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

VBA/VBAT Series
Booster Regulator/Air Tank

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

Boost pressure

Factory line
Compressor

0.3 MPa

Boost pressure

Booster Regulator + Air Tank

0.6 MPa

0.3 MPa

0.3 MPa

No power supply or wiring needed

Easy installation

Low heat generation

Air-only operation

Booster Regulator/VBA Series

Air Tank/VBAT Series
Booster Regulator VBA Series

**Improved service life**
- Floating piston structure
- Grease retaining groove
  - Except VBA10A, 11A

**Doubled**
that of the current model

**Improved reliability**
Built-in mesh filter at IN port
- Prevents operation failure due to foreign matter.

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

**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

Reduced by 13 dB (A) compared with the current model

**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.**
- Except VBA2□A, 4□A

**Elbow silencer added** (Option)

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

**Improved reliability**
Built-in mesh filter at IN port
- Prevents operation failure due to foreign matter.

**Air-operated type**
Max. operating pressure 1.6 MPa
Fourfold pressure increase type

VBA20A
VBA40A
VBA10A
VBA22A
VBA42A
VBA43A
VBA11A
<table>
<thead>
<tr>
<th>Pressure increase ratio</th>
<th>Twice</th>
<th>2 to 4 times</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operation</td>
<td>Knob-operated type (Direct operation)</td>
</tr>
<tr>
<td>Set pressure range</td>
<td>Body size</td>
<td>0.2 to 1.0 MPa</td>
</tr>
<tr>
<td></td>
<td>1/4&quot;</td>
<td>VBA10A-02 (0.2 to 2.0 MPa)</td>
</tr>
<tr>
<td></td>
<td>3/8&quot;</td>
<td>VBA20A-03</td>
</tr>
<tr>
<td></td>
<td>1/2&quot;</td>
<td>VBA40A-04 (0.2 to 1.6 MPa)</td>
</tr>
</tbody>
</table>

### 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>Model</th>
<th>VBAT05A</th>
<th>VBAT10A</th>
<th>VBAT20A</th>
<th>VBAT38A</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>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<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>Stainless steel</td>
<td></td>
<td></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.
## Booster Regulator
### VBA Series

#### How to Order

**VBA 40A** - 04 -

<table>
<thead>
<tr>
<th>Body size</th>
<th>Pressure increase ratio: Twice</th>
</tr>
</thead>
<tbody>
<tr>
<td>10A 1/4&quot; Knob-operated type</td>
<td></td>
</tr>
<tr>
<td>20A 3/8&quot; Knob-operated type</td>
<td></td>
</tr>
<tr>
<td>40A 1/2&quot; Knob-operated type</td>
<td></td>
</tr>
<tr>
<td>11A 1/4&quot;, Knob-operated type</td>
<td></td>
</tr>
<tr>
<td>22A 3/8&quot;, Air-operated type</td>
<td></td>
</tr>
<tr>
<td>42A 1/2&quot;, Air-operated type</td>
<td></td>
</tr>
<tr>
<td>43A 1/2&quot;, Max. operating pressure 1.6 MPa</td>
<td></td>
</tr>
</tbody>
</table>

- **Semi-standard**
  - Symbol: Nil
  - Pressure unit of "psi" on the pressure gauges cannot be used in Japan.

- **Option**
  - Symbol: 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)

- **Combination of Thread Type and Options**

<table>
<thead>
<tr>
<th>Body size</th>
<th>Thread type</th>
<th>Option</th>
<th>Semi-standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>10A 1/4&quot; Knob-operated type</td>
<td>Nil</td>
<td>G</td>
<td>N</td>
</tr>
<tr>
<td>11A 1/4&quot;, Knob-operated type</td>
<td>Nil</td>
<td>G</td>
<td>N</td>
</tr>
<tr>
<td>20A 3/8&quot; Knob-operated type</td>
<td>Nil</td>
<td>F</td>
<td>N</td>
</tr>
<tr>
<td>22A 3/8&quot;, Air-operated type</td>
<td>Nil</td>
<td>F</td>
<td>N</td>
</tr>
<tr>
<td>40A 1/2&quot; Knob-operated type</td>
<td>Nil</td>
<td>F</td>
<td>N</td>
</tr>
<tr>
<td>42A 1/2&quot;, Air-operated type</td>
<td>Nil</td>
<td>F</td>
<td>N</td>
</tr>
<tr>
<td>43A 1/2&quot;, Max. operating pressure 1.6 MPa</td>
<td>Nil</td>
<td>F</td>
<td>N</td>
</tr>
</tbody>
</table>

**Note**
- Set the pressure increase ratio to 2 or more.
- Thread types apply to the IN, OUT, and EXH ports of the VBA11A and to the IN, OUT, EXH, and gauge ports of the VBA20A and VBA43A.
- The gauge ports of the VBA11A are Rc thread type regardless of the thread type indication.

#### Air Tank Compatibility Chart

<table>
<thead>
<tr>
<th>Air tank</th>
<th>Booster regulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBAT05A(1)</td>
<td>VBA10A/11A</td>
</tr>
<tr>
<td>VBAT05S(1)</td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT10A(1)</td>
<td>VBA40A/42A</td>
</tr>
<tr>
<td>VBAT10S(1)</td>
<td>VBA43A</td>
</tr>
<tr>
<td>VBAT20A(1)</td>
<td>VBA42A</td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td>VBA38A(1)</td>
</tr>
<tr>
<td>VBAT38A(1)</td>
<td>VBA38S(1)</td>
</tr>
</tbody>
</table>

**Note**
- Refer to “Combination of Thread Type and Options.”
- Under the new measurement law, the pressure unit of “psi” on the pressure gauges cannot be used in Japan.
# 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 [Note 3] (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) (IN/OUT/EXH: 3 locations)</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>Pressure gauge port size (Rc) (IN/OUT: 3 locations)</td>
<td>1/8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></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>Installation</td>
<td>Horizontal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Grease (Non-lube)</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] Under the new measurement law, the pressure unit of “psi” on the pressure gauges cannot be used in Japan.
[Note 4] 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>Pressure gauge</td>
<td>G</td>
<td>G27-20-01</td>
<td>G36-10-01</td>
<td>G22A-7</td>
<td>G36-10-01</td>
<td>G27-20-01</td>
<td>G27-20-01</td>
<td></td>
</tr>
<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>AN1A-02</td>
<td>AN1A-03</td>
<td>AN1A-04</td>
<td>AN1A-03</td>
<td>AN1A-04</td>
<td>AN1A-04</td>
<td>AN20-02</td>
</tr>
<tr>
<td>Elbow for silencer</td>
<td>L</td>
<td>KT-VBA10A-18</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>KT-VBA10A-18</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-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>Description</th>
<th>Model</th>
<th>VBA10A-N02</th>
<th>VBA20A-T02</th>
<th>VBA40A-N04</th>
<th>VBA22A-N03</th>
<th>VBA42A-T04</th>
<th>VBA43A-N04</th>
<th>VBA11A-N02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure gauge</td>
<td>G</td>
<td>G27-20-01</td>
<td>G36-10-N01</td>
<td>KT-VBA22A-7N</td>
<td>G36-10-N01</td>
<td>G27-20-N01</td>
<td>G27-20-N01</td>
<td></td>
</tr>
<tr>
<td>Silencer</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>
</tr>
<tr>
<td>High-noise reduction silencer</td>
<td>S</td>
<td>AN1A-N03</td>
<td>AN1A-N04</td>
<td>AN1A-N03</td>
<td>AN1A-N03</td>
<td>AN1A-N04</td>
<td>AN1A-N04</td>
<td></td>
</tr>
<tr>
<td>Elbow for silencer</td>
<td>L</td>
<td>KT-VBA10A-18N</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</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>Description</th>
<th>Model</th>
<th>For VBA10A-02</th>
<th>For VBA20A-03</th>
<th>For VBA40A-04</th>
<th>For VBA22A-03</th>
<th>For VBA42A-04</th>
<th>For VBA43A-04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mist separator</td>
<td>AM250C-02</td>
<td>AM450C-04, 06</td>
<td>AM850C-06, 10</td>
<td>—</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>
<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

#### Flow Rate Characteristics

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Operating Range</th>
<th>Set Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBA10A</td>
<td>Solid line: Operating range</td>
<td>(Representative value)</td>
</tr>
<tr>
<td>VBA20A, 22A</td>
<td>Solid line: Operating range</td>
<td>(Representative value)</td>
</tr>
<tr>
<td>VBA40A, 42A</td>
<td>Solid line: Operating range</td>
<td>(Representative value)</td>
</tr>
</tbody>
</table>

#### Pressure Characteristics

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Inlet Pressure (MPa)</th>
<th>Outlet Pressure (MPa)</th>
<th>(Representative value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBA10A</td>
<td>0.7</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>VBA20A, 22A</td>
<td>0.7</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>VBA40A, 42A</td>
<td>0.7</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

#### Charge Characteristics

<table>
<thead>
<tr>
<th>Filter Type</th>
<th>Pressure Increase Ratio: Twice</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBA10A</td>
<td></td>
</tr>
<tr>
<td>VBA20A, 22A</td>
<td></td>
</tr>
<tr>
<td>VBA40A, 42A</td>
<td></td>
</tr>
</tbody>
</table>

### VBA10A

- The time required to charge pressure in the tank from 0.7 MPa to 0.95 MPa at 0.5 MPa supply pressure:
  - \[ \frac{P_2}{P_1} = 0.95 \]
  - \[ \frac{P_1}{P_2} = 1.4 \]
  - \[ T = 17 \times \frac{V}{10} = 17 \text{ (s)} \]

### 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:
  - \[ \frac{P_2}{P_1} = 1.6 \]
  - \[ \frac{P_1}{P_2} = 0.5 \]
  - \[ T = 7.7 \times \frac{V}{100} = 77 \text{ (s)} \]

### 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:
  - \[ \frac{P_2}{P_1} = 2.0 \]
  - \[ \frac{P_1}{P_2} = 0.5 \]
  - \[ T = 2.4 \times \frac{V}{100} = 24 \text{ (s)} \]
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

**VBA43A**

**Flow Rate Characteristics**

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.

**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:
  
  \[ P_2 = 0.8 \quad P_1 = 0.5 \quad \text{Pressure increase ratio} = 1.6 \]

  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:
  
  \[ T = \frac{100}{3.2} = 32 \text{ (s)}. \]

**VBA11A**

**Flow Rate Characteristics**

**Pressure Characteristics**

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

**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:

  \[ P_2 = 1.0 \quad P_1 = 0.5 \quad \text{Pressure increase ratio} = 2.0 \]

  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:
  
  \[ T = \frac{100}{3.2} = 32 \text{ (s)}. \]

**Pulsation/Pulsation is decreased with a tank.**

If the outlet capacity is undersized, pulsation may occur.

**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 \( P_1 \geq P_2 \) conditions can be prevented when the outlet side air has been consumed.
Please use the Booster Regulator Model Selection Software on the SMC website, http://mssc.smcworld.com/brmss/

**START**

Provide requisite conditions for selection.

1. **Necessary conditions:**
   - **D** [mm]: Cylinder bore size
   - **L** [mm]: Cylinder stroke
   - **W** [mm/s]: Cylinder operating speed
   - **C** [pc.]: Number of cylinders
   - **Tc** [s]: Cylinder operating time
   - **Ts** [s]: Cylinder stop time
   - **P1** [MPa]: Inlet pressure
   - **P2** [MPa]: Necessary supply pressure to cylinder
   - **Q** [L/min (ANR)]: Required air flow rate
   - **Qb** [L/min (ANR)]: Outlet air flow rate of booster regulator

2. **Other conditions:**
   - **K**: Cylinder double-acting: 2, single-acting: 1
   - **P3** [MPa]: Tank charge pressure
   - **T**: Time to charge (Time to charge to **P3**) or (Time to charge from **P2** to **P3**) [s]
   - **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.

   **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.

3. **Select booster regulator size from flow rate characteristics table.**

4. **Calculate required air flow rate Q.**

   \[ Q = \pi \times D \times W \times \left( \frac{P_2 + 0.101}{0.101} \right) \times 60 \times C \]

5. **Obtain the tank capacity V.**

   \[ V = \frac{(Q - Qb)}{2} \times (Tc \times k/60) \times (P_1 - P_2) \times 9.9 \]

6. **Select the tank capacity over V.**

7. **Calculate time T from charge characteristics table.**

   \[ T = \frac{4.6}{10} \times \frac{x}{10} \times \frac{7.5 - 3.8}{1} = 3.5 \text{ [s]} \]

8. **Judgement of charge time**

   **NO**: No tank
   - **YES**: Need no tank (The VBA4A can supply necessary pressure).

9. **No tank is inadequate.**

10. **Select the tank from table below.**

<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>VBA10A/11A</td>
</tr>
<tr>
<td>VBAT05S(1)</td>
<td></td>
<td>VBA10A/11A</td>
</tr>
<tr>
<td>VBAT10A(1)</td>
<td>10L</td>
<td>VBA10A/11A/20A/22A</td>
</tr>
<tr>
<td>VBAT10S(1)</td>
<td></td>
<td>VBA10A/11A/20A/22A</td>
</tr>
<tr>
<td>VBAT20A(1)</td>
<td>20L</td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td></td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT38A(1)</td>
<td>38L</td>
<td>VBA38A/40A/42A/43A</td>
</tr>
<tr>
<td>VBAT38S(1)</td>
<td></td>
<td>VBA38A/40A/42A/43A</td>
</tr>
</tbody>
</table>

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

12. **Select the tank from table below.**

<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>VBA10A/11A</td>
</tr>
<tr>
<td>VBAT05S(1)</td>
<td></td>
<td>VBA10A/11A</td>
</tr>
<tr>
<td>VBAT10A(1)</td>
<td>10L</td>
<td>VBA10A/11A/20A/22A</td>
</tr>
<tr>
<td>VBAT10S(1)</td>
<td></td>
<td>VBA10A/11A/20A/22A</td>
</tr>
<tr>
<td>VBAT20A(1)</td>
<td>20L</td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT20S(1)</td>
<td></td>
<td>VBA20A/22A</td>
</tr>
<tr>
<td>VBAT38A(1)</td>
<td>38L</td>
<td>VBA38A/40A/42A/43A</td>
</tr>
<tr>
<td>VBAT38S(1)</td>
<td></td>
<td>VBA38A/40A/42A/43A</td>
</tr>
</tbody>
</table>

13. **Review the size and pick a different booster regulator.**

   **END**

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 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.

![General line (low pressure) Locations requiring high pressure](image)

- 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 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 ($P_1$) passes through the check valve, fills $P_2$, and results in $P_1 = P_2$.

- 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.

- 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.
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.

3. Maintenance space

- Allow the sufficient space for maintenance and inspection.

---

**System configuration**

- To ensure an air supply capacity of the minimum operating pressure \((0.1 \text{ MPa})\) or more, if the internal operating pressure becomes the minimum operating pressure or less, the switching valve may remain in the intermediate position, which may cause a restart failure.
- 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 IN 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.

---

**Exhaust air measures**

- Provide a dedicated pipe to release the exhaust air from each booster regulator. If centralized piping is used for the exhaust air, the switching valve may stop halfway and fail to increase the pressure due to the influence of other exhaust.
- In the same manner, if a silencer or exhaust cleaner other than those designated by SMC is used, back pressure will be generated due to the clogging of the silencer, which may result in the switching valve stopping halfway and failing to increase the pressure.
- Depending on the necessity, install a silencer or an exhaust cleaner on the exhaust port of the booster regulator to reduce the exhaust noise.

---

**Maintenance space**

- Allow the sufficient space for maintenance and inspection.
### Caution

#### 1. Transporting
- When transporting this product, hold it lengthwise with both hands. Never hold it by the black knob that protrudes from the center because the knob 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

#### 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

#### 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: –23°C or less) is used, the life expectancy may be shortened because dry air will accelerate evaporation of grease inside.

#### 2. Pressure fluctuation
- Provide a stable supply of pressure for the inlet pressure. If the inlet pressure supply is unstable, operation also becomes unstable, which may result in the switching valve stopping halfway and failing to increase the pressure.

### Operating Environment

#### 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.


VBA Series

Handling

⚠️ 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.
VBA Series

Construction/Replacement Parts

VBA10A

VBA11A

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

Air-operated type

VBA22A, 42A

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.

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

* 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.
VBA Series

Dimensions

VBA22A-03

IN side gauge port
1/8

OUT side gauge port
1/8

Pressure gauge (Option)

300

39

73

53

IN port
3/8

OUT port
3/8

EXH port
3/8

EXH port
1/2

IN port
3/8

OUT port
3/8

IN port
1/2

OUT port
1/2

Silencer (Option)

Pilot port
1/8

39

28

118

59

21

4 x ø12

43

221

98

130

150

404

40

IN side gauge port
1/8

OUT side gauge port
1/8

Pressure gauge (Option)

VBA42A-04

IN port
3/8

OUT port
3/8

IN port
3/8

OUT port
3/8

EXH port
3/8

EXH port
1/2

IN port
1/2

OUT port
1/2

Silencer (Option)

Pilot port
1/8

85

139

8

221

96

116

53

32

32

284

284

116

32

IN side gauge port
1/8

OUT side gauge port
1/8

Pressure gauge (Option)

VBA43A-04

IN port
3/8

OUT port
3/8

IN port
3/8

OUT port
3/8

EXH port
3/8

EXH port
1/2

IN port
1/2

OUT port
1/2

Silencer (Option)

Pilot port
1/8

43

172

62

62

8

221

96

116

53

32

32

284

284

116

32

IN side gauge port
1/8

OUT side gauge port
1/8

Pressure gauge (Option)

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
(Excludes models with a pressure gauge (Option))

2 CE explosion-proof directive (ATEX) compliant

56 Standard model no.

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

3 Ozone resistant

80 Standard model no.

* Made to Order
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.

56 — Standard model no.

Made to Order

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

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

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

Made to Order
Copper-free/Fluorine-free
(Excludes models with a pressure gauge (Option))

* This option cannot be selected for air tank with safety valve.

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

* Made to Order
Ozone resistant

Ozone resistant

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

Ozone resistant

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

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

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

Ozone resistant

For detailed dimensions, specifications and lead times, please contact SMC.
Except the Chinese pressure vessel regulations compliant product (-X104)

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

**Standard Product**
(For Japanese Market)

<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>

**Option**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Option</th>
<th>Applicable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None (Note)</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**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Option</th>
<th>Applicable model</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Safety valve (Set pressure: 1 MPa)</td>
<td>VBAT05A1, VBAT10A1</td>
</tr>
<tr>
<td>S</td>
<td>Safety valve (Set pressure: 2 MPa)</td>
<td>VBAT05A1, VBAT10A1</td>
</tr>
</tbody>
</table>

**Accessories**

<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**

- **Tank capacity**
  - Symbol: 05 5 L
  - Symbol: 10 10 L
  - Symbol: 20 22 L
  - Symbol: 38 38 L

- **Material**
  - Symbol: A Carbon steel
  - Symbol: S Stainless steel

- **Safety valve/Pressure gauge set**
  - Note) When a drain valve is required, please order it separately.
  - Drain valve part no.: VBAT-V1

- **ASME Standards Compliant Product**

**VBAT 05 A N1 - E - X105**

- **Tank capacity**
  - Symbol: 05 5 L
  - Symbol: 10 10 L
  - Symbol: 20 22 L
  - Symbol: 38 38 L

- **Thread type**
  - Symbol: NIL Rc
  - Symbol: N NPT

- **Material**
  - Symbol: A Carbon steel (SA-414)
  - Symbol: S Stainless steel (SA-240 316)

- **Accessory**
  - Note) A safety valve is required according to ASME Standards.
  - The drain valve is sold separately. Please order it separately.

- **Option**
  - Symbol: E Safety valve
  - Symbol: EV Safety valve/Pressure gauge set

- **Part no.**
  - VBAT-V1 Rc
  - VBAT-V1N NPT

- **ASME standards compliant product**
  - Note) The labels indicating compliance with ASME standards are not based on the International System of Units. Therefore, these products cannot be used in Japan under the new Measurement Act.

- **Product Not Applicable to the ASME Standard**

**VBAT 05 A N1 - SV - X11**

- **Tank internal capacity**
  - Symbol: 05 5 L
  - Symbol: 10 10 L

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

- **Thread type**
  - Symbol: NIL Rc
  - Symbol: N NPT (Note)

- **Accessory**
  - Note) This product is for overseas use only according to the new Measurement Law. (The SI unit type is provided for use in Japan.)

- **Option**
  - Symbol: V Safety valve (Note 1)
  - Symbol: SV Safety valve (Note 2)

- **Part no.**
  - VBAT-V1N NPT

- **Product exportable model**

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Law</th>
<th>Exportable models</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>1. Industrial Safety and Health Act</td>
<td>VBAT05SA1-X101 (Note 2)</td>
<td>1. KCS Certification compliant product (Certificate included)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20A1-X101</td>
<td>2. High-pressure Gas Act not applicable (Not applicable when maximum operating pressure: 0.97 MPa)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT38A1-X101</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT05SS1-X101</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10SS1-X101</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20SS1-X101</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT38SS1-X101</td>
<td></td>
</tr>
</tbody>
</table>

- **Option (Order it separately)**

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Option</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>VBAT-K</td>
<td>(Safety valve)</td>
</tr>
<tr>
<td></td>
<td>VBAT-V1</td>
<td>(Safety valve)</td>
</tr>
</tbody>
</table>

- **List of Air Tank for Overseas**

- **Country/Region**
  - South Korea
  - Thailand, Taiwan

- **Law**
  - 1. Industrial Safety and Health Act
  - 2. High-Pressure Gas Safety Control Act
  - No applicable standard

- **Exportable models**
  - VBAT05SA1-X101 (Note 2)
  - VBAT10A1-X101
  - VBAT20A1-X101
  - VBAT38A1-X101
  - VBAT05SS1-X101
  - VBAT10SS1-X101
  - VBAT20SS1-X101
  - VBAT38SS1-X101
  - VBAT-V1

- **Details**
  - KCS Certification compliant product (Certificate included)
  - A safety valve must be mounted.
  - High-pressure Gas Act not applicable (Not applicable when maximum operating pressure: 0.97 MPa)

- **Option**
  - VBAT-K (Safety valve)
  - VBAT-V1 (Drain valve)

Note 1) VBAT-K is not RoHS compliant.

Note 2) This is exempt from the revision of Korean pressure vessel act (enforced in March, 2010). (Exception conditions: Inside diameter of the body is less than 150 mm.) Therefore, the KCS Certification nameplate is not attached to the VBAT05A1-X101. The VBAT-R safety valve can be used.
## VBAT Series

### Standard Product (For Japanese Market)

#### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Model</th>
<th>VBAT05-S1</th>
<th>VBAT10-S1</th>
<th>VBAT20-S1</th>
<th>VBAT38-S1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank capacity (L)</td>
<td></td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>VBAT-A1</td>
<td>2.0</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>IN port size</td>
<td>VBAT-S1</td>
<td>3/8</td>
<td>3/8</td>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>OUT port size</td>
<td></td>
<td></td>
<td></td>
<td>1/2</td>
<td>3/4</td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>VBAT-A1</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td></td>
<td></td>
<td></td>
<td>0 to 75</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>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety valve (When selecting an option)</td>
<td>Note 1)</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
</tr>
<tr>
<td>Drain valve (When selecting an option)</td>
<td>Note 2)</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
</tr>
</tbody>
</table>

**<For VBAT-S1 (Stainless Steel)>**

<table>
<thead>
<tr>
<th>Model</th>
<th>Accessory kit</th>
<th>VBAT05S1-Y</th>
<th>VBAT10S1-Y</th>
<th>VBAT20S1-Y</th>
<th>VBAT38S1-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain valve (When selecting an option)</td>
<td>Note 1)</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
<td>VBAT-V1</td>
</tr>
</tbody>
</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 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10A-Y-3</td>
<td>1 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT-V1</td>
<td>1 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20A-Y-3</td>
<td>1 (VBAT-A1)</td>
</tr>
<tr>
<td>②</td>
<td>Hexagon socket head taper screwed plug (for drain port)</td>
<td>VBAT5S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT-V1</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td>③</td>
<td>Hexagon socket head cap screw</td>
<td>VBAT5S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT-V1</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td>④</td>
<td>Anchor bolts/nut</td>
<td>VBAT5S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10S-Y-4</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT-V1</td>
<td>4 (VBAT-A1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20S-Y-4</td>
<td>4 (VBAT-A1)</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.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Internal capacity</th>
<th>Made to Order</th>
<th>Tank internal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>5 L</td>
<td>Copper-free/Fluorine-free</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10 L</td>
<td>Made to Order</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>20 L</td>
<td>Stainless steel</td>
<td>20</td>
</tr>
<tr>
<td>38</td>
<td>38 L</td>
<td>Made to Order</td>
<td>38</td>
</tr>
</tbody>
</table>

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 as accessories. (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.
**VBAT Series**

**Dimensions: Standard Product (For Japanese Market)**

**VBAT38A1** Material: Carbon steel

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.

**VBAT05S1** Material: Stainless steel 304

Connected to VBA10A, 11A

**VBAT10S1** Material: Stainless steel 304

Connected to VBA20A

**Connected to VBA22A**

Material: Carbon steel

Note) When option G (pressure gauge) is selected

* 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 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBA20A</td>
<td>531</td>
<td>444</td>
<td>3/8</td>
<td>—</td>
</tr>
<tr>
<td>VBA40A</td>
<td>570</td>
<td>479.8</td>
<td>1/2</td>
<td>—</td>
</tr>
<tr>
<td>VBA22A</td>
<td>494</td>
<td>444</td>
<td>3/8</td>
<td>519</td>
</tr>
<tr>
<td>VBA42A</td>
<td>527</td>
<td>479.8</td>
<td>1/2</td>
<td>543</td>
</tr>
</tbody>
</table>

Note) When option G (pressure gauge) is selected.
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

**VBAT 05 A1-R**
With safety valve

**VBAT 20 A1-R**
With safety valve

---

**Booster regulator model**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</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>
<tr>
<td>VBA43A</td>
<td>526</td>
<td>429.8</td>
<td>Rc 1/2</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: When option G (pressure gauge) is selected

---

**Tank model**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBAT05</td>
<td>60</td>
</tr>
<tr>
<td>VBAT10</td>
<td>130</td>
</tr>
</tbody>
</table>

---

**Safety valve port**
Rc 3/8

---

**Material:** Stainless steel 304

---

**Air Tank VBAT Series**

---

**ARJ**
**AR425 to 935**
**ARX**
**AMR**
**ARM**
**ARP**
**IR**
**IRV**
**VEX**
**SRH**
**SRP**
**SRF**
**ITV**
**IC**
**ITVH**
**ITVX**
**PVQ**
**VY1**
**VBA**
**VBAT**
**AP100**

---

**Dimensions:**

- **Tank OUT port**
  - Rc 1/2
- **Drain port**
  - Rc 1/4

- **Booster regulator IN port**
  - Rc 1/2
- **Booster regulator OUT port**
  - 4 x ø13

---

**Dimensions:**

- **Tank OUT port**
  - Rc 3/4
- **Drain port**
  - Rc 1/4

---

**Dimensions:**

- **Tank OUT port**
  - Rc 3/8
- **Drain port**
  - Rc 1/2

---

**Dimensions:**

- **Tank OUT port**
  - Rc 3/8
- **Drain port**
  - Rc 3/8

---

**Dimensions:**

- **Tank OUT port**
  - Rc 3/8
- **Drain port**
  - Rc 3/8

---

**Dimensions:**

- **Tank OUT port**
  - Rc 3/8
- **Drain port**
  - Rc 3/8
### Specifications

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

### Installation

- Horizontal (Floor mounting)

### Paint

- Outside: Silver paint, Inside: Rustproof paint

### Note

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.

---

### 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>VBAT-R (Set pressure: 1 MPa)</td>
<td></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>
<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></td>
</tr>
<tr>
<td>2</td>
<td>Hexagon socket head taper screwed plug</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(for drain port)</td>
<td></td>
<td></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</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></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>
</tr>
<tr>
<td>5</td>
<td>Hexagon socket head taper screwed plug</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(for safety valve port)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Diagrams

- **Safety valve**
- **Drain valve: VBAT-V1**
- **Safety valve: VBAT-R, VBAT-S**

**Body material: Brass**

---

1028
Air Tank  **VBAT Series**

### 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**

* 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 VBA22A**

* When option G (pressure gauge) is selected

---

ARJ
AR425 to 935
ARX
AMR
ARM
ARP
IR
IRV
VEX
SRH
SRP
SRF
ITV
IC
ITVH
ITVX
PVQ
VY1
VBA
VBAT
AP100
**Dimensions: CE Marking-Conformity Products**

**VBAT20A-Q [Material: Carbon steel]**

Connected to VBA20A, 40A

- Tank OUT port 3/4 (Rc, G)
- Tank IN port 3/4 (Rc, G)
- Safety valve port 3/8 (Rc, G)
- Drain port 1/4 (Rc, G)
- Booster regulator IN port
- Booster regulator OUT port ø206 4 x ø13
- EXH: ø206 4 x ø13

Note) When option G (pressure gauge) is selected

**VBAT38A-Q [Material: Carbon steel]**

Connected to VBA20A, 40A

- Tank OUT port 3/4 (Rc, G)
- Tank IN port 3/4 (Rc, G)
- Safety valve port 3/8 (Rc, G)
- Drain port 1/4 (Rc, G)
- Booster regulator IN port
- Booster regulator OUT port ø206 4 x ø13
- EXH: ø206 4 x ø13

Note) When option G (pressure gauge) is selected

---

* 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>Fluid</th>
<th>Compressed air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank capacity [L]</td>
<td>5</td>
</tr>
<tr>
<td>Max. operating pressure [MPa]</td>
<td>2.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IN port size</th>
<th>3/8</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT port size</td>
<td>1/2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proof pressure [MPa]</th>
<th>2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient and fluid temperature [°C]</td>
<td>0 to 75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Carbon steel  SA-414 (Plug for inspection port is made of carbon steel.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint</td>
<td>Outside: Silver gray, Inside: Phosphate coated treatment</td>
</tr>
<tr>
<td>Surface treatment</td>
<td>Outside: Acid cleaning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Documents included</th>
<th>• Manufacturer’s certificate of compliance  • Operation manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included parts</td>
<td>• Safety valve  • Accessory kit</td>
</tr>
</tbody>
</table>

**Options/Accessory Numbers**

**VBAT(A)1-X105 (Carbon steel)**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td>NPT</td>
<td>Rc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety valve</td>
<td>VBAT-E1N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VBAT(S)1-X105 (Stainless steel)**

<table>
<thead>
<tr>
<th>Model</th>
<th>VBAT05S1-X105</th>
<th>VBAT10S1-X105</th>
<th>VBAT20S1-X105</th>
<th>VBAT38S1-X105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td>NPT</td>
<td>Rc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety valve</td>
<td>VBAT-E1N</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</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-3N</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10A-Y-3N</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20A-Y-3N</td>
<td>1</td>
</tr>
<tr>
<td>②</td>
<td>Hexagon socket head taper screwed plug (For drain port)</td>
<td>VBAT5A-Y-3N</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10A-Y-3N</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20A-Y-3N</td>
<td>1</td>
</tr>
<tr>
<td>③</td>
<td>Hexagon socket head cap screw</td>
<td>VBAT5S-Y-4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT10S-Y-4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VBAT20S-Y-4</td>
<td>4</td>
</tr>
<tr>
<td>④</td>
<td>Anchor bolt/nut</td>
<td>VBAT-E1</td>
<td>—</td>
</tr>
</tbody>
</table>

---

**Note:** Scratches, scrapes, blotches, and uneven color may be present on the surface, but they do not affect the function or performance of the product.

---

**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**

**VBAT05AN(N)1-E□-X105**  
**VBAT05SN(N)1-E□-X105**

---

- 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.
- 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**

**VBAT10AN(N)1-E□-X105**  
**VBAT10SN(N)1-E□-X105**

---

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

**VBAT20AN1-E□-X105/VBAT20A1-E□-X105**
**VBAT20SN1-E□-X105/VBAT20S1-E□-X105**

Connected to VBA20A, 40A, 43A

Connected to VBA22A, 42A

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

**VBAT38AN1-E□-X105/VBAT38A1-E□-X105**
**VBAT38SN1-E□-X105/VBAT38S1-E□-X105**

Connected to VBA20A, 40A, 43A

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

The booster regulator is not subject to ASME standards.
Product Not Applicable to the ASME Standard

Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></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>5</td>
<td>10</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>2.0</td>
<td></td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>IN port size</td>
<td>3/8</td>
<td></td>
<td>3/8</td>
<td></td>
</tr>
<tr>
<td>OUT port size</td>
<td>1/2</td>
<td></td>
<td>1/2</td>
<td></td>
</tr>
<tr>
<td>Proof pressure (MPa)</td>
<td>3.3</td>
<td></td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>0 to 75</td>
<td></td>
<td>0 to 75</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>6.6</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Carbon steel (SS400)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1) The accessories and options are included in the same container.
Note 2) 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 3) Scratches, scrapes, blotsches, and uneven color may be present on the surface, but they do not affect the function or performance of the product.

Options/Accessories/Part No.

<Product Not Applicable to the ASME Standard>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread type</td>
<td>Rc</td>
<td>NPT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety valve (When selecting an option)</td>
<td>VBAT-S (Set pressure: 2 MPa)</td>
<td>VBAT-SN (Set pressure: 2 MPa)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drain valve (When selecting an option)</td>
<td>VBAT-V1</td>
<td>VBAT-V1N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Accessory Kit is a Set of Nos. 1 to 3.

<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 (VBAT1-Y-3)</td>
</tr>
<tr>
<td>2</td>
<td>Hexagon socket head taper screwed plug (No) (for drain port)</td>
<td>VBAT5A-Y-3-X11</td>
<td>1 (VBAT1-Y-3-X11)</td>
</tr>
<tr>
<td>3</td>
<td>Hexagon socket head cap screw</td>
<td>VBAT10A-Y-3-X11</td>
<td>4 (VBAT1-Y-3-X11)</td>
</tr>
</tbody>
</table>

Note) The thread type for VBAT5A-Y-3-X11 and VBAT10A-Y-3-X11 is NPTF.
**VBAT Series**

Dimensions: Product Not Applicable to the ASME Standard

### VBAT05A1-X11 Material: Carbon steel

Connected to VBA10A, 11A

- Safety valve port: 3/8 (Rc, NPT)
- Tank IN port: 3/8 (Rc, NPT)
- Tank OUT port: 3/8 (Rc, NPT)
- Drain port: 1/4 (Rc, NPT)

* 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.

### VBAT10A1-X11 Material: Carbon steel

Connected to VBA10A, 11A

- Safety valve port: 3/8 (Rc, NPT)
- Tank IN port: 3/8 (Rc, NPT)
- Tank OUT port: 3/8 (Rc, NPT)
- Drain port: 1/4 (Rc, NPT)
- Booster regulator IN port: Rc1/4
- Booster regulator EXH: Rc1/4

* 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

- Safety valve port: 3/8 (Rc, NPT)
- Tank IN port: 1/2 (Rc, NPT)
- Tank OUT port: 1/2 (Rc, NPT)
- Drain port: 1/4 (Rc, NPT)

Connected to VBA22A

- Booster regulator IN port: Rc3/8
- Booster regulator EXH: Rc3/8

* 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.
### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Compressed air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. operating pressure (MPa)</td>
<td>1.5, 1.5, 1.0, 1.0</td>
</tr>
<tr>
<td>IN port size</td>
<td>3/8, 3/8, 1/2, 1/2</td>
</tr>
<tr>
<td>OUT port size</td>
<td>3/8, 1/2, 1/2, 3/4</td>
</tr>
<tr>
<td>Ambient and fluid temperature (°C)</td>
<td>0 to 75</td>
</tr>
<tr>
<td>Installation</td>
<td>Horizontal (Floor mounting)</td>
</tr>
<tr>
<td>Material</td>
<td>VBAT05A1-U-X104 Carbon steel (Equivalent to SS400), VBAT10A1-U-X104 Stainless steel (Equivalent to stainless steel 304)</td>
</tr>
<tr>
<td>Paint</td>
<td>VBAT05A1-U-X104 Outside: Silver gray, Inside: Phosphate coated treatment</td>
</tr>
<tr>
<td>Surface treatment</td>
<td>VBAT05A1-U-X104 Outside: Acid cleaning, Sandblasting Insid: Acid cleaning</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

### Accessories/Part No.

#### For VBAT05A1-U-X104 (Carbon Steel)

<table>
<thead>
<tr>
<th>Model</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-ring</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head tapped screwed plug (for drain port)</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head cap screw</td>
<td>4</td>
</tr>
<tr>
<td>Anchor bolt/nut</td>
<td>1</td>
</tr>
</tbody>
</table>

#### For VBAT05S1-U-X104 (Stainless Steel)

<table>
<thead>
<tr>
<th>Model</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-ring</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head tapped screwed plug (for drain port)</td>
<td>1</td>
</tr>
<tr>
<td>Hexagon socket head cap screw</td>
<td>4</td>
</tr>
<tr>
<td>Anchor bolt/nut</td>
<td>1</td>
</tr>
</tbody>
</table>

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

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

* 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)

- 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.

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

**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.
**Dimensions**

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

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to  
VBA20A, 40A  
VBA22A, 42A

* 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.

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

Safety valve/Pressure gauge set  
(Supplied with product)

Connected to  
VBA20A, 40A  
VBA22A, 42A

* 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.

2. **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**
   - Connect a filter or a mist separator to the OUT side of the tank. Because the inner surface of the tank is untreated, there is a possibility of dust flowing out to the outlet side.
   - 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.

---

**Selection**

- Consider the operating conditions and operate this product within the specification range.
- When using the air tank with a booster regulator, refer to “Sizing” on page 1014 or SMC Pneumatic System Energy Saving Program.

---

**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.