Power Valve
Precision Regulator

VEX1\(^3\) 3\(^3\) Series

High precision, large capacity relief regulator
A 3 port large exhaust capacity pressure reducing valve which utilizes a nozzle flapper mechanism available as air operated or manual types.

Precise pressure setting
Having a relief Cv value that is similar to the supply Cv value, this regulator responds quickly in order to set a precise outlet pressure even when the outlet volume and the pressure fluctuations are large.

High precision
This regulator is well-suited for balancer applications because it minimizes pressure fluctuations with its large-volume supply/exhaust capability, in addition it features high precision F.S. (full span) sensitivity within 0.2% and F.S. repeatability of ±0.5%.

Manifold capable
VVEXB 1/8—Up to 10 stations
VVEX2 1/4—Up to 8 stations

Rich line-up
Port sizes available from M5 to 2 inches, most flow rates and pipes can be accommodated.

Minimum size VEX1\(^\wedge\) 33
- Non-grease only for VEX1\(^\wedge\) 33
- Seal materials (NBR, FKM) only for VEX1\(^\wedge\) 33

Manual knob type
Air operated type
Application Example

Relief Type Regulator
Precise internal tank pressure setting

- Large effective areas of both supply and exhaust sides make it possible to precisely set large-flow internal tank pressure.

Accurate Pressure Setting
Sensitivity within 0.2% F.S. (Full span)
Tension control

Contact Pressure Control

- Pressure is kept steady, responding rapidly to the position change of the piston in the cylinder.

Balance and Drive
Accurate balance pressure setting

- Pressure changes during cylinder actuation are suppressed, balancing the cylinder in both static and dynamic conditions.
Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VEX1A33</th>
<th>VEX1B33</th>
<th>VEX113B</th>
<th>VEX123B</th>
<th>VEX133B</th>
<th>VEX153B</th>
<th>VEX173B</th>
<th>VEX193B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
<td>M5</td>
</tr>
<tr>
<td>1(P)</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>02</td>
<td>04</td>
<td>06</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>2(A)</td>
<td>01</td>
<td>01</td>
<td>02</td>
<td>02</td>
<td>04</td>
<td>06</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>3(R)</td>
<td>03</td>
<td>03</td>
<td>04</td>
<td>04</td>
<td>06</td>
<td>10</td>
<td>14</td>
<td>20</td>
</tr>
</tbody>
</table>

| Operation | Manual knob (Push locking slotted type) | Manual knob (Push locking slotted type) and Air operated type |

| Pilot | Internal pilot | (External pilot can be switched. * Refer to “How to Switch to External Pilot” on page 843.) |

| Fluid | Refer to Applicable Fluids. Air |

| Supply pressure | (Set pressure + 0.1 MPa) to Max. 1 MPa * Refer to “Precautions”. |

| Setting pressure range | 0.01 to 0.7 MPa | 0.05 to 0.7 MPa |

| Ambient temperature (1) | 0 to 60°C (VEX1 33) | 0 to 60°C (VEX1 33B) |

| Fluid temperature (1) | 0 to 60°C (VEX1 33) | 0 to 99°C (VEX1 33B) |

| Repeatability | Within ±0.5% F.S. (Full span) |

| Sensitivity | Within ±1% F.S. (Full span) |

| Linearity (3) | — |

| Air consumption (2) | 9.5 L/min (ANR) (at supply pressure 1.0 MPa) |

| Mounting | Free |

| Weight (kg) | 0.15 | 0.18(4) | 0.2 | 0.3(4) | 0.5 | 1.4 | 2 | 4 |

Note 1) No condensation.  
Note 2) Large amount of air is exhausted all the time.  
Note 3) Applicable only to air operated type.  
Note 4) With sub-plate.  
Note 5) Non-lubricated specifications are not available for valve sizes 1 to 9.

Applicable Fluids

<table>
<thead>
<tr>
<th>Model</th>
<th>VEX1 33</th>
<th>VEX1 33B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air (Normal, Dry)</td>
<td>High temp. air (Max. 99°C)</td>
</tr>
</tbody>
</table>

| Symbol |

Air operated type  
Manual knob type
Power Valve/Precision Regulator **VEX1** [3A] Series

**How to Order**

**VEX1 A 3 3 B - M5 - G**

- **Regulator valve**
- **Type** Precision regulator
- **Operation** Manual knob

<table>
<thead>
<tr>
<th>Body size</th>
<th>Port size</th>
<th>Body ported</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M5</td>
<td>01</td>
<td>1(P), 2(A), 3(R)</td>
</tr>
<tr>
<td>B</td>
<td>M5</td>
<td>02</td>
<td>1(P), 2(A), 3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>03</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>04</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>05</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>06</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>10</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>12</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>14</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>20</td>
<td>3(R)</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Nil</td>
<td>Without sub-plate</td>
</tr>
</tbody>
</table>

**Seal material**
- Nil: NBR seals
- B: FKM seals

**Option**
- **B** Bracket
- **F** Foot
- **G** Pressure gauge
- **N** Silencer for bleed port

**Threads (1/8 only)**
- Nil
- Rc
- NPT
- NPTF

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket (With bolt and washer)</td>
<td>VEX1A33</td>
</tr>
<tr>
<td>Foot (With bolt and washer)</td>
<td>VEX1B33</td>
</tr>
<tr>
<td>Pressure gauge (1)</td>
<td>VEX1133</td>
</tr>
<tr>
<td>Pressure gauge (2)</td>
<td>VEX1233</td>
</tr>
<tr>
<td>Pressure gauge (3)</td>
<td>VEX1333</td>
</tr>
<tr>
<td>Pressure gauge (4)</td>
<td>VEX1433</td>
</tr>
<tr>
<td>Pressure gauge (5)</td>
<td>VEX1533</td>
</tr>
<tr>
<td>Pressure gauge (6)</td>
<td>VEX1633</td>
</tr>
<tr>
<td>Pressure gauge (7)</td>
<td>VEX1733</td>
</tr>
<tr>
<td>Pressure gauge (8)</td>
<td>VEX1833</td>
</tr>
<tr>
<td>Pressure gauge (9)</td>
<td>VEX1933</td>
</tr>
<tr>
<td>Silencer for bleed port (PE)</td>
<td>AN120-M5</td>
</tr>
</tbody>
</table>

Note 1) Not conforming to ISO1179-1.
Note 2) The optional parts are shipped in the same package.
Note 3) If a pressure gauge other than that which is indicated in the option table is to be used, also enter the part number of the pressure gauge.

Refer to the pressure gauge guide in Best Pneumatics No. 7 for details.
Example: VEX1333-03
G36-4-01

**Caution**

**Using the External Pilot**

1. If a pressure difference over 0.1 MPa between the supply and the set pressure cannot be maintained, change to an external pilot to obtain the necessary pressure difference.
2. If a mist separator cannot be installed on the supply side, change to an external pilot, and make sure to install a mist separator on the pilot side.

**How to Switch to External Pilot**

1. Using a flat head screwdriver, remove the fixed orifice from port P1.
2. Install the fixed orifice facing in the opposite direction (external pilot). Install it carefully to prevent damage to the O-ring.
3. Tighten the fixed orifice again and connect the pilot piping to port P1 using an M5 fitting.

**Dimensions of port P1**

- **<Internal pilot>**
  - **Fixed orificeassembly (with O-ring) part no.:**
    - VEX1-A30-3
  - For VEX1 [3B] (FKM seals)
    - Fixed orifice assembly (with O-ring) part no.:
      - VEX1-A30-3B

- **<External pilot>**
  - **Fittings for M5**
    - For VEX1 [3A] (NBR seals)
      - Fixed orifice assembly (with O-ring) part no.:
        - VEX1-A30-3
      - Note) O-rings cannot be shipped as a single unit.

**Position for port P1**

**Dimensions of port P1**

**Table:**

<table>
<thead>
<tr>
<th>Body ported</th>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M5</td>
</tr>
<tr>
<td>B</td>
<td>M5</td>
</tr>
<tr>
<td>Nil</td>
<td>Without sub-plate</td>
</tr>
</tbody>
</table>

**Option (2)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket (With bolt and washer)</td>
<td>B VEX1-18-1A</td>
</tr>
<tr>
<td>Foot (With bolt and washer)</td>
<td>F VEX1-18-2A</td>
</tr>
<tr>
<td>Pressure gauge</td>
<td>G G27-10-1-X207</td>
</tr>
<tr>
<td>Silencer for bleed port (PE)</td>
<td>G G36-10-01</td>
</tr>
</tbody>
</table>

**Note:**
- Refer to Applicable Fluids on page 842.
## VEX1\(3^0\) Series

### Sub-plate/Base Gasket Part No.

<table>
<thead>
<tr>
<th>Valve body size</th>
<th>B</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sub-plate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td>Symbol</td>
<td>Port size</td>
</tr>
<tr>
<td>A</td>
<td>M5</td>
<td>B</td>
</tr>
<tr>
<td>B</td>
<td>1/8</td>
<td></td>
</tr>
<tr>
<td><strong>Base gasket</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port size</td>
<td>Symbol</td>
<td>Seal material</td>
</tr>
<tr>
<td>A</td>
<td>Nil</td>
<td>NBR seals</td>
</tr>
<tr>
<td>B</td>
<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

### Note
- Not conforming to ISO1179-1.
**Specifications**

<table>
<thead>
<tr>
<th>Applicable valve</th>
<th>VEX1B33</th>
<th>VEX1233</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve stations</td>
<td>2 to 10 stations Note)</td>
<td>2 to 8 stations Note)</td>
</tr>
</tbody>
</table>

**Air passage**

<table>
<thead>
<tr>
<th>Pilot</th>
<th>Internal pilot</th>
<th>Common external pilot</th>
<th>Internal pilot</th>
<th>Common external pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot port size</td>
<td>$\frac{3}{8}$ x 0.8</td>
<td>$\frac{1}{4}$ x 0.8</td>
<td>$\frac{3}{8}$ x 0.8</td>
<td>$\frac{1}{4}$ x 0.8</td>
</tr>
</tbody>
</table>

**Valve stations**

- VVEXB-5
- VEX1-17

**Blanking plate**

- VVEXB-5 (With gasket and mounting bolt)
- VEX1-17 (With gasket and mounting bolt)

**Seal material**

- Nil
- NBR seals
- FKM seals

**Note)** Pressurize to Port 1(P) and exhaust from Port 3(R) on the both sides for six stations or more of “VEX1B33” and/or five stations or more of “VEX1233”.

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**How to Order**

**VVEXB**

- Body size
- Pilot type
  - 1 Internal pilot
  - 2 Common external pilot
- Valve stations
  - 2 2 stations
  - 10 10 stations
- Port size $\frac{1}{4}$
- Thread type
  - Nil
  - Rc
- Note)

**VVEX2**

- Body size
- Pilot type
  - 1 Internal pilot
  - 2 Common external pilot
- Valve stations
  - 2 2 stations
  - 8 8 stations
- Port size $\frac{1}{4}$
- Thread type
  - Nil
  - Rc
- Note)

**Set Pressure Characteristics (Air Operated Type)**

- Signal port PA Pressure (MPa) vs. Port 2(A) Pressure (MPa)

**Set Pressure Characteristics (Manual Knob Type)**

- Knob rotation (Cycles) vs. Port 2(A) Pressure (MPa)
Flow Rate Characteristics

**VEX1A33, VEX1B33-01**
Port 2(A) pressure (MPa)

**VEX113_3, VEX123_3-02**
Port 2(A) pressure (MPa)

**VEX133_3-03**
Port 2(A) pressure (MPa)

**VEX153_3-06**
Port 2(A) pressure (MPa)

**VEX173_3-12**
Port 2(A) pressure (MPa)

**VEX193_3-20**
Port 2(A) pressure (MPa)

Pressure Characteristics

**VEX1A33, VEX1B33**

**VEX113_3, VEX123_3**

**VEX133_3**

**VEX153_3**

**VEX193_3**

Port 1(P) pressure: 0.7 MPa, Port 2(A) pressure: 0.2 MPa, Flow: 0 L/min (ANR)
Construction/Working Principle

When set-knob is turned clockwise, the force generated by set spring causes flapper to close nozzle, allowing the nozzle back pressure to be applied to the right surface of top diaphragm. Then, valve moves to the left, allowing the supply air to flow from port 1(P) to port 2(A). The air pressure that has flowed in is applied to the left surface of top diaphragm and counteracts the force generated by the nozzle back pressure; at the same time, it is applied to the left surface of diaphragm, and balances with the set pressure that counteracts the compression force of set spring.

When the outlet pressure increases higher than the set pressure, it pushes diaphragm towards the right, and the pressure at the right side of top diaphragm decreases, causing top diaphragm to move to the right. Then, valve moves away from the left surface of top diaphragm, the outlet pressure flows from port 2(A) via the valve hollow and is discharged through port 3(R) (atmosphere). If set knob is turned counterclockwise, the movement will be the opposite, the outlet pressure will decrease and will balance with a newly set pressure.

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Zinc alloy die-casted</td>
</tr>
<tr>
<td>2</td>
<td>Bonnet</td>
<td>Aluminum alloy die-casted</td>
</tr>
<tr>
<td>3</td>
<td>Upper diaphragm</td>
<td>NBR/FKM</td>
</tr>
<tr>
<td>4</td>
<td>Spring</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>5</td>
<td>Valve guide</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Valve</td>
<td>NBR/FKM</td>
</tr>
<tr>
<td>7</td>
<td>Retainer</td>
<td>Resin</td>
</tr>
<tr>
<td>8</td>
<td>Lower diaphragm</td>
<td>NBR/FKM</td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Knob</td>
<td>VBA1-10</td>
</tr>
</tbody>
</table>

### Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum alloy die-casted</td>
</tr>
<tr>
<td>2</td>
<td>Bonnet</td>
<td>Aluminum alloy die-casted</td>
</tr>
<tr>
<td>3</td>
<td>Regulating piston</td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>4</td>
<td>Spring</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>5</td>
<td>Valve guide</td>
<td>Aluminum alloy</td>
</tr>
<tr>
<td>6</td>
<td>Poppet valve</td>
<td>NBR</td>
</tr>
<tr>
<td>7</td>
<td>Shaft</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>8</td>
<td>Valve guide</td>
<td>Aluminum alloy</td>
</tr>
</tbody>
</table>

### Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Knob</td>
<td>VBA1-10</td>
</tr>
</tbody>
</table>
VEX1\(^{3}\_3\) Series

Body Ported

VEX1A33-M5, 01

A section view

Pressure gauge (Option)

Foot (Option)

Bracket (Option)

Note) ( ) are the dimensions of ”M5”.

VEX113\(^{3}\_3\)-01, 02

A section view

Foot (Option)

Bracket (Option)

Air operated type

Note) ( ) are the dimensions of ”M5”.

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SMC
Body Ported

**VEX133\(\frac{0}{3}\)-02, 03, 04**

Pressure gauge (Option)  
G36-10-01

Air operated type

Bracket VEX3-32A  
(Option)

4 x M5 thread depth 8  
(For bracket mounting)

**VEX153\(\frac{0}{3}\)-04, 06, 10**

Pressure gauge (Option)  
G46-10-01

Air operated type

2 x M6 thread depth 9  
(For bracket mounting)
VEX1□3\textsuperscript{0} Series

Body Ported

VEX173\textsuperscript{0} Series

VEX173\textsuperscript{0} -10, 12

4 x M6 thread depth 6
(For bracket mounting)

2 x 9
(Mounting hole)

Air operated type

VEX193\textsuperscript{0} Series

VEX193\textsuperscript{0} -14, 20

4 x M6 thread depth 12
(For bracket mounting)

Bracket (Option)
VEX7-32A

Pressure gauge (Option)
G46-10-01

Air operated type

Mounting hole
Base Mounted

VEX1B33-M5, 01

VEX1233-01, 02

Air operated type

Pressure gauge (Option)

G27-10-R1-X207
Manifold: VVEXB-□-□-01

Applicable valve: VEX1B33

Valve mounting side

Blanking plate

VEXB-□

Pilot port

Port 2(A)

Pressure gauge (Option)

G27-10-R1-X207

Port 3(R): 1/4

For 6 manifold stations or more, exhaust from the both sides.

L Dimension

L1 = 31n + 25, L2 = 31n + 12 n: Station

<table>
<thead>
<tr>
<th>n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>87</td>
<td>118</td>
<td>149</td>
<td>180</td>
<td>211</td>
<td>242</td>
<td>273</td>
<td>304</td>
<td>335</td>
</tr>
<tr>
<td>L2</td>
<td>74</td>
<td>105</td>
<td>136</td>
<td>167</td>
<td>198</td>
<td>229</td>
<td>260</td>
<td>291</td>
<td>322</td>
</tr>
</tbody>
</table>
Manifold: VVEX2-□-□-02

Applicable valve: VEX123 3

Valve mounting side

Port 2(A)

Internal pilot VVEX2-1

Common external pilot VVEX2-2

Pressure gauge (Option)

Blanking plate VEX1-17

Port 1(P): \( \frac{3}{4} \)

For 5 manifold stations or more, exhaust from the both sides.

External pilot port

Without thread: Internal pilot VVEX2-1

With M5 thread: Common external pilot VVEX2-2

L Dimension

<table>
<thead>
<tr>
<th>n</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>91</td>
<td>122</td>
<td>153</td>
<td>184</td>
<td>215</td>
<td>246</td>
<td>277</td>
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<tr>
<td>L2</td>
<td>76</td>
<td>107</td>
<td>138</td>
<td>169</td>
<td>200</td>
<td>231</td>
<td>262</td>
</tr>
</tbody>
</table>
Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 387 to 391 for Precautions on every series.

Operating Fluid

**Caution**
1. If drainage or debris is present in the supply pressure line, the fixed orifice becomes clogged, resulting in a malfunction. Therefore, in addition to the air filter (SMC’s AF series), make sure to use a mist separator (SMC’s AM, AFM series). Concerning the quality of the operating air, refer to SMC’s the air preparation equipment selection guide (pages 2 and 3).
2. Make sure to perform a maintenance periodically on air filter and mist separator (by discharging the drain and cleaning a filter element or replacing with new one).
3. Never use a lubricator on the supply side with the internal pilot remaining in place, doing so will cause the fixed orifice to become clogged, invariably leading to a malfunction.
4. When lubrication to terminal device is required: Connect a lubricator on the supply line, the fixed orifice becomes clogged, invariably leading to a malfunction.
5. Use a supply pressure in the recommended range (the range indicated in the diagram below).

VEX1A33, VEX1B33

<table>
<thead>
<tr>
<th>Connection thread size (R, NPT)</th>
<th>Proper tightening torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8</td>
<td>3 to 5</td>
</tr>
<tr>
<td>1/4</td>
<td>8 to 12</td>
</tr>
<tr>
<td>1/2</td>
<td>15 to 20</td>
</tr>
<tr>
<td>5/16</td>
<td>20 to 25</td>
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<td>3/8</td>
<td>28 to 30</td>
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<td>1/2</td>
<td>36 to 38</td>
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<td>1 1/4</td>
<td>40 to 42</td>
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<td>1 1/2</td>
<td>48 to 50</td>
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<td>48 to 50</td>
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</table>

2. Ordinarily, air is discharged from the bleed port (PE). The consumption of air through this discharge is normal, owing to the construction of the precision pressure regulator.

Regulator for Signals (Air operated type only)

**Caution**
- Applicable model:
  - Regulator IR2000 series
  - VEX133 series
- In the case of multiple pressure control, consider using ITV series or the E-P HYREG® VY series, which can simplify your system.

Zero Adjustment Screw

**Caution**
- The zero adjustment screw has been adjusted at the time of shipment to set the signal pressure and the output pressure as close to 1:1 as possible. Thus, it is not necessary to adjust it for operational purposes.

Piping

**Warning**
1. Use the flow rate characteristics on page 846 as reference to select a regulator size so that the required flow rates on the reduced pressure supply and relief exhaust sides have sufficient allowances. If the reduced pressure supply pressure and relief exhaust pressure set value to deviate or the diaphragm to break early. So, do not use under such conditions.

Vibration

**Caution**
Vibration is likely to occur under the following conditions.
1. Supply pressure is relatively high (approx. 0.5 MPa or higher), set pressure is low (approx. 0.1 MPa or lower) and the outlet side is open to the atmosphere.
2. Capacity of the precision regulator outlet side is extremely small.

The following measures can be taken.
a. Set the supply pressure extremely low (+0.1 MPa or more of the set pressure).
b. Make the capacity of the precision regulator outlet side larger.
c. Install an exhaust throttle valve with a silencer (ASN2-M5) on the bleed port (PE). Vibration can be avoided by adjusting the exhaust throttle. However, if the bleed is throttled too much, sensitivity may be reduced, resulting in poor performance. Be sure not to apply excessive throttle.

Vibration of over 35 dB.
- Oil mist removal of 99.9%
- Can also be used in an intensive piping system.
- Provides noise reduction and oil mist recovery functions.
- Also can be used in an intensive piping system.
- Oil mist removal of 99.9%.
- Noise reduction of over 35 dB.

For details, refer to Best Pneumatics No. 7.