Proportional pressure control valves control the system pressure proportionally through a controlled input current from the amplifier. Therefore, the continuous and stepless pressure control can be obtained even with a single valve. The valves are of help not only to simplify the system design but also to eliminate any shocks in the hydraulic system.

**Pilot Relief Valves**

These valves are composed of a small DC solenoid and a direct-acting type relief valve. As a relief valve for a hydraulic system of small flow capacity or a pilot valve to electro-hydraulic proportional control valves, the valves are able to control the pressure in proportion to an input current.

**Relief Valves**

These valves consist of a small size but high performance 1/8 electro-hydraulic proportional pilot relief valve and a relief valve specially developed as low noise type. The valves can control the pressure in a hydraulic system proportionally through a controlled input current.

**Reducing and Relieving Valves**

These valves consist of a small size but high performance 1/8 electro-hydraulic proportional pilot relief valve and a reducing valve with relief function. The valves can control the pressure in a hydraulic system proportionally through a controlled input current. As the valves have a relieving mechanism, a good response speed in reducing the pressure even at a large load capacity can be obtained.
Hydraulic Fluids

Fluid Types
Any type of hydraulic fluid listed in the table below can be used.

<table>
<thead>
<tr>
<th>Fluid Types</th>
<th>Viscosity</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Base Oils</td>
<td>Use fluids equivalent to ISO VG 32 or VG 46.</td>
<td></td>
</tr>
<tr>
<td>Synthetic Fluids</td>
<td>Use phosphate ester or polyol ester fluids. When phosphate ester fluid is used, prefix &quot;F-&quot; to the model number because the special seals (fluororubber) are required to be used.</td>
<td></td>
</tr>
<tr>
<td>Water-containing Fluids</td>
<td>Use water-glycol fluid.</td>
<td></td>
</tr>
</tbody>
</table>

Note: For use with hydraulic fluids other than those listed above, please consult your Yuken representatives in advance.

Recommended Fluid Viscosity and Temperature
Use hydraulic fluids which satisfy the both recommended viscosity and oil temperatures given in the table below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Viscosity</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Relief Valves</td>
<td>15 - 400 mm²/s</td>
<td>-15 - +70°C</td>
</tr>
<tr>
<td>Relief Valves</td>
<td>(77 - 1800 SSU)</td>
<td>(5 - 160°F)</td>
</tr>
<tr>
<td>Reducing and Relieving Valves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control of Contamination
Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 11. Use 20 µm or finer line filter.
- **Mounting**
  Be sure that the air vent faces up.
  In addition, if the valve is mounted vertically, the minimum adjustment pressure is 2 MPa (290 PSI) or higher.

- **Air Bleeding**
  To ensure stable control, bleed the air from solenoid completely and fill its core with oil.
  Bleeding can be done by slowly loosening one of the air vents at the end of the solenoid. Choose one of the three air vents which is expected to work most effectively (see the figure to the right).

- **Manual Adjustment Screw**
  When initial adjustments are to be made or when no current is supplied to the valve due to electrical failure or other problem, turn the manual pressure adjustment screw to temporarily set the valve pressure. In that case, when turn the manual pressure adjustment screw clockwise, the valve pressure rises. Under normal condition, however, this screw must be kept in its original position (see the figure to the right).

- **Tank and Drain Piping**
  The tank-line back pressure and drain back pressure directly affect the minimum adjustment pressure. Therefore, do not connect the tank or drain pipes to other lines, but connect them directly to the reservoir maintaining the back pressure as low as possible. Be sure that the tank and drain pipe ends are immersed in fluid.

- **Hysteresis and Repeatability Value Indications**
  The hysteresis and repeatability values indicated in the specifications for each control valve are determined under the following conditions:
  * Hysteresis Value: Obtained when Yuken's applicable power amplifier is used.
  * Repeatability Value: Obtained when Yuken's applicable power amplifier is used under the same conditions.
## Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Numbers</th>
<th>EDG-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Operating Pres.</td>
<td></td>
<td>24.5 MPa (3550 PSI)</td>
</tr>
<tr>
<td>Max. Flow</td>
<td></td>
<td>2 L/min (.53 U.S.GPM)</td>
</tr>
<tr>
<td>Min. Flow</td>
<td></td>
<td>0.3 L/min (.08 U.S.GPM)</td>
</tr>
<tr>
<td>Pressure Adj. Range MPa (PSI)</td>
<td></td>
<td>Refer to Model Number Designation</td>
</tr>
<tr>
<td>Rated Current</td>
<td></td>
<td>EDG-01*-B 800 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDG-01*-C 900 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDG-01*-H 950 mA</td>
</tr>
<tr>
<td>Coil Resistance</td>
<td></td>
<td>10 Ω</td>
</tr>
<tr>
<td>Hysteresis</td>
<td></td>
<td>Less than 3%</td>
</tr>
<tr>
<td>Repeatability</td>
<td></td>
<td>Less than 1%</td>
</tr>
<tr>
<td>Approx. Mass</td>
<td></td>
<td>2 kg (4.4 lbs.)</td>
</tr>
</tbody>
</table>

## Model Number Designation

<table>
<thead>
<tr>
<th>ED</th>
<th>G</th>
<th>-01</th>
<th>V</th>
<th>-C</th>
<th>-1</th>
<th>PN</th>
<th>T13</th>
<th>-51</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series Number</td>
<td>Type of Mounting</td>
<td>Valve Size</td>
<td>Applicable Control</td>
<td>Pressure Adj. Range MPa (PSI)</td>
<td>Safety Valve</td>
<td>P-Line Orifice</td>
<td>T-Line Orifice</td>
<td>Design Number</td>
<td>Design Standards</td>
</tr>
<tr>
<td>ED: Proportional Electro-Hydraulic Pilot Relief Valve</td>
<td>G: Sub-plate Mounting</td>
<td>01</td>
<td>None: General use</td>
<td>B: 0.5 - 6.9 (70 - 1000)</td>
<td>None: Without Safety Valve</td>
<td>T15</td>
<td>T13</td>
<td>51</td>
<td>Refer to ★3</td>
</tr>
</tbody>
</table>

★1. When the valve is to be used for vent control purpose, orifice adjustment is required due to piping capacity limitations. Therefore, consult your Yukan representative in advance.

★2. The orifice used as the pilot valve may differ from the standard orifice.


---

Graphic Symbols

- Without Safety Valve
- With Safety Valve
**Attachment**

- **Mounting Bolts**
  Four socket head cap screws in the table below are included.

<table>
<thead>
<tr>
<th>Descriptions</th>
<th>Soc. Hd. Cap Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese Standard &quot;JIS&quot;</td>
<td>M5 x 45 Lg.</td>
</tr>
<tr>
<td>European Design Standard</td>
<td></td>
</tr>
<tr>
<td>N. American Design Standard</td>
<td>No. 10 - 24 UNC x 1-3/4 Lg.</td>
</tr>
</tbody>
</table>

**Applicable Power Amplifier**

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see Catalogue No. Pub. EC-1305).

Model Numbers:
- AME-D10-∗-20
- AME-D2-1010-∗-10
- SK1022-∗-∗-11
- SK1015-11 (For DC power supply)
- AMN-D10 (For DC power supply)

**Sub-plate**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub-plate Model Numbers</td>
<td>Thread Size</td>
<td>Sub-plate Model Numbers</td>
<td>Thread Size</td>
</tr>
<tr>
<td>1/8</td>
<td>DSGM-01-30</td>
<td>Re 1/8</td>
<td>DSGM-01-3080</td>
<td>1/8 BSP.F</td>
</tr>
<tr>
<td>1/4</td>
<td>DSGM-01X-30</td>
<td>Re 1/4</td>
<td>DSGM-01X-3080</td>
<td>1/4 BSP.F</td>
</tr>
<tr>
<td>3/8</td>
<td>DSGM-01Y-30</td>
<td>Re 3/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.

**Instructions**

- **Tank-Line Back Pressure**
  Check that the tank line back pressure does not exceed 0.2 MPa (29 PSI).

- **Vent Control**
  When the valve is used for vent control of relief valves or others, use the pipes of 6 mm (.24 in.) ID. 300 mm (11.8 in.) or less length for connection.
  If the pressure is unstable, provide a 1 to 1.5 mm (.04 to .06 in.) diameter orifice to the vent port of the relief valves or others.

- **Circuit Pressure Control**
  When the pressure in a circuit is directly controlled with this valve, set the trapped oil volume being more than 40 cm³ (2.44 cu. in.).

- **Safety Valve Pressure Setting**
  The pressure of the safety valve at the maximum flow is preset at the value equal to the upper limit of the pressure adjustment range plus 2 MPa (290 PSI).
  In case where the upper limit of operating pressure is low or the upper limit of flow rate to be used is different from the specified maximum flow, please adjust and determine the setting pressure of the safety valve at the value calculated from the following formula.

  Setting pressure = (Operating pressure upper limit) + (Additional pressure indicated below)

  ![Graph](image)

To lower the setting pressure, turn the safety valve pressure adjustment screw anti-clockwise. After adjustment, be sure to tighten the lock nut.
EDG-01*-PNT*-51/5190

With Safety Valve

The direction can be altered to every 90 degree angles.

Cable Departure
Cable Applicable:
Outside Dia.*** 8-10 mm
(0.31-0.39 in.)
Conductor Area*** Not Exceeding 1.5 mm²
(0.002 sq. in.)

Manual Pressure Adj. Screw
3(.12) Hex. Soc.

Air Vent
3(.12) Hex. Soc.
3 Places

* For other dimensions, refer to the without safety valve.

EDG-01*-PNT*-51/5190

Without Safety Valve

The direction can be altered to every 90 degree angles.

Pressure Adj. Screw for Safety Valve
3(.12) Hex. Soc.

Lock Nut
10(.39) Hex.

DIMENSIONS IN MILLIMETRES (INCHES)
**E Series**

**Sub-plate for Pilot Relief Valves**

**Installation Drawing**

---

### Sub-plates

- DSGM-01*-30/3080/3090

---

**DIMENSIONS IN MILLIMETRES (INCHES)**

<table>
<thead>
<tr>
<th>Sub-plate Model Numbers</th>
<th>Thread Size</th>
<th>&quot;C&quot; Thd.</th>
<th>&quot;D&quot; Thd.</th>
<th>&quot;E&quot; mm (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSGM-01-30</td>
<td>Rec 1/8</td>
<td>M5</td>
<td>10 (.39)</td>
<td></td>
</tr>
<tr>
<td>DSGM-01-3080</td>
<td>1/8 BSP.F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSGM-01-3090</td>
<td>1/8 NPT</td>
<td>No.10-24 UNC</td>
<td>12 (.47)</td>
<td></td>
</tr>
<tr>
<td>DSGM-01X-30</td>
<td>Rec 1/4</td>
<td>M5</td>
<td>10 (.39)</td>
<td></td>
</tr>
<tr>
<td>DSGM-01X-3080</td>
<td>1/4 BSP.F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSGM-01X-3090</td>
<td>1/4 NPT</td>
<td>No.10-24 UNC</td>
<td>12 (.47)</td>
<td></td>
</tr>
<tr>
<td>DSGM-01Y-30</td>
<td>Rec 3/8</td>
<td>M5</td>
<td>10 (.39)</td>
<td></td>
</tr>
<tr>
<td>DSGM-01Y-3090</td>
<td>3/8 NPT</td>
<td>No.10-24 UNC</td>
<td>12 (.47)</td>
<td></td>
</tr>
</tbody>
</table>
### E SERIES
Pilot Relief Valves
EDG-01

**Typical Performance Characteristics**

**Step Response (Example)**
These Characteristics have been obtained by measuring on each valve. Therefore, they may vary according to a hydraulic circuit to be used.

- **Flow Rate**: 2 L/min (.53 U.S. GPM)
- **Trapped Oil Volume**: 40 cm³ (2.44 cu. in)
- **Viscosity**: 30 mm²/s (141 SSU)

**Frequency Response**

**Control Pressure vs. Input Current**

**Min. Adjustment Pressure**

**Flow Rate vs. Pressure**

**Viscosity vs. Pressure**

---

No. 8
## E Series Pilot Relief Valves

**EDG-01**

### Spare Parts List and Pilot Valves

#### Without Safety Valve

- EDG-01*-*PNT*-*51/5190
- EDG-01V-*-*PNT*-*5103

#### With Safety Valve

- EDG-01*-*1-PNT*-*51/5190
- EDG-01V-*-*1-P*T*-*5103

### List of Seals

<table>
<thead>
<tr>
<th>Item</th>
<th>Name of Parts</th>
<th>Part Numbers</th>
<th>Qty.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>O-Ring</td>
<td>SO-NA-P6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>O-Ring</td>
<td>SO-NB-P9</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>O-Ring</td>
<td>SO-NB-P7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>O-Ring</td>
<td>SO-NB-P14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>O-Ring</td>
<td>SO-NB-P18</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>O-Ring</td>
<td>SO-NB-A013</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>O-Ring</td>
<td>SO-NB-P22</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>O-Ring</td>
<td>SO-FCF-4</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Note) O-ring (Item 16, 18, 20) and the fastener seal (Item 21) are included in the solenoid assembly.

### Solenoid Assy

<table>
<thead>
<tr>
<th>Valve Model Numbers</th>
<th>Solenoid Assy</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDG-01*-<em>PNT</em>-*51/5190</td>
<td>E318-Y06M1-28-61</td>
</tr>
<tr>
<td>EDG-01V-*-<em>PNT</em>-*5103</td>
<td>E318-Y06M1-05-61</td>
</tr>
</tbody>
</table>

Note) The connector assembly GDM-211-B-11 (Item 12) is not included in the solenoid assembly.

### Pilot Valves

The table shows the proportional control valves (main valves) and corresponding pilot relief valves to be used onto the main valves.

<table>
<thead>
<tr>
<th>Main Valve Model Numbers</th>
<th>Pilot Valve Model Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBG-03-C-51/5190</td>
<td>EDG-01V-C-1-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-H-51/5190</td>
<td>EDG-01V-H-1-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-C-T-51/5190</td>
<td>EDG-01V-C-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-H-T-51/5190</td>
<td>EDG-01V-H-PNT09-51</td>
</tr>
<tr>
<td>EBG-06-C-51/5190</td>
<td>EDG-01V-C-1-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-H-51/5190</td>
<td>EDG-01V-H-1-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-C-T-51/5190</td>
<td>EDG-01V-C-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-H-T-51/5190</td>
<td>EDG-01V-H-PNT10-51</td>
</tr>
<tr>
<td>EBG-10-C-51/5190</td>
<td>EDG-01V-C-1-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-H-51/5190</td>
<td>EDG-01V-H-1-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-C-T-51/5190</td>
<td>EDG-01V-C-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-H-T-51/5190</td>
<td>EDG-01V-H-PNT11-5103</td>
</tr>
<tr>
<td>ERGB-06-B-51/5190</td>
<td>EDG-01-B-PNTN-5101</td>
</tr>
<tr>
<td>ERGB-06-C-51/5190</td>
<td>EDG-01-C-PNTN-5101</td>
</tr>
<tr>
<td>ERGB-06-H-51/5190</td>
<td>EDG-01-H-PNTN15-5101</td>
</tr>
<tr>
<td>ERGB-10-B-51/5190</td>
<td>EDG-01-B-PNTN-5101</td>
</tr>
<tr>
<td>ERGB-10-C-51/5190</td>
<td>EDG-01-C-PNTN-5101</td>
</tr>
<tr>
<td>ERGB-10-H-51/5190</td>
<td>EDG-01-H-PNTN15-5101</td>
</tr>
<tr>
<td>EFBG-10-500-C-17/1790</td>
<td>EDG-01V-C-1-PNT17-5103</td>
</tr>
<tr>
<td>EFBG-10-500-H-17/1790</td>
<td>EDG-01V-H-1-PNT13-5103</td>
</tr>
<tr>
<td>EFBG-10-500-C-51/5190</td>
<td>EDG-01V-C-1-PNT12-5103</td>
</tr>
<tr>
<td>EFBG-10-500-H-51/5190</td>
<td>EDG-01V-H-1-PNT12-5103</td>
</tr>
<tr>
<td>EFBG-06-500-C-51/5190</td>
<td>EDG-01V-C-1-PNT11-5103</td>
</tr>
<tr>
<td>EFBG-06-500-H-51/5190</td>
<td>EDG-01V-H-1-PNT11-5103</td>
</tr>
</tbody>
</table>

---

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator’s Manual.
Interchangeability between Current and New Design

EDG-01 series valve has changed model from 50 to 51 design in line with the solenoid improvement.

Specifications and Characteristics

No change in specifications and characteristics between current and new design.

Mounting Interchangeability

There is an interchangeability in the mounting dimensions, however, the outside shape and dimensions are changed as shown below due to solenoid improvement and other modifications.

The solenoid assembly current design comes in two types: E318-50 design and E318-60 design. See the figure on the left for an external view of type E318-50 design. See the figure on the right for type E318-60 design.
## E Series
**Relief Valves EBG-03/06/10 (3/8, 3/4, 1-1/4)**
**Sub-plate Mounting**

### Specifications / Model Number Designation

<table>
<thead>
<tr>
<th>Specifications / Model Number Designation</th>
<th>EBG-03</th>
<th>EBG-06</th>
<th>EBG-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model Numbers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>EBG-03</td>
<td>EBG-06</td>
<td>EBG-10</td>
</tr>
<tr>
<td><strong>Max. Operating Pres.</strong></td>
<td>24.5 (3550)</td>
<td>24.5 (3550)</td>
<td>24.5 (3550)</td>
</tr>
<tr>
<td><strong>Max. Flow</strong></td>
<td>100 (26.4)</td>
<td>200 (52.8)</td>
<td>400 (106)</td>
</tr>
<tr>
<td><strong>Min. Flow</strong></td>
<td>3 (.79)</td>
<td>3 (.79)</td>
<td>3 (.79)</td>
</tr>
<tr>
<td><strong>Pressure Adjustment Range</strong></td>
<td>Refer to Model Number Designation</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rated Current</strong></td>
<td>C: 770 mA</td>
<td>C: 750 mA</td>
<td>C: 730 mA</td>
</tr>
<tr>
<td><strong>Coil Resistance</strong></td>
<td>10 Ω</td>
<td>10 Ω</td>
<td>10 Ω</td>
</tr>
<tr>
<td><strong>Hysteresis</strong></td>
<td>Less than 3%</td>
<td>Less than 3%</td>
<td>Less than 3%</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>Less than 1%</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
</tr>
<tr>
<td><strong>Approx. Mass</strong></td>
<td>5.6 (12.3)</td>
<td>6.3 (13.9)</td>
<td>10 (22)</td>
</tr>
</tbody>
</table>

### Model Number Designation

<table>
<thead>
<tr>
<th>EB</th>
<th>G</th>
<th>-03</th>
<th>-C</th>
<th>-T</th>
<th>-51</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series Number</strong></td>
<td><strong>Type of Mounting</strong></td>
<td><strong>Valve Size</strong></td>
<td><strong>Pres. Adj. Range MPa (PSI)</strong></td>
<td><strong>Safety Valve</strong></td>
<td><strong>Design Standards</strong></td>
</tr>
<tr>
<td>EB</td>
<td>Proportional Electro-Hydraulic Relief Valve</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G:</td>
<td>Sub-plate Mounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td></td>
<td>C: * - 15.7 (H: * - 2275)</td>
<td>None: (Refer to Design Standards)</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td>H: * - 24.5 (C: * - 3550)</td>
<td>Without Safety Valve</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>T: Refer to Design Standards</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Ref. adjustment pressure shall be referred to the curves on page 16.

### Graphic Symbols

- **Without Safety Valve**
- **With Safety Valve**

---

No. 11
## Sub-plates

### Valve Model Numbers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EBG-03</td>
<td>M12 x 40 Lg.</td>
<td>1/2 - 13 UNC x 1-1/2 Lg.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EBG-06</td>
<td>M16 x 50 Lg.</td>
<td>5/8 - 11 UNC x 2 Lg.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EBG-10</td>
<td>M20 x 60 Lg.</td>
<td>3/4 - 10 UNC x 2-1/4 Lg.</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see Catalogue No. Pub. EC-1305).

Model Numbers: AME-D-10-∗-20 | SK1015-11 (For DC power supply)
AME-D2-1010-∗-10 | AMN-D-10 (For DC power supply)
SK1022-∗-∗-11

### Instructions

#### Safety Valve

The pressure of the safety valve for EBG-03 is preset at the value equal to the upper limit of the pressure adjustment range plus 2 MPa (290 PSI) subject to a flow rate of 50 L/min (13.2 U.S.GPM).

The same for EBG-06 is preset at the value equal to the upper limit of the pressure adjustment range plus 3.5 MPa (510 PSI) subject to a flow rate of 100 L/min (26.4 U.S.GPM).

The same for EBG-10 is preset at the value equal to the upper limit of the pressure adjustment range plus 4 MPa (580 PSI) subject to a flow rate of 200 L/min (52.8 U.S.GPM).

In case where the upper limit of operating pressure is lower or the upper limit of flow rate is different from the specified maximum flow, please adjust and determine the setting pressure of the safety valve at the value calculated from the following formula.

\[
\text{Setting pressure} = (\text{Operating pressure upper limit}) + (\text{Additional pressure indicated blow})
\]

To lower the setting pressure, turn the safety valve pressure adjustment screw anti-clockwise. After adjustment, be sure to tighten the lock nut.
**E Series Relief Valves**

**EBG-03/06**

**Installation Drawing**

**EBG-03** - ISO 6264-AR-06-2-A

**EBG-06** - ISO 6264-AS-08-2-A

---

**With Safety Valve**

- Fully Extended: 216 (8.50)
- Pressure Adj. Screw for Safety Valve: 3 (0.12) Hex. Soc.
- Lock Nut: 10 (0.39) Hex.

---

**Without Safety Valve**

- Pressure Port: "P"
- Tank Port: "T"
- The direction can be altered to every 90 degree angles.

---

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>Dimensions mm (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>EBG-03</td>
<td>197.5 (7.80)</td>
</tr>
<tr>
<td>EBG-06</td>
<td>205.5 (8.09)</td>
</tr>
</tbody>
</table>

---

**Not Exceeding 1.5 mm² (.002 sq. in.)**

**Cable Departure**: Outside Dia.: 8-10 mm (.31 - .39 in.)

**Conductor Area**: Not Exceeding 1.5 mm² (.002 sq. in.)

---

**Connector**

The direction can be altered to every 90 degree angles.

---

**Mounting Surface**

(O-Rings Furnished)

---

**Air Vent**

3 (0.12) Hex. Soc.

---

**Manual Pressure Adj. Screw**

3 (0.12) Hex. Soc.

---

**Cable Departure**

- 48 (1.89) mm
- 27.5 (1.08) mm

---

**Pressure Port "Q"**


---

**Pressure Port "S"**

Dia. Spotface: 4 Places

---

**H**

---

**Mounting Surface**

(O-Rings Furnished)

---

**6 (.24) Dia. Locating Pin**

---

**Pressure Adj. Screw**

3 (0.12) Hex. Soc.

---

**Locating Pin**

6 (.24) Dia.

---

**This port is not used. It is provided because of the common use of the body with the low-noise relief valve. On the sub-plate, plug the port which corresponds to this port.**
PROPORTIONAL CONTROLS

E Series
Relief Valves
EBG-10

Installation Drawing

Mounting surface:
ISO 6264-AT-10-2-A

With Safety Valve

EBG-10-∗-51/5190

Pressure Adj. Screw
for Safety Valve
3(.12) Hex.Soc.
INC.

Lock Nut
10(.39) Hex.

Fully Extended
216(8.50)

Cable Departure
Cable Applicable:
Outside Dia. 8-10 mm (.31 - .39 in.)
Conductor Area 2 Not Exceeding 1.5 mm² (.002 sq. in.)

* For other dimensions, refer to the without safety valve.

No.14
### Model Numbers

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>Dimensions m.m (Inches)</th>
<th>Japanese Standard &quot;JIS&quot; Design &quot;20&quot;</th>
<th>European Design Standard Design &quot;3080&quot;</th>
<th>N. American Design Standard Design &quot;2090&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGM-03,03X-20/3080/2090</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGM-06,06X-20/3080/2090</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGM-10,10X-20/3080/2090</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Installation Drawing

- **A**
- **B**
- **C**
- **D**
- **E**
- **F**
- **H**
- **J**
- **K**
- **L**
- **N**
- **P**
- **Q**
- **S**

### Dimensions in Millimetres (Inches)

#### Model Numbers

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>Dimensions m.m (Inches)</th>
<th>Dimensions in Millimetres (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BGM-03,03X-20/3080/2090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGM-06,06X-20/3080/2090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BGM-10,10X-20/3080/2090</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Technical Specifications

- **"d"** Dia. Through
- **"e"** Dia. Spotface
- **4 Places**
- **"f"** Dia. Through
- **2 Places**
- **(From Rear)**
- **7(28) Dia.**
- **10(39) Deep**

---

**No. 15**
E SERIES
Relief Valves
EBG-03/0610

Typical Performance Characteristics

Min. Adjustment Pressure
Viscosity: 30 mm²/s (141 SSU)

EBG-03
EBG-06
EBG-10

Step Response (Example)
These Characteristics have been obtained by measuring on each valve. Therefore, they may vary according to a hydraulic circuit to be used.

EBG-03-C
EBG-03-H

EBG-06-C
EBG-06-H

EBG-10-C
EBG-10-H

Trapped Oil Volume: 1 L (.264 U.S. Gallons)
Viscosity: 30 mm²/s (141 SSU)
Typical Performance Characteristics

**Input Current vs. Pressure**

**EBG-03**
- Pressure vs. Input Current graph
- EBG-03-H and EBG-03-C markers

**EBG-06**
- Pressure vs. Input Current graph
- EBG-06-H and EBG-06-C markers

**EBG-10**
- Pressure vs. Input Current graph
- EBG-10-H and EBG-10-C markers

**Frequency Response**

**EBG-03**
- Frequency (Hz) vs. Gain (dB) graph
- Phase vs. Input Current graph
- Pressure: 7.8 ± 1.6 MPa (1130 ± 230 PSI)
- Flow Rate: 100 L/min (26.4 U.S.GPM)

**EBG-06**
- Frequency (Hz) vs. Gain (dB) graph
- Phase vs. Input Current graph
- Pressure: 7.8 ± 1.6 MPa (1130 ± 230 PSI)
- Flow Rate: 200 L/min (52.8 U.S.GPM)

**EBG-10**
- Frequency (Hz) vs. Gain (dB) graph
- Phase vs. Input Current graph
- Pressure: 7.8 ± 1.6 MPa (1130 ± 230 PSI)
- Flow Rate: 400 L/min (106 U.S.GPM)

Trapped Oil Volume: 1 L (.264 U.S. Gallons)
Viscosity: 30 mm²/s (141 SSU)
Typical Performance Characteristics

Viscosity vs. Pressure
Oil: ISO VG 46 Oil

EBG-03
Flow Rate: 100 L/min (26.4 U.S. GPM)

EBG-06
Flow Rate: 200 L/min (52.8 U.S. GPM)

EBG-10
Flow Rate: 400 L/min (106 U.S. GPM)

Flow Rate vs. Pressure
Viscosity: 30 mm²/s (141 SSU)
Spare Parts List

**List of Seals**

<table>
<thead>
<tr>
<th>Item</th>
<th>Name of Parts</th>
<th>Part Numbers</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>O-Ring</td>
<td>SO-NB-P32</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>O-Ring</td>
<td>SO-NB-P28</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>O-Ring</td>
<td>SO-NB-P9</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>O-Ring</td>
<td>SO-NB-P9</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>O-Ring</td>
<td>SO-NB-A024</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>O-Ring</td>
<td>SO-NB-P18</td>
<td>2</td>
</tr>
</tbody>
</table>

Note) When ordering seals, please specify the seal kit number from the table below.

In addition to the above O-rings, O-rings for pilot valve are included in the seal kit.

For the details of the pilot valve seals, see page 9.

**List of Seal Kit**

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>Seal Kit Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBG-03</td>
<td>KS-EBG-03-51</td>
</tr>
<tr>
<td>EBG-06</td>
<td>KS-EBG-06-51</td>
</tr>
<tr>
<td>EBG-10</td>
<td>KS-EBG-10-51</td>
</tr>
</tbody>
</table>

**Pilot Valve**

<table>
<thead>
<tr>
<th>Valve Model Numbers</th>
<th>Pilot Valve Model Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBG-03-C-51/5190</td>
<td>EDG-01V-C-1-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-H-51/5190</td>
<td>EDG-01V-H-1-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-C-T-51/5190</td>
<td>EDG-01V-C-PNT09-51</td>
</tr>
<tr>
<td>EBG-03-H-T-51/5190</td>
<td>EDG-01V-H-PNT09-51</td>
</tr>
<tr>
<td>EBG-06-C-51/5190</td>
<td>EDG-01V-C-1-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-H-51/5190</td>
<td>EDG-01V-H-1-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-C-T-51/5190</td>
<td>EDG-01V-C-PNT10-51</td>
</tr>
<tr>
<td>EBG-06-H-T-51/5190</td>
<td>EDG-01V-H-PNT10-51</td>
</tr>
<tr>
<td>EBG-10-C-51/5190</td>
<td>EDG-01V-C-1-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-H-51/5190</td>
<td>EDG-01V-H-1-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-C-T-51/5190</td>
<td>EDG-01V-C-PNT11-5103</td>
</tr>
<tr>
<td>EBG-10-H-T-51/5190</td>
<td>EDG-01V-H-PNT11-5103</td>
</tr>
</tbody>
</table>

Note: For the details of pilot valves, refer to "Pilot Relief Valves" on page 9.

**CAUTION**

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.
Interchangeability between Current and New Design

EBG-03/06/10 series valves have changed model from 50 to 51 design in line with the model change of pilot valve (EDG-01).

Specifications and Characteristics
No change in specifications and characteristics between current and new design.

Mounting Interchangeability
There is an interchangeability in the mounting dimensions, however, the outside shape and dimensions are changed as shown below due to pilot valve improvement and other modifications.

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td></td>
<td>217</td>
<td>118.6</td>
<td>40.2</td>
<td>199.5</td>
</tr>
<tr>
<td>EBG-03-**-50/5090</td>
<td>(8.54)</td>
<td>(4.67)</td>
<td>(1.58)</td>
<td>(7.85)</td>
<td>(5.12)</td>
</tr>
<tr>
<td>New</td>
<td></td>
<td>216</td>
<td>117.6</td>
<td>40.3</td>
<td>199.5</td>
</tr>
<tr>
<td>EBG-03-**-51/5190</td>
<td>(8.50)</td>
<td>(4.63)</td>
<td>(1.59)</td>
<td>(7.85)</td>
<td>(5.12)</td>
</tr>
<tr>
<td>Current</td>
<td></td>
<td>217</td>
<td>120.5</td>
<td>42.1</td>
<td>199.5</td>
</tr>
<tr>
<td>EBG-06-**-50/5090</td>
<td>(8.54)</td>
<td>(4.74)</td>
<td>(1.66)</td>
<td>(7.85)</td>
<td>(5.12)</td>
</tr>
<tr>
<td>New</td>
<td></td>
<td>216</td>
<td>119.9</td>
<td>42.2</td>
<td>199.5</td>
</tr>
<tr>
<td>EBG-06-**-51/5190</td>
<td>(8.50)</td>
<td>(4.70)</td>
<td>(1.66)</td>
<td>(7.85)</td>
<td>(5.12)</td>
</tr>
<tr>
<td>Current</td>
<td></td>
<td>217</td>
<td>102</td>
<td>23.6</td>
<td>235.5</td>
</tr>
<tr>
<td>EBG-10-**-50/5090</td>
<td>(8.54)</td>
<td>(4.02)</td>
<td>(0.93)</td>
<td>(9.27)</td>
<td>(6.54)</td>
</tr>
<tr>
<td>New</td>
<td></td>
<td>216</td>
<td>101</td>
<td>23.7</td>
<td>166</td>
</tr>
<tr>
<td>EBG-10-**-51/5190</td>
<td>(8.50)</td>
<td>(3.98)</td>
<td>(0.93)</td>
<td>(9.27)</td>
<td>(6.54)</td>
</tr>
</tbody>
</table>

DIMENSIONS IN MILLIMETRES (INCHES)
# Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>ERBG-06</th>
<th>ERBG-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Operating Pres. MPa (PSI)</td>
<td>24.5 (3550)</td>
<td>24.5 (3550)</td>
</tr>
<tr>
<td>Max. Flow L/min(U.S.GPM)</td>
<td>100 (26.4)</td>
<td>250 (66)</td>
</tr>
<tr>
<td>Max. Relieving Flow L/min(U.S.GPM)</td>
<td>35 (9.24)*</td>
<td>15 (3.96)*</td>
</tr>
<tr>
<td>Secondary Pres. Adj. Range MPa (PSI)</td>
<td>Refer to Model Number Designation</td>
<td></td>
</tr>
<tr>
<td>Rated Current</td>
<td>B: 800 mA</td>
<td>B: 800 mA</td>
</tr>
<tr>
<td></td>
<td>C: 800 mA</td>
<td>C: 800 mA</td>
</tr>
<tr>
<td></td>
<td>H: 950 mA</td>
<td>H: 950 mA</td>
</tr>
<tr>
<td>Coil Resistance</td>
<td>10 Ω</td>
<td>10 Ω</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Less than 3%</td>
<td>Less than 3%</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
</tr>
<tr>
<td>Approx. Mass kg (lbs.)</td>
<td>12 (26.5)</td>
<td>13.5 (29.8)</td>
</tr>
</tbody>
</table>

* The values shown are those obtained where the differential pressure between the secondary pressure port and tank port is 13.7 MPa (2000 PSI).

# Model Number Designation

<table>
<thead>
<tr>
<th>ERB</th>
<th>G</th>
<th>-06</th>
<th>Secondary Pres. Adj. Range MPa (PSI)</th>
<th>Design Number</th>
<th>Design Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERBG-06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERBG-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Design Standards: None ........... Japanese Standard "JIS" and European Design Standard 90 ............ N. American Design Standard

![Graphic Symbol]
### Instructions

**Primary Pressure Required for Preselected Pressure**

The primary pressure must be 1 MPa (145 PSI) higher than the preselected pressure.

**Drain Back Pressure**

Check that the drain back pressure does not exceed 0.2 MPa (29 PSI).

**Trapped Oil Volume**

The recommended secondary side trapped oil volume is about 20 liters (5.28 U.S.Gallons). Note that the trapped oil volume must not be lower than 1.4 liters (.37 U.S.Gallons).
### E Series Reducing & Relieving Valves

**ERBG-06**

**Installation Drawing**

#### Sub-plate:

**ERBGM-06-20/2080/2090**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ERBGM-06-20</td>
<td>Rc 3/4</td>
<td>Rc 3/8</td>
<td>Rc 1/4</td>
<td>M10</td>
</tr>
</tbody>
</table>

#### Thread Size

- "B" Thd.
- "C" Thd.
- "D" Thd.
- "E" Thd.

#### Dimensions in Millimetres (Inches)

**ERBG-06-**-51/5190

- Primary Pressure Port "P"
- Secondary Pressure Port "A"
- Drain Port "DR"
- Tank Port "T"

#### Notes:

- The direction can be altered to every 90 degree angles.
- Conductor Area: Not Exceeding 1.5 mm² (.002 sq. in.)
- Outside Dia: 8-10 mm (.31 -.39 in.)

#### Connector

- The direction can be altered to every 90 degree angles.

#### Cable Departure

- Outside Dia: 8-10 mm (.31 -.39 in.)
- Not Exceeding 1.5 mm² (.002 sq. in.)

#### Mounting Surface

(O-Rings Furnished)
E Series
Reducing & Relieving Valves
ERBG-10

Installation Drawing

Sub-plate:
ERBG-10-10/1080/1090

<table>
<thead>
<tr>
<th>Sub-plate Model Numbers</th>
<th>Thread Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERBG-10-10</td>
<td>Rc 1-1/4  Rc 3/8  Rc 1/4  M10</td>
</tr>
<tr>
<td>ERBG-10-1080</td>
<td>1-1/4 BSP.F  3/8 BSP.F  1/4 BSP.F</td>
</tr>
<tr>
<td>ERBG-10-1090</td>
<td>1-1/4 NPT  3/8 NPT  1/4 NPT  3/8-16 UNC</td>
</tr>
</tbody>
</table>

- **B** Thd. (From Rear) 2 Places
- **C** Thd. (From Rear) 6 Places
- **D** Thd. (From Rear) 12 (.47)
- **E** Thd. 2 Places

**Dimensions in Millimetres (Inches)**

ERBG-10-51/5190

- The direction can be altered to every 90 degree angles.
- Primary Pressure Port "P"
- Secondary Pressure Port "A"
- Tank Port "T"
- Drain Port "DR"
- Cable Applicable:
  - Outside Dia.** 8-10 mm (.31 -.39 in.)
  - Conductor Area
  - ** Not Exceeding 1.5 mm² (002 sq. in.)

**Connector**
The direction can be altered to every 90 degree angles.

**Air Vent**
3(12) Hex. Soc. 3 Places

**Manual Pressure Adj. Screw**
3(12) Hex. Soc.

**Locating Pin**
6 (.24) Dia.
**Step Response (Example)**

The following step response characteristics are taken when the trapped oil volume is 20 liters (5.28 U.S. Gallons). The step response varies by trapped oil volume.

- **Primary Pressure**: 24.5 MPa (3550 PSI)
- **Trapped Oil Volume**: 20 L (5.28 U.S. Gallons)
- **Viscosity**: 30 mm²/s (141 SSU)

### ERBG-06/10

#### ERBG-06-B

![Graph](image1)

#### ERBG-06-C

![Graph](image2)

#### ERBG-06-H

![Graph](image3)

#### ERBG-10-B

![Graph](image4)

#### ERBG-10-C

![Graph](image5)

#### ERBG-10-H

![Graph](image6)
Typical Performance Characteristics

**Primary Pressure:** 24.5 MPa (3550 PSI)

**Viscosity:** 30 mm²/s (141 SSU)

**ERBG-06**

- **Secondary Pressure:** 4.9 ± 1.5 MPa (710 ± 215)
- **Frequency (Hz):** 0.1, 0.2, 0.4, 0.7, 1, 2, 4, 7, 10

**ERBG-06-B**

- **Secondary Pressure:** 10.8 ± 2.9 MPa (1565 ± 420)

**ERBG-06-C**

- **Secondary Pressure:** 16.7 ± 3.9 MPa (2420 ± 565)

**ERBG-06-H**

- **Secondary Pressure:** 21.0 ± 2.9 MPa (3060 ± 420)

**ERBG-10**

- **Secondary Pressure:** 4.9 ± 1.5 MPa (710 ± 215)

**ERBG-10-B**

- **Secondary Pressure:** 10.8 ± 2.9 MPa (1565 ± 420)

**ERBG-10-C**

- **Secondary Pressure:** 16.7 ± 3.9 MPa (2420 ± 565)
## Typical Performance Characteristics

**ERBG-06-B**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)

**ERBG-10-B**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)

**ERBG-06-C**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)

**ERBG-10-C**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)

**ERBG-06-H**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)

**ERBG-10-H**

- **Flow Rate vs. Secondary Pressure**
  - Flow Rate: L/min
  - Secondary Pressure: PSI, MPa
  - Viscosity: 30 mm²/s (141 SSU)
Typical Performance Characteristics

**Viscosity vs. Secondary Pressure**

**ERBG-06-B**
- Oil: ISO VG 32 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

**ERBG-06-C**
- Oil: ISO VG 56 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

**ERBG-06-H**
- Oil: ISO VG 56 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

**ERBG-10-B**
- Oil: ISO VG 56 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

**ERBG-10-C**
- Oil: ISO VG 56 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

**ERBG-10-H**
- Oil: ISO VG 56 Oil
- Temperature: °C
- Viscosity: SSU
- Secondary Pressure: PSI

No.28
Spare Parts List

### E Series
Reducing & Relieving Valves
ERBG-06/10

#### List of Seals

<table>
<thead>
<tr>
<th>Item</th>
<th>Name of Parts</th>
<th>Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>O-Ring</td>
<td>SO-NB-G30</td>
</tr>
<tr>
<td>9</td>
<td>O-Ring</td>
<td>SO-NB-P28</td>
</tr>
<tr>
<td>10</td>
<td>O-Ring</td>
<td>SO-NB-P14</td>
</tr>
<tr>
<td>11</td>
<td>O-Ring</td>
<td>SO-NB-P9</td>
</tr>
</tbody>
</table>

Note: When ordering seals, please specify the seal kit number from the table right. In addition to the above O-rings, O-rings for pilot valve are included in the seal kit. For the details of the pilot valve seals, see page 9.

#### List of Seal Kits

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>Seal Kit Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERBG-06</td>
<td>KS-ERBG-06-51</td>
</tr>
<tr>
<td>ERBG-10</td>
<td>KS-ERBG-10-51</td>
</tr>
</tbody>
</table>

#### Pilot Valve

<table>
<thead>
<tr>
<th>Valve Model No.</th>
<th>Pilot Valve Model Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERBG-06-B-51/5190</td>
<td>EDG-01-B-PNTN-5101</td>
</tr>
<tr>
<td>ERBG-06-C-51/5190</td>
<td>EDG-01-C-PNTN-5101</td>
</tr>
<tr>
<td>ERBG-06-H-51/5190</td>
<td>EDG-01-H-PNT15-5101</td>
</tr>
<tr>
<td>ERBG-10-B-51/5190</td>
<td>EDG-01-B-PNTN-5101</td>
</tr>
<tr>
<td>ERBG-10-C-51/5190</td>
<td>EDG-01-C-PNTN-5101</td>
</tr>
<tr>
<td>ERBG-10-H-51/5190</td>
<td>EDG-01-H-PNT15-5101</td>
</tr>
</tbody>
</table>

Note: For the details of pilot valves, refer to "Pilot Relief Valves" on page 9.

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**CAUTION**

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.
Interchangeability between Current and New Design

ERBG-06/10 series valves have changed model from 50 to 51 design in line with the model change of pilot valve (EDG-01).

Specifications and Characteristics

No change in specifications and characteristics between current and new design.

Mounting Interchangeability

There is an interchangeability in the mounting dimensions, however, the outside shape and dimensions are changed as shown below due to pilot valve improvement and other modifications.

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>214.5 (8.44)</td>
<td>136.5 (5.37)</td>
<td>115 (4.53)</td>
</tr>
<tr>
<td>New</td>
<td>213.5 (8.41)</td>
<td>136.5 (5.37)</td>
<td>115 (4.53)</td>
</tr>
<tr>
<td>Current</td>
<td>235.5 (9.27)</td>
<td>158 (6.22)</td>
<td>117 (4.61)</td>
</tr>
<tr>
<td>New</td>
<td>234.5 (9.23)</td>
<td>158 (6.22)</td>
<td>117 (4.61)</td>
</tr>
</tbody>
</table>