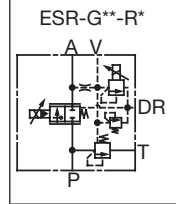
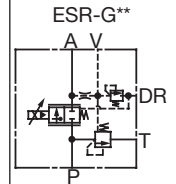


Load Response Electro-hydraulic Proportional Relief and Flow Control Valve

1 to 500ℓ/min
25MPa



Features

The load sensing function of this meter in flow control valve makes it possible to control pump discharge pressure automatically in accordance with the size of the load pressure.

Using this valve suppresses wasteful pump pressure rises and makes it possible to configure an energy-efficient circuit.

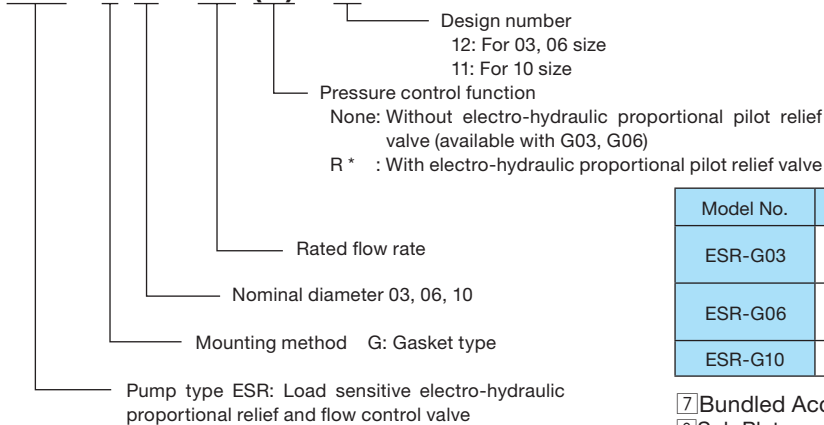
Specifications

| Model No. | | ESR-G03-125 (R*)-12 | ESR-G06-250 (R*)-12 | ESR-G10-500 R*-11 | |
|----------------------------------|-----------------------------|---------------------------|--|--|--|
| Item | | | | | |
| Maximum Operating Pressure | MPa(kgf/cm ²) | 25(255) | 25(255) | 25(255) | |
| Rated Flow Rate | ℓ/min | 125 | 250 | 500 | |
| Flow Rate Control System | Flow Rate Control Range | ℓ/min | 2 to 125 | 5 to 250 | 15 to 500 |
| | Valve Differential Pressure | MPa(kgf/cm ²) | 0.5{5.1}(Note 1) | 0.7{7.1}(Note 1) | 0.9{9.2}(Note 1) |
| | Hysteresis | % | 3 max. (Note 2) | 3 max. (Note 2) | 3 max. (Note 2) |
| | Repeatability | % | 1 | 1 | 1 |
| | Rated Current | mA | 800 | 800 | 800 |
| | Coil Resistance | Ω | 20(20°C) | 20(20°C) | 20(20°C) |
| Pressure Control System (Note 3) | Pressure Control Range | MPa(kgf/cm ²) | R1 : 1.2 to 7{12.2 to 71} R2 : 1.4 to 14{14.3 to 143} R3 : 1.6 to 21{16.3 to 214} R4 : 1.6 to 25{16.3 to 255} | R1 : 1.2 to 7{12.2 to 71} R2 : 1.4 to 14{14.3 to 143} R3 : 1.6 to 21{16.3 to 214} R4 : 1.6 to 25{16.3 to 255} | R1 : 1.2 to 7{12.2 to 71} R2 : 1.4 to 14{14.3 to 143} R3 : 1.6 to 21{16.3 to 214} R4 : 1.6 to 25{16.3 to 255} |
| | Hysteresis | % | 3 max. (Note 2) | 3 max. (Note 2) | 3 max. (Note 2) |
| | Repeatability | % | 1 | 1 | 1 |
| | Rated Current | mA | 800 | 800 | 800 |
| | Coil Resistance | Ω | 20 (20°C) | 20 (20°C) | 20 (20°C) |
| Weight | kg | 14 | 28 | 60 | |

Note) 1. Indicates the pressure differential between the valve P port and A port.
 2. Value when a Nachi-Fujikoshi special amplifier is used (with dithering).
 3. These specifications apply to valves that include an electro-hydraulic proportional pilot relief valve (i.e. ESR-G06-250R2-11).
 4. The maximum adjustment pressure is 25MPa {255kgf/cm²} for a valve that does not include an electro-hydraulic proportional pilot relief valve. Factory default is minimum output (3.5MPa max.) Set this value in accordance with the pressure of the hydraulic circuit being used.

Explanation of model No.

ESR - G 06 - 250 (**) - 12



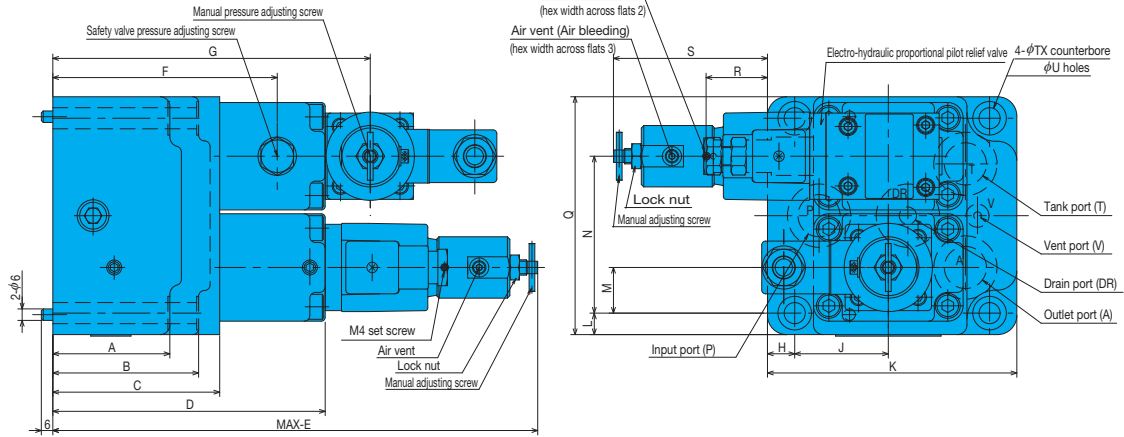
| Model No. | Bolt Size | Q'ty | Tightening Torque N·m(kgf·cm) |
|-----------|-----------|------|-------------------------------|
| ESR-G03 | M10× 75ℓ | 2 | 45 to 55{ 460 to 560} |
| | M10× 90ℓ | 2 | |
| ESR-G06 | M16×100ℓ | 2 | 190 to 235{1940 to 2400} |
| | M16×135ℓ | 2 | |
| ESR-G10 | M20×130ℓ | 6 | 370 to 460{3770 to 4690} |

- 7 Bundled Accessories (Valve Mounting Bolts)
- 8 Sub Plate
See the next page for more information about sub plates.
- 9 Use an operating fluid that conforms to the both of the following. Oil temperature: - 20 to 70°C Kinematic Viscosity: 12 to 400mm²/s. The recommended kinematic viscosity range is 15 to 60mm²/s.
- 10 Since this valve has a built-in pressure compensation valve, changing of the inertial load (using a high inertial oil motor, etc.) can create the risk of hunching under certain conditions. Contact your sales agent before changing the inertial load.

● Handling

- 1 Air Bleeding
In order to ensure stable control, loosen the air vent and bleed air from the valve before starting operation.
- 2 Manual Adjusting Screw
For the initial adjustment or when there is no input current to the valve due to an electrical problem or some other reason, pressure or flow rate can be increased by rotating the manual adjustment screw clockwise (rightward). Normally, this adjusting screw should be returned completely to its original position and secured with the lock nut.
- 3 Drain Port
Minimum control pressure is increased by drain port back pressure, so be sure to connect the drain port directly to the fluid tank at a point that is below the oil surface.
- 4 Safety Valve Setting Pressure
For a safety valve without an electro-hydraulic proportional pilot relief valve, safety valve pressure is set to minimum pressure (3.5MPa max.) In the case of a safety valve with an electrohydraulic proportional pilot relief valve, the safety valve setting pressure is set to the minimum adjustment pressure plus 1.5MPa. When actually using the valve, adjust in accordance with hydraulic circuit pressure.
- 5 Minimum Relief Flow Rate During Pressure Control
Setting pressure can become unstable when the relief flow rate to the valve's T port is small. Because of this, use a relief flow rate of at least 10ℓ/min with a nominal diameter of 03 or 06, and a relief flow rate of at least 20ℓ/min with a nominal diameter of 10.
- 6 Valve Mounting Orientation
When an electro-hydraulic proportional pilot relief valve main valve is mounted on a vertical surface with the pilot relief valve part facing downwards make it difficult to bleed air from the pilot relief valve. Because of this, you should not use this type of mounting orientation.

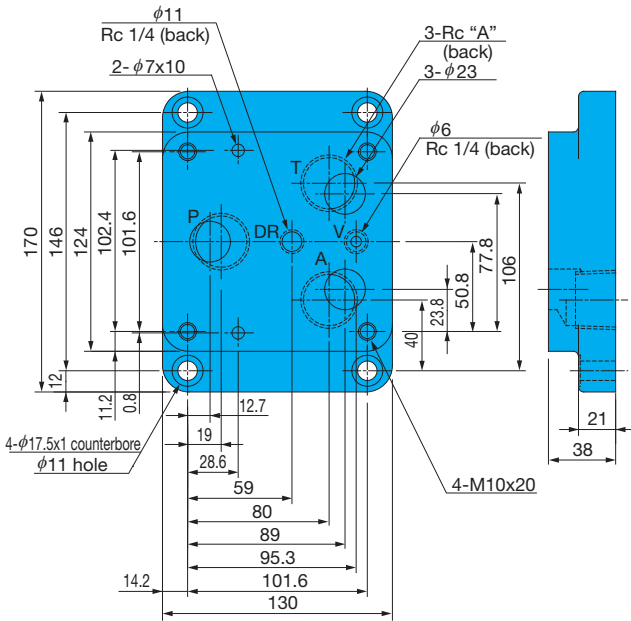
Installation Dimension Drawings



| Model No. | A | B | C | D | E | F | G | H | J | K | L | M | N | Q | R | S | T | U |
|-----------|-----|-----|-----|-----|-------|-----|-------|------|------|-----|------|------|------|-----|----|------|------|----|
| ESR-G03 | 61 | 76 | 87 | 142 | 252.8 | 117 | 165.5 | 14.2 | 48.8 | 130 | 11.2 | 23.8 | 81.8 | 124 | 32 | 80.3 | 17.5 | 11 |
| ESR-G06 | 76 | 110 | 120 | 172 | 282.8 | 154 | 195.5 | 16.8 | 57.2 | 167 | 17 | 28 | 118 | 180 | 21 | 68.3 | 26 | 18 |
| ESR-G10 | 107 | 107 | 150 | 205 | 317.3 | 183 | 228.5 | 25 | 76 | 228 | 23.5 | 35 | 162 | 244 | -3 | 35.3 | 32 | 22 |

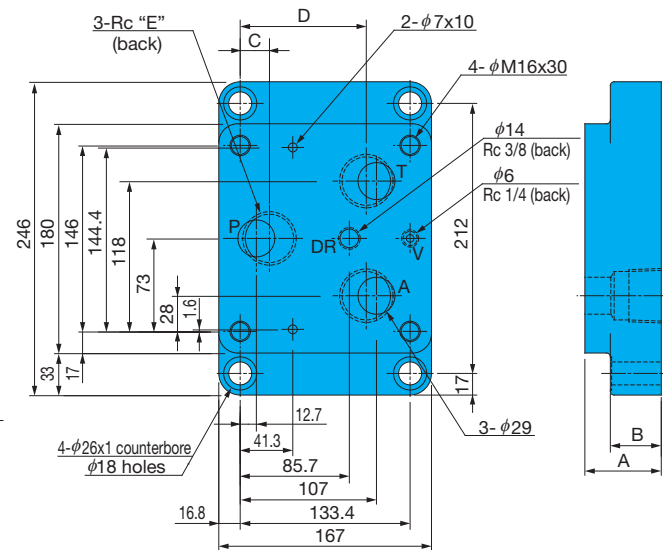
Sub Plate

MSR-03*-10



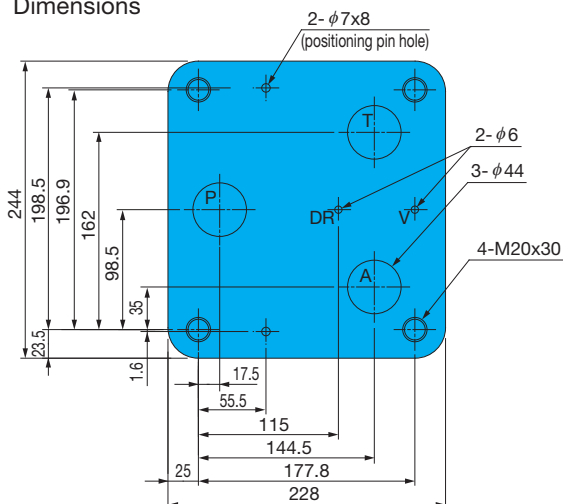
| Model No. | A |
|------------|-----|
| MSR-03Y-10 | 3/4 |
| MSR-03Z-10 | 1 |

MSR-06*-10



| Model No. | A | B | C | D | E |
|------------|----|----|----|-----|-------|
| MSR-06X-10 | 95 | 25 | 16 | 107 | 1 |
| MSR-06Y-10 | 60 | 40 | 23 | 99 | 1 1/4 |

ESR-G10 Mounting Gasket Surface Dimensions

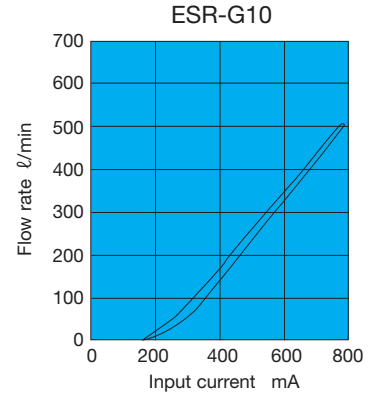
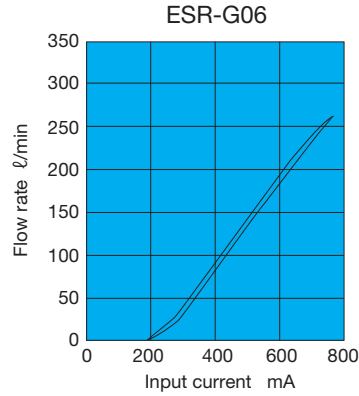
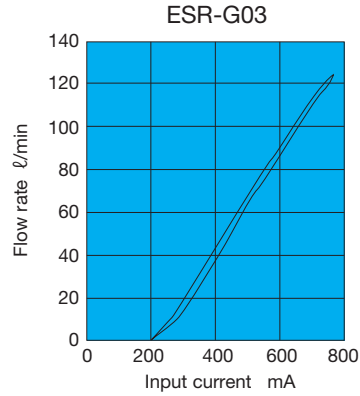


The gasket surface dimensions comply with the ISO standards shown below.
 ESR-G03...ISO 6263-07-11-1-97
 ESR-G06...ISO 6263-08-15-1-97

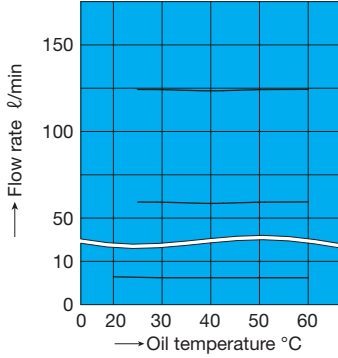
Performance Curves

Hydraulic Operating Fluid Kinematic Viscosity 32mm²/s

Input Current – Flow Rate Characteristics

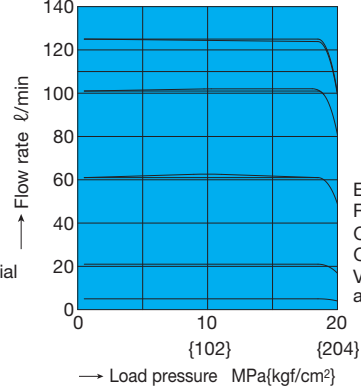


Oil Temperature – Control Flow Rate Characteristics



Load Pressure: 10MPa
Operating Fluid: VG32
Value when a Nachi-Fujikoshi special amplifier is used (with dithering).

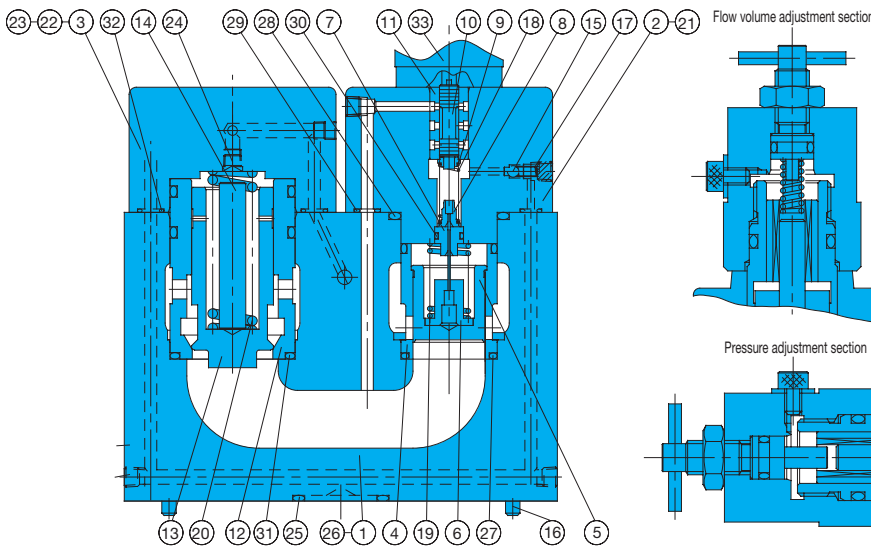
Pressure – Control Flow Rate Characteristics



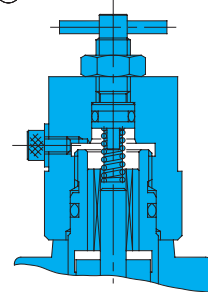
Electro-hydraulic Proportional Pilot Relief Valve Setting Pressure 21MPa
Operating Fluid: VG32
Oil Temperature: 40°C
Value when a Nachi-Fujikoshi special amplifier is used (with dithering).

Cross-sectional Drawing

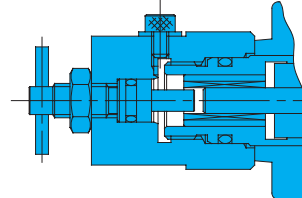
ESR-G** -***-11,12



Flow volume adjustment section



Pressure adjustment section



| Part No. | Part Name | Part No. | Part Name |
|----------|-----------|----------|-----------------------|
| 1 | Body | 18 | Spring |
| 2 | Cover (A) | 19 | Spring |
| 3 | Cover (B) | 20 | Spring |
| 4 | Sleeve | 21 | Screw |
| 5 | Spool | 22 | Screw |
| 6 | Guide | 23 | Safety valve |
| 7 | Sleeve | 24 | Choke |
| 8 | Retainer | 25 | O-ring |
| 9 | Retainer | 26 | O-ring |
| 10 | Piston | 27 | O-ring |
| 11 | Sleeve | 28 | O-ring |
| 12 | Sleeve | 29 | O-ring |
| 13 | Poppet | 30 | O-ring |
| 14 | Guide | 31 | O-ring |
| 15 | Ball | 32 | O-ring |
| 16 | Pin | 33 | Proportional solenoid |
| 17 | Spring | | |

Note) Coil model number JD64-D2

List of Sealing Parts

| Part No. | Part Name | ESR-G03 | | ESR-G06 | | ESR-G10 | |
|-----------------|-----------|-------------|------|-------------|------|-------------|------|
| | | Part Number | Q'ty | Part Number | Q'ty | Part Number | Q'ty |
| 25 | O-ring | NBR-90 P26 | 4 | NBR-90 G35 | 4 | NBR-90 P48 | 4 |
| 26 | O-ring | NBR-90 P9 | 1 | NBR-90 P9 | 1 | NBR-90 P9 | 1 |
| 27 | O-ring | NBR-90 G25 | 2 | NBR-90 G35 | 2 | NBR-90 G50 | 2 |
| 28 | O-ring | NBR-90 G35 | 1 | NBR-90 G45 | 1 | NBR-90 G60 | 1 |
| 29 | O-ring | NBR-90 P6 | 3 | NBR-90 P8 | 3 | NBR-90 P9 | 3 |
| 30 | O-ring | NBR-90 P9 | 1 | NBR-90 P9 | 1 | NBR-90 P9 | 1 |
| 31 | O-ring | NBR-90 G35 | 3 | NBR-90 P46 | 3 | NBR-90 G65 | 3 |
| 32 | O-ring | NBR-90 P6 | 2 | NBR-90 P8 | 2 | NBR-90 P9 | 2 |
| Seal Kit Number | | JLS-G03R | | JLS-G06R | | JLS-G10R | |

Note) 1. The materials and hardness of the O-ring conforms with JIS B2401.

2. EPR-G01 seal is available separately. See page I-3 for more information.