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Types	Graphic Symbols	Max. Operating Pressure MPa	Maximum Flow L/min										Page
			1	2	3	5	10	20	30	50	100	200	
Pilot Relief Valves		24.5	EDG 01										H-93
Relief Valves		24.5	EBG 03 06 10										H-99
Relieving and Reducing Valves		24.5	ERBG 06 10										H-108
40 Ω Series Flow Control (and Check) Valves		20.6	EFG EFCG 02 03 06 10										H-118
10 Ω Series Flow Control (and Check) Valves		03: 20.6 06: 24.5	EFG EFCG 03 06										H-128
10 Ω - 10 Ω Series Flow Control and Relief Valves		24.5	EFBG 03 06 10										H-135
High Flow Series Flow Control and Relief Valves		24.5	EFBG 03 06 10										H-145
Shockless Type Directional and Flow Control Valves		25	EDFG 01										H-155
Directional and Flow Control Valves		25	EDFHG 03 04 06										H-157
High Response Type Directional and Flow Control Valves		01/03: 31.5 04/06: 35	ELDFG 01 03 ELDFHG 04 06										H-163

## Hydraulic Fluids

### ● Fluid Types

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

Petroleum Base Oils	Use fluids equivalent to ISO VG 32 or VG 46.
Synthetic Fluids	Use phosphate ester or polyol ester fluids. When phosphate ester fluid is used, prefix "F-" to the model number because the special seals (fluororubber) are required to be used.
Water-containing Fluids	Use water-glycol fluid.

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.

Name	Viscosity	Temperature
Pilot Relief Valves Relief Valves Relieving and Reducing Valves	15 - 400 mm <sup>2</sup> /s	-15 - +70°C
Flow Control Valves Flow Control and Check Valves Flow Control and Relief Valves	20 - 200 mm <sup>2</sup> /s	
Directional and Flow Control Valves	20 - 400 mm <sup>2</sup> /s	0 - +60°C
Shockless Type Directional and Flow Control Valves High Response Type Directional and Flow Control Valves (Direct Type)	20 - 200 mm <sup>2</sup> /s	0 - +60°C
High Response Type Directional and Flow Control Valves (Two Stage Type)	15 - 400 mm <sup>2</sup> /s	-15 - +60°C

### ● Control of Contamination

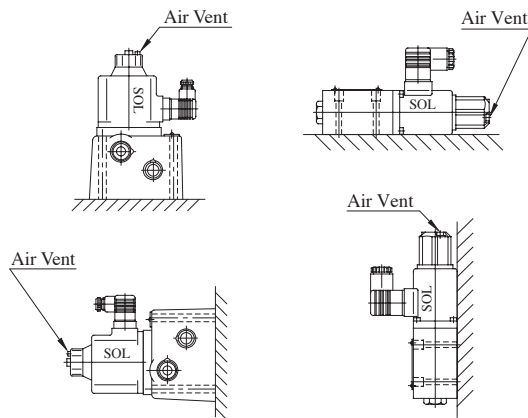
Due caution must be paid to maintaining control over contamination of the hydraulic fluids which may otherwise lead to breakdowns and shorten the life of the valve. Please maintain the degree of contamination within NAS 1638-Grade 11. Use 20 μm or finer line filter.

**Instructions**

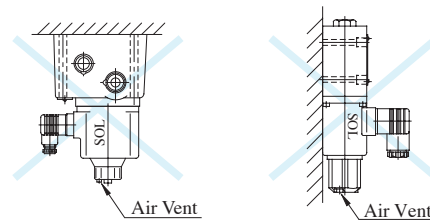
**Mounting**

Be sure that the air vent faces up.  
 In addition, if the valve is mounted vertically, the minimum adjustment pressure is 0.2 MPa or higher.

**[Good example]**

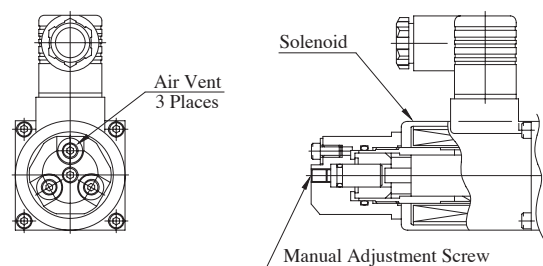


**[Bad example]**



**Air Bleeding**

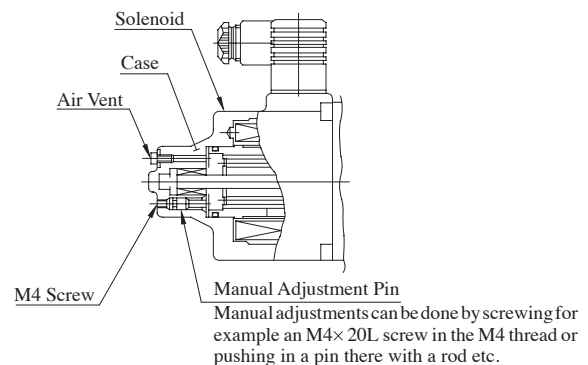
To ensure stable control, bleed the air from solenoid completely and fill its core with oil.  
 Bleeding can be done by slowly loosening one of the air vents at the end of the solenoid. Choose one of the three air vents which is expected to work most effectively (see the figure to the right).



10 Ω Series Solenoid

**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 adjustment screw to temporarily set the valve pressure / flow rate. In that case, when turn the manual adjustment screw clockwise, the valve pressure / flow rate increases. Under normal condition, however, this screw must be kept in its original position (see the figure to the right).



40 Ω Series Solenoid

**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.

## Interchangeability between Current and New Model Change Products

Name	Model Numbers	Design Number		Installation Interchangeability	Major Changes	Page
		Current	New			
Pilot Relief Valves	EDG-01	50	51	YES	● Solenoid Ass'y Change	H-98
Relief Valves	EBG-03	50	51	YES	● Pilot Valve Change EDG-01V, 50→51 Design	H-107
	EBG-06	50	51	YES		
	EBG-10	50	51	YES		
Relieving and Reducing Valves	ERBG-06	50	51	YES	● Pilot Valve Change EDG-01V, 5001→5101 Design ● No change in specifications	H-117
	ERBG-10	50	51	YES		
10Ω Series Flow Control (and Check) Valves	EFG EFCG -03	50	51	YES	● Solenoid Ass'y Change ● No change in specifications	H-133
	EFG EFCG -06	50	51	YES		
10Ω - 10Ω Series Flow Control and Relief Valves	EFBG-03	50•51	61	YES	● 03/06 : 50 <sup>D</sup> , 51 <sup>D</sup> →61 <sup>D</sup> • Pilot Valve (EDG-01) is now integrated into the cover • Solenoid Ass'y Change ● 03/06 : 60 <sup>D</sup> , 61 <sup>D</sup> , 10 : 50 <sup>D</sup> →51 <sup>D</sup> • Solenoid Ass'y Change	H-144
		60				
	EFBG-06	50•51	61	YES		
EFBG-10	50	51			YES	
High Flow Series Flow Control and Relief Valves	EFBG-03	50	51	YES	● Solenoid Ass'y Change ● Pilot Valve Change EDG-01V, 5003→5103 Design ● Solenoid Ass'y Change	H-154
	EFBG-06	50	51	YES		
Directional and Flow Control Valves	EDFHG-03	30	31	YES	● Solenoid Ass'y Change ● No change in specifications	H-160
	EDFHG-04	30	31	YES		
	EDFHG-06	30	31	YES		
Power Amplifiers For 40Ω Series Flow Control Valves	AME-D	41	50	YES	● Additional power supply, functions and installation	H-180
	AME-DF	22	50	YES		
Power Amplifiers For High Response Type Directional and Flow Control Valves	AMB-EL	10	20	YES	● Addition of input/output classification	H-194
Multifunction Slope Controllers	AMC-T	10	20	YES	● Compact and Lightweight ● Shockless control mode and stop mode functions added	H-200

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