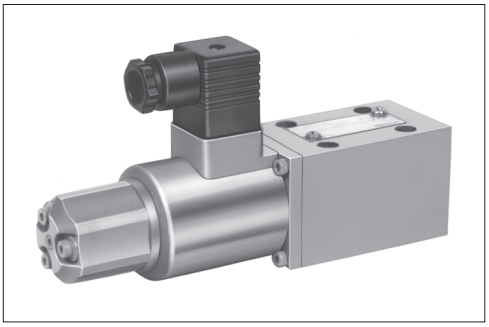
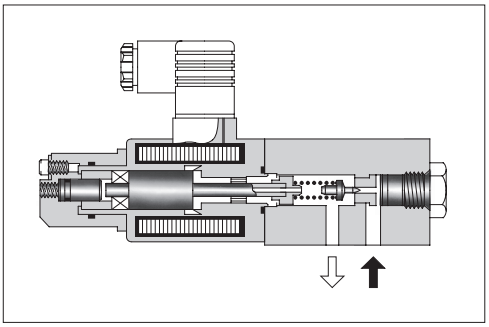
Proportional Electro-Hydraulic Pilot Relief Valves

This valve consists of a small DC solenoid and a direct-acting relief valve. It serves as a pilot valve for a low flow rate hydraulic system or a proportional electro-hydraulic control valve and controls the pressure in proportion to the input current. Note that this valve is used in conjunction with the applicable power amplifier.

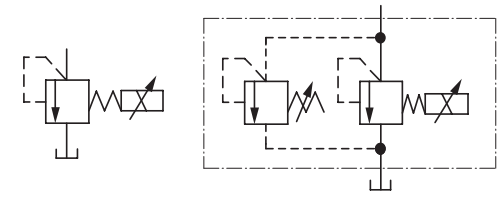




Specifications

Descriptions \ Model Numbers		EDG-01
Max. Operating Pres.	MPa	24.5
Max. Flow	L /min	2
Min. Flow	L /min	0.3
Pressure Adj. Range	MPa	Refer to Model Number Designation
Rated Current	mA	EDG-01∗-B : 800 EDG-01∗-C : 900 EDG-01∗-H : 950
Coil Resistance	Ω	10
Hysteresis		3% or less
Repeatability		1% or less
Mass	kg	2

Graphic Symbols



Without Safety Valve With Safety Valve

Model Number Designation

ED	G	-01	V	-C	-1	-PN	T13	-51
Series Number	Type of Mounting	Valve Size	Applicable Control ★1	Pressure Adj. Range MPa	Safety Valve	P-Line Orifice	T-Line★2 Orifice	Design Number
ED: Proportional Electro-Hydraulic Pilot Relief Valve	G: Sub-Plate Mounting	01	None: General Use V: Vent Control of Relief Valve (Omit if not required)	B: 0.5 - 6.9 C: 1.0 - 15.7 H: 1.2 - 24.5	None: Without Safety Valve 1: With Safety Valve	PN: Without Orifice (Standard)	T15 T13 T11	51

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

★2. Standard orifices for T-line orifices are as follows.
Pressure Adj. Range B: T15, C: T13, H: T11
The orifice used as the pilot valve may differ from the standard orifice.

Accessories

Mounting Bolts

Socket Head Cap Screw
M5 ×45 L ····· 4 pcs.

Applicable Power Amplifier

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see pages H-173, H-177 and H-183).

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

Sub-Plate

Piping Size	Sub-Plate Model Numbers	Thread Size Rc	Approx. Mass kg
1/8	DSGM-01-31	1/8	0.8
1/4	DSGM-01X-31	1/4	0.8
3/8	DSGM-01Y-31	3/8	0.8

- 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. ($\sqrt{}^{1.6}$)
- Sub-plates are those for 1/8 solenoid operated directional valves. For dimensoins, see page H-8.

Instructions

Tank-Line Back Pressure

Check that the tank line back pressure does not exceed 0.2 MPa.

Vent Control

When the valve is used for vent control of relief valves or others, use the pipes of 6 mm ID. 300 mm or less length for connection.

If the pressure is instable, provide a 1.0 to 1.5 mm 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 40cm^3.

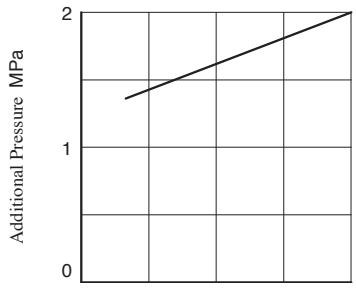
Safety Valve Pressure Setting

The pressure of the safty valve at the maximum flow is preset at the value equal to the upper limit of the pressure adjustment range plus 2 MPa.

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.

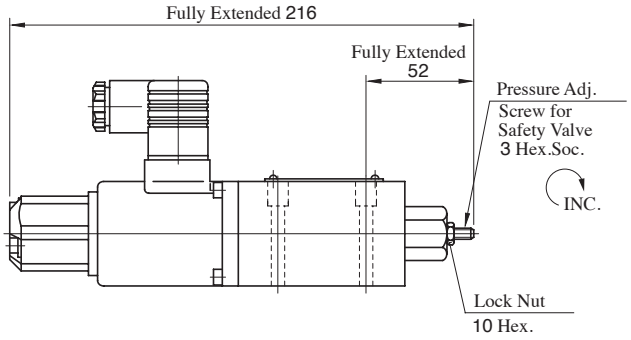
Setting pressure = (Operating pressure upper limit) + (Additional pressure indicated below)

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∗-∗-1-PNT∗-51

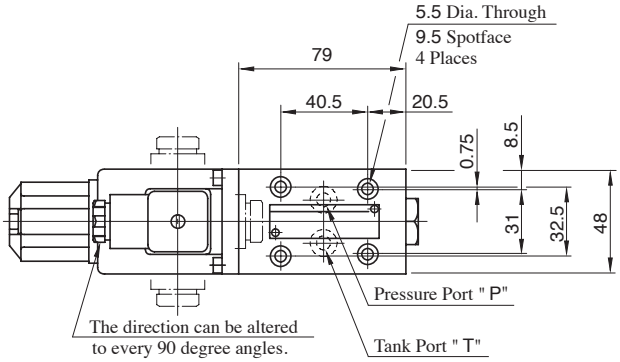
With Safety Valve

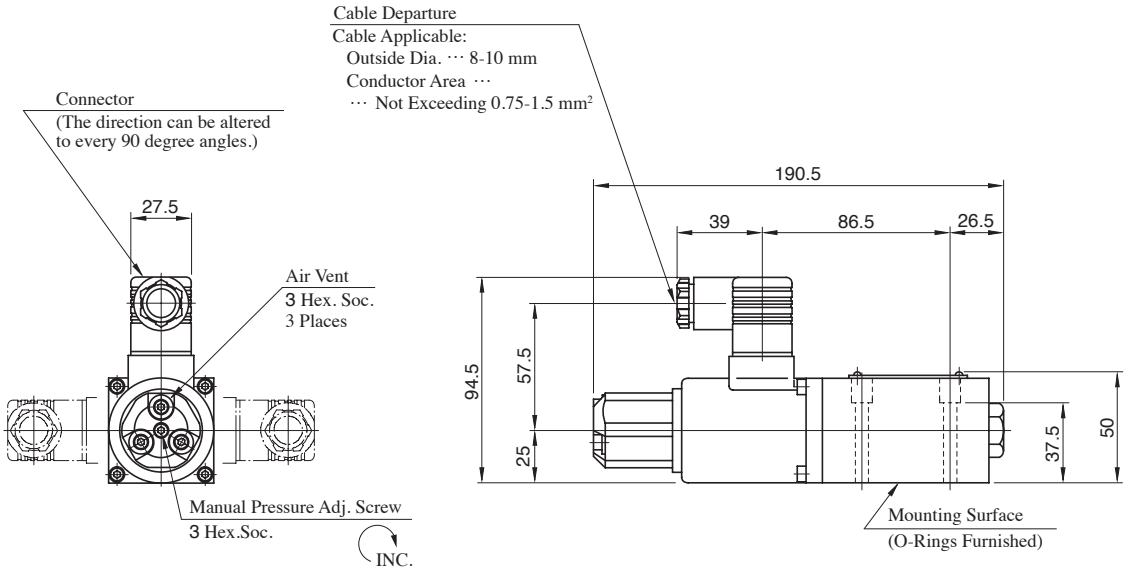


● For other dimensions, refer to the without safety valve.

EDG-01∗-∗-PNT∗-51

Without Safety Valve





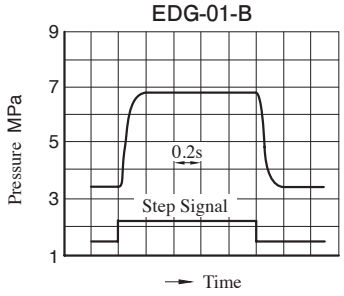
Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (page H-8) in common use.

Step Response (Example)

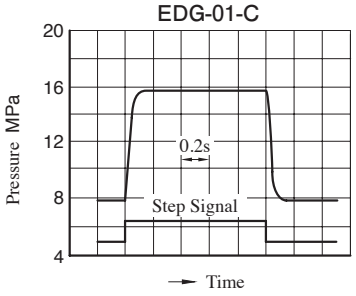
These characteristics have been obtained by measuring on each valve.
Therefore, they may vary according to a hydraulic circuit to be used.

Flow Rate : 2 L/min
Trapped Oil Volume : 40 cm^3
Viscosity : 30 mm^2/s

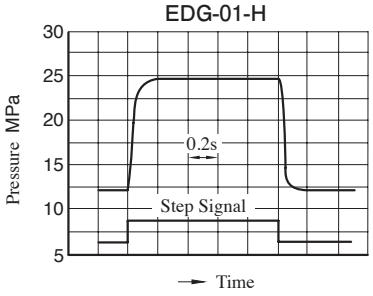
EDG-01-B



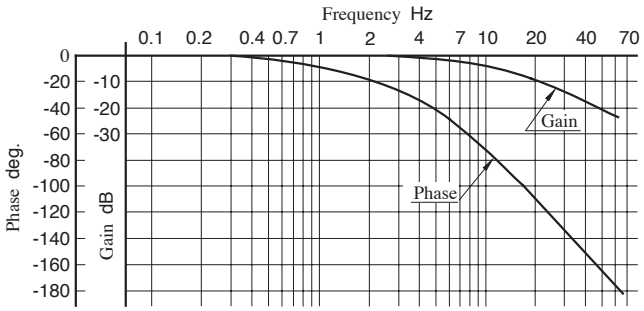
EDG-01-C



EDG-01-H



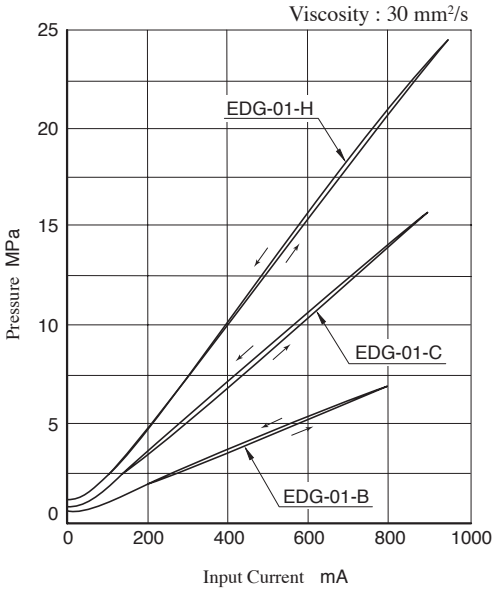
Frequency Response



Flow Rate : 2 L/min
Pressure :7.8 ± 1.6 MPa
Trapped Oil Volume : 30 cm^3
Viscosity : 30 mm^2/s

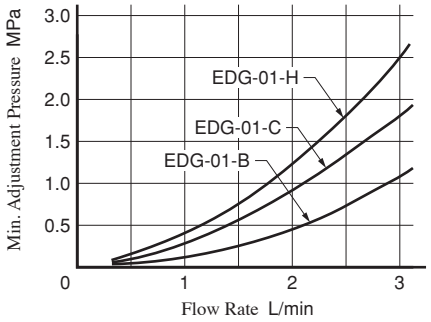
Control Pressure vs. Input Current

Viscosity : 30 mm^2/s



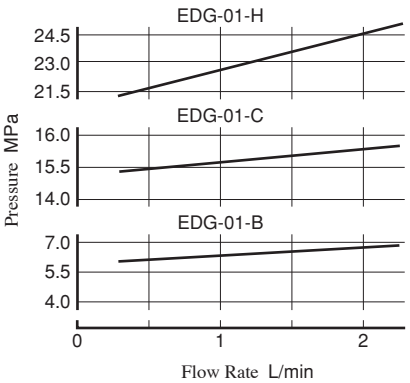
Min. Adjustment Pressure

Viscosity : 30 mm^2/s



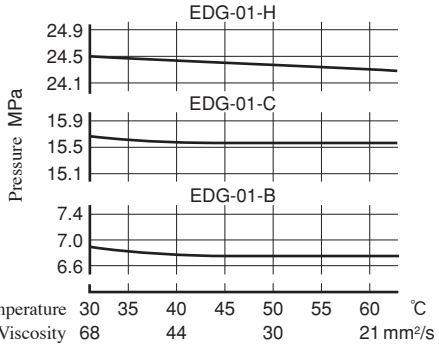
Flow Rate vs. Pressure

Viscosity : 30 mm^2/s



Viscosity vs. Pressure

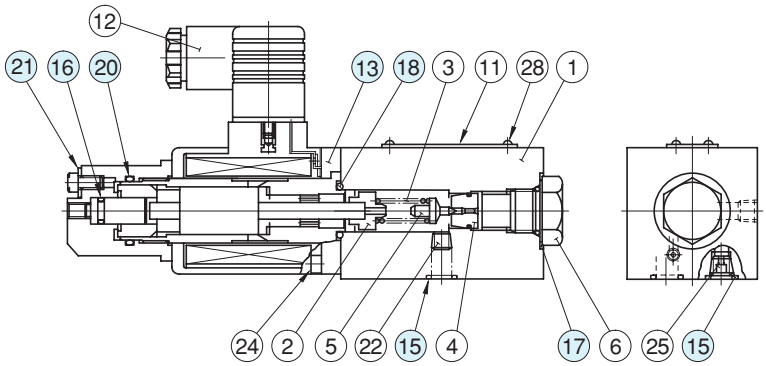
Flow Rate : 2 L/min
Oil : ISO VG 46 Oil



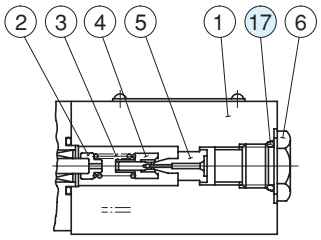
List of Seals and Solenoid Ass'y

Without Safety Valve

EDG-01∗-∗-PNT∗-51
EDG-01V-∗-PNT∗-5103

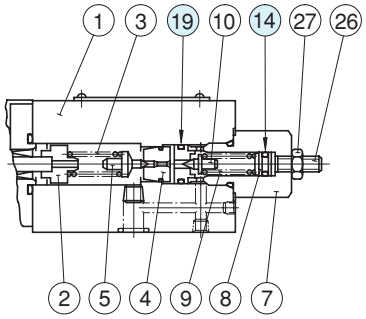


EDG-01-∗-PNT∗-5101



With Safety Valve

EDG-01∗-∗-1-PNT∗-51
EDG-01V-∗-1-PNT∗-5103
EDG-01V-∗-1-PNT20-5197



List of Seals

Item	Name of Parts	Part Numbers	Qty.
14	O-Ring	OR NBR-70-1 P6-N	1
15	O-Ring	OR NBR-90 P9-N	2
16	O-Ring	OR NBR-90 P7-N	1
17	O-Ring	OR NBR-90 P14-N	1
18	O-Ring	OR NBR-90 P18-N	1
19	O-Ring	AS568-013(NBR-90)	1
20	O-Ring	OR NBR-90 P22-N	1
21	Fastener Seal	W4	3

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

Solenoid Ass'y

Valve Model Numbers	⑬ Solenoid Ass'y
EDG-01V-∗-∗-P∗T∗-51 EDG-01-∗-∗-PT-5101	E318-Y06M1-28-61
EDG-01-∗-∗-P∗T∗-51	E318-Y06M1-05-61
EDG-01V-∗-∗-PNT∗-5103	E318-Y06M1-04-61

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

Pilot Valve

Model numbers of proportional electro-hydraulic control valves whose pilot valve is this valve (EDG-01∗) and the pilot valve are shown.

Valve Model No.	Pilot Valve Model Numbers
EBG-03-C-51	EDG-01V-C-1-PNT09-51
EBG-03-H-51	EDG-01V-H-1-PNT09-51
EBG-03-C-T-51	EDG-01V-C-PNT09-51
EBG-03-H-T-51	EDG-01V-H-PNT09-51
EBG-06-C-51	EDG-01V-C-1-PNT10-51
EBG-06-H-51	EDG-01V-H-1-PNT10-51
EBG-06-C-T-51	EDG-01V-C-PNT10-51
EBG-06-H-T-51	EDG-01V-H-PNT10-51
EBG-10-C-51	EDG-01V-C-1-PNT11-5103
EBG-10-H-51	EDG-01V-H-1-PNT11-5103
EBG-10-C-T-51	EDG-01V-C-PNT11-5103
EBG-10-H-T-51	EDG-01V-H-PNT11-5103
ERBG-06-B-51	EDG-01-B-PNTN-5101
ERBG-06-C-51	EDG-01-C-PNTN-5101
ERBG-06-H-51	EDG-01-H-PNT15-5101
ERBG-10-B-51	EDG-01-B-PNTN-5101
ERBG-10-C-51	EDG-01-C-PNTN-5101
ERBG-10-H-51	EDG-01-H-PNT15-5101
EFBG-10-500-C-∗-51	EDG-01V-C-1-PNT12-5103
EFBG-10-500-H-∗-51	EDG-01V-H-1-PNT12-5103
EFBG-06-500-C-∗-51	EDG-01V-C-1-PNT11-5103
EFBG-06-500-H-∗-51	EDG-01V-H-1-PNT11-5103
EFBG-10-1000-C-∗-51	EDG-01V-C-1-PNT20-5197
EFBG-10-1000-H-∗-51	EDG-01V-H-1-PNT20-5197

Interchangeability between Current and New Design

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

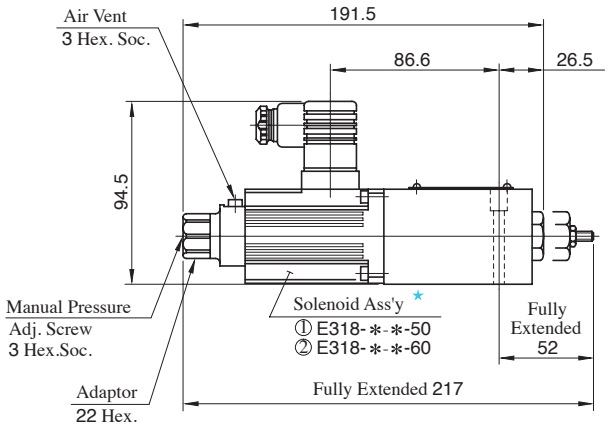
Specifications and Characteristics

Input current-pressure characteristics differ between current and new design. Please inquire separately for details.
Other specifications remain unchanged.

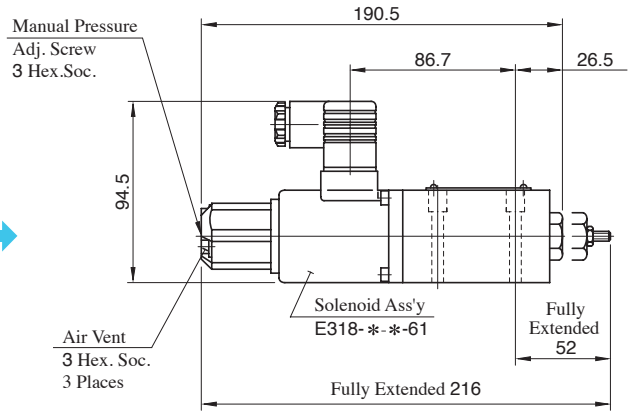
Mounting Interchangeability

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.

Current: Design 50



New: Design 51



★The solenoid assembly current design comes in two types: ① E318-50 design and ② 60 design.
See the figure on the left for an external view of type ①. See the figure on the right for type ②.