

Proportional Electro-Hydraulic Pilot Relief Valves

The valve can be used as a pilot valve of the Proportional Electro-Hydraulic Control valves.

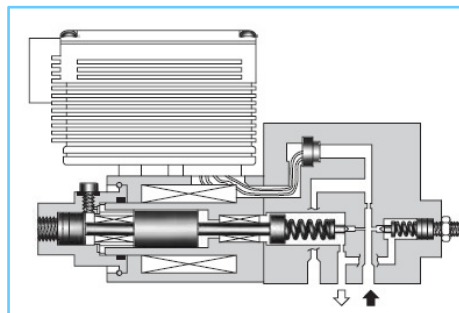
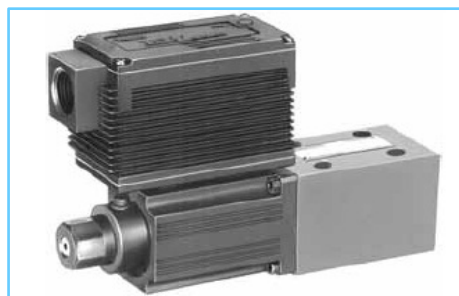
The valve can also be used as a relief valve for the hydraulic system where a small flow rate and continuous pressure control are required.

Specification

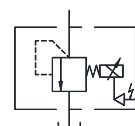
Model Number	EHDG-01-※
Descriptions	
Max. Operating Pres. Kg/cm ²	250
Max. Flow L/min.	2
Min. Flow L/min.	0.3
Pres. Adj. Range Kg/cm ²	Refer to Model No. Designation
Coil Resistance	10Ω
Hysteresis	Less than 3% (1%) ^{*1}
Repeatability	Less than 1% ^{*2}
Frequency Response Hz	Refer to frequency Response on page 642
Supply Electric Power	24V DC (21 to 28V DC included Ripple)
Power Input (Max.)	28 W
Input Signal Voltage	B: 70 Kg/cm ² / 5V DC C: 160 Kg/cm ² / 5V DC H: 250 Kg/cm ² / 5V DC
Input Impedance	10 kΩ
Alarm Signal Output (Open Collector)	Voltage: Max. 30V DC Current: Max. 40 Ma
Pressure Signal Output	B: 5V DC / 70 Kg/cm ² C: 5V DC / 160 Kg/cm ² H: 5V DC / 250 Kg/cm ²
Ambient Temperature	0 – 50°C (With Circulated Air)

^{*1} The value in () is for the closed-loop type.

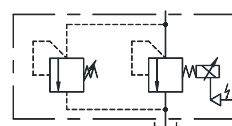
^{*2} The repeatability of the valve is obtained by having it tested independently on the conditions similar to its original testing.



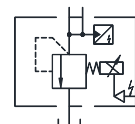
Graphic Symbols



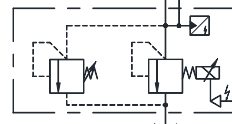
Open Loop Type



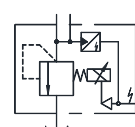
Open Loop Type With Safety Valve



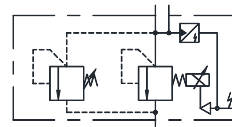
Open Loop Type With Sensor



Open Loop Type With Safety valve & Sensor



Closed Loop Type



Closed Loop Type With safety Valve

Model Number Designation

F-	EHD	G	-01	V	-B	-S	-1	-PN	T15	M10	-50
Special Seals	Series Number	Type of Mounting	Valve Size	Applicable Control	Pressure Adj. Range Kg/cm ²	Control Type	Safety Valve	P-Line Orifice	T-Line Orifice	P-B Line Orifice	Design Number
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EHD: Proportional Electro-Hydraulic Pilot Relief Valve	G: Sub-Plate Mounting	01	None: For General Use V: Vent Control Of Relief Valve (Omit if not required)	B: 5 – 70 C: 10 – 160 H: 12 – 250	None: Open Loop	None: Without Safety Valve 1: With Safety Valve	PN: Without Orifice (Standard)	T15	--	50
						S: Open Loop with Sensor			T13	M10: Standard	
						L: Closed Loop			T11		

^{*1} For Closed-Loop models, specify applicable control code “V” even though the valve may not be used as vent control of relief valve.

EH Series

Proportional Electro-Hydraulic Pilot Relief Valves

Mounting Bolts

Model Numbers	Socket Head Cap Screw	Qty	Bolt Kit Model Number
EHDG-01※-※-※-PNT※	M5 x 45Lg.	4	BKDSG-01-50
EHDG-01※-S※-※-※-PNT※M10	M5 x 75Lg.		BKEHDG-01-50
EHDG-01V-※-L※-※-PNT※M10			

Sub-Plate

Sl. No.	Sub-Plate Model Numbers	Thread size	Mass Kg.
1	DSGM-01-3080	1/8 BSP.F	0.8
2	DSGM-01X-3080	1/4 BSP.F	
3	DSGM-01Y-3080	3/8 BSP.F	

- Sub-plates are available. Specify sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish.
- For Sub-plates details please refer page no. 358.

Spare Parts List

List of Seals

Sl. No.	Name of Parts	Part No.	Qty.	
			Without Safety Valve	With Safety Valve
1	O-Ring	SO-NB-P9	2	
2	O-Ring	SO-NB-A013	-	1
3	O-Ring	SO-NA-P6		
4	O-Ring	SO-NB-P14	1	

Note : When ordering the seals, please specify the seal kit number from the table above.

● List of Seal Kits

Model Numbers	Seal Kit Numbers
EHDG-01-50	KS-EHDG-01-50
EHDG-01-1-50	KS-EHDG-01-1-50

Instructions

Piping to the Reservoir

The tank port should be connected directly to the reservoir with a back pressure of not more than 2 Kgf/cm². Be sure the end of pipe is dipped in to the oil in the reservoir.

Vent control

When this valve is to be used as a relief valve or for other valve vent control purposes, use 6mm ID, 300mm or less long pipes for piping connections. If pressure instability is encountered, provide a 1-1.5mm diameter orifice for the relief or other valve vent port.

Circuit Pressure Control

When circuit pressure is directly controlled by this valve, make sure that the trapped oil volume is exceeding 40 cm³.

Low Flow Rate

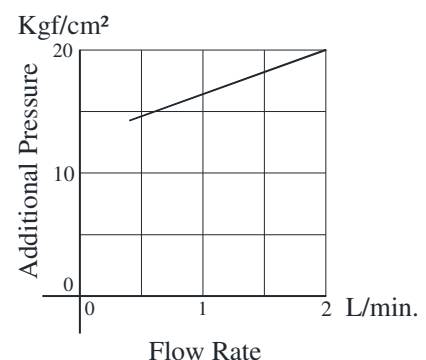
The preselected pressure may become unstable. To avoid such pressure instability, the flow rate should not be lower than 0.3 L/min.

Safety Valve Pressure Setting

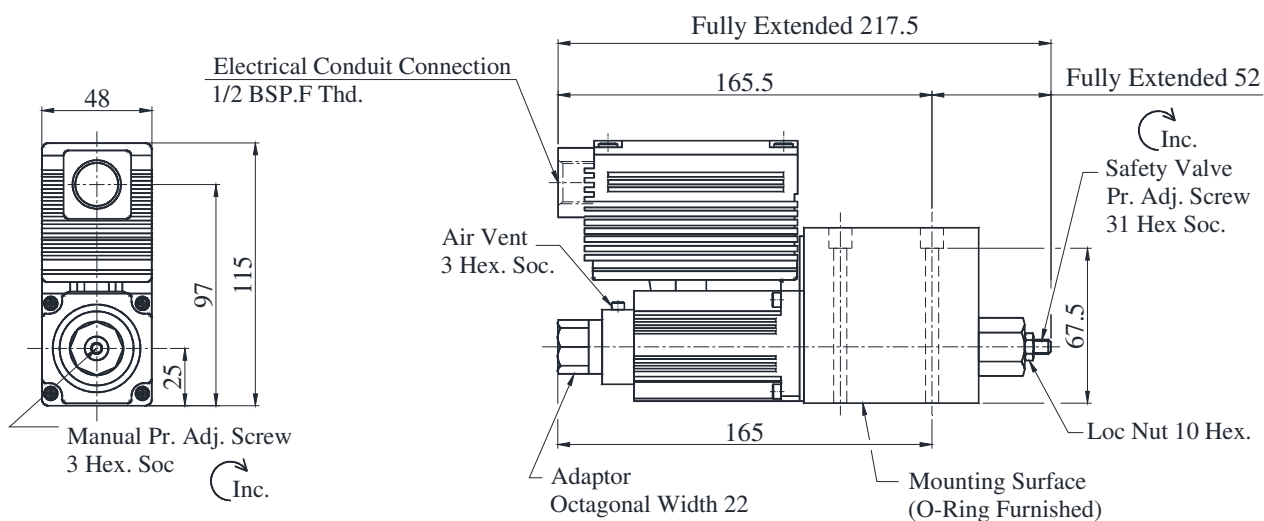
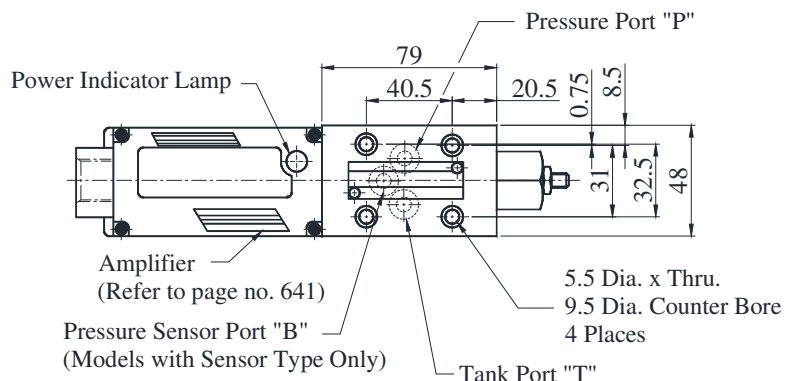
The safety valve pressure setting at the maximum flow rate is preset to a level that is 20 Kgf/cm² higher than the pressure adjustment range upper limit.

If the operating pressure upper limit is low or a different flow rate upper limit is used, make adjustment after calculating the safety valve pressure setting from the following equation:
 Pressure setting=(Operating pressure upper limit) + (Additional pressure indicated below).

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



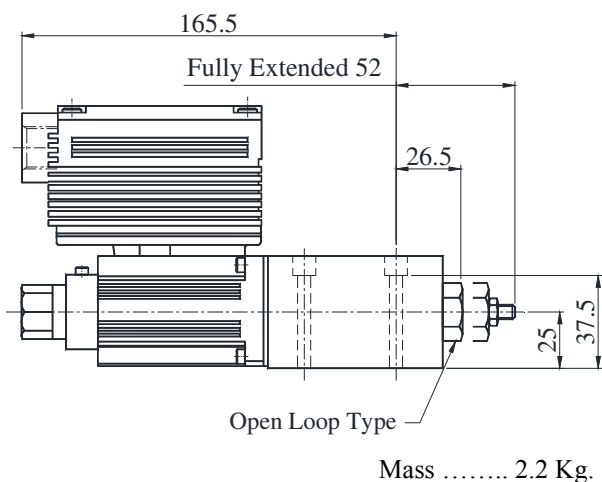
- **EHDG-01※-※-S-1-PNT※M10-50**
Open-Loop Type with Sensor and Safety Valve
- **EHDG-01※-※-L-1-PNT※M10-50**
Closed-Loop Type with Safety Valve



Mass 2.9 Kg.

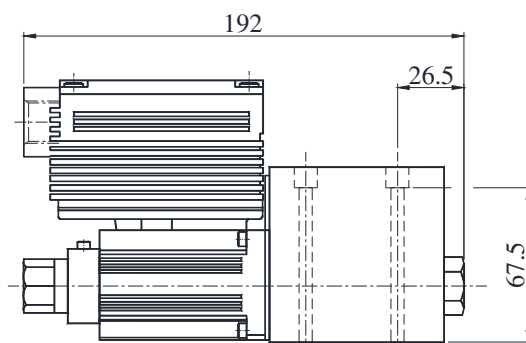
DIMENSIONS IN MILLIMETRES

- **EHDG-01※-※-PNT※50**
Open-Loop Type
- **EHDG-01※-※-1-PNT※50**
Open-Loop Type with Safety Valve



Mass 2.2 Kg.

- **EHDG-01※-※-S-PNT※M10-50**
Open-Loop Type with Sensor
- **EHDG-01※-※-L-PNT※M10-50**
Closed-Loop Type



Mass 2.9 Kg.

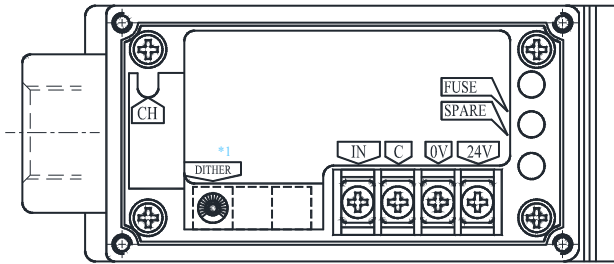
E Series

Proportional Electro-Hydraulic Pilot Relief Valves

Detail of Amplifier

Connecting Terminal

Open-Loop Type

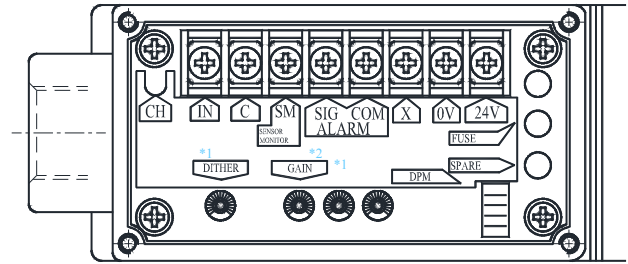


Terminal	Name
IN	Input Signal (+)
C	Input Signal (COM)
0 V	Power Supply
24 V	
CH	Output Current Check (to C)

*1 DITHER/GAIN

Use as they are since they are factory-preset to the optimum position. (Do not touch them in normal condition)

Closed-Loop Type with Sensor Open-Loop Type with Sensor



Terminal	Name
IN	Input Signal (+)
C	Input Signal (COM)
SM	Sensor Monitor (to C)
ALARM	Alarm Output *2
SIG	
COM	
X	(Open)
0 V	Power Supply
24 V	
CH	Output Current Check (to C)

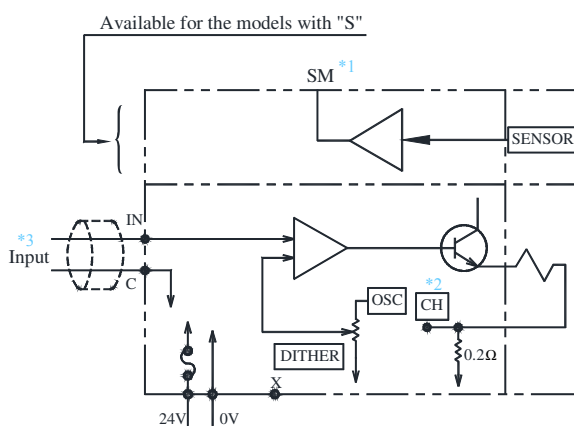
*2 GAIN/ALARM

GAIN adjusting volume is not available for Open-Loop type with sensor.

Circuit Schematic

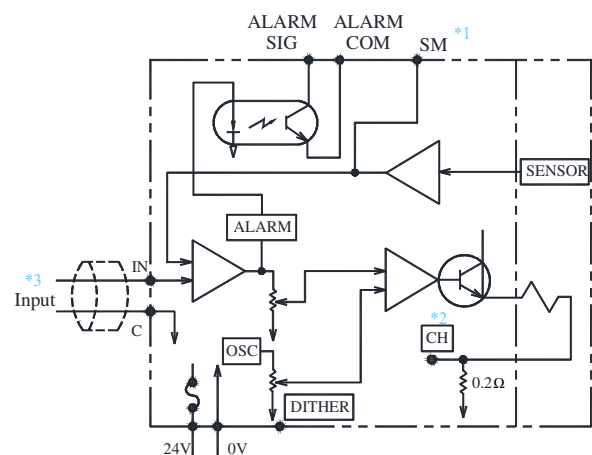
Open-Loop Type

Open-Loop Type with Sensor



Closed-Loop Type with Sensor

Open-Loop Type with Sensor



*1 For "SM" terminal, external instruments should have input impedance of more than 10 kΩ.

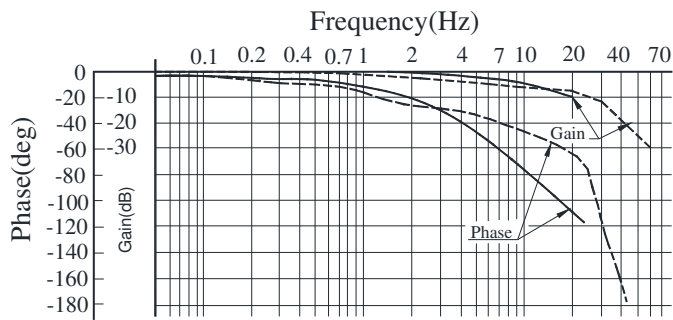
*2 For "CH" terminal, external instruments should have input impedance of more than 10 kΩ.

*3 Use shielded cable for "Input" connection. The ground of the shielded cable must be connected to input signal side.

Frequency Response

— Open Loop Type

----- Closed Loop Type

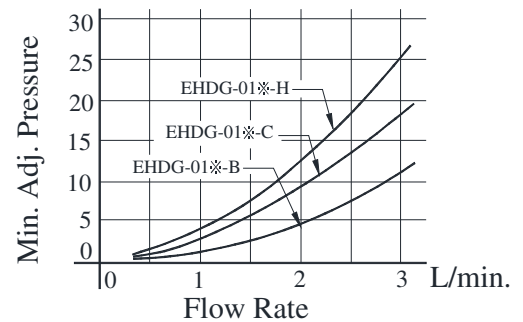


Min. Adjustment Pressure

● EHDG-01※-C
B
H

Kgf/cm²

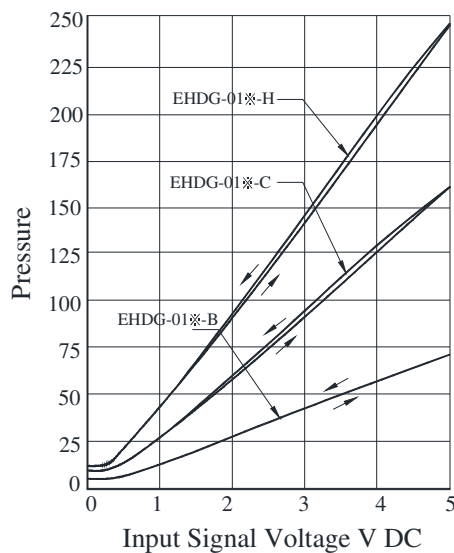
Viscosity: 30 cSt



Input Signal Voltage Vs. Pressure

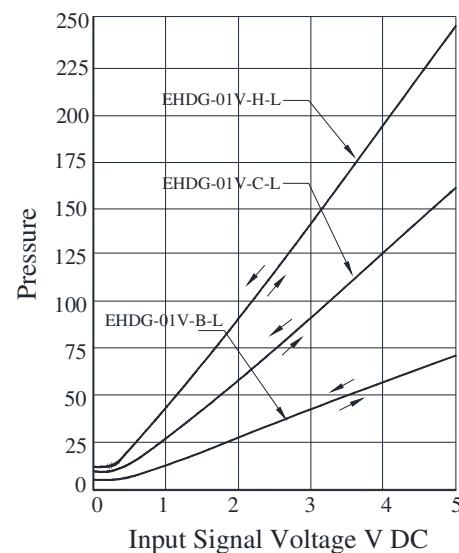
● Open Loop Type

Kgf/cm²



● Closed Loop Type

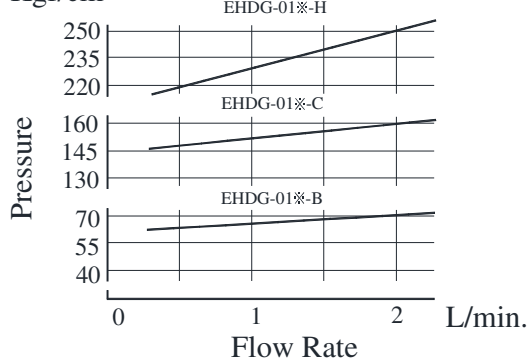
Kgf/cm²



Flow Rate Vs. Pressure

● Open Loop Type
EHDG-01※-※

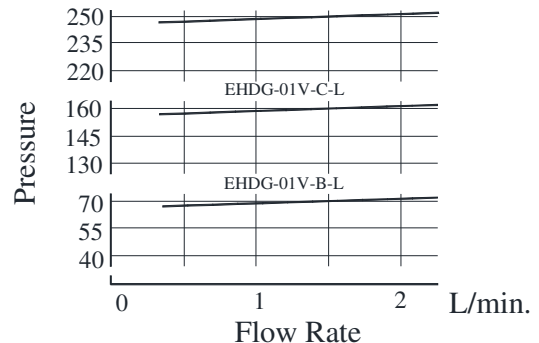
Kgf/cm²



Viscosity : 30 cSt

● Closed Loop Type
EHDG-01V-※-L

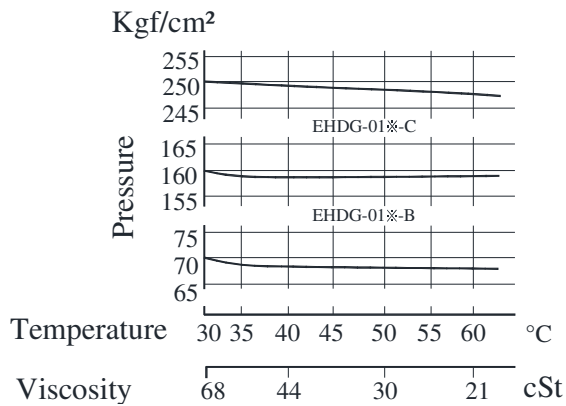
Kgf/cm²



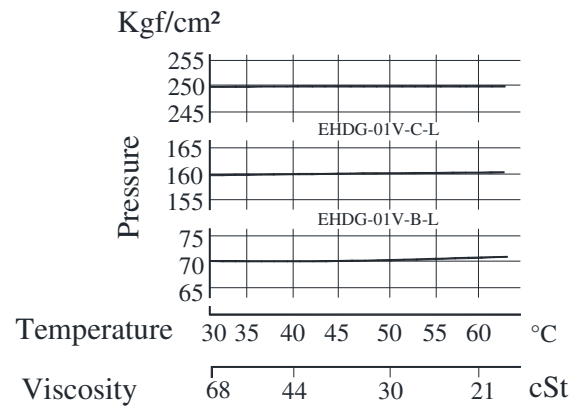
Viscosity Vs. Pressure

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

Open Loop Type EHDG-01※-※



Closed Loop Type EHDG-01V-※-L



Step Response (Example)

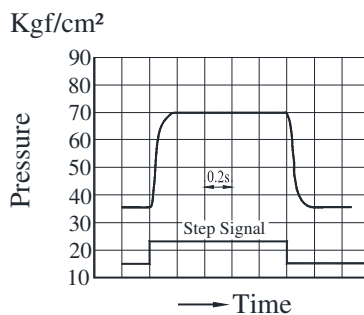
The step responses below are those obtained when the valve it-self is tested independently.

The step responses may differ from them when the valve is used in combinations with other control valves.

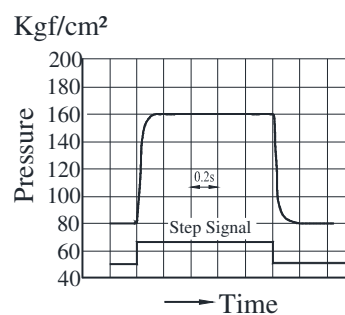
Flow Rate : 2 L/min.
Trapped oil volume : 40 cm³
Viscosity : 30 cSt

Open Loop Type

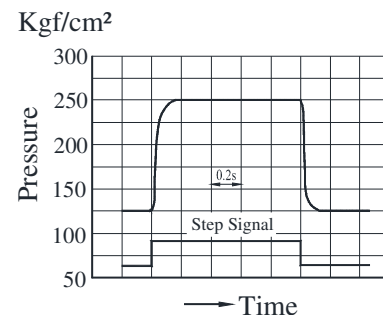
EHDG-01※ -B



EHDG-01※ -C

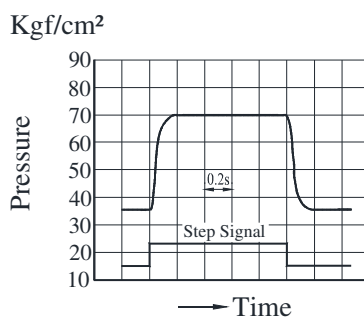


EHDG-01※ -H

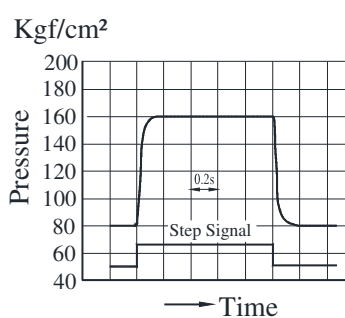


Closed Loop Type

EHDG-01V-B-L



EHDG-01V-C-L



EHDG-01V-H-L

