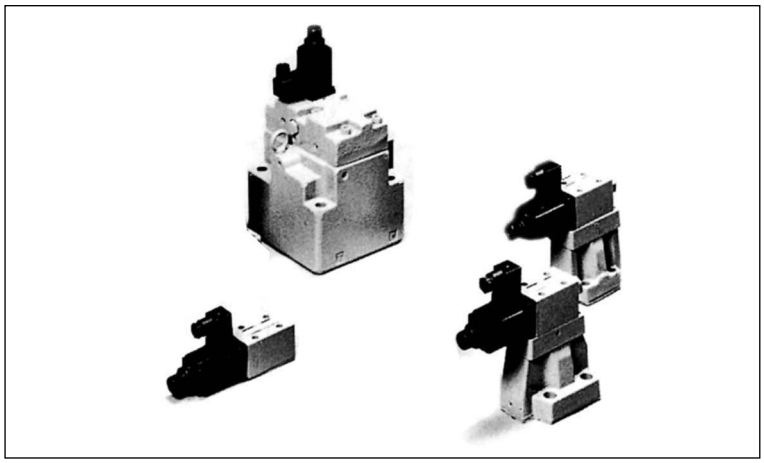
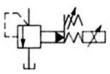
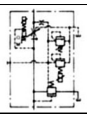
H

PROPORTIONAL ELECTRO-HYDRAULIC CONTROLS



E Series Proportional Electro-Hydraulic Controls

Proportional Electro-Hydraulic Controls

Types	KS Graphic Symbols	Max. Operating Pressure MPa	Maximum Flow L/min (1 2 3 5 10 20 30 50 100 200 300 500 1000)	Page
Pilot Relief Valves		24.5 {250}	EDG 01	H-5
Relief Valves		24.5 {250}	EBG 03 06	H-10
10Ω-10Ω Series Flow Control and Relief Valves		24.5 {250}	EFBG 03 06	H-16

Power Amplifiers H-22

Hydraulic Fluids

1. 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 VG46.
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.

2. 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	15~400mm²/s (cSt)	-15~+70℃
Flow Control and Relief Valves	20~200mm²/s (cSt)	

3. 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 m or finer line filter.

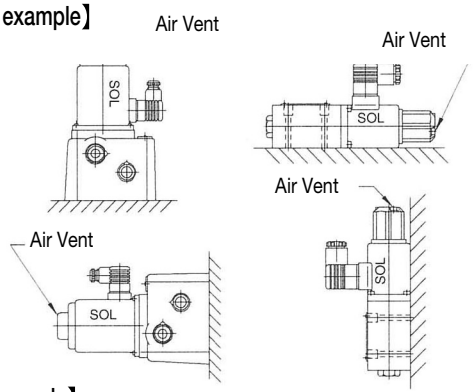
Instructions

Mounting Positioning

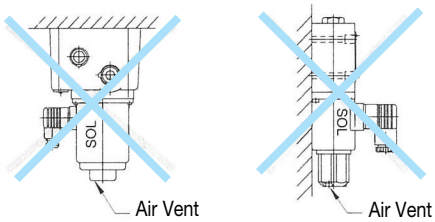
Be sure that the air vent faces up.

In addition, if the valve is mounted vertically, the minimum adjustment pressure is 0.2 MPa {20.4kgf/cm²} 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 airvents at the end of the solenoid. Choose one of the three air vents which is expected to work most effectively.

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.

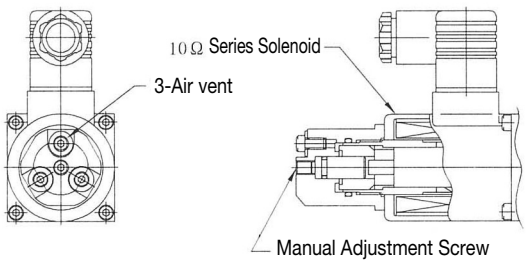
Hyseresis and Repeatability Value Indicatios

The hysteresis and repeatability values indicated in the specifications for each control valve are determined under the following conditions:

- Hysteresis Value: Obtained when SEWON's applicable power amplifier is used.
- Repeatability Value : Obtained when SEWON's applicable power amplifier is used under the same conditions.

Manual Adjustment Screw

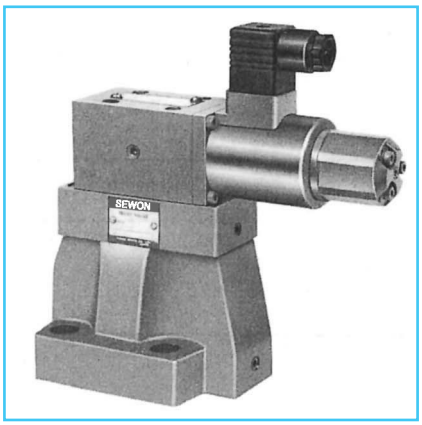
When initial adjustments are to be made or when no current is supplied to the valve due to electrical failure or other problem, turn the manual adjustment screw to temporatily set the valve pressure / flow rate. In that case, when turn the manual adjustment screw clockwise, the valve pressure / flow rate increases. Under normal condition, however, this screw must be kept in its original position (see the figure to the below).

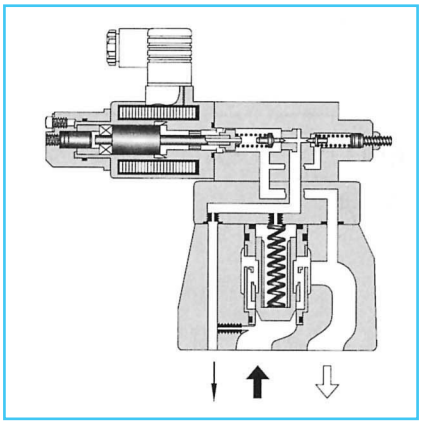


10Ω Series Solenoid

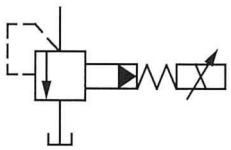
Proportional Electro-Hydraulic Relief Valves

This valve is derived by combining a small, high-performance 1/8 proportional electro-hydraulic pilot relief valve with a specially developed low-noise relief valve. With this valve, it is possible to regulate the system pressure in proportion to the input current. Note that this valve is used in conjunction with the applicable power amplifier.

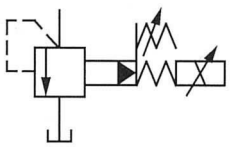




KS Graphic Symbols



Without Safety Valve



With Safety Valve

Ratings

Description \ Model Numbers		EBG-03-※-※-51	EBG-06-※-※-51
Max. Operating Pressure	MPa {kgf/cm²}	24.5{250}	24.5{250}
Max. Flow	L/min	100	200
Min. Flow	L/min	3	3
Pressure Adjustment Range	MPa {kgf/cm²}	Refer to Model Number Designation	
Rated Current	mA	C:770 H:820	C:750 H:800
Coil Resistance	Ω	10	10
Hysteresis		3% or less	3% or less
Repeatability		1%	1%
Approx. Mass	kg	5.6	6.3

Model Number Designation

EB	G	-03	-C	-T	-51
Series Number	Type of Mounting	Valve Size	Pressure Adj. Range	Safety Valve	Design Standard
EB : Proportional ElectroHydraulic Pilot Relief Valve	**G** : Sub-Plate Mounting	**03** **06**	**C** : ★~ 15.7 {★~ 160} **H** : ★~ 24.5 {★~ 250}	**None** : With Safety Valve **T**:Without Safety Valve	51(standard) 5107(Low pres. Control Type) 5183 (Ext.Drain Type)

Note) Min, adjustment pressure shall be refered to the curves on page H-12

Sub-Plate

Series Numbers	Sub-plate Model Numbers	Thread Size Rc(PT)	Approx. Mass kg
EBG-03	BGM-03-20	3/8	2.4
	BGM-03X-20	1/2	3.1
EBG-06	BGM-06-20	3/4	4.7
	BGM-06X-20	1	5.7

- Please order the sub-plate using above the model number when you see it.
  The mounting surface should be used roughly 6-S after grind when you made it yourself.
- Sub-plates are those for pilot operated relief valves. For dimensions, see page C-9.

Applicable Power Amplifiers

For stable performance, it is rrecommended that SEWON's applicable power amplifiers be used (for details see page E-22).
Model Number : AMN-D-10 (For DC power supply)

Attachment

Mounting Bolts

Model Numbers	Soket Head Cap Screw
EBG-03	M12 × 40L·····4pcs
EBG-06	M16 × 50L·····4pcs

Instructions

Low Flow Rates

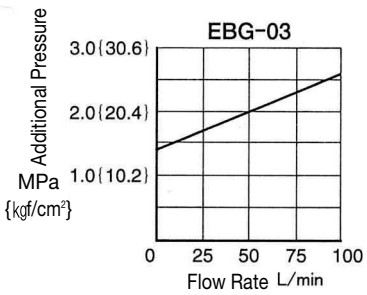
A flow rate of 3 L/min or higher should be used to avoid preselected pressure instability.

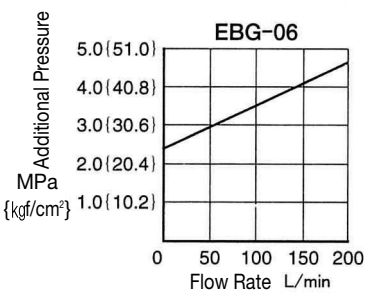
Safety Valve

The pressure of the safety valve is preset at the value equal to the upper limit of the pressure adjustment range plus added pressure.

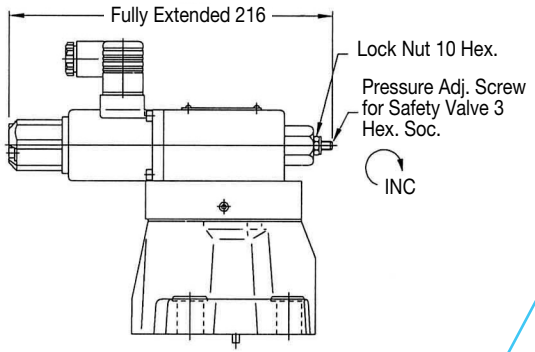
Model Numbers	Additional Pressure MPa{kgf/cm²}
EBG-03	2.0 {20.4} (At Flow rate 50 L/min)
EBG-06	3.5 {35.7} (At Flow rate 100 L/min)

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)





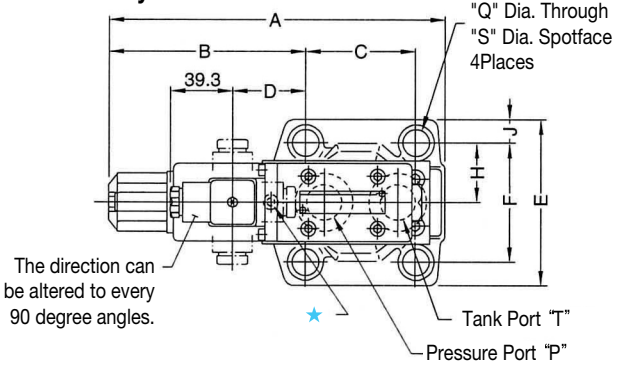
EBG-03/06-※-51 With Safety Valve



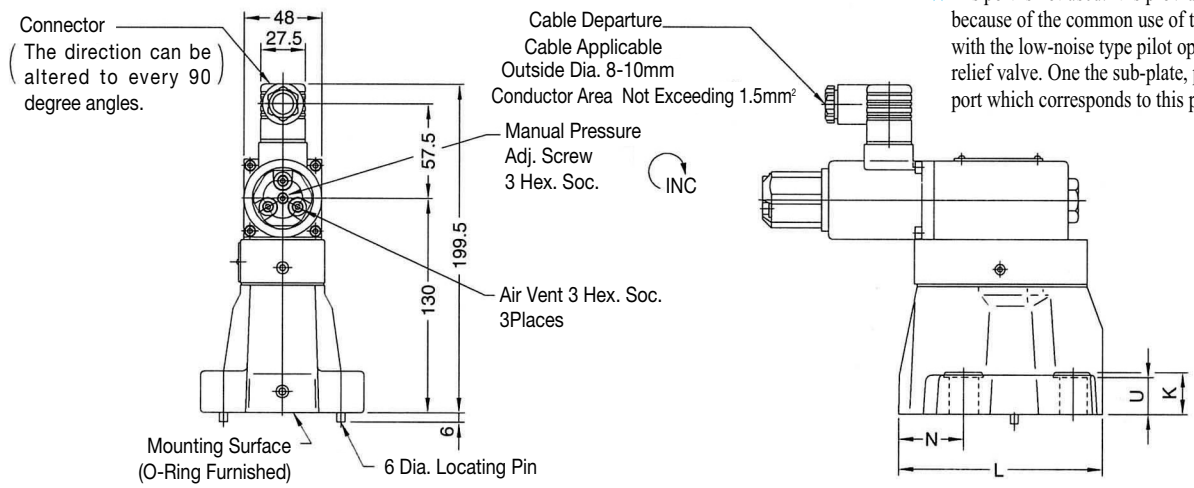
For other dimensions, refer to the without safety valve.

EBG-03/06-※-T-51 Without Safety Valve

Mounting Surface
EBG-03 : ISO 6264-AR-06-2-A
EBG-06 : ISO 6264-AS-08-2-A



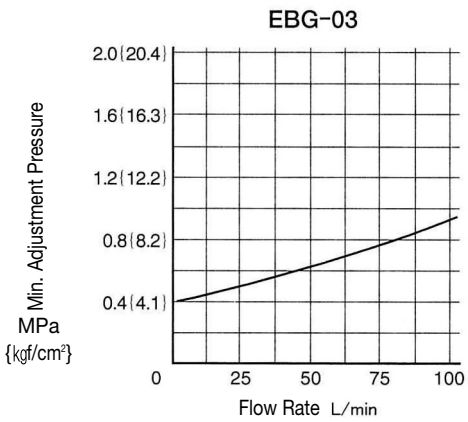
★This port is not used. It is provided because of the common use of the body with the low-noise type pilot operated relief valve. One the sub-plate, plug the port which corresponds to this port.

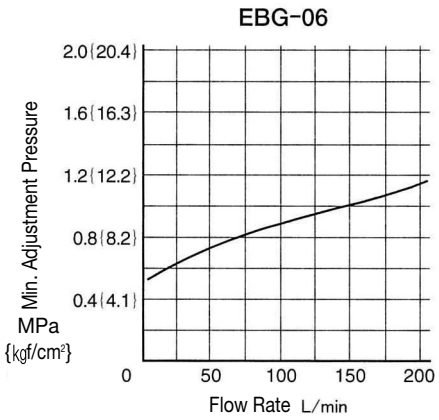


Model Numbers	A	B	C	D	E	F	H	J	K	L	N	Q	S	U
EBG-03	197.5	117.6	53.8	40.2	76	53.8	26.9	11.1	21.5	106	26.1	13.5	21	20.5
EBG-06	205.5	119.5	66.7	42.1	98	70	35	14	26	122	36	17.5	26	25

Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates C-9) in common use.

Min. Adjustment Pressure

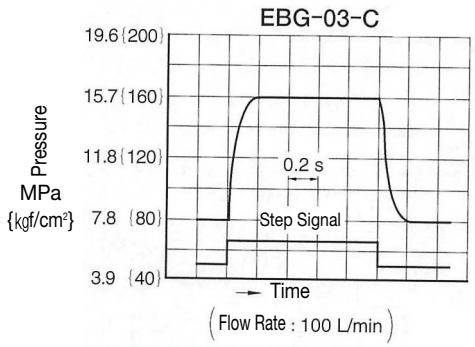


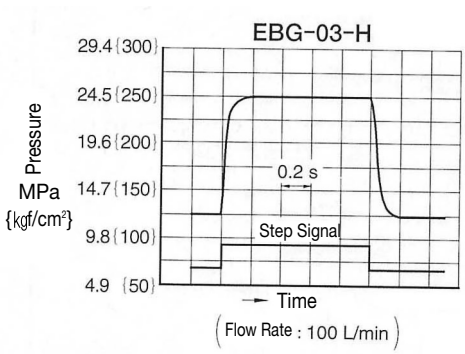


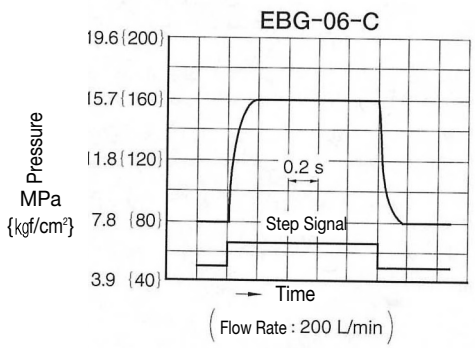
Step Response(Example)

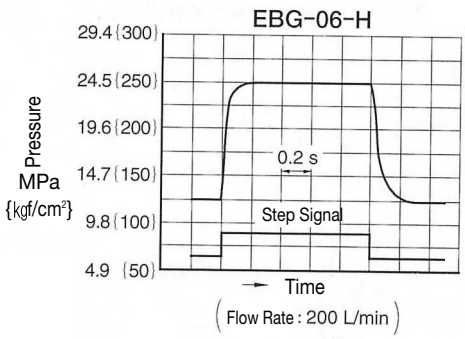
These characteristics have been obtained by measuring on each valve.
Therefore, they may vary according to a hydraulic circuit to be used.

Trapped Oil Volume : 1L
Viscosity : 30mm²/s{cSt}

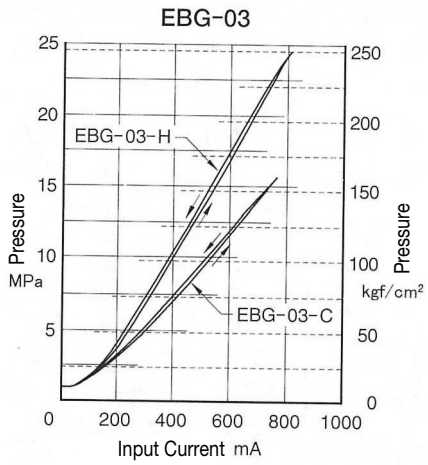


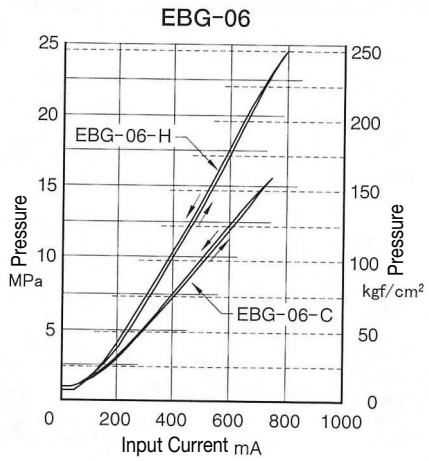






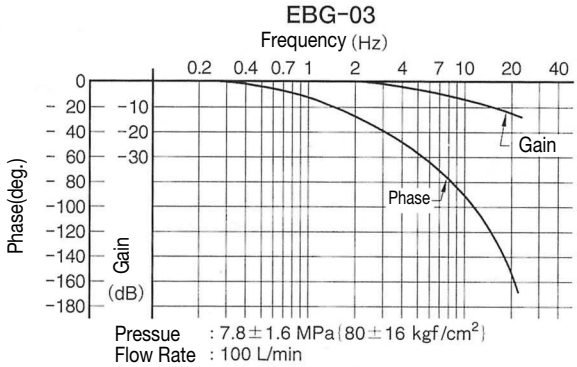
Input Current vs. Pressure

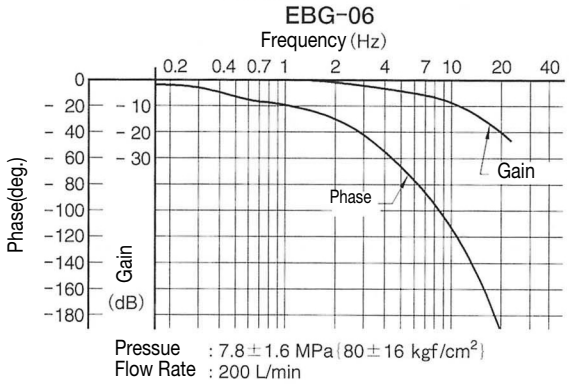




Frequency Response

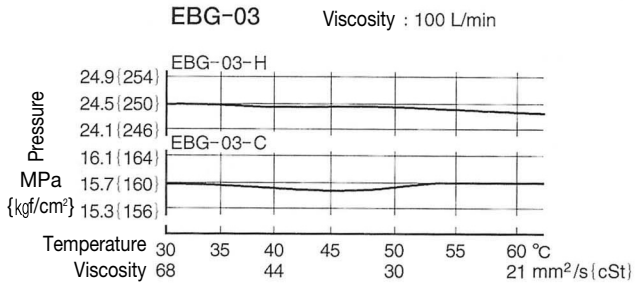
Trapped Oil Volume : 1L
Viscosity : 30㎟/s{cSt}

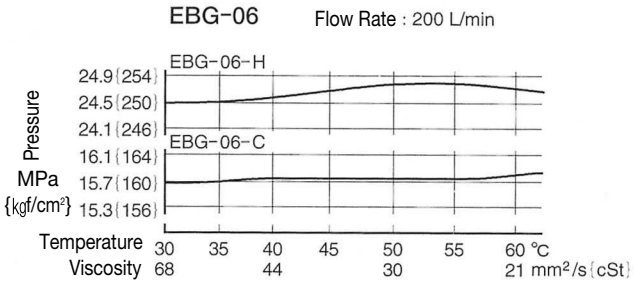




Viscosity vs. Pressure

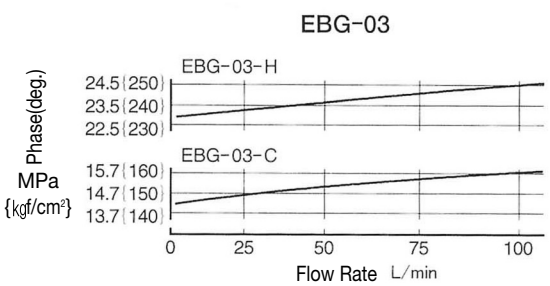
Oil : ISO VG 46

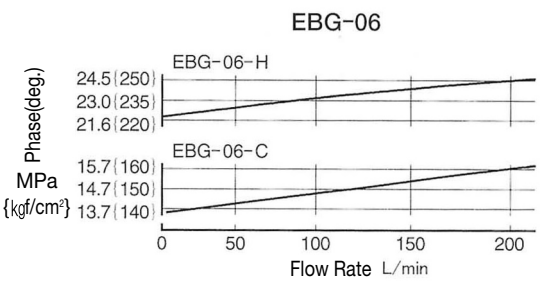




Flow Rate vs. Pressure

Viscosity : 30㎟/s{cSt}



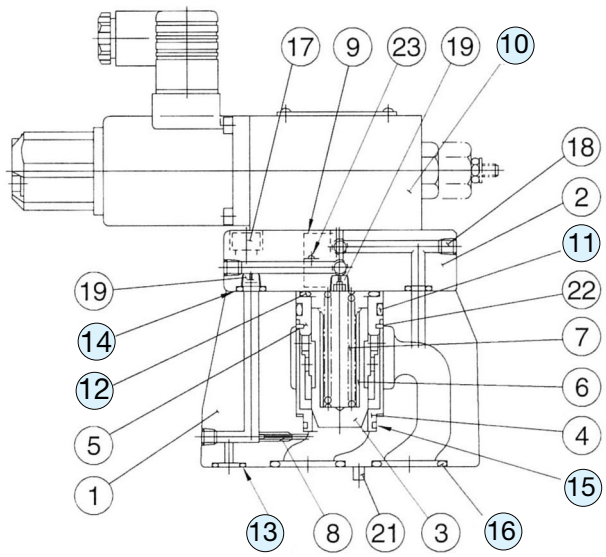


CAUTION

When making replacement of seals, please do it carefully after reading through the relevant instructions in the Operator's Manual.

List of Seals and Pilot Valves

EBG-03、06



Pilot Valve

Valve Model Numbers	⑩ 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

Note) For the details of pilot valves, refer to "Pilot Relief Valves" on page H-8.

List of Seals

Item	Name of Parts	Part Numbers		Qty.
		EBG-03	EBG-06	
11	O-Ring	JIS B 2401-1B-P32	JIS B 2401-1B-P32	1
12	O-Ring	JIS B 2401-1B-P28	JIS B 2401-1B-P28	1
13	O-Ring	JIS B 2401-1B-P9	JIS B 2401-1B-P11	1
14	O-Ring	JIS B 2401-1B-P9	JIS B 2401-1B-P9	2
15	O-Ring	AS568-024 NBR Hs90	AS568-024 NBR Hs90	1
16	O-Ring	JIS B 2401-1B-P18	JIS B 2401-1B-P28	2

■Interchangeability between Old and New Design

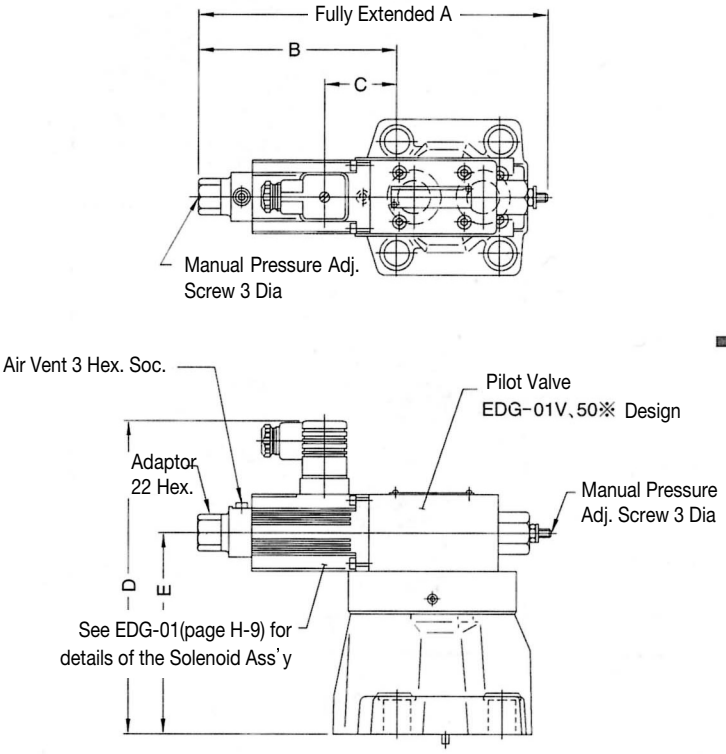
●Specifications and Characteristics

The Specification are not changed except as Input Current vs. Pressure Characteristics. For details contact us.

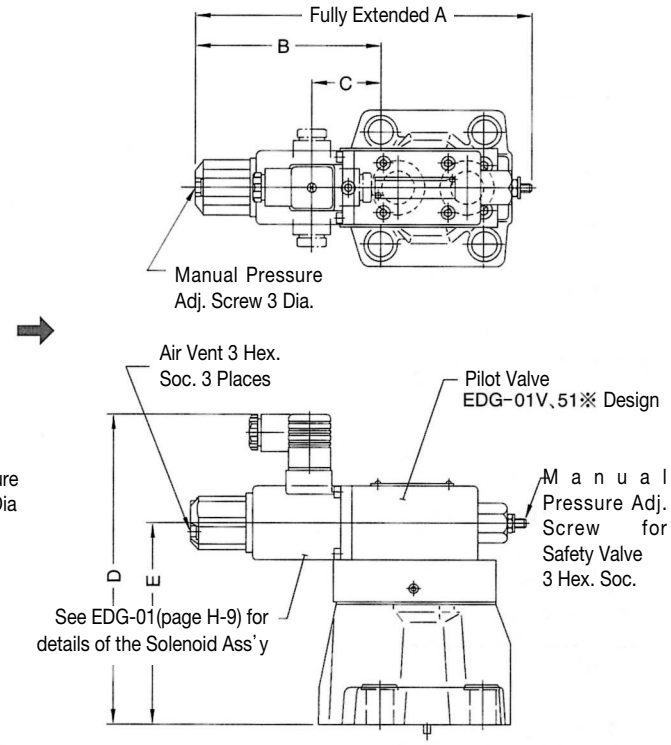
●Mounting Inerchangeability

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

Old : Design 50



New : Design 51



Model Numbers	A	B	C	D	E
(OLD) EBG-03-※-※-50	217	118.6	40.2	199.5	130
(NEW) EBG-03-※-※-51	216	117.6	40.2	199.5	130
(OLD) EBG-06-※-※-50	217	120.5	42.1	199.5	130
(NEW) EBG-06-※-※-51	216	119.5	42.1	199.5	130