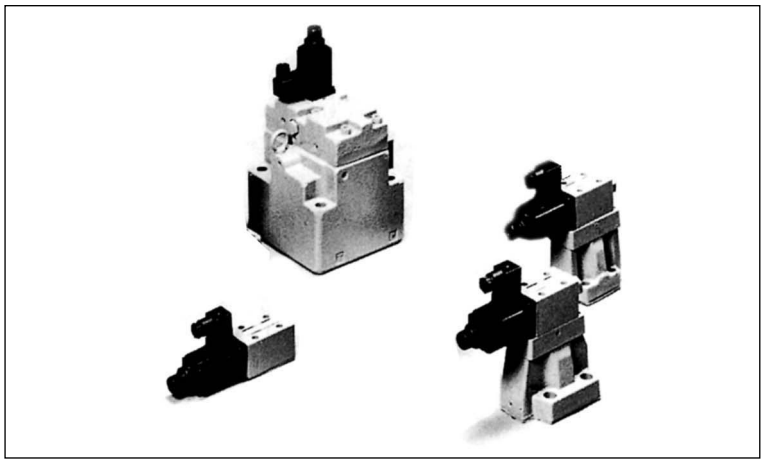
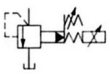
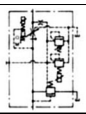
H

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.

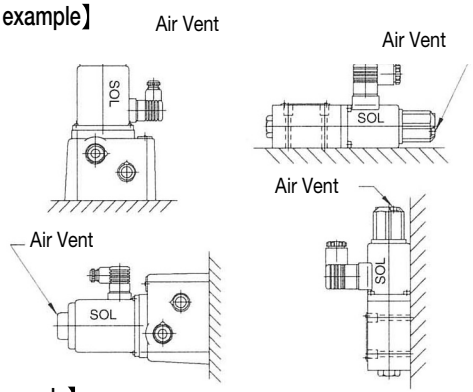
Instructions

Mounting Positioning

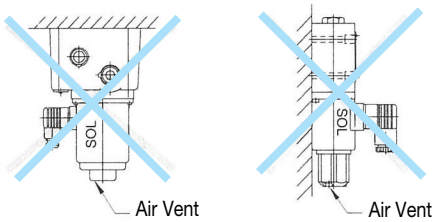
Be sure that the air vent faces up.

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.

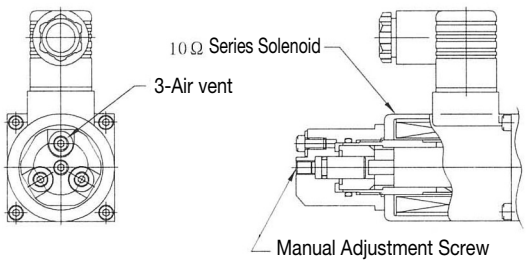
Hyseresis and Repeatability Value Indicatios

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

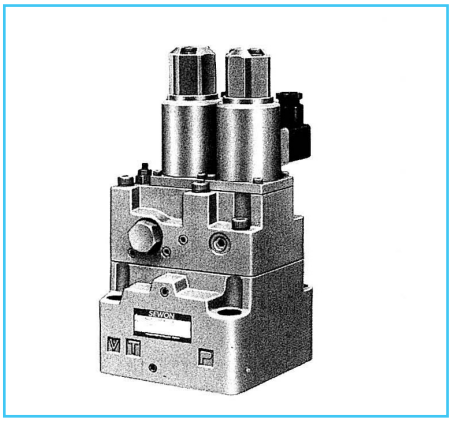
When initial adjustments are to be made or when no current is supplied to the valve due to electrical failure or other problem, turn the manual adjustment screw to temporatily set the valve pressure / flow rate. In that case, when turn the manual adjustment screw clockwise, the valve pressure / flow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

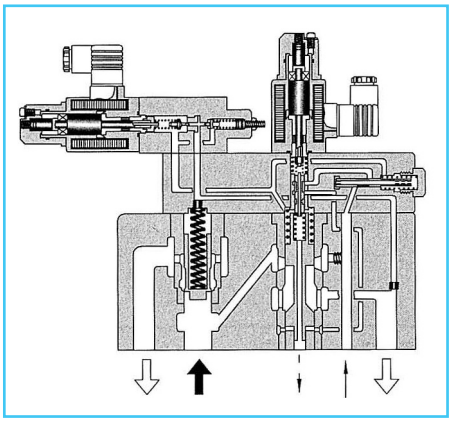


10Ω Series Solenoid

■10Ω-10Ω Series
Proportional Electro-Hydraulic Flow Control and Relief Valves

This flow control and relief valve is an energy-saving valve that supplies the minimum pressure and flow necessary for actuator drive.
Since this valve controls the pump pressure by following the load pressure while keeping the differential pressure minimized, it serves as a low power consumption energy-saving, metre-in, controlled flow control valve.
Further, since a temperature compensation function is incorporated, this valve provides consistent flow control without respect to the fluid temperature.





■Ratings

Description \ Model Numbers			EFBG-03-125 -※-※-51	EFBG-06-250 -※-※-5118
Max. Operating Pressure MPa{kgf/cm²}			24.5 {250}	24.5 {250}
Max. Flow L/min			125	250
Metred Flow Adjustment Range L/min			1~125	2.5~250
Min. Pilot Pressure MPa{kgf/cm²}			1.5 {15.3}	1.5 {15.3}
Pilot Flow L/min		at Normal	1	1
		at Transition	3	4
Flow Controls	Rated Current mA		800	750
	Coil Resistance Ω		10	10
	Differential Pressure MPa{kgf/cm²}		0.7{7.1}	0.7 {7.1}
	Hysteresis or less		3% or less	3% or less
	Repeatability		1%	1%
Pressure Controls★1	Pres. Adj. Range★2 MPa {kgf/cm²}		C : 1.4~15.7 {14~160} H : 1.4~24.5 {14~250}	C : 1.4~15.7 {14~160} H : 1.4~24.5 {14~250}
	Rate Current mA		C : 890 H : 970	C : 880 H : 900
	Coil Resistance Ω		10	10
	Hysteresis		3% or less	3% or less
	Repeatability		1%	1%
Approx. Mas kg			Refer to page H-18~H-19	

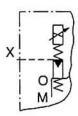
★1. The specifications for pressure controls are applied to models with proportional pilot relief valve.(Ex:EFBG-03-125-C-※-51)

★2. The maximum pressure adjustment range of the models without proportional pilot relief valves is 24.5 MPa.(Ex:EFBG-03-125-※-51)

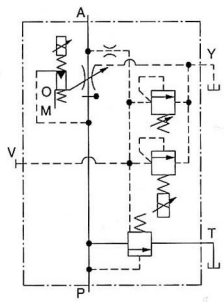
KS Graphic Symbols

Whth Proportional Pilot Relief Valve

External Pilot

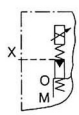


Internal Pilot

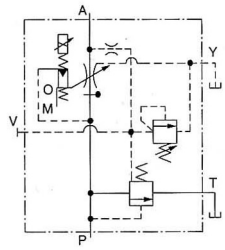


Whthout Proportional Pilot Relief Valve

External Pilot



Internal Pilot



Model Number Designation

EFB	G	-03	-125	-C	-E	-51
Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min	Proportional Pilot Relief Valve Pressure Adjustment Range	Pilot Connection	Design Number
EFB : Proportional Electro-Hydraulic Flow Control and Relief Valve	**G** : Sub-plate Mounting	**03**	**125**	**C, H** : See Specifications	**None** : Internal Pilot **E** : External Pilot	**51(standard)** **5103 (160L/min)** **5118 (standard)**
		06	**250**			

Attachment

Mounting Bolts

Model Numbers	soket head cap screw
EFBG-03	M10 × 65L·····4pcs
EFBG-06	M16 ×100L·····4pcs

Appilcable Power Amplifiers

For stable performance, it is rrecommended that SEWON's applicable power amplifiers be used (for details see page H-22).

Valve Model Numbers	Power Amplifier Model Number	
	For Flow Control	For Pres. Control
03 125 C -51 EFBG-06-250-H-(E)-5118	AMN-D-10	AMN-D-10

Sub-plate

Valve Model Numbers	Sub-plate Model Numbers	Thread Size RC(PT)	Approx. Mass kg
EFBG-03	EFBGM-03Y-20	3/4	6
	EFBGM-03Z-20	1	6
EFBG-06	EFBGM-06X-20	1	12.5
	EFBGM-06Y-20	1 1/4	16

- 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.

Instructions

Drain Back Pressure

Check that the drain back pressure does not exceed 0.2MPa.

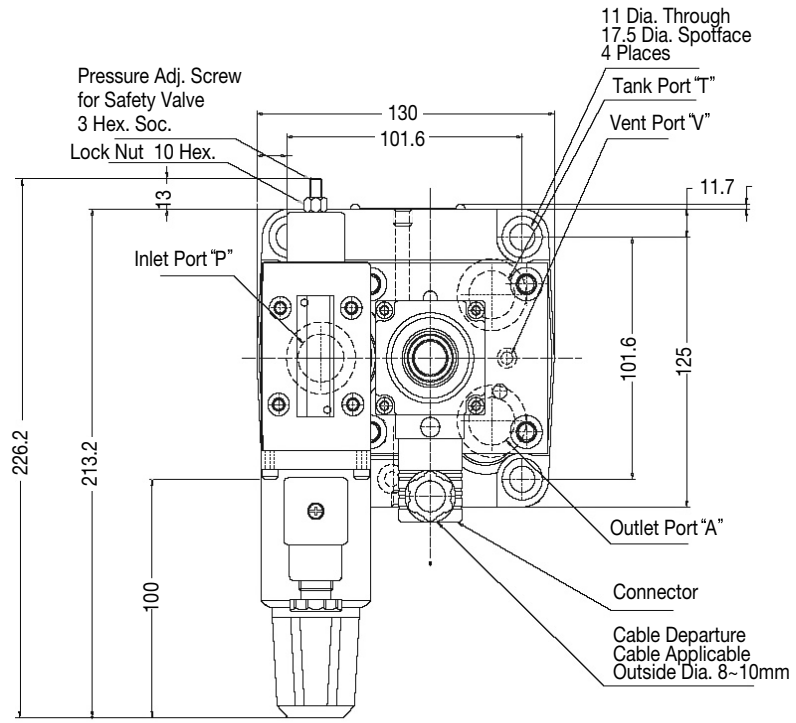
- When Relief Valve Passing Flow Rate is Low in Pressure Control State

To avoid preselected pressure instability, use a passing flow rate of 15 L/min or higher. Further, check that the tank-line back pressure dose not exceed 0.5MPa.{5.1kgf/cm²}

Safety Valve Setting

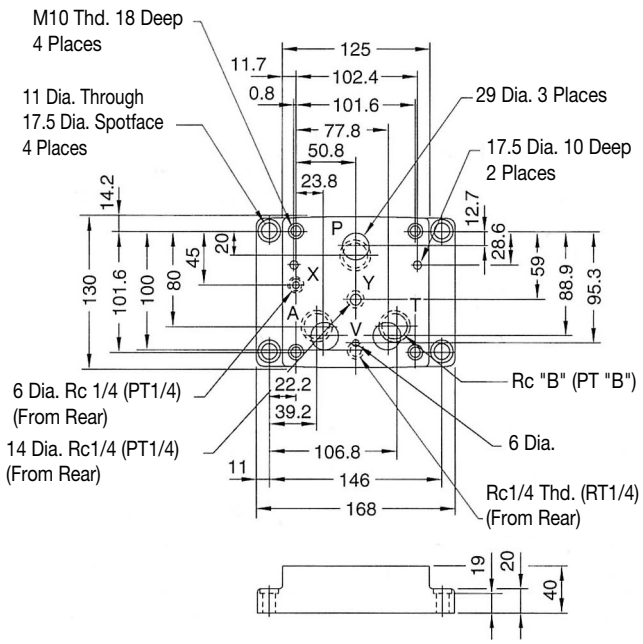
The pressure of the saffety valve is preset at the value equal to the upper limit of the pressure adjustment renge plus 2MPa. Please adjust the pressure of the valve so preset to meet the pressure to be used actually.
To lower the pressure setting, turn the safety valve pressure adjustment screw anti-clockwise. After adjustment, be sure to tighten the lock nut.

■EFBG-03-125-C-※-51

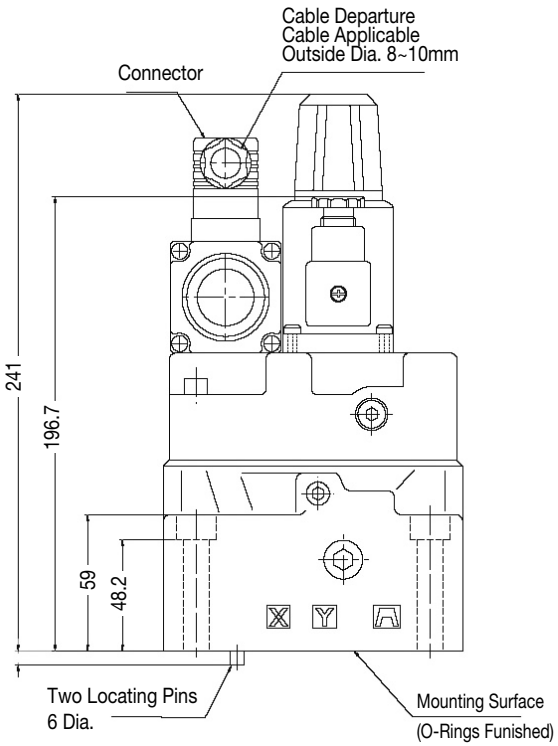


■Sub-Plate

EFBGM-$^{03Y}_{03Z}$-20

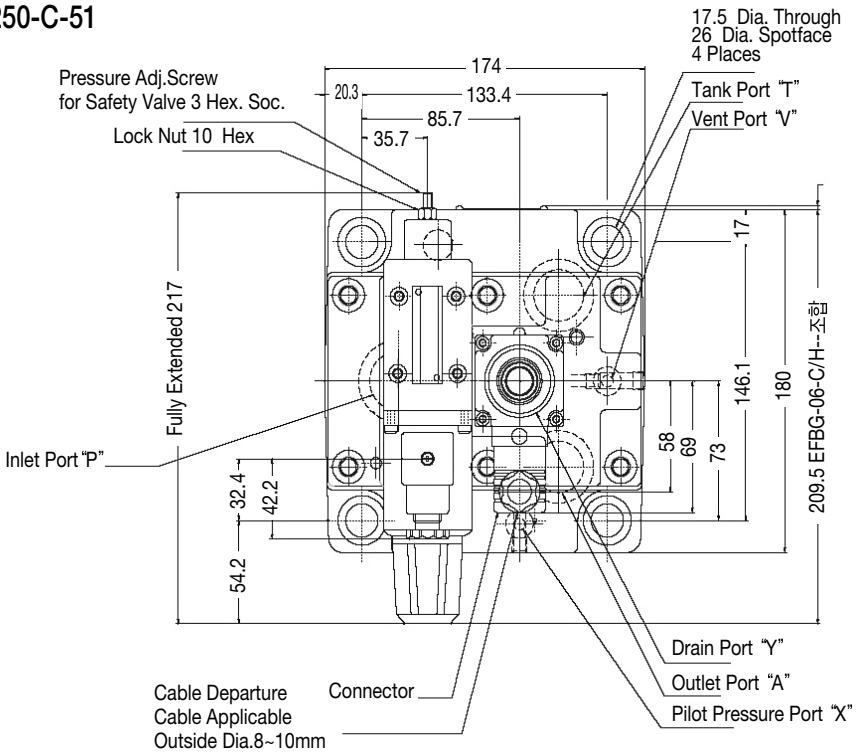


Sub-plate Model Number	B
EFBGM-03Y-20	3/4
EFBGM-03Z-20	1



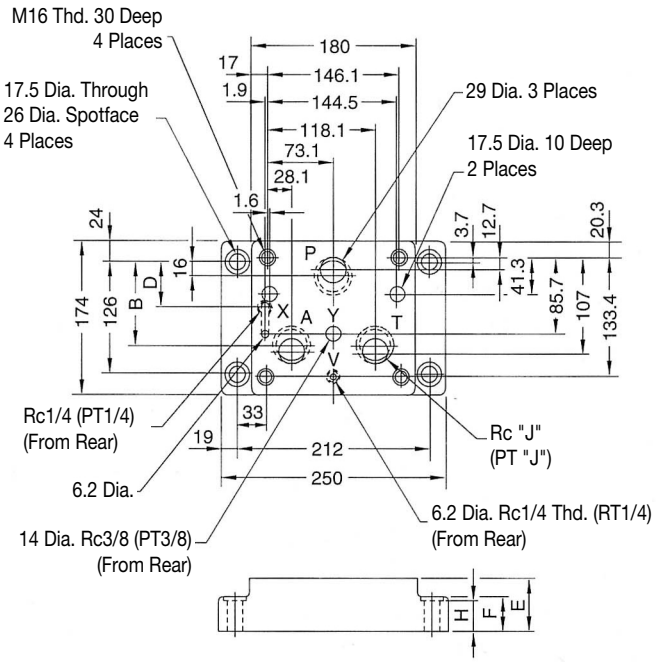
Mass ····· 16Kg

■EFBG-06-250-C-51

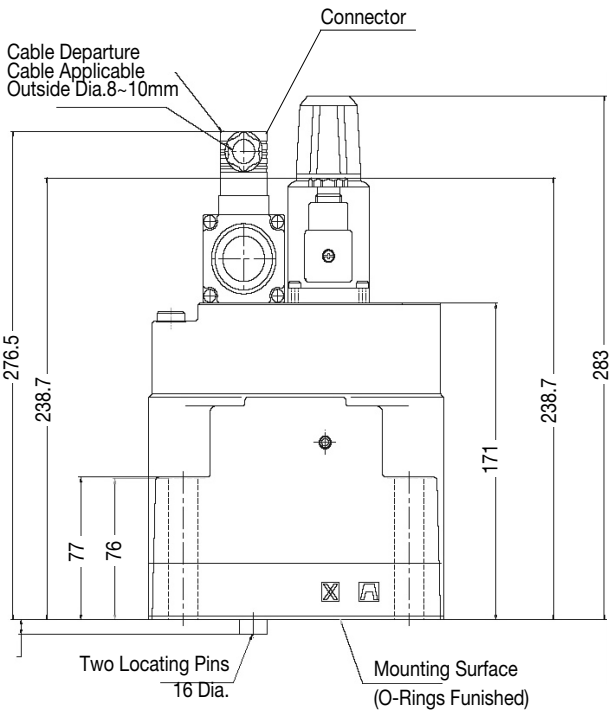


■Sub-Plate

EFBGM-$^{06Y}_{06Z}$-20



Sub-Plate Medel Numbers	B	D	E	F	H	J
EFBGM-06X-20	107	67	45	35	34	1
EFBGM-06Y-20	95	57	60	40	39	1¼

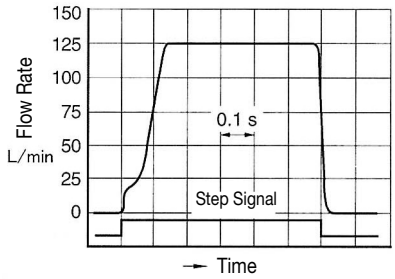


Mass ····· 23Kg

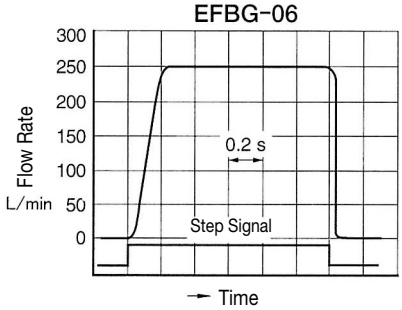
Step Response (Flow Controls)

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

EFBG-03



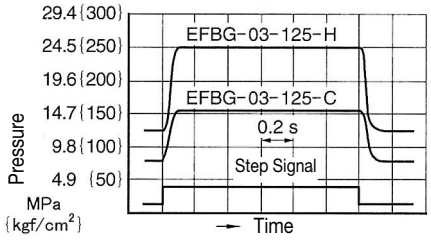
EFBG-06



Step Response (Pressure Controls)

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

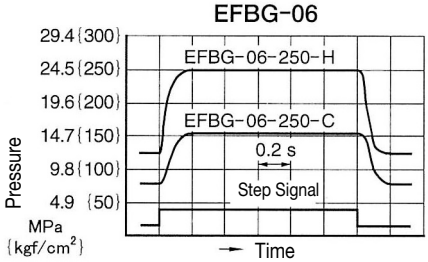
EFBG-03



Flow Rate : 125 L/min

Trapped Oil Volume : <1 L

EFBG-06

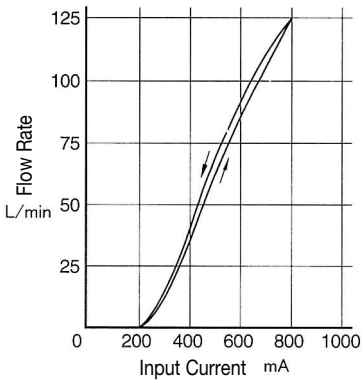


Flow Rate : 250 L/min

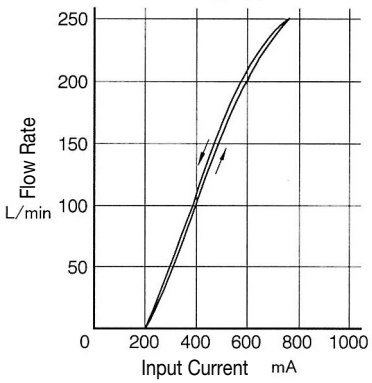
Trapped Oil Volume : <1 L

Input Current vs. Flow

EFBG-03

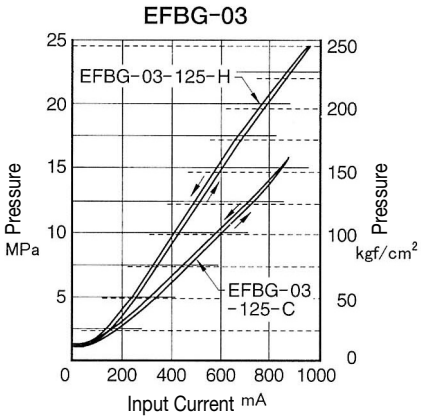


EFBG-06

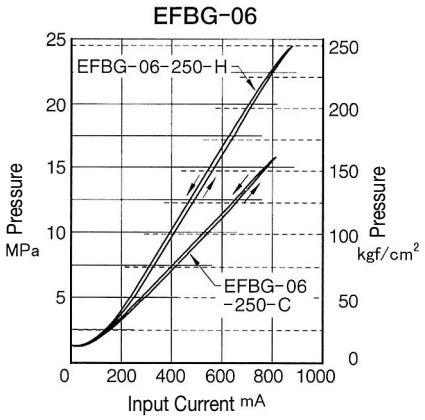


Input Current vs. Pressure

EFBG-03



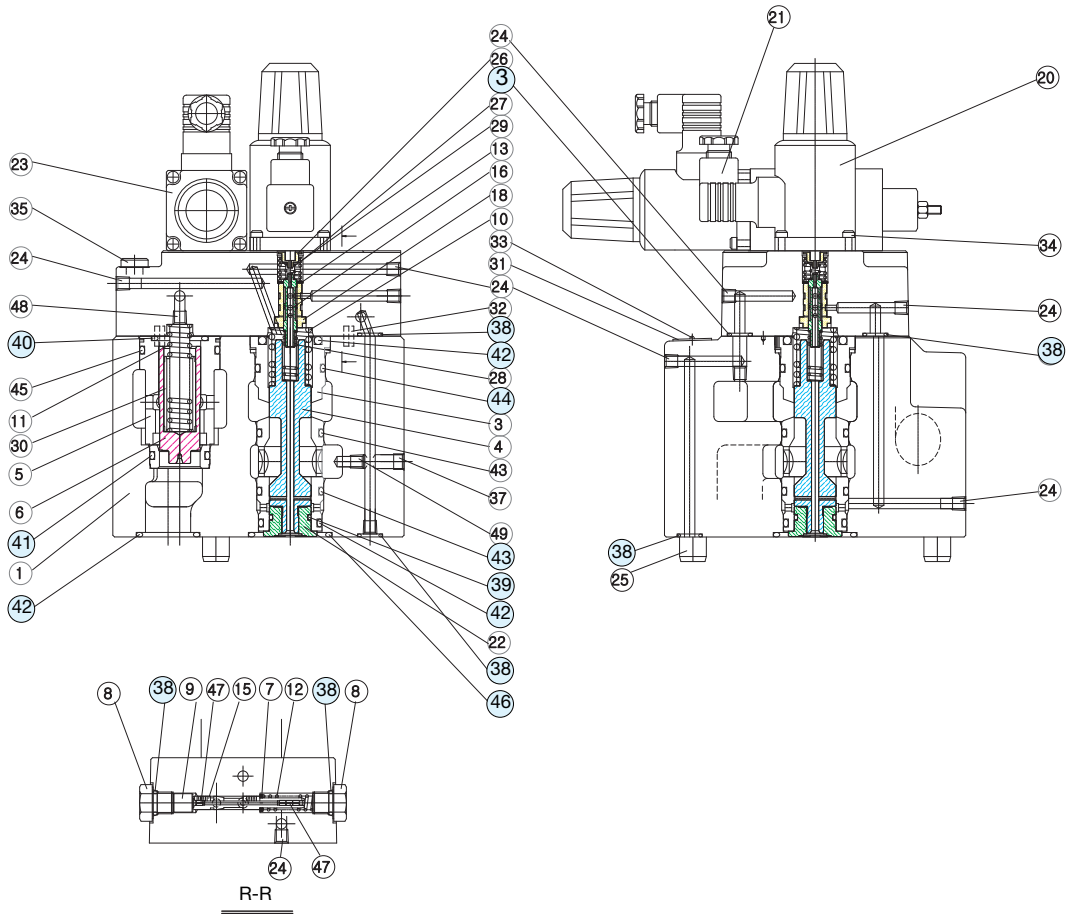
EFBG-06



CAUTION

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

List of Seals, Pilot Valves, Solenoid Ass'y



List of Seals

Item	Name of Parts	Part Numbers			
		EFBG-03	Qty.	EFBG-06	Qty.
38	O-Ring	JIS B 2401-1B-P9	5	JIS B 2401-1B-P11	7
39	O-Ring	AS568-016(NBR, Hs70)	1	JIS B 2401-1A-P21	1
40	O-Ring	JIS B 2401-1B-P28	6	JIS B 2401-1B-P28	1
41	O-Ring	JIS B 2401-1B-G30	1	JIS B 2401-1B-P30	1
42	O-Ring	———	—	JIS B 2401-1B-P32	5
43	O-Ring	———	—	JIS B 2401-1A-P34	2
44	O-Ring	———	—	JIS B 2401-1A-P36	1
45	O-Ring	JIS B 2401-1B-P32	1	JIS B 2401-1B-P42	1
46	O-Ring	JIS B 2401-1B-P28	1	JIS B 2401-1B-P44	1

Solenoid Ass'y

Valve Model Numbers	㉓ Solenoid Ass'y Model Numbers	⑳ Solenoid Ass'y Model Numbers
EFBG-$^{03\ 125}_{06\ 250}$-C-(E)-51	E318-Y06M1-04-61	E318-Y06M1-28-61
EFBG-$^{03\ 125}_{06\ 250}$-H-(E)-51		

Note) 1. For the details of seals for solenoid Ass'y see page H-8.

2. The connector assembly GDM-211-B-11(Item 21) is not included in the solenoid assembly.