

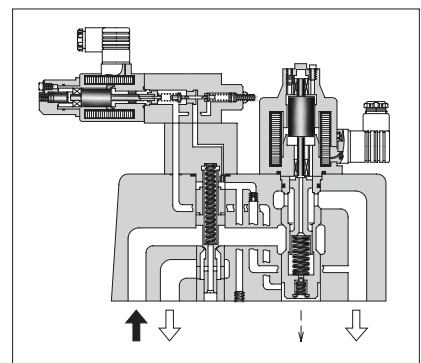
## 40Ω-10Ω Series Proportional Electro-Hydraulic Flow Control and Relief Valves

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.

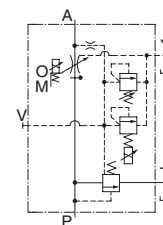
### Specifications

Model No.		EFBG-03 -125-*-17*	EFBG-06 -250-*-17*	EFBG-10 -500-*-17*
Description				
Max. Operating Pressure MPa (PSI)		24.5 (3550)	24.5 (3550)	24.5 (3550)
Max. Flow L/min (U.S.GPM)		125 (33)	250 (66)	500 (132)
Metred Flow Adjustment Range L/min (U.S.GPM)		1-125 (.26-33)	2.5-250 (.66-66)	5-500 (1.32-132)
Flow Controls	Rated Current	600 mA	580 mA	700 mA
	Coil Resistance	45 Ω	45 Ω	45 Ω
	Differential Pressure MPa (PSI)	0.6 (85)	0.7 (100)	0.9 (130)
	Hysteresis	7% or less	7% or less	7% or less
	Repeatability	1% or less	1% or less	1% or less
Pressure Controls <sup>★1</sup>	Pres. Adj. Range MPa (PSI) <sup>★2</sup>	C: 1.4-13.7 (205-2000) H: 1.4-20.6 (205-3000)	C: 1.5-13.7 (220-2000) H: 1.5-20.6 (220-3000)	C: 1.6-13.7 (230-2000) H: 1.6-20.6 (230-3000)
	Rated Current	C: 750 mA H: 750 mA	C: 690 mA H: 730 mA	C: 690 mA H: 690 mA
	Coil Resistance	10 Ω	10 Ω	10 Ω
	Hysteresis	3% or less	3% or less	3% or less
	Repeatability	1% or less	1% or less	1% or less
	Approx. Mass	kg (lbs.)	Refer to <a href="#">page 714 to 716</a>	

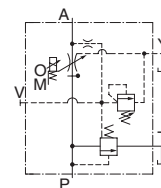
- ★1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-125-C-17)
- ★2. The maximum pressure adjustment range of the models without proportional pilot relief valves is 24.5 MPa (3550 PSI).



Graphic Symbols



With Proportional Pilot Relief Valve



Without Proportional Pilot Relief Valve

### Model Number Designation

F-	EFB	G	-03	-125	-C	-17	*
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min (U.S.GPM)	Proportional Pilot Relief Valve Pressure Adjustment Range	Design Number	Design Standards
<b>F:</b> Special Seals for Phosphate Ester Type Fluid (Omit if not required)	<b>EFB:</b> Proportional Electro-Hydraulic Flow Control and Relief Valve	<b>G:</b> Sub-plate Mounting	<b>03</b>	<b>125:</b> 125 (33)	<b>C, H:</b> See Specifications  <b>None:</b> Without Proportional Pilot Relief Valve	<b>17</b>	Refer to ★
			<b>06</b>	<b>250:</b> 250 (66)		<b>17</b>	
			<b>10</b>	<b>500:</b> 500 (132)		<b>17</b>	

- ★ Design Standards: None ..... Japanese Standard "JIS" and European Design Standard 90 ..... N. American Design Standard

## Attachment

### Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw		Qty.
	Japanese Std. "JIS" and European Design Std.	N. American Design Std.	
EFBG-03	M10 × 100 Lg.	3/8-16 UNC × 4 Lg.	4
EFBG-06	M16 × 130 Lg.	5/8-11 UNC × 5 Lg.	4
EFBG-10	M20 × 130 Lg.	3/4-10 UNC × 5 Lg.	4

## Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see page 772, 778).

Valve Model Numbers	Power Amplifier Model Numbers	
	For Flow Control	For Pres. Control
EFBG-03-125-17/1790 EFBG-06-250-17/1790 EFBG-10-500-17/1790	AME-D-S-*-40 AME-DF-S-*-22 AME-T-S-*-22	—
03 EFBG-06-*- <sup>C</sup> <sub>H</sub> -17/1790 10	AME-D2-H1-*-12	

## Sub-plate

Valve Model Numbers	Japanese Standard "JIS"		European Design Standard		N. American Design Standard		Approx. Mass kg (lbs.)
	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	Sub-plate Model Numbers	Thread Size	
EFBG-03	EFBGM-03Y-10	Rc 3/4	EFBGM-03Y-1080	3/4 BSP.F	EFBGM-03Y-1090	3/4 NPT	6 (13.2)
	EFBGM-03Z-10	Rc 1	EFBGM-03Z-1080	1 BSP.F	EFBGM-03Z-1090	1 NPT	
EFBG-06	EFBGM-06X-10	Rc 1	EFBGM-06X-1080	1 BSP.F	EFBGM-06X-1090	1 NPT	12.5 (27.6)
	EFBGM-06Y-10	Rc 1-1/4	EFBGM-06Y-1080	1-1/4 BSP.F	EFBGM-06Y-1090	1-1/4 NPT	16 (35.3)
EFBG-10	EFBGM-10Y-10 <sup>★</sup>	1-1/2, 2 Flange Mounting	EFBGM-10Y-1080 <sup>★</sup>	1-1/2, 2 Flange Mounting	EFBGM-10Y-1090 <sup>★</sup>	1-1/2, 2 Flange Mounting	37 (81.6)

● 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.

★ When ordering the EFBGM-10Y, see Type F3 Pipe Flange Kits on page 821 and order an appropriate pipe flange kit also.

## Instructions

### Drain Back Pressure

Check that the drain back pressure does not exceed 0.2 MPa (29 PSI).

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

To avoid preselected pressure instability, use a passing flow rate of 10 L/min (2.6 U.S.GPM) or higher for nominal sizes 03 and 06 or 15 L/min (4.0 U.S.GPM) or higher for nominal size 10.

Further, check that the tank-line back pressure does not exceed 0.5 MPa (70 PSI).

### Safety Valve Pressure Setting

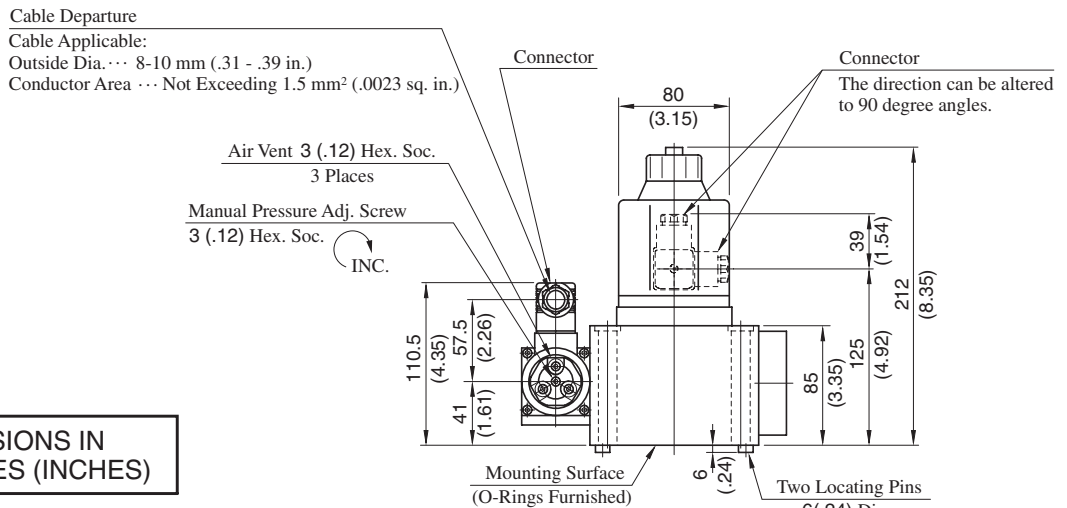
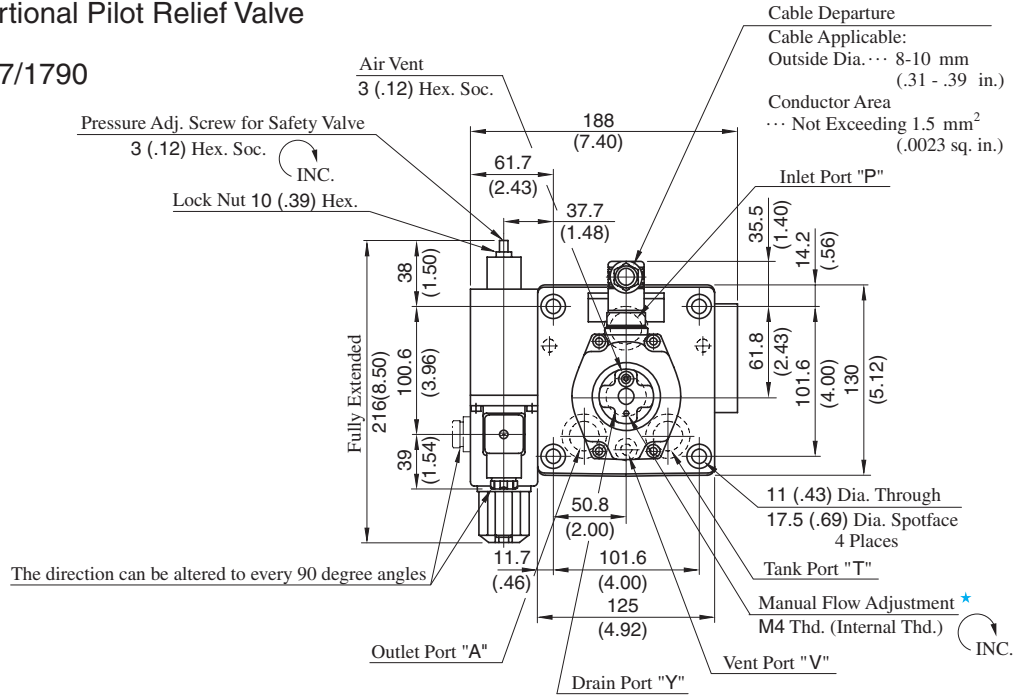
The pressure of the safety valve is preset at the value equal to the upper limit of the pressure adjustment range plus 2 MPa (290 PSI). Please adjust the pressure of the valve so preset to meet the pressure to be used actually.

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



**Models with Proportional Pilot Relief Valve**

EFBG-03-125-<sup>C</sup><sub>H</sub>-17/1790



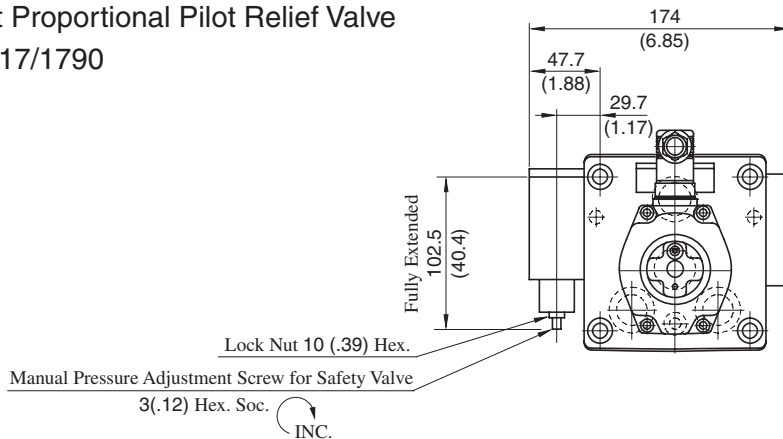
**DIMENSIONS IN MILLIMETRES (INCHES)**

★ Manual flow adjustment can be done by screwing for example an M4×20L screw in the M4 thread or pushing in a rod etc. there.

Approx. Mass ..... 16 kg (35.3 lbs.)

**Models without Proportional Pilot Relief Valve**

EFBG-03-125-17/1790

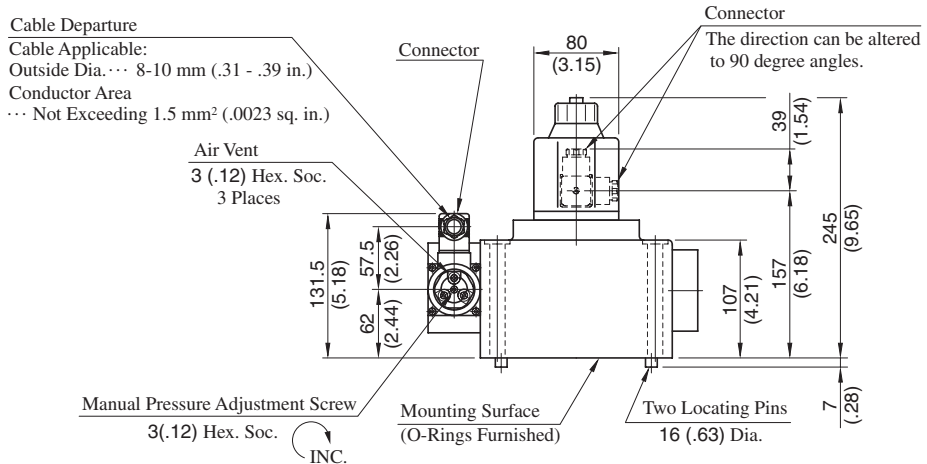
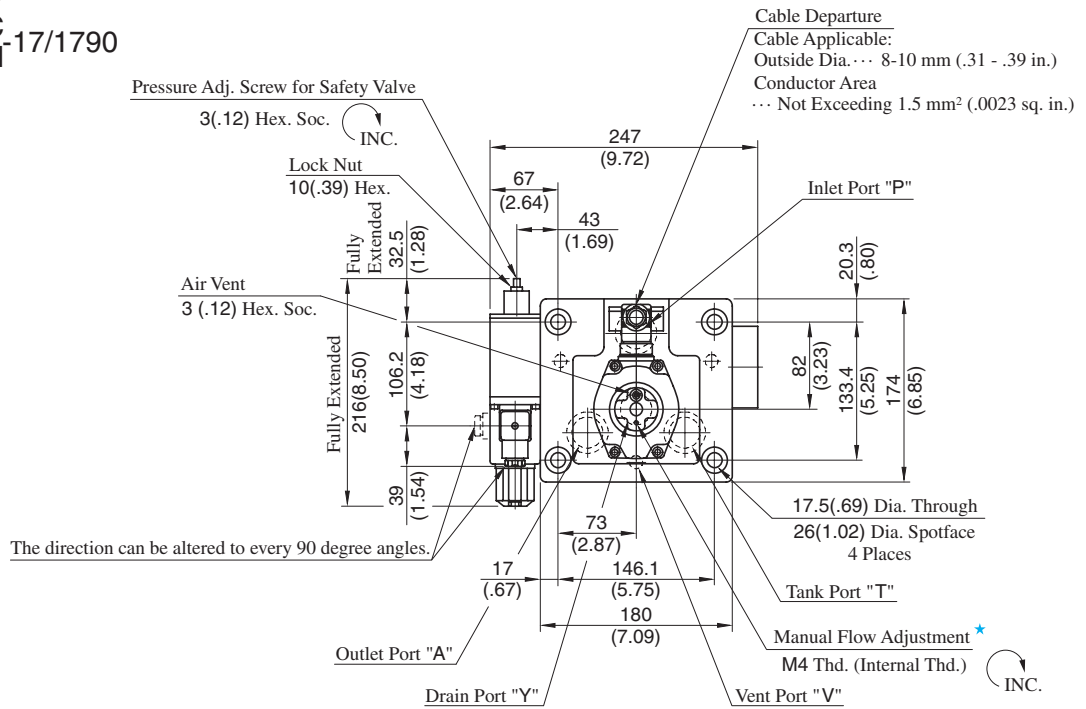


Approx. Mass ..... 14 kg (30.9 lbs.)

• For other dimensions, please refer to the models with proportional pilot relief valve.

Models with Proportional Pilot Relief Valve

EFBG-06-250-<sup>C</sup><sub>H</sub>-17/1790

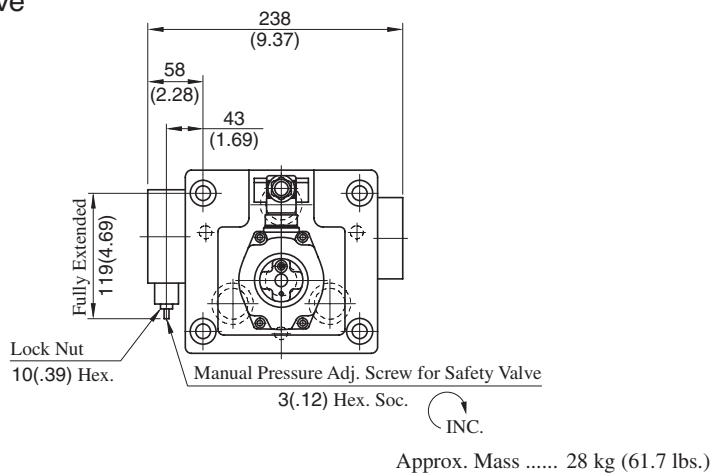


**DIMENSIONS IN MILLIMETRES (INCHES)**

★ Manual flow adjustment can be done by screwing for example an M4×20L screw in the M4 thread or pushing in a rod etc. there.

Models without Proportional Pilot Relief Valve

EFBG-06-250-17/1790



• For other dimensions, please refer to the models with Proportional Pilot Relief Valve.

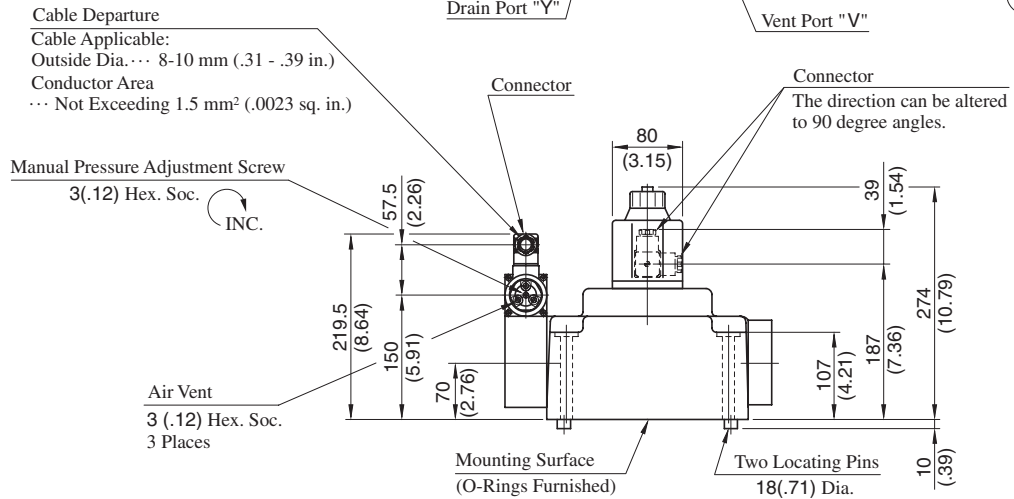
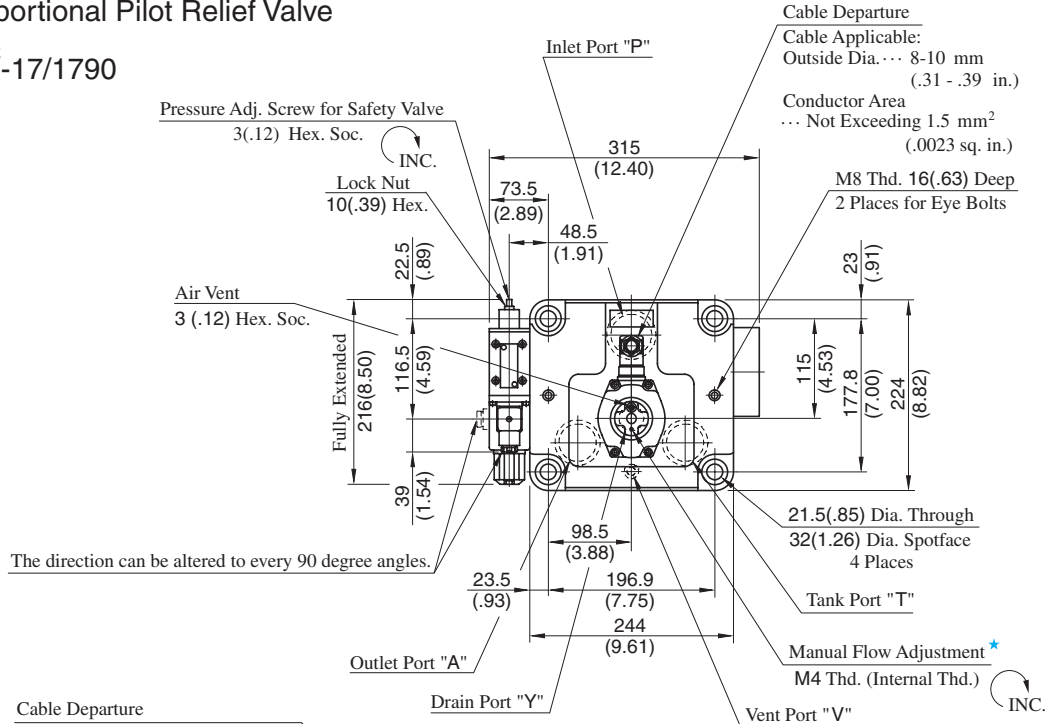
**H**



**E Series**  
40Ω-10Ω Series Flow Control and Relief Valves

**Models with Proportional Pilot Relief Valve**

**EFBG-10-500-<sup>C</sup><sub>H</sub>-17/1790**



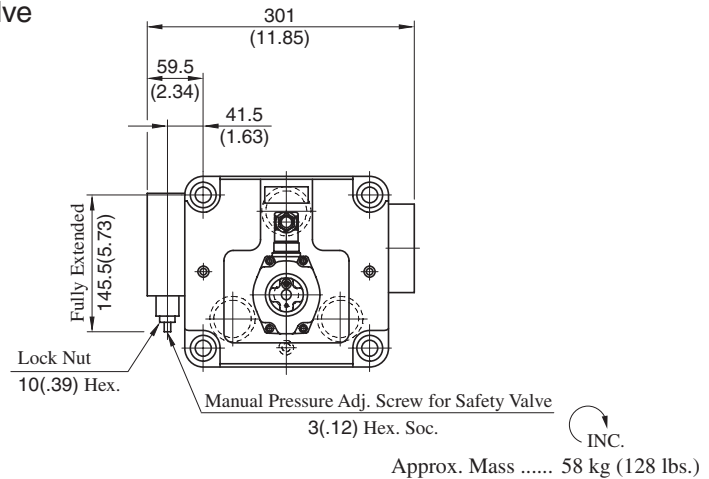
**DIMENSIONS IN MILLIMETRES (INCHES)**

Approx. Mass ..... 60 kg (132 lbs.)

★ Manual adjustment can be done by screwing for example an M4×20 L screw in the M4 thread or pushing in a rod etc. there.

**Models without Proportional Pilot Relief Valve**

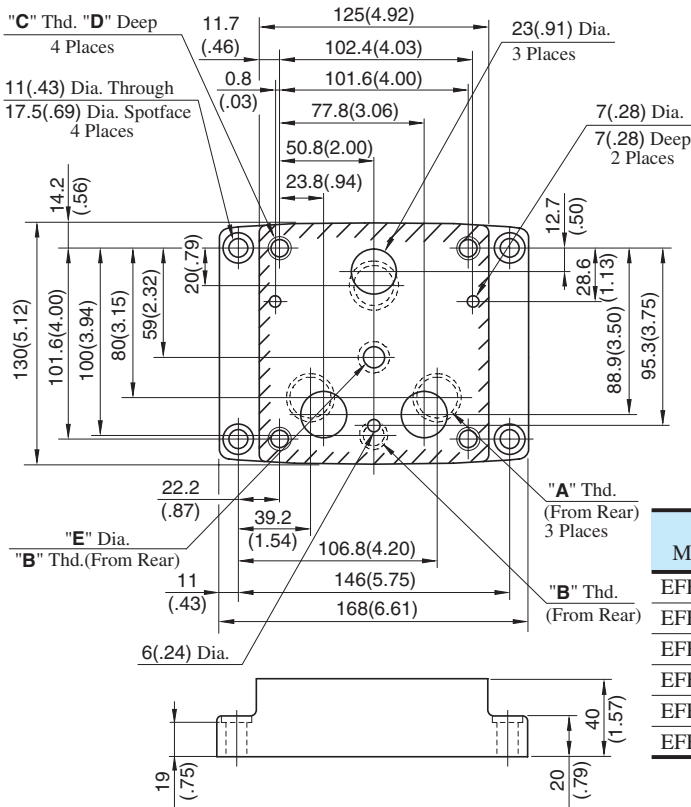
**EFBG-10-500-17/1790**



• For other dimensions, please refer to the models with Proportional Pilot Relief Valve.

**Sub-plate**

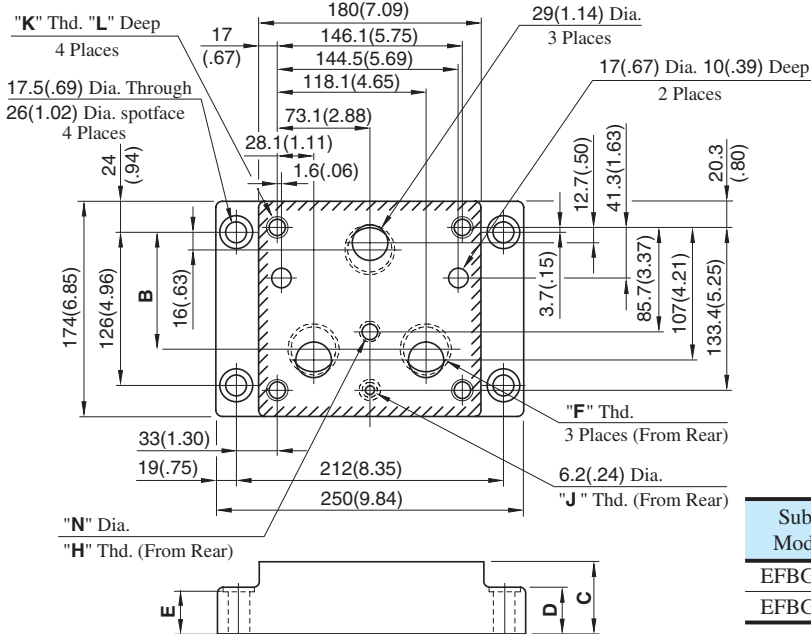
**EFBGM-03Y/03Z-10/1080/1090**



Sub-plate Model Numbers	Thread Size			mm (in.)	
	"A" Thd.	"B" Thd.	"C" Thd.	D	E
EFBGM-03Y-10	Rc 3/4	Rc 1/4	M10	18 (.71)	11 (.43)
EFBGM-03Z-10	Rc 1				11.7 (.46)
EFBGM-03Y-1080	3/4 BSP.F	1/4 BSP.F	M10	18 (.71)	11.7 (.46)
EFBGM-03Z-1080	1 BSP.F				11 (.43)
EFBGM-03Y-1090	3/4 NPT	1/4 NPT	3/8-16 UNC	21 (.83)	11 (.43)
EFBGM-03Z-1090	1 NPT				11 (.43)

**DIMENSIONS IN MILLIMETRES (INCHES)**

**EFBGM-06X/06Y-10/1080/1090**



Sub-plate Model No.	Dimensions mm (in.)			
	B	C	D	E
EFBGM-06X	103.3 (4.07)	45 (1.77)	35 (1.38)	34 (1.34)
EFBGM-06Y	95 (3.74)	60 (2.36)	40 (1.54)	39 (1.54)

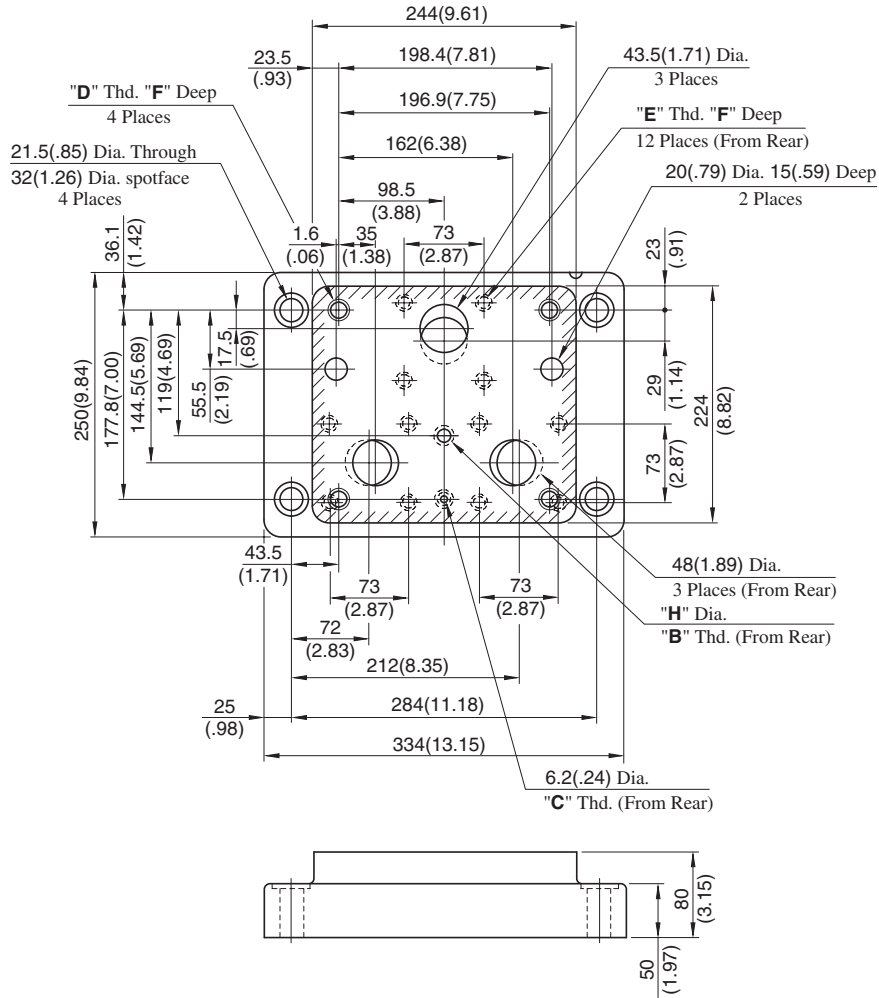
Sub-plate Model No.	Thread Size				mm (in.)	
	"F" Thd.	"H" Thd.	"J" Thd.	"K" Thd.	L	N
EFBGM-06X-10	Rc 1	Rc 3/8	Rc 1/4	M 16	30 (1.18)	14 (.55)
EFBGM-06Y-10	Rc 1-1/4				15.2 (.60)	
EFBGM-06X-1080	1 BSP.F	3/8 BSP.F	1/4 BSP.F	M 16	35 (1.38)	14 (.55)
EFBGM-06Y-1080	1-1/4 BSP.F				14 (.55)	
EFBGM-06X-1090	1 NPT	3/8 NPT	1/4 NPT	5/8-11 UNC	35 (1.38)	14 (.55)
EFBGM-06Y-1090	1-1/4 NPT				14 (.55)	

**H**  
E Series  
40Ω-10Ω Series Flow Control and Relief Valves

**Sub-plate**

EFBGM-10Y-10/1080/1090

**DIMENSIONS IN MILLIMETRES (INCHES)**



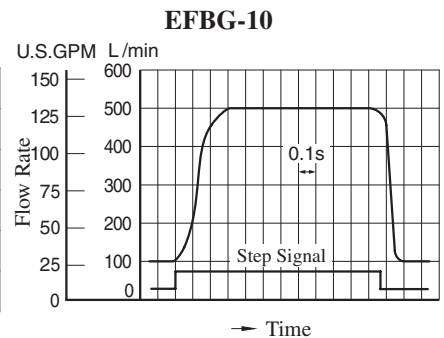
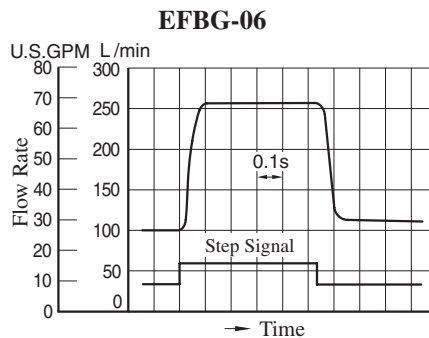
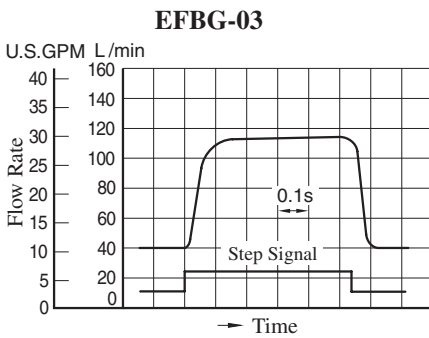
Sub-plate Model Numbers	Thread Size				mm (in.)	
	"B" Thd.	"C" Thd.	"D" Thd.	"E" Thd.	F	H
EFBGM-10Y-10	Rc 3/8	Rc 1/4	M20	M16	32 (1.26)	14 (.55)
EFBGM-10Y-1080	3/8 BSPF	1/4 BSPF				15.2 (.60)
EFBGM-10Y-1090	3/8 NPT	1/4 NPT	3/4-10 UNC	5/8-11 UNC	34 (1.34)	14 (.55)

**Step Response**

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

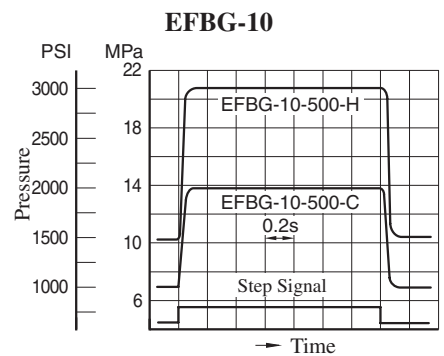
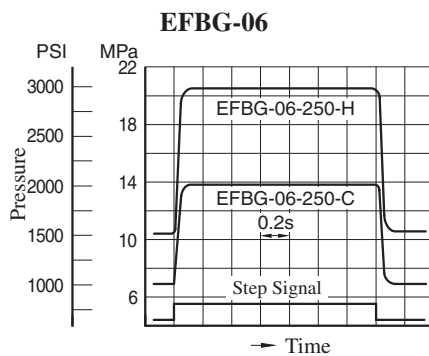
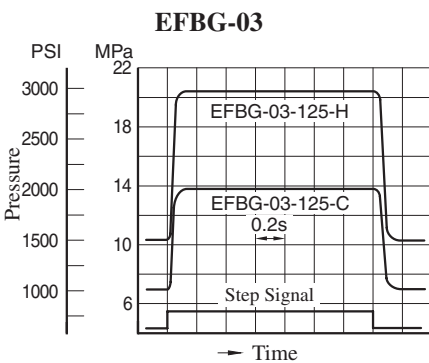
Viscosity: 30 mm<sup>2</sup>/s (141 SSU)

**Flow Controls**



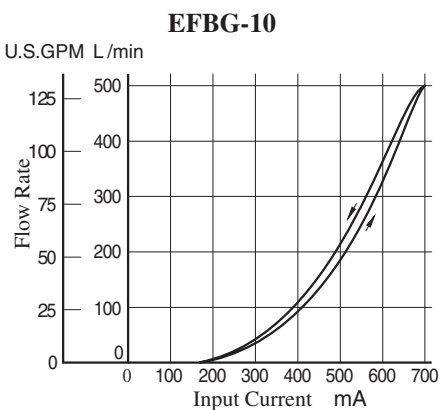
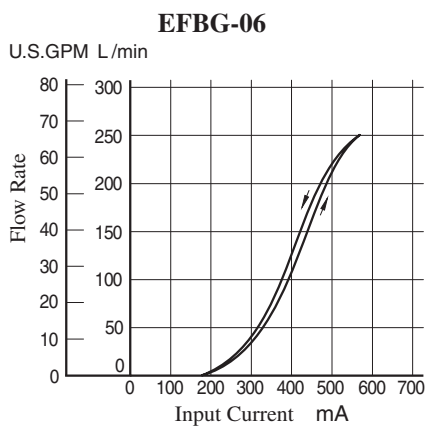
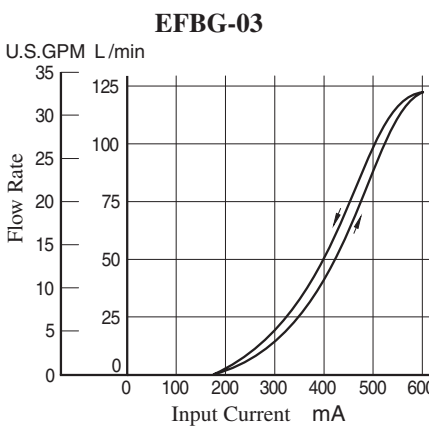
**Pressure Controls**

Viscosity: 30 mm<sup>2</sup>/s (141 SSU)



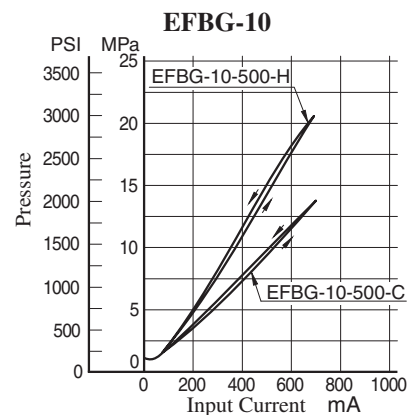
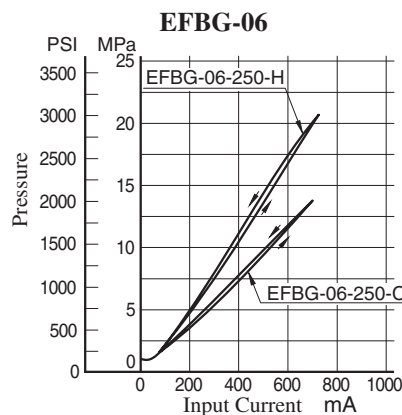
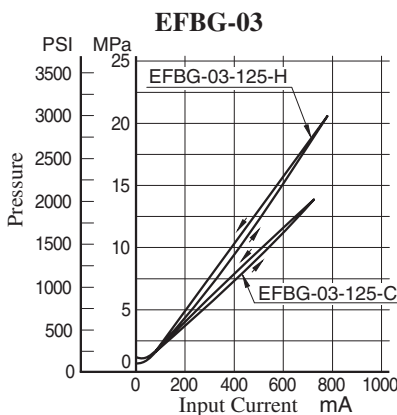
**Input Current vs. Flow**

Viscosity: 30 mm<sup>2</sup>/s (141 SSU)



**Input Current vs. Pressure**

Viscosity: 30 mm<sup>2</sup>/s (141 SSU)

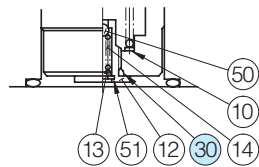
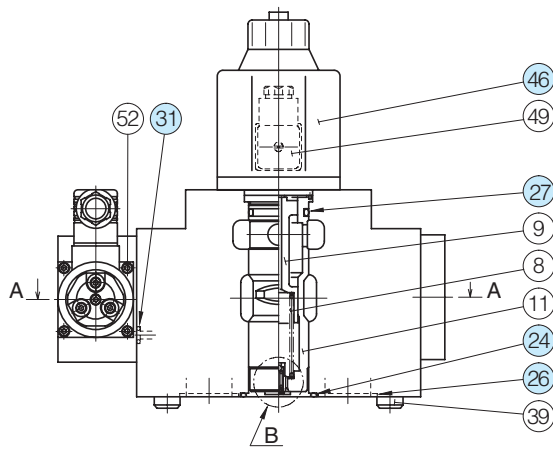


**H**  
E Series  
40Ω-10Ω Series Flow Control and Relief Valves

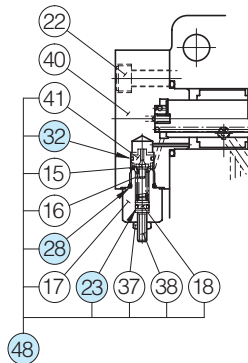
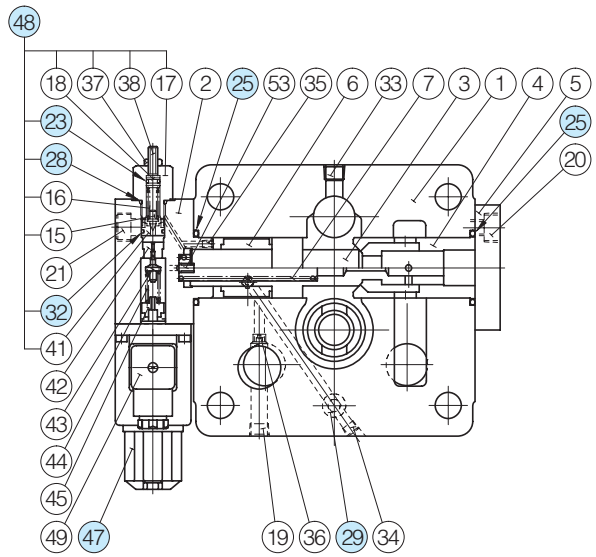


■ List of Seals, Solenoid Ass'y and Safety Valve

EFBG-03-125- \*-17/1790  
EFBG-06-250- \*-17/1790



Detail of "B"



Without Proportional Pilot Relief Valve

Section A-A

● List of Seals

Item	Name of Parts	Part Numbers		Qty.
		EFBG-03	EFBG-06	
23	O-Ring	SO-NA-P6	SO-NA-P6	1
24	O-Ring	SO-NB-G30	SO-NB-P44	1
25	O-Ring	SO-NB-P32	SO-NB-P42	2
26	O-Ring	SO-NB-P28	SO-NB-P32	3
27	O-Ring	—	SO-NB-P34	1
28	O-Ring	SO-NB-P14	SO-NB-P14	1
29	O-Ring	SO-NB-P11	SO-NB-P11	1
30	O-Ring	—	SO-NA-P10	1
31	O-Ring	SO-NB-P9	SO-NB-P9	1
32	O-Ring	SO-NB-A013	SO-NB-A013	1

● List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-03-125-17*	KS-EFBG-03-17
EFBG-03-125-C/H-17*	KS-EFBG-03-C-17
EFBG-06-250-17*	KS-EFBG-06-17
EFBG-06-250-C/H-17*	KS-EFBG-06-C-17

● Solenoid Ass'y and Safety valve

Valve Model Numbers	④⑦ Solenoid Ass'y Model No.	④⑥ Solenoid Ass'y Model No.	④⑧ Safety Valve Model No.
EFBG-03-125-C/H-17/1790	E318-Y06M2-05-61	E321-45-20	SB1094-2002
EFBG-06-250-C/H-17/1790			
EFBG-03-125-17/1790 EFBG-06-250-17/1790	—		

Note: The connector assembly GDM-211-B-11 (Item 49) is not included in the solenoid assembly.

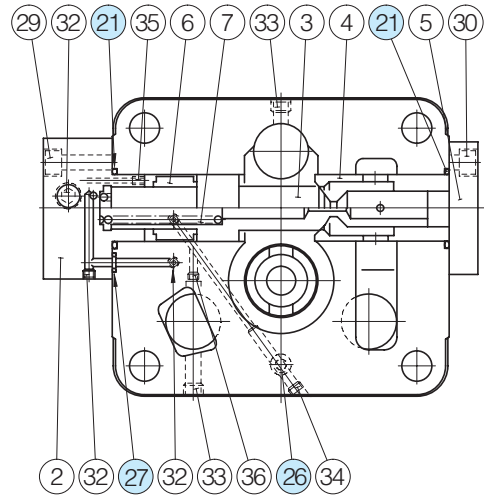
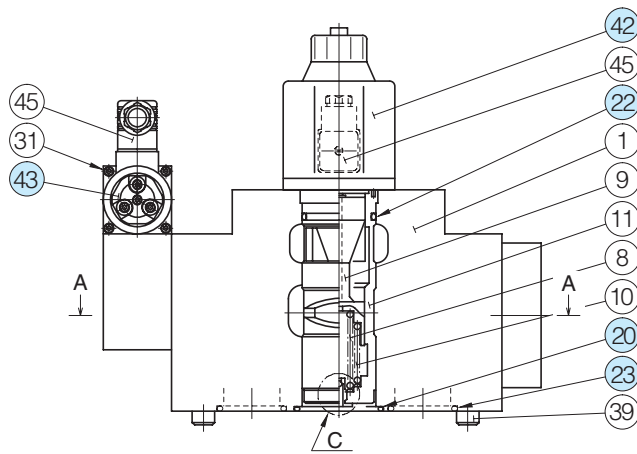
When ordering seals, please specify the seal kit number from the table above.

In addition to the above o-rings, seals for solenoid ass'y ④⑥ and ④⑦ are included in the seal kit.

For the details of seals for solenoid ass'y ④⑥, see page 704 and for solenoid ass'y ④⑦ see page 674.

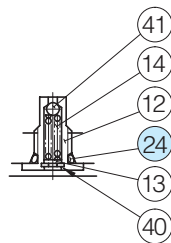
■ List of Seals, Solenoid Ass'y, Pilot Relief Valves and Safety Valve

EFBG-10-500- \*-17/1790

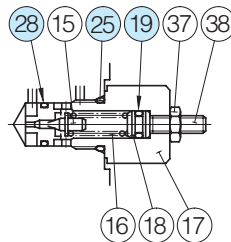


Section A-A

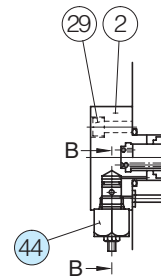
● Detail of Safety Valve (Item 44)



Detail of "C"



Section B-B



Without Proportional Pilot Relief Valve

● List of Seals and Solenoid Ass'y

Item	Name of Parts	Part Numbers	Qty.
19	O-Ring	SO-NA-P6	1
20	O-Ring	SO-NB-G60	1
21	O-Ring	SO-NB-G55	2
22	O-Ring	SO-NB-P50	1
23	O-Ring	SO-NB-P48	3
24	O-Ring	SO-NA-P10	1
25	O-Ring	SO-NB-P14	1
26	O-Ring	SO-NB-P11	1
27	O-Ring	PO-NB-P11	1
28	O-Ring	SO-NB-A013	1
42	Solenoid Ass'y	E321-45-20	1

● List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-10-500-17*	KS-EFBG-10-17
EFBG-10-500-C/H-17*	KS-EFBG-10-C-17

Note: The connector assembly GDM-211-B-11 (Item 45) is not included in the solenoid assembly.

When ordering seals, please specify the seal kit number from the table right.

In addition to the above o-rings, seals for Pilot Valve and solenoid ass'y are included in the seal kit.

● Pilot Valves and Safety Valve

Valve Model Numbers	④③ Proportional Pilot Relief Valve Model Numbers	④④ Safety Valve Model Numbers
EFBG-10-500-17/1790	—	SB1094-2002
EFBG-10-500-C-17/1790	EDG-01V-C-1-P18T17-5103	—
EFBG-10-500-H-17/1790	EDG-01V-H-1-PNT13-5103	—

Note: For the details of seals for solenoid ass'y ④②, see page 704 and for pilot relief valve ④③ see page 674.

