

40Ω Series Proportional Electro-Hydraulic Flow Control (and Check) Valves

Since the preselected flow rate continuously varies in proportion to the current input to the valve, the system flow rate can be remote-controlled as desired by regulating the amplifier current output. Further, since pressure and temperature compensation functions are provided, the preselected flow rate is not affected by pressure (load) or temperature (fluid viscosity).

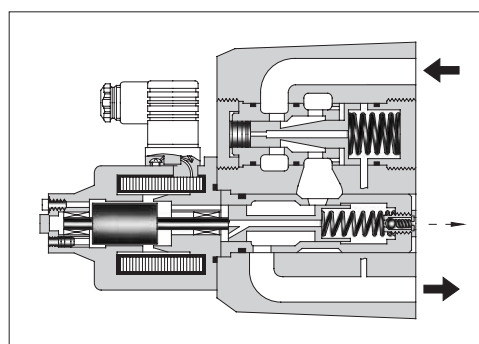
This valve is ideal for use where actuator startup, stop, and speed changes are to be implemented without producing a shock. Note that this valve is used in conjunction with the applicable power amplifier.



Specifications

Model No.	EFG EFCG-02-10 EFCG-02-30	EFG EFCG-03-60 EFCG-03-125	EFG EFCG-06-250	EFG EFCG-10-500
Max. Operating Pres. MPa (PSI)	20.6 (3000)	20.6 (3000)	20.6 (3000)	20.6 (3000)
Metred Flow Adjustment Range L/min (U.S.GPM)	10: 0.3-10 (.08-2.6) 30: 0.3-30 (.08-7.9)	60: 2-60 (.53-15.9) 125: 2-125 (.53-33)	3-250 (.79-66)	5-500 (1.32-132)
Min. Differential Pres.* MPa (PSI)	0.6 (90)	1.0 (145)	1.3 (190)	2.0 (290)
Free Flow (EFCG Models Only.) L/min (U.S.GPM)	40 (10.6)	130 (34.3)	280 (74.0)	550 (145)
Rated Current	600 mA	600 mA	600 mA	700 mA
Coil Resistance	45 Ω	45 Ω	45 Ω	45 Ω
Hysteresis	5% or less	7% or less	7% or less	7% or less
Repeatability	1% or less	1% or less	1% or less	1% or less
Approx. Mass kg (lbs.)	8.2 (18.1)	12.5 (27.6)	25 (55.1)	51 (113)

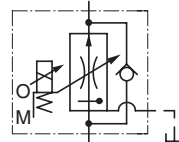
*Min. pressure difference required between inlet and outlet ports to maintain function as pressure compensator.



Graphic Symbols



EFG-*



EFCG-*

Model Number Designation

F-	EFC	G	-02	-10	-31	*
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min (U.S.GPM)	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EF: Proportional Electro-Hydraulic Flow Control Valve EFC: Proportional Electro-Hydraulic Flow Control and Check Valve	G: Sub-plate Mounting	02	10: 10 (2.6) 30: 30 (7.9)	31	Refer to ★
			03	60: 60 (15.9) 125: 125 (33)	26	
			06	250: 250 (66)	22	
			10	500: 500 (132)	11	

Note: If you are going to use the model with pressure compensator stroke adjustment screw, consult your Yuken representative in advance.

★ 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.	
EF*G-02	M8 × 75 Lg.	5/16-18 UNC × 3 Lg.	4
EF*G-03	M10 × 100 Lg.	3/8-16 UNC × 4 Lg.	4
EF*G-06	M16 × 130 Lg.	5/8-11 UNC × 5 Lg.	4
EF*G-10	M20 × 160 Lg.	3/4-10 UNC × 6-1/2 Lg.	4

Applicable Power Amplifiers

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

- Model Numbers : AME-D-* -40
- AME-DF-S- *-22
- AME-T-S- *-22

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	
EFG EFCG -02	EFGM-02X-20	Rc 3/8	EFGM-02X-2080	3/8 BSP.F	EFGM-02X-2090	3/8 NPT	2.3 (5.1)
	EFGM-02Y-20	Rc 1/2	EFGM-02Y-2080	1/2 BSP.F	EFGM-02Y-2090	1/2 NPT	3.1 (6.8)
EFG EFCG -03	EFGM-03Y-20	Rc 3/4	EFGM-03Y-2080	3/4 BSP.F	EFGM-03Y-2090	3/4 NPT	5.7 (12.6)
	EFGM-03Z-20	Rc 1	EFGM-03Z-2080	1 BSP.F	EFGM-03Z-2090	1 NPT	5.6 (12.3)
EFG EFCG -06	EFGM-06X-20	Rc 1	EFGM-06X-2080	1 BSP.F	EFGM-06X-2090	1 NPT	12.5 (27.6)
	EFGM-06Y-20	Rc 1-1/4	EFGM-06Y-2080	1-1/4 BSP.F	EFGM-06Y-2090	1-1/4 NPT	16 (35.3)
EFG EFCG -10	EFGM-10Y-10*	1-1/2, 2 Flange Mounting	EFGM-10Y-1080*	1-1/2, 2 Flange Mounting	EFGM-10Y-1090*	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 EFGM-10Y, see Type F3 Pipe Flange Kits on [page 821](#) and order an appropriate pipe flange kit also.

Models with Pressure Compensator Stroke Adjustment Screw

A models with pressure compensator stroke adjustment screw is optionally available to minimize the actuator protrusion (jumping) at startup. For the details, please consult us or your Yuken distributors.

Instructions

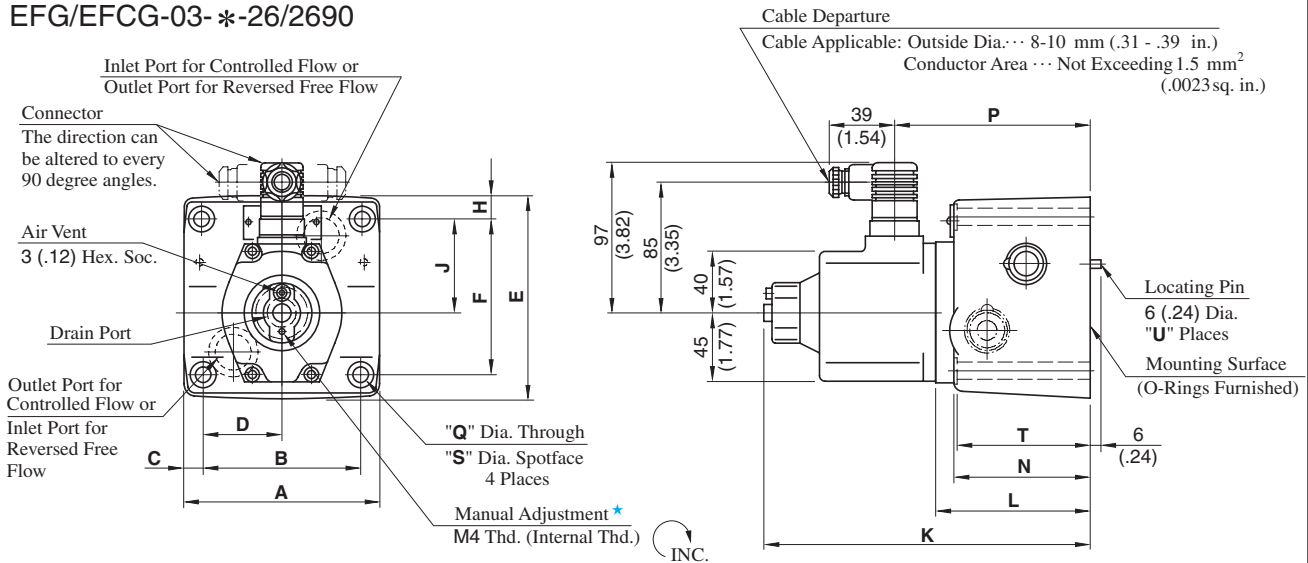
● Drain Back Pressure

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

● Models with Check Valve

A models with check valve makes it possible to obtain a free flow in the direction opposite that of the controlled flow without respect to the input current.

EFG/EF CG-02- *-31/3190
EFG/EF CG-03- *-26/2690

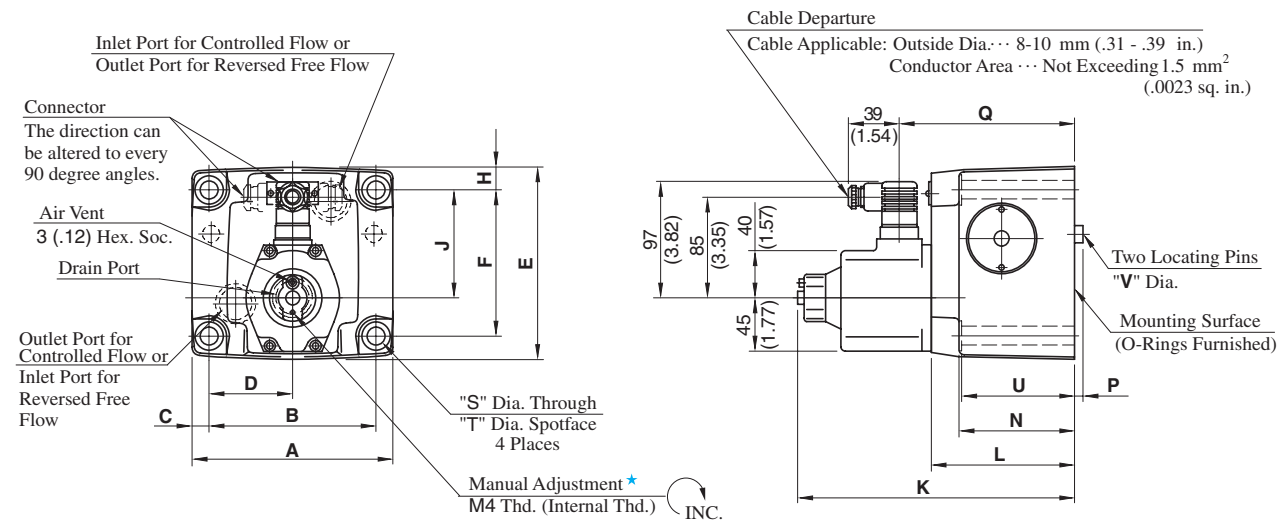


★ Manual adjustment can be done by screwing for example an M4×20 L screw in the M4 thread or pushing in a rod etc. there.

Model Numbers	Dimensions mm (Inches)															U
	A	B	C	D	E	F	H	J	K	L	N	P	Q	S	T	
EF*G-02	96 (3.78)	76.2 (3.00)	9.9 (.39)	38.1 (1.50)	106 (4.17)	82.6 (3.25)	11.7 (.46)	46.3 (1.82)	195 (7.68)	81 (3.19)	66 (2.60)	108 (4.25)	8.8 (.35)	14 (.55)	65 (2.56)	1
EF*G-03	125 (4.92)	101.6 (4.00)	11.7 (.46)	50.8 (2.00)	130 (5.12)	101.6 (4.00)	14.2 (.56)	61.8 (2.43)	212 (8.35)	98 (3.86)	85 (3.35)	125 (4.92)	11 (.43)	17.5 (.69)	84 (3.31)	2

EFG/EF CG-06-250-22/2290
EFG/EF CG-10-500-11/1190

DIMENSIONS IN MILLIMETRES (INCHES)



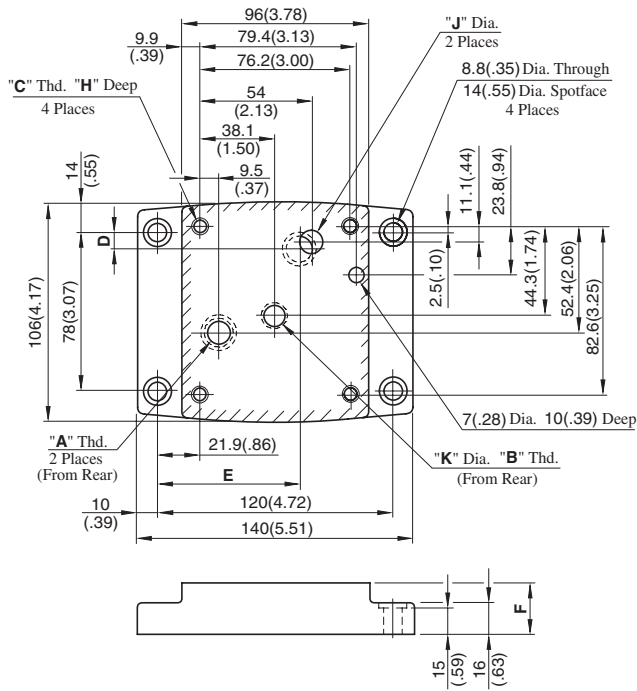
★ Manual adjustment can be done by screwing for example an M4×20 L screw in the M4 thread or pushing in a rod etc. there.

Model Numbers	Dimensions mm (Inches)																
	A	B	C	D	E	F	H	J	K	L	N	P	Q	S	T	U	V
EF*G-06	180 (7.09)	146.1 (5.75)	17 (.67)	73.1 (2.88)	174 (6.85)	133.4 (5.25)	20.3 (.80)	99 (3.90)	244 (9.61)	130 (5.12)	105 (4.13)	7 (.28)	157 (6.18)	17.5 (.69)	26 (1.02)	103.5 (4.07)	16 (.63)
EF*G-10	244 (9.61)	196.9 (7.75)	23.5 (.93)	98.5 (3.88)	228 (8.98)	177.8 (7.00)	25 (.98)	144.5 (5.69)	274 (10.79)	160 (6.30)	137 (5.93)	10 (.39)	187 (7.36)	21.5 (.85)	32 (1.26)	135 (5.31)	18 (.71)

H
E Series
40Ω Series Flow Control (and Check) Valves

Sub-plate

EFGM-02X/02Y-20/2080/2090

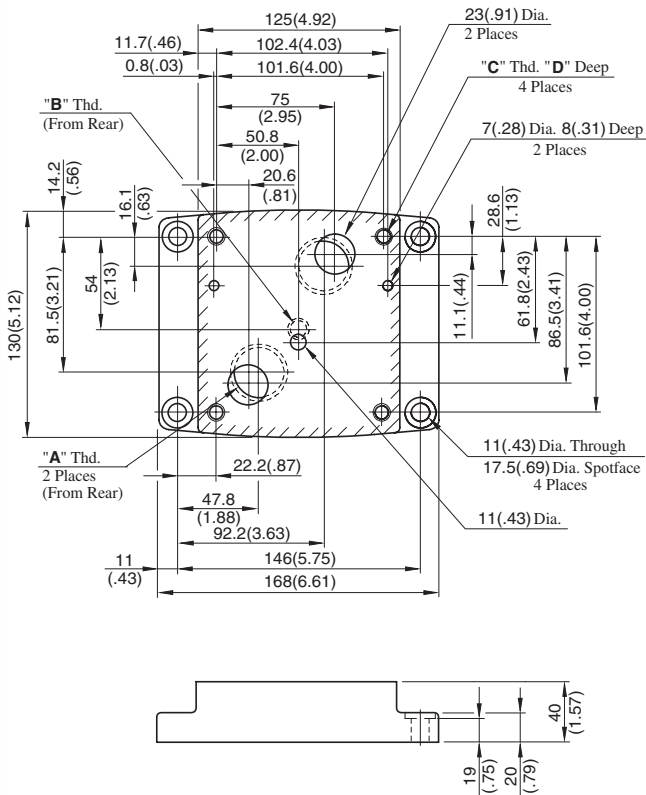


Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
EFGM-02X-20	Rc 3/8	Rc 1/4	M8
EFGM-02Y-20	Rc 1/2		
EFGM-02X-2080	3/8 BSP.F	1/4 BSP.F	
EFGM-02Y-2080	1/2 BSP.F		
EFGM-02X-2090	3/8 NPT	1/4 NPT	5/16-18 UNC
EFGM-02Y-2090	1/2 NPT		

Sub-plate Model Numbers	Dimensions mm (Inches)					
	D	E	F	H	J	K
EFGM-02X-20	8.6 (.34)	75.9 (2.99)	25 (.98)	14 (.55)	14 (.55)	11 (.43)
EFGM-02Y-20	11.5 (.45)	72.9 (2.87)	35 (1.38)		15.2 (.60)	11.7 (.46)
EFGM-02X-2080	8.6 (.34)	75.9 (2.99)	25 (.98)		15 (.59)	
EFGM-02Y-2080	11.5 (.45)	72.9 (2.87)	35 (1.38)			
EFGM-02X-2090	8.6 (.34)	75.9 (2.99)	25 (.98)	18 (.17)	14 (.55)	11 (.43)
EFGM-02Y-2090	11.5 (.45)	72.9 (2.87)	35 (1.38)			

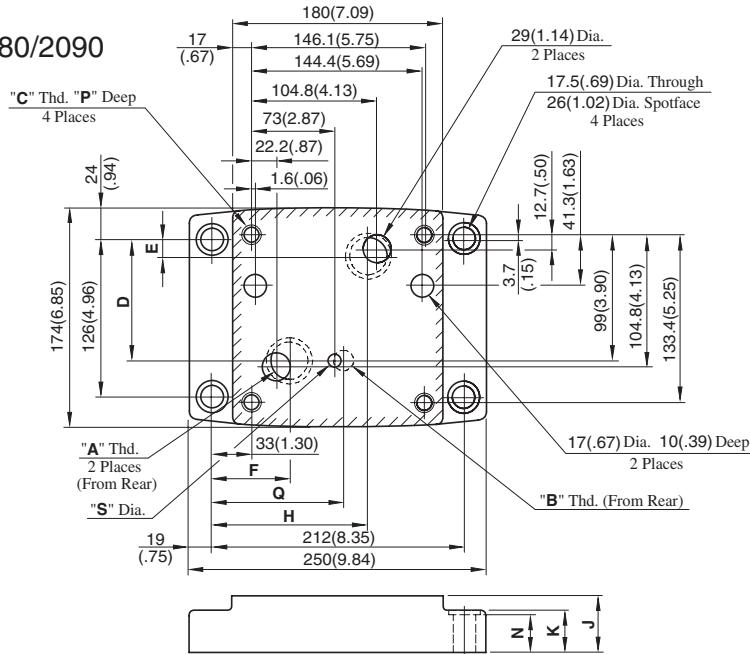
DIMENSIONS IN MILLIMETRES (INCHES)

EFGM-03Y/03Z-20/2080/2090



Sub-plate Model Numbers	Thread Size			D mm(in.)
	"A" Thd.	"B" Thd.	"C" Thd.	
EFGM-03Y-20	Rc 3/4	Rc 1/4	M10	18 (.71)
EFGM-03Z-20	Rc 1			
EFGM-03Y-2080	3/4 BSP.F	1/4 BSP.F		
EFGM-03Z-2080	1 BSP.F			
EFGM-03Y-2090	3/4 NPT	1/4 NPT	3/8-16 UNC	21 (.83)
EFGM-03Z-2090	1 NPT			

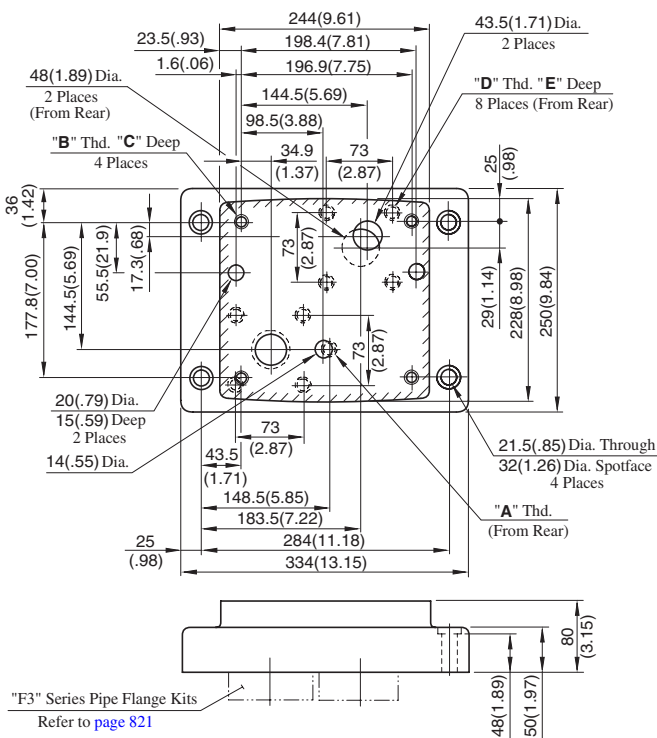
■ Sub-plate
EFGM-06X/06Y-20/2080/2090



Sub-plate Model Numbers	Thread Size			Dimensions mm (Inches)										
	"A" Thd.	"B" Thd.	"C" Thd.	D	E	F	H	J	K	N	P	Q	S	
EFGM-06X-20	Rc 1	Rc 3/8	M16	101.1 (3.98)	14.3 (.56)	55.2 (2.17)	137.8 (5.43)	45 (1.77)	35 (1.38)	34 (1.34)	30 (1.18)	106 (4.17)	14 (.55)	
EFGM-06Y-20	Rc 1-1/4			95.3 (3.75)	19.3 (.76)	67 (2.64)	132 (5.20)	60 (2.36)	40 (1.57)	39 (1.54)				
EFGM-06X-2080	1 BSP.F	3/8 BSP.F		101.1 (3.98)	14.3 (.56)	55.2 (2.17)	137.8 (5.43)	45 (1.77)	35 (1.38)	34 (1.34)		116 (4.57)	15 (.59)	
EFGM-06Y-2080	1-1/4 BSP.F			95.3 (3.75)	19.3 (.76)	67 (2.64)	132 (5.20)	60 (2.36)	40 (1.57)	39 (1.54)				
EFGM-06X-2090	1 NPT	3/8 NPT		5/8-11 UNC	101.1 (3.98)	14.3 (.56)	55.2 (2.17)	137.8 (5.43)	45 (1.77)	35 (1.38)	34 (1.34)	35 (1.38)	106 (4.17)	14 (.55)
EFGM-06Y-2090	1-1/4 NPT				95.3 (3.75)	19.3 (.76)	67 (2.64)	132 (5.20)	60 (2.36)	40 (1.57)	39 (1.54)			

DIMENSIONS IN MILLIMETRES (INCHES)

EFGM-10Y-10/1080/1090



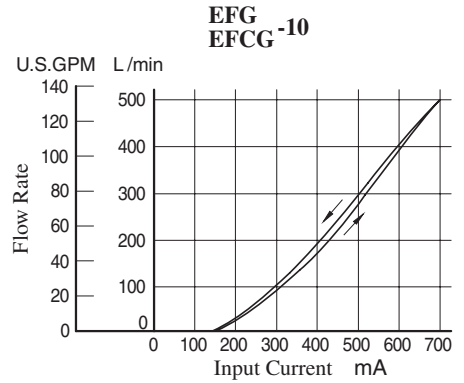
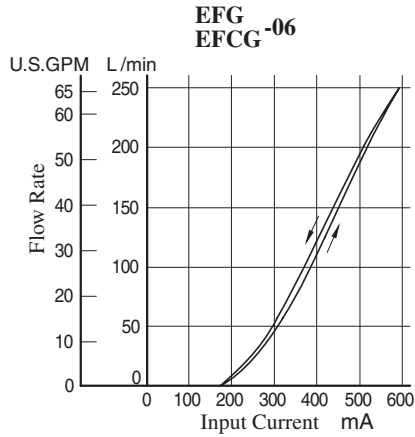
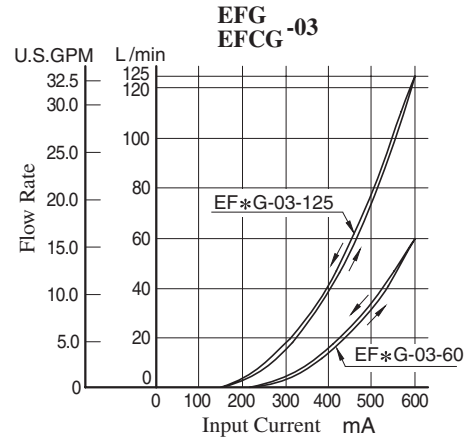
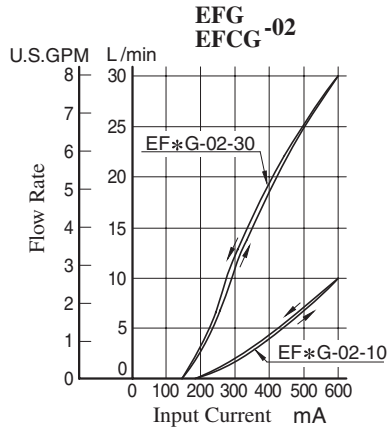
Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"D" Thd.
EFGM-10Y-10	Rc 3/8	M20	M16
EFGM-10Y-1080	3/8 BSP.F		
EFGM-10Y-1090	3/8 NPT	3/4-10 UNC	5/8-11 UNC

Sub-plate Model Numbers	mm (Inches)	
	C	E
EFGM-10Y-10	30 (1.18)	30 (1.18)
EFGM-10Y-1080	30 (1.18)	30 (1.18)
EFGM-10Y-1090	34 (1.34)	35 (1.38)

"F3" Series Pipe Flange Kits
Refer to page 821

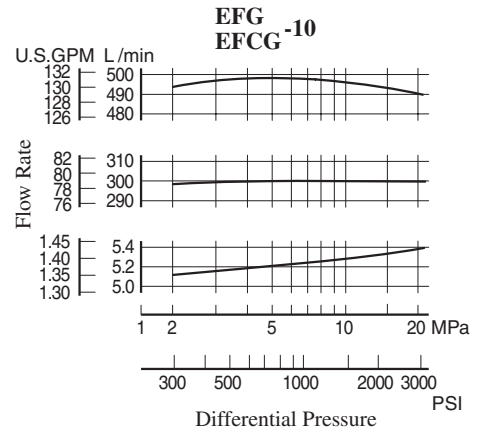
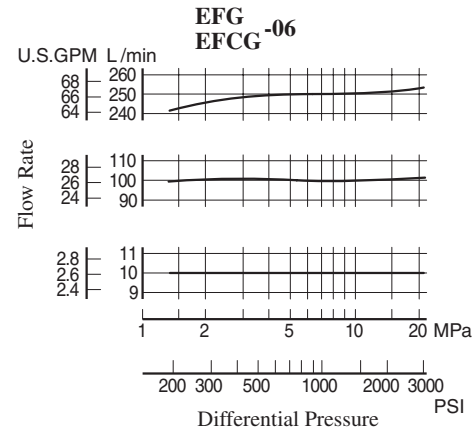
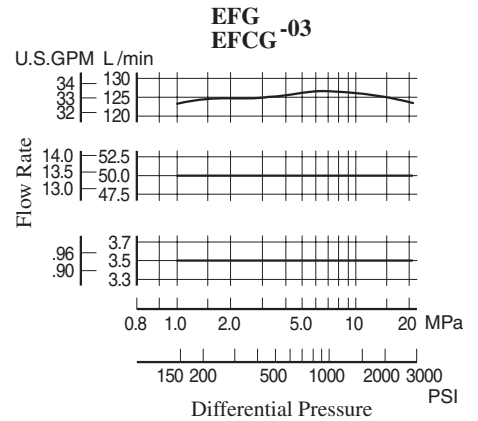
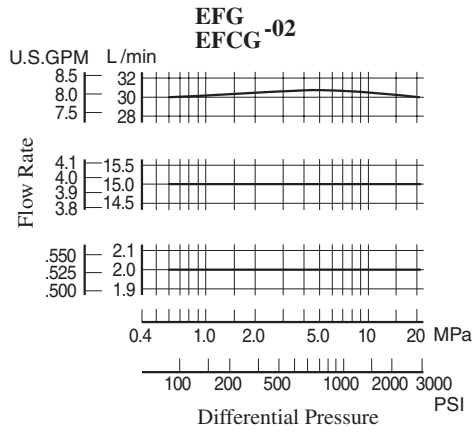
Input Current vs. Flow

Viscosity: 30 mm²/s
(141 SSU)



Differential Pressure vs. Metred Flow

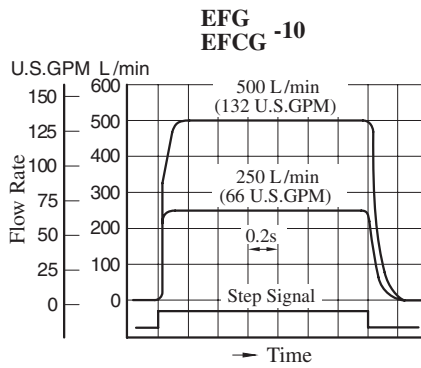
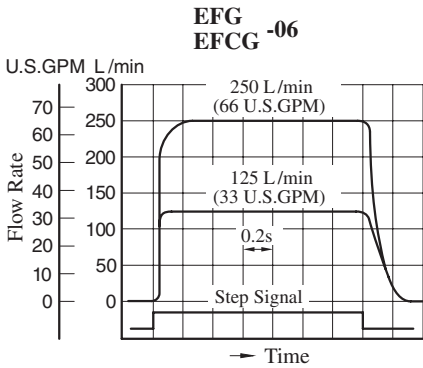
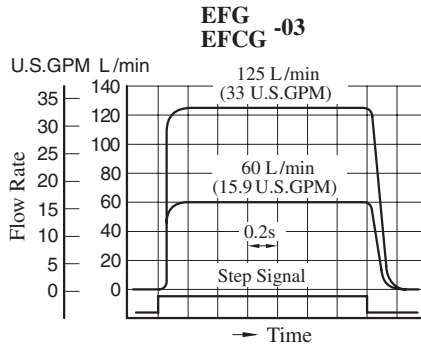
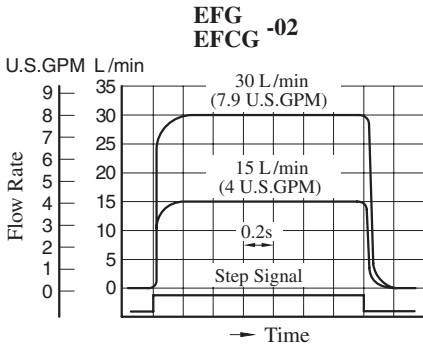
Viscosity: 30 mm²/s
(141 SSU)



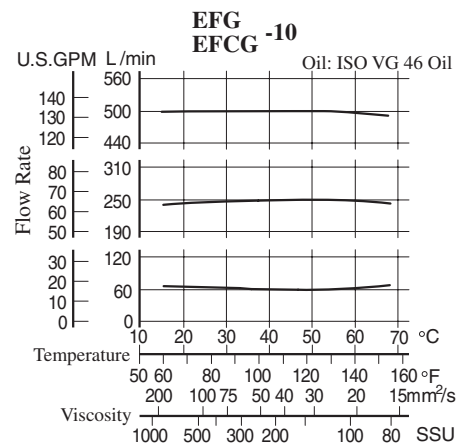
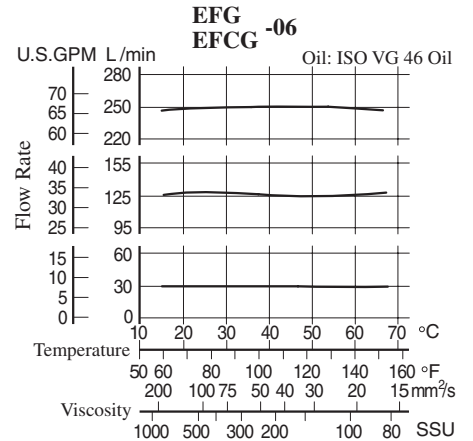
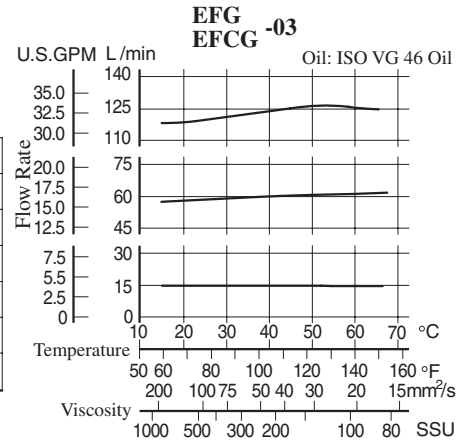
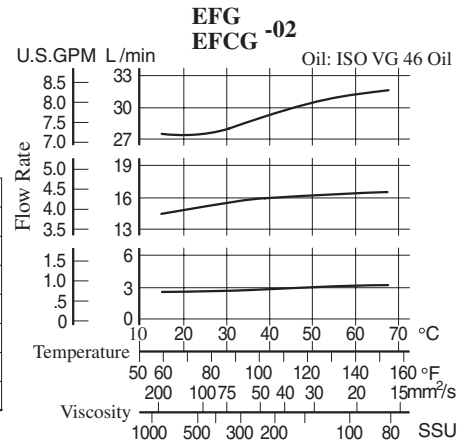
Step Response

Viscosity: 30 mm²/s (141 SSU)

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

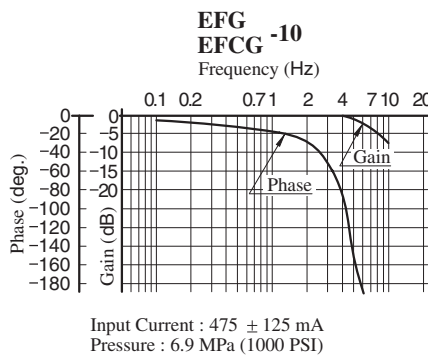
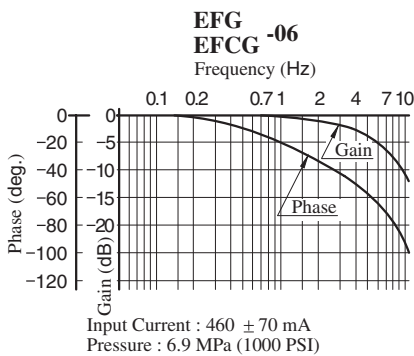
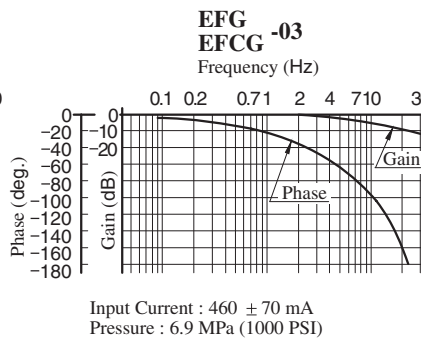
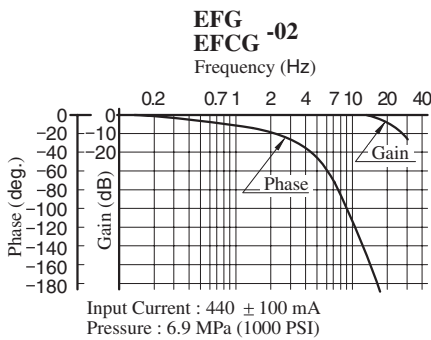


Viscosity vs. Flow



Frequency Response

Viscosity: 30 mm²/s (141 SSU)

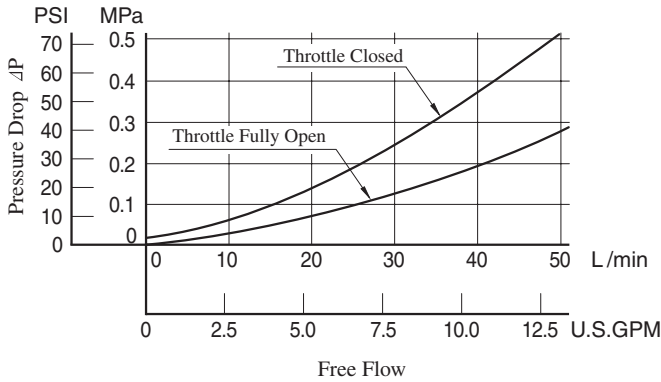


E Series
40Ω Series Flow Control (and Check) Valves

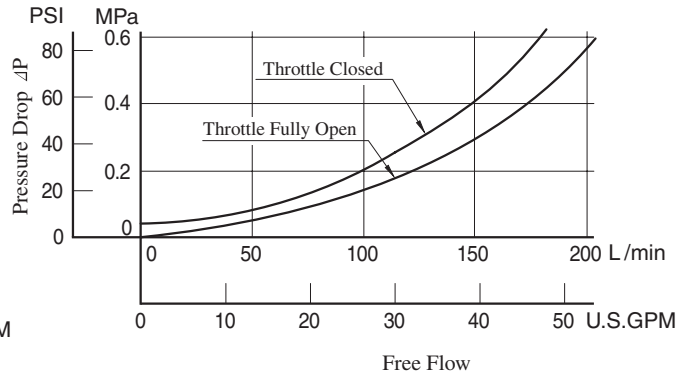
■ Pressure Drop for Reversed Free Flow (Only for "EFCG" Models)

Oil Viscosity: 35 mm²/s (164 SSU)
Specific Gravity: 0.850

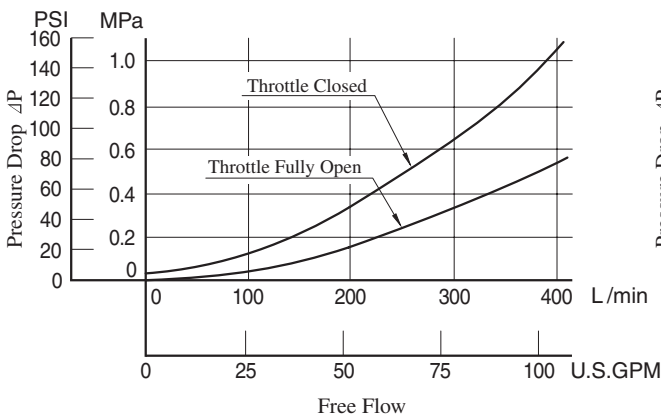
EFCG-02



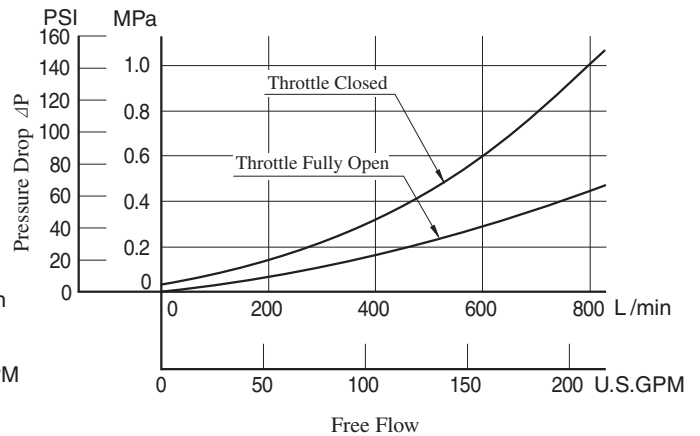
EFCG-03



EFCG-06



EFCG-10



● For any other viscosity, multiply the factors in the table below.

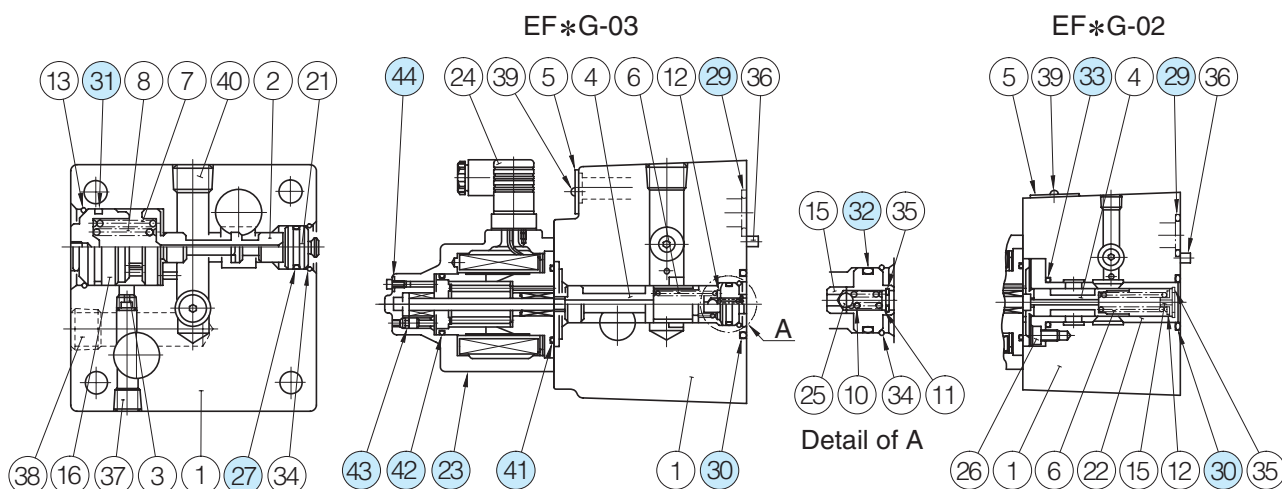
Viscosity	mm ² /s	20	40	60	80	100
	SSU	98	186	278	371	464
Factor		0.87	1.03	1.14	1.23	1.30

● For any other specific gravity (G'), the pressure drop ($\Delta P'$) may be obtained from the formula below.
 $\Delta P' = \Delta P (G'/0.850)$

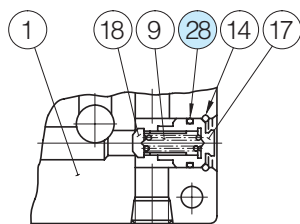
List of Seals and Solenoid Ass'y

EFG/EFCG-02- *-31/3190

EFG/EFCG-03- *-26/2690



With Check Valve (EFCG-02, 03)



List of Seals and Solenoid Ass'y

Item	Name of Parts	Part Numbers		Qty.
		EF*G-02	EF*G-03	
23	Solenoid Ass'y	E321-45-20	E321-45-20	1
27	O-Ring	SO-NB-P18	SO-NB-P18	1
28	O-Ring	SO-NB-P10A	SO-NB-P21	1
29	O-Ring	SO-NB-P18	SO-NB-P28	2
30	O-Ring	SO-NB-P22	SO-NB-P31	1
31	O-Ring	SO-NB-G25	SO-NB-G35	1
32	O-Ring	—	SO-NB-P18	1
33	O-Ring	SO-NB-P22	—	1
41	O-Ring	SO-NB-G45	SO-NB-G45	1
42	O-Ring	SO-NB-G35	SO-NB-G35	1
43	O-Ring	SO-NA-P4	SO-NA-P4	1
44	Fastener Seal	SG-FCF-4	SG-FCF-4	1

- Note 1: O-rings (Item 41, 42, 43) and the fastener seal (Item 44) are included in the solenoid assembly.
 2: The connector assembly GDM-211-B-11 (Item 24) is not included in the solenoid assembly.
 3: When ordering seals, please specify the seal kit number from the table right.

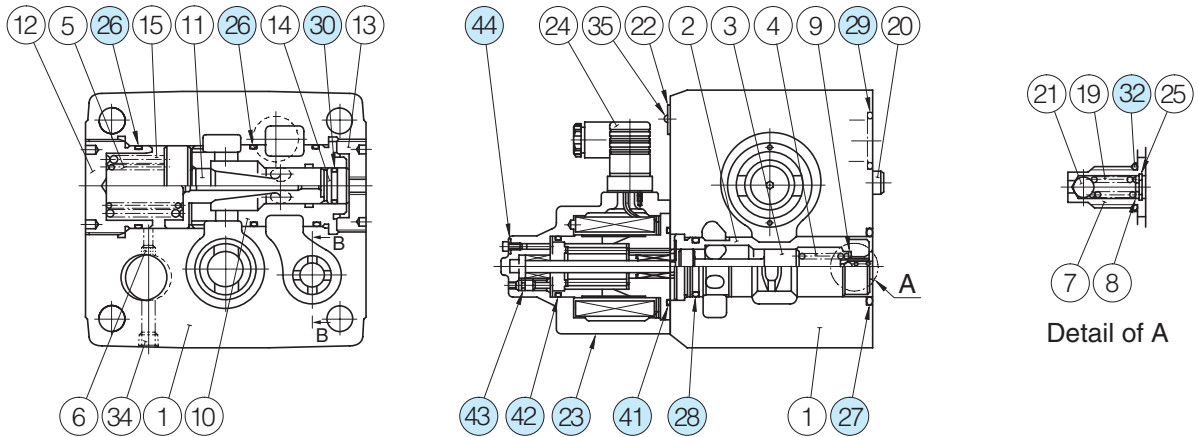
List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFG-02- *-31 *	KS-EFG-02-31
EFCG-02- *-31 *	KS-EFCG-02-31
EFG-03- *-26 *	KS-EFG-03-26
EFCG-03- *-26 *	KS-EFCG-03-26

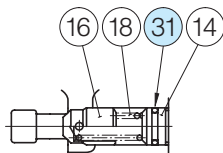
■ List of Seals and Solenoid Ass'y

EFG/EFCG-06-250-22/2290

EFG/EFCG-10-500-11/1190



With Check Valve (EFCG-06, 10)



Section B-B

● List of Seals and Solenoid Ass'y

Item	Name of Parts	Part Numbers		Qty.
		EF*G-06	EF*G-10	
23	Solenoid Ass'y	E321-45-20	E321-45-20	1
26	O-Ring	SO-NB-P50	SO-NB-G75	3
27	O-Ring	SO-NB-P44	SO-NB-G60	1
28	O-Ring	SO-NB-P34	SO-NB-P50	1
29	O-Ring	SO-NB-P32	SO-NB-P48	2
30	O-Ring	SO-NB-P21	SO-NB-P34	1
31	O-Ring	SO-NB-P21	SO-NB-P26	1
32	O-Ring	SO-NA-P10	SO-NA-P10	1
41	O-Ring	SO-NB-G45	SO-NB-G45	1
42	O-Ring	SO-NB-G35	SO-NB-G35	1
43	O-Ring	SO-NA-P4	SO-NA-P4	1
44	Fastener Seal	SG-FCF-4	SG-FCF-4	1

● List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFG-06-250-22*	KS-EFG-06-22
EFCG-06-250-22*	KS-EFCG-06-22
EFG-10-500-11*	KS-EFG-10-11
EFCG-10-500-11*	KS-EFCG-10-11

Note1: O-rings (Item 41, 42, 43) and the fastener seal (Item 44) are included in the solenoid assembly.

2: The connector assembly GDM-211-B-11 (Item 24) is not included in the solenoid assembly.

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

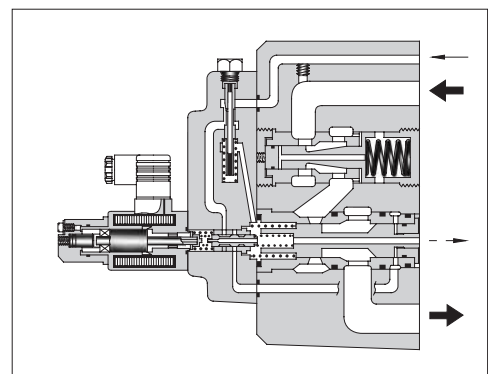
10Ω Series Proportional Electro-Hydraulic Flow Control (and Check) Valves

Since the preselected flow rate continuously varies in proportion to the current input to the valve, the system flow rate can be remote-controlled as desired by regulating the current output from the amplifier. Further, since the pressure and temperature compensation functions are provided, the preselected flow rate is not be affected by pressure (load) or temperature (fluid viscosity). This valve is ideal for use where actuator startup, stop, and speed changes are to be implemented without producing a shock. Note that this valve is used in conjunction with the applicable power amplifier.



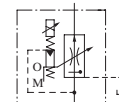
Specifications

Description		Model No.	EFG -03- 60 EFCG -125	EFG -06-250 EFCG
Max. Operating Pressure MPa (PSI)			20.6 (3000)	24.5 (3550)
Metred Flow Adj. Range L/min (U.S.GPM)			60: 1-60 (.26-15.9) 125: 1-125 (.26-33)	2.5-250 (.66-66)
Min. Differential Pressure ^{★1} MPa (PSI)			1.0 (145)	1.0 (145)
Free Flow (EFCG Models Only) L/min (U.S.GPM)			130 (34.3)	280 (74.0)
Min. Pilot Pressure ^{★2} MPa (PSI)			1.0 (145)	1.5 (220)
Pilot Flow L/min (U.S.GPM)	at Normal		0.5 (.13)	1 (.26)
	at Transition		2.6 (.69)	4 (1.06)
Rated Current			780 mA	820 mA
Coil Resistance			10 Ω	10 Ω
Hysteresis			3% or less	3% or less
Repeatability			1% or less	1% or less
Approx. Mass	kg (lbs.)		10 (22.1)	25 (55.1)



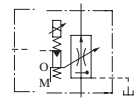
Graphic Symbols

Internal Pilot

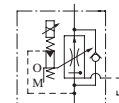


EFG- *

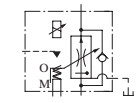
External Pilot



EFG- *



EFCG- *



EFCG- *

★ 1. Min pressure difference required between inlet and outlet ports to maintain function as pressure compensator.

★ 2. The minimum required value for the external pilot type.

Model Number Designation

F-	EFC	G	-03	-125	-E	-51	*
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min (U.S.GPM)	Pilot Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EF: Proportional Electro-Hydraulic Flow Control Valve EFC: Proportional Electro-Hydraulic Flow Control and Check Valve	G: Sub-plate Mounting	03	60: 60 (15.9) 125: 125 (33)	None: Internal Pilot E: External Pilot	51	Refer to ★
			06	250: 250 (66)		51	

★ 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.	
EF*G-03	M10 × 80 Lg.	3/8-16 UNC × 3-1/4 Lg.	4
EF*G-06	M16 × 130 Lg.	5/8-11 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 767, 771, 780).

- 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

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	
EFG EFCG -03	EFGM-03Y-30	Rc 3/4	EFGM-03Y-3080	3/4 BSP.F	EFGM-03Y-3090	3/4 NPT	5.7 (12.6)
	EFGM-03Z-30	Rc 1	EFGM-03Z-3080	1 BSP.F	EFGM-03Z-3090	1 NPT	5.6 (12.3)
EFG EFCG -06	EFGM-06X-30	Rc 1	EFGM-06X-3080	1 BSP.F	EFGM-06X-3090	1 NPT	12.5 (27.6)
	EFGM-06Y-30	Rc 1-1/4	EFGM-06Y-3080	1-1/4 BSP.F	EFGM-06Y-3090	1-1/4 NPT	16 (35.3)

● 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 dose not exceed 0.2 MPa (29 PSI).

● Pilot Type Selection

This valve is constructed so as to operate at a pre-determined pilot pressure. For the 03, a pilot pressure of 1 MPa (145 PSI) or higher is required. For the 06, the requied pilot pressure is 1.5 MPa (220 PSI) or higher. To obtain such a required pilot pressure, select the pilot type according to the circuit examples on the right.

①/②

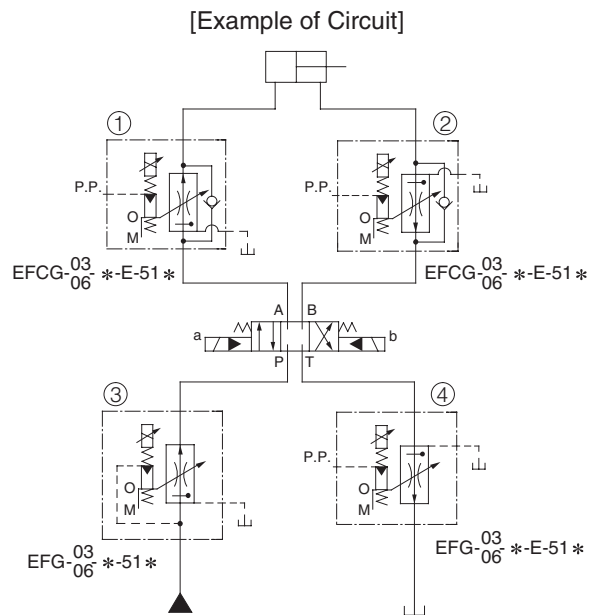
Use the external pilot type (pilot connection code: E) whether a metre-in or metre-out circuit is employed.

③

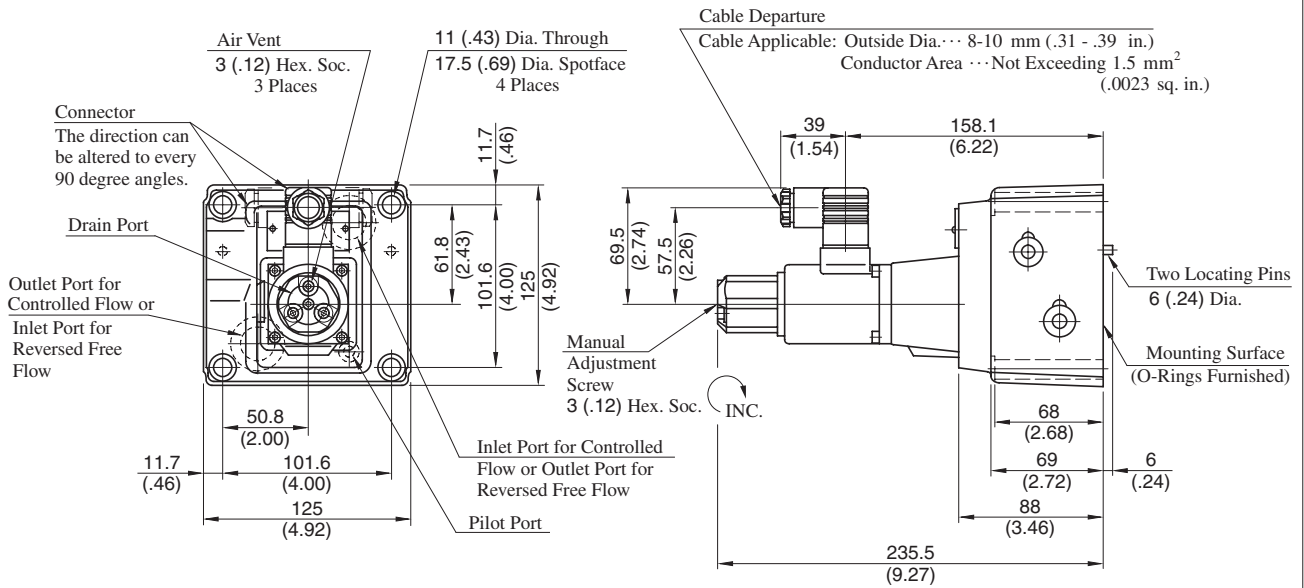
Use the internal pilot type (pilot connection code: None)

④

Use the external pilot type (pilot connection code: E)

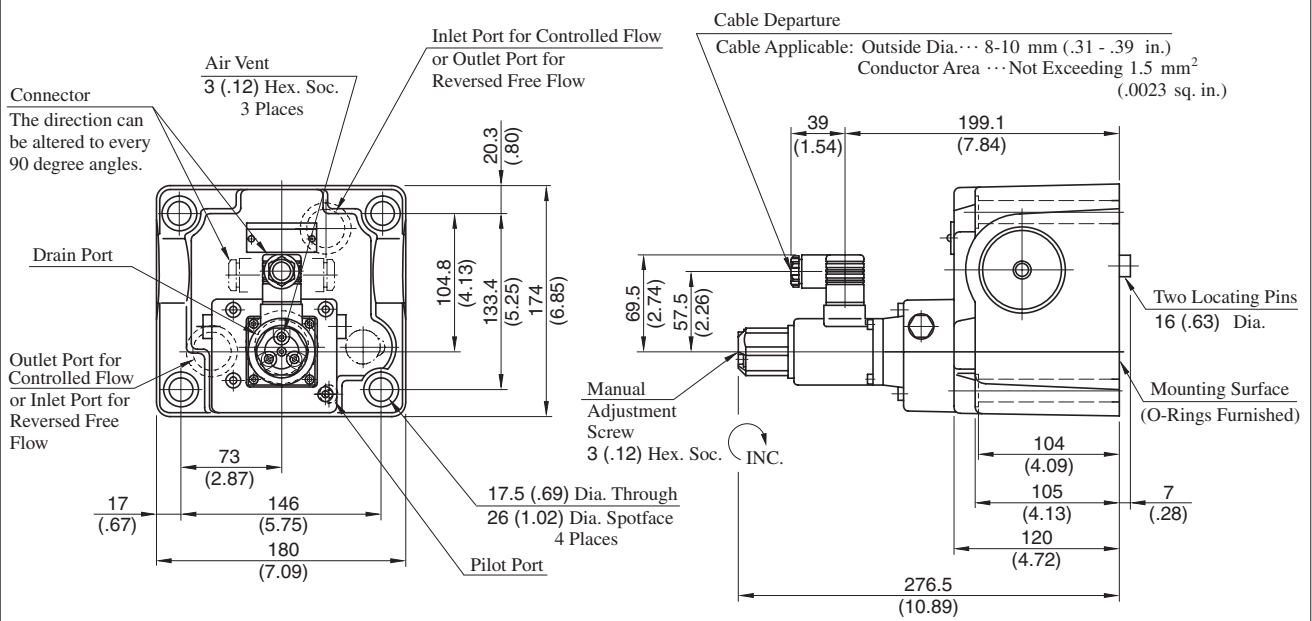


EFG 60
EFCG -03- 125 - *-51/5190



DIMENSIONS IN MILLIMETRES (INCHES)

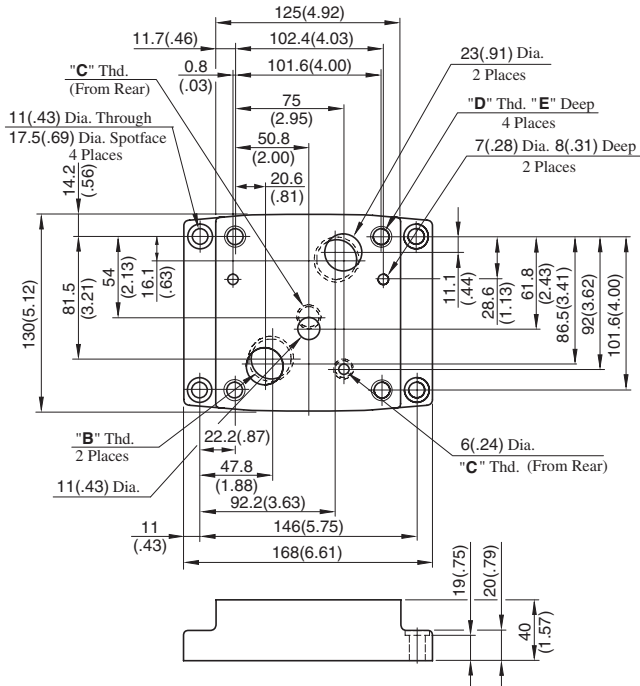
EFG -06-250- *-51/5190
EFCG



H
E Series
10Ω Series Flow Control (and Check) Valves

Sub-plate

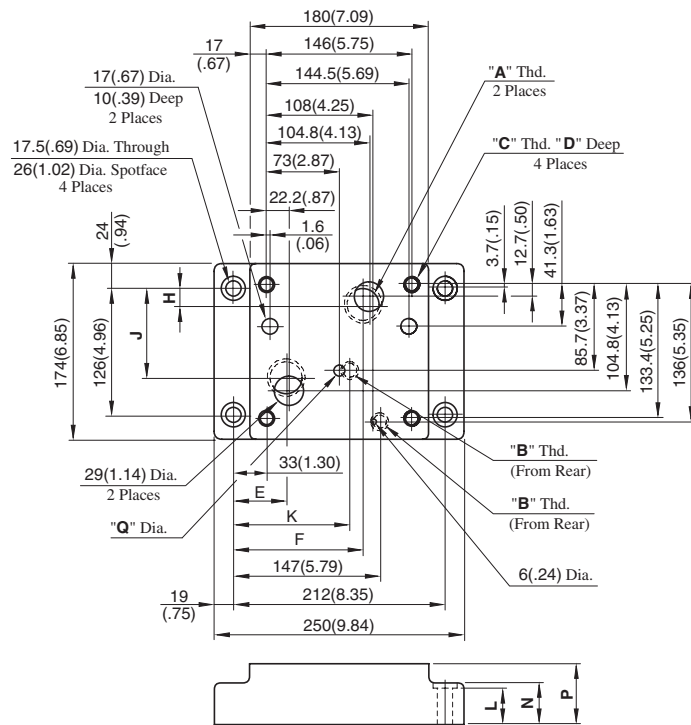
EFGM-03Y, 03Z-30/3080/3090



Sub-plate Model Numbers	Thread Size			E mm(in.)
	"B" Thd.	"C" Thd.	"D" Thd.	
EFGM-03Y-30	Rc 3/4	Rc 1/4	M10	18 (.71)
EFGM-03Z-30	Rc 1			
EFGM-03Y-3080	3/4 BSP.F	1/4 BSP.F	M10	18 (.71)
EFGM-03Z-3080	1 BSP.F			
EFGM-03Y-3090	3/4 NPT	1/4 NPT	3/8-16 UNC	21 (.83)
EFGM-03Z-3090	1 NPT			

DIMENSIONS IN MILLIMETRES (INCHES)

EFGM-06X, 06Y-30/3080/3090

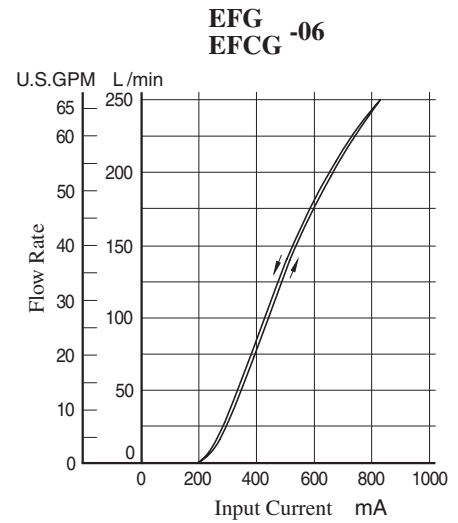
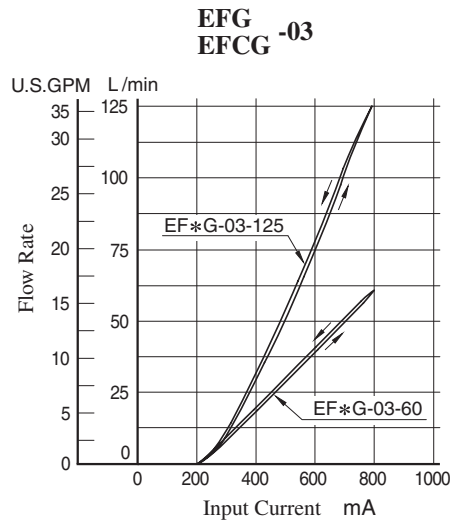


Sub-plate Model Numbers	Thread Size		
	"A" Thd.	"B" Thd.	"C" Thd.
EFGM-06X-30	Rc 1	Rc 3/8	M16
EFGM-06Y-30	Rc 1-1/4		
EFGM-06X-3080	1 BSP.F	3/8 BSP.F	M16
EFGM-06Y-3080	1-1/4 BSP.F		
EFGM-06X-3090	1 NPT	3/8 NPT	5/8-11 UNC
EFGM-06Y-3090	1-1/4 NPT		

Sub-plate Model Numbers	Dimensions mm (Inches)									
	D	E	F	H	J	K	L	N	P	Q
EFGM-06X-30	30 (1.18)	55.2 (2.17)	137.8 (5.43)	14.3 (.56)	101.1 (3.98)	106 (4.17)	34 (1.34)	35 (1.38)	45 (1.77)	11 (.43)
EFGM-06Y-30		52 (2.05)	132 (5.20)	19.3 (.76)	91.3 (3.59)		39 (1.54)	40 (1.57)	60 (2.36)	
EFGM-06X-3080		55.2 (2.17)	137.8 (5.43)	14.3 (.56)	101.1 (3.98)	116 (4.57)	34 (1.34)	35 (1.38)	45 (1.77)	15.2 (.60)
EFGM-06Y-3080		52 (2.05)	132 (5.20)	19.3 (.76)	91.3 (3.59)		39 (1.54)	40 (1.57)	60 (2.36)	
EFGM-06X-3090	35 (1.38)	55.2 (2.17)	137.8 (5.43)	14.3 (.56)	101.1 (3.98)	106 (4.17)	34 (1.34)	35 (1.38)	45 (1.77)	11 (.43)
EFGM-06Y-3090		52 (2.05)	132 (5.20)	19.3 (.76)	91.3 (3.59)		39 (1.54)	40 (1.57)	60 (2.36)	

Input Current vs. Flow

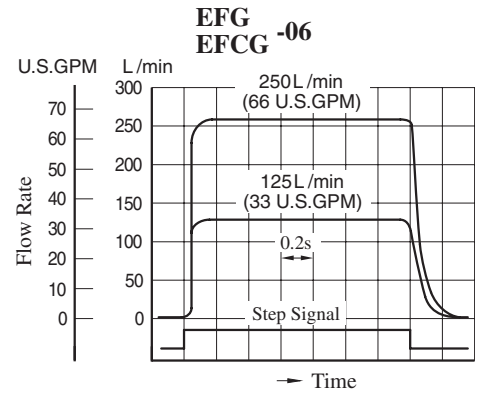
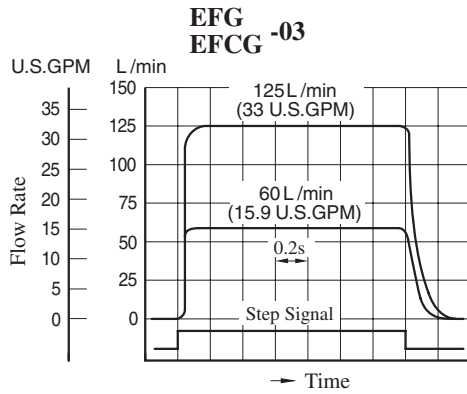
Viscosity: 30 mm²/s
(141 SSU)



Step Response

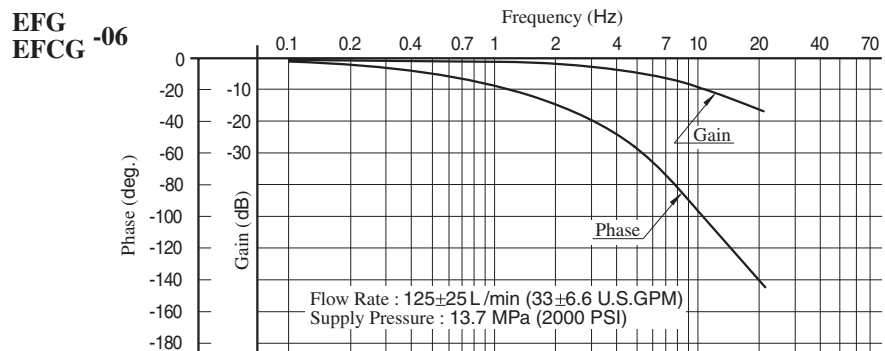
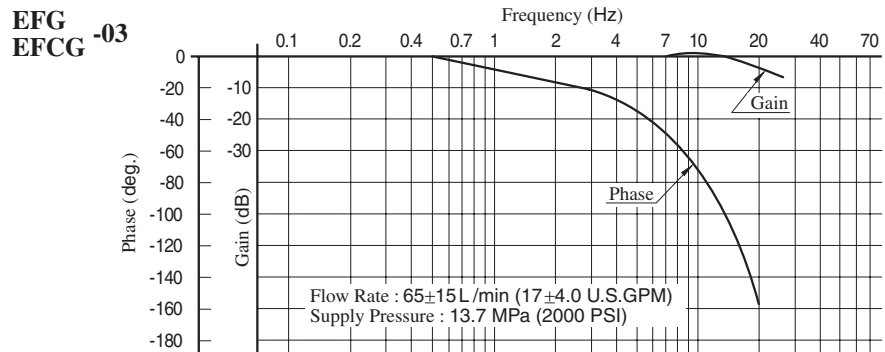
These characteristics have been obtained by measuring on each valve. Therefore, they may vary according to a hydraulic circuit to be used.

Viscosity: 30 mm²/s
(141 SSU)

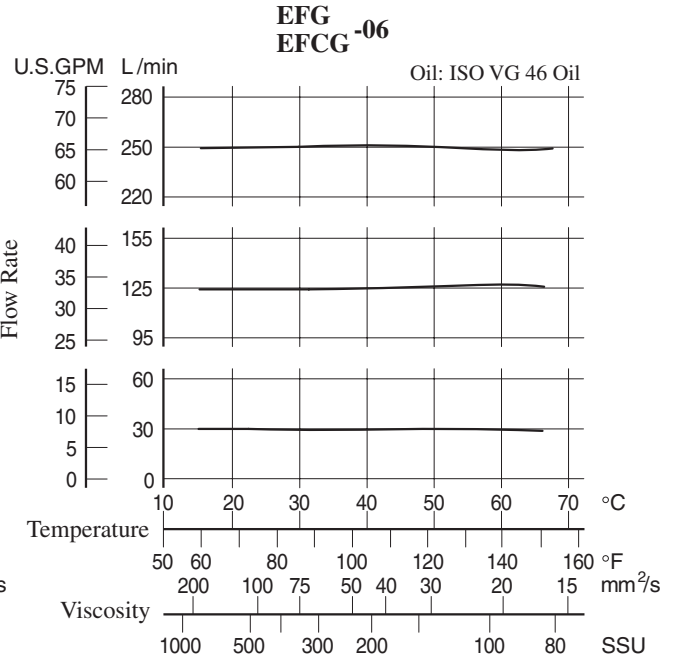
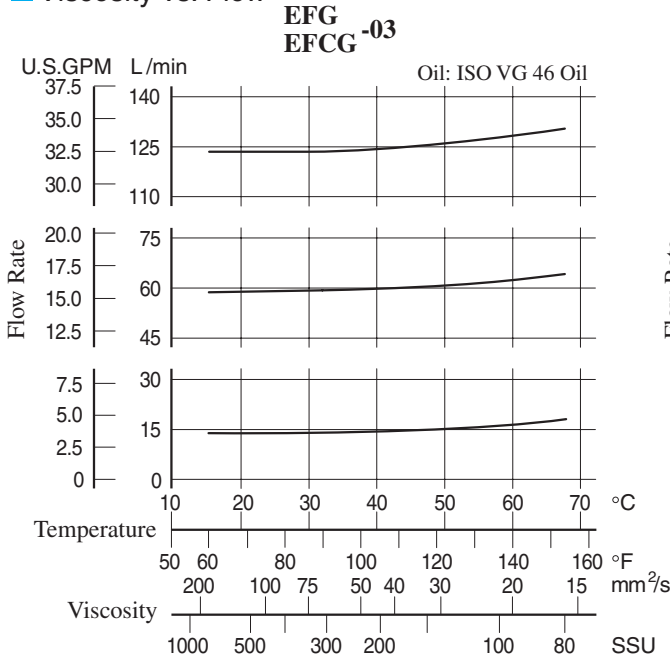


Frequency Response

Viscosity: 30 mm²/s
(141 SSU)

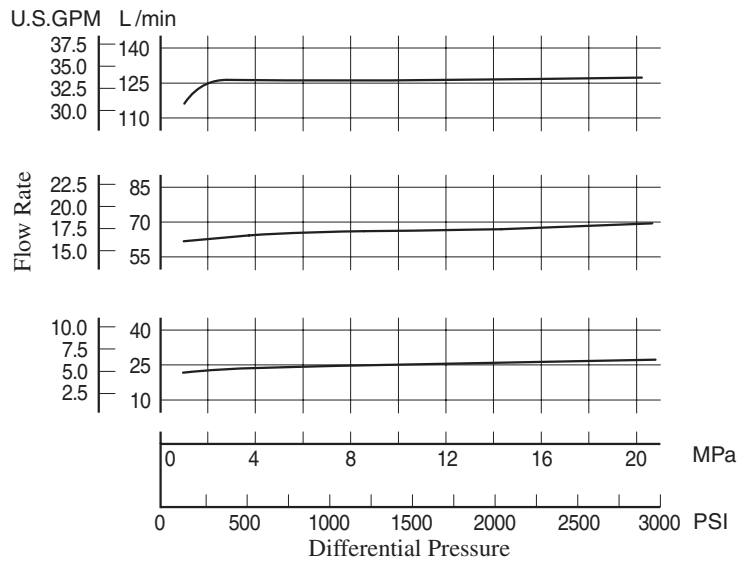


■ Viscosity vs. Flow

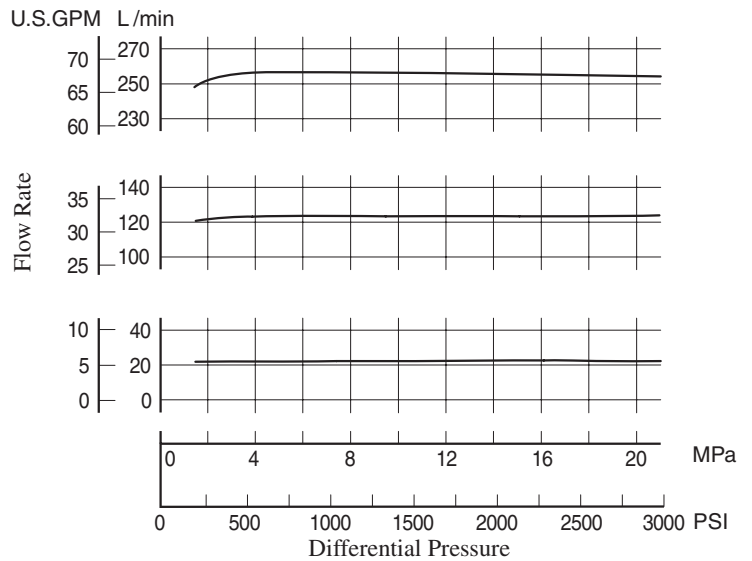


■ Differential Pressure vs. Metred Flow

**EFG
EFCG -03**

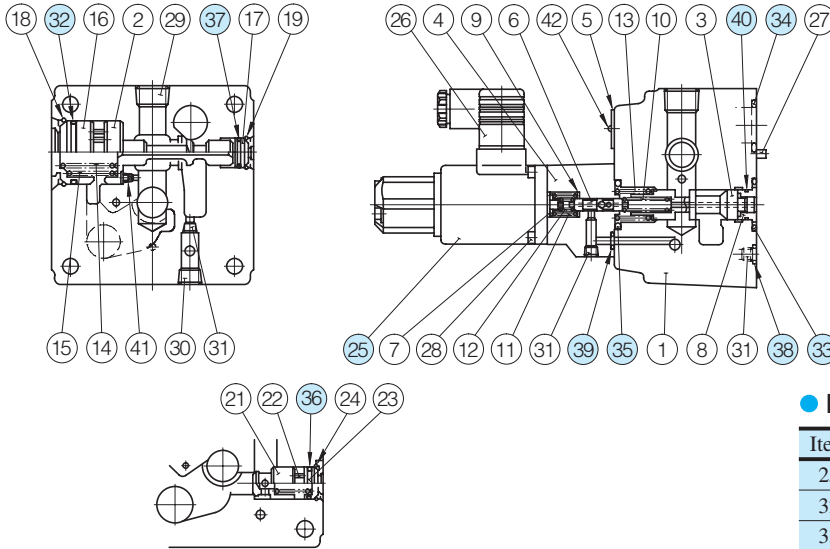


**EFG
EFCG -06**



List of Seals and Solenoid Ass'y

EFG
EFCG -03-*-*-51/5190



With Check Valve (EFCG-03)

Note: The connector assembly GDM-211-B-11 (Item 26) is not included in the solenoid assembly.

Note: When ordering seals, please specify the seal kit number from the table right. In addition to the right o-rings, seals for solenoid ass'y is included in the seal kit. For the detail of the solenoid ass'y seals, see page 674.

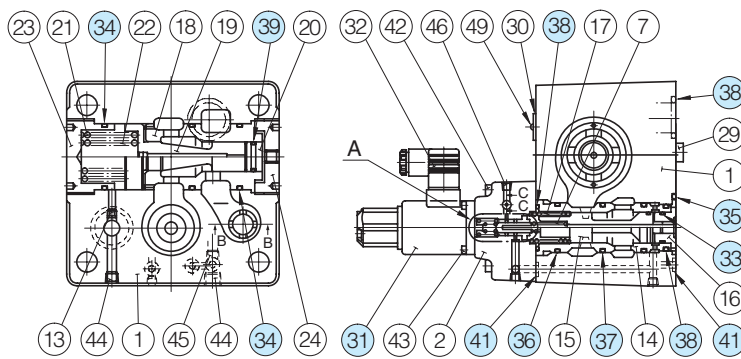
List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFG-03-*-*-51*	KS-EFG-03-51
EFCG-03-*-*-51*	KS-EFCG-03-51

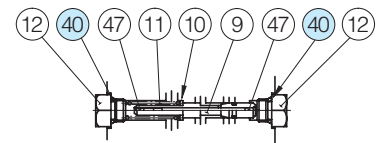
List of Seals and Solenoid Ass'y

Item	Name of Parts	Part Numbers	Qty.
25	Solenoid Ass'y	E318-Y06M1-28-61	1
32	O-Ring	SO-NB-G35	1
33	O-Ring	SO-NB-P28	1
34	O-Ring	SO-NB-P28	2
35	O-Ring	SO-NB-P26	1
36	O-Ring	SO-NB-P16	1
37	O-Ring	SO-NB-P14	1
38	O-Ring	SO-NB-P9	1
39	O-Ring	SO-NB-P6	2
40	O-Ring	SO-NA-A016	1

EFG
EFCG -06-250-*-*-51/5190



With Check Valve (EFCG-06)



Detail of Section C-C

List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFG-06-250-*-*-51*	KS-EFG-06-51
EFCG-06-250-*-*-51*	KS-EFCG-06-51

List of Seals and Solenoid Ass'y

Item	Name of Parts	Part Numbers	Qty.
31	Solenoid Ass'y	E318-Y06M1-28-61	1
33	O-Ring	SO-NA-P21	1
34	O-Ring	SO-NB-P50	3
35	O-Ring	SO-NB-P46	1
36	O-Ring	SO-NB-P36	1
37	O-Ring	SO-NB-P34	2
38	O-Ring	SO-NB-P32	4
39	O-Ring	SO-NA-P21	1★
40	O-Ring	SO-NB-P10	2
41	O-Ring	SO-NB-P9	3

★ Two O-rings are required for the EFCG.

Note: The connector assembly GDM-211-B-11 (Item 32) is not included in the solenoid assembly.

Note: When ordering seals, please specify the seal kit number from the table right. In addition to the right o-rings, seals for solenoid ass'y is included in the seal kit. For the detail of the solenoid ass'y seals, see page 674.

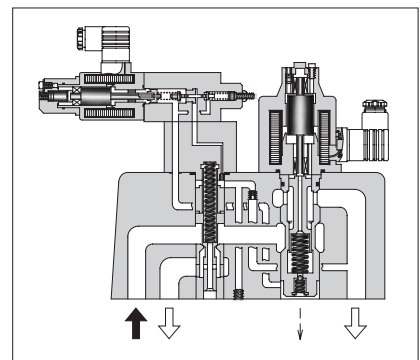
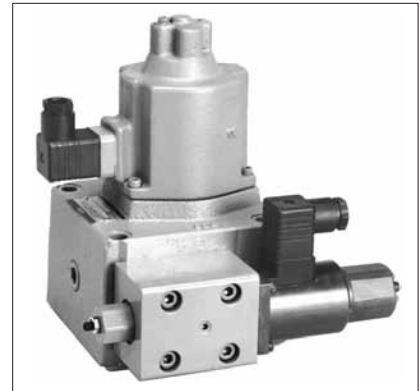
40Ω-10Ω Series

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.



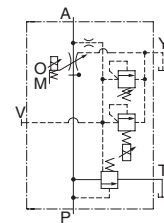
Specifications

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 ^{★1}	Pres. Adj. Range MPa (PSI) ^{★2}	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 page 714 to 716		

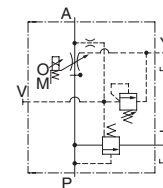
★1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-125-C-17)

★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
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EFB: Proportional Electro-Hydraulic Flow Control and Relief Valve	G: Sub-plate Mounting	03	125: 125 (33)	C, H: See Specifications None: Without Proportional Pilot Relief Valve	17	Refer to ★
			06	250: 250 (66)		17	
			10	500: 500 (132)		17	

★ 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	—
EFBG-06- ⁰³ *- ^C H-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 [★]	1-1/2, 2 Flange Mounting	EFBGM-10Y-1080 [★]	1-1/2, 2 Flange Mounting	EFBGM-10Y-1090 [★]	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).

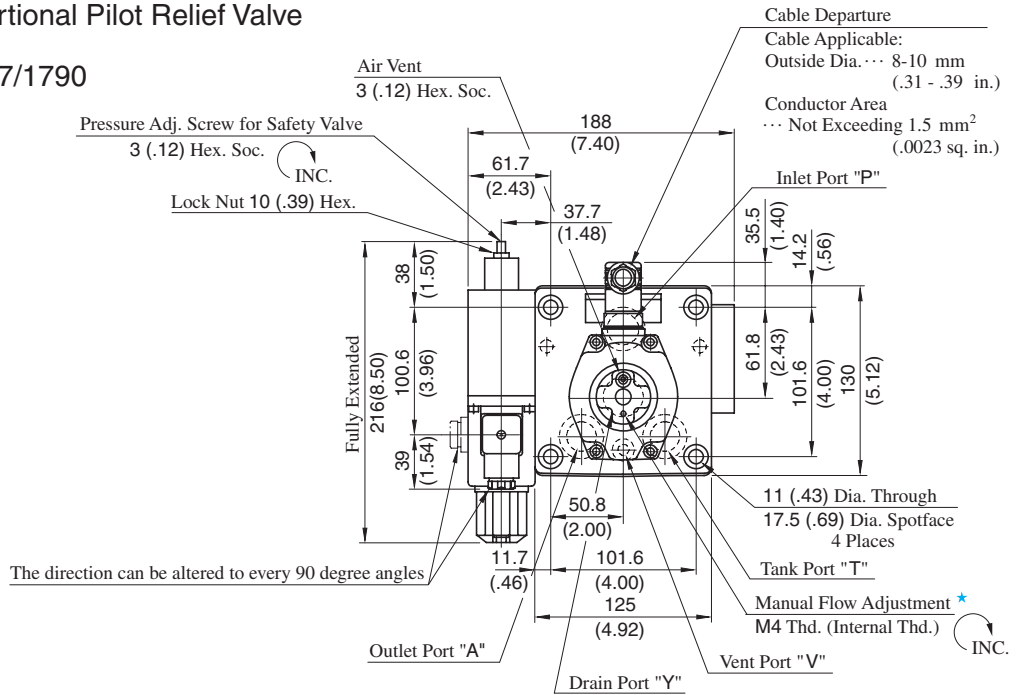
Safety Valve Pressure Setting

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.

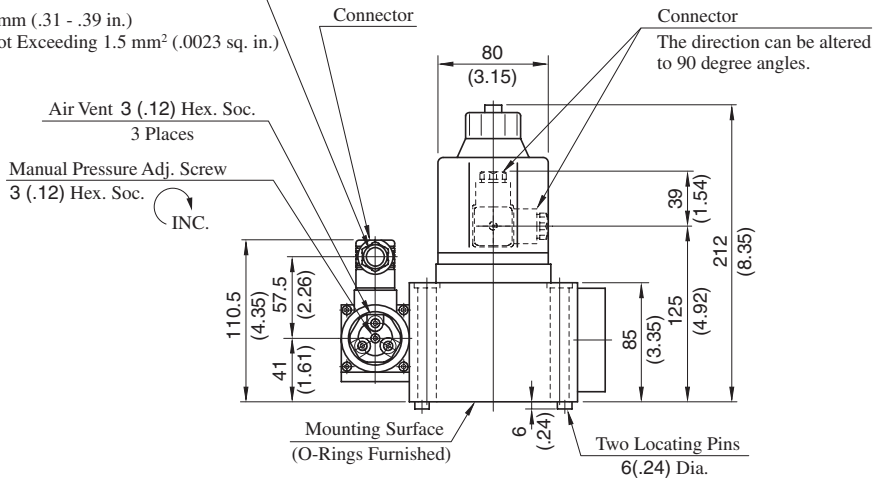
To lower the pressure setting, turn the safety valve pressure adjustment screw anti-clockwise. After adjustment, be sure to tighten the lock nut.

Models with Proportional Pilot Relief Valve

EFBG-03-125-^C/_H-17/1790



Cable Departure
Cable Applicable:
Outside Dia. ... 8-10 mm (.31 - .39 in.)
Conductor Area ... Not Exceeding 1.5 mm² (.0023 sq. in.)



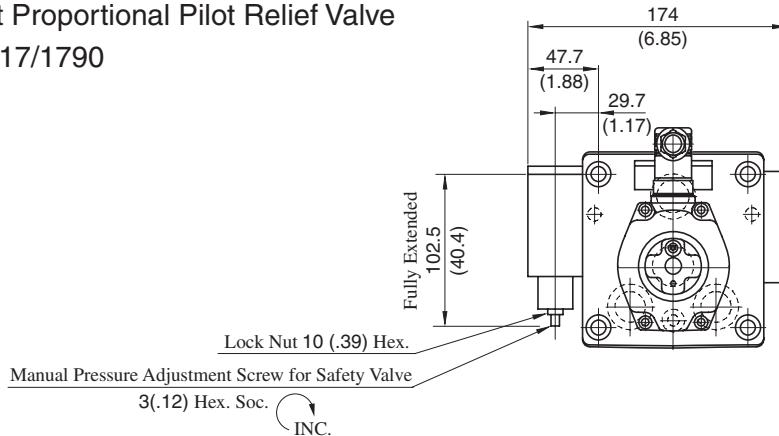
**DIMENSIONS IN
MILLIMETRES (INCHES)**

★ 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

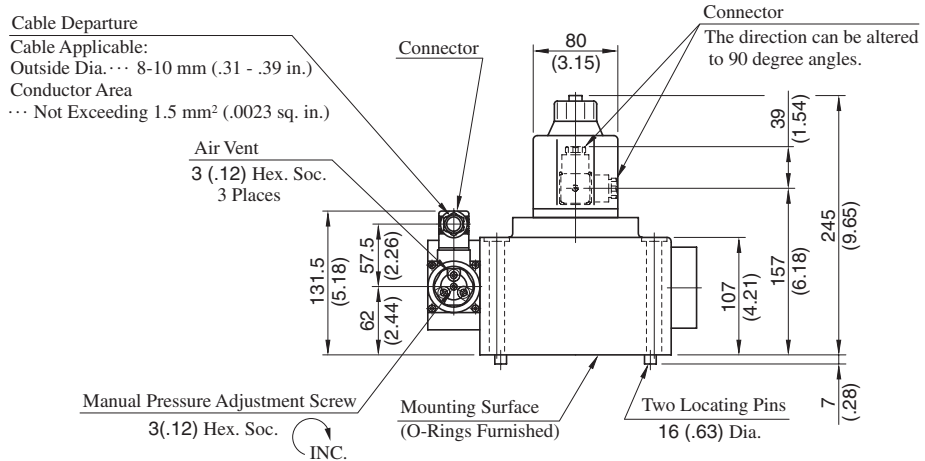
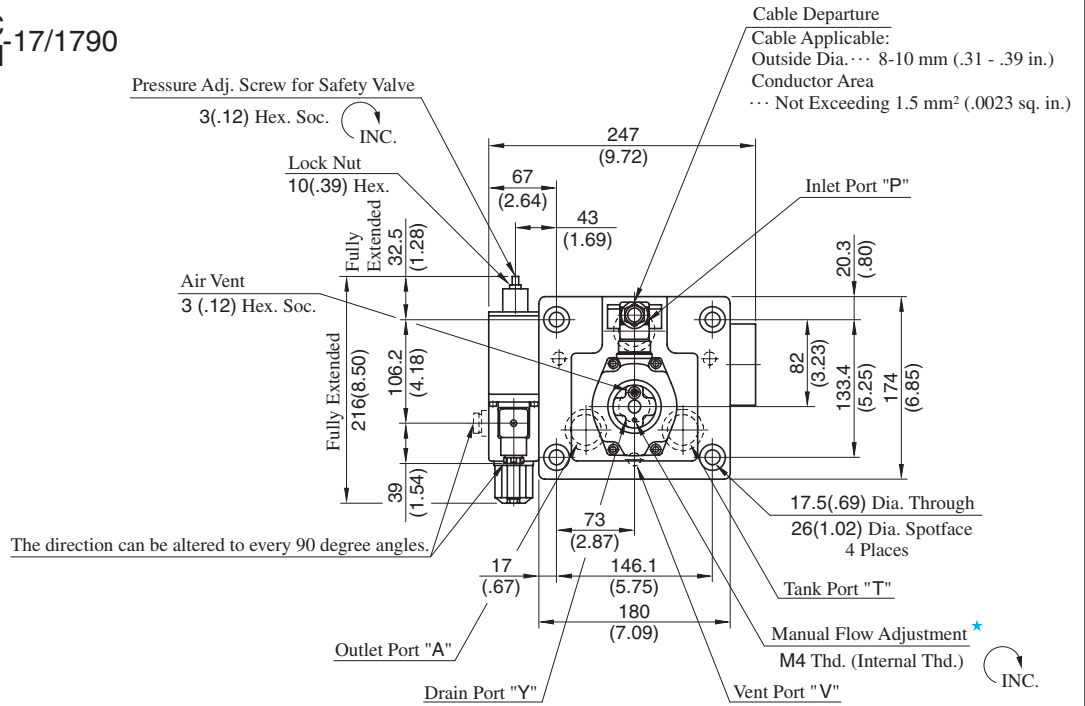


Approx. Mass 14 kg
(30.9 lbs.)

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

Models with Proportional Pilot Relief Valve

EFBG-06-250-^C_H-17/1790



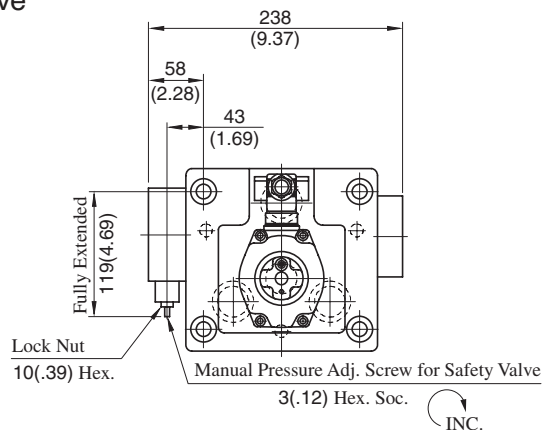
DIMENSIONS IN MILLIMETRES (INCHES)

Approx. Mass 30 kg (66.2 lbs.)

★ 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

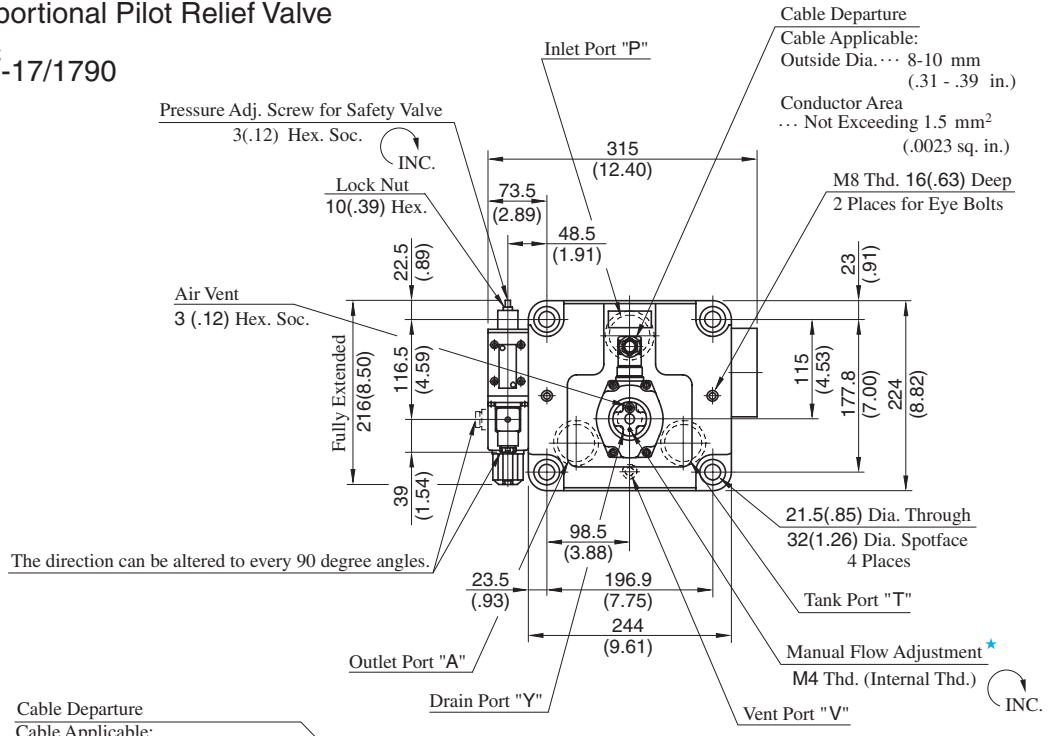


Approx. Mass 28 kg (61.7 lbs.)

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

Models with Proportional Pilot Relief Valve

EFBG-10-500-^C_H-17/1790



The direction can be altered to every 90 degree angles.

Manual Pressure Adjustment Screw
3(.12) Hex. Soc. **INC.**

Air Vent
3(.12) Hex. Soc.
3 Places

Mounting Surface
(O-Rings Furnished)

Two Locating Pins
18(.71) Dia.

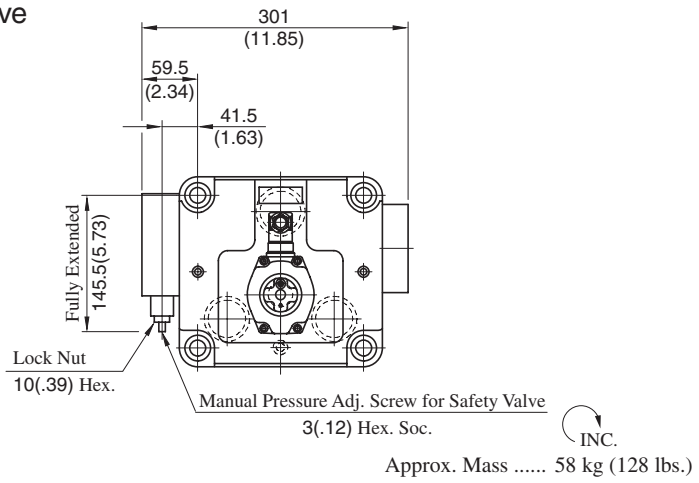
Approx. Mass 60 kg (132 lbs.)

DIMENSIONS IN MILLIMETRES (INCHES)

★ 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

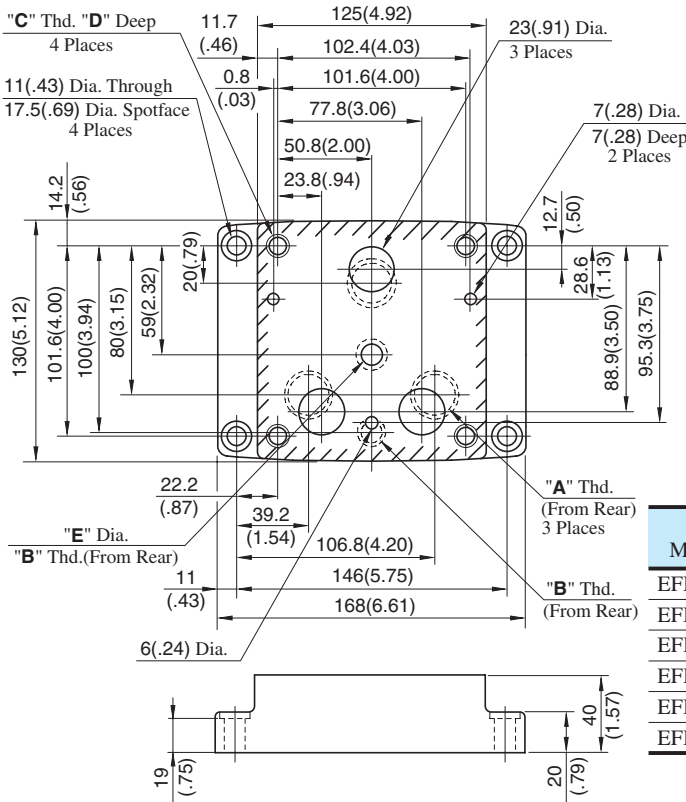


Approx. Mass 58 kg (128 lbs.)

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

Sub-plate

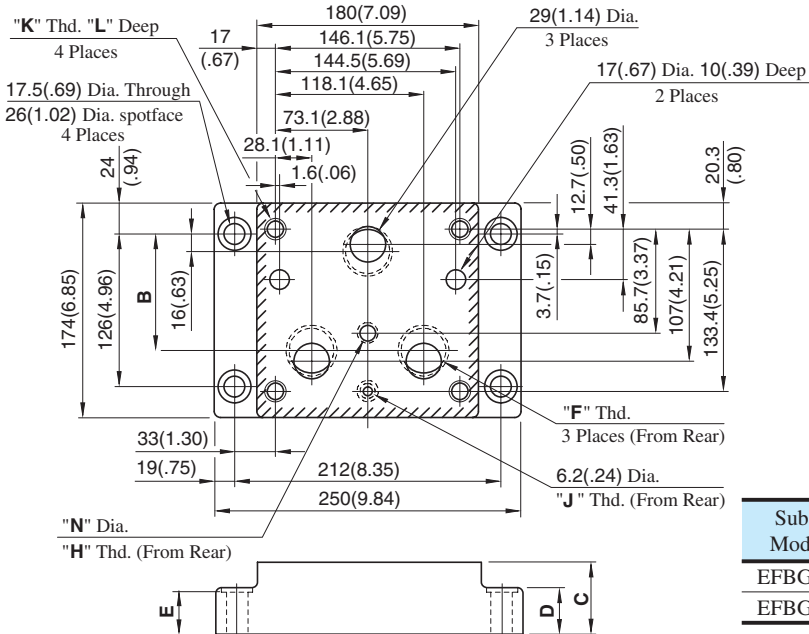
EFBGM-03Y/03Z-10/1080/1090



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)

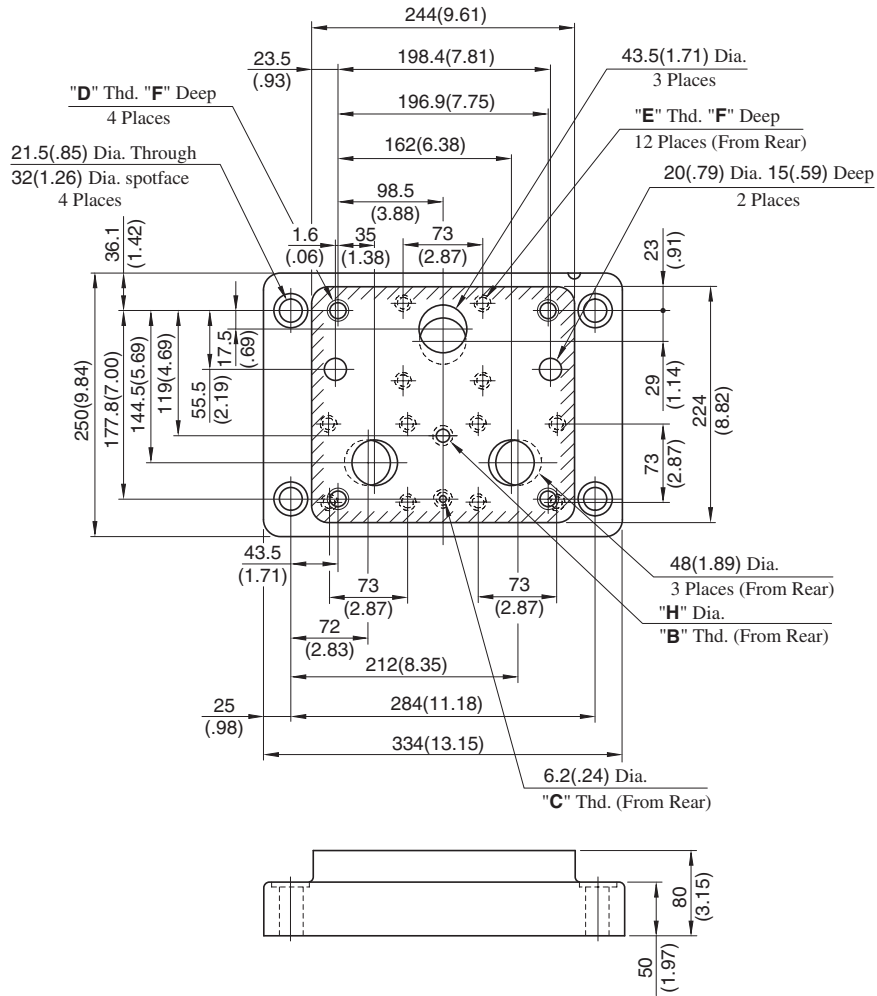
Sub-plate Model No.	Thread Size				mm (in.)	
	"F" Thd.	"H" Thd.	"J" Thd.	"K" Thd.	L	N
EFBGM-06X-10	Rc 1	Rc 3/8	Rc 1/4	M 16	30 (1.18)	14 (.55)
EFBGM-06Y-10	Rc 1-1/4				30 (1.18)	15.2 (.60)
EFBGM-06X-1080	1 BSP.F	3/8 BSP.F	1/4 BSP.F	M 16	30 (1.18)	15.2 (.60)
EFBGM-06Y-1080	1-1/4 BSP.F				35 (1.38)	14 (.55)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

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

Sub-plate

EFBGM-10Y-10/1080/1090

DIMENSIONS IN MILLIMETRES (INCHES)



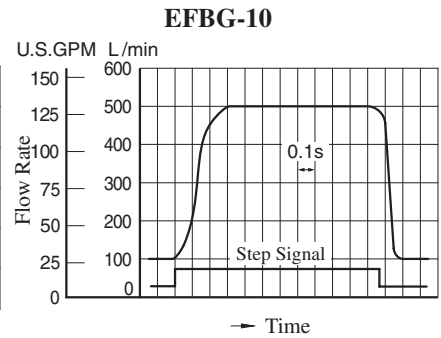
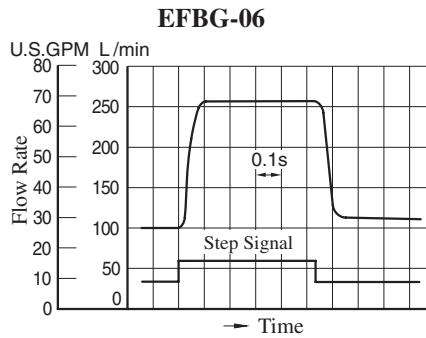
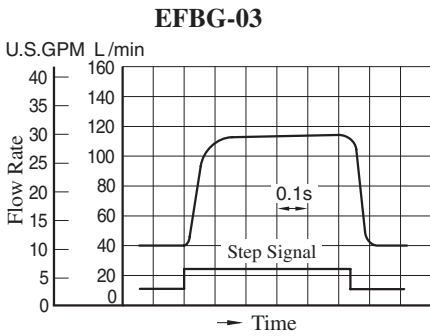
Sub-plate Model Numbers	Thread Size				mm (in.)	
	"B" Thd.	"C" Thd.	"D" Thd.	"E" Thd.	F	H
EFBGM-10Y-10	Rc 3/8	Rc 1/4	M20	M16	32 (1.26)	14 (.55)
EFBGM-10Y-1080	3/8 BSPF	1/4 BSPF				15.2 (.60)
EFBGM-10Y-1090	3/8 NPT	1/4 NPT	3/4-10 UNC	5/8-11 UNC	34 (1.34)	14 (.55)

Step Response

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

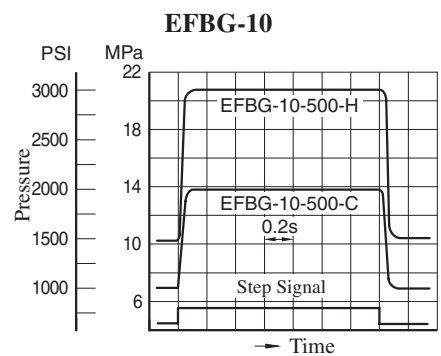
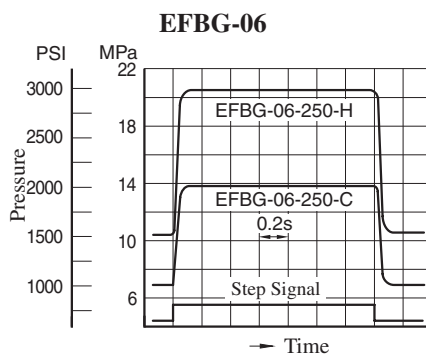
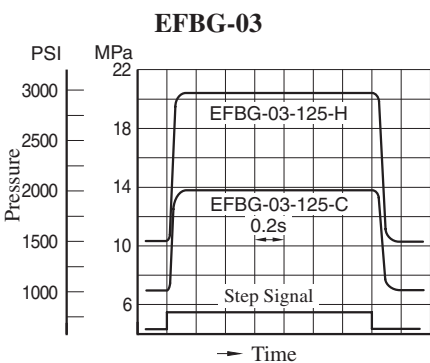
Viscosity: 30 mm²/s (141 SSU)

Flow Controls



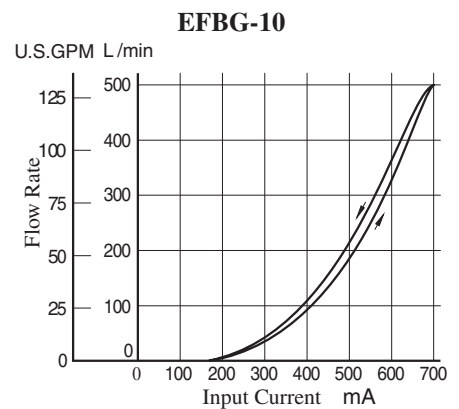
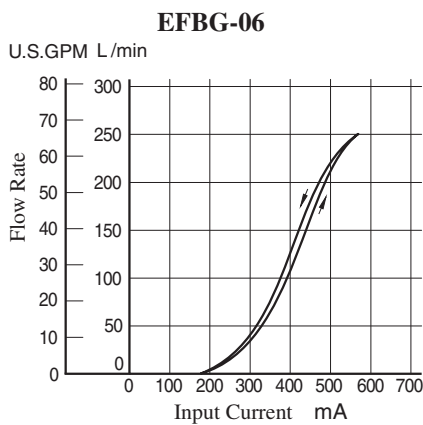
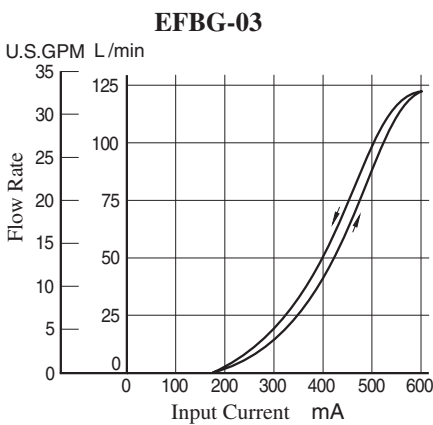
Pressure Controls

Viscosity: 30 mm²/s (141 SSU)



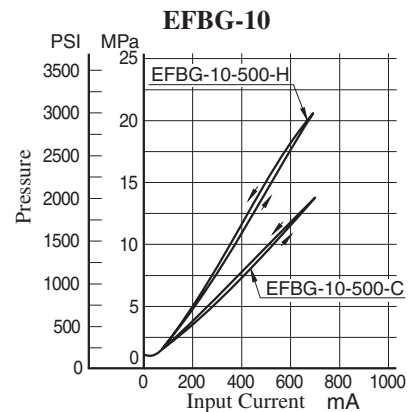
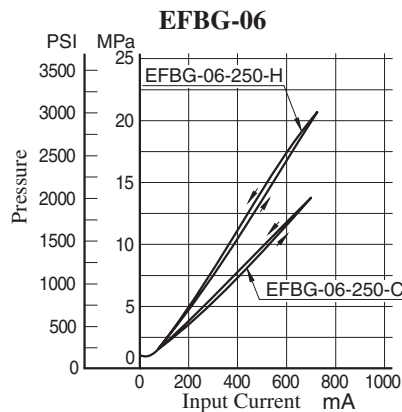
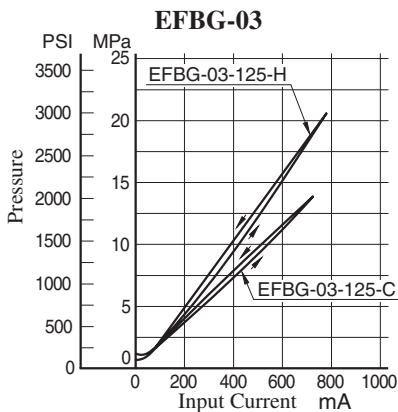
Input Current vs. Flow

Viscosity: 30 mm²/s (141 SSU)



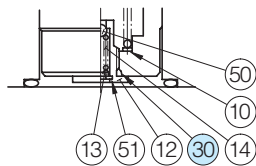
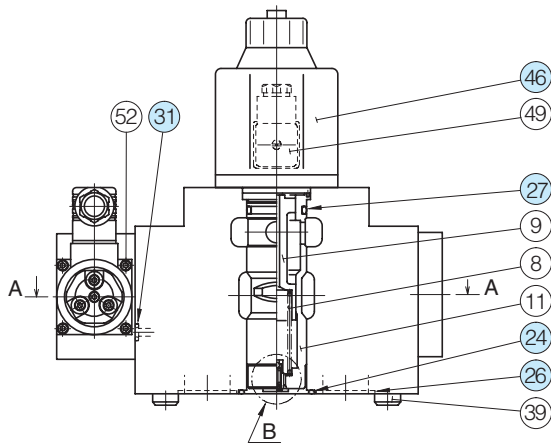
Input Current vs. Pressure

Viscosity: 30 mm²/s (141 SSU)

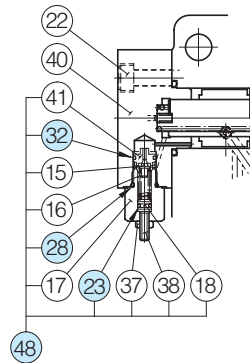
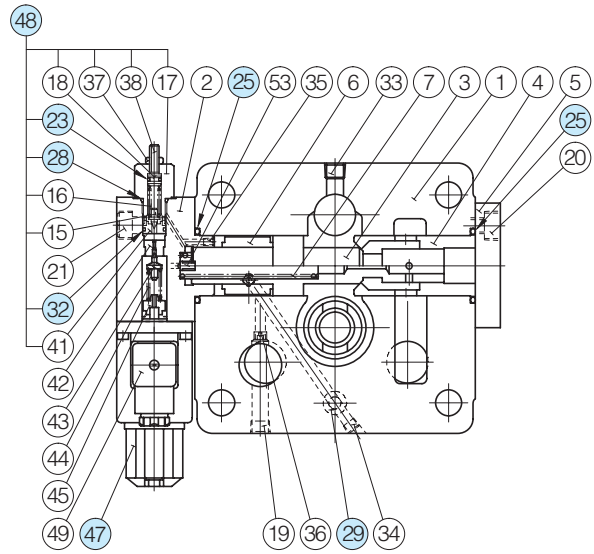


■ List of Seals, Solenoid Ass'y and Safety Valve

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	—	E321-45-20	SB1094-2002
EFBG-06-250-17/1790			

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

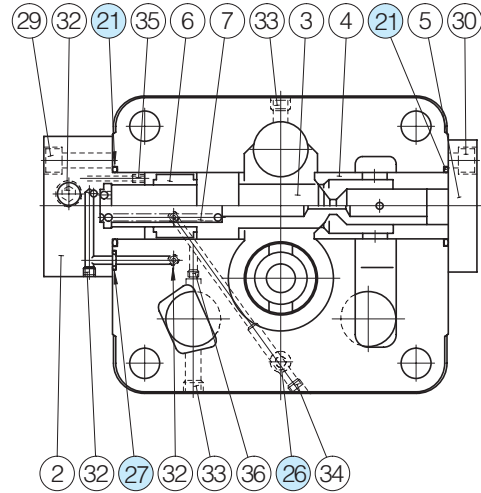
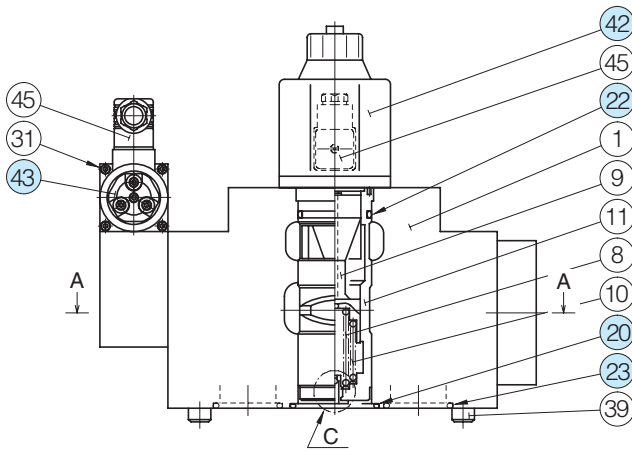
When ordering seals, please specify the seal kit number from the table above.

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.

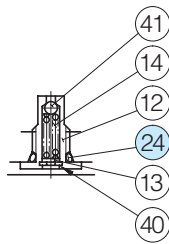
List of Seals, Solenoid Ass'y, Pilot Relief Valves and Safety Valve

EFBG-10-500- *-17/1790

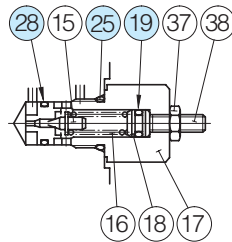


Section A-A

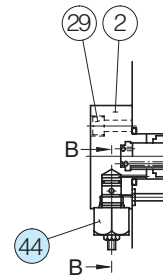
Detail of Safety Valve (Item 44)



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.



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.

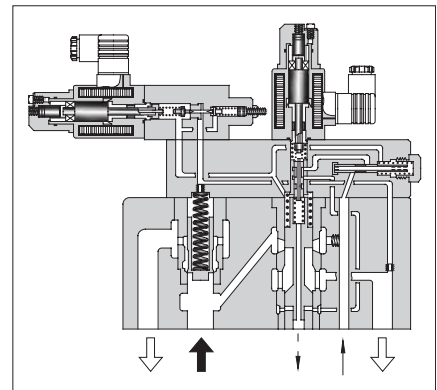
Further, since a temperature compensation function is incorporated, this valve provides consistent flow control without respect to the fluid temperature.

Specifications

Model Numbers		EFBG-03 -125-*-*-61*	EFBG-06 -250-*-*-61*	EFBG-10 -500-*-*-51*
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)
Min. Pilot Pressure	MPa (PSI)	1.5 (220)	1.5 (220)	1.5 (220)
Pilot Flow	at Normal	1 (.26)	1 (.26)	1 (.26)
	at Transition	3 (.79)	4 (1.06)	6 (1.59)
Flow Controls	Rated Current	800 mA	750 mA	900 mA
	Coil Resistance	10 Ω	10 Ω	10 Ω
	Differential Pressure	0.7 (100)	0.7 (100)	0.9 (130)
	Hysteresis	3% or less	3% or less	3% or less
	Repeatability	1% or less	1% or less	1% or less
Pressure Controls ^{★1}	Pres. Adj. Range	C: 1.4-15.7 (200-2275)	C: 1.4-15.7 (200-2275)	C: 1.5-15.7 (220-2275)
		H: 1.4-24.5 (200-3550)	H: 1.4-24.5 (200-3550)	H: 1.5-24.5 (220-3550)
	Rated Current	C: 890 mA H: 930 mA	C: 820 mA H: 880 mA	C: 800 mA H: 900 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 page 724 to 726		

★1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-125-C-*-61)

★2. The maximum pressure adjustment range of the models without proportional pilot relief valves is 24.5 MPa (3550 PSI).

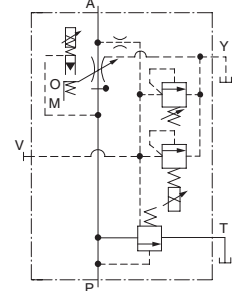
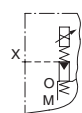


Graphic Symbols

With Proportional Pilot Relief Valve

External Pilot

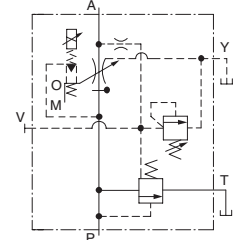
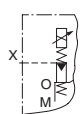
Internal Pilot



Without Proportional Pilot Relief Valve

External Pilot

Internal Pilot



Model Number Designation

F-	EFB	G	-03	-125	-C	-E	-61	*
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min (U.S.GPM)	Proportional Pilot Relief Valve Pressure Adj. Range	Pilot Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	E FB : Proportional Electro-Hydraulic Flow Control and Relief Valve	G: Sub-plate Mounting	03	125: 125 (33)	C, H: See Specifications None: Without Proportional Pilot Relief Valve	None: Internal Pilot E: External Pilot	61	Refer to *
			06	250: 250 (66)			61	
			10	500: 500 (132)			51	

★ 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 × 65 Lg.	3/8-16 UNC × 2-1/2 Lg.	4
EFBG-06	M16 × 100 Lg.	5/8-11 UNC × 4 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 767, 780).

Valve Model Numbers	Power Amplifier Model Numbers	
	For Flow Control	For Pres. Control
EFBG-03-125(-E)-61/6190 EFBG-06-250(-E)-61/6190 EFBG-10-500(-E)-51/5190	AME-D-10-* -20 AMN-D-10 (For DC Power Supply)	—
EFBG-03-125-C/H(-E)-61/6190 EFBG-06-250-C/H(-E)-61/6190 EFBG-10-500-C/H(-E)-51/5190	AME-D2-1010-11	

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-20	Rc 3/4	EFBGM-03Y-2080	3/4 BSP.F	EFBGM-03Y-2090	3/4 NPT	6 (13.2)
	EFBGM-03Z-20	Rc 1	EFBGM-03Z-2080	1 BSP.F	EFBGM-03Z-2090	1 NPT	
EFBG-06	EFBGM-06X-20	Rc 1	EFBGM-06X-2080	1 BSP.F	EFBGM-06X-2090	1 NPT	12.5 (27.6)
	EFBGM-06Y-20	Rc 1-1/4	EFBGM-06Y-2080	1-1/4 BSP.F	EFBGM-06Y-2090	1-1/4 NPT	16 (35.3)
EFBG-10	EFBGM-10Y-20★	1-1/2, 2 Flange Mounting	EFBGM-10Y-2080★	1-1/2, 2 Flange Mounting	EFBGM-10Y-2090★	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 dose 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 15 L/min (4.0 U.S.GPM) or higher. Further, check that the tank-line back pressure dose not exceed 0.5 MPa (70 PSI).

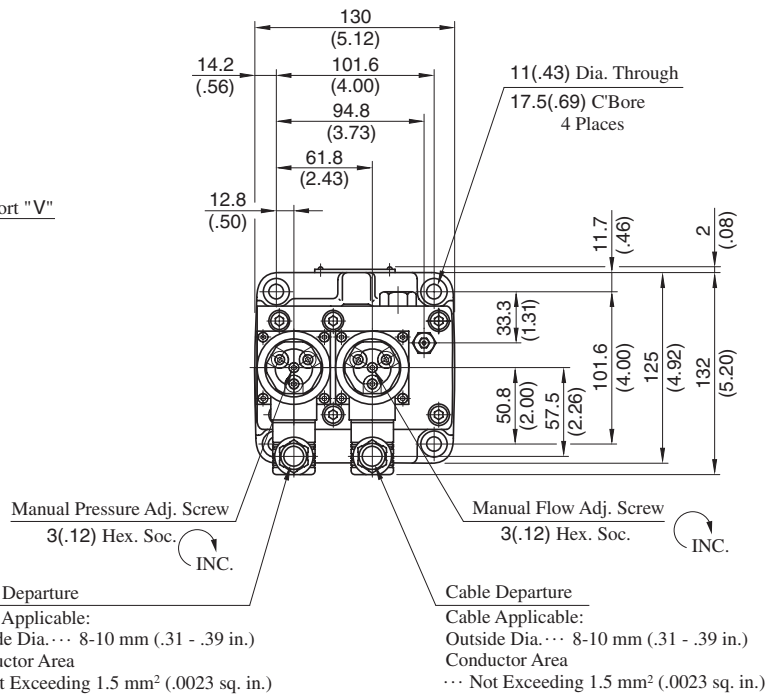
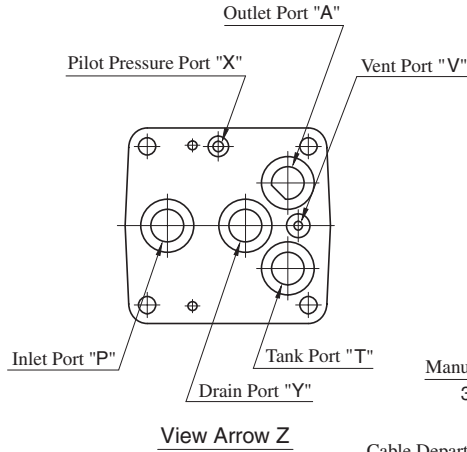
Safety Valve Pressure Setting

The pressure of the saffety valve is preset at the value equal to the upper limit of the pressure adjustment rengo 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.

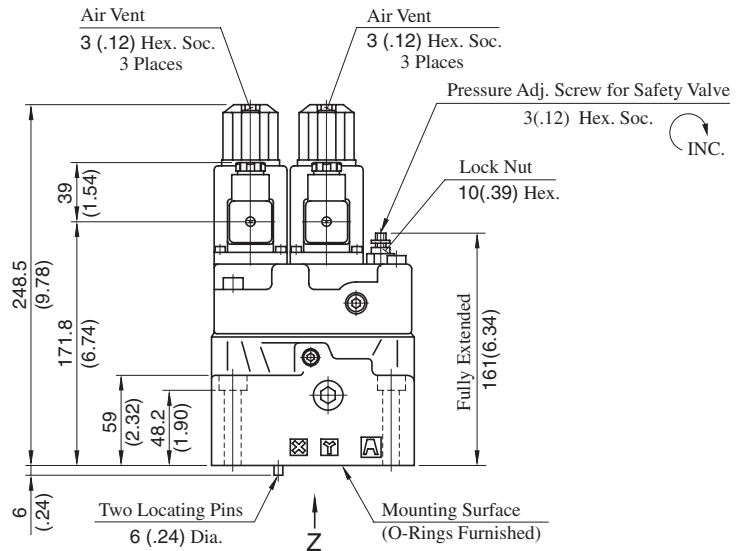
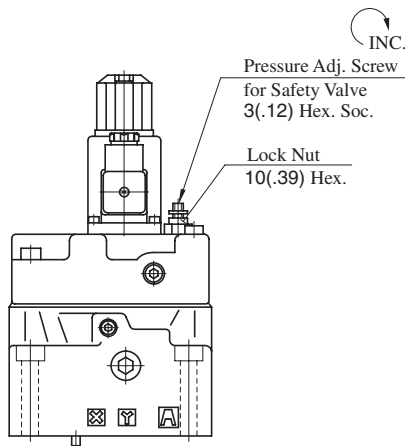
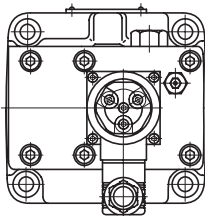
Models with Proportional Pilot Relief Valve

EFBG-03-125-^C_H(-E)-61/6190



Models without Proportional Pilot Relief Valve

EFBG-03-125(-E)-61/6190



Approx. Mass 14 kg (30.9 lbs.)

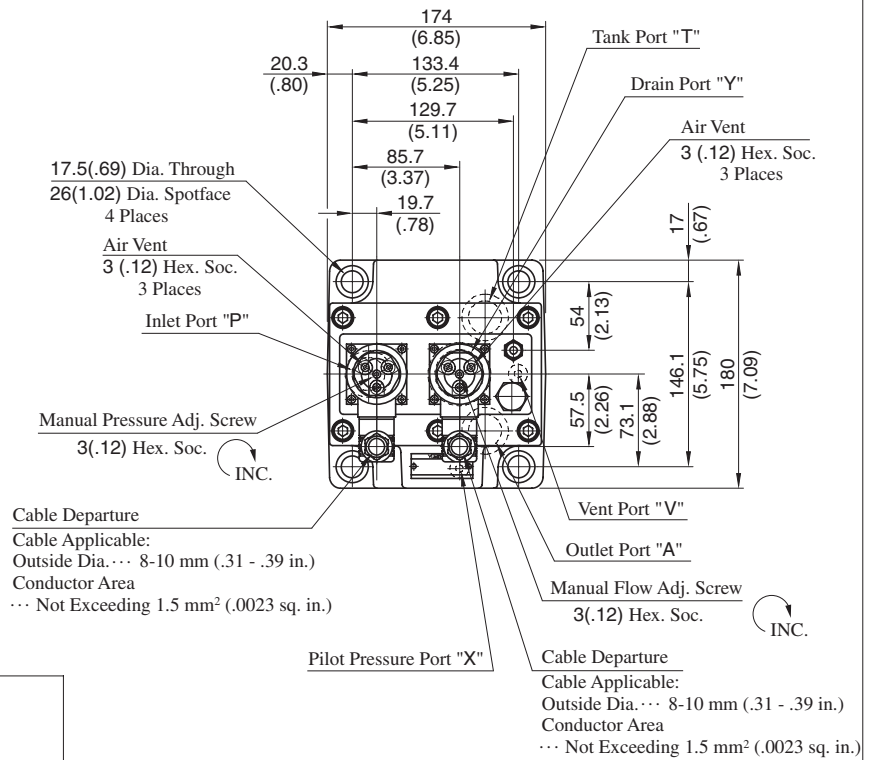
DIMENSIONS IN MILLIMETRES (INCHES)

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

Approx. Mass 13.3 kg (29.3 lbs.)

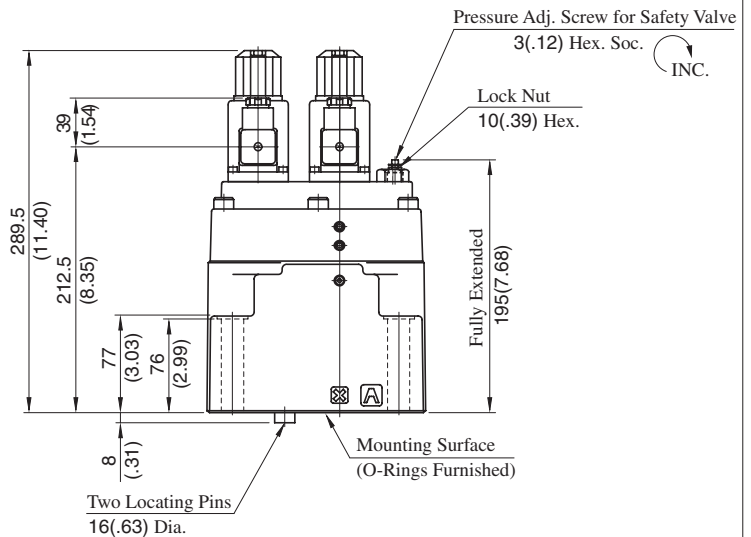
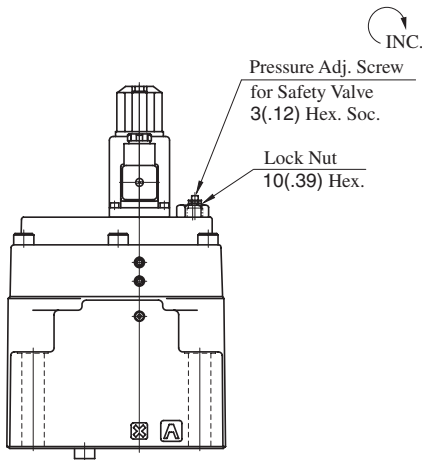
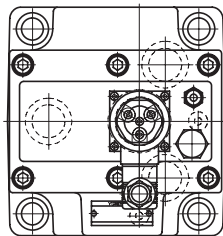
Models with Proportional Pilot Relief Valve

EFBG-06-250-^C_H(-E)-61/6190



Models without Proportional Pilot Relief Valve

EFBG-06-250(-E)-61/6190



Approx. Mass 22 kg (48.5 lbs.)

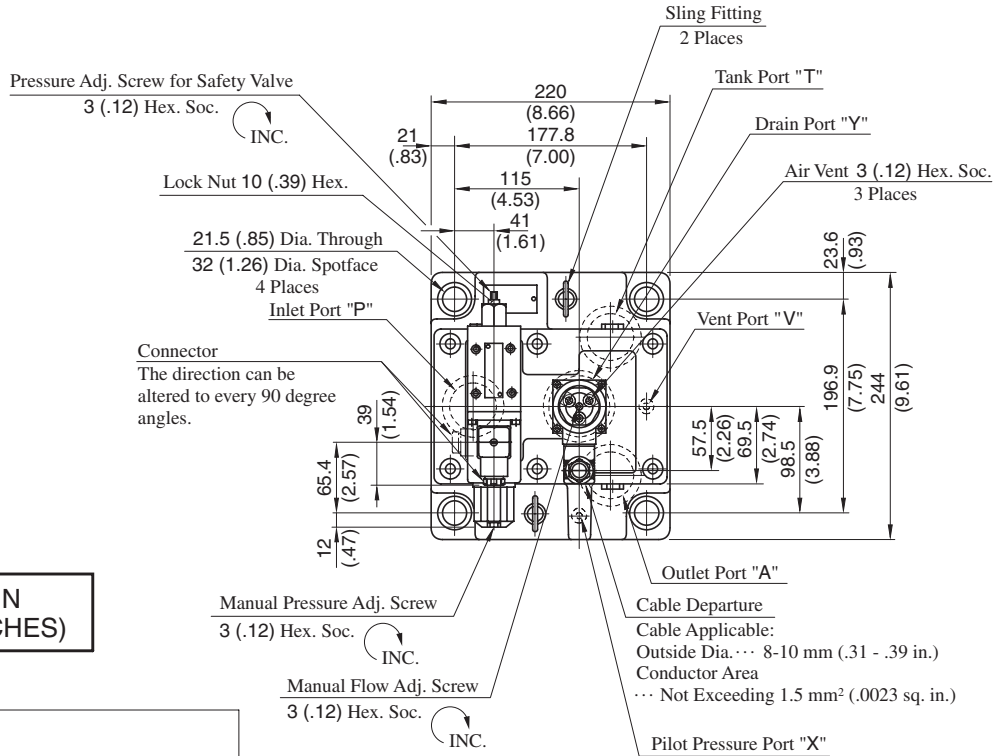
• For other dimensions, please refer to the models with Proportional Pilot Relief Valve.

Approx. Mass 21.3 kg (47.0 lbs.)

DIMENSIONS IN MILLIMETRES (INCHES)

Models with Proportional Pilot Relief Valve

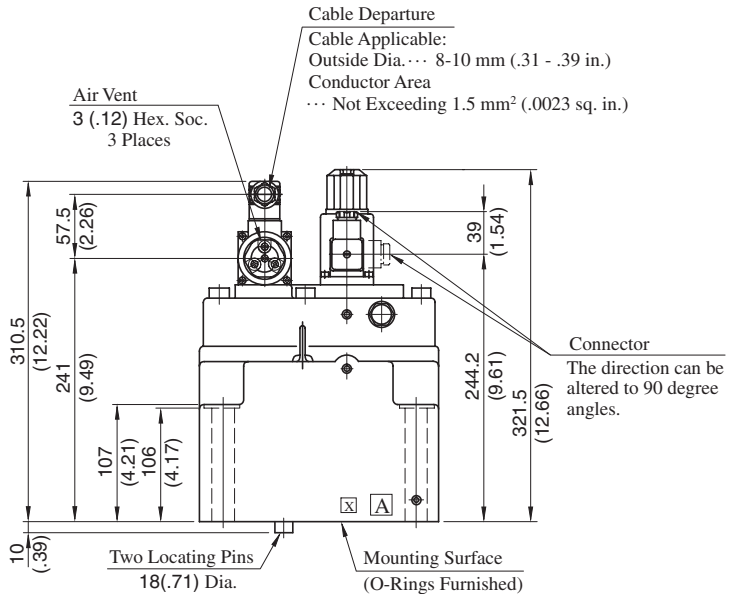
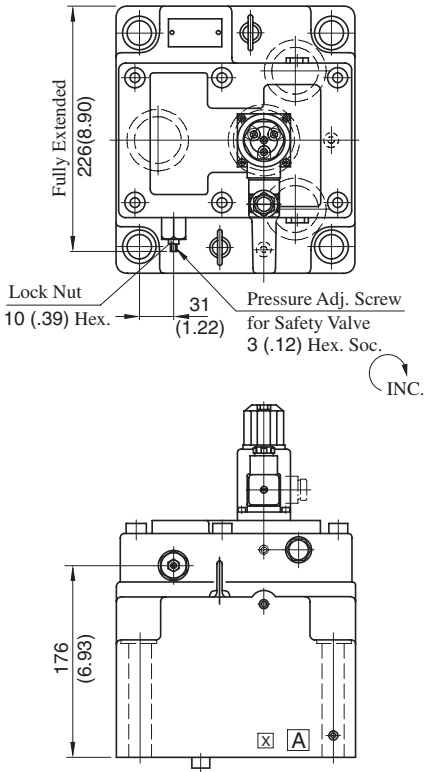
EFBG-10-500-^C_H(-E)-51/5190



DIMENSIONS IN MILLIMETRES (INCHES)

Models without Proportional Pilot Relief Valve

EFBG-10-500(-E)-51/5190



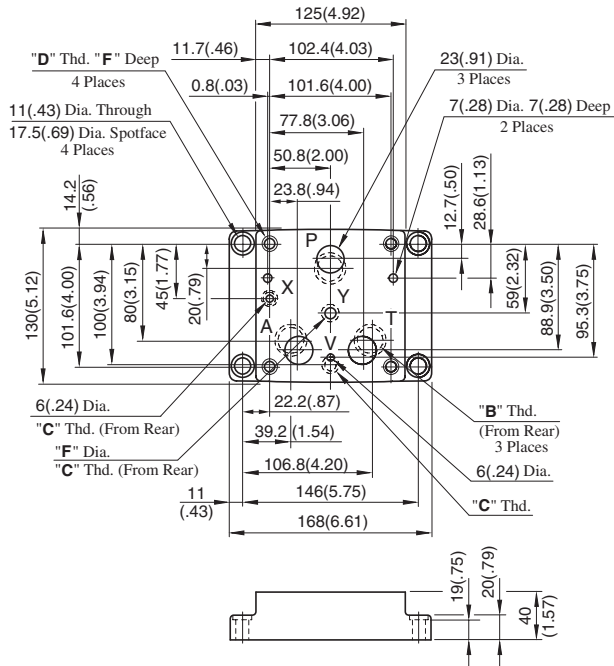
Approx. Mass 64 kg (141 lbs.)

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

Approx. Mass 62 kg (137 lbs.)

Sub-plate

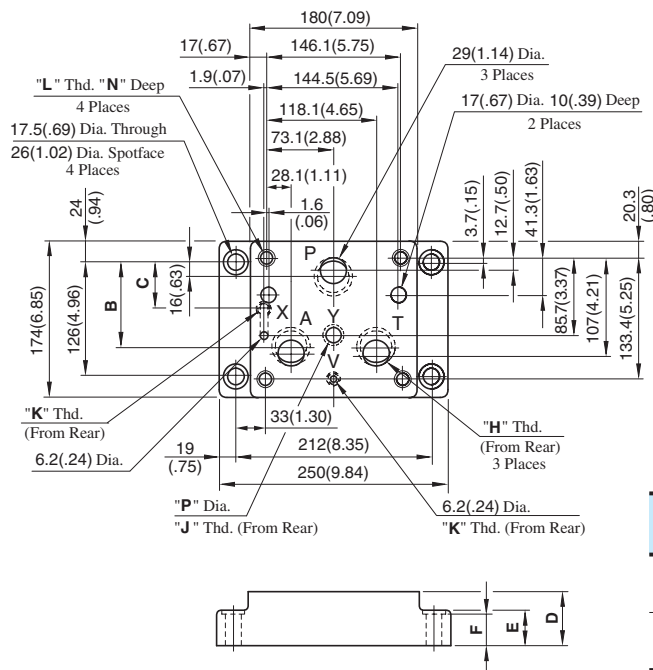
EFBGM-03Y
03Z-20/2080/2090



Sub-plate Model Numbers	Thread Size			mm (in.)	
	"B" Thd.	"C" Thd.	"D" Thd.	E	F
EFBGM-03Y-20	Rc 3/4	Rc 1/4	M10	18 (.71)	11 (.43)
EFBGM-03Z-20	Rc 1				11.7 (.46)
EFBGM-03Y-2080	3/4 BSP.F	1/4 BSP.F		21 (.83)	11 (.43)
EFBGM-03Z-2080	1 BSP.F				
EFBGM-03Y-2090	3/4 NPT	1/4 NPT	3/8-16 UNC	11 (.43)	
EFBGM-03Z-2090	1 NPT				

DIMENSIONS IN MILLIMETRES (INCHES)

EFBGM-06X
06Y-20/2080/2090



Sub-plate Model Numbers	Dimensions mm (in.)				
	B	C	D	E	F
EFBGM-06X	103.3 (4.07)	63.3 (2.49)	45 (1.77)	35 (1.38)	34 (1.34)
EFBGM-06Y	95 (3.74)	53.3 (2.10)	60 (2.36)	40 (1.57)	39 (1.54)

Sub-plate Model Numbers	Thread Size				mm (in.)	
	"H" Thd.	"J" Thd.	"K" Thd.	"L" Thd.	N	P
EFBGM-06X-20	Rc 1	Rc 3/8	Rc 1/4	M16	30 (1.18)	14 (.55)
EFBGM-06Y-20	Rc 1-1/4					
EFBGM-06X-2080	1 BSP.F	3/8 BSP.F	1/4 BSP.F	M16	30 (1.18)	15.2 (.60)
EFBGM-06Y-2080	1-1/4 BSP.F					
EFBGM-06X-2090	1 NPT	3/8 NPT	1/4 NPT	5/8-11 UNC	35 (1.38)	14 (.55)
EFBGM-06Y-2090	1-1/4 NPT					

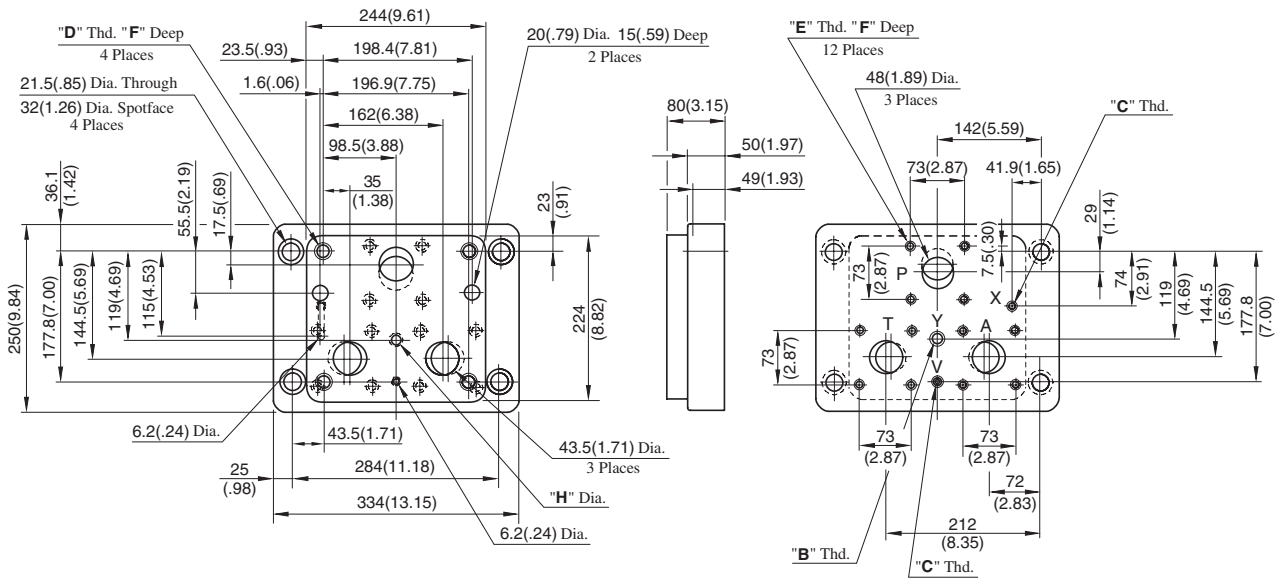
H



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

EFBGM-10Y-20/2080/2090

DIMENSIONS IN MILLIMETRES (INCHES)



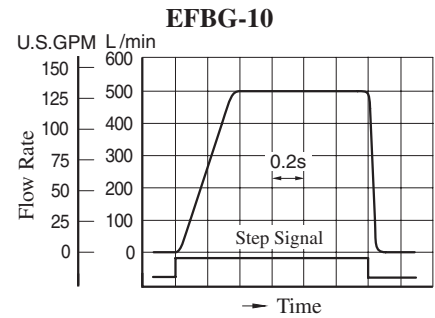
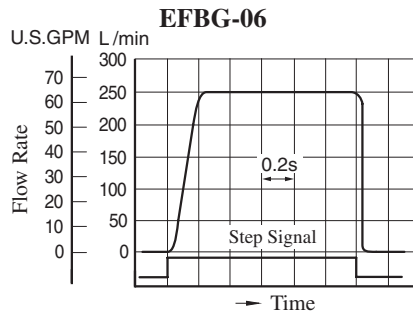
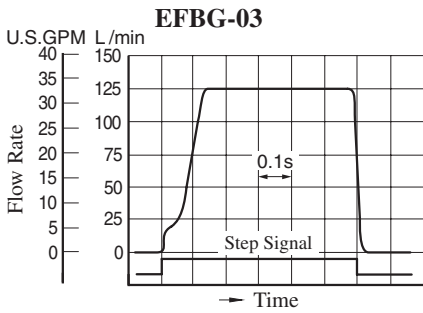
Sub-plate Model Numbers	Thread Size				mm (in.)	
	"B" Thd.	"C" Thd.	"D" Thd.	"E" Thd.	F	H
EFBGM-10Y-20	Rc 3/8	Rc 1/4	M20	M16	32(1.26)	14(.55)
EFBGM-10Y-2080	3/8 BSPF	1/4 BSP.F				15.2(.60)
EFBGM-10Y-2090	3/8 NPT	1/4 NPT	3/4-10 UNC	5/8-11 UNC	34(1.34)	14(.55)

Step Response

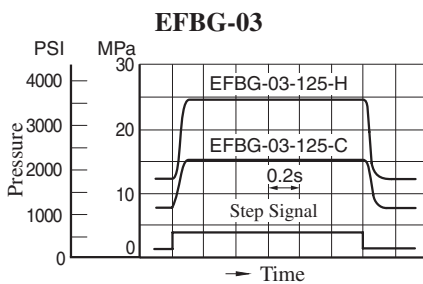
These characteristics have been obtained by measuring on each valve. Therefore, they may vary according to a hydraulic circuit to be used.

Viscosity: 30 mm²/s (141 SSU)

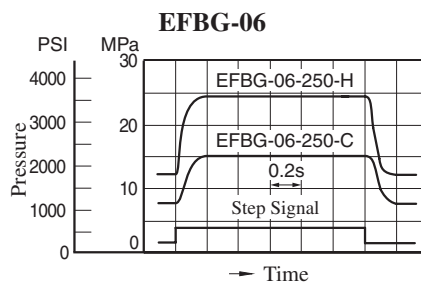
Flow Controls



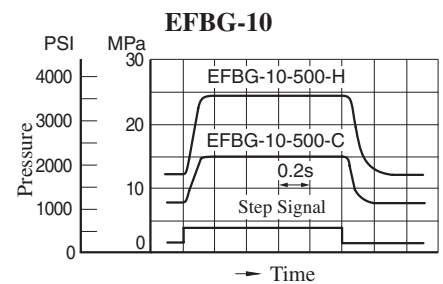
Pressure Controls



Flow Rate : 125 L/min (33 U.S.GPM)
Trapped Oil Volume : < 1 L (.264 U.S.Gallons)



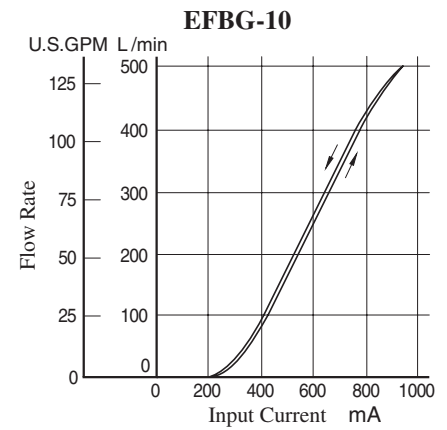
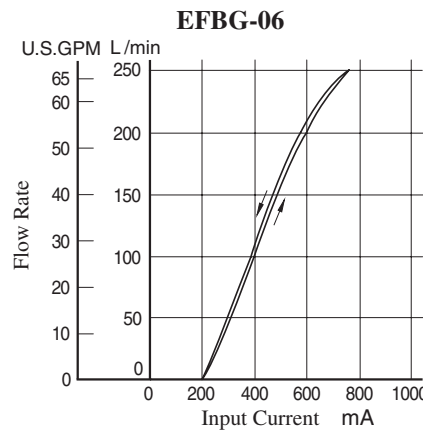
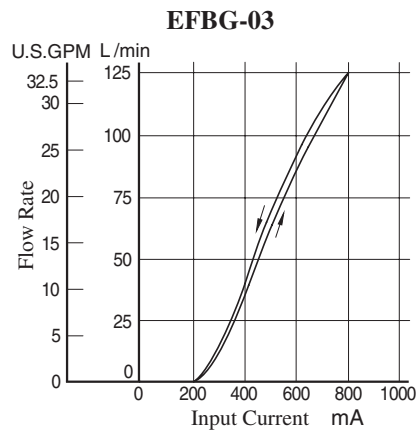
Flow Rate : 250 L/min (66 U.S.GPM)
Trapped Oil Volume : < 1 L (.264 U.S.Gallons)



Flow Rate : 500 L/min (132 U.S.GPM)
Trapped Oil Volume : < 1 L (.264 U.S.Gallons)

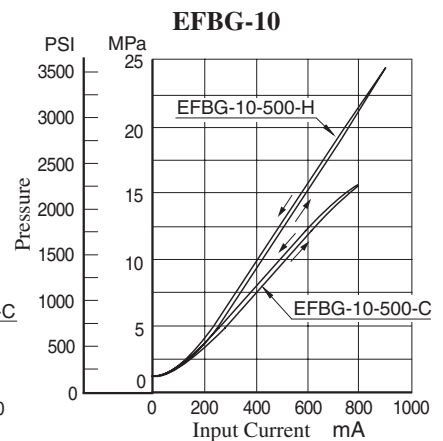
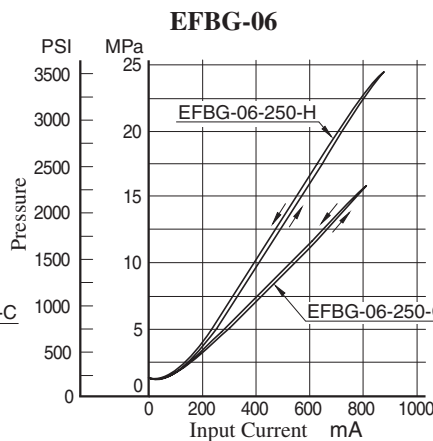
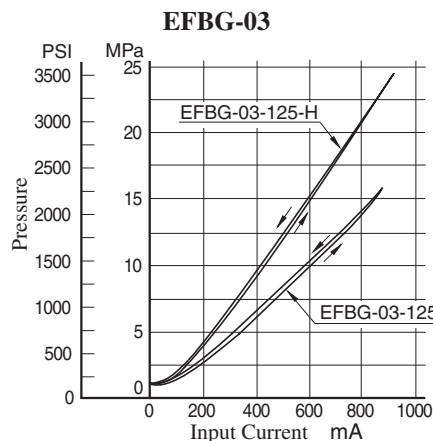
Input Current vs. Flow

Viscosity: 30 mm²/s (141 SSU)



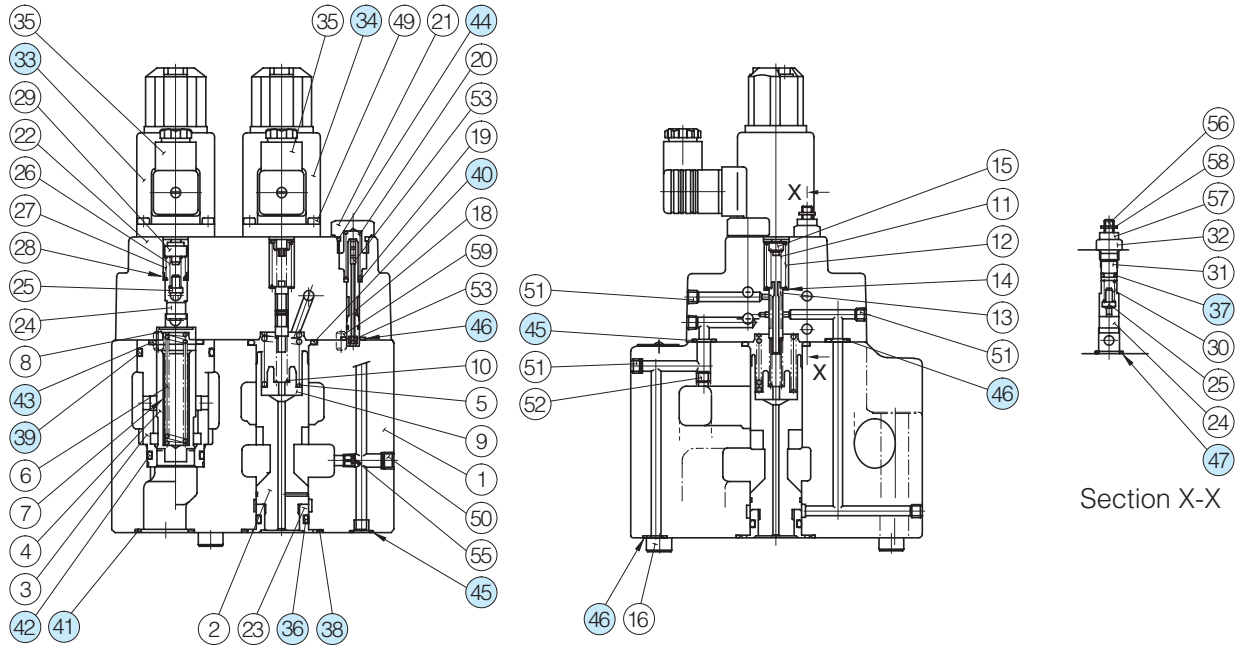
Input Current vs. Pressure

Viscosity: 30 mm²/s (141 SSU)



■ List of Seals and Solenoid Ass'y

EFBG-03-125-**-61/6190
 EFBG-06-250-**-61/6190



● List of Seals

Item	Name of Parts	EFBG-03		EFBG-06	
		Part Numbers	Qty.	Part Numbers	Qty.
36	O-Ring	SO-NA-A016	1	SO-NA-P26	1
37	O-Ring	SO-NA-P6	1	SO-NA-P6	1
38	O-Ring	SO-NB-P28	1	SO-NB-P44	1
39	O-Ring	SO-NB-P32	1	SO-NB-P42	1
40	O-Ring	SO-NB-P28	1	SO-NB-P36	1
41	O-Ring	SO-NB-P28	3	SO-NB-P32	3
42	O-Ring	SO-NB-G30	1	SO-NB-P30	1
43	O-Ring	SO-NB-P28	1	SO-NB-P28	1
44	O-Ring	SO-NB-P15	1	SO-NB-P15	1
45	O-Ring	SO-NB-P11	2	SO-NB-P11	2
46	O-Ring	SO-NB-P9	5	SO-NB-P11	4
47	O-Ring	SO-NB-A016	1	SO-NB-A016	1

● List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-03-125-61*	KS-EFBG-03-61
EFBG-03-125-C/H-61*	KS-EFBG-03-C-61
EFBG-06-250-61*	KS-EFBG-06-61
EFBG-06-250-C/H-61*	KS-EFBG-06-C-61

Note: When ordering seals, please specify the seal kit number from the table right.
 In addition to the above o-rings, seals for solenoid ass'y are included in the seal kit.
 For the details of seals for solenoid ass'y (33) and (34) see page 674.

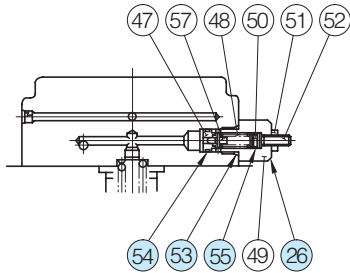
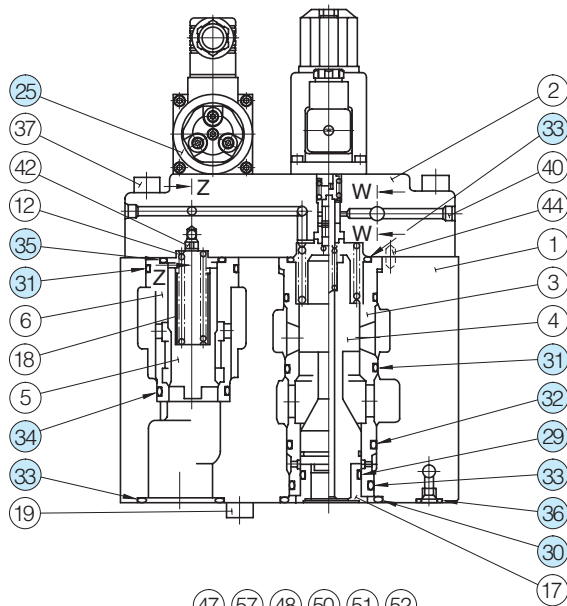
● Solenoid Ass'y

Valve Model Numbers	(33) Solenoid Ass'y Model Numbers	(34) Solenoid Ass'y Model Numbers
EFBG-03-125-C/H(-E)-61/6190	E318-Y06M1-04-61	E318-Y06M1-28-61
EFBG-06-250-C/H(-E)-61/6190		
EFBG-03-125(-E)-61/6190 EFBG-06-250(-E)-61/6190	—	

Note: The connector assembly GDM-211-B-11 (Item 35) is not included in the solenoid assembly.

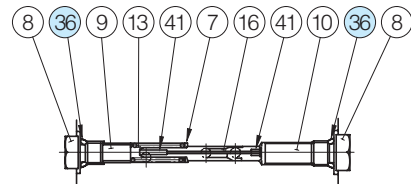
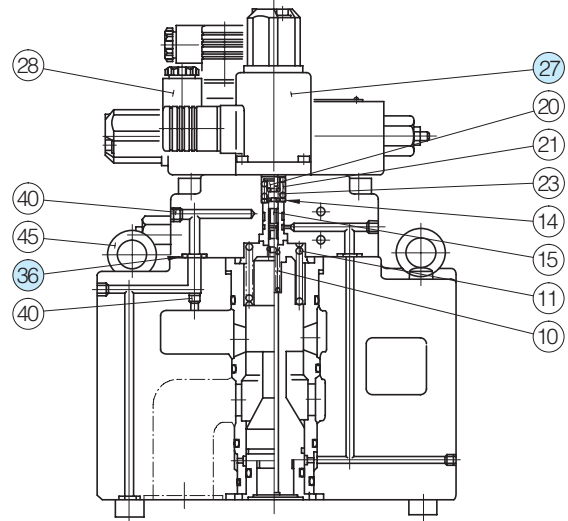
List of Seals, Pilot Valves, Solenoid Ass'y and Safety Valve

EFBG-10-500- *- *-51/5190



Section W-W

(Only for Models without Pilot Relief Valve)



Section Z-Z

List of Seals

Item	Name of Parts	Part Numbers	Qty.	
			Models with Pilot Relief Valve	Models without Pilot Relief Valve
29	O-Ring	SO-NA-P34	1	1
30	O-Ring	SO-NB-G60	1	1
31	O-Ring	SO-NB-G55	3	3
32	O-Ring	SO-NB-P50	1	1
33	O-Ring	SO-NB-P48	5	5
34	O-Ring	SO-NB-P42	1	1
35	O-Ring	SO-NB-P36	1	1
36	O-Ring	SO-NB-P11	8	8
53	O-Ring	SO-NB-P14	—	1
54	O-Ring	SO-NB-A013	—	1
55	O-Ring	SO-NA-P6	—	1

Note: 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. For the detail of the pilot valve and solenoid ass'y seals, see page 674.

List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-10-500-51*	KS-EFBG-10-51
EFBG-10-500-C/H-51*	KS-EFBG-10-C-51

Pilot Valve, Solenoid Ass'y and Safety Valve

Valve Model Numbers	25 Pilot Valve Model Numbers	27 Solenoid Ass'y Model No.	26 Safety Valve Model No.
EFBG-10-500-C(-E)-51/5190	EDG-01V-C-1-PNT12-5103	E318-Y06M1-28-61	—
EFBG-10-500-H(-E)-51/5190	EDG-01V-H-1-PNT12-5103		—
EFBG-10-500(-E)-51/5190	—		SB1094-2002

Note: The connector assembly GDM-211-B-11 (Item 28) is not included in the solenoid assembly.



Interchangeability between Current and New Design

Model changes have been made from 50, 51 to 61 design in the EFBG-03/06 because of changes in the pilot valve building-in method and model changes have been made from 50 to 51 design in the EFBG-10 because of improvement in Solenoid Ass'y.

Specification and Characteristics

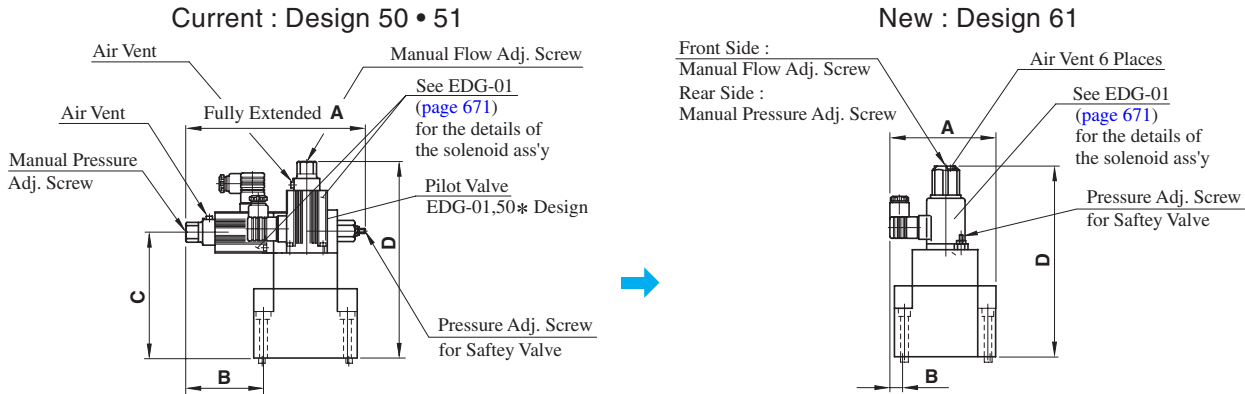
No changes in specifications and characteristics between current and new design

Interchangeability in Installation

EFBG-03/06

50* • 51* Design → 61* Design

The mounting surface are interchangeable. However, the method of building in the pilot valve has been changed, bringing about changes in the appearance shapes and dimensions as shown below.



Model Numbers	A	B	C	D
(Current) EFBG-03-125-*-* 50/5090 51/5190	217 (8.54)	93.2 (3.67)	155 (6.10)	236.5 (9.31)
(New) EFBG-03-125-*-* 61/6190	132 (5.20)	18.7 (.74)	—	248.5 (9.78)
(Current) EFBG-06-250-*-* 50/5090 51/5190	217 (8.54)	53.3 (2.10)	196 (7.72)	277.5 (10.93)
(New) EFBG-06-250-*-* 61/6190	180 (7.09)	—	—	289.5 (11.40)

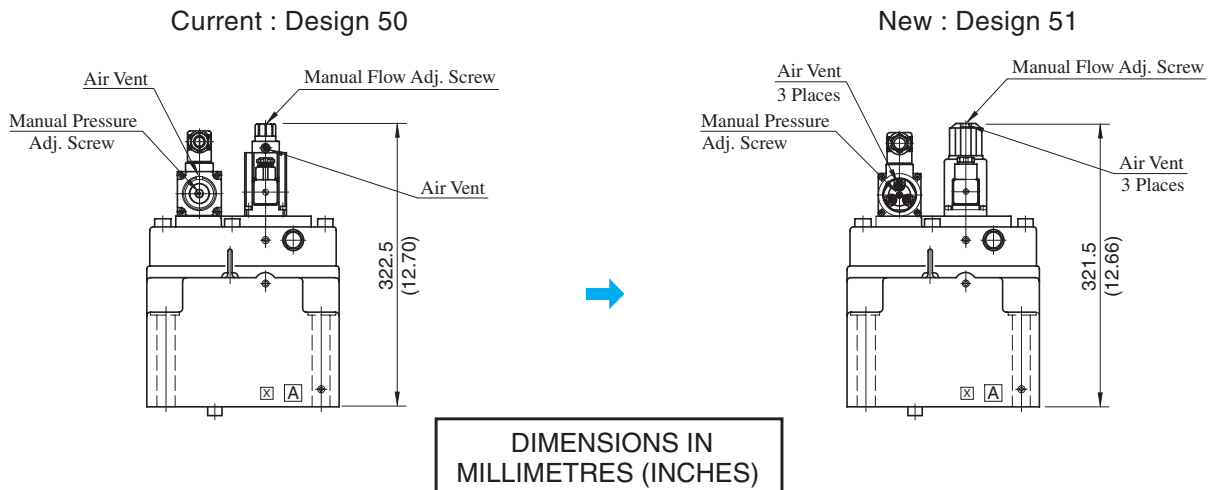
60* Design → 61* Design

The mounting surface are interchangeable. There are no changes in the appearance shapes and dimensions.

EFBG-10

Mounting compatibility is provided.

Note that because of improvements made on the solenoids, the overall shapes have been changed as shown below.



High Flow 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.

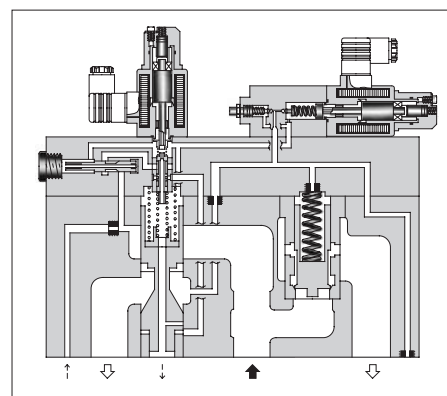
For the High Flow Series, double maximum flow rate [03 size: 125→250 L/min (33.03→66.05 U.S.GPM), 06 size: 250→500 L/min (66.05→132.1 U.S.GPM), 10 size: 500→1000 L/min (132.1→264.2 U.S.GPM)] enables a smaller valve size than conventional products; compact-sized devices can be provided.

Specifications

Model No.		EFBG-03 -250-*-*-51*	EFBG-06 -500-*-*-51*	EFBG-10 -1000-*-*-51*
Description				
Max. Operating Pressure MPa (PSI)		24.5 (3550)	24.5 (3550)	24.5 (3550)
Max. Flow L/min (U.S.GPM)		250 (66)	500 (132)	1000 (264)
Metred Flow Adjustment Range L/min (U.S.GPM)		2.5-250 (.66-66)	5-500 (1.32-132)	10-1000 (2.64-264)
Min. Pilot Pressure MPa (PSI)		1.5 (220)	1.5 (220)	1.5 (220)
Pilot Flow L/min (U.S.GPM)		at Normal	1 (.26)	4.5 (1.19)
		at Transition	4 (1.06)	6 (1.59)
Flow Controls	Rated Currnt	830 mA	780 mA	830 mA
	Coil Resistance	10 Ω	10 Ω	10 Ω
	Differential Pressure MPa (PSI)	0.8 (115)	0.9 (130)	1.2 (174)
	Hysteresis	3% or less	3% or less	3% or less
	Repeatability	1% or less	1% or less	1% or less
Pressure Controls ^{*1}	Pres. Adj. Range MPa (PSI)	C: 1.6-15.7 (230-2275) H: 1.8-24.5 (260-3550)	C: 1.5-15.7 (220-2275) H: 1.5-24.5 (220-3550)	C: 1.1-15.7 (160-2275) H: 1.1-24.5 (160-3550)
		Rated Current	C: 850 mA H: 870 mA	C: 800 mA H: 900 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 page 735 to 737		

★1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-250-C-*-51)

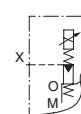
★2. The maximum pressure adjustment range of the valves without proportional pilot relief valves is 24.5 MPa (3550 PSI).



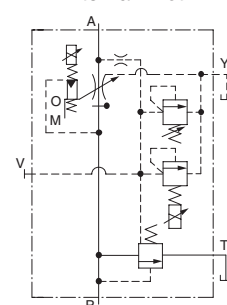
Graphic Symbols

With Proportional Pilot Relief Valve

External Pilot

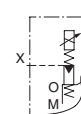


Internal Pilot

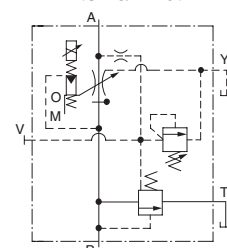


Without Proportional Pilot Relief Valve

External Pilot



Internal Pilot



Model Number Designation

F-	EFB	G	-03	-250	-C	-E	-51	*
Special Seals	Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min (U.S.GPM)	Proportional Pilot Relief Valve Pressure Adj. Range	Pilot Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EFB: Proportional Electro-Hydraulic Flow Control and Relief Valve	G: Sub-plate Mounting	03	250: 250 (66)	C, H: See Specifications None: Without Proportional Pilot Relief Valve	None: Internal Pilot E: External Pilot	51	Refer to ★
			06	500: 500 (132)			51	
			10	1000: 1000 (264)			51	

★ 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	M12 × 120 Lg.	1/2-13 UNC × 4-3/4 Lg.	4
EFBG-06	M16 × 120 Lg.	5/8-11 UNC × 4-3/4 Lg.	4
EFBG-10	M20 × 150 Lg.	3/4-10 UNC × 6 Lg.	4

Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see [page 767, 771](#)).

Model Numbers	Power Amplifier Model Numbers	
	For Flow Control	For Pres. Control
EFBG-03-250(-E)-51/5190 EFBG-06-500(-E)-51/5190 EFBG-10-1000(-E)-51/5190	AME-D-10-*-20 AMN-D-10 (For DC power supply)	—
EFBG-03-250-C/H(-E)-51/5190 EFBG-06-500-C/H(-E)-51/5190 EFBG-10-1000-C/H(-E)-51/5190	AME-D2-1010-11	

Instructions

● **Drain Back Pressure**

Check that the drain back pressure dose 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 15 L/min (4.0 U.S.GPM) or higher. Further, check that the tank-line back pressure dose 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.

● **Interchangeability in installation with conventional valves (10 Ω-10 Ω Series)**

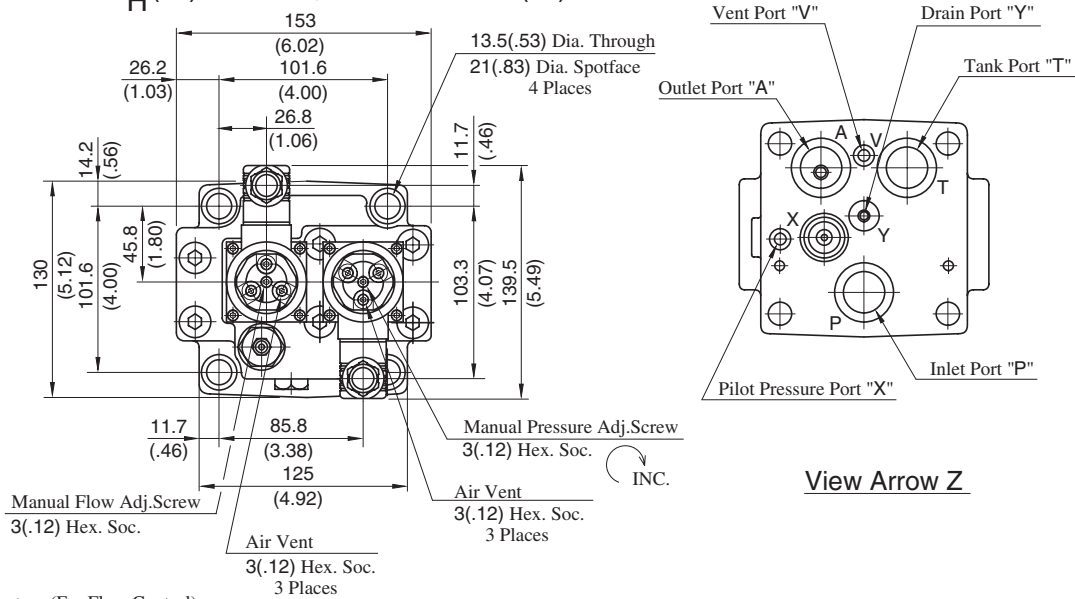
● **EFBG-03**

There is no interchangeability in installation.

● **EFBG-06/10**

A product in the high-flow series can be mounted on the conventional mounting surface but no conventional product can be mounted on the mounting surface of the high-flow series.

EFBG-03-250-C_H(-E)-51/5190, EFBG-03-250 (-E)-51/5190



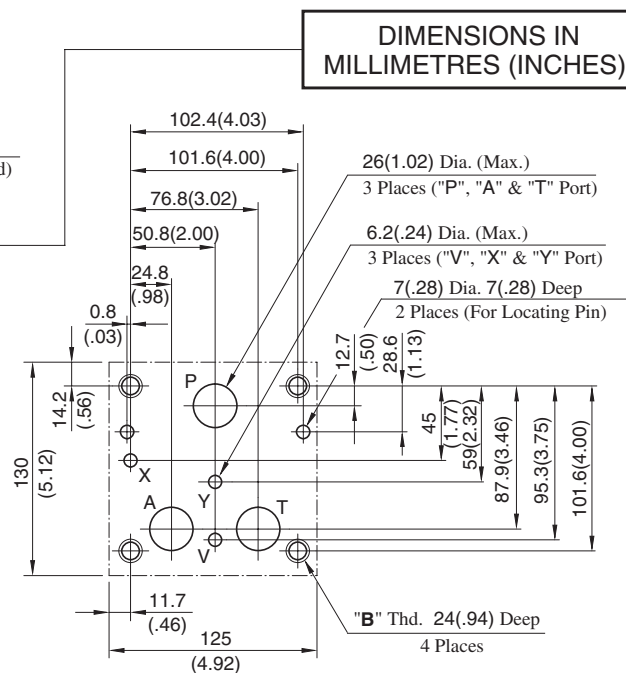
View Arrow Z

Approx. Mass 19 kg (41.9 lbs.)

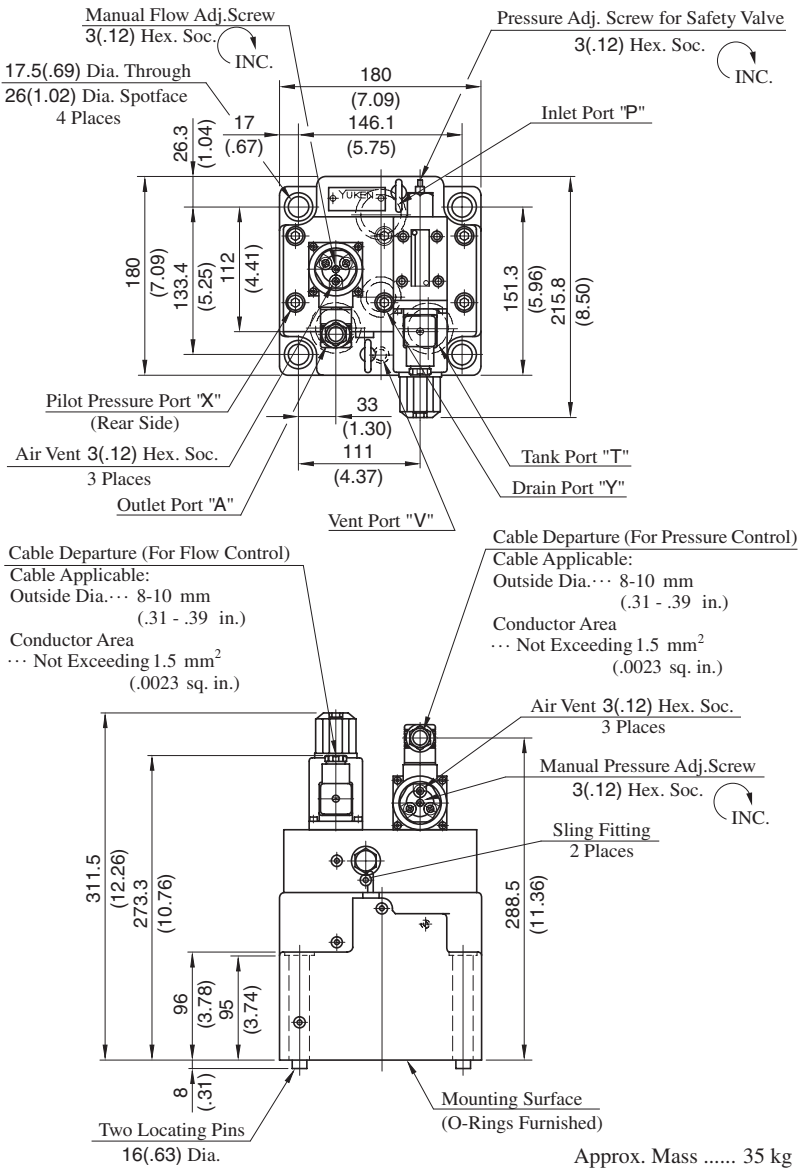
Dimensions of valve mounting surface

Prepare a mounting surface as shown to the right.
 Also finish it finely.

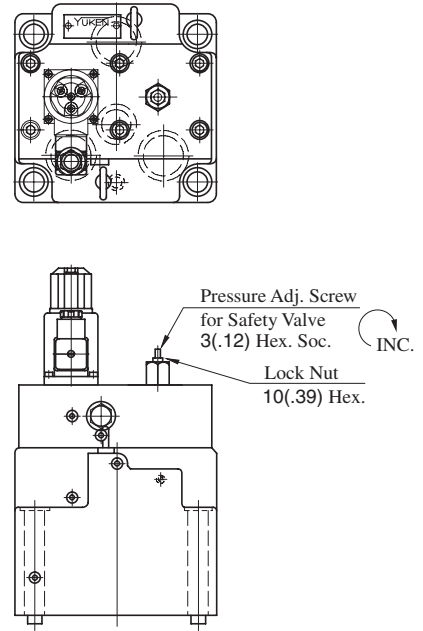
Model Numbers	"B" Thd.
EFBG-03-250-*-51	M12
EFBG-03-250-*-5190	1/2-13 UNC



Models with Proportional Pilot Relief Valve
EFBG-06-500-^C_H(-E)-51/5190



Models without Proportional Pilot Relief Valve
EFBG-06-500(-E)-51/5190



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

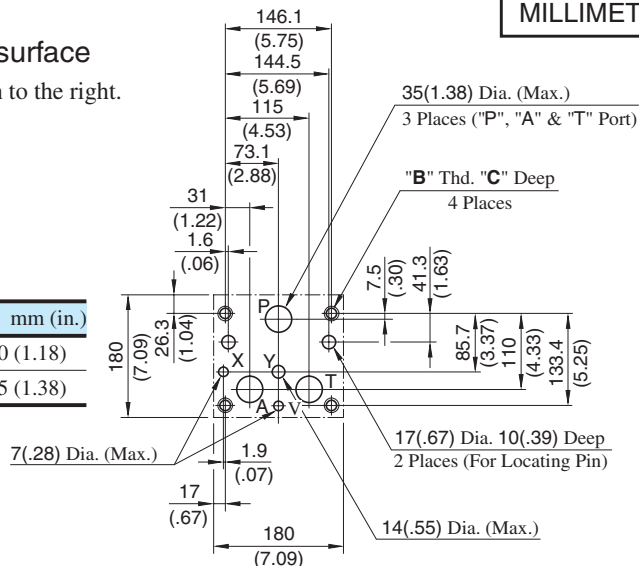
Approx. Mass 33 kg (72.8 lbs.)

DIMENSIONS IN MILLIMETRES (INCHES)

Dimensions of valve mounting surface

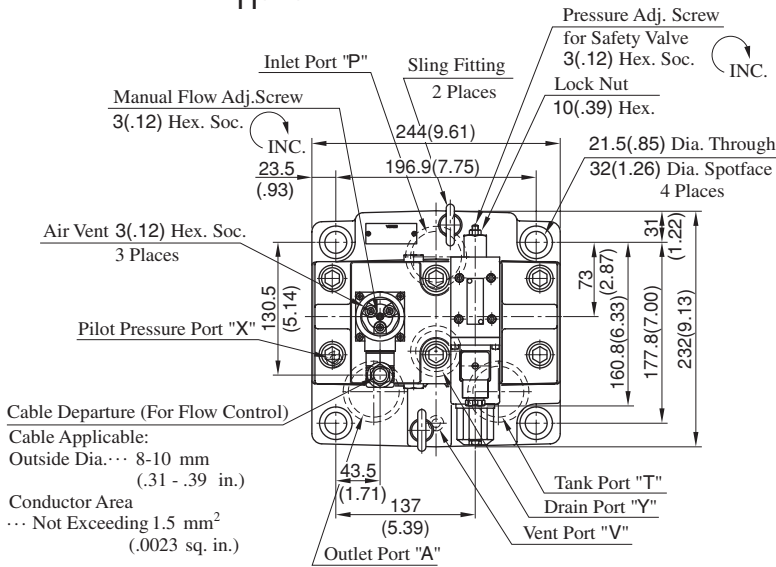
Prepare a mounting surface as shown to the right.
 Also finish it finely.

Model Numbers	"B" Thd.	C mm (in.)
EFBG-06-500-*-51	M16	30 (1.18)
EFBG-06-500-*-5190	5/8-11 UNC	35 (1.38)

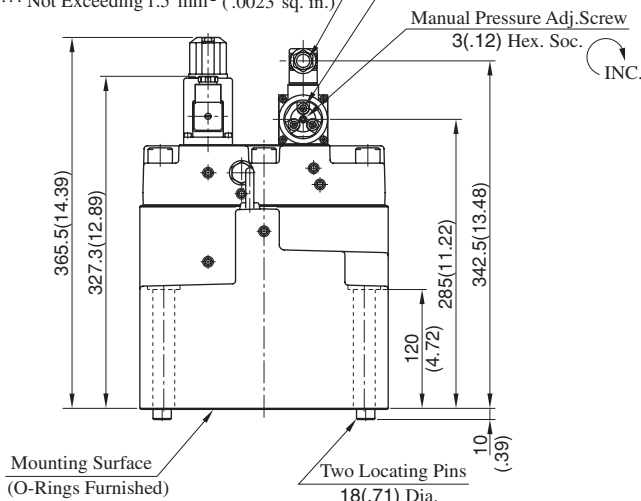


Models with Proportional Pilot Relief Valve

EFBG-10-1000-^C_H(-E)-51/5190



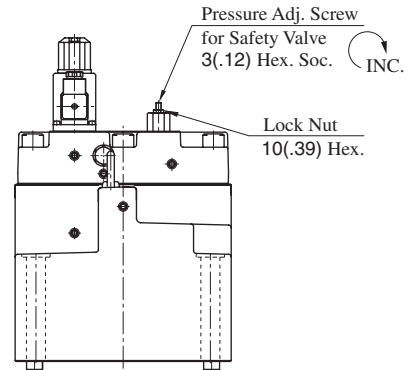
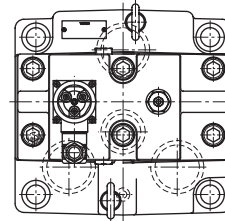
Cable Departure (For Pressure Control)
 Cable Applicable:
 Outside Dia. ... 8-10 mm (.31 - .39 in.)
 Conductor Area ... Not Exceeding 1.5 mm² (.0023 sq. in.)



Approx. Mass 76 kg (167.6 lbs.)

Models without Proportional Pilot Relief Valve

EFBG-10-1000(-E)-51/5190



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

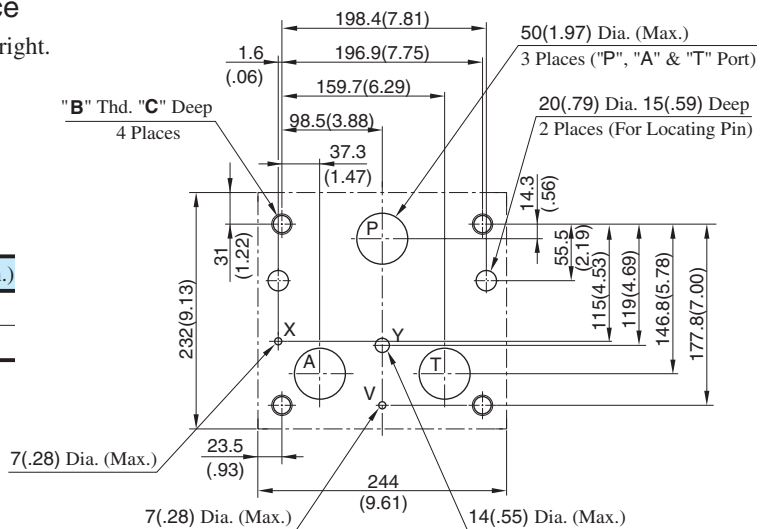
Approx. Mass 74 kg (163.1 lbs.)

DIMENSIONS IN MILLIMETRES (INCHES)

Dimensions of valve mounting surface

Prepare a mounting surface as shown to the right.
 Also finish it finely.

Model Numbers	"B" Thd.	C mm (in.)
EFBG-10-1000-*-51	M20	32 (1.26)
EFBG-10-1000-*-5190	3/4-10 UNC	35 (1.38)

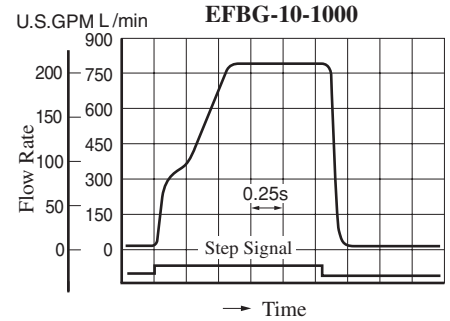
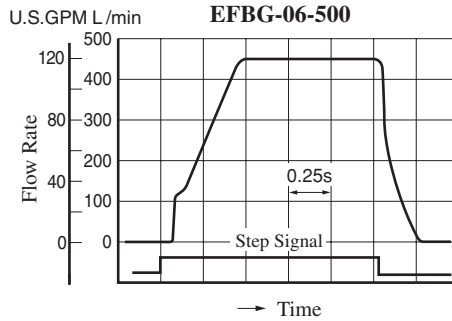
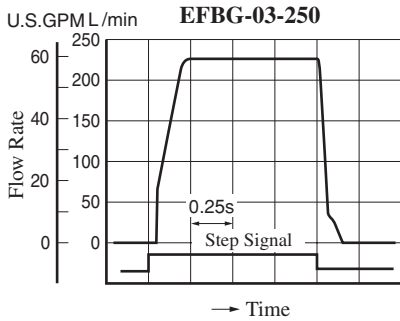


Step Response

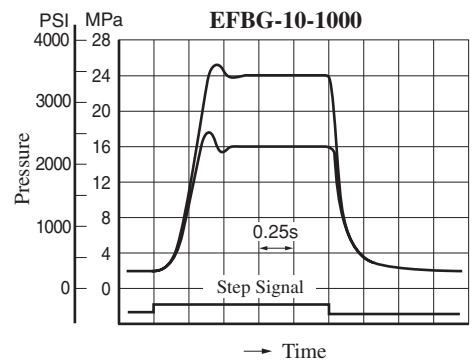
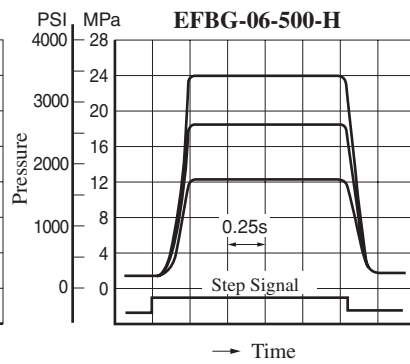
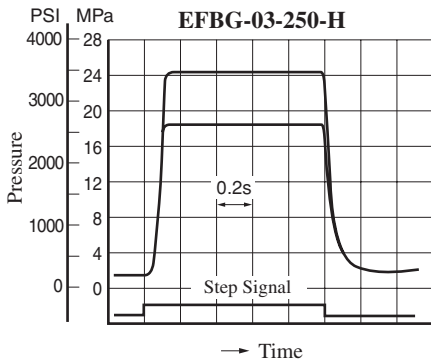
These characteristics have been obtained by measuring on each valve. Therefore, they may vary according to a hydraulic circuit to be used.

Viscosity: 30mm²/s (141 SSU)

Flow Controls

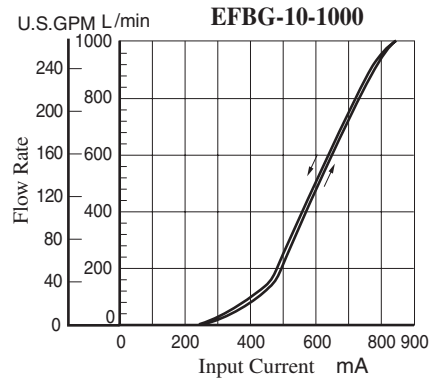
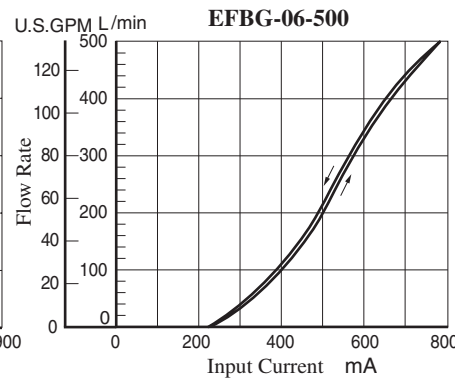
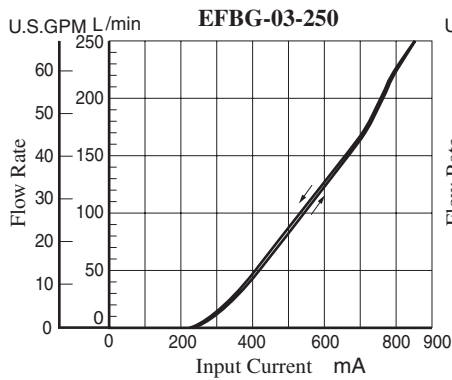


Pressure Controls



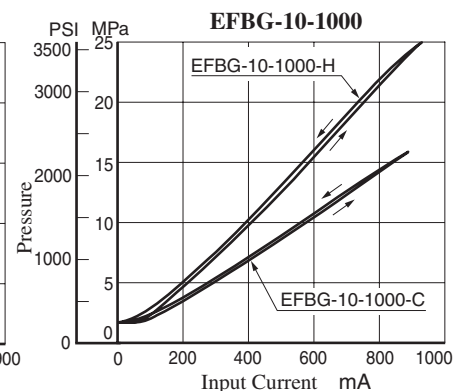
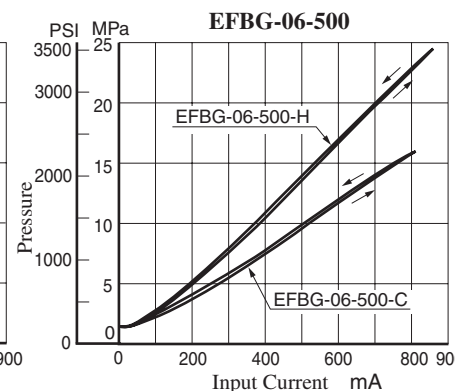
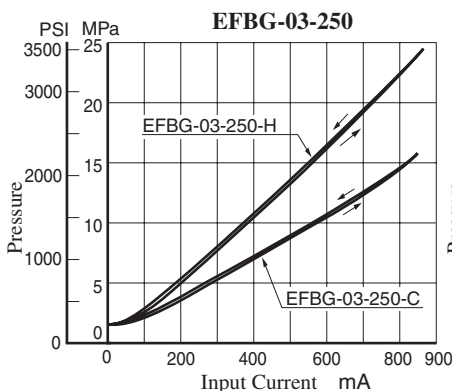
Input Current vs. Flow

Viscosity: 30mm²/s (141 SSU)



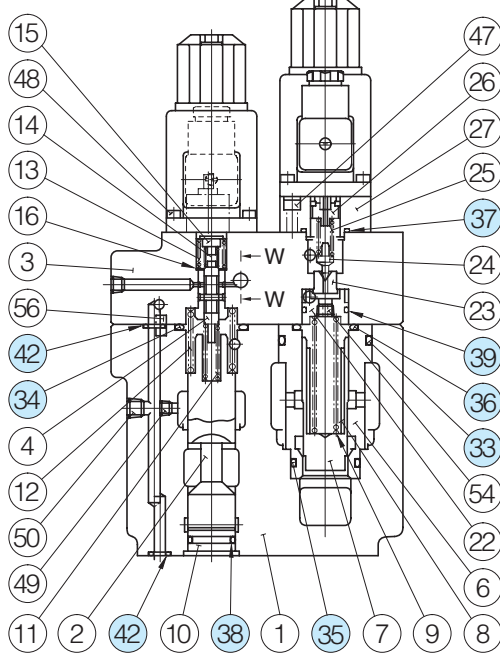
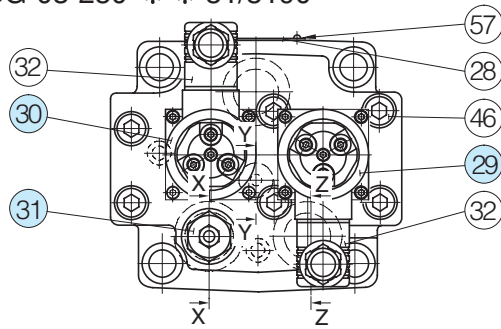
Input Current vs. Pressure

Viscosity: 30mm²/s (141 SSU)

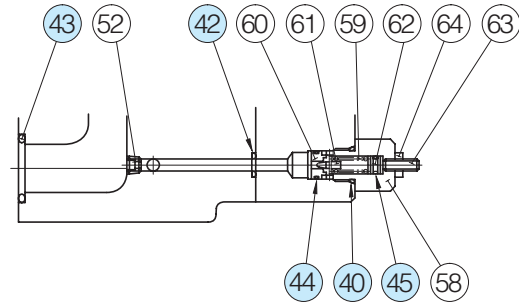


List of Seals, Solenoid Ass'y and Safety Valve

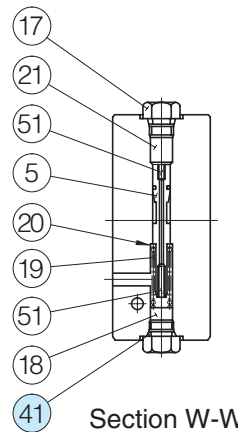
EFBG-03-250-**-51/5190



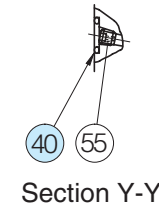
Detail of Safety Valve (Item 31)



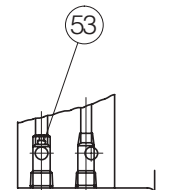
Section X-X



Section W-W



Section Y-Y



Section Z-Z

List of Seals

Item	Name of Parts	Part Numbers	Qty.
33	O-Ring	SO-NB-P42	1
34	O-Ring	SO-NB-P32	1
35	O-Ring	SO-NB-P30	1
36	O-Ring	SO-NB-P28	1
37	O-Ring	SO-NB-P22	1*
38	O-Ring	SO-NB-P21	1
39	O-Ring	SO-NB-P20	1*
40	O-Ring	SO-NB-P14	2
41	O-Ring	SO-NB-P11	2
42	O-Ring	SO-NB-P9	6
43	O-Ring	SO-NB-G30	3
44	O-Ring	SO-NB-A013	1
45	O-Ring	SO-NA-P6	1

* O-rings, item 37 and 39, are used only with the proportional pilot relief valve (EFBG-03-250-C/H).

Note: When ordering seals, please specify the seal kit number from the table right. In addition to the above o-rings, seals for solenoid ass'y are included in the seal kit.

For the detail of seals for solenoid ass'y seals, see page 674.

Solenoid Ass'y and Safety Valve

Valve Model Numbers	②⑨ Solenoid Ass'y Model No.	③⑩ Solenoid Ass'y Model No.	③① Safety Valve Model No.
EFBG-03-250-C/H(-E)-51/5190	E318-Y06M1-04-61	E318-Y06M1-28-61	SB1094-2002
EFBG-03-250(-E)-51/5190	—		

Note: The connector assembly GDM-211-B-11 (Item 32) is not included in the solenoid assembly.

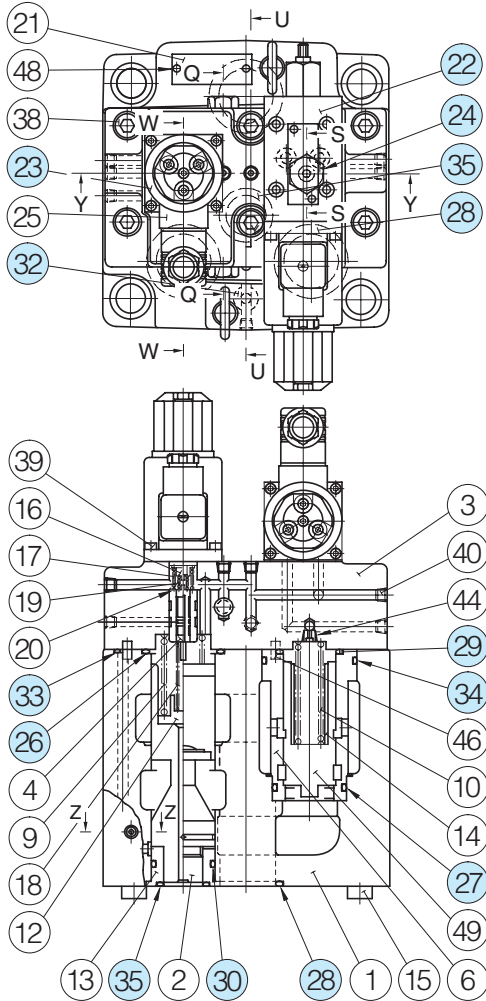
List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-03-250-51*	KS-EFBG-03-250-51
EFBG-03-250-C/H-51*	KS-EFBG-03-250-C-51

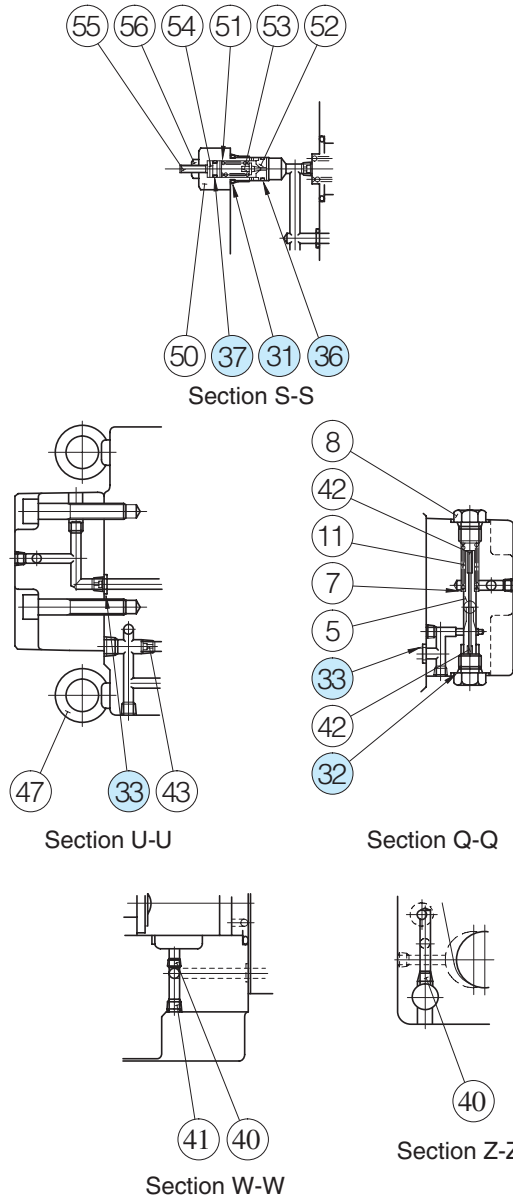


List of Seals, Pilot Valves, Solenoid Ass'y and Safety Valve

EFBG-06-500- *- *-51/5190



Detail of Safety Valve (Item 24)
[Models Without Pilot Relief Valve : EFBG-06-500(-E)]



List of Seals

Item	Name of Parts	Part Numbers	Qty.
26	O-Ring	SO-NB-P46	1
27	O-Ring	SO-NB-P42	1
28	O-Ring	SO-NB-P40	3
29	O-Ring	SO-NB-P36	1
30	O-Ring	SO-NB-P34	1
31	O-Ring	SO-NB-P14	1*
32	O-Ring	SO-NB-P11	4
33	O-Ring	SO-NB-P9	4
34	O-Ring	SO-NB-G55	1
35	O-Ring	SO-NB-G30	2
36	O-Ring	SO-NB-AO13	1*
37	O-Ring	SO-NA-P6	1*

* O-rings, item 31, 36 and 37, are used only without the proportional pilot relief valve [(EFBG-06-500(-E)].

Note: When ordering seals, please specify the seal lit 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.

For the detail of the pilot valve and solenoid ass'y seals, see [page 674](#).

Pilot Valve, Solenoid Ass'y and Safety Valve

Valve Model Numbers	②② Pilot Valve Model Numbers	②③ Solenoid Ass'y Model No.	②④ Safety Valve Model No.
EFBG-06-500-C(-E)-51/5190	EDG-01V-C-1-PNT11-5103	E318-Y06M1-28-61	—
EFBG-06-500-H(-E)-51/5190	EDG-01V-H-1-PNT11-5103		—
EFBG-06-500(-E)-51/5190	—		SB1094-2002

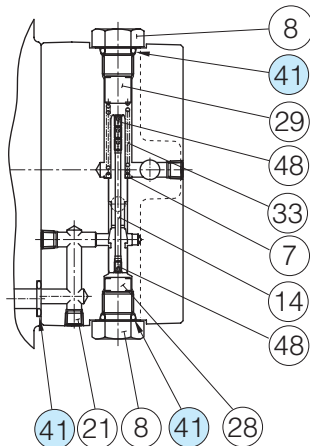
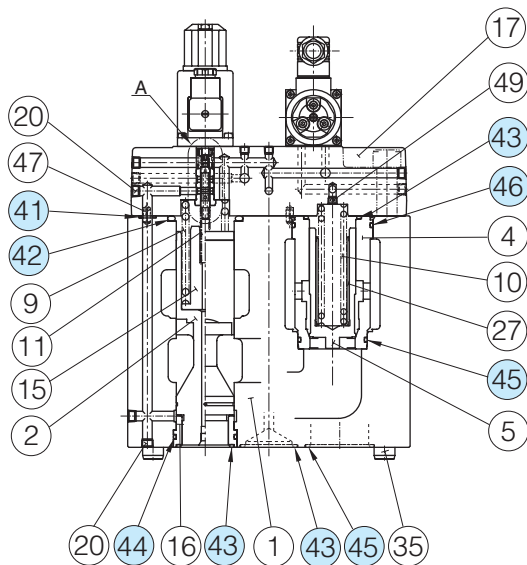
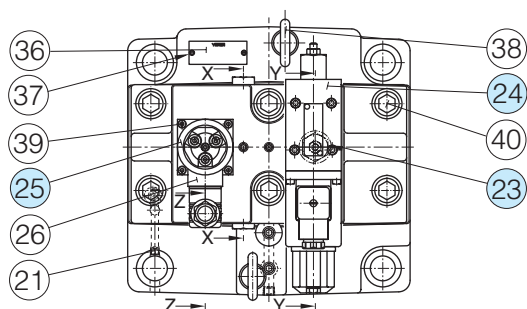
Note: The connector assembly GDM-211-B-11 (Item 25) is not included in the solenoid assembly.

List of Seal Kits

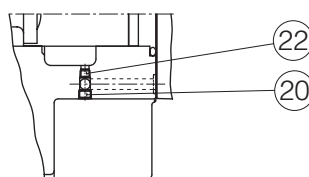
Valve Model Numbers	Seal Kit Numbers
EFBG-06-500-51*	KS-EFBG-06-500-51
EFBG-06-500-C/H-51*	KS-EFBG-06-500-C-51

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

EFBG-10-1000-*-51/5190

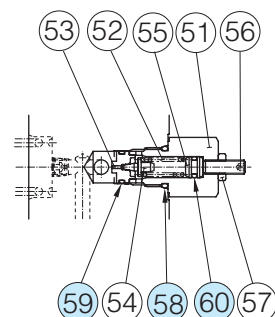


Section X-X

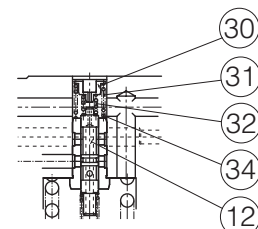


Section Z-Z

Detail of Safety Valve (Item 23)
 [Models Without Pilot Relief Valve : EFBG-10-1000(-E)]



Section Y-Y



Detail A

List of Seals

Item	Name of Parts	Part Numbers	Qty.
41	O-Ring	JIS-B 2401-1B-P11	8
42	O-Ring	JIS-B 2401-1B-P55	1
43	O-Ring	JIS-B 2401-1B-G45	3
44	O-Ring	JIS-B 2401-1B-G50	1
45	O-Ring	JIS-B 2401-1B-G55	4
46	O-Ring	JIS-B 2401-1B-G65	1
58	O-Ring	JIS-B 2401-1B-P14	1*
59	O-Ring	AS568-013(NBR, Hs90)	1*
60	O-Ring	JIS-B 2401-1A-P6	1*

* O-rings, item 58, 59 and 60, are used only without the proportional pilot relief valve [EFBG-10-1000(-E)].

Note: When ordering seals, please specify the seal lit 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.

For the detail of the pilot valve and solenoid ass'y seals, see page 674.

List of Seal Kits

Valve Model Numbers	Seal Kit Numbers
EFBG-10-1000-51*	KS-EFBG-10-1000-51
EFBG-10-1000-C/H-51*	KS-EFBG-10-1000-C-51

Pilot Valve, Solenoid Ass'y and Safety Valve

Valve Model Numbers	②④ Pilot Valve Model Numbers	②⑤ Solenoid Ass'y Model No.	②③ Safety Valve Model No.
EFBG-10-1000-C(-E)-51/5190	EDG-01V-C-1-PNT20-5197	E318-Y06M1-28-61	—
EFBG-10-1000-H(-E)-51/5190	EDG-01V-H-1-PNT20-5197		—
EFBG-10-1000(-E)-51/5190	—		SB1094-2002

Note: The connector assembly GDM-211-B-11 (Item 25) is not included in the solenoid assembly.

■ Interchangeability between Current and New Design

EFBG-03/06/10 series valves have changed model from 50 to 51 design in line with the model change of solenoid ass'y.

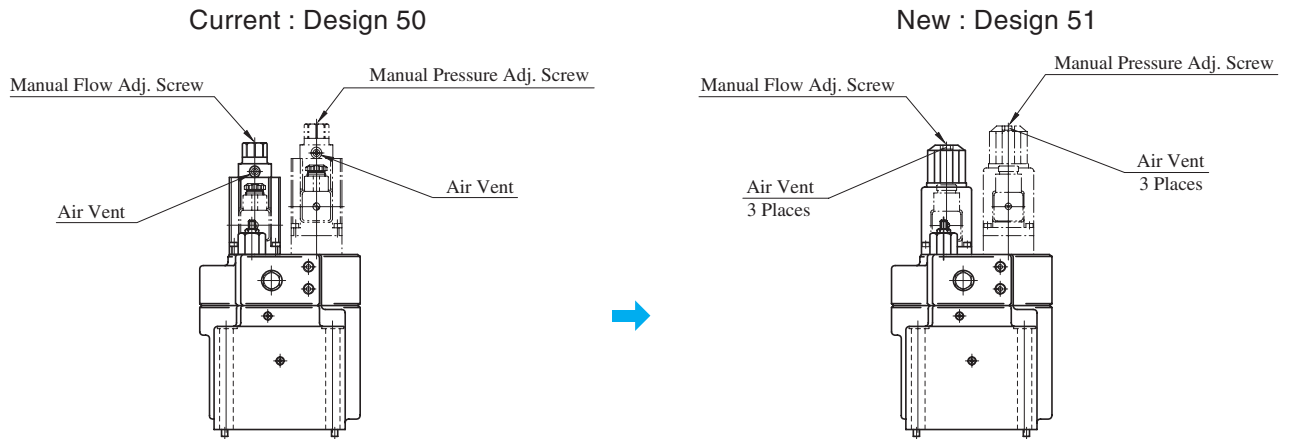
● Specifications and Characteristics

No changes in specifications and characteristics between current and new design.

● Mounting Interchangeability

There is an interchangeability in the mounting dimensions between current and new design, however, note that because of improvements made on the solenoids, the overall shapes have been changed as shown below.

● EFBG-03



● EFBG-06/10

