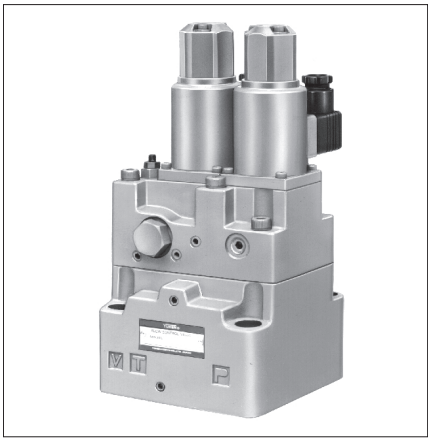
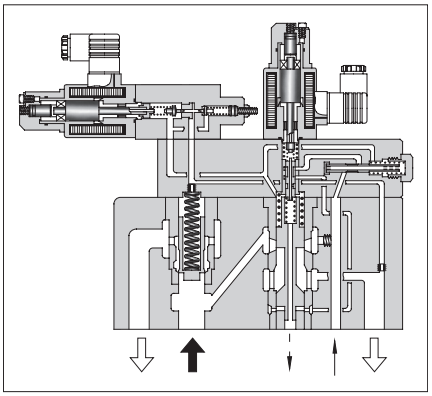
10Ω–10Ω Series
Proportional Electro-Hydraulic Flow Control and Relief Valves

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, meter-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

Descriptions \ Model Numbers			EFBG-03-125 -∗-∗-61	EFBG-06-250 -∗-∗-61	EFBG-10-500 -∗-∗-61
Max. Operating Pressure		MPa	24.5	24.5	24.5
Max. Flow		L/min	125	250	500
Metered Flow Adjustment Range		L/min	1-125	2.5-250	5-500
Min. Pilot Pressure		MPa	1.5	1.5	1.5
Pilot Flow L/min	at Normal		1	1	1
	at Transition		3	4	6
Flow Controls	Rated Current	mA	800	750	900
	Coil Resistance	Ω	10	10	10
	Differential Pressure	MPa	0.7	0.7	0.9
	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 ★2	C: 1.4-15.7 H: 1.4-24.5	C: 1.4-15.7 H: 1.4-24.5	C: 1.5-15.7 H: 1.5-24.5
	Rated Current	mA	C: 890 H: 930	C: 820 H: 880	C: 800 H: 900
	Coil Resistance	Ω	10	10	10
	Hysteresis		3% or less	3% or less	3% or less
	Repeatability		1% or less	1% or less	1% or less
Approx. Mass		kg	Refer to pages H-137 to H-139		

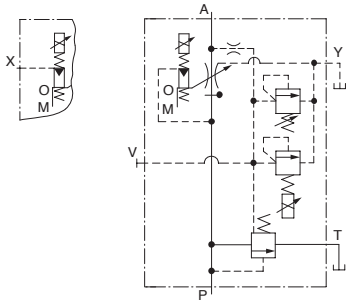
★1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-125-C-∗-61)

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

Graphic Symbols

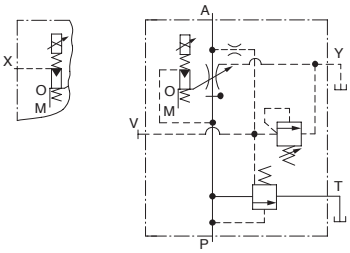
With Proportional Pilot Relief Valve

External Pilot Internal Pilot



Without Proportional Pilot Relief Valve

External Pilot Internal Pilot



Model Number Designation

EFB	G	-03	-125	-C	-E	-61
Series Number	Type of Mounting	Valve Size	Max. Metered Flow L/min	Proportional Pilot Relief Valve Pressure Adj. Range	Pilot Connection	Design Number
EFB: Proportional Electro-Hydraulic Flow Control and Relief Valve	**G:** Sub-Plate Mounting	**03**	**125**	**C, H:** See Specifications	**None:** Internal Pilot	**61**
		06	**250**	**None:** Without Proportional Pilot Relief Valve	**E:** External Pilot	**61**
		10	**500**			**51**

Accessories

Mounting Bolts

Valve Model Numbers	Socket Head Cap Screw	Qty.
EFBG-03	M10 × 65 L	4
EFBG-06	M16 × 100 L	4
EFBG-10	M20 × 130 L	4

Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see page H-173, H-177 and H-183).

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

Sub-Plate

Valve Model Numbers	Sub-Plate Model Numbers	Thread Size Rc	Approx. Mass kg
EFBG-03	EFBGM-03Y-20	3/4	6
	EFBGM-03Z-20	1	
EFBG-06	EFBGM-06X-20	1	12.5
	EFBGM-06Y-20	1-1/4	16
EFBG-10	EFBGM-10Y-20★	1-1/2, 2 Flange Mounting	37

● 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, also order a F3 series pipe flange kit. For details on the kit, consult us.

Instructions

Drain Back Pressure

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

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

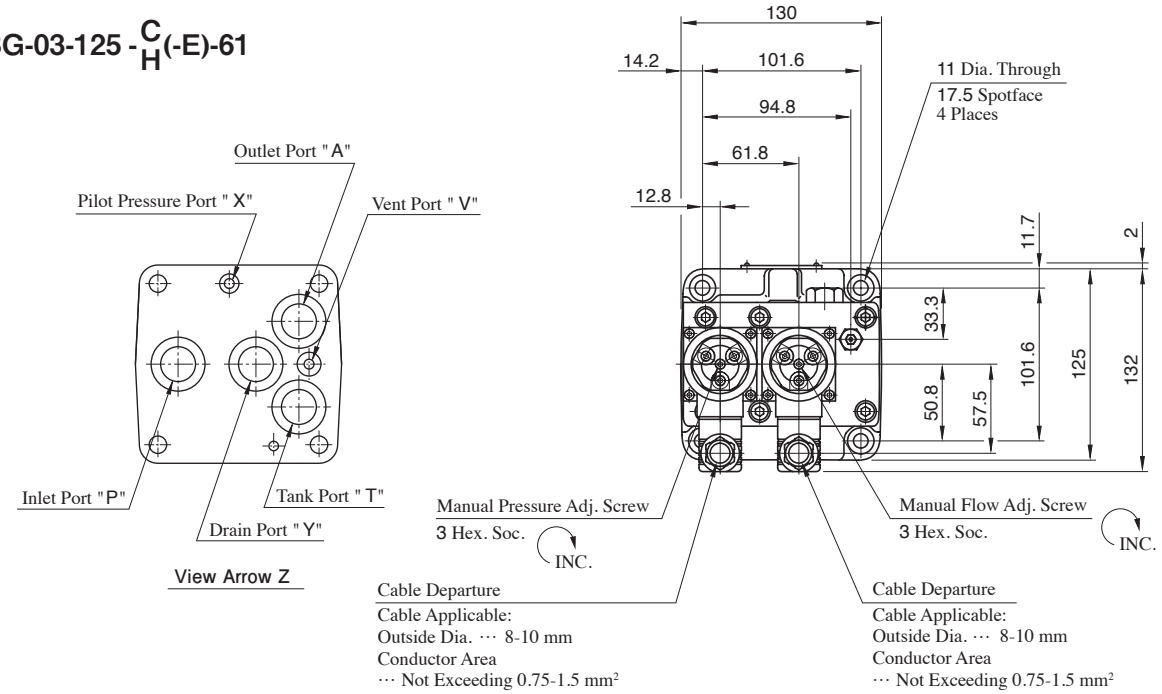
To avoid preselected pressure instability, use a passing flow rate of 15 L/min or higher.
Further, check that the tank-line back pressure dose not exceed 0.5 MPa.

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. 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.

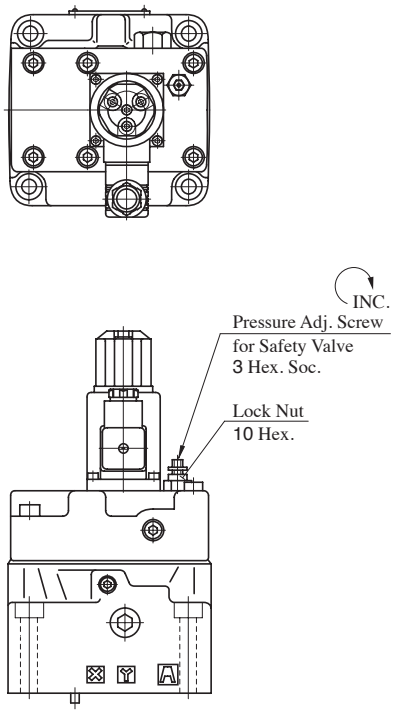
Models with Proportional Pilot Relief Valve

EFBG-03-125 -$^{C}_{H}$(-E)-61



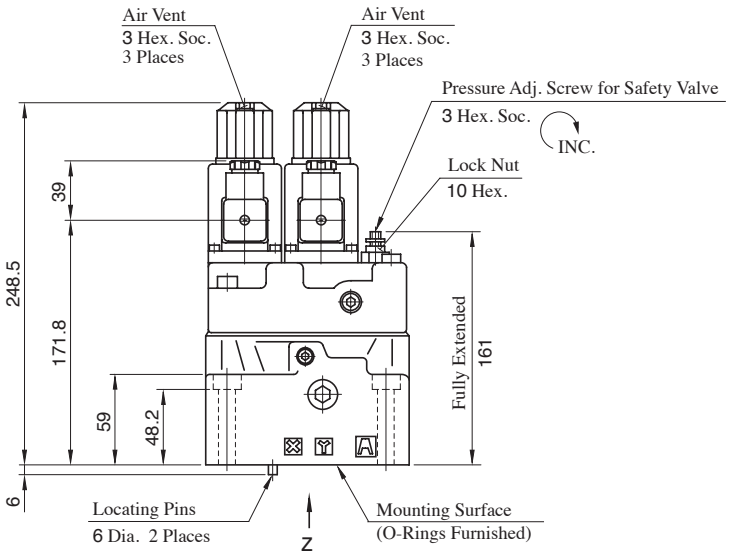
Models without Proportional Pilot Relief Valve

EFBG-03-125(-E)-61



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

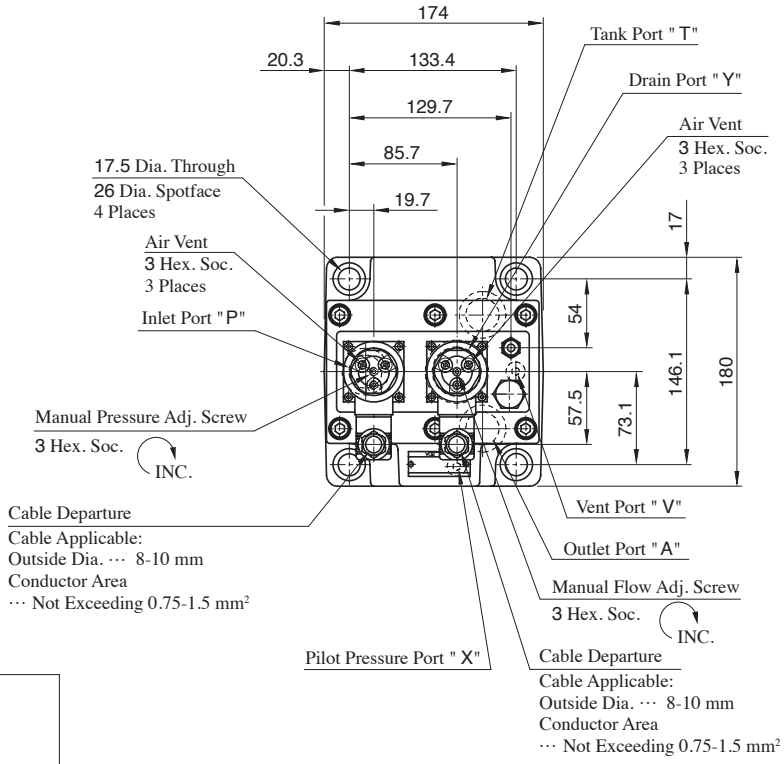
Approx. Mass ..... 13.3 kg



Approx. Mass ..... 14 kg

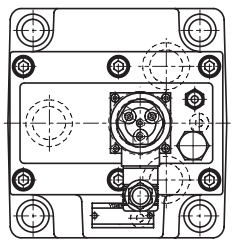
Models with Proportional Pilot Relief Valve

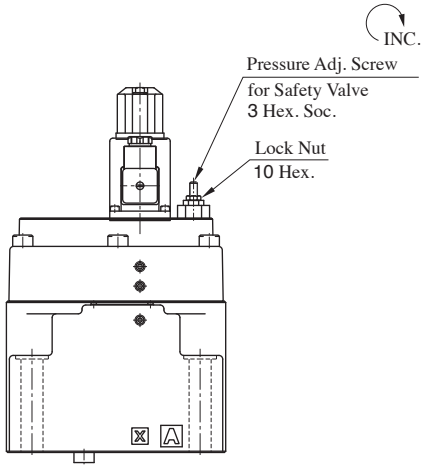
EFBG-06-250 -$^{C}_{H}$(-E)-61



Models without Proportional Pilot Relief Valve

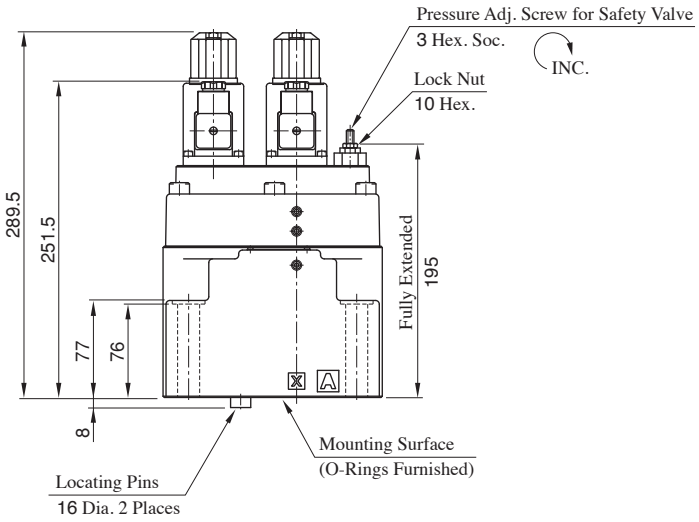
EFBG-06-250(-E)-61





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

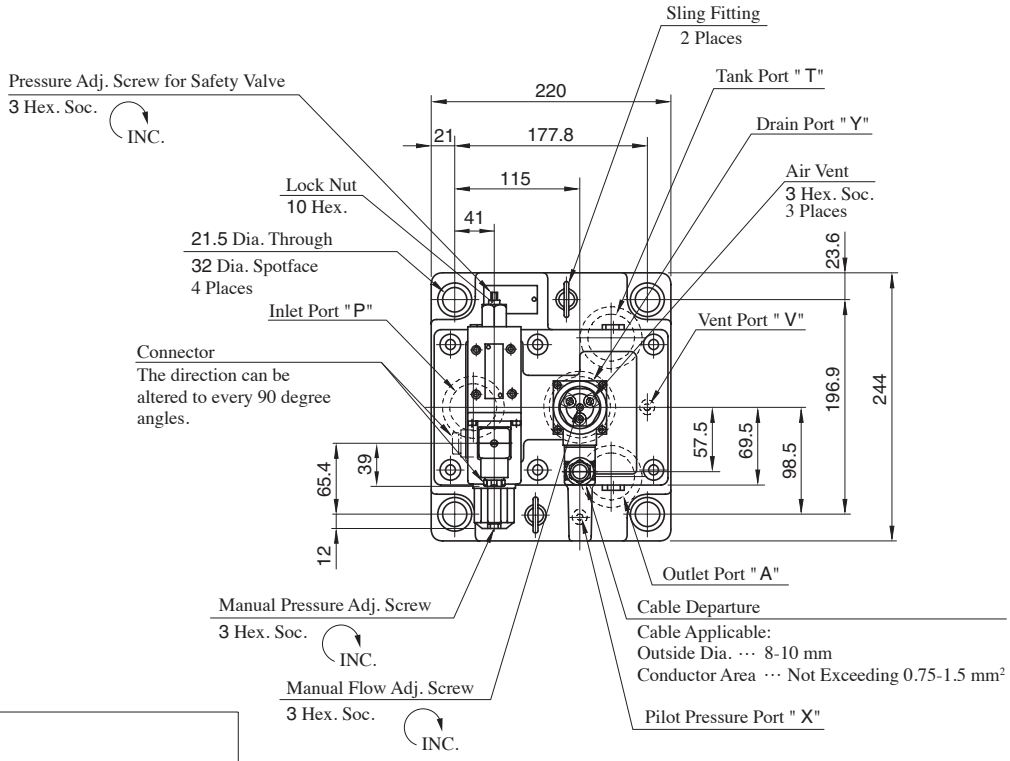
Approx. Mass ..... 21.3 kg



Approx. Mass ..... 22 kg

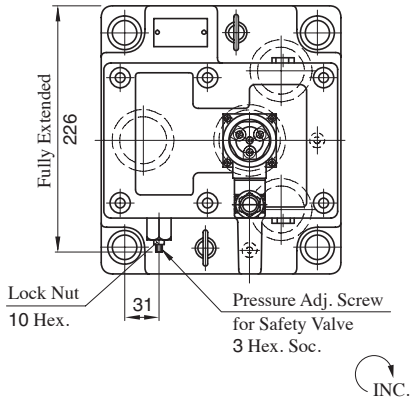
Models with Proportional Pilot Relief Valve

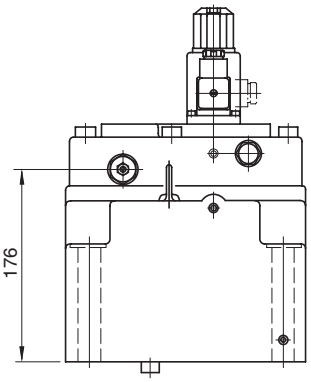
EFBG-10-500 - $\frac{C}{H}$(-E)-51



Models without Proportional Pilot Relief Valve

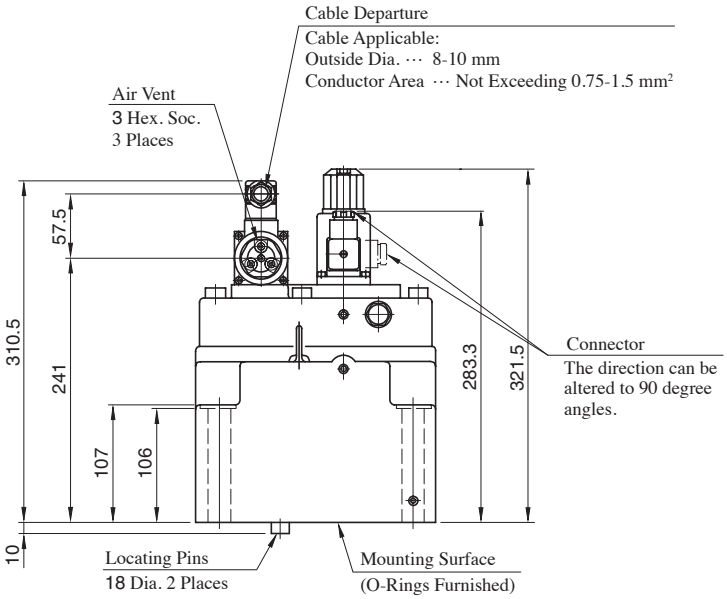
EFBG-10-500(-E)-51





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

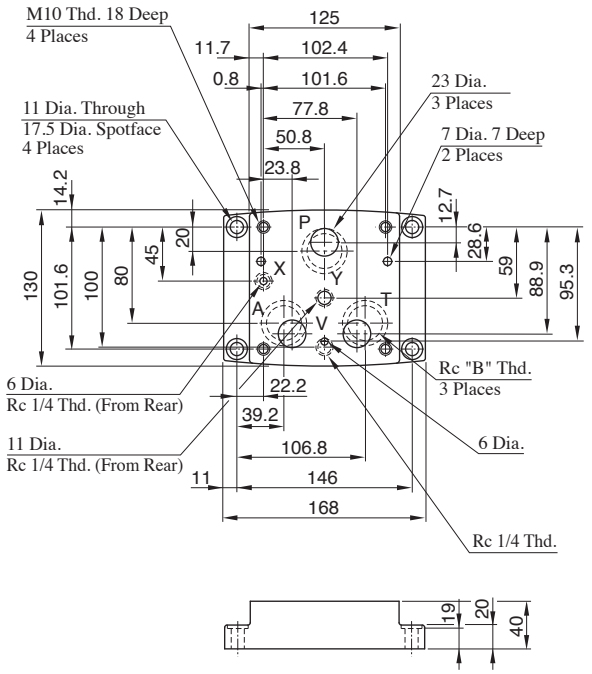
Approx. Mass ..... 60 kg



Approx. Mass ..... 62 kg

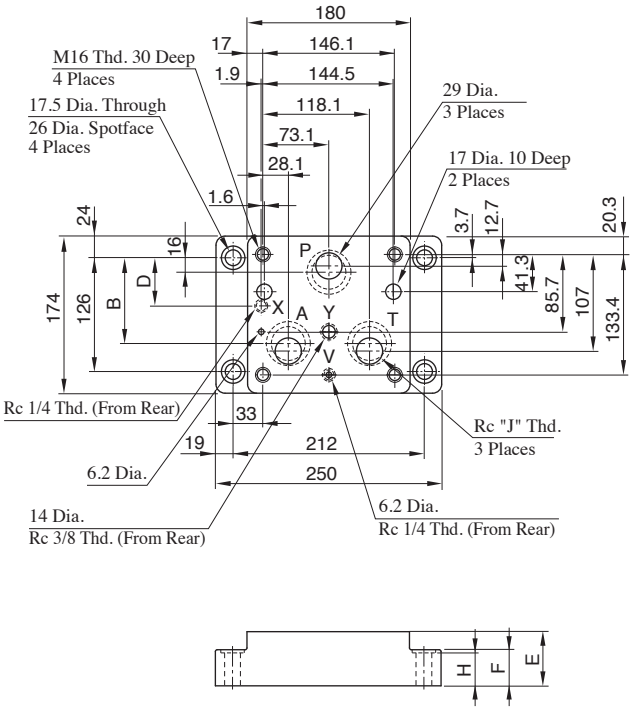
Sub Plates

EFBGM-03Y/03Z-20



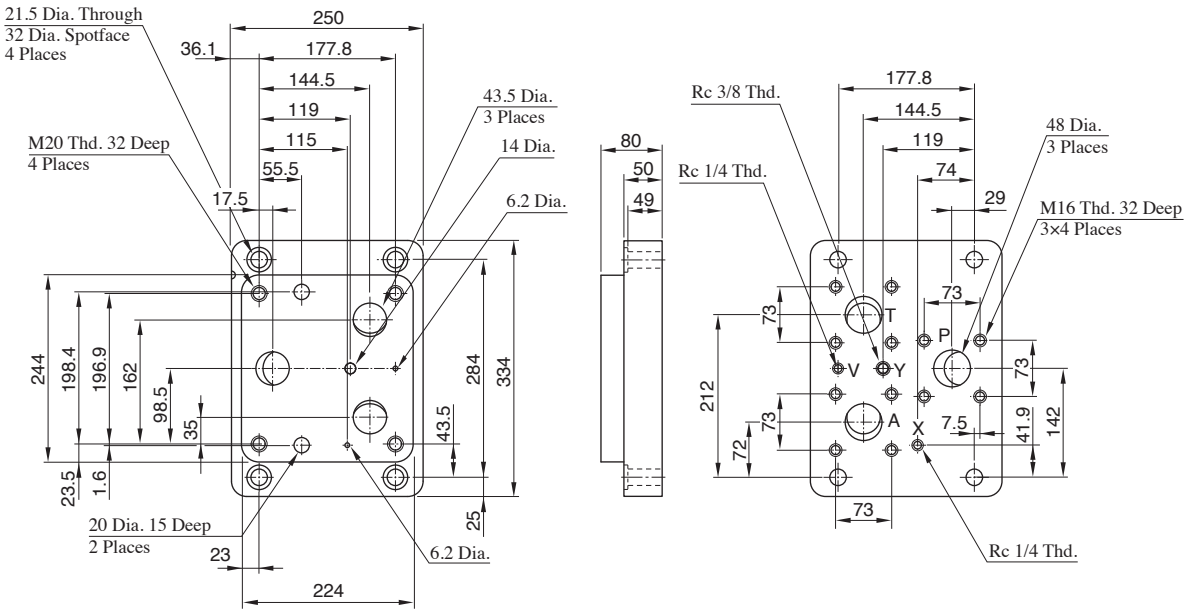
Sub-Plate Model Numbers	B
EFBGM-03Y-20	3/4
EFBGM-03Z-20	1

EFBGM-06X/06Y-20



Sub-Plate Model Numbers	B	D	E	F	H	J
EFBGM-06X-20	103.3	63.3	45	35	34	1
EFBGM-06Y-20	95	53.3	60	40	39	1 1/4

EFBGM-10Y-20



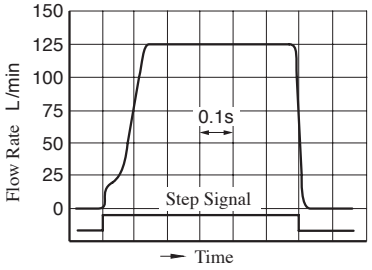
Step Response

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

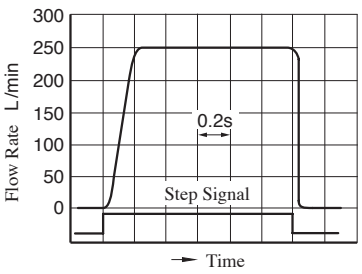
Viscosity: 30 mm²/s

Flow Controls

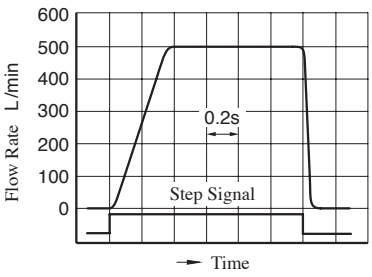
EFBG-03



EFBG-06

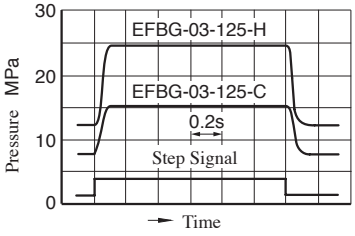


EFBG-10



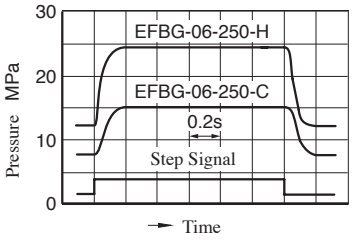
Pressure Controls

EFBG-03



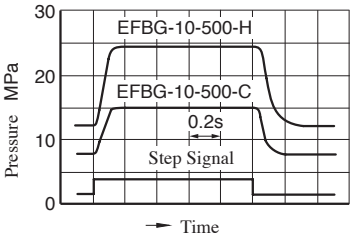
Flow Rate : 125 L/min
Trapped Oil Volume : < 1 L

EFBG-06



Flow Rate : 250 L/min
Trapped Oil Volume : < 1 L

EFBG-10

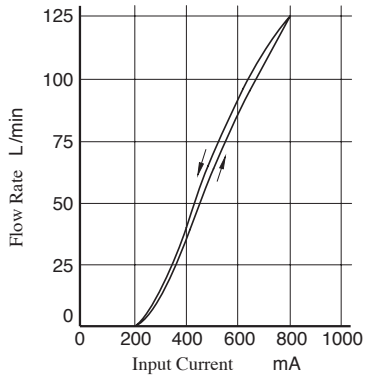


Flow Rate : 500 L/min
Trapped Oil Volume : < 1 L

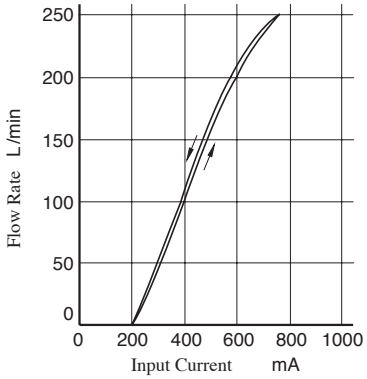
Input Current vs. Flow

Viscosity: 30 mm²/s

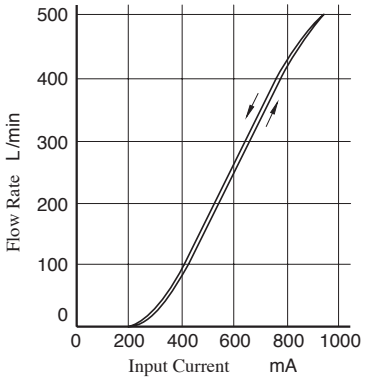
EFBG-03



EFBG-06



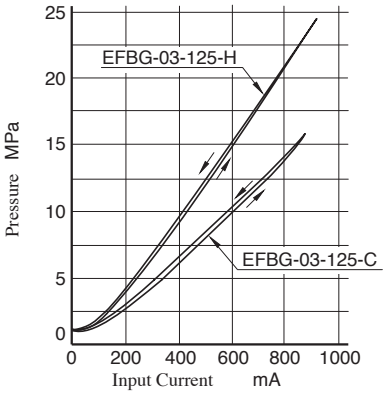
EFBG-10



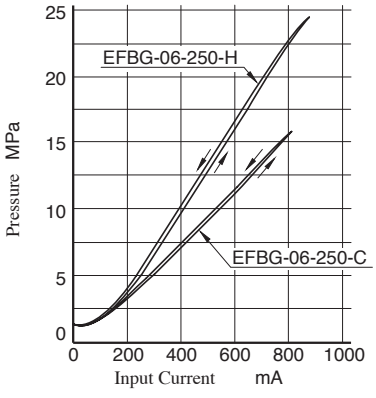
Input Current vs. Pressure

Viscosity: 30 mm²/s

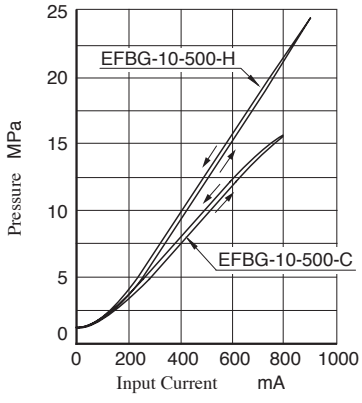
EFBG-03



EFBG-06

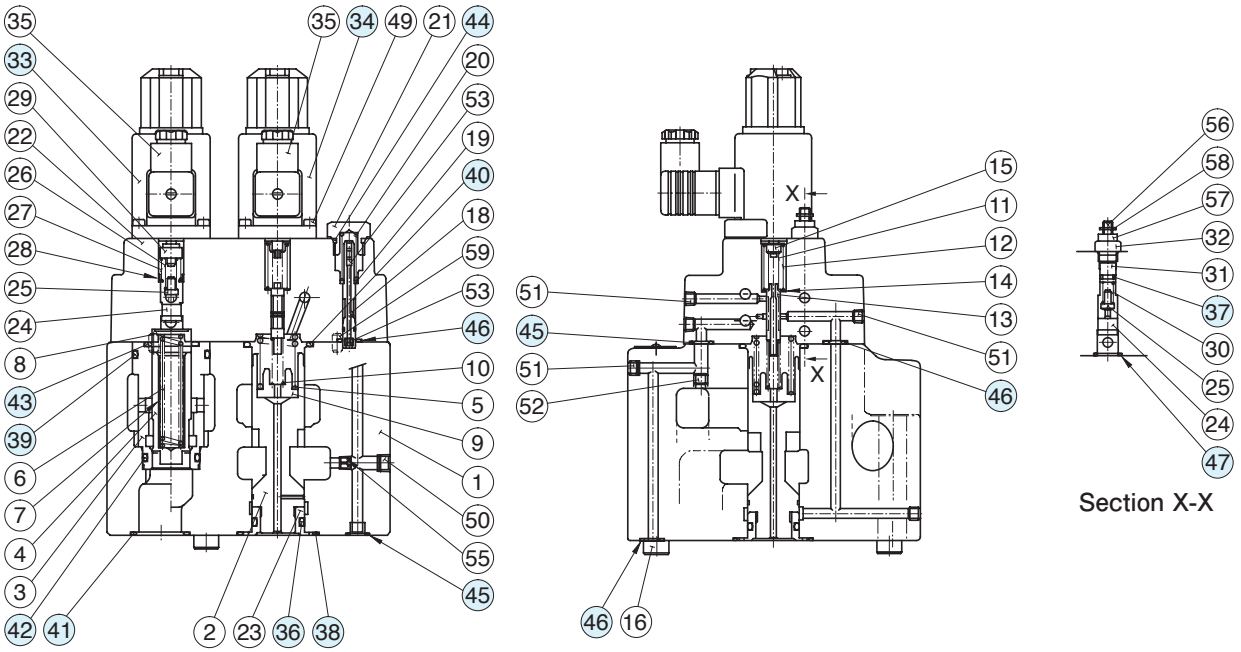


EFBG-10



List of Seals and Solenoid Ass'y

EFBG-03-125-∗-∗-61
EFBG-06-250-∗-∗-61



List of Seals and Solenoid Ass'y

Item	Name of Parts	EFBG-03		EFBG-06	
		Part Numbers	Qty.	Part Numbers	Qty.
36	O-Ring	AS568-016(NB-70-1)	1	OR NBR-70-1 P26-N	1
37	O-Ring	OR NBR-70-1 P6-N	1	OR NBR-70-1 P6-N	1
38	O-Ring	OR NBR-90 P28-N	1	OR NBR-90 P44-N	1
39	O-Ring	OR NBR-90 P32-N	1	OR NBR-90 P42-N	1
40	O-Ring	OR NBR-90 P28-N	1	OR NBR-90 P36-N	1
41	O-Ring	OR NBR-90 P28-N	3	OR NBR-90 P32-N	3
42	O-Ring	OR NBR-90 G30-N	1	OR NBR-90 P30-N	1
43	O-Ring	OR NBR-90 P28-N	1	OR NBR-90 P28-N	1
44	O-Ring	OR NBR-90 P15-N	1	OR NBR-90 P15-N	1
45	O-Ring	OR NBR-90 P11-N	2	OR NBR-90 P11-N	2
46	O-Ring	OR NBR-90 P9-N	5	OR NBR-90 P11-N	4
47	O-Ring	AS568-016(NB-70-1)	1	AS568-016(NB-90)	1

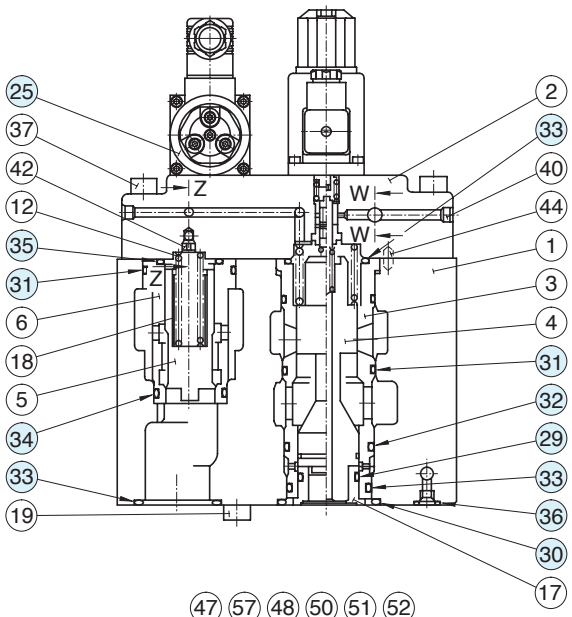
Solenoid Ass'y

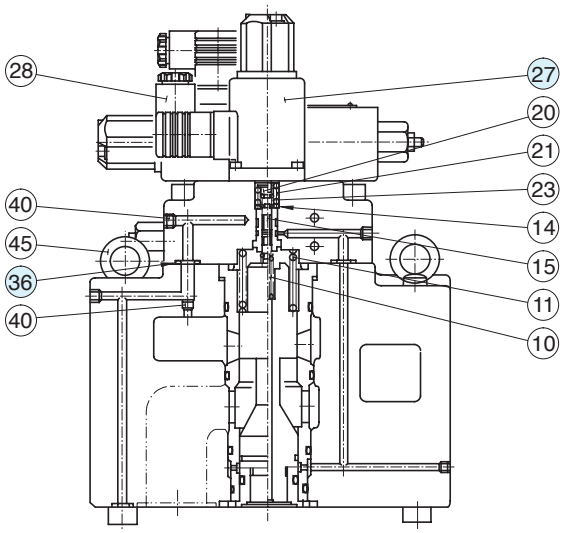
Valve Model Numbers	㉝ Solenoid Ass'y Model Numbers	㉞ Solenoid Ass'y Model Numbers
EFBG-$^{03}_{06}$-$^{125}_{250}$-C(E)-61	E318-Y06M1-04-61	E318-Y06M1-28-61
EFBG-$^{03}_{06}$-$^{125}_{250}$-E(E)-61		
EFBG-$^{03}_{06}$-$^{125}_{250}$-(E)-61	—	

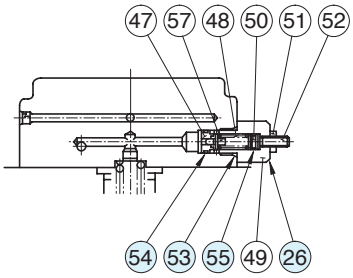
Note) The connector assembly GDM-211-B-11 (Item 35) is not included in the solenoid assembly.

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

EFBG-10-500-∗-∗-51

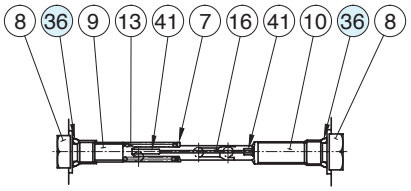






Section W-W

(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	OR NBR-70-1 P34-N	1	1
30	O-Ring	OR NBR-90 G60-N	1	1
31	O-Ring	OR NBR-90 G55-N	3	3
32	O-Ring	OR NBR-90 P50-N	1	1
33	O-Ring	OR NBR-90 P48-N	5	5
34	O-Ring	OR NBR-90 P42-N	1	1
35	O-Ring	OR NBR-90 P36-N	1	1
36	O-Ring	OR NBR-90 P11-N	8	8
53	O-Ring	OR NBR-90 P14-N	—	1
54	O-Ring	AS568-013(NBR-90)	—	1
55	O-Ring	OR NBR-70-1 P6-N	—	1

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	EDG-01V-C-1-PNT12-5103	E318-Y06M1-28-61	—
EFBG-10-500-H(-E)-51	EDG-01V-H-1-PNT12-5103		—
EFBG-10-500(-E)-51	—		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

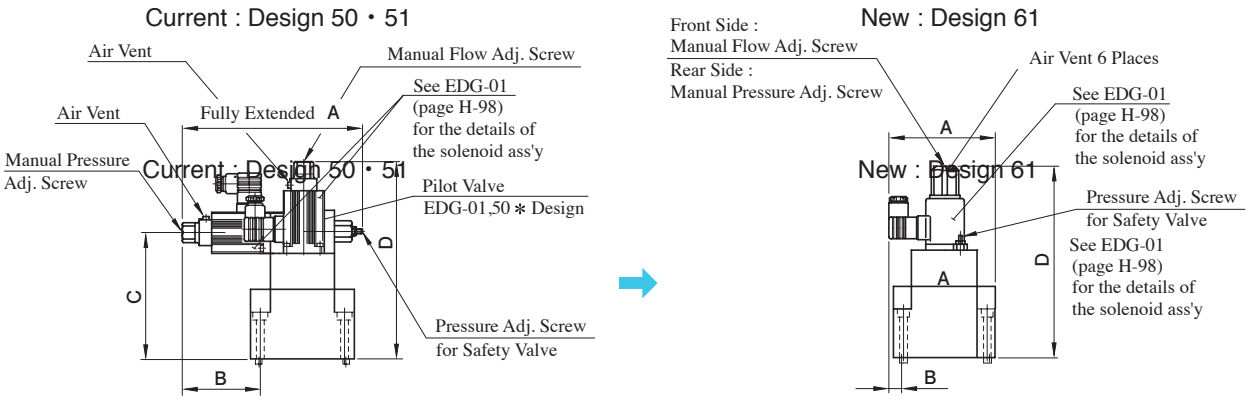
The input current and pressure–flow characteristics differ between the new and old models. Ask Yuken for details.
No changes in specifications and characteristics between current and new design.

Safety Valve Pressure Setting

・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.



Valve Model Numbers		A	B	C	D
(Current)	EFBG-03-125-＊-＊-$^{50}_{51}$	217	93.2	155	2236.5
(New)	EFBG-03-125-＊-＊-61	132	18.7	—	248.5
(Current)	EFBG-06-250-＊-＊-$^{50}_{51}$	217	53.3	196	277.5
(New)	EFBG-06-125-＊-＊-61	180	16.9	—	289.5

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.