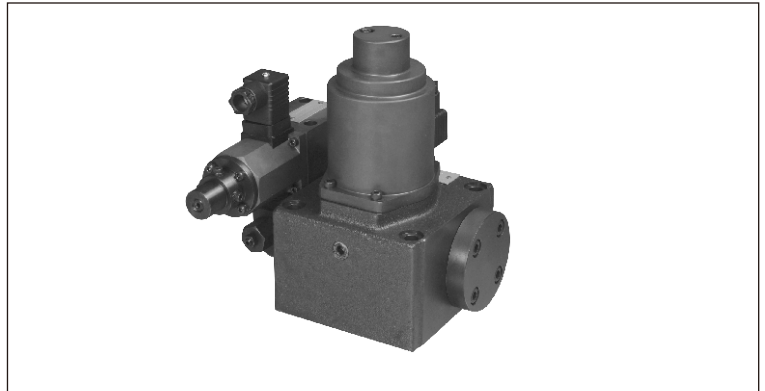


# Proportional Pressure Relief And Flow Valves Pilot Operated Type EFBG...

## ■ Product show and brief introduction

---

Size 03,06,10  
Component series 10/21  
Maximum operating pressure 25 MPa  
Maximum flow 500L/min



## ■ Features

---

- This series of relief speed control valve is made of proportional relief valve and proportional throttle valve in parallel
- Control flow by inlet throttling control, greatly reduce system power consumption
- Through the proportional solenoid valve input corresponding current signal, can quickly proportional control system pressure and output flow

## Ordering details

	1	2	3	4	5	6	7
EFBG	-	-	-	-	-	-	-

Item	Collocate	Code	Expanation
1	Sort	EFBG	Proportional relief timing valve
2	Size	03	
		06	
		10	
3	Flow adjustment range	60	Fit for size:03
		125	
		160	
		250	Fit for size:06
		500	Fit for size:10

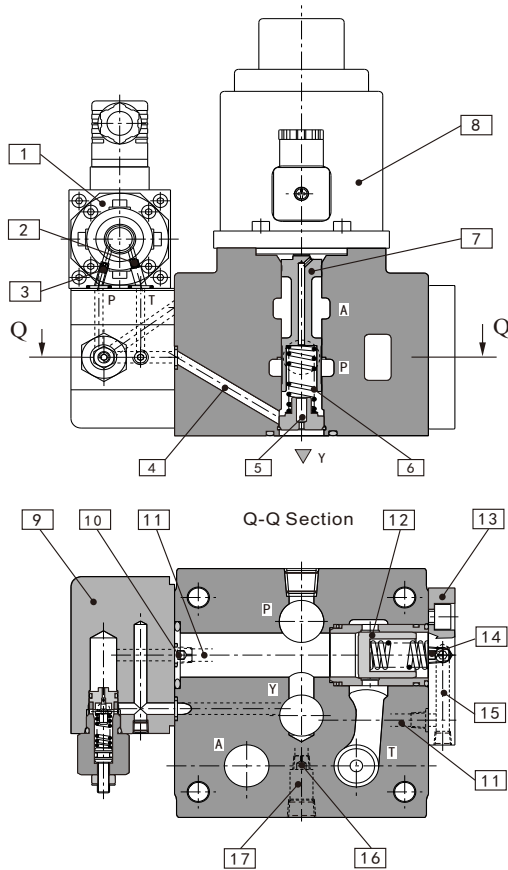
Item	Collocate	Code	Expanation
4	Pressure adjustment range	B	0.5 ~ 6.9MPa
		C	1.0 ~ 15.7MPa
		H	1.2 ~ 24.5MPa
5	Design series	20	Fit for size:03
		10	Fit for size:03,06,10
6	Seal material	NO	NBR
		V	FKM
7			Describe other especial demand

## Technical data

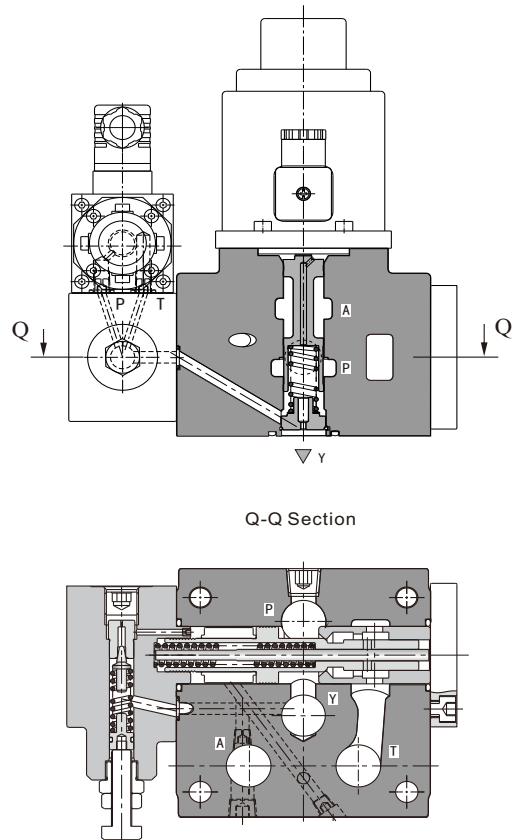
Name		Code	EFBG-03	EFBG-06	EFBG-10	
Max. pressure		MPa	24.5	24.5	24.5	
Max. flow		L/min	125	250	500	
Flow control	Flow adjustment range		L/min	1 ~ 125	2.5 ~ 250	5 ~ 500
	Rating electricity		mA	540	750	900
	Coil resistance		Ω	10	10	10
	Pressure difference		Mpa	0.6	0.7	0.9
	Stagnant loop			<3%	<3%	<3%
	Repeat			1%	1%	1%
Pressure control	Pressure adjustment range	B	MPa	0.5 ~ 6.9	0.5 ~ 6.9	0.5 ~ 6.9
		C	MPa	1.2 ~ 15.7	1.4 ~ 15.7	1.5 ~ 15.7
		H	MPa	1.4 ~ 24.5	1.4 ~ 24.5	1.5 ~ 24.5
	Rating electricity	B	mA	750	820	900
		C	mA			
		H	mA			
	Coil resistance		Ω	10	10	10
	Stagnant loop			<2%	<2%	<2%
Repeat			1%	1%	1%	
Weight		Kg	18	33	58	

Work theory

CODE:EFBG-03-...-20



CODE:EFBG-03-...-10



EFBG-03-...-20

Pass way P's pressure is on main spool 12. At the same time, pressure oil via oil road 17, throttle hole 16 to oil road 11. After that, it divides into two ways. One way via throttle hole 10 into safe valve 9 and proportional pressure pilot valve 1. Another way via end cover 13's oil road 15 and throttle hole 14 into main spool's spring side.

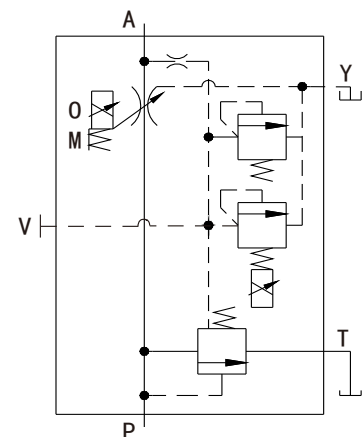
Pilot valve 1's spool is opened when above control oil pressure bigger than proportional pressure pilot valve 1's enactment value. Control oil via pilot T port, oil road 4 to main valve Y port to reflow to oil box. Then it caused pressure difference between main spool 12's left and right sides to conquer spring power. The power makes main spool move to right to open main valve to relief. So pass way P's pressure keep same for enactment value.

Pass way P's pressure value can be adjusted proportionally by changing proportional solenoid's input electricity on proportional pressure pilot valve 1.

Throttle port is opened by proportional solenoid 8 controls main flow spool 7 to conquer spring 6 to move down. Then the fluid from pass way P flow into A port.

Pass way PA's flow can be controlled proportionally by changing proportional solenoid 8's input electricity.

Symbols



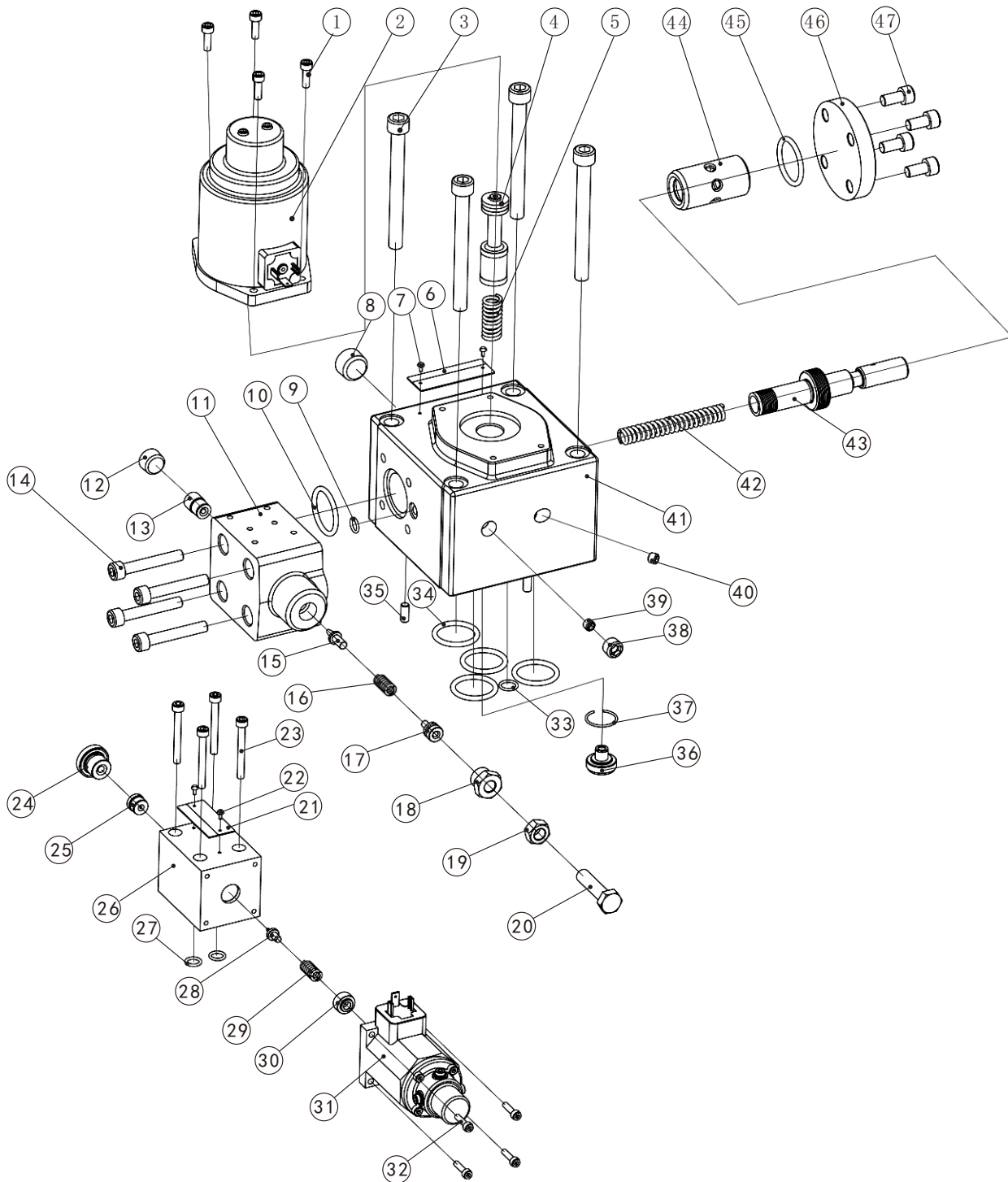
At the same time, A port passes to oil road 17. It comes true pass way P's pressure to change follow loading pressure (A port pressure) to reduce system power waste.

EFBG-03-...-10

The valve's work theory is similar with 20 series.

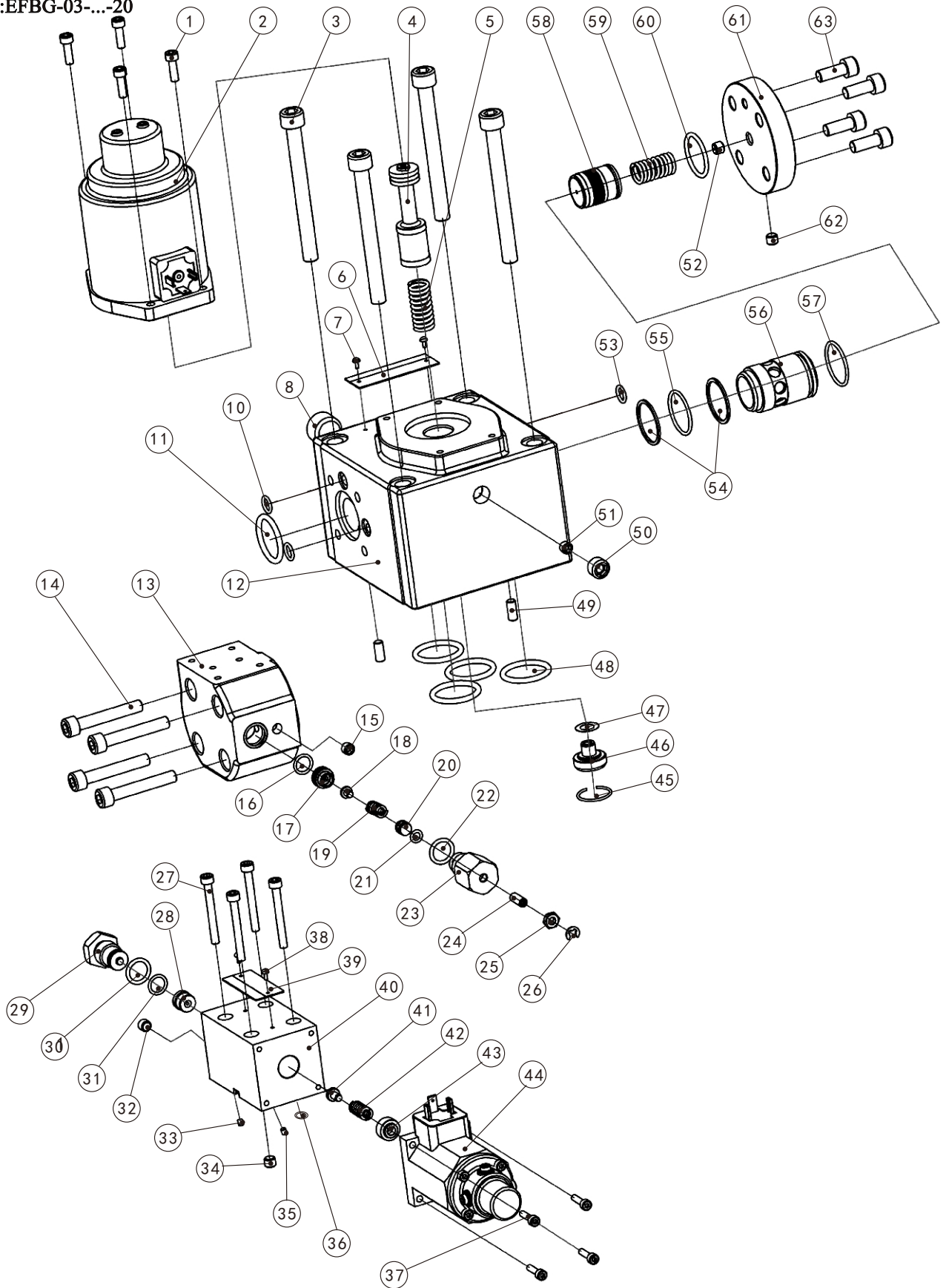
### ■ Three Dimensional Analyse Photo

CODE:EFBG-03-...-10



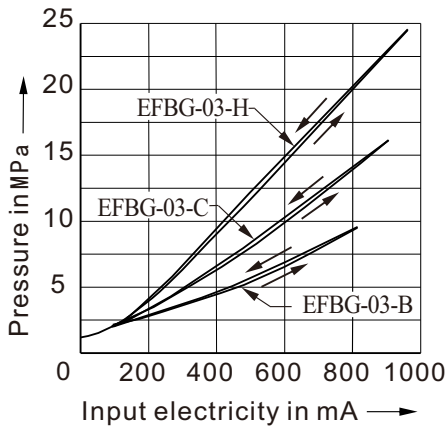
■ Three Dimensional Analyse Photo

CODE:EFBG-03-...-20

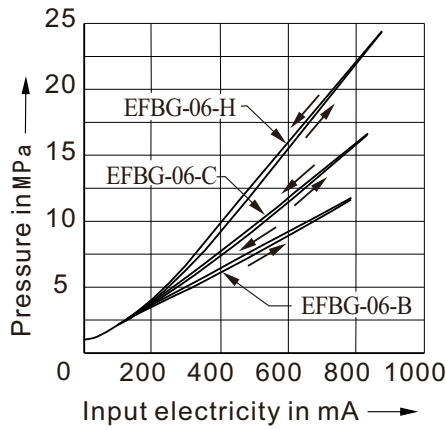


**Characteristic curves**

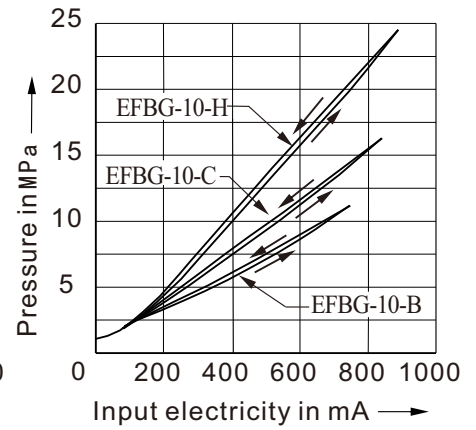
EFBG-03...10



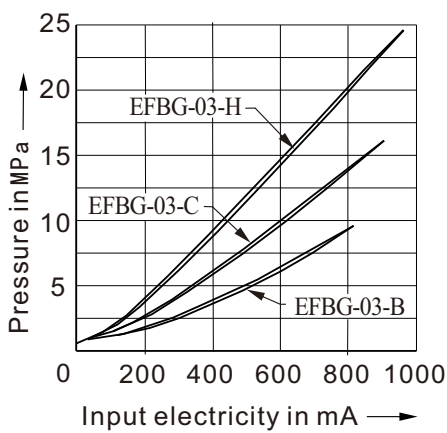
EFBG-06...10



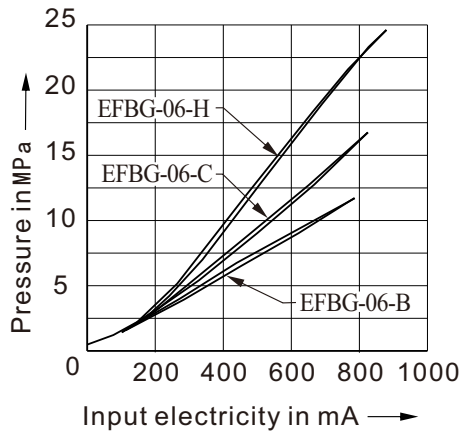
EFBG-10...10



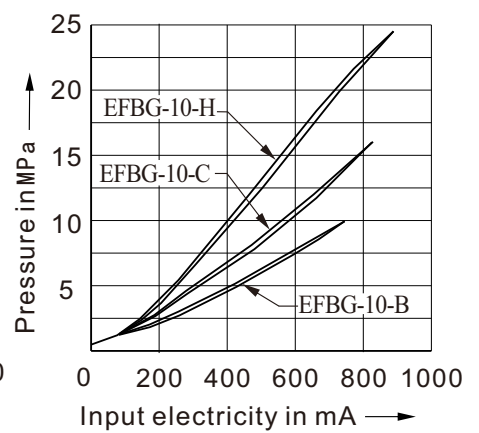
EFBG-03...20



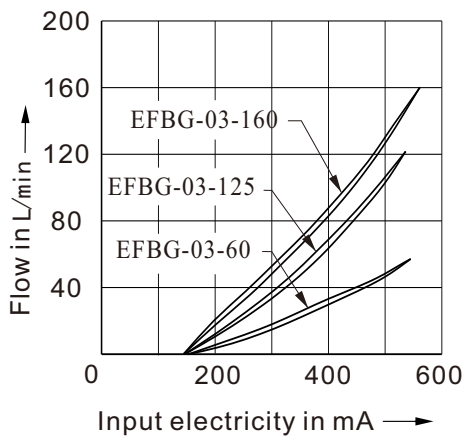
EFBG-06...20



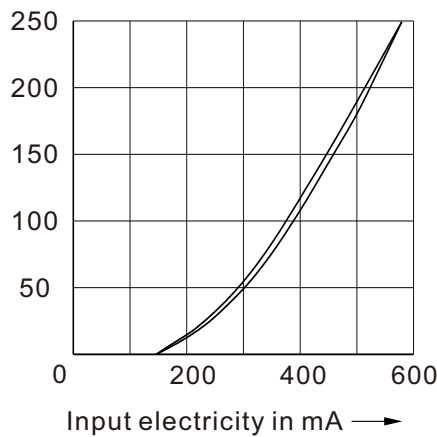
EFBG-10...20



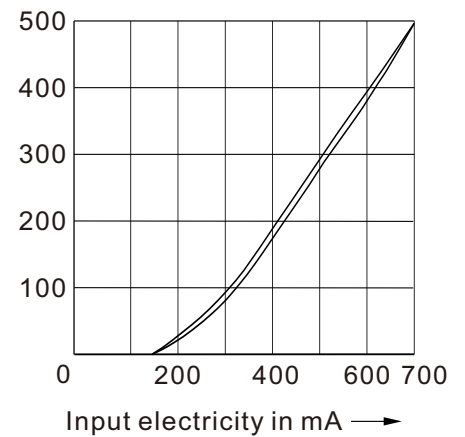
EFBG-03



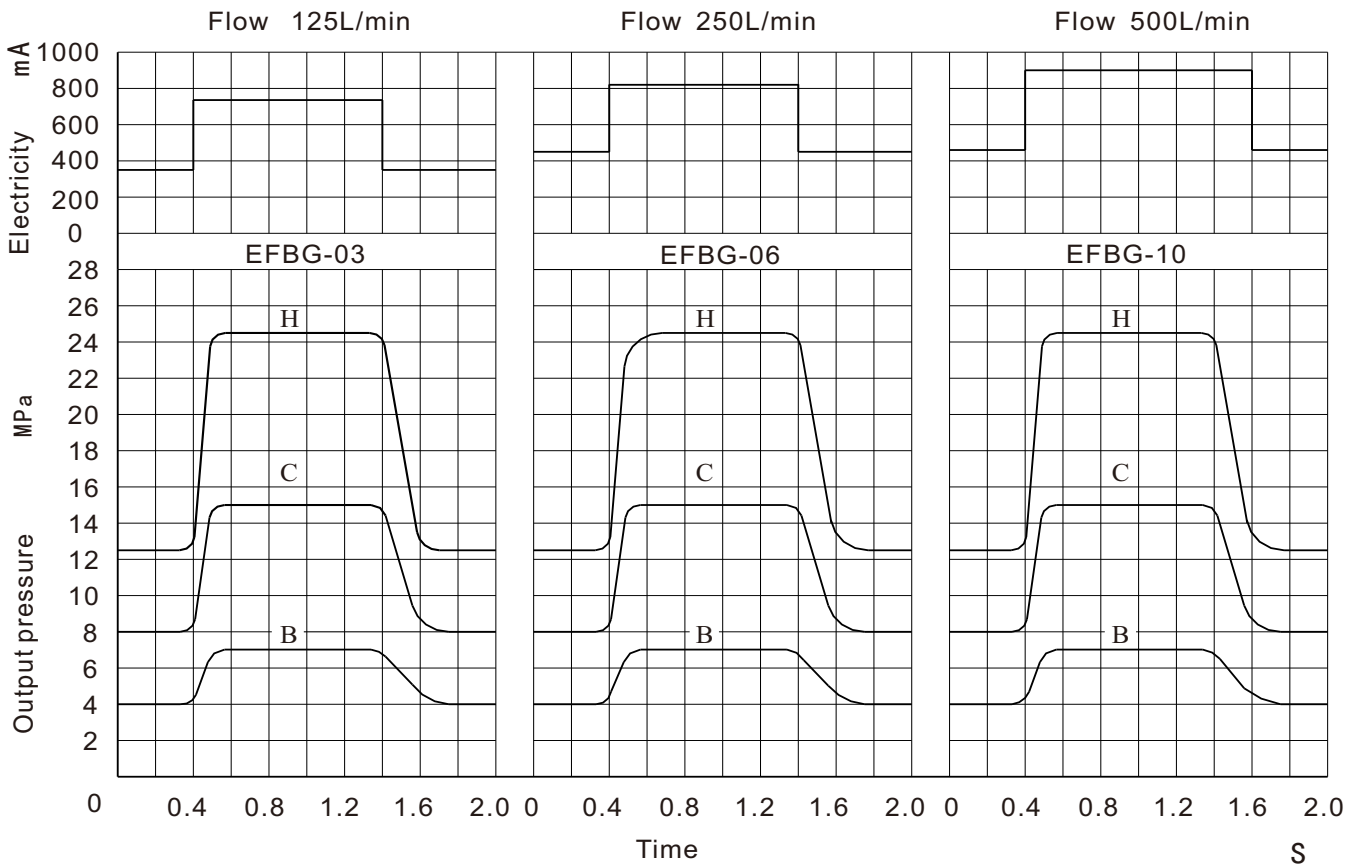
EFBG-06



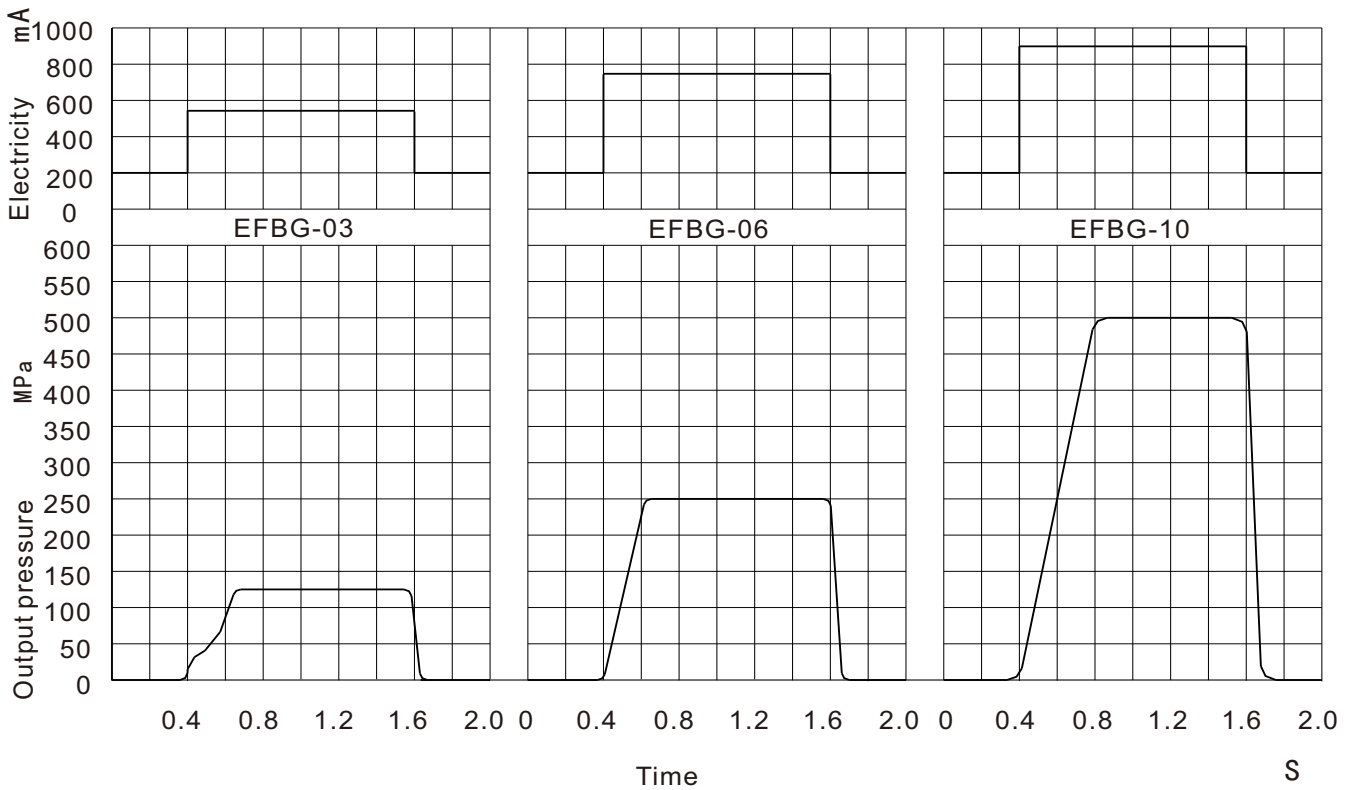
EFBG-10



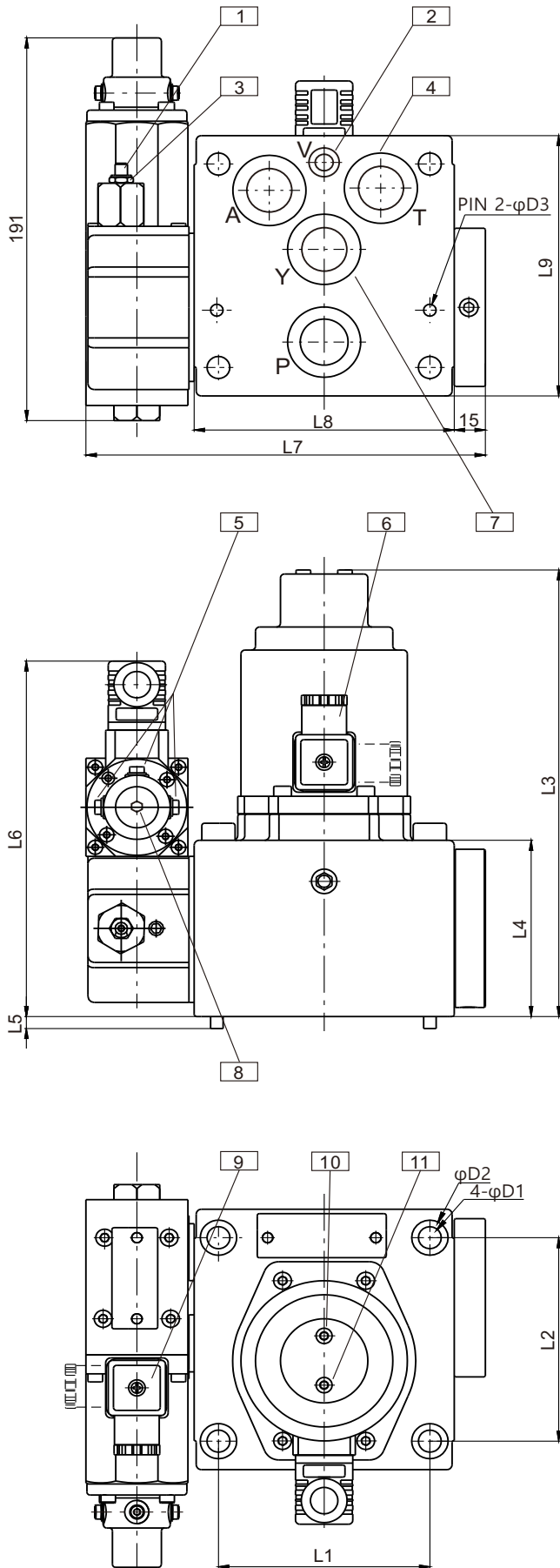
**Pressure control jumping response characteristic curves**



**Flow control jumping response characteristic curves**



**Installation dimensions**



**Valve fix bolts**

- EFBG-03:4-M10x100 GB/T70.1-2000-12.9,  
M<sub>A</sub>=130N.M
- EFBG-06:4-M16x130 GB/T70.1-2000-12.9,  
M<sub>A</sub>=310N.M
- EFBG-10:4-M20x150 GB/T70.1-2000-12.9,  
M<sub>A</sub>=430N.M

**Explanation**

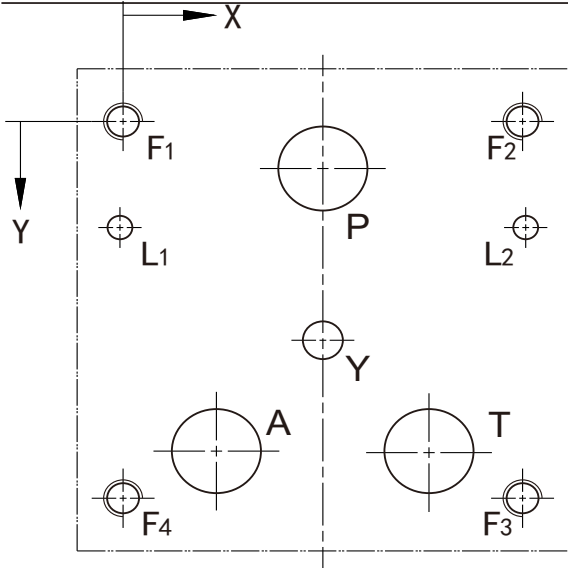
- 1.Safe valve pressure adjustment bolts  
(Inside six corner s=3)
- 2.Installation o-rings for telecontrol  
port v.03:without the port;  
06:10.8.x2.4;10:10.8x2.4
- 3.Lock nut(six corner s=10)
- 4.A、 T、 P Ports installation o-rings.  
03:28x3.55;06:30.8x3.6;10:47.7x3.5
- 5.Vent(inside six corner s=3)
- 6.Space for pulling out plug is 15mm.  
Installation can be changed . each  
time for 90°
- 7.Y Port installation o-rings,  
03:28x3.55;06:43x3.5;10:59.4x3.1
- 8.Manual pressure adjustment bolts  
(inside six corner s=3)
- 9.Space for pulling out is 15mm.please  
see page xx for installation direction.
- 10.Manual flow adjustment bolts  
(inside six corner s=3)
- 11.Vent(inside six corner s=3)

Code	L1	L2	L3	L4	L5
EFBG-03	101.6	101.6	218	85	6
EFBG-06	146.1	133.4	248	107	8
EFBG-10	196.9	177.8	275	124	10

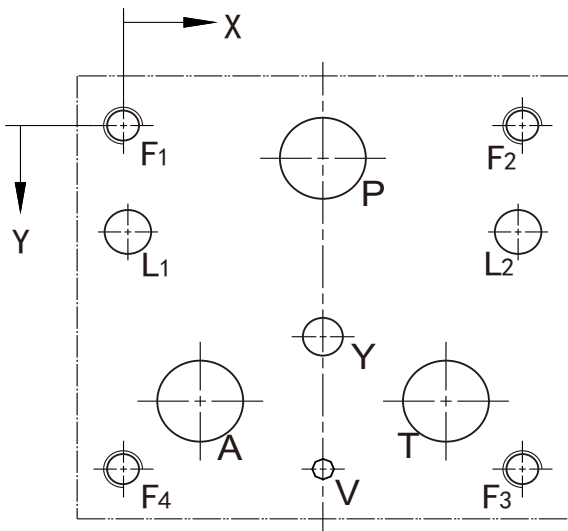
L6	L7	L8	L9	D1	D2
171	191	125	130	11	17.5
206	247	180	174	17.5	26
220	315	244	244	22	32



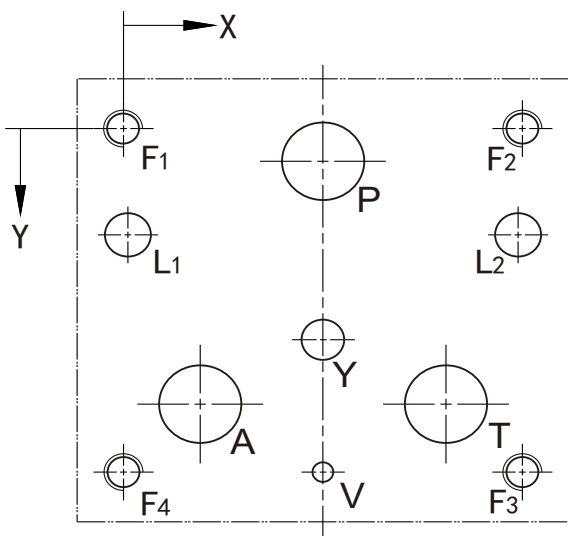
**Installation surface process dimensions**



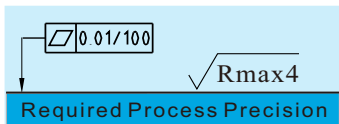
Size	DES.		Position		Character	
	Code		X	Y		DEEP
EFBG03	F1		0	0	M10	18
	F2		101.6	0	M10	18
	F3		101.6	101.6	M10	18
	F4		0	101.6	M10	18
	P		50.8	12.7	φ23	–
	T		77.8	88.9	φ23	–
	A		23.8	88.9	φ23	–
	Y		50.8	59	φ11	–
	L1		-0.8	28.6	φ7	7
	L2		102.4	28.6	φ7	7



Size	DES.		Position		Character	
	Code		X	Y		Deep
EFBG06	F1		0	0	M16	30
	F2		146.1	0	M16	30
	F3		146.1	133.4	M16	30
	F4		0	133.4	M16	30
	P		73.1	12.7	φ29	–
	T		118.1	107	φ29	–
	A		28.1	107	φ29	–
	Y		73.1	82	φ14	–
	L1		1.6	32.2	φ17.5	10
	L2		144.5	32.2	φ17.5	10



Size	DES.		Position		Character	
	Code		X	Y		Deep
EFBG10	F1		0	0	M20	35
	F2		196.9	0	M20	35
	F3		196.9	177.8	M20	35
	F4		0	177.8	M20	35
	P		98.45	17.5	φ43.5	–
	T		161.95	144.5	φ43.5	–
	A		34.95	144.5	φ43.5	–
	Y		98.45	115	φ14	–
	L1		1.6	55.5	φ20	15
	L2		195.3	55.5	φ20	15



**Note!**

The installation surface should be bigger than valve bottom figure when process valve's installation surface.

## Installation and using notice

### 1. Vent

Before using, please vent out air inside valve and immit full fluid into solenoid. In order to vent air easily, vent hole position should be up. Vent hole direction can be changed by circumgyrating solenoid vent.

### 2. Manual enactment

Before using or coming out electric fault, it can adjust manual adjustment bolts to enact valve's pressure and flow. Manual adjustment bolts should return to original position when without using manual enactment.

### 3. Return oil and vent oil back pressure

The back pressure effects valve's min. adjustment pressure and control flow directly. So two pipe road should be collocated alone to reduce back pressure. At the same time, end of pipe road should immerge oil. Return oil back pressure isn't bigger than 0.5MPa. Vent oil back pressre isn't bigger than 0.2MPa.

### 4. Small flow limit

Control pressure will be unsteadiness when relief valve's pass flow is small. So using flow should over than 10L/min for 03,06 size. For 10 size valve, using flow should over than 15L/min.

### 5. Safe valve pressure enactment

Enacting safe valve pressure 2MPa higher than max. adjustment pressure. After adjusting pressure, lock nut must be screwed down.

### 6. See below photo for installation type.

