

Proportional Electro-Hydraulic Directional and Flow Control Valves

These valves are double-deck directional and flow control valves employing as their pilot the electro-hydraulic proportional pressure reducing valves with two proportional solenoids. The flow rate can be controlled by changing an input current to the solenoids and the direction of the flow can be controlled by providing the current to either solenoid of the two.

By combining the valves with the power amplifiers specially designed for the valves, the speed control, acceleration, deceleration and directional control can be done with a single valve, which eventually makes the hydraulic circuits simple and contributes the cost of the hydraulic systems.

Specification

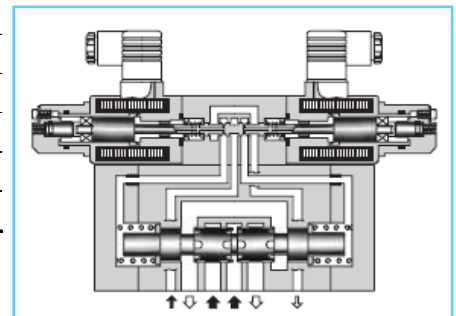
Model Numbers		EDFHG-03	EDFHG-04	EDFHG-06
Description				
Max. Operating Pressure Kgf/cm ²		250		
Rated Flow L/min. [Valve ΔP : 150 Kgf/cm ²]		100	140	280
Pilot Pressure *1 Kgf/cm ²		15 ~ 160		
Pilot Flow L/min.	at Normal	1		
	at Transition	3	4	6
Max. Tank Line Pres. Kgf/cm ²		160	210	
Max. Drain Line Pres. Kgf/cm ²		30*2		
Rated Current		800 mA	980 mA	900 mA
Coil resistance		10 Ω		
Hysteresis		5% or less*3		
Repeatability		1% or less*3		
Approx. Mass Kg.		11	12	15

*1. Take care to keep the difference between the pilot pressure and drain port back pressure consistently greater than 15 Kgf/cm².

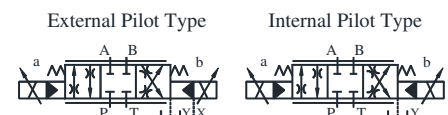
*2. To obtain stable performance, keep the drain port back pressure low and minimize its fluctuations.

*3. The hysteresis and repeatability values indicated in the specifications for each control valve are determined under the following conditions.

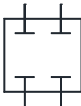
- Hysteresis value : obtained when YUKEN's applicable power amplifier is used.
- Repeatability Value : obtained when YUKEN's applicable power amplifier is used under the same conditions..



Graphic Symbols



Model Number Designation

F-	EDFH	G	-03	-100	-3C2	-XY	-E	-10
Special Seals	Series Number	Type of Mounting	Valve Size	Rated Flow L/min.	Spool	Direction of Flow	Pilot Connection	Design Number
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EDFH: Proportional Electro-Hydraulic Directional and Flow Control Valves	G: Sub-Plate Mounting	03	100 : 100	3C2  3C40 	XY: Metre-out Metre-in	None: Internal Pilot E: External Pilot	31
			04	140 : 140				
			06	280 : 280				

Sub-Plate

Sl. No.	Model Number	Sub-Plate Model Numbers	Thread size	Mass Kg.
1	EDFHG-03	DHGM-03Y-1080	3/4 BSP.F	4.7
2	EDFHG-04	DHGM-04-2080	1/2 BSP.F	4.4
		DHGM-04X-2080	3/4 BSP.F	4.1
3	EDFHG-06	DHGM-06-5080	3/4 BSP.F	7.4
		DHGM-06X-5080	1 BSP.F	

- 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.
- The Sub-plates are those for solenoid controlled pilot operated directional valves.
For dimensions, see page. 384 and 385

Mounting Bolts

Model Number	Socket head cap Screw	Qty	Bolt Kit Model Number
EDFHG-03	M6 x 35 Lg.	4	BKEDFHG-03-31
EDFHG-04	M6 x 45 Lg.	2	BKEDFHG-04-31
	M10 x 50 Lg.	4	
EDFHG-06	M12 x 60 Lg.	6	BKEDFHG-06-31

Applicable Power Amplifiers

For stable performance, it is recommended that YUKEN's applicable power amplifiers be used (for details see page no. 691)

- Model Numbers : SK1091-D24-10**

Instructions

- Manual Adjustment**

In the event of an electric fault or emergency, a manual shift can be made by screwing in the manual adjustment screw. Take care, however, that this manual shift has no flow adjusting function.

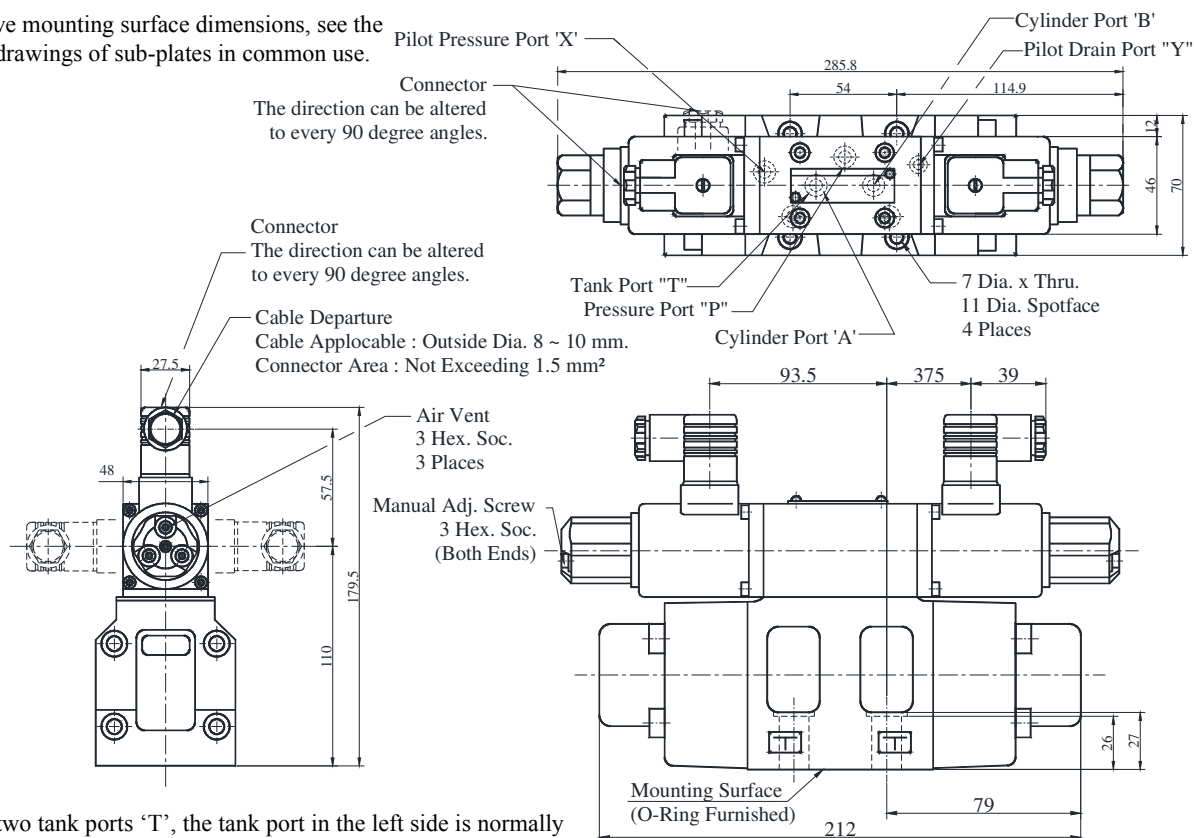
For this operation, set the pilot pressure (or P-PORT pressure on an internal pilot model) below 70 Kgf/cm².

After operation, be sure to return the manual adjustment screw completely to the original position.

EDFHG-03-100-3C※-XY※-31

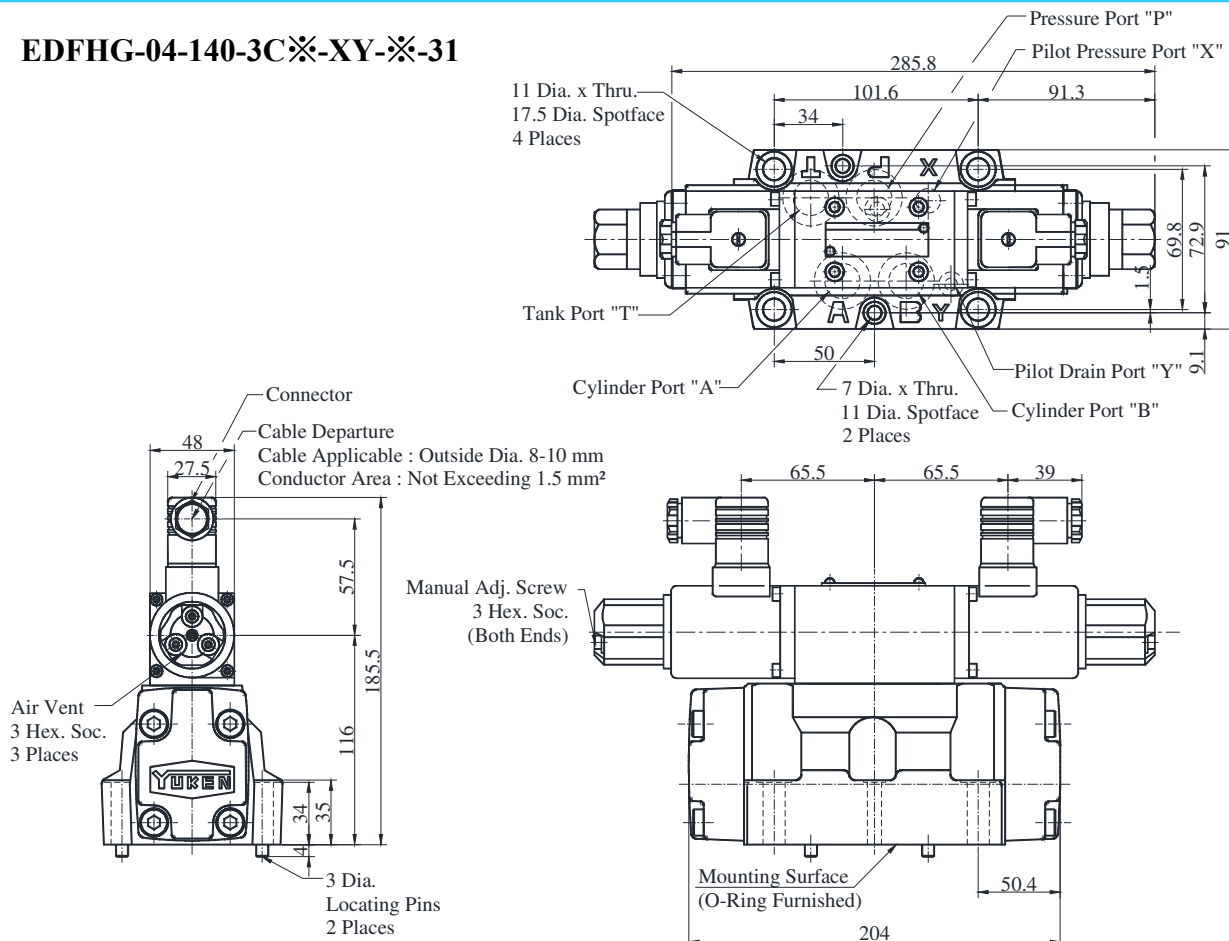
**DIMENSIONS IN
MILLIMETRES**

Note: for valve mounting surface dimensions, see the dimensional drawings of sub-plates in common use.



★ Of the two tank ports 'T', the tank port in the left side is normally used in our standard sub-plate, through, either side of the tank port 'T' can be used without problem.

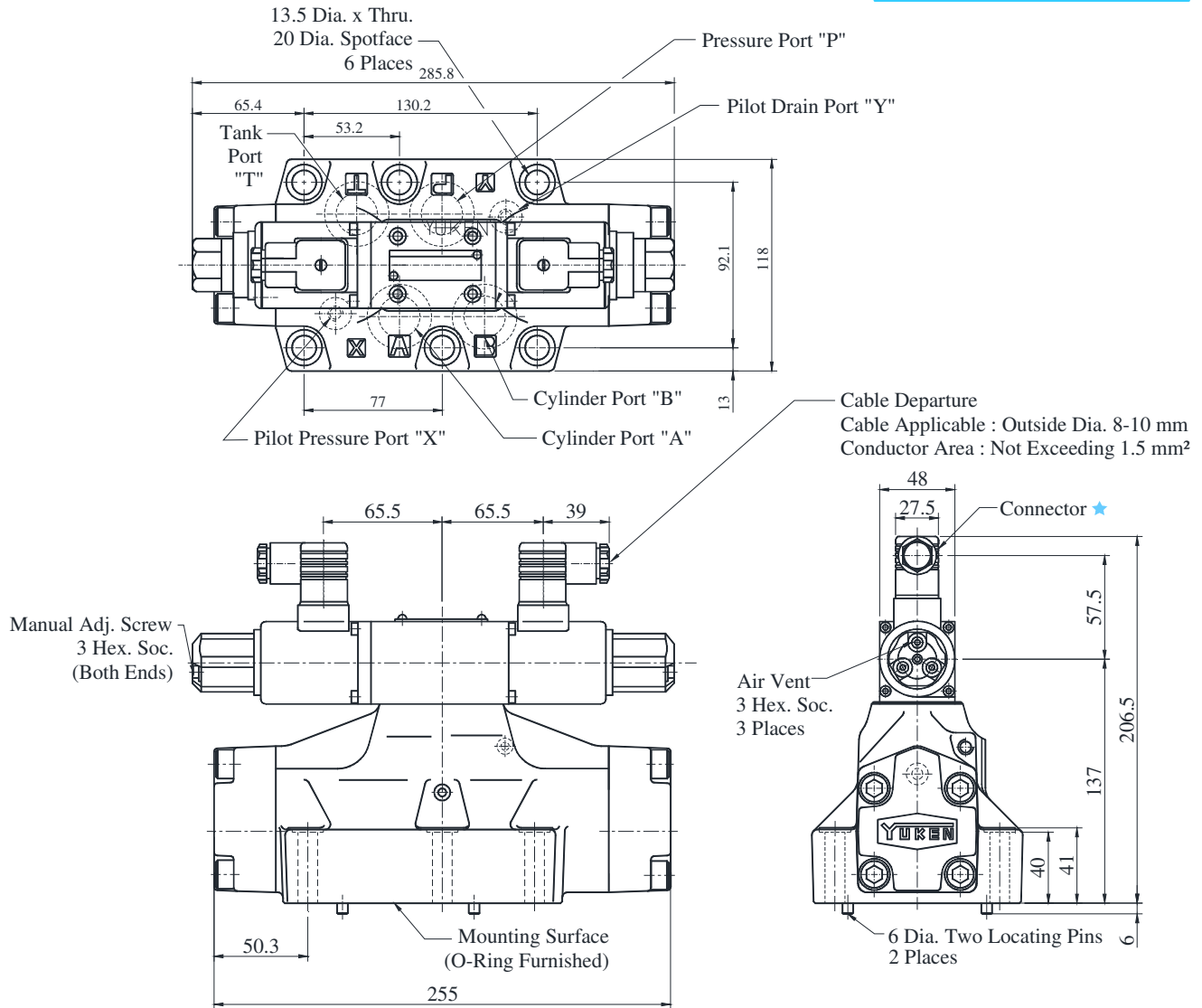
EDFHG-04-140-3C※-XY※-31



E Series

**Proportional Electro-Hydraulic High Response Type
Directional and Flow Control Valve**

EDFHG-06-280-3C※-XY-※-31

DIMENSIONS IN
MILLIMETRES

★ O Position of cable departure can be changed. For details, refer to EDFHG-03 valve on page no. 622

Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates in common use.

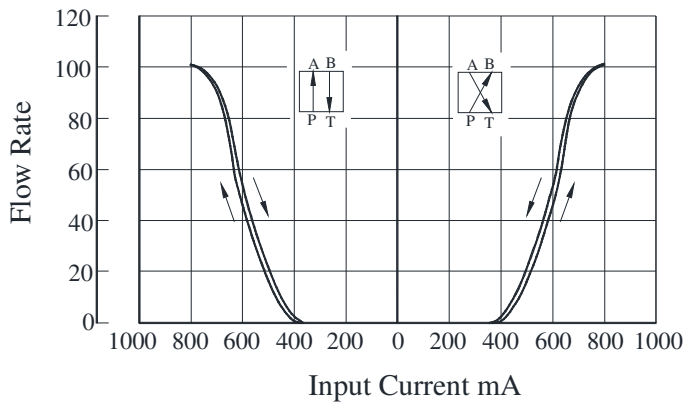
Input Current vs. Flow

Viscosity : 30 cSt

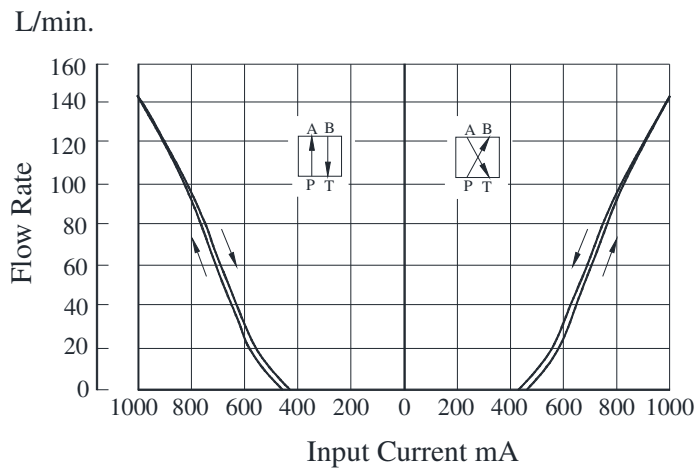
Valve Pres. Diff. : P→A (B), B (A) → T 10 Kg/cm²

L/min.

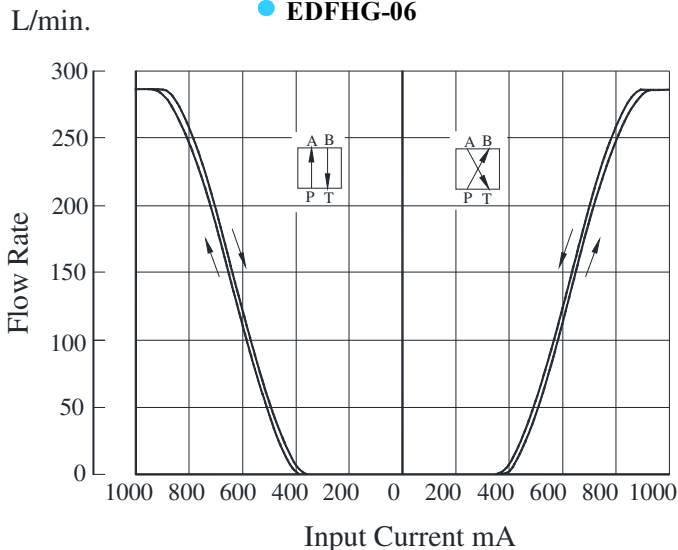
EDFHG-03



EDFHG-04



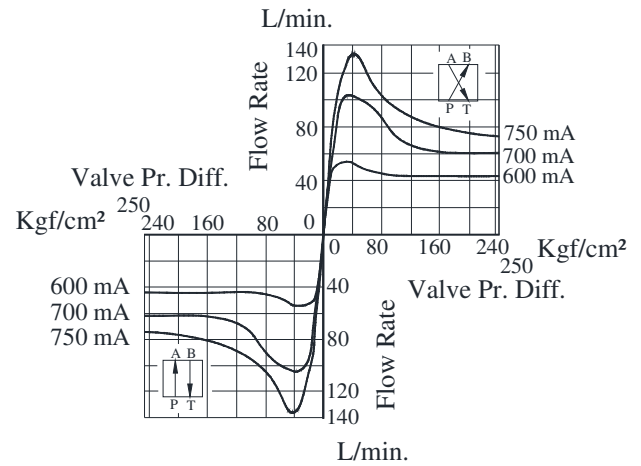
EDFHG-06



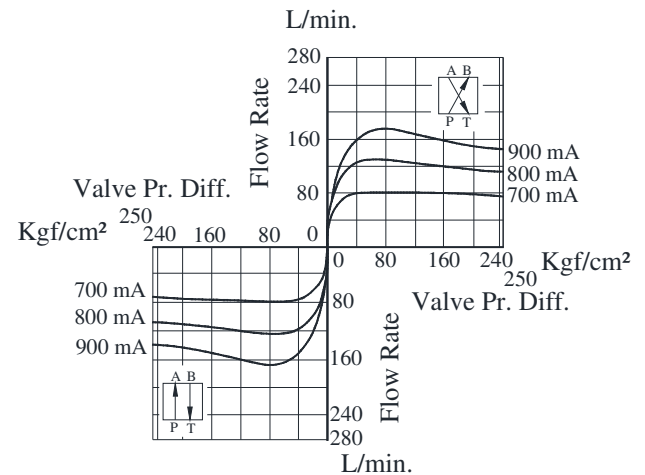
Valve Pressure Difference Vs. Flow

Viscosity : 30 cSt

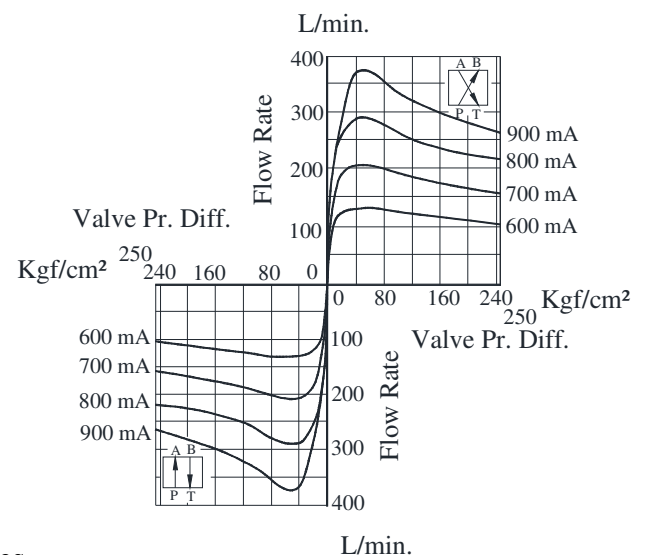
EDFHG-03



EDFHG-04



EDFHG-06

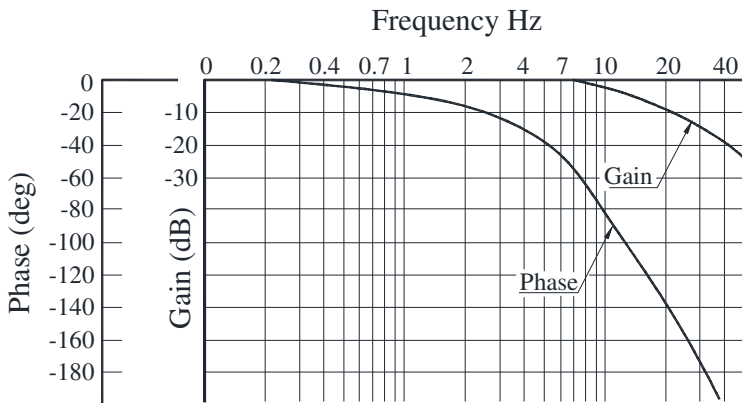


E Series

**Proportional Electro-Hydraulic High Response Type
Directional and Flow Control Valve**

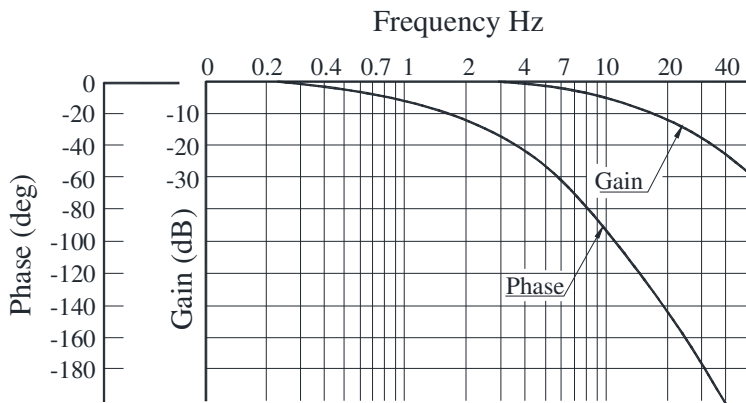
Frequency Response

EDFHG-03



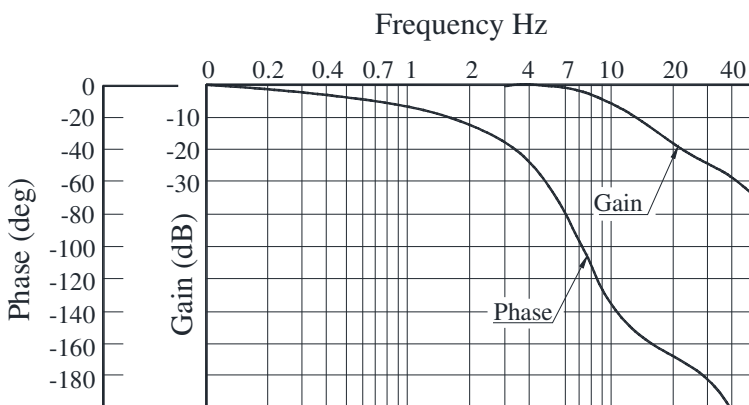
Model Number : EDFHG-03-100-3C2-E-31
 Viscosity : 30 cSt
 Pilot Pressure : 160 Kg/cm²
 Travel of Spool : $\pm 10\%$ of Max. Stroke

EDFHG-04



Model Number : EDFHG-04-140-3C2-E-31
 Viscosity : 30 cSt
 Pilot Pressure : 160 Kg/cm²
 Travel of Spool : $\pm 10\%$ of Max. Stroke

EDFHG-06



Model Number : EDFHG-06-280-3C2-E-31
 Viscosity : 30 cSt
 Pilot Pressure : 160 Kg/cm²
 Travel of Spool : $\pm 10\%$ of Max. Stroke

E Series

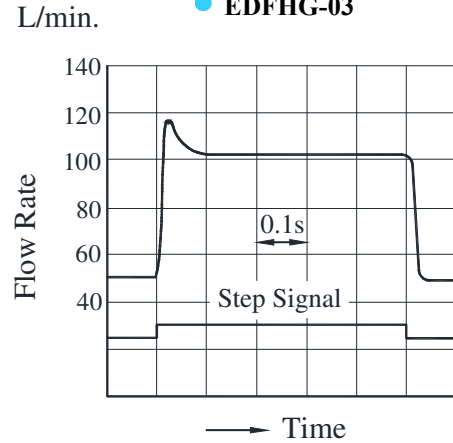
Proportional Electro-Hydraulic High Response Type Directional and Flow Control Valve

Step Response

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

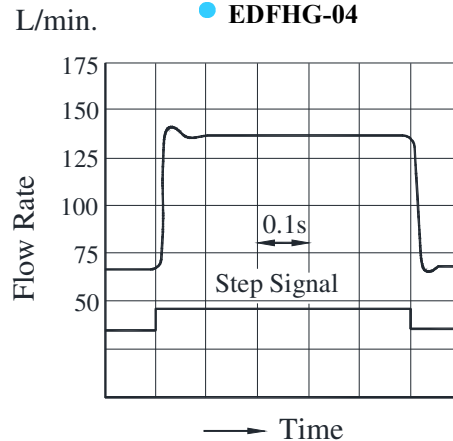
Viscosity : 30 cSt
 Supply Pressure : 160 Kg/cm²

EDFHG-03



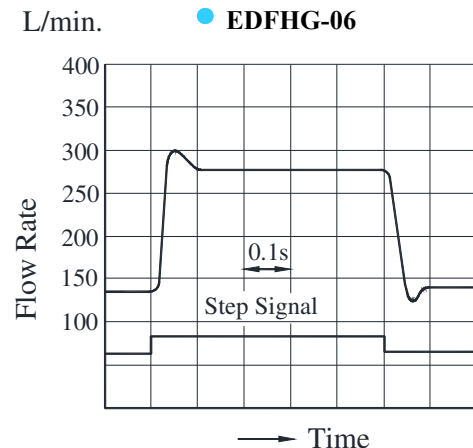
Time

EDFHG-04



Time

EDFHG-06



Time

Spare Parts List

EDFHG-※-※-3C※-XY-※-31

List of Seals

Sl. No.	Name of Parts	Part No.	Qty.		
			EDFHG-03	EDFHG-04	EDFHG-06
1	O-Ring	SO-NB-P28	2	--	--
2	O-Ring	SO-NB-A014	5	--	--
3	O-Ring	SO-NB-P9	12	8	4
4	O-Ring	SO-NB-P4	2	2	2
5	O-Ring	SO-NB-P34	--	2	--
6	O-Ring	SO-NB-P22	--	4	--
7	O-Ring	SO-NB-P40	--	--	2
8	O-Ring	SO-NB-P30	--	--	4
9	O-Ring	SO-NB-P14	--	--	2
10	O-Ring	SO-NB-P10	--	--	2

List of Seal Kits

Model Numbers	Seal Kit Numbers
EDFHG-03	KS-EDFHG-03-31
EDFHG-04	KS-EDFHG-04-31
EDFHG-06	KS-EDFHG-06-31

Notes :

1. When ordering the seals, please specify the seal kit number from the table above. In addition to the above O-Rings, seals for solenoid ass'y are included in the seal kit.
2. For the details of seals for solenoid ass'y see page no. 557.

Solenoid Ass'y

Model Numbers	Solenoid Ass'y Model Number	Qty.
EDFHG-03	E318-Y06M1-28-61	2
EDFHG-04		
EDFHG-06		

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