

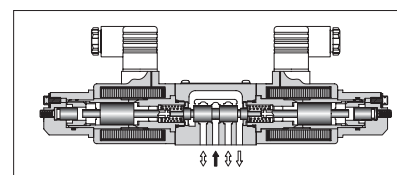
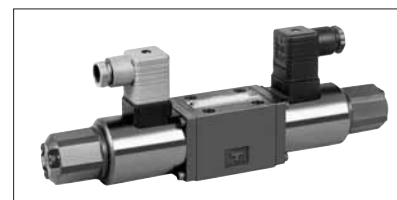
Shockless Type Proportional Electro-Hydraulic Directional and Flow Control Valves

These valves are well accepted by industrial users as shifting time adjustable type shockless valves. By employing the basic design concept of the “G series solenoid operated directional valves”, we have been successful developing the shifting time adjustable shockless valves with high performance which makes the speed setting possible at any high speed operation.

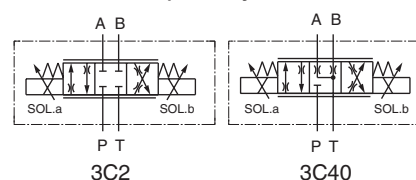
In combination with the newly developed digital amplifiers, the further enhancement of maneuverability and repeatability of the valves can be realized.

Specifications

Model No.		EDFG-01
Description		
Max. Operating Pressure	MPa (PSI)	25 (3630)
Max. Flow	L/min (U.S.GPM)	30 (7.9)
Max. Tank Line Back Pressure	MPa (PSI)	14 (2030)
Rated Current		1100 mA
Coil Resistance		10.8 Ω
Hysteresis		5% or less
Repeatability		1% or less
Step Response (Typical Rating) (0 ↔ 100%)		100 ms or less
Frequency Response (50% ±25%)	Phase	20 Hz (-90 degree)
	Gain	25 Hz (-3 dB)
Approx. Mass	kg (lbs.)	2.4 (5.3)



Graphic Symbols



Model Number Designation

F-	EDF	G	-01	-30	-3C2	-XY	-50	*
Special Seals	Series Number	Type of Mounting	Valve Size	Rated Flow L/min (U.S.GPM)	Spool Type	Direction of Flow	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	EDF: Shockless Type Proportional Directional and Flow Control Valve	G: Sub-plate Mounting	01	30 (7.9)	3C2 3C40	XY: Metre - In • Metre - Out	50	Refer to ★1

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

Attachment

Mounting Bolts

Descriptions	Soc. Hd. Cap Screw	Qty.
Japanese Standard "JIS"	M5 × 45 Lg.	4
European Design Standard		
N. American Design Standard	No.10 - 24 UNC × 1-3/4 Lg.	4

Sub-plate

Piping Size	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	
1/8	DSGM-01-31	Rc 1/8	DSGM-01-3180	1/8 BSP.F	DSGM-01-3190	1/8 NPT	0.8 (1.8)
1/4	DSGM-01X-31	Rc 1/4	DSGM-01X-3180	1/4 BSP.F	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
3/8	DSGM-01Y-31	Rc 3/8	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)

- 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.
- Sub-plates are those for 1/8 solenoid operated directional valves. For dimensions, see page 356.

Applicable Power Amplifier

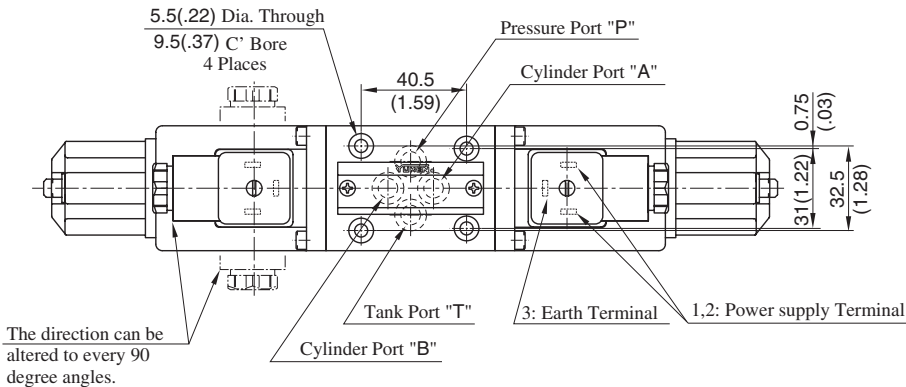
For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see page 782).

Model Numbers: AMN-G/W-10

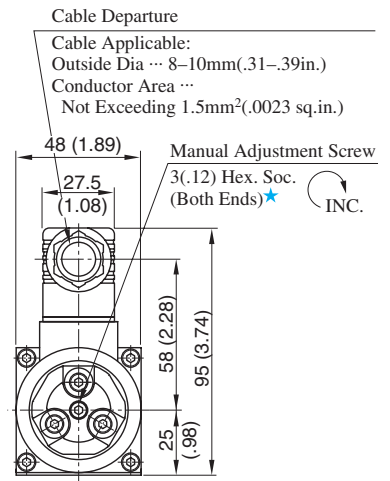
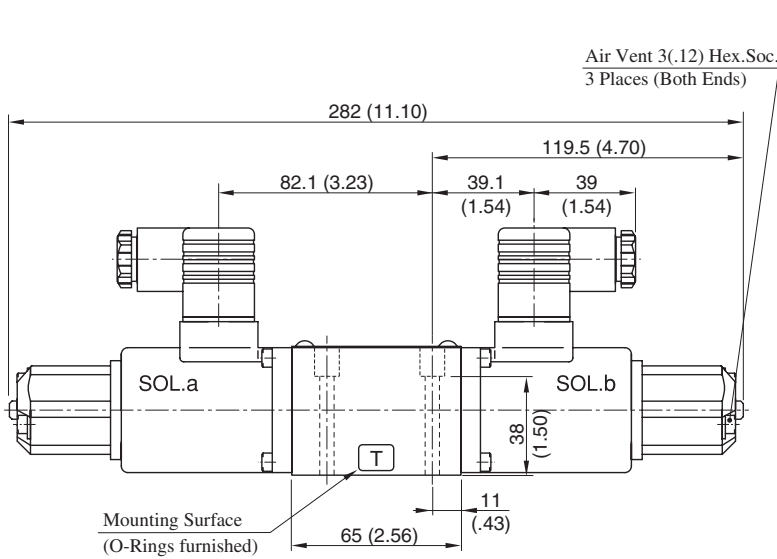


EDFG-01-30-3C*-XY-50/5090

Mounting Surface
ISO 4401-AB-03-4-A

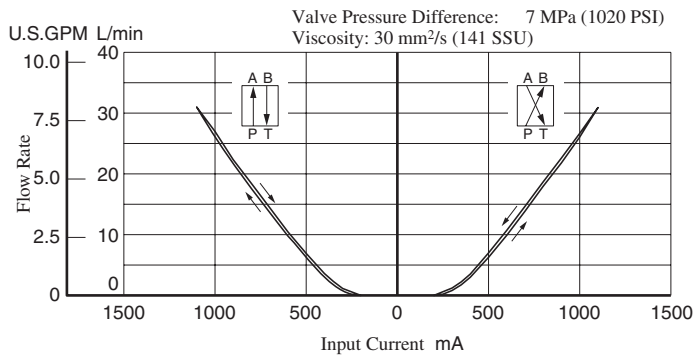


DIMENSIONS IN MILLIMETRES (INCHES)

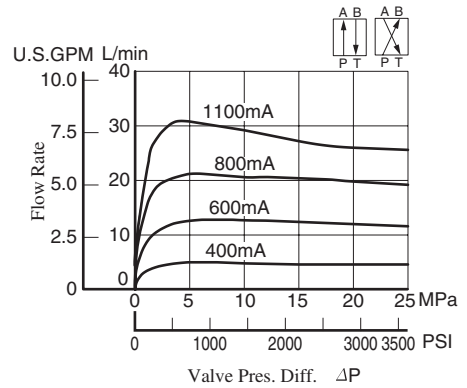


★ Under normal conditions, however, this screw must be kept in its original position.

■ Input Current vs. Flow

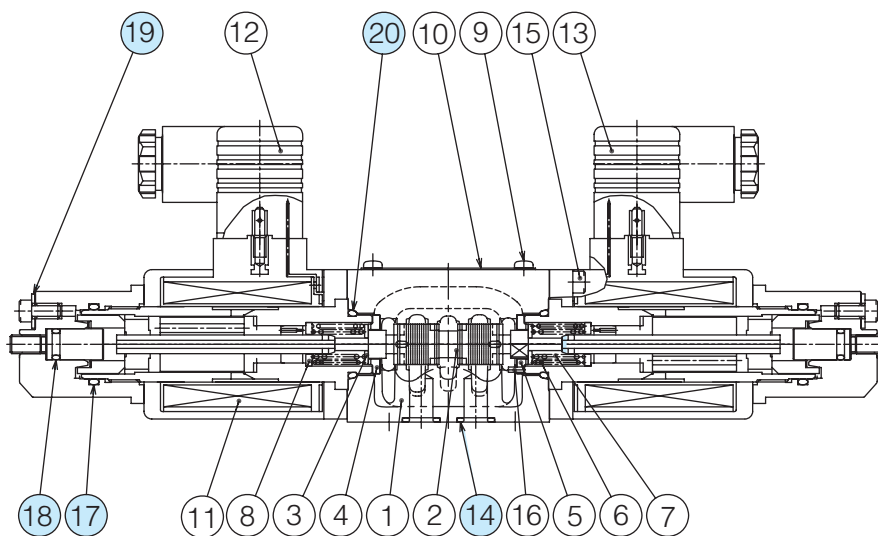


■ Valve pressure Difference vs. Flow



List of Seals and Solenoid Ass'y

EDFG-01-30-*-XY-50/5090



List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
14	O-Ring	SO-NB-P9	4	Included in Seal Kit
17	O-Ring	SO-NB-P22	2	
18	O-Ring	SO-NB-P7	2	
19	Fastner Seal	SG-FCF-4	6	
20	O-Ring	SO-NB-P18	2	Kit No.: KS-EDFG-01-50

Note) O-ring (Item 17, 18, 20) and the fastner sael (Item 19) are included in the solenoid assembly.

Solenoid Ass'y

Valve Model Numbers	① Solenoid Ass'y	Qty.
EDFG-01-30-*-XY-50/5090	E318-Y05M2-28-6103	2

Note) The connector assembly GDM-211-*-11 (Item 12, 13) is not included in the solenoid assembly.

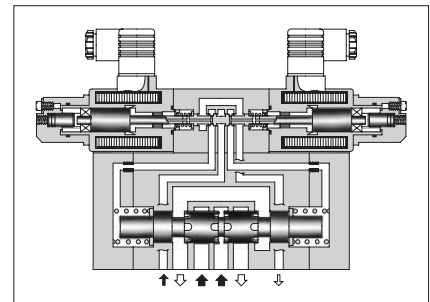
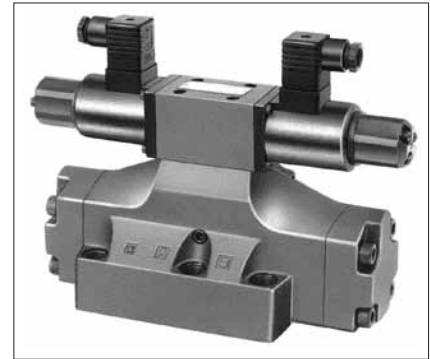
■ Proportional Electro-Hydraulic Directional and Flow Control Valves

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.

■ Specifications

Model No.		EDFHG-03	EDFHG-04	EDFHG-06
Description				
Max. Operating Pressure MPa (PSI)		25 (3630)		
Rated Flow L/min (U.S.GPM) at Valve Pressure Difference: 1.0 MPa (145 PSI)		100 (26.4)	140 (37.0)	280 (74.0)
Pilot Pressure ^{★1}	MPa (PSI)	1.5 - 16 (220 - 2320) ^{★1}		
Pilot Flow L/min (U.S.GPM)	at Normal	1 (.26)	1 (.26)	1 (.26)
	at Transition	3 (.79)	4 (1.06)	6 (1.59)
Max. Tank Line Back Pressure MPa (PSI)		16 (2320)	21 (3050)	21 (3050)
Max. Drain Line Back Pressure MPa (PSI)		3.0 (435) ^{★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 (lbs.)		11 (24.3)	12 (26.5)	15 (33.1)



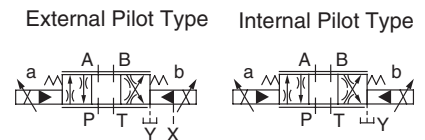
★1. Take care to keep the difference between the pilot pressure and drain port back pressure consistently greater than 1.5 MPa (220 PSI).

★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	-31	*
Special Seals	Series Number	Type of Mounting	Valve Size	Rated Flow L/min (U.S.GPM)	Spool Type ^{★1}	Direction of Flow	Pilot Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	EDFH: Proportional Electro-Hydraulic Directional and Flow Control Valves	G: Sub-Plate Mounting	03 04 06	100: 100 (26.4) 140: 140 (37.0) 280: 280 (74.0)	3C2 3C40	XY: Metre-in • Metre-out	E: External Pilot None: Internal Pilot	31 31 31	Refer to ^{★2}

★1. Spool type shown in the column is for the centre position.

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

■ Attachment

● Mounting Bolts

Model Numbers	Socket Head Cap Screw			
	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	Tightening Torque Nm (in. lbs.)
EDFHG-03	M6 × 35 Lg.	1/4-20 UNC × 1-1/2 Lg.	4	12 - 15 (106 - 133)
EDFHG-04	M6 × 45 Lg.	1/4-20 UNC × 1-3/4 Lg.	2	12 - 15 (106 - 133)
	M10 × 50 Lg.	3/8-16 UNC × 2 Lg.	4	58 - 72 (513 - 637)
EDFHG-06	M12 × 60 Lg.	1/2-13 UNC × 2-1/2 Lg.	6	100 - 123 (885 - 1089)

Sub-plates

Valve Model Numbers	Japanese Standard "JIS"			European Design Standard			N. American Design Standard		
	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)	Sub-plate Model Numbers	Thread Size	Approx. Mass kg (lbs.)
EDFHG-03	DHGM-03Y-10	Rc 3/4	4.7 (10.4)	DHGM-03Y-1080	3/4 BSPF	4.7 (10.4)	DHGM-03Y-1090	3/4 NPT	4.7 (10.4)
EDFHG-04	DHGM-04-20	Rc 1/2	4.4 (9.7)	DHGM-04-2080	1/2 BSPF	4.4 (9.7)	DHGM-04-2090	1/2 NPT	4.4 (9.7)
	DHGM-04X-20	Rc 3/4	4.1 (9.0)	DHGM-04X-2080	3/4 BSPF	4.1 (9.0)	DHGM-04X-2090	3/4 NPT	4.1 (9.0)
EDFHG-06	DHGM-06-50	Rc 3/4	7.4 (16.3)	DHGM-06-5080	3/4 BSPF	8.5 (18.7)	DHGM-06-5090	3/4 NPT	7.4 (16.3)
	DHGM-06X-50	Rc 1	7.4 (16.3)	DHGM-06X-5080	1 BSPF	8.5 (18.7)	DHGM-06X-5090	1 NPT	7.4 (16.3)

- 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.
- Sub-plates are those for solenoid controlled pilot operated directional valves. For dimensions, see [page 401 and 402](#).

Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see [page 784](#)).

Model Numbers: SK1091-D24-10

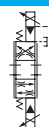
Instructions

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 flows adjusting function.

For this operation, set the pilot pressure (or P-port pressure on an internal-pilot model) below 7 MPa (1020 PSI).

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

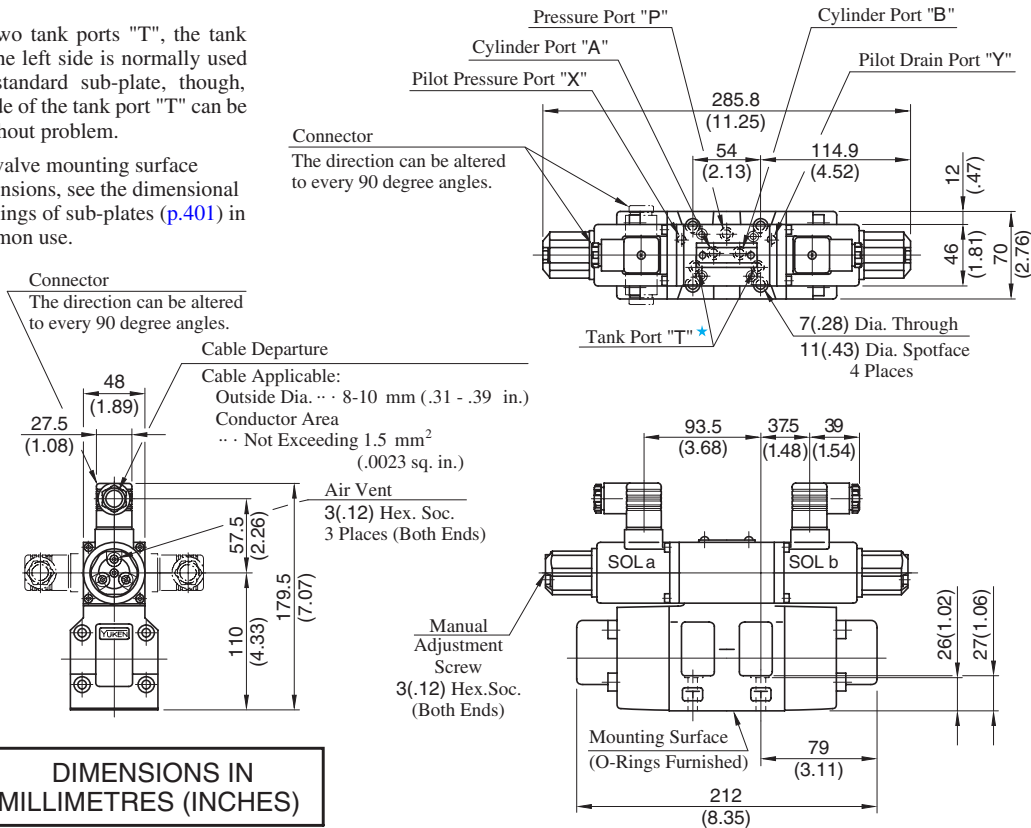


EDFHG-03-100-3C*-XY-*-31/3190

Mounting Surface: Main port ... Conform to ISO 4401-AC-05-4-A.
Pilot/drain ports ... Conform to ISO.

★ Of the two tank ports "T", the tank port in the left side is normally used in our standard sub-plate, though, either side of the tank port "T" can be used without problem.

Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (p.401) in common use.



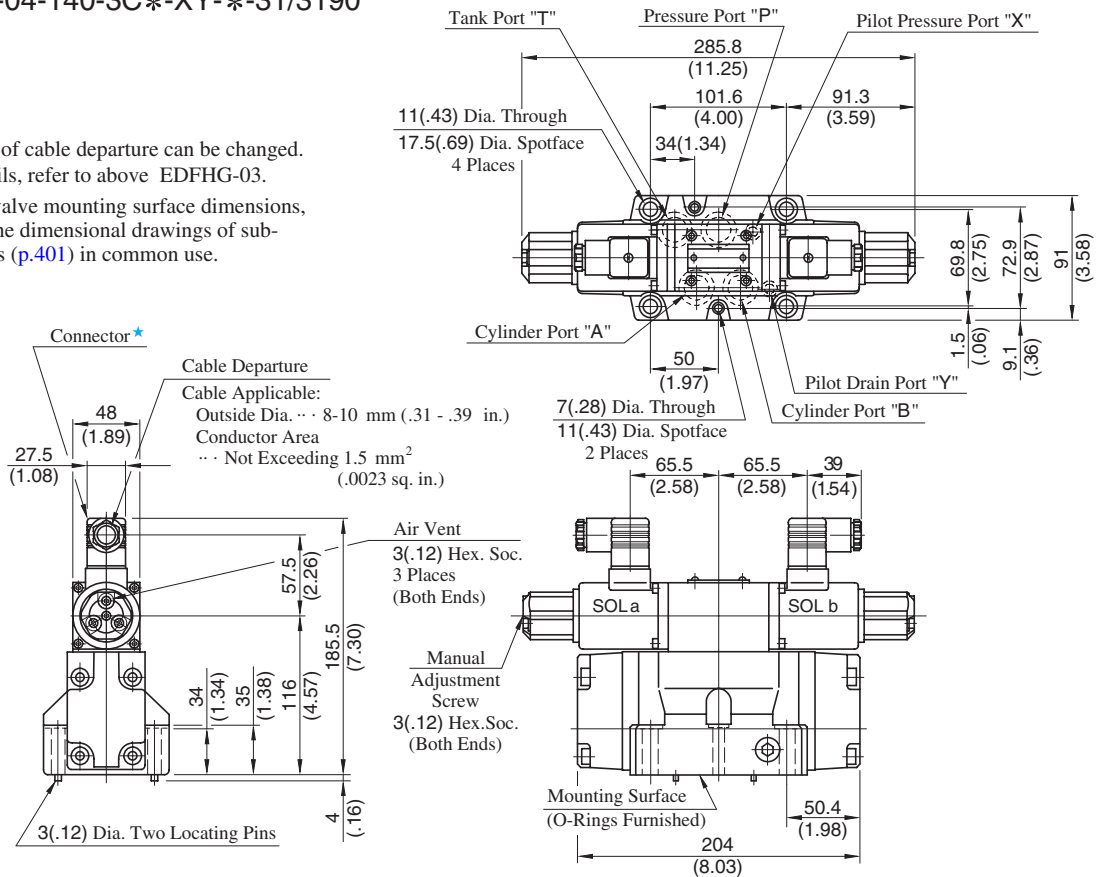
DIMENSIONS IN MILLIMETRES (INCHES)

EDFHG-04-140-3C*-XY-*-31/3190

Mounting surface: Conform to ISO4401-AD-07-4-A.

★ Position of cable departure can be changed. For details, refer to above ED FHG-03.

Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (p.401) in common use.

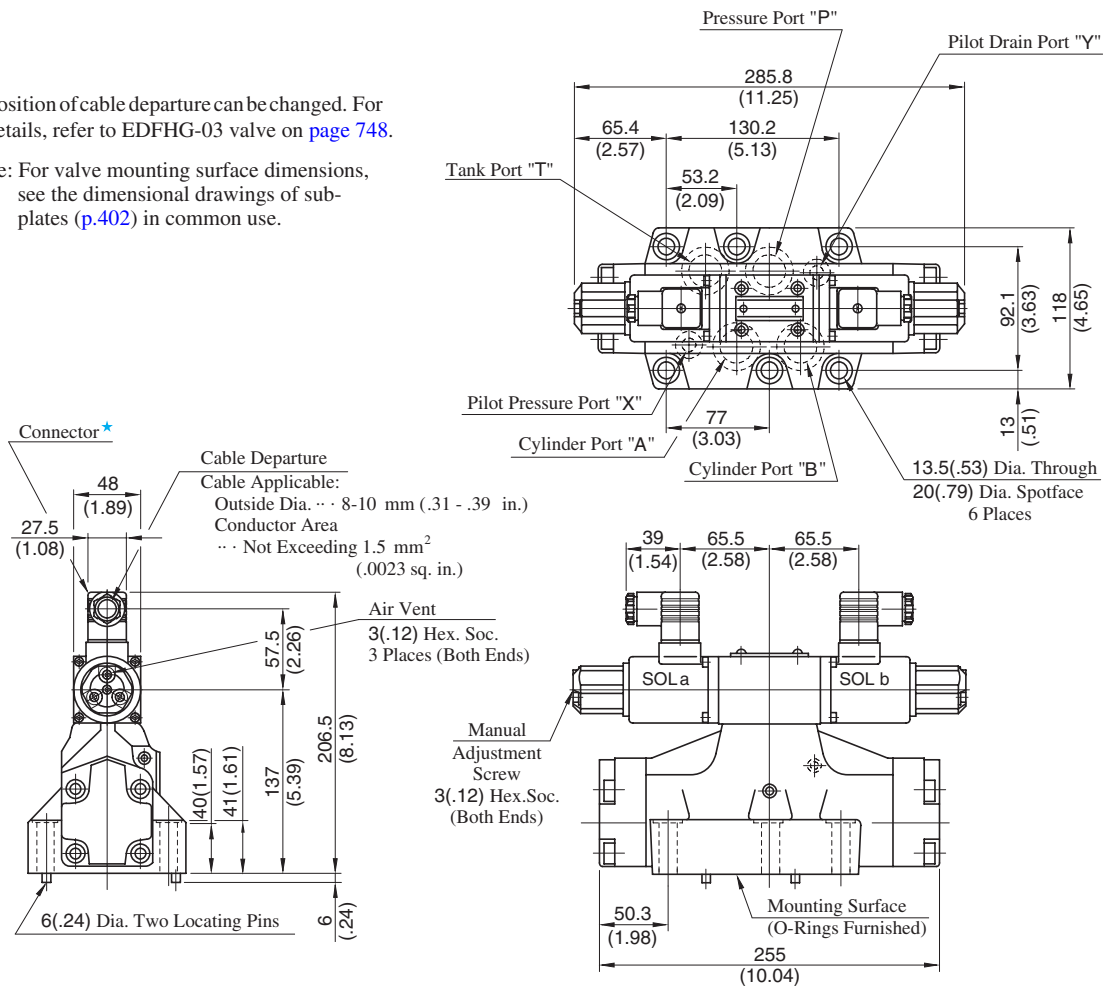


EDFHG-06-280-3C*-XY-*-31/3190

Mounting surface: Conform to ISO4401-AE-08-4-A.

★ Position of cable departure can be changed. For details, refer to EDFHG-03 valve on page 748.

Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (p.402) in common use.



DIMENSIONS IN MILLIMETRES (INCHES)

Interchangeability between Current and New Design

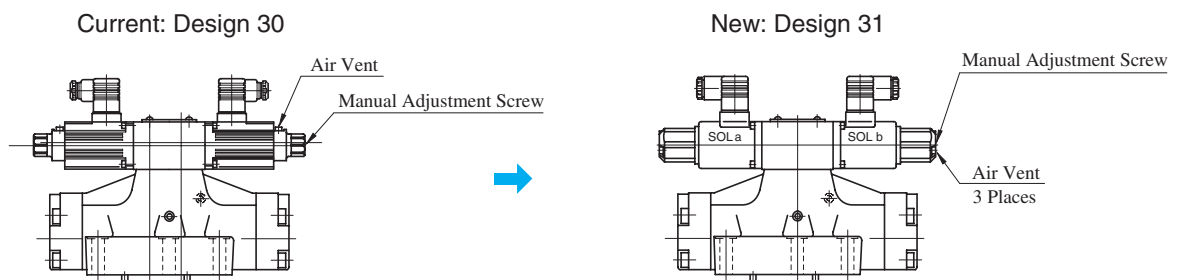
Specifications and Characteristics

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

Mounting Interchangeability

The mounting surface are interchangeable.

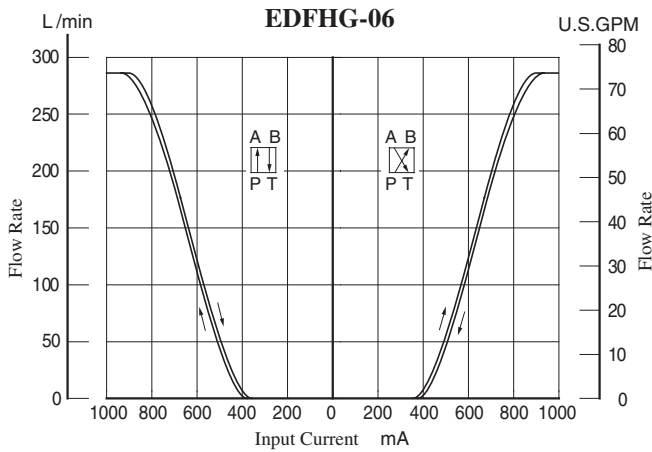
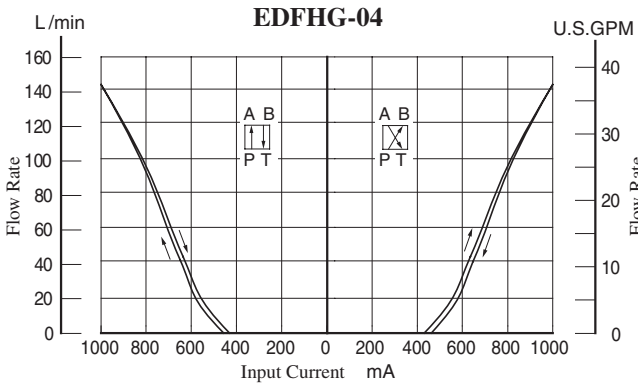
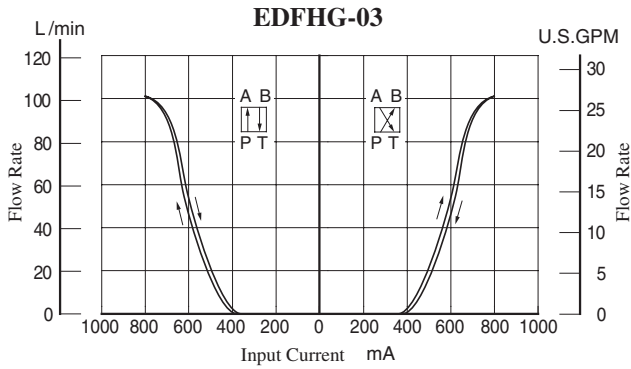
Note that because of improvements made on the solenoids, the overall shapes have been changed as shown below.



Input Current vs. Flow

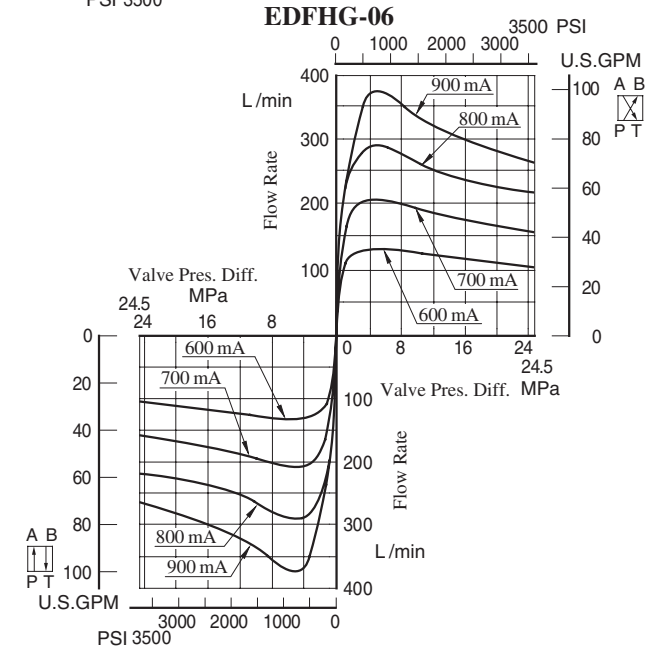
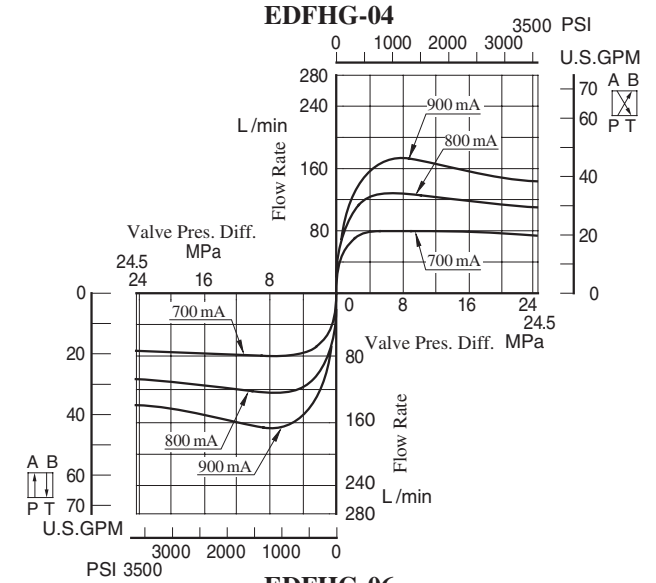
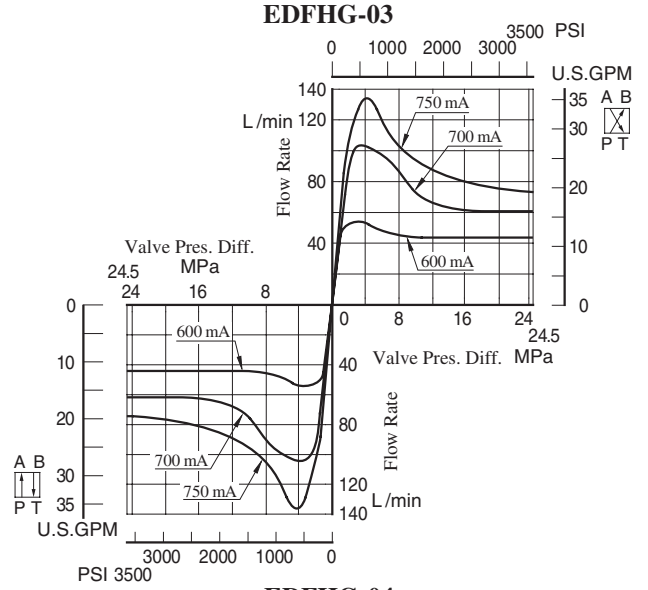
Viscosity : 30 mm²/s (141 SSU)

Valve Pres. Difference : P → A (B), B (A) → T 1 MPa (145 PSI)

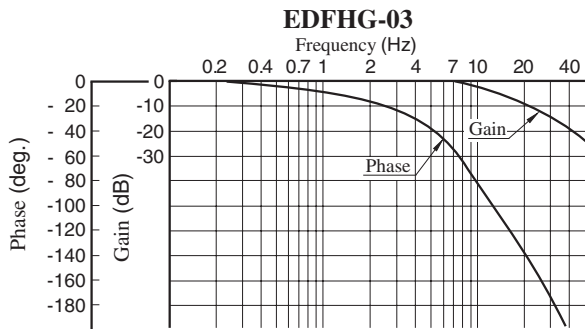


Valve Pressure Difference vs. Flow

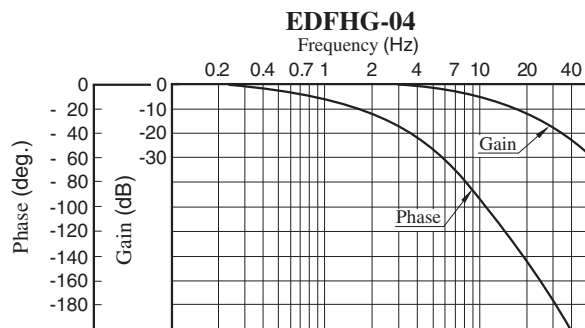
Viscosity : 30 mm²/s (141 SSU)



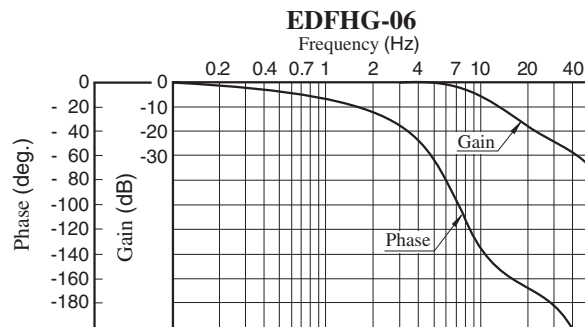
Frequency Response



Model Number : EDFHG-03-100-3C2-E-31
 Viscosity : 30 mm²/s(141 SSU)
 Pilot Pressure : 15.7 MPa(2280 PSI)
 Travel of Spool : ±10% of Maximum Stroke



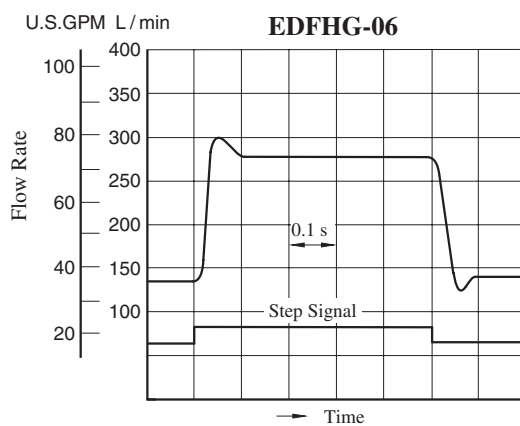
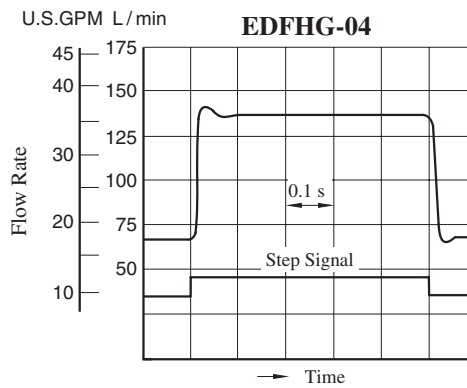
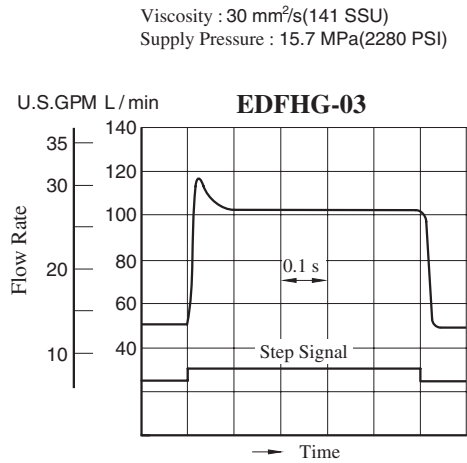
Model Number : EDFHG-04-140-3C2-E-31
 Viscosity : 30 mm²/s(141 SSU)
 Pilot Pressure : 15.7 MPa(2280 PSI)
 Travel of Spool : ±10% of Maximum Stroke



Model Number : EDFHG-06-280-3C2-E-31
 Viscosity : 30 mm²/s(141 SSU)
 Pilot Pressure : 15.7 MPa(2280 PSI)
 Travel of Spool : ±10% of Maximum Stroke

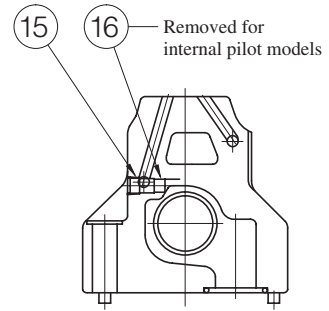
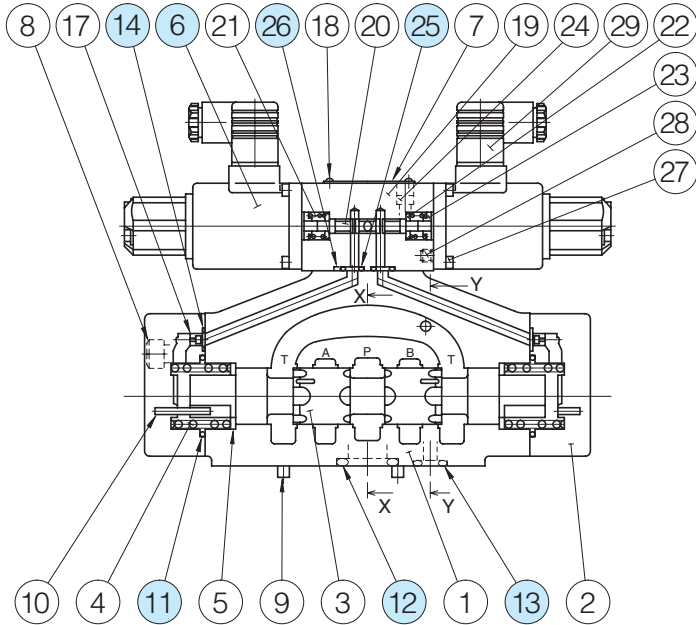
Step Response

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

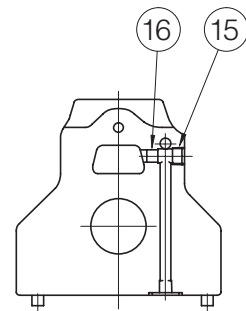


■ List of Seals and Solenoid Ass'y

EDFHG-03-100-3C *-XY- *-31/3190
 EDFHG-04-140-3C *-XY- *-31/3190
 EDFHG-06-280-3C *-XY- *-31/3190



Section X-X



Section Y-Y

● List of Seals and Solenoid Ass'y

Item	Name of Parts	EDFHG-03		EDFHG-04		EDFHG-06	
		Part Numbers	Qty.	Part Numbers	Qty.	Part Numbers	Qty.
6	Solenoid Ass'y	E318-Y06M1-28-61	2	E318-Y06M1-28-61	2	E318-Y06M1-28-61	2
11	O-Ring	SO-NB-P28	2	SO-NB-P34	2	SO-NB-P40	2
12	O-Ring	SO-NB-A014	5	SO-NB-P22	4	SO-NB-P30	4
13	O-Ring	SO-NB-P9	2	SO-NB-P9	2	SO-NB-P14	2
14	O-Ring	SO-NB-P9	6	SO-NB-P9	2	SO-NB-P10	2
25	O-Ring	SO-NB-P9	4	SO-NB-P9	4	SO-NB-P9	4
26	O-Ring	SO-NB-P4	2	SO-NB-P4	2	SO-NB-P4	2

Note: The GDM-211-B-11 connector assembly (Item 29) is not included in the solenoid assembly.

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

For the detail of the solenoid ass'y o-rings, see [page 674](#).

● List of Seal Kits

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

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

High response, high precision and high reliability are achieved by a combination of a compact and powerful solenoid and a spool-position-detection LVDT.

Direct type ELDFG-01/03 and two stage type ELDFG-04/06 (which use the ELDFG-01 as a pilot) are available.

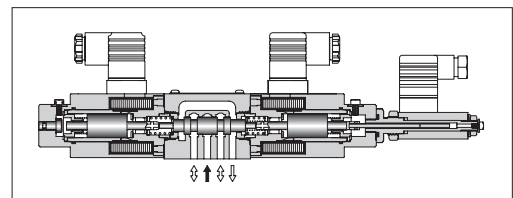
Direct Operated Type Directional and Flow Control Valves

This product can be interchanged with the simplified servo valve to perform position control and pressure control.

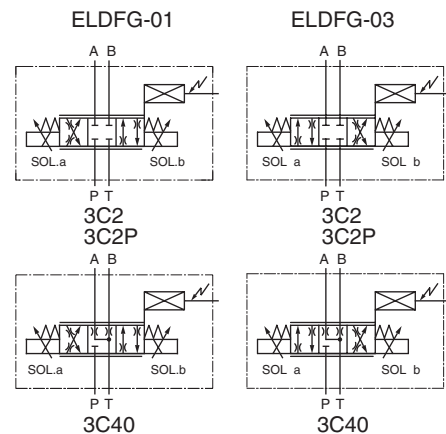
Compared to nozzle flapper type servo valve, this product has excellent contamination-related problems.

Specifications

Description		Model No.	ELDFG-01	ELDFG-03
Max. Operating Pressure		MPa (PSI)	31.5 (4570)	
Max. Tank Line Back Pressure		MPa (PSI)	21 (3050)	
Rated Flow	L/min (U.S.GPM)		10: 10 (2.6)	40: 40 (10.6)
	Valve Pres. Diff. : 1.5 MPa (220 PSI)		20: 20 (5.3)	80: 80 (21.1)
			35: 35 (9.2)	
Hysteresis			0.5% or less	
Repeatability			0.5% or less	
Step Response (Typical Rating)	0 → 100%		30 ms	3C2, 3C40: 29 ms 3C2P: 25 ms
	100 → 0%		38 ms	3C2, 3C40: 26 ms 3C2P: 23 ms
Frequency Response (0 ±25 %V)	Phase -90 degree		48 Hz	3C2, 3C40: 36 Hz 3C2P: 41 Hz
	Gain -3 dB		52 Hz	3C2, 3C40: 35 Hz 3C2P: 38 Hz
Rated Current			Max. 2.5 A	Max. 3 A
Coil Resistance [20°C (68°F)]			3.9 Ω	3 Ω
Power Input			Max. 25 W	Max. 27 W
Approx. Mass		kg (lbs.)	3.2 (7.1)	7.5 (16.5)



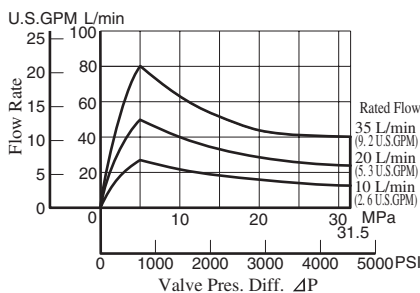
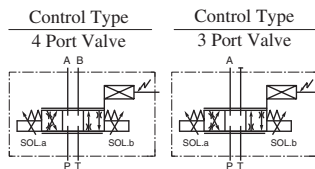
Graphic Symbols



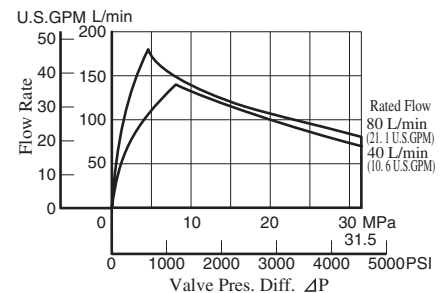
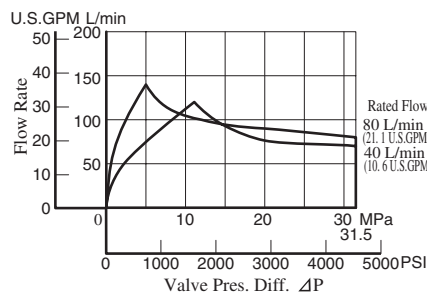
Range of Flow Control

See “Valve Pres. Difference vs. Flow Rate” below characteristics for the appropriate range.

ELDFG-01



ELDFG-03

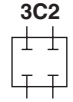
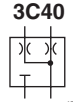
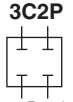


★ Valve pressure difference “ΔP” is reference by follows. In addition, “P”, “A”, “B”, “T”, are pressure of each port.

4 Port Valve: ΔP = [(P-A) + (B-T)] or [(P-B) + (A-T)]

3 Port Valve: ΔP = (P-A) or (A-T)

Model Number Designation

F-	ELDF	G	-01	-35	-3C2	-XY	-10	*
Special Seals	Series Number	Type of Mounting	Valve Size	Rated Flow L/min (U.S.GPM)	Spool Type	Direction of Flow	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluid (Omit if not required)	ELDF: High Response (Direct) Type Proportional Electro-Hydraulic Directional and Flow Control Valves	G: Sub-plate Mounting	01	10: 10 (2.6) 20: 20 (5.3) 35: 35 (9.2)	   (Zero Lap)	XY: Metre-In·Metre-Out	10	Refer to [★]
			03	40: 40 (10.6) 80: 80 (21.1)			10	

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

Attachment

● Mounting Bolts

Four socket head cap screws in the table below are included.

Model No.	Descriptions	Soc. Hd. Cap Screw (4 pcs.)	Tightening Torque
ELDFG-01	Japanese Standard "JIS" European Design Standard	M5 × 45 Lg.	5 - 7 Nm (43 - 60 in. lbs.) [Applicable to working pressure more than 25 MPa (3630 PSI): 6 - 7 Nm (52 - 60 in. lbs.)]
	N. American Design Standard	No. 10-24 UNC × 1-3/4 Lg.	
ELDFG-03	Japanese Standard "JIS" European Design Standard	M6 × 35 Lg.	12 - 15 Nm (106 - 133 in. lbs.)
	N. American Design Standard	1/4-20 UNC × 1-1/2 Lg.	

Sub-plate

Valve Model Numbers	Piping Size	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	
ELDFG-01	1/8	DSGM-01-31	Rc 1/8	DSGM-01-3180	1/8 BSP.F	DSGM-01-3190	1/8 NPT	0.8 (1.8)
	1/4	DSGM-01X-31	Rc 1/4	DSGM-01X-3180	1/4 BSP.F	DSGM-01X-3190	1/4 NPT	0.8 (1.8)
	3/8	DSGM-01Y-31	Rc 3/8	—	—	DSGM-01Y-3190	3/8 NPT	0.8 (1.8)
ELDFG-03	3/8	DSGM-03-40	Rc 3/8	DSGM-03-2180	3/8 BSP.F	DSGM-03-2190	3/8 NPT	3.0 (6.6)
	1/2	DSGM-03X-40	Rc 1/2	DSGM-03X-2180	1/2 BSP.F	DSGM-03X-2190	1/2 NPT	3.0 (6.6)
	3/4	DSGM-03Y-40	Rc 3/4	DSGM-03Y-2180	3/4 BSP.F	DSGM-03Y-2190	3/4 NPT	4.7 (10.4)

- 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 1/8 and 3/8 solenoid operated directional valves. For dimensions, see [page 356 and 373](#).

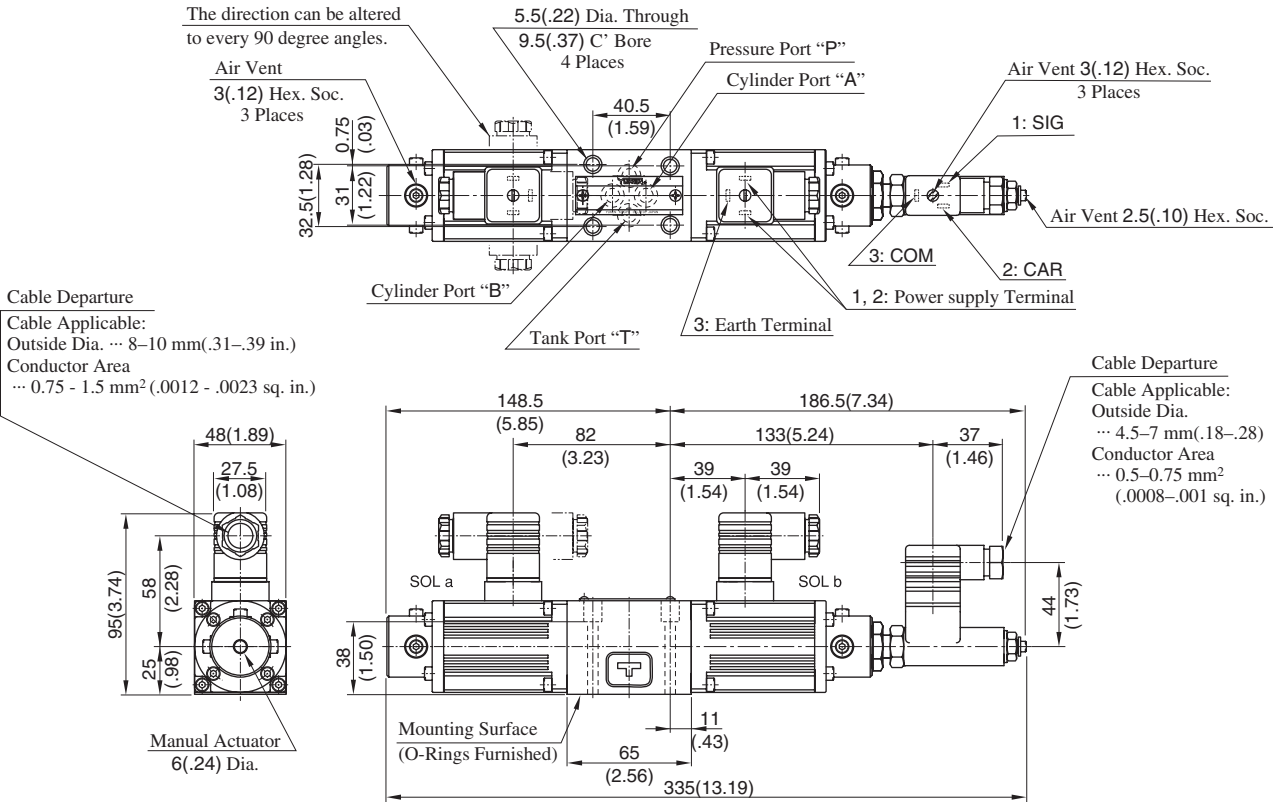
Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see [page 786](#)).

Valve Model Numbers	Power Amplifier Model Numbers
ELDFG-01-* ^{3C2} / _{3C40}	AMN-L-01-1-10
ELDFG-01-* ^{3C2P}	AMN-L-01-3-2P-10
ELDFG-03-* ^{3C2} / _{3C40}	AMB-EL-03-1-10
ELDFG-03-* ^{3C2P}	AMB-EL-03-2P-1-10

ELDFG-01--*-XY-10/1090**

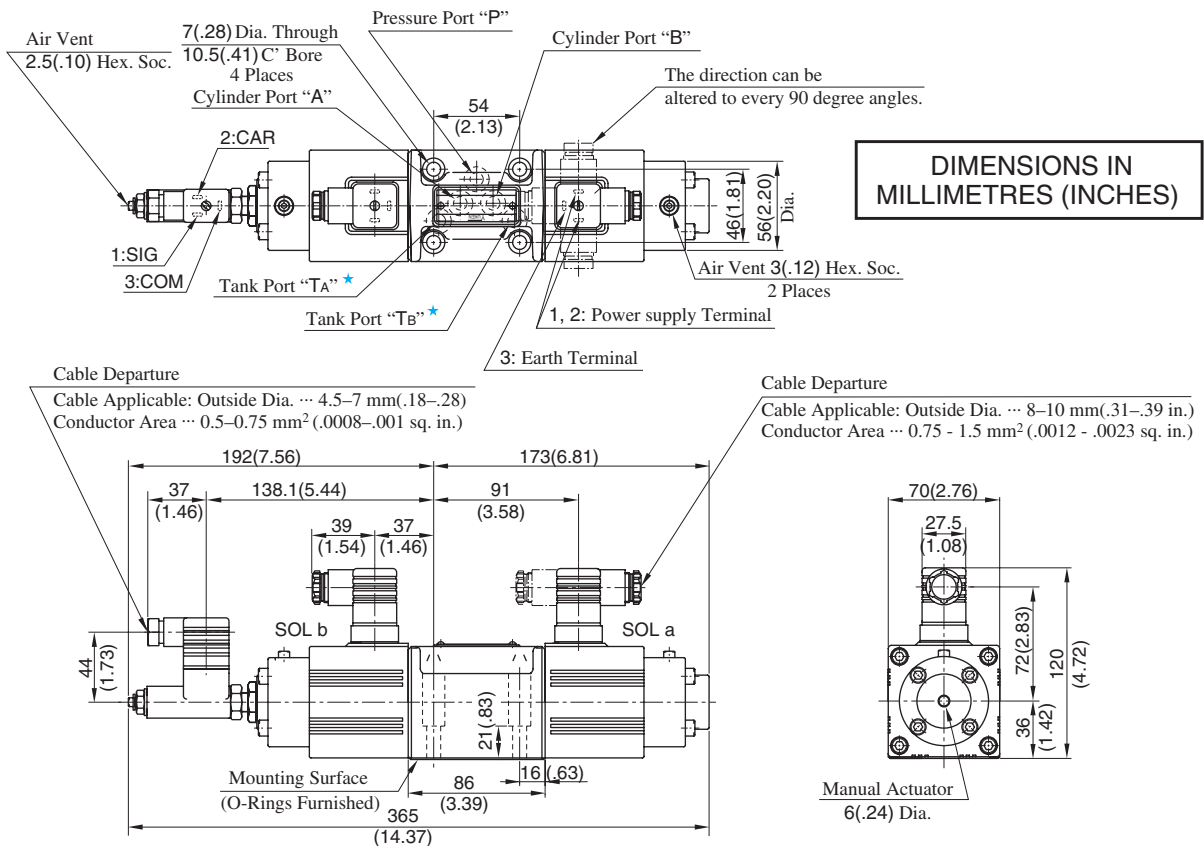
Mounting surface: Conform to ISO4401-AB-03-4-A.



Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (p.356) in common use.

ELDFG-03--*-XY-10/1090**

Mounting surface: Conform to ISO4401-AC-05-4-A.



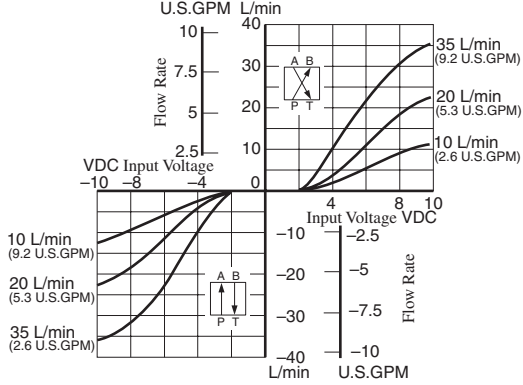
Note: For valve mounting surface dimensions, see the dimensional drawings of sub-plates (p.373) in common use.

H
E Series
Direct Operated Type Directional and Flow Control Valves

Input Voltage vs. Flow Rate

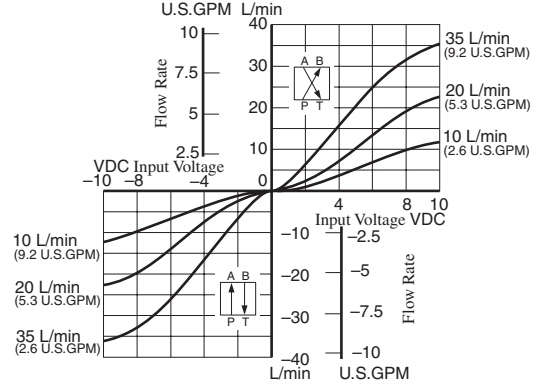
ELDFG-01-* -3C2/3C40

Valve Pres. Diff. : 1.2 MPa (174 PSI)
 Viscosity : 30 mm²/s (141 SSU)



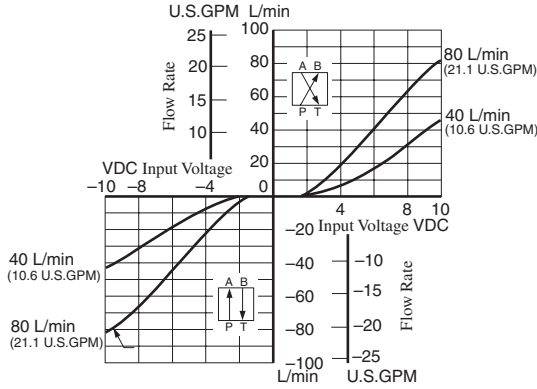
ELDFG-01-* -3C2P

Valve Pres. Diff. : 1.2 MPa (174 PSI)
 Viscosity : 30 mm²/s (141 SSU)



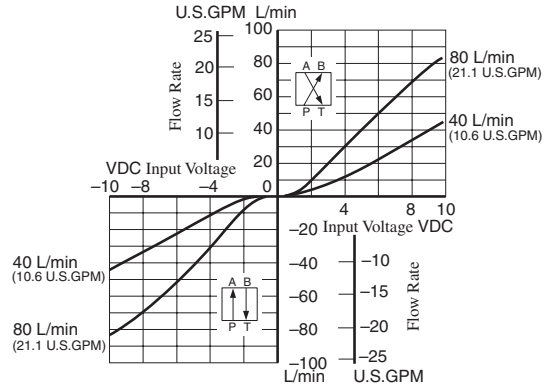
ELDFG-03-* -3C2/3C40

Valve Pres. Diff. : 1.5 MPa (218 PSI)
 Viscosity : 30 mm²/s (141 SSU)



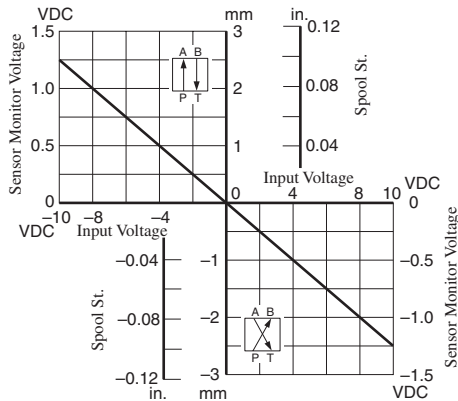
ELDFG-03-* -3C2P

Valve Pres. Diff. : 1.5 MPa (218 PSI)
 Viscosity : 30 mm²/s (141 SSU)

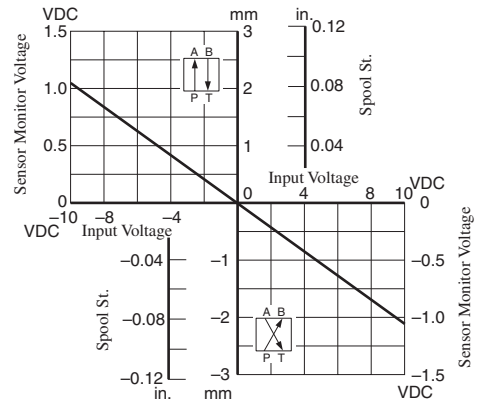


Input Voltage vs. Spool St.

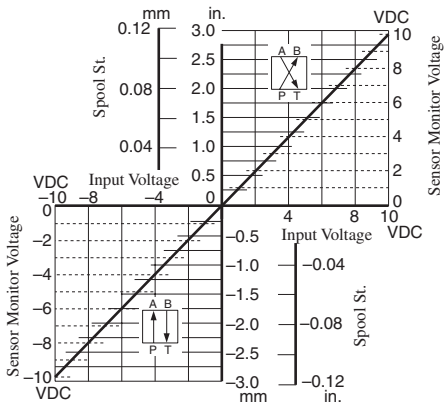
ELDFG-01-* -3C2/3C40



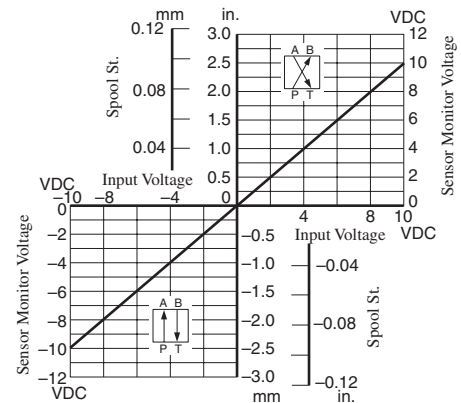
ELDFG-01-* -3C2P



ELDFG-03-* -3C2/3C40



ELDFG-03-* -3C2P



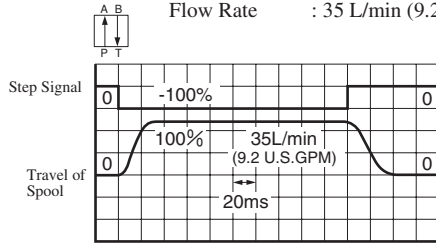
Step Response (Example)

Viscosity : 30 mm²/s (140 SSU)

The values were measured on independent valves. They vary by circuit.

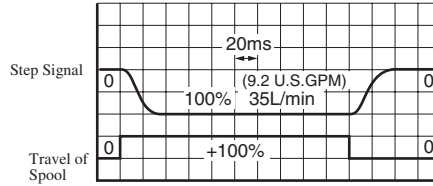
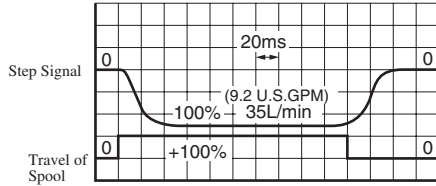
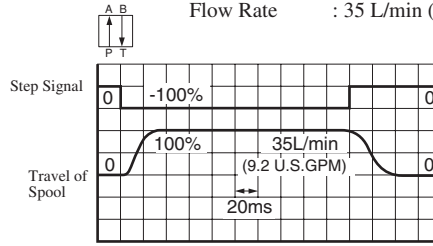
ELDFG-01-35-3C2/3C40

Supply Pressure : 2 MPa (290 PSI)
Flow Rate : 35 L/min (9.2 U.S.GPM)



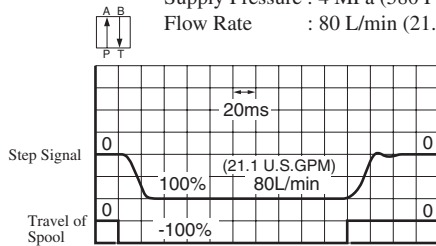
ELDFG-01-35-3C2P

Supply Pressure : 2 MPa (290 PSI)
Flow Rate : 35 L/min (9.2 U.S.GPM)



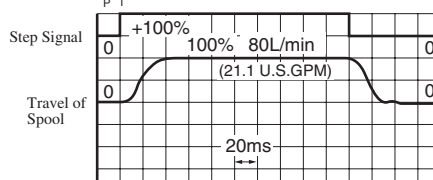
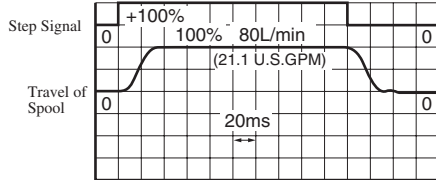
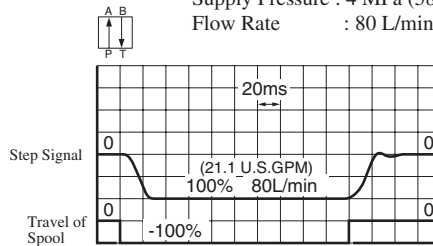
ELDFG-03-80-3C2/3C40

Supply Pressure : 4 MPa (580 PSI)
Flow Rate : 80 L/min (21.1 U.S.GPM)



ELDFG-03-80-3C2P

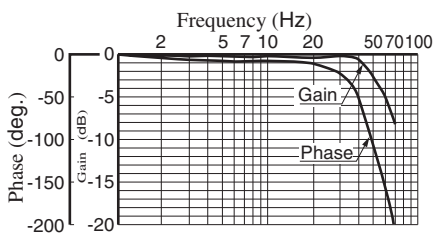
Supply Pressure : 4 MPa (580 PSI)
Flow Rate : 80 L/min (21.1 U.S.GPM)



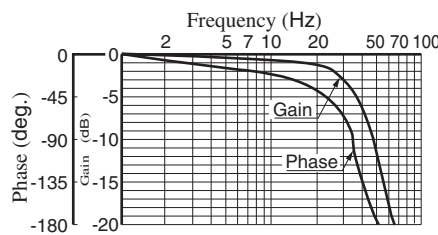
Frequency Response

Input Signal : 0 ±25 %V
Primary Pressure : 14 PMa (2030 PSI)
Viscosity : 30 mm²/s (140 SSU)

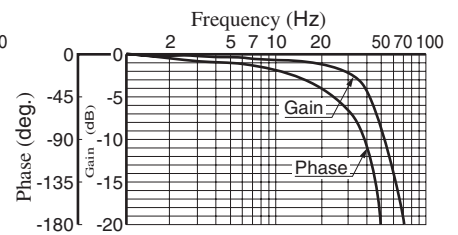
ELDFG-01-35-3C2/3C40/3C2P



ELDFG-03-80-3C2/3C40

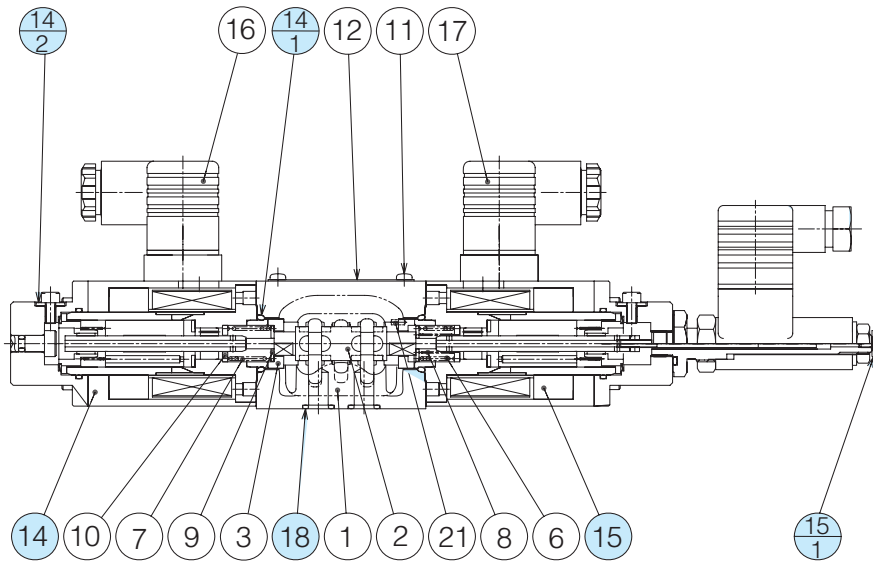


ELDFG-03-80-3C2P



■ List of Seals and Solenoid Ass'y

ELDFG-01-*-*-XY-10/1090



● List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
14-1	O-Ring	SO-NB-P18	2	Included in Seal Kit Kit No.: KS-ELDFG-01-10
14-2	Fastner Seal	SG-FCF-4	2	
15-1	Fastner Seal	TK280152-0	1	
18	O-Ring	SO-NB-P9	4	

Note) O-ring (Item 14-1) and the fastner sael (Item 14-2, 15-1) are included in the solenoid assembly.

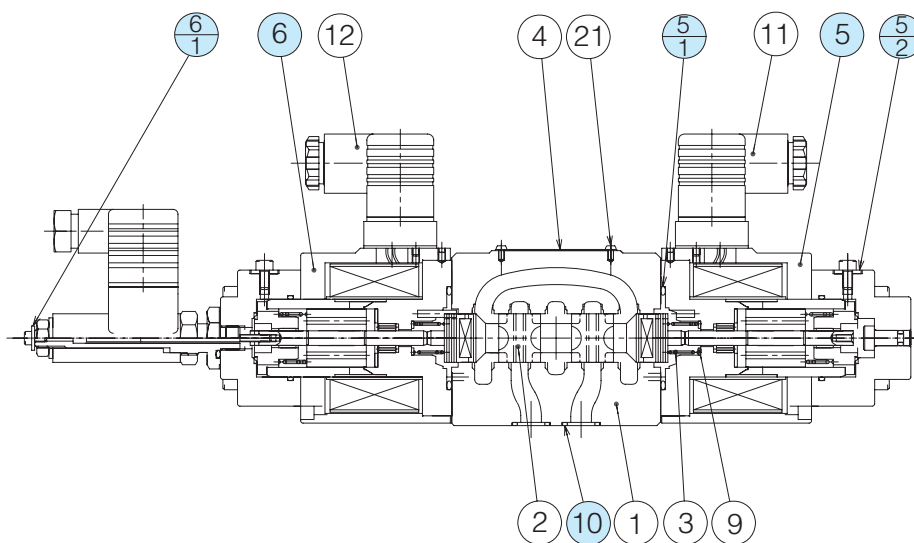
● Solenoid Ass'y

Valve Model Numbers	Item	Solenoid Ass'y	Qty.
ELDFG-01-*-*-XY-10/1090	14	E318-Y06M2-14-5007	1
	15	E318-Y06M2-14-L-5007	1

Note) The connector assembly GDM-211-*-11 (Item 16, 17) is not included in the solenoid assembly.

List of Seals and Solenoid Ass'y

ELDFG-03-*-*-XY-10/1090



List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
5-1	O-Ring	SO-NB-A128	2	Included in Seal Kit Kit No.: KS-ELDFG-03-10
5-2	Fastner Seal	SG-FCF-4	2	
6-1	Fastner Seal	TK280152-0	1	
10	O-Ring	SO-NB-A014	4	

Note) O-ring (Item 5-1) and the fastener sael (Item 5-2, 6-1) are included in the solenoid assembly.




Solenoid Ass'y

Valve Model Numbers	Item	Solenoid Ass'y	Qty.
ELDFG-03-*-*-XY-10/1090	5	E324-Y12M2-28-10	1
	6	E324-Y12M2-28-L-10	1

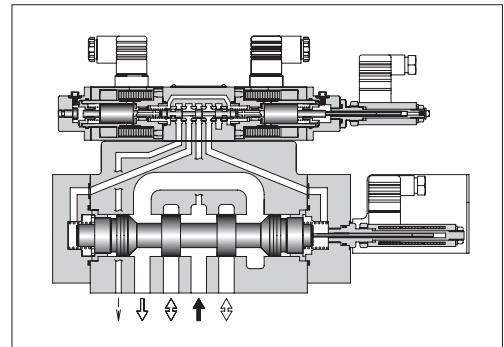
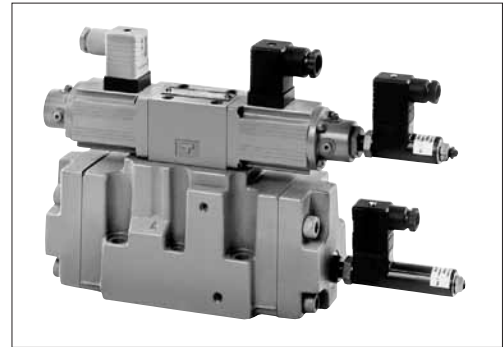
Note) The connector assembly GDM-211-*-11 (Item 11, 12) is not included in the solenoid assembly.

Two Stage Type Directional and Flow Control Valves

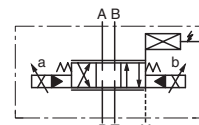
Specifications

Description	Model No.	ELDFHG-04	ELDFHG-06
Rated Flow L/min (U.S.GPM) Valve Pres. Diff. : 1 MPa (145 PSI)		280 (74.0)	350: 350 (92.5) 500: 500 (132.1)
Max. Operating Pressure MPa (PSI)		35 (5080)	350: 35 (5080) 500: 31.5 (4570)
Proof Pressure at Return Port ^{★1} (External Drain) MPa (PSI)		"T" Port : 31.5 (4570) "Y" Port : 21 (3050)	350 "T" Port : 35 (5080) "Y" Port : 21 (3050) 500 "T" Port : 25 (3630) "Y" Port : 21 (3050)
Proof Pressure at Return Port (Internal Drain) MPa (PSI)		21 (3050)	
Pilot Pressure ^{★2} MPa (PSI)		1.5–31.5 (218–4570)	
Pilot Flow ^{★3}		16 L/min or more	350: 16 L/min or more 500: 19 L/min or more
Null Leakage ^{★4} Ps=14 MPa (2030 PSI), Pp=14 MPa (2030 PSI)		3C2: 3 L/min or less 3C2P: 10 L/min or less	3C40: 4 L/min or less
Step Response (Typical Rating) (0↔100%) Pp=14 MPa (2030 PSI)		13 ms	350: 15 ms 500: 18 ms
Frequency Response (0±25%V, Phase) Pp=14 MPa (2030 PSI)		46 Hz (–90 degree)	350: 66 Hz (–90 degree) 500: 39 Hz (–90 degree)
Water - Proofness		IP64	
Operating Temperature Range		–15 – +60 °C (5–140°F)	
Spool Type		3C2:  3C2P:  (Zero Rap) 3C40: 	
Approximate Spool Stroke to Stops		±5 mm (±.20 in.)	350: ±5 mm (±.20 in.) 500: ±7 mm (±.28 in.)
Main Spool End Area cm ² (sq. in.)		7.1 (1.10)	8 (1.24)
Rated Current		Max. 2.5 A	
Coil Resistance [20 °C (68 °F)]		3.9 Ω	
Approx. Mass kg (lbs.)		10 (22.0)	350: 18 (39.7) 500: 19 (41.9)

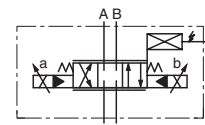
- ★1. Return pressure should be less than the actual supply pressure.
- ★2. Pilot pressure should be between 1.5 MPa (218 PSI) and 3.5 MPa (508 PSI), and should exceed 60% of the actual supply pressure to main valve.
- ★3. Pilot flow is calculated with the above step response time at pilot pressure 14 MPa (2030 PSI).
- ★4. Added up leakage of main and pilot spools are stated.



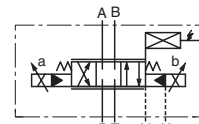
Graphic Symbols



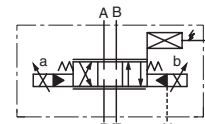
Internal Pilot /
External Drain Type



Internal Pilot /
Internal Drain Type






External Pilot /
External Drain Type



External Pilot /
Internal Drain Type

Model Number Designation

F-	ELDFH	G	-04	-280	-3C2P	-XY	-E	T	-10	*
Special Seals	Series Number	Type of Mounting	Valve Size	Rated Flow L/min (U.S.GPM)	Spool Type	Direction of Flow	Pilot Connection	Drain Connection	Design Number	Design Standards
F: Special Seals for Phosphate Ester Type Fluids (Omit if not required)	ELDFH: High Response (Two Stage) Type Proportional Electro-Hydraulic Directional and Flow Control Valves	G: Sub-Plate Mounting	04	280: 280(74.0)	3C2  3C40 	XY : Metre-in • Metre-out	None: Internal Pilot	None: External Drain	10	Refer to ^{★1}
		06	350: 350(92.5) 500: 500(132.1)	3C2P  (Zero Lap)	E: External Pilot		T: External Drain	10		

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

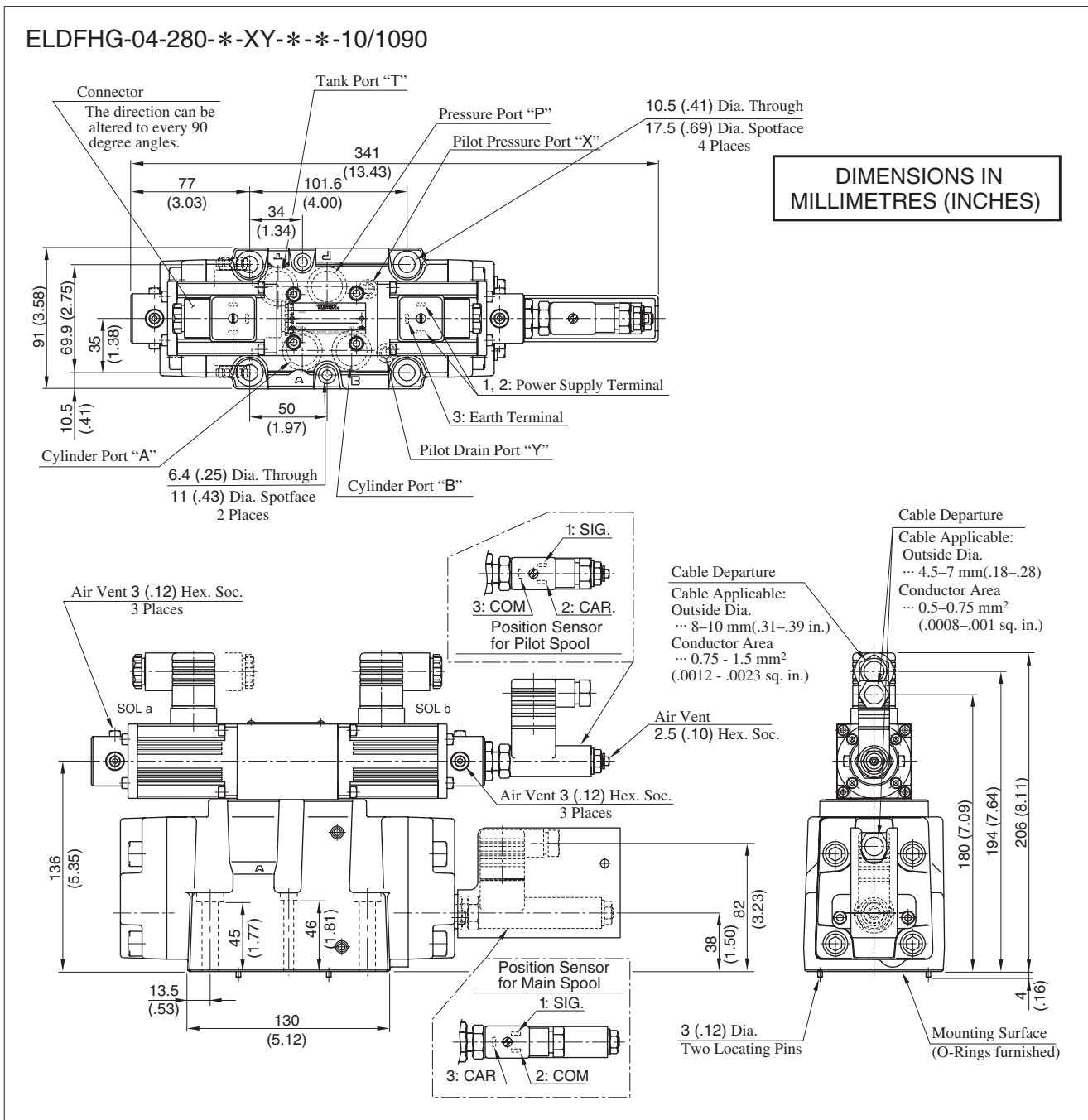
Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used (for details see [page 786](#)).
 Model Numbers: AMB-EL-**-**-10

Attachment

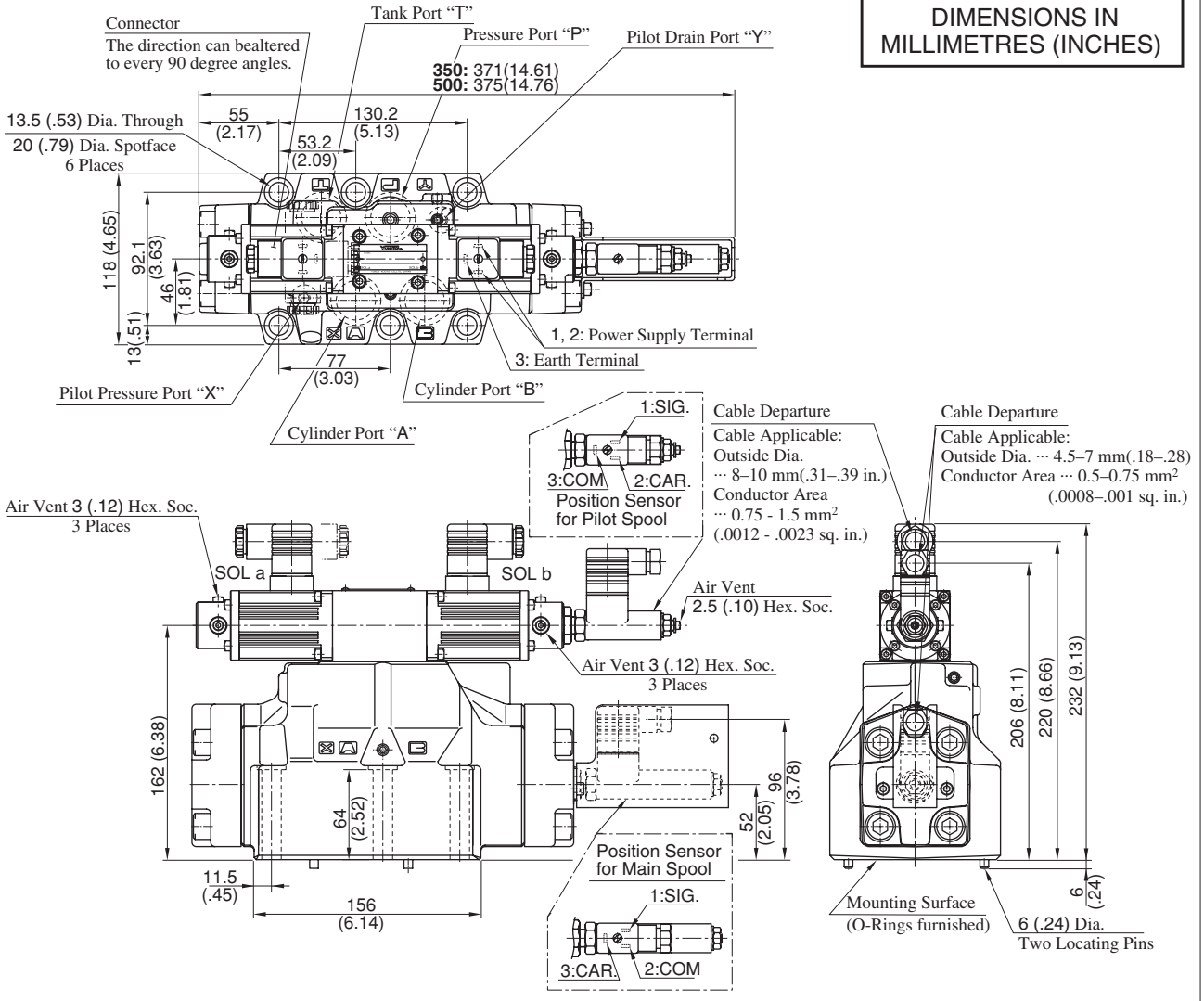
Mounting Bolts

Model Numbers	Socket Head Cap Screw			Tightening Torque Nm (in. lbs.)
	Japanese Standard "JIS" European Design Standard	N. American Design Standard	Qty.	
ELDFHG-04	M6 × 55 Lg.	1/4-20 UNC × 2-1/4 Lg.	2	12 - 15 (106 - 133)
	M10 × 60 Lg.	3/8-16 UNC × 2-1/2 Lg.	4	58 - 72 (513 - 637)
ELDFHG-06	M12 × 85 Lg.	1/2-13 UNC × 3-1/2 Lg.	6	100 - 123 (885 - 1089)



ELDFHG-06-*-*-XY-*-*-10/1090

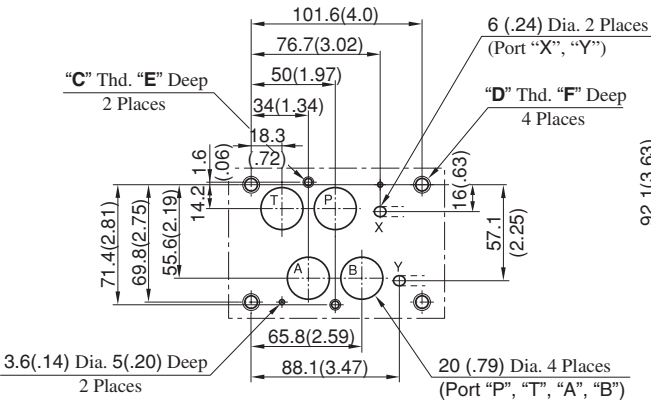
DIMENSIONS IN MILLIMETRES (INCHES)



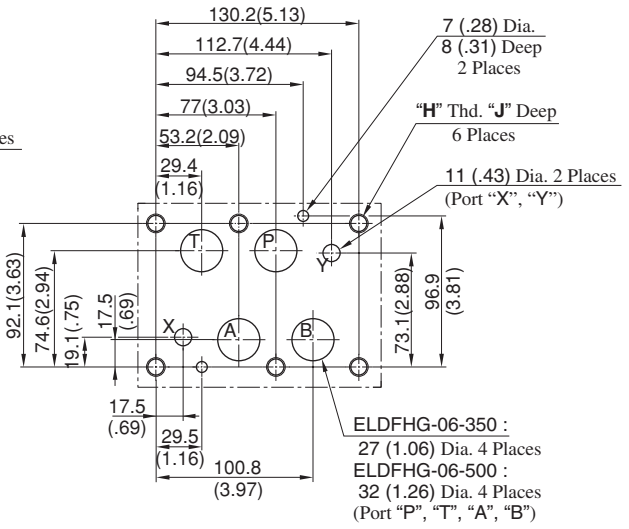
Dimensions of valve mounting surface

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

● **ELDFHG-04**



● **ELDFHG-06**

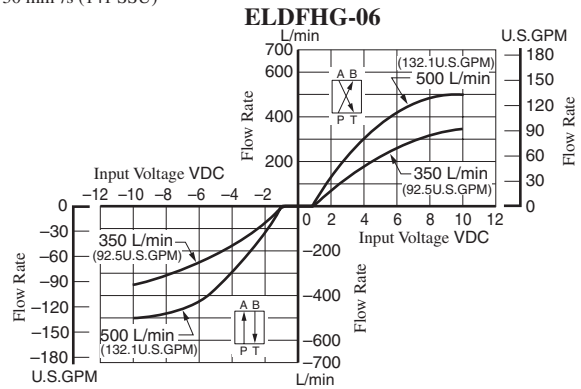
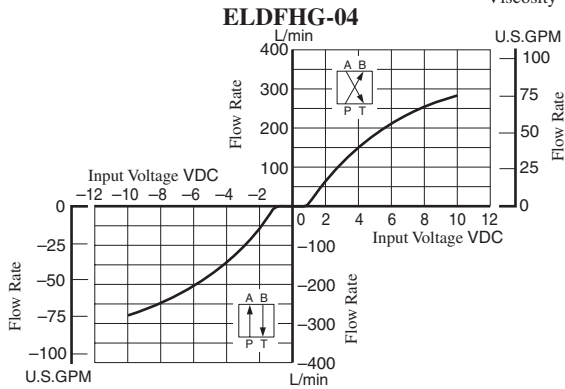


Model Numbers	"C" Thd.	"D" Thd.	"E" mm (in.)	F mm (in.)
ELDFHG-04-*-*-10	M6	M10	12 (.47)	17 (.67)
ELDFHG-04-*-*-1090	1/4-20 UNC	3/8-16 UNC	14 (.55)	20 (.79)

Model Numbers	"H" Thd.	J mm (in.)
ELDFHG-06-*-*-10	M12	24 (.94)
ELDFHG-06-*-*-1090	1/2-13 UNC	28 (1.10)

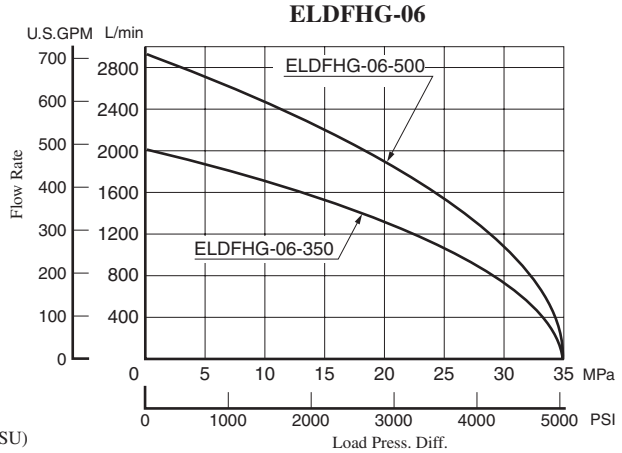
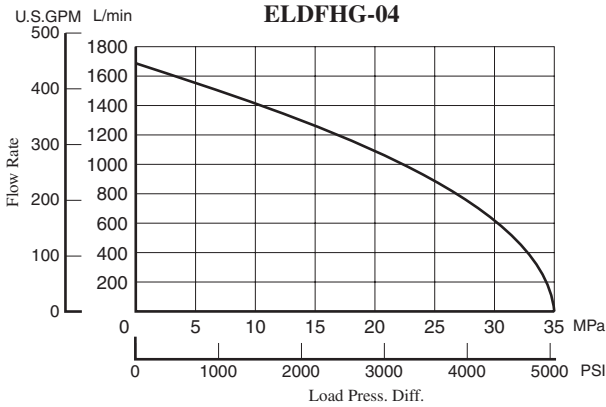
Input Voltage vs. Flow Rate

Valve Pres. Diff. : 1 MPa (145 PSI)
Viscosity : 30 mm²/s (141 SSU)



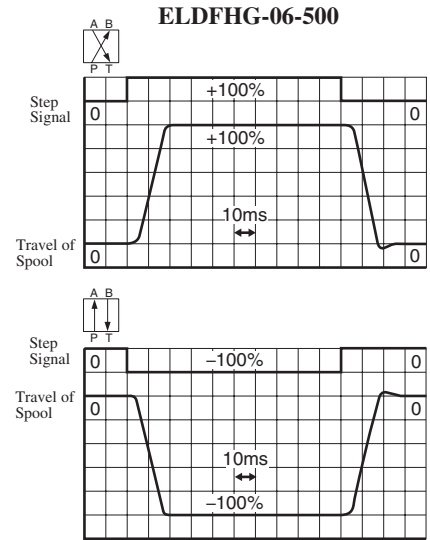
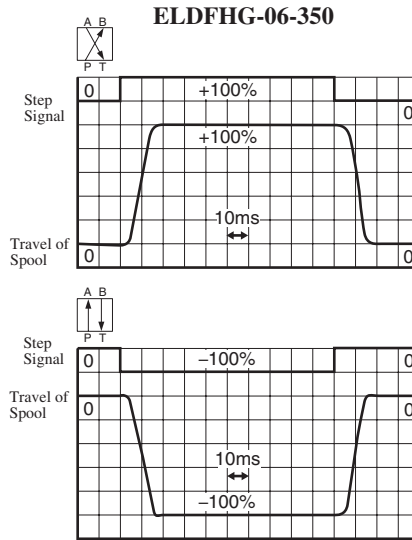
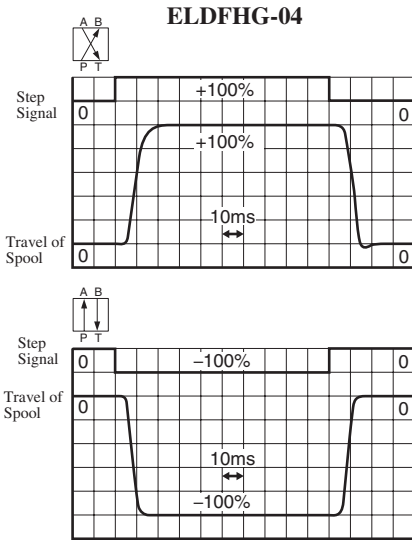
Load Flow Characteristics

Viscosity : 30 mm²/s (141 SSU)



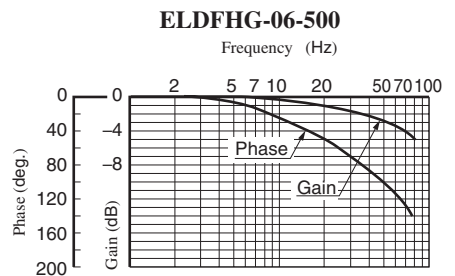
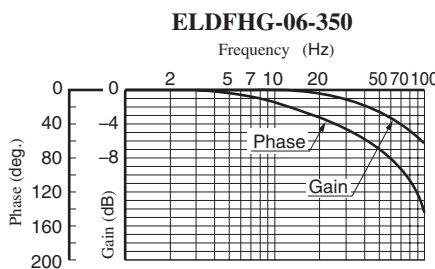
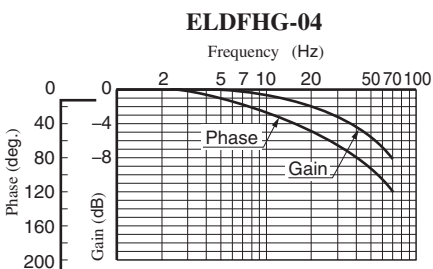
Step Response (Example)

Viscosity : 30 mm²/s (141 SSU)



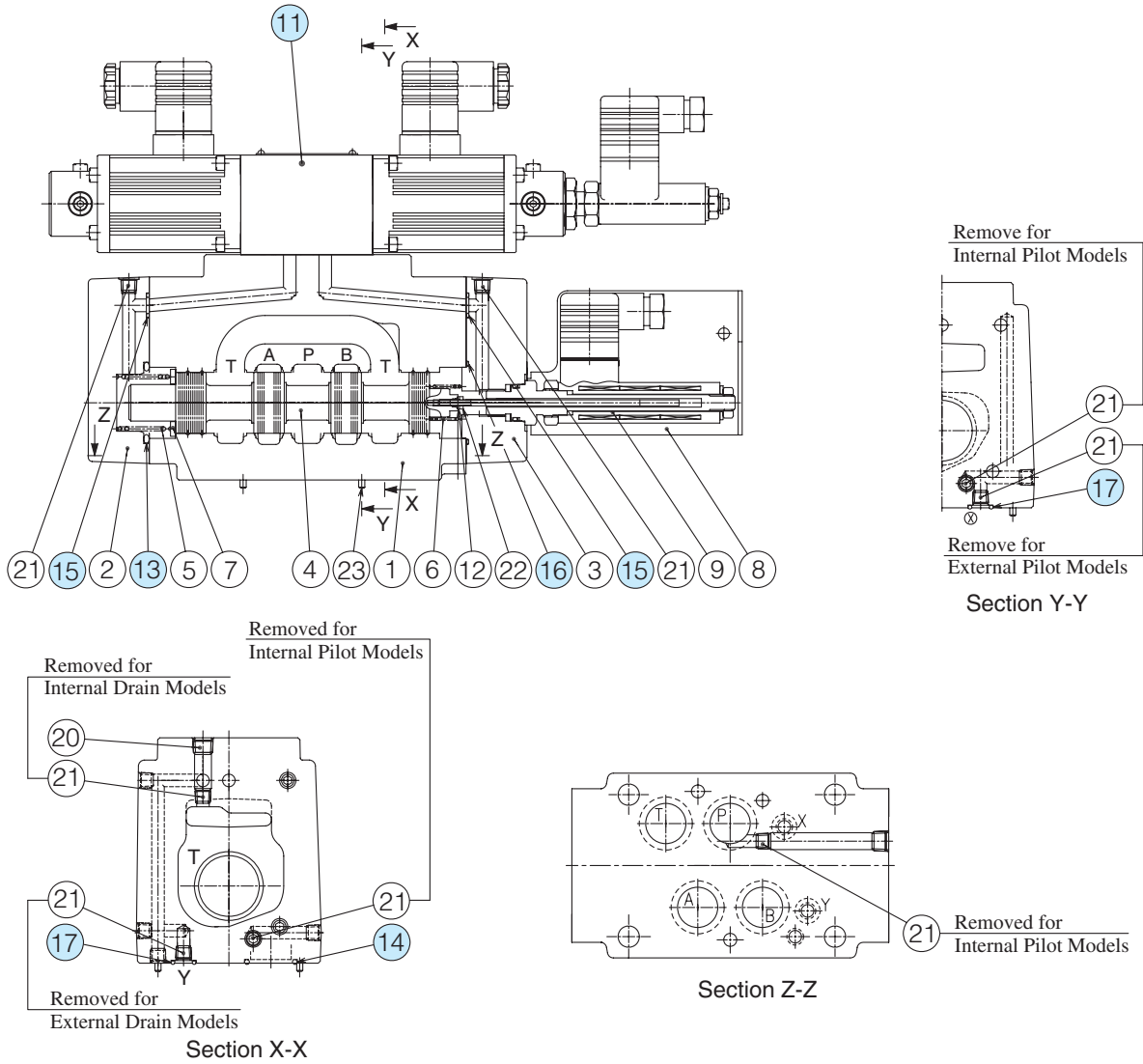
Frequency Response

Input Signal : 0 ± 25 %
Hydraulic Circuit : Port A/B Closed
Supply and Pilot Pressure : 14 PMa (2030 PSI)
Viscosity : 30 mm²/s (140 SSU)



■ List of Seals and Pilot Valve

ELDFHG-04-280-*-XY-**-10/1090



● List of Seals

Item	Name of Parts	Part Numbers	Qty.	Remarks
13	O-Ring	SO-NB-P39	1	Included in Seal Kit Kit No.: KS-ELDFHG-01-10
14	O-Ring	SO-NB-P22	4	
15	O-Ring	SO-NB-P9	2	
16	O-Ring	SO-NB-A029	1	
17	O-Ring	SO-NB-A012	2	

● Pilot Valve

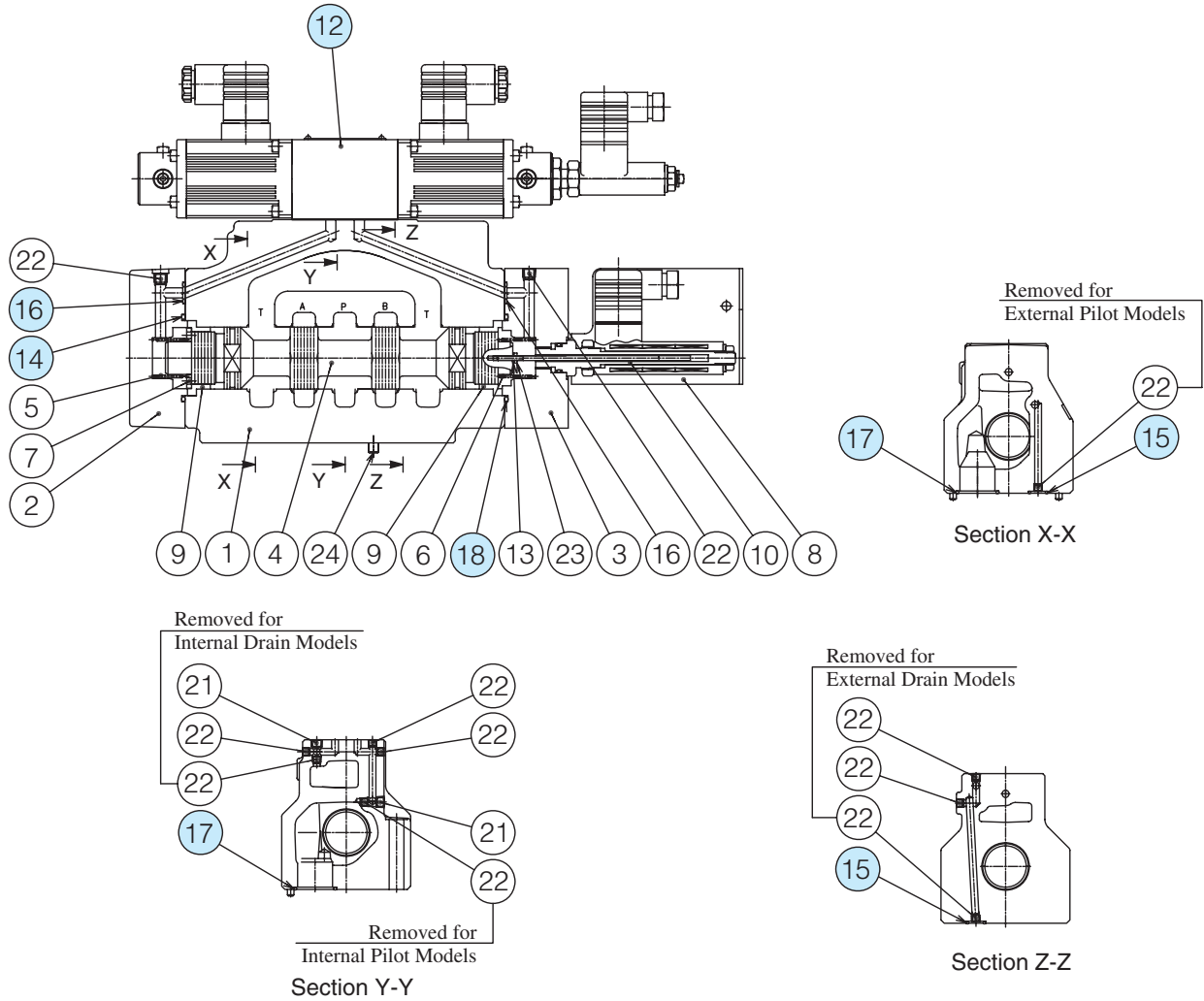
Valve Model No.	⑪ Pilot Valve Model No.
ELDFHG-04	ELDFG-01-30-3C2P-XY-1004

Note) See ELDFG-01-*-XY-10/1090 on page 758 for the corresponding seal and solenoid assembly for the pilot valve.

Note: When ordering seals, please specify the seal kit number from the table above. In addition to the above o-rings, seals for pilot valve are included in the seal kit. For the detail of the pilot valve seals, see page 758.

List of Seals and Pilot Valve

ELDFHG-06-*-*-XY-**-10/1090



List of Seals

Item	Name of Parts	Part Numbers		Qty.
		ELDFHG-06-350	ELDFHG-06-500	
14	O-Ring	SO-NB-P40	SO-NB-A135	1
15	O-Ring	SO-NB-P14		2
16	O-Ring	SO-NB-P10		2
17	O-Ring	SO-NB-A123	SO-NB-A126	4
18	O-Ring	SO-NB-A030	SO-NB-A135	1

Note: When ordering seals, please specify the seal kit number from the table above. In addition to the above o-rings, seals for pilot valve are included in the seal kit. For the detail of the pilot valve seals, see page 758.

Pilot Valve

Valve Model No.	⑫ Pilot Valve Model No.
ELDFHG-06	ELDFG-01-30-3C2P-XY-1006

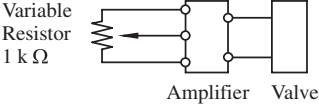
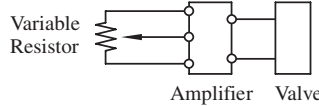
Note) See ELDFG-01-*-*-XY-10/1090 on page 758 for the corresponding seal and solenoid assembly for the pilot valve.

Seal Kit Numbers

Valve Model Numbers	Seal Kit Numbers
ELDFHG-06-350-*-XY-**-10/1090	KS-ELDFHG-06-350-10
ELDFHG-06-500-*-XY-**-10/1090	KS-ELDFHG-06-500-10

■ Power Amplifiers / Setting Adjusters For Proportional Electro-Hydraulic Control Valves

These are power amplifiers to be used exclusively to operate the electro-hydraulic proportional valves. Various type and models are available for a variety of applications.

Type	Model Numbers	Applicable to Control Valve	Function
DC Input	AME-D-10-*-20	Pressure or Flow Control (For 10 Ω Sol.)	<p>By giving the command of DC voltage (0–10 V) to the amplifier, current in proportion to that voltage will flow into the solenoid of the control valve in order to control pressure or flow rate.</p> <p>An external setting unit which makes the command voltage of 0–10 V and a DC power supply (or a function generator) are necessary, but if a variable resistor for external setting is only one, the internal power supply for amplifier can be used.</p> 
	AME-D-40-*-40	Flow Control (For 40 Ω Sol.)	
	AME-D2-H1-*-12	Flow Control and Relief (For 40 Ω - 10 Ω Sol.)	
	AME-D2-1010-*-11	Flow Control and Relief (For 10 Ω - 10 Ω Sol.)	
DC Input-Feedback	SK1022-*-*-11	Pressure or Flow Control (For 10 Ω Sol.)	<p>Basically, this is a DC input type with a feedback operating unit. This is for high-accuracy control and used to feedback the pressure or flow rate converted to electric signals.</p>
	AME-DF-S-*-22	Flow Control (For 40 Ω Sol.)	
Slow Up-Down	AME-T-S-*-22	Flow Control (For 40 Ω Sol.)	<p>A slow up-down signal generator and the functions of a DC input type are incorporated. This is used to control the pressure or flow rate by slow up-down pattern and the command signals are given by relay contacts, limit switches, timer contacts, etc.</p>
DC Input For DC Power 24 V DC	SK1015-11 AMN-D-10 AMN-W-10	Pressure or Flow Control (For 10 Ω Sol.)	<p>An amplifier which is operated by a battery power supply (24 V). By giving the command of DC voltage to the amplifier, current in proportion to that voltage will flow in the solenoid of the control valve in order to control pressure or flow rate.</p> <p>An external setting unit which makes the command voltage and a DC power supply (or a function generator) are necessary, but if a variable resistor for external setting is only one, the internal power supply for amplifier can be used.</p> 
	SK1091-D24-10	Directional and Flow Control	
DC Input with Minor Feedback	AMN-L-01-*-*-10	High Response Type Directional and Flow Control	<p>An amplifier which is operated by a battery power supply (24V).</p>
	AMB-EL-*-*-*-10		<p>This is for high-response, high-accuracy control and used to feedback the pressure or flow rate converted to electric signals.</p>
Shockless	AMN-G-10	Shockless Directional and Flow Control	<p>Outputs shockless patterns, low speed (Level 1) high-speed (Level 2) low speed (Level 3).</p> <p>Shockless speed control is enabled just by providing SOL a and SOL b only contact signals in the same control mode as the mode for the “G” series of shifting time adjustable type shockless valves.</p>

■ Instructions

- The power amplifiers should be kept away from hot and humid conditions which may deteriorate some components of the power amplifiers. They also should be installed in the clean and dry place where the vibration is minimal. Please avoid to install the power amplifiers in the complete enclosure or get them enclosed totally as they need to radiate the heat from semiconductors or ICs inside.
- Please use shielded wires for input signal transmission to prevent the amplifiers from any interference such as noise from outside.