



HYDRAULIC EQUIPMENT

E

PROPORTIONAL ELECTRO- HYDRAULIC CONTROLS





1. Front View of the Main Factory

2. Front View of 2nd Factory

3. Power Unit Assembly Line

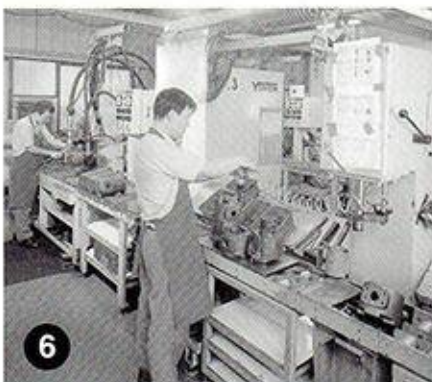
4. Horizontal Machining Centers

5. Processing Production Line (2nd Factory)

6. Vane Pumps Test Bench

7. Proportional Electro-Hydraulic Controls Test Bench

8. Solenoid Valves Assembly Line



Brief Introduction

The main factory of Yuken Hydraulics (T.W.) Co., Ltd., is located at No. 12 7th Rd., Taichung Industrial Park, Taichung, Taiwan. the area is 9,543 m². 2nd factory is located at No. 6, 7th Rd, the area is 5,623 m².

"To improve Technology, to improve Quality, to strengthen Service, and to satisfy Customers" are our consistent quality promises. In order to keep our promises, we have a strong focus on the promotion of automation and computerization covering sales, design, operations, production management and even quality control, to ensure quality of our products and services. All our employees pursue the organization's Goal - "To work hard, to ameliorate, and to grow perpetually."

As the domestic market was getting saturated gradually, we started exploring overseas market since July, 1996. The achievement has been remarkable. Our market is not only in Asia but also North America, Europe, Middle East and Africa.

- March, 1997, Yuken Hydraulics (T.W.) Co., Ltd., was awarded ISO-9002 certificate and built up international-level quality system.
- January, 1998, We open our second factory located at No.6 7th Rd., Taichung Industrial Park, Taichung, Taiwan, area is 5,623 m².
- February, 2002, Yuken Hydraulics (T.W.) Co., Ltd., was awarded CSA-C/US certificate, to strengthen our competition in North American market.
- May, 2002, Yuken Hydraulics (T.W.) Co., Ltd., was awarded ISO-9001 certificate and scaled new heights of quality system.
- October, 2002, Organization simplified, management institutionalized.
- June, 2003, Production line readjusted, equipment reinforced, production rationalized, striding into a new milestone.
- April, 2005, Proportional Valve was awarded CE certificate.
- November, 2005, Solenoid Valve was awarded CE certificate.
- November, 2008, Solenoid Valves with monitoring switches were patented in Taiwan.
- March, 2009, Solenoid Valves with monitoring switches were patented in China.
- June, 2010, Solenoid Valves with monitoring switches were awarded CE certificate.
- December, 2011, 2nd factory's expansion is finished.

Yuken Hydraulics (T.W.) Co., Ltd. has been leading the Industry here in Taiwan. We will increase technical cooperation with our parent company, Yuken Kogyo Co., Ltd. in the future. We will build an efficient and comprehensive sales network both in domestic and overseas market. Concurrently, we will train our talented people extensively to upgrade quality continuously. All our efforts are to achieve our goal - to grow perpetually!

- Name : **Yuken Hydraulics (T.W.) Co., Ltd.**
- Main Factory : No. 12, 7th Road, Taichung Industrial Park, Taichung, Taiwan.
Tel: 886-4-2359-3077 (Rep.)
Fax: 886-4-2359-2500
Website: <http://www.yuken.com.tw>
- Taichung Office: No. 12, 7th Road, Taichung Industrial Park, Taichung, Taiwan.
(Sales Dept) Tel: 886-4-2359-3077 (Rep.)
Fax: 886-4-2359-8813
- Taipei Office : No. 18-1, Wun Hua 5th Road, Guei Shan Township, Taoyuan County, Taiwan.
(Sales Dept) Tel: 886-3-328-3628 (Rep.)
Fax: 886-3-328-3242
- Established : 1, May, 1969
- Paid in Capital : NTS 90,000,000 (as of January, 2004)
- Line of Business : • Manufacture & sales of Hydraulic Pumps, Pressure Control Valves, Flow Control Valves, Directional Control Valves, Modular Valves, Proportional Electro-Hydraulic Control Valves, Electro-Hydraulic Servo Valves, Power Unit, Hydraulic Cylinders, Hydraulic Motors & Associated Products.
• Design, manufacture & installation of Hydraulic systems.
- Licensor : **YUKEN KOGYO CO., LTD.**

Group of Components



Hydraulic Pumps

Pressure Control Valves

Flow Control Valves

Directional Control Valves

Check Valves

Proportional Electro-Hydraulic Control

A Hydraulic Pump

1 MPa = 10.2 kgf/cm²

Pump Type	Max. Pressure MPa	Nominal Displacement cm ³ /rev										Page
		1	2	5	10	20	50	100	200	500		
ARL1 Series Variable Piston Pumps	7				ARL1						9	
AML1 Series Motor-Pumps	7				AML1						12	
ML1 Series Electric Motors	-	ML1 (0.75 / 1.5 / 2.2 kw)										15
AR Series Variable Piston Pumps	16				AR16	AR22					16	
50T 150T Single Pumps	7					50T		150T			20	
PV2R S-PV2R Series Single Pumps	21 (17.5/16/14)					PV2R1	PV2R2 S-PV2R2	PV2R3 S-PV2R3	PV2R4 S-PV2R4		24	
PV2R S-PV2R Series Double Pumps	21 (17.5/16/14)					PV2R1	PV2R2 S-PV2R2	PV2R3 S-PV2R3	Small Volume Pumps		38	
							PV2R2 S-PV2R2	PV2R3 S-PV2R3	PV2R4 S-PV2R4	Large Volume Pumps		
A ₁₆ SR3, A ₂₂ SR4 Series Piston & Vane Pumps	21 (17.5/16/14)				A16	A22	Piston Pump				48	
									PV2R3 S-PV2R3	PV2R4 S-PV2R4	Vane Pump	
SVPF Series Variable Vane Pump	7				SVPF-12	20	30	40			51	
SVPDF Series Double Variable Vane Pump	7					SVPDF-30	40				52	
							SVPDF-30	40				
								SVPDF-40	40			

B Pressure Control Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Remote Control Relief Valves	25	DT-01										53
Direct Type Relief Valves	21			DT-DG-02								53
Pilot Operated Relief Valves	25					BT-BG-03		06	10			53
Low Noise Type Pilot Operated Relief Valves	25					S-BG-03		06				53
Solenoid Controlled Relief Valves	25					BST-03		06	10			57
Low Noise Type Solenoid Controlled Relief Valves	25					S-BSG-03		06				57
H & HC Type Pressure Control Valves	21					HT/HCT HG/HCG-03		06	10			61
Pressure Reducing (and Check) Valves	21					RT/RCT RG/RCG-03		06	10			67
Unloading Relief Valves	21					BUCG-06						72
Balancing Valves	14					RBG-03						73

C Flow Control Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Flow Control (and Check) Valves	21					FG FCG-02		03	06 *	10 *	*Yuken Kogyo Models	74
(One Way) Restrictors	21					SRCT SRG/SRCG-03		SRCT SRG/SRCG-06	SRCT-10			77
Throttle (and Check) Modules	25					TC1G TC2G-01						80
Needle Valves	35					GCT GTCR-02						81

D Directional Control Valves 1 MPa = 10.2 kgf/cm²

Valve Type	Max. Pressure MPa	Max. Flow L/min												Page
		1	2	5	10	20	50	100	200	500	1000	2000	8000	
Solenoid Operated Directional Valves	7	DSGL-01												84
Solenoid Operated Directional Valves	31.5	DSG-01 03												86
Solenoid Valves with Monitoring Switch-DSGS	31.5	DSGS-01 03												92
Solenoid Controlled Pilot Operated Directional Valves	31.5	DSHG-04 06 10												94
Solenoid Valves with Monitoring Switch-DSHGN	25	DSHGN-03 04 06												99
Pilot Operated Directional Valves	31.5	DHG-04 06 10												104
Manually Operated Directional Valves	25 (21)	DMT-03 DMG-03												107
Mechanically Operated Directional Valves	21 (25)	DCT-01 DCG 03												109
Mechanically Operated Directional Valves with Monitoring Switch-DCGS	21 (25)	DCTS-01 DCGS 03												112
Logic Valves with Monitoring Switch-LDLS	30	LDLS-16 25 32 40 50												115
Check Valves	21	CIT-03 06 10												119
		CRT-03 CRG 06 10												
Pilot Controlled Check Valves	25	CPT/CPG CPDT/CPDG-03 06 10												121
Poppet Type Directional Valves	21	LVT-03 LVG												123
Prefill Valves	25	PP-80 PDF-80 90 100 125 150 PP-200(PF-300)												124

E Proportional Electro-Hydraulic Controls

Valve Type	Max. Pressure MPa	Max. Flow L/min										Page
		1	2	5	10	20	50	100	200	500	1000	
Proportional Electro-Hydraulic Pilot Relief Valves	25	EDG-01										131
Proportional Relief Valves	25	EBG-03 06 10 * * Yuken Kogyo Models										133
Power Saving Valves	25	EFBG-03 06 10										135
Power Saving Valves 10Ω~10Ω	25	EFBG-03										141
Power Saving Valves High Performance	25	ELFBG ELFBG-03 06										143
Proportional Electro-Hydraulic Directional and Flow Control Valves	25	EDFG-01 EDFHG-03 04 06										149
Power Amplifiers	-	AME-D2-H1 (Yuken Kogyo Models) AMN-D-20T AMN-D-L-20T SK1115-※-30T AMN-W-10T										156

F Other Valves

Valve Type	Max. Pressure MPa	Max. Flow L/min															Page
		1	2	5	10	20	50	100	200	500							
Lift Valves	21	LVST-03															165
Air Bleed Valves	21	AVT-03-05 AVT-03-20															166
Automatic Shut Off Valves	21	DAS-03-20															166

G Modular Base Plates

Series Number	Max. Pressure MPa	Max. Flow L/min				Page
		0	20	40	60	
Base Plates	31.5	MMC-01MMC-03				167

* As for the products other than those listed in this catalogue, please consult with our engineers for your requirement.

General Information

Design Standard

The distinctive features of Yuken Standard products is as shown below.

Feature	Domestic Standard	Remarks
Port Tapping	Rc(=PT)	Taper Pipe Thread (ISO 7/1)
Port Tapping (Partial)	G(=PF)	Straight Pipe Thread (ISO 228/1)
Pressure Gauge Tapping	Rc(=PT)	Taper Pipe Thread (ISO 7/1)
Mounting Bolts	Metric	General Purpose Thread (ISO 261)
Mounting Dimensions	Metric	
Conduit Entry	G(=PF)	Straight Pipe Thread (ISO 228/1)
Solenoid Voltages AC/DC	Domestic voltage	Voltage and frequency change according to country
Frequency	50/60 Hz	
Electronic Amplifier Input Supply	Domestic voltage 50/60 Hz	
Graphic Symbol	ISO Standard	ISO 1219
Valve Port Size	Inch	

Design Number

Yuken products have factory applied Design numbers, the key to which is as follows.

Example: 4222T68

42 22 T68

Major Design No. _____ Design No. for modified products in Taiwan
Minor Design No. _____ Omitted: Domestic standard

Design numbers are subject to change. But installation dimensions and specifications remain unchanged for variation in second digit of design numbers (Minor Design No.).

Hydraulic Fluids

Type of hydraulic fluids

- Petroleum base oil-Please use anti-wear type hydraulic oil or R & O (Rust and Oxidation inhibitor) type hydraulic oil equivalent to ISO VG 32 or 46. Do not use VG 68 hydraulic oils in winter; it will cause suction failure or cavitation.
- Fire resistant or other special fluids-Please consult with our sales engineers for your requirement.

Fluid viscosity and temperature range

Please use hydraulic fluids in a range which satisfies the conditions of both viscosity and temperature (specified in table.)

Type of Components	Viscosity Range	Temperature Range
Hydraulic Pumps	20 ~ 400 mm ² /s ★ 1	0 ~ 70°
Pressure Control Valves	15 ~ 400 mm ² /s ★ 2	-15 ~ +70°
Flow Control Valves	FG, FCG : 20 ~ 200 mm ² /s Other : 15 ~ 400 mm ² /s	
Directional Control Valves	15 ~ 400 mm ² /s	
Proportional Electro-Hydraulic Control Valves	EBG : 15 ~ 400 mm ² /s EFBG : 20 ~ 200 mm ² /s	

- ★ 1. When starting the pumps at low speed, maximum viscosity is restricted. (see table above right).
★ 2. If the valve is provided with a vent restrictor (ex.: A-BSG-03), the viscosity range should be 15-200 mm²/s.

Control of contamination

Contamination of the hydraulic fluids may cause any damage to the products or shorten the life of the products, therefore, please maintain the degree of contamination level lower than NAS Class Numbers as shown on the table 1 below

① The suction port line must have a reservoir type filter of 100 μm (150 mesh) and the filter should be installed minimum 50 mm higher than the bottom of the reservoir.

② The return line must have a line filter.

Line type filter ratings

Type of Components	Line Type Filter
Pump's Suction Port	100μm
Circuit System	Piston Pumps: below 10μm E series components: below 20μm Other components: below 25μm

Limit of contamination

Type of Components	NAS Class No.
Piston Pumps	10 or less
E series components	11 or less
Other components	12 or less

General Information

■ Limitation of general properties of fluids

● Limit of fluid purity

Characteristics ¹	Value changed
Specific gravity (15/4°C)	0.05
Colour	2
Flash point (°C) COC	60
Total acid number (mg KOH/g)	0.2
Viscosity (cSt)	10 ~ 15

■ High-pressure specialized hydraulic fluid

Manufacture	Brand
Mobil	Mobil DTE 25
Shell	Shell Tellus Oil 46
China Oil	Aw46, LPS 46

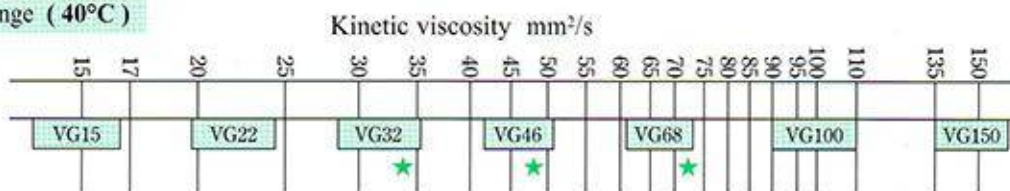
● Limit of water content

Applicable conditions	Limit
Fluid becomes milky with water contained.	To be replaced immediately.
Systems in which operating fluid circulates and returns to reservoir and which are not to be stopped for a long period of time.	1000ppm
System with long piping lines in which operating fluid in circuits does not completely circulate.	500ppm
Systems to be stopped for a long period of time (Safety systems) or systems in which operating fluid in circuits moves little, and precision control systems.	300ppm

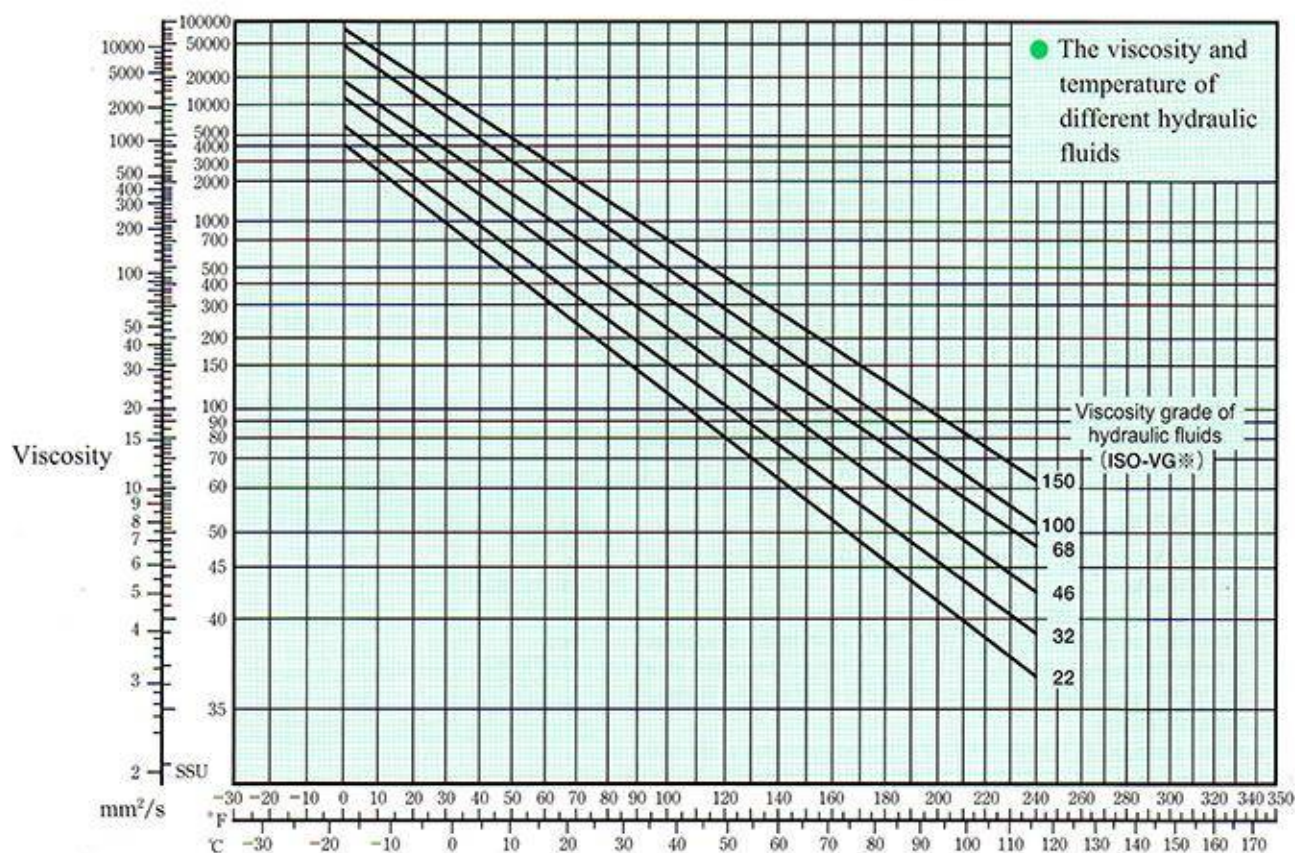
■ Viscosity of hydraulic fluids

Viscosity range (40°C)

● ISO
Viscosity
grade
(ISO VG)



★ JIS K 2213 The Second Type (Added Turbine oil)
for ISO VG32, 46, 68.



General Information

Instructions for hydraulic pump

1. Mounting

When installing piston pumps the filling port should be positioned upwards. When (S)-PV2R Single and Double Vane Pumps are operated below 1200 r/min; we recommend the suction port upwards to suck oil easily.

2. Alignment of Shaft

Employ a flexible coupling whenever possible, and avoid any stress from bending or thrust. Maximum permissible misalignment is less than 0.1 mm. TIR (Total Indicator Reading) and maximum permissible misangular is less than 0.2°.

3. Suction Pressure

★ 1 kPa = 0.01 kgf/cm² = 7.5 mmHg

Model		Suction Pressure Range		
		Min		Max.
		Petroleum base oils	Water containing phosphate esters	
Piston Pumps	ARL1 AR※	-16.7 kPa	—	+50 kPa
Single Pumps	50T 150T	-20 kPa	-16 kPa	+140 kPa
PV2R Single Vane Pumps	(S)-PV2R1 (S)-PV2R2 (S)-PV2R3 (S)-PV2R4	-20 kPa	-16 kPa	+30 kPa
PV2R Double Vane Pumps	(S)-PV2R12 (S)-PV2R13 (S)-PV2R23 (S)-PV2R24 (S)-PV2R34	-20 kPa		
		-20 kPa		
		-20 kPa ★		

- Make sure that the height of the pump suction port is within 1m from the oil level in the reservoir.
- Please follow the instructions of catalogue to choose suitable caliber of suction port pipes; otherwise, it might lead to dangerous cavitation. We suggest the suction port flow rate under 1 m/s.

★ For some displacement of pumps, the Min. suction pressure is restricted by the rotation speed. Please refer to Table 1.

● Table 1: The limitation of Min. suction pressure for specific displacement of hydraulic pumps.

The following hydraulic pumps with rotation speed 1700 r/min are restricted by the Min. suction pressure. (Min. suction pressure of other hydraulic pumps is -150 mmHg)

Model No.	Min. Suction Pressure kPa	
	1700 r/min Below	1700-1800 r/min
(S)-PV2R3-116	-20	0
(S)-PV2R4-237	-20	-13.3
(S)-PV2R※3-※-76	-20	-6.7
(S)-PV2R※3-※-94	-20	-6.7
(S)-PV2R※3-※-116	-20	0
(S)-PV2R※4-※-237	-20	-13.3
(S)-PV2R34-76-※	-20	-6.7
(S)-PV2R34-94-※	-20	-6.7
(S)-PV2R34-116-※	-20	0
(S)-PV2R34-116-237	-20	0

4. Instructions of Piping

- ① In case the pump is installed above the oil level, the suction piping and suction line filter should be located lower than the pump position to prevent air in the suction line.
- ② When using steel pipes for the suction or discharge ports, excessive load from the piping to the pump generates excessive noise. Whenever there is fear of excessive load, please use rubber hoses.

5. Drain Piping

Install drain piping according to the chart and ensure that pressure within the pump housing should be maintained at a normal pressure of less than 0.1 MPa (14.5 PSI) and surge pressure of less than 0.5 MPa (72.5 PSI). Length of piping should be less than 1 m, and the pipe end should be submerged in oil.

Recommended Drain Piping Size:

Model	Piping Fitting Size	Internal Dia. of Pipe
ARL1, AR※	3/8 (Internal Dia. more than Ø8.5)	more than Ø10

6. Hydraulic Pumps Starting

- Before first starting, fill pump case with clean operating oil via the filling port.
- In order to avoid air blockage when starting pumps after long time shut down, to set up air bleeding valve on the discharge sides in advance or to loose discharge piping connection area for bleeding the air in the pipes. To the best of pumps' starting with no loading.
- When temperature is under 15°C in winter or viscosity is 200~400 mm²/s (1000SSU~1800SSU), please refer to the following instructions to start pumps in order to make better internal lubrication, and it will help the suction of the pump and extend the pump's life.
- Starting instructions: to start running pumps for 5 seconds, and then stop it for 10 seconds. To repeat this process 10 times, and then keep it running.

● Table 2: Max.viscosity list of starting at low rotation speed

Model	Rotation speed of starting r/min	Max. viscosity mm ² /s
PV2R1 (S)-PV2R12 (S)-PV2R13 (S)-PV2R14	750	100
	950	200
50T (S)-PV2R2 (S)-PV2R23 (S)-PV2R24	600	100
	950	200

Prefill Valve

Max. Pressure 25 MPa



This valve is small and easy to install; high flow and less internal drain. Before operating the valve, you have to unload pressure first. This valve is two-way shift not spring-returned type. Please refer the circuit as follows.

Specifications

1 MPa = 10.2 kgf/cm²

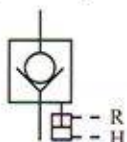
Valve Size	Model Number	Max. Flow L/min	Max Pilot Pressure MPa (kgf/cm ²)	Main Valve and Pilot Valve Square Measure Ratio	Mass without flange kg
8	PF-200-※-20T211	4000	10 (100)	5.1:1	110
12	PF-300-※-20T211	7000	10 (100)	5.1:1	160

Note 1. To avoid possible shock, decompress the pressure in the cylinder line first before the valve operates, otherwise the valve does not perform well. (The pilot pressure should be 4.5 times more higher than the main pressure)

Note 2. The pressure drop is about 0.03 MPa in the maximum flow rate on the table above.

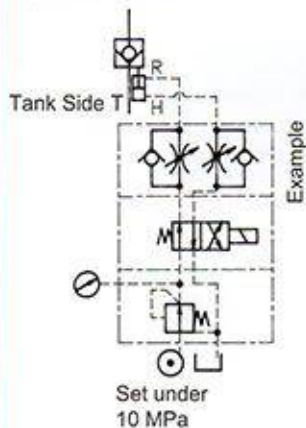
Note 3. The high pressure drop is not easy to happen in reality, selecting according to the calculation, 70% of the max. flow rate will be the best choice.

Graphic Symbol



Sample Circuit

Hydraulic Cylinder Side P



Mounting Bolts

Model No.	Socket Head Cap Screw	Q'ty	Tightening Torque N·m
PF-200	M30x120 Lg	16	1420-1735
PF-300	M30x130 Lg	20	

Model Number Designation

PF-200-FT-20T211

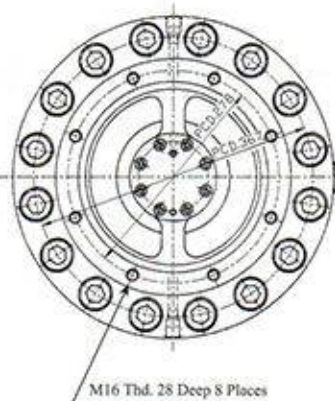
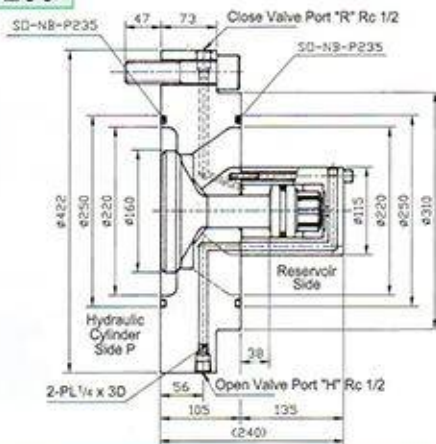
Series Number
(Flange Connection)

Design Number

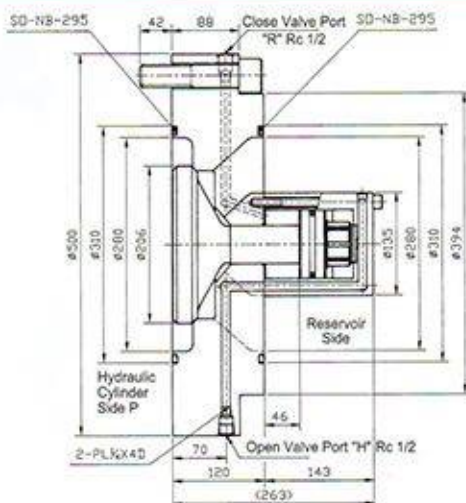
Valve Size
200 : 8" pipe
300 : 12" pipe

Type of Pipe Flange
None: Without Pipe Flange
FP: P Port With Pipe Flange
FT: T Port With Pipe Flange (Standard)
FW: P Port & T Port With Pipe Flange

PF-200



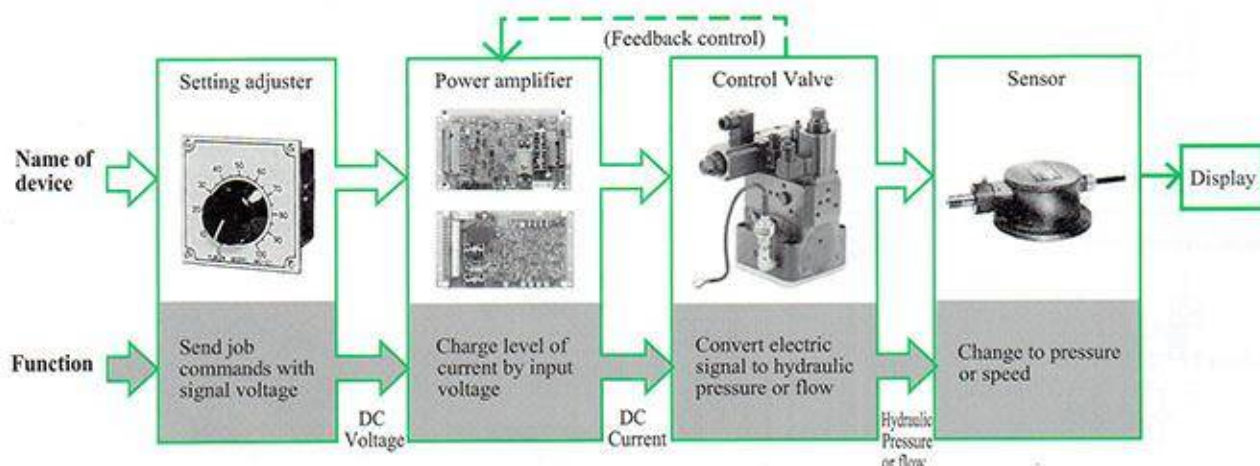
PF-300



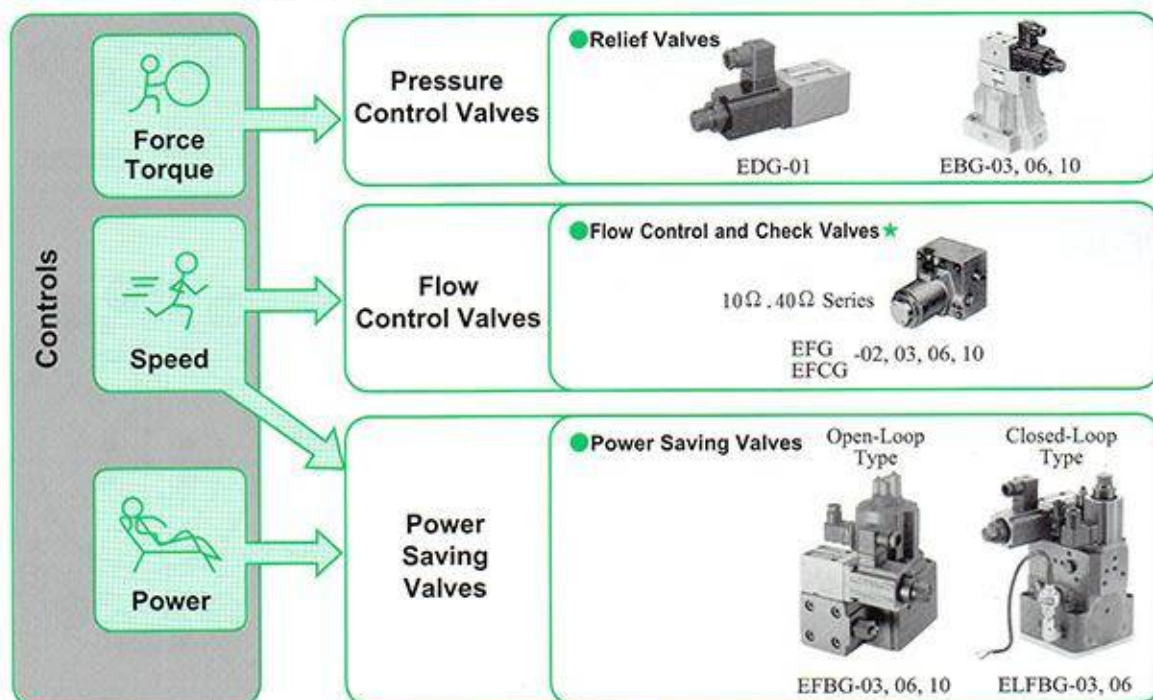
Proportional Electro-Hydraulic Control Valves

E Series to connect Electronics and Oil Hydraulics

- These valves are capable of varying pressure and flow rate in oil hydraulic circuits continuously by means of electrical setting. Unlike conventional multistage pressure or flow control system in which two or more control valves are used in combination, the valves do not require many control valves, thus they make oil hydraulic circuits much simpler in configuration.
- These valves are available for injection moulding machine, press machine...etc.
In comparison with servo valves, the proportional electro-hydraulic control valves have advantages such as: smaller in overall installation, tolerant against fluid contamination and easier maintenance, because the valves structurally are designed and developed, based on conventional valves.
- Devices for proportional Control**
Diagram below shows the devices needed for using Proportional Control system.
Adapt E series to plan using Proportional Control system, when selecting the control valves, also need to select the specification of the devices below.



Applicable Controls and Valves



*The valves with mark above are not included in this catalogue, however, please contact our sales engineer for your requirement.

Proportional Electro-Hydraulic Control Valves

Instructions

Hydraulic Fluids

Fluid Types

Any type of hydraulic fluid, listed in the table below can be used.

Petroleum Based Oils	Use fluids equivalent to ISO VG32 or VG46
Synthetic Fluids	Use phosphate ester or polyol ester fluids When this type of fluids is used, please suffix the number "05" to the design number when ordering. When phosphate ester is used, prefix "F-" to the model number because a special seal (fluororubber) will be used. Phosphate ester fluid : (Ex.) F-EDG-01-B-PNT 15 - 6005 Polyol ester fluid : (Ex.) EDG-01-B-PNT 15 - 6005
Water containing Fluids	Use water-glycol fluid

Mounting Positioning Orientation

Be sure that the air vent faced up. The air vent position can be changed as desired.

Air Bleeding

To provide stable control, conduct air bleeding through and fill the solenoid cover with oil.
For air bleeding purposes, gradually loosen the air vent at the end of the solenoid. The air vent can be repositioned as needed so that air is easily expelled from the valve. To change the air vent position, rotate the solenoid adaptor until the air vent is positioned as desired. (see the figure right)

Tank and Drain Piping

The tank-line back pressure and drain back pressure directly affect the minimum adjustment pressure or flow adjustment valve main spool operating force.
Therefore, do not connect the tank or drain pipes to other lines, but connect them directly to the reservoir maintaining the back pressure as low as possible. Be sure that the tank and drain pipe ends are immersed in fluid.

Hysteresis and Repeatability Value Indications

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

Recommended Fluid Viscosity and Temperature

Use hydraulic fluids which satisfy both the recommended viscosity and oil temperatures given in the table below.

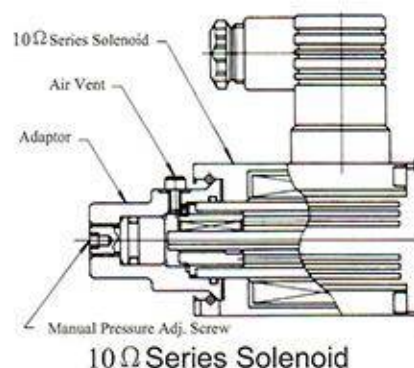
Name	Viscosity	Temperature
Pilot Relief Valves Relief Valves Relieving and Reducing Valves	15~400mm ² /s {cSt}	-15~+70°C
Flow Control Valves Flow Control and Check Valves Relief and Flow Control Valves	20~200mm ² /s {cSt}	

Control of Contamination

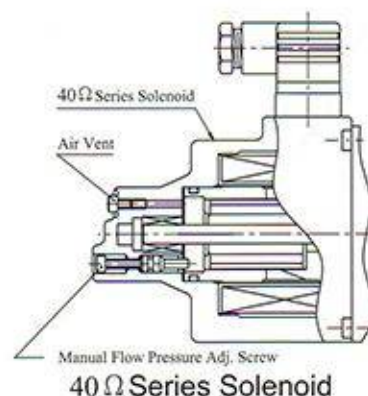
Due caution must be paid to maintaining control over contamination of hydraulic fluids which may otherwise lead to breakdown and shorten the life of the valve. Please maintain the degree of contamination within NAS1638-11, Use 20 μ m or finer line filter.

Manual Adjusting Screw

When initial adjustments are to be made or when no current is supplied to the valve due to electrical failure or other problem, turn the manual adjusting screw to temporarily set the valve pressure and flow rate. Under normal conditions, however, this screw must be kept in its original position (see the figure below)



10 Ω Series Solenoid

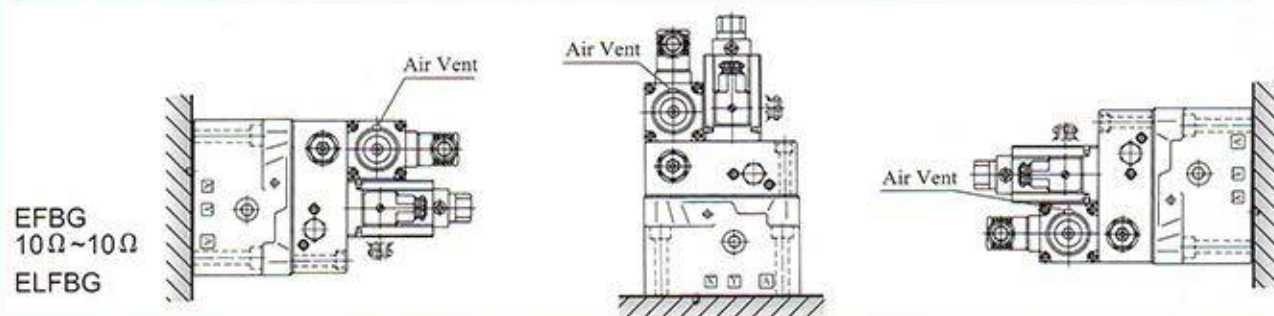
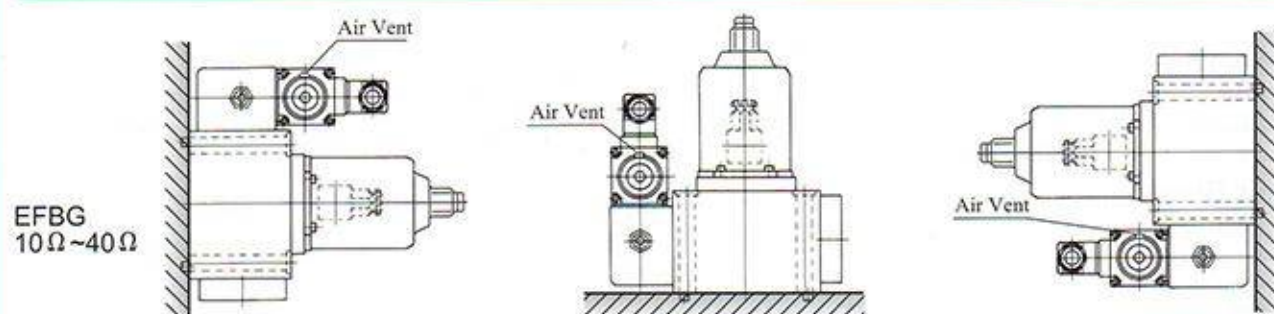
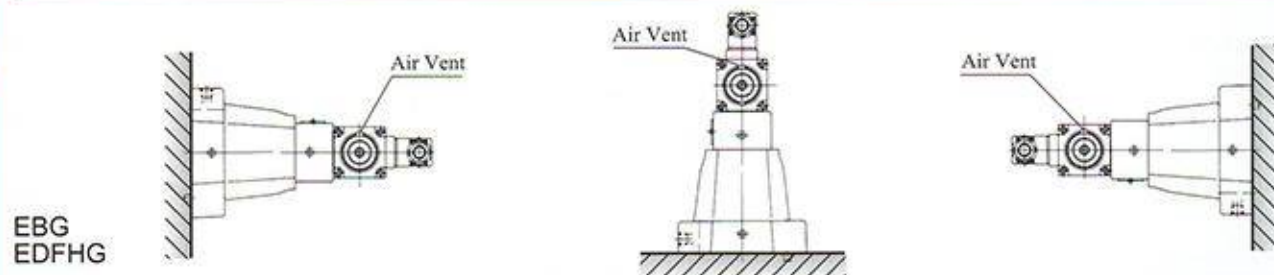
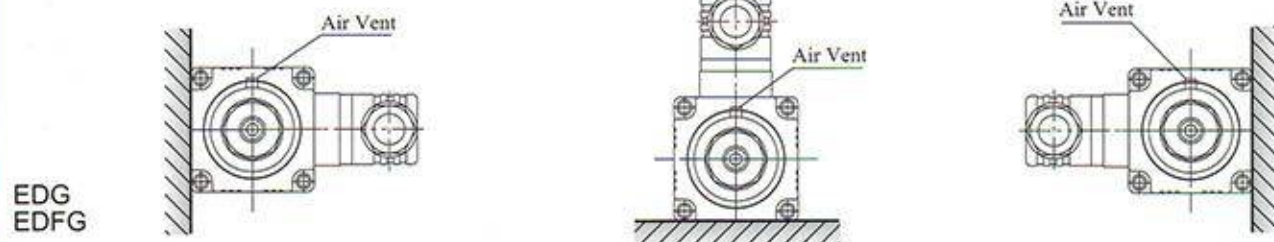


40 Ω Series Solenoid

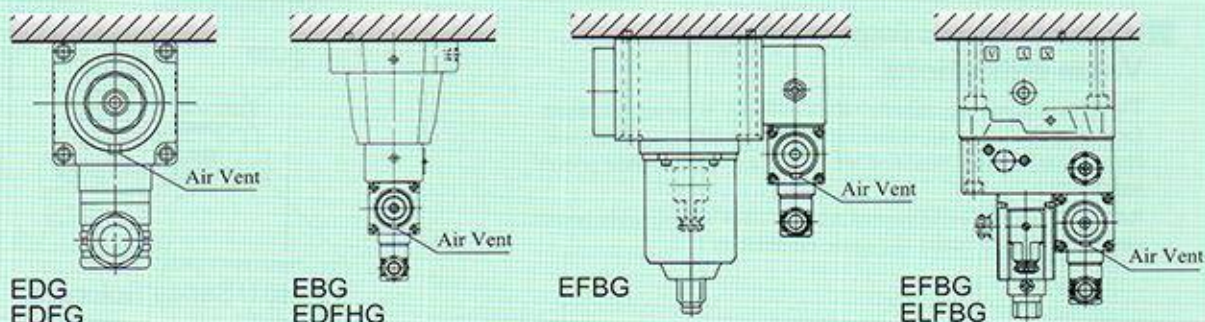
Proportional Electro-Hydraulic Control Valves

Attention to install proportional valve

The coil E318 should be installed horizontally. The air vent should be up to let the air release smoothly to make the proportional valve operate normally. It is OK not to release the air.



WRONG

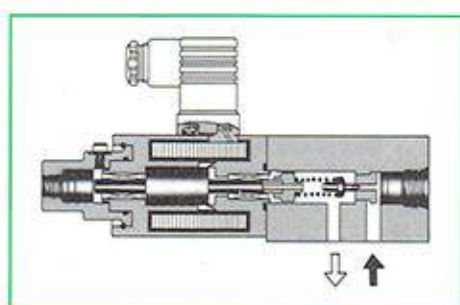
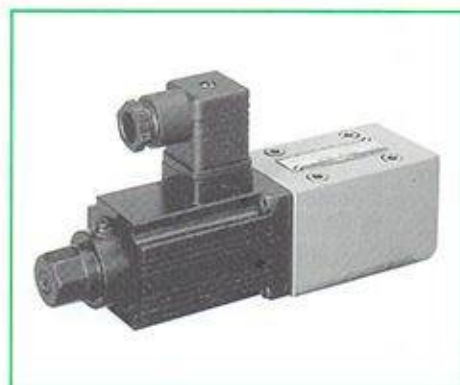


Proportional Electro-Hydraulic Pilot Relief Valves Max. Pressure 25 MPa

This valve consists of a small DC solenoid and a direct - acting relief valve. It serves as a pilot valve for a low flow rate hydraulic system or a proportional electro-hydraulic control valve and controls the pressure in proportion to the input current. Note that this valve is used in conjunction with the applicable power amplifier.

Specifications

Description	Model No.	EDG-01※ - ※ - ※ -P※T※ -60T
Max. Operating Press	MPa (kgf/cm ²)	24.5 (250)
Max. Flow	L/min	2
Min. Flow	L/min	0.3
Pres. Adj. Range	MPa (kgf/cm ²)	Refer to Designation
Rated Current	mA	B:800 C:900 H:950
Coil Resistance (20°C)	Ω	10
Hysteresis		Less than 3%
Repeatability		1%
Power Amplifier		AMN-D-20T (See Page 157)
Mass	kg	2



Model Number Designation

ED	G	- 01	V	- C	- 1	- PN	T13	- 60T
Series Number	Type of Mounting Valve	Size	Applicable Control ★1	Pressure Adj. Range MPa (kgf/cm ²)	Safety Valve	P-line Orifice	T-Line Orifice	Design Standard
ED: Proportional Electro-Hydraulic Pilot Relief Valve	G: Sub-Plate Mounting	01	None: General Use V: Vent Control of Relief Valve	A: ★3 B: 0.5~6.9 (5~70) C: 1.0~15.7 (10~160) H: 1.2~24.5 (12~250)	None: Without Safety Valve 1: With Safety Valve	PN: Without Orifice (Standard)	T15 ★2 T13 T11	60T

★1. When the valve is used for vent control purpose, orifice adjustment is required due to piping capacity limitations. Therefore, please contact our sales engineers in advance.

★2. Standard of T-Line Orifice
Press. Adj. Range B: T15, C: T13, H: T11.
The orifice used as the pilot valve may differ from the standard orifice.

★3. There is one model for low adj. pressure, 0.2~4.0 MPa (kgf/cm²),
EDG-01V-A-※-P※T※-60T234, the max. flow is limited.

Sub-plate

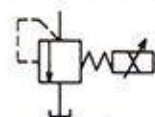
Sub-plate Model No.	Piping Size Rc	Mass kg
DSGM-01-30	1/8	0.8
DSGM-01X-30	1/4	
DSGM-01Y-30	3/8	

● Sub-plates are available. When ordering, please specify sub-plate model no. from the table above. When sub-plate are not used, the mounting surface should have a good mechanic finish.

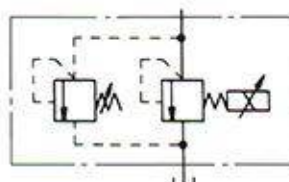
● Sub-plate is the same as DSG-01 series Solenoid Operated Directional Valve.

● Please refer to page 88 for dimension details.

JIS Hydraulic Graphic Symbol



without safety valve



with safety valve

Proportional Electro-Hydraulic Pilot Relief Valves Max. Pressure 25 MPa

Instructions

Tank-Line Back Pressure

Check that the tank line pressure does not exceed 0.2MPa (2.0kgf/cm²)

Vent Control

When this valve is used as a relief valve or for other valve vent control purposes, use 6 mm ID, 300mm long or shorter pipes for piping connections. If pressure instability is encountered, provided a 1-1.5mm diameter orifice for the relief or other valve vent port.

Circuit Pressure Control

When circuit pressure is directly controlled by this valve, make sure that the trapped oil volume is exceeding 40cm³.

Low Flow Rates

The preset pressure may become unstable. To avoid such pressure instability, the flow rate should not be lower than 0.3 L/min.

Safety Valve Pressure Setting

The safety valve pressure setting at the maximum flow rate is preset to a level that is 2MPa(20.4kgf/cm²) higher than the pressure adjustment range upper limit. If the operating pressure upper limit is low or a different flow rate upper limit is used, make adjustment after calculating the safety valve pressure setting from the following equation: Pressure setting =(Operating pressure upper limit)+(Additional pressure indicated right)

Air vent

The air vent should be screwed to the up position and set pressure at 1.5 MPa (15kgf/cm²) while testing. You should release air fully to reach stable pressure.

Applicable Power Amplifier

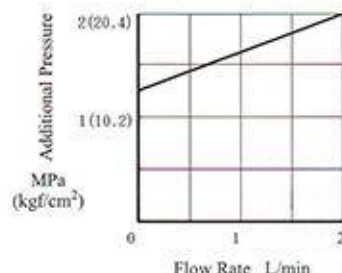
For stable performance, it is recommended that Yuken's applicable power amplifiers be used.

Model Number: AMN-D-20T
(Please refer to Page 157)

Attachment

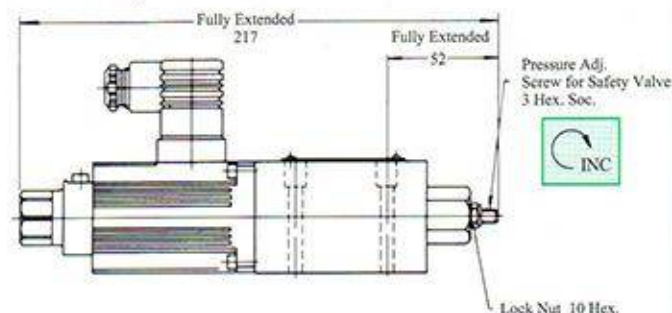
Mounting Bolts

Soc. Hd. Cap. Screw : M5 x 45Lg.....4pcs
Tightening Torque: 8~10 N·m



EDG-01V- *1-P *T *-60T

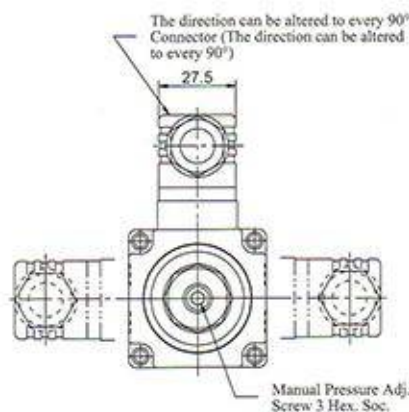
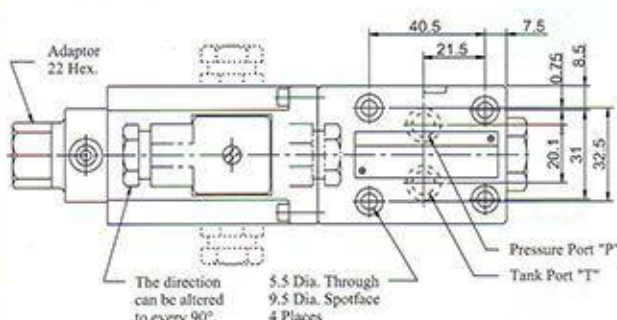
With Safety Valve



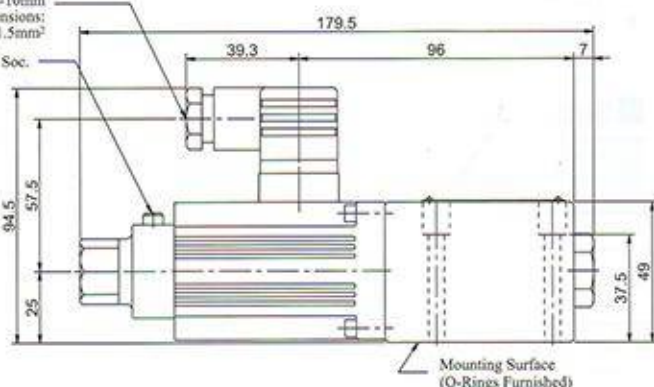
For other dimensions, please refer to the without-safety valve type.

EDG-01V- *-P *T *-60T

Without Safety Valve



Cable Departure
Cable Applicable
Outside Dia.: 8-10mm
Conductor Dimensions:
less than 1.5mm²
Air Vent 3 Hex. Soc.



Proportional Relief Valves

Max. Pressure 25 MPa

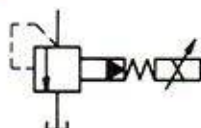

This valve is combined with a proportional electro-hydraulic pilot relief valve and a specially developed low-noise relief valve. Owing to special vent restrictor, this valve can make pressure control more precise and stable.

Specifications

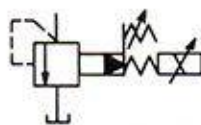
Model No.		EBG-03-※-※-60T	EBG-06-※-※-60T	EBG-10-※-※-51
Description				
Max. flow	L/min	100	200	400 ★3
Min. Flow	L/min	3	3	3
Pressure Adjustment Range MPa (kgf/cm ²)		Refer to Model Number Designation		
Rated Current	mA	C:770	C:750	C:730
		H:820	H:800	H:780
Coil Resistance (20°C)	Ω	10		
Hysteresis		Less than 2% ★1		
Repeatability		Less than 1% ★2		
Frequency Response (at 90°C)		12Hz	13 Hz	11Hz
Applicable power Amp		AMN-D-20T (See page 157)		
Mass	kg	5.6	6.3	10

- ★1. This figures in the table above are those obtained when used in conjunction with YUKEN's power amplifier.
 ★2. The repeatability of the valve is obtained by having it tested independently on the conditions similar to its original testing.
 ★3. Product is made by Yuken Kogyo. If you have any inquiry, please contact our sales engineers.
 ★4. There is one model for low adj. pressure, 0.2 MPa (2~40 kgf/cm²), EBG-※-A-※-6007T, the max. flow is limited.

Graphic Symbol

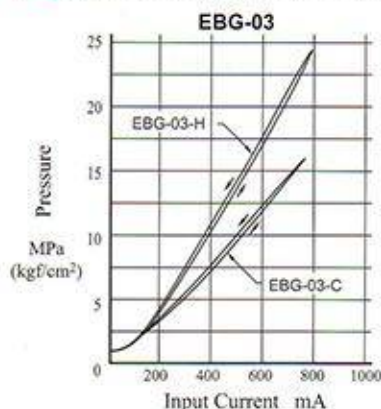


Without Safety Valve



With Safety Valve

Input Current vs Pressure (Ex)



Model Number Designation

Series Number (Sub-plate mounting)	EBG-03-C-T-※	Design Number
Valve Size		Safety Valve None: With Safety valve T: Without Safety Valve
Pressure Adjustment Range		
C: 0.6~16 MPa (6~160 kgf/cm ²)	EBG-03	
H: 0.6~25 MPa (6~250 kgf/cm ²)		
C: 0.9~16 MPa (9~160 kgf/cm ²)	EBG-06	
H: 0.9~25 MPa (9~250 kgf/cm ²)		
C: 1.1~16 MPa (11~160 kgf/cm ²)	EBG-10	
H: 1.1~25 MPa (11~250 kgf/cm ²)		

Sub-plate

Valve Model No.	Sub-plate Model No.	Piping Size Rc	Mass kg
EBG-03	BGM-03-20	3/8	2.4
	BGM-03X-20	1/2	3.1
EBG-06	BGM-06-20	3/4	4.7
	BGM-06X-20	1	5.7
EBG-10	BGM-10-20	1-1/4	8.4
	BGM-10X-20	1-1/2	10.3

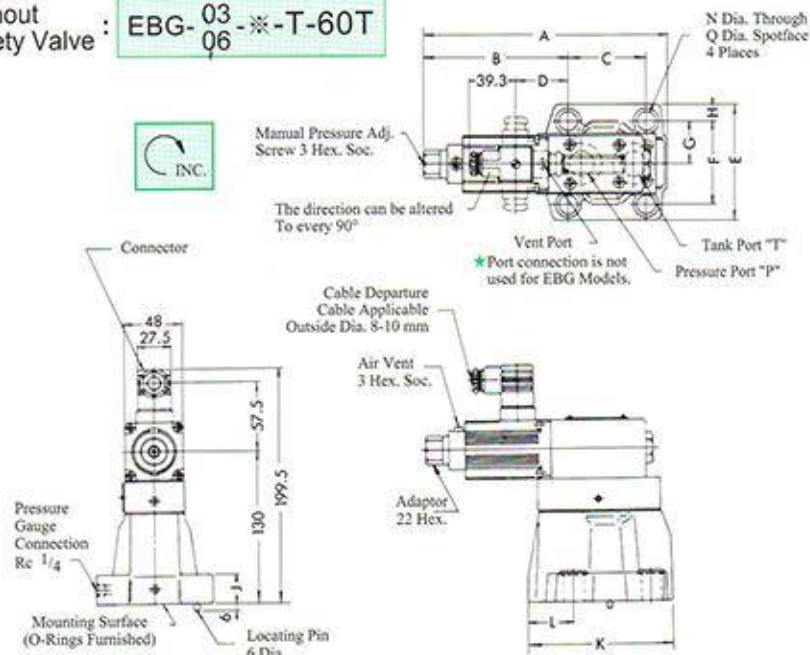
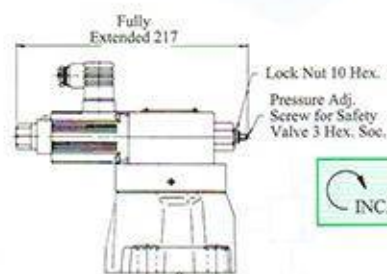
*Sub-plates are available. When ordering, please specify sub-plate model no. from the table above.

*Please refer to page 56 for dimensions.

Mounting Bolts (Attachment)

Model No.	Soc. Hd. Cap Screw (4 Pcs)	Tightening Torque N·m
EBG-03	M12 x 40 Lg	104 ~ 127
EBG-06	M16 x 50 Lg	253 ~ 310
EBG-10	M20 x 60 Lg	493 ~ 603

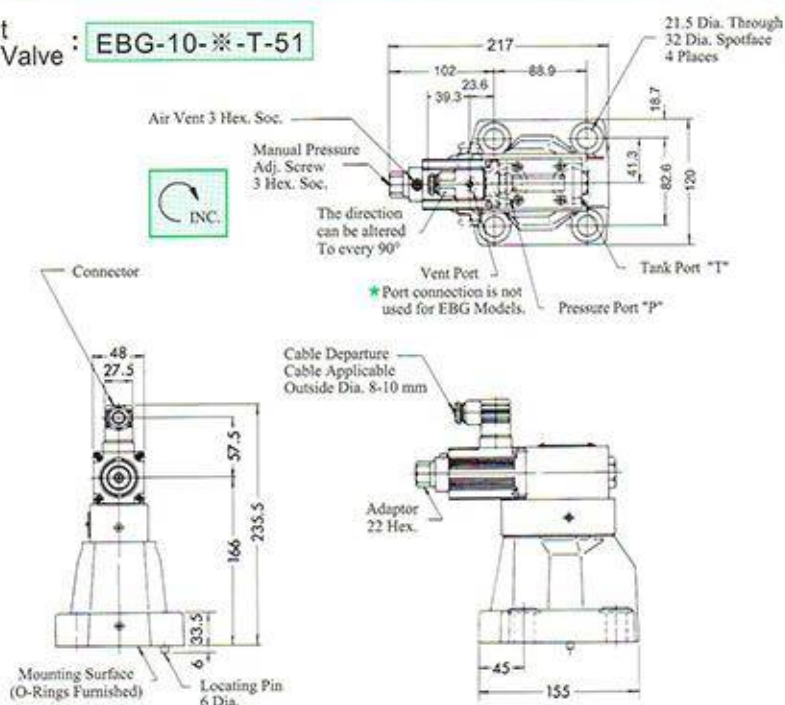
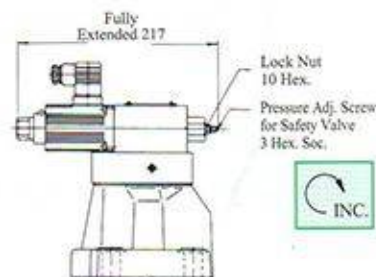
Proportional Relief Valves

Max. Pressure 25 MPa
**Without
Safety Valve :** EBG-03-※-T-60T

Mounting Surface:
EBG-03:ISO 6264-AR-06-2-A
EBG-06:ISO 6264-AS-08-2-A
With Safety Valve : EBG-03-※


For other dimensions, please see the figures shown left.

Model No.	A	B	C	D	E	F	G	H	J	K	L	N	Q
EBG-03	198.5	118.6	53.8	40.2	76	53.8	26.9	11.1	21.5	106	26.1	13.5	21
EBG-06	206.5	120.5	66.7	42.1	98	70	35	14	26	122	31	17.5	26

Note: For dimensions of mounting surface, please refer to BGM-03,06 type sub-plate (page 56).

**Without
Safety Valve :** EBG-10-※-T-51

Mounting Surface: ISO 6264-AT-10-2-A
With Safety Valve : EBG-10-※


For other dimensions, please see the figures shown left.

Note: For dimensions of mounting surface, please refer to BGM-10 type sub-plate (page 56).

Power Saving Valves

Max. Pressure 25 MPa

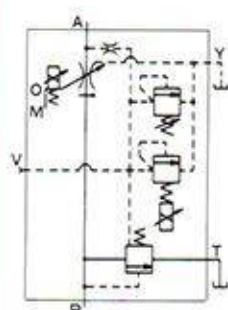

- This relief and flow control valve is an energy-saving valve that supplies the minimum pressure and flow necessary for actuator drive.

Specifications

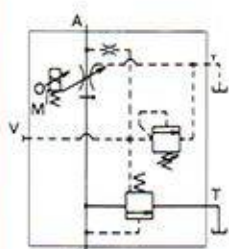
Model No.		EFBG-03-60	EFBG-03-125	EFBG-03-160	EFBG-06-250	EFBG-06-250A	EFBG-10-500	EFBG-10-500A
Description		※-20T145	※-20T145	※-20T145	※-20T145	※-20T145	※-20T49	※-20T49
Flow Controls	Max. Flow L/min	60	125	160	250	350	500	700
	Metered Flow Adjustment Range L/min	1~60	1~125	1~160	2.5~250	2.5~350	5~500	5~700
	Differential Pressure MPa (kgf/cm ²)	0.6 (6)			0.7 (7)		0.9 (9)	
	Hysteresis	Less than 7%★1						
	Repeatability	Less than 1%★2						
	Rated Current mA	670	560	700	540	700	700	800
Pressure Controls	Coil Resistance (20°C)Ω	43.5						
	Pressure Adjustment C	1.4~14 (14~140)			1.5~14(15~140)	2.0~14(20~140)	1.6~14(16~140)	2.5~14(25~140)
	Range MPa (kgf/cm ²) H	1.4~21 (14~210)			1.5~21(15~210)	2.0~21(20~210)	1.6~21(16~210)	2.5~21(25~210)
	Hysteresis	Less than 3%★1						
	Repeatability	Less than 1%★2						
	Rated C	730	730	750	730	740	780	750
	Current mA H	730	730	730	730	740	800	750
	Coil Resistance (20°C)Ω	10						
★3	Mass kg	16 (14)★4			30 (28)★4		60 (58)★4	

- ★1 The figures in the table above are obtained when used in conjunction with YUKEN's power amplifier.
- ★2 The repeatability of the valve is obtained by having it tested independently on the conditions similar to its original testing.
- ★3 The rating for pressure controls are applied to models with proportional pilot relief valve (EFBG-※-※-C/H).
- ★4 The mass with () mark is applied to models without proportional pilot relief valve (EFBG-※-※-※).
- ★5 Without Proportional Pilot Relief Valve, Max. Pressure can reach 25 MPa (250 kgf/cm²).
- ★6 The air vent should be screwed to the up position and released air fully to reach stable pressure.

Graphic Symbol



With Proportional Pilot Relief Valve



Without Proportional Pilot Relief Valve

Model Number Designation

Series Number (Sub-plate Mounting)	EFBG-03-125-C-※	Design Number
Valve Size: 03, 06, 10		Proportional Pilot Relief Valve
Max. Metered Flow		Pressure Adjustment Range
03:60, 125, 160		C } See Specifications
06:250, 250A (350 L/min)		H } See Specifications
10:500, 500A (700 L/min)		None: Without Proportional Pilot Relief Valve

Applicable Power Amplifiers(Options)

Valve Model No.	Power Amplifiers Model No	
	For Flow Control	For Pres. Control
EFBG-※-※- $\frac{C}{H}$	★ AME-D2-H1-※-12	

★ Product is made by Yuken Kogyo. (See page 156)

Mounting Bolts (Attachment)

Model No.	Soc. Hd. Cap Screw (4Pcs)	Tightening Torque N·m
EFBG-03	M10 x 100 Lg	60~74
EFBG-06	M16 x 130 Lg	253~310
EFBG-10	M20 x 130 Lg	493~603

Sub-plate

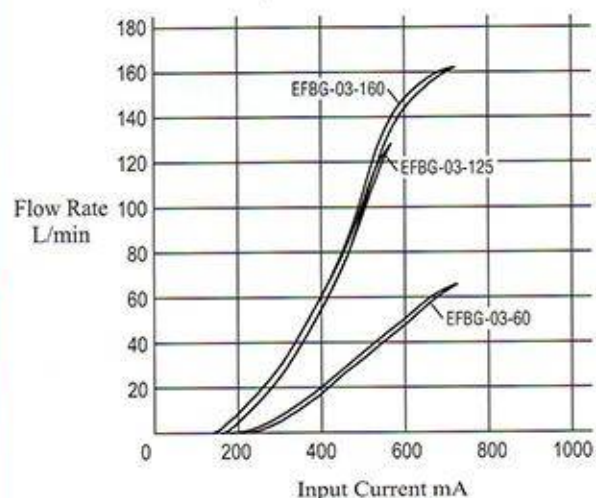
Valve Model No.	Sub-plate Model No.	Piping Size	Mass kg
EFBG-03	EFBGM-03Y-10	Rc 3/4	6
	EFBGM-03Z-10	Rc 1	
EFBG-06	EFBGM-06X-10	Rc 1	12.5
	EFBGM-06Y-10	Rc 1-1/4	16
EFBG-10	EFBGM-10Y-10	1-1/2 or 2 flange mounting ★	37

- Sub-plates are available. When ordering, please specify sub-plate model no. from the table above (page 140).
- ★ When ordering EFBGM-10Y-10, please use F3 pipe flange, or contact our sales engineer.

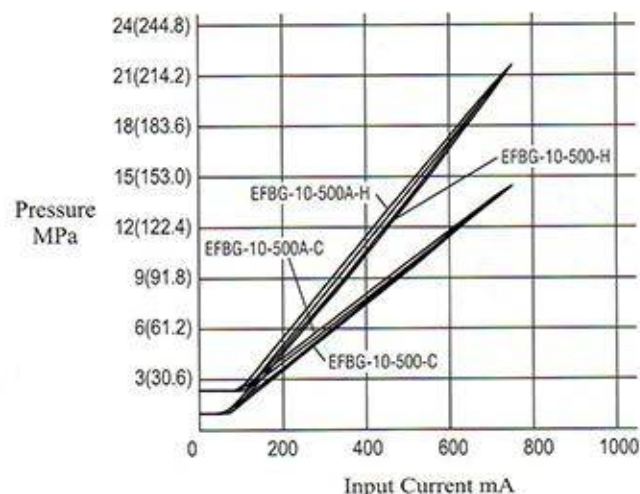
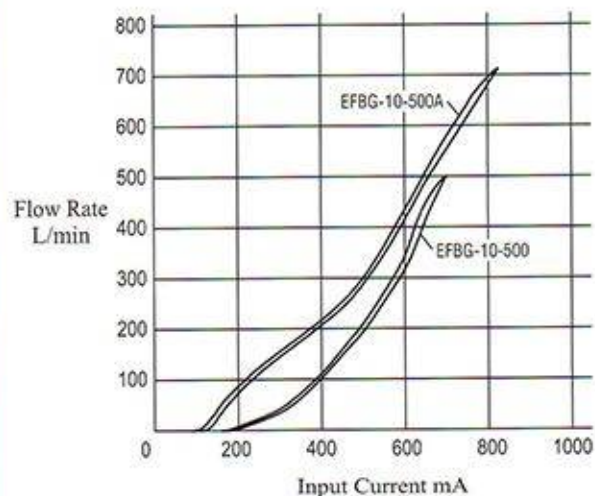
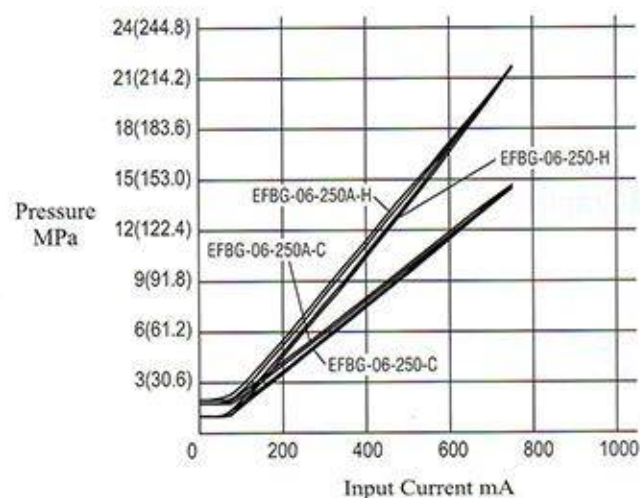
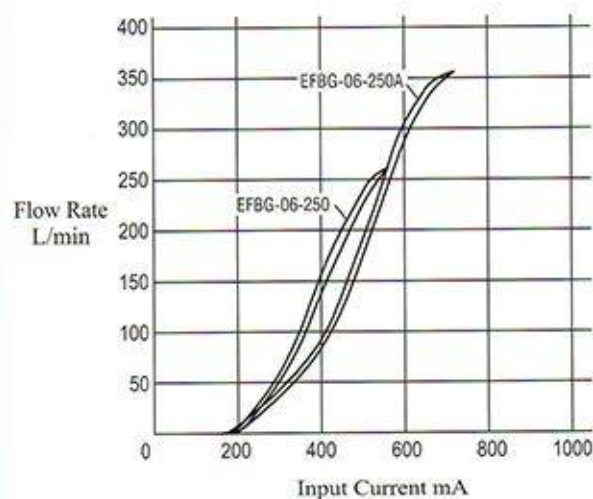
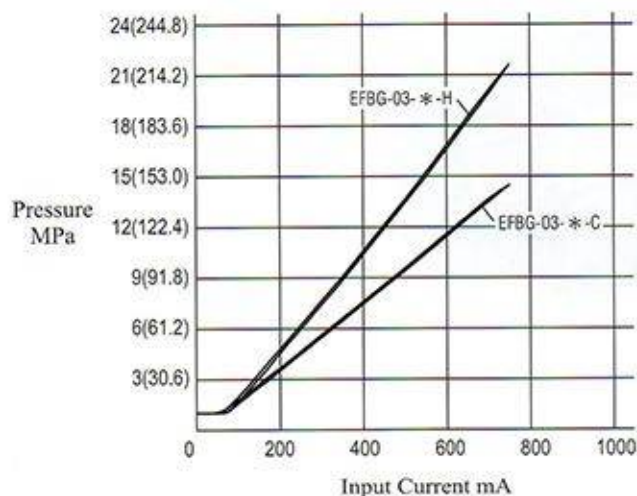
Power Saving Valves

Max. Pressure 25 MPa

EFBG-*-20T145
Input Current vs. Flow



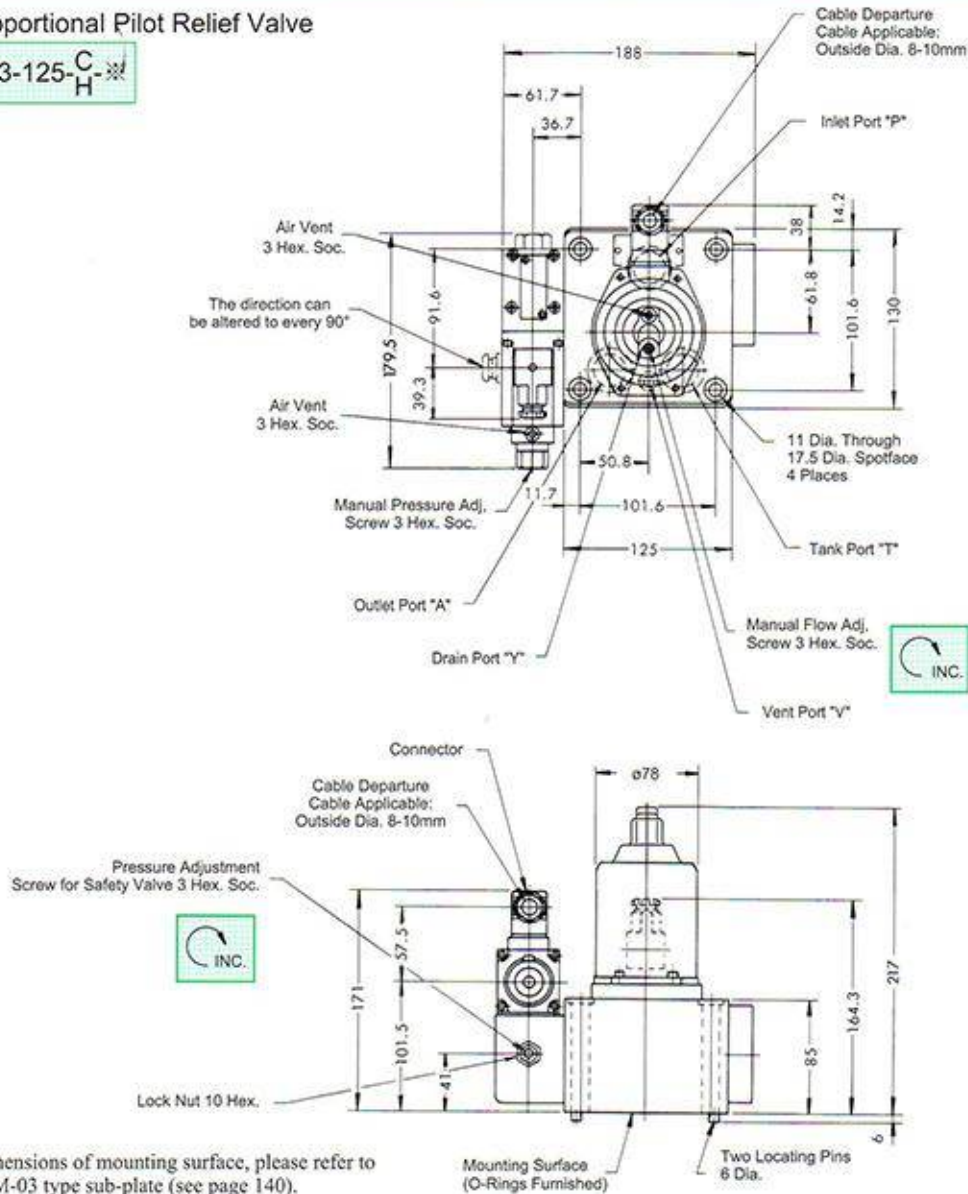
EFBG-*-20T145
Input Current vs. Pressure



Power Saving Valves

Max. Pressure 25 MPa

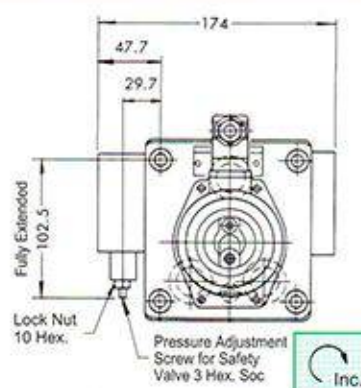
With Proportional Pilot Relief Valve

EFBG-03-125-C_H-※

Note: For dimensions of mounting surface, please refer to EFBGM-03 type sub-plate (see page 140).

Without Proportional Pilot Relief Valve

EFBG-03-125-※



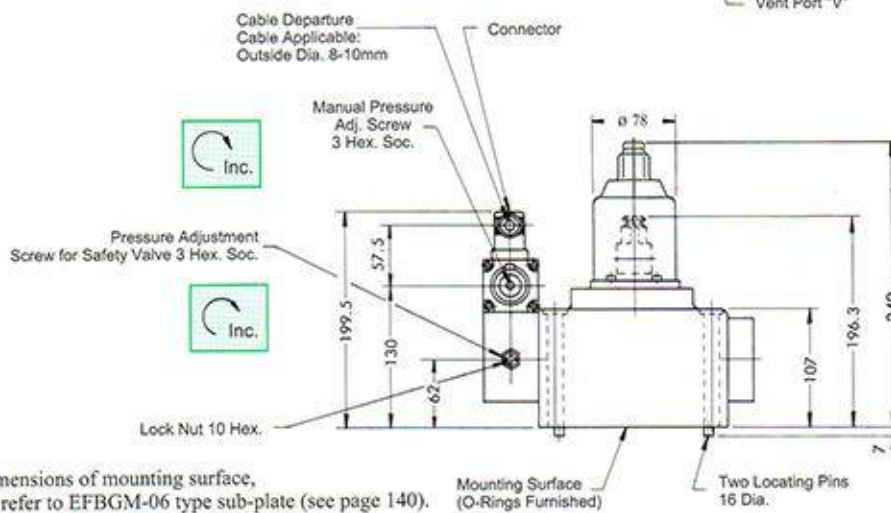
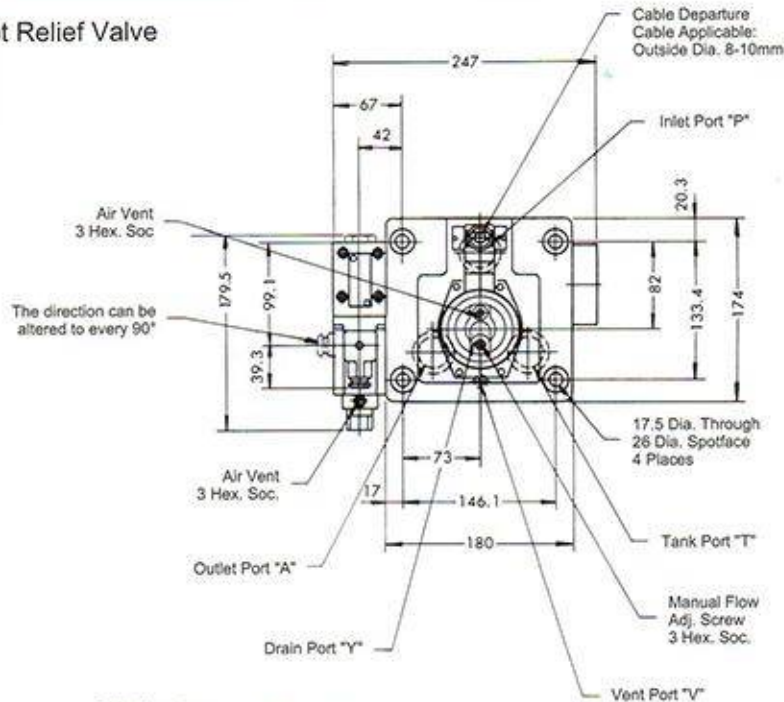
For other dimensions,
please refer to the drawing above.

Power Saving Valves

Max. Pressure 25 MPa

With Proportional Pilot Relief Valve

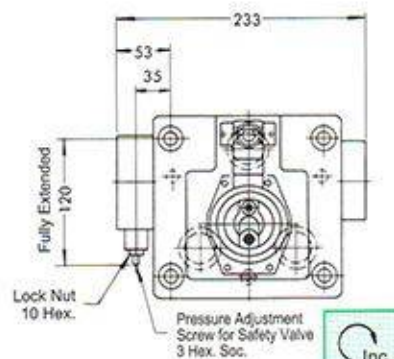
EFBG-06-250- $\frac{C}{H}$



Note: For dimensions of mounting surface, please refer to EFBGM-06 type sub-plate (see page 140).

Without Proportional Pilot Relief Valve

EFBG-06-250- $\frac{C}{H}$



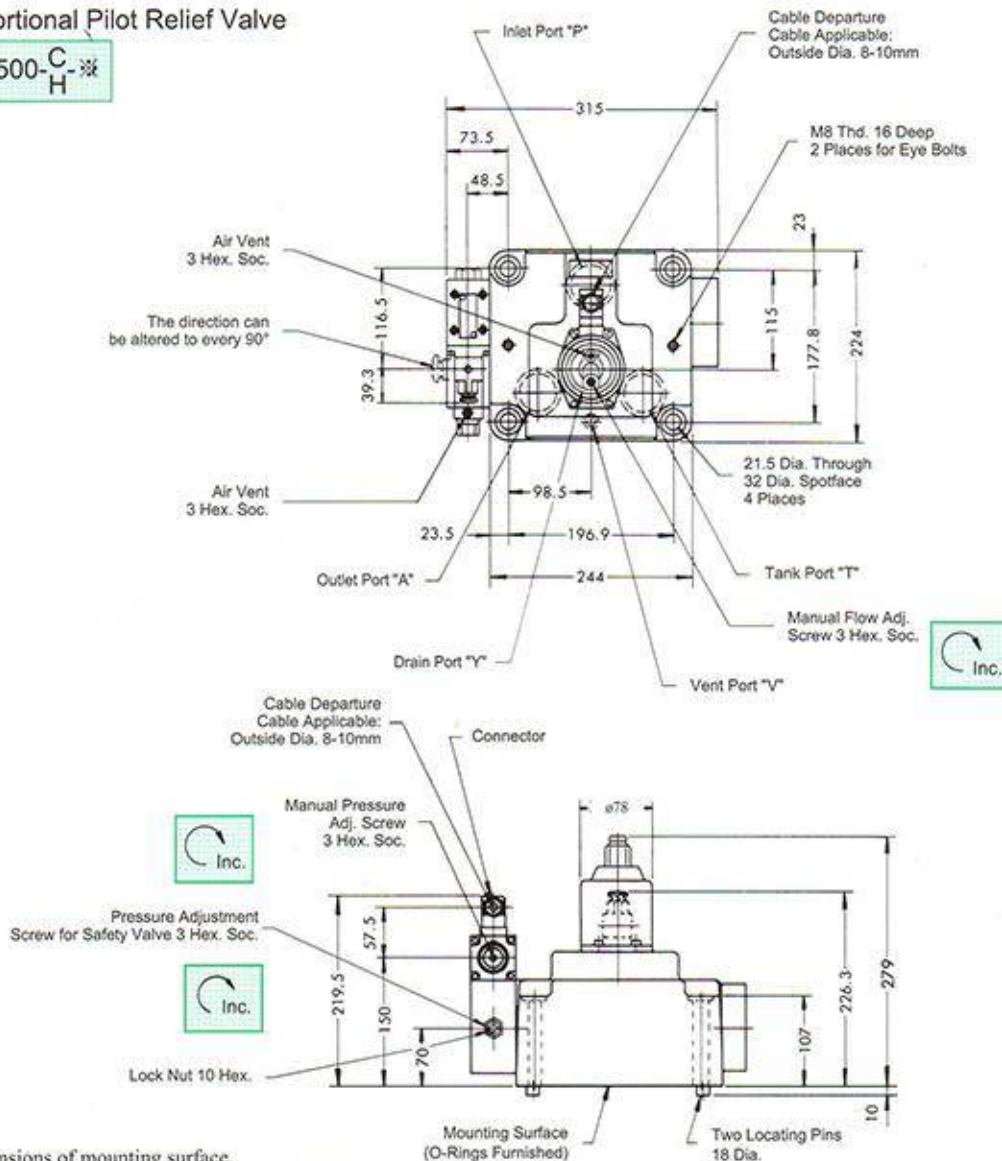
For other dimensions, please refer to the drawing above

Power Saving Valves

Max. Pressure 25 MPa

With Proportional Pilot Relief Valve

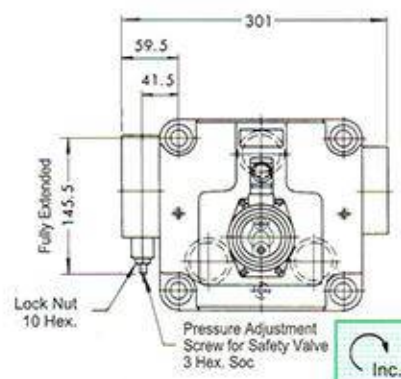
EFBG-10-500- $\frac{C}{H}$ -※



Note: For dimensions of mounting surface, please refer to EFBGM-10 type sub-plate (see page 140).

Without Proportional Pilot Relief Valve

EFBG-10-500-※



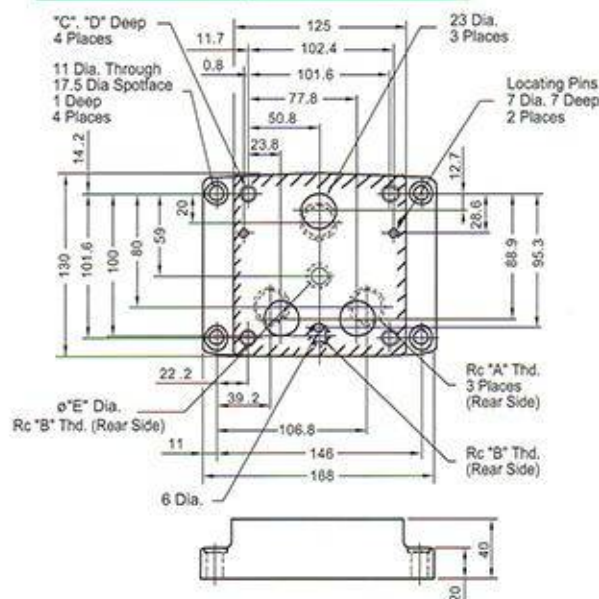
For other dimensions, please refer to the drawing above

Power Saving Valves

Max. Pressure 25 MPa

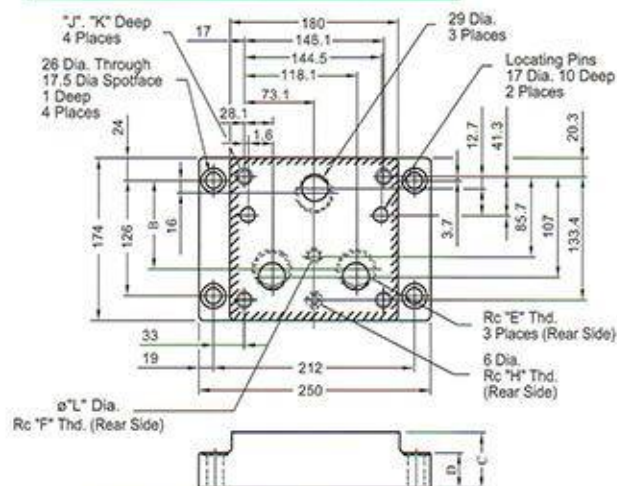
Sub-Plate

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



Model No.	Piping Size		Dimension mm	D	E
	"A"	"B"			
EFBGM-03Y-10	Rc 3/4	Rc 1/4	M10	18	11
EFBGM-03Z-10	Rc 1				
EFBGM-03Y-1080	3/4 BSP.F	1/4 BSP.F			11.7
EFBGM-03Z-1080	1 BSP.F				
EFBGM-03Y-1090	3/4 NPT	1/4 NPT	3/8-16 UNC	21	11
EFBGM-03Z-1090	1 NPT				

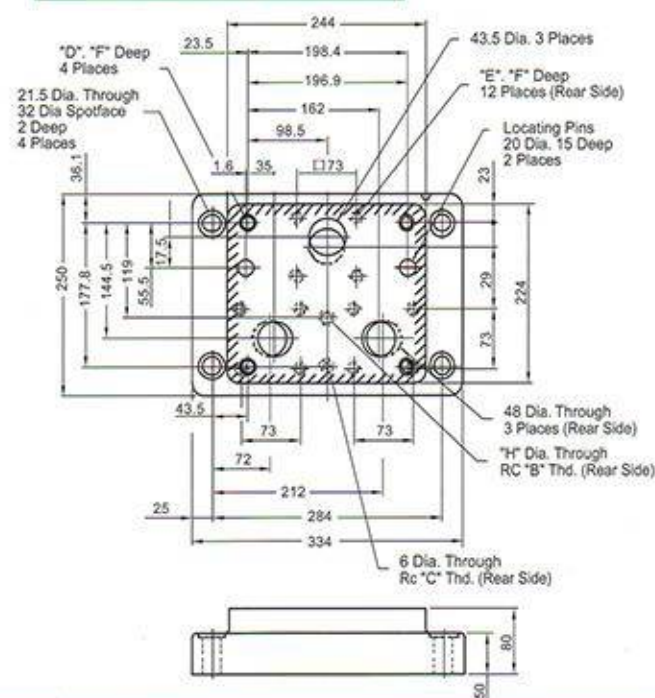
EFBGM-06X / 06Y-10 / 1080 / 1090



Model No.	Dimension mm		
	B	C	D
EFBGM-06X	103.3	45	35
EFBGM-06Y	95	60	40

Model No.	Piping Size			Dimension mm	K	L
	"E"	"F"	"H"			
EFBGM-06X-10	Rc 1	Rc 3/8	Rc 1/4	M16	30	14
EFBGM-06Y-10	Rc 1-1/4					
EFBGM-06X-1080	1 BSP.P	3/8 BSP.F	1/4 BSP.F	M16	30	15.2
EFBGM-06Y-1080	1-1/4 BSP.F					
EFBGM-06X-1090	1 NPT	3/8 NPT	1/4 NPT	5/8-11 UNC	35	14
EFBGM-06Y-1090	1-1/4 NPT					

EFBGM-10Y-10 / 1080 / 1090



Model No.	Piping Size		"D"	"E"
	"B"	"C"		
EFBGM-10Y-10	Rc 3/8	Rc 1/4	M20	M16
EFBGM-10Y-1080	3/8 BSP.F	1/4 BSP.F		
EFBGM-10Y-1090	3/8 NPT	1/4 NPT		

Model No.	Dimension mm	
	F	H
EFBGM-10Y-10	32	14
EFBGM-10Y-1080		15.2
EFBGM-10Y-1090	34	14

Power Saving Valves (10Ω~10Ω) Max. Pressure 25 MPa



This relief and flow control 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 adjustment valve.

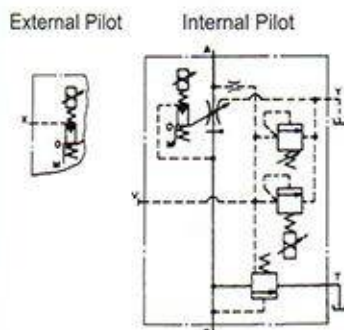
Further, since a temperature compensation function is incorporated, this valve provides consistent flow control without regard to the fluid temperature.

Specifications

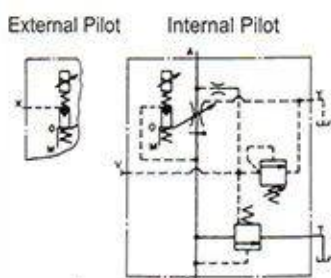
Description		Model Numbers	EFBG-03-125-C-E-60T248
Max. Operating Pressure	MPa (kgf/cm ²)		25 (250)
Max. Flow	L/min		125
Metered Flow Adjustment Range	L/min		1~125
Min. Pilot Pressure	MPa (kgf/cm ²)		1.5 (15.3)
Pilot Flow L/min	at Normal		1
	at Transition		3
Flow Controls	Rated Current	mA	800
	Coil Resistance	(20°C)Ω	10
	Differential Pressure	MPa (kgf/cm ²)	0.6(6.1)
	Hysteresis		Less than 3%
	Repeatability		1%
Pressure Controls	Pres. Adj. Range	MPa(kgf/cm ²)	C : 1.2 - 16 (12~160)
			H : 1.4 - 25 (14~250)
	Rated Current	mA	C : 890 'H : 970
	Coil Resistance	(20°C)Ω	10
	Hysteresis		Less than 2%
	Repeatability		1%

Graphic Symbol

With Proportional Pilot Relief Valve



Without Proportional Pilot Relief Valve



★ 1. The specifications for pressure controls are applied to models with proportional pilot relief valve. (Ex. EFBG-03-125-C-E-60T)

★ 2. The maximum pressure adjustment range of the models without proportional pilot relief valves is 25 MPa (250 kgf/cm²) (Ex. EFBG-03-125-C-E-60T)

3. Drain back pressure: Check that the drain back pressure does not exceed 0.2 MPa (2.0 kgf/cm²)

4. 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 does not exceed 0.5 MPa (5.1 kgf/cm²)

5. 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 (20.4 kgf/cm²). Please adjust the pressure of the valve so preset to meet the pressure to be used actually.

Applicable Power Amplifiers (Options)

Valve Model No.	Power Amplifiers Model No	
	For Pres. Control	For Flow Control
EFBG-03-125-(E)	-	★ AMN-D-20T
EFBG-03-125-C-(E)	★ AMN-D-20T	★ AMN-D-20T

1. For stable performance, it is recommended that Yuken's applicable power amplifiers be used.

2. ★ Please refer to page 157

Sub-plate

Valve Model No.	Sub-plate Model No.	Piping Size	Mass kg
EFBG-03	EFBGM-03Y-20	Re 3/4	6
	EFBGM-03Z-20	Re 1	

* Please refer to page 141 for dimension details.

Mounting Bolts (Attachment)

Model No.	Soc. Hd. Cap Screw (4 Pcs)	Tightening Torque N·m
EFBG-03	M10 x 65 Lg	60 ~ 74

Model Number Designation

EFBG-03-125-C-E-60T248

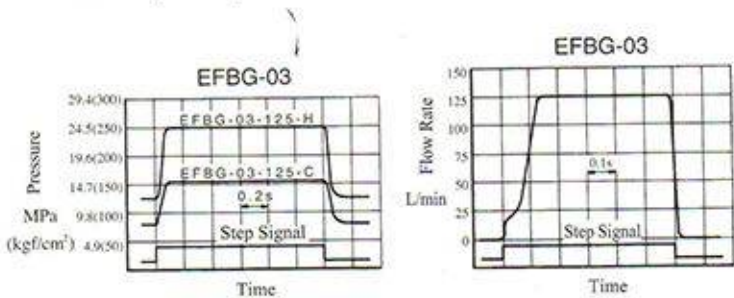
Series Number (Sub-plate Mounting)
Valve Size: 03
Max. Metered Flow: 125
Proportional Pilot Relief Valve Pressure Adjustment Range
C } See Specifications above
H }
None: Without Proportional Pilot Relief Valve

Design Number
Pilot Connection
None: Internal Pilot
E: External Pilot

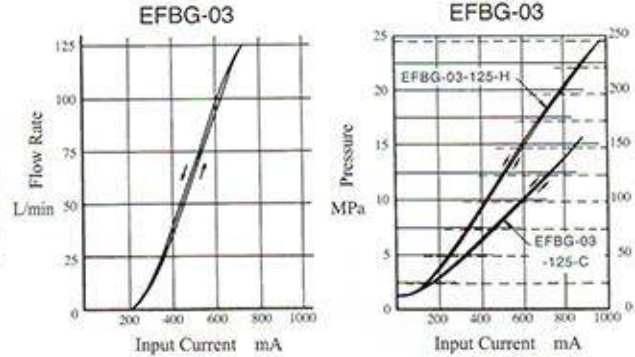
Power Saving Valves (10Ω~10Ω) Max. Pressure 25 MPa

Step Response of Flow & Pressure Controls

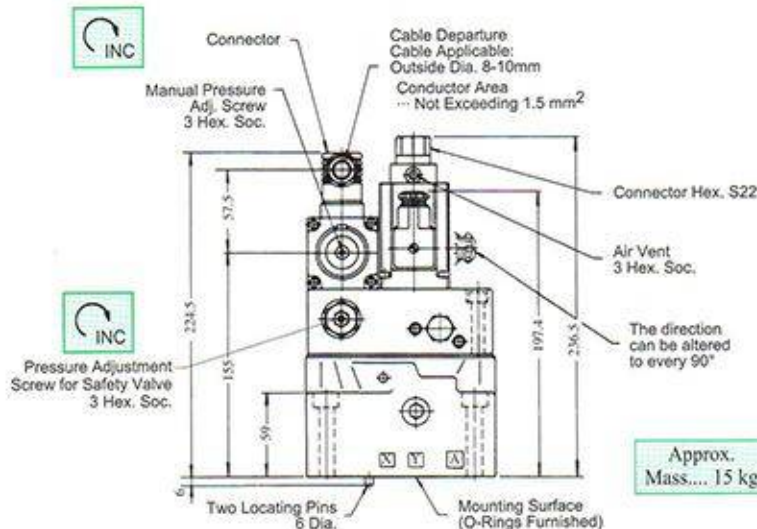
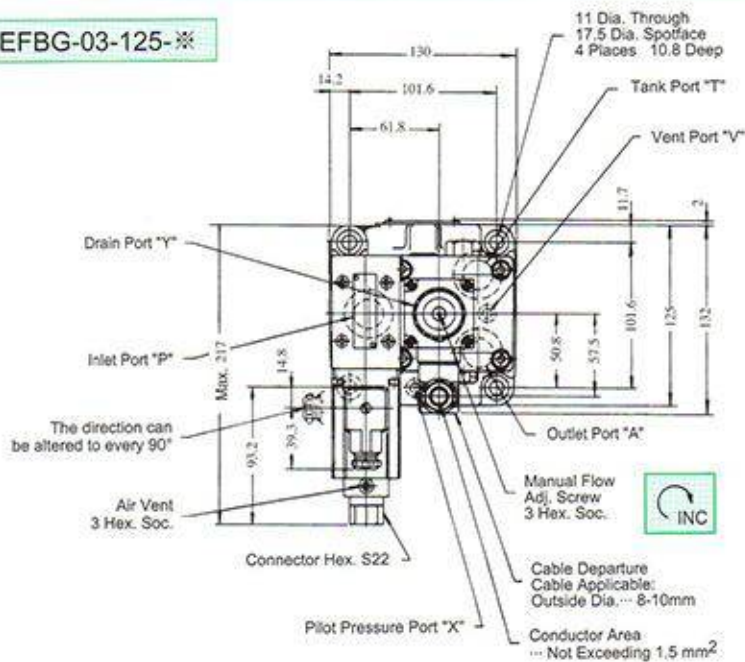
Flow & Pressure VS Input Current



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

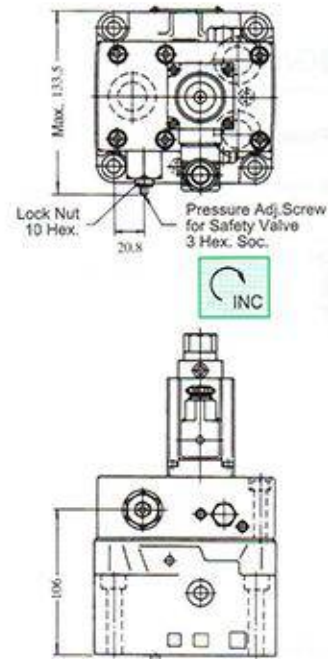


EFBG-03-125-※



Approx. Mass... 15 kg

EFBG-03-125-(E)



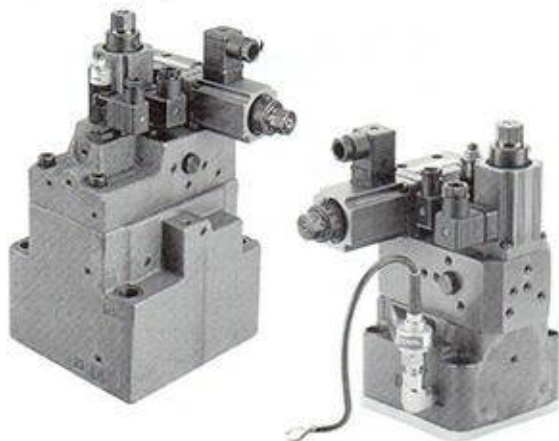
• For other dimensions, please refer to the models with Proportional Pilot Relief Valve.

Approx. Mass... 14 kg

High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

Max. Pressure 25 MPa

ELFB(C)G



- This valve is a closed-loop control Proportional Electro-Hydraulic valves. Closed-loop control achieves high response, high precision and high performance (flow control and pressure control). We have completed the series, 4 models, the max. flow from 125 L/min to 600 L/min.
- The flow control of this series was adopted by a new developed small solenoid, together with spool-position-detection LVDT & pressure sensor. It can detect the position and flow of the flow control spool and respond to the control system. It can perfectly achieve high response, high precision and high performance closed-loop control. (flow response is standard, pressure response is options.)
- ELFB(C)G-06 was designed by big flow, and the max. flow of this valve can reach 600 L/min. The dimension and weight of this valve are smaller than traditional valves and it will help to make equipment smaller and lighter.

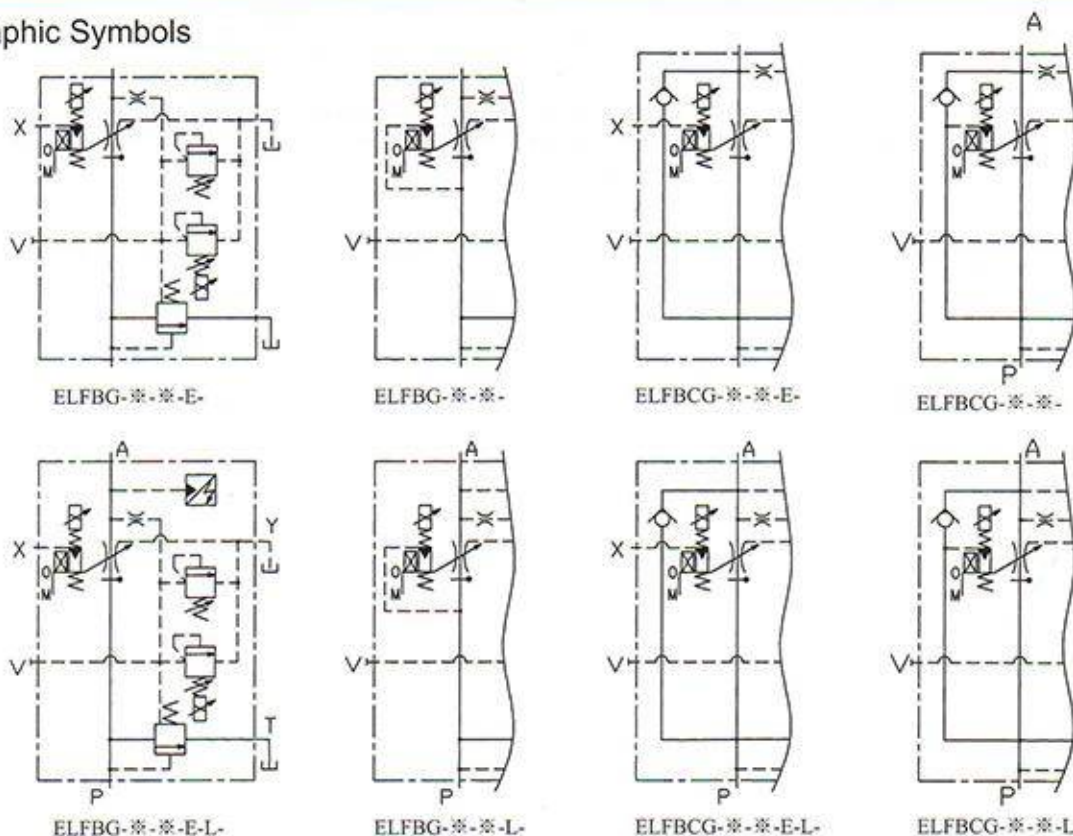
E

Model Number Designation

* There is also low pressure type (T340) for options. Please contact our sales engineers.

ELFB	G	-03	-125	-C	-E	-L	-20T
Series Number	Type of Mounting	Valve Size	Max. Metred Flow L/min	Proportional Pilot Relief Valve Pressure Adj. Range	Pilot Connection	Pressure Closed-Loop	Design Number
ELFB : Proportional Electro-Hydraulic Flow Control and Relief Valve ELFBC : Proportional Electro-Hydraulic Flow Control and Relief Check Valve	G : Sub-plate Mounting	-03	125 : 125 L/min 170 : 170 L/min	C : 1.2~16 MPa H : 1.2~21 MPa C : 2.0~18 MPa H : 2.0~21 MPa	None : Internal Pilot E : External Pilot	None : Open-Loop L : Pressure Closed-Loop	-20T *
		-06	300 : 300 L/min 600 : 600 L/min	C : 1.2~16 MPa H : 1.2~21 MPa			

Graphic Symbols



High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

Max. Pressure 25 MPa

Specifications

Model Numbers		ELFB(C)G-03-125	ELFB(C)G-03-125	ELFB(C)G-03-170	ELFB(C)G-03-170	ELFB(C)G-06-300	ELFB(C)G-06-300	ELFB(C)G-06-600	ELFB(C)G-06-600	
Description		-※-※-20T	-※-※-L-20T	-※-※-20T	-※-※-L-20T	-※-※-20T	-※-※-L-20T	-※-※-20T	-※-※-L-20T	
Max.Operating Pressure		25 MPa								
Max. Flow		125 L/min		170 L/min		300 L/min		600 L/min		
Metred Flow Adjustment Range		1~125 L/min		1~170 L/min		2.5~300 L/min		5~600 L/min		
Min. Pilot Pressure		1.5 MPa								
Pilot Flow	at Normal	1 L/min				1 L/min				
	at Transition	3 L/min				6 L/min				
Flow Controls	Differential Pressure	0.6~0.8 MPa		0.85~1 MPa		0.7~0.9 MPa		0.85~0.95 MPa		
	Hysteresis	Less then 0.5 %								
	Repeatability	Less then 0.5 %								
	Step	0→100%V	0.110 s		0.125 s		0.150 s		0.170 s	
	Response	100%→0V	0.150 s		0.150 s		0.150 s		0.150 s	
	Input Signal	DC10V at MAX. Q								
	Coil Resistance	4 Ω								
	Power Input (Max.)	25 W								
Pressure Controls	Pres. Adj. Range	C:1.6~16 MPa ; H:1.6~21 MPa		C:2.3~18 MPa ; H:2.3~21 MPa		C:1.6~16 MPa ; H:1.6~21 MPa				
	Hysteresis	Less then 2%	Less then 1%	Less then 2%	Less then 1%	Less then 2%	Less then 1%	Less then 2%	Less then 1%	
	Repeatability	Less then 1%	Less then 0.5%	Less then 1%	Less then 0.5%	Less then 1%	Less then 0.5%	Less then 1%	Less then 0.5%	
	Step	0→100%V	0.115 s	0.100 s	0.135 s	0.110 s	0.120 s	0.100 s	0.135 s	0.110 s
	Response	100%→0V	0.175 s	0.125 s	0.170 s	0.125 s	0.170 s	0.125 s	0.170 s	0.125 s
	Rated Current	880 mA	-	940 mA	-	850 mA	-	820 mA	-	
	Coil Resistance	10 Ω								
	Power Input (Max.)	10 W								
Ambient Temperature		0~50 °C								
Ambient Humidity		30~90 %								
Approx. Mass		15 kg	15.3 kg	15 kg	15.3 kg	35 kg	35.3 kg	35 kg	35.3 kg	

Note 1. The above specifications was tested with Yuken-specialized amplifier. Input voltage vs flow & Input current vs pressure are collocated by valves and amplifiers but there will be some inaccuracy in performance. Please adjust the "NULL" & "SPAN" on the amplifier. The actual performance will vary according to different circuit.

Note 2. Evaluation for flow and pressure step response. (1) the time of flow step response up: when the sleeve seat ass'y closed, flow-controlled spool opened, the time to reach setting flow. To evaluate the time of flow up, not only the response time of flow-controlled spool, but also the response time of the sleeve seat ass'y. The pilot pressure should be over 1.5MPa to meet the above up time and the input current should be 1.4V ~ 1.5V. (2) the time of flow step response down: The valve is made by meter in. When the flow-controlled spool closed, there will be no flow to A port, so we evaluate the response time by flow-controlled spool. (3) the time of pressure step response: evaluate by the response time of A port pressure.

Note 3. The back pressure of return piping and drain will directly influence the min. adjusting pressure or flow adjusting spool. Therefore, don't connect the return or drain piping with other piping but connect to the tank. It will make the back pressure as low as possible. Make sure the end of the return and drain piping immersed in the fluid and the drain back pressure should be under 0.2 MPa.

Note 4. In order to prevent setting pressure unstable, flow rate should not be less than 15 L/min and the return back pressure should not be higher than 0.5 MPa.

Note 5. The preset pressure of safety valve should be set 2 MPa higher than the Max. adjusting pressure. While operating, the pressure should be preset according to the working pressure. After presetting, please lock the adj. screw.

Note 6. In order to keep flow control and pressure control stable, release the air vent of the coil and LVDT gradually. Let the air out completely and fluid flow into the coil, then lock the screws of the air vent.

Note 7. Use LVDT to make flow adjusting spool positioning. LVDT has been set at zero exwork and please do not to adjust it.

Note 8. At first adjustment or electric shut down and no current into the valve, you can use manual adj. screw to adjust the pressure and flow. However, under normal situations, the screws should be loosened to the beginning position.

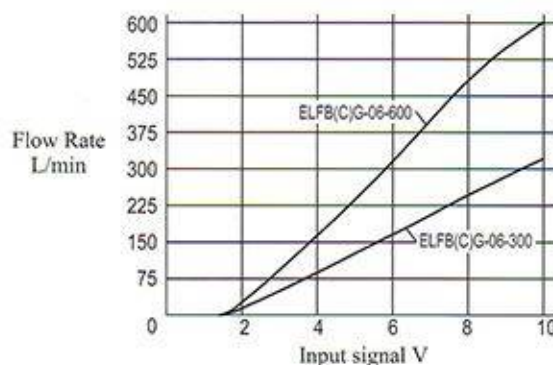
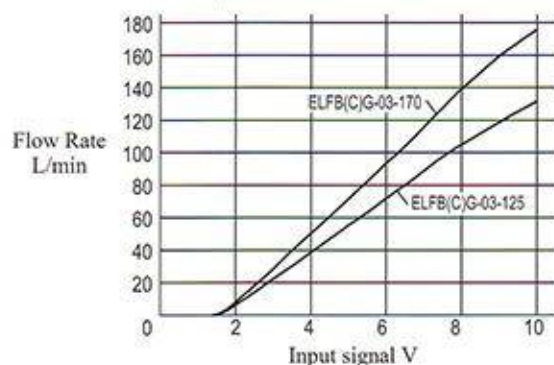
Note 9. Please confirm the wiring between valve and amplifier is correct. Please operate the valve 15 minute after the electric is on to make sure the amplifier stable. Please use two separate power supply for the amplifiers.

High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

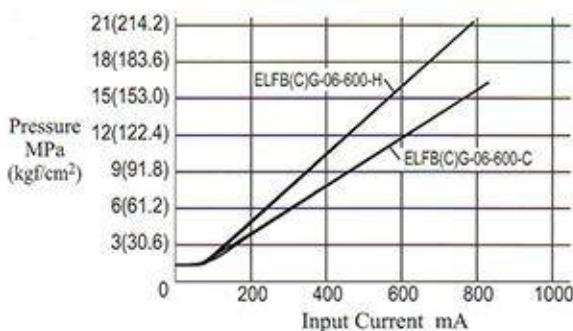
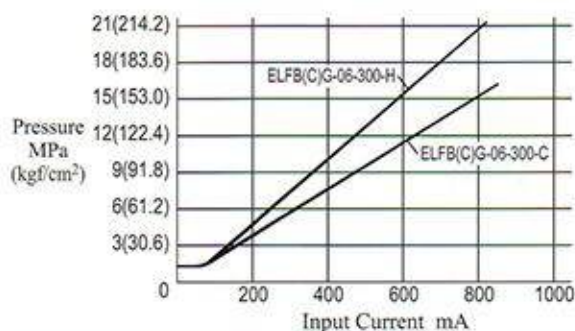
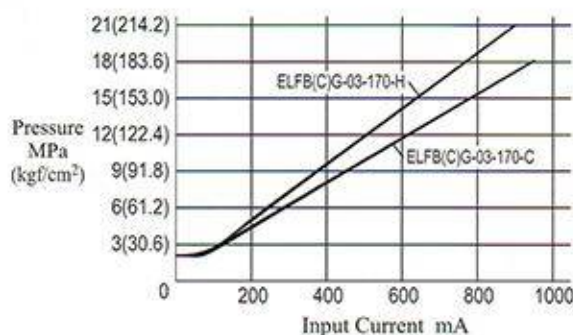
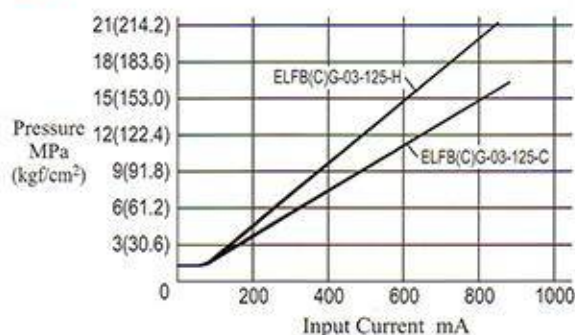
Max. Pressure 25 MPa

E

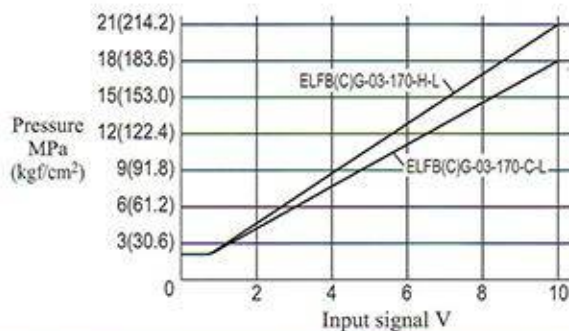
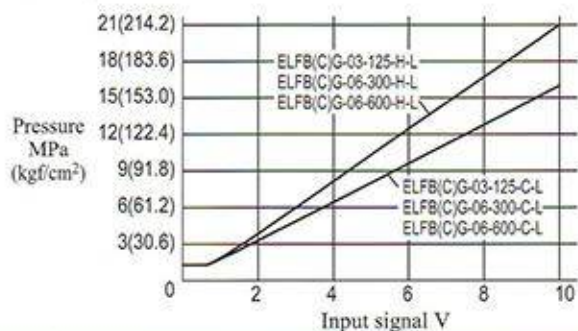
Input Current vs. Flow (with flow closed-loop)



Input Current vs. Pressure (without pressure closed-loop)



Input Current vs. Pressure (with pressure closed-loop)



High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

Max. Pressure 25 MPa

■ ELFBG-03
■ ELFBG-03

Pressure Adjustment Screw
for Safety Valve 3 Hex. Soc.
Lock Nut 10 Hex.



Air Vent (For LVDT)
2.5 Hex. Soc.

Inlet Port "P"

Drain Port "Y"

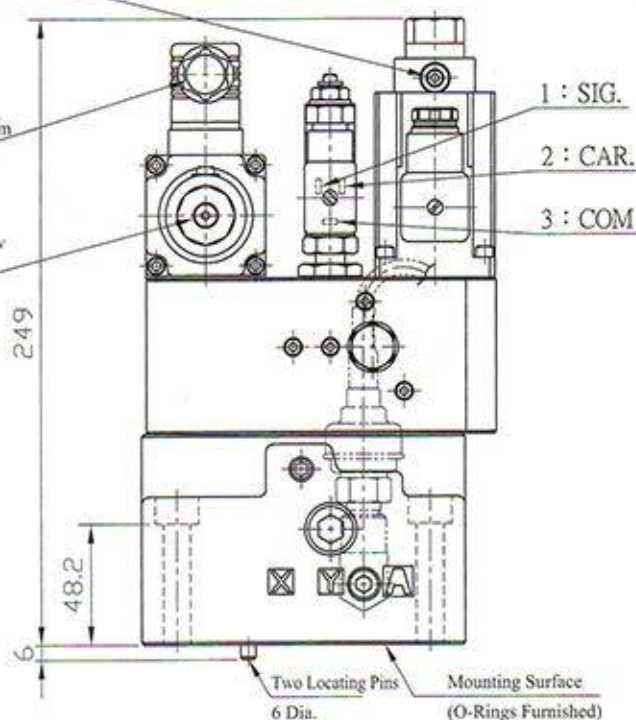
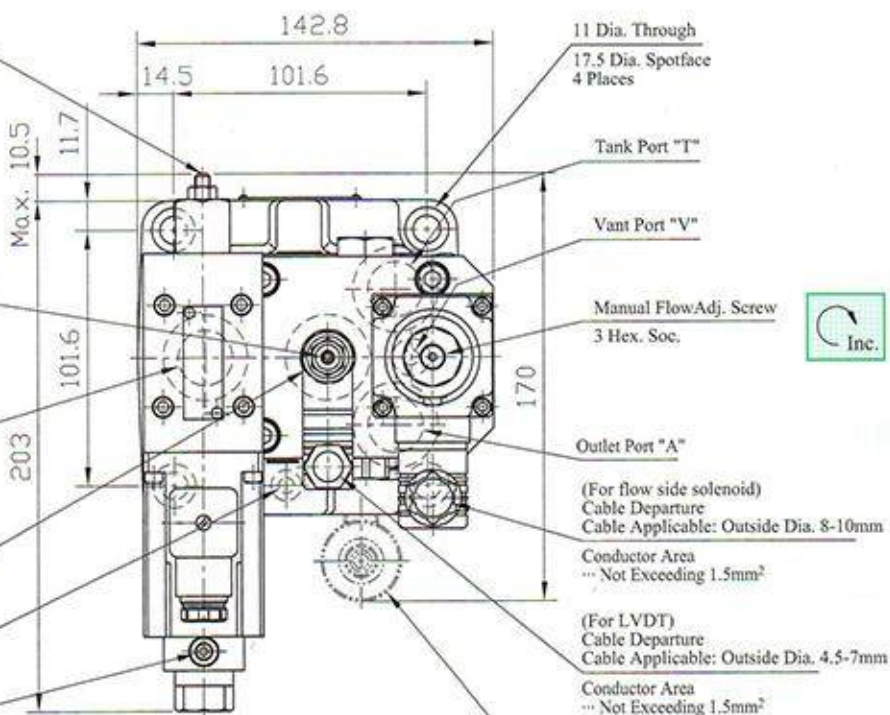
Pilot Pressure
Port "X"

Air Vent 3 Hex. Soc.
(For pressure side solenoid)

(For flow side solenoid)
Air Vent 3 Hex. Soc.

(For pressure side solenoid)
Cable Departure
Cable Applicable: Outside Dia. 8-10mm
Conductor Dimensions:
Less than 1.5mm

Manual Pressure Adj. Screw
3 Hex. Soc.

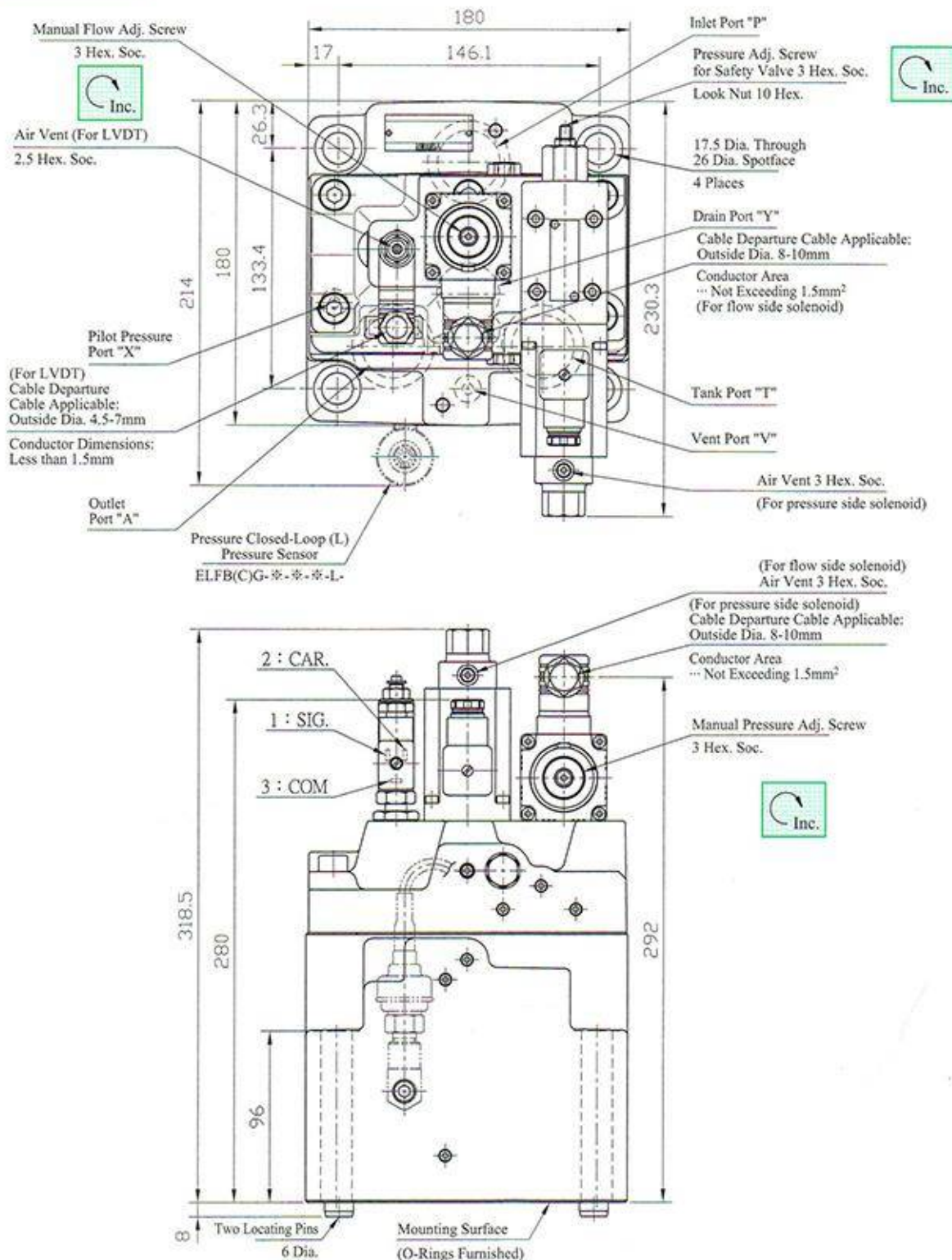


High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

Max. Pressure 25 MPa

E

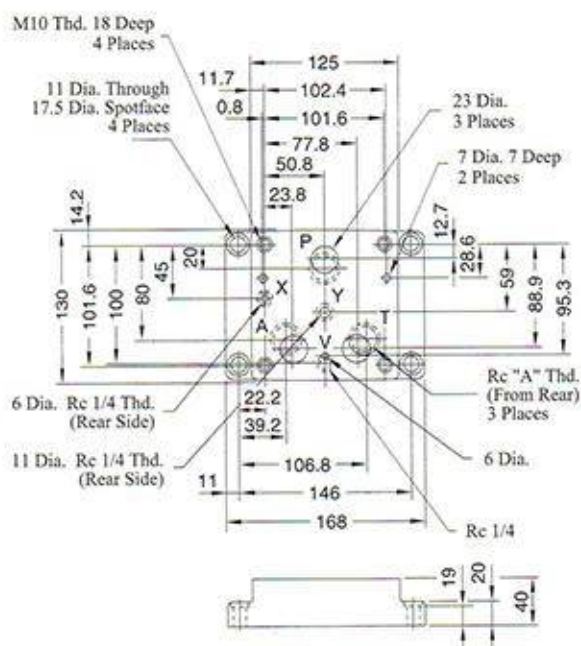
- ELFBG-06
- ELFBCG-06



High Performance Proportional Electro-Hydraulic Relief And-Flow Control Valves

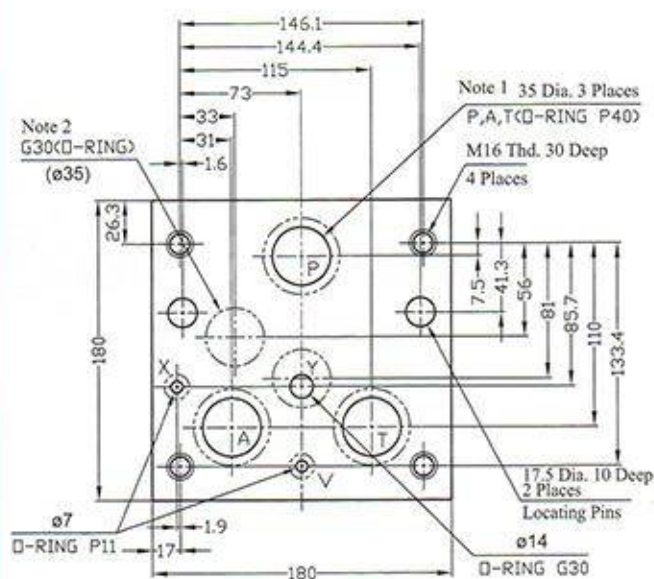
Max. Pressure 25 MPa

**EFBGM-03Y-20
03Z-20**



Model Number	A
EFBGM-03Y-20	3/4
EFBGM-03Z-20	1

ELFB(C)G-06



Note: 1. The P, A, T port of the sub-plate should be drilled with Ø35, because the flow passes through ELFB(C)G-06 is big.
Note: 2. Do not drill the position under G30 O-RING, Ø35 on the sub-plate.

Sub-plate

Valve Model No.	Sub-plate Model Number	Thread Size	Approx. Mass kg
ELFB(C)G-03	EFBGM-03Y-20	Rc 3/4	6
	EFBGM-03Z-20	Rc 1	6

Mounting Bolts (Attachment)

Valve Model No.	Socket Head Cap Screw (4 pcs)	Tightening Torque N·m
ELFB(C)G-03	M10 x 65 Lg	60~74
ELFB(C)G-06	M16 x 120 Lg	253~310

Applicable Power Amplifiers

Model Numbers	Power Amplifier Model Numbers			
	For Flow Control	Page	For Pres. Control	Page
ELFB(C)G-03-125-※	SK1115-1-30T	159	AMN-D-20T	157
ELFB(C)G-03-125-※-L			AMN-D-L-20T	158
ELFB(C)G-03-170-※	SK1115-2-30T	159	AMN-D-20T	157
ELFB(C)G-03-170-※-L			AMN-D-L-20T	158
ELFB(C)G-06-300-※	SK1115-3-30T	159	AMN-D-20T	157
ELFB(C)G-06-300-※-L			AMN-D-L-20T	158
ELFB(C)G-06-600-※	SK1115-4-30T	159	AMN-D-20T	157
ELFB(C)G-06-600-※-L			AMN-D-L-20T	158

Proportional Electro-Hydraulic Directional and Flow Control Valves

Max. Pressure 25 MPa


Graphic Symbol



Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used AMN-W-10T. (For details see P164.)

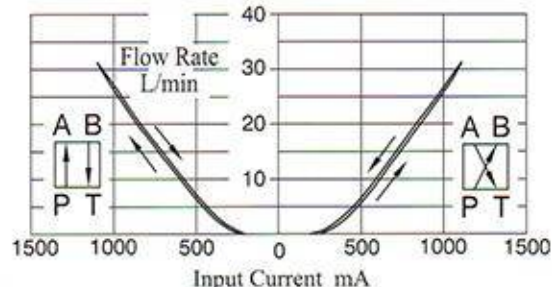
Note

- To ensure stable control, bleed the air from solenoid completely and fill the iron core with oil. For this purpose, it is recommended to provide the drain line with a check valve having a cracking pressure about 0.04 MPa.
- T Port back pressure effect the operating ability of the spool directly, so that tank line couldn't be connected with other pipe, must be connected with the tank.
- In the event of an electric fault 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, only for direction function.

Input current vs Flow

Viscosity: 30mm²/s

Valve pressure difference: 7.0 MPa



Sub-plate

Sub-plate Model No.	Piping Size (Rc)
DSGM-01-30	1/8
DSGM-01X-30	1/4
DSGM-01Y-30	3/8

- Sub-plate are available. Specify the sub-plate model number from the table above, when sub-plates are not used, the mounting surface must be process under 6-S (Ra1.6)
- Please refer to page 88 for dimension details.

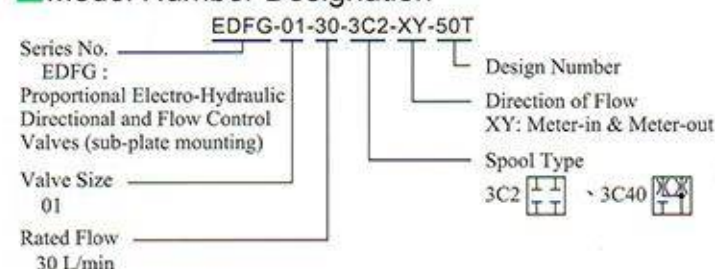
- These valves are double-deck directional and flow control valves employing as their pilot the electro-hydraulic proportional reducing valves with two proportional solenoids.
- The flow rate can be controlled by changing an input current to the solenoids and the direction of the flow can be controlled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

Description	Model No.	EDFG-01
Max Operating Pressure	MPa	25
Rated Flow ★	L/min	30
Rated Current	mA	1100
Max. Tank Line Back Pressure	MPa	14
Coil Resistance	Ω	10
Hysteresis		Less than 5%
Repeatability		Less than 1%
Step Response		Less than 100ms
Approx. Mass	kg	2.4

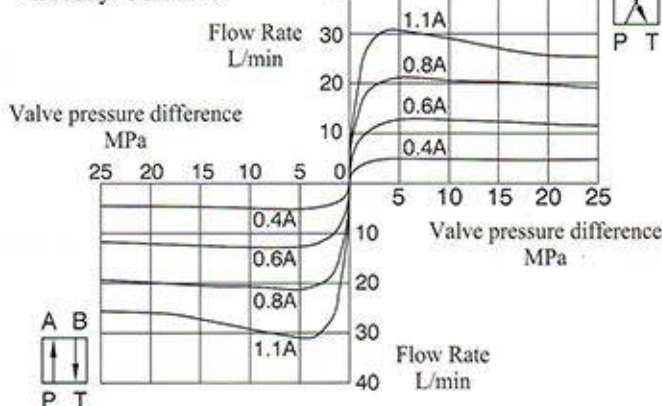
★ 1: Rated flow: P → A(B) ∨ A(B) → T, at valve pressure difference 7.0 MPa

Model Number Designation



Valve pressure difference vs Flow

Viscosity: 30mm²/s



Mounting Bolts (Attachment)

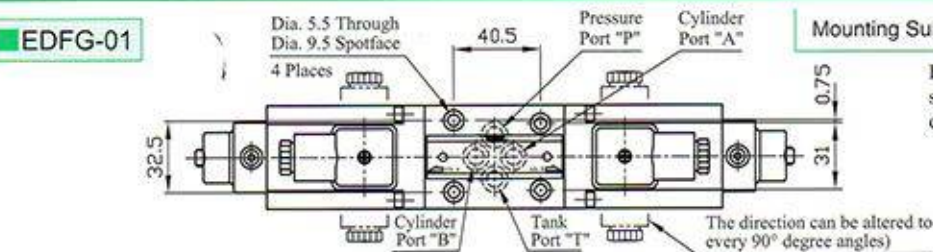
Model No.	Soc. Hd. Cap Screw	Qty	Tightening Torque N·m (kgf·m)
EDFG-01	M5 x 45 Lg	4	5~7 (0.5~0.7)

E

Proportional Electro-Hydraulic Directional and Flow Control Valves

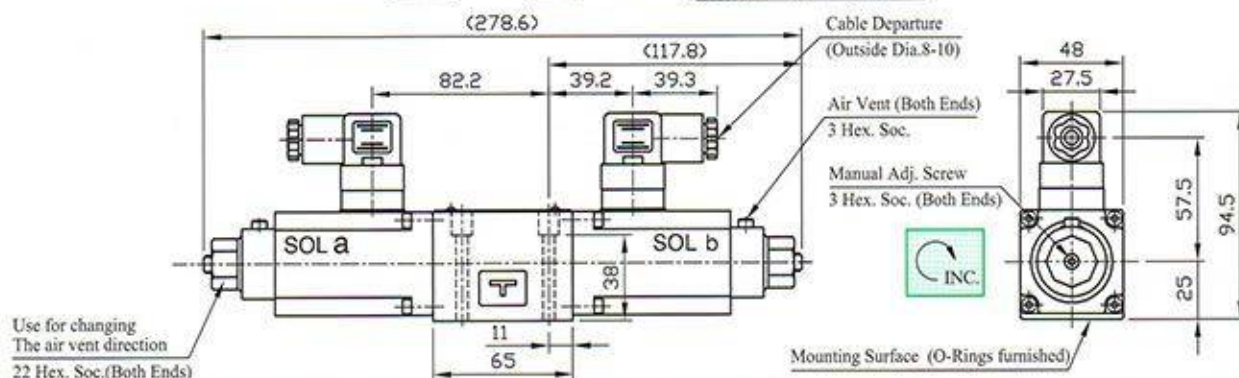
Max. Pressure 25 MPa

EDFG-01

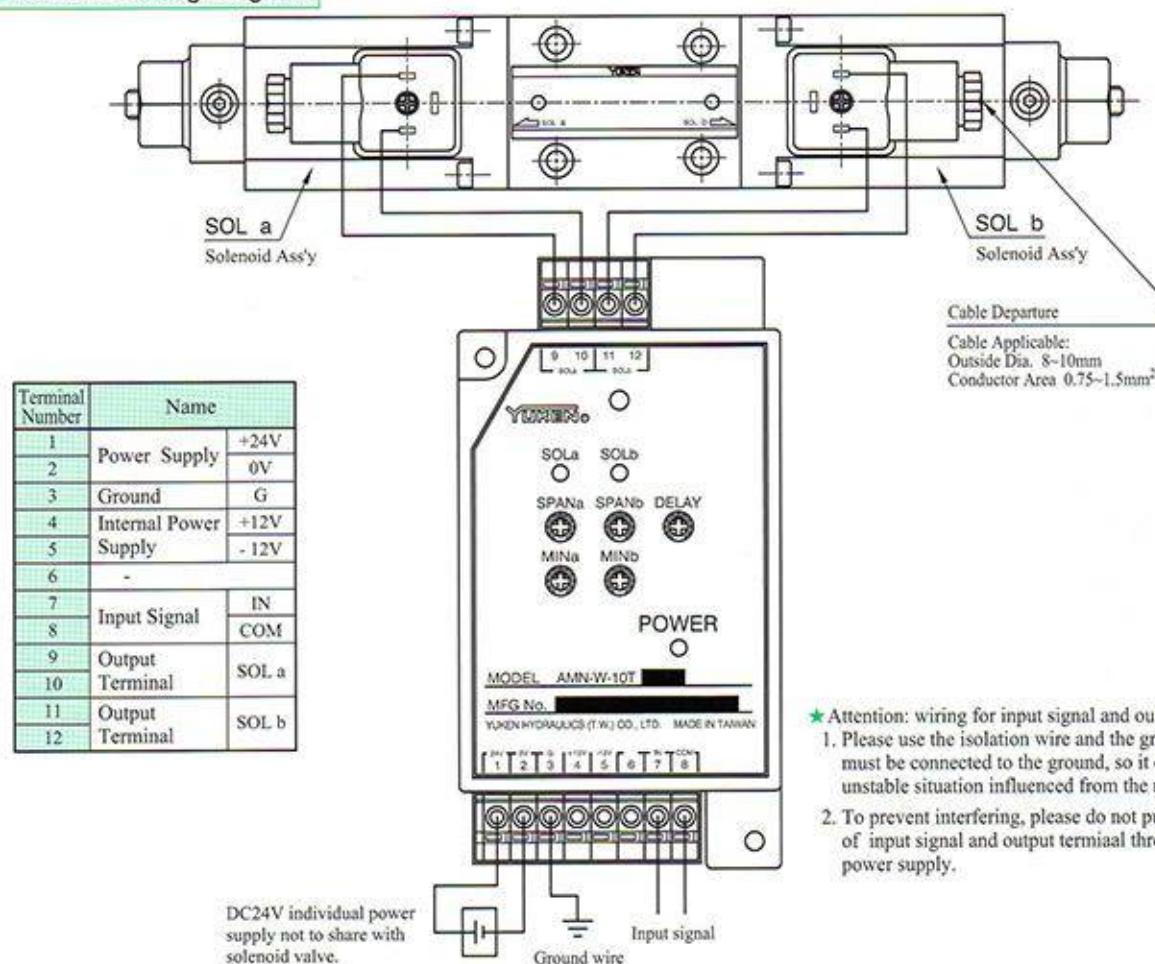


Mounting Surface: Comfort to ISO 4401-AB-03-4-A

For valve mounting surface dimensions, see the dimension drawings of sub-plates of DSGM-01, P88 (in common use).



EDFG-01 Wiring Diagram



Proportional Electro-Hydraulic Directional and Flow Control Valves

Max. Pressure 25 MPa


- These valves are double-deck directional and flow control valves employing as their pilot the electro-hydraulic proportional 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 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

Description		Model No.	EDFHG-03	EDFHG-04	EDFHG-06
Max Operating Pressure		MPa	25		
Rated Flow	★1	L/min	100	140	280
Pilot Pressure	★2	MPa	1.5 ~16		
Pilot Flow		At Normal	1	1	2
L/min		At Transition	3	4	6
Max. Tank Line Back Pressure		MPa	16	21	
Max. Drain Line Back Pressure		MPa	3.0		
Rated Current		mA	800	980	900
Coil Resistance		Ω	10		
Hysteresis			Less than 5%		
Repeatability			Less than 1%		
Approx. Mass		kg	11	12	15

★1: Rated flow: $P \rightarrow A(B) \cdot A(B) \rightarrow T$, at valve pressure difference 1.0 MPa

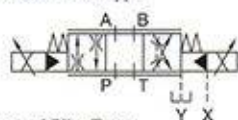
★2: Take care to keep the pressure difference between the pilot pressure and drain port back pressure consistently greater than 1.5 MPa.

★3: To obtain stable performance, keep the drain port back pressure lower and minimize its fluctuations.

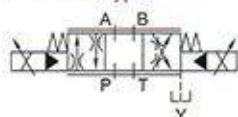
E

Graphic Symbols

External Pilot Type
External Drain Type



Internal Pilot Type
External Drain Type



Applicable Power Amplifiers

For stable performance, it is recommended that Yuken's applicable power amplifiers be used AMN-W-10T. (For details see P164.)

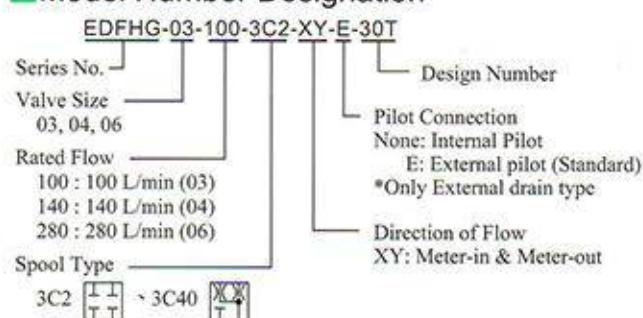
Note

- To ensure stable control, bleed the air from solenoid completely and fill the iron core with oil. For this purpose, it is recommended to provide the drain line with a check valve having a cracking pressure about 0.04 MPa.
- In the event of an electric fault 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, only for direction function.

Mounting Bolts (Attachment)

Model No.	Socket Hd. Cap Screw	QTY	Tightening Torque N·m (kgf·m)
EDFHG-03	M6 x 35L	4	12~15 (1.2~1.5)
EDFHG-04	M6 x 45L	2	12~15 (1.2~1.5)
	M10 x 50L	4	58~72 (5.8~7.3)
EDFHG-06	M20 x 75L	6	100~123 (10.2~12.5)

Model Number Designation



Sub-plates

Model No.	Sub-plate Model No.	Thread Size (Re)
EDFHG-03	DHGM-03Y-10	3/4
EDFHG-04	DHGM-04-20	1/2
	DHGM-04X-20	3/4
EDFHG-06	DHGM-06-50	3/4
	DHGM-06X-50	1

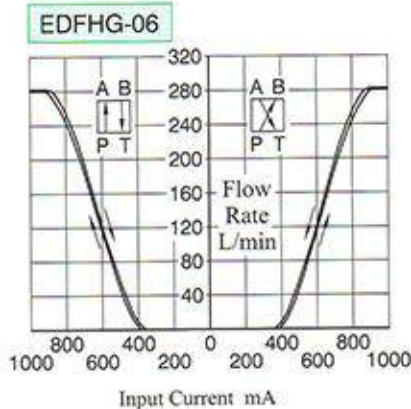
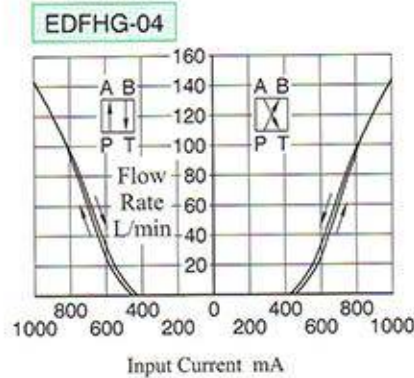
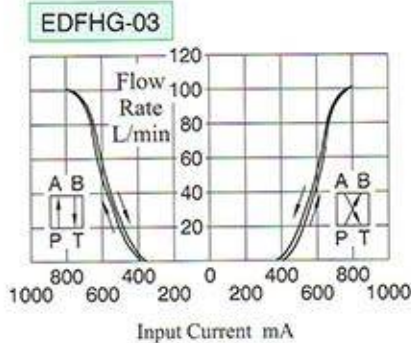
Sub-plate are available. Specify the sub-plate model number from the table above, when sub-plates are not used, the mounting surface must be process under 6-S (Ra1.6).

For dimensions of sub-plates, see page 97 (DHGM-04), page 98 (DHGM-06), page 103 (DHGM-03).

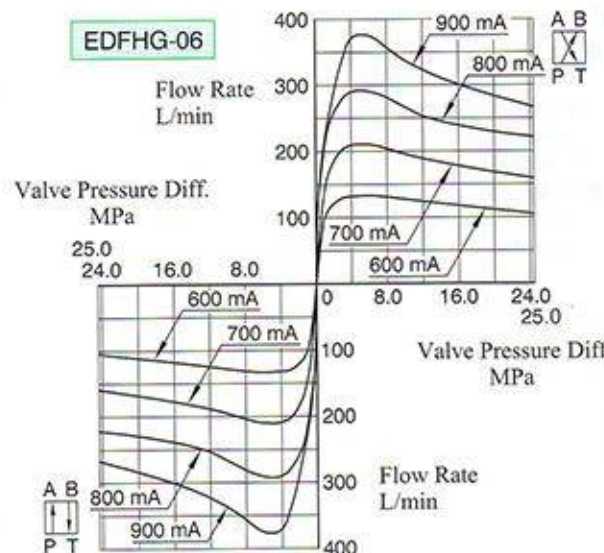
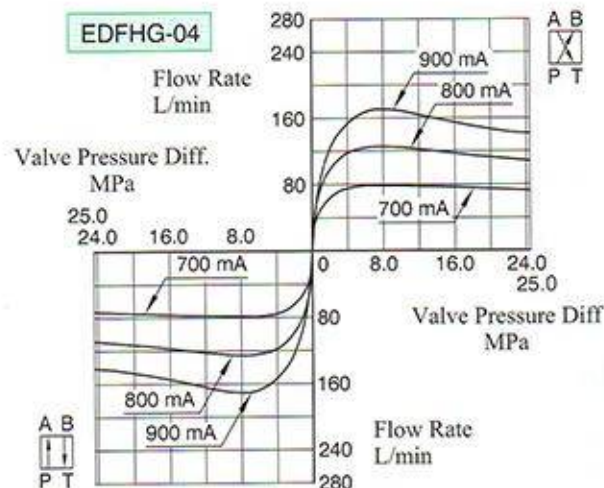
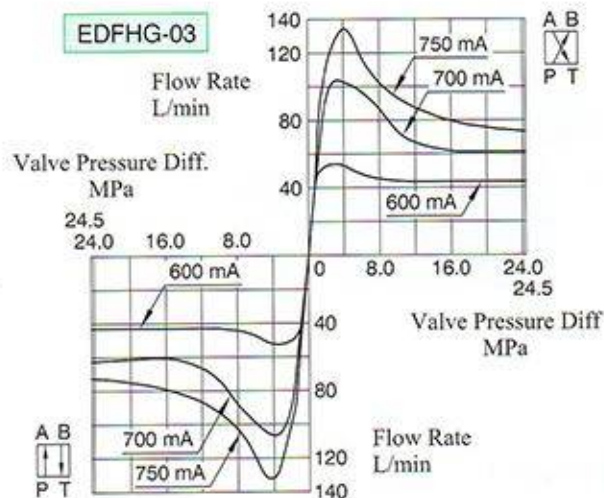
Proportional Electro-Hydraulic Directional and Flow Control Valves

Max. Pressure 25 MPa

■ Input Current vs. Flow Viscosity: 30 mm²/s
Valve Pressure Difference : P → A (B) + B (A) → T 1 MPa



■ Valve Pressure Difference vs. Flow Viscosity: 30 mm²/s

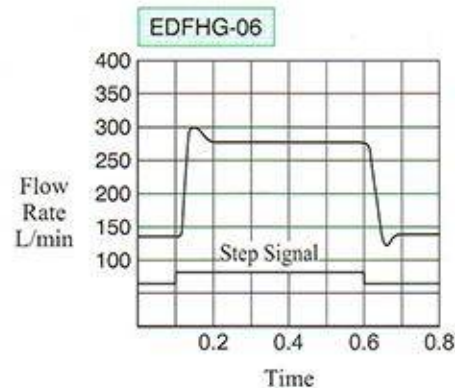
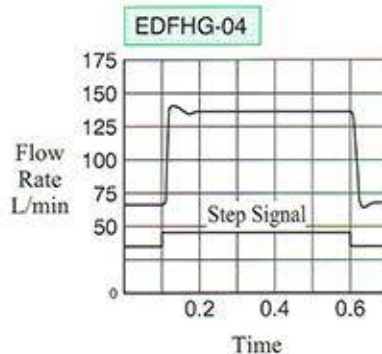
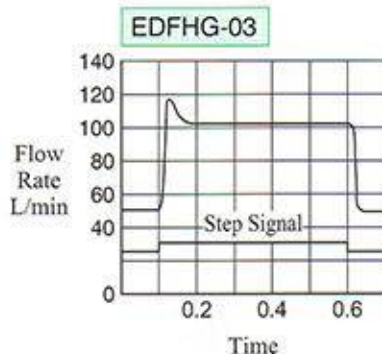


Proportional Electro-Hydraulic Directional and Flow Control Valves

Max. Pressure 25 MPa

Step Response \ Viscosity: 30 mm²/s

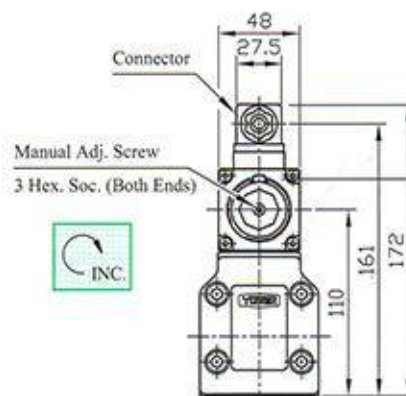
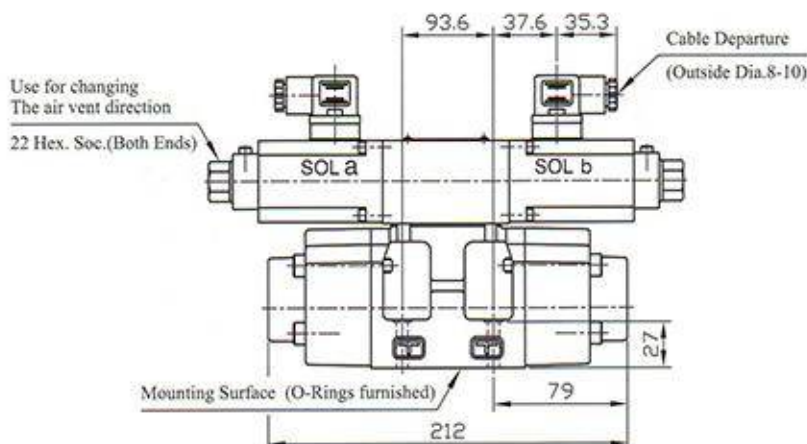
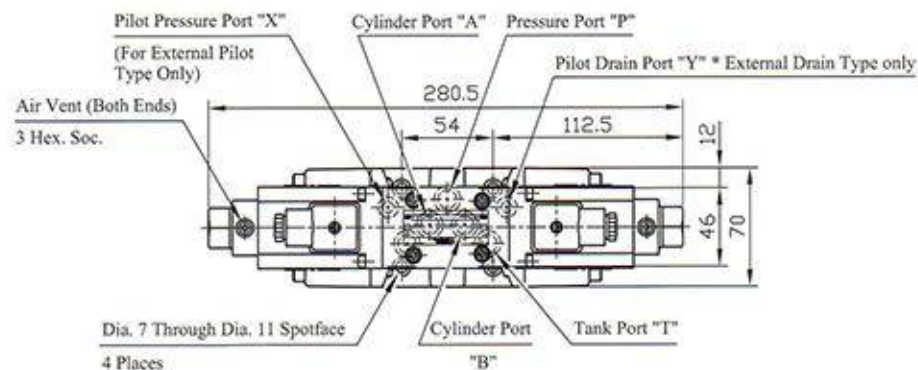
These characteristics have been obtained by measuring on each valve. Therefore, they may vary according to hydraulic circuit to be used.


E

EDFHG-03-※

Mounting Surface: Conforms to ISO 4401-05-05-0-94

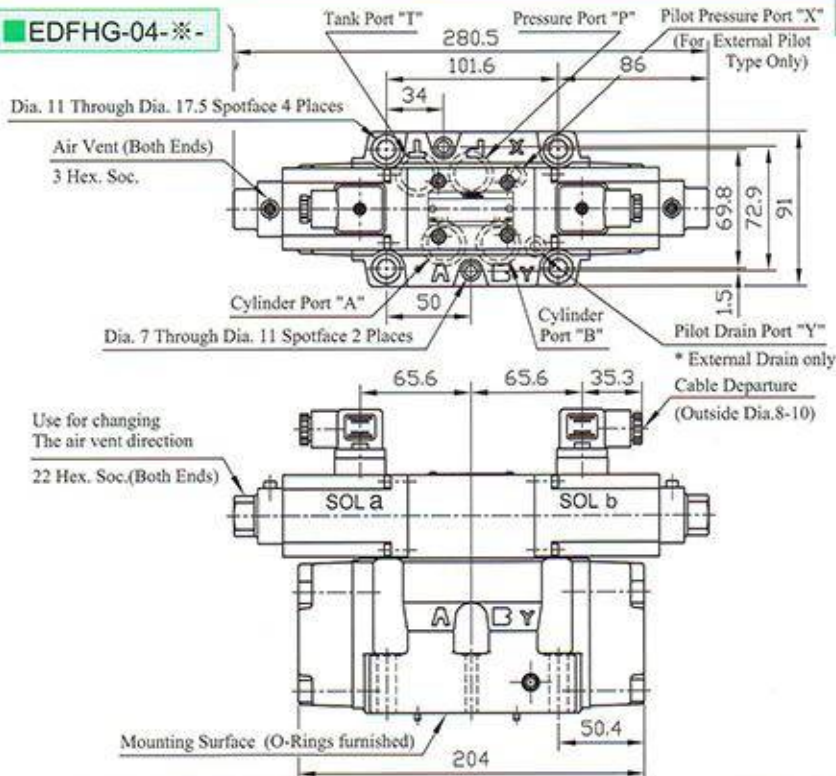
For valve mounting surface dimensions, see the dimension drawings of sub-plates of DHGM-03, P103 (in common use).



Proportional Electro-Hydraulic Directional and Flow Control Valves

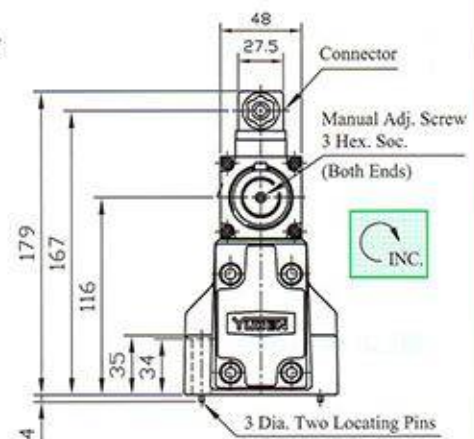
Max. Pressure 25 MPa

EDFHG-04-※-

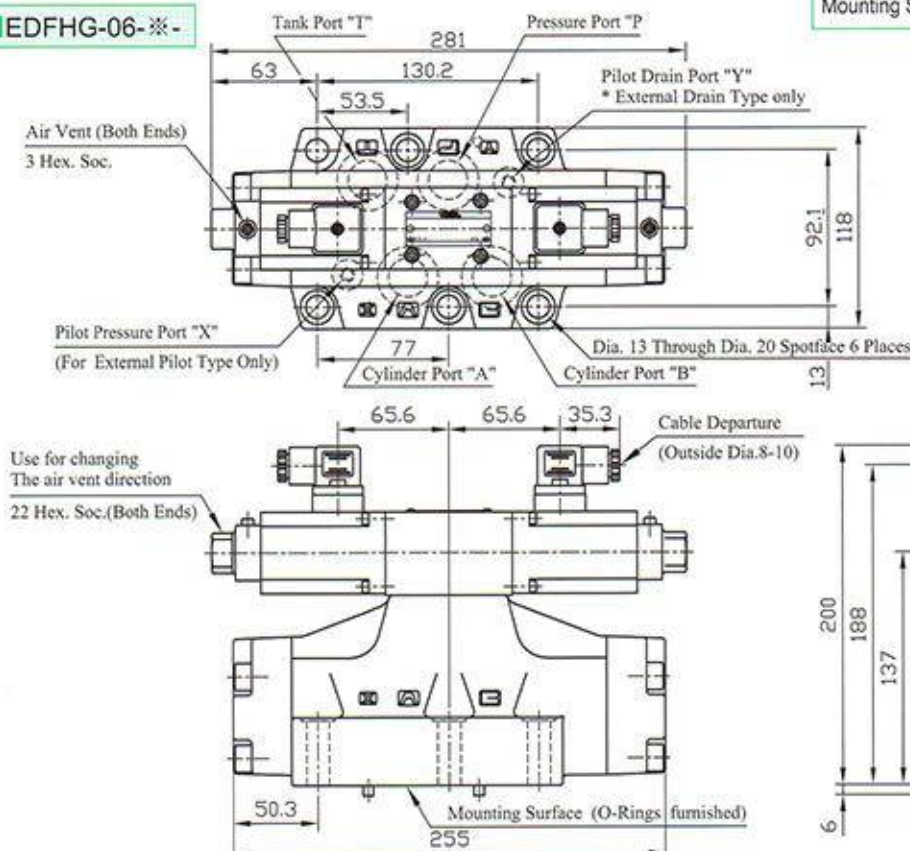


Mounting Surface: Comfort to ISO 4401-AD-07-4-A-80

For valve mounting surface dimensions, see the dimension drawings of sub-plates of DHGM-04, P97 (in common use).

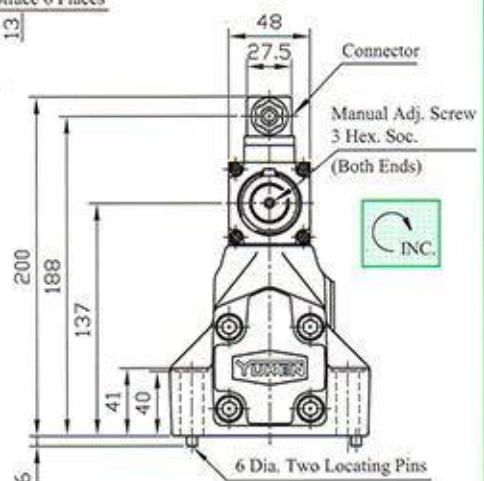


EDFHG-06-※-



Mounting Surface: Comfort to ISO 4401-AE-08-4-A-80

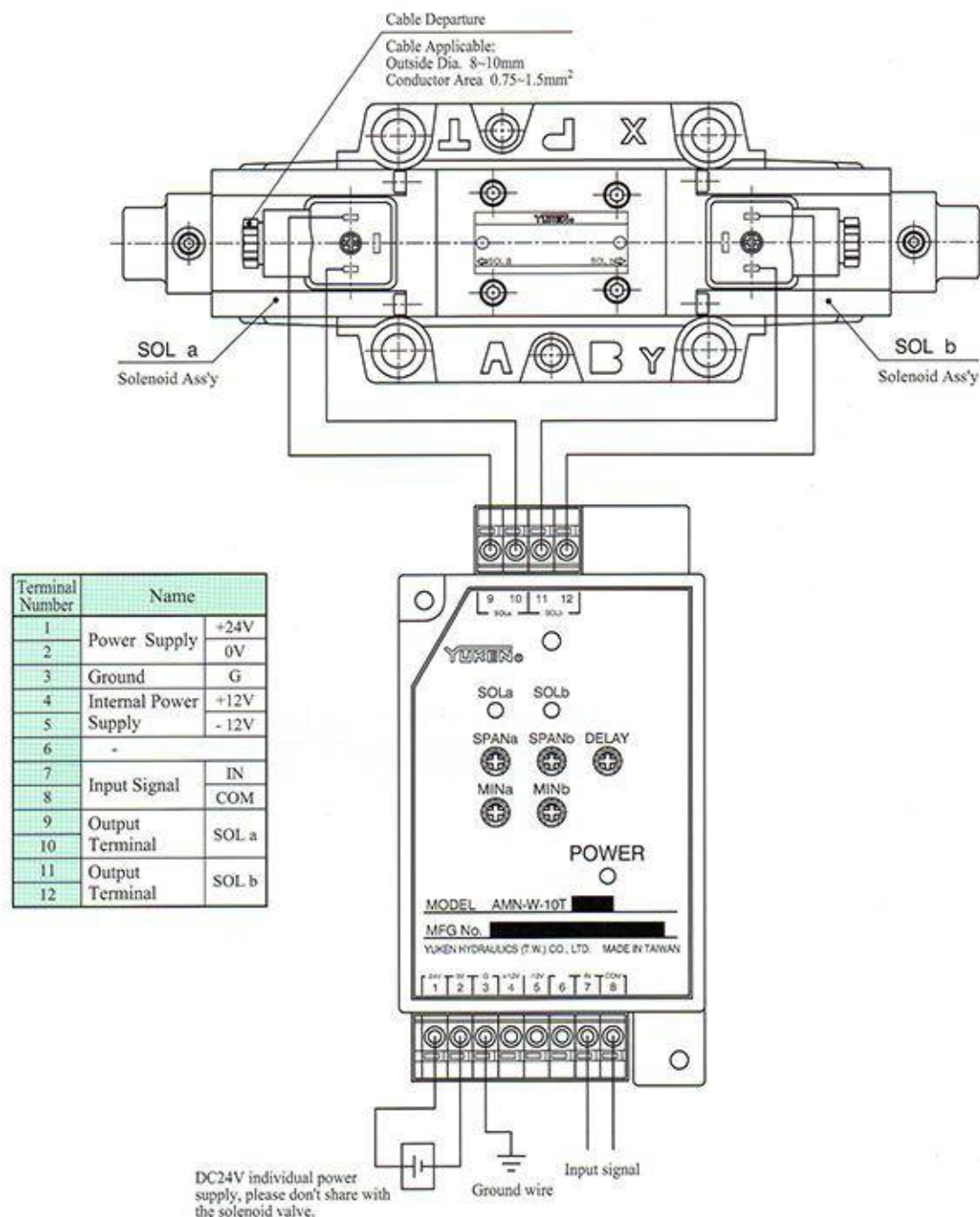
For valve mounting surface dimensions, see the dimension drawings of sub-plates of DHGM-06, P98 (in common use).



Proportional Electro-Hydraulic Directional and Flow Control Valves

Max. Pressure 25 MPa

EDFHG-03 / 04 / 06 Wiring Diagram



- ★ Attention: wiring for input signal and output terminal:
1. Please use the isolation wire and the ground wire must be connected to the ground, so it can reduce the unstable situation influenced from the mixed signals.
 2. To prevent interfering, please do not put the wiring of input signal and output terminal through the main power supply.

Power Amplifiers



AME-D2-H1 Series For Power Saving

These power amplifiers are specially designed to drive the valves incorporating the functions of pressure control (10Ω solenoid) and flow control (43.5Ω solenoid). It can be used for the proportional electro-hydraulic control valves of which model numbers are as shown on the table of "Applicable to valve" below.

Specifications (Made by Yuken Kogyo)

Model No.	AME-D2-H1-※-12	
Description	Flow Controls	Press. Controls
Type of Function	DC Input Type	
Max. Output Current	0.8A(43.5Ω Solenoid)	1A(10Ω Solenoid)
Max. Input Voltage	DC+10V	
Input Impedance	10KΩ	
Max. Gain	0.8A/5V	1A/5V
Dither	Fix	
Temperature Drift (Max.)	0.2mA/°C	
Power Supply	AC100V • AC200V/200V ± 10 % (50/60Hz)	
Power Input	Max. 130VA	
Ambient Temperature	0~50°C	
External Setting Resistance	1KΩ	
Mass	5.6kg	

Model Number Designation

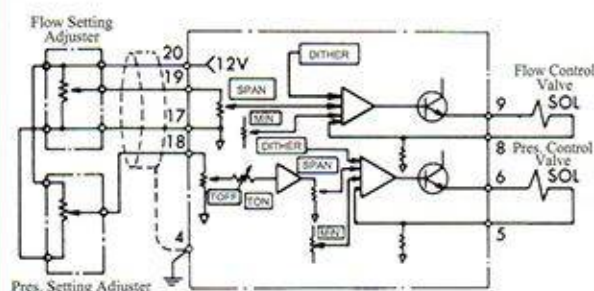
AME-D2-H1-100-12	
Series Number	AME
Type of Function	D: DC Input Type
Type of Mounting	H1: Wall Tapestry Type
Power Supply	100: AC100V 200: AC200/220V
Design Number	12

Applicable to valve

Name	Model No.
Power Saving Valve	03 EFBG-06-※-C H -20T 10

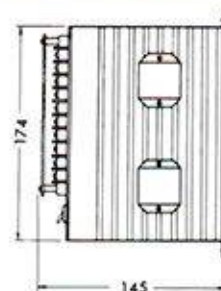
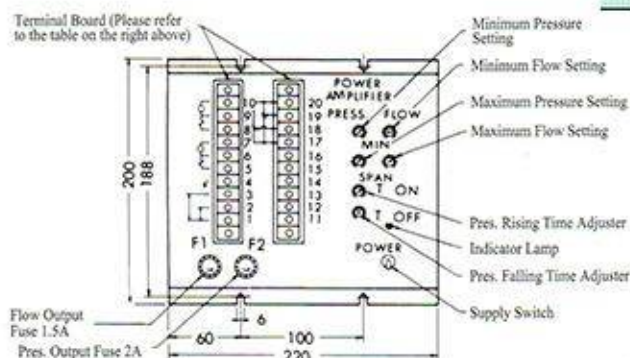
AME-D2-H1

(Example Diagram)



Details of Terminal Board

Terminal Number	Name	Terminal Number	Name
1	Power Supply	11	Common COM
2		12	
3		13	
4	Earth G	14	-12V OUT -12V
5	Output to Pressure Control Valve Solenoid SOL	15	Common COM
6		16	+12V OUT +12V
7	Ammeter	17	Common COM
8	Output to Flow Control Valve Solenoid SOL	18	Input Signal for Pres. PR.IN
9		19	Input Signal for Flow FL.IN
10	Ammeter	20	+12V OUT +12V



Power Amplifiers



Compact power amplifiers are for 10Ω proportional solenoids. The power supply is 24V DC. It uses a new circuitry to be slow to heat..

Specifications

Description	Model No.
	AMN-D-20T
Type of Function	DC Input Type
Max. Output Current	1A(10Ω Solenoid)
Power Input (Max.)	DC+10V
Input Impedance	10KΩ
Max. Gain	1A/5V
Dither	Variable
Temperature Drift (Max.)	0.2mA/°C
Power Supply	DC 24V (DC 20~30V)
Max. Input Power	25W
Ambient Temperature	0~50°C
External Setting Resistance	1KΩ
Approx. Mass	0.1 kg

Model Number Designation

AMN	-D	-20T
Series Numbers	Type of Function	Design Number
AMN	D: DC Input Type	20T

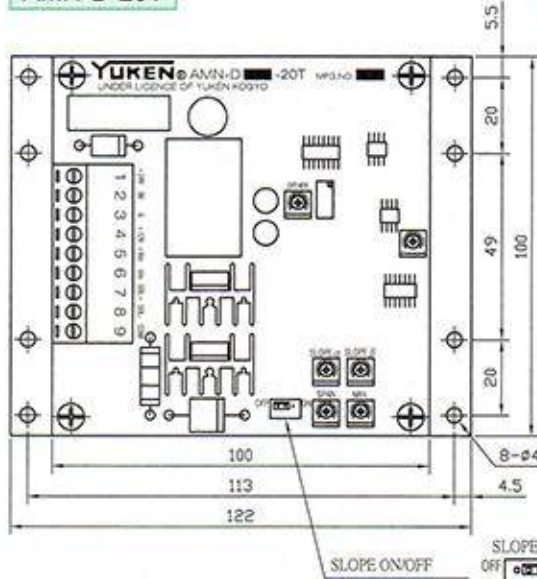
Applicable to Valve

Name of Valve	Model Numbers
Pilot Relief Valve	EDG-01
Relief Valves	EBG-03 EBG-06 ※ EBG-10
Reducing and Relieving Valves	※ ERBG-06 ※ ERBG-10
10Ω Series Flow Control Valves	※ EF(C)G-03-※-51D ※ EF(C)G-03-※-51D
10Ω Series High Flow Series Flow Control and Relief Valves	EFBG-03 EFBG-06 EFBG-10 ELFB(C)G-03 ELFB(C)G-06

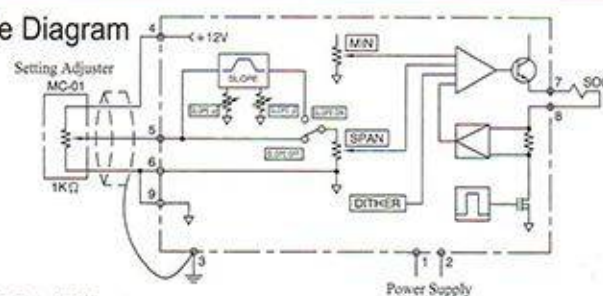
※ Yuken Kogyo Models

E

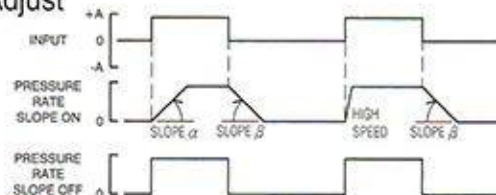
AMN-D-20T



Example Diagram



SLOPE Adjust



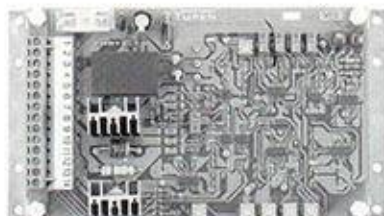
Details of Terminal Board

Terminal Number	Name
1	Power Supply
2	0V
3	Ground
4	Internal Power Supply
5	+12V
6	Input Signal
7	+Vin
8	-Vin
9	Output to Valve
	SOL+
	SOL-
	COM

★ Please connect input signal with +Vin and -Vin, please do not connect +Vin and COM.

※ We do not adjust the MIN and SPAN of the amplifier exwork, please adjust it while operating the amplifier.

Power Amplifiers



The pressure-response AMP is designed for high response & high precision ELFB(C)G and the power supply is DC24V. It uses a new circuit to be slow to heat, a perfect control.

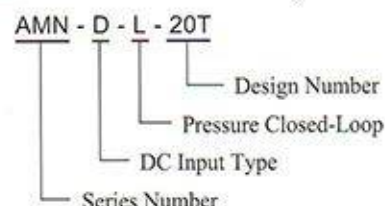
Specifications

Model No.	AMN-D-L-20T
Description	
Max. Output Current	1A(10Ω Solenoid)
Power Input (Max.)	DC10V
Input Impedance	DC0.5~4.5V
Max. Gain	10KΩ
Dither	1A/5V
Temperature Drift (Max.)	Variable
Power Supply	Max. 0.2mA/°C
Max. Input Power	DC 24V (DC 20~30V)
Ambient Temperature	0~50°C
External Setting Resistance	1KΩ
Approx. Mass	0.3 kg

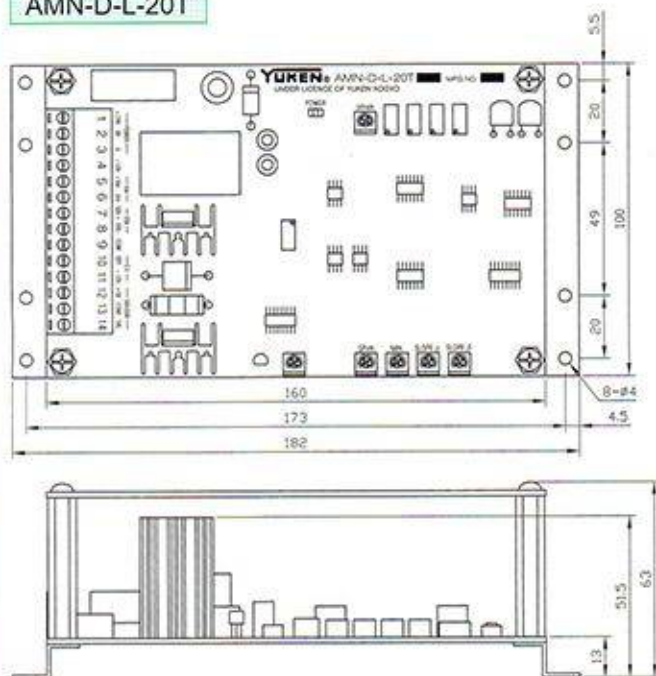
Applicable to Valve

Name of Valve	Model Number
10Ω Series High Flow Series Flow Control and Relief Valve	ELFB(C)G-※-※-L-20T

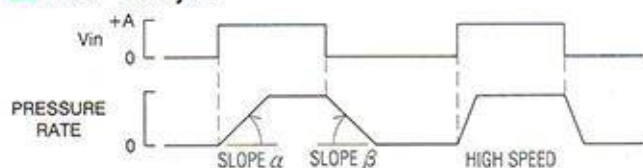
Model Number Designation



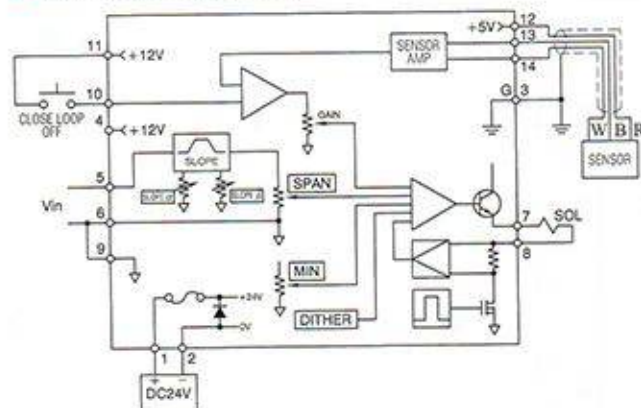
AMN-D-L-20T



SLOPE Adjust



Example Diagram

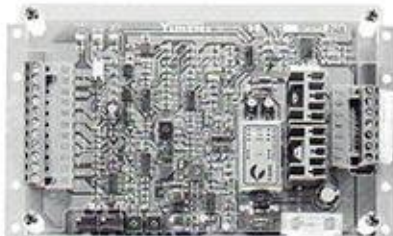


Details of Terminal Board

Terminal Number	Name	Terminal Number	Name
1	Power Supply	7	Output to Valve
2		8	Solenoid
3	Ground	9	Common
4	Internal Power Supply	10	CLOSE LOOP
5		11	ON/OFF
6	Input Signal	12	
		13	Pressure Sensor
		14	

- ★1. Please connect input signal with +Vin and -Vin, please do not connect +Vin and COM
- ★2. We do not adjust the MIN and SPAN of the amplifier exwork, please adjust it while operating the amplifier.
- ★3. If pressure checking wires need to be extended, please use conductor area small than 1.5mm² isolation wires and make sure the total length can not be over 10m.

Power Amplifiers



The flow-response AMP is designed for high response & high precision ELFB(C)G and the power supply is DC24V. It uses a new circuit to be slow to heat, a perfect control.

Specifications

Model No.	SK1115-※-30T
Description	
Max. Output Current	2.5A
Power Input (Max.)	DC+10V
Input Impedance	More than 10KΩ
Max. Gain	Max. 5V/5V
Power Supply	DC 24V (DC 20~30V)
S.M. Signal Output	-0.5V/1mm St
Alarm Signal Output	Max DC30V.10mA
Ambient Temperature	0-50°C
Ambient Humidity	less than 90%RH
Approx. Mass	0.3 kg

Applicable to Valve

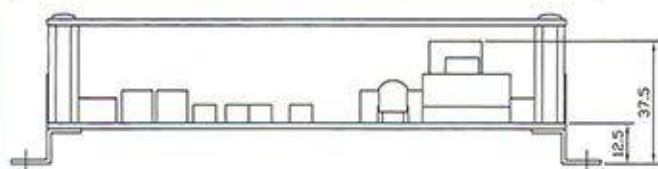
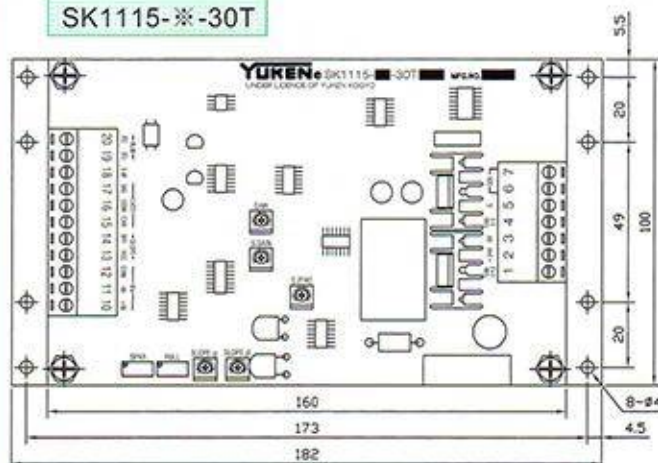
Model Numbers	Power Amplifiers
ELFB(C)G-03-125-※-※-20T	SK1115-1-30T
ELFB(C)G-03-170-※-※-20T	SK1115-2-30T
ELFB(C)G-06-300-※-※-20T	SK1115-3-30T
ELFB(C)G-06-600-※-※-20T	SK1115-4-30T

Model Number Designation

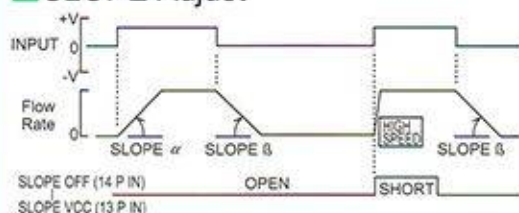
SK1115 -1- 30T

Series: SK1115
Design Number: 1
Applicable Valve: 1: ELFB(C)G-03-125-※-※-20T
2: ELFB(C)G-03-170-※-※-20T
3: ELFB(C)G-06-300-※-※-20T
4: ELFB(C)G-06-600-※-※-20T

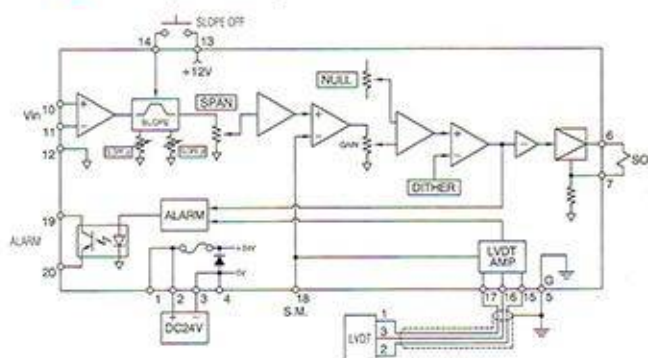
SK1115-※-30T



SLOPE Adjust



Example Diagram



Details of Terminal Board

Terminal Number	Name	Terminal Number	Name
1	Power Supply	10	Input Signal +IN
2		11	Input Signal -IN
3		12	Common COM
4		13	SLOPE VCC
5	Ground G	14	SLOPE OFF
6	Output to Valve SOL(+)	15	LVDT CAR.
7	SOL(-)	16	COM
		17	Terminal SIG
		18	Sensor Monitor Output S.M.
		19	ALARM Signal ALM(C)
		20	Output ALM(E)

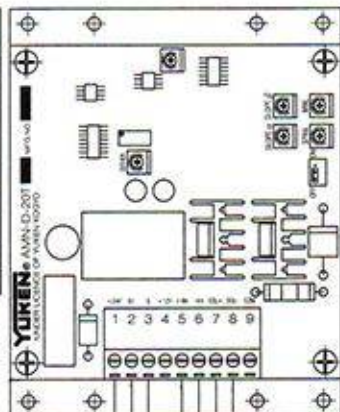
★Please connect input signal with +IN and -IN, please do not connect +IN and COM.

Wiring Diagram

■ ELFB(C)G-03-※-Wiring Diagram

Amplifier for pressure control
(AMN-D-20T)

Terminal Number	Name
1	Power Supply +24V
2	Power Supply 0V
3	Ground G
4	Internal Power Supply +12V
5	Input Signal +Vin
6	Input Signal -Vin
7	Output to Valve SOL +
8	Solenoid SOL -
9	Common COM



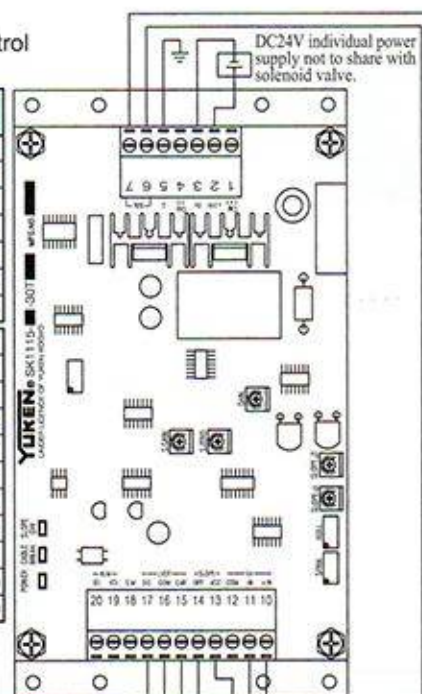
DC24V individual power supply not to share with solenoid valve.

Pressure Signal

Amplifier for flow control
(SK1115-※-30T)

Terminal Number	Name
1	CAP.(+)
2	Power Supply +24V
3	Power Supply 0V
4	CAP.(-)
5	Ground G
6	Output to Valve SOL(+)
7	Solenoid SOL(-)
10	Input Signal +IN
11	Input Signal -IN
12	Common COM
13	SLOPE ON/OFF VCC
14	SLOPE ON/OFF OFF
15	LVDT CAR.
16	LVDT COM
17	Terminal SIG
18	Sensor Monitor Output S.M
19	ALARM Signal ALM(C)
20	Output ALM(E)

★ Conducted will be Slope off



DC24V individual power supply not to share with solenoid valve.

Terminal Number	Name
SIG	1
CAR	2
COM	3

Flow Signal

Cable Departure
Cable Applicable:
Outside Dia. --- 8~10mm
Conductor Area --- Not Exceeding 1.5mm²

Pressure control coil

Cable Departure
Cable Applicable:
Outside Dia. --- 4.5~7mm
Conductor Area --- Not Exceeding 1.5mm²

Cable Departure
Cable Applicable:
Outside Dia. --- 8~10mm
Conductor Area --- Not Exceeding 1.5mm²

Flow sensors
Don't turn the nut of LVDT.

Flow control coil

1 : SIG.
2 : CAR.
3 : COM

- ★ Attention: wiring for the pressure, flow signal and LVDT response
1. Please use the isolation wire and the ground wire must be connected to the ground so it can reduce the unstable situation influenced from the mixed signals.
 2. To prevent interfering, please do not put the wiring of pressure, flow signal and LVDT response through the main power supply.
 3. The wiring of LVDT responses should be as short as possible.
 4. The terminal wiring of amplifier and LVDT should be correct.

Wiring Diagram

■ ELFB(C)G-03-※-L-Wiring Diagram

Amplifier for pressure control
(AMN-D-L-20T)

Terminal Number	Name	
1	Power Supply	+24V
2		0V
3	Ground	G
4	Internal Power Supply	+12V
5	Input Signal	+Vin
6		-Vin
7	Output to Valve	SOL+
8	Solenoid	SOL-
9	Common	COM
10	CLOSE LOOP	OFF
11	ON/OFF	+12V
12	Pressure Sensor	COM
13		SIG.

★ Conducted will be Close-loop off

Amplifier for flow control
(SK1115-※-30T)

Terminal Number	Name	
1	Power Supply	+24V
2		0V
3	Ground	G
4	Internal Power Supply	+12V
5	Input Signal	+IN
6		-IN
7	Output to Valve	SOL(+)
8	Solenoid	SOL(-)
9	Common	COM
10	CLOSE LOOP	OFF
11	ON/OFF	+12V
12	Pressure Sensor	COM
13		SIG.

★ Conducted will be Slope off

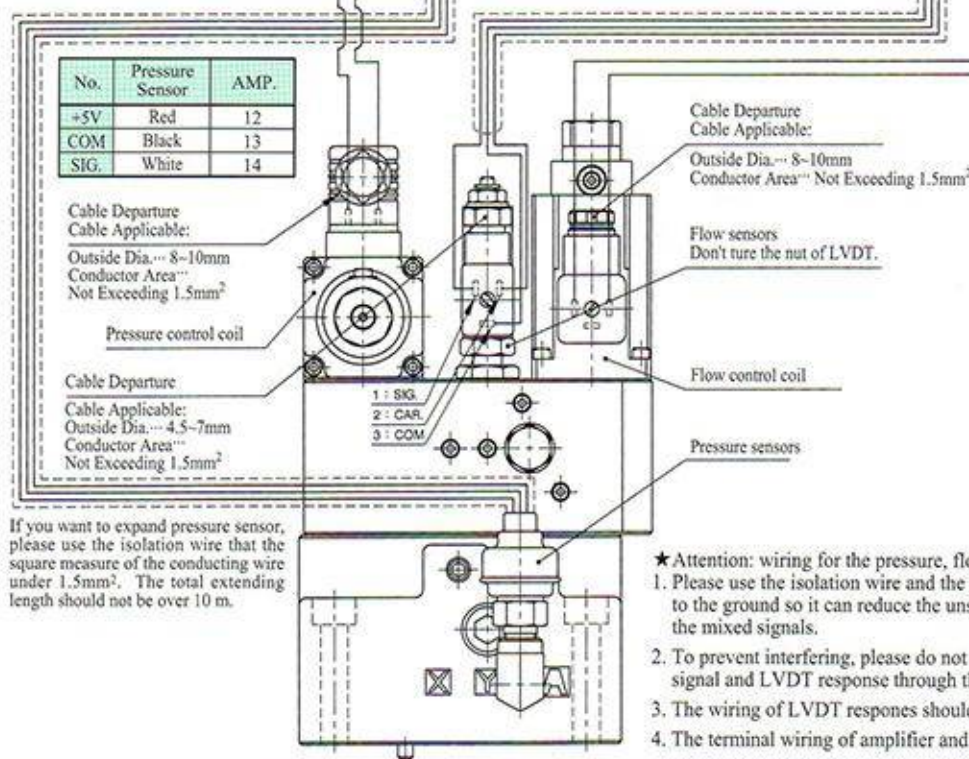
DC24V individual power supply not to share with solenoid valve.

Pressure Signal

CLOSE LOOP ON/OFF

Terminal Number	Name	
1	LVDT	AMP.
2		
3		

Flow Signal



- ★ Attention: wiring for the pressure, flow signal and LVDT response
1. Please use the isolation wire and the ground wire must be connected to the ground so it can reduce the unstable situation influenced from the mixed signals.
 2. To prevent interfering, please do not put the wiring of pressure, flow signal and LVDT response through the main power supply.
 3. The wiring of LVDT responses should be as short as possible.
 4. The terminal wiring of amplifier and LVDT should be correct.

Wiring Diagram

■ ELFB(C)G-06-※-Wiring Diagram

Amplifier for flow control
(SK1115-※-30T)

Terminal Number	Name
1	CAP.(+)
2	Power Supply +24V
3	0V
4	CAP.(-)
5	Ground G
6	Output to Valve SOL(+)
7	SOL(-)

10	Input Signal +IN
11	-IN
12	Common COM
13	SLOPE ON/OFF VCC
14	OFF
15	LVDT CAR.
16	COM
17	SIG
18	Sensor Output S.M
19	ALARM Signal ALM(C)
20	Output ALM(E)

※ Conducted will be Slope off

Terminal Number	Name
1	LVDT AMP.
2	SIG.
3	CAR.
4	COM

DC24V individual power supply not to share with solenoid valve.

Amplifier for pressure control
(AMN-D-20T)

Terminal Number	Name
1	Power Supply +24V
2	0V
3	Ground G
4	Internal Power Supply +12V
5	+Vin
6	-Vin
7	Output to Valve SOL +
8	SOL -
9	Common COM

DC24V individual power supply not to share with solenoid valve.

Pressure Signal

Cable Departure
Cable Applicable:
Outside Dia. 4.5~7mm
Conductor Area Not Exceeding 1.5mm²

Cable Departure
Cable Applicable:
Outside Dia. 8~10mm
Conductor Area Not Exceeding 1.5mm²

Flow control coil
Pressure control coil

1 : SIG.
2 : CAR.
3 : COM

Flow sensors
Don't turn the nut of LVDT.

- ★ Attention: wiring for the pressure, flow signal and LVDT response
1. Please use the isolation wire and the ground wire must be connected to the ground so it can reduce the unstable situation influenced from the mixed signals.
 2. To prevent interfering, please do not put the wiring of pressure, flow signal and LVDT response through the main power supply.
 3. The wiring of LVDT responses should be as short as possible.
 4. The terminal wiring of amplifier and LVDT should be correct.

Wiring Diagram

■ ELFB(C)G-06-※-L-Wiring Diagram

Amplifier for flow control
(SK1115-※-30T)

Terminal Number	Name
1	CAP.(+)
2	Power Supply
3	+24V
4	0V
5	CAP.(-)
6	Ground
7	G
10	Output to Valve Solenoid
11	SOL(+)
12	SOL(-)
13	+IN
14	-IN
15	Common
16	COM
17	SLOPE ON/OFF
18	VCC
19	OFF
20	CAR.
21	COM
22	SIG
23	S.M
24	ALM(C)
25	ALM(E)

★ Conducted will be Slope off

Terminal Number	Name
1	LVDT
2	AMP.
3	SIG.
4	CAR.
5	COM

Flow Signal

Amplifier for pressure control
(AMN-D-L-20T)

Terminal Number	Name
1	Power Supply
2	+24V
3	0V
4	Ground
5	G
6	Internal Power Supply
7	+12V
8	+Vin
9	-Vin
10	Output to Valve Solenoid
11	SOL +
12	SOL -
13	Common
14	COM
15	CLOSE LOOP ON/OFF
16	OFF
17	+12V
18	+5V
19	Pressure Sensor
20	COM
21	SIG.

★ Conducted will be Close-loop off

DC24V individual power supply not to share with solenoid valve.

Pressure Signal

Cable Departure
Cable Applicable:
Outside Dia.--- 4.5~7mm
Conductor Area--- Not Exceeding 1.5mm²

1: SIG.
2: CAR.
3: COM

Flow sensors
Don't turn the nut of LVDT.

Pressure sensors

Cable Departure
Cable Applicable:
Outside Dia.--- 8~10mm
Conductor Area--- Not Exceeding 1.5mm²

Flow control coil

Pressure control coil

No.	Pressure Sensor	AMP.
+5V	Red	12
COM	Black	13
SIG.	White	14

If you want to expand pressure sensor, please use the isolation wire that the square measure of the conducting wire under 1.5mm². The total extending length should not be over 10 m.

- ★ Attention: wiring for the pressure, flow signal and LVDT response
1. Please use the isolation wire and the ground wire must be connected to the ground so it can reduce the unstable situation influenced from the mixed signals.
 2. To prevent interfering, please do not put the wiring of pressure, flow signal and LVDT response through the main power supply.
 3. The wiring of LVDT responses should be as short as possible.
 4. The terminal wiring of amplifier and LVDT should be correct.

Power Amplifiers



- The power amplifier is applicable to the DC input type of proportional electro-hydraulic directional and flow control valves.

Specifications

Model No.	AMN-W-10T
Description	DC Input Type
Type of Function	DC Input Type
Max. Output Current	1.3A(10Ω Solenoid)
Max. Power Input	-10V DC SOL a +10V DC SOL b
Input Impedance	10 kΩ
Max. Gain	1.3 A / -5V : SOL a 1.3 A / +5V : SOL b
Dither	Variable
Delay Adj. Range	0.1 ~ 3 s
Temperature Drift	0.2mA / °C
Power Supply	DC 24V (DC 20~30V)
Ambient Temperature	25
Max. Input Power	0~50°C
Ambient Humidity	Less than 90% RH
Approx. Mass	0.2 kg

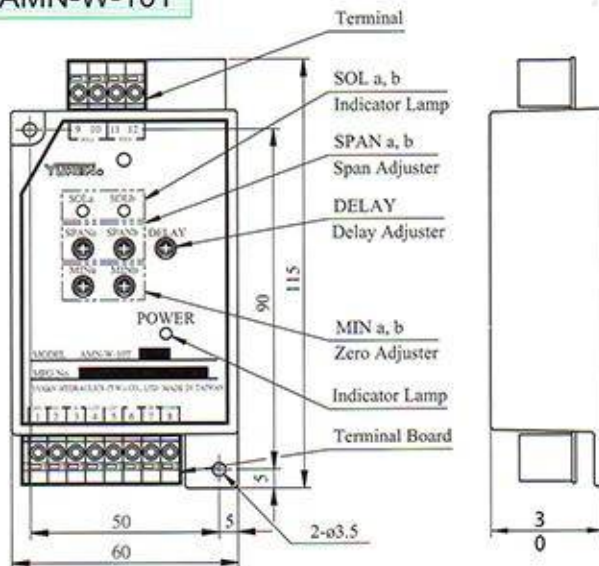
Model Number Designation

AMN - W - 10T	
AMN	Series Number
W	Type of Function W : DC Input Type
10T	Design Number

Applicable to Valve

Name of Valve	Model Numbers
Proportional Electro-Hydraulic Directional and Flow Control Valve	EDFG-01-※ EDFHG-03-※ EDFHG-04-※ EDFHG-06-※

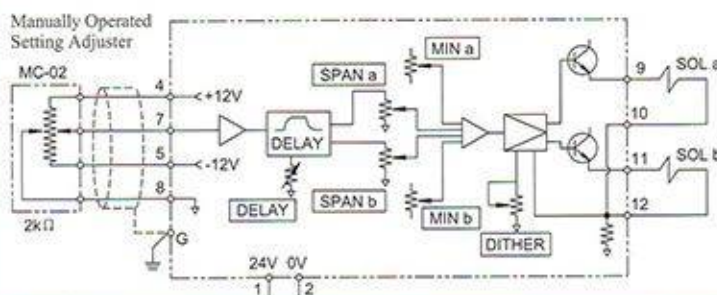
AMN-W-10T



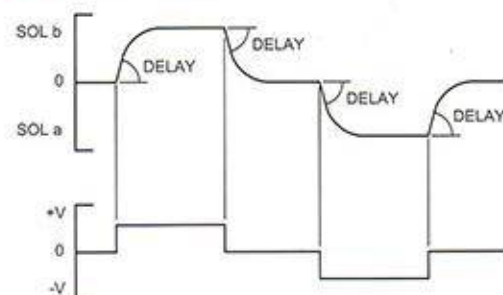
Details of Terminal Board

Terminal Number	Name	Terminal Number	Name
1	Power Supply	7	Input Signal
2		8	IN
3	+24V	9	COM
4	0V	10	Output to Valve Solenoid
5	Ground Internal Power Supply	11	SOL a
6	G	12	Output to Valve Solenoid
			SOL b

Example Diagram



DELAY Adjustment



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