

Electro-Hydraulic Proportional Valve Series

.5 to 132 gpm
3000, 3600, 4000, 5000 psi

Overview

Today's hydraulic systems demand high levels of automation, power efficiency, and energy efficiency, which is why the use of electro-hydraulic proportional valves is on the rise. Built-in electronic

components deliver outstanding response and fluid pressure that allows high output, as well as superior operation, and control. The NACHI Electrohydraulic Proportional Valve

Series includes the pressure control valves, flow control valves, and direction control valves that make it easy to meet these needs.

Features

1 Pressure Control Valve Series

- EPR Series:** Small-volume direct driver type pilot relief valve
- ER Series:** Large-volume balanced piston type relief valve
- EGB Series:** Large-volume balanced piston type pressure reducing valve with relief function

The pressure control section uses a poppet structure, which is virtually impervious to the effects of dirt in the operating fluid for outstanding pressure stability.

Flow Control Valve Series

- 2 ES Series:** This 3-directional valve provides proportional flow control in accordance with **input current**.
- ESR Series:** With a built-in load sensing function, this 3-way valve is for use in low-energy circuits.

A force feedback mechanism is used for main spool positioning, and amplification is performed by the pilot spool. The result is superior response with small hysteresis

and outstanding flow rate reproduction.

3 Direction Flow Control Valve Series

- ESD Series:** This electro-hydraulic proportional valve provides both direction control and flow control functions. Mounting methods are the same as those for standard directional valves, which allows simple structuring and maintenance.

4 Modular Type Control Valve Series

- EOG-G01:** This reduction valve with relief function can be used in ganged configurations.
- EOF-G01:** This flow control valve combines a restrictor valve with a pressure compensation valve.

This dual configuration provides easy installation along with dramatically reduced space requirements.

5 Power Amplifiers

- EMA Series:** Amplifier type
 - EMC Series:** Controller type
- A **current-feedback** amplifier system is used to virtually eliminate **output current** fluctuation. The same power supply specifications apply to all types.

6 Compact Power Amplifiers

- EBA Series:** Amplifier type
- The highly efficient PWM control system of this new series ensures high reliability in a compact configuration.

7 Compact, Multi-function Power Amplifiers

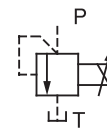
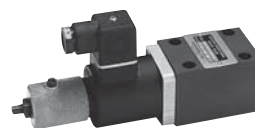
- EDA Series:** Amplifier type
 - EDC Series:** Amplifier controller type
- A choice of inputs: 6-contact or DC 2 input/4-contact compensation valve.

Series List

Name	Maximum Working Pressure psi	Rated Flow Rate gpm								
		.26	.5	2.6	13.2	26.4	52.8	79.2	105	132
Electro-hydraulic Proportional Valve (EPR)	5000	01 — Size								
Electro-hydraulic Proportional Relief Valve (ER)	5000	03 06								
Electro-hydraulic Proportional Relief and Reducing Valve (EGB)	3600	03 06								
Electro-hydraulic Proportional Flow Control Valve (ES)	3000	02 03 06 10								
Load Sensitive Electro-hydraulic Proportional Relief and Flow Control Valve (ESR)	3600	03 06 10								
Electro-hydraulic Proportional Flow Control Valve (ESD)	3600	01 03 04 06								
Modular Type Electro-hydraulic Proportional Reducing Valve (EOG)	3600	01								
Modular Type Electro-hydraulic Flow Control Valve (EOF)	3000	01								
Power Amplifier (EMA) (EMC)										
Compact Power Amplifier (EBA)										
Compact, Multi-function Power Amplifier (EDA) (EDC)										

Electro-Hydraulic Proportional Pilot Relief Valve

0.3 gpm
43 to 4000 psi



Features

This DC solenoid relief valve matches the attraction force of a DC solenoid with fluid pressure. When connected to a

small-volume hydraulic system or the poppet of a balanced piston type pressure control valve, this valve provides

continual pressure control in proportion to **input current**.

Specifications

Item	Model No.	EPR-G01-*-***-12
Rated Flow Rate gpm		0.3
Pressure Control Range psi		B: 43 to 360 1: 100 to 1000 2: 145 to 2000 3: 215 to 3000 4: 215 to 4000 5: 290 to 5000
Rated Current mA		800
Coil Resistance Ω		20 (68° F)
Hysteresis %		3 max. (Note)
Weight lbs		3.5

Note: Value when a Nachi-Fujikoshi special amplifier is used (with dithering).

Series List

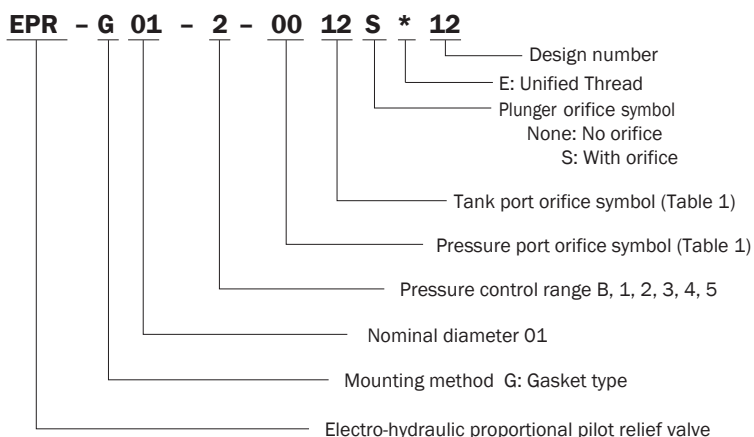


Table 1 Pressure Port and Tank Port Orifice Symbols

Orifice Symbol	00	08	09	10	11	12	13
Orifice Diameter	None	φ0.8	φ0.9	φ1.0	φ1.1	φ1.2	φ1.3

Note: The following are the standards for the orifice auxiliary symbols.

Pressure Control Range	Orifice Auxiliary Symbol
Type B, Type 1	0013S
Type 2, Type 3	0012S
Type 4	1212S
Type 5	1111S

• Handling

1 Air Bleeding

To enable proper pressure control, loosen the air vent when starting up the pump in order to bleed any air from the pump, and fill the inside of the solenoid with hydraulic operating fluid. The position of the air vent can change by loosening the M4 screw and rotating the cover.

2 Mounting Method

Mounting on a vertical surface causes minimum pressure to increase by 14 psi.

3 Manual Pressure Adjusting Screw

For the initial adjustment or when there is no **input current** to the valve due to an electrical problem or some other reason, valve pressure can be increased by rotating the manual adjustment screw clockwise (rightward). Normally, the manual adjusting screw should be rotated back fully to the left (counter-clockwise) and secured with the lock nut.

4 Minimum Relief Flow Rate

A small flow rate can cause setting pressure to become unstable. Use a flow rate of at least .18 in³/min.

5 Load Capacity

When using this valve to control direct circuit pressure, make sure the load volume (valve P port side volume) is at least 2.4 in³.

6 Bundled Accessories (Valve Mounting Bolts)

10-24 x 1 3/4" (four) Tightening torque: 3.6-7 ft lbs.

7 Sub Plate

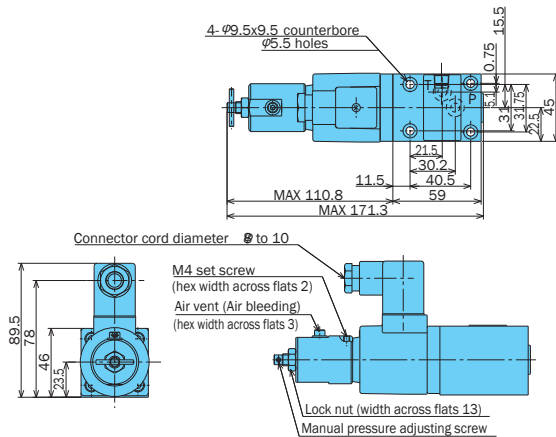
When a sub plate is required, order using the following model number. MSA-01Y-E10 (See the next page for dimensions.)

8 Use an operating fluid that conforms to the both of the following.

Fluid Temperature: 4 °F to 140 °F
Viscosity: 12 to 400 centistokes. The recommended viscosity range is 15 to 60 centistokes.

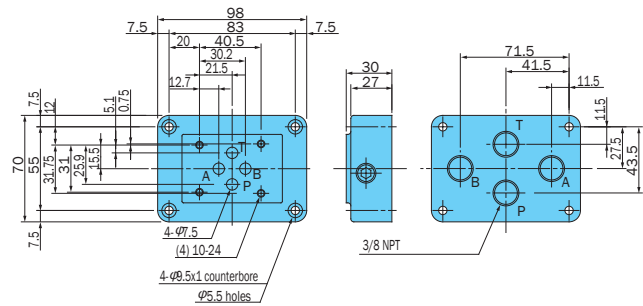
Installation Dimension Drawings

EPR-G01



Sub Plate

MSA-01Y-E10



Note: Install the sub plate so the valve's P port is aligned with the sub plate's B port.

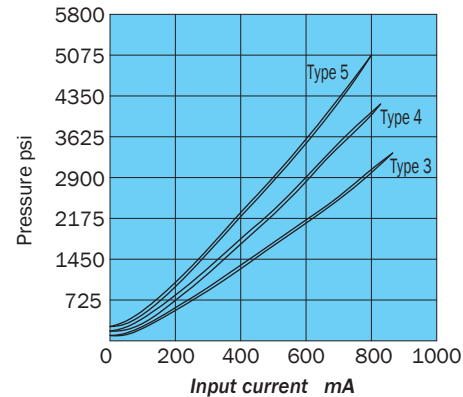
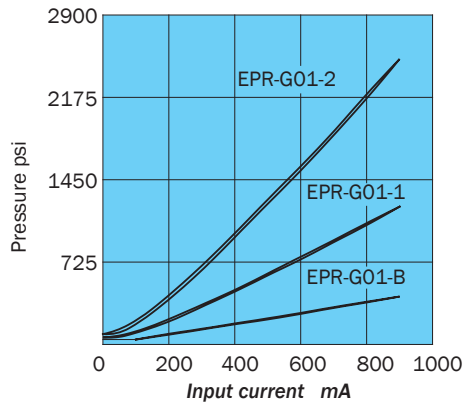
The gasket surface dimensions comply with the ISO standard shown below.

ISO 4401-03-02-0-94

Performance Curves

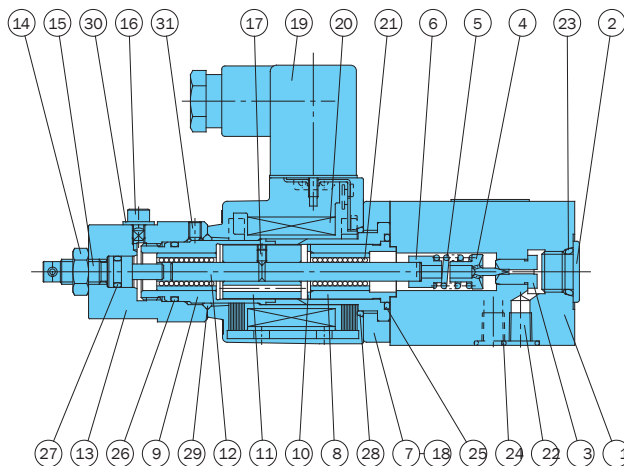
Hydraulic Operating Fluid Viscosity 32 centistokes

Input Current – Pressure Characteristics



Cross-sectional Drawing

EPR-G01-*-***-12



Part No.	Part Name	Part No.	Part Name	Part No.	Part Name
1	Body	12	Rod	22	Choke
2	Plug	13	Cover	23	O-ring
3	Seat	14	Nut	24	O-ring
4	Poppet	15	Screw	25	O-ring
5	Spring	16	Screw	26	O-ring
6	Retainer	17	Screw	27	O-ring
7	Cover	18	Screw	28	O-ring
8	Stopper	19	Connector	29	O-ring
9	Guide	20	Coil	30	Seal
10	Shim	21	Ball bush	31	Screw
11	Plunger				

Note: Coil model number JD64-D2

Seal Part List (Kit Model Number JPS-G01-1A)

Part No.	Part Name	Part Number	Q'ty
23	O-ring	1B-P11	1
24	O-ring	1B-P9	2
25	O-ring	1B-P22	1
26	O-ring	AS 568-016(Hs90)	1
27	O-ring	1B-P7	1
28	O-ring	S-25	1
29	O-ring	1A-P20	1
30	Seal	CW1000FO	1

Note: O-ring 1A/B-** refers to JIS B2401-1A/B.