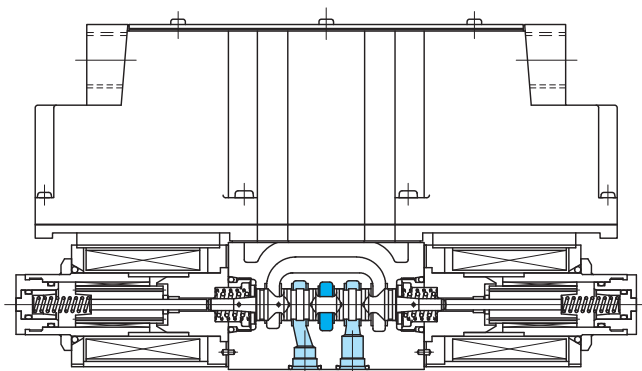
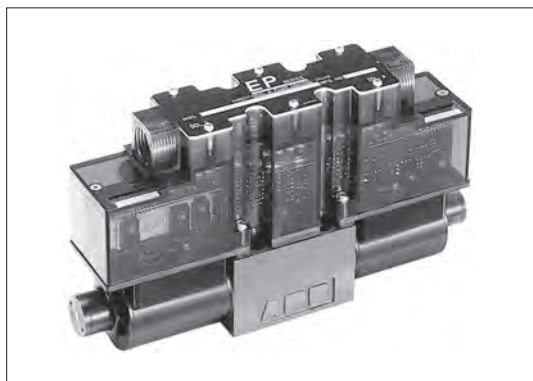
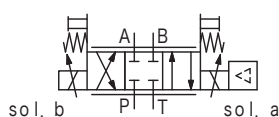


Proportional solenoid directional and flow control valves (direct operated type) EPDG1-3



Functional Symbol



This valve provides great space saving and shockless operation compared to conventional systems employing double or triple solenoid valves and restrictor valves.

Onboard amplifier with setting function allows control only with contact signals from sequencers, etc.

Model Code

EPDG1-3-33C-20-(DA)-31

1 2 3 4 5 6 7 8

- 1 Proportional solenoid directional and flow control valve (direct operated type)
- 2 Mounting dimensions 3: ISO 4401-03
- 3 Spool type
2: type 2 33: type 33
- 4 Spool/spring arrangement C: spring center type (3 position)
- 5 Max. control flow (P to A/B, diff. press. 0.7 MPa)
10: 10 L/min 20: 20 L/min
- 6 Controller
Omit: no controller

- A1: onboard controller (w/setting device)
- D: onboard controller w/DIN connector
- 7 DIN connector type controllers
A: analog input
SC: integrated setting device (3 settings)
- 8 Design no.
31: controller A1
21: except for controller A1

Specifications

Model Code		EPDG1-3	
Max. working pressure	MPa	21	
Allowable T port back pressure	MPa	14	
Max. control flow code		10	20
Min. control flow	L/min*1	0.5	1
Max. control flow	L/min*1	10	20
Rated current	A	1	
Coil resistance	Ω	13 (20°C)	
Dither frequency	Hz	100~110	
Dither current	mA (p-p)	200	
Hysteresis		7%*2	
Repeatability		2%*2	
Weight	kg	Valve: 2.4 Amplifier: 0.5	

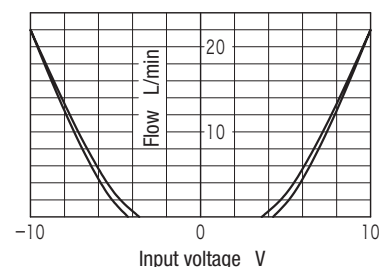
Note:

*1: P to A/B differential pressure approx. 0.7 MPa.

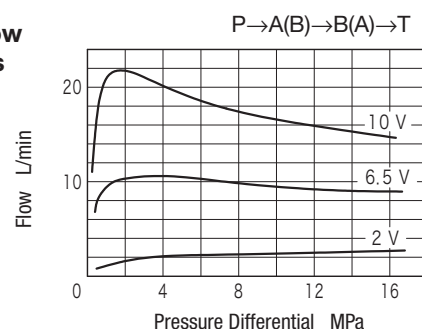
*2: With onboard controller

Characteristics Curve (at 20 mm²/s) (typical examples)

Input Voltage–Flow Characteristics



Pressure Differential–Flow Characteristics



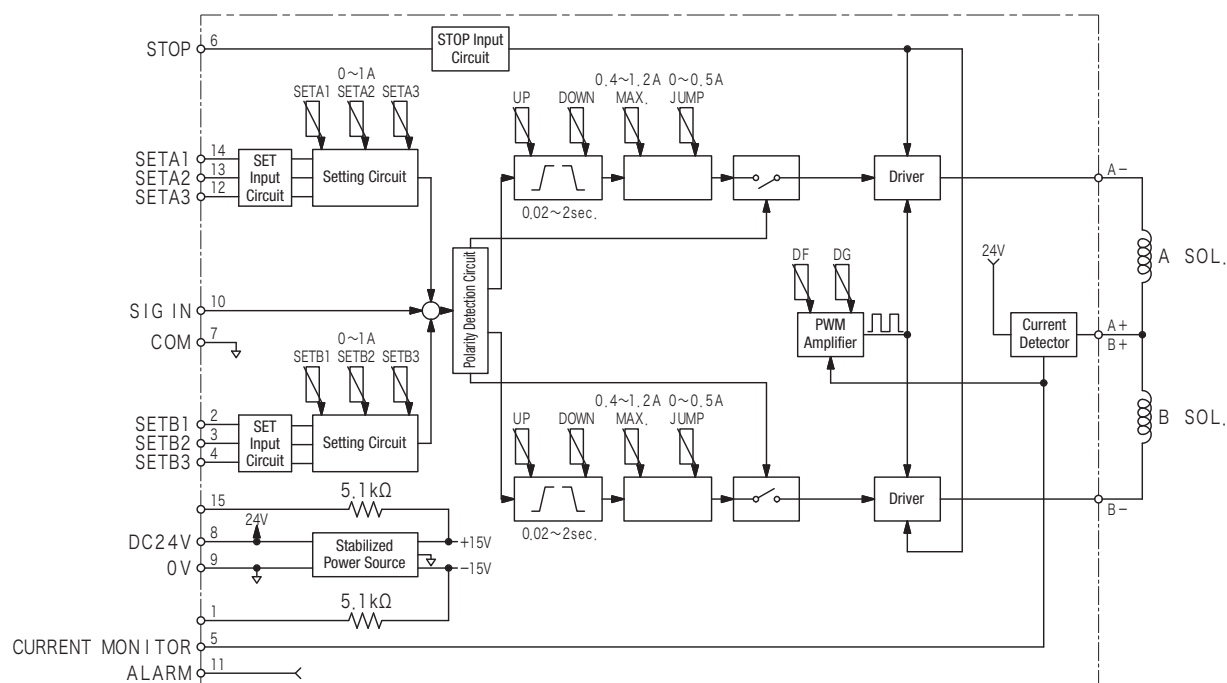
TOKYO KEIKI INC.

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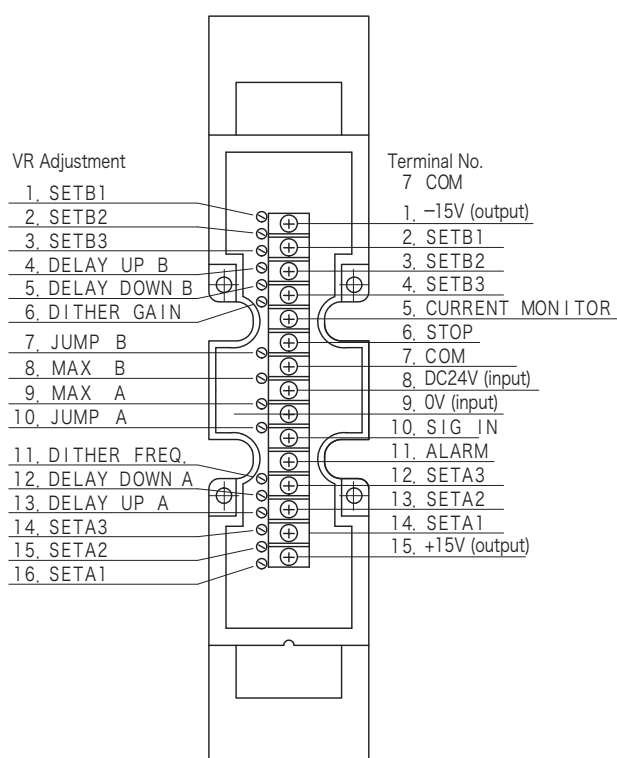
Proportional Solenoid Control Valves

Specifications

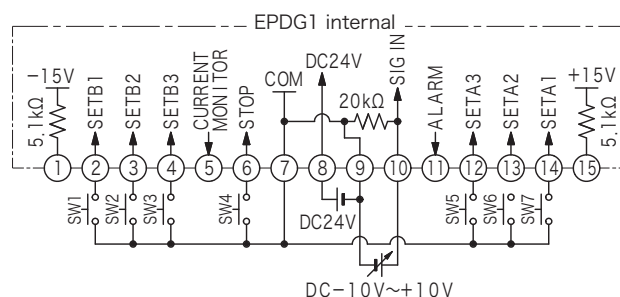
A1 controller block diagram



Terminal connections, trimmer description



Wiring diagram (example)



Flow output set by SETB1 VR when SW1 is ON.
 Flow output set by SETB2 VR when SW2 is ON.
 Flow output set by SETB3 VR when SW3 is ON.
 Compulsory input cancellation condition when SW4 is ON.
 Flow output set by SETA3 VR when SW5 is ON.
 Flow output set by SETA2 VR when SW6 is ON.
 Flow output set by SETA1 VR when SW7 is ON.

SIG IN

Solid line is example of external signal input.
 Use of $\pm 10V$ analog output unit of PLC is recommended.

Notes on Operation

- T port**
 Oil should always be filled in T port (tank). For example, use of a 0.035 MPa cracking pressure check valve is recommended. End of piping should always be below oil level.

Mounting Bolts (JIS B 1176, Strength Class 12.9)

Hex Socket Bolts	Qty
M5 × 50	4

- Mounting bolts must be ordered separately.
- Tightening torque of mounting bolts: 7 to 8 N·m

Subplate

Subplate Model Code		Connection Port Dia. Rc
Side Piping	DGMS-3-1E-10-T-JA-J	3/8
Bottom Piping	DGVM-3-10-T-JA-J	

- Subplate must be ordered separately.
- Mounting bolts are not included.
- See page R6-6 for dimensions.

Dimensions

Technical drawing of the Valve integrated A1 controller, showing top and side views with dimensions.

Top View Dimensions:

- Overall width: 40,5
- Port spacing (A to T): 31
- Port spacing (T to B): 32,5
- Port spacing (B to P): 23,5
- Overall height: 47
- Ports labeled: A port, T port, P port, B port.

Side View Dimensions:

- Overall length: 220
- Internal length: 181
- Wiring port (both ends): G1/2
- Height from base to wiring port: 117
- Height from base to solenoid: 129,5
- Solenoid height: 50
- Solenoid mounting flange height: 38
- Solenoid mounting flange thickness: 24,5
- Distance from base to solenoid center: 53,5
- Distance from base to solenoid center (alternative): 73
- Distance from base to solenoid center (alternative): 81
- Distance from base to solenoid center (alternative): 16,8
- Distance from base to solenoid center (alternative): 74
- Overall width: 236
- Solenoids labeled: sol. a, sol. b.

Figure 1: Dimensions of the test specimen. The diagram shows a rectangular specimen with overall dimensions of 74 mm in width and 47 mm in height. It features four M5 screws, 14 deep, along the top edge. The bottom edge has four holes with a maximum diameter of 7.5 mm. The top edge has two circular features labeled A and B, and two rectangular features labeled P and T. The bottom edge has two circular features labeled A and B, and two rectangular features labeled P and T. The dimensions are as follows: 74 mm total width, 47 mm total height, 16.8 mm distance from top edge to top of circular features, 7.25 mm distance from bottom edge to bottom of circular features, 40.5 mm distance from top edge to top of rectangular features, 27.8 mm distance from bottom edge to bottom of rectangular features, 19 mm distance between circular features, 10.3 mm distance between rectangular features, and 0 mm distance from bottom edge to bottom of rectangular features. The vertical dimensions on the right are 32.5, 31.75, 26.6, 16.3, 6, and 0.75 mm.

Construction



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