

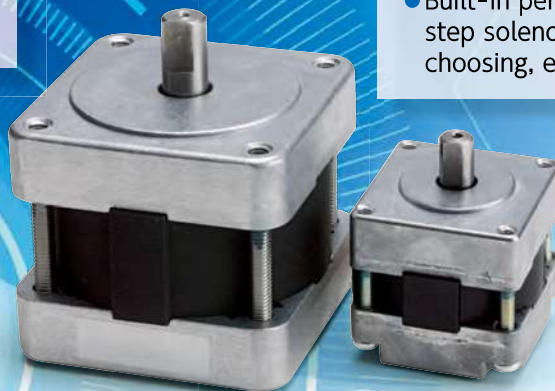
# STEP ROTARY SOLENOIDS

## Noiseless

- Stopless structure allows for silent operation.

## Power-Saving

- Built-in permanent magnet holds our step solenoids in the position of your choosing, even when power is turned off.



## No Need for Stops

- The six NS magnetic poles in the solenoid's structure eliminate the need for external stops.

## FEATURES

### 1 Multi-Positional Control Capabilities

Set the device in up to 12 positions in increments of 30°, or up to 6 positions in increments of 60° (depending on the lead line connection pattern).

### 2 High Durability

Because there are no sliding parts apart from the ball-bearing, our step solenoids are highly reliable with a long life cycle.

〈Target durability〉

with ball-bearings: 30,000,000 cycles

with oil-retaining bearings: 10,000,000 cycles

\* Depending on load and environmental conditions. In all cases we recommend that you confirm operation of the solenoid with its load attached.

### 3 Absolute Positional Control

Our step rotary solenoids have absolute positional control: you don't have to deal with the step-out or desynchronism seen in such devices as stepper motors.

### 4 Ease of Control

Since control is carried out solely by switching the hard-wiring pattern of 3 output lead lines, it is simple and easy to control the solenoid.

## APPLICATIONS

### 1. Light Control

can be used to block or polarize light, to switch between lights, and to change the color or amount of light.

### 2. Sorting/Screening

can be used to sort or screen (mail, etc.).

### 3. Locking/Positioning

can be used for electric locking or halting (of moving items on a conveyor belt, etc.).

### 4. Valves

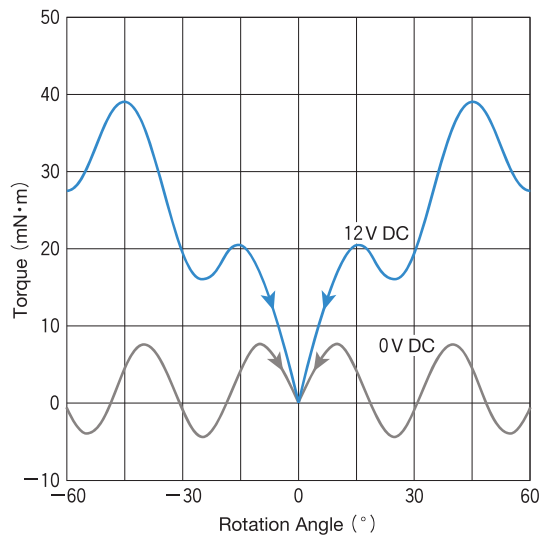
can be used to rapidly redirect the course of flow, or to open and close plumbing and tubing by means of a clamp.

## ◆ Main Specifications

Operating Angle	1 step = 30° or 60°
Working Voltage	12 (V DC)
Non-Excited Holding Force	0.008 (N·m)
Torque when Excited (at 12W)	0.02 (N·m)
DC Resistance	12 (Ω)
Heat-Resistant Class	Class E (120 °C)
Coil Saturation Temperature Rise $\Delta\theta_s$ (at 20 °C)	$\Delta\theta_s \div 12 \times W$ (°C) $K \div 12$ (°C/watt)
Insulation Resistance	500 V DC MEGA, 100 MΩ or more
Dielectric Strength	1000 V AC, 50/60 Hz, 1 minute
Rotor Inertia	2.9 (g·cm <sup>2</sup> )
Mass	80 (g)



## ◆ Torque Data



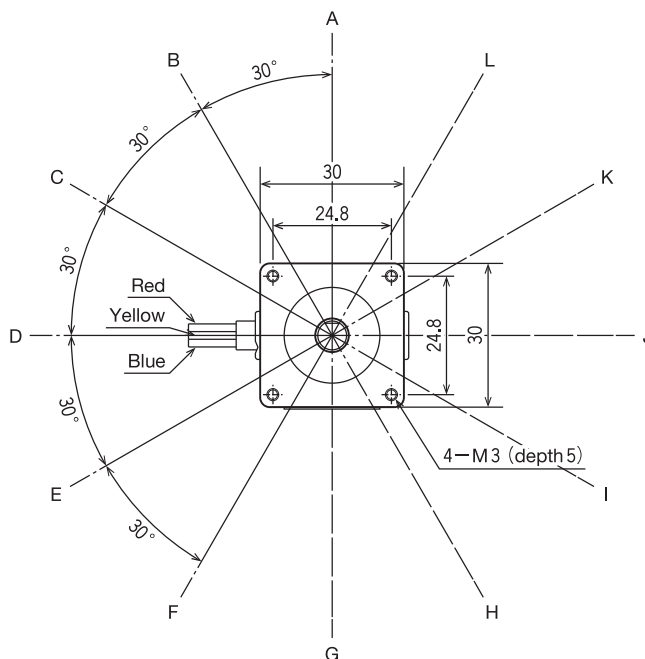
## ◆ Hard-Wiring Pattern Control Chart

30° Steps (0 = unplugged)      60° Steps (0 = unplugged)

Position	Lead Line Color	Red	Yellow	Blue
A		(+)	(-)	0
B		(+)	0	(-)
C		0	(+)	(-)
D		(-)	(+)	0
E		(-)	0	(+)
F		0	(-)	(+)
G		(+)	(-)	0
H		(+)	0	(-)
I		0	(+)	(-)
J		(-)	(+)	0
K		(-)	0	(+)
L		0	(-)	(+)

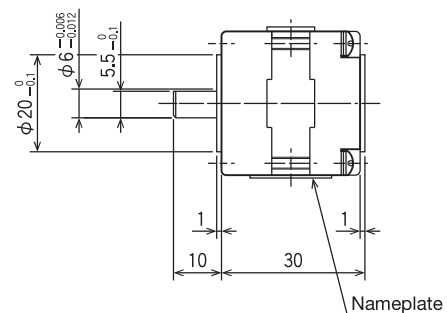
Position	Lead Line Color	Red	Yellow	Blue
A		(+)	(-)	0
C		0	(+)	(-)
E		(-)	0	(+)
G		(+)	(-)	0
I		0	(+)	(-)
K		(-)	0	(+)

## ◆ External Dimensions (mm)



## Terminal Specifications

Lead Wire Length (mm) : 195  
AWG Size : 26

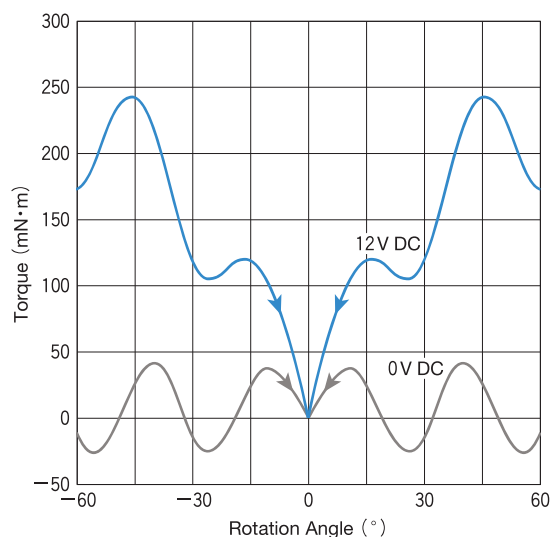


### ◆ Main Specifications

Operating Angle	1 step = 30° or 60°
Working Voltage	12 (V DC)
Non-Excited Holding Force	0.025 (N·m)
Torque when Excited (at 12W)	0.088 (N·m)
DC Resistance	8 (Ω)
Heat-Resistant Class	Class E (120°C)
Coil Saturation Temperature Rise $\Delta\theta_s$ (at 20°C)	$\Delta\theta_s \div 6.5 \times W$ (°C) $K \div 6.5$ (°C/watt)
Insulation Resistance	500 V DC MEGA, 100 MΩ or more
Dielectric Strength	1000 V AC, 50/60 Hz, 1 minute
Rotor Inertia	20 (g·cm <sup>2</sup> )
Mass	350 (g)



### ◆ Torque Data



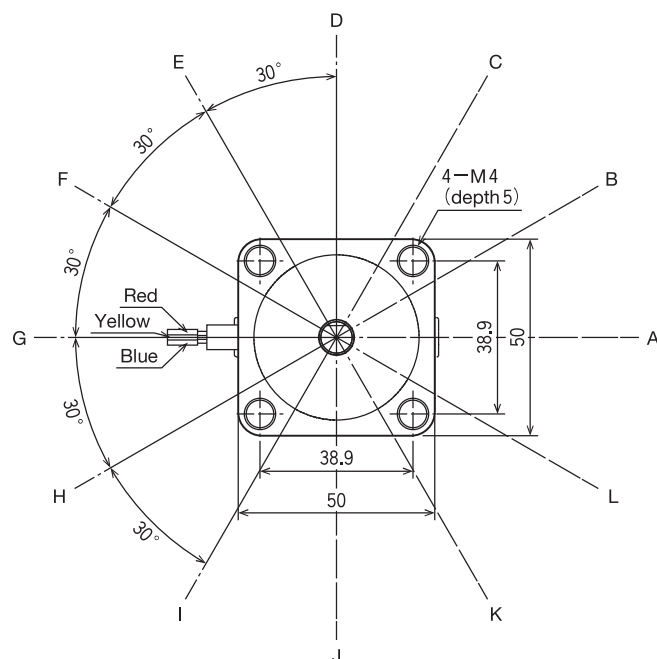
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C		0	(+)	(-)
D		(-)	(+)	0
E		(-)	0	(+)
F		0	(-)	(+)
G		(+)	(-)	0
H		(+)	0	(-)
I		0	(+)	(-)
J		(-)	(+)	0
K		(-)	0	(+)
L		0	(-)	(+)

Position	Lead Line Color	Red	Yellow	Blue
A		(+)	(-)	0
C		0	(+)	(-)
E		(-)	0	(+)
G		(+)	(-)	0
I		0	(+)	(-)
K		(-)	0	(+)

### ◆ External Dimensions (mm)



### Terminal Specifications

Lead Wire Length (mm) : 180  
Contact : DF 11-2428 SCFA (Hirose)  
Housing : DF 11-8 DS 2 C (Hirose)  
Thermal Fuse : Nominal Operating Temperature : 115°C

