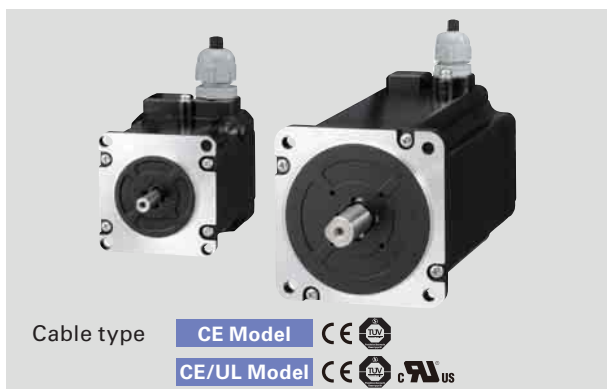


IP65 Splash and Dust Proof Stepping Motors



Cable type

CE Model



CE/UL Model



Connector type

CE Model



Features

- These IP65 rated motors* have superior water and dust resistance, and can be safely utilized in harsh or wet environments such as in food processing machines.
※ Except for the shaft and the cable end.
- The input voltage range of the motors is up to AC 250 V.
- Brake, encoder, and oil seal can be combined.

Safety standards

The CE model (Cable or Connector type) and the CE/UL model (Cable type) are available.

Specifications

	56 mm sq. (2.20 in sq.)		86 mm sq. (3.39 in sq.)	
	CE Model	CE/UL Model	CE Model	CE/UL Model
Motor model number	SP256 □ T-5 □ □ 0	SP256 □ -5 □ □ 60	SP286 □ T-5 □ □ 0	SP286 □ -5 □ □ 60
Type	S1 (continuous operation)			
Operating ambient temperature	- 10°C to + 40°C			
Conversation temperature	- 20°C to + 60°C			
Operating ambient humidity	95%MAX. : 40°C MAX., 57%MAX. : 50°C MAX.			
Conversation humidity	35%MAX. : 60°C MAX. (no condensation)			
Operation altitude	1000m (3280 feet) MAX above sea level			
Vibration resistance	Vibration frequency 10 to 500 Hz, total amplitude 1.52 mm (10 to 70 Hz), vibration acceleration 147m/s ² (70 to 500 Hz), sweep time 15 min/cycle, 12 sweeps in each X, Y and Z direction.			
Impact resistance	500m/s ² of acceleration for 11 ms with half-sine wave applying three times for X, Y and Z axes each, 18 times in total.			
Insulation class	Class F (+155°C)			
Withstand voltage	At normal temperature and humidity, no failure with 1500 V AC @50/60 Hz applied for one minute between motor winding and frame.			
Insulation resistance	At normal temperature and humidity, not less than 100MΩ between winding and frame by DC500V megger.			
Protection grade	IP65 (Except for the shaft and the cable end)			
Winding temperature rise	100K MAX. (Based on Sanyo Denki standard)			
Static angle error	± 0.054°		± 0.09°	
Axial play	0.075 mm (0.003 in) MAX. (load: 10N (2.25 lbs))			
Radial play	0.025 mm (0.001 in) MAX. (load: 5N (1.12 lbs))			
Shaft runout	0.025 mm (0.001 in)			
Concentricity of mounting pilot relative to shaft	φ 0.075 mm (φ 0.003 in)			
Squareness of mounting surface relative to shaft	0.1 mm (0.004 in)	0.1 mm (0.004 in)	0.15 mm (0.006 in)	0.15 mm (0.006 in)

Safety standards

CE	Standard category	Standard code	
	Low-voltage directives	EN60034-1, EN60034-5	
UL	Acquired standards	Standard code	File No.
	UL	UL1004-1,	E179832
	UL for Canada (c-UL)	UL1004-6	

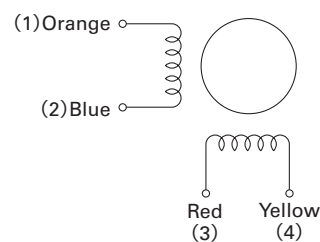
Model No. differs when the motor is equipped with a brake or oil seal.
Model No. and vibration resistance levels differ when the motor is equipped with a brake or oil seal.

Internal wiring and rotation direction

Bipolar winding

Internal wire connection

() : connector pin number



Direction of motor rotation

The output shaft shall rotate clockwise as seen from the shaft side, when excited by DC in the following order.

Lead wire color	Red	Blue	Yellow	Orange
Connector pin number	3	2	4	1
Exciting order	1	-	-	+
	2	+	-	+
	3	+	+	-
	4	-	+	-

56 mm sq. (2.20 inch sq.)

1.8° /step

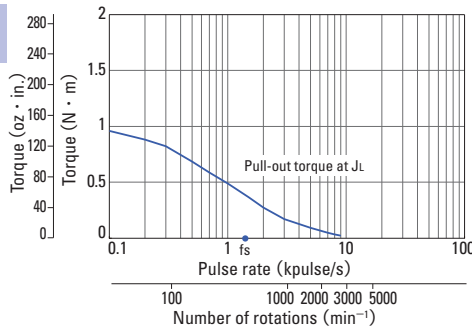
Bipolar winding

Safety standards	Model number		Holding torque at 2-phase energization [N·m (oz·in) MIN.]	Rated current A/phase	Winding resistance Ω /phase	Winding inductance mH/phase	Rotor inertia [$\times 10^{-4}$ kg·m ² (oz·in ²)]	Mass (Weight) [kg (lbs)]
	Cable type	Connector type						
CE Model	SP2563T-5060	SP2563T-5000	1 (141.6)	1	5.7	29	0.21 (1.15)	0.9 (2)
	SP2563T-5160	SP2563T-5100	1 (141.6)	2	1.5	7.3	0.21 (1.15)	0.9 (2)
	SP2563T-5260	SP2563T-5200	1 (141.6)	3	0.7	3.4	0.21 (1.15)	0.9 (2)
	SP2566T-5060	SP2566T-5000	1.7 (240.7)	1	7.7	35.4	0.36 (1.97)	1.2 (2.65)
	SP2566T-5160	SP2566T-5100	1.7 (240.7)	2	2	9.2	0.36 (1.97)	1.2 (2.65)
	SP2566T-5260	SP2566T-5200	1.7 (240.7)	3	0.94	4.4	0.36 (1.97)	1.2 (2.65)
CE/UL Model	SP2563-5060	—	1 (141.6)	1	5.8	29	0.21 (1.15)	0.9 (2)
	SP2563-5160	—	1 (141.6)	2	1.5	7.3	0.21 (1.15)	0.9 (2)
	SP2563-5260	—	1 (141.6)	3	0.75	3.4	0.21 (1.15)	0.9 (2)
	SP2566-5060	—	1.7 (240.7)	1	7.8	35.4	0.36 (1.97)	1.2 (2.65)
	SP2566-5160	—	1.7 (240.7)	2	2	9.2	0.36 (1.97)	1.2 (2.65)
	SP2566-5260	—	1.7 (240.7)	3	1	4.4	0.36 (1.97)	1.2 (2.65)

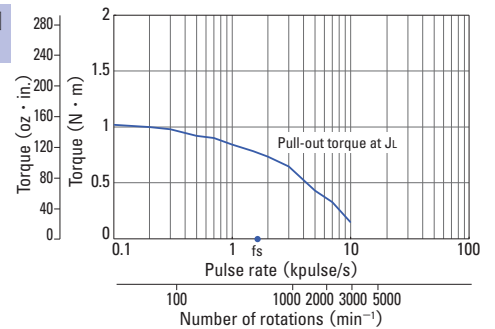
· The Model No., rotor inertia and mass differ when the motor is equipped with brake, encoder or oil seal.

Characteristics diagram

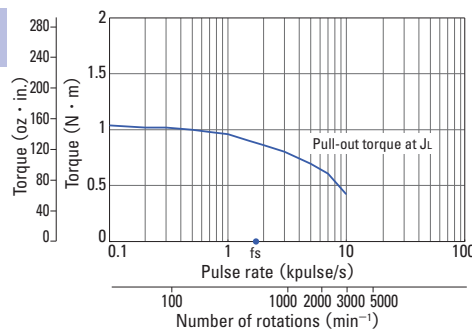
SP2563T-50
SP2563-5060



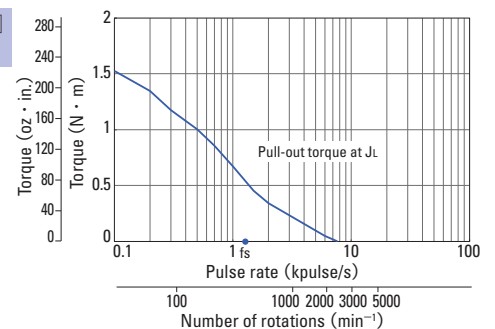
SP2563T-51
SP2563-5160



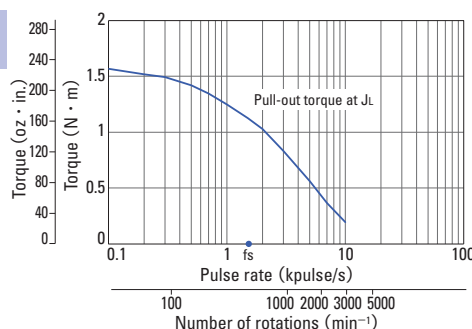
SP2563T-52
SP2563-5260



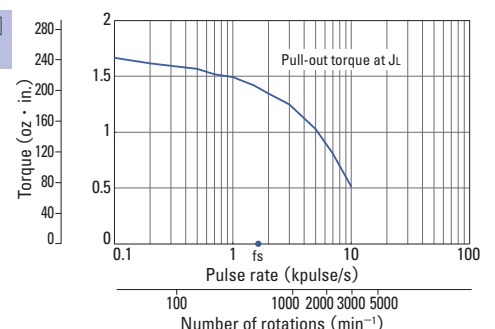
SP2566T-50
SP2566-5060



SP2566T-51
SP2566-5160



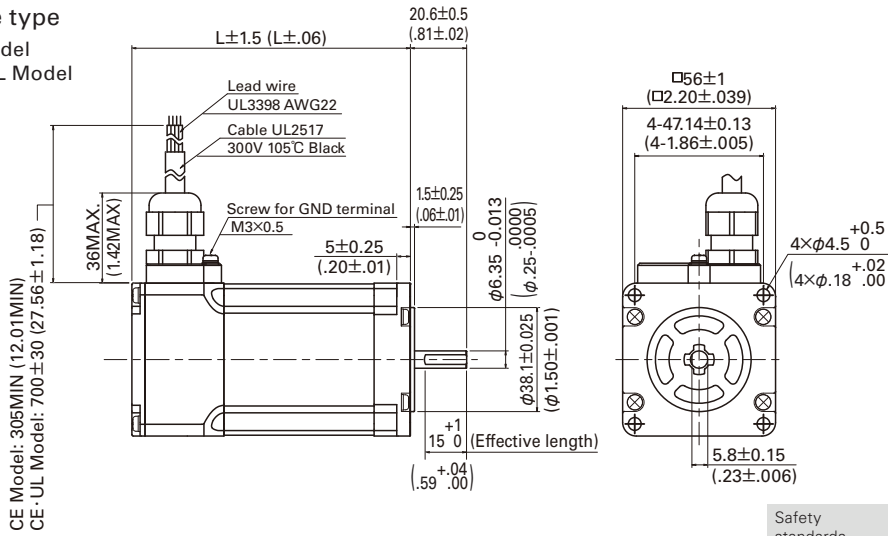
SP2566T-52
SP2566-5260



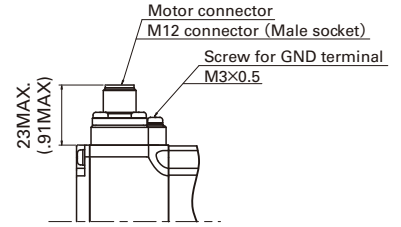
IP65 Splash and Dust Proof Stepping Motors [Unit: mm (inch)]

56 mm sq. (2.20 inch sq.)

Cable type
CE Model
CE · UL Model



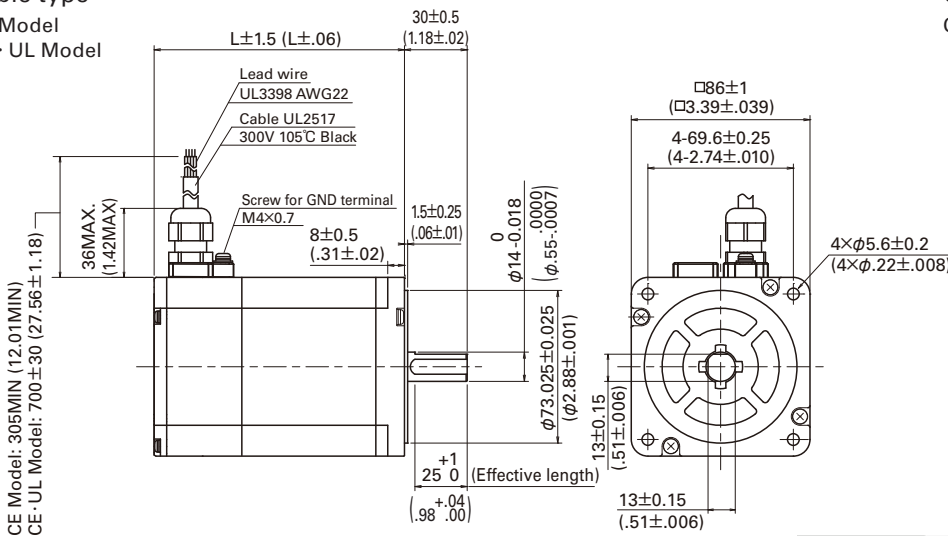
Connector type
CE Model



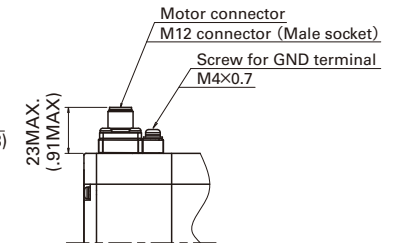
Safety standards	Model number		Motor length (L)
	Cable type	Connector type	
CE Model	SP2563T-5 □ 60	SP2563T-5 □ 00	80 (3.15)
	SP2566T-5 □ 60	SP2566T-5 □ 00	102 (4.02)
CE · UL Model	SP2563-5 □ 60	-	80 (3.15)
	SP2566-5 □ 60	-	102 (4.02)

86 mm sq. (3.39 inch sq.)

Cable type
CE Model
CE · UL Model



Connector type
CE Model



Safety standards	Model number		Motor length (L)
	Cable type	Connector type	
CE Model	SP2862T-5 □ 60	SP2862T-5 □ 00	120 (4.72)
	SP2863T-5 □ 60	SP2863T-5 □ 00	150 (5.91)
CE · UL Model	SP2862-5 □ 60	-	120 (4.72)
	SP2863-5 □ 60	-	150 (5.91)

