

Specifications of 2-Phase Stepping Motor

General Specifications

	103-4902	103-591	103-771 □	103H32 □ □ / SH35 □ □ / 103H52 □ □
Insulation class	Class B (130°C)			
Insulation resistance	Not less than 100MΩ between winding and frame by DC500V megger or normal temperature and humidity.			
Withstand voltage	Without abnormality when applying 50/60Hz, 0.5kV AC (1kV AC for 103-771 □) for 1minute (leakage current 1mA) between winding and frame at normal temperature and humidity.			
Operating environment	Ambient temperature: -10°C~+50°C			
	Ambient humidity: 20~90% RH (no condensation)			
Winding temperature rise	80K MAX. (Based on Sanyo Denki standard)			
Standing angle error	±0.045°	±0.054°	±0.045°	±0.09°
Axial play	0.075mm(0.003inch) MAX Load 4.4N(1lbs)	0.075mm(0.003inch) MAX Load 4.4N(1lbs)	0.075mm(0.003inch) MAX Load 9N(2lbs)	0.075mm(0.003inch) MAX Load 4.4N(1lbs)
	0.025mm(0.001inch) MAX Load 4.4N(1lbs)			
Radial play (Note 1)	0.025mm(0.001inch) MAX Load 4.4N(1lbs)			
Shaft runouts	0.025mm(0.001inch)			
Concentricity of mounting spigot relative to shaft	ø0.05mm(0.002inch)	ø0.05mm(0.002inch)	ø0.075mm(0.003inch)	ø0.05mm(0.002inch)
Perpendicularity of mounting surface relative to shaft	0.075mm(0.03inch)	0.075mm(0.03inch)	0.075mm(0.003inch)	0.1mm(0.004inch)

(Note 1) When load is applied at 1/3 length from output shaft edge.

	103H670 □	103H712 □ / 103H782 □	103H822 □ □ / 103H8922 □ □
Insulation class	Class B (130°C)		
Insulation resistance	Not less than 100MΩ between winding and frame by DC500V megger or normal temperature and humidity.		
Withstand voltage	Without abnormality when applying 50/60Hz, 1kV AC for 1minute (leakage current 1mA) between winding and frame at normal temperature and humidity.		
Operating environment	Ambient temperature: -10°C~+50°C		
	Ambient humidity: 20~90% RH (no condensation)		
Winding temperature rise	80K MAX. (Based on Sanyo Denki standard)		
Standing angle error	±0.09°	±0.054°	±0.09°
Axial play	0.075mm(0.003inch) MAX. Load 9N(2lbs)		
Radial play (Note 1)	0.025mm MAX. Load 4.4N(1lbs)		
Shaft runouts	0.025mm(0.001inch)		
Concentricity of mounting spigot relative to shaft	ø0.075mm(0.003inch)		
Perpendicularity of mounting surface relative to shaft	0.075mm(0.003inch)		

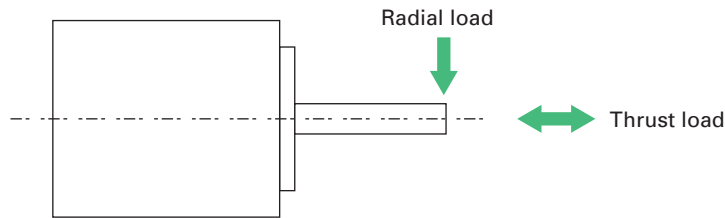
(Note 1) When load is applied at 1/3 length from output shaft edge.

General Specifications (CE Marked Models)

	103H712 □	103H8922 □ / 103H822 □
Rated voltage	12-200VDC	12-300VDC
Applied standards(Low voltage directive)	EN60034-1, IEC34-5(EN60034-5), EN60204-1, EN60950, EN61010-1	
Operation type	S1 (continuous rating)	
Protection grade	IP43	
Device category	Class I	
Operation environment	Pollution dgree	
Insulation class	Class B (130°C)	
Insulation resistance	Not less than 100MΩ between winding and frame by DC500V megger or normal temperature and humidity.	
Withstand voltage	Without abnormality when applying 50/60Hz, 1600V AC (1500V AC for 103H712 □) for 1minute (leakage current 10mA) between winding and frame at normal temperature and humidity.	
Operating environment	Ambient temperature: -10°C~+40°C	
	Ambient humidity 20~90% (no condensation)	
Winding temperature rise	80K MAX. (Based on Sanyo Denki standard)	
Standing angle error	±0.054°	±0.09°
Axial play	0.075mm(0.003inch) MAX. Load 9N(2lbs)	
Radial play (Note 1)	0.025mm(0.001inch) MAX. Load 4.4N(1lbs)	
Shaft runouts	0.025mm(.001inch)	
Concentricity of mounting spigot relative to shaft	ø0.075mm(0.003inch)	
Perpendicularity of mounting surface relative to shaft	0.1mm(0.04inch)	

(Note 1) When load is applied at 1/3 length from output shaft edge.

Allowable radial load / thrust load



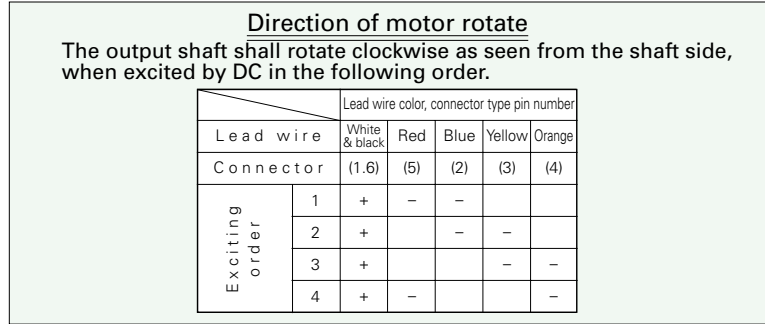
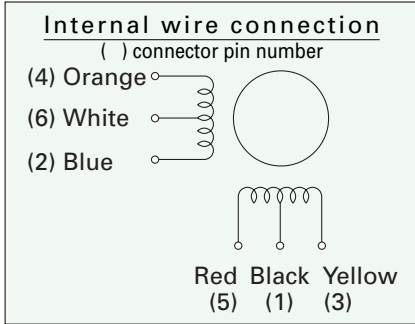
Frange size	Model. No.	Distance from end of shaft:mm (inch)				Thrust load N(lbs)
		0	5(0.20)	10(0.39)	15(0.59)	
Radial load:N(lbs)						
□28mm(□1.10inch)	103H32□□	30(6)	39(8)	53(11)	84(18)	3(0.67)
□35mm(□1.38inch)	SH35□□	40(8)	50(11)	67(15)	98(22)	10(2.25)
□39mm(□1.54inch)	103-49□□	43(9)	59(13)	93(20)	216(48)	30(6.75)
□42mm(□1.65inch)	103H52□□	22(4)	26(5)	33(7)	46(10)	10(2.25)
	103-59□					
□50mm(□1.97inch)	103H670□	71(15)	87(19)	115(25)	167(37)	15(3.37)
□56mm(□2.20inch)	103H712□	52(11)	65(14)	85(19)	123(27)	15(3.37)
	103H7128	85(19)	105(23)	138(31)	200(44)	15(3.37)
φ 56mm(φ 2.20inch)	103-77□□	75(16)	92(20)	121(27)	176(39)	15(3.37)
□60mm(□2.36inch)	103H782□	70(15)	87(19)	114(25)	165(37)	20(4.50)
φ 86mm(φ 3.39inch)	103H822□	167(37)	193(43)	229(51)	280(62)	60(13.488)
φ 106mm(φ 4.17inch)	103H8922□	321(72)	357(80)	401(90)	458(102)	100(22.48)

39mm(1.54)/0.9
 42mm(1.65)/0.9
 28mm(1.10)/1.8
 35mm(1.38)/1.8
 42mm(1.65)/1.8
 50mm(1.97)/1.8
 56mm(2.20)/1.8
 60mm(2.36)/1.8
 86mm(3.39)/1.8
 106mm(4.17)/1.8
 106mm(4.17)/CE
 56mm(2.20)/CE
 86mm(3.39)/CE
 106mm(4.17)/CE
 Specifications of
 2-phase stepping motor
 In-vacuum
 stepping motor
 2-phase
 synchronous motor

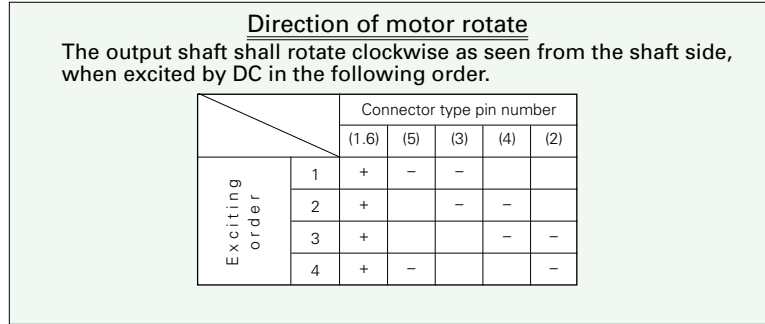
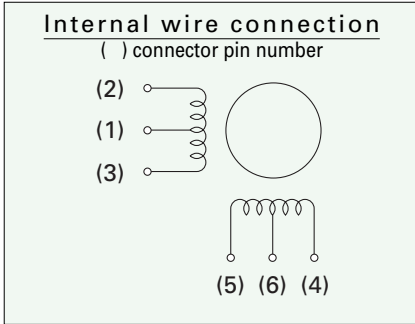
Internal Wiring and Rotation Direction

Unipolar winding

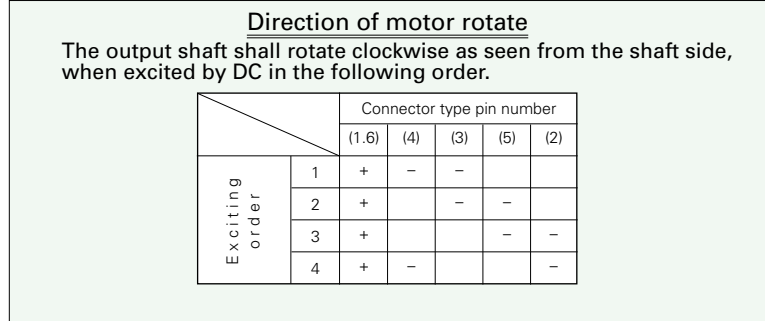
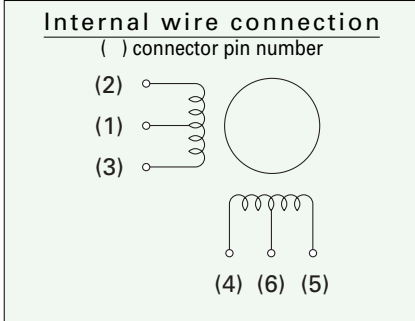
● 103H32□□



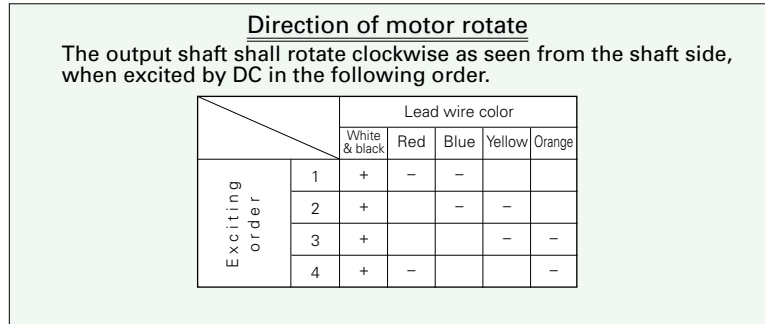
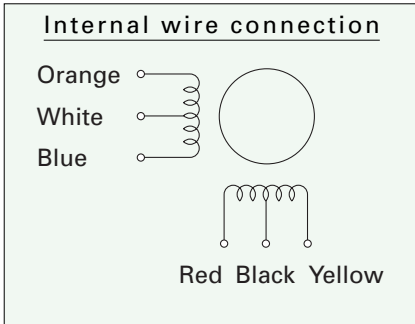
● 103H52□□



● 103H782□



● Other than 103H32□□, 103H52□□, 103H782□



Bipolar winding

