

5 PHASE STEPPING MOTOR

M A N U A L



Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

Caution for your safety

- ※ Please keep these instructions and review them before using this unit.
- ※ Please observe the cautions that follow:
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- ※ The following is an explanation of the symbols used in the operation manual.
- Caution**: Injury or danger may occur under special conditions.

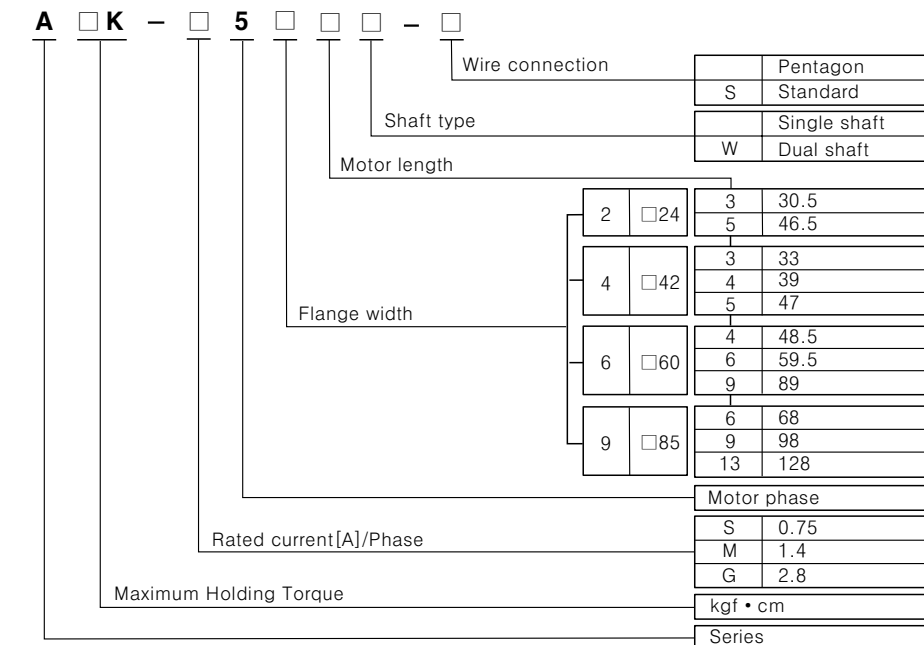
Warning

- In case of using this unit with machineries (Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information on type required. It may result in serious damage, fire or human injury.

Caution

- Do not put flammable object around this product. It may cause a fire or a burn.
- Do not put obstacle object for well ventilation around this product. It may cause damage to this product or malfunction of peripheral equipment by motor heating.
- Temperature in surface of motor can be over 70°C in normal operating state. Please put caution mark in order to avoid this. It may cause a burn.
- Do not move cable for rotating part of this unit. It may cause human injury.
- Please cover the rotation part of this unit. It may cause human injury.
- Do not disassemble or modify this unit. It may cause damage to this product or quality down.
- Please separate as industrial scrapped material when disuse this unit.

Ordering information



※ The above specification are changeable without notice anytime.

Specification

Model	A02K-S523□	A02K-S525□
Maximum Holding Torque	0.18kgf • cm 0.018N • m	0.28kgf • cm 0.028N • m
Rotor inertia	4.2g • cm ² 4.2 × 10 ⁻⁷ kg • m ²	8.2g • cm ² 8.2 × 10 ⁻⁷ kgf • m ²
Rated current	0.75A/Phase	
Step angle	0.72° / 0.36° (Full/Half)	
Insulation level	B(130°C)	
Insulation resistance	Over 100 MΩ when measured between Motor coil and case with 500VDC in normal temperature and humidity.	
Dielectric strength	Apply 0.5kV between Motor Coil and case for 1 minute in normal temperature and humidity.	
Ambient temperature	-10°C to +50°C	
Weight	0.07kg	0.12kg

Model	A1K-S543□-□	A2K-S544□-□	A3K-S545□-□
Maximum Holding Torque	1.3kgf • cm 0.13N • m	1.8kgf • cm 0.18N • m	2.4kgf • cm 0.24N • m
Rotor inertia	35g • cm ² 35 × 10 ⁻⁷ kg • m ²	54g • cm ² 54 × 10 ⁻⁷ kg • m ²	68g • cm ² 68 × 10 ⁻⁷ kg • m ²
Rated current	0.75A/Phase		
Step angle	0.72° / 0.36° (Full/Half)		
Insulation level	B(130°C)		
Insulation resistance	Over 100 MΩ when measured between Motor coil and case with 500VDC in normal temperature and humidity.		
Dielectric strength	Apply 0.5kV between Motor Coil and case for 1 minute in normal temperature and humidity.		
Ambient temperature	-10°C to +50°C		
Weight	0.25kg	0.3kg	0.4kg

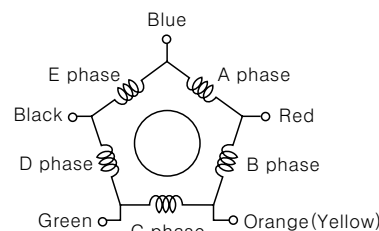
Model	A4K-S564□-□	A4K-S564□-□	A8K-S566□-□	A8K-S566□-□	A16K-S569□-□	A16K-S569□-□
Maximum Holding Torque	4.2kgf • cm 0.42N • m	4.2kgf • cm 0.42N • m	8.3kgf • cm 0.83N • m	8.3kgf • cm 0.83N • m	16.6kgf • cm 1.66N • m	16.6kgf • cm 1.66N • m
Rotor inertia	175g • cm ² 175 × 10 ⁻⁷ kg • m ²	175g • cm ² 175 × 10 ⁻⁷ kg • m ²	280g • cm ² 280 × 10 ⁻⁷ kg • m ²	280g • cm ² 280 × 10 ⁻⁷ kg • m ²	560g • cm ² 560 × 10 ⁻⁷ kg • m ²	560g • cm ² 560 × 10 ⁻⁷ kg • m ²
Rated current	0.75A/Phase	1.4A/Phase	0.75A/Phase	1.4A/Phase	1.4A/Phase	2.8A/Phase
Step angle	0.72° / 0.36° (Full/Half)					
Insulation level	B(130°C)					
Insulation resistance	Over 100 MΩ when measured between Motor coil and case with 500VDC in normal temperature and humidity.					
Dielectric strength	Apply 1.0kV between Motor Coil and case for 1 minute in normal temperature and humidity.					
Ambient temperature	-10°C to +50°C					
Weight	0.6kg		0.8kg		1.3kg	

Model	A21K-M596□-□	A21K-G596□-□	A41K-M599□-□	A41K-G599□-□	A63K-M5913□-□	A63K-G5913□-□
Maximum holding torque	21kgf • cm 2.1N • m	21kgf • cm 2.1N • m	41kgf • cm 4.1N • m	41kgf • cm 4.1N • m	63kgf • cm 6.3N • m	63kgf • cm 6.3N • m
Rotor inertia	1400g • cm ² 1400 × 10 ⁻⁷ kg • m ²	1400g • cm ² 1400 × 10 ⁻⁷ kg • m ²	2700g • cm ² 2700 × 10 ⁻⁷ kg • m ²	2700g • cm ² 2700 × 10 ⁻⁷ kg • m ²	4000g • cm ² 4000 × 10 ⁻⁷ kg • m ²	4000g • cm ² 4000 × 10 ⁻⁷ kg • m ²
Rated current	1.4A/Phase	2.8A/Phase	1.4A/Phase	2.8A/Phase	1.4A/Phase	2.8A/Phase
Basic step angle	0.72° / 0.36° (Full/Half)					
Insulation level	B(130°C)					
Insulation resistance	Over 100 MΩ when measured between Motor coil and case with 500VDC in normal temperature and humidity.					
Dielectric strength	Apply 1.0kV between Motor Coil and case for 1 minute in normal temperature and humidity.					
Ambient temperature	-10°C to +50°C					
Weight	1.7kg		2.8kg		3.8kg	

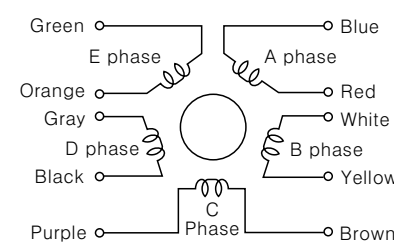
Winding diagram

Please see the every phase and color of lead wire of stepping motor below.
Connection of pentagon and standard are wired by inner connection of this products.

● A□K-□5□□□



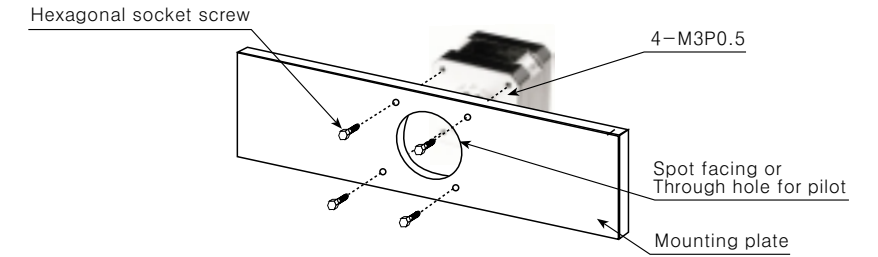
● A□K-□5□□□-S



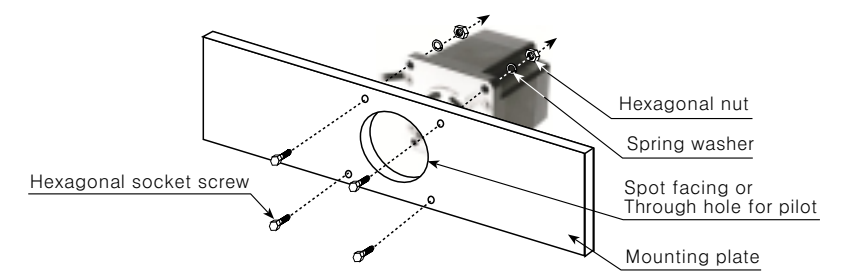
Installation

- Mounting
 - Mount the motor tightly on a metal surface with good thermal conductivity.
 - Please fix the motor with using hexagonal socket screw, nut, etc.
 - Please see the thickness of mounting plate and screws in below chart.

● A□K-□52□□-□, A□K-□54□□-□ Series



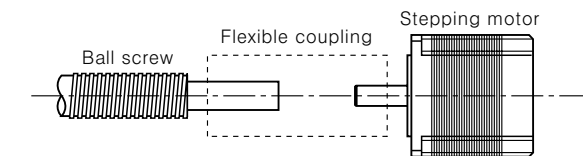
● A□K-□56□□-□, A□K-□59□□-□ Series



Motor model	Minimum thickness of the mounting plate	Screw
A□K-□52□□-□ Series	3[mm] (0.12inch)	M2.6
A□K-□54□□-□ Series		M3
A□K-□56□□-□ Series	4[mm] (0.16inch)	M4
A□K-□59□□-□ Series	5[mm] (0.20inch)	M6

Alignment of the load

- When connect the load to shaft of motor directly (Ball screw etc), please use flexible coupling. If the center of shaft and mate are not aligned each other, it might cause shorten the life cycle or damage to motor shaft.



- When machining the motor shaft or connecting it to a pulley or other device, ensure that shaft is not subjected to a thrust bad, overhung load or shock.

Caution for using

- Do not drop this product or put impact. Do not pull the cable with excessive strength.
- Please avoid below place to use this product.
 - Place where can effect vibration or impact on motor.
 - Place where lots of dust etc.
 - Place where lots of water or oil etc.
 - Place where flammable gas or corrosive gas.
 - Ambient temperature is beyond of -10°C to +50°C.
- Rising temperature

Please make temperature of motor surface under 100°C.

When drive the motor by constant current drive, the surface temperature of motor can be significantly increased. This case please consider cooling method such as fan etc.

※ It may cause malfunction if above instructions are not followed.

Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER
- LINE SPEED METER
- DISPLAY UNIT
- PROXIMITY SWITCH
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

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