Autonics

5 PHASE HOLLOW SHAFT TYPE

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

▲: Injury or danger may occur under special conditions.

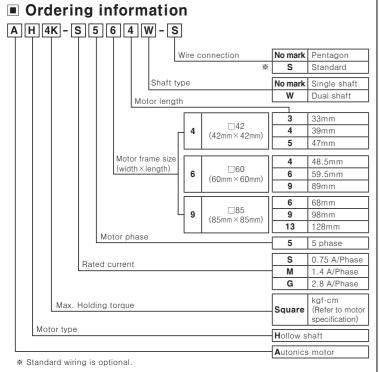
∆Warning

1. In case of using this unit with machinery(medical equipment, vehicle, train, airplane, combustion apparatus, entertainment processing equipment, conveyor, elevator or safety device, etc.), it is required to install fail-safe device, or contact us for information required.

It may cause serious a fire, human injury or property loss

∧Caution

- 1. Do not put flammable objects around this unit.
- t may cause a fire or burn
- 2. Do not obstacle object for well ventilation around this unit. It may cause a damage to this product or malfunction of peripheral equipment by motor heating
- 3. The surface temperature of the motor is possible to be over 70°C in normal operating state. Please put a caution mark on outstanding place when somebody may approach to the operating motor. may cause a burn
- 4. Do not carry the cable or rotating part of this unit.
- may cause human injury.
- 5. Do not inordinate impact or continuous vibration to this unit.
- may cause malfunction of this product
- 6. Please put a cover on the rotating part of this unit.
- may cause human injury.
- 7. Do not disassemble or modify this unit.
- may cause damage to this product or quality down
- 8. Please separate as industrial scrapped material when disuse this unit.



* The above specifications are subject to change without notice.

Specifications

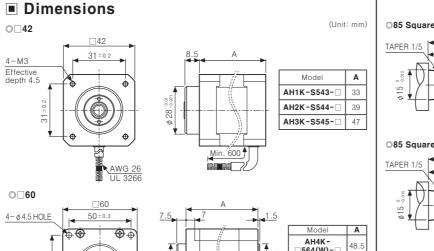
□42			
Model	AH1K-S543-□	AH2K-S544-□	AH3K-S545-□
Max. holding torque(*1)	1.3 kgf·cm (0.13 N·m)	1.8 kgf·cm (0.18 N·m)	2.4 kgf·cm (0.24 N·m)
Moment of rotor inertia	35 g·cm² (35x10 ⁻⁷ kg·m²)	54 g·cm² (54x10 ⁻⁷ kg·m²)	68 g·cm ² (68x10 ⁻⁷ kg·m ²)
Rated current	0.75 A/Phase		
Basic step angle	0.72 ° / 0.36 ° (Full/Half)		
Unit weight	Approx. 0.25kg	Approx. 0.3kg	Approx. 0.4kg

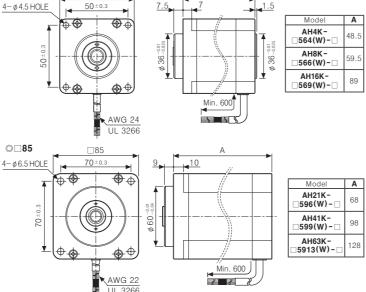
□60						
Model	AH4K- S564(W)-□	AH4K- M564(W)-□	AH8K- S566(W)-□	AH8K- M566(W)-□	AH16K- M569(W)-□	AH16K- G569(W)-□
Max. holding torque (*1)		gf·cm N·m)		gf·cm N·m)		gf·cm N·m)
Moment of rotor inertia		g·cm² ⁻⁷ kg·m²)		g·cm² ⁻⁷ kg·m²)		g·cm² ⁻⁷ kg·m²)
Rated current	0.75 A/Phase	1.4 A/Phase	0.75 A/Phase	1.4 A/Phase	1.4 A/Phase	2.8 A/Phase
Basic step angle			0.72 °/0.36	° (Full/Half)		
Unit weight	Approx	. 0.6ka	Approx	. 0.8ka	Approx	. 1.3kg

□85						
Model	AH21K- M596(W)-□	AH21K- G596(W)-□	AH41K- M599(W)-□	AH41K- G599(W)-□	AH63K- M5913(W)-□	AH63K- G5913(W)-□
Max. holding torque (*1)		gf·cm N·m)		gf·cm N·m)	63 kg (6.3	gf·cm N·m)
Moment of rotor inertia		g·cm²) ⁻⁷ kg·m²)		g·cm²) ⁻⁷ kg·m²)		g·cm²) ⁻⁷ kg·m²)
Rated current	1.4 A/Phase	2.8 A/Phase	1.4 A/Phase	2.8 A/Phase	1.4 A/Phase	2.8 A/Phase
Basic step angle			0.72 ° / 0.36	° (Full/Half)		
Unit weight	Approx	. 1.7kg	Approx	. 2.8kg	Approx	. 3.8kg

* 1: Max. Holding torque is a retaining torque when 5 phase excitation stopped after the rated current is flowed in motor

Common specif	ication
Insulation resistance Min. 100№ (at 500VDC megger) between Motor coil-case	
Dielectric strength 1 kVAC(at 0.75 A/Phase is 0.5 kVAC) 50/60Hz for 1 minute between Motor coil—case	
Temperature rise	5-Phase excitation for rated current, below 80°C at stop status (resistance method)
Ambient temperature	-10 to 50℃, Storage: -25 to 85℃
Ambient temperature Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH
Protection	IP30(IEC34-5 standards)
Environment re	sistance is rated at no freezing or condensation.



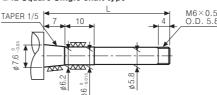


Processing Example for Shaft Assembly

In order to assemble external shafts into Autonics motors, the shafts must be processed as shown in the

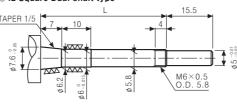
This motor is developed for direct connection to the axis of Ball-screw or TM-screw, etc. without a coupling.

042 Square Single shaft type



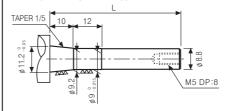
Model L AH1K-S543-AH2K-S544-AH3K-S545-★ Lock Nut is included

042 Square Dual shaft type





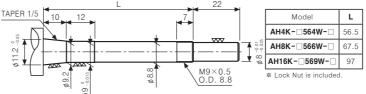
060 Square Single shaft type



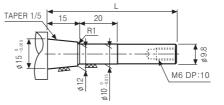
Model	L
AH4K-□564-□	46
AH8K-□566-□	57
AH16K-□569-□	86.5

washer, Spring washer an Lock Nut are included

○60 Square Dual shaft type

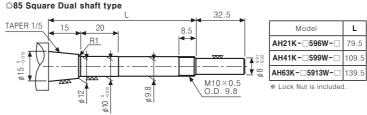


○85 Square Single shaft type



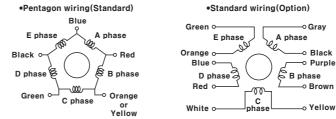
Model	L	
AH21K-□596-□	64.5	
AH41K-□599-□	94	
AH63K-□5913-□	124.5	
** Hexagon socket screw, Plane washer, Spring washer and Lock Nut are included.		

L



Connection diagram

Refer to the below for correlations of motor's each phase(coil) and the color of lead wire. Note that Pentagon connection type is a standard model. (Standard connection type is an option model.)



In case of connecting standard connection type models to motor drivers, make sure that motor's lead wire connection must be made as specified in the table

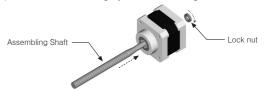
Lead wire color for Standard connection type	Lead wire color for Pentagon connection type	
Gray + Red	Blue	
Yellow + Black	Red	
Orange + White	Orange	
Brown + Green	Green	
Blue + Purple	Black	

■ Shaft assembly for hollow shaft with Motor

Make sure that external shaft assembly into motors must be made as sturdy as possible. If not, motor's torque might not be thoroughly transmitted to the shaft. In case no additional shaft assembly changes would be made, it is recommended to apply adhesives on screw fixing part.

TAP hole type motor

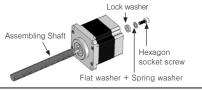
Use pliers to fasten lock nut tightly as shown in the figure below



Through hole type motor with single shaft

Use hexagon socket screws, flat washers, spring washers and lock washers to fasten the shaft tightly as shown in the figure below.

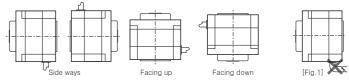
. Through hole type motor with dual shaft Use a lock nut to fasten the shaft tightly as shown in the figure below





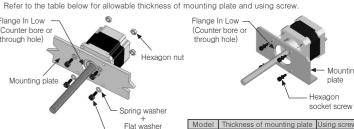
Motor mounting

· Motors can be mounted in any directions - facing up, facing down and side ways. No matter which direction motors to be mounted, be sure not to apply overhung or thrust load on the shaft Do not apply excessive force on motor cable when mounting motors like [Fig.1]. It may cause disconnection of motor cable



With considering heat radiation and vibration isolation, mount the motor as tight as possible again: metal panel having high thermal conductivity such as iron or aluminum

When mounting motors, use hexagon socket screw, hexagon nuts, spring washers, flat washers,



Model	Thickness of mounting plate	Using screw
□42	Min. 4mm	М3
□60	Min. 5mm	M4
□85	Min. 8mm	M6

Caution for using

. It may cause the efficiency of motor down if disassembling the motor

Hexagon

- . Do not disassemble motor. Be sure of an impact like motor drop.
- . Do not pull the connecting cable of motor. Please avoid below place to use this product.
- 1) The place where can cause vibration or an impact to motor
- 2 The place where has a lot of pollutant like dust, etc.
- 3 The place where can cause water or oil, etc. to go into motor
- (4) The place where flammable or corrosive gas is. $\mbox{\fontfamily support}$ The place where ambient temperature is beyond of $-10\,\mbox{\fontfamily c}$ to $50\,\mbox{\fontfamily c}$

The surface temperature of motor shall be under 100°C and it can be significantly increased in case of running motor by constant current drive. In this case, use the fan to lower the temperature forcedly. 6. Using at low temperature

Using motors at low temperature may cause reducing maximum starting/driving characteristics of the motor as ball bearing's grease consistency decreases due to low temperature. (Note that the lower the bearing's grease consistency, the higher the bearing's friction torques.) Start the motor in a steady manner since motor's torque is not to be influenced.

It may cause malfunction if above instructions are not followed.

Major products ■ Counters Proximity sensors

■ Photoelectric sensors
■ Display units

Fiber optic sensors ■ Door/Door side sensors ■ Pressure sensors Rotary encoders

■ Power controllers Sensor controllers

■ Graphic/Logic panels emperature controllers

■ Tachometer/Pulse(Rate) meters

nperature/Humidity transducers Switching power supplies

Stepping motors/drivers/m ■ Field network devices

■ Laser marking system(CO₂, Nd:YAG) ■ Laser welding/soldering system

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Bldg, 402 3rd FL, Bucheon Techno Park, 193, Yakdae-dong,

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TEL: 82-32-610-2730 / FAX: 82-32-329-0728

The proposal of a product improvement and development :product@autonics.com

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