

5 PHASE HOLLOW TYPE 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 "Caution for your safety" to avoid accidents or damages as using it correctly.

※The meaning of 'Warning' and 'Caution' is as follows;
Warning In case a serious injury or dead may be occurred.
Caution In case a little injury or a damage of this unit may be occurred.

※The meaning of the mark on the product and manual is as follows;
▲ is a caution mark for danger in special condition.

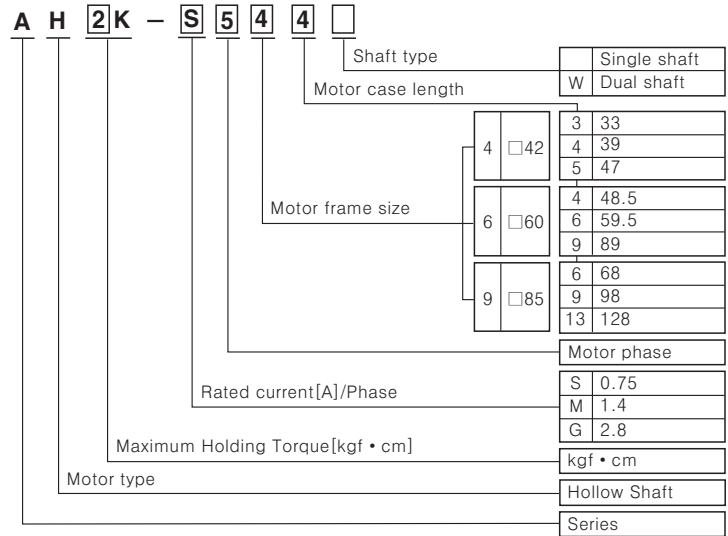
Warning

1. Please use it with double safety devices when it is used at the equipments which may cause damages to human life or assets(Ex:Medical equipment, Vehicle, Train, Air plane, Combustion apparatus, Entertainment or Safety device etc.) It may cause a fire, human life or assets.

Caution

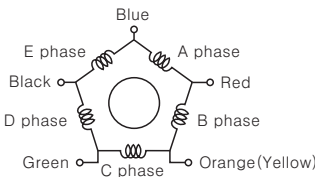
- Do not put flammable objects around this unit.
It may cause a fire or a burn.
- Do not put obstacle object for well ventilation around this unit.
It may cause a damage to this product or malfunction of peripheral equipment by motor heating.
- The surface temperature of the motor can be over 70℃ in normal operating state. Please put a caution mark on outstanding place when somebody may approach to the operating motor.
It may cause a burn.
- Do not carry the cable or rotating part of this unit.
It may cause human injury.
- Please put a cover on the rotating 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 informaion



Connection diagram

Five lead wires come out as wiring each phase coil by pentagon connection in hollow type stepping motor.



※The above specification are changeable without notice anytime.

Specifications

42(AH□K-□54□ Series)

Model	AH1K-S543	AH2K-S544	AH3K-S545
Maximum holding torque	1.3[kgf・cm] 0.13 [N・m]	1.8[kgf・cm] 0.18 [N・m]	2.4[kgf・cm] 0.24 [N・m]
Rotor inertia	35[g・cm ²] 35×10 ⁻⁷ [kg・m ²]	54[g・cm ²] 54×10 ⁻⁷ [kg・m ²]	68[g・cm ²] 68×10 ⁻⁷ [kg・m ²]
Rated current[A]/Phase	0.75		
Basic step angle	0.72° / 0.36° (Full/Half)		
Insulation class	CLASS B(130℃)		
Insulation resistance	100MΩ minimum under normal temperature and humidity, when measured by a 500VDC megger between the windings and the motor casing		
Dielectric strength	Sufficient to withstand 0.5kV, 50Hz applied for one minute between the windings and casing under normal temperature and humidity		
Operation condition	-10℃ ~ +50℃ (non freezing) Max. 1,000m		
Storage condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non condensing)		
Transportation condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non freezing)		
Standard	IEC34-1		
Protection	IP30(IEC34-5)		
Weight	0.25kg	0.3kg	0.4kg

60(AH□K-□56□ Series)

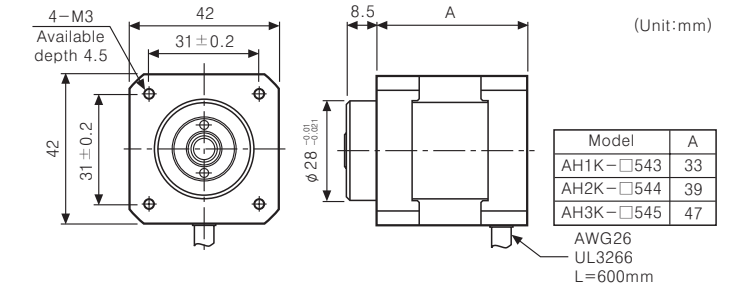
Model	AH4K-S564□	AH4K-S564□	AH8K-S566□	AH8K-S566□	AH16K-S569□	AH16K-S569□
Maximum holding torque	4.2[kgf・cm] 0.42 [N・m]	4.2[kgf・cm] 0.42 [N・m]	8.3[kgf・cm] 0.83 [N・m]	8.3[kgf・cm] 0.83 [N・m]	16.6[kgf・cm] 1.66 [N・m]	16.6[kgf・cm] 1.66 [N・m]
Rotor inertia	175[g・cm ²] 175×10 ⁻⁷ [kg・m ²]	175[g・cm ²] 175×10 ⁻⁷ [kg・m ²]	280[g・cm ²] 280×10 ⁻⁷ [kg・m ²]	280[g・cm ²] 280×10 ⁻⁷ [kg・m ²]	560[g・cm ²] 560×10 ⁻⁷ [kg・m ²]	560[g・cm ²] 560×10 ⁻⁷ [kg・m ²]
Rated current[A]/Phase	0.75	1.4	0.75	1.4	1.4	2.8
Basic step angle	0.72° / 0.36° (Full/Half)					
Insulation class	CLASS B(130℃)					
Insulation resistance	100MΩ minimum under normal temperature and humidity, when measured by a 500VDC megger between the windings and the motor casing					
Dielectric strength	Sufficient to withstand 1.0[kV] (But, 0.5[kV] in 0.75[A]/Phase) 50Hz applied for one minute between the windings and casing under normal temperature and humidity					
Operation condition	Ambient temperature: -10℃ ~ +50℃ (non freezing) Altitude: Max. 1,000m Humidity: 85% or less (non condensing)					
Storage condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non condensing)					
Transportation condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non freezing)					
Standard	IEC34-1					
Protection	IP30(IEC34-5)					
Weight	0.6kg		0.8kg		1.3kg	

85(AH□K-□59□ Series)

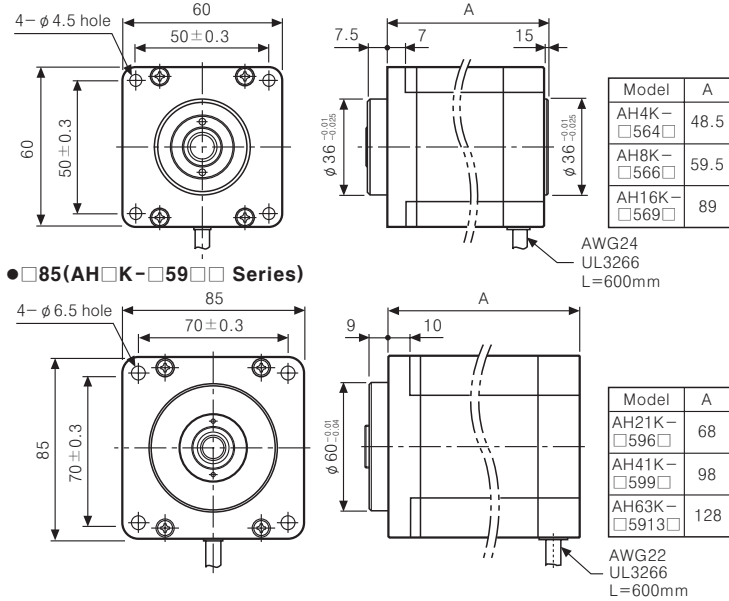
Model	AH21K-M596□	AH21K-M596□	AH41K-M599□	AH41K-M599□	AH63K-M5913□	AH63K-M5913□
Maximum holding torque	21[kgf・cm] 2.1 [N・m]	21[kgf・cm] 2.1 [N・m]	41[kgf・cm] 4.1 [N・m]	41[kgf・cm] 4.1 [N・m]	63[kgf・cm] 6.3 [N・m]	63[kgf・cm] 6.3 [N・m]
Rotor inertia	1,400[g・cm ²] 1,400×10 ⁻⁷ [kg・m ²]	1,400[g・cm ²] 1,400×10 ⁻⁷ [kg・m ²]	2,700[g・cm ²] 2,700×10 ⁻⁷ [kg・m ²]	2,700[g・cm ²] 2,700×10 ⁻⁷ [kg・m ²]	4,000[g・cm ²] 4,000×10 ⁻⁷ [kg・m ²]	4,000[g・cm ²] 4,000×10 ⁻⁷ [kg・m ²]
Rated current[A]/Phase	1.4	2.8	1.4	2.8	1.4	2.8
Basic step angle	0.72° / 0.36° (Full/Half)					
Insulation class	CLASS B(130℃)					
Insulation resistance	100MΩ minimum under normal temperature and humidity, when measured by a 500VDC megger between the windings and the motor casing					
Dielectric strength	Sufficient to withstand 1.0[kV], 50Hz applied for one minute between the windings and casing under normal temperature and humidity					
Operation condition	Ambient temperature: -10℃ ~ +50℃ (non freezing) Altitude: Max. 1,000m Humidity: 85% or less (non condensing)					
Storage condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non condensing)					
Transportation condition	Ambient temperature: -25℃ ~ +70℃ (non freezing) Altitude: Max. 3,000m Humidity: 85% or less (non condensing)					
Standard	IEC34-1					
Protection	IP30(IEC34-5)					
Weight	1.7kg		2.8kg		3.8kg	

Dimensions

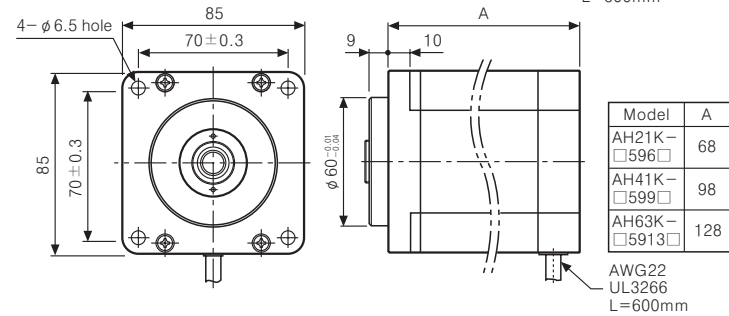
42(AH□K-□54□ Series)



60(AH□K-□56□ Series)



85(AH□K-□59□ Series)

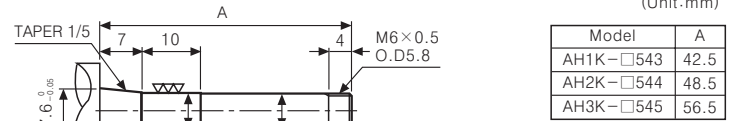


Processing of joint shaft

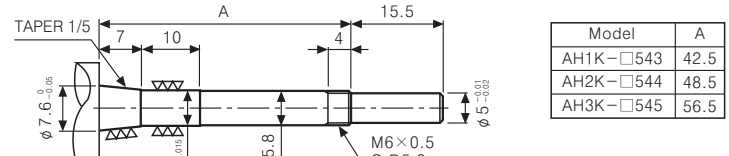
In order to connect joint shaft to our motor it should be processed as below drawing and be assembled.

Our motor is developed on the purpose of connecting to the axis of Ball-Screw or TM-Screw directly. etc. not by coupling.

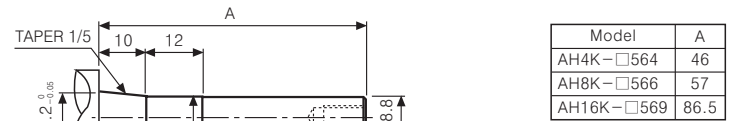
42(AH□K-□54□ Series), a single joint shaft



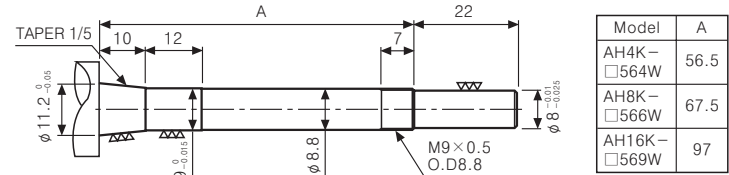
42(AH□K-□54□ Series), a dual joint shaft



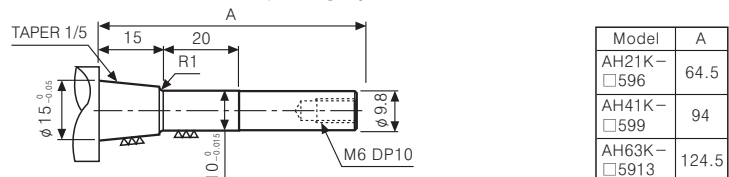
60(AH□K-□56□ Series), a single joint shaft



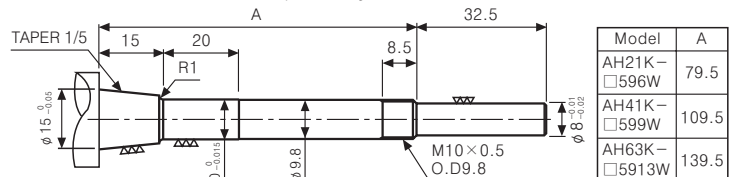
60(AH□K-□56□W Series), a dual joint shaft



85(AH□K-□59□ Series), a single joint shaft



85(AH□K-□59□W Series), a dual joint shaft

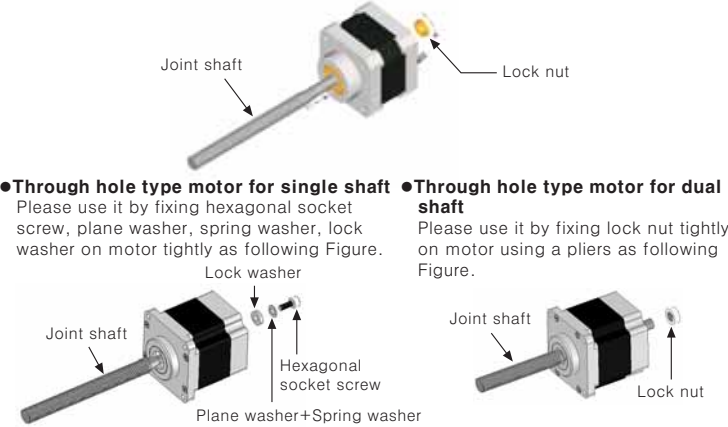


Shaft for assembly with Motor

Please assemble the shaft with motor tightly as following Figure. It may be not transferred the torque of motor to the shaft when it is not assembled tightly. Assemble using glue for fix the bolts if it doesn't need to exchange the joint shaft.

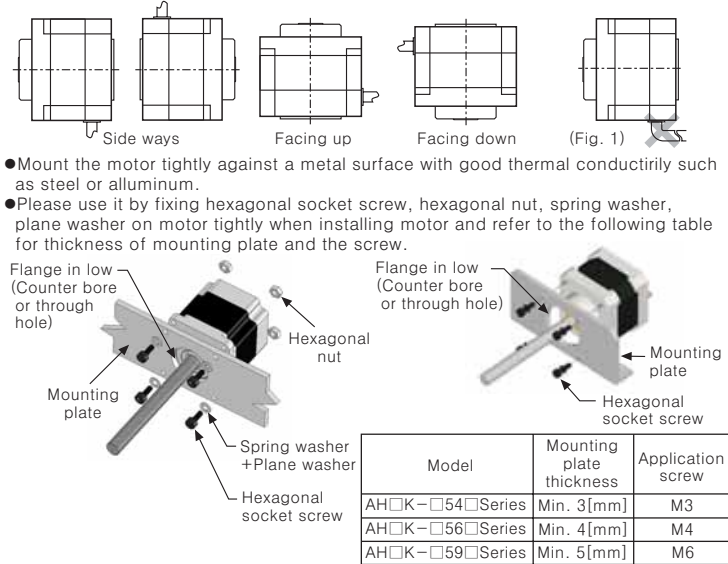
Tapped hole type motor

Please use it by fixing lock nut tightly on motor using a pliers as following Figure.



Motor mounting

Motor can be mounted freely in any direction of side ways, facing up or down as following. But please check overhung and thrust load on shaft. And be sure of overload on Motor's cable like (Fig. 1). It may cause for the snapping of motor cable.



Caution for using

- It may cause the efficiency of motor down if disassembling the motor.
- 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.
 - The place where can cause vibration or an impact to motor.
 - The place where has a lot of pollutant like dust etc.
 - The place where can cause water or oil etc. to go into motor.
 - The place where flammable or corrosive gas is.
 - The place where ambient temperature is beyond of -10℃ to +50℃.
- Temperature rise
Please use it on the surface temperature under 100℃.
The surface temperature of motor can be significantly increased in case of driving the motor by constant current. In this case please consider using forced cooling methods by fan etc.
- Usage in low temperature
The features of Maximum slewing and Maximum starting frequency may go down by frictional torque decreased as the ambient temperature of ball bearing for the axis of motor falls down. But, use it operating motor slowly as the torque of motor is not damaged.

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

Main products

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

Autonics Corporation
http://www.autonics.net

HEAD QUARTER :
41-5, Yongdang-ri, Ungsang-eup, Yangsan-si,
Gyeongnam, Korea 626-847
INTERNATIONAL SALES :
512 Ansung B/D, 410-13, Shindorim-dong,
Guro-gu, Seoul, Korea 152-070
TEL:82-2-2679-6585 / FAX:82-2-2679-6556
E-mail : sales@autonics.net

NO20030807-EP-KE-10-0002A