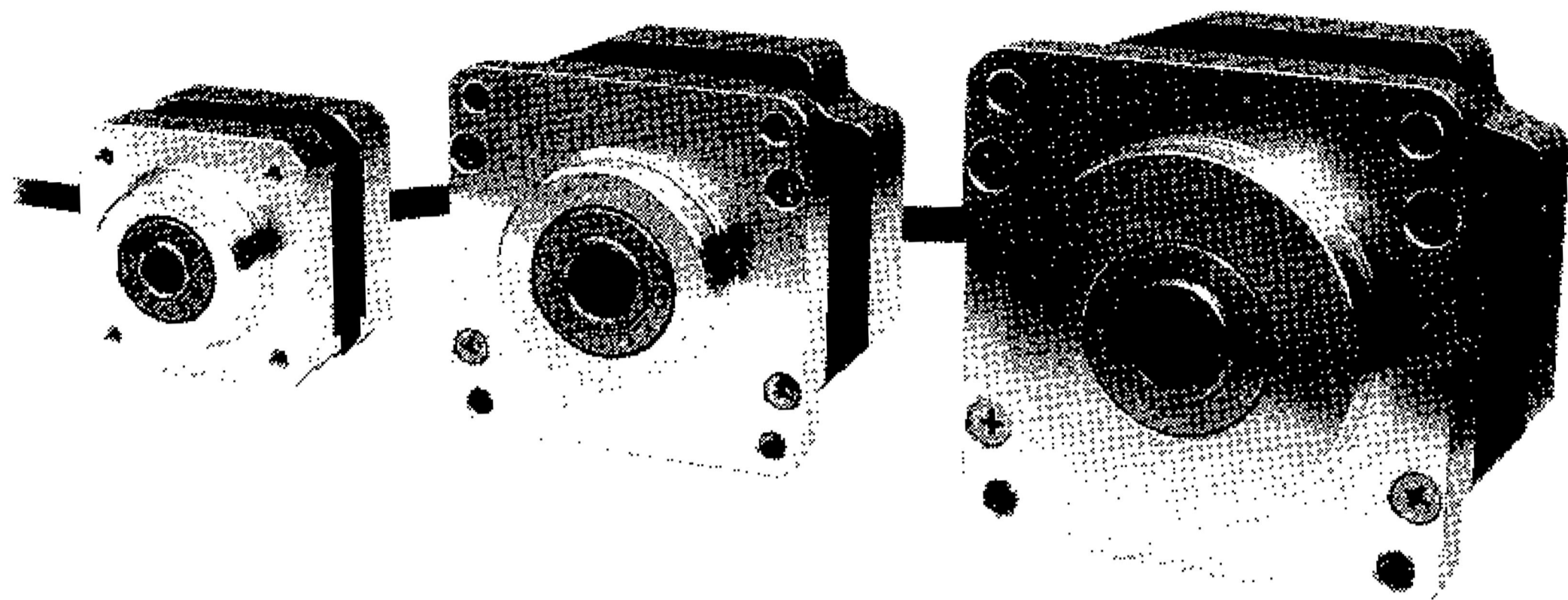


5 PHASE HOLLOW TYPE STEPPING MOTOR

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.

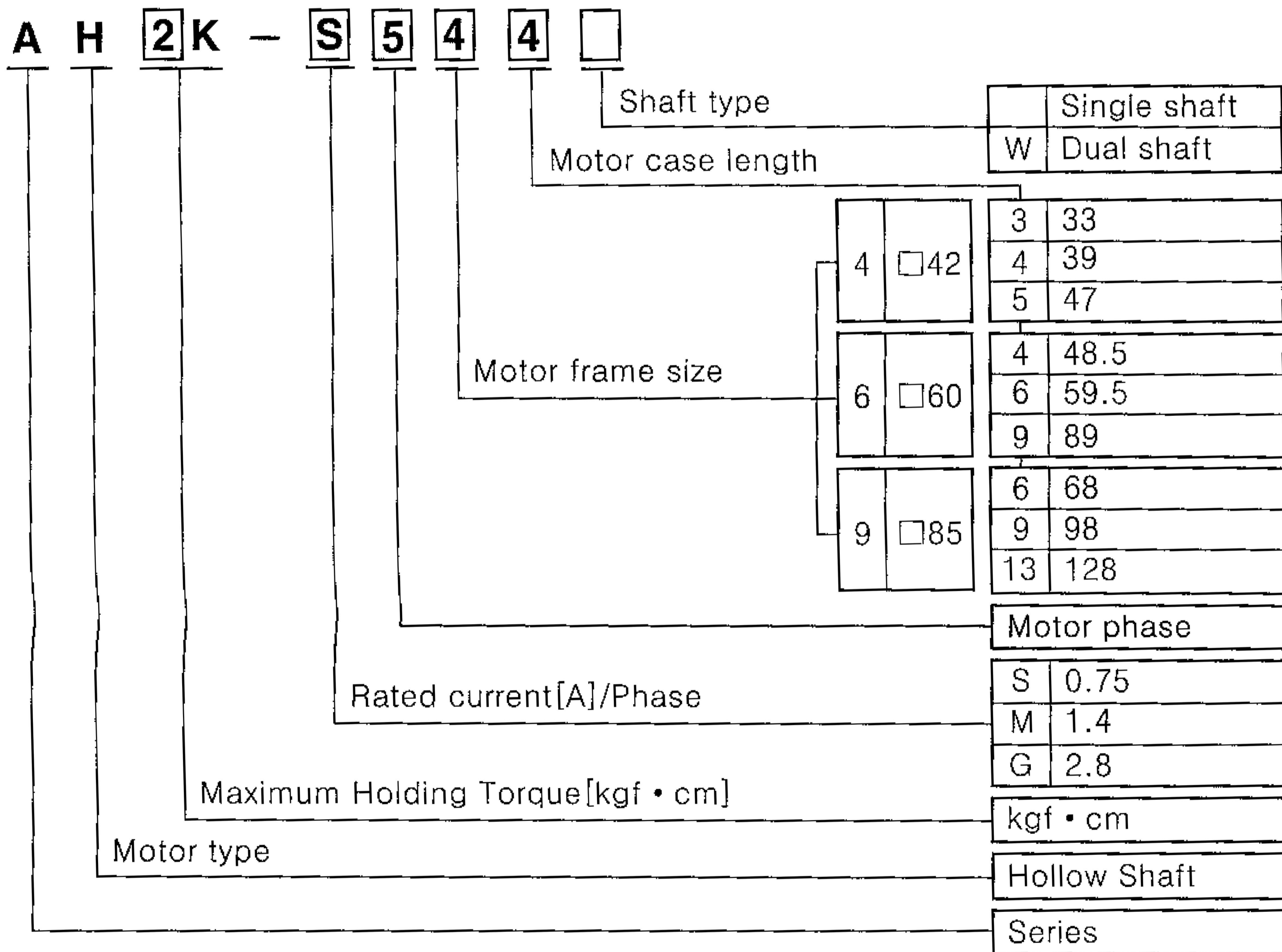
Warning

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

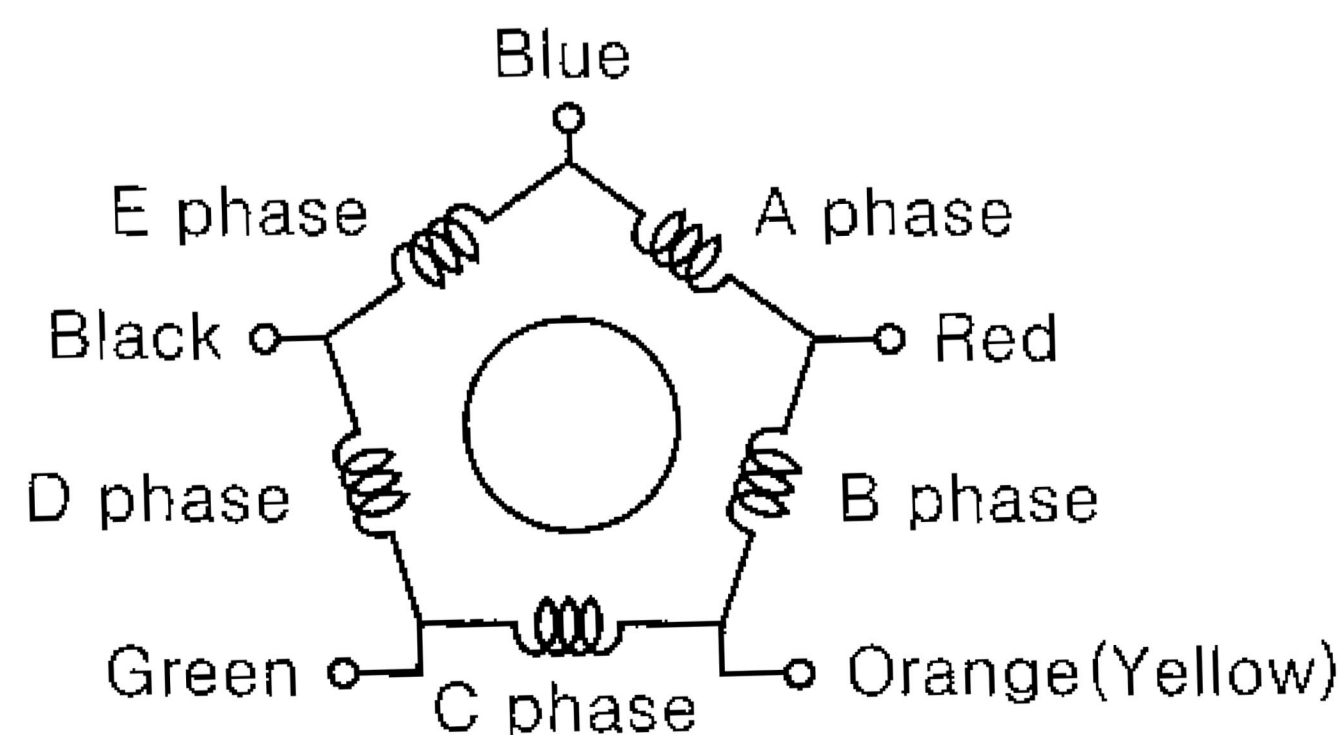
1. Do not put flammable objects around this unit. It may cause a fire or a burn.
2. Do not put obstacle object for well ventilation around this unit. It may cause a damage to this product or malfunction of peripheral equipment by motor heating.
3. The surface temperature of the motor can be over 70°C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

Ordering information



Connection diagram

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



※The above specifications are changeable at anytime without notice.

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°C)		
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	Ambient temperature	-10°C ~ +50°C (non freezing)	
	Altitude	Max. 1,000m	
	Humidity	85% or less (non condensing)	
Storage condition	Ambient temperature	-25°C ~ +70°C (non freezing)	
	Altitude	Max. 3,000m	
	Humidity	85% or less (non condensing)	
Transportation condition	Ambient temperature	-25°C ~ +70°C (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)

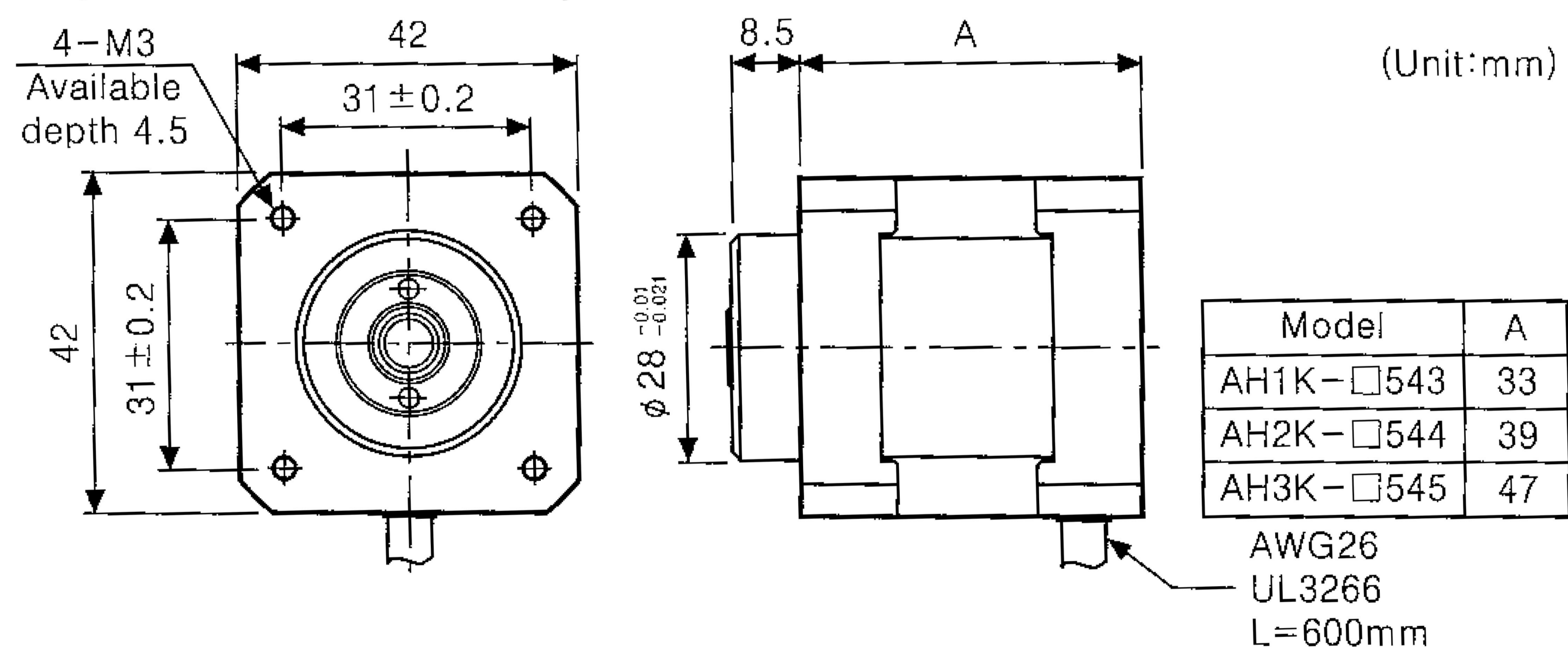
Model	AH4K-S564□	AH4K-M564□	AH8K-S566□	AH8K-M566□	AH16K-M569□	AH16K-G569□
Maximum holding torque	4.2[kgf · cm] 0.42 [N · m]	4.2[kgf · cm] 0.42 [N · m]	8.3[kgf · cm] 0.83 [N · m]	8.3[kgf · cm] 0.83 [N · m]	16.6[kgf · cm] 1.66 [N · m]	16.6[kgf · cm] 1.66 [N · m]
Rotor inertia	175[g · cm ²] 175 × 10 ⁻⁷ [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°C)					
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°C ~ +50°C (non freezing)				
	Altitude	Max. 1,000m				
	Humidity	85% or less (non condensing)				
Storage condition	Ambient temperature	-25°C ~ +70°C (non freezing)				
	Altitude	Max. 3,000m				
	Humidity	85% or less (non condensing)				
Transportation condition	Ambient temperature	-25°C ~ +70°C (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)

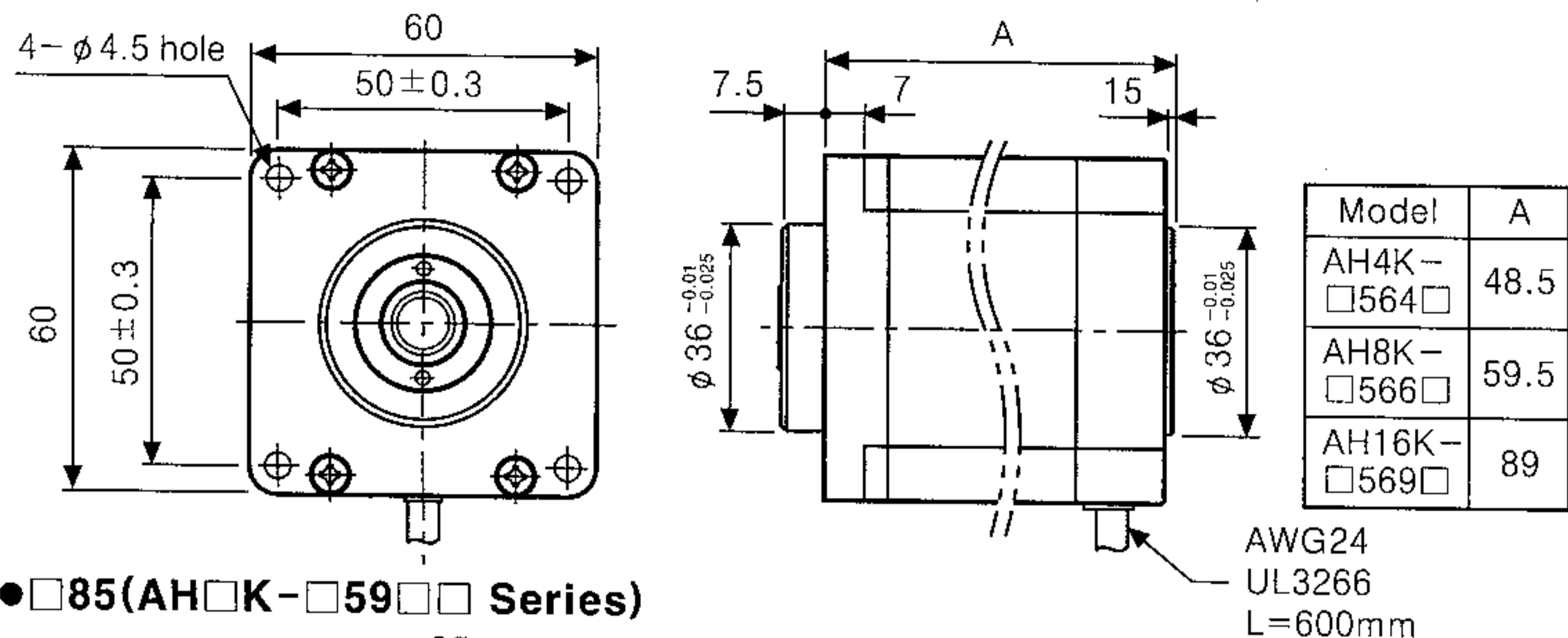
Model	AH21K-M596□	AH21K-G596□	AH41K-M599□	AH41K-G599□	AH63K-M5913□	AH63K-G5913□
Maximum holding torque	21[kgf · cm] 2.1 [N · m]	21[kgf · cm] 2.1 [N · m]	41[kgf · cm] 4.1 [N · m]	41[kgf · cm] 4.1 [N · m]	63[kgf · cm] 6.3 [N · m]	63[kgf · cm] 6.3 [N · m]
Rotor inertia	1,400[g · cm ²] 1,400 × 10 ⁻⁷ [kg · 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°C)					
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°C ~ +50°C (non freezing)				
	Altitude	Max. 1,000m				
	Humidity	85% or less (non condensing)				
Storage condition	Ambient temperature	-25°C ~ +70°C (non freezing)				
	Altitude	Max. 3,000m				
	Humidity	85% or less (non condensing)				
Transportation condition	Ambient temperature	-25°C ~ +70°C (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

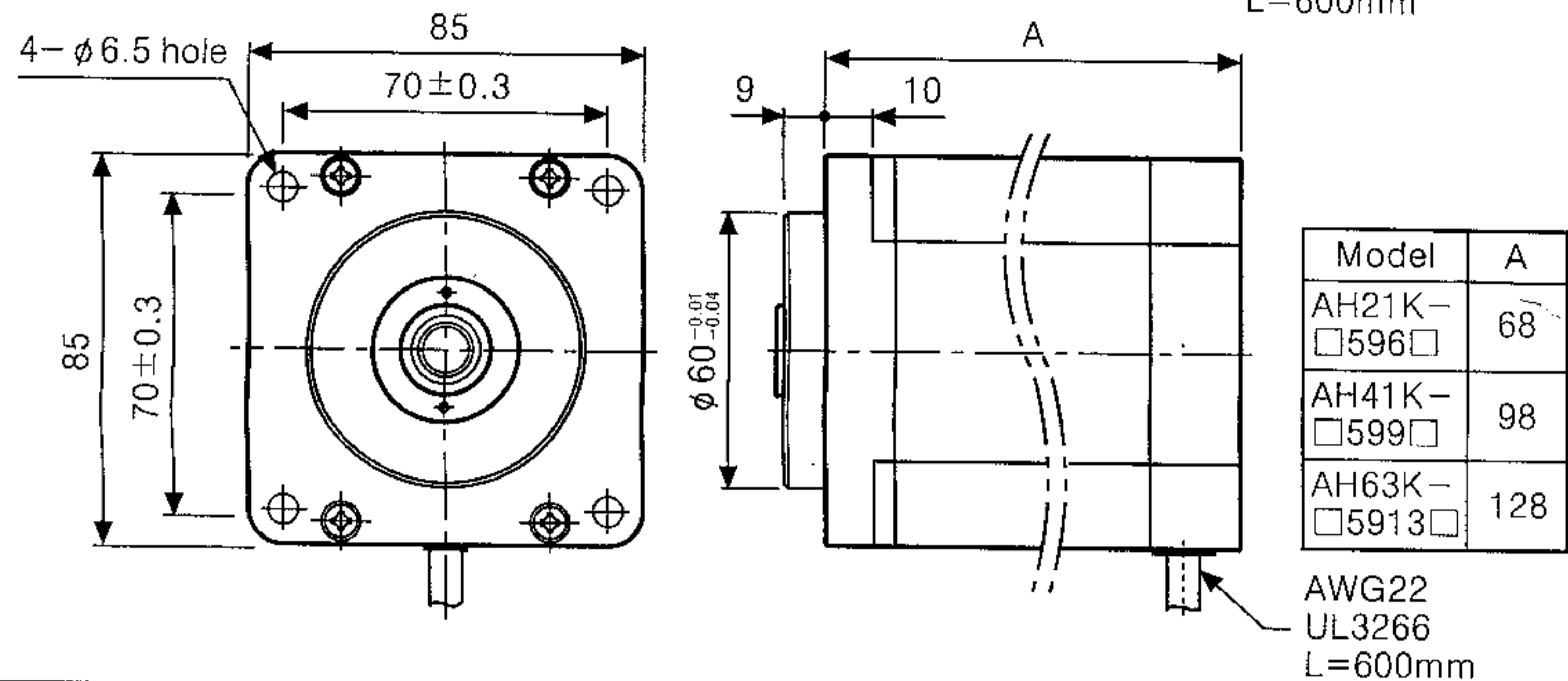
□42(AH□K-□54□ Series)



● **60(AH□K-□56□□ Series)**



● **85(AH□K-□59□□ Series)**

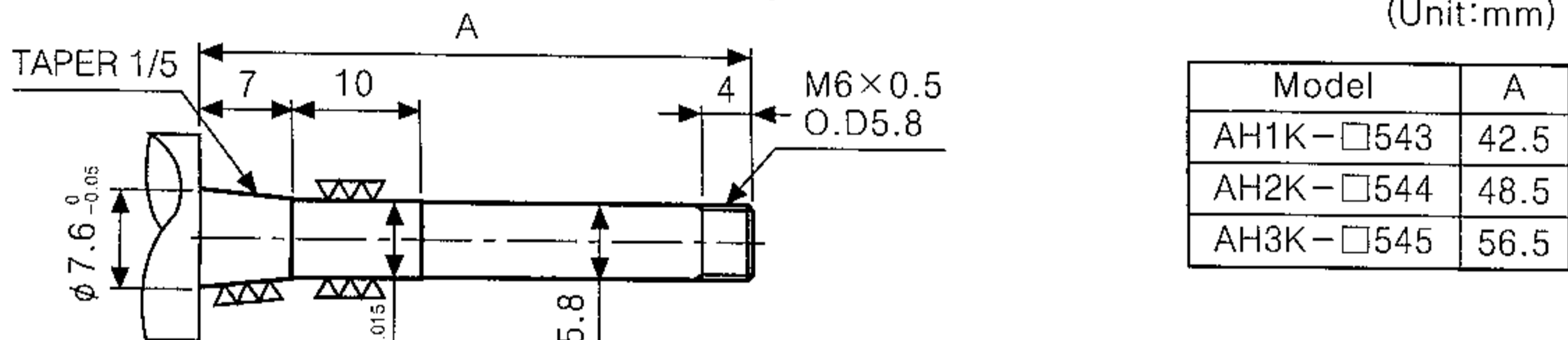


■ **Processing of joint shaft**

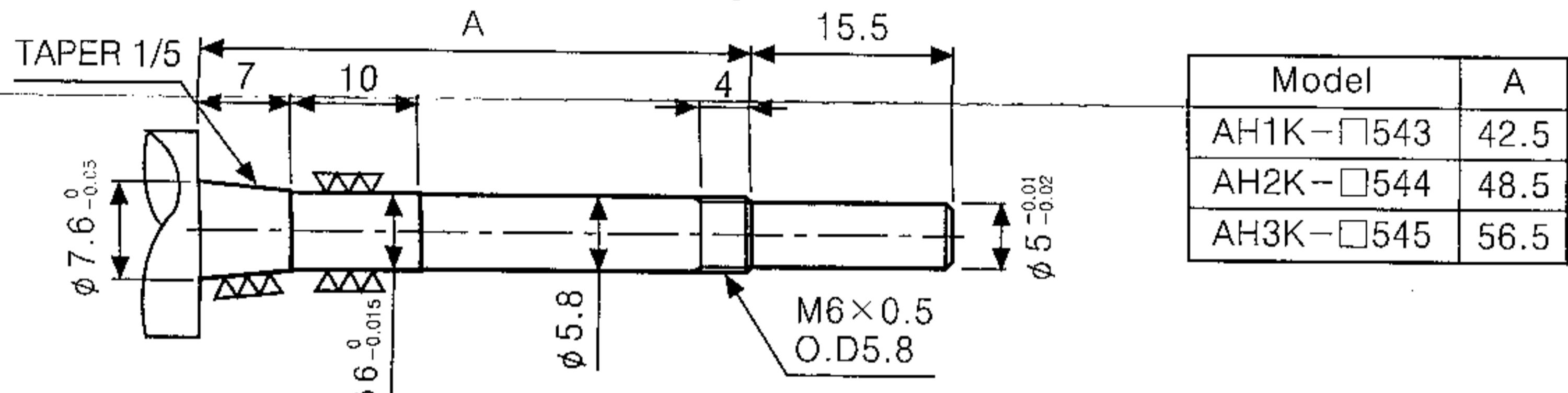
In order to connect joint shaft to our motor it should be processed as below drawing and be assembled.

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

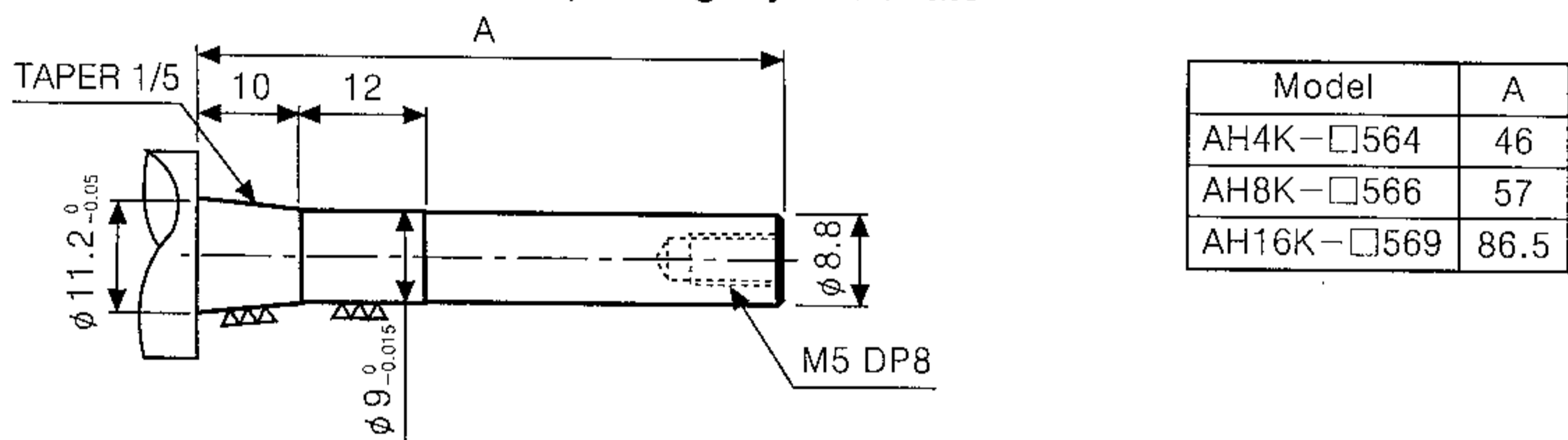
● **42(AH□K-□54□ Series), a single joint shaft**



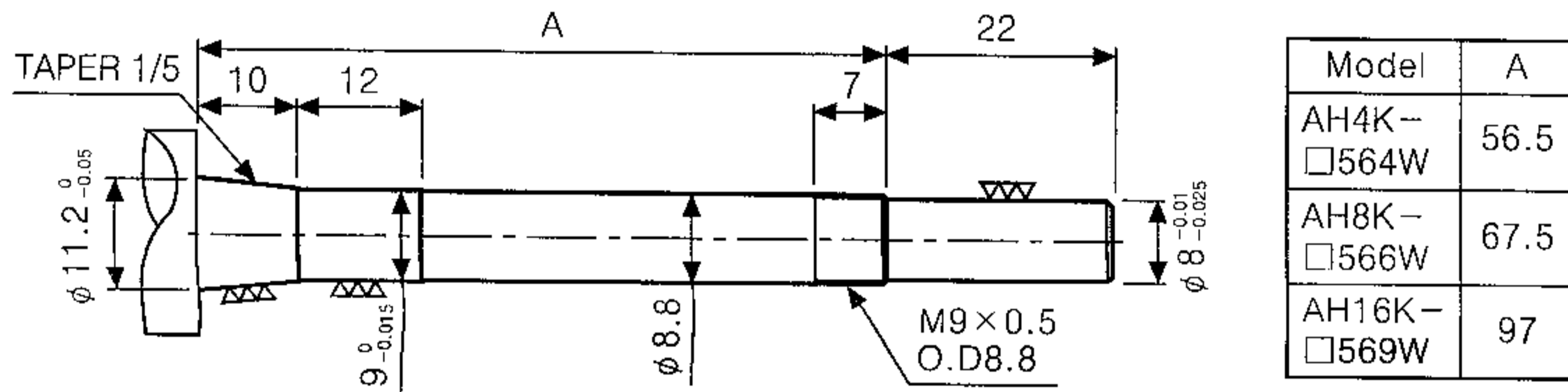
● **42(AH□K-□54□ Series), a dual joint shaft**



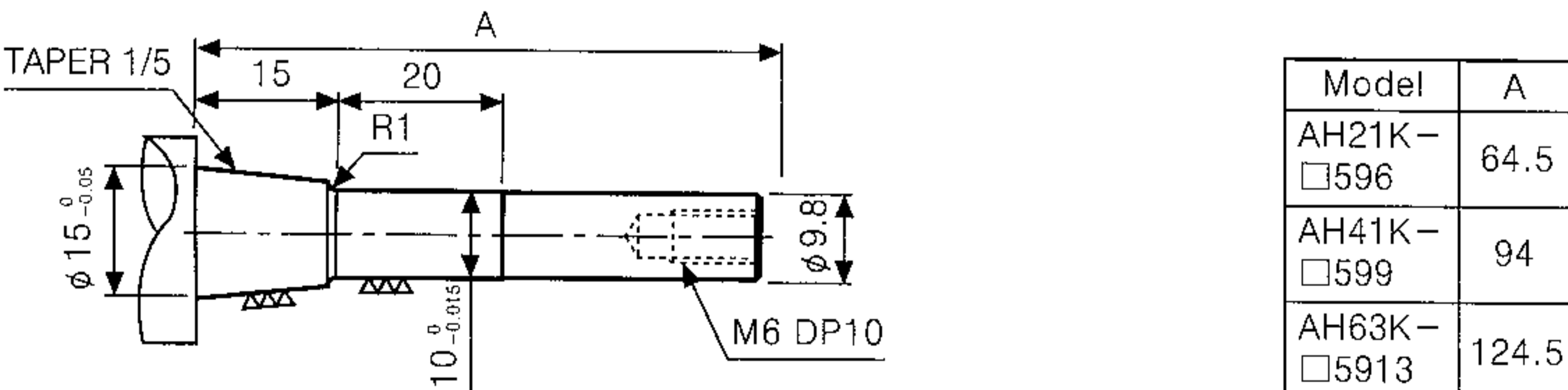
● **60(AH□K-□56□ Series), a single joint shaft**



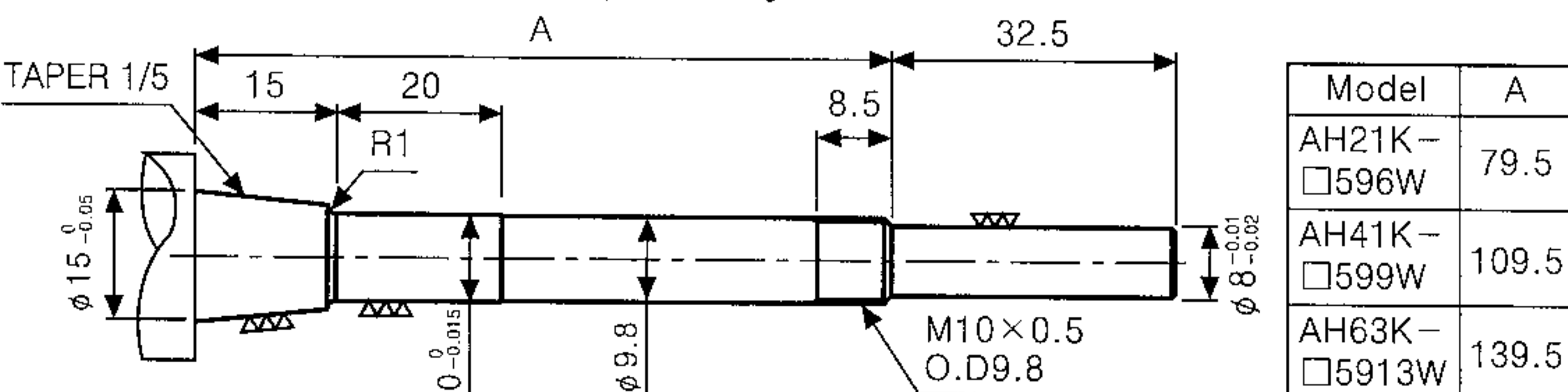
● **60(AH□K-□56□W Series), a dual joint shaft**



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



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

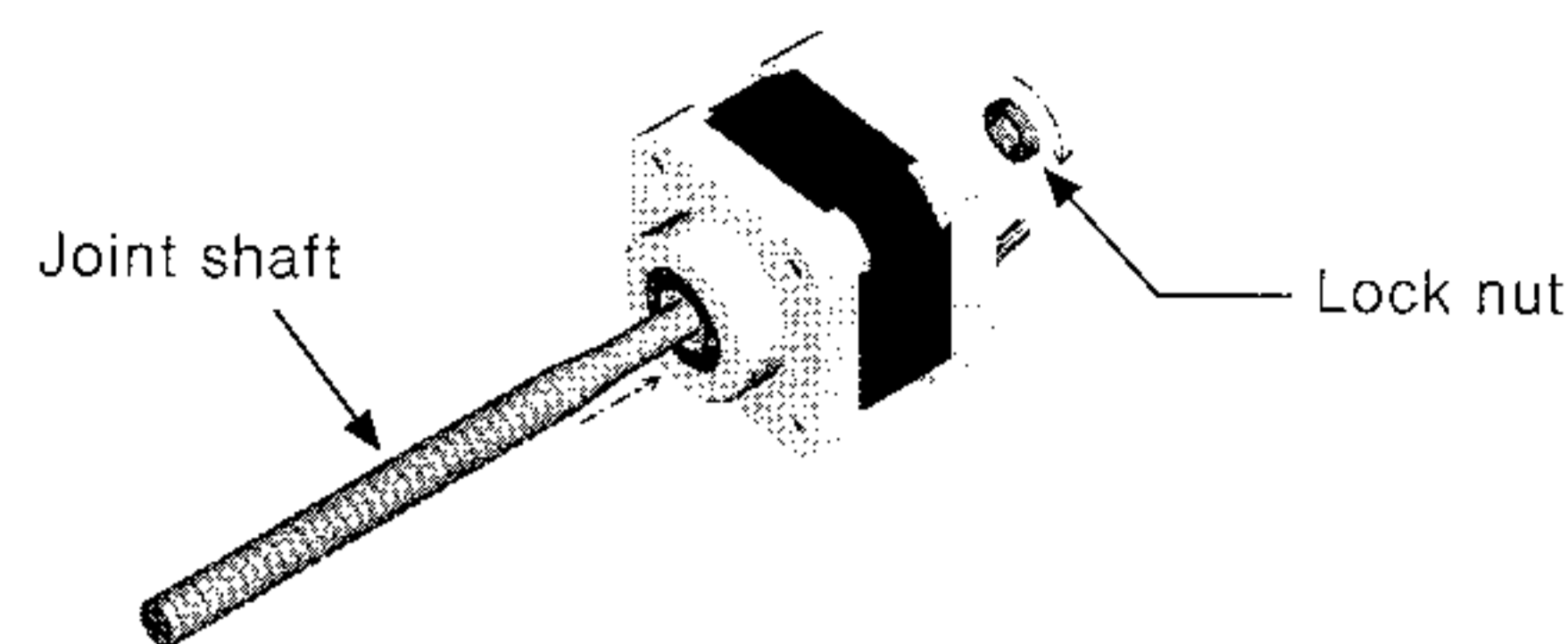


■ **Shaft for assembly with Motor**

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.

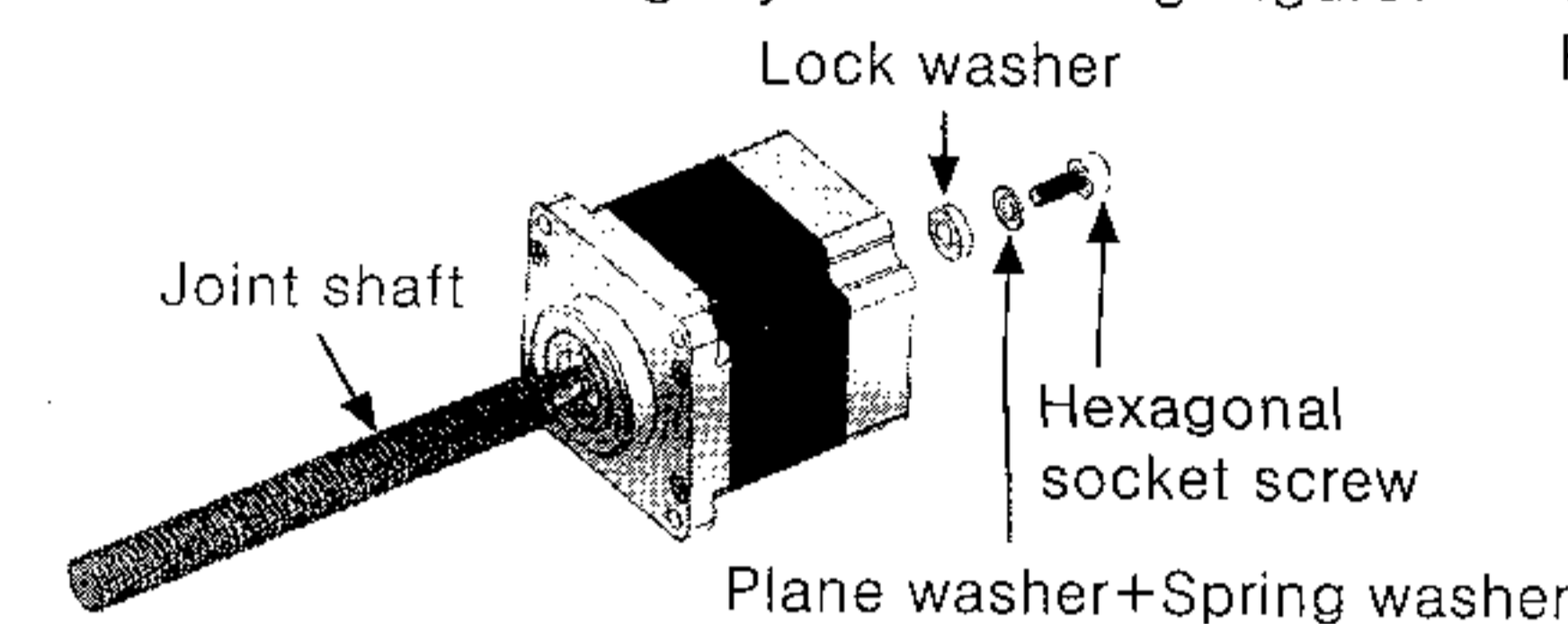
● **Tapped hole type motor**

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



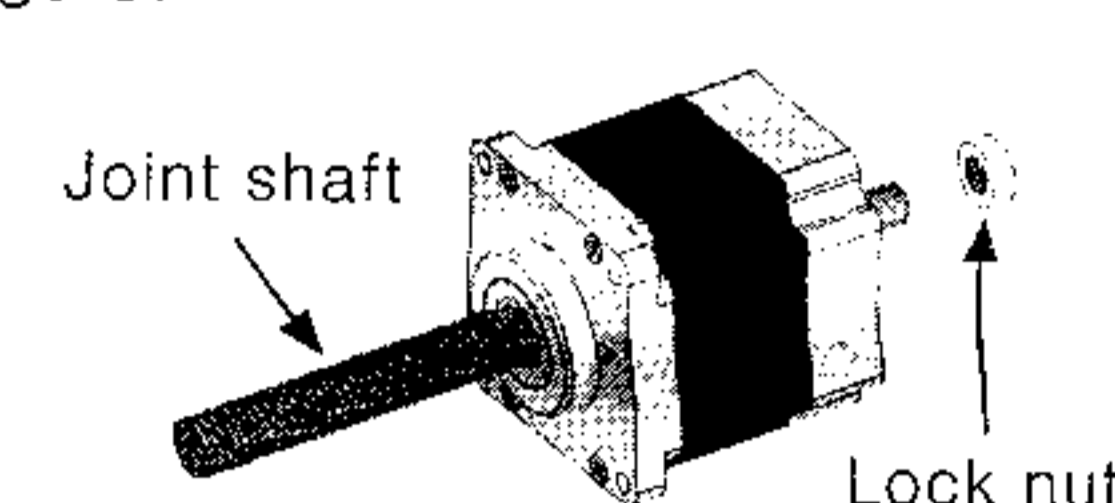
● **Through hole type motor for single shaft**

Please use it by fixing hexagonal socket screw, plane washer, spring washer, lock washer on motor tightly as following Figure.



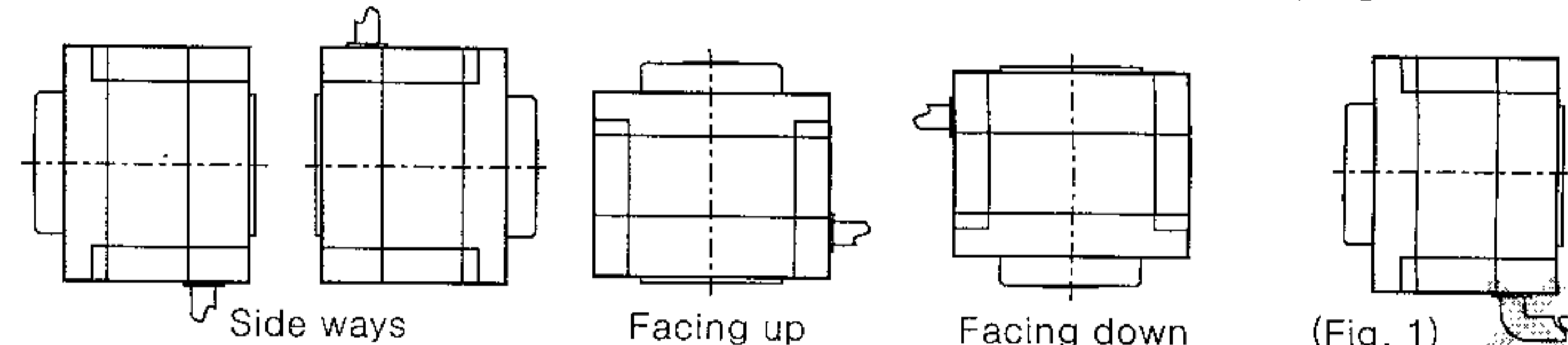
● **Through hole type motor for dual shaft**

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



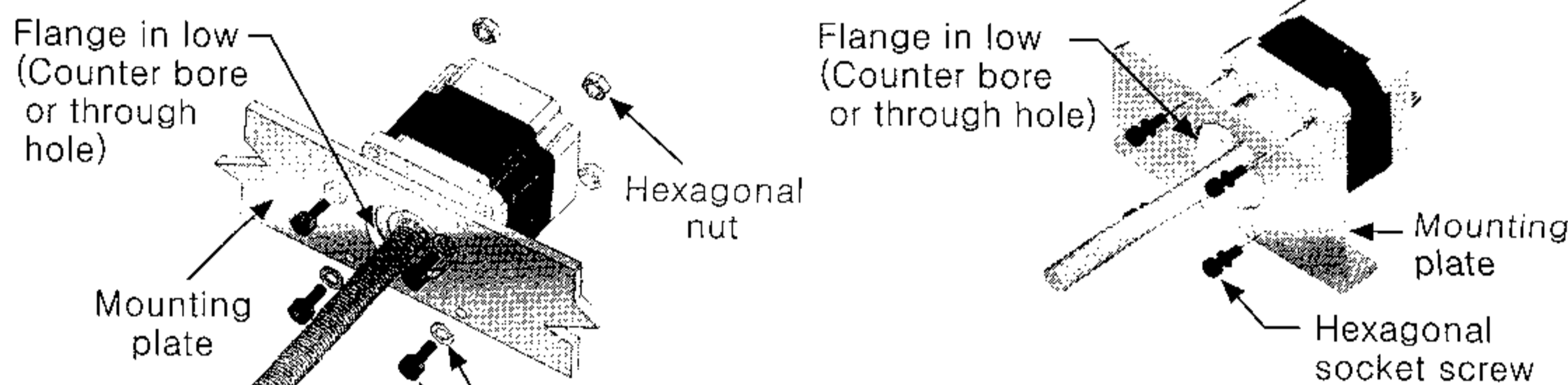
■ **Motor mounting**

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.



● Mount the motor tightly against a metal surface with good thermal conductivity such as steel or aluminum.

● Please use it by fixing hexagonal socket screw, hexagonal nut, spring washer, plane washer on motor tightly when installing motor and refer to the following table for thickness of mounting plate and the screw.



Model	Mounting plate thickness	Application screw
AH□K-□54□Series	Min. 3[mm]	M3
AH□K-□56□Series	Min. 4[mm]	M4
AH□K-□59□Series	Min. 5[mm]	M6

■ **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°C to +50°C.
- Temperature rise

Please use it on the surface temperature under 100°C.

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.

■ **Major products**

- PROXIMITY SENSOR
- AREA SENSOR
- DOOR/DOOR SIDE SENSOR
- PRESSURE SENSOR
- SENSOR CONTROLLER
- SWITCHING POWER SUPPLY
- TEMPERATURE CONTROLLER
- TEMPERATURE/HUMIDITY TRANSDUCER
- POWER CONTROLLER
- TACHOMETER/PULSE(RATE) METER
- PANEL METER
- SIGNAL CONVERTER
- TIMER
- GRAPHIC PANEL
- STEPPING MOTOR & DRIVER
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- ROTARY ENCODER
- RECORDER
- INDICATOR
- COUNTER
- DISPLAY UNIT
- MOTION CONTROLLER

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EP-KE-10-0002B