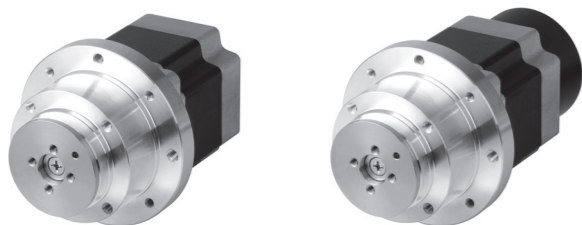


Autonics

ROTARY ACTUATOR TYPE 5 PHASE Stepper motor

M A N U A L



Standard type **Brake built-in type**
Thank you very much for selecting Autonics products.
For your safety, please read the following before using.

■ Ordering information

A 35K - M 5 6 6 W - R B 5

Model	35K	40K	50K
Rated current	M		
Motor phase	5		
Motor frame size(width×length)	6		
Motor shaft direction length	6		
Shaft type	W		
Motor type	R		
Features	No mark		
Gear ratio	5		
	7.2		
	10		
Max. holding torque	35K		
	40K		
	50K		
	Autonics motor		

■ Specifications

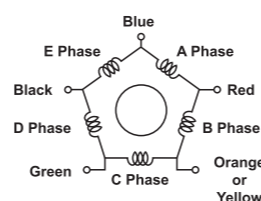
AK-M566(W)-R □ / AK-M566-RB □			
Model	A35K-M566(W)-R5	A40K-M566(W)-R7.2	A50K-M566(W)-R10
Max. allowable torque*1	35 kgf·cm (3.4 N·m)	40 kgf·cm (3.9 N·m)	50 kgf·cm (4.9 N·m)
Rotor moment of inertia*2	280 g·cm ² (280×10 ⁻⁷ kg·m ²)		
Rated current	1.4 A/Phase		
Basic step angle	0.144°/0.072° (Full/Half)	0.1°/0.05° (Full/Half)	0.072°/0.036° (Full/Half)
Gear ratio	1:5	1:7.2	1:10
Allowable speed range	0 to 360 rpm	0 to 250 rpm	0 to 180 rpm
Backlash	±20'(0.33')		
Electro-magnetic brake	Rated excitation voltage	24VDC(non- polarity)	
	Rated excitation current	0.33A	
	Static friction torque	8kgf·cm	
	Rotation part inertia moment	2.9×10 ⁻⁶ kg·m ²	
	Insulation class	CLASS B type(130°C)	
	B type Brake	For power on, brake is off, and a motor starts operating	
	Operating time	Max. 20ms	
	Releasing time	Max. 25ms	
Absolute position error	±20'(0.33')		
Lost motion	±25'(0.33')		
Weight*3	Standard type: Approx. 1.4kg(Approx. 1.3kg) Brake built-in type: Approx. 1.7kg(Approx. 1.6kg)		

Common specification		
Insulation class	CLASS B type(130°C)	
Insulation resistance	Min. 100MΩ(at 500VDC megger) between Motor coil-case	
Dielectric strength	1 minute at 1 kVAC 50/60Hz between Motor coil-case	
Environment	Ambient temperature	-10 to 50°C, Storage: -25 to 85°C
	Ambient humidity	35 to 85%RH, Storage: 35 to 85%RH
Protection	IP30(IEC34-5 standards)	

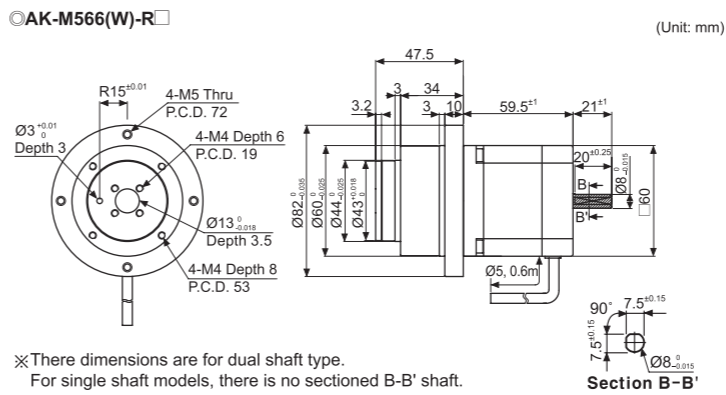
*1: Max. allowable torque is standable torque when supply the rated current and stop the motor.
*2: Moment of rotor inertia indicates a part, except Gear-Head part.
*3: The weight is with packaging and the weight in parentheses is only unit weight.
* Environment resistance is rated at no freezing or condensation.

■ Connection diagram

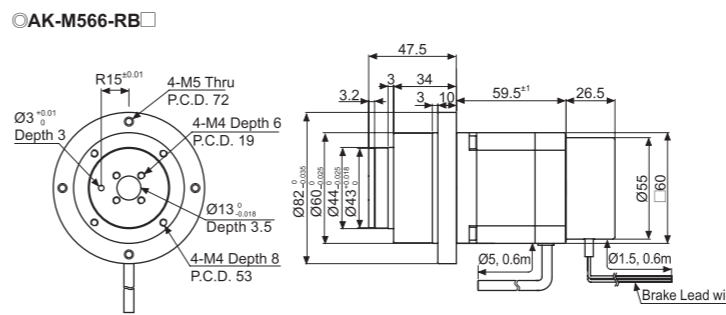
Our 5 phase stepper motor is internally wired in a pentagon connection. Therefore, it is a proper product for the driver working as a bipolar pentagon driving method of 5 phase stepper motor drivers. The figure shows the relationship of inside each phase and wire color of stepper motor.



■ Dimensions



*These dimensions are for dual shaft type. For single shaft models, there is no sectioned B-B' shaft.

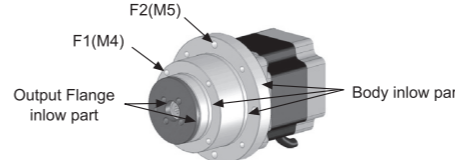


*There is no dual shaft type for brake built-in type.

■ Installation

1. Installation of the motor

- With considering heat radiation and vibration isolation, make sure the motor's inrow to be kept as close as possible against a metal panel having high thermal conductivity such as iron or aluminum. Make sure to use mounting plates with thickness more than 8mm.
- As shown in the figure below, total 4 mounting Tap Holes on F1 and F2 are used to fix rotary actuator. In case of using M4, screw connecting torque is 2N.m and 4.4N.m when using M5.



- Do not apply excessive force on motor cable when installing rotary actuators. Do not forcibly pull or insert the cable. It may cause poor connection or disconnection of the cable. In case of frequent cable movement required application, proper safety countermeasures must be ensured.

2. Installation condition

- Install the motor in a place that meets certain conditions specified below. It may cause product damage if instructions are not following.
- It shall be used indoors.
 - (This product is designed / manufactured to be installed on machinery as a part.)
 - Within -10°C to 50°C (at non-freezing status) of ambient temperature
 - Within 85%RH (at non-dew status) of ambient humidity
 - The place without explosive, flammable and corrosive gas
 - The place without direct ray of light
 - The place without dust, dregs, etc.
 - The place without water, oil, etc.
 - The place where easy heat dissipation could be made
 - The place where no continuous vibration or severe shock
 - The place with less salt content
 - The place with less electronic noise occurred by welding machine, motor, etc.
 - The place where no radioactive substances and magnetic fields exist. It shall be no vacuum status as well.

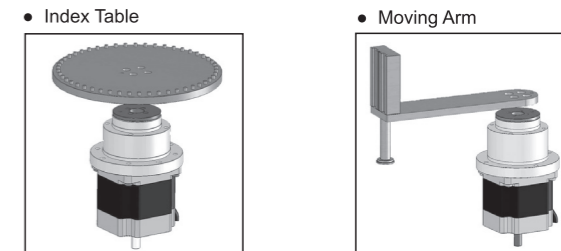
3. Installation of attachment (index table, arm, etc.)

- Mount the attachment on the output flange using M4 screw. Note that Ø13 inlow part is processed with C0.3. It is necessary to process the attachment under C0.2 to mount. Place a positioning pin on flange's positioning hole and push it in. Make sure not to place the pin on output flange.
- Do not use a hammer to mount the attachment. It may cause product damage. Please cautiously mount the attachment with hands in a gentle manner.
- Make sure that attachment mounted on the output to be tightly fixed. It may cause an accident, if it is detached from the actuator during operation.

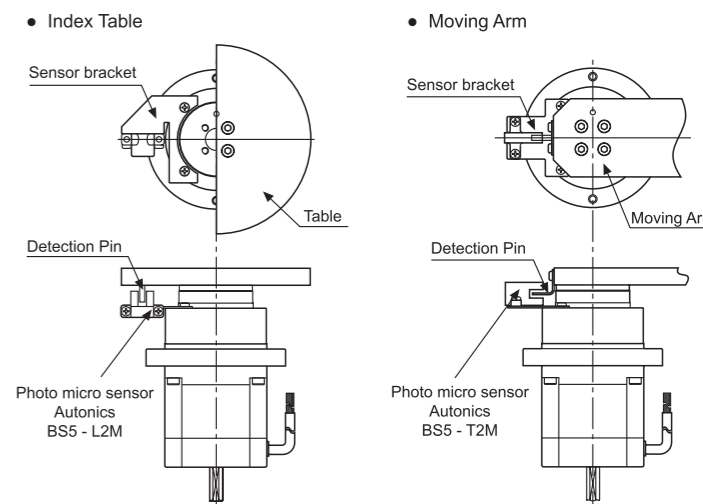
4. Proper operation

- Observe the rated product specification
- Do not apply rotational load to the motor when it stops.
- Do not apply the excessive load to the motor during operation. It may cause step out of the motor.
- Use a sensor to detect a completed division or the starting point.

5. Application



6. Sensor attachment



■ Caution for using

- Use the motor within the allowable torque range.** The allowable torque range indicates the maximum value of mechanical strength of gear part and the total of ac/deceleration torque of start/stop and friction torque shall not exceed the allowable torque range, or it may cause the breakdown of gear.
- Use the motor within the allowable speed range.** The allowable speed range includes the revolution number of gear and pulse speed of motor. Use the motor within the allowable speed range, or it may shorten the life cycle of gear part. (Backlash is increased.)
- Be careful of backlash when positioning the motors in both CW/CCW directions.** Backlash refers to the displacement occurred on motor's output shaft while gear's input axis is fixed. Geared type stepper motors are to realize high accuracy and low backlash. When positioning the motors in both CW/CCW directions, however, backlash may possibly occur. Therefore, make sure that motor positioning will be made in one single direction in case of geared type motors.
- Temperature rise** 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 forcibly.
- 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.
- Clack sound when using electromagnetic brake** In case of brake built-in type motors, there occurs certain sound while turning on/off the power to the motor. This is not a product failure symptom. Do not strike or disassemble the product for this.

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

■ Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connectors/sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, CO₂, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- Tachometer/Pulse(Rate)meters
- SSR/Power controllers
- Sensor controllers
- Display units
- Panel meters
- Counters
- Timers

Autonics Corporation
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