



5-Phase Stepping Motors

FeaturesB-166
 Product SpecificationsB-168
 5-Phase Stepping MotorsB-169

5-Phase Stepping Motors

QSTEP

RK

CSK

PMC

NanoStep RPK

5-Phase Stepping Motors

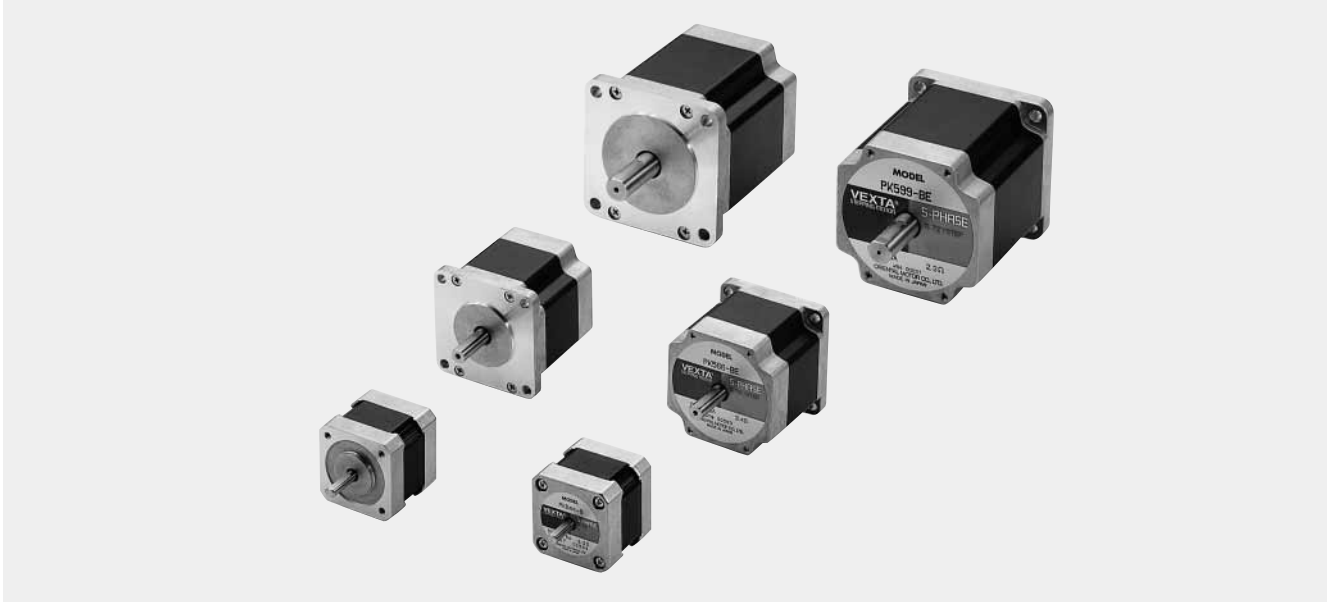
CSK

2-Phase Stepping Motors

Controller

Accessories

High-Torque PK Type



Features

1. High Torque

The high torque of the **PK** type motor makes it possible to drive large equipment and is effective for equipment downsizing and for keeping heat generation low. The maximum static torque values are as follows.

PK54 □ : 0.13N·m~0.24N·m
PK56 □ : 0.42N·m~1.66N·m
PK59 □ : 2.1N·m~6.3N·m

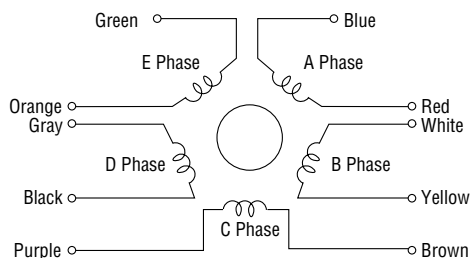
2. Low Vibration

The **PK** motors do more than provide high torque: they were also designed to produce less vibration. This makes **PK** motors the ideal choice for micro-step driving.

3. Low Audible Noise

The **PK** motor was designed to produce low audible noise.

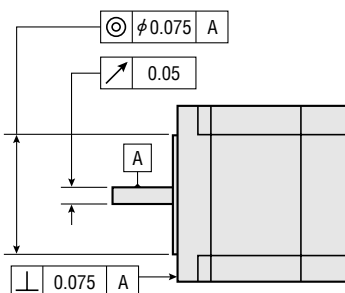
Windings



General Specifications

Item	Specifications
Shaft Runout	0.05 T.I.R (mm) *1
Concentricity	0.075 T.I.R (mm) *1
Perpendicularity	0.075 T.I.R (mm) *1
Shaft Radial Play *2	0.025mm Maximum (at 5N)
Shaft Axial Play *3	0.075mm Maximum (at 10N)
Stop Position Accuracy *4	±3 minutes
Insulation Resistance	100M Ω or more when the megger reading between the windings and the case is DC 500V.
Dielectric Strength	Sufficient to withstand 1kV (0.5kV for PK54) at 50Hz applied between the windings and the case for one minute.
Insulation Class	Class B (130°C)
Temperature Rise	80°C or less as measured by the resistance change method with rated voltage, during five-phase excitation and motor standstill.
Ambient Temperature	-10°C ~ +50°C

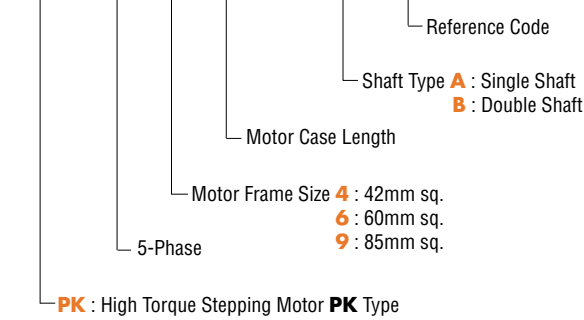
- * 1 T.I.R. (Total Indicator Reading): It refers to the total dial gage reading when the measurement section is rotated 1 revolution centered on the reference axis center.
- * 2 Radial Play: It refers to the displacement in shaft position in the radial direction when a 5N load is applied to the motor shaft tip in a radial direction.
- * 3 Axial Play: It refers to the displacement in shaft position in the axial direction when a 10N load is applied to the motor shaft in the axial direction.
- * 4 Stop Position Accuracy: This value is for full step with no load. (The value changes with size of load.)



Product Specifications of 5-Phase Stepping Motors

Product Number Code

PK 5 6 6 - B E



Specifications

Model (Single Shaft / Double Shaft)	Basic Step Angle	Holding Torque * N · m	Current per Phase A/phase	Resistance per Phase Ω/phase	Rotor Inertia J kg · m ²	Mass kg	Page
PK543-A	0.72°	0.13	0.75	1.7	35×10 ⁻⁷	0.21	B-169
PK543-B							
PK544-A	0.72°	0.18	0.75	2.2	54×10 ⁻⁷	0.27	B-169
PK544-B							
PK545-A	0.72°	0.24	0.75	2.2	68×10 ⁻⁷	0.35	B-169
PK545-B							
PK564-AE	0.72°	0.42	0.75	2.3	175×10 ⁻⁷	0.6	B-170
PK564-BE							
PK566-AE	0.72°	0.83	0.75	3.4	280×10 ⁻⁷	0.8	B-170
PK566-BE							
PK569-AE	0.72°	1.66	1.4	1.7	560×10 ⁻⁷	1.3	B-170
PK569-BE							
PK596-AE	0.72°	2.1	1.4	1.5	1400×10 ⁻⁷	1.7	B-171
PK596-BE							
PK599-AE	0.72°	4.1	1.4	2.3	2700×10 ⁻⁷	2.8	B-171
PK599-BE							
PK5913-AE	0.72°	6.3	2.8	0.75	4000×10 ⁻⁷	3.8	B-171
PK5913-BE							

* The value given for holding torque is the value when operated with rated current and five phase excitation.

Accessories

● Motor Mounting Brackets: Page B-248

● Clean Dampers: Page B-251
Effective at suppressing motor vibration and improving performance.

● Flexible Couplings: Page B-252
Clamping Type



5-Phase Stepping Motors High-Torque Type **PK54** □ Step Angle 0.72°



■ Specifications (at 5-phase excitation)

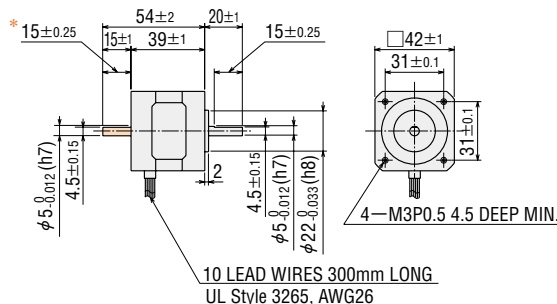
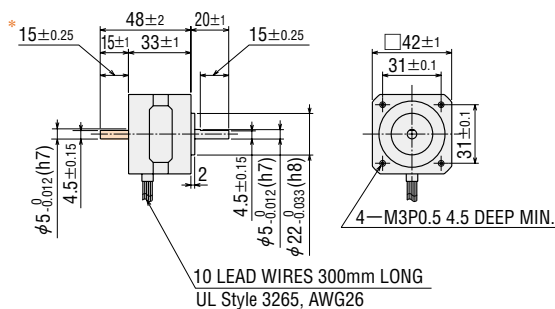
Model (Single Shaft / Double Shaft)	Holding Torque* N · m	Current per Phase A/phase	Resistance per Phase Ω/phase	Rotor Inertia J kg · m ²	Corresponding DC-Input Motor / Driver Unit	Page with Speed-Torque Characteristics
PK543-A	0.13	0.75	1.7	35×10^{-7}	CSK543-N□TE	B-123
PK543-B						
PK544-A	0.18	0.75	2.2	54×10^{-7}	CSK544-N□TE	B-123
PK544-B						
PK545-A	0.24	0.75	2.2	68×10^{-7}	CSK545-N□TE	B-123
PK545-B						

- If you are considering buying both a motor and driver, we recommend the purchase of one of the **CSK** Series products, which combine a dedicated motor and driver into a single unit.
- The motors in the table above cannot be connected to **CSK** Series drivers. Consult us regarding drivers before your purchase.
- For the speed-torque characteristics of the motors in the above table, see the corresponding **CSK** series characteristics.

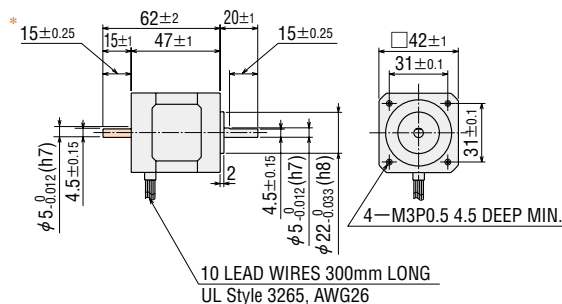
■ Dimensions scale 1/4, unit = mm

- **PK543-A** (Single shaft) Mass 0.21kg
- **PK543-B** (Double shaft) Mass 0.21kg

- **PK544-A** (Single shaft) Mass 0.27kg
- **PK544-B** (Double shaft) Mass 0.27kg



- **PK545-A** (Single shaft) Mass 0.35kg
- **PK545-B** (Double shaft) Mass 0.35kg



- * 15±0.25 indicates the length of milling on motor shaft.
- These dimensions are for double shaft models. For single shaft, ignore the colored areas.
- Refer to page B-42 for information on motor installation.

5-Phase Stepping Motors High-Torque Type

PK56

Step Angle 0.72°



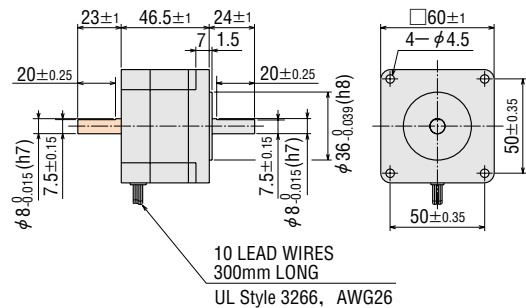
Specifications (at 5-phase excitation)

Model (Single Shaft / Double Shaft)	Holding Torque* N · m	Current per Phase A/phase	Resistance per Phase Ω/phase	Rotor Inertia J kg · m ²	Corresponding AC-Input Motor / Driver Unit	Page with speed-torque characteristics
PK564-AE	0.42	0.75	2.3	175 × 10 ⁻⁷	RK564AC RK564BC	B-96
PK564-BE						
PK566-AE	0.83	0.75	3.4	280 × 10 ⁻⁷	RK566AC RK566BC	B-96
PK566-BE						
PK569-AE	1.66	1.4	1.7	560 × 10 ⁻⁷	RK569AC RK569BC	B-96
PK569-BE						

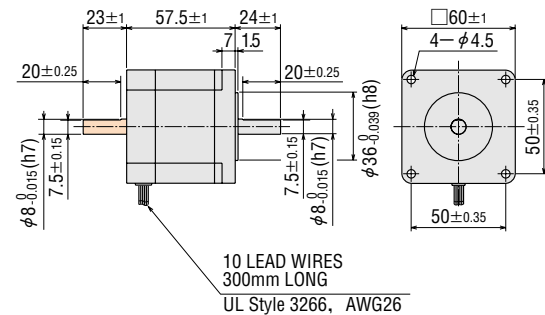
- If you are considering buying both a motor and driver, we recommend the purchase of one of the **RK** Series products, which combine a dedicated motor and driver into a single unit.
- The motors in the table above cannot be connected to **RK** Series drivers. Consult us regarding drivers before your purchase.
- For the speed-torque characteristics of the motors in the above table, see the corresponding **RK** series characteristics.

Dimensions scale 1/4, unit = mm

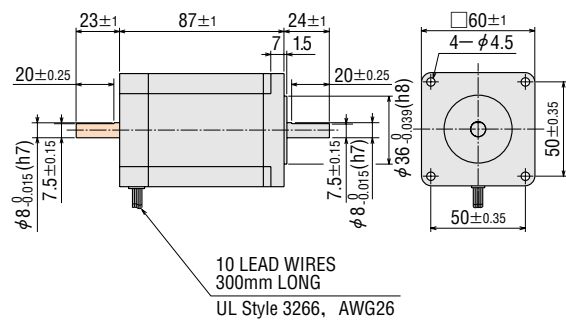
- **PK564-AE** (Single shaft) Mass 0.6kg
- **PK564-BE** (Double shaft) Mass 0.6kg



- **PK566-AE** (Single shaft) Mass 0.8kg
- **PK566-BE** (Double shaft) Mass 0.8kg



- **PK569-AE** (Single shaft) Mass 1.3kg
- **PK569-BE** (Double shaft) Mass 1.3kg



- These dimensions are for double shaft models. For single shaft, ignore the colored areas.
- Refer to page B-42 for information on motor installation.

5-Phase Stepping Motors High-Torque Type **PK59** □ Step Angle 0.72°



■ Specifications (at 5-phase excitation)

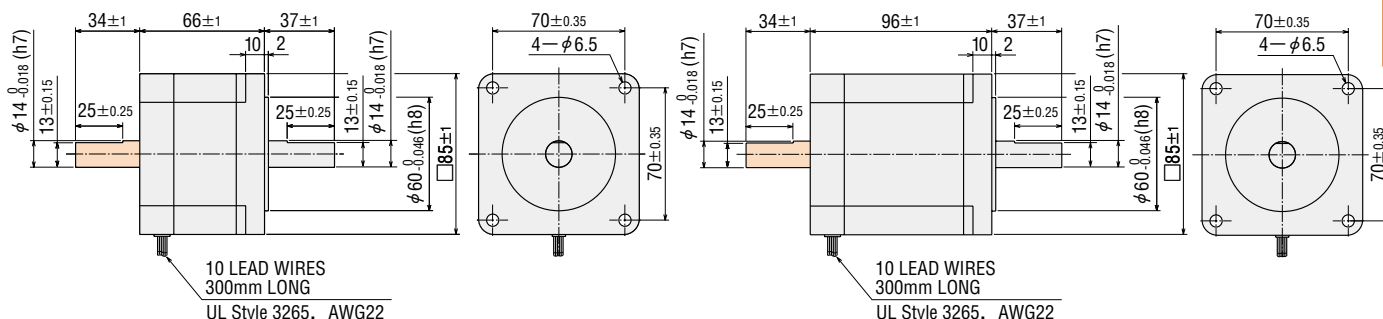
Model (Single Shaft Double Shaft)	Holding Torque N · m	Current per Phase A/phase	Resistance per Phase Ω/phase	Rotor Inertia kg · m ²	Corresponding AC-Input Motor / Driver Unit	Page with Speed-Torque Characteristics
PK596-AE	2.1	1.4	1.5	1400 × 10 ⁻⁷	RK596AC RK596BC	B-96
PK596-BE						
PK599-AE	4.1	1.4	2.3	2700 × 10 ⁻⁷	RK599AC RK599BC	B-96
PK599-BE						
PK5913-AE	6.3	2.8	0.75	4000 × 10 ⁻⁷	RK5913AC RK5913BC	B-96
PK5913-BE						

- If you are considering buying both a motor and driver, we recommend the purchase of one of the **RK** Series products, which combine a dedicated motor and driver into a single unit.
- The motors in the table above cannot be connected to **RK** Series drivers. Consult us regarding drivers before your purchase.
- For the speed-torque characteristics of the motors in the above table, see the corresponding **RK** series characteristics.

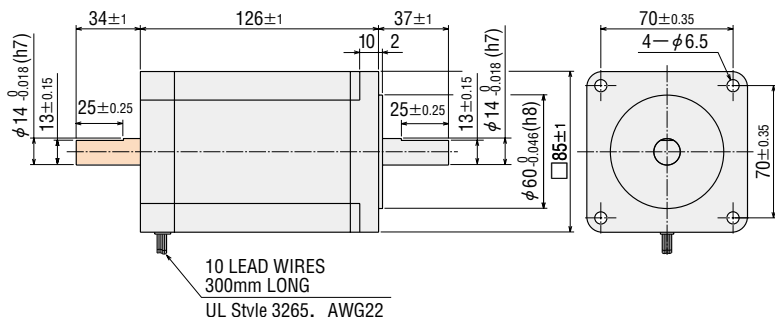
■ Dimensions scale 1/4, unit = mm

- **PK596-AE** (Single shaft) Mass 1.7kg
- **PK596-BE** (Double shaft) Mass 1.7kg

- **PK599-AE** (Single shaft) Mass 2.8kg
- **PK599-BE** (Double shaft) Mass 2.8kg



- **PK5913-AE** (Single shaft) Mass 3.8kg
- **PK5913-BE** (Double shaft) Mass 3.8kg



- These dimensions are for double shaft models. For single shaft, ignore the colored areas.
- Refer to page B-42 for information on motor installation.