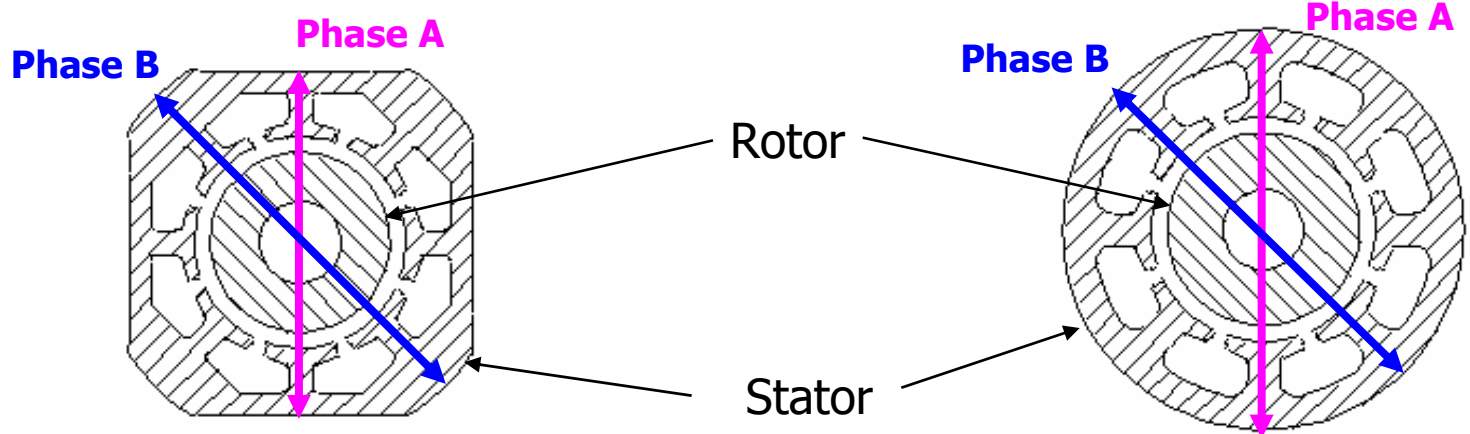


Stepper motors



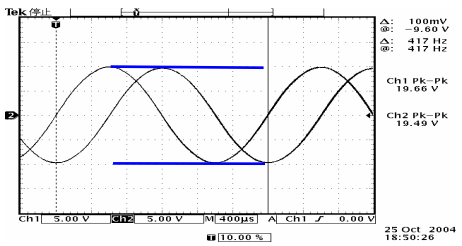
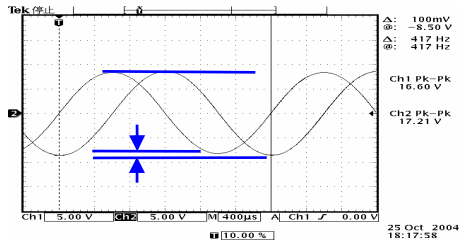
KA round type stepper

What is completely balanced core? Comparison of 42 square type & 50 Round type



Current KH42 Square type
Magnetic balance between phase A & phase B is **not uniform**

New KA50 Round type
Magnetic balance between phase A & phase B is **uniform**



Difference of Back EMF between A & B
phase: **3.6%**

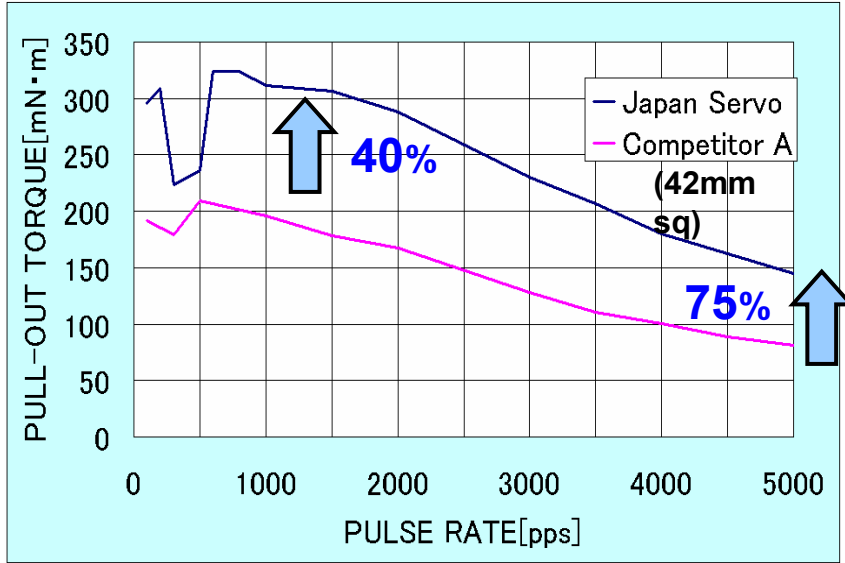
Difference of Back EMF between A & B
phase **0.8%**



KA round type stepper

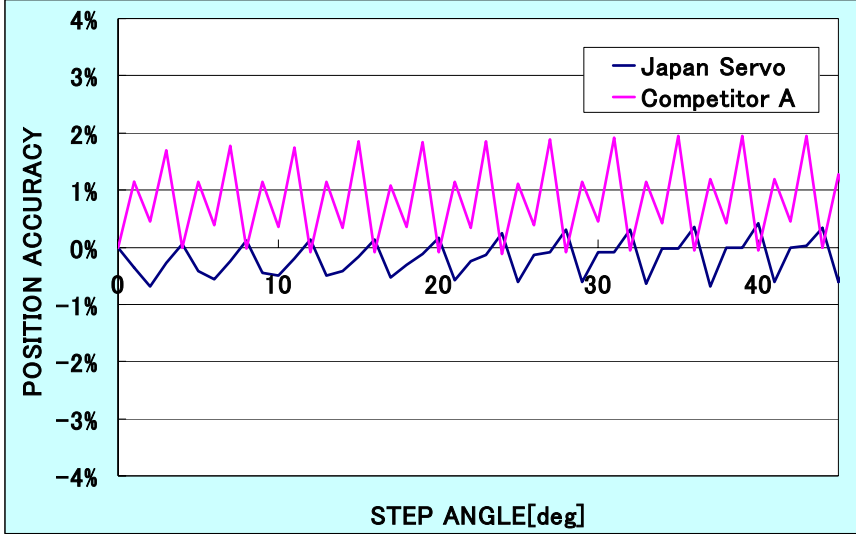
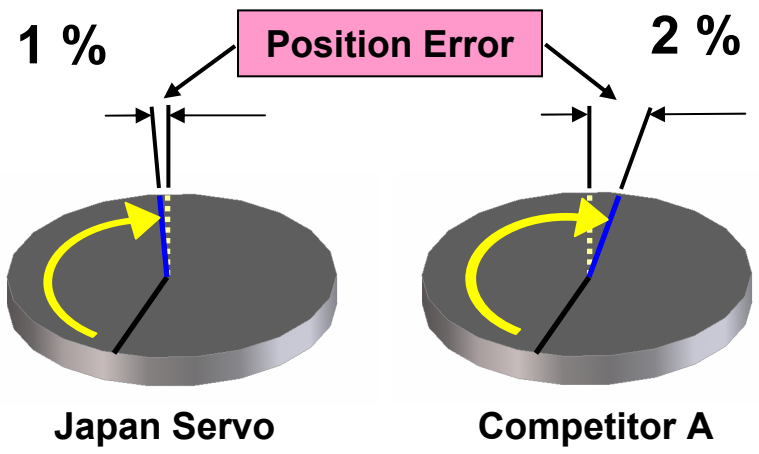
Benefits: **Higher Torque**
 Better Accuracy

Torque performance



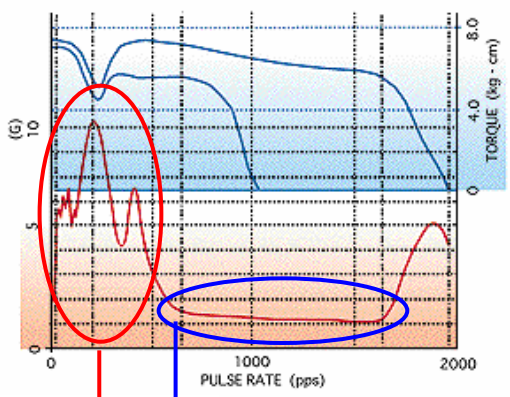
Pulse-torque Curve

Accuracy

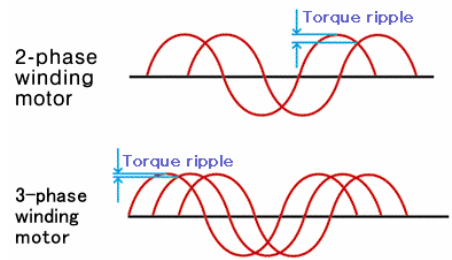


Position Accuracy

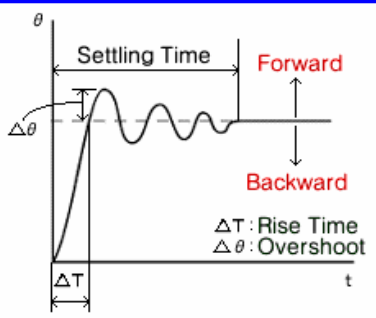
3 phase stepper



3 phase stepper motor “KT” series. Small step angle **0.6 deg/step** offers **smooth rotation** and **low vibration**.



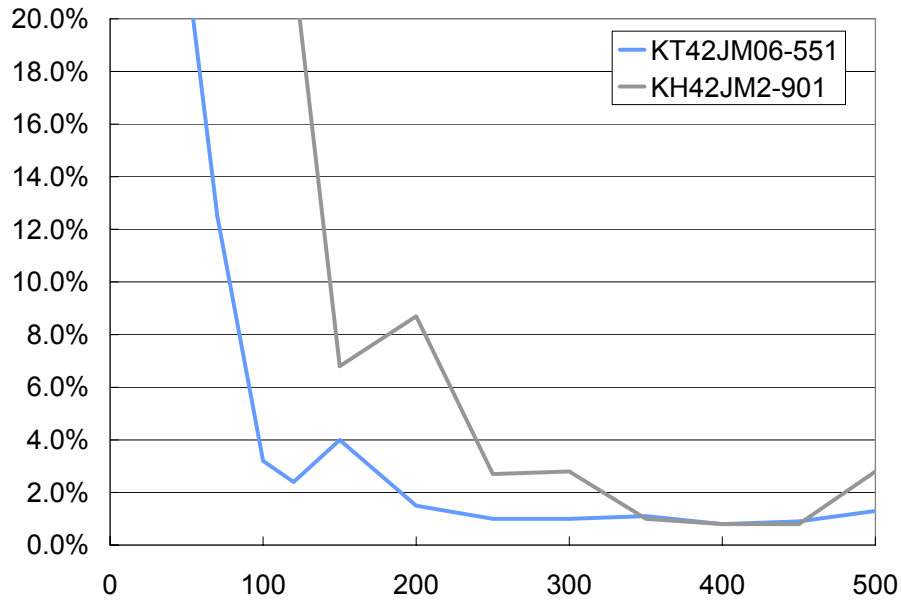
Vibration in this speed range is rather steady and small. The source of the vibration is torque ripple generated by each phase. **3 phase stepper provides low vibration with small torque ripple.**



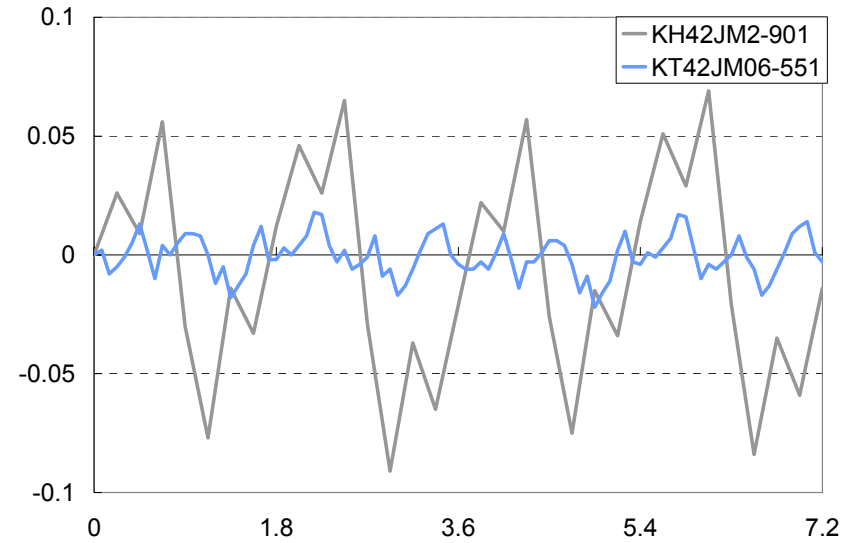
Stepping motor repeats start and stop with every one step rotation. The motor must repeat its damped oscillation/vibration. Therefore by its nature a big vibration may occur at low speed operation.

3 phase vs 2 phase

W/F



Vibration



3 phase vs 5 phase

The **5 phase** stepper motor is known for low vibration & smooth rotation. However it is very **expensive!**

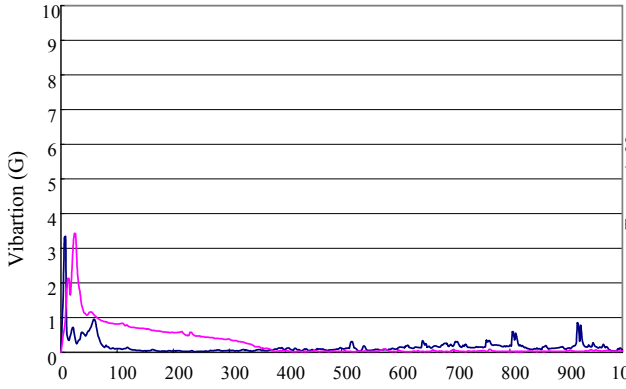
Our **3 phase** stepper motor offers more **excellent performance** than the 5 phase stepper.

	3 phase	5 phase
Model	KT60LM06	
Step angle	0.6 deg (at full step)	0.72 deg (at full step)
Holding torque	0.78 N-m	0.83 N-m
Rotor Inertia	265*10 ⁻² kg-cm	280*10 ⁻² kg-cm
Outline	60 sqr, L=58	60 sqr, L=58

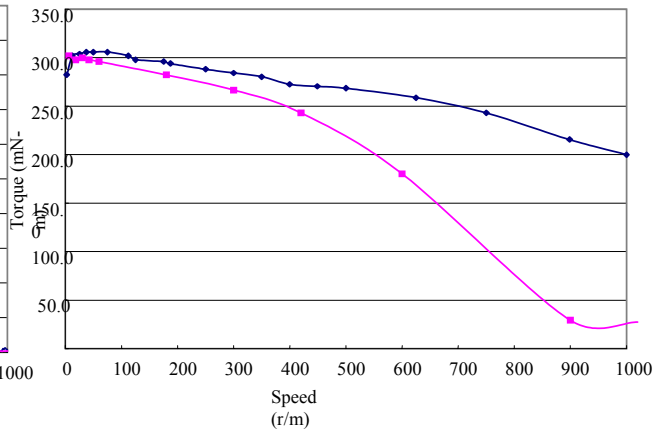
	3 phase	5 phase
Model	KT60LM06	Oriental motor
Voltage	DC24V	DC24V
Current	2.4 A	2.0 A
Excitation mode	W2-3 phase	Half
Driver IC	STK673-010	-
Note	Inertia load: 80g-cm ² With RF1600-A5	Inertia load: 80g-cm ² With RF1600-A5

— 3 phase
— 5 phase

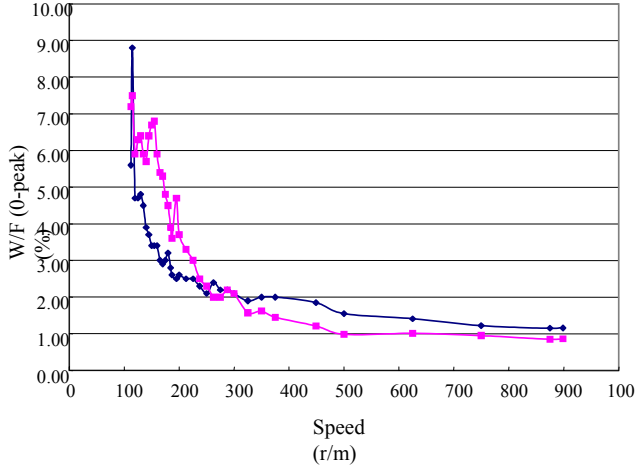
Vibration



Torque



W/F



KH56 Series

Unique tooth shape & Highly rigid structure

Minimize the source of vibration.

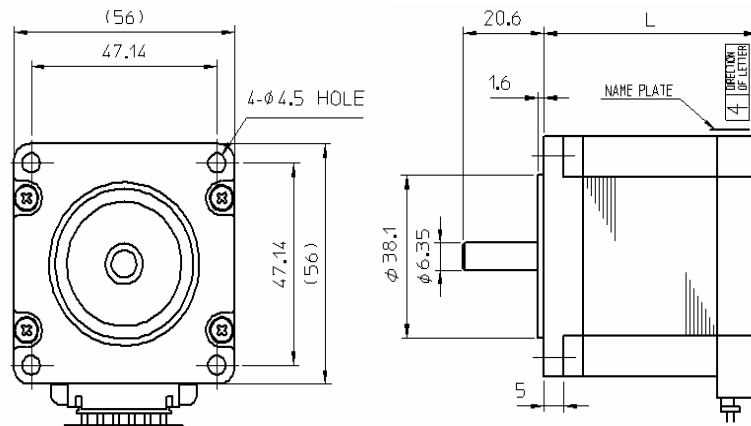
Unique tooth shape & small rotor diameter provide high-speed performance. Also superior

High grade material rise electrical efficiency.

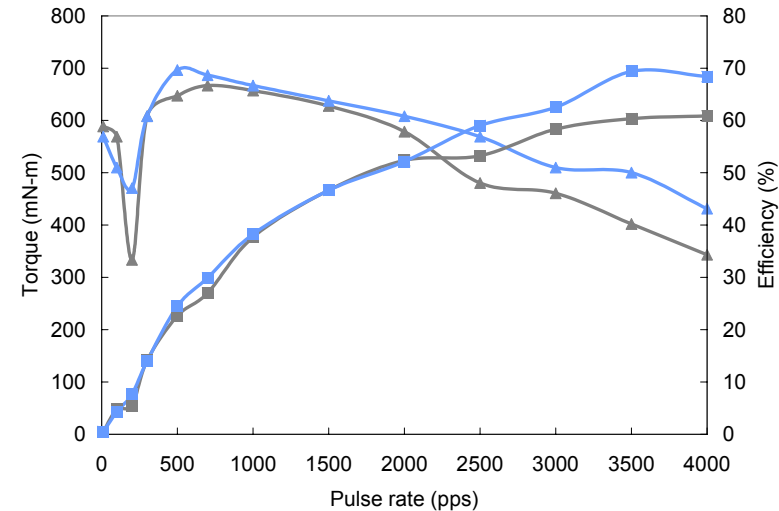
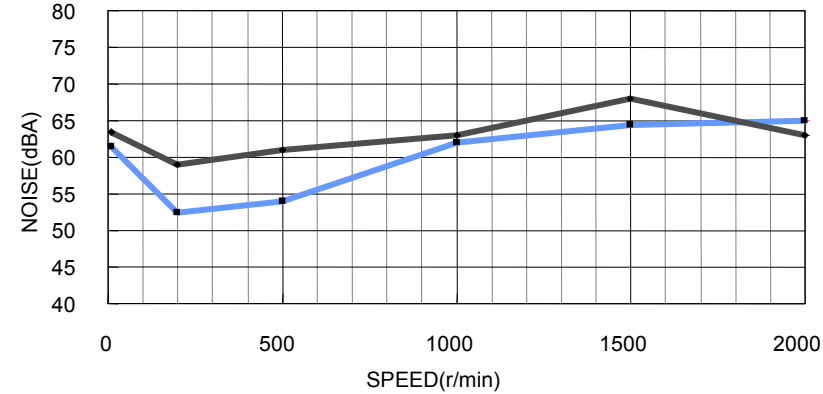
High torque 2 phase stepping motor.

Low vibration and low noise.

A unique tooth profile. Micro step correspondence.



NOISE CHARACTERISTIC



KH39 Series

Unique tooth shape & Highly rigid structure

- Minimize the source of vibration.
- Unique tooth shape & small rotor diameter provide high-speed performance. Also superior High grade material rise electrical efficiency.
- High torque 2 phase stepping motor.
- Low vibration and low noise.
- A unique tooth profile. Micro step correspondence.

