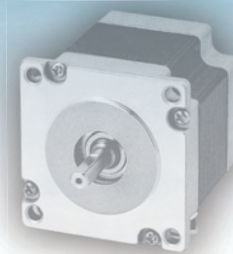


Stepping Motor

5 Phase Stepping Motor Series



► Product number code

■ Motor:

TK

TROY
Stepping
Motor Series

599

Motor model
596/599/5913



Phase current
— : 1.4A/phase
H : 2.8A/phase



— : Round shaft
P : Pinion shaft

—

A

Shaft type
A : Single shaft
B : Double shaft

1

No.

■ Gearhead:

9

Frame size
9:90mm sq.

H

Gearhead



Gear ratio
9H□ Gear ratio

3:1/3	3.6:1/3.6	5:1/5
6:1/6	7.5:1/7.5	9:1/9
10:1/10	12.5:1/12.5	15:1/15
18:1/18	20:1/20	25:1/25
30:1/30	36:1/36	50:1/50
60:1/60	75:1/75	90:1/90
100:1/100	120:1/120	150:1/150
180:1/180	200:1/200	250:1/250
300:1/300	360:1/360	

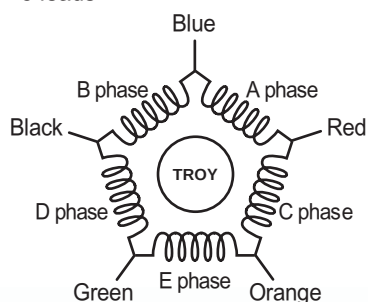
► Specs

Size	Stepping angle deg.	Model		Rated voltage V/phase	Rated current A/phase	Holding torque kg • cm	Dimension □ × L (mm)	Gearhead model	Page No.
Model 34: □86mm	0.72°	TK596□-A1 TK596-B1	Single shaft Double shaft	1.96	1.4	21	85.85 × 70	9H□	12
	0.72°	TK599□-A1 TK599-B1	Single shaft Double shaft	3.08	1.4	41	85.85 × 100		
	0.72°	TK599H-A1 TK599H-B1	Single shaft Double shaft	1.68	2.8	41	85.85 × 100	—	
	0.72°	TK5913-A1 TK5913-B1	Single shaft Double shaft	4.5	1.4	63	85.85 × 127		
	0.72°	TK5913H-A1 TK5913H-B1	Single shaft Double shaft	2.52	2.8	63	85.85 × 127		

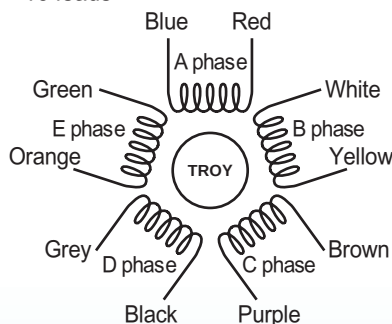
※ TK596□/TK599□, Enter the P in the box □ which indicates Pinion type will need to attached the gearhead 9H series, please refer to the P.14. There is no value in the box □ which indicates Round shaft type. When purchased this type, it also can attach with planetary gearhead.

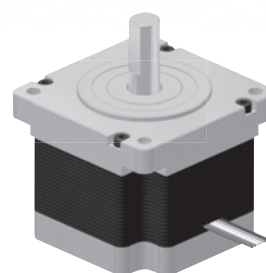
► The wiring of 5 phase stepping motor

■ 5 leads



■ 10 leads





5 Phase Stepping Motor

Model 34 □86mm 0.72°HB type

► Specs

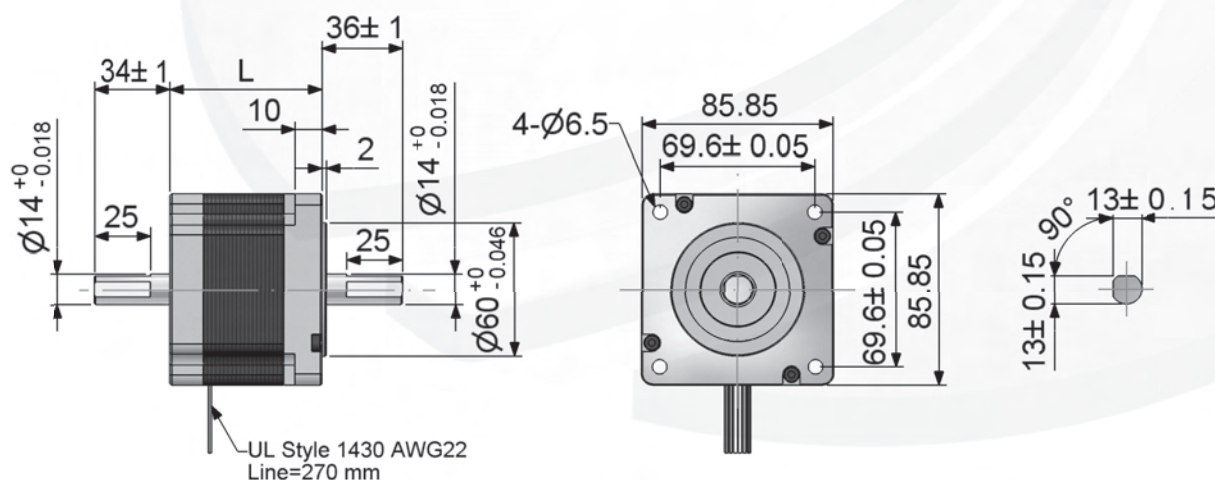
Model		Rated voltage	Rated current	Impedance	Inductance	Holding	Motor	Inertia	Weight
Single shaft	Double shaft	V / phase	A/phase	Ω / phase	mh / phase	torque kg·cm	length(L) mm	g·cm ²	g
TK596□-A1	TK596-B1	1.96	1.4	1.4	5.4	21	70±1	1330	1900
TK599□-A1	TK599-B1	3.08	1.4	2.2	10.8	41	100±1	2680	3200
TK599H-A1	TK599H-B1	1.68	2.8	0.6	2.5	41	100±1	2680	3200
TK5913-A1	TK5913-B1	4.5	1.4	3.2	20	63	127±1	4000	4700
TK5913H-A1	TK5913H-B1	2.52	2.8	0.9	5	63	127±1	4000	4700

※ TK596□-A1、TK599□-A1、Enter the P in the box □ which indicates Pinion type will need to attached the gearhead 9H series, please refer to the P.14. There is no value in the box □ which indicates Round shaft type. When purchased this type, it also can attach with planetary gearhead.

- Ambient temperature -20°C~+50°C
- Insulation resistance 100MΩ Min. (at DC500V)
- Insulation voltage AC500V (1min.)
- Overhung vibration 0.075mm Max.
- Thrust vibration 0.025mm Max.
- Permissible temperature range 80 deg Max. ... (Tested by resistivity)

Notes: Be sure to keep the temperature of the motor case under 90°C

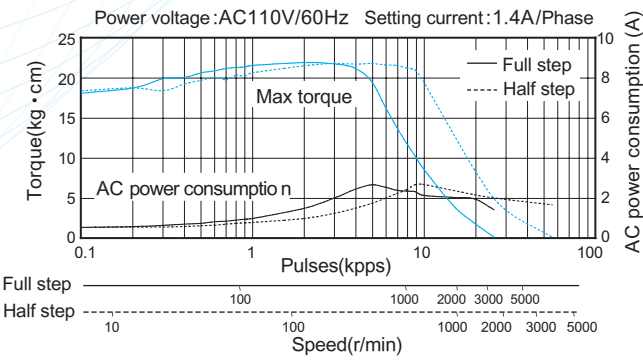
► Dimensions (Unit:mm)



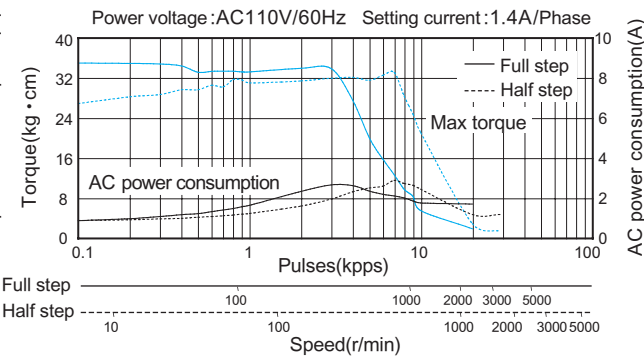
5 Phase Stepping Motor Series

► Speed—Torque Characteristics (Attached with driver TR514-1)

TK596□-A1, TK596-B1



TK599□-A1, TK599-B1



Gearhead

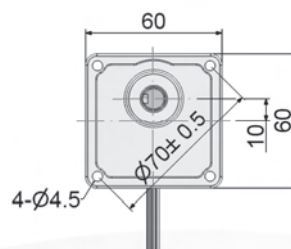
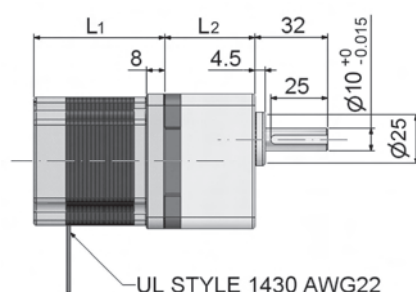
(For TROY Stepping Motors)



► Specs/ Dimensions (Unit:mm)

■ 6H Series:

Model	6H5	6H10	6H15	6H20	6H30	6H50	6H100
Gear ratio	1:5	1:10	1:15	1:20	1:30	1:50	1:100
Length L ₂	39.5mm						

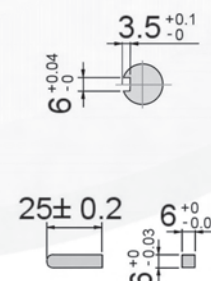
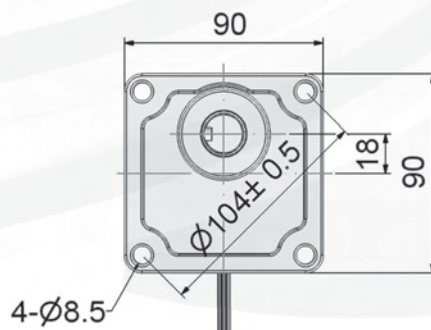
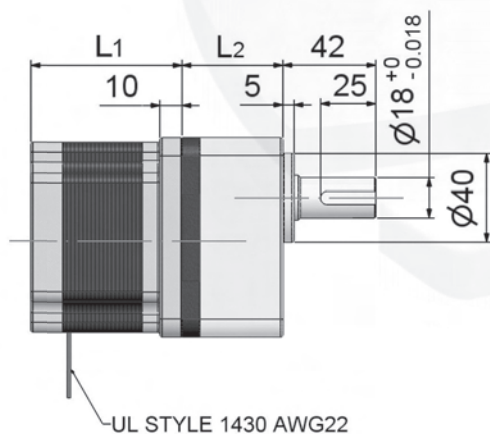


Stepping motor pinion shaft type

Model	L ₁
TK264P-02A1	48 ± 1
TK266P-02A1	58 ± 1

■ 9H Series:

Model	9H3	9H3.6	9H5	9H6	9H7.5	9H9	9H10	9H12.5	9H15	9H18	9H20
Gear ratio	1:3	1:3.6	1:5	1:6	1:7.5	1:9	1:10	1:12.5	1:15	1:18	1:20
Length L ₂	45.5mm										
Model	9H25	9H30	9H36	9H50	9H60	9H75	9H90	9H100			
Gear ratio	1:25	1:30	1:36	1:50	1:60	1:75	1:90	1:100			
Length L ₂	58.5mm										
Model	9H120	9H150	9H180	9H200	9H250	9H300	9H360				
Gear ratio	1:120	1:150	1:180	1:200	1:250	1:300	1:360				
Length L ₂	64.5mm										



Stepping motor pinion shaft type

Model	L ₁
TK296P-02A1	71 ± 1
TK299P-02A1	101 ± 1
TK596P-A1	71 ± 1
TK599P-A1	101 ± 1

Gearhead (For TROY Stepping Motors)

► Transmission efficiency/Rotation direction

■ 6H□ Series:

Model	6H5	6H10	6H15	6H20	6H30	6H50	6H100
Efficiency (%)	90%				86%		

■ 9H□ Series:

Model	9H3	9H3.6	9H5	9H6	9H7.5	9H9	9H10	9H12.5	9H15	9H18	9H20
Efficiency (%)	90%										
Model	9H25	9H30	9H36	9H50	9H60	9H75	9H90	9H100			
Efficiency (%)	86%										
Model	9H120	9H150	9H180	9H200	9H250	9H300	9H360				
Efficiency (%)	81%										

※A colored background indicates gear shaft rotation in the opposite direction as the motor shaft, otherwise indicates rotation in the same direction.

► Output torque when gearhead attached

Output torque when gearhead is calculated according to the following formula :

$$\text{Output torque} \rightarrow T_G = T_M \times i \times \eta$$

T_G : Output torque at gearhead shaft

T_M : Motor holding torque

i : Gear ratio of gearhead

η : Gearhead efficiency

► Max permissible torque of gearhead

Model	Max permissible torque of gearhead
6H□	80kg · cm
9H□	400kg · cm

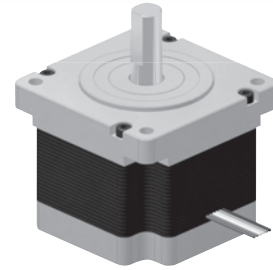
Note : The T_G value > Max permissible torque of gearhead , please take the max permissible torque value of gear head as standard

The T_G value < Max permissible torque of gearhead , please take the T_G value as standard

Low-Speed Synchronous Motor Series

Low-Speed Synchronous Motor

□ 86mm type

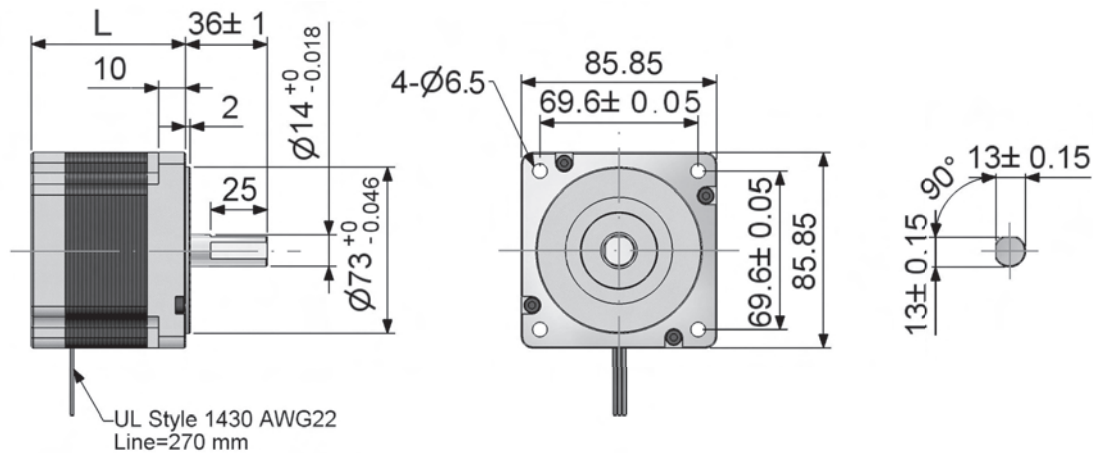


► Specs

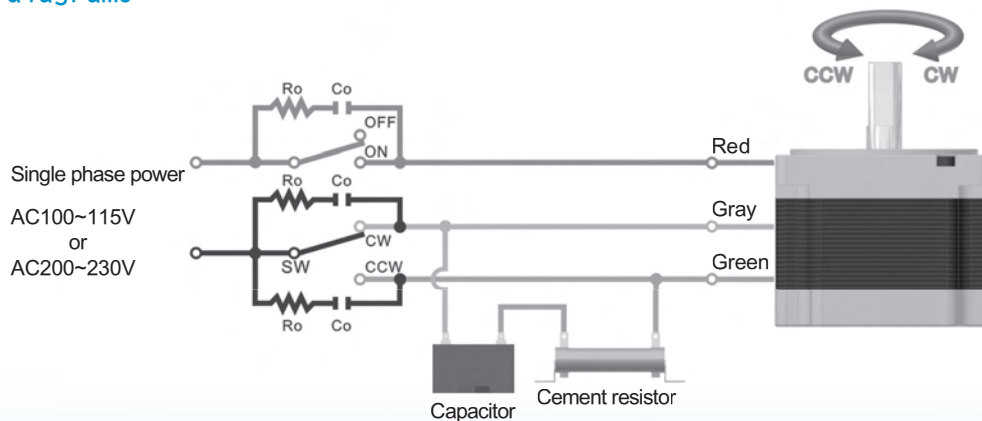
Model	Voltage V	Frequency Hz	Current A	Torque Kg·cm	Speed r/min	Standstill holding torque g·cm	Rotor inertia GD ² g·cm ²	Capacitor μF	External resistor W / Ω	Length (L) mm	Weight g
TSK550□-1	100	50	0.06	5.1	60	360	1330	0.6	30W/400Ω	70±1	2400
		60	0.07		72						
	115	60	0.07		72						
TSK550□-2	200	50	0.06	5.1	60	360	1330	P :0.5 S :0.35	30W/2000Ω	70±1	2400
		60	0.08		72						
	230	50	0.07		60						
		60	0.07		72						
TSK5100S-1	100	50	0.17	10.2	60	360	1330	2.5	30W/400Ω	70±1	2400
		60	0.2		72						
	115	60	0.21	11.2	72						
TSK5100S-2	200	50	0.09	10.2	60	360	1330	0.6	30W/1500Ω	70±1	2400
		60	0.11		72						
	230	50	0.1	11.2	60						
		60	0.11		72						

※ Enter the P in the box □ which indicates Pinion shaft type will need to attached the gearhead 9A series, please refer to the P.34.
Enter the S in the box □ which indicates Round shaft type.

► Dimension (Unit:mm)



► Wiring diagrams



Gearhead

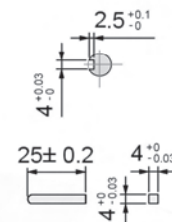
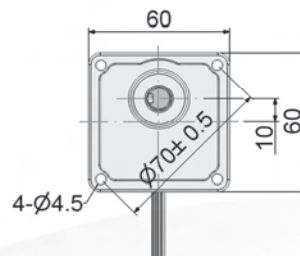
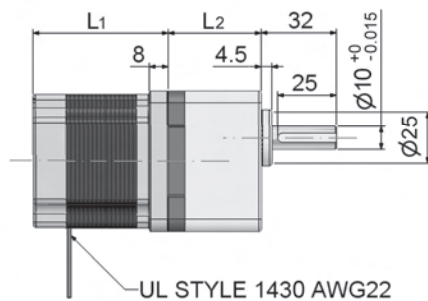
(For TROY Low-Speed Synchronous Motors)



► Specs / Dimensions (Unit:mm)

■ 6A□ series :

Model	6A5	6A10	6A15	6A20	6A30	6A50	6A100
Gear ratio	1:5	1:10	1:15	1:20	1:30	1:50	1:100
L ₂	39.5mm						

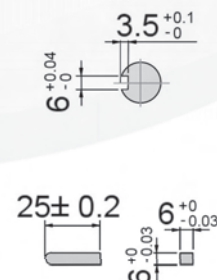
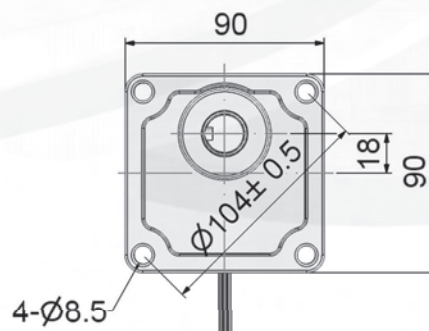
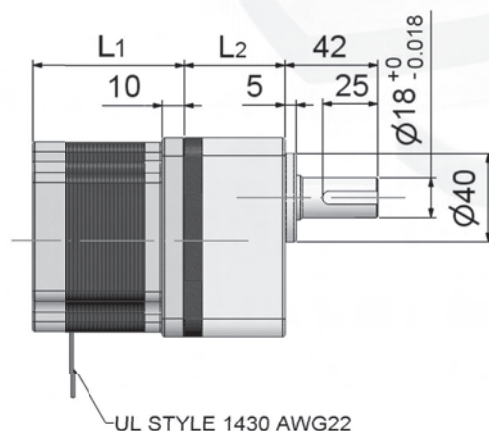


Low-speed synchronous motor
pinion shaft type

Model	L ₁
TSK237P-1	58±1

■ 9A□ series :

Model	9A3	9A3.6	9A5	9A6	9A7.5	9A9	9A10	9A12.5	9A15	9A18	9A20
Gear ratio	1:3	1:3.6	1:5	1:6	1:7.5	1:9	1:10	1:12.5	1:15	1:18	1:20
L ₂	45.5mm										
Model	9A25	9A30	9A36	9A50	9A60	9A75	9A90	9A100			
Gear ratio	1:25	1:30	1:36	1:50	1:60	1:75	1:90	1:100			
L ₂	58.5mm										
Model	9A120	9A150	9A180	9A200	9A250	9A300	9A360				
Gear ratio	1:120	1:150	1:180	1:200	1:250	1:300	1:360				
L ₂	64.5mm										



Low-speed synchronous motor
pinion shaft type

Model	L ₁
TSK550P-1/TSK550P-2	71±1

Stepping Motor
2 phase
5 phase
Gearhead

Stepping Motor Driver
2 phase
3 phase
5 phase

Low-Speed Synchronous Motor

Stepping / Servo Motor Controller

Motor Selection

Gearhead (For TROY Low-Speed Synchronous Motors)

► Transmission efficiency / Rotation direction

■ 6A□ series :

Model	6A5	6A10	6A15	6A20	6A30	6A50	6A100
Efficiency (%)	90%				86%		

■ 9A□ series :

Model	9A3	9A3.6	9A5	9A6	9A7.5	9A9	9A10	9A12.5	9A15	9A18	9A20
Efficiency (%)	90%										
Model	9A25	9A30	9A36	9A50	9A60	9A75	9A90	9A100			
Efficiency (%)	86%										
Model	9A120	9A150	9A180	9A200	9A250	9A300	9A360				
Efficiency (%)	81%										

※A colored background indicates gear shaft rotation in the opposite direction as the motor shaft, otherwise indicates rotation in the same direction

► Output torque after combined with gearhead

The Calculation formula as below :

$$\text{Torque} \rightarrow T_G = T_M \times i \times \eta$$

T_G : Output torque from gearhead

T_M : Motor torque

i : Gear ratio of gearhead

η : Transmission efficiency

► Max permissible torque of gearhead

Model	Max permissible torque of gearhead
6A□	80kg·cm
9A□	400kg·cm

Note : The T_G value > Max permissible torque of gearhead , take the max permissible torque of gearhead value as standard value

The T_G value < Max permissible torque of gearhead , take the T_G value as standard value