

# Low-Speed Synchronous Motor

## Low-Speed Synchronous Motor Series



### Product Number Code

#### Motor:

**TSK**

TSK TROY  
Low-speed  
synchronous  
motor series

**550**

Model  
237/550/5100

S: Round shaft  
P: Pinion shaft

—

**1**

Power input  
1:110V  
2:220V

#### Gearhead:

**6**

Frame size  
6:60mm sq.  
9:90mm sq.

**A**

Gearhead for  
TROY low-speed  
Synchronous  
motor

Gear ratio  
6A  Gear ratio 9A  Gear ratio

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

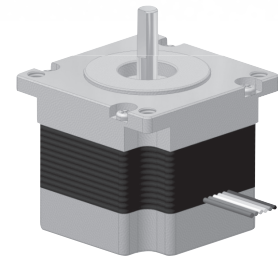
### Specs

Size	Model	Voltage V	Frequency Hz	Torque kg·cm	Speed r/min	Dimension □×L (mm)	Gearhead model	Page No.
□57mm	TSK237□-1	100	50	3.7	60	57.15 x 57	6A□	32
			60		72			
		115	60	72				
□86mm	TSK550□-1	100	50	5.1	60	85.85 x 70	9A□	33
			60		72			
	TSK550□-2	200	50	5.1	60	85.85 x 70		
			60		72			
	230	50	60	72				
		60	72					
	TSK5100S-1	100	50	10.2	60	85.85 x 70	—	
			60		72			
	115	60	11.2	72				
		TSK5100S-2	200	50	10.2	60	85.85 x 70	
	60			72				
	230	50	11.2	60				
60		72						

※ TSK237□/TSK550□, Enter the P in the box □ which indicates Pinion shaft type will need to attached the gearhead 6A or 9A series, please refer to the P.34. Enter the S in the box □ which indicates Round shaft type.



**TROY**  
Stepping Motor



# Low-Speed Synchronous Motor

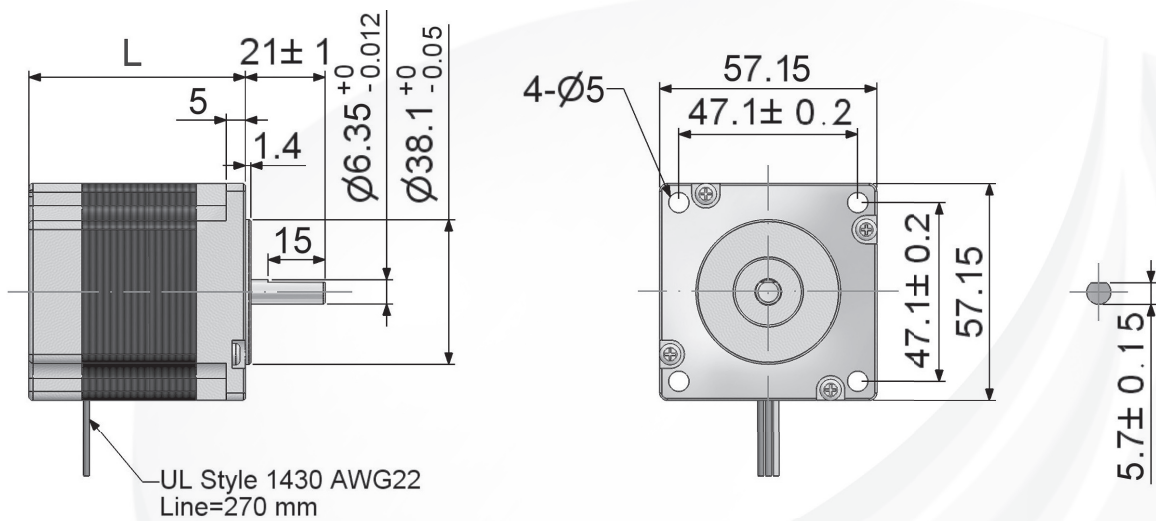
□ 57mm type

## ► Specs

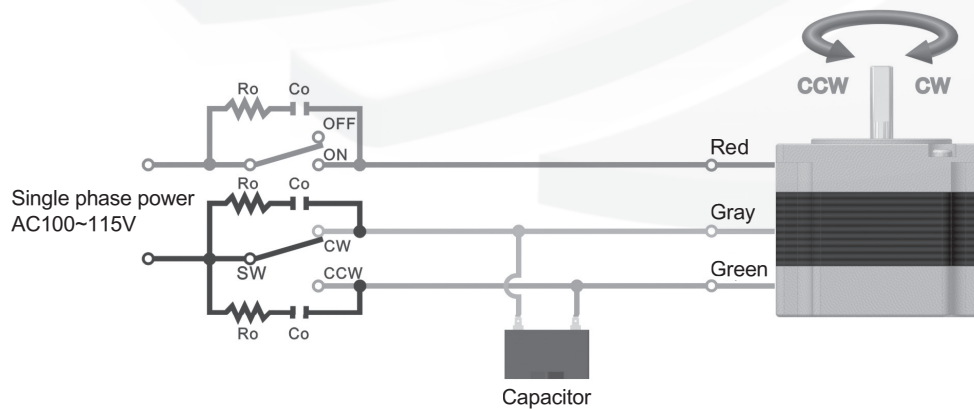
Model	Voltage V	Frequency Hz	Current A	Torque Kg·cm	Speed r/min	Standstill holding torque g·cm	Rotor inertia GD <sup>2</sup> g·cm <sup>2</sup>	Capacitor μF	External resistor W /Ω	Length (L) mm	Weight g
TSK237□-1	100	50	0.08	3.7	60	250	225	1.2	-	57±1	900
		60	0.09		72						
	115	60	0.1		72						

※ Enter the P in the box □ which indicates Pinion shaft type will need to attached the gearhead 6A series, please refer to the P.34.  
There is S in the box □ which indicates Round shaft type.

## ► Dimensions (Unit:mm)



## ► Wiring diagrams



Stepping Motor  
2 phase  
5 phase  
Gearhead

Stepping Motor Driver  
2 phase  
3 phase  
5 phase

Low-Speed Synchronous Motor

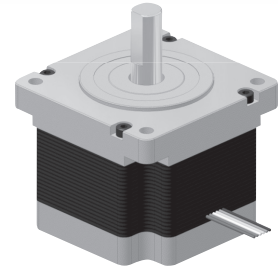
Stepping / Servo Motor Controller

Motor Selection

# Low-Speed Synchronous Motor Series

## Low-Speed Synchronous Motor

□ 86mm type

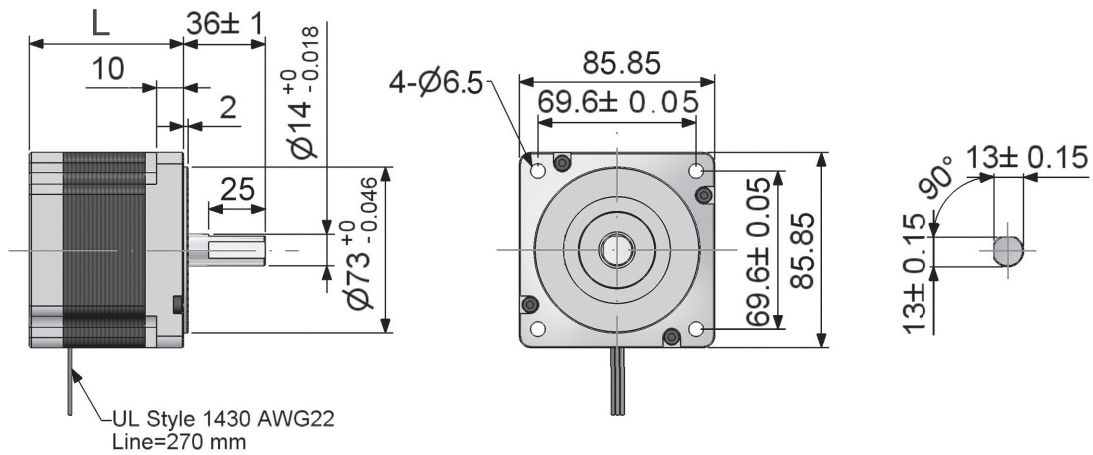


### Specs

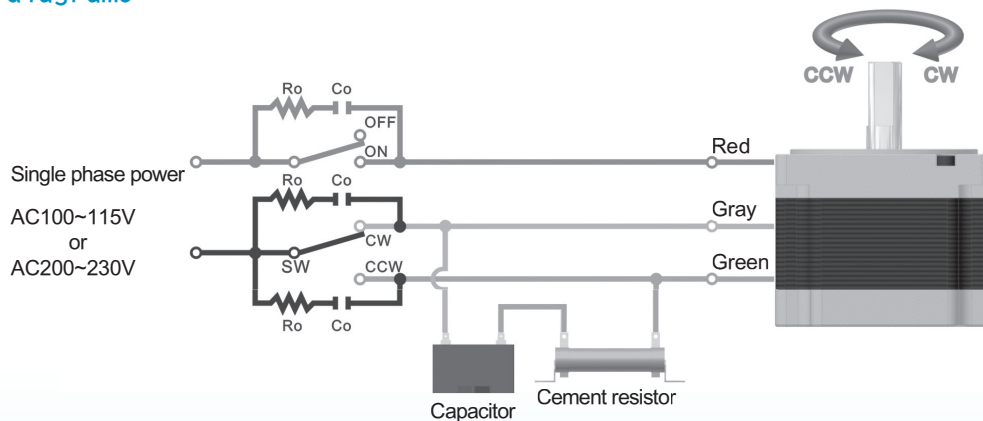
Model	Voltage V	Frequency Hz	Current A	Torque Kg·cm	Speed r/min	Standstill holding torque g·cm	Rotor inertia GD <sup>2</sup> g·cm <sup>2</sup>	Capacitor μF	External resistor W / Ω	Length (L) mm	Weight g
TSK550□-1	100	50	0.06	5.1	60	360	1330	0.6	30W/400Ω	70±1	2400
		60	0.07		72						
	115	60	0.07		72						
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	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	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

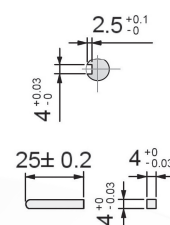
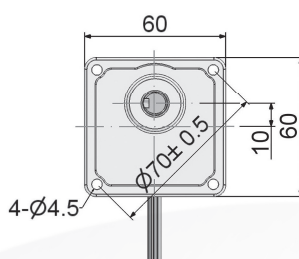
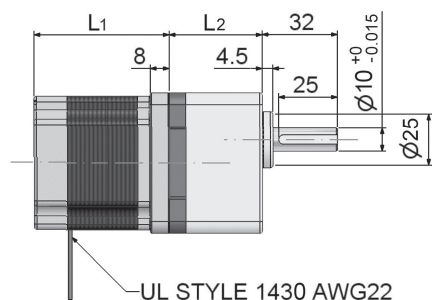
(For TROY Low-Speed Synchronous Motors)



## ► 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 <sub>2</sub>	39.5mm						

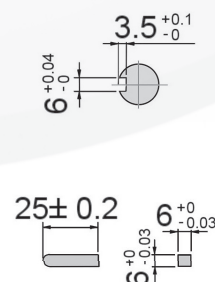
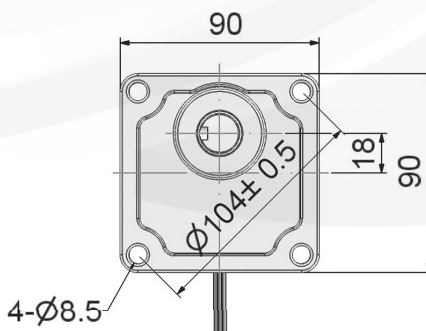
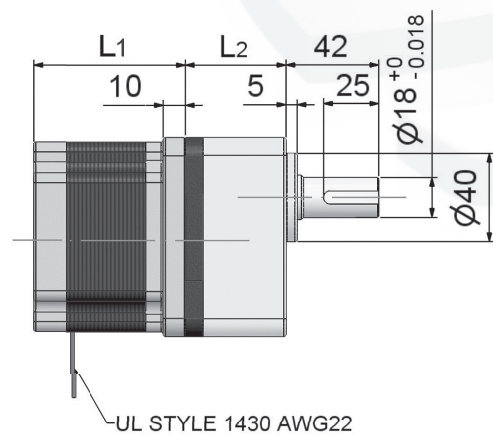


Low-speed synchronous motor pinion shaft type

Model	L <sub>1</sub>
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 <sub>2</sub>	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 <sub>2</sub>	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 <sub>2</sub>	64.5mm										



Low-speed synchronous motor pinion shaft type

Model	L <sub>1</sub>
TSK550P-1/TSK550P-2	71 ± 1

# 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

$\eta$  : 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