

# ULTRA-LOW-SPEED SYNCHRONOUS MOTORS

The demand for low speed motors for control use is sure to increase with the recent demand for more automated, labor saving machines and facilities. The gears, pulleys, other mechanical speed reduction devices used in the past to obtain low speed involve difficult problems related to life, noise, dimensions, maintenance, etc. Fuji Electric has made considerable progress in the development of an inductor type synchronous motor which provides ultra-low-speed electrically and without any of the above disadvantages.

The motors presently available in this new series are introduced here. Over 1,000 units already in wide use have been highly acclaimed.

## Features

- 1) Ultra-low-speed (60/72 rpm) can be obtained without the use of mechanical speed reduction devices. Consequently, life and maintenance need not be considered.
- 2) Since they are synchronous motors, their speed remains constant and is unaffected by load torque.
- 3) Rush current during starting and reversing is extremely small and is no larger than the operating current.
- 4) Starting and stopping times are extremely short (10~50 ms), thus they are suitable as servomotor.
- 5) Self-starting is possible and they can be freely rotated in any direction.
- 6) Fairly high static hold torque even when unexcited. Moreover, a static hold torque greater than the rated torque can be obtained by DC excitation.
- 7) Motor will not burn up even if continuously locked and can withstand a starting and stopping frequency of 2 times per second.
- 8) Single-phase source can be used.
- 9) Since a symmetrical 2-phase winding with capacitor splitting is used, forward and reverse operation is simple.
- 10) Since they are fully enclosed, little installation space is required.
- 11) Stepping operation at a step angle of  $1.8^\circ$  is possible when a pulse source is used.

## Applications

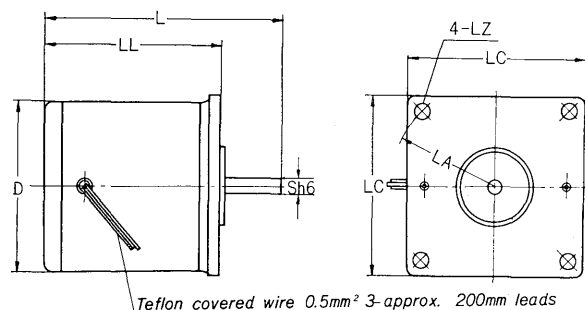
- Valve/damper operator
- Positioning of machine tools and other machines
- Electrode vertical movement device
- Control/measurement equipment
- Other ultra-low-speed applications

## Standard Specifications

Nominal output (W)	1.5	3	7.5	15	45	90
Rated torque (kg·cm)	2.4/2.0	4.8/4.0	12/10	24/20	73/61	146/122
Rated voltage (V)	100					
Voltage range (V)	100±10					
Input current (A)	0.1/ 0.09	0.13/ 0.15	0.4/ 0.32	0.7/ 0.55	2.4/1.8	4.5/3.5
Frequency (Hz)	50/60					
Speed (rpm)	60/72					
※Permissible load $GD^2$ (kg·cm <sup>2</sup> )	1.8	6	10	15	30	50
Weight (kg)	0.72	1.6	6	9	18	32
Insulation class	Class F					
Ambient condition	Temperature: -20~+40C° Humidity: 85% less					

※ Becomes  $\frac{1}{4}$  this value when indicated by moment of inertia.

## Exterior Dimensions



Unit: mm

Nominal output (W)	LA	LC	D	L	LL	LZ	S
1.5	70	60	60	80	60	5	6.3
3	105	95	88	99	69	6	9.5
7.5	156	135	119	156	128	10	14
15	156	135	119	203	175	10	14
45	226	200	178	212	174	15	18
90	226	200	178	288	250	15	18

