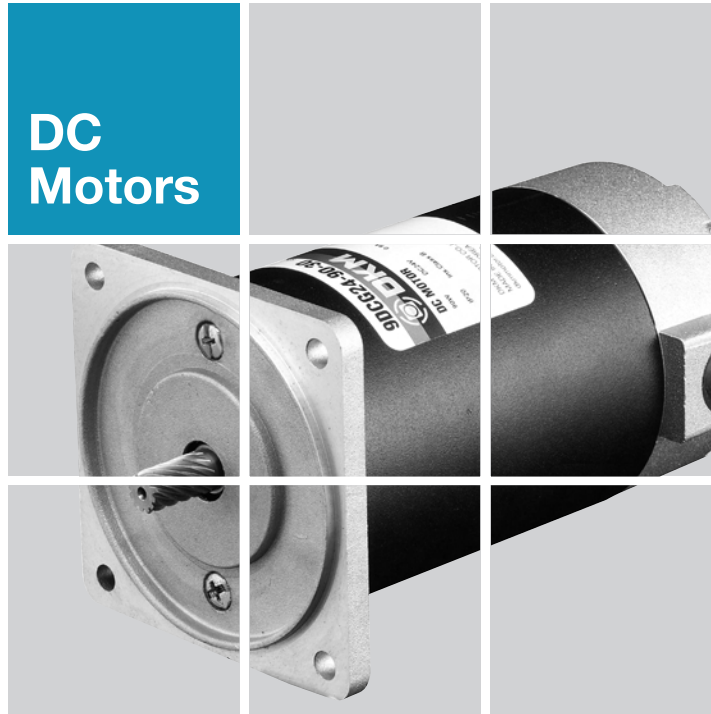


**DC
Motors**



Contents ▶▶

A Information

- A-01 Product Coding System
- A-04 Products Lineup
- A-08 General Information
- A-12 Terminology
- A-15 Caution for Using

B AC Motors

- B-01 Technical Data of AC Motor
- B-06 Induction Motor
- B-56 2 Pole Motor
- B-74 Reversible Motor
- B-106 Brake Motor
- B-148 Clutch & Brake Motor
- B-162 Torque Motor
- B-176 Speed Control System
 - B-179 Speed Controller FX1000A
 - B-181 Speed Controller DSKM
 - B-186 Speed Control Induction Motor
 - B-222 Speed Control Reversible Motor
 - B-250 Speed Control Brake Motor
 - B-276 Speed Control Clutch & Brake Motor

C DC Motors

- C-01 Technical Data of DC Motor
- C-04 DC Motor
- C-17 Speed Controller DSD-90

D Gearboxes

- D-01 Technical Data of Gearbox
- D-07 Parallel Gearbox
- D-13 Worm Gearbox
- D-16 Inter-decimal Gearbox

E Options

- E-01 Mounting Plate
- E-02 Extension Cable
- E-03 Output Flange / Output Shaft

C DC Motors

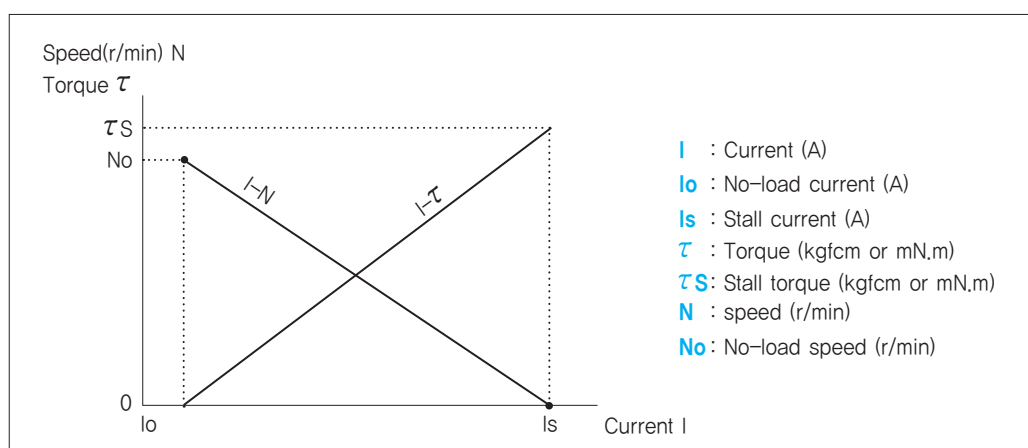
Technical Data of DC Motor

Features

- DC motor has a big starting torque and excellent mobility and when comparing with the same sized AC motor, the output is big and the efficiency is high.
- It is easy to control the speed and change the normal/reverse rotation.
- Comparing to AC motor, it is available to manufacture low voltage motor which can be applied to portable machine which uses various spec., especially battery power (12V, 24V).
- Due to the wear of brush, there is a limit in the service life.
- Due to brush and commutator, noise generates when starting.

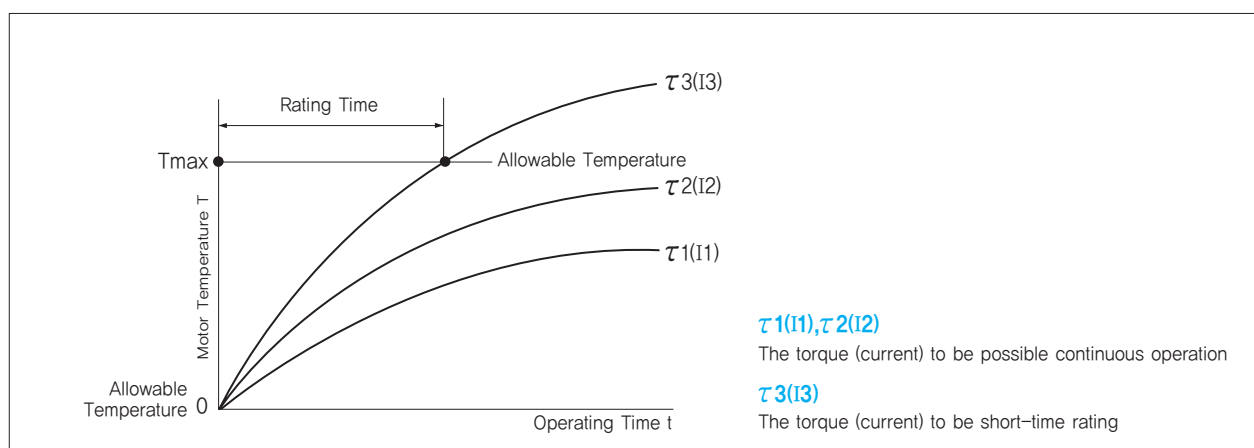
Current, Torque and Speed (r/min)

When the voltage of power supply is fixed, D.C. magnet motor shows the characteristic in the relationship between torque, speed and current as below. The relationship is almost linear show as the above, and the speed decreases, and current increases conversely when increasing the torque to the output shaft motor. It is same until the output shaft of motor is done a stall, when ignored heat generation in the motor. (It is possible to control the torque by controlling the current.)



Rating Time

According to increase of current (torque), heat generation in the motor increases. Generally, when the temperature of component parts in the motor is below than allowable temperature after it was saturated, it is possible to keep continuous operation. When it was not saturated in the allowable temperature, the time to exceed the temperature is rating time of motor and it is short-time rating specification. According to size and the specification, each motor model has different current (torque) value to be possible continuous operation.

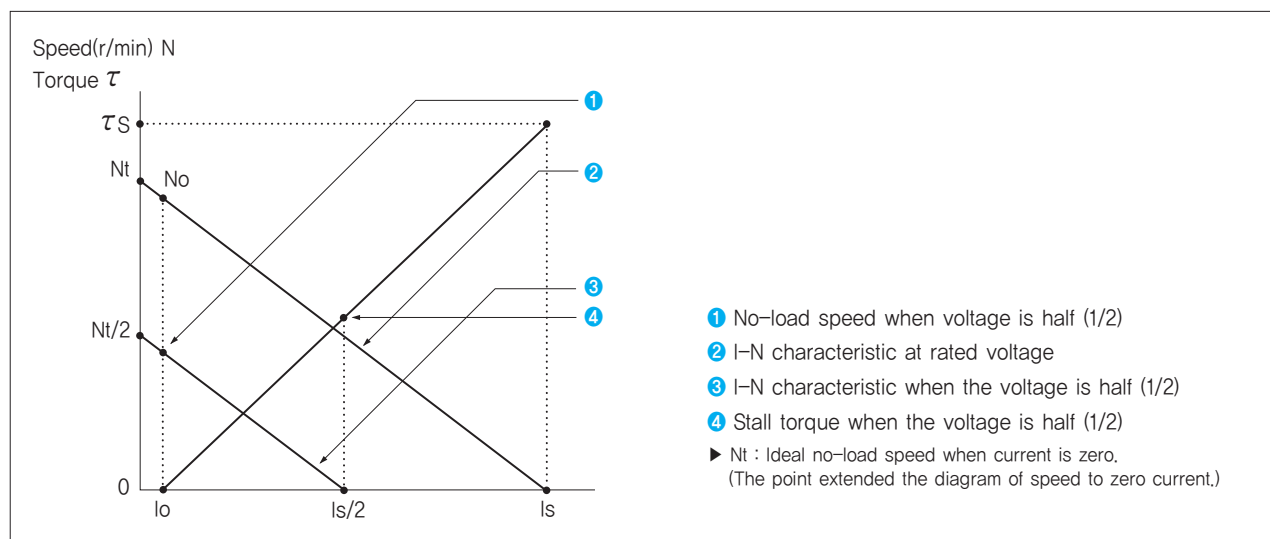


Performance of DC Motor in Case of Voltage Change at Power Supply

DC magnet motor can change speed by changing power supply voltage. The relationship between torque(τ), speed(N) and current(I) of motor when the voltage is half (1/2) is shown as below.

As the below figure, in the relationship between current and speed when power supply voltage was changed to half (1/2), ideal no-load speed "Nt" becomes "Nt/2" and it falls parallel to the performance of rated voltage.

The relationship between current and torque is same as the rated voltage, but the stall current " τ_s " falls accordingly as the stall current "Is" becomes "Is/2".



Input, Output and Efficiency of DC motor

The input, output and efficiency can be calculated with the next formula.

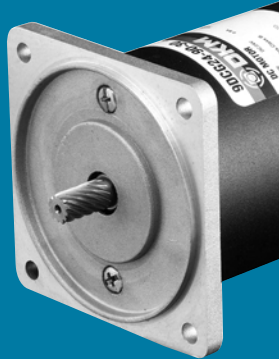
$$\text{Input(W)} = \text{Power Supply Voltage (V)} \times \text{Current (A)}$$

$$\text{Output(W)} = \text{Torque } \tau \text{ (kgfcm)} \times \text{Speed N (r/min)} \times 1.027 \times 10^{-2}$$

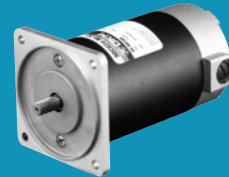
$$\text{Efficiency } \eta \text{ (\%)} = \frac{\text{Output(W)}}{\text{Input(W)}} \times 100$$

General Specifications

Item	Specification
Insulation Resistance	100M Ω or more when DC500V MEGA is applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5KV at 50Hz and 60Hz applied between the windings and the frame for 1 minute after rated motor operation under normal ambient temperature and humidity.
Temperature Rise	Temperature rise of windings are 80°C or less measured by the resistance change method after rated motor operation with connecting a Gearbox or equivalent heat radiation plate.
Insulation Class	Class B [130°C]
Ambient Temperature	-10°C~+40°C
Ambient Humidity	85% maximum



DC Motor



DC Motor

Index

DC Motor 15W (□60mm)

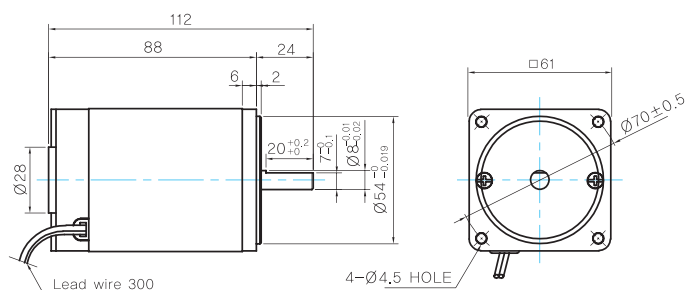
C-05

DKM AC/DC Geared Motor and Gearbox **C-04**

Dimensions

MOTOR ONLY

- MOTOR MODEL: 6DCD□-15-30



MOTOR OUTPUT SHAFT

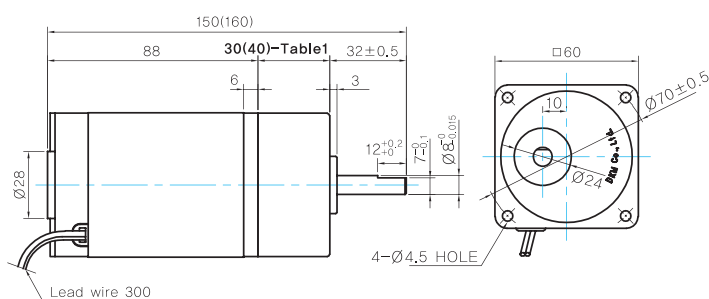
MODEL	SPEC
D-CUT TYPE	

GEARED MOTOR

G TYPE GEARBOX

- MOTOR MODEL:
6DCG□-15-30

- GEARBOX MODEL:
6GBD□MH



GEARBOX OUTPUT SHAFT

MODEL	SPEC
D-CUT TYPE	

WEIGHT

PART		WEIGHT(Kg)
MOTOR		0,7
GEAR BOX	6GBD3MH ~ 6GBD18MH	0,3
	6GBD20MH ~ 6GBD40MH	0,32
	6GBD50MH ~ 6GBD250MH	0,34

30(40)-Table1

SIZE(mm)	GEAR RATIO
30	6GBD3MH - 6GBD18MH
40	6GBD20MH - 6GBD250MH

Motor Images

