

# Model Name Code

## Model Name Construction

The name configuration is normally composed of 4 or 5 items aligned in order, and the meaning of the symbols is as follows.



(1) Item 1 : When the header is "M" it means the product is produced by Mitsumi.

(2) Item 2 : This shows the external diameter value. (Shows the nominal value.)

(3) Item 3 : This shows the design characteristics.

E : Fork brush type.

N : Carbon brush type.

BL : Brushless motor.

(4) Item 4 : This shows the development order by type.

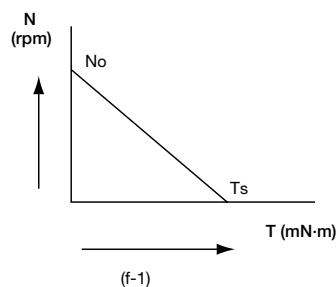
As a rule, begins with 1.

## Explanation of Terminology and How to Read Characteristics Diagrams

1) No load rpm :  $N_0$  (rpm)

This shows the rpm (revolutions/min.) in an unloaded state when voltage is applied between terminals.

2) Starting torque :  $T_s$  (mN·m)



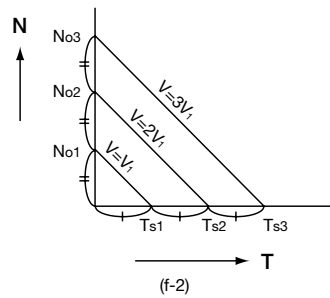
This shows the torque when the motor rotation stops when the load is increased during motor operation.

3) Applied voltage :  $V$  (V)

This shows the voltage applied between motor terminals. The value is shown as (V).

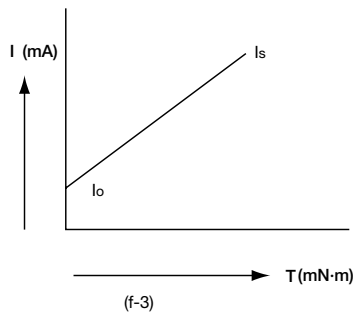
(a) The graph (f-1) that links  $N_0$  and  $T_s$  is called the N-T characteristics and is shown by the relationship between the load torque and the rpm.

(b) The no load rpm ( $N_0$ ) and starting torque ( $T_s$ ) are both proportional to the applied voltage ( $V$ ), so when the applied voltage is used as a parameter the N-T characteristics is a parallel moving straight line as shown by (f-2).



4) No load current :  $I_0$  (mA)

This shows the current that flows at no load when a voltage is applied between terminals. The value is shown as (mA).

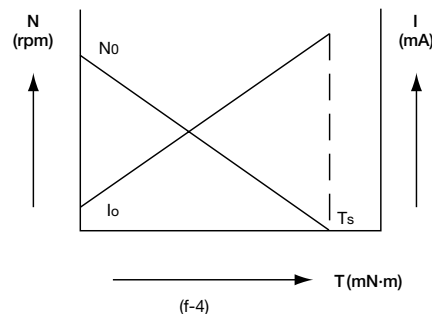


5) Starting current :  $I_s$  (mA)

This shows the current when the motor rotation stops when the load is increased during motor operation.

(c) The graph (f-3) that links  $I_0$  and  $I_s$  is called the I-T characteristics and is shown by the relationship between the load torque and the current.

(b) In this catalog, the relationship between the torque, current, and rpm when the rated voltage is applied is as shown at below (f-4) and is added as the basis of the characteristics graph.



## General Motor Use Precautions During Handling

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(During use)

(1) Usage temperature conditions

The affect of the ambient temperature on the motor cannot be ignored. Care must be taken so that the motor is not used under high temperature or high humidity conditions. (Please refer to the specifications before use.)

(2) Belt charge

The motor case becomes charged from the belt friction, and this charge creates noise when released, so use a belt material that is difficult to charge. Also, be sure to ground the case.

(3) Motor installation

If the length of the motor installation screws are too long, the internal rotors or magnets could be damaged. Use a safe length that takes into account the chassis thickness and dimensions in the specifications.

(4) Do not stop the motor while the power is on

Be careful that the shaft does not lock while the power to the motor is turned on. Depending on the motor specifications, the inside of the motor will become hot and could suffer burn damage. Strictly observe the specification values and use the motor within the usage voltage and load ranges.

(5) Pulley and gear installation

- 1) When the shaft is pressure fit, correctly pressure fit the opposing shaft bearing.
- 2) When the shaft is held by a stop screw, do not use a screw that is so large that it will cause rotational unbalance.
- 3) When the shaft is glued, be careful so that the adhesive does not flow down the shaft into the bearing.

(6) Oiling the motor shaft bearing

When the motor shaft bearing is oiled the oil will get into the motor and cause a degradation of the motor's characteristics, so do not oil the motor shaft bearing.

(7) Atmosphere

Do not use the motor in areas where there are corrosive gases (H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, Cl<sub>2</sub>, etc.), harmful gases, or substances from which harmful gases can be created (especially organic silicones, cyanides, formalin, and phenol substances). Make a sufficient check ahead of time that none of the above substances exist in the set.

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(8) Load on the motor shaft

If a large load like that below is applied to the shaft during motor operation, the life of the motor could be shortened. Check the actual usage loads ahead of time so that appropriate measures can be taken for the mechanism.

- 1) When there is a large thrust load from the worm gear or fan, etc.
- 2) When there is a large radial load from a centrifugal cam, etc.

(9) Clearance noise

When the side pressure that is applied to the motor output axis is less than a minute load (refer to the individual specifications), a clearance noise might be generated between the metal and output shafts. Check the set mounting conditions ahead of time.

(10) Motor expanded usage

When expanding the use of the motor to another set, only do so after checking the set mounting ahead of time for electrical noise, mechanical noise, vibration, rotational waste, drift, motor and circuit resonance, etc.

(During handling)

(11) Take the following precautions when soldering to motor terminals.

- 1) Keep the iron temperature below 320°C and keep the soldering time within 3 sec. In addition, do not apply so much load to terminals.
- 2) Make sure that the spattering of flux and solder does not get into the motor.

(12) Storage

Do not store in areas containing harmful gases as described in Item (7), or with high temperatures, low temperatures, or high humidity. Extra care should be taken for long-term storage. Be sure to keep the storage period at normal temperature and humidity within 6 months.

(13) Handling of faulty motors

If a fault occurs with a motor, do not disassemble or attempt to repair it. Mitsumi will handle the problem as soon as contacted.

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