

11.2. When Using a Stepping Motor (Pulse Motor)

11.2.1. Minimal Feed (Feed per Step)

The step angle required for the motor and the driver is obtained using the equation (50) below based on the minimum feed distance, Ball Screw lead and reduction ratio.

$$E = \frac{360S}{\ell \cdot A} \dots\dots\dots (50)$$

where

- E : Step angle required for the motor and the driver (degree)
S : Minimum feed distance (mm)
(feed per step)
 ℓ : Ball Screw lead (mm)
A : Reduction ratio

11.2.2. Pulse Speed and Motor Torque

① Pulse speed

The pulse speed is obtained using the equation (51) below based on the feed speed and the minimum feed distance.

$$f = \frac{V \times 1000}{S} \dots\dots\dots (51)$$

where

- f : Pulse speed (Hz)
V : Feed speed (m/s)
S : Minimum feed distance (mm)

② Torque required for the motor

The torque required for the motor differs between uniform motion, acceleration and deceleration. To calculate the rotation torque, see "Studying the Rotation Torque" on page K-68.

Thus, the pulse speed required for the motor and the required torque can be calculated in the manner described above.

Although the torque varies depending on the motor used, normally the calculated torque should be doubled to ensure safety. Check if the torque can be used in the motor speed-torque curve.