# CB Gear Motor Specifications

## 1. Specifications

<table>
<thead>
<tr>
<th>Motor</th>
<th>Output</th>
<th>Three-phase: 0.1, 0.2, 0.4, 0.75, 1.5, 2.2, 3.7kW</th>
<th>Single-phase: 100W, 200W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>200/200/220V 50/60/60Hz</td>
<td>100V 50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Number of poles</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Protection type</td>
<td>0.1 kW - Totally-enclosed type (IP44), 0.2-3.7 kW - Totally-enclosed external fan type (IP44)</td>
<td>Drip-proof protection type (IP22)</td>
<td></td>
</tr>
<tr>
<td>Cooling method</td>
<td>0.1 kW - Self-cooling type (IC410), 0.2-3.7 kW - Self-managed type (IC411)</td>
<td>Draft type (IC01)</td>
<td></td>
</tr>
<tr>
<td>Starting method</td>
<td>-</td>
<td>Split-phase starting type</td>
<td></td>
</tr>
<tr>
<td>Rating</td>
<td>Continuous</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>Insulation</td>
<td>Class E</td>
<td>Class E</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reducer</th>
<th>Reduction ratio</th>
<th>1/5 to 1/200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed reducing method</td>
<td>External gear system (helical gear, spur wheel)</td>
<td></td>
</tr>
<tr>
<td>Lubricating method</td>
<td>Grease lubrication</td>
<td></td>
</tr>
<tr>
<td>Shaft end key way</td>
<td>New JIS key (JIS B1301-1976): Output shaft key attached</td>
<td></td>
</tr>
<tr>
<td>Output shaft end</td>
<td>Tapped</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambient conditions</th>
<th>Installation place</th>
<th>Indoor not exposed to dust or water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ambient temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td></td>
<td>Ambient humidity</td>
<td>Less than 85% (non condensing)</td>
</tr>
<tr>
<td></td>
<td>Altitude</td>
<td>At elevations below 1000 m</td>
</tr>
<tr>
<td></td>
<td>Atmosphere</td>
<td>Free from corrosive gases, explosive gases and steam</td>
</tr>
<tr>
<td></td>
<td>Mounting direction</td>
<td>No limitations on mounting angles: horizontal, vertical or inclined</td>
</tr>
<tr>
<td>Paint color</td>
<td>Munsell 2.5G 6/3</td>
<td></td>
</tr>
</tbody>
</table>

Note) The protective construction for the CB gear motor is IP12.

## 2. Clutch/Brake

<table>
<thead>
<tr>
<th>Type</th>
<th>Dry single-plate friction type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuation method</td>
<td>Excitation</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Insulation class</td>
<td>Class B</td>
</tr>
<tr>
<td>Protection type</td>
<td>Open</td>
</tr>
<tr>
<td>Gap adjustment</td>
<td>Automatic gap control system</td>
</tr>
<tr>
<td>Lining</td>
<td>No asbestos</td>
</tr>
</tbody>
</table>

For lubrication, installation and coupling, refer to pages 59 to 62.
Power supply box
The following power supply boxes and control unit for the clutch/brake are available. Make the selection according to your operating conditions. The control unit is of the non-contact type, making it suitable for high frequency on-off switching.

Power supply box list

<table>
<thead>
<tr>
<th>Model</th>
<th>Model number</th>
<th>Capacity W</th>
<th>Recommended CB gear motor</th>
<th>Varistor for discharge circuit</th>
<th>Function</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMP-type</td>
<td>DMP-10/24</td>
<td>10</td>
<td>GMTA010 GMTA100 GMTA200 GMTA040</td>
<td>Z15D151</td>
<td>Rectifying only</td>
<td>Input voltage: 100/100/110 V AC 200/200/220 V AC</td>
</tr>
<tr>
<td>power supply</td>
<td>DMP-20/24A</td>
<td>20</td>
<td>GMTA075 GMTA150 GMTA220</td>
<td>Z15D151</td>
<td></td>
<td>Output voltage: 24 V DC</td>
</tr>
<tr>
<td>box</td>
<td>DMP-63/24A</td>
<td>63</td>
<td>GMTA370</td>
<td>Z15D151</td>
<td></td>
<td>Rating: Continuous</td>
</tr>
<tr>
<td></td>
<td>TMP-40D</td>
<td>40</td>
<td>All models</td>
<td>Unnecessary</td>
<td></td>
<td>Paint color: Munseil 7.5BG6/1.5</td>
</tr>
</tbody>
</table>

(The varistor accompanies the CB gear motor.)

DMP-10/24

DMP-20/24A

DMP-63/24A

TMP-40D
Control circuit

1. Example of circuit using standard power supply box (DMP-type)

![Circuit Diagram](image)

- **Tr**: Transformer
- **V**: Varistor
- **MB**: Electromagnetic brake
- **PB1, PB2**: Pushbutton switch
- **Rf**: Silicon rectifier
- **CL**: Electromagnetic clutch
- **EF**: Fuse
- **MC**: Electromagnetic contactor

2. The discharge circuit

When performing switching on the DC side using the standard power supply box (DMP-type), provide a discharge circuit using the varistor accompanying the CB gear motor in order to protect the switch and to prevent a dielectric breakdown of the clutch/brake.

![Discharge Circuit](image)

When using the standard power supply box (TMP-type), because a discharge circuit is included, the above procedure is not necessary.

3. Power capacity

The power capacity for the electromagnetic clutch/brake should be 130% or more of the power consumption of the clutch/brake.

When using two or more CB gear motors, it should be 130% or more of the total capacity.

4. Structure of terminal box

![Terminal Box Diagrams](image)
5. Brake torque adjusting function
For the TMP-type control unit, a brake torque adjusting resistor is set in the circuit. The brake torque can be adjusted as shown in the figure to the right by reducing the voltage with this resistor. The lower limit of voltage adjustment is about 70%. If the voltage is reduced too much, insufficient pull-in of the armature will result. The scale of the control unit should be regarded as a guideline. To determine the precise value, measure the terminal voltage.

6. Special control circuit
If fast actuation of the clutch/brake is required, increase the voltage applied to the clutch/brake above the rated voltage, which will shorten the armature pull-in time and the torque rise time. Using this method will cause heating of the clutch/brake body. In addition, if the GD² of the load is 0.5 or more as compared with that of the motor, the shock on starting will be increased. Care should therefore be taken when using this method.
1. Selection procedure

- When making a selection based on the torque and revolution, select a model number according to the gear motor.
- The allowable inertia ratio, clutch/brake clutching work and life span are described here.

1. Conditions

- (1) Output shaft revolution speed \(n_s\) and frequency Hz
- (2) Load torque on motor shaft \(T_s\)
- (3) Load on motor shaft \(G_i\) (moment of inertia)
- (4) \(G_i\) of motor
- (5) Starting frequency per minute \(N\) (Maximum frequency: 60 times/min)
- (6) Method of coupling to load

2. Selection of model

(1) Calculate the corrected inertia ratio \((U)\).

\[
U = \frac{G_i \times U_s}{G_i_s}
\]

(2) Make sure that the corrected inertia ratio \((U)\) of the motor to be used does not exceed the allowable inertia ratio \((U_{max})\).

- If it exceeds the allowable inertia ratio, please contact our company.

(3) While referring to the clutch/brake selection diagram on page 92, select a suitable motor capacity to allow for the load torque on the motor shaft and \(G_i\) on motor shaft.

- (For \(N=25\), refer to the diagram for \(N=30\).)

When a precise selection is necessary, determine it using the basic formula on page 104.

3. Determination of life span

Calculate the clutching work per time \(E\) using the formula shown in Section 3 on page 104.

From this \(E\) and the total work (\(E\) shown on page 105), calculate the total clutching count \((Z)\) as shown below.

\[
Z = \frac{E}{E_s}
\]

To calculate the life span in units of days, use the following formula.

\[
Z_s = \frac{Z}{N \times 60 \times N_r}
\]

- \(Z_s\): Life span in units of days
- \(N\): Starting count per minute
- \(N_r\): Average operating time per day

2. Example of selection

SI units

1. Conditions

- (1) Output shaft revolution speed \(n_s = 60\) r/min (50 Hz)
- (2) Load torque on motor shaft \(T_s = 1.764\) N·m
- (3) Moment of inertia on motor shaft \(I_s = 0.001\) kg·m² (Load being coupled directly)
- (4) Moment of inertia of load \(I_s = 0.00119\) kg·m²
- (5) Starting frequency \(N = 15\) times/min

2. Selection of model

\[
U = \frac{I_s \times U_s}{I_s} = \frac{0.001 \times 1.0}{0.00119} = 0.84
\]

- Because the output shaft revolution speed is \(60\) r/min, the reduction ratio is \(1/30\) according to the specification chart (page 106) and therefore the allowable inertia ratio is \(1.0\), which means there is no problem with the corrected inertia ratio \(U\).

- Because the starting frequency per minute is \(15\) times/min, refer to the diagram for \(N = 20\) times/min. The point of intersection of the above shown \(T_s\) and \(I_s\) in this diagram indicates that the proper motor capacity is \(0.4\) kW. As a result, the model number that should be selected is GMT040-L30CB.

3. Determination of life span

(Perform the following calculation while referring to page 104.)

\[
E_s = \frac{\Sigma G_i \times n_s}{182} \times \frac{T_s}{(T_s - T_s)}
\]

\[
= \frac{1.216 \times 10^4 \times 1500}{182} \times \frac{3.63}{(3.53 - 1.76)}
\]

\[
= 29.9\ J
\]

\[
Z = \frac{E_s}{299} = 13.1 \times 10^4 \text{ times}
\]

Gravitational units

1. Conditions

- (1) Output shaft revolution speed \(n_s = 60\) r/min (50 Hz)
- (2) Load torque on motor shaft \(T_s = 0.18\) kgf·m
- (3) Load on motor shaft \(G_i\) (moment of inertia)
- (4) \(G_i\) of motor = 0.004 kgf·m² (Load being coupled directly)
- (5) Starting frequency \(N = 15\) times/min

2. Selection of model

\[
U = \frac{G_i \times U_s}{G_i} = \frac{0.004 \times 1.0}{0.0476} = 0.84
\]

- Because the output shaft revolution speed is \(60\) r/min, the reduction ratio is \(1/30\) according to the specification chart (page 106) and therefore the allowable inertia ratio is \(1.0\), which means there is no problem with the corrected inertia ratio \(U\).

- Because the starting frequency per minute is \(15\) times/min, refer to the diagram for \(N = 20\) times/min. The point of intersection of the above shown \(T_s\) and \(G_i\) in this diagram indicates that the proper motor capacity is \(0.4\) kW. As a result, the model number that should be selected is GMT040-L30CB.

3. Determination of life span

(Perform the following calculation while referring to page 104.)

\[
Z = \frac{E_s}{3.05} = 13.1 \times 10^4 \text{ times}
\]
3. Clutch/Brake selection diagram

**SI units**

\[ T_i = \frac{T_L}{R} \quad I_i = \frac{I}{R^2} \]

- \( T_i \): Load torque on motor shaft (N·m)
- \( T_L \): Load torque on output shaft (N·m)
- \( I_i \): Moment of inertia on motor shaft (kg·m²)
- \( I \): Moment of inertia of load on output shaft (kg·m²)
- \( R \): Reduction ratio

**Gravitational units**

\[ T_i = \frac{T_L}{R} \quad GD_i = \frac{GD_i^r}{R^r} \]

- \( T_i \): Load torque on motor shaft (kgf·m)
- \( T_L \): Load torque on output shaft (kgf·m)
- \( GD_i \): Moment of inertia on motor shaft \( GD_i^r \) (kgf·m²)
- \( GD_i^r \): Moment of inertia of load on output shaft \( GD_i^r \) (kgf·m²)
- \( R \): Reduction ratio
4. Basic formula for selection

SI units

1. Torque, revolution speed and power
\[ T_i = \frac{9550 \cdot P}{n} \]
\[ T_i : \text{Torque on output shaft} \quad \text{N-m} \]
\[ P : \text{Power} \quad \text{kW} \]
\[ n : \text{Output shaft revolution speed} \quad \text{r/min} \]

2. Conversion to motor shaft
   (1) \[ T_i = T_i \cdot \frac{T_i}{i} \]
   \[ T_i : \text{Torque on output shaft} \quad \text{N-m} \]
   \[ i : \text{Reduction ratio} \]
   (2) \[ I_i = \frac{I_i}{i} \]
   \[ I_i : \text{Moment of inertia on motor shaft} \quad \text{kg-m}^2 \]

3. Clutching (braking) work
   (1) \[ E_i = \frac{31 \cdot n_i \cdot T_i}{1825} \times \frac{T_i}{(T_i \pm T_i)} \]
   \[ \Sigma J = I_i + I_i \]
   \[ \text{Moment of inertia of clutch/brake} \]
   \[ \text{(Table 1 on page 105)} \]
   \[ n_i : \text{Motor shaft revolution speed} \quad \text{r/min} \]
   \[ T_i : \text{Dynamic friction torque of clutch/brake} \quad \text{N-m} \]
   \[ \text{(Table 3 on page 105)} \]
   \[ + : \text{Positive torque at the time of braking} \]
   \[ – : \text{Negative torque at the time of clutching and braking} \]

(2) \[ E_b = E_i \times N \]
\[ E_b : \text{Allowable work} \quad \text{J/min} \text{ (Table 3 on page 105)} \]

4. Clutching (braking) time
\[ t_i = \frac{31 \cdot n_i}{955} \times \frac{n_i}{(T_i \pm T_i)} \]
\[ \text{Moment of inertia of clutch/brake} \]
\[ \text{(Table 1 on page 105)} \]
\[ + : \text{Positive torque at the time of braking} \]
\[ – : \text{Negative torque at the time of clutching and braking} \]

5. Response time
\[ t_i : \text{Armature pull-in time} \quad \text{s} \text{ (Table 2 on page 105)} \]

6. Calculation of braking distance
\[ S = (t_i + \frac{1}{2} t_i) \times V \]
\[ S : \text{Braking distance} \quad \text{mm} \]
\[ V : \text{Speed (conveyor speed, etc.)} \quad \text{mm/s} \]

7. Stopping accuracy
Precise determination of the stopping accuracy is difficult because it is affected by voltage, temperature, alteration through use, operating time, etc. However, if the following variations are assumed:
   a. Load torque variation: ±20%
   b. Braking torque variation: ±20%
   c. Time lag variation: ±0.01s
The variation from the calculated braking distance is about ±30%.
Stopping accuracy \( \delta = S \times 0.6 \) or \( S \times 0.3 \)
For example, when the calculated braking distance \( S = 10 \text{ mm} \), the stopping accuracy is 6 mm (10±3 mm).

Gravitational units

1. Torque, revolution speed and power
\[ T_i = \frac{974 \cdot P}{n} \]
\[ T_i : \text{Torque on output shaft} \quad \text{kgf-m} \]
\[ P : \text{Power} \quad \text{kW} \]
\[ n : \text{Output shaft revolution speed} \quad \text{r/min} \]

2. Conversion to motor shaft
   (1) \[ T_i = T_i \cdot \frac{T_i}{i} \]
   \[ T_i : \text{Torque on output shaft} \quad \text{kgf-m} \]
   \[ i : \text{Reduction ratio} \]

(2) \[ GD_i^2 = \frac{GD_i^2}{i^2} \]
\[ GD_i : \text{Load on motor shaft} \quad \text{GD}^2 \quad \text{kgf-m}^2 \]

3. Clutching (braking) work
   (1) \[ E_i = \frac{31 \cdot n_i^2 \cdot T_i}{7180} \times \frac{T_i}{(T_i \pm T_i)} \]
   \[ \Sigma GD_i = GD_i^2 + GD_i \]
   \[ \text{Load on motor shaft} \quad \text{GD}^2 \]
   \[ \text{GD}^2 \text{ of clutch/brake} \]
   \[ \text{(Table 1 on page 105)} \]
   \[ n_i : \text{Motor shaft revolution speed} \quad \text{r/min} \]
   \[ T_i : \text{Dynamic friction torque of clutch/brake} \quad \text{kgf-m} \]
   \[ \text{(Table 3 on page 105)} \]
   \[ + : \text{Positive torque at the time of braking} \]
   \[ – : \text{Negative torque at the time of clutching and braking} \]

(2) \[ E_b = E_i \times N \]
\[ E_b : \text{Allowable work} \quad \text{kgf-min} \text{ (times/min)} \]
\[ E_b \leq E_i \]
\[ E_i : \text{Allowable work} \quad \text{kgf-min} \text{ (times/min)} \text{ (Table 3 on page 105)} \]

4. Clutching (braking) time
\[ t_i = \frac{31 \cdot n_i^2}{400} \times \frac{n_i}{(T_i \pm T_i)} \]
\[ \text{Moment of inertia of clutch/brake} \]
\[ \text{(Table 1 on page 105)} \]
\[ + : \text{Positive torque at the time of braking} \]
\[ – : \text{Negative torque at the time of clutching and braking} \]

5. Response time
\[ t_i : \text{Armature pull-in time} \quad \text{s} \text{ (Table 2 on page 105)} \]

6. Calculation of braking distance
\[ S = (t_i + \frac{1}{2} t_i) \times V \]
\[ S : \text{Braking distance} \quad \text{mm} \]
\[ V : \text{Speed (conveyor speed, etc.)} \quad \text{mm/s} \]

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Precise determination of the stopping accuracy is difficult because it is affected by voltage, temperature, alteration through use, operating time, etc. However, if the following variations are assumed:
   a. Load torque variation: ±20%
   b. Braking torque variation: ±20%
   c. Time lag variation: ±0.01s
The variation from the calculated braking distance is about ±30%.
Stopping accuracy \( \delta = S \times 0.6 \) or \( S \times 0.3 \)
For example, when the calculated braking distance \( S = 10 \text{ mm} \), the stopping accuracy is 6 mm (10±3 mm).
Specifications of motor and clutch/brake

Table 1. Moment of inertia of motor and clutch/brake

<table>
<thead>
<tr>
<th>Motor output</th>
<th>Moment of inertia of motor</th>
<th>Model number of clutch/brake</th>
<th>Moment of inertia of clutch/brake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$I_a$ [kg·m$^2$]</td>
<td>$GD^2$ [kgf·m$^2$]</td>
<td>$I_e$ [kg·m$^2$]</td>
</tr>
<tr>
<td>0.1kW</td>
<td>$0.49 \times 10^{-3}$</td>
<td>$2.54 \times 10^{-3}$</td>
<td>NC/NB-0.15/0.1-AG-001</td>
</tr>
<tr>
<td>100W</td>
<td>$0.60 \times 10^{-3}$</td>
<td>$2.40 \times 10^{-3}$</td>
<td>NC/NB-0.3/0.2-AG-001</td>
</tr>
<tr>
<td>0.2kW</td>
<td>$0.74 \times 10^{-3}$</td>
<td>$2.96 \times 10^{-3}$</td>
<td>NC/NB-0.3/0.2-AG-001</td>
</tr>
<tr>
<td>200W</td>
<td>$0.88 \times 10^{-3}$</td>
<td>$3.50 \times 10^{-3}$</td>
<td>NC/NB-0.3/0.3-AG-001</td>
</tr>
<tr>
<td>0.4kW</td>
<td>$0.90 \times 10^{-3}$</td>
<td>$3.59 \times 10^{-3}$</td>
<td>NC/NB-0.5/0.4-AG-001</td>
</tr>
<tr>
<td>0.75kW</td>
<td>$1.37 \times 10^{-3}$</td>
<td>$5.48 \times 10^{-3}$</td>
<td>NC/NB-0.5/0.4-AG-001</td>
</tr>
<tr>
<td>1.5kW</td>
<td>$3.41 \times 10^{-3}$</td>
<td>$1.38 \times 10^{-3}$</td>
<td>NC/NB-0.5/0.4-AG-001</td>
</tr>
<tr>
<td>2.2kW</td>
<td>$4.79 \times 10^{-3}$</td>
<td>$1.92 \times 10^{-3}$</td>
<td>NC/NB-0.5/0.4-AG-001</td>
</tr>
<tr>
<td>3.7kW</td>
<td>$7.60 \times 10^{-3}$</td>
<td>$3.04 \times 10^{-3}$</td>
<td>NC/NB-0.5/0.4-AG-001</td>
</tr>
</tbody>
</table>

Table 2. Armature pull-in time

<table>
<thead>
<tr>
<th>Motor number of power supply box</th>
<th>Armature pull-in time (S)</th>
<th>Model number of power supply box</th>
<th>Armature pull-in time (S)</th>
<th>Model number of power supply box</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC/NB-0.15/0.1</td>
<td>0.010</td>
<td>DMP</td>
<td>NC/NB-25/1.5</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>0.015</td>
<td>EMP</td>
<td>NC/NB-25/2.2</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>0.005</td>
<td>EMP</td>
<td>NC/NB-5/3.7</td>
<td>0.040</td>
</tr>
<tr>
<td>NC/NB-0.3/0.2</td>
<td>0.010</td>
<td>DMP</td>
<td>NC/NB-25/1.5</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>0.015</td>
<td>EMP</td>
<td>NC/NB-25/2.2</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>0.005</td>
<td>EMP</td>
<td>NC/NB-5/3.7</td>
<td>0.040</td>
</tr>
<tr>
<td>NC/NB-0.6/0.4</td>
<td>0.015</td>
<td>DMP</td>
<td>NC/NB-25/1.5</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>0.023</td>
<td>EMP</td>
<td>NC/NB-25/2.2</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>0.008</td>
<td>EMP</td>
<td>NC/NB-5/3.7</td>
<td>0.040</td>
</tr>
<tr>
<td>NC/NB-1.2/0.75</td>
<td>0.020</td>
<td>DMP</td>
<td>NC/NB-25/1.5</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>0.030</td>
<td>EMP</td>
<td>NC/NB-25/2.2</td>
<td>0.053</td>
</tr>
<tr>
<td></td>
<td>0.010</td>
<td>EMP</td>
<td>NC/NB-5/3.7</td>
<td>0.040</td>
</tr>
</tbody>
</table>

Table 3. Specifications of clutch/brake

<table>
<thead>
<tr>
<th>Motor output</th>
<th>Classification</th>
<th>Model number of clutch/brake</th>
<th>Static friction torque (N·m</th>
<th>Dynamic friction torque (N·m</th>
<th>Rated output (W)</th>
<th>Allowable work $E_A$ (J/min)</th>
<th>Total work $E_T$ (J/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1kW/100W</td>
<td>Clutch</td>
<td>NC/NB-0.15/0.1-AG-001</td>
<td>1.47 [0.15]</td>
<td>0.88 [0.09]</td>
<td>4</td>
<td>1960</td>
<td>(2.6 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-0.15/0.1-AG-001</td>
<td>0.96 [0.11]</td>
<td>0.63 [0.06]</td>
<td>3</td>
<td>1764</td>
<td>(2.2 \times 10^3)</td>
</tr>
<tr>
<td>0.2kW/200W</td>
<td>Clutch</td>
<td>NC/NB-0.3/0.2-AG-001</td>
<td>2.94 [0.31]</td>
<td>1.76 [0.18]</td>
<td>8</td>
<td>2744</td>
<td>(4.0 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-0.3/0.2-AG-001</td>
<td>1.96 [0.21]</td>
<td>1.18 [0.12]</td>
<td>4</td>
<td>2744</td>
<td>(4.0 \times 10^3)</td>
</tr>
<tr>
<td>0.4kW</td>
<td>Clutch</td>
<td>NC/NB-0.5/0.4-AG-001</td>
<td>5.88 [0.56]</td>
<td>3.53 [0.36]</td>
<td>8</td>
<td>3250</td>
<td>(5.0 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-0.4/AG-001</td>
<td>3.92 [0.34]</td>
<td>2.35 [0.24]</td>
<td>8</td>
<td>2744</td>
<td>(4.0 \times 10^3)</td>
</tr>
<tr>
<td>0.75kW</td>
<td>Clutch</td>
<td>NC/NB-1.2/0.4-AG-001</td>
<td>11.2 [1.12]</td>
<td>6.66 [0.70]</td>
<td>11</td>
<td>4410</td>
<td>(6.3 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-1.2/0.4-AG-001</td>
<td>7.35 [0.73]</td>
<td>4.41 [0.45]</td>
<td>8</td>
<td>3250</td>
<td>(5.0 \times 10^3)</td>
</tr>
<tr>
<td>1.5kW</td>
<td>Clutch</td>
<td>NC/NB-2.5/0.5-AG-001</td>
<td>24.5 [2.5]</td>
<td>14.7 [1.5]</td>
<td>17</td>
<td>6860</td>
<td>(9.2 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-2.5/0.5-AG-001</td>
<td>14.7 [1.5]</td>
<td>8.82 [0.9]</td>
<td>12</td>
<td>6174</td>
<td>(8.3 \times 10^3)</td>
</tr>
<tr>
<td>2.2kW</td>
<td>Clutch</td>
<td>NC/NB-2.2/0.6-AG-001</td>
<td>24.5 [2.5]</td>
<td>14.7 [1.5]</td>
<td>17</td>
<td>6860</td>
<td>(9.2 \times 10^3)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/NB-2.2/0.6-AG-001</td>
<td>14.7 [1.5]</td>
<td>8.82 [0.9]</td>
<td>12</td>
<td>6174</td>
<td>(8.3 \times 10^3)</td>
</tr>
<tr>
<td>3.7kW</td>
<td>Clutch</td>
<td>NC/B-0.7/0.75-AG-001</td>
<td>39.0 [3.0]</td>
<td>29.4 [3.0]</td>
<td>25</td>
<td>10290</td>
<td>(1.7 \times 10^4)</td>
</tr>
<tr>
<td></td>
<td>Brake</td>
<td>NC/B-0.7/0.75-AG-001</td>
<td>36.3 [3.1]</td>
<td>22.5 [2.3]</td>
<td>17</td>
<td>9310</td>
<td>(1.7 \times 10^4)</td>
</tr>
</tbody>
</table>

Precautions for use

- **Use with constantly held loads**
  - Because the brake of the CB gear motor exerts a braking effect through excitation, it is unsuitable for use in equipment, such as hoisting machines, that always holds loads.

- **Provision of totally-enclosed types**
  - The standard product cannot be used in an outdoor place where it will be exposed to water or an indoor place where there is lots of dust or oil mist, because the clutch/brake part is of open type. For such uses, a totally-enclosed type clutch/brake is required. For more information, contact our company.

- **Handling variable voltage and double voltage**
  - For a motor, it is possible to cope with variable voltage and double voltage at time of purchase or through rewinding. For the power supply box for a clutch/brake, because it is for 100/200 V AC, a 100 V instrumentation power supply should be used.

- **Explosion-proof type**
  - No explosion-proof-type clutch/brake is available.