Variable Speed Electromagnetic Brake
Single-phase Motor

Contents
• Motor Overview B-310
• Model list B-312
• Product information for each model B-314
• Gear head combination dimensions B-322
Feature
- It is an electromagnetic brake variable speed motor.
- By using it together with a speed controller, you can vary the speed over a wider range (90 to 1400 r/min for 50 Hz and 90 to 1700 r/min for 50 Hz).
- Various functions such as variable speed, braking, normal/reverse run and soft-start/soft-down stop are available by using it together with a speed controller.
- Feedback control with the built-in tacho-generator gives a constant speed despite of frequency change.
- The motor output is 6 W to 40 W.
* For the method of using the electromagnetic brake, refer to the electromagnetic brake motor (page B-168).

Working range
- The working range of the electromagnetic brake variable speed motor is shown in the figure below. (The time rating is 30 minutes.) The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Working range line

Example: M8RX25GBV4L

Others
For the principle of operation etc., refer to page B-226.
Model list of Variable speed electromagnetic brake single-phase motor

### Pinion shaft motor

<table>
<thead>
<tr>
<th>Size</th>
<th>Output (W)</th>
<th>Leadwire type</th>
<th>Model number</th>
<th>Specifications</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 mm sq.</td>
<td>6</td>
<td>M6RX6GBV4L</td>
<td>200V</td>
<td>B-314</td>
<td></td>
</tr>
<tr>
<td>60 mm sq.</td>
<td>15</td>
<td>M7RX15GBV4Y</td>
<td>200V</td>
<td>B-316</td>
<td></td>
</tr>
<tr>
<td>60 mm sq.</td>
<td>25</td>
<td>M8RX25GBV4L</td>
<td>200V</td>
<td>B-318</td>
<td></td>
</tr>
<tr>
<td>60 mm sq.</td>
<td>40</td>
<td>M9RX40GBV4Y</td>
<td>200V</td>
<td>B-320</td>
<td></td>
</tr>
</tbody>
</table>

### Applicable gear head

<table>
<thead>
<tr>
<th>Standard gear head</th>
<th>Decimal gear head</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6G◨3A</td>
<td>M6G◨10XB</td>
</tr>
<tr>
<td>M6G◨3A</td>
<td>M6G◨10XB</td>
</tr>
<tr>
<td>M7G◨3A</td>
<td>M7G◨10XB</td>
</tr>
<tr>
<td>M8G◨3H</td>
<td>M8G◨10XB</td>
</tr>
<tr>
<td>M9G◨3H</td>
<td>M9G◨10XB</td>
</tr>
</tbody>
</table>

*Refer to page B-384 for dimensions of decimal gear head.

### Possible combination of speed controller and motor

<table>
<thead>
<tr>
<th>Size</th>
<th>Output (W)</th>
<th>Motor</th>
<th>Voltage (V)</th>
<th>Speed controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 mm sq.</td>
<td>6</td>
<td>M6RX6GBV4L</td>
<td>100</td>
<td>MGSDA1 DV1131</td>
</tr>
<tr>
<td>70 mm sq.</td>
<td>15</td>
<td>M7RX15GBV4Y</td>
<td>200</td>
<td>MGSDB2 DV1231</td>
</tr>
<tr>
<td>80 mm sq.</td>
<td>25</td>
<td>M8RX25GBV4L</td>
<td>200</td>
<td>MGSDB2 DV1231</td>
</tr>
<tr>
<td>90 mm sq.</td>
<td>40</td>
<td>M9RX40GBV4Y</td>
<td>200</td>
<td>MGSDB2 DV1234</td>
</tr>
</tbody>
</table>

* When using a speed controller operative under a wide range of supply voltage (MGSD, SD48, EX48), the mating motor should be selected according to the voltage of the power supply to be used.
Variable speed electromagnetic brake single-phase motor (leadwire)

**Specifications**

<table>
<thead>
<tr>
<th>Motor model No.</th>
<th>Number of pole (P)</th>
<th>Voltage (V)</th>
<th>Input current (A)</th>
<th>Speed (min⁻¹)</th>
<th>Brake torque N·m (oz-in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6RX6GBV4L</td>
<td>4</td>
<td>60</td>
<td>100</td>
<td>90–140</td>
<td>0.030 (4.32)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1200</td>
<td>0.303 (5.26)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1500</td>
<td>0.303 (5.26)</td>
</tr>
<tr>
<td>M6RX6GBV4Y</td>
<td>4</td>
<td>60</td>
<td>200</td>
<td>90–170</td>
<td>0.040 (5.60)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1200</td>
<td>0.312 (5.56)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1500</td>
<td>0.312 (5.56)</td>
</tr>
</tbody>
</table>

**Permissible torque at output shaft of gear head**

- **Applicable gear head**
  - MX6GB BA (ball bearing)
  - MX6GB MA (metal bearing)

<table>
<thead>
<tr>
<th>Gear head</th>
<th>Reduction ratio</th>
<th>Speed</th>
<th>Torque at output shaft (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX6GB BA</td>
<td>3</td>
<td>60Hz</td>
<td>0.10 (1.84)</td>
</tr>
<tr>
<td>MX6GB M</td>
<td>3</td>
<td>50Hz</td>
<td>0.08 (1.44)</td>
</tr>
</tbody>
</table>

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**Features**

- Permissible torque at output shaft of gear head
- Connection diagram

**Connection diagram**

* For the connection diagram showing wiring with the speed controller, refer to pages C-6 to C-35.

**Motor (dimensions)**

- M6RX6GBV4L: 4P 6W 100V
- M6RX6GBV4Y: 4P 6W 200V

**Capacitor (dimensions)**

- Capacitor cap: M0PC0.8M40, M0PC2M20
- Capacitor cap (attachment): M0PC3917

**Gear head (dimensions)**

- MX6GB BA (ball bearing) / MX6GB MA (metal bearing)
  - Motor (dimensions) Scale: 1/3, Unit: mm (inch)
  - Gear head (dimensions) Scale: 1/3, Unit: mm (inch)

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*Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.*

**Features**

- System configuration B-311
- Coding system B-315
- Model list B-312
Variable speed electromagnetic brake single-phase motor (leadwire)

### Specifications

<table>
<thead>
<tr>
<th>Size</th>
<th>Motor model No.</th>
<th>Number of pole (P)</th>
<th>Output (W)</th>
<th>Voltage (V)</th>
<th>Input (μA)</th>
<th>Rating (μA)</th>
<th>Speed (r/min)</th>
<th>Variable speed range</th>
<th>Permissible Torque N·m (oz-in)</th>
<th>Starting current (A)</th>
<th>Starting torque (oz-in)</th>
<th>Brake current (A)</th>
<th>Brake Friction Torque N·m (oz-in)</th>
<th>Capacitor (μF)</th>
<th>Starting voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 mm</td>
<td>M7RX15GBV4L</td>
<td>4</td>
<td>150</td>
<td>100</td>
<td>60</td>
<td>50</td>
<td>1200</td>
<td>90 to 1400</td>
<td>0.09 (13.9)</td>
<td>0.59</td>
<td>0.90 (13.3)</td>
<td>4.05</td>
<td>0.078 (11.0)</td>
<td>6</td>
<td>0.078 (11.0)</td>
</tr>
<tr>
<td></td>
<td>M7RX15GBV4Y</td>
<td>4</td>
<td>150</td>
<td>200</td>
<td>30</td>
<td>60</td>
<td>1200</td>
<td>90 to 1700</td>
<td>0.09 (13.9)</td>
<td>0.57</td>
<td>0.90 (13.3)</td>
<td>4.05</td>
<td>0.078 (11.0)</td>
<td>6</td>
<td>0.078 (11.0)</td>
</tr>
</tbody>
</table>

### Permissible torque at output shaft of gear head

<table>
<thead>
<tr>
<th>Applicable gear head</th>
<th>Reduction ratio</th>
<th>Speed</th>
<th>3</th>
<th>3.6</th>
<th>5</th>
<th>6</th>
<th>7.5</th>
<th>9</th>
<th>10</th>
<th>12.5</th>
<th>15</th>
<th>18</th>
<th>20</th>
<th>25</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>MX7G7B BA</td>
<td>50Hz</td>
<td>0.23</td>
<td>(2.04)</td>
<td>0.28</td>
<td>(2.48)</td>
<td>0.39</td>
<td>(3.45)</td>
<td>0.47</td>
<td>(4.16)</td>
<td>0.59</td>
<td>(5.22)</td>
<td>0.71</td>
<td>(6.28)</td>
<td>0.79</td>
<td>(6.99)</td>
</tr>
<tr>
<td>MX7G7B MA</td>
<td>60Hz</td>
<td>0.23</td>
<td>(2.04)</td>
<td>0.28</td>
<td>(2.48)</td>
<td>0.39</td>
<td>(3.45)</td>
<td>0.47</td>
<td>(4.16)</td>
<td>0.59</td>
<td>(5.22)</td>
<td>0.71</td>
<td>(6.28)</td>
<td>0.79</td>
<td>(6.99)</td>
</tr>
<tr>
<td>MX7G7M</td>
<td>90/min</td>
<td>0.11</td>
<td>(0.97)</td>
<td>0.13</td>
<td>(1.16)</td>
<td>0.18</td>
<td>(1.69)</td>
<td>0.22</td>
<td>(2.04)</td>
<td>0.27</td>
<td>(2.39)</td>
<td>0.33</td>
<td>(2.92)</td>
<td>0.37</td>
<td>(3.27)</td>
</tr>
<tr>
<td>MX7G10XB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Torque speed characteristics

- **Motor (dimensions)**
  - M7RX15GBV4L: 4P 15 W 100 V
  - M7RX15GBV4Y: 4P 15 W 200 V

- **Capacitor**
  - Dimensions: Unit: mm (inch)
  - Model: MX7G7BA

- **Gear head**
  - Dimensions: Unit: mm (inch)

- **Connection diagram**
  - For the connection diagram showing wiring with the speed controller, refer to pages C-6 to C-35.

* Figures in [ ] represent the dimensions of MX7G7B (M) (1/30 or larger reduction ratio).

(Qnote) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.
Variable speed electromagnetic brake single-phase motor (leadwire)

80 mm (3.15 in) sq. 25 W

**Specifications**

<table>
<thead>
<tr>
<th>Motor model No.</th>
<th>Output (W)</th>
<th>Voltage (V)</th>
<th>Frequency (Hz)</th>
<th>Rotating direction</th>
<th>Reduction ratio</th>
<th>Output power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8RX2GBV4L</td>
<td>4P</td>
<td>25</td>
<td>100</td>
<td>CW</td>
<td>3:1</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>4P</td>
<td>25</td>
<td>200</td>
<td>CCW</td>
<td>3:1</td>
<td>20</td>
</tr>
</tbody>
</table>

**Connection diagram**

- For the connection diagram showing wiring with the speed controller, refer to pages C-6 to C-35.
- Working range line
  - The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

**Permissible torque at output shaft of gear head**

Unit of permissible torque: upper (N·m) / lower (lb-in)

**Motor (dimensions)**

<table>
<thead>
<tr>
<th>Motor model No.</th>
<th>Output (W)</th>
<th>Voltage (V)</th>
<th>Permissible torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8RX2GBV4L</td>
<td>4P</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4P</td>
<td>25</td>
<td>200</td>
</tr>
</tbody>
</table>

**Gear head (dimensions)**

Scale: 1/3, Unit: mm (inch)

**Capacitor (dimensions)**

Scale: 1/3, Unit: mm (inch)

**Capacitor dimension list**

<table>
<thead>
<tr>
<th>Model number of motor</th>
<th>Model number of capacitor (attachment)</th>
<th>L</th>
<th>W</th>
<th>D</th>
<th>H</th>
<th>T</th>
<th>Capacitor cap (option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8RX2GBV4L</td>
<td>M0PC9.5M20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M8RX2GBV4Y</td>
<td>M0PC2.4M40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tacho-generator leadwires**

300 ± V (2 yellow wires)

**Bearing**

- M8RX2GBV4L: MB1014ILB (ball bearing) / MB1014IL (metal bearing)
- M8RX2GBV4Y: MB1014ILB (ball bearing) / MB1014IL (metal bearing)

**Torque**

- Variable torque at output shaft of gear head
  - MX8G□B: 4–ø5.5 (ø0.22)
  - MX8G□M: 2–ø2.5 (ø0.10)

**Motor leadwires**

300 ± (3 wires white, gray and black each)

**Motor leadwires**

300 ± (2 wires white, gray and black each)

**Motor leadwires**

60 ± 30 mm (11.8 ± 1.18 inch) (2 yellow wires)

**Motor leadwires**

60 ± 30 mm (11.8 ± 1.18 inch) (2 pink wires)

**Motor leadwires**

60 ± 30 mm (11.8 ± 1.18 inch) (2 pink wires)

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60 ± 30 mm (11.8 ± 1.18 inch) (2 yellow wires)

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**Motor leadwires**

60 ± 30 mm (11.8 ± 1.18 inch) (2 pink wires)
**Variable speed electromagnetic brake single-phase motor (leadwire)**

**Motor (dimensions)**

<table>
<thead>
<tr>
<th>Motor model</th>
<th>Number of poles</th>
<th>Power rating (W)</th>
<th>Voltage (V)</th>
<th>Frequency (Hz)</th>
<th>Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9RX40GBVL4</td>
<td>5</td>
<td>40</td>
<td>400</td>
<td>50</td>
<td>0.09</td>
</tr>
<tr>
<td>M9RX40GBVY4</td>
<td>5</td>
<td>40</td>
<td>400</td>
<td>50</td>
<td>0.09</td>
</tr>
</tbody>
</table>

**Connection diagram**

* For the connection diagram showing wiring with the speed controller, refer to pages C-6 to C-35.

**Permissible torque at output shaft of gear head**

Unit of permissible torque: upper (N·m) / lower (B-in)

**Capacitor (dimensions) [attachment]**

Unit: mm (inch)

**Capacitor dimension list**

<table>
<thead>
<tr>
<th>Model number of motor</th>
<th>Model number of capacitor (option)</th>
<th>L (mm)</th>
<th>W (mm)</th>
<th>D (mm)</th>
<th>H (mm)</th>
<th>T (mm)</th>
<th>Capacitor cap (option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9RX40GBVL4</td>
<td>M0PC15M20</td>
<td>28.3</td>
<td>7.97</td>
<td>3.49</td>
<td>1.67</td>
<td>1.67</td>
<td>M0PC926</td>
</tr>
<tr>
<td>M9RX40GBVY4</td>
<td>M0PC3.8M40</td>
<td>28.3</td>
<td>3.49</td>
<td>3.49</td>
<td>1.67</td>
<td>1.67</td>
<td>M0PC5026</td>
</tr>
</tbody>
</table>

**Gear head (dimensions)**

Scale: 1/3, Unit: mm (inch)

**Key and keyway (dimensions) (U.S.A.)**

MX9G□B(M)

(Note) Because the dimensions may be subject to change, also check the determined dimensions if the gear head is to be used for design.

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* Please read your User’s Manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.
Variable Speed Unit Motor

**Variable speed electromagnetic brake**
**single-phase motor (leadwire)**

**Motor Overview**
- Model list
- Product information for each model
- Gear head combination dimensions

**Contents**
- Motor Overview B-324
- Model list B-326
- Product information for each model B-328
- Gear head combination dimensions B-340

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Please read your User’s manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

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**60 mm sq. (2.36 in sq.) 6 W**
- M6RX6GBV4L + MX6GBA(MA) / MX6GB(M)
- M6RX6GBV4Y + MX6GBA(MA) / MX6GB(M)

**80 mm sq. (3.15 in sq.) 25 W**
- M8RX23GBV4L + MX8GBB(M)
- M8RX23GBV4Y + MX8GBB(M)

**70 mm sq. (2.76 in sq.) 15 W**
- M7RX15GBV4L + MX7GBA(MA) / MX7GB(M)
- M7RX15GBV4Y + MX7GBA(MA) / MX7GB(M)

**90 mm sq. (3.54 in sq.) 40 W**
- M9RX40GBV4L + MX9GBB(M)
- M9RX40GBV4Y + MX9GBB(M)

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* Figures in [ ] represent the dimensions of MX6G[M] (1/30 or larger reduction ratio).
* The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6GBA(MA).

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Model list B-312
System configuration B-311
Coding system B-315
Model list B-312