Electromagnetic brake motor

Contents

Outline of electromagnetic brake motor

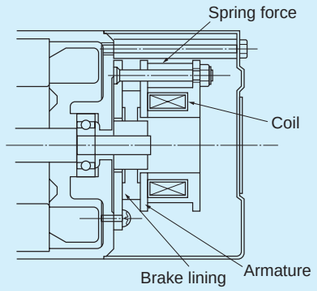
Features

- It is suitable for holding the load.
  Because the electromagnetic brake is off, when the power is turned off, it will be activated and hold the load securely.
- The brake can be used as an excellent safety brake.
  Among the examples are emergency braking at the time of power failure, load holding for a long period of time and the prevention of free-run of the machine.
- The brake will be activated instantly.
  The overrun is only 2 to 4 revolutions when the motor is used alone.
- A quick-reversal run can be frequently.
  Up to 6 cycles of start/stop can be performed through simple switching. (Secure 3 seconds or longer for a pause.)
  If it is necessary that the frequency of reversal operation is 7 to 100 cycles per minute, use the C&B motor. (For running in one direction only)
- Common power for both motor and brake can be used.
  Because the electromagnetic brake section contains a rectifier circuit, it can use the same AC power supply as the motor.

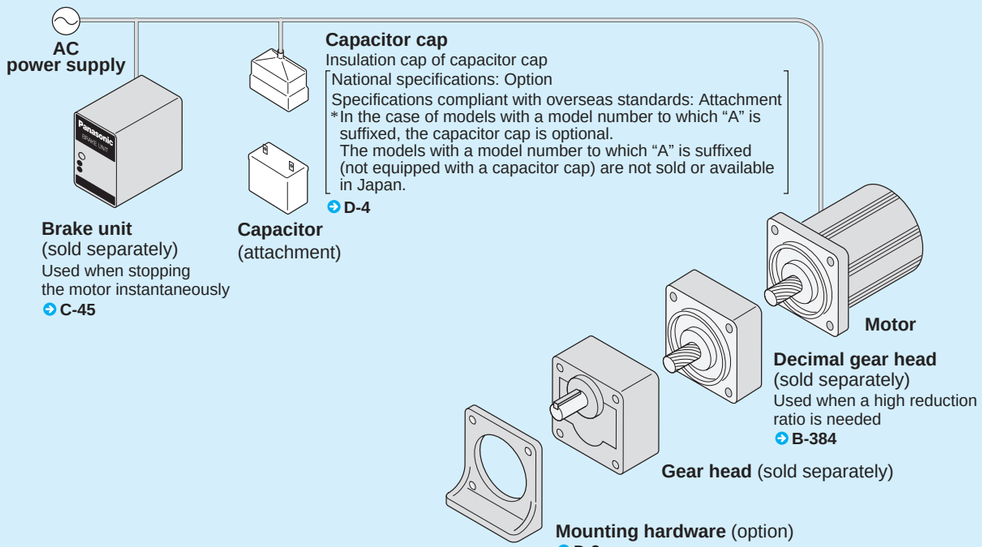
Principle of Operation

The construction of the electromagnetic brake motor is shown below. The electromagnetic brake is off.
When voltage is applied to the coil, the armature is retracted to the spring. This creates an air gap between the armature and brake lining. The motor shaft is then released from braking to run freely. When the voltage to the coil is shut off (the power is turned off), the armature is pressed against the brake lining by the spring force to stop the motor shaft.

Construction



System configuration diagram



Coding system

M 9 R X 40 G B 4 L S A

- **9** Size
  - 6 : 60 mm sq.
  - 7 : 70 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **R** Motor type
  - R : Reversible motor
  - M : 3-phase motor
- **X** Output type
  - X : 40 W or smaller
  - Z : 60 W or larger
- **40** Output
  - 6 : 6W
  - 15 : 15W
  - 25 : 25W
  - 40 : 40W
  - 60 : 60W
  - 90 : 90W
- **G** Shape of shaft
  - G : Pinion shaft
  - S : Round shaft
- **B** Option
  - B : Electromagnetic brake
- **4** No. of poles
  - 4 : 4 poles
- **L** Voltage
  - L : 100V
  - Y : Reversible motor, 3-phase motor
    - National specifications: 200/220 V
    - Specifications compliant with overseas standards: 200/220/230 V
  - D : 110/115V
  - G : 220/230V
- **S** Classification
  - G : Specifications compliant with overseas standards
    S : Round shaft
    (S for round shaft with national specifications only)
- **A**
  - Motor with specifications compliant with overseas standards that is not equipped with a capacitor cap.

Corresponding model number	Shape of shaft	Classification
Specifications compliant with overseas standards Pinion shaft	G	G
Specifications compliant with overseas standards Round shaft	S	G
National specifications Pinion shaft	G	–
National specifications Round shaft	S	S
42 mm sq. round shaft specifications	S	–

Outline of electromagnetic brake motor

Various characteristics of electromagnetic brake motor

The characteristics of the electromagnetic motor include responses regarding a start time, stop time, overrun, etc. And these are all affected by the load inertia.

The characteristics of the electromagnetic motor depend on the following three elements.

1) Average acceleration torque of the motor
2) Average value of brake torque
3) Load torque and inertia

When these elements are identified, the start time and stop time will be determined. It is necessary to give sufficient attention to the load inertia in particular because it varies depending on the equipment used together with the motor. These various characteristics are shown below.

• Characteristic table [The brake response characteristics shown below are those obtained when the motor is used alone (load inertia= 0).]

Number of phases	Size	Output (W)	Rotor inertia		Brake torque		Frequency (Hz)	Start time (s)	Stop time (s)	Overrun (revolutions)
			J (kg·cm²)	GD²(kgf·cm²)	N·m	(kgf·cm)				
Single-phase	60 mm sq.	6	0.201	0.805	0.049	(0.5)	50	0.07	0.08	1.5
							60	0.09	0.09	1.6
	70 mm sq.	15	0.329	1.316	0.078	(0.8)	50	0.07	0.05	1.5
							60	0.085	0.07	1.5
	80 mm sq.	25	0.603	2.411	0.10	(1.0)	50	0.05	0.13	2.2
							60	0.06	0.14	2.3
	90 mm sq.	40	1.362	5.446	0.20	(2.0)	50	0.065	0.14	3.0
							60	0.08	0.15	3.5
		60	1.862	7.447	0.39	(4.0)	50	0.055	0.11	2.5
							60	0.065	0.12	2.9
		90	2.353	9.413	0.39	(4.0)	50	0.07	0.13	2.8
							60	0.075	0.14	3.2
3-phase	80 mm sq.	25	0.603	2.411	0.10	(1.0)	50	0.05	0.13	2.2
							60	0.06	0.14	2.3
	90 mm sq.	40	1.362	5.446	0.20	(2.0)	50	0.05	0.15	3.5
							60	0.06	0.16	4.0
		60	1.862	7.447	0.39	(4.0)	50	0.06	0.12	3.0
							60	0.065	0.13	3.4
		90	2.286	9.143	0.39	(4.0)	50	0.06	0.14	3.3
							60	0.065	0.15	3.7

• Inertia

To describe the moment of inertia when handling motors, **J** and **GD²** are used. **J** is generally called Inertia and has the same value as the physical moment of inertia in SI Units. The unit is in [**kfg·m²**].

GD² is called “Flywheel Effect” and generally used in industrial applications with gravitational systems of units. The unit is in [**kfg·m²**] or [**kfg·cm²**]. The relation between **J** and **GD²** is described as follows:

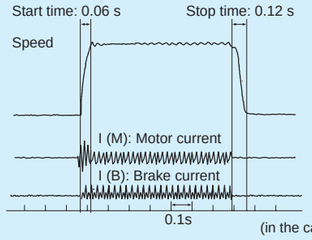
$$J = GD^2 / 4$$

In this catalog, we both use **J** for SI units and **GD²** for gravitational system of units. Unit of **J** should be [**kfg·m²**] in dynamical significance, however, [**kfg·cm²**] is used for convenience. Refer to the attached table (page A-48) for calculation of **J** and **GD²** depending on the shape of the load.

Response of electromagnetic brake motor

The following figure shows the start time, stop time and speed variation of the electromagnetic brake motor.

Electromagnetic brake motor (M8RX25GB4L) (no load)



(in the case of simultaneous switching)

(1) Start time

You can obtain the start time (**ts**) of the motor from the following formula.

• SI units

$$ts = \frac{J_M + J_L}{9.55 \times 10^4} \times \frac{n}{T_A - T_L}$$

ts : Start time (**s**)
TA : Average acceleration torque (**N·m**)
TL : Load torque (**N·m**)
JM : Motor inertia (**kg·cm²**)
JL : Load inertia (**kg·cm²**)
n : Motor speed (**min⁻¹**)

• Gravitational system of units

$$ts = \frac{GD^2_M + GD^2_L}{37500} \times \frac{n}{T_A - T_L}$$

ts : Start time (**s**)
TA : Average acceleration torque (**kgf·cm**)
TL : Load torque (**kgf·cm**)
GD²M : Rotor GD² (**kgf·cm²**)
GD²L : Load GD² (**kgf·cm²**)
n : Motor speed (**min⁻¹**)

• Average acceleration torque of electromagnetic brake motor

Number of phases	Size	Output (W)	Rotor inertia		Average acceleration torque			Permissible load inertia	
			J (kg·cm²)	GD²(kgf·cm²)		(N·m)	(kgf·cm)	J (kg·cm²)	GD²(kgf·cm²)
Single-phase Reversible	60 mm sq.	6	0.201	0.805	50Hz 60Hz	0.0637 0.0647	0.65 0.66	0.080	0.32
	70 mm sq.	15	0.329	1.316	50Hz 60Hz	0.120 0.114	1.22 1.16	0.158	0.63
	80 mm sq.	25	0.603	2.411	50Hz 60Hz	0.235 0.222	2.40 2.27	0.178	0.71
	90 mm sq.	40	1.362	5.446	50Hz 60Hz	0.439 0.420	4.48 4.29	0.735	2.94
		60	1.862	7.447	50Hz 60Hz	0.639 0.615	6.52 6.28	0.875	3.50
		90	2.353	9.413	50Hz 60Hz	0.859 0.804	8.77 8.20	1	4.0
3-phase	80 mm sq.	25	0.603	2.411	50Hz 60Hz	0.388 0.306	3.96 3.12	0.178	0.71
	90 mm sq.	40	1.362	5.446	50Hz 60Hz	0.667 0.513	6.81 5.23	0.735	2.94
		60	1.862	7.447	50Hz 60Hz	1.031 0.767	10.52 7.83	0.875	3.50
		90	2.286	9.143	50Hz 60Hz	1.429 1.065	14.58 10.87	1	4.0

Outline of electromagnetic brake motor

(2) Stop time

The brake of the electromagnetic brake motor is activated when the power is turned off. However there exists some delay time between power-off and brake activation due to the mechanism of the brake. You can obtain the stop time of the electromagnetic brake motor from the following formula.

• SI units

$$Tb = Ta + Tb_1$$

$$Tb_1 = \frac{J_M + J_L}{9.55 \times 10^4} \times \frac{n}{Tb_B}$$

Tb : Stop time of electromagnetic brake motor (s)
Ta : Absorbing time of armature :
Separate switching About 0.02 sec
Simultaneous switching About 0.1 sec
Tb1 : Braking time (s)
TbB : Brake torque of electromagnetic brake motor (N·m)

• Gravitational system of units

$$Tb = Ta + Tb_1$$

$$Tb_1 = \frac{GD^2_M + GD^2_L}{37500} \times \frac{n}{Tb_B}$$

Tb : Stop time of electromagnetic brake motor (s)
Ta : Absorbing time of armature :
Separate switching About 0.02 sec
Simultaneous switching About 0.1 sec
Tb1 : Braking time (s)
TbB : Brake torque of electromagnetic brake motor (N·m)

(3) Stop time and overrun

An overrun is defined as a revolution which the motor makes when the stop signal is inputted. You can obtain the overrun of the electromagnetic brake motor from the following formula, considering the absorbing time of the

$$nbB = a + \frac{n}{120} \times tb1 \quad \text{.....(5)}$$

where
nbB : Overrun of electromagnetic brake motor (revolution)
a : Constant due to delay
Separate switching: 0.43 (50 Hz), 0.53 (60 Hz)
Simultaneous switching: 2.15 (50 Hz), 2.65 (60 Hz)

(4) Overrun of gear head output shaft

The overrun of the gear head output shaft is obtained by dividing the overrun of the electromagnetic brake motor by the gear reduction ratio.

• Overrun in revolution $nGbB = nbB \times \frac{1}{i}$

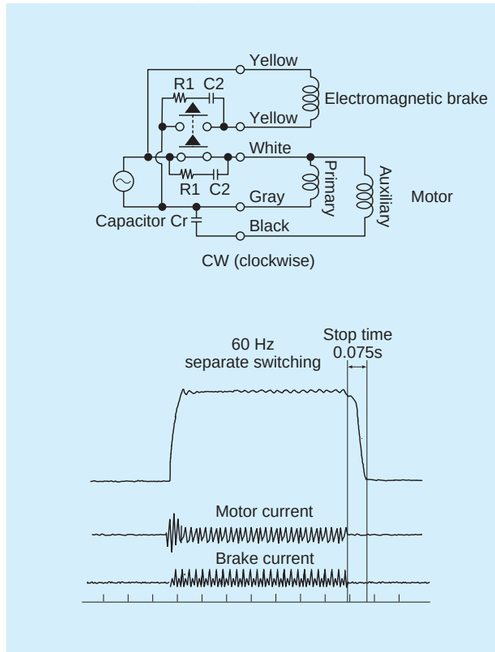
• Overrun in angle $\theta GbB = 360 nGbB$

where
nGbB :Overrun of gear head output shaft (revolution)
θGbB : Overrun of gear head output shaft (degree)
nbB : Overrun of electromagnetic brake motor (revolution)

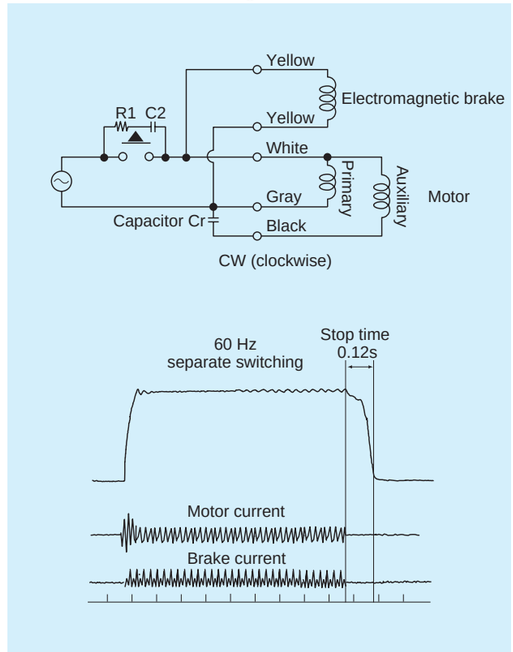
Separate switching and simultaneous switching

In the case of the electromagnetic brake motor, the stop time varies depending on the position where the switch is connected.
In the case of a simultaneous switching circuit, because the motor coil and brake coil are in a closed loop, the release time of the armature is made longer due to the effect of the residual magnetic flux to the coil, resulting in a longer stop time.
When a shorter stop time is required, use a separate switching circuit.

• Separate switching circuit



• Simultaneous switching circuit



Life ex pectancy

The life expectancy of the brake of the electromagnetic brake motor is one million cycles at the permissible inertia load.
The permissible inertia load of the electromagnetic brake motor is shown on page A-50, which should not be exceeded.

Model list of electromagnetic brake motor

Pinion shaft motor

Applicable gear head

✪ Motor compliant with overseas standards

Hinge attached

Size	Output (W)	single-phase motor, leadwire type				3-phase motor, leadwire type				Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
		Model number	Specifications		Page	Model number	Specifications		Page	Ball bearing	metal bearing			
60 mm sq.	4									MX6G□BA MX6G□B	MX6G□MA MX6G□M	–	–	MX6G10XB
	6	M6RX6GB4L	100V		B-178									
		M6RX6GB4Y	200V		B-178									
		M6RX6GB4LG(A)	100V	✪	B-180									
		M6RX6GB4DG(A)	110/115V	✪	B-180									
		M6RX6GB4YG(A)	200V	✪	B-180									
		M6RX6GB4GG(A)	220/230V	✪	B-180									
70 mm sq.	10									MX7G□BA MX7G□B	MX7G□MA MX7G□M	–	–	MX7G10XB
	15	M7RX15GB4L	100V		B-182									
		M7RX15GB4Y	200V		B-182									
		M7RX15GB4LG(A)	100V	✪	B-184									
		M7RX15GB4DG(A)	110/115V	✪	B-184									
		M7RX15GB4YG(A)	200V	✪	B-184									
		M7RX15GB4GG(A)	220/230V	✪	B-184									
80 mm sq.	20									MX8G□B	MX8G□M	–	–	MX8G10XB
	25	M8RX25GB4L	100V		B-186									
		M8RX25GB4Y	200V		B-186	M8MX25GB4Y	200V		B-202					
		M8RX25GB4LG(A)	100V	✪	B-188									
		M8RX25GB4DG(A)	110/115V	✪	B-188									
		M8RX25GB4YG(A)	200V	✪	B-188	M8MX25GB4YG(A)	200/220/230V	✪	B-204					
		M8RX25GB4GG(A)	220/230V	✪	B-188									
90 mm sq.	40	M9RX40GB4L	100V		B-190					MX9G□B	MX9G□M	–	MX9G□R	MX9G10XB
		M9RX40GB4Y	200V		B-190	M9MX40GB4Y	200V		B-206					
		M9RX40GB4LG(A)	100V	✪	B-192									
		M9RX40GB4DG(A)	110/115V	✪	B-192									
		M9RX40GB4YG(A)	200V	✪	B-192	M9MX40GB4YG(A)	200/220/230V	✪	B-208					
		M9RX40GB4GG(A)	220/230V	✪	B-192									
	60	M9RZ60GB4L	100V		B-194					MZ9G□B	–	MR9G□B	MZ9G□R	MZ9G10XB
		M9RZ60GB4Y	200V		B-194	M9MZ60GB4Y	200V		B-210					
		M9RZ60GB4LG(A)	100V	✪	B-196									
		M9RZ60GB4DG(A)	110/115V	✪	B-196									
		M9RZ60GB4YG(A)	200V	✪	B-196	M9MZ60GB4YG(A)	200/220/230V	✪	B-212					
		M9RZ60GB4GG(A)	220/230V	✪	B-196									
	90	M9RZ90GB4L	100V		B-198					MY9G□B		MP9G□B		
		M9RZ90GB4Y	200V		B-198	M9MZ90GB4Y	200V		B-214					
		M9RZ90GB4LG(A)	100V	✪	B-200									
		M9RZ90GB4DG(A)	110/115V	✪	B-200									
		M9RZ90GB4YG(A)	200V	✪	B-200	M9MZ90GB4YG(A)	200/220/230V	✪	B-216					
		M9RZ90GB4GG(A)	220/230V	✪	B-200									

* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

* Refer to page B-380 for dimensions and permissible torque of high torque gear head.
Refer to page B-382 for dimensions and permissible torque of right-angle gear head.
Refer to page B-384 for dimensions of decimal gear head.

Model list of electromagnetic brake motor

Round shaft motor

✪ Motor compliant with overseas standards c UL us CE CCC
PS Electrical Appliance and Material Safety Law

Size	Output (W)	single-phase motor, leadwire type			3-phase motor, leadwire type	
		Model number	Specifications		Model number	Specifications
60 mm sq.	4					
	6	M6RX6SB4LS	100V			
		M6RX6SB4YS	200V			
		M6RX6SB4LG(A)	100V	✪		
		M6RX6SB4DG(A)	110/115V	✪		
		M6RX6SB4YG(A)	200V	✪		
		M6RX6SB4GG(A)	220/230V	✪		
70 mm sq.	10					
	15	M7RX15SB4LS	100V			
		M7RX15SB4YS	200V			
		M7RX15SB4LG(A)	100V	✪		
		M7RX15SB4DG(A)	110/115V	✪		
		M7RX15SB4YG(A)	200V	✪		
		M7RX15SB4GG(A)	220/230V	✪		
80 mm sq.	20					
	25	M8RX25SB4LS	100V			
		M8RX25SB4YS	200V		M8MX25SB4YS	200V
		M8RX25SB4LG(A)	100V	✪		
		M8RX25SB4DG(A)	110/115V	✪		
		M8RX25SB4YG(A)	200V	✪	M8MX25SB4YG(A)	200/220/230V ✪
		M8RX25SB4GG(A)	220/230V	✪		
90 mm sq.	40	M9RX40SB4LS	100V			
		M9RX40SB4YS	200V		M9MX40SB4YS	200V
		M9RX40SB4LG(A)	100V	✪		
		M9RX40SB4DG(A)	110/115V	✪		
		M9RX40SB4YG(A)	200V	✪	M9MX40SB4YG(A)	200/220/230V ✪
		M9RX40SB4GG(A)	220/230V	✪		
	60	M9RZ60SB4LS	100V			
		M9RZ60SB4YS	200V		M9MZ60SB4YS	200V
		M9RZ60SB4LG(A)	100V	✪		
		M9RZ60SB4DG(A)	110/115V	✪		
		M9RZ60SB4YG(A)	200V	✪	M9MZ60SB4YG(A)	200/220/230V ✪
		M9RZ60SB4GG(A)	220/230V	✪		
	90	M9RZ90SB4LS	100V			
		M9RZ90SB4YS	200V		M9MZ90SB4YS	200V
		M9RZ90SB4LG(A)	100V	✪		
		M9RZ90SB4DG(A)	110/115V	✪		
		M9RZ90SB4YG(A)	200V	✪	M9MZ90SB4YG(A)	200/220/230V ✪
		M9RZ90SB4GG(A)	220/230V	✪		

* The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft motor.
Dimensional outline drawing → Page B-220.
* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Electromagnetic brake single-phase motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX6GB4L	4	6	100	50	30	22	0.22	1300	0.044 (0.45)	0.32	0.056 (0.57)	4	0.04	0.049 (0.5)	3.5 (200V)
					60		22	0.22	1600	0.035 (0.36)	0.32	0.056 (0.57)	4	0.04	0.049 (0.5)	
	M6RX6GB4Y	4	6	200	50	30	25	0.13	1300	0.044 (0.45)	0.17	0.056 (0.57)	4	0.02	0.049 (0.5)	0.9 (400V)
					60		25	0.13	1600	0.035 (0.36)	0.18	0.056 (0.57)	4	0.02	0.049 (0.5)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

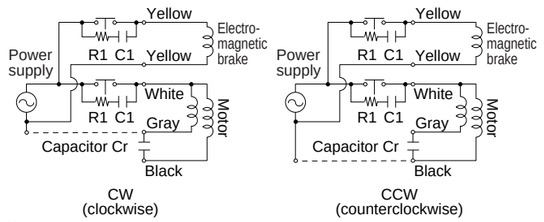
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX6G3BA to MX6G180B (ball bearing)	50Hz	0.098 (1.0)	0.12 (1.2)	0.16 (1.6)	0.19 (1.9)	0.25 (2.6)	0.29 (3.0)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.59 (6.0)	0.66 (6.7)	0.79 (8.1)	0.95 (9.7)	1.18 (12)	1.57 (16)	1.86 (19)	2.25 (23)	2.45 (25)	2.45 (25)			
	MX6G3MA to MX6G180M (metal bearing)	60Hz	0.081 (0.83)	0.098 (1.0)	0.13 (1.3)	0.16 (1.6)	0.21 (2.1)	0.25 (2.6)	0.26 (2.7)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.53 (5.4)	0.66 (6.7)	0.79 (8.1)	0.95 (9.7)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.45 (25)			
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	MX6G10XB	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
		Permissible torque	N·m	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
			(kgf·cm)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram

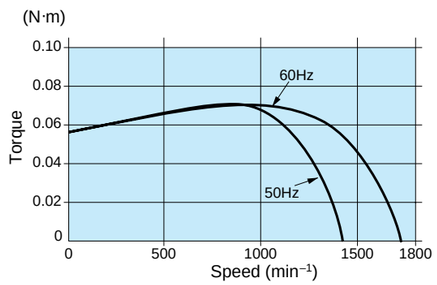


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M6RX6GB4L

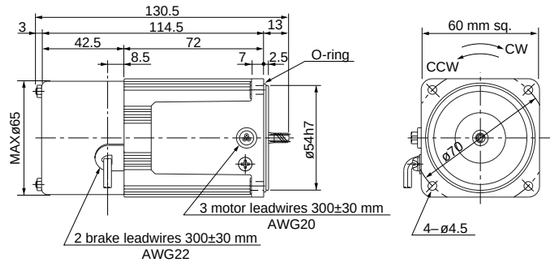


Motor (dimensions)

Scale: 1/3, Unit: mm

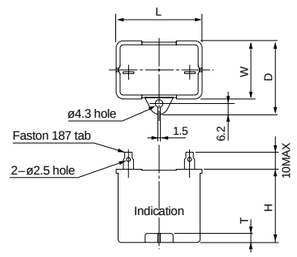
M6RX6GB4L 4P 6 W 100 V
M6RX6GB4Y 4P 6 W 200 V

Mass	Helical	Module	Number of teeth
0.85 kg	gear	0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



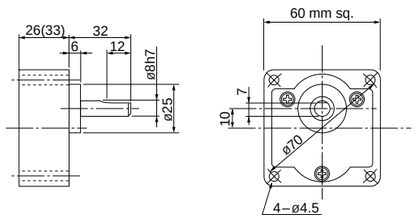
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M6RX6GB4L	M0PC3.5M20	39.5	16	26.5	30.5	4	M0PC3917
M6RX6GB4Y	M0PC0.9M40	39.5	16.2	27	27	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

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

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

Electromagnetic brake single-phase motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX6GB4LG M6RX6GB4LGA	4	6	100	50	30	24	0.24	1300	0.044 (0.45)	0.34	0.063 (0.64)	4	0.04	0.049 (0.50)	4 (250V)
					60		26	0.26	1625	0.035 (0.36)	0.35	0.063 (0.64)	4	0.04	0.049 (0.50)	
	M6RX6GB4DG M6RX6GB4DGA	4	6	110 115	60 60	30	24 26	0.22 0.23	1625 1625	0.035 (0.36) 0.035 (0.36)	0.34 0.36	0.057 (0.58) 0.063 (0.64)	4 4	0.05 0.05	0.049 (0.50) 0.049 (0.50)	3 (250V)
	M6RX6GB4YG M6RX6GB4YGA	4	6	200	50	30	24	0.12	1275	0.045 (0.46)	0.15	0.063 (0.64)	4	0.02	0.049 (0.50)	1 (450V)
					60		28	0.14	1550	0.037 (0.38)	0.16	0.063 (0.64)	4	0.02	0.049 (0.50)	
	M6RX6GB4GG M6RX6GB4GGA	4	6	220	50	30	24	0.11	1275	0.045 (0.46)	0.15	0.063 (0.64)	4	0.02	0.049 (0.50)	0.8 (450V)
					60		26	0.12	1600	0.036 (0.37)	0.16	0.063 (0.64)	4	0.02	0.049 (0.50)	
				230	50		26	0.12	1300	0.044 (0.45)	0.16	0.069 (0.70)	4	0.02	0.049 (0.50)	
					60		28	0.12	1625	0.035 (0.36)	0.16	0.069 (0.70)	4	0.02	0.049 (0.50)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

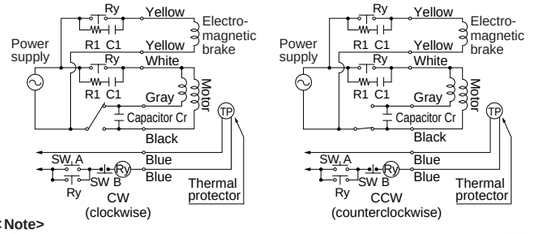
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX6G3BA to MX6G180B (ball bearing)	50Hz	0.098 (1.0)	0.12 (1.2)	0.16 (1.6)	0.19 (1.9)	0.25 (2.6)	0.29 (3.0)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.59 (6.0)	0.66 (6.7)	0.79 (8.1)	0.95 (9.7)	1.18 (12)	1.57 (16)	1.86 (19)	2.25 (23)	2.45 (25)	2.45 (25)			
	MX6G3MA to MX6G180M (metal bearing)	60Hz	0.081 (0.83)	0.098 (1.0)	0.13 (1.3)	0.16 (1.6)	0.21 (2.1)	0.25 (2.6)	0.26 (2.7)	0.33 (3.4)	0.40 (4.1)	0.49 (5.0)	0.53 (5.4)	0.66 (6.7)	0.79 (8.1)	0.95 (9.7)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.45 (25)			
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	MX6G10XB	Permissible torque	N·m	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45	2.45
			(kgf·cm)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)	(25)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

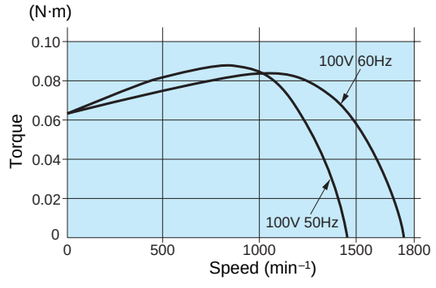
Connection diagram



< Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M6RX6GB4LG(A)



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

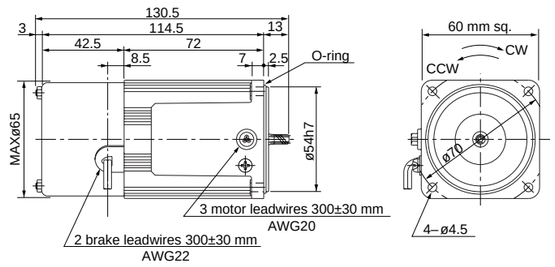
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

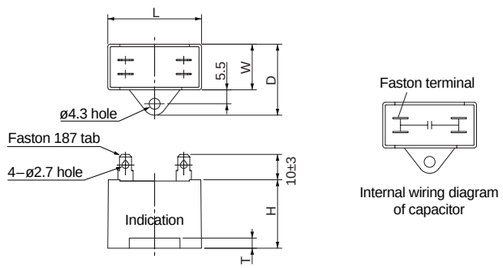
M6RX6GB4LG(A) 4P 6 W 100 V
M6RX6GB4DG(A) 4P 6 W 110 V / 115 V
M6RX6GB4YG(A) 4P 6 W 200 V
M6RX6GB4GG(A) 4P 6 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
0.85 kg	gear	0.5	6



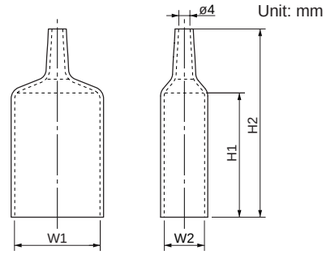
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

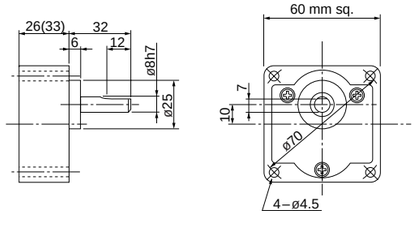
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M6RX6GB4LG(A)	M0PC4M25G	37	18	28	27	4	M0PC3718G	37	18	50	73
M6RX6GB4DG(A)	M0PC3M25G	31	17	27	27	4	M0PC3117G	31	17	50	73
M6RX6GB4YG(A)	M0PC1M45G	37	18	28	27	4	M0PC3718G	37	18	50	73
M6RX6GB4GG(A)	M0PC0.8M45G	31	17	27	27	4	M0PC3117G	31	17	50	73

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX15GB4L	4	15	100	50	30	36	0.36	1300	0.110 (1.10)	0.59	0.10 (1.0)	4	0.05	0.078 (0.80)	6 (200V)
					60		38	0.38	1600	0.088 (0.90)	0.57	0.10 (1.0)	4	0.05	0.078 (0.80)	
	M7RX15GB4Y	4	15	200	50	30	38	0.18	1300	0.110 (1.10)	0.28	0.10 (1.0)	4	0.03	0.078 (0.80)	1.5 (400V)
					60		39	0.19	1600	0.088 (0.90)	0.28	0.10 (1.0)	4	0.03	0.078 (0.80)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

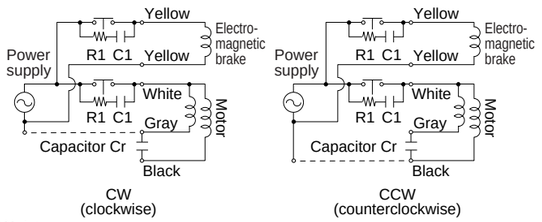
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX7G3BA to MX7G180B (ball bearing)	50Hz	0.24 (2.5)	0.28 (2.9)	0.39 (4.0)	0.47 (4.8)	0.59 (6.0)	0.71 (7.2)	0.80 (8.2)	0.98 (10)	1.18 (12)	1.37 (14)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.82 (39)	4.61 (47)	4.90 (50)	4.90 (50)					
	MX7G3MA to MX7G180M (metal bearing)	60Hz	0.20 (2.0)	0.24 (2.5)	0.32 (3.3)	0.39 (4.0)	0.49 (5.0)	0.59 (6.0)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	3.23 (33)	3.82 (39)	4.80 (49)	4.90 (50)					
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	MX7G10XB	Permissible torque	N·m	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
			(kgf·cm)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram

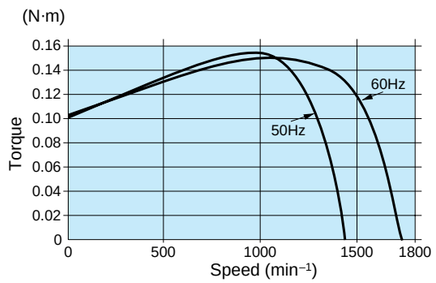


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M7RX15GB4L



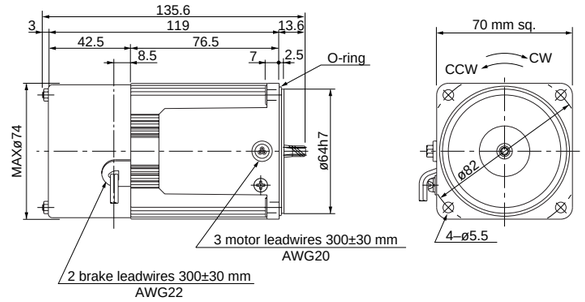
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

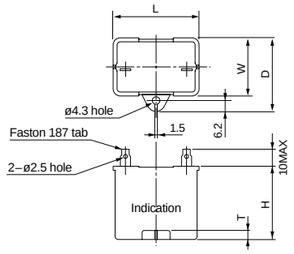
M7RX15GB4L 4P 15 W 100 V
M7RX15GB4Y 4P 15 W 200 V

Mass	Helical	Module	Number of teeth
1.1 kg	gear	0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



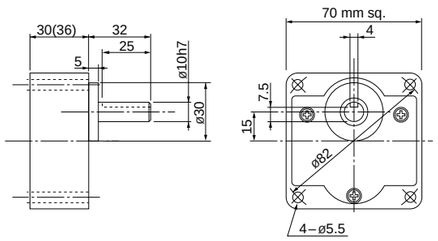
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M7RX15GB4L	M0PC6M20	39.5	17.5	28	30.5	4	M0PC3917
M7RX15GB4Y	M0PC1.5M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

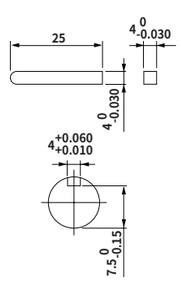


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Electromagnetic brake single-phase motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX15GB4LG	4	15	100	50	30	36	0.36	1300	0.11 (1.1)	0.60	0.11 (1.1)	5	0.06	0.078 (0.80)	6.5 (250V)
	M7RX15GB4LGA				60		41	0.42	1600	0.090 (0.91)	0.59	0.11 (1.1)	5	0.06	0.078 (0.80)	
	M7RX15GB4DG	4	15	110	60	30	39	0.36	1625	0.088 (0.90)	0.61	0.11 (1.1)	6	0.06	0.078 (0.80)	5.5 (250V)
	M7RX15GB4DGA			115	60		42	0.36	1650	0.087 (0.89)	0.64	0.12 (1.2)	6	0.06	0.078 (0.80)	
	M7RX15GB4YG	4	15	200	50	30	38	0.19	1275	0.11 (1.1)	0.27	0.11 (1.1)	5	0.03	0.078 (0.80)	1.7 (450V)
	M7RX15GB4YGA				60		48	0.25	1550	0.092 (0.94)	0.29	0.11 (1.1)	5	0.03	0.078 (0.80)	
	M7RX15GB4GG	4	15	220	50	30	36	0.17	1275	0.11 (1.1)	0.27	0.10 (1.0)	6	0.03	0.078 (0.80)	1.3 (450V)
	M7RX15GB4GGA				60		39	0.18	1600	0.090 (0.91)	0.27	0.10 (1.0)	6	0.03	0.078 (0.80)	
				230	50		38	0.17	1300	0.11 (1.1)	0.28	0.11 (1.1)	6	0.03	0.078 (0.80)	
					60		41	0.18	1625	0.088 (0.90)	0.28	0.11 (1.1)	6	0.03	0.078 (0.80)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

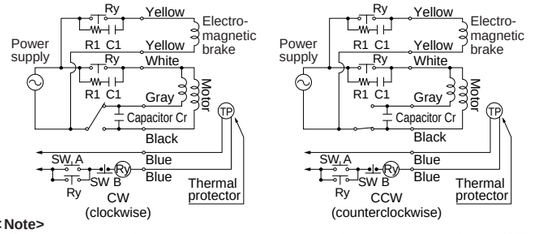
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX7G3BA to MX7G180B (ball bearing)	50Hz	0.24 (2.5)	0.28 (2.9)	0.39 (4.0)	0.47 (4.8)	0.59 (6.0)	0.71 (7.2)	0.80 (8.2)	0.98 (10)	1.18 (12)	1.37 (14)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.82 (39)	4.61 (47)	4.90 (50)	4.90 (50)				
	MX7G3MA to MX7G180M (metal bearing)	60Hz	0.20 (2.0)	0.24 (2.5)	0.32 (3.3)	0.39 (4.0)	0.49 (5.0)	0.59 (6.0)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	3.23 (33)	3.82 (39)	4.80 (49)	4.90 (50)				
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	MX7G10XB	Permissible torque	N·m	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
			(kgf·cm)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)	(50)
		Rotational direction		Same as motor rotational direction		Reverse to motor rotational direction									

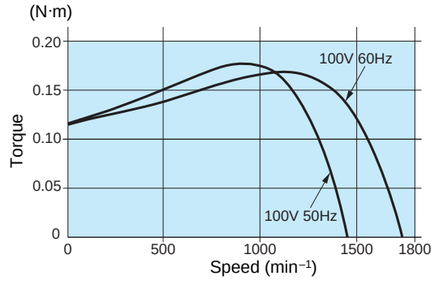
Connection diagram



< Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M7RX15GB4LG(A)



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

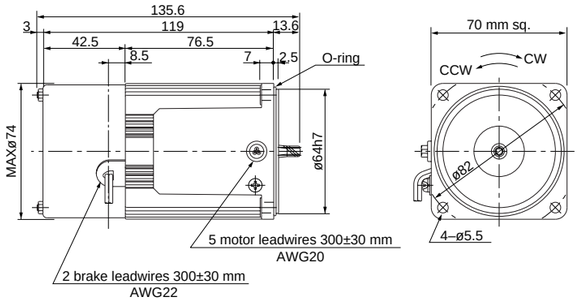
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

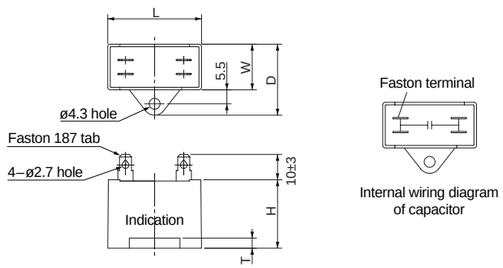
M7RX15GB4LG(A) 4P 15 W 100 V
M7RX15GB4DG(A) 4P 15 W 110 V / 115 V
M7RX15GB4YG(A) 4P 15 W 200 V
M7RX15GB4GG(A) 4P 15 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
1.1 kg	gear	0.5	7



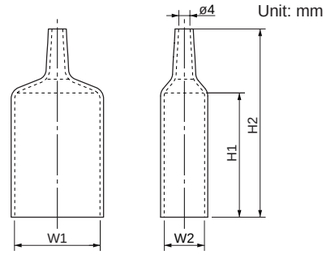
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

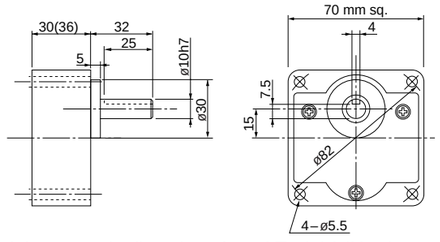
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M7RX15GB4LG(A)	M0PC6.5M25G	48	19	29	29	4	M0PC4819G	48	19	55	78
M7RX15GB4DG(A)	M0PC5.5M25G	38	21	31	31	4	M0PC3821G	38	21	55	78
M7RX15GB4YG(A)	M0PC1.7M45G	38	21	31	31	4	M0PC3821G	38	21	55	78
M7RX15GB4GG(A)	M0PC1.3M45G	38	19	29	29	4	M0PC3819G	38	19	50	73

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

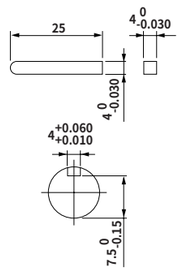


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX25GB4L	4	25	100	50	30	56	0.57	1300	0.19 (1.9)	1.0	0.20 (2.0)	6	0.06	0.10 (1.0)	9.5 (200V)
					60		56	0.56	1600	0.16 (1.6)	1.0	0.20 (2.0)	6	0.06	0.10 (1.0)	
	M8RX25GB4Y	4	25	200	50	30	56	0.29	1300	0.19 (1.9)	0.52	0.20 (2.0)	6	0.03	0.10 (1.0)	2.4 (400V)
					60		56	0.28	1600	0.16 (1.6)	0.51	0.20 (2.0)	6	0.03	0.10 (1.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

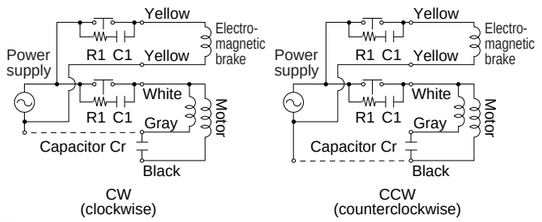
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX8G3B to MX8G180B (ball bearing)	50Hz	0.39 (4.0)	0.47 (4.8)	0.66 (6.7)	0.78 (8.0)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.96 (20)	2.35 (24)	2.55 (26)	3.14 (32)	3.82 (39)	4.61 (47)	6.37 (65)	7.64 (78)	7.84 (80)					
	MX8G3M to MX8G180M (metal bearing)	60Hz	0.32 (3.3)	0.39 (4.0)	0.55 (5.6)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.65 (27)	3.14 (32)	3.82 (39)	5.29 (54)	6.37 (65)	7.84 (80)					
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX8G□B (ball bearing) MX8G□M (metal bearing)	MX8G10XB	Permissible torque	N·m	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84
			(kgf·cm)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram

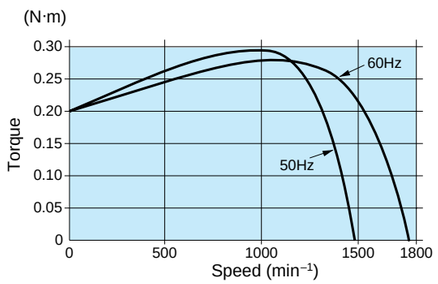


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M8RX25GB4L

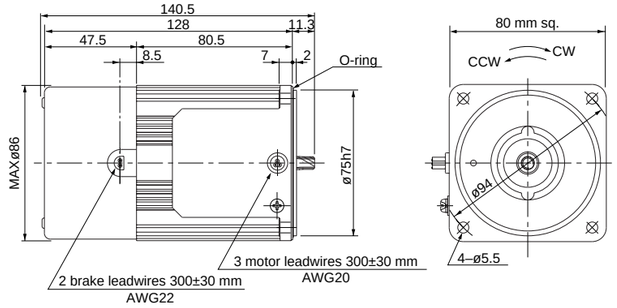


Motor (dimensions)

Scale: 1/3, Unit: mm

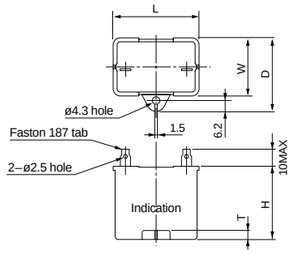
M8RX25GB4L 4P 25 W 100 V
M8RX25GB4Y 4P 25 W 200 V

Mass	Helical	Module	Number of teeth
1.8 kg	gear	0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



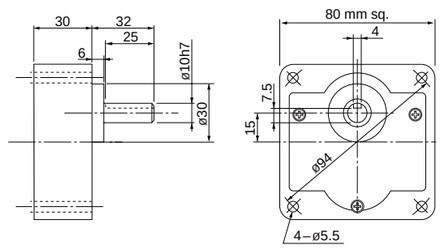
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M8RX25GB4L	M0PC9.5M20	39.5	22	32.5	30.5	4	M0PC3922
M8RX25GB4Y	M0PC2.4M40	49.7	24	34.5	34.5	4	M0PC5026

Gear head (dimensions)

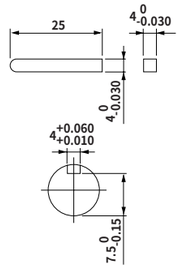
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

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

Electromagnetic brake single-phase motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX25GB4LG	4	25	100	50	30	55	0.56	1300	0.18 (1.9)	1.1	0.20 (2.0)	6	0.06	0.10 (1.0)	10 (250V)
	M8RX25GB4LGA				60		57	0.57	1600	0.15 (1.5)	1.1	0.20 (2.0)	6	0.06	0.10 (1.0)	
	M8RX25GB4DG	4	25	110	60	30	54	0.50	1625	0.15 (1.5)	1.1	0.19 (1.9)	6	0.06	0.10 (1.0)	8 (250V)
	M8RX25GB4DGA			115	60		57	0.50	1625	0.15 (1.5)	1.2	0.21 (2.1)	6	0.07	0.10 (1.0)	
	M8RX25GB4YG	4	25	200	50	30	55	0.28	1250	0.19 (1.9)	0.44	0.20 (2.0)	6	0.03	0.10 (1.0)	2.5 (450V)
	M8RX25GB4YGA				60		64	0.33	1550	0.15 (1.5)	0.45	0.20 (2.0)	6	0.03	0.10 (1.0)	
	M8RX25GB4GG	4	25	220	50	30	56	0.26	1250	0.19 (1.9)	0.46	0.19 (1.9)	6	0.03	0.10 (1.0)	2 (450V)
	M8RX25GB4GGA				60		57	0.26	1575	0.15 (1.5)	0.45	0.19 (1.9)	6	0.03	0.10 (1.0)	
				230	50		59	0.27	1275	0.19 (1.9)	0.48	0.21 (2.1)	6	0.03	0.10 (1.0)	
					60		60	0.26	1600	0.15 (1.5)	0.47	0.21 (2.1)	6	0.03	0.10 (1.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

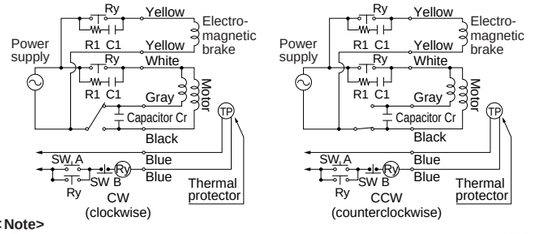
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX8G3B to MX8G180B (ball bearing)	50Hz	0.39 (4.0)	0.47 (4.8)	0.66 (6.7)	0.78 (8.0)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.96 (20)	2.35 (24)	2.55 (26)	3.14 (32)	3.82 (39)	4.61 (47)	6.37 (65)	7.64 (78)	7.84 (80)					
Applicable gear head: MX8G3M to MX8G180M (metal bearing)	60Hz	0.32 (3.3)	0.39 (4.0)	0.55 (5.6)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.65 (27)	3.14 (32)	3.82 (39)	5.29 (54)	6.37 (65)	7.84 (80)					
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX8G□B (ball bearing) MX8G□M (metal bearing)	MX8G10XB	Permissible torque	N·m (kgf·cm)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)
		Rotational direction		Same as motor rotational direction		Reverse to motor rotational direction									

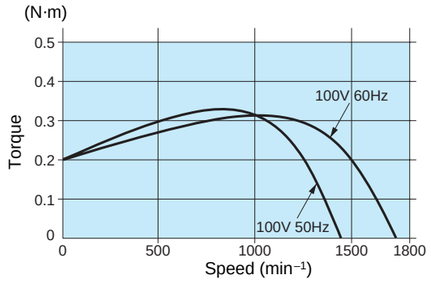
Connection diagram



< Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M8RX25GB4LG(A)



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

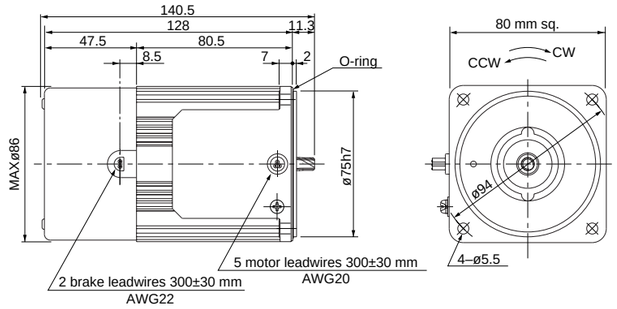
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

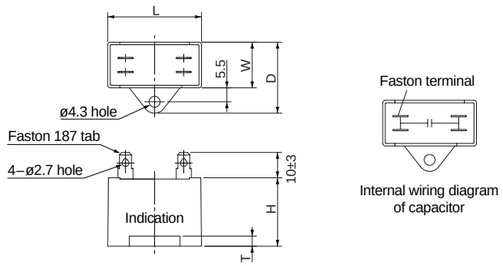
M8RX25GB4LG(A) 4P 25 W 100 V
M8RX25GB4DG(A) 4P 25 W 110 V / 115 V
M8RX25GB4YG(A) 4P 25 W 200 V
M8RX25GB4GG(A) 4P 25 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
1.8 kg	gear	0.5	9



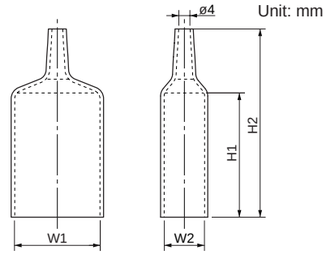
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

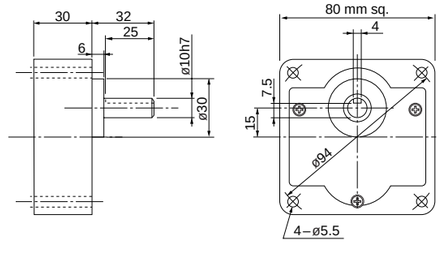
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M8RX25GB4LG(A)	M0PC10M25G	58	21	31	31	4	M0PC5821G	58	21	55	78
M8RX25GB4DG(A)	M0PC8M25G	48	21	31	31	4	M0PC4821G	48	21	55	78
M8RX25GB4YG(A)	M0PC2.5M45G	48	21	31	31	4	M0PC4821G	48	21	55	78
M8RX25GB4GG(A)	M0PC2M45G	48	19	29	29	4	M0PC4819G	48	19	55	78

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

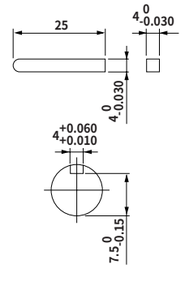
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RX40GB4L	4	40	100	50	30	79	0.81	1300	0.29 (3.0)	1.7	0.32 (3.3)	7	0.09	0.20 (2.0)	15 (210V)
					60		80	0.81	1625	0.24 (2.4)	1.6	0.32 (3.3)	7	0.09	0.20 (2.0)	
	M9RX40GB4Y	4	40	200	50	30	79	0.40	1300	0.29 (3.0)	0.85	0.32 (3.3)	7	0.05	0.20 (2.0)	3.8 (400V)
					60		80	0.41	1625	0.24 (2.4)	0.78	0.32 (3.3)	7	0.05	0.20 (2.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

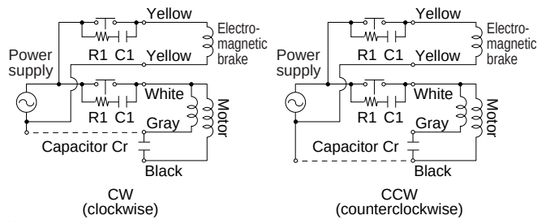
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head	MX9G3B to MX9G180B (ball bearing)	50Hz	0.66 (6.7)	0.78 (8.0)	1.08 (11)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.23 (33)	3.92 (40)	4.41 (45)	5.29 (54)	6.37 (65)	7.94 (81)	9.80 (100)	9.80 (100)						
	MX9G3M to MX9G180M (metal bearing)	60Hz	0.55 (5.6)	0.66 (6.7)	0.90 (9.2)	1.08 (11)	1.27 (13)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	6.37 (65)	8.82 (90)	9.80 (100)						
Rotational direction			Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX9G□B (ball bearing) MX9G□M (metal bearing)	MX9G10XB	Permissible torque	N·m (kgf·cm)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram

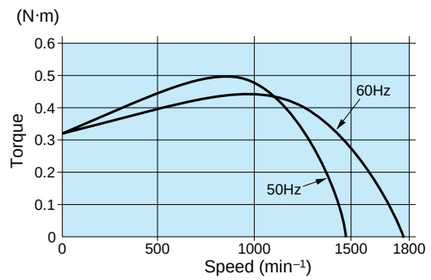


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9RX40GB4L



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

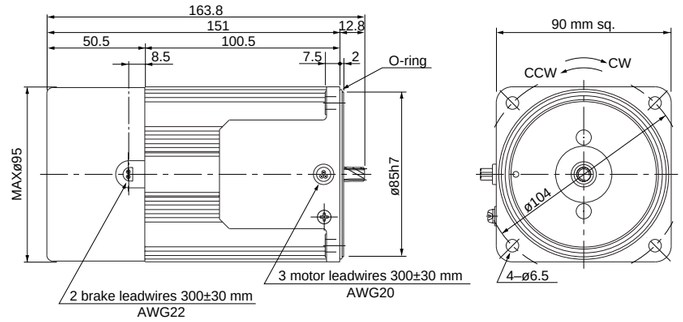
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

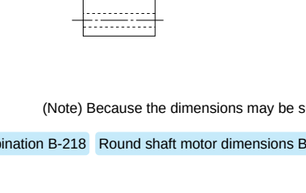
M9RX40GB4L 4P 40 W 100 V
M9RX40GB4Y 4P 40 W 200 V

Mass	Helical	Module	Number of teeth
2.8 kg	gear	0.55	9



Capacitor (dimensions) [attachment]

Unit: mm



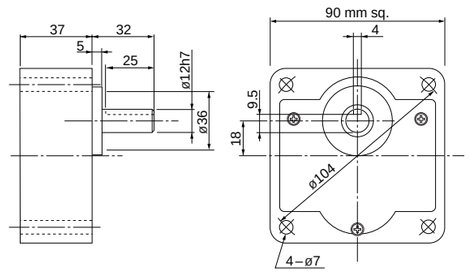
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RX40GB4L	M0PC15M21	39.5	26.7	37	41	4	M0PC3926
M9RX40GB4Y	M0PC3.8M40	50	26.7	37.5	38	4	M0PC5026

Gear head (dimensions)

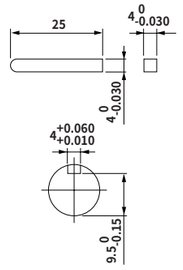
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RX40GB4LG	4	40	100	50	30	76	0.77	1325	0.29 (2.9)	1.7	0.34 (3.5)	7	0.09	0.20 (2.0)	16 (250V)
	M9RX40GB4LGA				60		83	0.86	1625	0.24 (2.4)	1.7	0.34 (3.5)	7	0.09	0.20 (2.0)	
	M9RX40GB4DG	4	40	110	60	30	77	0.70	1650	0.23 (2.4)	1.7	0.32 (3.3)	8	0.09	0.20 (2.0)	12 (250V)
	M9RX40GB4DGA			115	60		80	0.70	1650	0.23 (2.4)	1.8	0.34 (3.5)	9	0.10	0.20 (2.0)	
	M9RX40GB4YG	4	40	200	50	30	81	0.40	1275	0.30 (3.1)	0.69	0.34 (3.5)	7	0.05	0.20 (2.0)	4 (450V)
	M9RX40GB4YGA				60		103	0.54	1575	0.24 (2.5)	0.71	0.34 (3.5)	7	0.05	0.20 (2.0)	
	M9RX40GB4GG	4	40	220	50	30	80	0.36	1325	0.29 (2.9)	0.73	0.39 (4.0)	8	0.05	0.20 (2.0)	3.5 (450V)
	M9RX40GB4GGA				60		96	0.46	1625	0.24 (2.4)	0.73	0.39 (4.0)	8	0.05	0.20 (2.0)	
				230	50		84	0.36	1350	0.28 (2.9)	0.76	0.43 (4.4)	9	0.05	0.20 (2.0)	
					60		101	0.46	1625	0.24 (2.4)	0.76	0.43 (4.4)	8	0.05	0.20 (2.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

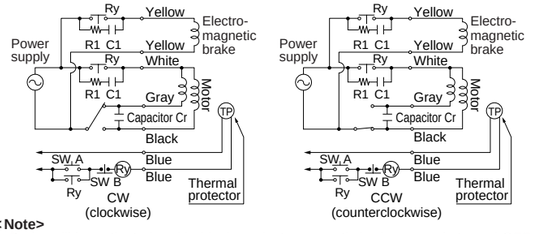
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX9G3B to MX9G180B (ball bearing)	50Hz	0.66 (6.7)	0.78 (8.0)	1.08 (11)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.23 (33)	3.92 (40)	4.41 (45)	5.29 (54)	6.37 (65)	7.94 (81)	9.80 (100)	9.80 (100)						
Applicable gear head: MX9G3M to MX9G180M (metal bearing)	60Hz	0.55 (5.6)	0.66 (6.7)	0.90 (9.2)	1.08 (11)	1.27 (13)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	6.37 (65)	8.82 (90)	9.80 (100)						
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX9G□B (ball bearing) MX9G□M (metal bearing)	MX9G10XB	Permissible torque	N·m (kgf·cm)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

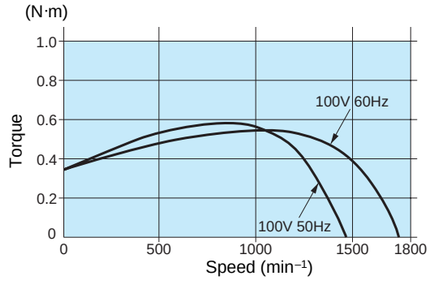
Connection diagram



< Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9RX40GB4LG(A)



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

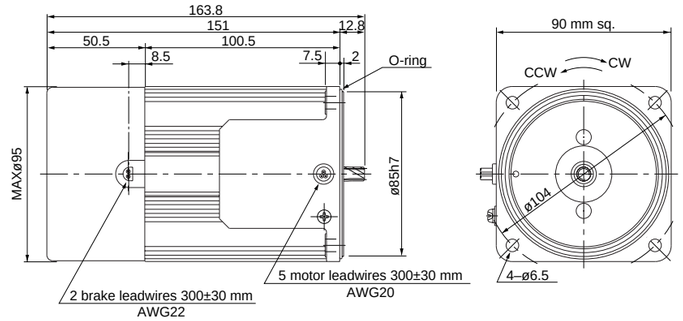
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

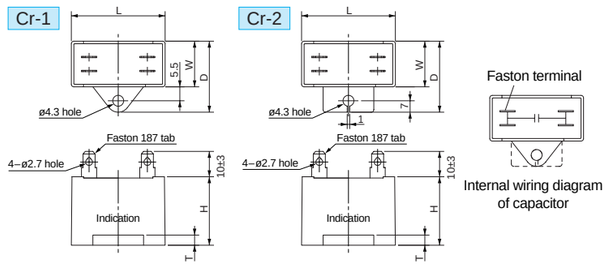
M9RX40GB4LG(A) 4P 40 W 100 V
M9RX40GB4DG(A) 4P 40 W 110 V / 115 V
M9RX40GB4YG(A) 4P 40 W 200 V
M9RX40GB4GG(A) 4P 40 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
2.8 kg	gear	0.55	9



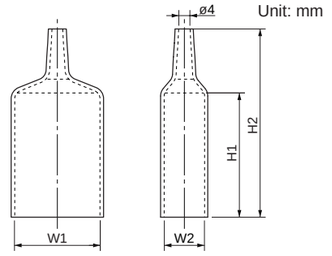
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

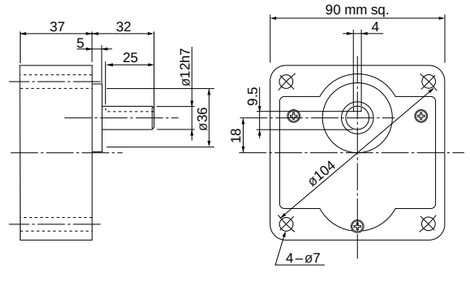
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	dimension No.	Capacitor cap (attachment)	W1	W2	H1	H2
M9RX40GB4LG(A)	M0PC16M25G	58	23.5	38.5	37	4	Cr-2	M0PC5823G	58	23.5	55	78
M9RX40GB4DG(A)	M0PC12M25G	58	22	32	35	4	Cr-1	M0PC5822G	58	22	55	78
M9RX40GB4YG(A)	M0PC4M45G	58	23.5	38.5	37	4	Cr-2	M0PC5823G	58	23.5	55	78
M9RX40GB4GG(A)	M0PC3.5M45G	58	22	32	35	4	Cr-1	M0PC5822G	58	22	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

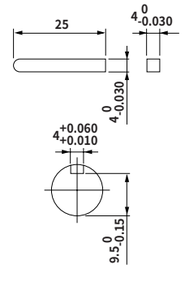
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ60GB4L	4	60	100	50	30	127	1.3	1275	0.45 (4.6)	2.4	0.57 (5.8)	7	0.09	0.39 (4.0)	25 (200V)
					60		133	1.3	1600	0.36 (3.7)	2.4	0.57 (5.8)	7	0.09	0.39 (4.0)	
	M9RZ60GB4Y	4	60	200	50	30	127	0.65	1275	0.45 (4.6)	1.2	0.57 (5.8)	7	0.05	0.39 (4.0)	6.2 (375V)
					60		133	0.65	1600	0.36 (3.7)	1.2	0.57 (5.8)	7	0.05	0.39 (4.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

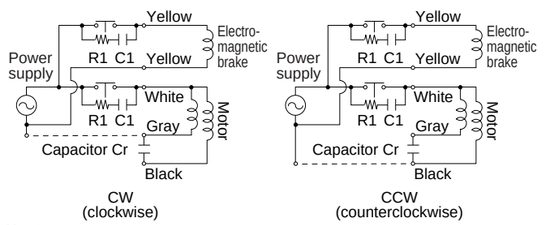
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min^{-1})		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head	MZ9G3BA to MZ9G200B (ball bearing / hinge not attached)	50Hz	0.98 (9.99)	1.18 (12)	1.57 (16)	1.96 (20)	2.35 (24)	2.94 (30)	3.14 (32)	3.92 (40)	4.70 (48)	5.59 (57)	6.27 (64)	7.55 (77)	9.11 (93)	11.0 (112)	15.2 (155)	17.8 (182)	19.6 (200)						
	MY9G3MA to MY9G200M (metal bearing / hinge attached)	60Hz	0.78 (8.0)	0.98 (9.99)	1.37 (14)	1.57 (16)	1.96 (20)	2.35 (24)	2.65 (27)	3.33 (34)	3.92 (40)	4.70 (48)	5.29 (54)	6.47 (66)	7.55 (77)	9.11 (93)	12.6 (129)	15.2 (155)	19.6 (200)						
Rotational direction			Same as motor rotational direction						Reverse to motor rotational direction						Same as motor rotational direction										

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min^{-1})	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / Hinge not attached) MY9G□M (metal bearing / Hinge attached)	MZ9G10XB	Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

Connection diagram

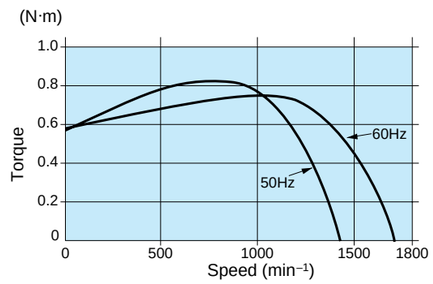


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9RZ60GB4L



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

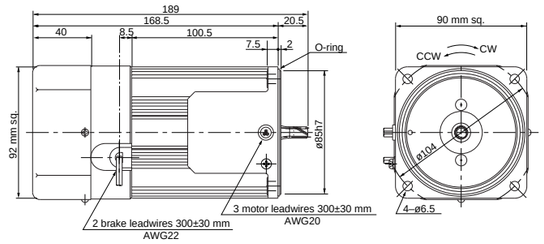
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/4, Unit: mm

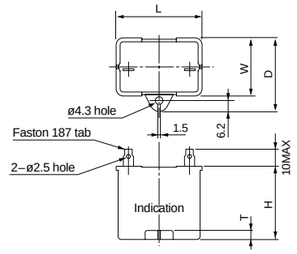
M9RZ60GB4L 4P 60 W 100 V (with fan)
M9RZ60GB4Y 4P 60 W 200 V (with fan)

Mass	Helical	Module	Number of teeth
2.8 kg	gear	0.55	9



Capacitor (dimensions) [attachment]

Unit: mm



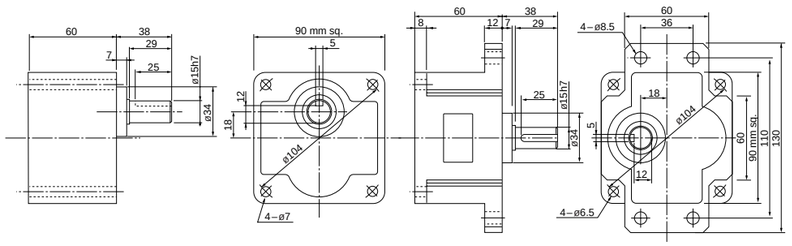
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RZ60GB4L	M0PC25M20	50.2	31	41	42	5	M0PC5032
M9RZ60GB4Y	M0PC6.2M38	50	30.5	41	41.5	4	M0PC5032

Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

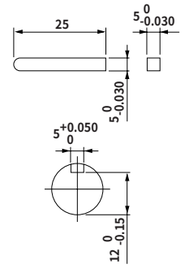


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ60GB4LG	4	60	100	50	30	126	1.3	1300	0.44 (4.5)	2.5	0.57 (5.8)	7	0.09	0.39 (4.0)	25 (250V)
	M9RZ60GB4LGA				60		134	1.4	1600	0.36 (3.7)	2.4	0.57 (5.8)	7	0.09	0.39 (4.0)	
	M9RZ60GB4DG	4	60	110	60	30	127	1.2	1625	0.35 (3.6)	2.5	0.56 (5.7)	8	0.09	0.39 (4.0)	20 (250V)
	M9RZ60GB4DGA			115	60		134	1.2	1650	0.35 (3.5)	2.6	0.62 (6.3)	9	0.10	0.39 (4.0)	
	M9RZ60GB4YG	4	60	200	50	30	121	0.60	1275	0.45 (4.6)	1.1	0.57 (5.8)	8	0.05	0.39 (4.0)	6 (450V)
	M9RZ60GB4YGA				60		146	0.76	1575	0.36 (3.7)	1.1	0.57 (5.8)	8	0.05	0.39 (4.0)	
	M9RZ60GB4GG	4	60	220	50	30	126	0.59	1300	0.44 (4.5)	1.1	0.56 (5.7)	10	0.05	0.39 (4.0)	5 (450V)
	M9RZ60GB4GGA				60		133	0.62	1600	0.36 (3.7)	1.1	0.57 (5.8)	10	0.05	0.39 (4.0)	
				230	50		135	0.62	1300	0.44 (4.5)	1.2	0.62 (6.3)	10	0.05	0.39 (4.0)	
					60		139	0.61	1625	0.35 (3.6)	1.1	0.62 (6.3)	10	0.05	0.39 (4.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

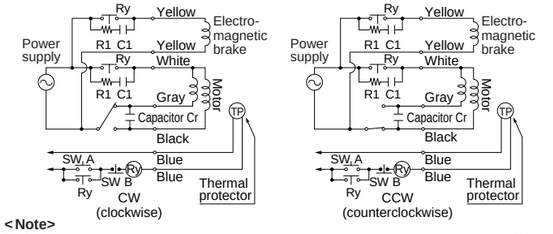
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)		50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
		60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head	MZ9G3B to MZ9G200B (ball bearing / hinge not attached)	50Hz	0.98 (9.99)	1.18 (12)	1.57 (16)	1.96 (20)	2.35 (24)	2.94 (30)	3.14 (32)	3.92 (40)	4.70 (48)	5.59 (57)	6.27 (64)	7.55 (77)	9.11 (93)	11.0 (112)	15.2 (155)	17.8 (182)	19.6 (200)						
	MY9G3B to MY9G200B (ball bearing / hinge attached)	60Hz	0.78 (8.0)	0.98 (9.99)	1.37 (14)	1.57 (16)	1.96 (20)	2.35 (24)	2.65 (27)	3.33 (34)	3.92 (40)	4.70 (48)	5.29 (54)	6.47 (66)	7.55 (77)	9.11 (93)	12.6 (129)	15.2 (155)	19.6 (200)						
Rotational direction			Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	MZ9G10XB	Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

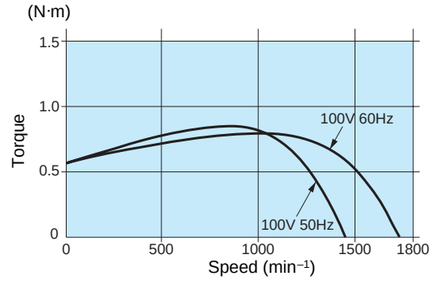
Connection diagram



< Note >
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9RZ60GB4LG(A)



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

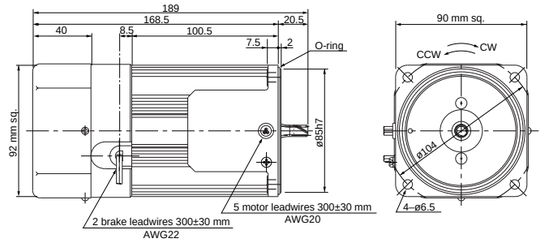
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/4, Unit: mm

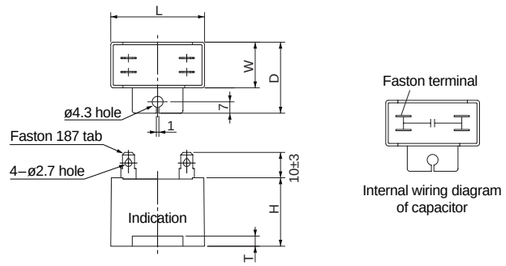
M9RZ60GB4LG(A) 4P 60 W 100 V (with fan)
M9RZ60GB4DG(A) 4P 60 W 110 V / 115 V (with fan)
M9RZ60GB4YG(A) 4P 60 W 200 V (with fan)
M9RZ60GB4GG(A) 4P 60 W 220 V / 230 V (with fan)

Mass	Helical	Module	Number of teeth
3.1 kg	gear	0.6	9



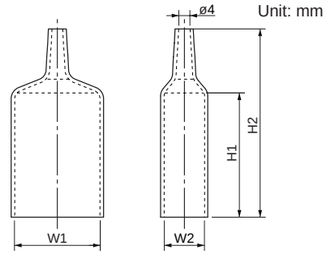
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

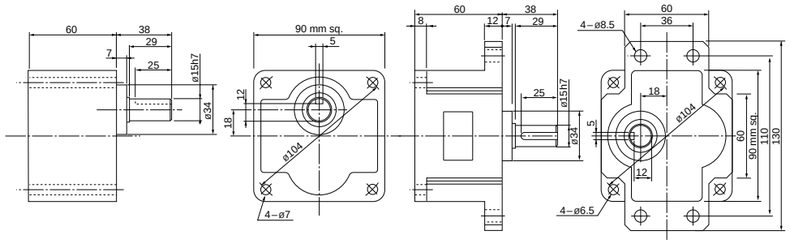
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M9RZ60GB4LG(A)	M0PC25M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ60GB4DG(A)	M0PC20M25G	58	29	44	41	4	M0PC5829G	58	29	55	78
M9RZ60GB4YG(A)	M0PC6M45G	58	29	44	41	4	M0PC5829G	58	29	55	78
M9RZ60GB4GG(A)	M0PC5M45G	58	29	44	41	4	M0PC5829G	58	29	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

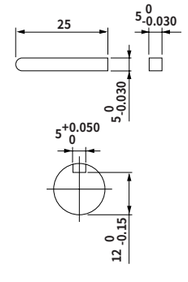
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ90GB4L	4	90	100	50	30	171	1.7	1225	0.70 (7.1)	2.8	0.68 (6.9)	7	0.09	0.39 (4.0)	30 (200V)
					60		181	1.9	1525	0.56 (5.7)	2.7	0.70 (7.1)	7	0.09	0.39 (4.0)	
	M9RZ90GB4Y	4	90	200	50	30	171	0.93	1225	0.70 (7.1)	1.4	0.68 (6.9)	7	0.05	0.39 (4.0)	7.5 (370V)
					60		181	0.96	1525	0.56 (5.7)	1.4	0.70 (7.1)	7	0.05	0.39 (4.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

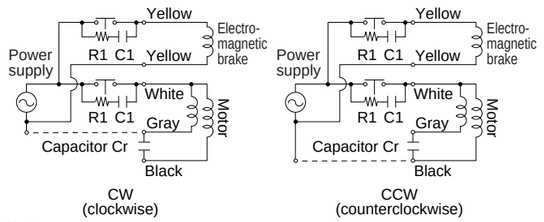
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3B to MZ9G200B (ball bearing / hinge not attached)	50Hz	1.37 (14)	1.67 (17)	2.25 (23)	2.74 (28)	3.43 (35)	4.12 (42)	4.51 (46)	5.68 (58)	6.76 (69)	8.04 (82)	9.02 (92)	10.9 (111)	13.0 (133)	15.7 (160)	19.6 (200)	19.6 (200)							
Applicable gear head: MY9G3B to MY9G200B (ball bearing / hinge attached)	60Hz	1.18 (12)	1.37 (14)	1.86 (19)	2.25 (23)	2.84 (29)	3.43 (35)	3.72 (38)	4.70 (48)	5.68 (58)	6.76 (69)	7.55 (77)	9.21 (94)	10.9 (111)	13.0 (133)	18.3 (187)	19.6 (200)							
Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	MZ9G10XB	Permissible torque	N·m (kgf·cm)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

Connection diagram

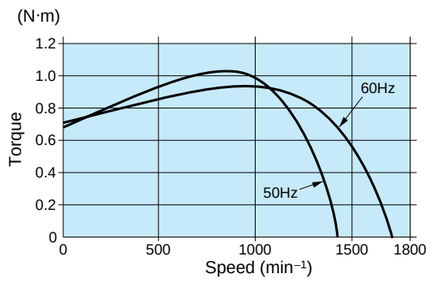


<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9RZ90GB4L



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

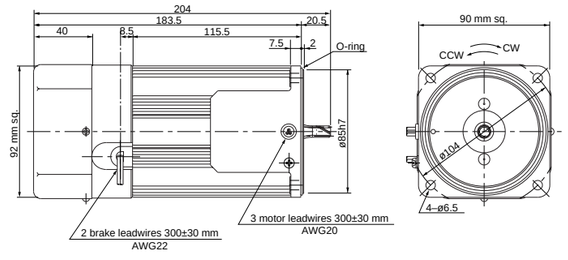
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/4, Unit: mm

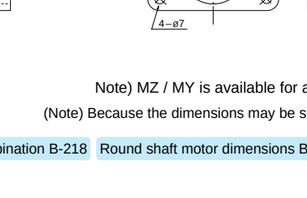
M9RZ90GB4L 4P 90 W 100 V (with fan)
M9RZ90GB4Y 4P 90 W 200 V (with fan)

Mass	Helical gear	Module	Number of teeth
3.7 kg		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm



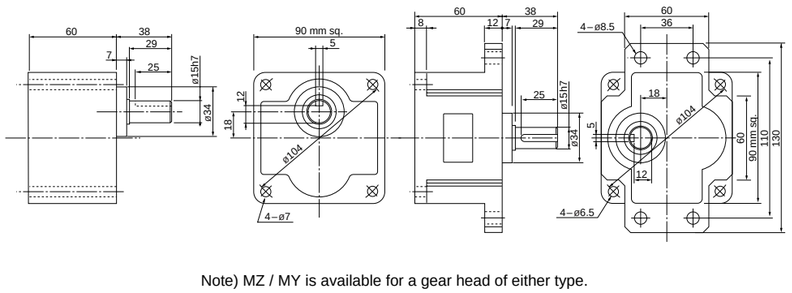
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RZ90GB4L	M0PC30M20	50.2	31	41	42	5	M0PC5032
M9RZ90GB4Y	M0PC7.5M37	50	34	45	45	6	—

Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

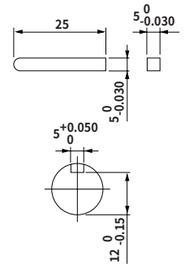


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake single-phase motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ90GB4LG M9RZ90GB4LGA	4	90	100	50	30	175	1.8	1250	0.69 (7.0)	3.0	0.72 (7.3)	7	0.09	0.39 (4.0)	32 (250V)
					60		188	1.9	1575	0.55 (5.6)	3.0	0.72 (7.3)	7	0.09	0.39 (4.0)	
	M9RZ90GB4DG M9RZ90GB4DGA	4	90	110 115	60 60	30	181 190	1.7 1.7	1600 1625	0.54 (5.5) 0.53 (5.4)	3.1 3.2	0.76 (7.8) 0.83 (8.5)	8 9	0.09 0.10	0.39 (4.0) 0.39 (4.0)	28 (250V)
	M9RZ90GB4YG M9RZ90GB4YGA	4	90	200	50 60	30	171 193	0.86 1.0	1225 1550	0.70 (7.1) 0.55 (5.6)	1.4 1.4	0.72 (7.3) 0.72 (7.3)	8 8	0.05 0.05	0.39 (4.0) 0.39 (4.0)	8 (450V)
	M9RZ90GB4GG M9RZ90GB4GGA	4	90	220 230	50 60 50 60	30	179 184 192 192	0.84 0.84 0.89 0.84	1275 1600 1275 1600	0.67 (6.8) 0.54 (5.5) 0.67 (6.8) 0.54 (5.5)	1.5 1.5 1.6 1.5	0.76 (7.8) 0.76 (7.8) 0.83 (8.5) 0.83 (8.5)	10 10 10 10	0.05 0.05 0.05 0.05	0.39 (4.0) 0.39 (4.0) 0.39 (4.0) 0.39 (4.0)	7 (450V)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-220.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

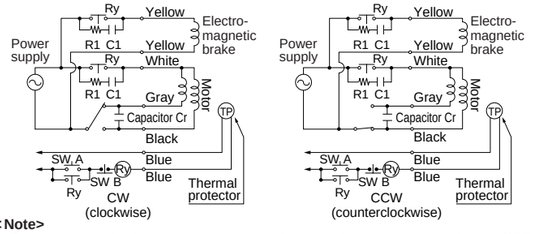
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3B to MZ9G200B (ball bearing / hinge not attached)	50Hz	1.37 (14)	1.67 (17)	2.25 (23)	2.74 (28)	3.43 (35)	4.12 (42)	4.51 (46)	5.68 (58)	6.76 (69)	8.04 (82)	9.02 (92)	10.9 (111)	13.0 (133)	15.7 (160)	19.6 (200)	19.6 (200)							
Applicable gear head: MY9G3B to MY9G200B (ball bearing / hinge attached)	60Hz	1.18 (12)	1.37 (14)	1.86 (19)	2.25 (23)	2.84 (29)	3.43 (35)	3.72 (38)	4.70 (48)	5.68 (58)	6.76 (69)	7.55 (77)	9.21 (94)	10.9 (111)	13.0 (133)	18.3 (187)	19.6 (200)							
Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	MZ9G10XB	Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
		Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

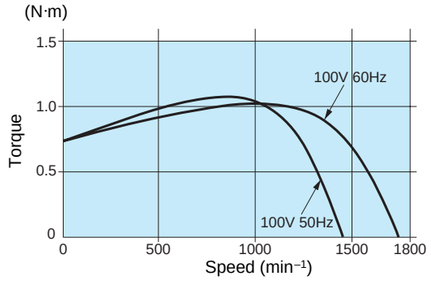
Connection diagram



< Note >
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9RZ90GB4LG(A)



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

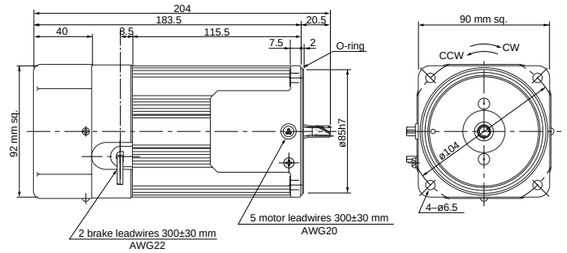
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/4, Unit: mm

M9RZ90GB4LG(A) 4P 90 W 100 V (with fan)
M9RZ90GB4DG(A) 4P 90 W 110 V / 115 V (with fan)
M9RZ90GB4YG(A) 4P 90 W 200 V (with fan)
M9RZ90GB4GG(A) 4P 90 W 220 V / 230 V (with fan)

Mass	Helical	Module	Number of teeth
3.7 kg	gear	0.6	9



Capacitor (dimensions) [attachment]

Unit: mm

Capacitor cap (dimensions) [attachment]

Unit: mm

• Capacitor dimension list (mm)

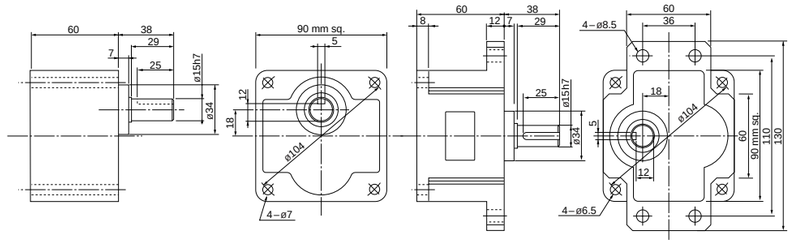
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M9RZ90GB4LG(A)	M0PC32M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GB4DG(A)	M0PC28M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GB4YG(A)	M0PC8M45G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GB4GG(A)	M0PC7M45G	58	35	50	50	4	M0PC5835G	58	35	55	78

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

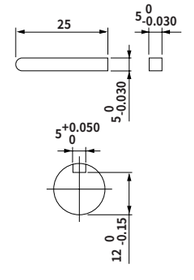
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-218 | Round shaft motor dimensions B-220 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake 3-phase motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
80 mm sq.	M8MX25GB4Y	4	25	200	50	Cont.	50	0.25	1350	0.18 (1.8)	0.62	0.54 (5.5)	6	0.03	0.10 (1.0)
					60		47	0.22	1625	0.15 (1.5)	0.58	0.40 (4.0)	6	0.03	0.10 (1.0)
		4	25	220	50	Cont.	54	0.27	1375	0.18 (1.8)	0.67	0.66 (6.7)	6	0.03	0.10 (1.0)
					60		49	0.23	1650	0.15 (1.5)	0.64	0.50 (5.1)	6	0.03	0.10 (1.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

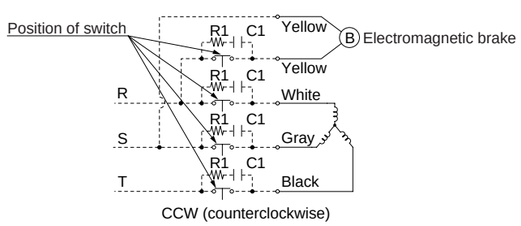
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX8G3B to MX8G180B (ball bearing)	50Hz	0.39 (4.0)	0.47 (4.8)	0.66 (6.7)	0.78 (8.0)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.96 (20)	2.35 (24)	2.55 (26)	3.14 (32)	3.82 (39)	4.61 (47)	6.37 (65)	7.64 (78)	7.84 (80)					
Applicable gear head: MX8G3M to MX8G180M (metal bearing)	60Hz	0.32 (3.3)	0.39 (4.0)	0.55 (5.6)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.65 (27)	3.14 (32)	3.82 (39)	5.29 (54)	6.37 (65)	7.84 (80)					
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX8G□B (ball bearing) MX8G□M (metal bearing)	MX8G10XB	Permissible torque	N·m	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84
			(kgf·cm)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram



CCW (counterclockwise)

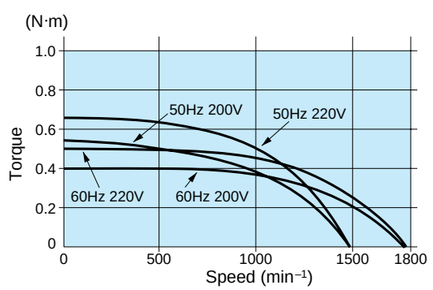
Change any two lead wires of R, S and T for CW rotation.

<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M8MX25GB4Y



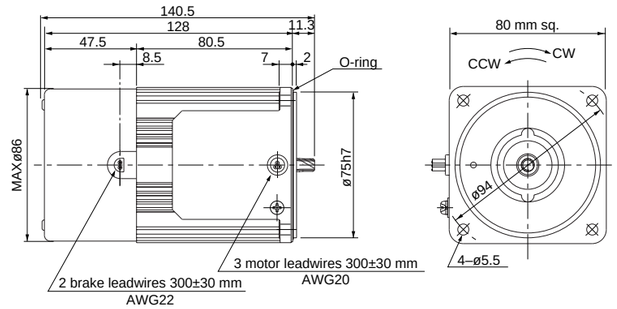
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX25GB4Y 4P 25 W 200/220 V

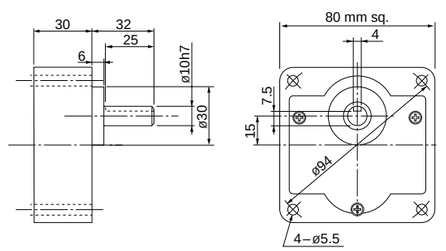
Mass	Helical	Module	Number of teeth
1.8 kg	gear	0.5	9



Gear head (dimensions)

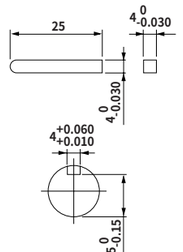
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Electromagnetic brake 3-phase motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min⁻¹)	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
80 mm sq.	M8MX25GB4YG M8MX25GB4YGA	4	25	200	50	Cont.	50	0.25	1350	0.18 (1.8)	0.62	0.54 (5.5)	6	0.03	0.10 (1.0)
					60		47	0.22	1625	0.15 (1.5)	0.58	0.40 (4.0)	6	0.03	0.10 (1.0)
				220	60	Cont.	49	0.23	1650	0.14 (1.5)	0.64	0.50 (5.1)	6	0.03	0.10 (1.0)
				230	60	Cont.	50	0.24	1675	0.14 (1.5)	0.65	0.54 (5.5)	6	0.03	0.10 (1.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.
• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

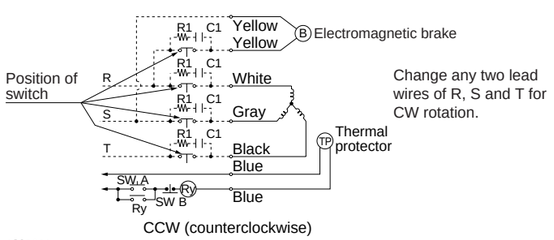
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX8G3B to MX8G180B (ball bearing)	50Hz	0.39 (4.0)	0.47 (4.8)	0.66 (6.7)	0.78 (8.0)	0.98 (10)	1.18 (12)	1.27 (13)	1.57 (16)	1.96 (20)	2.35 (24)	2.55 (26)	3.14 (32)	3.82 (39)	4.61 (47)	6.37 (65)	7.64 (78)	7.84 (80)					
Applicable gear head: MX8G3M to MX8G180M (metal bearing)	60Hz	0.32 (3.3)	0.39 (4.0)	0.55 (5.6)	0.66 (6.7)	0.81 (8.3)	0.98 (10)	1.08 (11)	1.27 (13)	1.57 (16)	1.96 (20)	2.06 (21)	2.65 (27)	3.14 (32)	3.82 (39)	5.29 (54)	6.37 (65)	7.84 (80)					
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX8G□B (ball bearing) MX8G□M (metal bearing)	MX8G10XB	Permissible torque	N·m	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84
			(kgf·cm)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)	(80)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

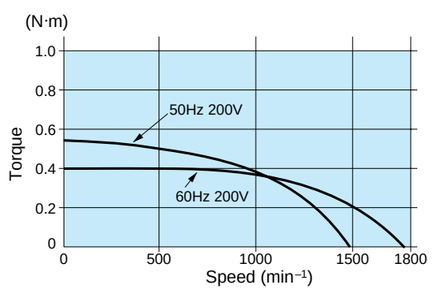
Connection diagram



<Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M8MX25GB4YG(A)



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

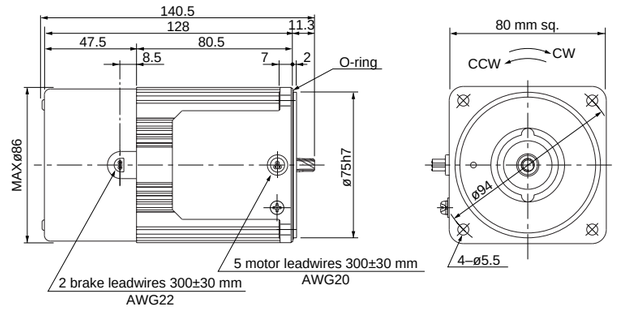
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX25GB4YG(A) 4P 25 W 200/220/230 V

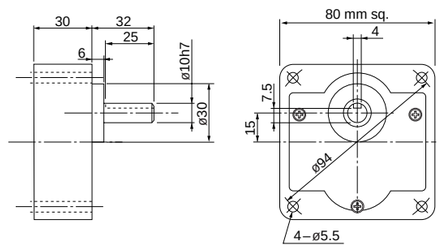
Mass	Helical	Module	Number of teeth
1.8 kg	gear	0.5	9



Gear head (dimensions)

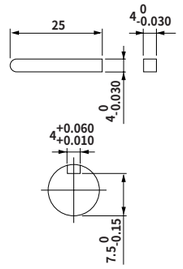
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-219 | Round shaft motor dimensions B-221 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
□90	M9MX40GB4Y	4	40	200	50	Cont.	69	0.31	1350	0.28 (2.9)	0.90	0.72 (7.3)	7	0.05	0.20 (2.0)
					60		68	0.29	1625	0.24 (2.4)	0.82	0.51 (5.2)	7	0.05	0.20 (2.0)
		4	40	220	50	Cont.	70	0.32	1375	0.27 (2.8)	1.00	0.88 (8.9)	7	0.05	0.20 (2.0)
					60		66	0.28	1675	0.23 (2.3)	0.91	0.63 (6.4)	7	0.05	0.20 (2.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

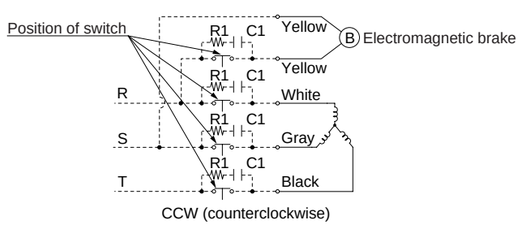
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX9G3B to MX9G180B (ball bearing)	50Hz	0.66 (6.7)	0.78 (8.0)	1.08 (11)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.23 (33)	3.92 (40)	4.41 (45)	5.29 (54)	6.37 (65)	7.94 (81)	9.80 (100)	9.80 (100)						
Applicable gear head: MX9G3M to MX9G180M (metal bearing)	60Hz	0.55 (5.6)	0.66 (6.7)	0.90 (9.2)	1.08 (11)	1.27 (13)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	6.37 (65)	8.82 (90)	9.80 (100)						
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX9G□B (ball bearing) MX9G□M (metal bearing)	MX9G10XB	Permissible torque	N·m	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80
			(kgf·cm)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram



CCW (counterclockwise)

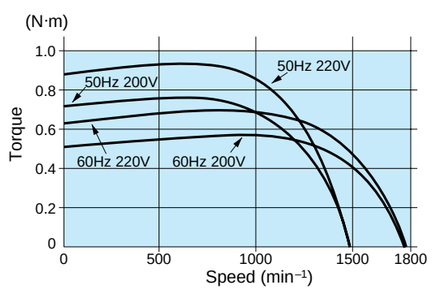
Change any two lead wires of R, S and T for CW rotation.

<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9MX40GB4Y



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

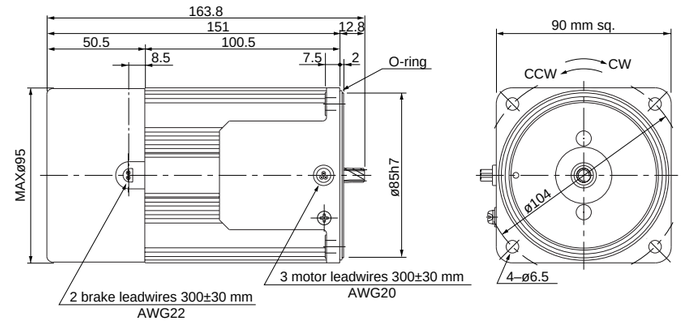
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

M9MX40GB4Y 4P 40 W 200/220 V

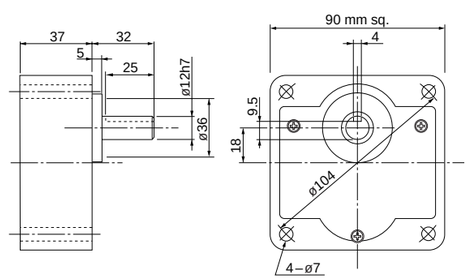
Mass	Helical	Module	Number of teeth
2.8 kg	gear	0.55	9



Gear head (dimensions)

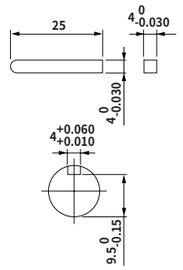
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-219 | Round shaft motor dimensions B-221 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
90 mm sq.	M9MX40GB4YG M9MX40GB4YGA	4	40	200	50	Cont.	69	0.31	1350	0.28 (2.9)	0.90	0.72 (7.3)	7	0.05	0.20 (2.0)
					60		68	0.29	1625	0.24 (2.4)	0.82	0.51 (5.2)	7	0.05	0.20 (2.0)
				220	60	Cont.	66	0.28	1675	0.23 (2.3)	0.91	0.63 (6.4)	7	0.05	0.20 (2.0)
				230	60	Cont.	66	0.29	1675	0.23 (2.3)	0.96	0.69 (7.0)	7	0.05	0.20 (2.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.
• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

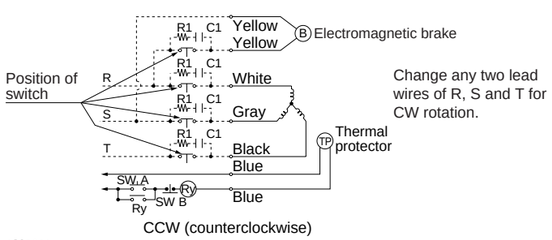
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX9G3B to MX9G180B (ball bearing)	50Hz	0.66 (6.7)	0.78 (8.0)	1.08 (11)	1.27 (13)	1.57 (16)	1.86 (19)	2.25 (23)	2.74 (28)	3.23 (33)	3.92 (40)	4.41 (45)	5.29 (54)	6.37 (65)	7.94 (81)	9.80 (100)	9.80 (100)						
Applicable gear head: MX9G3M to MX9G180M (metal bearing)	60Hz	0.55 (5.6)	0.66 (6.7)	0.90 (9.2)	1.08 (11)	1.27 (13)	1.57 (16)	1.76 (18)	2.25 (23)	2.74 (28)	3.23 (33)	3.53 (36)	4.41 (45)	5.29 (54)	6.37 (65)	8.82 (90)	9.80 (100)						
Rotational direction		Same as motor rotational direction												Reverse to motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	7.5	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	9	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MX9G□B (ball bearing) MX9G□M (metal bearing)	MX9G10XB	Permissible torque	N·m	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80	9.80
			(kgf·cm)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)
		Rotational direction		Same as motor rotational direction	Reverse to motor rotational direction										

Connection diagram

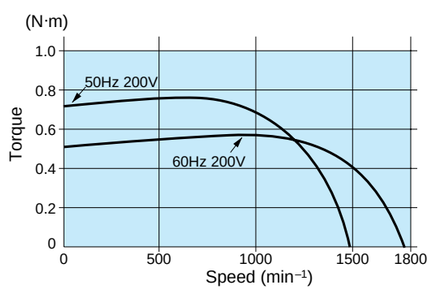


Change any two lead wires of R, S and T for CW rotation.

<Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9MX40GB4YG(A)



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

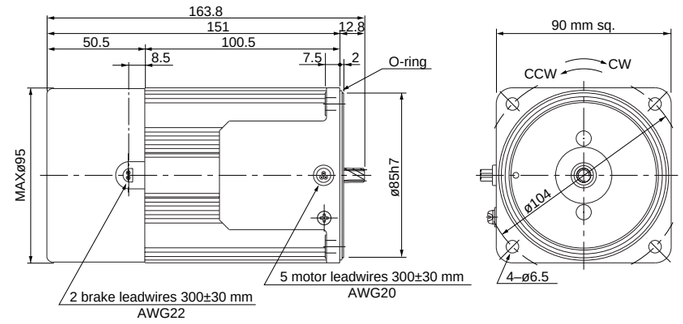
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Motor (dimensions)

Scale: 1/3, Unit: mm

M9MX40GB4YG(A) 4P 40 W 200/220/230 V

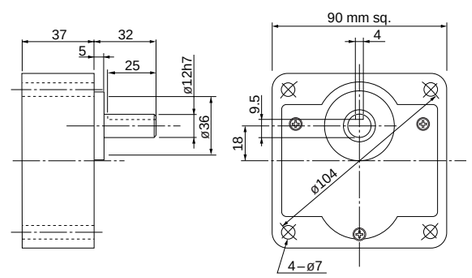
Mass	Helical	Module	Number of teeth
2.8 kg	gear	0.55	9



Gear head (dimensions)

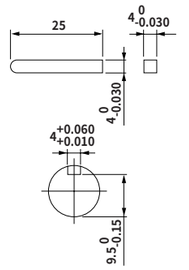
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-219 | Round shaft motor dimensions B-221 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
90 mm sq.	M9MZ60GB4Y	4	60	200	50	Cont.	101	0.45	1350	0.42 (4.3)	1.3	1.0 (10)	7	0.05	0.39 (4.0)
					60		96	0.41	1625	0.35 (3.6)	1.2	0.69 (7.0)	7	0.05	0.39 (4.0)
		4	60	220	50	Cont.	103	0.46	1375	0.41 (4.2)	1.5	1.2 (12)	7	0.05	0.39 (4.0)
					60		98	0.40	1650	0.34 (3.5)	1.3	0.87 (8.8)	7	0.05	0.39 (4.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

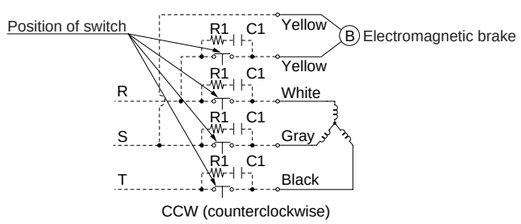
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min^{-1})	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3BA to MZ9G200B (ball bearing / hinge not attached)	50Hz	0.98 (9.99)	1.18 (12)	1.57 (16)	1.96 (20)	2.35 (24)	2.94 (30)	3.14 (32)	3.92 (40)	4.70 (48)	5.59 (57)	6.27 (64)	7.55 (77)	9.11 (93)	11.0 (112)	15.2 (155)	17.8 (182)	19.6 (200)						
Applicable gear head: MY9G3MA to MY9G200M (metal bearing / hinge attached)	60Hz	0.78 (8.0)	0.98 (9.99)	1.37 (14)	1.57 (16)	1.96 (20)	2.35 (24)	2.65 (27)	3.33 (34)	3.92 (40)	4.70 (48)	5.29 (54)	6.47 (66)	7.55 (77)	9.11 (93)	12.6 (129)	15.2 (155)	19.6 (200)						
Rotational direction		Same as motor rotational direction						Reverse to motor rotational direction						Same as motor rotational direction										

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min^{-1})	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / Hinge not attached) MY9G□M (metal bearing / Hinge attached)	MZ9G10XB	Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

Connection diagram



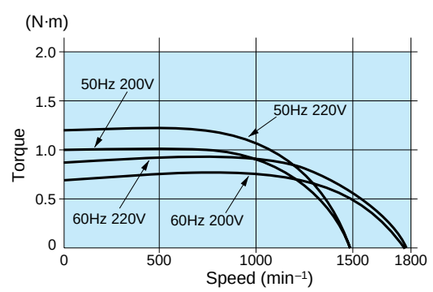
Change any two lead wires of R, S and T for CW rotation.

<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9MZ60GB4Y



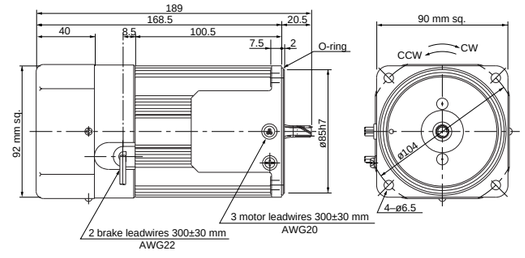
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/4, Unit: mm

M9MZ60GB4Y 4P 60 W 200/220 V (with fan)

Mass	Helical	Module	Number of teeth
3.1 kg	gear	0.6	9

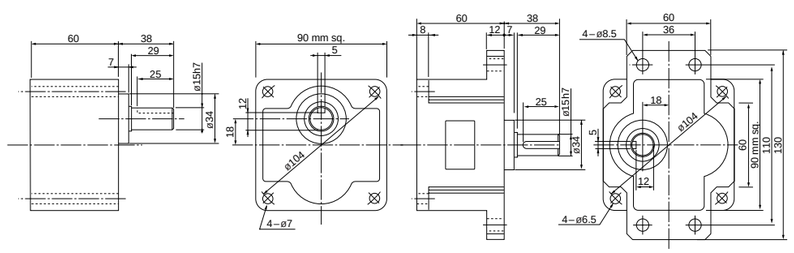


Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg

MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

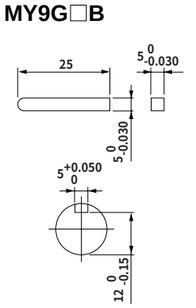


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
90 mm sq.	M9MZ60GB4YG M9MZ60GB4YGA	4	60	200	50	Cont.	101	0.45	1350	0.42 (4.3)	1.3	1.0 (10)	7	0.05	0.39 (4.0)
					60		96	0.41	1625	0.35 (3.6)	1.2	0.69 (7.0)	7	0.05	0.39 (4.0)
				220	60	Cont.	98	0.40	1650	0.35 (3.5)	1.3	0.87 (8.8)	7	0.05	0.39 (4.0)
				230	60	Cont.	98	0.41	1675	0.34 (3.5)	1.4	1.0 (10)	7	0.05	0.39 (4.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.
• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

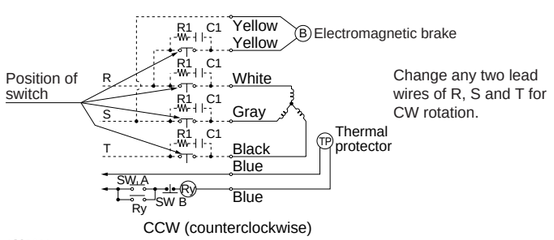
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3BA to MZ9G200B (ball bearing / hinge not attached)	50Hz	0.98 (9.99)	1.18 (12)	1.57 (16)	1.96 (20)	2.35 (24)	2.94 (30)	3.14 (32)	3.92 (40)	4.70 (48)	5.59 (57)	6.27 (64)	7.55 (77)	9.11 (93)	11.0 (112)	15.2 (155)	17.8 (182)	19.6 (200)						
Applicable gear head: MY9G3MA to MY9G200M (metal bearing / hinge attached)	60Hz	0.78 (8.0)	0.98 (9.99)	1.37 (14)	1.57 (16)	1.96 (20)	2.35 (24)	2.65 (27)	3.33 (34)	3.92 (40)	4.70 (48)	5.29 (54)	6.47 (66)	7.55 (77)	9.11 (93)	12.6 (129)	15.2 (155)	19.6 (200)						
Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / Hinge not attached) MY9G□M (metal bearing / Hinge attached)	MZ9G10XB	Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

Connection diagram

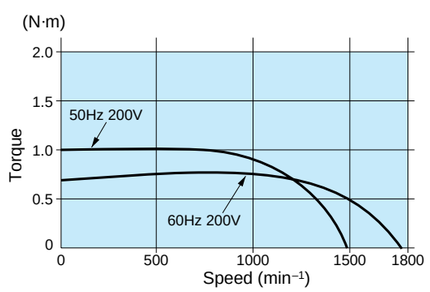


Change any two lead wires of R, S and T for CW rotation.

<Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9MZ60GB4YG(A)

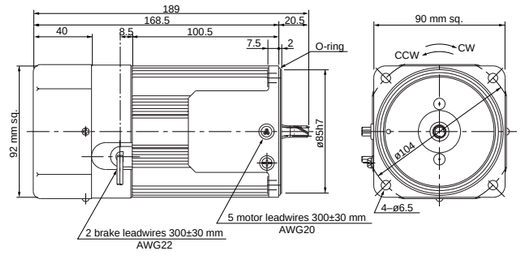


Motor (dimensions)

Scale: 1/4, Unit: mm

M9MZ60GB4YG(A) 4P 60 W 200/220/230 V (with fan)

Mass	Helical	Module	Number of teeth
3.1 kg	gear	0.6	9

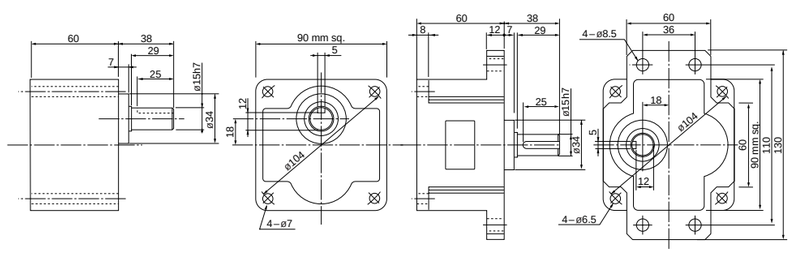


Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg

MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

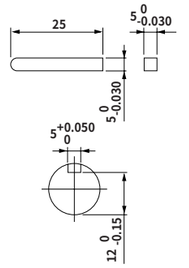


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



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

Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
90 mm sq.	M9MZ90GB4Y	4	90	200	50	Cont.	141	0.62	1350	0.63 (6.4)	2.0	1.6 (16)	7	0.05	0.39 (4.0)
					60		137	0.56	1625	0.53 (5.4)	1.8	1.1 (11)	7	0.05	0.39 (4.0)
		4	90	220	50	Cont.	143	0.65	1400	0.62 (6.3)	2.2	2.0 (20)	7	0.05	0.39 (4.0)
					60		137	0.56	1650	0.52 (5.3)	2.0	1.4 (14)	7	0.05	0.39 (4.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

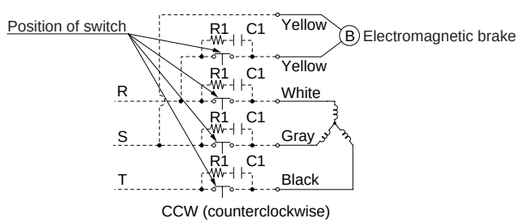
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3B to MZ9G200B (ball bearing / hinge not attached)	50Hz	1.37 (14)	1.67 (17)	2.25 (23)	2.74 (28)	3.43 (35)	4.12 (42)	4.51 (46)	5.68 (58)	6.76 (69)	8.04 (82)	9.02 (92)	10.9 (111)	13.0 (133)	15.7 (160)	19.6 (200)	19.6 (200)								
Applicable gear head: MY9G3B to MY9G200B (ball bearing / hinge attached)	60Hz	1.18 (12)	1.37 (14)	1.86 (19)	2.25 (23)	2.84 (29)	3.43 (35)	3.72 (38)	4.70 (48)	5.68 (58)	6.76 (69)	7.55 (77)	9.21 (94)	10.9 (111)	13.0 (133)	18.3 (187)	19.6 (200)								
Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	MZ9G10XB	Permissible torque	N·m (kgf·cm)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)
		Rotational direction		Reverse to motor rotational direction	Same as motor rotational direction									

Connection diagram



CCW (counterclockwise)

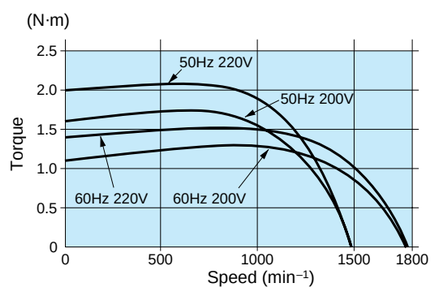
Change any two lead wires of R, S and T for CW rotation.

<Note>

1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).

Speed-torque characteristics

M9MZ90GB4Y



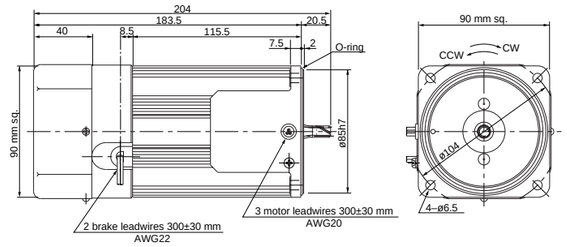
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/4, Unit: mm

M9MZ90GB4Y 4P 90 W 200/220 V (with fan)

Mass	Helical	Module	Number of teeth
3.7 kg	gear	0.6	9

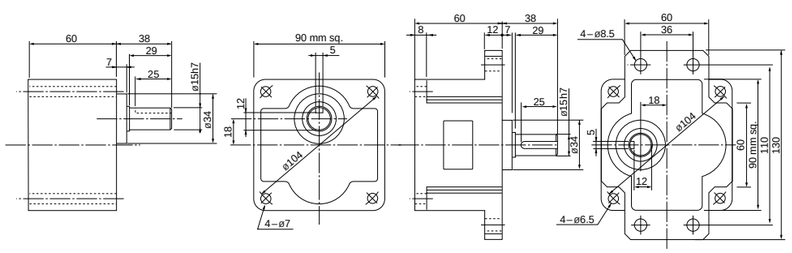


Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg

MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

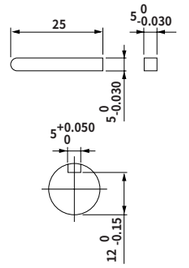


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Electromagnetic brake 3-phase motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)
90 mm sq.	M9MZ90GB4YG M9MZ90GB4YGA	4	90	200	50	Cont.	142	0.62	1350	0.63 (6.4)	2.0	1.6 (16)	7	0.05	0.39 (4.0)
					60		138	0.56	1625	0.53 (5.4)	1.8	1.1 (11)	7	0.05	0.39 (4.0)
				220	60	Cont.	137	0.56	1650	0.52 (5.3)	2.0	1.4 (14)	7	0.05	0.39 (4.0)
				230	60	Cont.	137	0.58	1675	0.51 (5.2)	2.1	1.6 (16)	7	0.05	0.39 (4.0)

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-221.
• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

• Permissible torque at output shaft of gear head

* The speed shown below is a calculated value based on the synchronous rotational speed. Depending on the load, the speed is less than the indicated value by 2 to 20%.

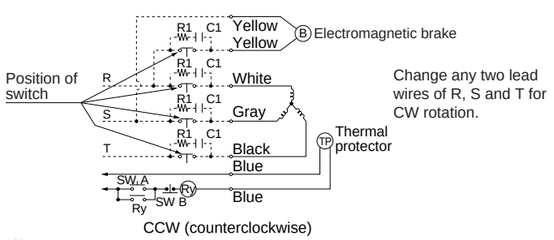
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min⁻¹)	50Hz	500	416.7	300	250	200	166.7	150	120	100	83.3	75	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	180	144	120	100	90	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3B to MZ9G200B (ball bearing / hinge not attached)	50Hz	1.37 (14)	1.67 (17)	2.25 (23)	2.74 (28)	3.43 (35)	4.12 (42)	4.51 (46)	5.68 (58)	6.76 (69)	8.04 (82)	9.02 (92)	10.9 (111)	13.0 (133)	15.7 (160)	19.6 (200)	19.6 (200)							
Applicable gear head: MY9G3B to MY9G200B (ball bearing / hinge attached)	60Hz	1.18 (12)	1.37 (14)	1.86 (19)	2.25 (23)	2.84 (29)	3.43 (35)	3.72 (38)	4.70 (48)	5.68 (58)	6.76 (69)	7.55 (77)	9.21 (94)	10.9 (111)	13.0 (133)	18.3 (187)	19.6 (200)							
Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction						Same as motor rotational direction									

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800
		Speed (min⁻¹)	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.8
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	MZ9G10XB	Permissible torque	N·m	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
			(kgf·cm)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
		Rotational direction		Reverse to motor rotational direction		Same as motor rotational direction								

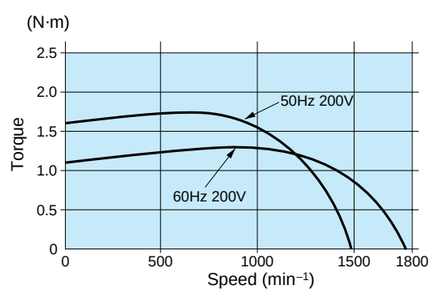
Connection diagram



<Note>
1. Brake will be activated and held when electromagnetic brake power is turned OFF.
2. Protect the contacts by inserting the spark-killer circuit (R1+C1) between the contacts. R1+C1 is provided as an option (DV0P008, refer to page D-3).
3. Refer to page A-58 for connection of thermal protector.

Speed-torque characteristics

M9MZ90GB4YG(A)



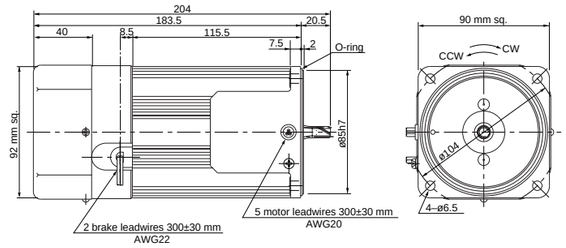
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/4, Unit: mm

M9MZ90GB4YG(A) 4P 90 W 200/220/230 V (with fan)

Mass	Helical	Module	Number of teeth
3.7 kg	gear	0.6	9

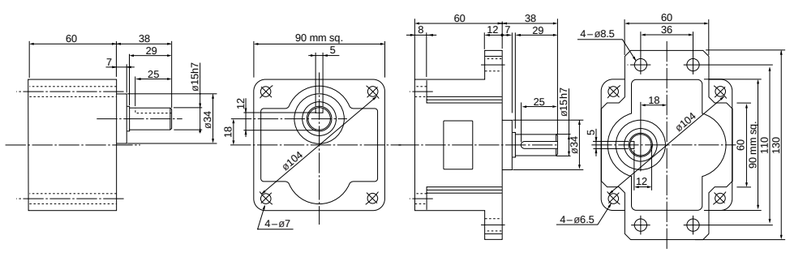


Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg

MY9G□M (metal bearing / hinge attached) Mass 1.4 kg

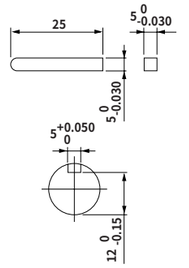


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B

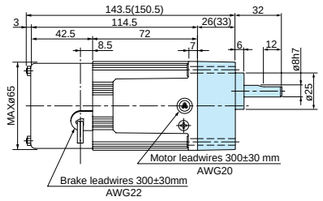


Electromagnetic brake single-phase motor (leadwire) — Gear head combination dimensions

Scale: 1/4, Unit: mm

60 mm sq. 6 W

M6RX6GB4L + MX6G□BA(MA) / MX6G□B(M)
M6RX6GB4Y + MX6G□BA(MA) / MX6G□B(M)
M6RX6GB4LG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GB4DG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GB4YG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GB4GG(A) + MX6G□BA(MA) / MX6G□B(M)

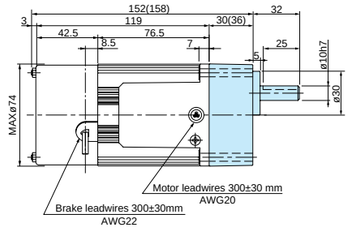


* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)

70 mm sq. 15 W

M7RX15GB4L + MX7G□BA(MA) / MX7G□B(M)
M7RX15GB4Y + MX7G□BA(MA) / MX7G□B(M)
M7RX15GB4LG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GB4DG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GB4YG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GB4GG(A) + MX7G□BA(MA) / MX7G□B(M)

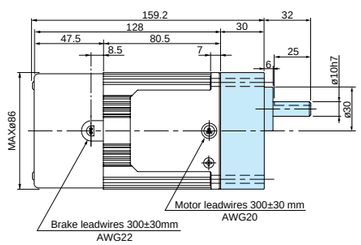


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

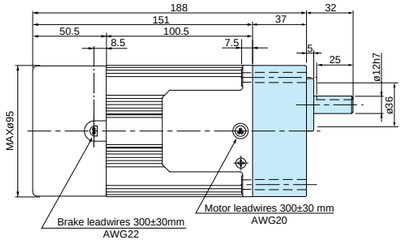
80 mm sq. 25 W

M8RX25GB4L + MX8G□B(M)
M8RX25GB4Y + MX8G□B(M)
M8RX25GB4LG(A) + MX8G□B(M)
M8RX25GB4DG(A) + MX8G□B(M)
M8RX25GB4YG(A) + MX8G□B(M)
M8RX25GB4GG(A) + MX8G□B(M)



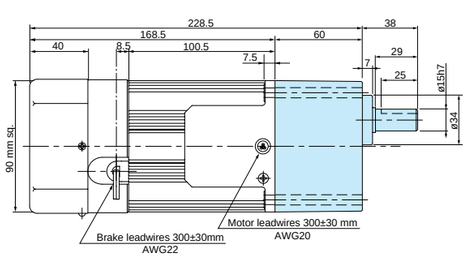
90 mm sq. 40 W

M9RX40GB4L + MX9G□B(M)
M9RX40GB4Y + MX9G□B(M)
M9RX40GB4LG(A) + MX9G□B(M)
M9RX40GB4DG(A) + MX9G□B(M)
M9RX40GB4YG(A) + MX9G□B(M)
M9RX40GB4GG(A) + MX9G□B(M)



90 mm sq. 60 W

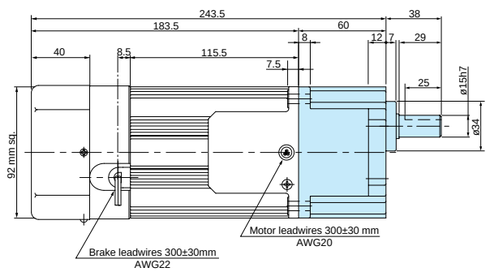
M9RZ60GB4L + MZ9G□B (MY9G□B)
M9RZ60GB4Y + MZ9G□B (MY9G□B)
M9RZ60GB4LG(A) + MZ9G□B (MY9G□B)
M9RZ60GB4DG(A) + MZ9G□B (MY9G□B)
M9RZ60GB4YG(A) + MZ9G□B (MY9G□B)
M9RZ60GB4GG(A) + MZ9G□B (MY9G□B)



* Refer to page B-380 for high torque gear head.

90 mm sq. 90 W

M9RZ90GB4L + MY9G□B (MZ9G□B)
M9RZ90GB4Y + MY9G□B (MZ9G□B)
M9RZ90GB4LG(A) + MY9G□B (MZ9G□B)
M9RZ90GB4DG(A) + MY9G□B (MZ9G□B)
M9RZ90GB4YG(A) + MY9G□B (MZ9G□B)
M9RZ90GB4GG(A) + MY9G□B (MZ9G□B)



* Refer to page B-380 for high torque gear head.

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

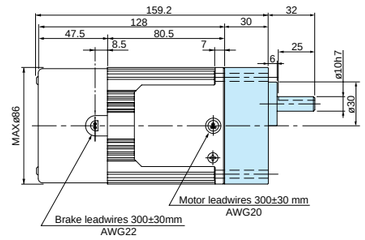
Features B-168 | System configuration B-169 | Coding system B-169 | Model list B-174

Electromagnetic brake 3-phase motor (leadwire) — Gear head combination dimensions

Scale: 1/4, Unit: mm

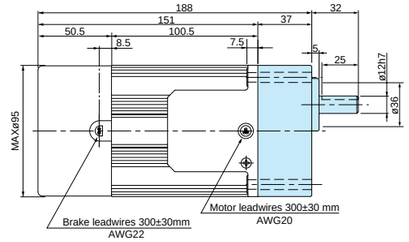
80 mm sq. 25 W

M8MX25GB4Y + MX8G□B(M)
M8MX25GB4YG(A) + MX8G□B(M)



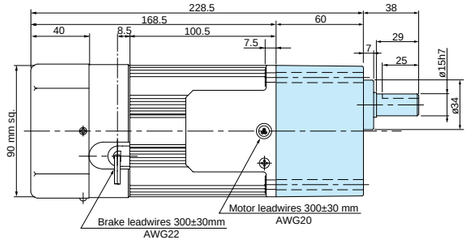
90 mm sq. 40 W

M9MX40GB4Y + MX9G□B(M)
M9MX40GB4YG(A) + MX9G□B(M)



90 mm sq. 60 W

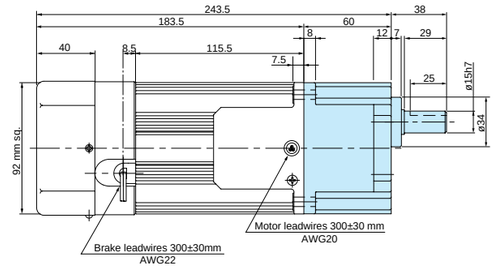
M9MZ60GB4Y + MZ9G□B (MY9G□B)
M9MZ60GB4YG(A) + MZ9G□B (MY9G□B)



* Refer to page B-380 for high torque gear head.

90 mm sq. 90 W

M9MZ90GB4Y + MY9G□B (MZ9G□B)
M9MZ90GB4YG(A) + MY9G□B (MZ9G□B)



* Refer to page B-380 for high torque gear head.

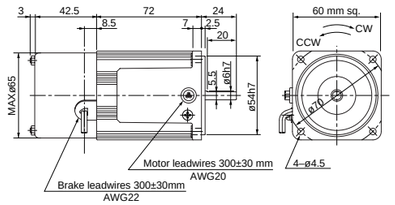
* The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
* The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

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

Specifications B-178 to B-217 | Control related product C-4 | Option D-2

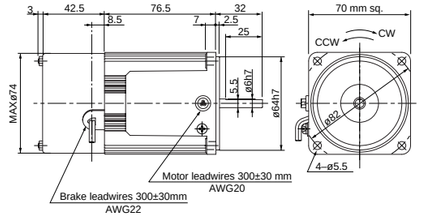
60 mm sq. 6 W — Mass 0.85 kg

M6RX6SB4LS **M6RX6SB4LG(A)**
M6RX6SB4YS **M6RX6SB4DG(A)**
M6RX6SB4YG(A)
M6RX6SB4GG(A)



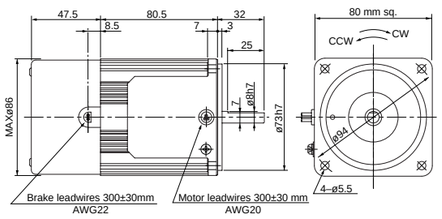
70 mm sq. 15 W — Mass 1.1 kg

M7RX15SB4LS **M7RX15SB4LG(A)**
M7RX15SB4YS **M7RX15SB4DG(A)**
M7RX15SB4YG(A)
M7RX15SB4GG(A)



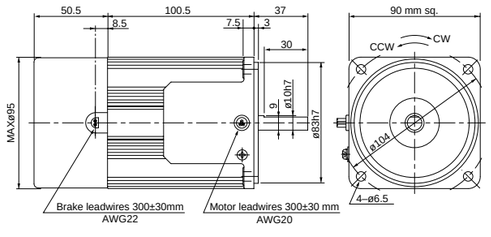
80 mm sq. 25 W — Mass 1.8 kg

M8RX25SB4LS **M8RX25SB4LG(A)**
M8RX25SB4YS **M8RX25SB4DG(A)**
M8RX25SB4YG(A)
M8RX25SB4GG(A)



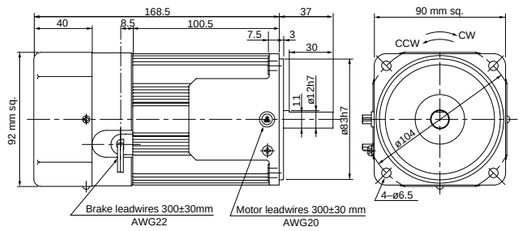
90 mm sq. 40 W — Mass 2.8 kg

M9RX40SB4LS **M9RX40SB4LG(A)**
M9RX40SB4YS **M9RX40SB4DG(A)**
M9RX40SB4YG(A)
M9RX40SB4GG(A)



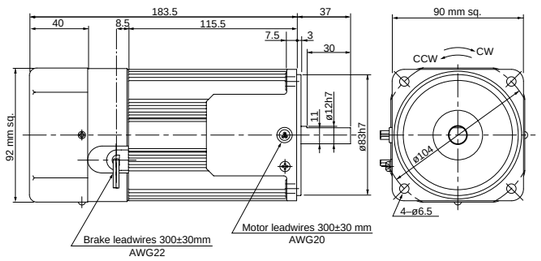
90 mm sq. 60 W — Mass 3.1 kg

M9RZ60SB4LS (with fan) **M9RZ60SB4LG(A)** (with fan)
M9RZ60SB4YS (with fan) **M9RZ60SB4DG(A)** (with fan)
M9RZ60SB4YG(A) (with fan)
M9RZ60SB4GG(A) (with fan)



90 mm sq. 90 W — Mass 3.7 kg

M9RZ90SB4LS (with fan) **M9RZ90SB4LG(A)** (with fan)
M9RZ90SB4YS (with fan) **M9RZ90SB4DG(A)** (with fan)
M9RZ90SB4YG(A) (with fan)
M9RZ90SB4GG(A) (with fan)

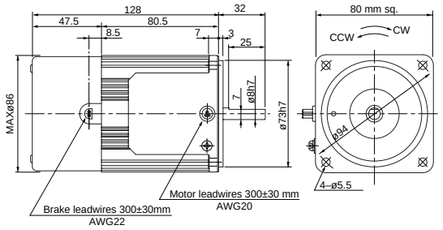


*The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
*The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

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

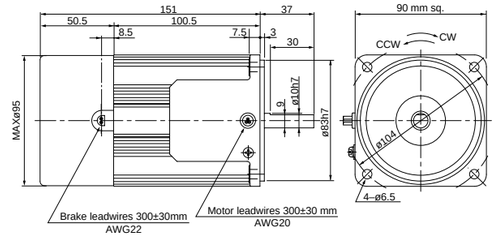
80 mm sq. 25 W — Mass 1.8 kg

M8MX25SB4YS
M8MX25SB4YG(A)



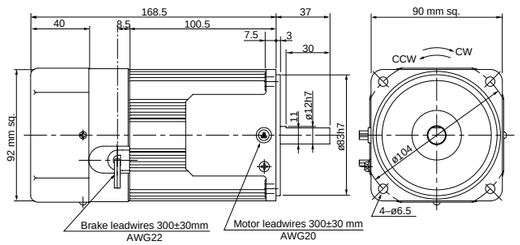
90 mm sq. 40 W — Mass 2.8 kg

M9MX40SB4YS
M9MX40SB4YG(A)



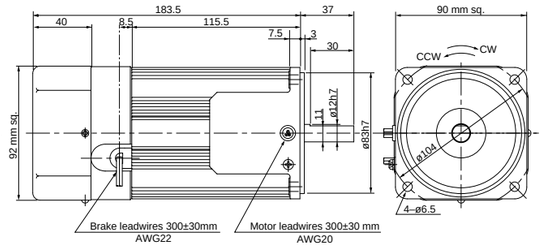
90 mm sq. 60 W — Mass 3.1 kg

M9MZ60SB4YS (with fan)
M9MZ60SB4YG(A) (with fan)



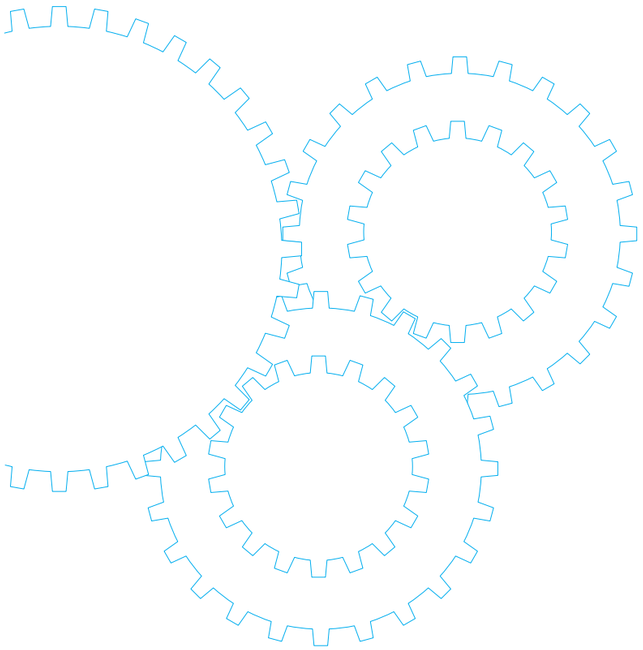
90 mm sq. 90 W — Mass 3.7 kg

M9MZ90SB4YS (with fan)
M9MZ90SB4YG(A) (with fan)



(Note) 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 Induction Motor



Contents

Outline of variable speed induction motor

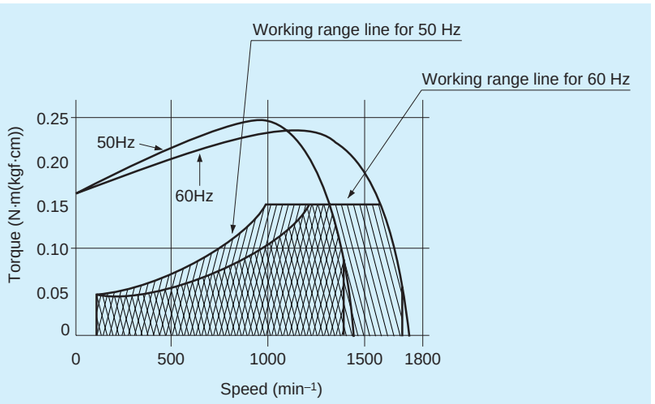
Features

- By using it together with a speed controller, you can vary the speed over a wider range (90 to 1400 min^{-1} for 50 Hz and 90 to 1700 min^{-1} for 60 Hz).
- Various functions such as variable speed, braking, normal/reverse run and soft-start/soft-stop are available.
- Feedback control with the built-in tacho-generator gives a constant speed despite of frequency change.
- The motor output is 3 W to 90 W.

Working range

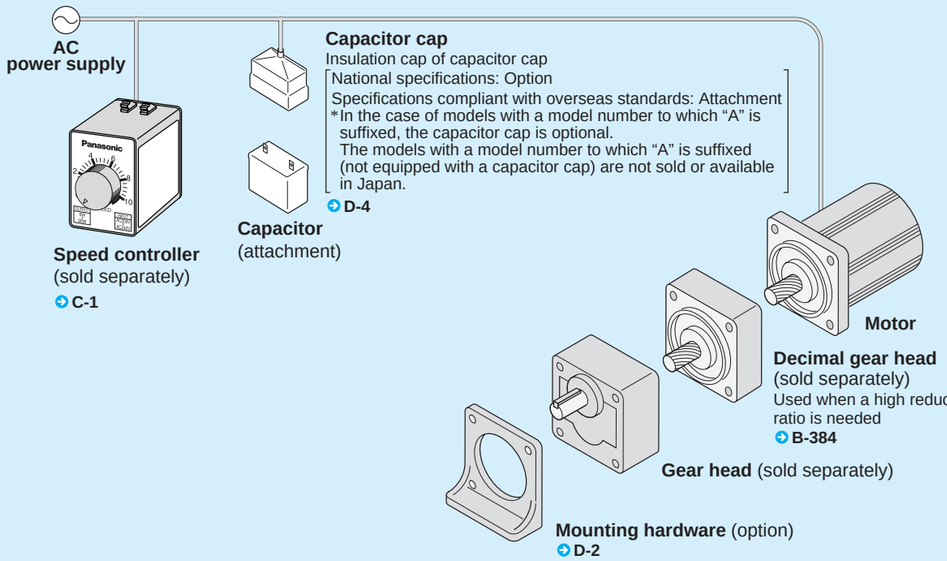
The working range line shows the working limit (at the constant rating) for the variable speed motor. The permissible torque should fall within the shaded portion.
If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

• Working range line



Example : M81X25GV4L 4P 25W

System configuration diagram



Coding system

M 9 1 X 40 G V 4 L S A

- **9 Size**
  - 6 : 60 mm sq.
  - 7 : 70 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **1 Motor type**
  - 1 : Induction motor
- **X Output type**
  - X : 40 W or smaller
  - Z : 60 W or larger
- **40 Output**
  - 3 : 3 W
  - 6 : 6 W
  - 10 : 10 W
  - 15 : 15 W
  - 25 : 25 W
  - 40 : 40 W
  - 60 : 60 W
  - 90 : 90 W
- **G Shape of shaft**
  - G : Pinion shaft
  - S : Round shaft
- **V Option**
  - V : Variable speed
- **4 No. of poles**
  - 4 : 4 poles
- **L Voltage**
  - L : 100 V
  - Y : 200 V
  - D : 110/115 V
  - G : 220/230 V
- **S Classification**
  - Motor with specifications compliant with overseas standards that is not equipped with a capacitor cap.
  - G : Specifications compliant with overseas standards
    S : Round shaft
    (S for round shaft with national specifications only)

Corresponding model number	Shape of shaft	Classification
Specifications compliant with overseas standards Pinion shaft	G	G
Specifications compliant with overseas standards Round shaft	S	G
National specifications Pinion shaft	G	–
National specifications Round shaft	S	S
42 mm sq. round shaft specifications	S	–

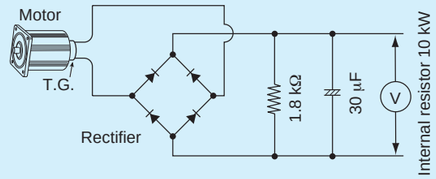
- **A**

Outline of variable speed induction motor

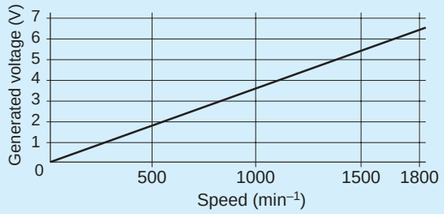
Voltage generation of tacho-generator

The tacho-generator attached directly to the variable speed motor generate a voltage almost in proportion to the motor speed as shown in the figure below. (You can measure it with an AC tester simply.)

• Voltage generation of tacho-generator



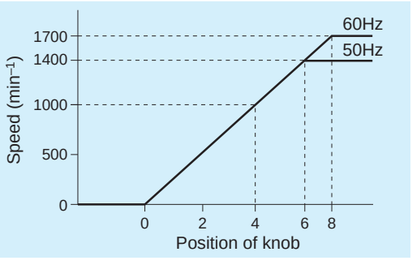
Measuring Circuit Diagram



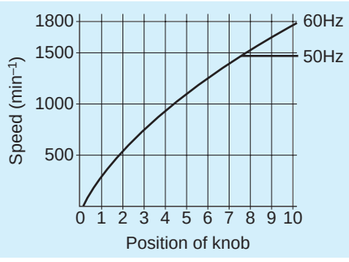
Setting of Speed

In the case of the MGSD type and SD type, the built-in speed reference is used to set the speed. In the case of the EX type, the external speed reference is used to set the speed. The figure below shows an example of the relation between the position of the speed setting knob and the speed of the motor. (Note that there is an approx. 10% fluctuation due to variations in the voltage generation of the circuit and tacho-generator.)

• MGSD type



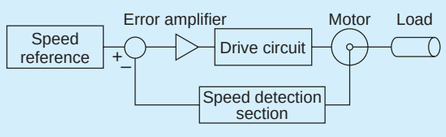
• SD and EX type



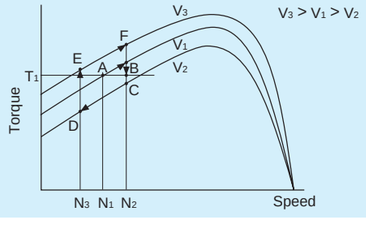
Principle of closed loop system speed control

The closed loop system speed control is described below according to Fig. 1. The motor speed is converted to a corresponding voltage in the speed detection section and compared with the voltage set in the speed setting section. The difference between them is called an error voltage. Based on the error voltage, the motor is driven through the error amplifier and drive circuit. Because the error voltage is controlled practically to zero, the speed is determined by the value set in the speed setting section. Therefore the speed scarcely changes even if the load changes, and the speed changes according to the speed setting when the setting is changed.
In the case of the closed loop system speed control, as described above, the motor speed is detected and the drive voltage is controlled so as to keep the speed constant.

• Fig. 1



• Fig. 2



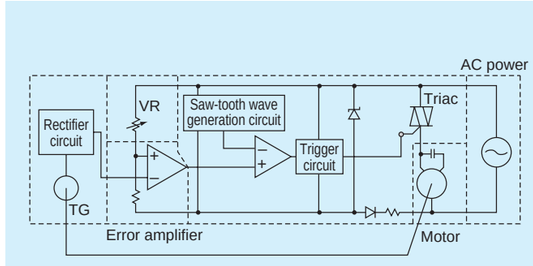
Primary voltage control through closed loop

Fig. 2 shows the relation between the motor torque and speed when the voltage (primary voltage) applied to the motor is changed. Assume that the voltage is V1, the load torque is T1 and the resulting speed is N1. If the motor is being accelerated at this point A, when the voltage is changed from V1 to V2 with the motor status at point B, the motor status moves to point C. Because load torque T1 is larger than the motor torque at point C, the speed is reduced from N2.
When the voltage is increased to V3 with the speed being N3, because the motor status moves to point E, the applied torque becomes larger than the load torque and the motor is accelerated again toward point F. By controlling the primary voltage so as to making this loop "C → D → E → F" sufficiently small and producing it continuously, a stable rotation can be obtained. In the case of the primary voltage control through closed loop, the motor speed is detected and the speed is kept constant by controlling the primary voltage according to the change of the speed.

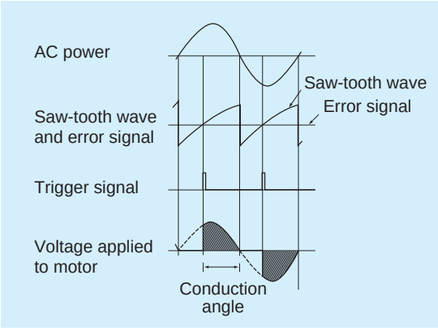
Operation of speed controller

The operation of our speed controller is described below using Fig. 3. The motor speed is detected by the tachometer generator TG and the feedback voltage is obtained through the rectifier circuit.
The difference between the voltage set with the VR and the feedback voltage is amplified by the error amplifier. Based on the saw-tooth wave obtained from the saw-tooth wave generation circuit and the error signal, the trigger signal of the triac is generated through the comparator and trigger circuit. The conduction angle of the triac is controlled with the trigger signal to adjust the voltage applied to the motor.
As a result, the motor is controlled so as to keep the speed constant. (Refer to Fig. 4.)

• Fig. 3



• Fig. 4



Model list of variable speed induction motor

Pinion shaft motor

Applicable gear head

✪ Motor compliant with overseas standards

Hinge attached

Size	Output (W)	Leadwire type				Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
		Model number	Specifications		Page	Ball bearing	metal bearing			
60 mm sq.	3	M61X3GV4L	100V		B-232	MX6G□BA MX6G□B	MX6G□MA MX6G□M	–	–	MX6G10XB
	6	M61X6GV4L	100V		B-234					
		M61X6GV4Y	200V		B-234					
		M61X6GV4LG(A)	100V	✪	B-236					
		M61X6GV4DG(A)	110/115V	✪	B-236					
		M61X6GV4YG(A)	200V	✪	B-236					
		M61X6GV4GG(A)	220/230V	✪	B-236					
70 mm sq.	10	M71X10GV4L	100V		B-238	MX7G□BA MX7G□B	MX7G□MA MX7G□M	–	–	MX7G10XB
		M71X10GV4Y	200V		B-238					
	15	M71X15GV4L	100V		B-240					
		M71X15GV4Y	200V		B-240					
		M71X15GV4LG(A)	100V	✪	B-242					
		M71X15GV4DG(A)	110/115V	✪	B-242					
		M71X15GV4YG(A)	200V	✪	B-242					
		M71X15GV4GG(A)	220/230V	✪	B-242					
80 mm sq.	15	M81X15GV4L	100V		B-244	MX8G□B	MX8G□M	–	–	MX8G10XB
		M81X15GV4Y	200V		B-244					
	25	M81X25GV4L	100V		B-246					
		M81X25GV4Y	200V		B-246					
		M81X25GV4LG(A)	100V	✪	B-248					
		M81X25GV4DG(A)	110/115V	✪	B-248					
		M81X25GV4YG(A)	200V	✪	B-248					
		M81X25GV4GG(A)	220/230V	✪	B-248					
90 mm sq.	40	M91X40GV4L	100V		B-250	MX9G□B	MX9G□M	–	MX9G□R	MX9G10XB
		M91X40GV4Y	200V		B-250					
		M91X40GV4LG(A)	100V	✪	B-252					
		M91X40GV4DG(A)	110/115V	✪	B-252					
		M91X40GV4YG(A)	200V	✪	B-252					
		M91X40GV4GG(A)	220/230V	✪	B-252					
	60	M91Z60GV4L	100V		B-254	MZ9G□B	–	MR9G□B	MZ9G□R	MZ9G10XB
		M91Z60GV4Y	200V		B-254					
		M91Z60GV4LG(A)	100V	✪	B-256					
		M91Z60GV4DG(A)	110/115V	✪	B-256					
		M91Z60GV4YG(A)	200V	✪	B-256					
		M91Z60GV4GG(A)	220/230V	✪	B-256					
	90	M91Z90GV4L	100V		B-258	MY9G□B		MP9G□B		
		M91Z90GV4Y	200V		B-258					
		M91Z90GV4LG(A)	100V	✪	B-260					
		M91Z90GV4DG(A)	110/115V	✪	B-260					
		M91Z90GV4YG(A)	200V	✪	B-260					
		M91Z90GV4GG(A)	220/230V	✪	B-260					

* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

* Refer to page B-380 for dimensions and permissible torque of high torque gear head.
Refer to page B-382 for dimensions and permissible torque of right-angle gear head.
Refer to page B-384 for dimensions of decimal gear head.

Model list of variable speed induction motor

Round shaft motor

✪ Motor compliant with overseas standards

Size	Output (W)	Leadwire type		
		Model number	Specifications	
60 mm sq.	3	**M61X3SV4LS**	100V	
	6	**M61X6SV4LS**	100V	
		M61X6SV4YS	200V	
		M61X6SV4LG(A)	100V	✪
		M61X6SV4DG(A)	110/115V	✪
		M61X6SV4YG(A)	200V	✪
		M61X6SV4GG(A)	220/230V	✪
70 mm sq.	10	**M71X10SV4LS**	100V	
		M71X10SV4YS	200V	
	15	**M71X15SV4LS**	100V	
		M71X15SV4YS	200V	
		M71X15SV4LG(A)	100V	✪
		M71X15SV4DG(A)	110/115V	✪
		M71X15SV4YG(A)	200V	✪
		M71X15SV4GG(A)	220/230V	✪
80 mm sq.	15	**M81X15SV4LS**	100V	
		M81X15SV4YS	200V	
	25	**M81X25SV4LS**	100V	
		M81X25SV4YS	200V	
		M81X25SV4LG(A)	100V	✪
		M81X25SV4DG(A)	110/115V	✪
		M81X25SV4YG(A)	200V	✪
		M81X25SV4GG(A)	220/230V	✪
90 mm sq.	40	**M91X40SV4LS**	100V	
		M91X40SV4YS	200V	
		M91X40SV4LG(A)	100V	✪
		M91X40SV4DG(A)	110/115V	✪
		M91X40SV4YG(A)	200V	✪
		M91X40SV4GG(A)	220/230V	✪
	60	**M91Z60SV4LS**	100V	
		M91Z60SV4YS	200V	
		M91Z60SV4LG(A)	100V	✪
		M91Z60SV4DG(A)	110/115V	✪
		M91Z60SV4YG(A)	200V	✪
		M91Z60SV4GG(A)	220/230V	✪
	90	**M91Z90SV4LS**	100V	
		M91Z90SV4YS	200V	
		M91Z90SV4LG(A)	100V	✪
		M91Z90SV4DG(A)	110/115V	✪
		M91Z90SV4YG(A)	200V	✪
		M91Z90SV4GG(A)	220/230V	✪

* The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft motor.
  Dimensional outline drawing → Page B-264.
* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
  The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Possible combination of speed controller and motor

Size	Output (W)	Motor		Voltage (V)	Speed controller			
		Certified	Part No.		MGSD type	EX type	SD48 type	EX48 type
60 mm sq.	3	-----	M61X3GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
	6	-----	M61X6GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M61X6GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
		✪	M61X6GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M61X6GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M61X6GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M61X6GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
70 mm sq.	10	-----	M71X10GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M71X10GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
	15	-----	M71X15GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M71X15GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
		✪	M71X15GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M71X15GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M71X15GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M71X15GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
80 mm sq.	15	-----	M81X15GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M81X15GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
	25	-----	M81X25GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M81X25GV4Y	200	MGSDB2 ★	DV1234	DVSD48BY	DVEX48BY
		✪	M81X25GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M81X25GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M81X25GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M81X25GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
90 mm sq.	40	-----	M91X40GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M91X40GV4Y	200	MGSDB2 ★	DV1234	DVSD48BY	DVEX48BY
		✪	M91X40GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M91X40GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M91X40GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M91X40GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
	60	-----	M91Z60GV4L	100	MGSDB1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M91Z60GV4Y	200	MGSDB2 ★	DV1234	DVSD48CY	DVEX48CY
		✪	M91Z60GV4LG(A)	100	MGSDB1 ★	-----	-----	-----
		✪	M91Z60GV4DG(A)	110/115	MGSDB1 ★	-----	-----	-----
		✪	M91Z60GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M91Z60GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
	90	-----	M91Z90GV4L	100	MGSDB1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M91Z90GV4Y	200	MGSDB2 ★	DV1234	DVSD48CY	DVEX48CY
		✪	M91Z90GV4LG(A)	100	MGSDB1 ★	-----	-----	-----
		✪	M91Z90GV4DG(A)	110/115	MGSDB1 ★	-----	-----	-----
		✪	M91Z90GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M91Z90GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----

* 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.

✪ **Conforming to international standards :**

★ **MGSD speed controllers are compliant with and .**

* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
  The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Variable speed induction motor (leadwire)

60 mm sq. 3 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M61X3GV4L	4	3	100	50	Cont.	90 to 1400	0.018 (0.18)	0.018 (0.18)	0.21	0.026 (0.26)	2 (200V)
					60		90 to 1700	0.018 (0.18)	0.018 (0.18)	0.21	0.026 (0.26)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

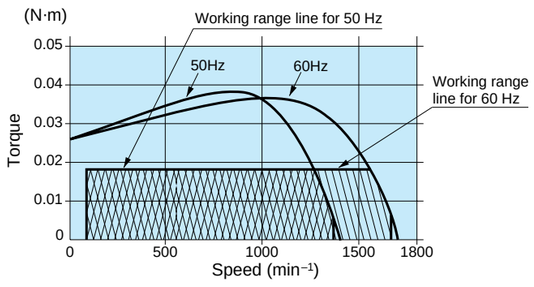
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.044 (0.4)	0.052 (0.5)	0.073 (0.7)	0.088 (0.8)	0.11 (1.1)	0.13 (1.3)	0.14 (1.4)	0.18 (1.8)	0.22 (2.2)	0.26 (2.6)	0.29 (2.9)	0.365 (3.7)
		60Hz	0.044 (0.4)	0.052 (0.5)	0.073 (0.7)	0.088 (0.8)	0.11 (1.1)	0.13 (1.3)	0.14 (1.4)	0.18 (1.8)	0.22 (2.2)	0.26 (2.6)	0.29 (2.9)	0.365 (3.7)
	90min⁻¹		0.044 (0.4)	0.052 (0.5)	0.073 (0.7)	0.088 (0.8)	0.11 (1.1)	0.13 (1.3)	0.14 (1.4)	0.18 (1.8)	0.22 (2.2)	0.26 (2.6)	0.29 (2.9)	0.365 (3.7)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.39 (3.9)	0.47 (4.7)	0.65 (6.6)	0.78 (7.9)	0.98 (10)	1.18 (12)	1.31 (13)	1.57 (16)	1.96 (20)	2.35 (23)	MX6G10XB
		60Hz	0.39 (3.9)	0.47 (4.7)	0.65 (6.6)	0.78 (7.9)	0.98 (10)	1.18 (12)	1.38 (13)	1.57 (16)	1.96 (20)	2.35 (23)	
	90min⁻¹		0.39 (3.9)	0.47 (4.7)	0.65 (6.6)	0.78 (7.9)	0.98 (10)	1.18 (12)	1.38 (13)	1.57 (16)	1.96 (20)	2.35 (23)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

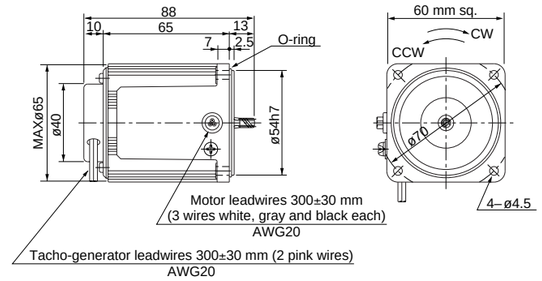
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

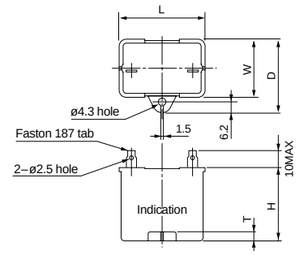
M61X3GV4L 4P 3 W 100 V

Mass	Helical gear	Module	Number of teeth
0.60 kg		0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



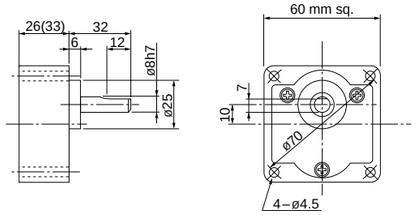
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M61X3GV4L	M0PC2M20	39.5	16	26.5	30.5	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

(Note) 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 induction motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
□60	M61X6GV4L	4	6	100	50	Cont.	90 to 1400	0.032 (0.32)	0.025 (0.25)	0.30	0.037 (0.37)	2.5 (200V)
					60		90 to 1700	0.032 (0.32)	0.025 (0.25)	0.30	0.037 (0.37)	
	M61X6GV4Y	4	6	200	50	Cont.	90 to 1400	0.032 (0.32)	0.025 (0.25)	0.15	0.037 (0.37)	0.6 (400V)
					60		90 to 1700	0.032 (0.32)	0.025 (0.25)	0.15	0.037 (0.37)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

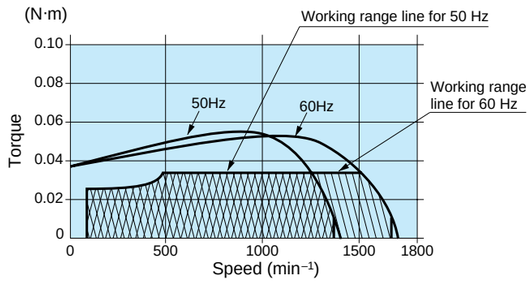
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA / MX6G□B (ball bearing) MX6G□MA / MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.077 (0.7)	0.093 (0.9)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.25 (2.5)	0.32 (3.2)	0.38 (3.8)	0.46 (4.6)	0.51 (5.2)	0.64 (6.5)
		60Hz	0.077 (0.7)	0.093 (0.9)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.25 (2.5)	0.32 (3.2)	0.38 (3.8)	0.46 (4.6)	0.51 (5.2)	0.64 (6.5)
	90min⁻¹		0.06 (0.6)	0.07 (0.7)	0.10 (1.0)	0.12 (1.2)	0.15 (1.5)	0.18 (1.8)	0.20 (2.0)	0.25 (2.5)	0.30 (3.0)	0.36 (3.6)	0.40 (4.0)	0.50 (5.1)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA / MX6G□B (ball bearing) MX6G□MA / MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.69 (7.0)	0.83 (8.4)	1.16 (11)	1.39 (14)	1.74 (17)	2.09 (20)	2.33 (23)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
		60Hz	0.69 (7.0)	0.83 (8.4)	1.16 (11)	1.39 (14)	1.74 (17)	2.09 (20)	2.33 (23)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min⁻¹		0.54 (5.5)	0.65 (6.6)	0.90 (9.1)	1.08 (11)	1.35 (13)	1.62 (16)	1.81 (18)	2.17 (22)	2.45 (25)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

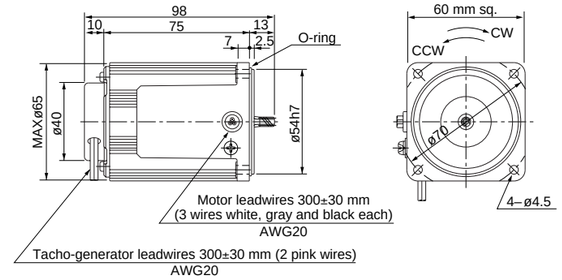
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

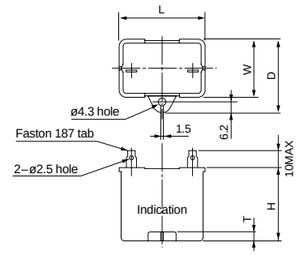
M61X6GV4L 4P 6 W 100 V
M61X6GV4Y 4P 6 W 200 V

Mass	Helical gear	Module	Number of teeth
0.71 kg		0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



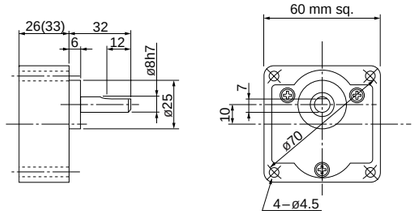
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M61X6GV4L	M0PC2.5M20	39.5	16	26.5	30.5	4	M0PC3917
M61X6GV4Y	M0PC0.6M40	39.5	16.2	27	27	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

(Note) 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 induction motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M61X6GV4LG M61X6GV4LGA	4	6	100	50	Cont.	90 to 1400	0.044 (0.45)	0.034 (0.35)	0.32	0.049 (0.50)	3.5 (250V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.33	0.049 (0.50)	
	M61X6GV4DG M61X6GV4DGA	4	6	110	60	Cont.	90 to 1700	0.034 (0.35)	0.034 (0.35)	0.33	0.044 (0.45)	2.5 (250V)
				115	60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.34	0.049 (0.50)	
	M61X6GV4YG M61X6GV4YGA	4	6	200	50	Cont.	90 to 1400	0.044 (0.45)	0.034 (0.35)	0.14	0.049 (0.50)	0.8 (450V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.14	0.049 (0.50)	
	M61X6GV4GG M61X6GV4GGA	4	6	220	50	Cont.	90 to 1400	0.044 (0.45)	0.034 (0.35)	0.14	0.042 (0.43)	0.6 (450V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.14	0.042 (0.43)	
				230	50		90 to 1400	0.044 (0.45)	0.034 (0.35)	0.15	0.048 (0.49)	
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.15	0.049 (0.50)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

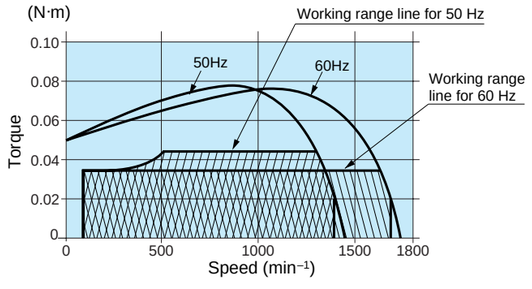
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.11 (1.1)	0.13 (1.3)	0.18 (1.8)	0.21 (2.2)	0.27 (2.7)	0.32 (3.3)	0.36 (3.6)	0.45 (4.6)	0.53 (5.5)	0.64 (6.6)	0.71 (7.3)	0.89 (9.1)
		60Hz	0.083 (0.9)	0.10 (1.0)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.25 (2.6)	0.28 (2.8)	0.34 (3.5)	0.41 (4.3)	0.50 (5.1)	0.55 (5.7)	0.69 (7.1)
	90min⁻¹	50Hz	0.08 (0.9)	0.10 (1.0)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.25 (2.6)	0.28 (2.8)	0.34 (3.5)	0.41 (4.3)	0.50 (5.1)	0.55 (5.7)	0.69 (7.1)
		60Hz	0.083 (0.9)	0.10 (1.0)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.25 (2.6)	0.28 (2.8)	0.34 (3.5)	0.41 (4.3)	0.50 (5.1)	0.55 (5.7)	0.69 (7.1)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.96 (9.8)	1.15 (12)	1.60 (16)	1.92 (20)	2.41 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
		60Hz	0.74 (7.7)	0.89 (9.2)	1.24 (13)	1.49 (15)	1.86 (19)	2.23 (23)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min⁻¹	50Hz	0.74 (7.7)	0.89 (9.2)	1.24 (13)	1.49 (15)	1.86 (19)	2.23 (23)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
		60Hz	0.74 (7.7)	0.89 (9.2)	1.24 (13)	1.49 (15)	1.86 (19)	2.23 (23)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

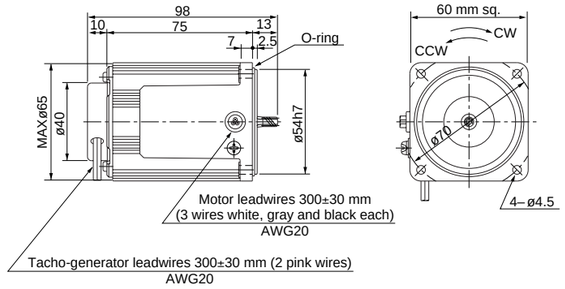
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/3, Unit: mm

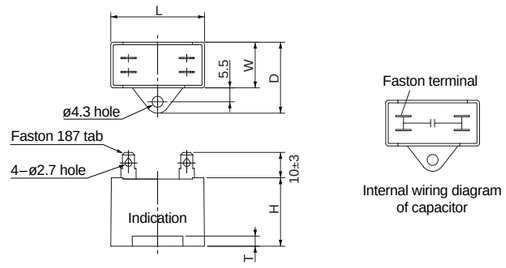
M61X6GV4LG(A) 4P 6 W 100 V
M61X6GV4DG(A) 4P 6 W 110 V / 115 V
M61X6GV4YG(A) 4P 6 W 200 V
M61X6GV4GG(A) 4P 6 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
0.71 kg	gear	0.5	6



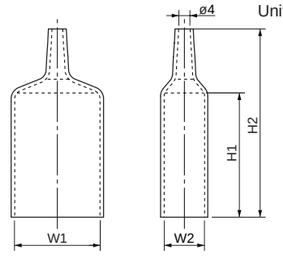
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

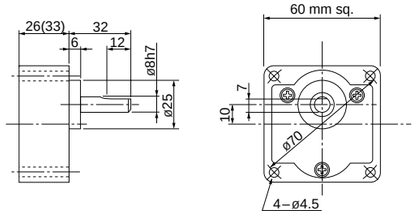
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M61X6GV4LG(A)	M0PC3.5M25G	31	17	27	27	4	M0PC3117G	31	17	50	73
M61X6GV4DG(A)	M0PC2.5M25G	31	17	27	27	4	M0PC3117G	31	17	50	73
M61X6GV4YG(A)	M0PC0.8M45G	31	17	27	27	4	M0PC3117G	31	17	50	73
M61X6GV4GG(A)	M0PC0.6M45G	31	14.5	24.5	23.5	4	M0PC3114G	31	14.5	45	68

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Gear head combination B-262 | Round shaft motor dimensions B-264 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

70 mm sq. 10 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M71X10GV4L	4	10	100	50	Cont.	90 to 1400	0.059 (0.60)	0.027 (0.27)	0.40	0.064 (0.65)	4 (200V)
					60		90 to 1700	0.059 (0.60)	0.027 (0.27)	0.40	0.066 (0.67)	
	M71X10GV4Y	4	10	200	50	Cont.	90 to 1400	0.059 (0.60)	0.027 (0.27)	0.20	0.064 (0.65)	1 (400V)
					60		90 to 1700	0.059 (0.60)	0.027 (0.27)	0.20	0.066 (0.67)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

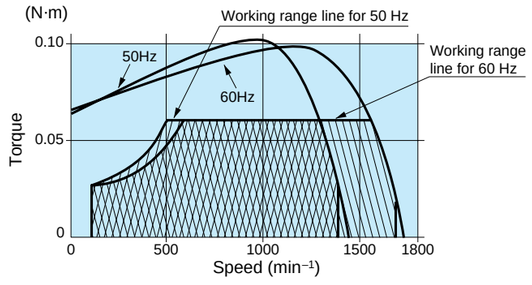
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	0.14 (1.4)	0.17 (1.7)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.43 (4.3)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.86 (8.7)	0.95 (9.6)	1.19 (12)
		60Hz	0.14 (1.4)	0.17 (1.7)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.43 (4.3)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.86 (8.7)	0.95 (9.6)	1.19 (12)
	90min⁻¹		0.065 (0.6)	0.078 (0.7)	0.11 (1.1)	0.31 (3.1)	0.16 (1.6)	0.19 (1.9)	0.21 (2.1)	0.27 (2.7)	0.32 (3.2)	0.39 (3.9)	0.43 (4.3)	0.54 (5.5)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	1.29 (13)	1.54 (15)	2.15 (21)	2.58 (26)	3.22 (32)	3.87 (39)	4.30 (43)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.29 (13)	1.54 (15)	2.15 (21)	2.58 (26)	3.22 (32)	3.87 (39)	4.30 (43)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min⁻¹		0.59 (6.0)	0.70 (7.1)	0.98 (10)	1.18 (12)	1.47 (15)	1.77 (18)	1.97 (20)	2.36 (24)	2.95 (30)	3.54 (36)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

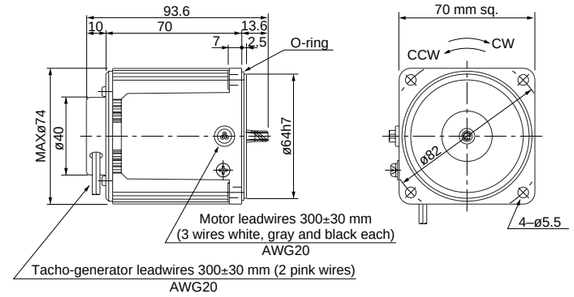
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

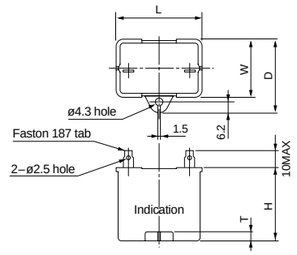
M71X10GV4L 4P 10 W 100 V
M71X10GV4Y 4P 10 W 200 V

Mass	Helical gear	Module	Number of teeth
0.88 kg		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



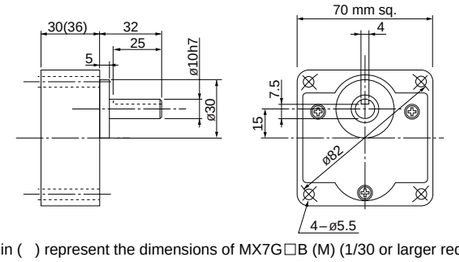
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M71X10GV4L	M0PC4M20	39.5	16	26.5	30.5	4	M0PC3917
M71X10GV4Y	M0PC1M40	39.5	16.2	27	27	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

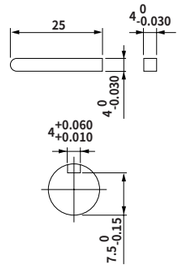


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed induction motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M71X15GV4L	4	15	100	50	Cont.	90 to 1400	0.089 (0.90)	0.029 (0.29)	0.60	0.068 (0.69)	5 (200V)
					60		90 to 1700	0.089 (0.90)	0.029 (0.29)	0.56	0.068 (0.69)	
	M71X15GV4Y	4	15	200	50	Cont.	90 to 1400	0.089 (0.90)	0.029 (0.29)	0.30	0.068 (0.69)	1.3 (400V)
					60		90 to 1700	0.089 (0.90)	0.029 (0.29)	0.28	0.068 (0.69)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

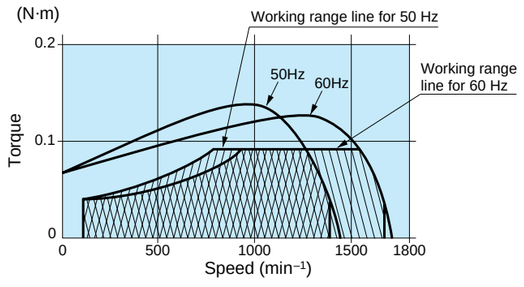
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA / MX7G□B (ball bearing) MX7G□MA / MX7G□M (metal bearing)	1200min⁻¹	50Hz	0.21 (2.1)	0.25 (2.5)	0.36 (3.6)	0.43 (4.3)	0.54 (5.5)	0.64 (6.5)	0.72 (7.3)	0.86 (8.7)	1.08 (11)	1.29 (13)	1.44 (14)	1.80 (18)
		60Hz	0.21 (2.1)	0.25 (2.5)	0.36 (3.6)	0.43 (4.3)	0.54 (5.5)	0.64 (6.5)	0.72 (7.3)	0.86 (8.7)	1.08 (11)	1.29 (13)	1.44 (14)	1.88 (19)
	90min⁻¹		0.070 (0.7)	0.084 (0.8)	0.11 (1.1)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.42 (4.2)	0.47 (4.7)	0.58 (5.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA / MX7G□B (ball bearing) MX7G□MA / MX7G□M (metal bearing)	1200min⁻¹	50Hz	1.92 (19)	2.30 (23)	3.20 (32)	3.84 (39)	4.80 (48)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.92 (19)	2.30 (23)	3.20 (32)	3.84 (39)	4.80 (48)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min⁻¹		0.63 (6.4)	0.75 (7.6)	1.05 (10)	1.26 (12)	1.58 (16)	1.89 (19)	2.11 (21)	2.53 (25)	3.16 (32)	3.79 (38)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

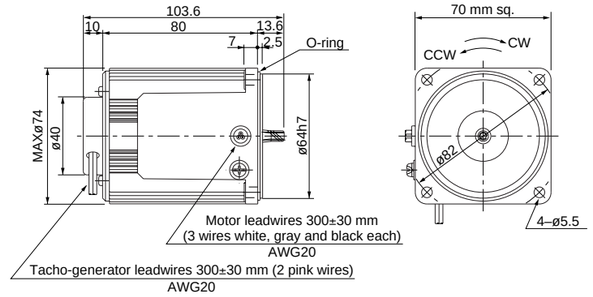
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

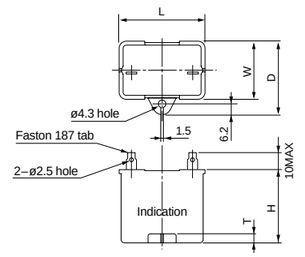
M71X15GV4L 4P 15 W 100 V
M71X15GV4Y 4P 15 W 200 V

Mass	Helical gear	Module	Number of teeth
1.1 kg		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



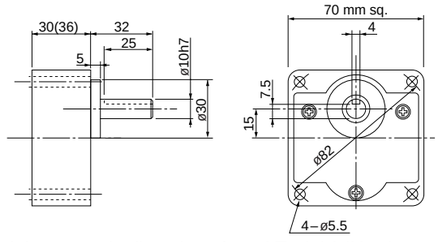
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M71X15GV4L	M0PC5M20	39.5	16	26.5	30.5	4	M0PC3917
M71X15GV4Y	M0PC1.3M40	39.5	18.3	29	29	4	M0PC3922

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

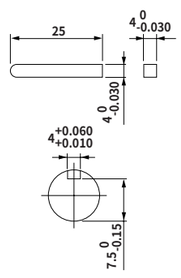


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed induction motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M71X15GV4LG M71X15GV4LGA	4	15	100	50	Cont.	90 to 1400	0.11 (1.1)	0.049 (0.50)	0.57	0.080 (0.82)	5.5 (250V)
					60		90 to 1700	0.088 (0.90)	0.049 (0.50)	0.56	0.080 (0.82)	
	M71X15GV4DG M71X15GV4DGA	4	15	110	60	Cont.	90 to 1700	0.088 (0.90)	0.049 (0.50)	0.58	0.080 (0.82)	4.5 (250V)
				115	60		90 to 1700	0.088 (0.90)	0.049 (0.50)	0.61	0.088 (0.90)	
	M71X15GV4YG M71X15GV4YGA	4	15	200	50	Cont.	90 to 1400	0.11 (1.1)	0.049 (0.50)	0.24	0.080 (0.82)	1.3 (450V)
					60		90 to 1700	0.088 (0.90)	0.049 (0.50)	0.24	0.080 (0.82)	
	M71X15GV4GG M71X15GV4GGA	4	15	220	50	Cont.	90 to 1400	0.11 (1.1)	0.049 (0.50)	0.27	0.080 (0.82)	1.2 (450V)
					60		90 to 1700	0.088 (0.90)	0.049 (0.50)	0.26	0.080 (0.82)	
				230	50		90 to 1400	0.11 (1.1)	0.049 (0.50)	0.28	0.10 (1.0)	
					60		90 to 1700	0.088 (0.90)	0.049 (0.50)	0.27	0.10 (1.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

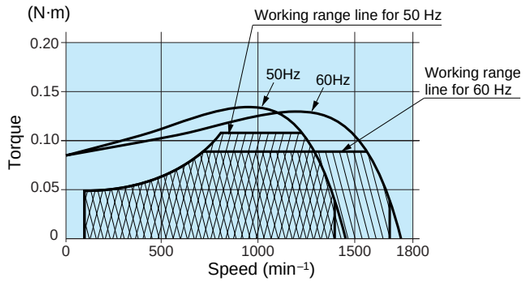
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	0.27 (2.7)	0.32 (3.2)	0.45 (4.5)	0.53 (5.3)	0.67 (6.7)	0.80 (8.0)	0.89 (8.9)	1.11 (11)	1.34 (13)	1.60 (16)	1.78 (18)	2.23 (22)
		60Hz	0.21 (2.2)	0.26 (2.6)	0.36 (3.6)	0.43 (4.4)	0.53 (5.5)	0.64 (6.6)	0.71 (7.3)	0.89 (9.1)	1.07 (11)	1.28 (13)	1.43 (15)	1.78 (18)
	90min⁻¹		0.12 (1.2)	0.14 (15)	0.20 (2.0)	0.24 (2.4)	0.30 (3.0)	0.36 (3.6)	0.40 (4.1)	0.50 (5.1)	0.60 (6.1)	0.71 (7.3)	0.79 (8.1)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	2.41 (24)	2.89 (29)	4.01 (40)	4.81 (48)	4.9 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.92 (20)	2.31 (24)	3.21 (33)	3.85 (39)	4.81 (49)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min⁻¹		1.07 (11)	1.29 (13)	1.79 (18)	2.14 (22)	2.68 (27)	3.21 (33)	3.57 (36)	4.29 (44)	4.9 (50)	4.9 (50)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

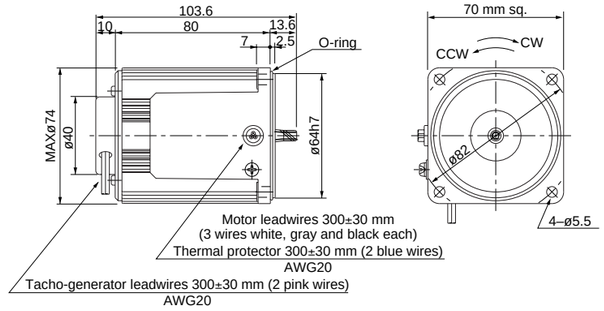
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

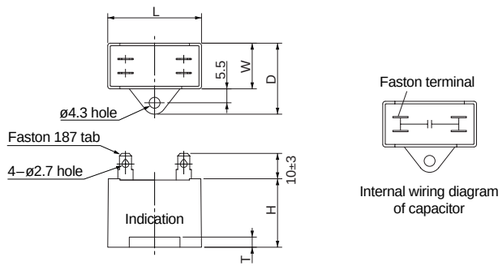
M71X15GV4LG(A) 4P 15 W 100 V
M71X15GV4DG(A) 4P 15 W 110 V / 115 V
M71X15GV4YG(A) 4P 15 W 200 V
M71X15GV4GG(A) 4P 15 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
1.1 kg	gear	0.5	7



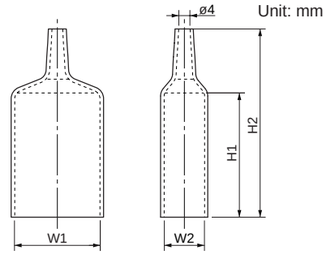
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

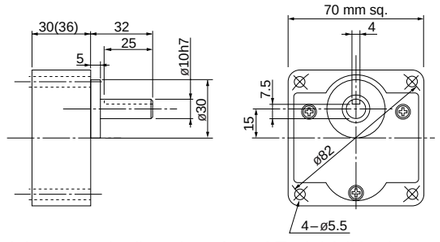
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M71X15GV4LG(A)	M0PC5.5M25G	38	21	31	31	4	M0PC3821G	38	21	55	78
M71X15GV4DG(A)	M0PC4.5M25G	37	18	28	27	4	M0PC3718G	37	18	50	73
M71X15GV4YG(A)	M0PC1.3M45G	38	19	29	29	4	M0PC3819G	38	19	50	73
M71X15GV4GG(A)	M0PC1.2M45G	37	18	28	27	4	M0PC3718G	37	18	50	73

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

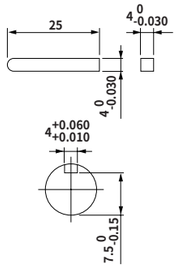


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed induction motor (leadwire)

80 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X15GV4L	4	15	100	50	Cont.	90 to 1400	0.12 (1.2)	0.039 (0.39)	0.72	0.12 (1.2)	6 (200V)
					60		90 to 1700	0.12 (1.2)	0.039 (0.39)	0.69	0.12 (1.2)	
	M81X15GV4Y	4	15	200	50	Cont.	90 to 1400	0.12 (1.2)	0.039 (0.39)	0.36	0.12 (1.2)	1.5 (400V)
					60		90 to 1700	0.12 (1.2)	0.039 (0.39)	0.35	0.12 (1.2)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

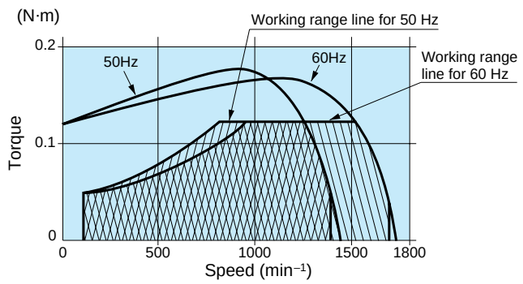
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	0.29 (2.9)	0.34 (3.4)	0.48 (4.8)	0.58 (5.9)	0.72 (7.3)	0.87 (8.8)	0.97 (9.8)	1.21 (12)	1.45 (14)	1.74 (17)	1.94 (19)	2.43 (24)
		60Hz	0.29 (2.9)	0.34 (3.4)	0.48 (4.8)	0.58 (5.9)	0.72 (7.3)	0.87 (8.8)	0.97 (9.8)	1.21 (12)	1.45 (14)	1.74 (17)	1.94 (19)	2.43 (24)
	90min⁻¹		0.094 (0.9)	0.11 (1.1)	0.15 (1.5)	0.18 (1.8)	0.23 (2.3)	0.28 (2.8)	0.31 (3.1)	0.39 (3.9)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.78 (7.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	2.62 (26)	3.14 (32)	4.37 (44)	5.24 (53)	6.55 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	2.62 (26)	3.14 (32)	4.37 (44)	5.24 (53)	6.55 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min⁻¹		0.84 (8.5)	1.01 (10)	1.41 (14)	1.69 (17)	2.12 (21)	2.54 (25)	2.83 (28)	3.39 (34)	4.24 (43)	5.09 (51)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



Connection diagram

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

* Working range line

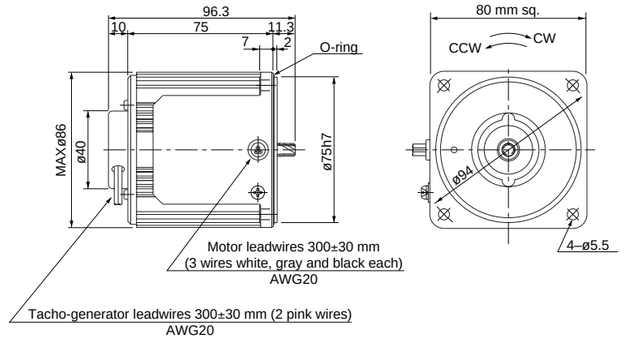
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

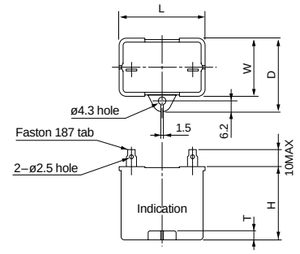
M81X15GV4L 4P 15 W 100 V
M81X15GV4Y 4P 15 W 200 V

Mass	Helical gear	Module	Number of teeth
1.2 kg		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



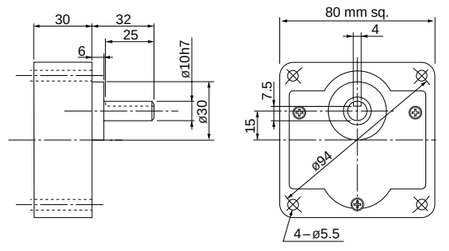
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X15GV4L	M0PC6M20	39.5	17.5	28	30.5	4	M0PC3917
M81X15GV4Y	M0PC1.5M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

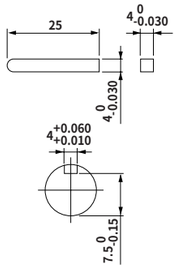
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

* 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 induction motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X25GV4L	4	25	100	50	Cont.	90 to 1400	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	8 (200V)
					60		90 to 1700	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	
	M81X25GV4Y	4	25	200	50	Cont.	90 to 1400	0.14 (1.4)	0.039 (0.39)	0.5	0.16 (1.6)	2 (400V)
					60		90 to 1700	0.14 (1.4)	0.039 (0.39)	0.5	0.16 (1.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

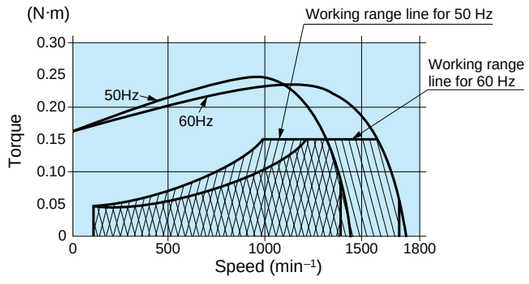
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed / Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
		60Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
	90min⁻¹		0.094 (0.9)	0.11 (1.1)	0.15 (1.5)	0.18 (1.8)	0.23 (2.3)	0.28 (2.8)	0.31 (3.1)	0.39 (3.9)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.78 (7.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed / Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min⁻¹		0.84 (8.5)	1.01 (10)	1.41 (14)	1.69 (17)	2.12 (21)	2.54 (25)	2.83 (28)	3.39 (34)	4.24 (43)	5.09 (51)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



Connection diagram

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

* Working range line

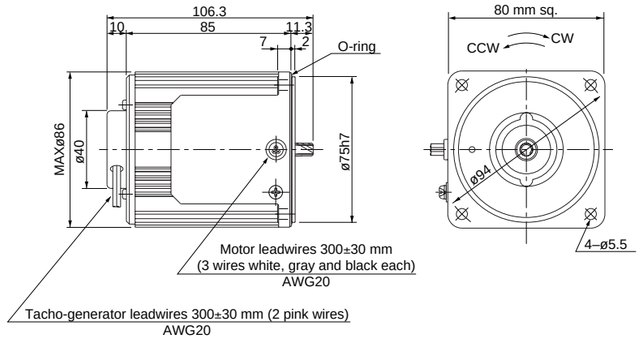
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

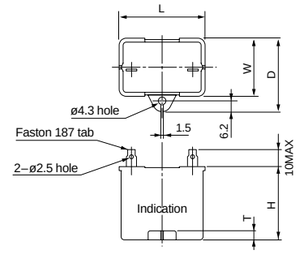
M81X25GV4L 4P 25 W 100 V
M81X25GV4Y 4P 25 W 200 V

Mass	Helical gear	Module	Number of teeth
1.5 kg		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



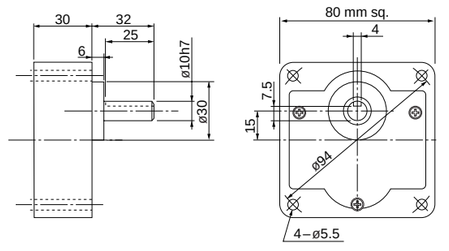
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X25GV4L	M0PC8M20	39.5	22	32.5	30.5	4	M0PC3922
M81X25GV4Y	M0PC2M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

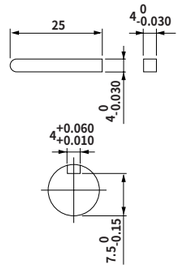
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

* 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 induction motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X25GV4LG M81X25GV4LGA	4	25	100	50	Cont.	90 to 1400	0.19 (1.9)	0.049 (0.50)	1.1	0.13 (1.3)	8 (250V)
					60		90 to 1700	0.15 (1.5)	0.049 (0.50)	0.98	0.13 (1.3)	
	M81X25GV4DG M81X25GV4DGA	4	25	110	60	Cont.	90 to 1700	0.15 (1.5)	0.049 (0.50)	1.1	0.13 (1.3)	6 (250V)
				115	60		90 to 1700	0.15 (1.5)	0.049 (0.50)	1.1	0.13 (1.3)	
	M81X25GV4YG M81X25GV4YGA	4	25	200	50	Cont.	90 to 1400	0.19 (1.9)	0.049 (0.50)	0.43	0.13 (1.3)	2.1 (450V)
					60		90 to 1700	0.15 (1.5)	0.049 (0.50)	0.42	0.13 (1.3)	
	M81X25GV4GG M81X25GV4GGA	4	25	220	50	Cont.	90 to 1400	0.19 (1.9)	0.049 (0.50)	0.46	0.13 (1.3)	1.5 (450V)
					60		90 to 1700	0.15 (1.5)	0.049 (0.50)	0.44	0.13 (1.3)	
				230	50		90 to 1400	0.19 (1.9)	0.049 (0.50)	0.48	0.13 (1.3)	
					60		90 to 1700	0.15 (1.5)	0.049 (0.50)	0.45	0.13 (1.3)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

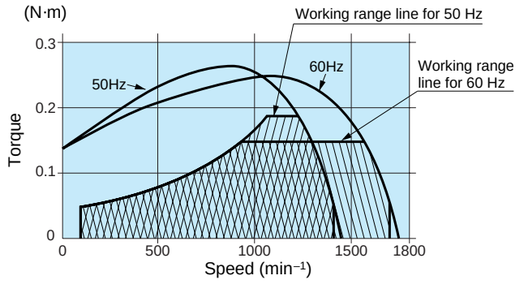
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	0.46 (4.6)	0.55 (5.5)	0.77 (7.7)	0.92 (9.2)	1.15 (12)	1.39 (14)	1.54 (15)	1.92 (19)	2.31 (23)	2.77 (28)	3.08 (31)	3.85 (38)
		60Hz	0.36 (3.6)	0.44 (4.4)	0.61 (6.1)	0.73 (7.3)	0.91 (9.1)	1.09 (11)	1.22 (12)	1.52 (15)	1.82 (18)	2.19 (22)	2.43 (24)	3.04 (30)
	90min^{-1}		0.12 (1.2)	0.14 (1.5)	0.20 (2.0)	0.24 (2.4)	0.30 (3.0)	0.36 (3.6)	0.40 (4.1)	0.50 (5.1)	0.60 (6.1)	0.71 (7.3)	0.79 (8.1)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	4.16 (42)	4.99 (50)	6.93 (69)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.28 (33)	3.94 (39)	5.47 (55)	6.56 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min^{-1}		1.07 (11)	1.29 (13)	1.79 (18)	2.14 (22)	2.68 (27)	3.21 (33)	3.57 (36)	4.29 (44)	5.36 (55)	6.43 (66)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

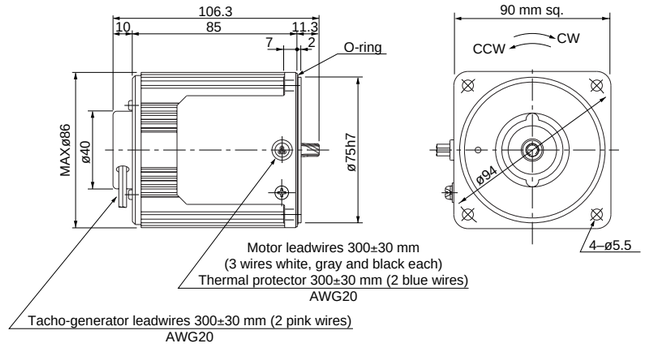
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/3, Unit: mm

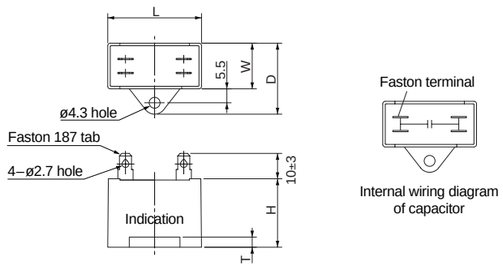
M81X25GV4LG(A) 4P 25 W 100 V
M81X25GV4DG(A) 4P 25 W 110 V / 115 V
M81X25GV4YG(A) 4P 25 W 200 V
M81X25GV4GG(A) 4P 25 W 220 V / 230 V

Mass	Helical gear	Module	Number of teeth
1.5 kg		0.5	9



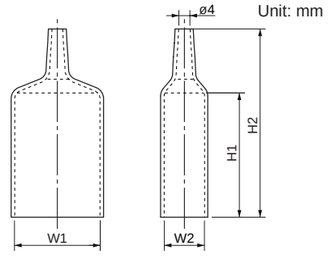
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

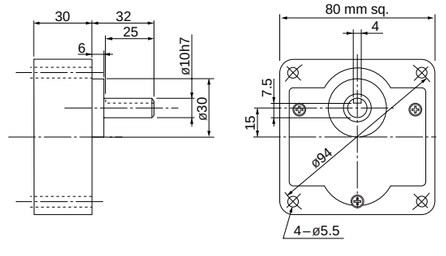
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M81X25GV4LG(A)	M0PC8M25G	48	21	31	31	4	M0PC4821G	48	21	55	78
M81X25GV4DG(A)	M0PC6M25G	38	21	31	31	4	M0PC3821G	38	21	55	78
M81X25GV4YG(A)	M0PC2.1M45G	48	21	31	31	4	M0PC4821G	48	21	55	78
M81X25GV4GG(A)	M0PC1.5M45G	38	21	31	31	4	M0PC3821G	38	21	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

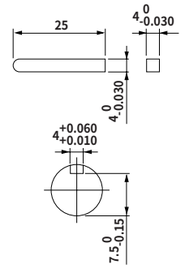
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-262 | Round shaft motor dimensions B-264 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91X40GV4L	4	40	100	50	Cont.	90 to 1400	0.30 (3.0)	0.049 (0.5)	1.6	0.25 (2.5)	12 (200V)
					60		90 to 1700	0.24 (2.4)	0.049 (0.5)	1.6	0.25 (2.5)	
	M91X40GV4Y	4	40	200	50	Cont.	90 to 1400	0.30 (3.0)	0.049 (0.5)	0.8	0.25 (2.5)	3 (400V)
					60		90 to 1700	0.24 (2.4)	0.049 (0.5)	0.8	0.25 (2.5)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.

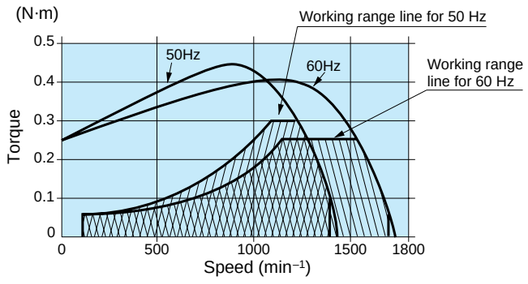
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	0.72 (7.3)	0.87 (8.8)	1.21 (12)	1.45 (14)	1.82 (18)	2.18 (22)	2.43 (24)	3.03 (30)	3.64 (37)	4.37 (44)	4.86 (49)	6.07 (61)
		60Hz	0.58 (5.9)	0.69 (7.0)	0.97 (9.8)	1.16 (11)	1.45 (14)	1.74 (17)	1.92 (19)	2.42 (24)	2.91 (29)	3.49 (35)	3.88 (39)	4.85 (49)
	90min⁻¹		0.11 (1.1)	0.14 (1.4)	0.19 (1.9)	0.23 (2.3)	0.29 (2.9)	0.35 (3.5)	0.39 (3.9)	0.49 (5.0)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	6.54 (66)	7.84 (80)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	MX9G10XB
		60Hz	5.23 (53)	6.26 (63)	8.70 (88)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	
	90min⁻¹		1.06 (10)	1.28 (13)	1.78 (18)	2.13 (21)	2.67 (27)	3.20 (32)	3.56 (36)	4.27 (43)	5.34 (54)	6.40 (65)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

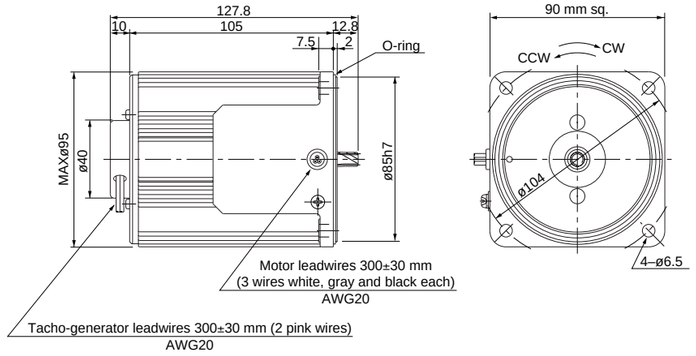
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/3, Unit: mm

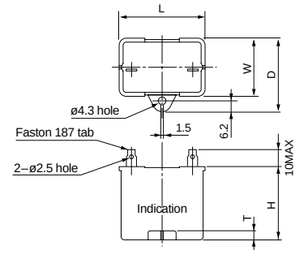
M91X40GV4L 4P 40 W 100 V
M91X40GV4Y 4P 40 W 200 V

Mass	Helical gear	Module	Number of teeth
2.4 kg		0.55	9



Capacitor (dimensions) [attachment]

Unit: mm



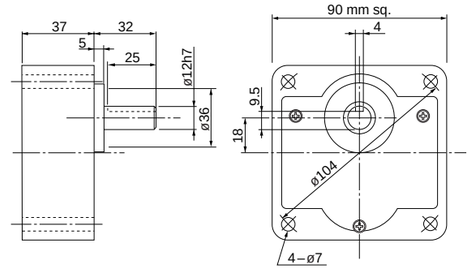
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91X40GV4L	M0PC12M20	39.5	26.7	37	32	4	M0PC3926
M91X40GV4Y	M0PC3M40	49.7	24	34.5	34.5	4	M0PC5026

Gear head (dimensions)

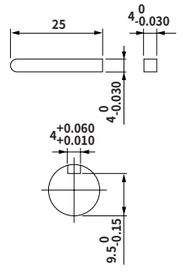
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-263 | Round shaft motor dimensions B-265 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91X40GV4LG M91X40GV4LGA	4	40	100	50	Cont.	90 to 1400	0.30 (3.1)	0.078 (0.80)	1.7	0.23 (2.3)	12 (250V)
					60		90 to 1700	0.24 (2.4)	0.078 (0.80)	1.5	0.23 (2.3)	
	M91X40GV4DG M91X40GV4DGA	4	40	110	60	Cont.	90 to 1700	0.24 (2.4)	0.078 (0.80)	1.7	0.23 (2.3)	10 (250V)
				115	60		90 to 1700	0.24 (2.4)	0.078 (0.80)	1.8	0.25 (2.5)	
	M91X40GV4YG M91X40GV4YGA	4	40	200	50	Cont.	90 to 1400	0.30 (3.1)	0.078 (0.80)	0.64	0.23 (2.3)	3 (450V)
					60		90 to 1700	0.24 (2.4)	0.078 (0.80)	0.62	0.23 (2.3)	
	M91X40GV4GG M91X40GV4GGA	4	40	220	50	Cont.	90 to 1400	0.30 (3.1)	0.078 (0.80)	0.69	0.23 (2.3)	2.5 (450V)
					60		90 to 1700	0.24 (2.4)	0.078 (0.80)	0.65	0.23 (2.3)	
				230	50		90 to 1400	0.30 (3.1)	0.078 (0.80)	0.72	0.25 (2.5)	
					60		90 to 1700	0.24 (2.4)	0.078 (0.80)	0.68	0.25 (2.5)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

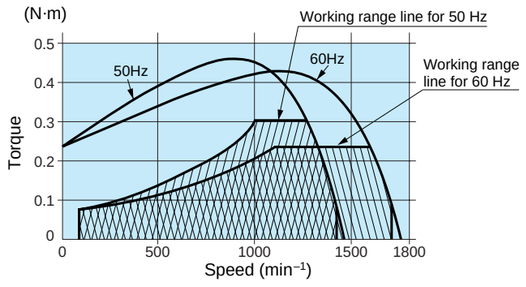
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	0.73 (7.5)	0.87 (9.0)	1.22 (13)	1.46 (15)	1.82 (19)	2.19 (23)	2.43 (25)	3.04 (31)	3.65 (38)	4.37 (45)	4.86 (50)	6.08 (63)
		60Hz	0.58 (5.8)	0.70 (7.0)	0.97 (9.7)	1.17 (12)	1.46 (15)	1.75 (17)	1.94 (19)	2.43 (24)	2.92 (29)	3.50 (35)	3.89 (39)	4.86 (49)
	90min⁻¹		0.19 (1.9)	0.23 (2.3)	0.32 (3.2)	0.38 (3.9)	0.47 (4.9)	0.57 (5.8)	0.63 (6.5)	0.79 (8.1)	0.95 (9.7)	1.14 (12)	1.26 (13)	1.58 (16)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	6.56 (68)	7.87 (81)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	MX9G10XB
		60Hz	5.25 (52)	6.30 (63)	8.75 (87)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	
	90min⁻¹		1.71 (17)	2.05 (21)	2.84 (29)	3.41 (35)	4.26 (44)	5.12 (52)	5.69 (58)	6.82 (70)	8.53 (87)	9.80 (100)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

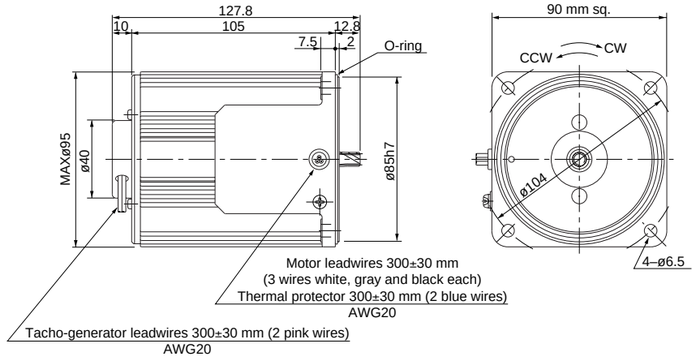
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/3, Unit: mm

M91X40GV4LG(A) 4P 40 W 100 V
M91X40GV4DG(A) 4P 40 W 110 V / 115 V
M91X40GV4YG(A) 4P 40 W 200 V
M91X40GV4GG(A) 4P 40 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
2.4 kg	gear	0.55	9



Capacitor (dimensions) [attachment]

Unit: mm

Capacitor cap (dimensions) [attachment]

Unit: mm

• Capacitor dimension list (mm)

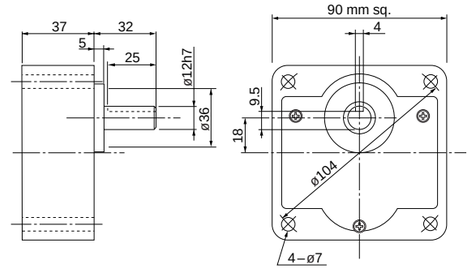
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91X40GV4LG(A)	M0PC12M25G	58	22	32	35	4	M0PC5822G	58	22	55	78
M91X40GV4DG(A)	M0PC10M25G	58	21	31	31	4	M0PC5821G	58	21	55	78
M91X40GV4YG(A)	M0PC3M45G	58	21	31	31	4	M0PC4821G	48	21	55	78
M91X40GV4GG(A)	M0PC2.5M45G	48	21	31	31	4	M0PC4821G	48	21	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

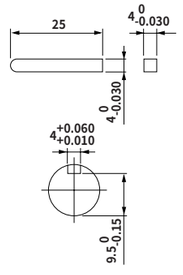
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-263 | Round shaft motor dimensions B-265 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z60GV4L	4	60	100	50	Cont.	90 to 1400	0.43 (4.3)	0.078 (0.79)	2.3	0.46 (4.6)	20 (200V)
					60		90 to 1700	0.36 (3.6)	0.078 (0.79)	2.4	0.46 (4.6)	
	M91Z60GV4Y	4	60	200	50	Cont.	90 to 1400	0.43 (4.3)	0.078 (0.79)	1.2	0.46 (4.6)	5 (400V)
					60		90 to 1700	0.36 (3.6)	0.078 (0.79)	1.2	0.46 (4.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.

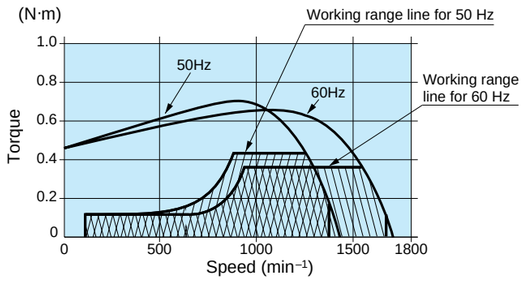
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	0.98 (10)	1.17 (11)	1.57 (16)	1.87 (19)	2.35 (23)	2.80 (28)	3.14 (32)	3.92 (40)	4.70 (47)	5.60 (57)	6.27 (63)	7.55 (77)	9.01 (91)
		60Hz	0.82 (8.3)	0.98 (10)	1.31 (13)	1.57 (16)	1.96 (20)	2.35 (23)	2.62 (26)	3.28 (33)	3.92 (40)	4.70 (47)	5.29 (53)	6.32 (64)	7.55 (77)
	90min^{-1}		0.18 (1.8)	0.22 (2.2)	0.31 (3.1)	0.37 (3.7)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.70 (7.1)	0.84 (8.5)	1.00 (10)	1.12 (11)	1.40 (14)	1.68 (17)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed	Reduction ratio	36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	10.8 (110)	15.2 (155)	18.1 (184)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	9.11 (92)	12.7 (129)	15.2 (155)	19.0 (193)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		1.81 (18)	2.50 (25)	3.00 (30)	3.75 (38)	4.50 (45)	5.00 (51)	6.00 (61)	7.50 (76)	9.00 (91)	10.0 (102)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

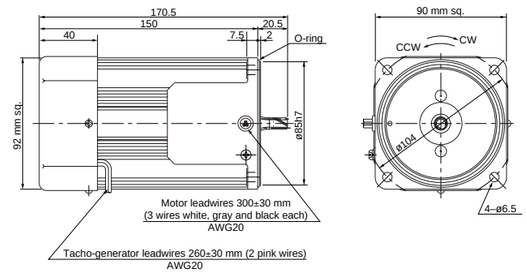
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/4, Unit: mm

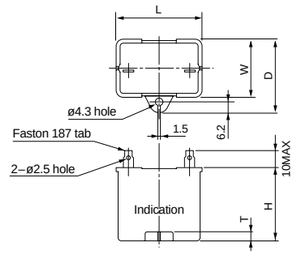
M91Z60GV4L 4P 60 W 100 V (with fan)
M91Z60GV4Y 4P 60 W 200 V (with fan)

Mass	Helical gear	Module	Number of teeth
2.7 kg		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm



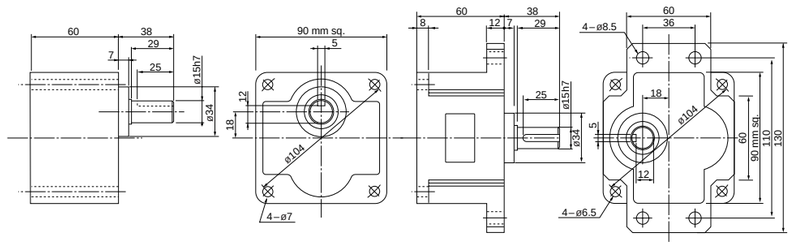
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91Z60GV4L	M0PC20M20	50.2	26.7	37	36	5	M0PC5026
M91Z60GV4Y	M0PC5M40	50	30.5	41	41.5	4	M0PC5032

Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg

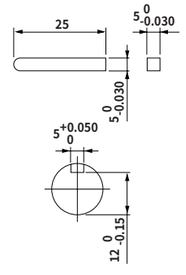


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Gear head combination B-263 | Round shaft motor dimensions B-265 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z60GV4LG M91Z60GV4LGA	4	60	100	50	Cont.	90 to 1400	0.44 (4.5)	0.10 (1.0)	3.0	0.37 (3.8)	20 (250V)
					60		90 to 1700	0.35 (3.6)	0.10 (1.0)	2.7	0.37 (3.8)	
	M91Z60GV4DG M91Z60GV4DGA	4	60	110 115	60	Cont.	90 to 1700	0.35 (3.6)	0.10 (1.0)	3.0	0.40 (4.1)	18 (250V)
					60		90 to 1700	0.35 (3.6)	0.10 (1.0)	3.1	0.43 (4.4)	
	M91Z60GV4YG M91Z60GV4YGA	4	60	200	50	Cont.	90 to 1400	0.44 (4.5)	0.10 (1.0)	1.3	0.37 (3.8)	5 (450V)
					60		90 to 1700	0.35 (3.6)	0.10 (1.0)	1.2	0.37 (3.8)	
	M91Z60GV4GG M91Z60GV4GGA	4	60	220	50	Cont.	90 to 1400	0.44 (4.5)	0.10 (1.0)	1.5	0.40 (4.1)	5 (450V)
					60		90 to 1700	0.35 (3.6)	0.10 (1.0)	1.3	0.40 (4.1)	
				230	50		90 to 1400	0.44 (4.5)	0.10 (1.0)	1.5	0.43 (4.4)	
					60		90 to 1700	0.35 (3.6)	0.10 (1.0)	1.4	0.43 (4.4)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

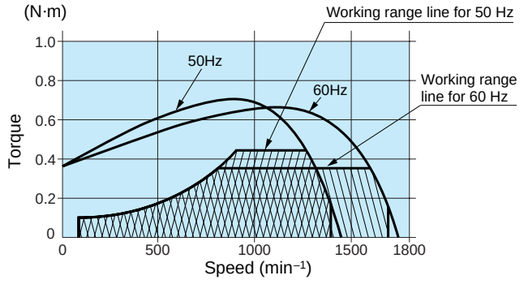
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min⁻¹	50Hz	1.07 (11)	1.28 (13)	1.78 (18)	2.14 (22)	2.67 (27)	3.21 (33)	3.56 (36)	4.01 (41)	4.81 (49)	5.77 (59)	6.42 (66)	8.02 (82)	9.62 (98)
		60Hz	0.85 (8.7)	1.02 (10)	1.42 (15)	1.70 (17)	2.13 (22)	2.55 (26)	2.84 (29)	3.19 (33)	3.83 (39)	4.59 (47)	5.10 (52)	6.38 (66)	7.65 (79)
	90min⁻¹		0.24 (2.4)	0.29 (2.9)	0.41 (4.1)	0.49 (4.9)	0.61 (6.1)	0.73 (7.3)	0.81 (8.1)	0.91 (9.1)	1.09 (11)	1.31 (13)	1.46 (15)	1.82 (18)	2.19 (22)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed	Reduction ratio	36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min⁻¹	50Hz	10.4 (106)	14.4 (148)	17.3 (177)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	8.27 (85)	11.5 (118)	13.8 (142)	17.2 (177)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min⁻¹		2.36 (24)	3.28 (33)	3.94 (39)	4.92 (49)	5.90 (59)	6.56 (66)	7.87 (79)	9.84 (98)	11.8 (118)	13.1 (131)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

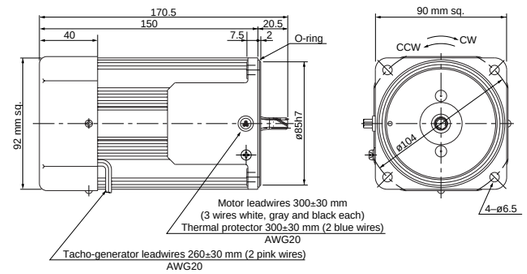
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/4, Unit: mm

M91Z60GV4LG(A) 4P 60 W 100 V (with fan)
M91Z60GV4DG(A) 4P 60 W 110 V / 115 V (with fan)
M91Z60GV4YG(A) 4P 60 W 200 V (with fan)
M91Z60GV4GG(A) 4P 60 W 220 V / 230 V (with fan)

Mass	Helical	Module	Number of teeth
2.7 kg	gear	0.6	9



Capacitor (dimensions) [attachment]

Unit: mm

Capacitor cap (dimensions) [attachment]

Unit: mm

• Capacitor dimension list (mm)

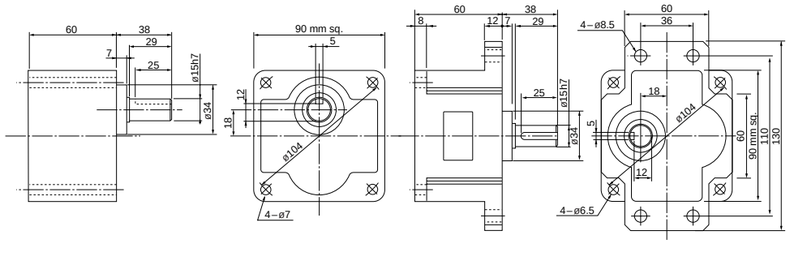
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91Z60GV4LG(A)	M0PC20M25G	58	29	44	41	4	M0PC5829G	58	29	55	78
M91Z60GV4DG(A)	M0PC18M25G	58	29	44	41	4	M0PC5829G	58	29	55	78
M91Z60GV4YG(A)	M0PC5M45G	58	29	44	41	4	M0PC5829G	58	29	55	78
M91Z60GV4GG(A)	M0PC5M45G	58	29	44	41	4	M0PC5829G	58	29	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

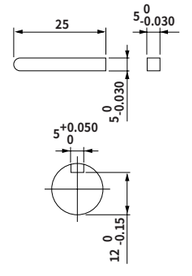
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-263 | Round shaft motor dimensions B-265 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z90GV4L	4	90	100	50	Cont.	90 to 1400	0.59 (6.0)	0.25 (2.5)	2.3	0.53 (5.4)	25 (200V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	2.2	0.56 (5.7)	
	M91Z90GV4Y	4	90	200	50	Cont.	90 to 1400	0.59 (6.0)	0.25 (2.5)	1.1	0.57 (5.8)	6.2 (375V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	1.1	0.59 (6.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.

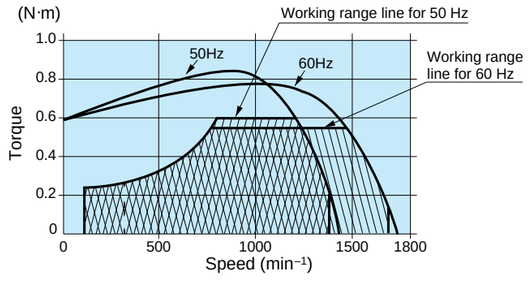
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	1.43 (14)	1.71 (17)	2.38 (24)	2.86 (29)	3.57 (36)	4.29 (43)	4.77 (48)	5.36 (54)	6.43 (65)	7.72 (78)	8.58 (87)	10.97 (111)	12.8 (130)
		60Hz	1.31 (13)	1.57 (16)	2.18 (22)	2.62 (26)	3.27 (33)	3.93 (40)	4.37 (44)	4.91 (50)	5.89 (60)	7.07 (72)	7.86 (80)	9.82 (100)	11.7 (119)
	90min^{-1}		0.60 (6.1)	0.72 (7.3)	1.01 (10)	1.21 (12)	1.51 (15)	1.81 (18)	2.02 (20)	2.26 (23)	2.71 (27)	3.25 (33)	3.62 (36)	4.52 (46)	5.43 (55)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed	Reduction ratio	36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	13.7 (139)	19.2 (195)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	12.6 (128)	17.6 (179)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		5.83 (59)	8.10 (82)	9.72 (99)	12.1 (123)	14.5 (147)	16.2 (165)	19.4 (197)	19.6 (200)	19.6 (200)	19.6 (200)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

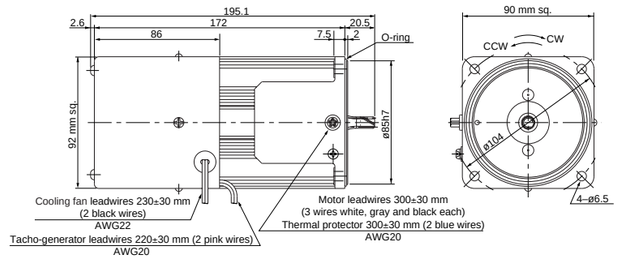
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/4, Unit: mm

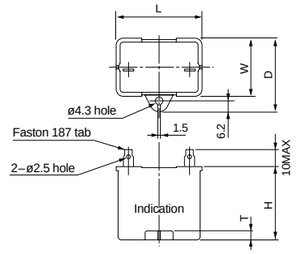
M91Z90GV4L 4P 90 W 100 V (Forced cooling fan)
M91Z90GV4Y 4P 90 W 200 V (Forced cooling fan)

Mass	Helical gear	Module	Number of teeth
3.5 kg		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm



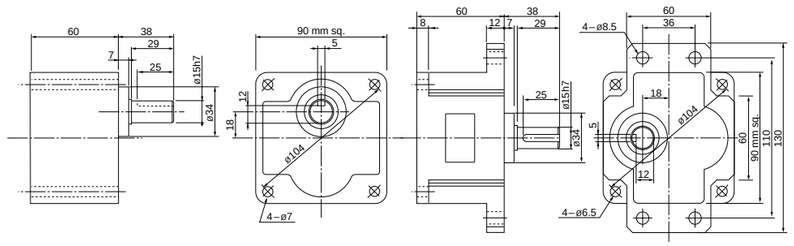
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91Z90GV4L	M0PC25M20	50.2	31	41	42	5	M0PC5032
M91Z90GV4Y	M0PC6.2M38	50	30.5	41	41.5	4	M0PC5032

Gear head (dimensions)

Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg

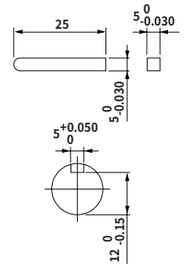


Note) MZ / MY is available for a gear head of either type.

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

Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Variable speed induction motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z90GV4LG M91Z90GV4LGA	4	90	100	50	Cont.	90 to 1400	0.69 (7.0)	0.29 (3.0)	3.0	0.61 (6.2)	30 (250V)
					60		90 to 1700	0.54 (5.5)	0.29 (3.0)	2.8	0.61 (6.2)	
	M91Z90GV4DG M91Z90GV4DGA	4	90	110	60	Cont.	90 to 1700	0.54 (5.5)	0.29 (3.0)	3.0	0.61 (6.2)	25 (250V)
				115	60		90 to 1700	0.54 (5.5)	0.29 (3.0)	3.1	0.65 (6.6)	
	M91Z90GV4YG M91Z90GV4YGA	4	90	200	50	Cont.	90 to 1400	0.69 (7.0)	0.29 (3.0)	1.4	0.61 (6.2)	7.5 (450V)
					60		90 to 1700	0.54 (5.5)	0.29 (3.0)	1.4	0.61 (6.2)	
	M91Z90GV4GG M91Z90GV4GGA	4	90	220	50	Cont.	90 to 1400	0.69 (7.0)	0.29 (3.0)	1.5	0.60 (6.1)	6 (450V)
					60		90 to 1700	0.54 (5.5)	0.29 (3.0)	1.4	0.60 (6.1)	
				230	50		90 to 1400	0.69 (7.0)	0.29 (3.0)	1.5	0.65 (6.6)	
					60		90 to 1700	0.54 (5.5)	0.29 (3.0)	1.5	0.65 (6.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

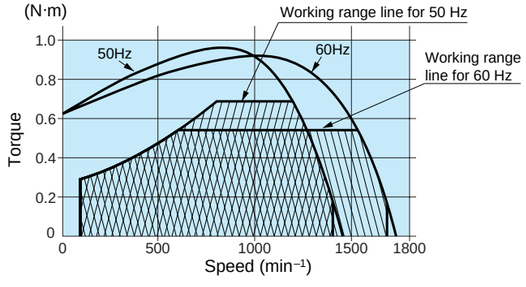
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min^{-1}	50Hz	1.68 (17)	2.01 (20)	2.79 (28)	3.35 (34)	4.19 (43)	5.03 (51)	5.59 (57)	6.29 (64)	7.55 (77)	9.05 (92)	10.1 (102)	12.6 (128)	15.1 (153)
		60Hz	1.31 (13)	1.57 (16)	2.19 (22)	2.62 (27)	3.28 (33)	3.94 (40)	4.37 (45)	4.92 (50)	5.90 (60)	7.09 (72)	7.87 (80)	9.84 (100)	11.8 (120)
	90min^{-1}		0.70 (7.3)	0.85 (8.7)	1.17 (12)	1.41 (15)	1.76 (18)	2.11 (22)	2.35 (24)	2.64 (27)	3.17 (33)	3.81 (39)	4.23 (44)	5.29 (55)	6.34 (66)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed		Reduction ratio 36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min^{-1}	50Hz	16.3 (165)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	12.8 (130)	17.7 (180)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		6.85 (71)	9.51 (98)	11.4 (118)	14.3 (148)	17.1 (177)	19.0 (197)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

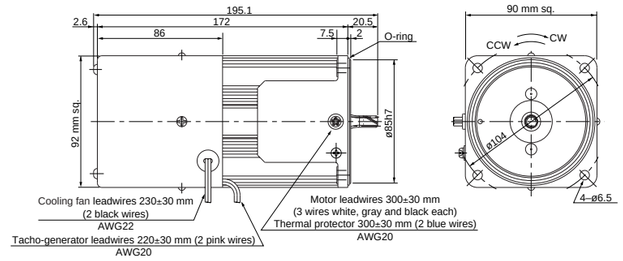
Features B-224 | System configuration B-225 | Coding system B-225 | Model list B-228

Motor (dimensions)

Scale: 1/4, Unit: mm

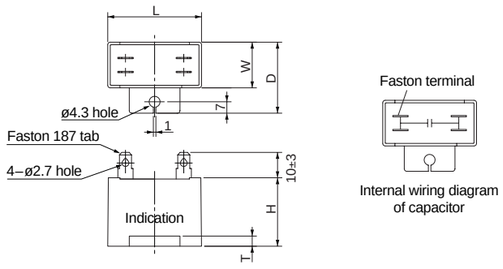
M91Z90GV4LG(A) 4P 90 W 100 V (Forced cooling fan)
M91Z90GV4DG(A) 4P 90 W 110 V / 115 V (Forced cooling fan)
M91Z90GV4YG(A) 4P 90 W 200 V (Forced cooling fan)
M91Z90GV4GG(A) 4P 90 W 220 V / 230 V (Forced cooling fan)

Mass	Helical	Module	Number of teeth
3.5 kg	gear	0.6	9



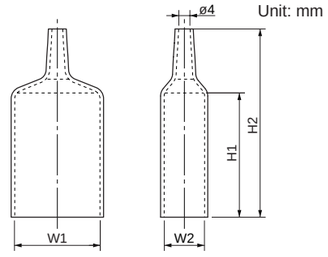
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

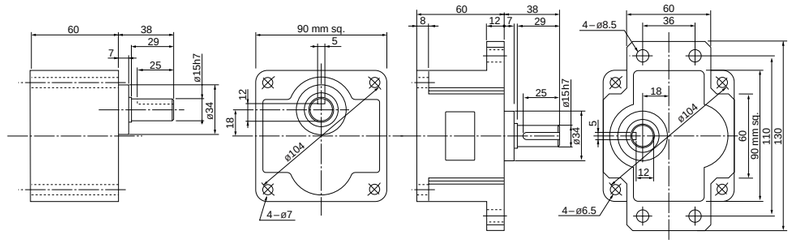
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91Z90GV4LG(A)	M0PC30M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90GV4DG(A)	M0PC25M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90GV4YG(A)	M0PC7.5M45G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90GV4GG(A)	M0PC6M45G	58	29	44	41	4	M0PC5829G	58	29	55	78

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

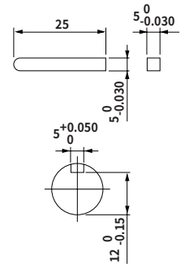
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

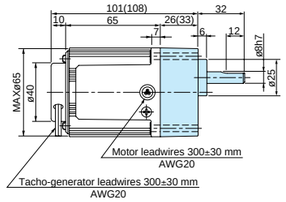
Gear head combination B-263 | Round shaft motor dimensions B-265 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed induction motor (leadwire)

Gear head combination dimensions
Scale: 1/4, Unit: mm

60 mm sq. 3 W

M61X3GV4L + MX6G□BA(MA) / MX6G□B(M)

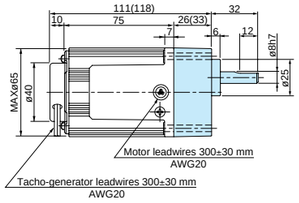


* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)

60 mm sq. 6 W

M61X6GV4L + MX6G□BA(MA) / MX6G□B(M)
M61X6GV4Y + MX6G□BA(MA) / MX6G□B(M)
M61X6GV4LG(A) + MX6G□BA(MA) / MX6G□B(M)
M61X6GV4DG(A) + MX6G□BA(MA) / MX6G□B(M)
M61X6GV4YG(A) + MX6G□BA(MA) / MX6G□B(M)
M61X6GV4GG(A) + MX6G□BA(MA) / MX6G□B(M)

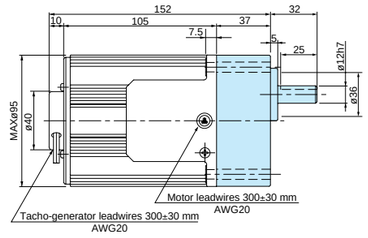


* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)

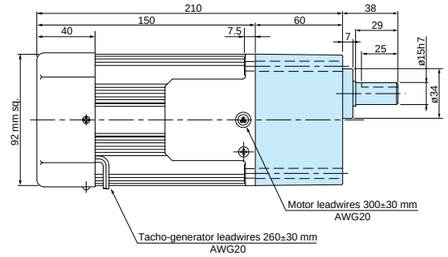
90 mm sq. 40 W

M91X40GV4L + MX9G□B(M)
M91X40GV4Y + MX9G□B(M)
M91X40GV4LG(A) + MX9G□B(M)
M91X40GV4DG(A) + MX9G□B(M)
M91X40GV4YG(A) + MX9G□B(M)
M91X40GV4GG(A) + MX9G□B(M)



90 mm sq. 60 W

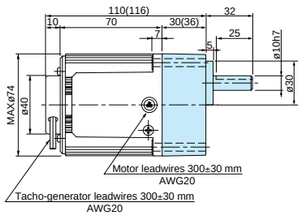
M91Z60GV4L + MZ9G□B (MY9G□B)
M91Z60GV4Y + MZ9G□B (MY9G□B)
M91Z60GV4LG(A) + MZ9G□B (MY9G□B)
M91Z60GV4DG(A) + MZ9G□B (MY9G□B)
M91Z60GV4YG(A) + MZ9G□B (MY9G□B)
M91Z60GV4GG(A) + MZ9G□B (MY9G□B)



* Refer to page B-380 for high torque gear head.

70 mm sq. 10 W

M71X10GV4L + MX7G□BA(MA) / MX7G□B(M)
M71X10GV4Y + MX7G□BA(MA) / MX7G□B(M)

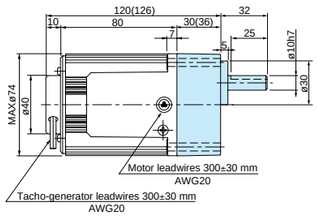


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

70 mm sq. 15 W

M71X15GV4L + MX7G□BA(MA) / MX7G□B(M)
M71X15GV4Y + MX7G□BA(MA) / MX7G□B(M)
M71X15GV4LG(A) + MX7G□BA(MA) / MX7G□B(M)
M71X15GV4DG(A) + MX7G□BA(MA) / MX7G□B(M)
M71X15GV4YG(A) + MX7G□BA(MA) / MX7G□B(M)
M71X15GV4GG(A) + MX7G□BA(MA) / MX7G□B(M)

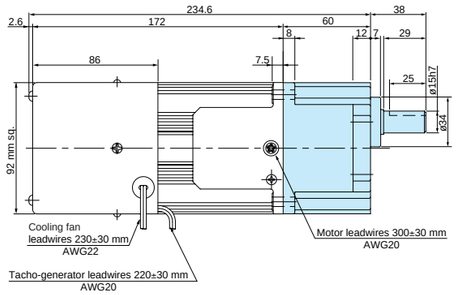


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).

(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

90 mm sq. 90 W

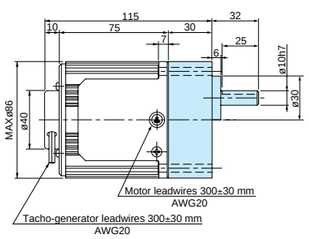
M91Z90GV4L + MY9G□B (MZ9G□B)
M91Z90GV4Y + MY9G□B (MZ9G□B)
M91Z90GV4LG(A) + MY9G□B (MZ9G□B)
M91Z90GV4DG(A) + MY9G□B (MZ9G□B)
M91Z90GV4YG(A) + MY9G□B (MZ9G□B)
M91Z90GV4GG(A) + MY9G□B (MZ9G□B)



* Refer to page B-380 for high torque gear head.

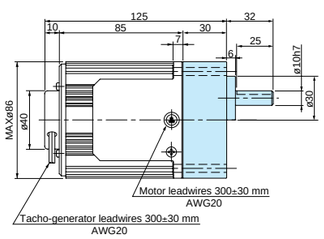
80 mm sq. 15 W

M81X15GV4L + MX8G□B(M)
M81X15GV4Y + MX8G□B(M)



80 mm sq. 25 W

M81X25GV4L + MX8G□B(M)
M81X25GV4Y + MX8G□B(M)
M81X25GV4LG(A) + MX8G□B(M)
M81X25GV4DG(A) + MX8G□B(M)
M81X25GV4YG(A) + MX8G□B(M)
M81X25GV4GG(A) + MX8G□B(M)



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

*The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
*The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

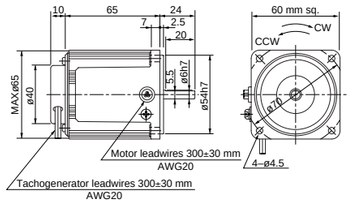
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Variable speed induction motor (4-pole round shaft / leadwire)

Dimensions
Scale: 1/4, Unit: mm

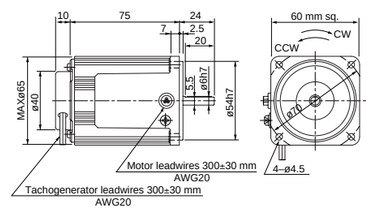
60 mm sq. 3 W — Mass 0.6 kg

M61X3SV4LS



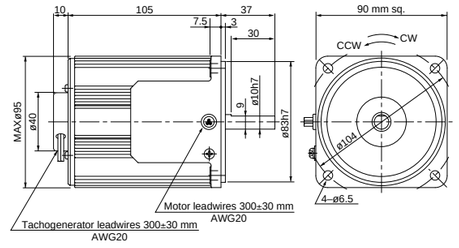
60 mm sq. 6 W — Mass 0.71 kg

M61X6SV4LS
M61X6SV4YS
M61X6SV4LG(A)
M61X6SV4YG(A)
M61X6SV4DG(A)
M61X6SV4GG(A)



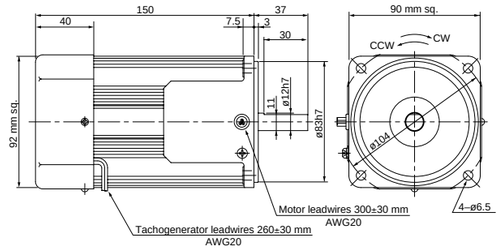
90 mm sq. 40 W — Mass 2.4 kg

M91X40SV4LS
M91X40SV4YS
M91X40SV4LG(A)
M91X40SV4YG(A)
M91X40SV4DG(A)
M91X40SV4GG(A)



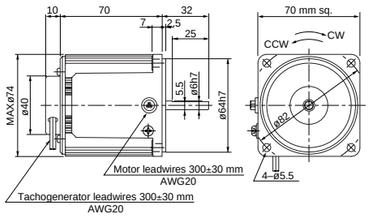
90 mm sq. 60 W — Mass 2.7 kg

M91Z60SV4LS (with fan)
M91Z60SV4YS (with fan)
M91Z60SV4LG(A) (with fan)
M91Z60SV4DG(A) (with fan)
M91Z60SV4YG(A) (with fan)
M91Z60SV4GG(A) (with fan)



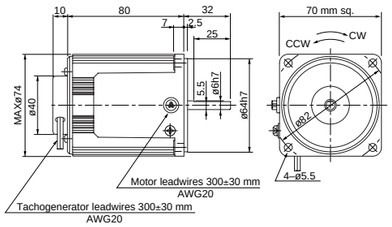
70 mm sq. 10 W — Mass 0.88 kg

M71X10SV4LS
M71X10SV4YS



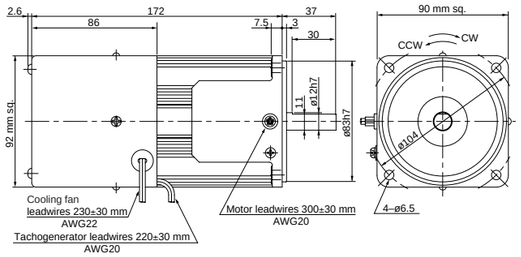
70 mm sq. 15 W — Mass 1.1 kg

M71X15SV4LS
M71X15SV4YS
M71X15SV4LG(A)
M71X15SV4YG(A)
M71X15SV4DG(A)
M71X15SV4GG(A)



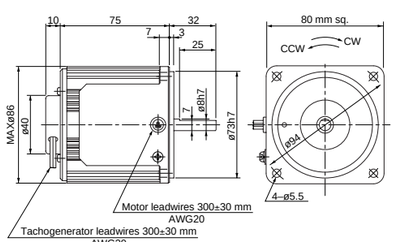
90 mm sq. 90 W — Mass 3.5 kg

M91Z90SV4LS (Forced cooling fan)
M91Z90SV4YS (Forced cooling fan)
M91Z90SV4LG(A) (Forced cooling fan)
M91Z90SV4DG (A) (Forced cooling fan)
M91Z90SV4YG (A) (Forced cooling fan)
M91Z90SV4GG(A) (Forced cooling fan)



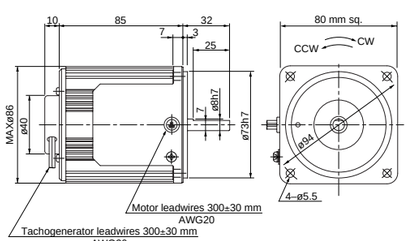
80 mm sq. 15 W — Mass 1.2 kg

M81X15SV4LS
M81X15SV4YS



80 mm sq. 25 W — Mass 1.5 kg

M81X25SV4LS
M81X25SV4YS
M81X25SV4LG(A)
M81X25SV4YG(A)
M81X25SV4DG(A)
M81X25SV4GG(A)



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

＊The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
＊The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

(Note) 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 Reversible Motor

Contents

Outline of variable speed reversible motor

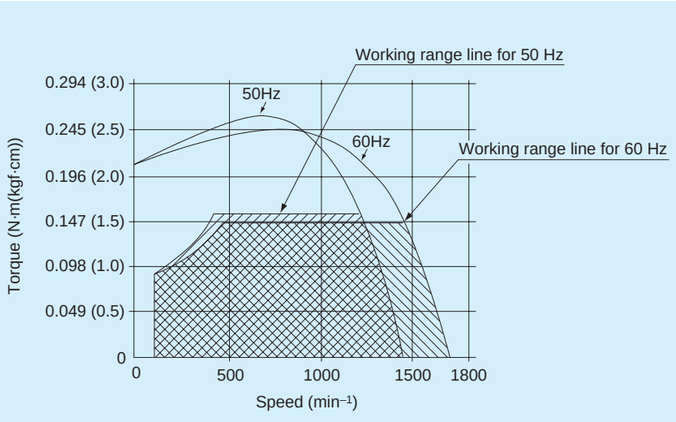
Features

- It is a variable speed motor containing a simple brake mechanism.
- The built-in simple brake mechanism makes the overrun small as compared with the induction motor, enabling a quick-reversal run.
- The time rating is 30 minutes.
- By using it together with a speed controller, you can vary the speed over a wider range (90 to 1400 min^{-1} for 50 Hz and 90 to 1700 min^{-1} for 60 Hz).
- Various functions such as variable speed, braking, normal/reverse run and soft-start/soft-stop are available.
- Feedback control with the built-in tacho-generator gives a constant speed despite of frequency change.
- The motor output is 4 W to 90 W.

Working range

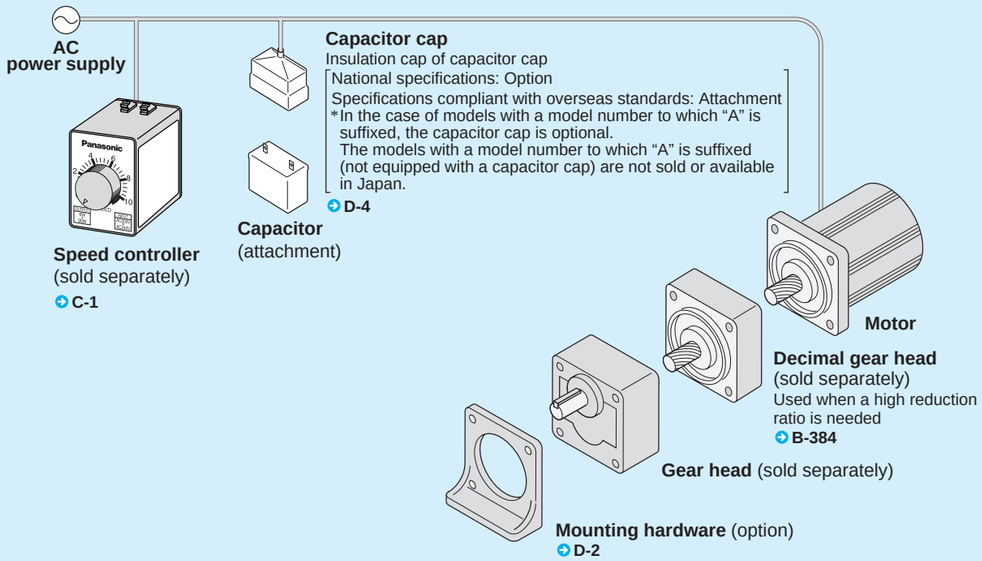
The working range line shows the working limit for the variable speed motor. (The time rating is 30 minutes.) The permissible torque should fall within the shaded portion.
If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

• Working range line



Example : M8RX25GV4L 4P 25W

System configuration diagram



Coding system

M 9 R X 40 G V 4 L S A

- **9 Size**
  - 6 : 60 mm sq.
  - 7 : 70 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **R Motor type**
  - R :Reversible motor
- **X Output type**
  - X : 40 W or smaller
  - Z : 60 W or larger
- **40 Output**
  - 4 : 4 W
  - 6 : 6 W
  - 10 : 10 W
  - 15 : 15 W
  - 20 : 20 W
  - 25 : 25 W
  - 40 : 40 W
  - 60 : 60 W
  - 90 : 90 W
- **G Shape of shaft**
  - G : Pinion shaft
  - S : Round shaft
- **V Option**
  - V : Variable speed
- **4 No. of poles**
  - 4 : 4 poles
- **L Voltage**
  - L : 100 V
  - Y : 200 V
  - D : 110/115 V
  - G : 220/230 V
- **S Classification**
  - G : Specifications compliant with overseas standards
  - S : Round shaft (S for round shaft with national specifications only)
- **A**
  - Motor with specifications compliant with overseas standards that is not equipped with a capacitor cap.

Corresponding model number	Shape of shaft	Classification
Specifications compliant with overseas standards Pinion shaft	G	G
Specifications compliant with overseas standards Round shaft	S	G
National specifications Pinion shaft	G	–
National specifications Round shaft	S	S

Model list of variable speed reversible motor

Pinion shaft motor

Applicable gear head

✪ Motor compliant with overseas standards

Hinge attached

Size	Output (W)	Leadwire type				Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
		Model number	Specifications		Page	Ball bearing	metal bearing			
60 mm sq.	4	M6RX4GV4L	100V		B-274	MX6G□BA MX6G□B	MX6G□MA MX6G□M	–	–	MX6G10XB
	6	M6RX6GV4L	100V		B-276					
		M6RX6GV4Y	200V		B-276					
		M6RX6GV4LG(A)	100V	✪	B-278					
		M6RX6GV4DG(A)	110/115V	✪	B-278					
		M6RX6GV4YG(A)	200V	✪	B-278					
		M6RX6GV4GG(A)	220/230V	✪	B-278					
70 mm sq.	10	M7RX10GV4L	100V		B-280	MX7G□BA MX7G□B	MX7G□MA MX7G□M	–	–	MX7G10XB
		M7RX10GV4Y	200V		B-280					
	15	M7RX15GV4L	100V		B-282					
		M7RX15GV4Y	200V		B-282					
		M7RX15GV4LG(A)	100V	✪	B-284					
		M7RX15GV4DG(A)	110/115V	✪	B-284					
		M7RX15GV4YG(A)	200V	✪	B-284					
		M7RX15GV4GG(A)	220/230V	✪	B-284					
80 mm sq.	20	M8RX20GV4L	100V		B-286	MX8G□B	MX8G□M	–	–	MX8G10XB
		M8RX20GV4Y	200V		B-286					
	25	M8RX25GV4L	100V		B-288					
		M8RX25GV4Y	200V		B-288					
		M8RX25GV4LG(A)	100V	✪	B-290					
		M8RX25GV4DG(A)	110/115V	✪	B-290					
		M8RX25GV4YG(A)	200V	✪	B-290					
		M8RX25GV4GG(A)	220/230V	✪	B-290					
90 mm sq.	40	M9RX40GV4L	100V		B-292	MX9G□B	MX9G□M	–	MX9G□R	MX9G10XB
		M9RX40GV4Y	200V		B-292					
		M9RX40GV4LG(A)	100V	✪	B-294					
		M9RX40GV4DG(A)	110/115V	✪	B-294					
		M9RX40GV4YG(A)	200V	✪	B-294					
		M9RX40GV4GG(A)	220/230V	✪	B-294					
	60	M9RZ60GV4L	100V		B-296	MZ9G□B MY9G□B	–	MR9G□B MP9G□B	MZ9G□R	MZ9G10XB
		M9RZ60GV4Y	200V		B-296					
		M9RZ60GV4LG(A)	100V	✪	B-298					
		M9RZ60GV4DG(A)	110/115V	✪	B-298					
		M9RZ60GV4YG(A)	200V	✪	B-298					
		M9RZ60GV4GG(A)	220/230V	✪	B-298					
	90	M9RZ90GV4L	100V		B-300					
		M9RZ90GV4Y	200V		B-300					
		M9RZ90GV4LG(A)	100V	✪	B-302					
		M9RZ90GV4DG(A)	110/115V	✪	B-302					
		M9RZ90GV4YG(A)	200V	✪	B-302					
		M9RZ90GV4GG(A)	220/230V	✪	B-302					

* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

* Refer to page B-380 for dimensions and permissible torque of high torque gear head.
Refer to page B-382 for dimensions and permissible torque of right-angle gear head.
Refer to page B-384 for dimensions of decimal gear head.

Model list of variable speed reversible motor

Round shaft motor

✪ Motor compliant with overseas standards

Size	Output (W)	Leadwire type		
		Model number	Specifications	
60 mm sq.	4	M6RX4SV4LS	100V	
	6	M6RX6SV4LS	100V	
		M6RX6SV4YS	200V	
		M6RX6SV4LG(A)	100V	✪
		M6RX6SV4DG(A)	110/115V	✪
		M6RX6SV4YG(A)	200V	✪
		M6RX6SV4GG(A)	220/230V	✪
70 mm sq.	10	M7RX10SV4LS	100V	
		M7RX10SV4YS	200V	
	15	M7RX15SV4LS	100V	
		M7RX15SV4YS	200V	
		M7RX15SV4LG(A)	100V	✪
		M7RX15SV4DG(A)	110/115V	✪
		M7RX15SV4YG(A)	200V	✪
		M7RX15SV4GG(A)	220/230V	✪
80 mm sq.	20	M8RX20SV4LS	100V	
		M8RX20SV4YS	200V	
	25	M8RX25SV4LS	100V	
		M8RX25SV4YS	200V	
		M8RX25SV4LG(A)	100V	✪
		M8RX25SV4DG(A)	110/115V	✪
		M8RX25SV4YG(A)	200V	✪
		M8RX25SV4GG(A)	220/230V	✪
90 mm sq.	40	M9RX40SV4LS	100V	
		M9RX40SV4YS	200V	
		M9RX40SV4LG(A)	100V	✪
		M9RX40SV4DG(A)	110/115V	✪
		M9RX40SV4YG(A)	200V	✪
		M9RX40SV4GG(A)	220/230V	✪
	60	M9RZ60SV4LS	100V	
		M9RZ60SV4YS	200V	
		M9RZ60SV4LG(A)	100V	✪
		M9RZ60SV4DG(A)	110/115V	✪
		M9RZ60SV4YG(A)	200V	✪
		M9RZ60SV4GG(A)	220/230V	✪
	90	M9RZ90SV4LS	100V	
		M9RZ90SV4YS	200V	
		M9RZ90SV4LG(A)	100V	✪
		M9RZ90SV4DG(A)	110/115V	✪
		M9RZ90SV4YG(A)	200V	✪
		M9RZ90SV4GG(A)	220/230V	✪

* The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft motor.
  Dimensional outline drawing Page B-306.
* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
  The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Possible combination of speed controller and motor

Size	Output (W)	Motor		Voltage (V)	Speed controller			
		Certified	Part No.		MGSD type	EX type	SD48 type	EX48 type
60 mm sq.	3	-----	M6RX4GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
	6	-----	M6RX6GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M6RX6GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
		✪	M6RX6GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M6RX6GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M6RX6GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M6RX6GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
70 mm sq.	10	-----	M7RX10GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M7RX10GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
	15	-----	M7RX15GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M7RX15GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
		✪	M7RX15GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M7RX15GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M7RX15GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M7RX15GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
80 mm sq.	15	-----	M8RX20GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M8RX20GV4Y	200	MGSDB2 ★	DV1231	DVSD48AY	DVEX48AY
	25	-----	M8RX25GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M8RX25GV4Y	200	MGSDB2 ★	DV1234	DVSD48BY	DVEX48BY
		✪	M8RX25GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M8RX25GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M8RX25GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M8RX25GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
90 mm sq.	40	-----	M9RX40GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M9RX40GV4Y	200	MGSDB2 ★	DV1234	DVSD48BY	DVEX48BY
		✪	M9RX40GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		✪	M9RX40GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		✪	M9RX40GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M9RX40GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
	60	-----	M9RZ60GV4L	100	MGSDB1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M9RZ60GV4Y	200	MGSDB2 ★	DV1234	DVSD48CY	DVEX48CY
		✪	M9RZ60GV4LG(A)	100	MGSDB1 ★	-----	-----	-----
		✪	M9RZ60GV4DG(A)	110/115	MGSDB1 ★	-----	-----	-----
		✪	M9RZ60GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M9RZ60GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----
	90	-----	M9RZ90GV4L	100	MGSDB1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M9RZ90GV4Y	200	MGSDB2 ★	DV1234	DVSD48CY	DVEX48CY
		✪	M9RZ90GV4LG(A)	100	MGSDB1 ★	-----	-----	-----
		✪	M9RZ90GV4DG(A)	110/115	MGSDB1 ★	-----	-----	-----
		✪	M9RZ90GV4YG(A)	200	MGSDB2 ★	-----	-----	-----
		✪	M9RZ90GV4GG(A)	220/230	MGSDB2 ★	-----	-----	-----

* 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.

✪ **Conforming to international standards :**

★ **MGSD speed controllers are compliant with and .**

* The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
  The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Variable speed reversible motor (leadwire)

60 mm sq. 4 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX4GV4L	4	4	100	50	30	90 to 1400	0.019 (0.19)	0.019 (0.19)	0.22	0.028 (0.28)	2.5 (200V)
					60		90 to 1700	0.019 (0.19)	0.019 (0.19)	0.23	0.028 (0.28)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

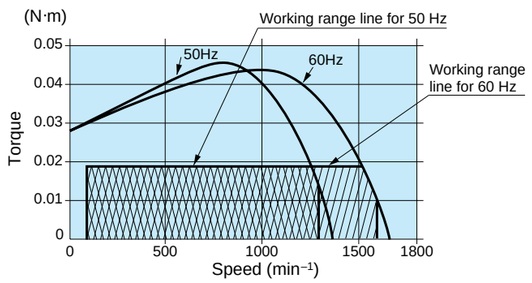
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA / MX6G□B (ball bearing) MX6G□MA / MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.046 (0.4)	0.055 (0.5)	0.077 (0.7)	0.092 (0.9)	0.11 (1.1)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.27 (2.7)	0.30 (3.0)	0.38 (3.8)
		60Hz	0.046 (0.4)	0.055 (0.5)	0.077 (0.7)	0.092 (0.9)	0.11 (1.1)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.27 (2.7)	0.30 (3.0)	0.38 (3.8)
	90min⁻¹		0.046 (0.4)	0.055 (0.5)	0.077 (0.7)	0.092 (0.9)	0.11 (1.1)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.27 (2.7)	0.30 (3.0)	0.38 (3.8)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA / MX6G□B (ball bearing) MX6G□MA / MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.41 (4.1)	0.49 (5.0)	0.69 (7.0)	0.82 (8.3)	1.03 (10)	1.24 (12)	1.38 (14)	1.65 (16)	2.07 (21)	2.45 (25)	MX6G10XB
		60Hz	0.41 (4.1)	0.49 (5.0)	0.69 (7.0)	0.82 (8.3)	1.03 (10)	1.24 (12)	1.38 (14)	1.65 (16)	2.07 (21)	2.45 (25)	
	90min⁻¹		0.41 (4.1)	0.49 (5.0)	0.69 (7.0)	0.82 (8.3)	1.03 (10)	1.24 (12)	1.38 (14)	1.65 (16)	2.07 (21)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

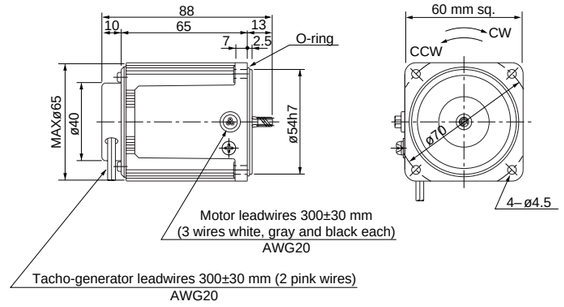
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

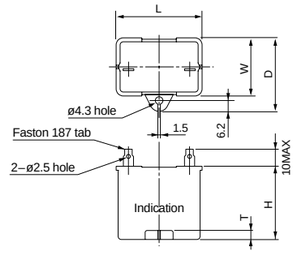
M6RX4GV4L 4P 4 W 100 V

Mass	Helical gear	Module	Number of teeth
0.60 kg		0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



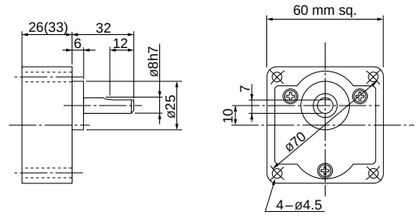
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M6RX4GV4L	M0PC2.5M20	39.5	16	26.5	30.5	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

(Note) 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 reversible motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX6GV4L	4	6	100	50	30	90 to 1400	0.030 (0.30)	0.030 (0.30)	0.31	0.038 (0.38)	3 (200V)
					60		90 to 1700	0.030 (0.30)	0.030 (0.30)	0.31	0.038 (0.38)	
	M6RX6GV4Y	4	6	200	50	30	90 to 1400	0.030 (0.30)	0.030 (0.30)	0.16	0.038 (0.38)	0.8 (400V)
					60		90 to 1700	0.030 (0.30)	0.030 (0.30)	0.16	0.038 (0.38)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

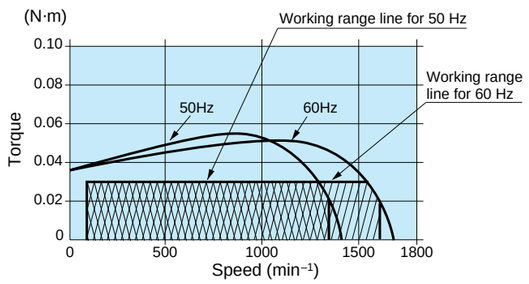
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹ 50Hz	0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
	1200min⁻¹ 60Hz	0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
	90min⁻¹	0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
	Rotational direction	Same as motor rotational direction											

Applicable gear head / Bearing	Speed	Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹ 50Hz	0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
	1200min⁻¹ 60Hz	0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min⁻¹	0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	
	Rotational direction	Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

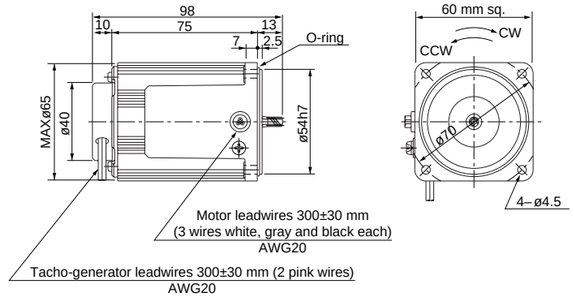
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

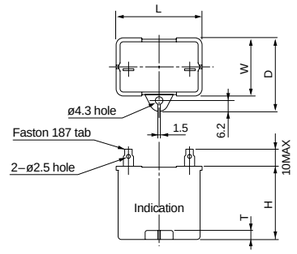
M6RX6GV4L 4P 6 W 100 V
M6RX6GV4Y 4P 6 W 200 V

Mass	Helical gear	Module	Number of teeth
0.71 kg		0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



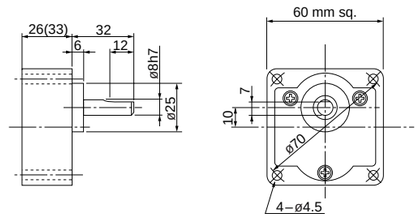
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M6RX6GV4L	M0PC3M20	39.5	16	26.5	30.5	4	M0PC3917
M6RX6GV4Y	M0PC0.8M40	39.5	16.2	27	27	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

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

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX6GV4LG M6RX6GV4LGA	4	6	100	50	30	90 to 1400	0.044 (0.45)	0.044 (0.45)	0.33	0.057 (0.58)	4 (250V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.35	0.057 (0.58)	
	M6RX6GV4DG M6RX6GV4DGA	4	6	110	60	30	90 to 1700	0.034 (0.35)	0.034 (0.35)	0.34	0.051 (0.53)	3 (250V)
				115	60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.35	0.057 (0.58)	
	M6RX6GV4YG M6RX6GV4YGA	4	6	200	50	30	90 to 1400	0.044 (0.45)	0.044 (0.45)	0.15	0.057 (0.58)	1 (450V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.16	0.057 (0.58)	
	M6RX6GV4GG M6RX6GV4GGA	4	6	220	50	30	90 to 1400	0.044 (0.45)	0.044 (0.45)	0.15	0.056 (0.57)	0.8 (450V)
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.15	0.056 (0.57)	
				230	50		90 to 1400	0.044 (0.45)	0.044 (0.45)	0.15	0.057 (0.58)	
					60		90 to 1700	0.034 (0.35)	0.034 (0.35)	0.16	0.057 (0.58)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

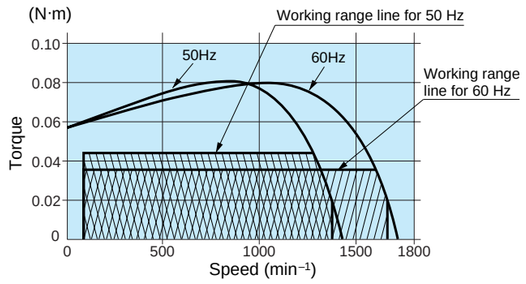
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.11 (1.1)	0.13 (1.3)	0.18 (1.8)	0.21 (2.2)	0.27 (2.7)	0.32 (3.3)	0.36 (3.6)	0.45 (4.6)	0.53 (5.5)	0.64 (6.6)	0.71 (7.3)	0.89 (9.1)
		60Hz	0.083 (0.9)	0.10 (1.0)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.25 (2.6)	0.28 (2.8)	0.34 (3.5)	0.41 (4.3)	0.50 (5.1)	0.55 (5.7)	0.69 (7.1)
	90min⁻¹	50Hz	0.11 (1.1)	0.13 (1.3)	0.18 (1.8)	0.21 (2.2)	0.27 (2.7)	0.32 (3.3)	0.36 (3.6)	0.45 (4.6)	0.53 (5.5)	0.64 (6.6)	0.71 (7.3)	0.89 (9.1)
		60Hz	0.083 (0.9)	0.10 (1.0)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.25 (2.6)	0.28 (2.8)	0.34 (3.5)	0.41 (4.3)	0.50 (5.1)	0.55 (5.7)	0.69 (7.1)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.96 (9.8)	1.15 (12)	1.60 (16)	1.92 (20)	2.41 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
		60Hz	0.74 (7.7)	0.89 (9.2)	1.24 (13)	1.49 (15)	1.86 (19)	2.23 (23)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min⁻¹	50Hz	0.96 (9.8)	1.15 (12)	1.60 (16)	1.92 (20)	2.41 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
		60Hz	0.74 (7.7)	0.89 (9.2)	1.24 (13)	1.49 (15)	1.86 (19)	2.23 (23)	2.45 (25)	2.45 (25)	2.45 (25)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

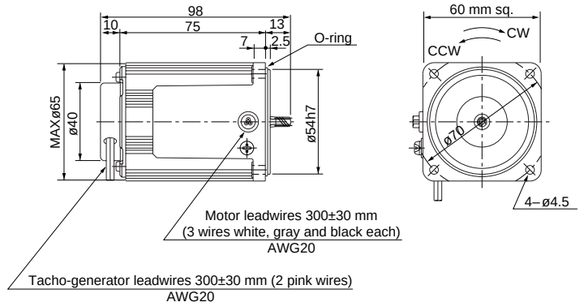
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

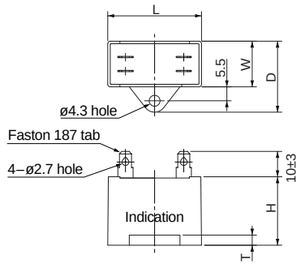
M6RX6GV4LG(A) 4P 6 W 100 V
M6RX6GV4DG(A) 4P 6 W 110 V / 115 V
M6RX6GV4YG(A) 4P 6 W 200 V
M6RX6GV4GG(A) 4P 6 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
0.71 kg	gear	0.5	6



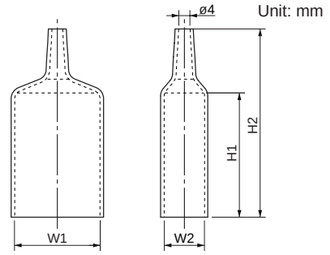
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

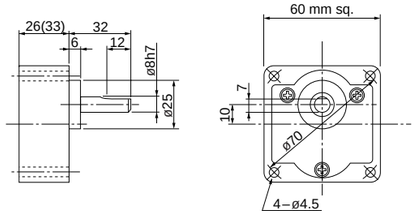
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M6RX6GV4LG(A)	M0PC4M25G	37	18	28	27	4	M0PC3718G	37	18	50	73
M6RX6GV4DG(A)	M0PC3M25G	31	17	27	27	4	M0PC3117G	31	17	50	73
M6RX6GV4YG(A)	M0PC1M45G	37	18	28	27	4	M0PC3718G	37	18	50	73
M6RX6GV4GG(A)	M0PC0.8M45G	31	17	27	27	4	M0PC3117G	31	17	50	73

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



* Figures in ( ) represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX6G□BA (MA).)
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

70 mm sq. 10 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX10GV4L	4	10	100	50	30	90 to 1400	0.059 (0.60)	0.034 (0.34)	0.41	0.049 (0.5)	4.5 (200V)
					60		90 to 1700	0.059 (0.60)	0.034 (0.34)	0.40	0.049 (0.5)	
	M7RX10GV4Y	4	10	200	50	30	90 to 1400	0.059 (0.60)	0.034 (0.34)	0.20	0.049 (0.5)	1.2 (400V)
					60		90 to 1700	0.059 (0.60)	0.034 (0.34)	0.21	0.049 (0.5)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

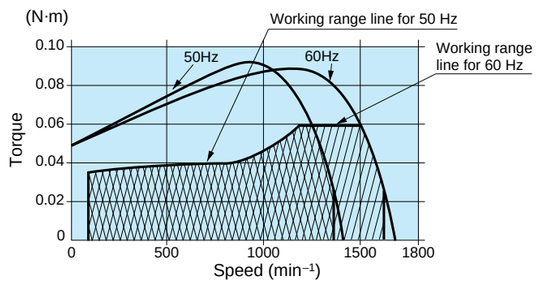
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	0.14 (1.4)	0.17 (1.7)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.43 (4.3)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.86 (8.7)	0.95 (9.6)	1.19 (12)
		60Hz	0.14 (1.4)	0.17 (1.7)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.43 (4.3)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.86 (8.7)	0.95 (9.6)	1.19 (12)
	90min⁻¹		0.082 (0.8)	0.099 (1.0)	0.13 (1.3)	0.16 (1.6)	0.20 (2.0)	0.24 (2.4)	0.27 (2.7)	0.34 (3.4)	0.41 (4.1)	0.49 (5.0)	0.55 (5.6)	0.68 (6.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min⁻¹	50Hz	1.29 (13)	1.54 (15)	2.15 (21)	2.58 (26)	3.22 (32)	3.87 (39)	4.30 (43)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.29 (13)	1.54 (15)	2.15 (21)	2.58 (26)	3.22 (32)	3.87 (39)	4.30 (43)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min⁻¹		0.74 (7.5)	0.98 (10)	1.23 (12)	1.48 (15)	1.85 (18)	2.22 (22)	2.47 (25)	2.96 (30)	3.70 (37)	4.44 (45)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

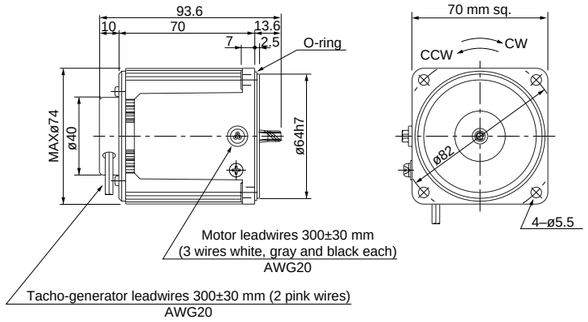
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

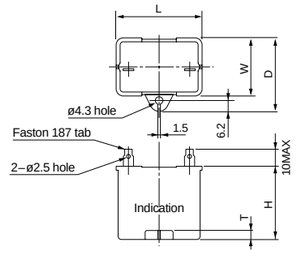
M7RX10GV4L 4P 10 W 100 V
M7RX10GV4Y 4P 10 W 200 V

Mass	Helical gear	Module	Number of teeth
0.8 kg		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



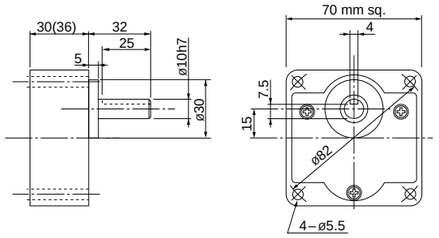
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M7RX10GV4L	M0PC4.5M20	39.5	16	26.5	30.5	4	M0PC3917
M7RX10GV4Y	M0PC1.2M40	39.5	18.3	29	29	4	M0PC3922

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

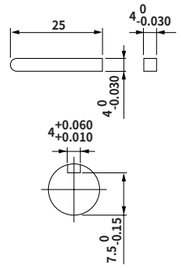


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed reversible motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX15GV4L	4	15	100	50	30	90 to 1400	0.098 (1.0)	0.046 (0.46)	0.59	0.080 (0.81)	6 (200V)
					60		90 to 1700	0.098 (1.0)	0.046 (0.46)	0.57	0.080 (0.81)	
	M7RX15GV4Y	4	15	200	50	30	90 to 1400	0.098 (1.0)	0.046 (0.46)	0.30	0.080 (0.81)	1.5 (400V)
					60		90 to 1700	0.098 (1.0)	0.046 (0.46)	0.30	0.080 (0.81)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

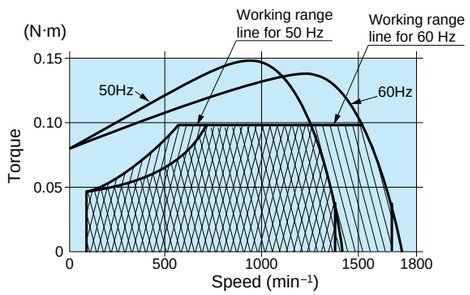
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA / MX7G□B (ball bearing) MX7G□MA / MX7G□M (metal bearing)	1200min⁻¹	50Hz	0.23 (2.3)	0.28 (2.8)	0.39 (3.9)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)	1.19 (12)	1.42 (14)	1.58 (16)	1.98 (20)
		60Hz	0.23 (2.3)	0.28 (2.8)	0.39 (3.9)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)	1.19 (12)	1.42 (14)	1.58 (16)	1.98 (20)
	90min⁻¹		0.11 (1.1)	0.13 (1.3)	0.18 (1.8)	0.22 (2.2)	0.27 (2.7)	0.33 (3.3)	0.37 (3.7)	0.46 (4.6)	0.55 (5.6)	0.66 (6.7)	0.74 (7.5)	0.93 (9.4)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA / MX7G□B (ball bearing) MX7G□MA / MX7G□M (metal bearing)	1200min⁻¹	50Hz	2.13 (21)	2.56 (26)	3.56 (36)	4.27 (43)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	2.13 (21)	2.56 (26)	3.56 (36)	4.27 (43)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min⁻¹		1.00 (10)	1.20 (12)	1.67 (17)	2.00 (20)	2.50 (25)	3.00 (30)	3.34 (34)	4.00 (40)	4.90 (50)	4.90 (50)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

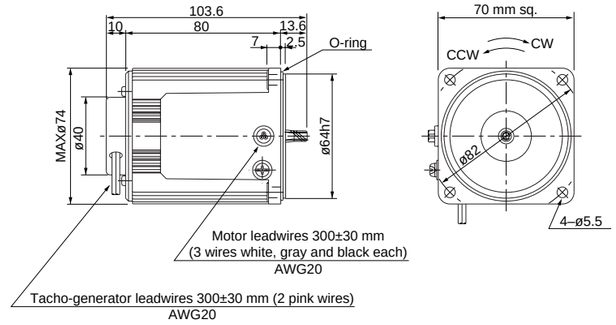
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

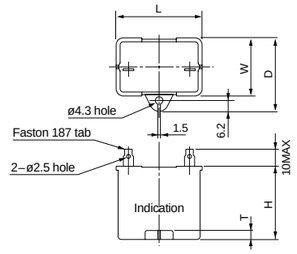
M7RX15GV4L 4P 15 W 100 V
M7RX15GV4Y 4P 15 W 200 V

Mass	Helical gear	Module	Number of teeth
1.1 kg		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



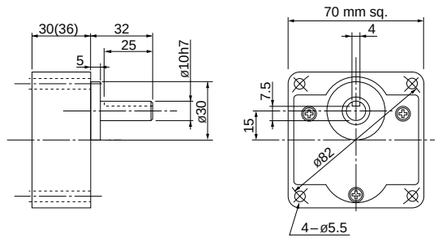
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M7RX15GV4L	M0PC6M20	39.5	17.5	28	30.5	4	M0PC3917
M7RX15GV4Y	M0PC1.5M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

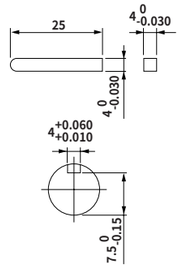


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed reversible motor (leadwire)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX15GV4LG M7RX15GV4LGA	4	15	100	50	30	90 to 1400	0.11 (1.1)	0.069 (0.70)	0.58	0.088 (0.90)	6.5 (250V)
					60		90 to 1700	0.088 (0.90)	0.069 (0.70)	0.58	0.088 (0.90)	
	M7RX15GV4DG M7RX15GV4DGA	4	15	110	60	30	90 to 1700	0.088 (0.90)	0.069 (0.70)	0.60	0.088 (0.90)	5.5 (250V)
				115	60		90 to 1700	0.088 (0.90)	0.069 (0.70)	0.63	0.10 (1.0)	
	M7RX15GV4YG M7RX15GV4YGA	4	15	200	50	30	90 to 1400	0.11 (1.1)	0.069 (0.70)	0.27	0.088 (0.90)	1.7 (450V)
					60		90 to 1700	0.088 (0.90)	0.069 (0.70)	0.28	0.088 (0.90)	
	M7RX15GV4GG M7RX15GV4GGA	4	15	220	50	30	90 to 1400	0.11 (1.1)	0.069 (0.70)	0.27	0.082 (0.84)	1.3 (450V)
					60		90 to 1700	0.088 (0.90)	0.069 (0.70)	0.26	0.082 (0.84)	
				230	50		90 to 1400	0.11 (1.1)	0.069 (0.70)	0.28	0.10 (1.0)	
					60		90 to 1700	0.088 (0.90)	0.069 (0.70)	0.28	0.10 (1.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

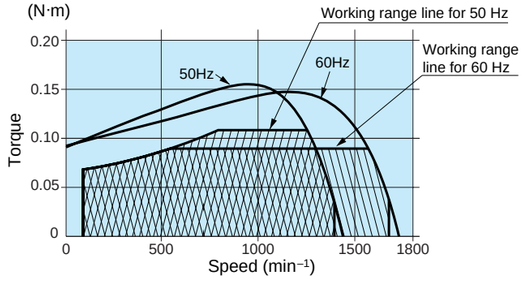
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (ball bearing)	1200min⁻¹	50Hz	0.27 (2.7)	0.32 (3.2)	0.45 (4.5)	0.53 (5.3)	0.67 (6.7)	0.80 (8.0)	0.89 (8.9)	1.11 (11)	1.34 (13)	1.60 (16)	1.78 (18)	2.23 (22)
		60Hz	0.21 (2.2)	0.26 (2.6)	0.36 (3.6)	0.43 (4.4)	0.53 (5.5)	0.64 (6.6)	0.71 (7.3)	0.89 (9.1)	1.07 (11)	1.28 (13)	1.43 (15)	1.78 (18)
MX7G□MA (metal bearing) MX7G□M (metal bearing)	90min⁻¹		0.17 (1.7)	0.20 (2.0)	0.28 (2.8)	0.34 (3.4)	0.42 (4.3)	0.50 (5.1)	0.56 (5.7)	0.70 (7.1)	0.84 (8.5)	1.01 (10)	1.12 (11)	1.40 (14)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA (ball bearing) MX7G□B (ball bearing)	1200min⁻¹	50Hz	2.41 (24)	2.89 (29)	4.01 (40)	4.81 (48)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.92 (20)	2.31 (24)	3.21 (33)	3.85 (39)	4.81 (49)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
MX7G□MA (metal bearing) MX7G□M (metal bearing)	90min⁻¹		1.51 (15)	1.81 (18)	2.52 (26)	3.02 (31)	3.77 (38)	4.53 (46)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

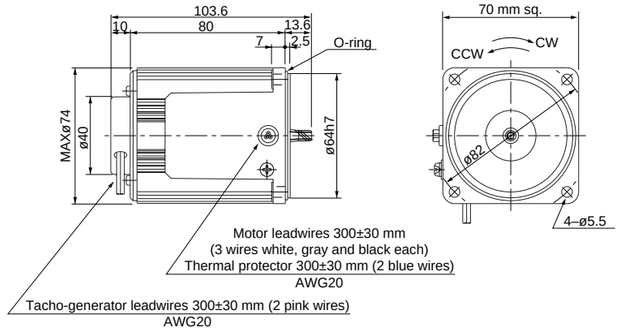
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

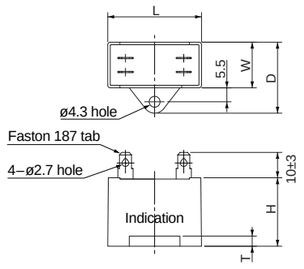
M7RX15GV4LG(A) 4P 15 W 100 V
M7RX15GV4DG(A) 4P 15 W 110 V / 115 V
M7RX15GV4YG(A) 4P 15 W 200 V
M7RX15GV4GG(A) 4P 15 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
1.1 kg	gear	0.5	7



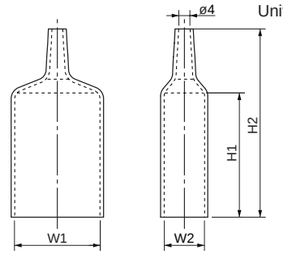
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

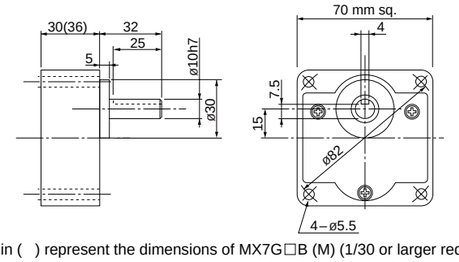
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M7RX15GV4LG(A)	M0PC6.5M25G	48	19	29	29	4	M0PC4819G	48	19	55	78
M7RX15GV4DG(A)	M0PC5.5M25G	38	21	31	31	4	M0PC3821G	38	21	55	78
M7RX15GV4YG(A)	M0PC1.7M45G	38	21	31	31	4	M0PC3821G	38	21	55	78
M7RX15GV4GG(A)	M0PC1.3M45G	38	19	29	29	4	M0PC3819G	38	19	50	73

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

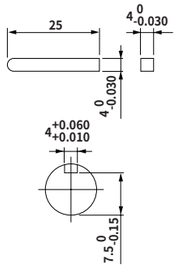


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Induction motor
Reversible motor
3-phase motor
Electromagnetic brake motor
Variable speed induction motor
Variable speed reversible motor
Variable speed electromagnetic brake single-phase motor
Variable speed unit
2-pole round shaft motor
Gear head

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

80 mm sq. 20 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX20GV4L	4	20	100	50	30	90 to 1400	0.12 (1.2)	0.049 (0.5)	0.73	0.12 (1.2)	7 (200V)
					60		90 to 1700	0.12 (1.2)	0.049 (0.5)	0.71	0.12 (1.2)	
	M8RX20GV4Y	4	20	200	50	30	90 to 1400	0.12 (1.2)	0.049 (0.5)	0.36	0.12 (1.2)	1.8 (400V)
					60		90 to 1700	0.12 (1.2)	0.049 (0.5)	0.36	0.12 (1.2)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

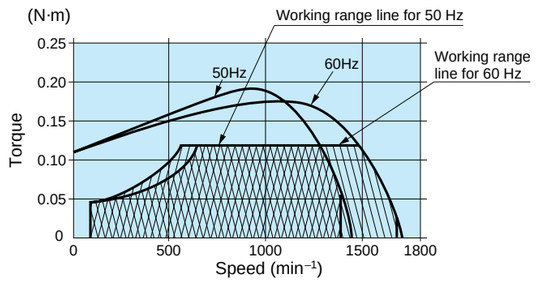
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	0.29 (2.9)	0.34 (3.4)	0.48 (4.8)	0.58 (5.9)	0.72 (7.3)	0.87 (8.8)	0.97 (9.8)	1.21 (12)	1.45 (14)	1.74 (17)	1.94 (19)	2.43 (24)
		60Hz	0.29 (2.9)	0.34 (3.4)	0.48 (4.8)	0.58 (5.9)	0.72 (7.3)	0.87 (8.8)	0.97 (9.8)	1.21 (12)	1.45 (14)	1.74 (17)	1.94 (19)	2.43 (24)
	90min⁻¹		0.11 (1.1)	0.14 (1.4)	0.19 (1.9)	0.23 (2.3)	0.29 (2.9)	0.35 (3.5)	0.39 (3.9)	0.49 (5.0)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	2.62 (26)	3.14 (32)	4.37 (44)	5.24 (53)	6.55 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	2.62 (26)	3.14 (32)	4.37 (44)	5.24 (53)	6.55 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min⁻¹		1.19 (12)	1.42 (14)	1.98 (20)	2.38 (24)	2.97 (30)	3.57 (36)	3.97 (40)	4.76 (48)	5.95 (60)	7.14 (72)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

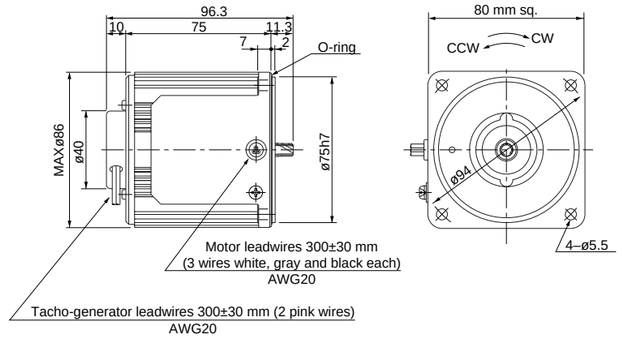
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

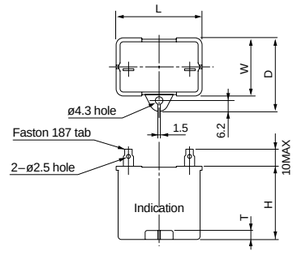
M8RX20GV4L 4P 20 W 100 V
M8RX20GV4Y 4P 20 W 200 V

Mass	Helical gear	Module	Number of teeth
1.2 kg		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



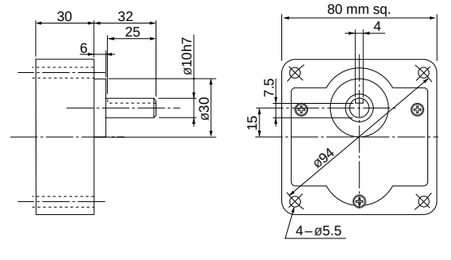
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M8RX20GV4L	M0PC7M20	39.5	22	32.5	30.5	4	M0PC3922
M8RX20GV4Y	M0PC1.8M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

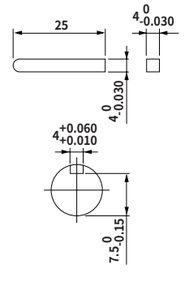
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX25GV4L	4	25	100	50	30	90 to 1400	0.15 (1.6)	0.088 (0.90)	1.0	0.16 (1.6)	9.5 (200V)
					60		90 to 1700	0.15 (1.6)	0.088 (0.90)	1.0	0.16 (1.6)	
	M8RX25GV4Y	4	25	200	50	30	90 to 1400	0.15 (1.6)	0.088 (0.90)	0.5	0.16 (1.6)	2.4 (400V)
					60		90 to 1700	0.15 (1.6)	0.088 (0.90)	0.5	0.16 (1.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.

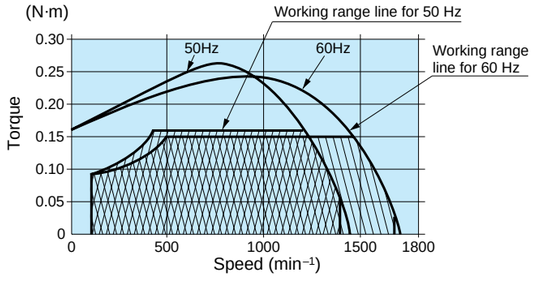
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed / Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
		60Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
	90min⁻¹		0.094 (0.9)	0.11 (1.1)	0.15 (1.5)	0.18 (1.8)	0.23 (2.3)	0.28 (2.8)	0.31 (3.1)	0.39 (3.9)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.78 (7.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed / Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min⁻¹	50Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min⁻¹		0.84 (8.5)	1.01 (10)	1.41 (14)	1.69 (17)	2.12 (21)	2.54 (25)	2.83 (28)	3.39 (34)	4.24 (43)	5.09 (51)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

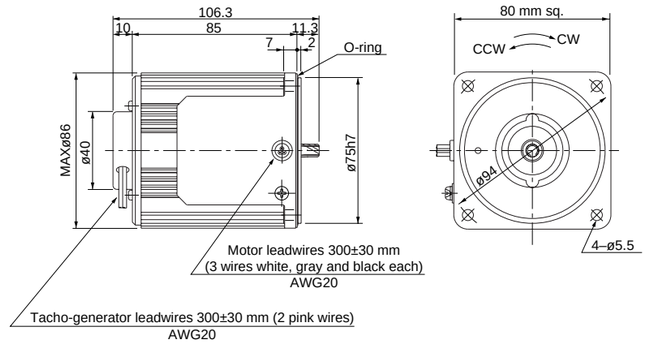
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

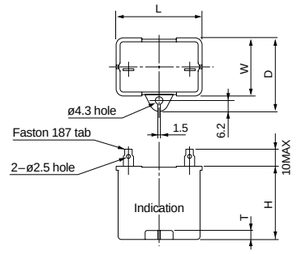
M8RX25GV4L 4P 25 W 100 V
M8RX25GV4Y 4P 25 W 200 V

Mass	Helical	Module	Number of teeth
1.5 kg	gear	0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



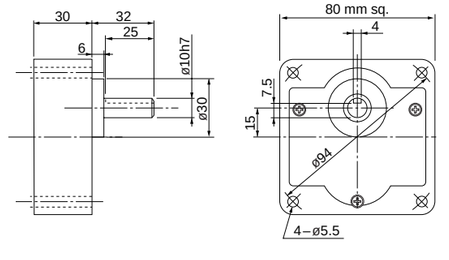
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M8RX25GV4L	M0PC9.5M20	39.5	22	32.5	30.5	4	M0PC3922
M8RX25GV4Y	M0PC2.4M40	49.7	24	34.5	34.5	4	M0PC5026

Gear head (dimensions)

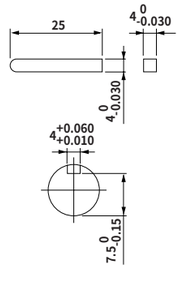
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

80 mm sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX25GV4LG M8RX25GV4LGA	4	25	100	50	30	90 to 1400	0.19 (1.9)	0.11 (1.1)	1.1	0.17 (1.7)	10 (250V)
					60		90 to 1700	0.15 (1.5)	0.11 (1.1)	1.1	0.17 (1.7)	
	M8RX25GV4DG M8RX25GV4DGA	4	25	110	60	30	90 to 1700	0.15 (1.5)	0.11 (1.1)	1.1	0.16 (1.6)	8 (250V)
				115	60		90 to 1700	0.15 (1.5)	0.11 (1.1)	1.2	0.17 (1.7)	
	M8RX25GV4YG M8RX25GV4YGA	4	25	200	50	30	90 to 1400	0.19 (1.9)	0.11 (1.1)	0.45	0.17 (1.7)	2.5 (450V)
					60		90 to 1700	0.15 (1.5)	0.11 (1.1)	0.46	0.17 (1.7)	
	M8RX25GV4GG M8RX25GV4GGA	4	25	220	50	30	90 to 1400	0.19 (1.9)	0.11 (1.1)	0.47	0.16 (1.6)	2 (450V)
					60		90 to 1700	0.15 (1.5)	0.11 (1.1)	0.46	0.16 (1.6)	
				230	50		90 to 1400	0.19 (1.9)	0.11 (1.1)	0.49	0.17 (1.7)	
					60		90 to 1700	0.15 (1.5)	0.11 (1.1)	0.48	0.17 (1.7)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-306.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

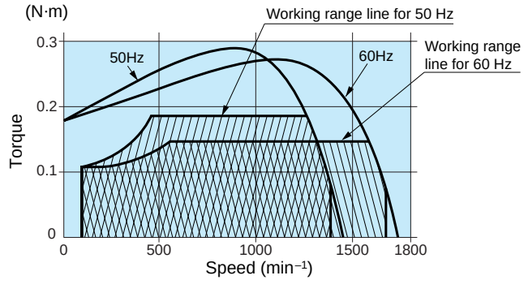
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	0.46 (4.6)	0.55 (5.5)	0.77 (7.7)	0.92 (9.2)	1.15 (12)	1.39 (14)	1.54 (15)	1.92 (19)	2.31 (23)	2.77 (28)	3.08 (31)	3.85 (38)
		60Hz	0.36 (3.6)	0.44 (4.4)	0.61 (6.1)	0.73 (7.3)	0.91 (9.1)	1.09 (11)	1.22 (12)	1.52 (15)	1.82 (18)	2.19 (22)	2.43 (24)	3.04 (30)
	90min^{-1}		0.27 (2.7)	0.32 (3.2)	0.45 (4.5)	0.53 (5.3)	0.67 (6.7)	0.80 (8.0)	0.89 (8.9)	1.11 (11)	1.34 (13)	1.60 (16)	1.78 (18)	2.23 (22)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	4.16 (42)	4.99 (50)	6.93 (69)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.28 (33)	3.94 (39)	5.47 (55)	6.56 (66)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min^{-1}		2.41 (24)	2.89 (29)	4.01 (40)	4.81 (48)	6.01 (60)	7.22 (72)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

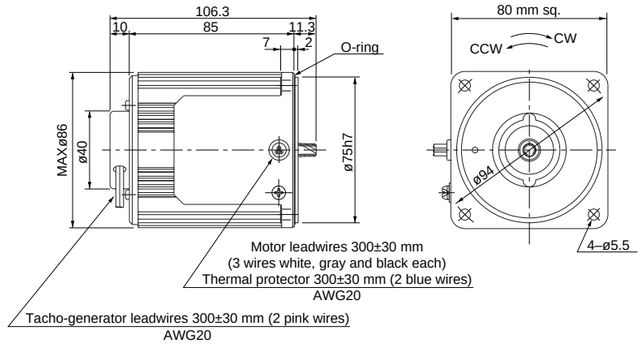
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

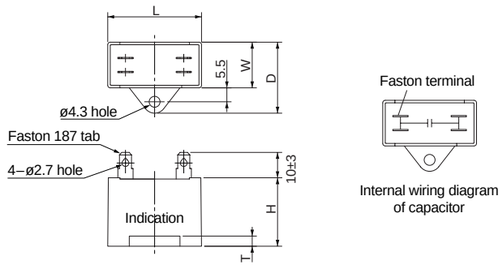
M8RX25GV4LG(A) 4P 25 W 100 V
M8RX25GV4DG(A) 4P 25 W 110 V / 115 V
M8RX25GV4YG(A) 4P 25 W 200 V
M8RX25GV4GG(A) 4P 25 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
1.5 kg	gear	0.5	9



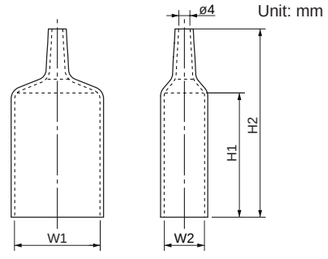
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

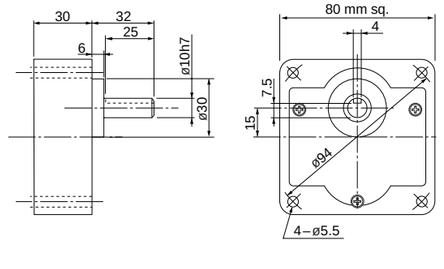
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M8RX25GV4LG(A)	M0PC10M25G	58	21	31	31	4	M0PC5821G	58	21	55	78
M8RX25GV4DG(A)	M0PC8M25G	48	21	31	31	4	M0PC4821G	48	21	55	78
M8RX25GV4YG(A)	M0PC2.5M45G	48	21	31	31	4	M0PC4821G	48	21	55	78
M8RX25GV4GG(A)	M0PC2M45G	48	19	29	29	4	M0PC4819G	48	19	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

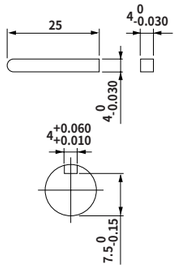
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-304 | Round shaft motor dimensions B-306 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RX40GV4L	4	40	100	50	30	90 to 1400	0.30 (3.1)	0.098 (1.0)	1.60	0.25 (2.6)	15 (210V)
					60		90 to 1700	0.24 (2.5)	0.098 (1.0)	1.60	0.25 (2.6)	
	M9RX40GV4Y	4	40	200	50	30	90 to 1400	0.30 (3.1)	0.098 (1.0)	0.80	0.25 (2.6)	3.8 (400V)
					60		90 to 1700	0.24 (2.5)	0.098 (1.0)	0.76	0.25 (2.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.

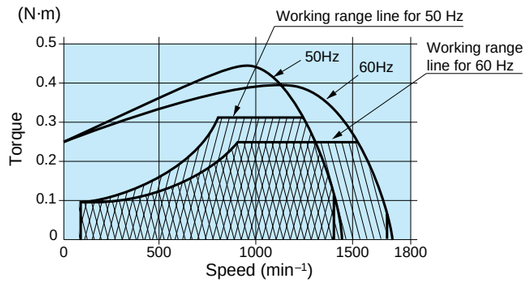
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	0.66 (6.7)	0.84 (8.5)	1.08 (11)	1.38 (14)	1.57 (16)	2.00 (20)	2.25 (22)	2.74 (27)	3.23 (32)	4.13 (42)	4.41 (44)	5.29 (53)
		60Hz	0.51 (5.2)	0.66 (6.7)	0.84 (8.5)	1.08 (11)	1.22 (12)	1.57 (16)	1.76 (17)	2.14 (21)	2.74 (27)	3.23 (32)	3.53 (36)	4.13 (42)
	90min⁻¹		0.11 (1.1)	0.14 (1.4)	0.19 (1.9)	0.23 (2.3)	0.29 (2.9)	0.35 (3.5)	0.39 (3.9)	0.49 (5.0)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	6.37 (65)	8.15 (83)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	MX9G10XB
		60Hz	5.29 (53)	6.37 (65)	8.8 (89)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	
	90min⁻¹		1.06 (10)	1.28 (13)	1.78 (18)	2.13 (21)	2.67 (27)	3.20 (32)	3.56 (36)	4.27 (43)	5.34 (54)	6.40 (65)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

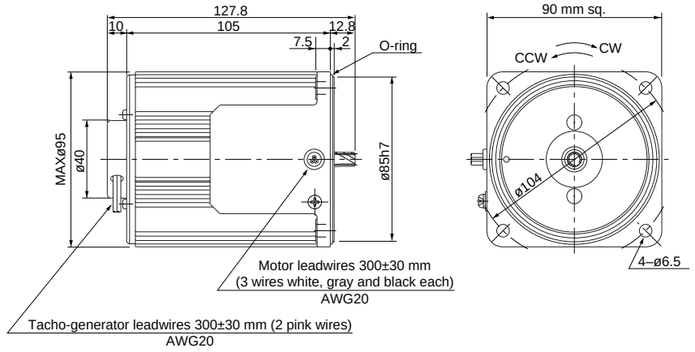
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

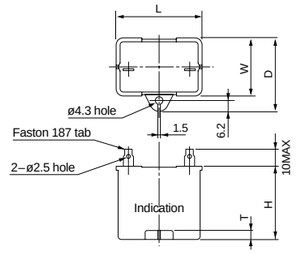
M9RX40GV4L 4P 40 W 100 V
M9RX40GV4Y 4P 40 W 200 V

Mass	Helical gear	Module	Number of teeth
2.4 kg		0.55	9



Capacitor (dimensions) [attachment]

Unit: mm



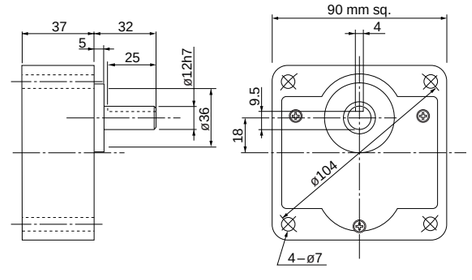
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RX40GV4L	M0PC15M20	39.5	26.7	37	41	4	M0PC3926
M9RX40GV4Y	M0PC3.8M40	50	26.7	37.5	38	4	M0PC5026

Gear head (dimensions)

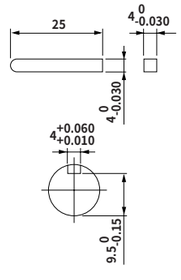
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RX40GV4LG M9RX40GV4LGA	4	40	100	50	30	90 to 1400	0.30 (3.1)	0.12 (1.2)	1.7	0.27 (2.8)	16 (250V)
					60		90 to 1700	0.25 (2.5)	0.12 (1.2)	1.6	0.27 (2.8)	
	M9RX40GV4DG M9RX40GV4DGA	4	40	110 115	60	30	90 to 1700	0.25 (2.5)	0.12 (1.2)	1.7	0.23 (2.3)	12 (250V)
					60		90 to 1700	0.25 (2.5)	0.12 (1.2)	1.8	0.25 (2.5)	
	M9RX40GV4YG M9RX40GV4YGA	4	40	200	50	30	90 to 1400	0.30 (3.1)	0.12 (1.2)	0.67	0.27 (2.8)	4 (450V)
					60		90 to 1700	0.25 (2.5)	0.12 (1.2)	0.70	0.27 (2.8)	
	M9RX40GV4GG M9RX40GV4GGA	4	40	220	50	30	90 to 1400	0.30 (3.1)	0.12 (1.2)	0.71	0.27 (2.8)	3.5 (450V)
					60		90 to 1700	0.25 (2.5)	0.12 (1.2)	0.71	0.27 (2.8)	
				230	50		90 to 1400	0.30 (3.1)	0.12 (1.2)	0.74	0.30 (3.1)	
					60		90 to 1700	0.25 (2.5)	0.12 (1.2)	0.74	0.30 (3.1)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

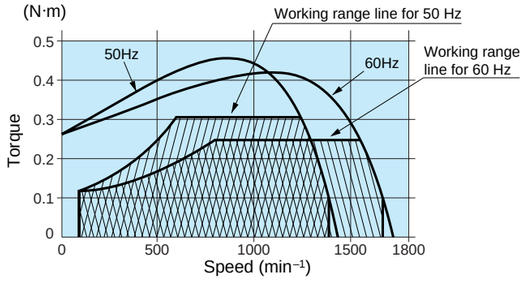
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	0.73 (7.5)	0.87 (9.0)	1.22 (13)	1.46 (15)	1.82 (19)	2.19 (23)	2.43 (25)	3.04 (31)	3.65 (38)	4.37 (45)	4.86 (50)	6.08 (63)
		60Hz	0.61 (6.1)	0.73 (7.3)	1.01 (10)	1.22 (12)	1.52 (15)	1.82 (18)	2.03 (20)	2.53 (25)	3.04 (30)	3.65 (36)	4.05 (41)	5.06 (51)
	90min⁻¹		0.29 (2.9)	0.35 (3.5)	0.49 (4.9)	0.58 (5.8)	0.73 (7.3)	0.87 (8.7)	0.97 (9.7)	1.22 (12)	1.46 (15)	1.75 (17)	1.94 (19)	2.43 (24)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed		Reduction ratio 30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	6.56 (68)	7.87 (81)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	MX9G10XB
		60Hz	5.47 (55)	6.56 (66)	9.11 (91)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	
	90min⁻¹		2.62 (26)	3.15 (31)	4.37 (44)	5.25 (52)	6.56 (66)	7.87 (79)	8.75 (87)	9.8 (100)	9.8 (100)	9.8 (100)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

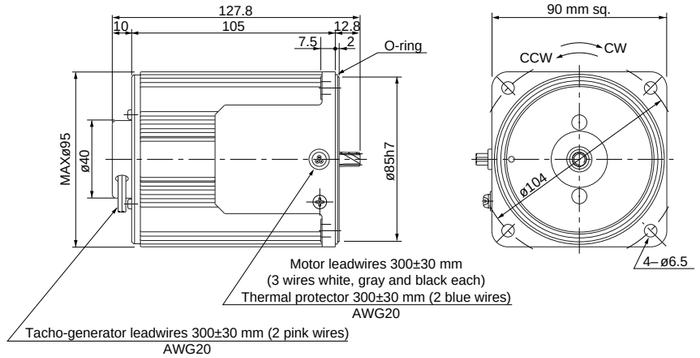
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/3, Unit: mm

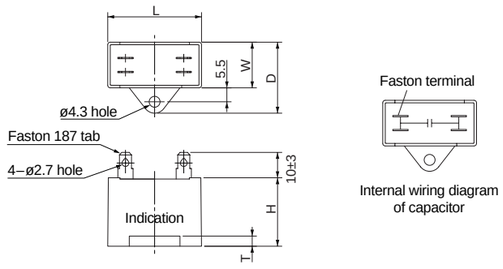
M9RX40GV4LG(A) 4P 40 W 100 V
M9RX40GV4DG(A) 4P 40 W 110 V / 115 V
M9RX40GV4YG(A) 4P 40 W 200 V
M9RX40GV4GG(A) 4P 40 W 220 V / 230 V

Mass	Helical	Module	Number of teeth
2.4 kg	gear	0.55	9



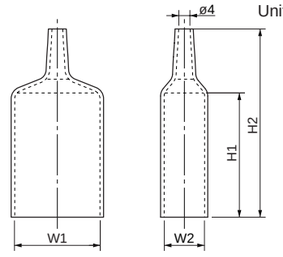
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

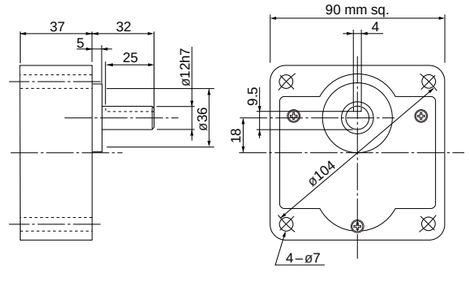
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M9RX40GV4LG(A)	M0PC16M25G	58	23.5	38.5	37	4	M0PC5823G	58	23.5	55	78
M9RX40GV4DG(A)	M0PC12M25G	58	22	32	35	4	M0PC5822G	58	22	55	78
M9RX40GV4YG(A)	M0PC4M45G	58	23.5	38.5	37	4	M0PC5823G	58	23.5	55	78
M9RX40GV4GG(A)	M0PC3.5M45G	58	22	32	35	4	M0PC5822G	58	22	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

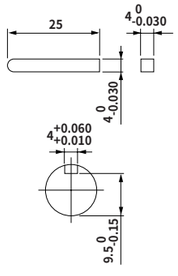
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



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

Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ60GV4L	4	60	100	50	30	90 to 1400	0.43 (4.4)	0.12 (1.2)	3.0	0.46 (4.6)	25 (200V)
					60		90 to 1700	0.36 (3.7)	0.12 (1.2)	2.8	0.46 (4.6)	
	M9RZ60GV4Y	4	60	200	50	30	90 to 1400	0.43 (4.4)	0.12 (1.2)	1.4	0.46 (4.6)	6.2 (375V)
					60		90 to 1700	0.36 (3.7)	0.12 (1.2)	1.3	0.46 (4.6)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.

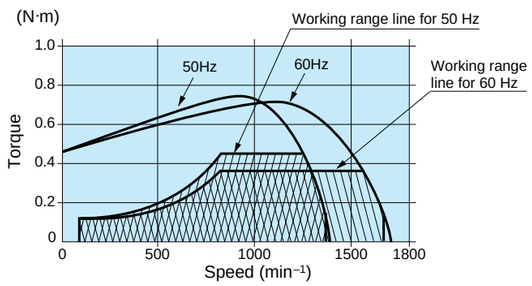
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	1.04 (10)	1.25 (12)	1.74 (17)	2.08 (21)	2.61 (26)	3.13 (31)	3.48 (35)	3.91 (39)	4.69 (47)	5.63 (57)	6.26 (63)	7.82 (79)	9.39 (95)
		60Hz	0.87 (8.8)	1.04 (10)	1.45 (14)	1.74 (17)	2.18 (22)	2.61 (26)	2.91 (29)	3.27 (33)	3.91 (39)	4.69 (47)	5.22 (53)	6.52 (66)	7.83 (79)
	90min⁻¹		0.18 (1.8)	0.22 (2.2)	0.31 (3.1)	0.37 (3.7)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.70 (7.1)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (14)	1.71 (17)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed	Reduction ratio	36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	10.1 (103)	14.0 (142)	16.8 (171)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	8.42 (85)	11.7 (119)	14.0 (142)	17.5 (178)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min⁻¹		1.83 (18)	2.55 (26)	3.06 (31)	3.82 (38)	4.59 (46)	5.10 (52)	6.12 (62)	7.65 (78)	9.18 (93)	10.2 (104)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

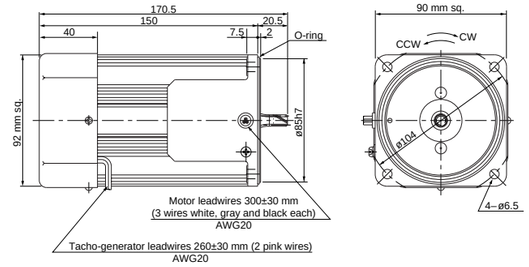
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/4, Unit: mm

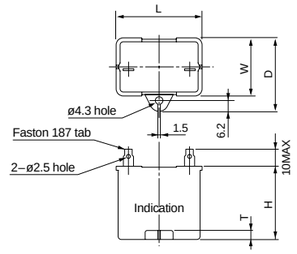
M9RZ60GV4L 4P 60 W 100 V (with fan)
M9RZ60GV4Y 4P 60 W 200 V (with fan)

Mass	Helical gear	Module	Number of teeth
2.7 kg		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm



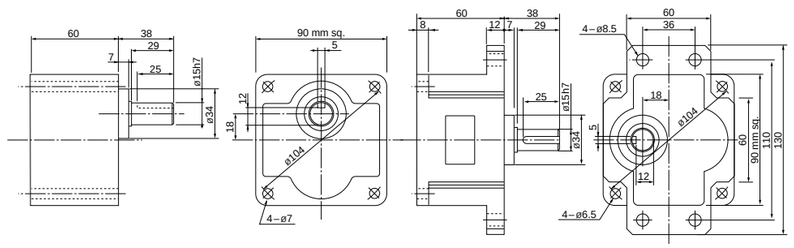
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RZ60GV4L	M0PC25M20	50.2	31	41	42	5	M0PC5032
M9RZ60GV4Y	M0PC6.2M38	50	30.5	41	41.5	4	M0PC5032

Gear head (dimensions)

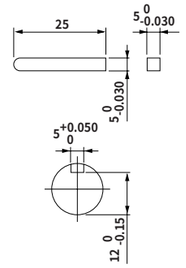
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ60GV4LG M9RZ60GV4LGA	4	60	100	50	30	90 to 1400	0.45 (4.6)	0.14 (1.4)	3.0	0.46 (4.7)	25 (250V)
					60		90 to 1700	0.36 (3.7)	0.14 (1.4)	2.8	0.48 (4.9)	
	M9RZ60GV4DG M9RZ60GV4DGA	4	60	110 115	60	30	90 to 1700	0.36 (3.7)	0.14 (1.4)	3.0	0.43 (4.4)	20 (250V)
					60		90 to 1700	0.36 (3.7)	0.14 (1.4)	3.1	0.48 (4.9)	
	M9RZ60GV4YG M9RZ60GV4YGA	4	60	200	50	30	90 to 1400	0.45 (4.6)	0.14 (1.4)	1.3	0.46 (4.7)	6 (450V)
					60		90 to 1700	0.36 (3.7)	0.14 (1.4)	1.2	0.48 (4.9)	
	M9RZ60GV4GG M9RZ60GV4GGA	4	60	220	50	30	90 to 1400	0.45 (4.6)	0.14 (1.4)	1.4	0.43 (4.4)	5 (450V)
					60		90 to 1700	0.36 (3.7)	0.14 (1.4)	1.3	0.43 (4.4)	
				230	50		90 to 1400	0.45 (4.6)	0.14 (1.4)	1.5	0.48 (4.9)	
					60		90 to 1700	0.36 (3.7)	0.14 (1.4)	1.4	0.48 (4.9)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

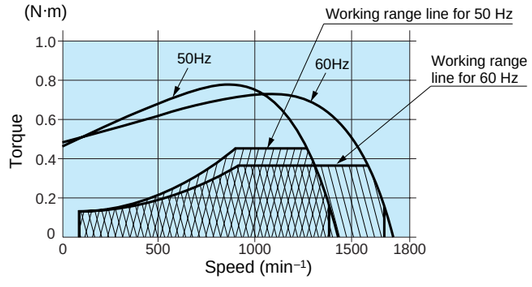
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min^{-1}	50Hz	1.09 (11)	1.31 (13)	1.82 (19)	2.19 (22)	2.73 (28)	3.28 (34)	3.65 (37)	4.10 (42)	4.92 (50)	5.90 (60)	6.56 (67)	8.20 (84)	9.84 (101)
		60Hz	0.87 (9.0)	1.05 (11)	1.46 (15)	1.75 (18)	2.19 (22)	2.62 (27)	2.92 (30)	3.28 (34)	3.94 (40)	4.72 (49)	5.25 (54)	6.56 (67)	7.87 (81)
	90min^{-1}		0.34 (3.4)	0.41 (4.1)	0.57 (5.7)	0.68 (6.8)	0.85 (8.5)	1.02 (10)	1.13 (11)	1.28 (13)	1.53 (15)	1.84 (18)	2.04 (20)	2.55 (26)	3.06 (31)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed		Reduction ratio 36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing hinge not attached) MY9G□B (ball bearing hinge attached)	1200min^{-1}	50Hz	10.6 (109)	14.8 (151)	17.7 (181)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	8.50 (87)	11.8 (121)	14.2 (146)	17.7 (182)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		3.31 (33)	4.59 (46)	5.51 (55)	6.89 (69)	8.27 (83)	9.19 (92)	11.0 (110)	13.8 (138)	16.5 (165)	18.4 (184)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

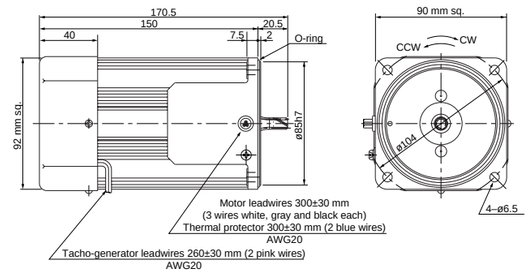
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/4, Unit: mm

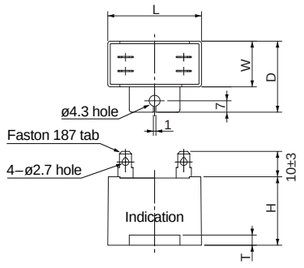
M9RZ60GV4LG(A) 4P 60 W 100 V (with fan)
M9RZ60GV4DG(A) 4P 60 W 110 V / 115 V (with fan)
M9RZ60GV4YG(A) 4P 60 W 200 V (with fan)
M9RZ60GV4GG(A) 4P 60 W 220 V / 230 V (with fan)

Mass	Helical	Module	Number of teeth
2.7 kg	gear	0.6	9



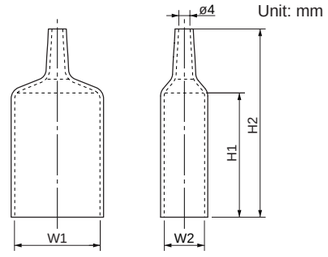
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

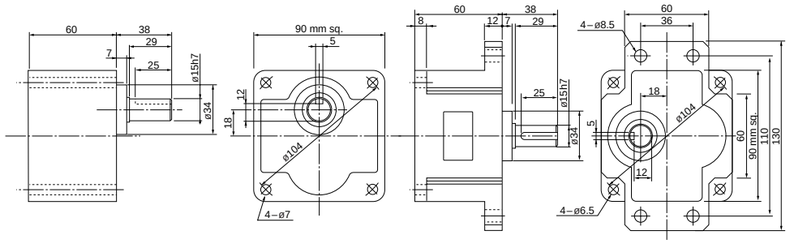
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M9RZ60GV4LG(A)	M0PC25M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ60GV4DG(A)	M0PC20M25G	58	29	44	41	4	M0PC5829G	58	29	55	78
M9RZ60GV4YG(A)	M0PC6M45G	58	29	44	41	4	M0PC5829G	58	29	55	78
M9RZ60GV4GG(A)	M0PC5M45G	58	29	44	41	4	M0PC5829G	58	29	55	78

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

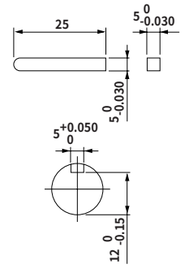
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ90GV4L	4	90	100	50	30	90 to 1400	0.59 (6.0)	0.25 (2.5)	2.9	0.61 (6.2)	30 (200V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	2.9	0.61 (6.2)	
	M9RZ90GV4Y	4	90	200	50	30	90 to 1400	0.59 (6.0)	0.25 (2.5)	1.6	0.59 (6.0)	7.5 (370V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	1.5	0.59 (6.0)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.

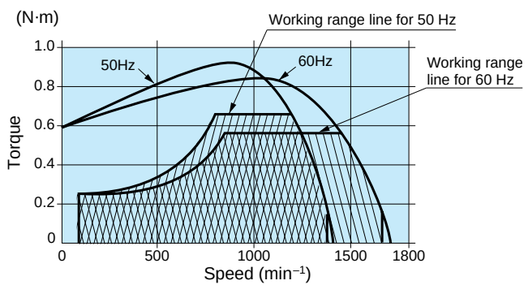
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed		Reduction ratio 3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	1.43 (14)	1.71 (17)	2.38 (24)	2.86 (29)	3.57 (36)	4.29 (43)	4.77 (48)	5.36 (54)	6.43 (65)	7.72 (78)	8.58 (87)	10.7 (109)	12.8 (130)
		60Hz	1.31 (13)	1.57 (16)	2.18 (22)	2.62 (26)	3.27 (33)	3.93 (40)	4.37 (44)	4.91 (50)	5.89 (60)	7.07 (72)	7.86 (80)	9.82 (100)	11.7 (119)
	90min⁻¹		0.60 (6.1)	0.72 (7.3)	1.01 (10)	1.21 (12)	1.51 (15)	1.81 (18)	2.02 (20)	2.27 (23)	2.70 (27)	2.89 (29)	3.62 (36)	4.52 (46)	5.43 (55)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed		Reduction ratio 36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	13.8 (140)	19.3 (196)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	12.7 (129)	17.6 (179)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min⁻¹		5.86 (59)	8.10 (82)	9.72 (99)	12.1 (123)	14.5 (147)	16.2 (165)	19.4 (197)	19.6 (200)	19.6 (200)	19.6 (200)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

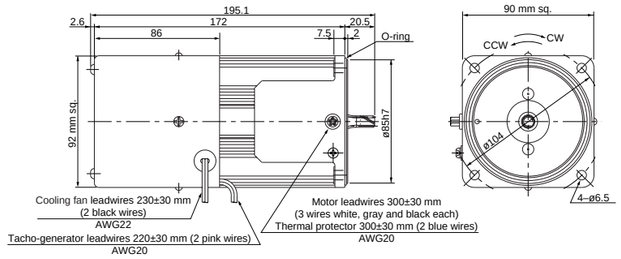
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/4, Unit: mm

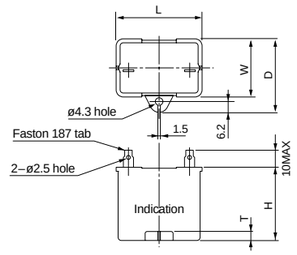
M9RZ90GV4L 4P 90 W 100 V (Forced cooling fan)
M9RZ90GV4Y 4P 90 W 200 V (Forced cooling fan)

Mass	Helical gear	Module	Number of teeth
3.3 kg		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm



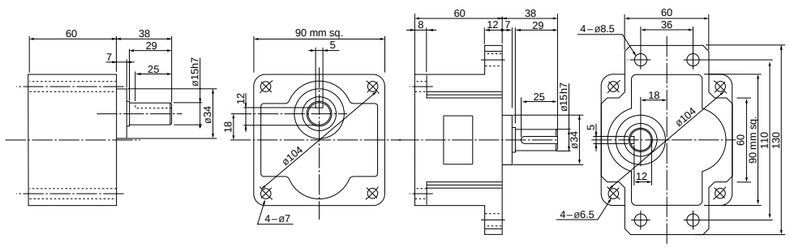
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RZ90GV4L	M0PC30M20	50.2	31	41	42	5	M0PC5032
M9RZ90GV4Y	M0PC7.5M37	50	34	45	45	6	—

Gear head (dimensions)

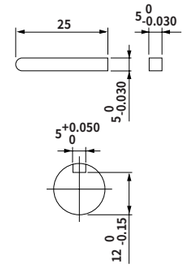
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

cULus CE 90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RZ90GV4LG M9RZ90GV4LGA	4	90	100	50	30	90 to 1400	0.69 (7.0)	0.39 (4.0)	3.0	0.66 (6.7)	32 (250V)
					60		90 to 1700	0.55 (5.6)	0.39 (4.0)	2.9	0.66 (6.7)	
	M9RZ90GV4DG M9RZ90GV4DGA	4	90	110	60	30	90 to 1700	0.55 (5.6)	0.39 (4.0)	3.1	0.66 (6.7)	28 (250V)
				115	60		90 to 1700	0.55 (5.6)	0.39 (4.0)	3.2	0.72 (7.3)	
	M9RZ90GV4YG M9RZ90GV4YGA	4	90	200	50	30	90 to 1400	0.69 (7.0)	0.39 (4.0)	1.4	0.66 (6.7)	8 (450V)
					60		90 to 1700	0.55 (5.6)	0.39 (4.0)	1.4	0.66 (6.7)	
	M9RZ90GV4GG M9RZ90GV4GGA	4	90	220	50	30	90 to 1400	0.69 (7.0)	0.39 (4.0)	1.5	0.66 (6.7)	7 (450V)
					60		90 to 1700	0.55 (5.6)	0.39 (4.0)	1.4	0.66 (6.7)	
				230	50		90 to 1400	0.69 (7.0)	0.39 (4.0)	1.6	0.72 (7.3)	
					60		90 to 1700	0.55 (5.6)	0.39 (4.0)	1.5	0.72 (7.3)	

• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-307.
• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

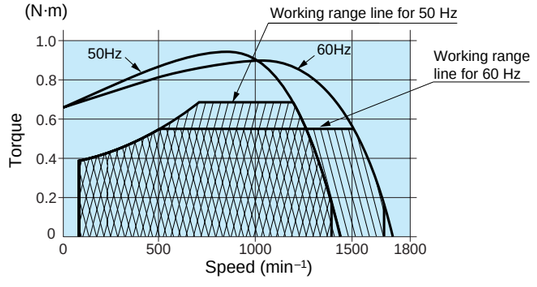
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	1.68 (17)	2.01 (20)	2.79 (28)	3.35 (34)	4.19 (43)	5.03 (51)	5.59 (57)	6.29 (64)	7.55 (77)	9.05 (92)	10.1 (102)	12.6 (128)	15.1 (153)
		60Hz	1.34 (14)	1.60 (16)	2.23 (23)	2.67 (27)	3.34 (34)	4.01 (41)	4.46 (45)	5.01 (51)	6.01 (61)	7.22 (73)	8.02 (82)	10.0 (102)	12.0 (122)
	90min^{-1}		0.95 (9.7)	1.14 (12)	1.58 (16)	1.90 (19)	2.37 (24)	2.84 (29)	3.16 (32)	3.55 (36)	4.26 (44)	5.12 (52)	5.69 (58)	7.11 (73)	8.53 (87)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed \ Reduction ratio		36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	16.3 (165)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	13.0 (132)	18.0 (184)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		9.21 (94)	12.8 (131)	15.4 (157)	19.2 (197)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	Rotational direction		Same as motor rotational direction										

Speed-torque characteristics



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.

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

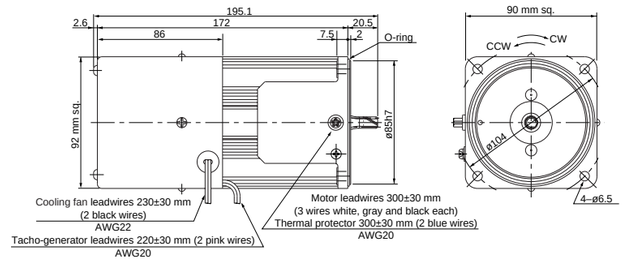
Features B-268 | System configuration B-269 | Coding system B-269 | Model list B-270

Motor (dimensions)

Scale: 1/4, Unit: mm

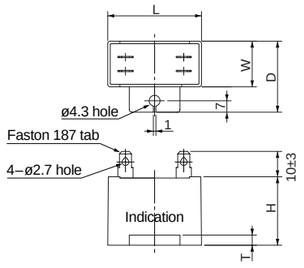
M9RZ90GV4LG(A) 4P 90 W 100 V (Forced cooling fan)
M9RZ90GV4DG(A) 4P 90 W 110 V / 115 V (Forced cooling fan)
M9RZ90GV4YG(A) 4P 90 W 200 V (Forced cooling fan)
M9RZ90GV4GG(A) 4P 90 W 220 V / 230 V (Forced cooling fan)

Mass	Helical	Module	Number of teeth
3.5 kg	gear	0.6	9



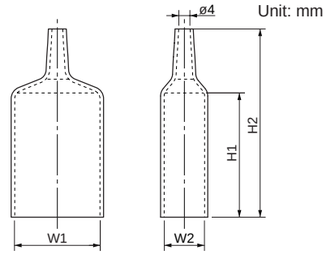
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

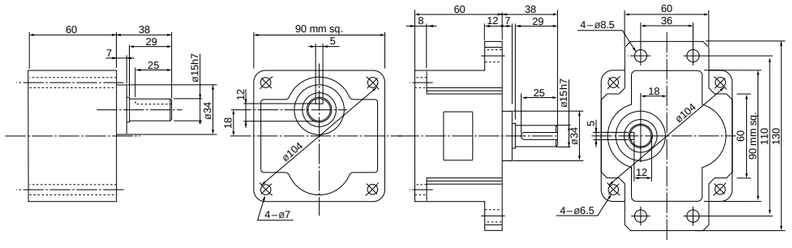
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M9RZ90GV4LG(A)	M0PC32M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GV4DG(A)	M0PC28M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GV4YG(A)	M0PC8M45G	58	35	50	50	4	M0PC5835G	58	35	55	78
M9RZ90GV4GG(A)	M0PC7M45G	58	35	50	50	4	M0PC5835G	58	35	55	78

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

Gear head (dimensions)

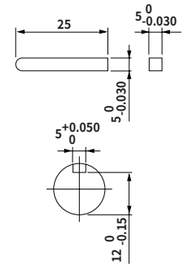
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg
MY9G□M (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

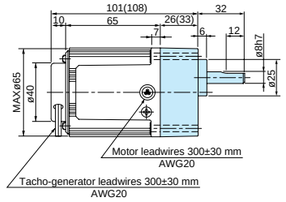
Gear head combination B-305 | Round shaft motor dimensions B-307 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed reversible motor (leadwire)

Gear head combination dimensions
Scale: 1/4, Unit: mm

60 mm sq. 4 W

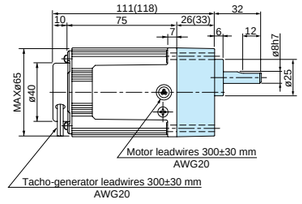
M6RX4GV4L + MX6G□BA(MA) / MX6G□B(M)



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

60 mm sq. 6 W

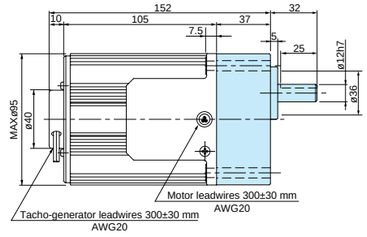
M6RX6GV4L + MX6G□BA(MA) / MX6G□B(M)
M6RX6GV4Y + MX6G□BA(MA) / MX6G□B(M)
M6RX6GV4LG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GV4DG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GV4YG(A) + MX6G□BA(MA) / MX6G□B(M)
M6RX6GV4GG(A) + MX6G□BA(MA) / MX6G□B(M)



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

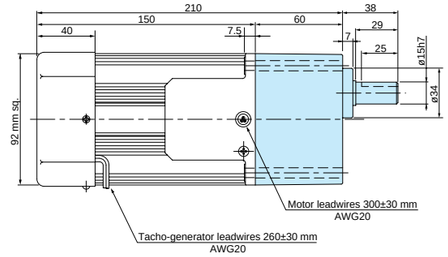
90 mm sq. 40 W

M9RX40GV4L + MX9G□B(M)
M9RX40GV4Y + MX9G□B(M)
M9RX40GV4LG(A) + MX9G□B(M)
M9RX40GV4DG(A) + MX9G□B(M)
M9RX40GV4YG(A) + MX9G□B(M)
M9RX40GV4GG(A) + MX9G□B(M)



90 mm sq. 60 W

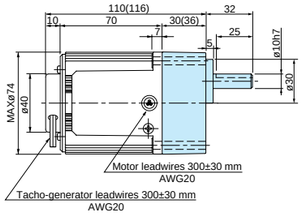
M9RZ60GV4L + MZ9G□B (MY9G□B)
M9RZ60GV4Y + MZ9G□B (MY9G□B)
M9RZ60GV4LG(A) + MZ9G□B (MY9G□B)
M9RZ60GV4DG(A) + MZ9G□B (MY9G□B)
M9RZ60GV4YG(A) + MZ9G□B (MY9G□B)
M9RZ60GV4GG(A) + MZ9G□B (MY9G□B)



* Refer to page B-380 for high torque gear head.

70 mm sq. 10 W

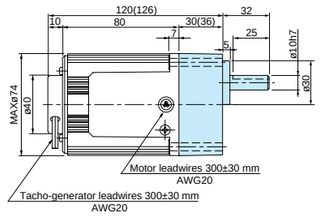
M7RX10GV4L + MX7G□BA(MA) / MX7G□B(M)
M7RX10GV4Y + MX7G□BA(MA) / MX7G□B(M)



* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).

70 mm sq. 15 W

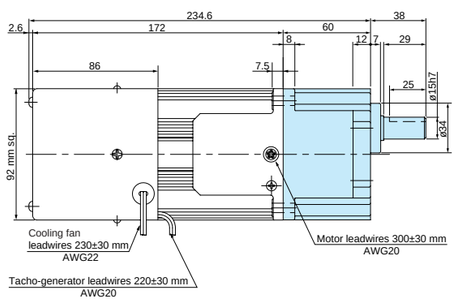
M7RX15GV4L + MX7G□BA(MA) / MX7G□B(M)
M7RX15GV4Y + MX7G□BA(MA) / MX7G□B(M)
M7RX15GV4LG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GV4DG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GV4YG(A) + MX7G□BA(MA) / MX7G□B(M)
M7RX15GV4GG(A) + MX7G□BA(MA) / MX7G□B(M)



* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).

90 mm sq. 90 W

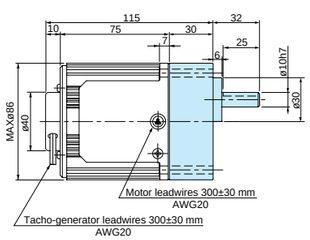
M9RZ90GV4L + MY9G□B (MZ9G□B)
M9RZ90GV4Y + MY9G□B (MZ9G□B)
M9RZ90GV4LG(A) + MY9G□B (MZ9G□B)
M9RZ90GV4DG(A) + MY9G□B (MZ9G□B)
M9RZ90GV4YG(A) + MY9G□B (MZ9G□B)
M9RZ90GV4GG(A) + MY9G□B (MZ9G□B)



* Refer to page B-380 for high torque gear head.

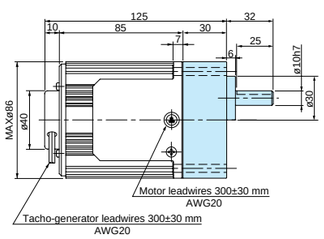
80 mm sq. 20 W

M8RX20GV4L + MX8G□B(M)
M8RX20GV4Y + MX8G□B(M)



80 mm sq. 25 W

M8RX25GV4L + MX8G□B(M)
M8RX25GV4Y + MX8G□B(M)
M8RX25GV4LG(A) + MX8G□B(M)
M8RX25GV4DG(A) + MX8G□B(M)
M8RX25GV4YG(A) + MX8G□B(M)
M8RX25GV4GG(A) + MX8G□B(M)



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

*The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
*The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

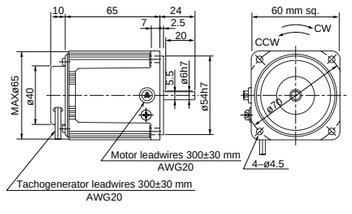
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Variable speed reversible motor (4-pole round shaft / leadwire)

Dimensions
Scale: 1/4, Unit: mm

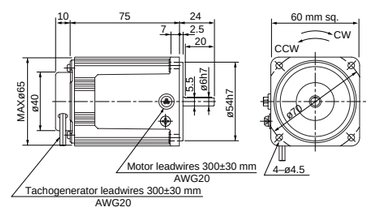
60 mm sq. 4 W — Mass 0.6 kg

M6RX4SV4LS



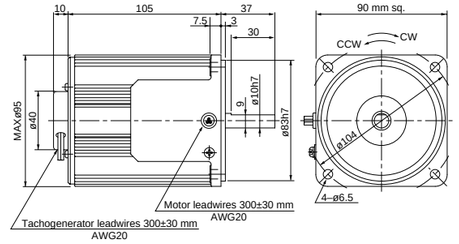
60 mm sq. 6 W — Mass 0.71 kg

M6RX6SV4LS
M6RX6SV4YS
M6RX6SV4LG(A)
M6RX6SV4YG(A)
M6RX6SV4DG(A)
M6RX6SV4GG(A)



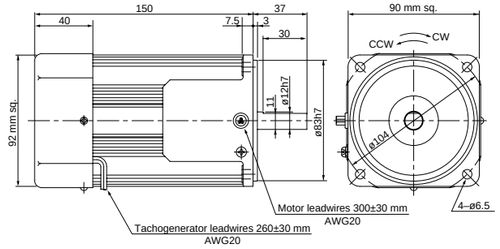
90 mm sq. 40 W — Mass 2.4 kg

M9RX40SV4LS
M9RX40SV4YS
M9RX40SV4LG(A)
M9RX40SV4YG(A)
M9RX40SV4DG(A)
M9RX40SV4GG(A)



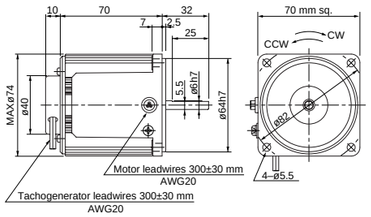
90 mm sq. 60 W — Mass 2.7 kg

M9RZ60SV4LS (with fan)
M9RZ60SV4YS (with fan)
M9RZ60SV4LG(A) (with fan)
M9RZ60SV4DG(A) (with fan)
M9RZ60SV4YG(A) (with fan)
M9RZ60SV4GG(A) (with fan)



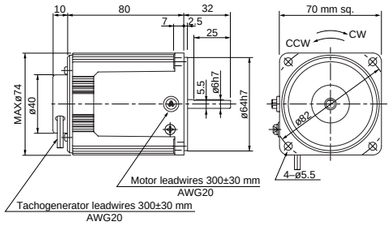
70 mm sq. 10 W — Mass 0.88 kg

M7RX10SV4LS
M7RX10SV4YS



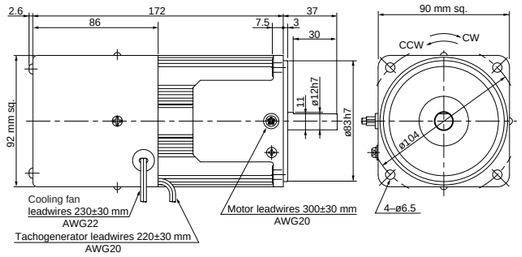
70 mm sq. 15 W — Mass 1.1 kg

M7RX15SV4LS
M7RX15SV4YS
M7RX15SV4LG(A)
M7RX15SV4YG(A)
M7RX15SV4DG(A)
M7RX15SV4GG(A)



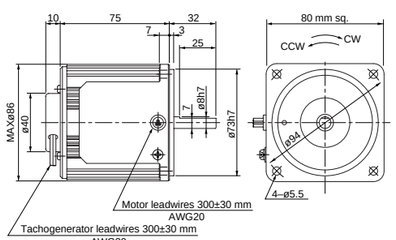
90 mm sq. 90 W — Mass 3.5 kg

M9RZ90SV4LS (Forced cooling fan)
M9RZ90SV4YS (Forced cooling fan)
M9RZ90SV4LG(A) (Forced cooling fan)
M9RZ90SV4DG(A) (Forced cooling fan)
M9RZ90SV4YG(A) (Forced cooling fan)
M9RZ90SV4GG(A) (Forced cooling fan)



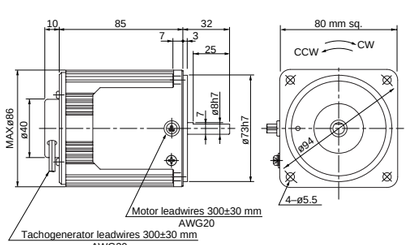
80 mm sq. 20 W — Mass 1.2 kg

M8RX20SV4LS
M8RX20SV4YS



80 mm sq. 25 W — Mass 1.5 kg

M8RX25SV4LS
M8RX25SV4YS
M8RX25SV4LG(A)
M8RX25SV4YG(A)
M8RX25SV4DG(A)
M8RX25SV4GG(A)

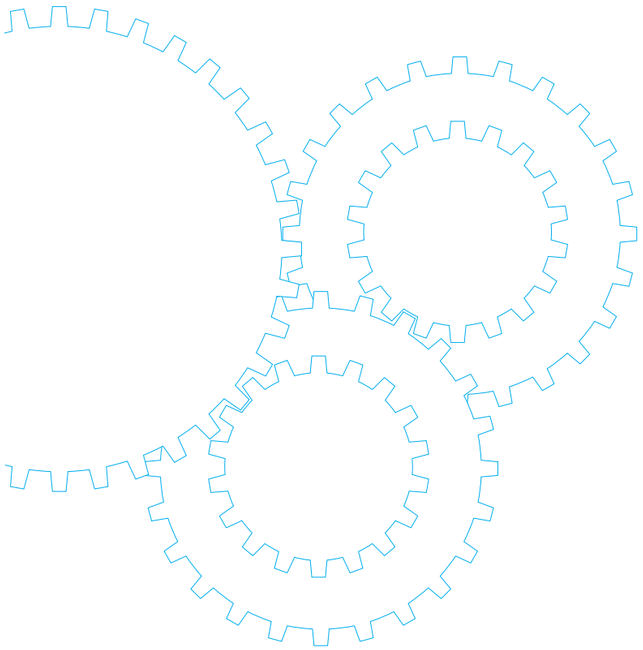


* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

*The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.
*The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

(Note) 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



Contents

Outline of
Variable speed electromagnetic brake single-phase motor

Features

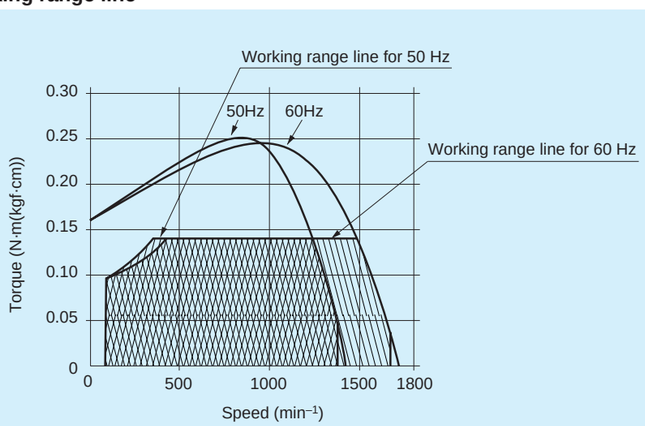
- It is an electromagnetic brake variable speed motor.
- By using it together with a speed controller, you can vary the speed over a wider range (90 to 1400 min^{-1} for 50 Hz and 90 to 1700 min^{-1} for 50 Hz).
- Various functions such as variable speed, braking, normal/reverse run and soft-start/soft-down stop are made 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

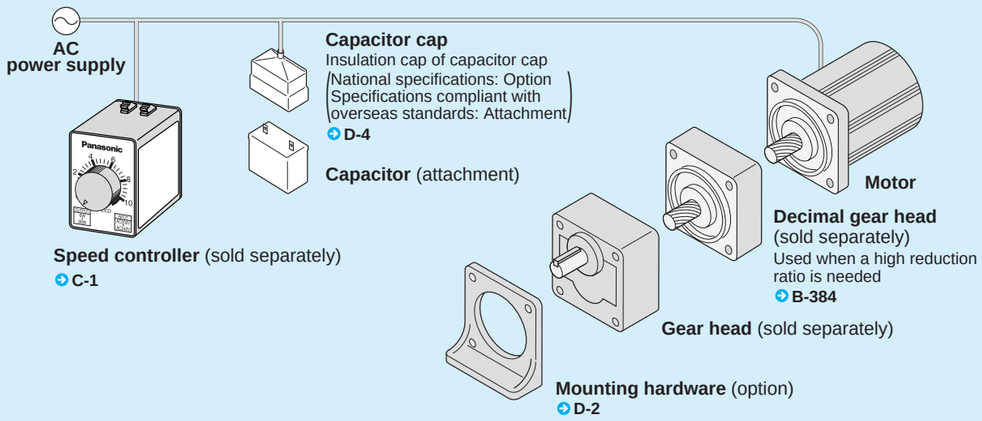


Example : M8RX25GBV4L

Others

For the principle of operation etc., refer to page B-226.

System configuration diagram



Coding system

M 9 R X 40 G BV 4 L

- **9 Size**
  - 6 : 60 mm sq.
  - 7 : 70 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **R Motor type**
  - R : Reversible motor
- **X Output type**
  - X : 40 W or smaller
- **40 Output**
  - 6 : 6 W
  - 15 : 15 W
  - 25 : 25 W
  - 40 : 40 W
- **G Shape of shaft**
  - G : Pinion shaft
- **BV Option**
  - B : Electromagnetic brake
  - V : Variable speed
- **4 No. of poles**
  - 4 : 4 poles
- **L Voltage**
  - L : 100 V
  - Y : 200 V

Model list of
Variable speed electromagnetic brake single-phase motor

Pinion shaft motor

Size	Output (W)	Leadwire type		
		Model number	Specifications	Page
60 mm sq.	6	M6RX6GBV4L	100V	B-314
		M6RX6GBV4Y	200V	B-314
70 mm sq.	15	M7RX15GBV4L	100V	B-316
		M7RX15GBV4Y	200V	B-316
80 mm sq.	25	M8RX25GBV4L	100V	B-318
		M8RX25GBV4Y	200V	B-318
90 mm sq.	40	M9RX40GBV4L	100V	B-320
		M9RX40GBV4Y	200V	B-320

Applicable gear head

Standard gear head		Decimal gear head
Ball bearing	metal bearing	
MX6G□BA	MX6G□MA	MX6G10XB
MX6G□B	MX6G□M	
MX7G□BA	MX7G□MA	MX7G10XB
MX7G□B	MX7G□M	
MX8G□B	MX8G□M	MX8G10XB
MX9G□B	MX9G□M	MX9G10XB

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

Possible combination of speed controller and motor

Size	Output (W)	Motor		Voltage (V)	Speed controller			
		Certified	Part No.		MGSD type	EX type	SD48 type	EX48 type
60 mm sq.	6	-----	M6RX6GBV4L	100	MGSDA1	DV1131	DVSD48AL	DVEX48AL
		-----	M6RX6GBV4Y	200	MGSDB2	DV1231	DVSD48AY	DVEX48AY
70 mm sq.	15	-----	M7RX15GBV4L	100	MGSDA1	DV1132	DVSD48AL	DVEX48AL
		-----	M7RX15GBV4Y	200	MGSDB2	DV1231	DVSD48AY	DVEX48AY
80 mm sq.	25	-----	M8RX25GBV4L	100	MGSDA1	DV1132	DVSD48BL	DVEX48BL
		-----	M8RX25GBV4Y	200	MGSDB2	DV1234	DVSD48BY	DVEX48BY
90 mm sq.	40	-----	M9RX40GBV4L	100	MGSDA1	DV1132	DVSD48BL	DVEX48BL
		-----	M9RX40GBV4Y	200	MGSDB2	DV1234	DVSD48BY	DVEX48BY

* 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)

60 mm sq. 6 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M6RX6GBV4L	4	6	100	50	30	90 to 1400	0.030 (0.30)	0.030 (0.30)	0.31	0.038 (0.38)	4	0.04	0.049 (0.5)	3 (200V)
					60		90 to 1700	0.030 (0.30)	0.030 (0.30)	0.31	0.038 (0.38)	4	0.04	0.049 (0.5)	
	M6RX6GBV4Y	4	6	200	50	30	90 to 1400	0.030 (0.30)	0.030 (0.30)	0.16	0.038 (0.38)	4	0.02	0.049 (0.5)	0.8 (400V)
					60		90 to 1700	0.030 (0.30)	0.030 (0.30)	0.16	0.038 (0.38)	4	0.02	0.049 (0.5)	

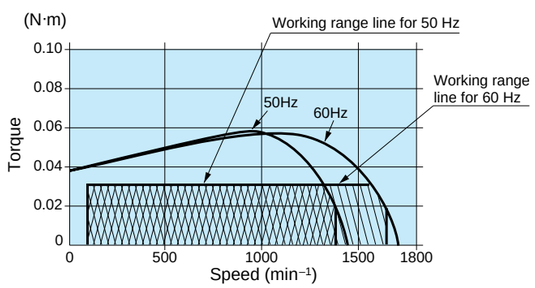
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
		60Hz	0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
	90min⁻¹		0.072 (0.7)	0.087 (0.8)	0.12 (1.2)	0.14 (1.4)	0.18 (1.8)	0.21 (2.1)	0.24 (2.4)	0.29 (2.9)	0.36 (3.6)	0.43 (4.3)	0.48 (4.8)	0.60 (6.1)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA MX6G□B (ball bearing) MX6G□MA MX6G□M (metal bearing)	1200min⁻¹	50Hz	0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
		60Hz	0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min⁻¹		0.65 (6.6)	0.78 (7.9)	1.09 (11)	1.30 (13)	1.63 (16)	1.98 (20)	2.18 (22)	2.45 (25)	2.45 (25)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

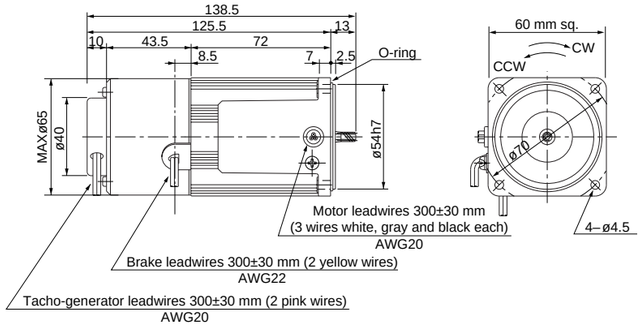
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

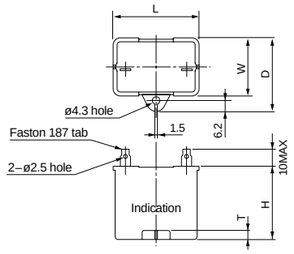
M6RX6GBV4L 4P 6 W 100 V
M6RX6GBV4Y 4P 6 W 200 V

Mass	Helical	Module	Number of teeth
0.9 kg	gear	0.5	6



Capacitor (dimensions) [attachment]

Unit: mm



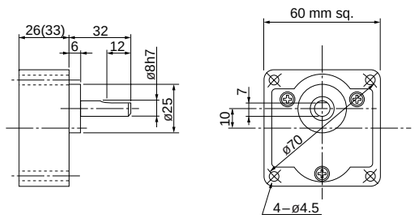
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M6RX6GBV4L	M0PC3M20	39.5	16	26.5	30.5	4	M0PC3917
M6RX6GBV4Y	M0PC0.8M40	39.5	16.2	27	27	4	M0PC3917

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

(Note) 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)

70 mm sq. 15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M7RX15GBV4L	4	15	100	50	30	90 to 1400	0.098 (1.0)	0.046 (0.46)	0.59	0.080 (0.81)	4	0.05	0.078 (0.80)	6 (200V)
					60		90 to 1700	0.098 (1.0)	0.046 (0.46)	0.57	0.080 (0.81)	4	0.05	0.078 (0.80)	
	M7RX15GBV4Y	4	15	200	50	30	90 to 1400	0.098 (1.0)	0.046 (0.46)	0.30	0.080 (0.81)	4	0.03	0.078 (0.80)	1.5 (400V)
					60		90 to 1700	0.098 (1.0)	0.046 (0.46)	0.30	0.080 (0.81)	4	0.03	0.078 (0.80)	

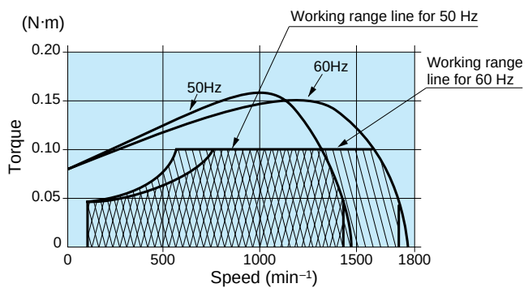
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA MX7G□B (ball bearing) MX7G□MA MX7G□M (metal bearing)	1200min^{-1}	50Hz	0.23 (2.3)	0.28 (2.8)	0.39 (3.9)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)	1.19 (12)	1.42 (14)	1.58 (16)	1.98 (20)
		60Hz	0.23 (2.3)	0.28 (2.8)	0.39 (3.9)	0.47 (4.7)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)	1.19 (12)	1.42 (14)	1.58 (16)	1.98 (20)
	90min^{-1}		0.11 (1.1)	0.13 (1.3)	0.18 (1.8)	0.22 (2.2)	0.27 (2.7)	0.33 (3.3)	0.37 (3.7)	0.46 (4.6)	0.55 (5.6)	0.66 (6.7)	0.74 (7.5)	0.93 (9.4)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA MX7G□B (ball bearing) MX7G□MA MX7G□M (metal bearing)	1200min^{-1}	50Hz	2.13 (21)	2.56 (26)	3.56 (36)	4.27 (43)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	2.13 (21)	2.56 (26)	3.56 (36)	4.27 (43)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min^{-1}		1.00 (10)	1.20 (12)	1.67 (17)	2.00 (20)	2.50 (25)	3.00 (30)	3.34 (34)	4.00 (40)	4.90 (50)	4.90 (50)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

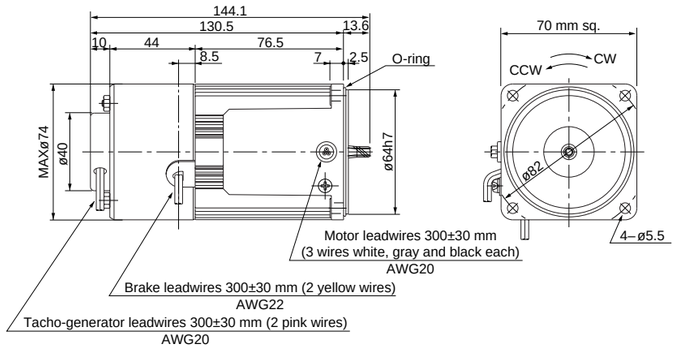
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

Scale: 1/3, Unit: mm

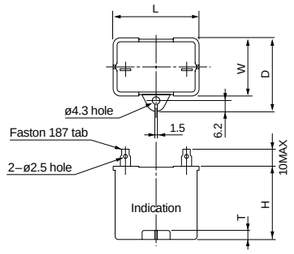
M7RX15GBV4L 4P 15 W 100 V
M7RX15GBV4Y 4P 15 W 200 V

Mass	Helical gear	Module	Number of teeth
1.4 kg		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm



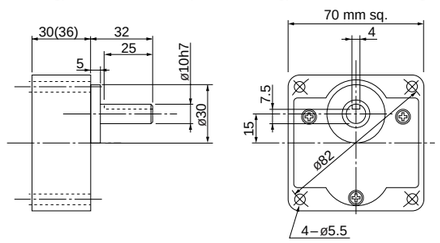
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M7RX15GBV4L	M0PC6M20	39.5	17.5	28	30.5	4	M0PC3917
M7RX15GBV4Y	M0PC1.5M40	39.5	22	32.5	32.5	4	M0PC3922

Gear head (dimensions)

Scale: 1/3, Unit: mm

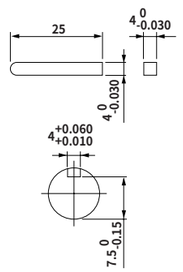
MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg



* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



(Note) 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 sq. 25 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M8RX25GBV4L	4	25	100	50	30	90 to 1400	0.15 (1.5)	0.088 (0.90)	1.0	0.16 (1.6)	6	0.06	0.10 (1.0)	9.5 (200V)
					60		90 to 1700	0.15 (1.5)	0.088 (0.90)	1.0	0.16 (1.6)	6	0.06	0.10 (1.0)	
	M8RX25GBV4Y	4	25	200	50	30	90 to 1400	0.15 (1.5)	0.088 (0.90)	0.5	0.16 (1.6)	6	0.03	0.10 (1.0)	2.4 (400V)
					60		90 to 1700	0.15 (1.5)	0.088 (0.90)	0.5	0.16 (1.6)	6	0.03	0.10 (1.0)	

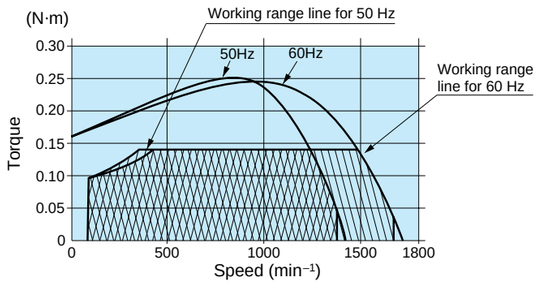
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
		60Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
	90min^{-1}		0.094 (0.9)	0.11 (1.1)	0.15 (1.5)	0.18 (1.8)	0.23 (2.3)	0.28 (2.8)	0.31 (3.1)	0.39 (3.9)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.78 (7.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min^{-1}		0.84 (8.5)	1.01 (10)	1.41 (14)	1.69 (17)	2.12 (21)	2.54 (25)	2.83 (28)	3.39 (34)	4.24 (43)	5.09 (51)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

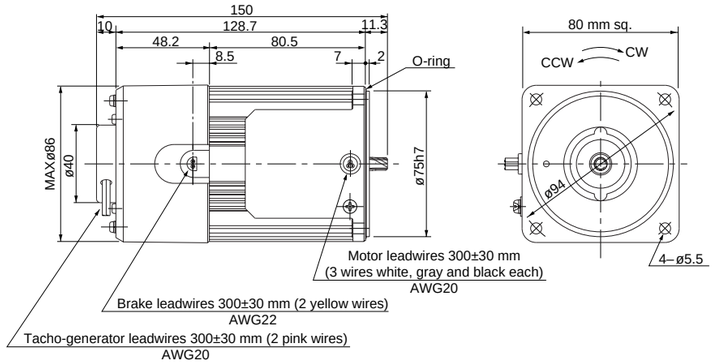
Features B-310 | System configuration B-311 | Coding system B-311 | Model list B-312

Motor (dimensions)

Scale: 1/3, Unit: mm

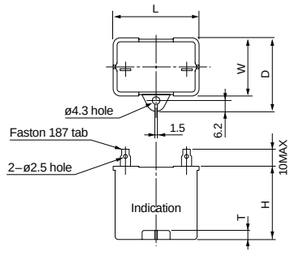
M8RX25GBV4L 4P 25 W 100 V
M8RX25GBV4Y 4P 25 W 200 V

Mass	Helical gear	Module	Number of teeth
1.8 kg		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm



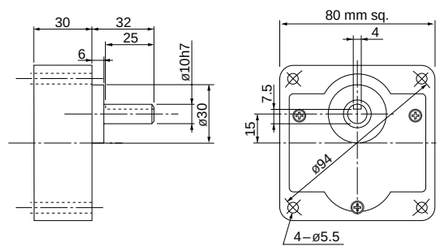
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M8RX25GBV4L	M0PC9.5M20	39.5	22	32.5	30.5	4	M0PC3922
M8RX25GBV4Y	M0PC2.4M40	49.7	24	34.5	34.5	4	M0PC5026

Gear head (dimensions)

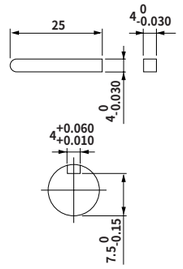
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



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

Gear head combination B-322 | Decimal gear head B-384 | Control related product C-4 | Option D-2

Variable speed electromagnetic brake single-phase motor (leadwire)

90 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Brake Input (W)	Brake Current (A)	Brake Friction Torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M9RX40GBV4L	4	40	100	50	30	90 to 1400	0.30 (3.0)	0.098 (1.0)	1.60	0.25 (2.6)	7	0.09	0.20 (2.0)	15 (210V)
					60		90 to 1700	0.24 (2.4)	0.098 (1.0)	1.60	0.25 (2.6)	7	0.09	0.20 (2.0)	
	M9RX40GBV4Y	4	40	200	50	30	90 to 1400	0.30 (3.0)	0.098 (1.0)	0.80	0.25 (2.6)	7	0.05	0.20 (2.0)	3.8 (400V)
					60		90 to 1700	0.24 (2.4)	0.098 (1.0)	0.76	0.25 (2.6)	7	0.05	0.20 (2.0)	

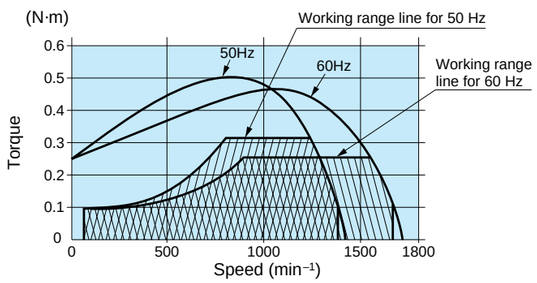
• Permissible torque at output shaft of gear head

Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	0.66 (6.7)	0.84 (8.5)	1.08 (11)	1.38 (14)	1.57 (16)	2.00 (20)	2.25 (22)	2.74 (27)	3.23 (32)	4.13 (42)	4.41 (44)	5.29 (53)
		60Hz	0.51 (5.2)	0.66 (6.7)	0.84 (8.5)	1.08 (11)	1.22 (12)	1.57 (16)	1.76 (17)	2.14 (21)	2.74 (27)	3.23 (32)	3.53 (36)	4.13 (42)
	90min⁻¹		0.11 (1.1)	0.14 (1.4)	0.19 (1.9)	0.23 (2.3)	0.29 (2.9)	0.35 (3.5)	0.39 (3.9)	0.49 (5.0)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min⁻¹	50Hz	6.37 (65)	8.15 (83)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	MX9G10XB
		60Hz	5.29 (53)	6.37 (65)	8.8 (89)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	9.8 (100)	
	90min⁻¹		1.06 (10)	1.28 (13)	1.78 (18)	2.13 (21)	2.67 (27)	3.20 (32)	3.56 (36)	4.27 (43)	5.34 (54)	6.40 (65)	
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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.

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

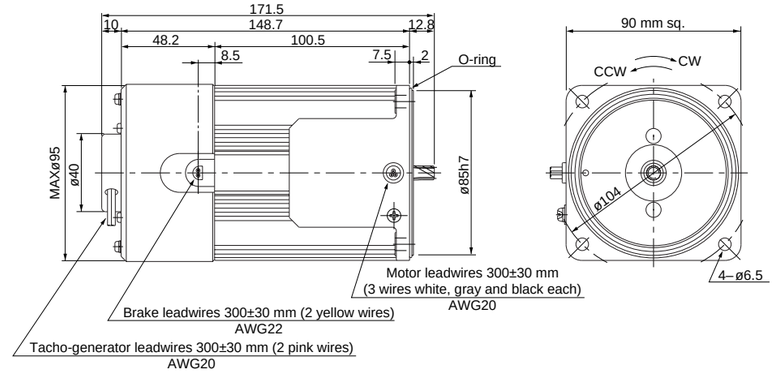
Features B-310 | System configuration B-311 | Coding system B-311 | Model list B-312

Motor (dimensions)

Scale: 1/3, Unit: mm

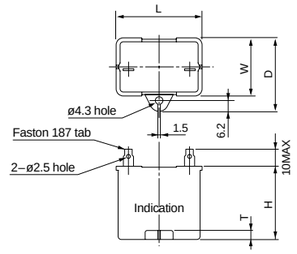
M9RX40GBV4L 4P 40 W 100 V
M9RX40GBV4Y 4P 40 W 200 V

Mass	Helical gear	Module	Number of teeth
2.9 kg		0.55	9



Capacitor (dimensions) [attachment]

Unit: mm



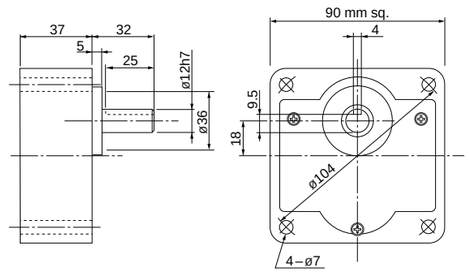
• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M9RX40GBV4L	M0PC15M20	39.5	26.7	37	41	4	M0PC3926
M9RX40GBV4Y	M0PC3.8M40	50	26.7	37.5	38	4	M0PC5026

Gear head (dimensions)

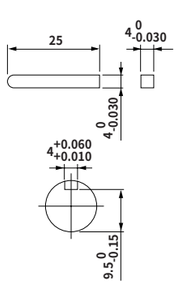
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)

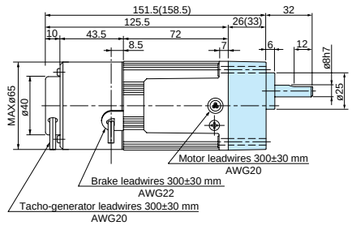


(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

Gear head combination B-322 | Decimal gear head B-384 | Control related product C-4 | Option D-2

60 mm sq. 6 W

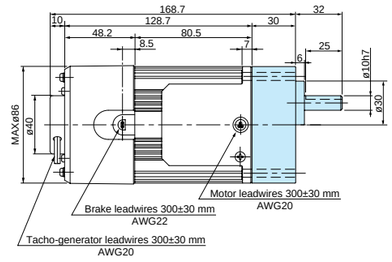
M6RX6GBV4L + MX6G□BA(MA) / MX6G□B(M)
M6RX6GBV4Y + MX6G□BA(MA) / MX6G□B(M)



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

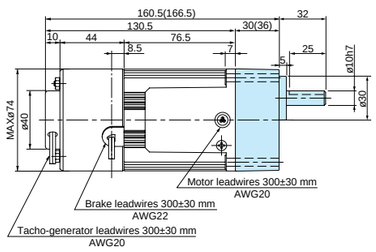
80 mm sq. 25 W

M8RX25GBV4L + MX8G□B(M)
M8RX25GBV4Y + MX8G□B(M)



70 mm sq. 15 W

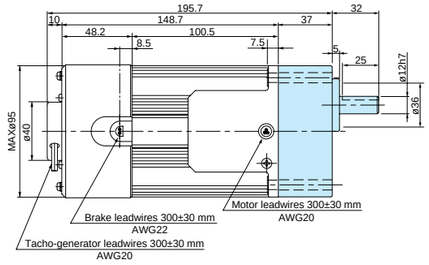
M7RX15GBV4L + MX7G□BA(MA) / MX7G□B(M)
M7RX15GBV4Y + MX7G□BA(MA) / MX7G□B(M)



* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).

90 mm sq. 40 W

M9RX40GBV4L + MX9G□B(M)
M9RX40GBV4Y + MX9G□B(M)



* 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

Contents

Outline of variable speed unit motor

Features

• A variable speed motor is combined with a one-touch connection speed controller.
• The speed controller is available in an analog setting type (MUSN series) or a digital setting type (MUXN series).

<MUSN series>
• Analog setting type with a speed setting knob, RUN-STOP and rotational direction change
• The cable can be extended up to 5 m using an option
(A 1-meter extension cable is included with the motor.)

<MUXN series>
• Multifunction digital setting type using a microcomputer
1. The speed can be set digitally.
2. The motor speed can be converted to the gear head speed and conveyor speed instantaneously.
3. The actual speed can be displayed digitally.
4. Soft-start/soft-down function
5. Set conditions backup function
6. Set lock function

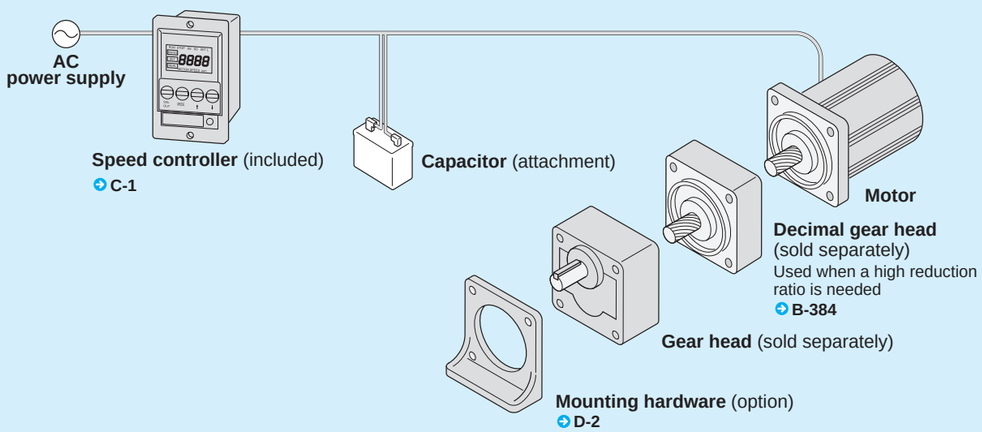
• The cable can be extended up to 5 m using an option
(A 1-meter extension cable is included with the motor.)

Specifications

	MUSN Series	MUXN Series
Output	6W : 15W : 25W : 40W : 60W : 90W	6W : 15W : 25W : 40W : 60W : 90W
Rated voltage	100 / 200V	100 / 200V
Power supply frequency	50Hz / 60Hz	50Hz / 60Hz
Speed control range	90 to 1400min^{-1} / 90 to 1700min^{-1}	90 to 1400min^{-1} / 90 to 1700min^{-1}
Speed variation	5% (standard value)	5% (standard value)
Speed setting	Analog setting	Digital setting
Operating temperature range	–10 to 40˚C	0 to 40˚C
Storage temperature range	–20 to 60˚C	–10 to 60˚C
Soft-start/soft-down time	————	0.1 to 30 sec

• The 90 W models contain a thermal protector to prevent burnout for 90 W.

System configuration diagram



* For the 40 W or lower models, the capacitor is built into the speed controller.

Coding system

MUSN Motor type
- MUSN :US series
- MUXN :UX series

8 Size
- 6 : 60 mm sq.
- 7 : 70 mm sq.
- 8 : 80 mm sq.
- 9 : 90 mm sq.

25 Output
- 6 : 6 W
- 15 : 15 W
- 25 : 25 W
- 40 : 40 W
- 60 : 60 W
- 90 : 90 W

G Shape of shaft
- G: Pinion shaft

L Voltage
- L : 100 V
- Y : 200 V

Model list of variable speed unit motor

Pinion shaft motor / speed controller (Set)

Size	Output (W)	MUSN Series			MUXN Series		
		Model number	Specifications	Page	Model number	Specifications	Page
60 mm sq.	6	MUSN606GL	100V	B-328	MUXN606GL	100V	B-328
		MUSN606GY	200V	B-328	MUXN606GY	200V	B-328
70 mm sq.	15	MUSN715GL	100V	B-330	MUXN715GL	100V	B-330
		MUSN715GY	200V	B-330	MUXN715GY	200V	B-330
80 mm sq.	25	MUSN825GL	100V	B-332	MUXN825GL	100V	B-332
		MUSN825GY	200V	B-332	MUXN825GY	200V	B-332
90 mm sq.	40	MUSN940GL	100V	B-334	MUXN940GL	100V	B-334
		MUSN940GY	200V	B-334	MUXN940GY	200V	B-334
	60	MUSN960GL	100V	B-336	MUXN960GL	100V	B-336
		MUSN960GY	200V	B-336	MUXN960GY	200V	B-336
	90	MUSN990GL	100V	B-338	MUXN990GL	100V	B-338
		MUSN990GY	200V	B-338	MUXN990GY	200V	B-338

Applicable gear head

Hinge attached

Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
Ball bearing	metal bearing			
MX6G□BA MX6G□B	MX6G□MA MX6G□M	–	–	MX6G10XB
MX7G□BA MX7G□B	MX7G□MA MX7G□M	–	–	MX7G10XB
MX8G□B	MX8G□M	–	–	MX8G10XB
MX9G□B	MX9G□M	–	MX9G□R	MX9G10XB
MZ9G□B	–	MR9G□B	MZ9G□R	MZ9G10XB
MY9G□B		MP9G□B		

*Refer to page B-380 for dimensions and permissible torque of high torque gear head.
Refer to page B-382 for dimensions and permissible torque of right-angle gear head.
Refer to page B-384 for dimensions of decimal gear head.

Variable speed unit motor

60 mm sq. 6 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
60 mm sq.	MUSN606GL	M61X6GD4L	100V	DVUS606L	C-36
	MUXN606GL			DVUX606L	C-36
	MUSN606GY	M61X6GD4Y	200V	DVUS606Y	C-36
	MUXN606GY			DVUX606Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
60 mm sq.	M61X6GD4L	4	6	100	50	Cont.	90 to 1400	0.032 (0.32)	0.025 (0.25)	0.30	0.037 (0.37)	2.5 (200V)
					60		90 to 1700	0.032 (0.32)	0.025 (0.25)	0.30		
	M61X6GD4Y	4	6	200	50	Cont.	90 to 1400	0.032 (0.32)	0.025 (0.25)	0.15	0.037 (0.37)	0.6 (400V)
					60		90 to 1700	0.032 (0.32)	0.025 (0.25)	0.15		

• Permissible torque at output shaft of gear head

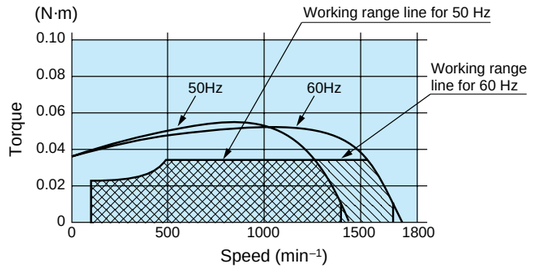
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	1200min^{-1}	50Hz	0.077 (0.7)	0.093 (0.9)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.25 (2.5)	0.32 (3.2)	0.38 (3.8)	0.46 (4.6)	0.51 (5.2)	0.64 (6.5)
		60Hz	0.077 (0.7)	0.093 (0.9)	0.13 (1.3)	0.15 (1.5)	0.19 (1.9)	0.23 (2.3)	0.25 (2.5)	0.32 (3.2)	0.38 (3.8)	0.46 (4.6)	0.51 (5.2)	0.64 (6.5)
	90min^{-1}		0.06 (0.6)	0.07 (0.7)	0.10 (1.0)	0.12 (1.2)	0.15 (1.5)	0.18 (1.8)	0.20 (2.0)	0.25 (2.5)	0.30 (3.0)	0.36 (3.6)	0.40 (4.0)	0.50 (5.1)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX6G□BA (ball bearing) MX6G□B (ball bearing) MX6G□MA (metal bearing) MX6G□M (metal bearing)	1200min^{-1}	50Hz	0.69 (7.0)	0.83 (8.4)	1.16 (11)	1.39 (14)	1.74 (17)	2.09 (20)	2.33 (23)	2.45 (25)	2.45 (25)	2.45 (25)	MX6G10XB
		60Hz	0.69 (7.0)	0.83 (8.4)	1.16 (11)	1.39 (14)	1.74 (17)	2.09 (20)	2.33 (23)	2.45 (25)	2.45 (25)	2.45 (25)	
	90min^{-1}		0.54 (5.5)	0.65 (6.6)	0.90 (9.1)	1.08 (11)	1.35 (13)	1.62 (16)	1.81 (18)	2.17 (22)	2.45 (25)	2.45 (25)	
	Rotational direction		Reverse to motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

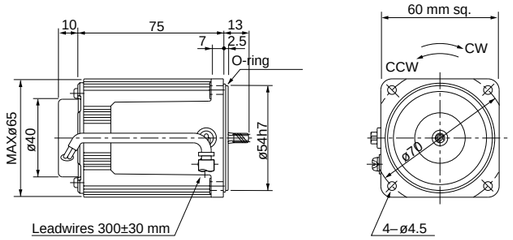
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

M61X6GD4L 4P 6 W 100 V
M61X6GD4Y 4P 6 W 200 V

Mass 0.71 kg | Helical gear | Module 0.5 | Number of teeth 6

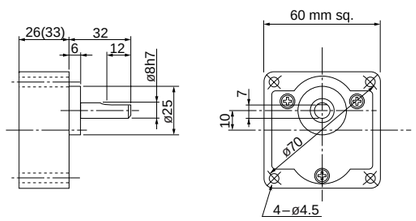


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg: Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg: Output shaft D cut



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

(Note) 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 unit motor

70 mm sq. 15 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
70 mm sq.	MUSN715GL	M71X15GD4L	100V	DVUS715L	C-36
	MUXN715GL			DVUX715L	C-36
	MUSN715GY	M71X15GD4Y	200V	DVUS715Y	C-36
	MUXN715GY			DVUX715Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
70 mm sq.	M71X15GD4L	4	15	100	50	Cont.	90 to 1400	0.089 (0.90)	0.029 (0.29)	0.60	0.068 (0.69)	5 (200V)
					60		90 to 1700	0.089 (0.90)	0.029 (0.29)	0.56	0.068 (0.69)	
	M71X15GD4Y	4	15	200	50	Cont.	90 to 1400	0.089 (0.90)	0.029 (0.29)	0.30	0.068 (0.69)	1.3 (400V)
					60		90 to 1700	0.089 (0.90)	0.029 (0.29)	0.28	0.068 (0.69)	

• Permissible torque at output shaft of gear head

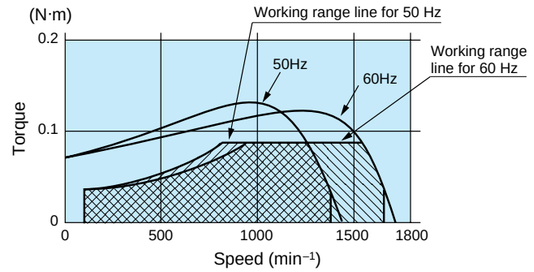
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min^{-1}	50Hz	0.21 (2.1)	0.25 (2.5)	0.36 (3.6)	0.43 (4.3)	0.54 (5.5)	0.64 (6.5)	0.72 (7.3)	0.86 (8.7)	1.08 (11)	1.29 (13)	1.44 (14)	1.80 (18)
		60Hz	0.21 (2.1)	0.25 (2.5)	0.36 (3.6)	0.43 (4.3)	0.54 (5.5)	0.64 (6.5)	0.72 (7.3)	0.86 (8.7)	1.08 (11)	1.29 (13)	1.44 (14)	1.88 (19)
	90min^{-1}		0.070 (0.7)	0.084 (0.8)	0.11 (1.1)	0.14 (1.4)	0.17 (1.7)	0.21 (2.1)	0.23 (2.3)	0.28 (2.8)	0.35 (3.5)	0.42 (4.2)	0.47 (4.7)	0.58 (5.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	1200min^{-1}	50Hz	1.92 (19)	2.30 (23)	3.20 (32)	3.84 (39)	4.80 (48)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	MX7G10XB
		60Hz	1.92 (19)	2.30 (23)	3.20 (32)	3.84 (39)	4.80 (48)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	4.90 (50)	
	90min^{-1}		0.63 (6.4)	0.75 (7.6)	1.05 (10)	1.26 (12)	1.58 (16)	1.89 (19)	2.11 (21)	2.53 (25)	3.16 (32)	3.79 (38)	
	Rotational direction		Reverse to motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

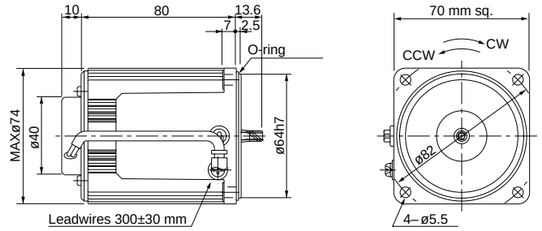
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

M71X15GD4L 4P 15 W 100 V
M71X15GD4Y 4P 15 W 200 V

Mass 1.1 kg | Helical gear | Module 0.5 | Number of teeth 7

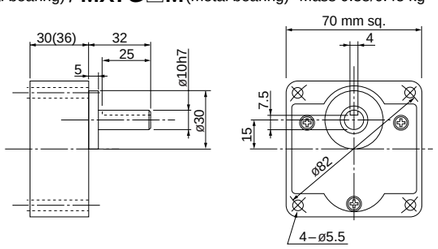


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

Scale: 1/3, Unit: mm

MX7G□BA (ball bearing) / **MX7G□B** (ball bearing) Mass 0.38/0.45 kg
MX7G□MA (metal bearing) / **MX7G□M** (metal bearing) Mass 0.38/0.45 kg

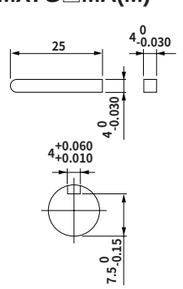


* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Variable speed unit motor

80 mm sq. 25 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
80 mm sq.	MUSN825GL	M81X25GD4L	100V	DVUS825L	C-36
	MUXN825GL			DVUX825L	C-36
	MUSN825GY	M81X25GD4Y	200V	DVUS825Y	C-36
	MUXN825GY			DVUX825Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X25GD4L	4	25	100	50	Cont.	90 to 1400	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	8 (200V)
					60		90 to 1700	0.14 (1.4)	0.039 (0.39)	1.0	0.16 (1.6)	
	M81X25GD4Y	4	25	200	50	Cont.	90 to 1400	0.14 (1.4)	0.039 (0.39)	0.5	0.16 (1.6)	2 (400V)
					60		90 to 1700	0.14 (1.4)	0.039 (0.39)	0.5	0.16 (1.6)	

• Permissible torque at output shaft of gear head

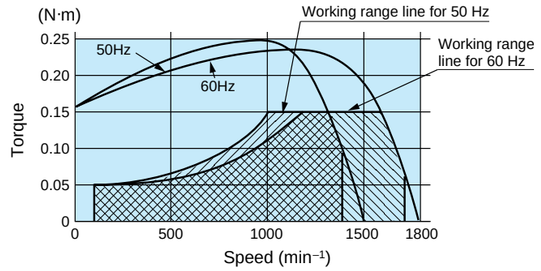
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
		60Hz	0.34 (3.4)	0.40 (4.0)	0.56 (5.7)	0.68 (6.9)	0.85 (8.6)	1.02 (10)	1.13 (11)	1.41 (1.4)	1.70 (17)	2.04 (20)	2.26 (23)	2.83 (28)
	90min^{-1}		0.094 (0.9)	0.11 (1.1)	0.15 (1.5)	0.18 (1.8)	0.23 (2.3)	0.28 (2.8)	0.31 (3.1)	0.39 (3.9)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.78 (7.9)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min^{-1}	50Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	MX8G10XB
		60Hz	3.06 (31)	3.67 (37)	5.10 (52)	6.12 (62)	7.65 (78)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	7.84 (80)	
	90min^{-1}		0.84 (8.5)	1.01 (10)	1.41 (14)	1.69 (17)	2.12 (21)	2.54 (25)	2.83 (28)	3.39 (34)	4.24 (43)	5.09 (51)	
	Rotational direction		Reverse to motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

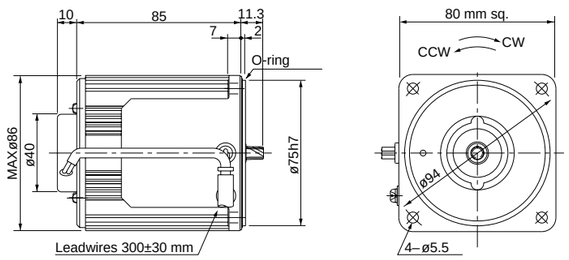
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

M81X25GD4L 4P 25 W 100 V
M81X25GD4Y 4P 25 W 200 V

Mass	Helical gear	Module	Number of teeth
1.5 kg		0.5	9

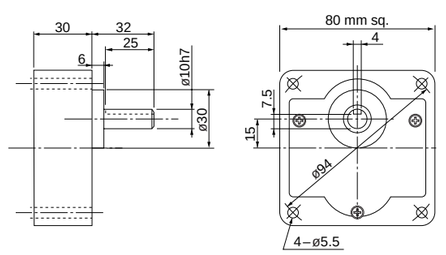


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

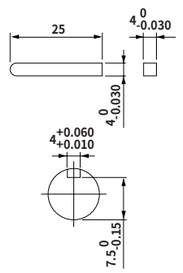
Scale: 1/3, Unit: mm

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg



Key and keyway (dimensions) [attachment]

MX8G□B(M)



(Note) 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 unit motor

90 mm sq. 40 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage		
90 mm sq.	MUSN940GL	M91X40GD4L	100V	DVUS940L	C-36
	MUXN940GL			DVUX940L	C-36
	MUSN940GY	M91X40GD4Y	200V	DVUS940Y	C-36
	MUXN940GY			DVUX940Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91X40GD4L	4	40	100	50	Cont.	90 to 1400	0.30 (3.0)	0.049 (0.5)	1.6	0.25 (2.5)	12 (200V)
					60		90 to 1700	0.24 (2.4)	0.049 (0.5)	1.6	0.25 (2.5)	
	M91X40GD4Y	4	40	200	50	Cont.	90 to 1400	0.30 (3.0)	0.049 (0.5)	0.8	0.25 (2.5)	3 (400V)
					60		90 to 1700	0.24 (2.4)	0.049 (0.5)	0.8	0.25 (2.5)	

• Permissible torque at output shaft of gear head

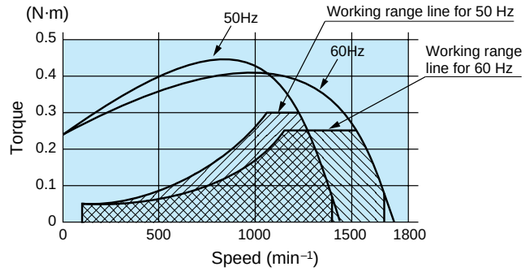
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min^{-1}	50Hz	0.72 (7.3)	0.87 (8.8)	1.21 (12)	1.45 (14)	1.82 (18)	2.18 (22)	2.43 (24)	3.03 (30)	3.64 (37)	4.37 (44)	4.86 (49)	6.07 (61)
		60Hz	0.58 (5.9)	0.69 (7.0)	0.97 (9.8)	1.16 (11)	1.45 (14)	1.74 (17)	1.92 (19)	2.42 (24)	2.91 (29)	3.49 (35)	3.88 (39)	4.85 (49)
	90min^{-1}		0.11 (1.1)	0.14 (1.4)	0.19 (1.9)	0.23 (2.3)	0.29 (2.9)	0.35 (3.5)	0.39 (3.9)	0.49 (5.0)	0.59 (6.0)	0.71 (7.2)	0.79 (8.0)	0.99 (10)
	Rotational direction		Same as motor rotational direction											

Applicable gear head / Bearing	Speed \ Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min^{-1}	50Hz	6.54 (66)	7.84 (80)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	MX9G10XB
		60Hz	5.23 (53)	6.26 (63)	8.70 (88)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	
	90min^{-1}		1.06 (10)	1.28 (13)	1.78 (18)	2.13 (21)	2.67 (27)	3.20 (32)	3.56 (36)	4.27 (43)	5.34 (54)	6.40 (65)	
	Rotational direction		Reverse to motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

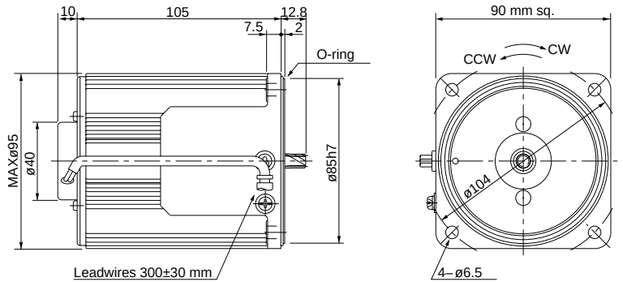
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/3, Unit: mm

M91X40GD4L 4P 40 W 100 V
M91X40GD4Y 4P 40 W 200 V

Mass	Helical gear	Module	Number of teeth
2.4 kg		0.55	9

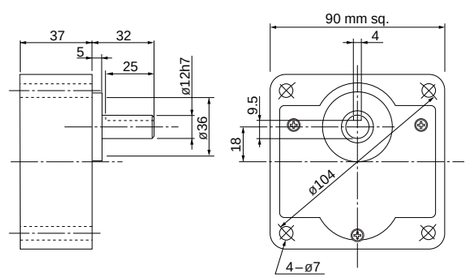


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

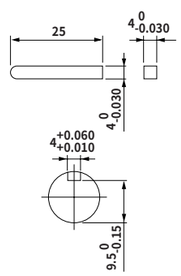
Scale: 1/3, Unit: mm

MX9G□B (ball bearing) / **MX9G□M** (metal bearing) Mass 0.8 kg



Key and keyway (dimensions) [attachment]

MX9G□B(M)



(Note) 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 unit motor

90 mm sq. 60 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
90 mm sq.	MUSN960GL	M91Z60GD4L	100V	DVUS960L	C-36
	MUXN960GL			DVUX960L	C-36
	MUSN960GY	M91Z60GD4Y	200V	DVUS960Y	C-36
	MUXN960GY			DVUX960Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min⁻¹)	Permissible Torque N·m (kgf·cm) at 1200 min⁻¹	Permissible Torque N·m (kgf·cm) at 90 min⁻¹	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z60GD4L	4	60	100	50	Cont.	90 to 1400	0.43 (4.3)	0.078 (0.79)	2.3	0.46 (4.6)	20 (200V)
					60		90 to 1700	0.36 (3.6)	0.078 (0.79)	2.4	0.46 (4.6)	
	M91Z60GD4Y	4	60	200	50	Cont.	90 to 1400	0.43 (4.3)	0.078 (0.79)	1.2	0.46 (4.6)	5 (400V)
					60		90 to 1700	0.36 (3.6)	0.078 (0.79)	1.2	0.46 (4.6)	

• Permissible torque at output shaft of gear head

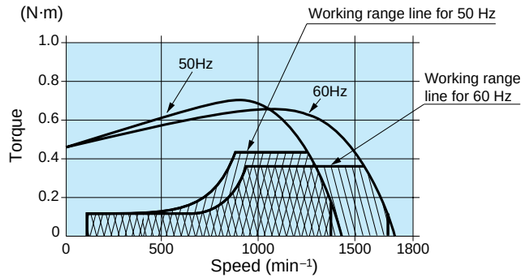
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed	Reduction ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	0.98 (10)	1.17 (11)	1.57 (16)	1.87 (19)	2.35 (23)	2.80 (28)	3.14 (32)	3.92 (40)	4.70 (47)	5.60 (57)	6.27 (63)	7.55 (77)	9.01 (91)
		60Hz	0.82 (8.3)	0.98 (10)	1.31 (13)	1.57 (16)	1.96 (20)	2.35 (23)	2.62 (26)	3.28 (33)	3.92 (40)	4.70 (47)	5.29 (53)	6.32 (64)	7.55 (77)
	90min⁻¹		0.18 (1.8)	0.22 (2.2)	0.31 (3.1)	0.37 (3.7)	0.47 (4.7)	0.56 (5.7)	0.63 (6.4)	0.70 (7.1)	0.84 (8.5)	1.00 (10)	1.12 (11)	1.40 (14)	1.68 (17)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed	Reduction ratio	36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min⁻¹	50Hz	10.8 (110)	15.2 (155)	18.1 (184)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	9.11 (92)	12.7 (129)	15.2 (155)	19.0 (193)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min⁻¹		1.81 (18)	2.50 (25)	3.00 (30)	3.75 (38)	4.50 (45)	5.00 (51)	6.00 (61)	7.50 (76)	9.00 (91)	10.0 (102)	
	Rotational direction		Same as motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

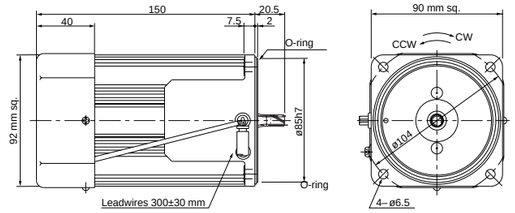
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/4, Unit: mm

M91Z60GD4L 4P 60 W 100 V (with fan)
M91Z60GD4Y 4P 60 W 200 V (with fan)

Mass	Helical gear	Module	Number of teeth
2.7 kg		0.6	9

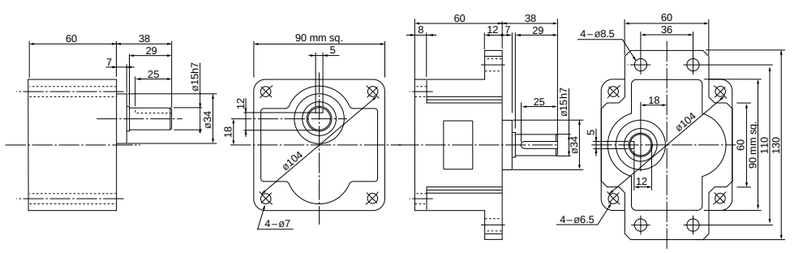


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

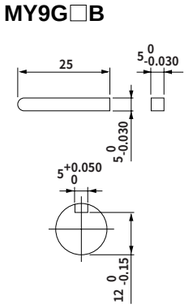
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

(Note) 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 unit motor

90 mm sq. 90 W

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
90 mm sq.	MUSN990GL	M91Z90GD4L	100V	DVUS990L	C-36
	MUXN990GL			DVUX990L	C-36
	MUSN990GY	M91Z90GD4Y	200V	DVUS990Y	C-36
	MUXN990GY			DVUX990Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range Speed (min^{-1})	Permissible Torque N·m (kgf·cm) at 1200 min^{-1}	Permissible Torque N·m (kgf·cm) at 90 min^{-1}	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z90GD4L	4	90	100	50	Cont.	90 to 1400	0.59 (6.0)	0.25 (2.5)	2.3	0.53 (5.4)	25 (200V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	2.2	0.56 (5.7)	
	M91Z90GD4Y	4	90	200	50	Cont.	90 to 1400	0.59 (6.0)	0.25 (2.5)	1.1	0.57 (5.8)	6.2 (375V)
					60		90 to 1700	0.54 (5.5)	0.25 (2.5)	1.1	0.59 (6.0)	

• Permissible torque at output shaft of gear head

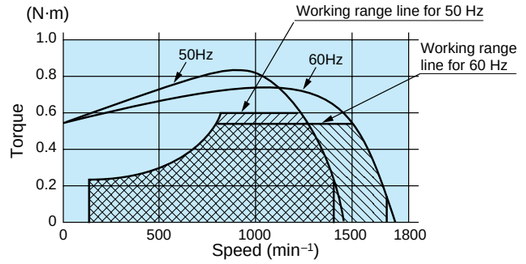
Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Applicable gear head / Bearing	Speed \ Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	1.43 (14)	1.71 (17)	2.38 (24)	2.86 (29)	3.57 (36)	4.29 (43)	4.77 (48)	5.36 (54)	6.43 (65)	7.72 (78)	8.58 (87)	10.97 (111)	12.8 (130)
		60Hz	1.31 (13)	1.57 (16)	2.18 (22)	2.62 (26)	3.27 (33)	3.93 (40)	4.37 (44)	4.91 (50)	5.89 (60)	7.07 (72)	7.86 (80)	9.82 (100)	11.7 (119)
	90min^{-1}		0.60 (6.1)	0.72 (7.3)	1.01 (10)	1.21 (12)	1.51 (15)	1.81 (18)	2.02 (20)	2.26 (23)	2.71 (27)	3.25 (33)	3.62 (36)	4.52 (46)	5.43 (55)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head / Bearing	Speed \ Reduction ratio		36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
MZ9G□B (ball bearing / hinge not attached) MY9G□B (ball bearing / hinge attached)	1200min^{-1}	50Hz	13.7 (139)	19.2 (195)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	MZ9G10XB
		60Hz	12.6 (128)	17.6 (179)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	
	90min^{-1}		5.83 (59)	8.10 (82)	9.72 (99)	12.1 (123)	14.5 (147)	16.2 (165)	19.4 (197)	19.6 (200)	19.6 (200)	19.6 (200)	
	Rotational direction		Same as motor rotational direction										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

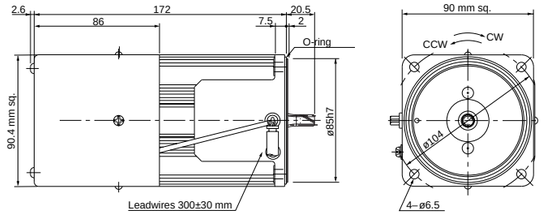
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high temperature rise or the gear tooth may be damaged.

Motor (dimensions)

Scale: 1/4, Unit: mm

M91Z90GD4L 4P 90 W 100 V (Forced cooling fan)
M91Z90GD4Y 4P 90 W 200 V (Forced cooling fan)

Mass	Helical gear	Module	Number of teeth
3.5 kg		0.6	9

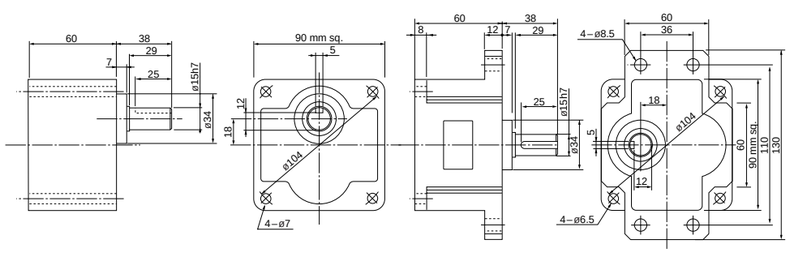


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

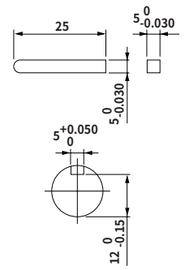
Scale: 1/4, Unit: mm

MZ9G□B (ball bearing / hinge not attached) Mass 1.4 kg **MY9G□M** (metal bearing / hinge attached) Mass 1.4 kg



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



Note) MZ / MY is available for a gear head of either type.

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

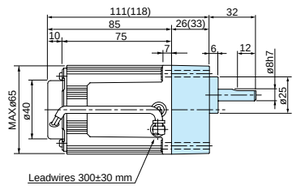
Variable speed unit motor

Gear head combination dimensions

Scale: 1/4, Unit: mm

60 mm sq. 6 W

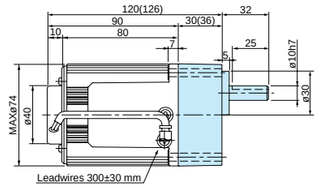
M61X6GD4L + MX6G□BA(MA) / MX6G□B(M)
M61X6GD4Y + MX6G□BA(MA) / MX6G□B(M)



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

70 mm sq. 15 W

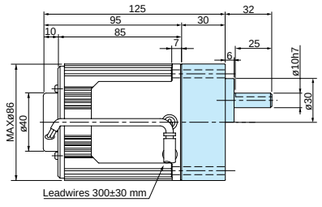
M71X15GD4L + MX7G□BA(MA) / MX7G□B(M)
M71X15GD4Y + MX7G□BA(MA) / MX7G□B(M)



* Figures in ( ) represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).

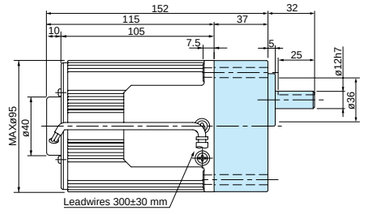
80 mm sq. 25 W

M81X25GD4L + MX8G□B(M)
M81X25GD4Y + MX8G□B(M)



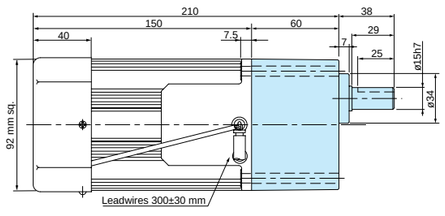
90 mm sq. 40 W

M91X40GD4L + MX9G□B(M)
M91X40GD4Y + MX9G□B(M)



90 mm sq. 60 W

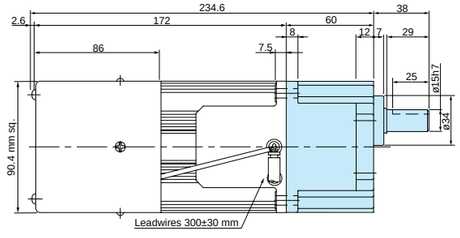
M91Z60GD4L + MZ9G□B (MY9G□B)
M91Z60GD4Y + MZ9G□B (MY9G□B)



* Refer to page B-380 for high torque gear head.

90 mm sq. 90 W

M91Z90GD4L + MY9G□B (MZ9G□B)
M91Z90GD4Y + MY9G□B (MZ9G□B)



* Refer to page B-380 for high torque gear head.

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

2-pole round shaft motor

Contents

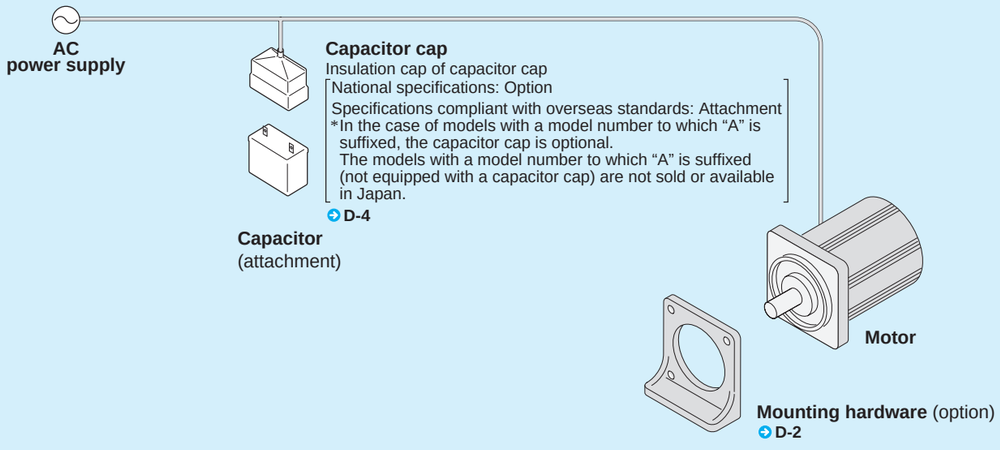
2-pole round shaft motor

Outline of motor

Features

- High-speed induction motor (50Hz: 3000min^{-1}, 60Hz: 3600min^{-1})
- Continuous time rating

System configuration diagram



Coding system

M 9 1 X 60 S 2 L S A

- **Size**
  - 4 : 42 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **Motor type**
  - 1 : Induction Motor
  - M : 3-phase motor
- **Output type**
  - A : 42mm sq. only
  - X : 40 W or smaller
  - Z : 60 W or larger
- **Output**
  - 3 : 3 W
  - 20 : 20 W
  - 40 : 40 W
  - 60 : 60 W
  - 90 : 90 W
  - A5 : 150 W
- **Shape of shaft**
  - S : Round shaft
- **No. of poles**
  - 2 : 2 poles
- **Voltage**
  - L : 100 V
  - Y : Induction motor : 200 V
    3-phase motor
    National specifications : 200/220 V
    Specifications compliant with overseas standards : 200/220/230 V
  - D : 110/115V
  - G : 220/230V
- **Classification**
  - Motor with specifications compliant with overseas standards that is not equipped with a capacitor cap.
  - S : Round shaft
    (S for round shaft with national specifications only)

Corresponding model number	Shape of shaft	Classification
Specifications compliant with overseas standards Round shaft	S	G
National specifications Round shaft	S	S
42 mm sq. round shaft specifications	S	–

Model list

Size	Output (W)	Single-phase induction motor			3-phase motor		
		Model number	Specifications	Page	Model number	Specifications	Page
42 mm sq.	3	M41A3S2L	100V	B-344			
80 mm sq.	20	M81X20S2LS	100V	B-345			
		M81X20S2YS	200V	B-345			
	40	M81X40S2LS	100V	B-346	M8MX40S2YS	200/220V	B-356
		M81X40S2YS	200V	B-346	M8MX40S2YG(A)	200/220/230V ✪	B-357
		M81X40S2LG(A)	100V ✪	B-347			
		M81X40S2DG(A)	110/115V ✪	B-347			
		M81X40S2YG(A)	200V ✪	B-347			
		M81X40S2GG(A)	220/230V ✪	B-347			
	60	M81X60S2LS	100V	B-348	M8MX60S2YS	200/220V	B-358
		M81X60S2YS	200V	B-348	M8MX60S2YG(A)	200/220/230V ✪	B-359
		M81X60S2LG(A)	100V ✪	B-349			
		M81X60S2DG(A)	110/115V ✪	B-349			
		M81X60S2YG(A)	200V ✪	B-349			
		M81X60S2GG(A)	220/230V ✪	B-349			
90 mm sq.	60	M91X60S2LS	100V	B-350	M9MX60S2YS	200/220V	B-360
		M91X60S2YS	200V	B-350	M9MX60S2YG(A)	200/220/230V ✪	B-361
		M91X60S2LG(A)	100V ✪	B-351			
		M91X60S2DG(A)	110/115V ✪	B-351			
		M91X60S2YG(A)	200V ✪	B-351			
		M91X60S2GG(A)	220/230V ✪	B-351			
	90	M91Z90S2LS	100V	B-352	M9MZ90S2YS	200/220V	B-362
		M91Z90S2YS	200V	B-352	M9MZ90S2YG(A)	200/220/230V ✪	B-363
		M91Z90S2LG(A)	100V ✪	B-353			
		M91Z90S2DG(A)	110/115V ✪	B-353			
		M91Z90S2YG(A)	200V ✪	B-353			
		M91Z90S2GG(A)	220/230V ✪	B-353			
	150	M91ZA5S2LS	100V	B-354	M9MZA5S2YS	200/220V	B-364
		M91ZA5S2YS	200V	B-354	M9MZA5S2YG(A)	200/220/230V ✪	B-365
		M91ZA5S2LG(A)	100V ✪	B-355			
		M91ZA5S2DG(A)	110/115V ✪	B-355			
		M91ZA5S2YG(A)	200V ✪	B-355			
		M91ZA5S2GG(A)	220/230V ✪	B-355			

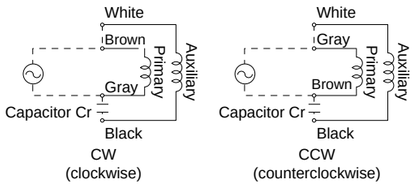
* The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

2-pole round shaft motor (Induction motor) 42 mm sq. 3 W

• Specifications

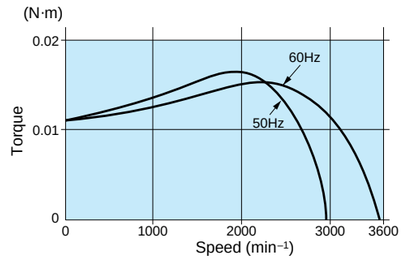
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
42 mm sq.	M41A3S2L	2	3	100	50	Cont.	10	0.10	2625	0.011 (0.11)	0.15	0.011 (0.11)	1.5 (200V)
					60		9	0.10	3250	0.009 (0.09)	0.15	0.011 (0.11)	

Connection diagram



Speed-torque characteristics

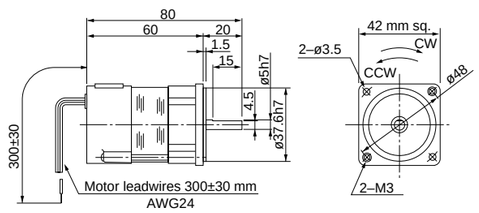
M41A3S2L



Motor (dimensions) Scale: 1/3, Unit: mm

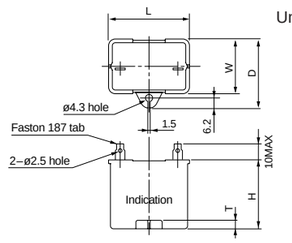
M41A3S2L 2P 3 W 100 V

Mass **0.3 kg**



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M41A3S2L	M0PC1.5M20	39.5	16	26.5	30.5	4	M0PC3917

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

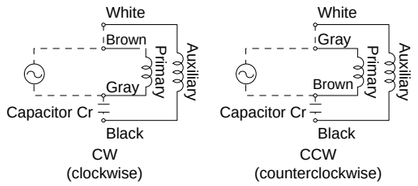
Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

2-pole round shaft motor (Induction motor) 80 mm sq. 20 W

• Specifications

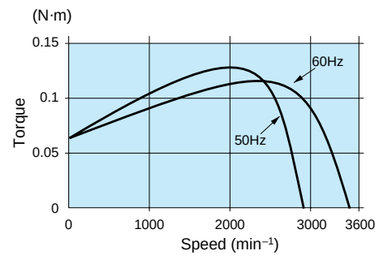
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X20S2LS	2	20	100	50	Cont.	40	0.40	2575	0.074 (0.75)	0.83	0.064 (0.65)	6 (200V)
					60		38	0.38	3175	0.060 (0.61)	0.82	0.064 (0.65)	
	M81X20S2YS	2	20	200	50	Cont.	40	0.20	2575	0.074 (0.75)	0.42	0.063 (0.64)	1.5 (400V)
					60		39	0.20	3150	0.061 (0.62)	0.41	0.063 (0.64)	

Connection diagram



Speed-torque characteristics

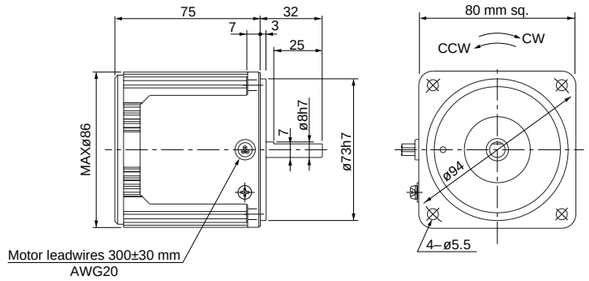
M81X20S2LS



Motor (dimensions) Scale: 1/3, Unit: mm

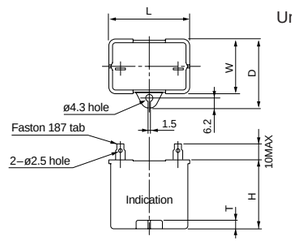
M81X20S2LS 2P 20 W 100 V
M81X20S2YS 2P 20 W 200 V

Mass **1.2 kg**



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X20S2LS	M0PC6M20	39.5	17.5	28	30.5	4	M0PC3917
M81X20S2YS	M0PC1.5M40	39.5	22	32.5	32.5	4	M0PC3922

• The models with a motor model number to which “A” is suffixed are not equipped with a capacitor cap.

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

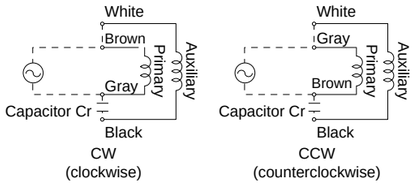
Option D-2

2-pole round shaft motor (Induction motor) 80 mm sq. 40 W

• Specifications

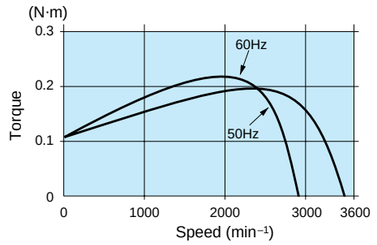
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X40S2LS	2	40	100	50	Cont.	70	0.70	2550	0.14 (1.5)	1.5	0.10 (1.0)	10 (200V)
					60		68	0.70	3125	0.12 (1.2)	1.4	0.10 (1.0)	
	M81X40S2YS	2	40	200	50	Cont.	66	0.33	2525	0.14 (1.5)	0.67	0.11 (1.2)	2.5 (400V)
					60		69	0.36	3075	0.12 (1.3)	0.66	0.11 (1.2)	

Connection diagram



Speed-torque characteristics

M81X40S2LS

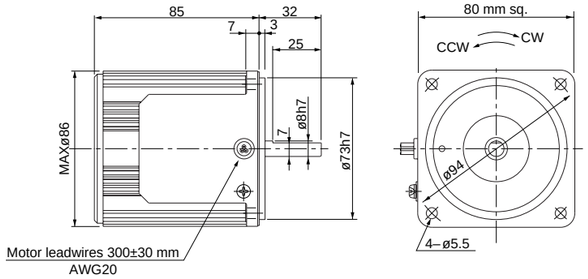


Motor (dimensions)

Scale: 1/3, Unit: mm

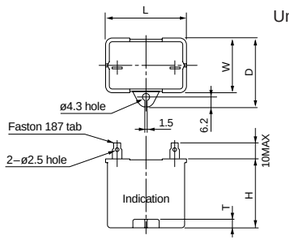
M81X40S2LS 2P 40 W 100 V
M81X40S2YS 2P 40 W 200 V

Mass 1.5 kg



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X40S2LS	M0PC10M20	39.5	26.7	37	32	4	M0PC3926
M81X40S2YS	M0PC2.5M40	49.7	24	34.5	34.5	4	M0PC5026

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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

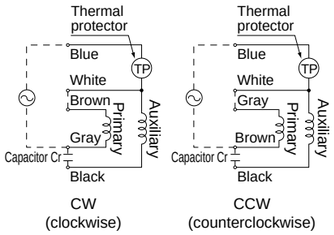
2-pole round shaft motor (Induction motor) 80 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X40S2LG M81X40S2LGA	2	40	100	50	Cont.	72	0.71	2575	0.15 (1.5)	1.6	0.10 (1.0)	10 (250V)
					60		70	0.70	3150	0.12 (1.2)	1.5	0.10 (1.0)	
	M81X40S2DG M81X40S2DGA	2	40	110 115	60 60	Cont.	69 71	0.62 0.62	3225 3275	0.12 (1.2) 0.12 (1.2)	1.6 1.7	0.10 (1.0) 0.10 (1.0)	8 (250V)
	M81X40S2YG M81X40S2YGA	2	40	200	50 60	Cont.	71 73	0.36 0.38	2425 3025	0.16 (1.6) 0.13 (1.3)	0.65 0.64	0.10 (1.0) 0.10 (1.0)	2.5 (450V)
	M81X40S2GG M81X40S2GGA	2	40	220 230	50 60 50 60	Cont.	72 66 73 65	0.34 0.30 0.33 0.29	2525 3125 2600 3200	0.15 (1.5) 0.12 (1.2) 0.15 (1.5) 0.12 (1.2)	0.69 0.67 0.71 0.69	0.10 (1.0) 0.10 (1.0) 0.10 (1.0) 0.10 (1.0)	1.7 (450V)

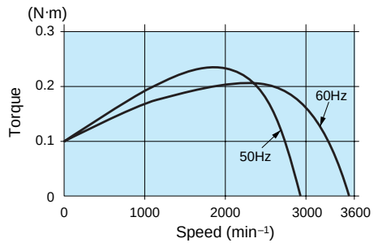
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



Speed-torque characteristics

M81X40S2LG(A)

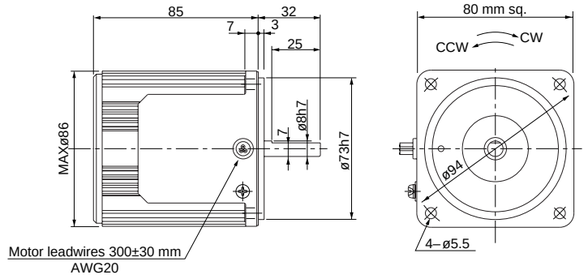


Motor (dimensions)

Scale: 1/3, Unit: mm

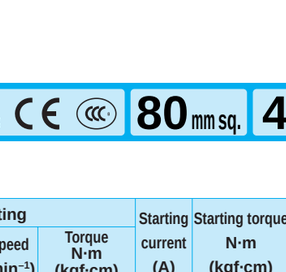
M81X40S2LG(A) 2P 40 W 100 V
M81X40S2DG(A) 2P 40 W 110 V / 115 V
M81X40S2YG(A) 2P 40 W 200 V
M81X40S2GG(A) 2P 40 W 220 V / 230 V

Mass 1.5 kg



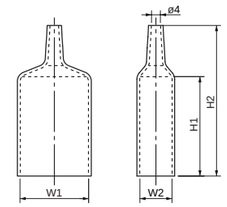
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M81X40S2LG(A)	M0PC10M25G	58	21	31	31	4	M0PC5821G	58	21	55	78
M81X40S2DG(A)	M0PC8M25G	48	21	31	31	4	M0PC4821G	48	21	55	78
M81X40S2YG(A)	M0PC2.5M45G	48	21	31	31	4	M0PC4821G	48	21	55	78
M81X40S2GG(A)	M0PC1.7M45G	38	21	31	31	4	M0PC3821G	38	21	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

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

Option D-2

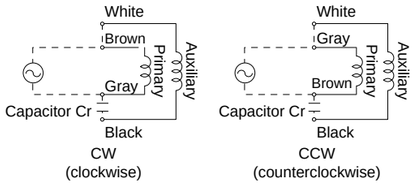
2-pole round shaft motor (Induction motor)

80 mm sq. 60 W

• Specifications

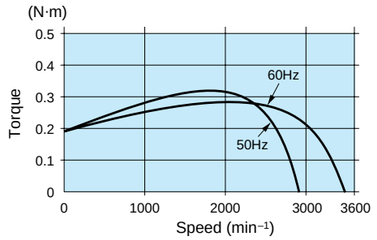
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X60S2LS	2	60	100	50	Cont.	111	1.1	2500	0.23 (2.3)	1.9	0.19 (1.9)	12 (200V)
					60		114	1.2	3050	0.19 (1.9)	1.9	0.19 (1.9)	
	M81X60S2YS	2	60	200	50	Cont.	112	0.56	2475	0.23 (2.4)	0.97	0.18 (1.8)	3.0 (400V)
					60		117	0.59	3025	0.20 (2.0)	0.96	0.18 (1.8)	

Connection diagram



Speed-torque characteristics

M81X60S2LS

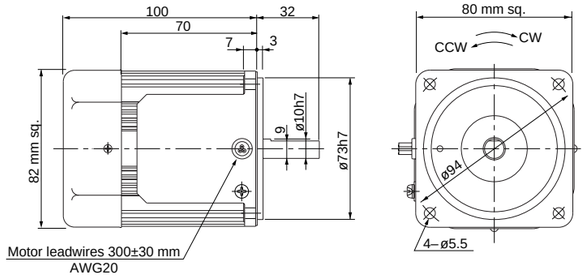


Motor (dimensions)

Scale: 1/3, Unit: mm

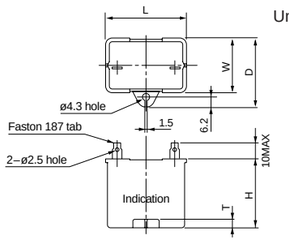
M81X60S2LS 2P 60 W 100 V (with fan)
M81X60S2YS 2P 60 W 200 V (with fan)

Mass 1.8 kg



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X60S2LS	M0PC12M20	39.5	26.7	37	32	4	M0PC3926
M81X60S2YS	M0PC3M40	49.7	24	34.5	34.5	4	M0PC5026

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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

2-pole round shaft motor (Induction motor)

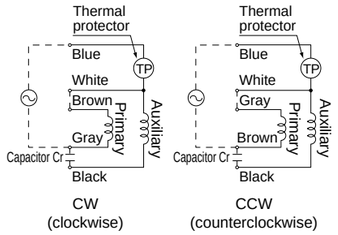
cULus CE **80 mm sq. 60 W**

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
80 mm sq.	M81X60S2LG M81X60S2LGA	2	60	100	50	Cont.	113	1.1	2450	0.23 (2.4)	1.9	0.18 (1.8)	18 (250V)
					60		118	1.2	3050	0.19 (1.9)	1.9	0.18 (1.8)	
	M81X60S2DG M81X60S2DGA	2	60	110	60	Cont.	105	0.95	3100	0.18 (1.9)	1.9	0.18 (1.8)	12 (250V)
				115	60		108	0.94	3175	0.18 (1.8)	2.0	0.18 (1.8)	
	M81X60S2YG M81X60S2YGA	2	60	200	50	Cont.	126	0.64	2250	0.25 (2.6)	0.82	0.18 (1.8)	5 (450V)
					60		143	0.74	2725	0.21 (2.1)	0.87	0.18 (1.8)	
	M81X60S2GG M81X60S2GGA	2	60	220	50	Cont.	114	0.52	2475	0.23 (2.4)	0.84	0.18 (1.8)	4 (450V)
					60		122	0.58	3050	0.19 (1.9)	0.86	0.18 (1.8)	
				230	50		119	0.52	2550	0.22 (2.3)	0.87	0.18 (1.8)	
					60		125	0.57	3125	0.18 (1.9)	0.90	0.18 (1.8)	

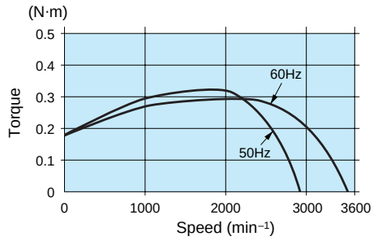
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



Speed-torque characteristics

M81X60S2LG(A)

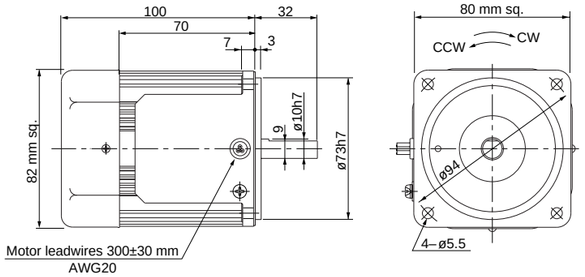


Motor (dimensions)

Scale: 1/3, Unit: mm

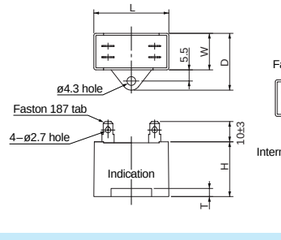
M81X60S2LG(A) 2P 60 W 100 V (with fan)
M81X60S2DG(A) 2P 60 W 110 V / 115 V (with fan)
M81X60S2YG(A) 2P 60 W 200 V (with fan)
M81X60S2GG(A) 2P 60 W 220 V / 230 V (with fan)

Mass 1.8 kg



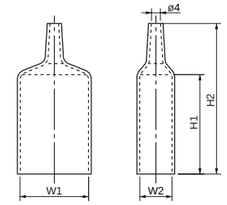
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M81X60S2LG(A)	M0PC18M25G	58	29	44	41	4	M0PC5829G	58	29	55	78
M81X60S2DG(A)	M0PC12M25G	58	22	32	35	4	M0PC5822G	58	22	55	78
M81X60S2YG(A)	M0PC5M45G	58	29	44	41	4	M0PC5829G	58	29	55	78
M81X60S2GG(A)	M0PC4M45G	58	23.5	38.5	37	4	M0PC5823G	58	23.5	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

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

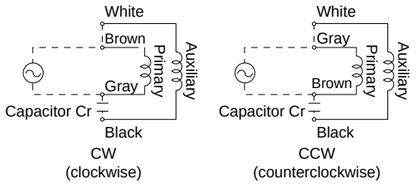
Option D-2

2-pole round shaft motor (Induction motor) 90 mm sq. 60 W

• Specifications

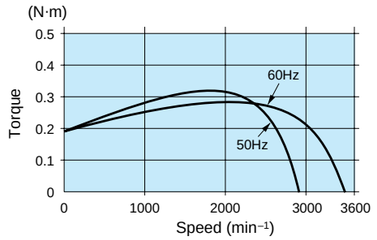
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91X60S2LS	2	60	100	50	Cont.	92	0.95	2725	0.20 (2.1)	2.9	0.17 (1.8)	14 (200V)
					60		89	0.90	3325	0.16 (1.7)	2.8	0.17 (1.8)	
	M91X60S2YS	2	60	200	50	Cont.	94	0.48	2725	0.20 (2.1)	1.4	0.17 (1.8)	3.5 (400V)
					60		90	0.46	3300	0.16 (1.7)	1.4	0.17 (1.8)	

Connection diagram



Speed-torque characteristics

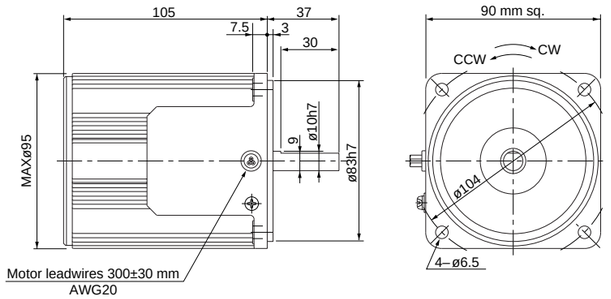
M91X60S2LS



Motor (dimensions) Scale: 1/3, Unit: mm

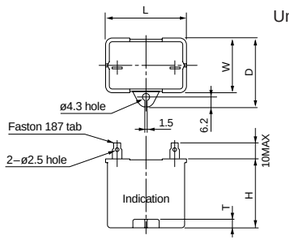
M91X60S2LS 2P 60 W 100 V
M91X60S2YS 2P 60 W 200 V

Mass 2.4 kg



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91X60S2LS	M0PC14M20	39.5	26.7	37	41	4	M0PC3926
M91X60S2YS	M0PC3.5M40	49.7	24	34.5	34.5	4	M0PC5026

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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

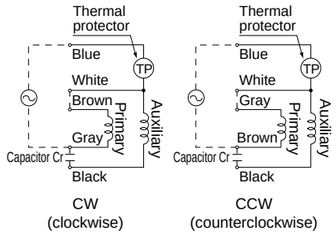
2-pole round shaft motor (Induction motor) 90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91X60S2LG M91X60S2LGA	2	60	100	50	Cont.	93	0.98	2725	0.21 (2.1)	3.1	0.16 (1.6)	14 (250V)
					60		89	0.90	3325	0.17 (1.8)	2.9	0.16 (1.6)	
	M91X60S2DG M91X60S2DGA	2	60	110 115	60 60	Cont.	91 94	0.83 0.82	3375 3375	0.17 (1.7) 0.17 (1.7)	3.2 3.3	0.16 (1.6) 0.16 (1.6)	12 (250V)
	M91X60S2YG M91X60S2YGA	2	60	200	50 60	Cont.	92 98	0.46 0.53	2700 3275	0.21 (2.2) 0.17 (1.8)	1.3 1.3	0.16 (1.6) 0.16 (1.6)	4 (450V)
	M91X60S2GG M91X60S2GGA	2	60	220 230	50 60 50 60	Cont.	93 91 97 92	0.45 0.42 0.46 0.41	2725 3325 2750 3350	0.21 (2.1) 0.17 (1.8) 0.21 (2.1) 0.17 (1.7)	1.4 1.4 1.5 1.4	0.16 (1.6) 0.16 (1.6) 0.16 (1.6) 0.16 (1.6)	3 (450V)

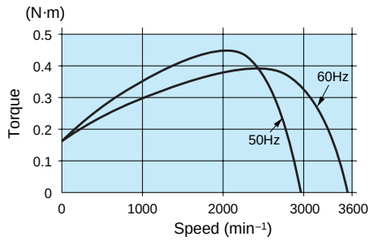
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



Speed-torque characteristics

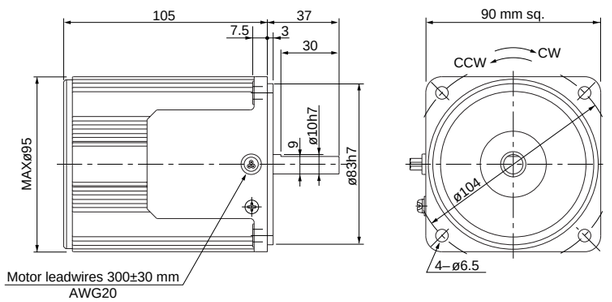
M91X60S2LG(A)



Motor (dimensions) Scale: 1/3, Unit: mm

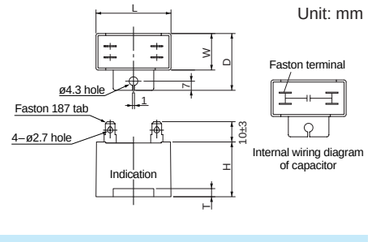
M91X60S2LG(A) 2P 60 W 100 V
M91X60S2DG(A) 2P 60 W 110 V / 115 V
M91X60S2YG(A) 2P 60 W 200 V
M91X60S2GG(A) 2P 60 W 220 V / 230 V

Mass 2.4 kg



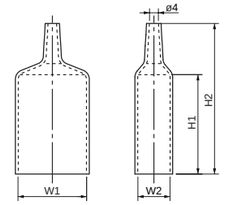
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91X60S2LG(A)	M0PC14M25G	58	22	32	35	4	M0PC5822G	58	22	55	78
M91X60S2DG(A)	M0PC12M25G	58	22	32	35	4	M0PC5822G	58	22	55	78
M91X60S2YG(A)	M0PC4M45G	58	23.5	38.5	37	4	M0PC5823G	58	23.5	55	78
M91X60S2GG(A)	M0PC3M45G	58	21	31	31	4	M0PC4821G	48	21	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

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

Option D-2

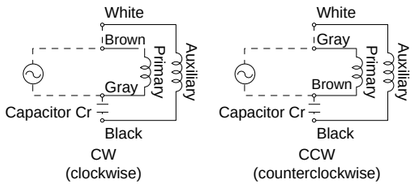
2-pole round shaft motor (Induction motor)

90 mm sq. 90 W

• Specifications

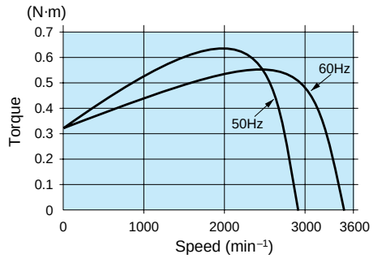
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z90S2LS	2	90	100	50	Cont.	151	1.6	2700	0.32 (3.3)	4.1	0.32 (3.3)	25 (200V)
					60		153	1.6	3275	0.26 (2.7)	3.8	0.32 (3.3)	
	M91Z90S2YS	2	90	200	50	Cont.	153	0.78	2675	0.32 (3.3)	2.0	0.32 (3.3)	6.2 (375V)
					60		157	0.82	3250	0.26 (2.7)	2.0	0.32 (3.3)	

Connection diagram



Speed-torque characteristics

M91Z90S2LS

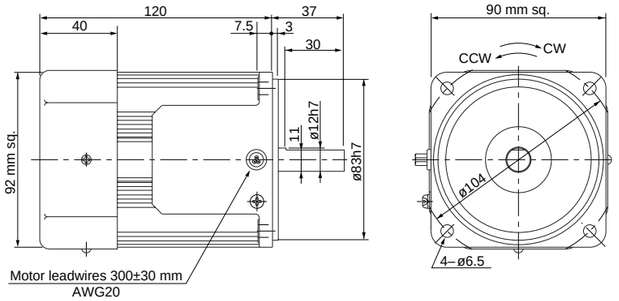


Motor (dimensions)

Scale: 1/3, Unit: mm

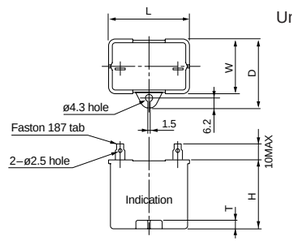
M91Z90S2LS 2P 90 W 100 V (with fan)
M91Z90S2YS 2P 90 W 200 V (with fan)

Mass 2.7 kg



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91Z90S2LS	M0PC25M20	50.2	31	41	42	5	M0PC5032
M91Z90S2YS	M0PC6.2M38	50	30.5	41	41.5	4	M0PC5032

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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

2-pole round shaft motor (Induction motor)

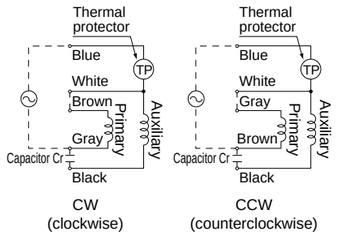
cULus CE **90 mm sq. 90 W**

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91Z90S2LG M91Z90S2LGA	2	90	100	50	Cont.	151	1.5	2675	0.32 (3.3)	3.8	0.33 (3.4)	28 (250V)
					60		160	1.8	3250	0.26 (2.7)	3.6	0.33 (3.4)	
	M91Z90S2DG M91Z90S2DGA	2	90	110	60	Cont.	158	1.5	3300	0.26 (2.7)	3.9	0.33 (3.4)	25 (250V)
				115	60		165	1.5	3325	0.26 (2.6)	4.0	0.33 (3.4)	
	M91Z90S2YG M91Z90S2YGA	2	90	200	50	Cont.	150	0.76	2600	0.33 (3.4)	1.6	0.33 (3.4)	7 (450V)
					60		176	0.98	3175	0.27 (2.8)	1.6	0.33 (3.4)	
	M91Z90S2GG M91Z90S2GGA	2	90	220	50	Cont.	152	0.69	2650	0.32 (3.3)	1.7	0.33 (3.4)	6 (450V)
					60		165	0.81	3225	0.27 (2.7)	1.6	0.33 (3.4)	
				230	50		162	0.72	2700	0.32 (3.2)	1.7	0.33 (3.4)	
					60		168	0.79	3275	0.26 (2.7)	1.7	0.33 (3.4)	

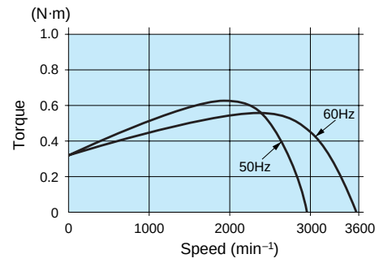
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



Speed-torque characteristics

M91Z90S2LG(A)

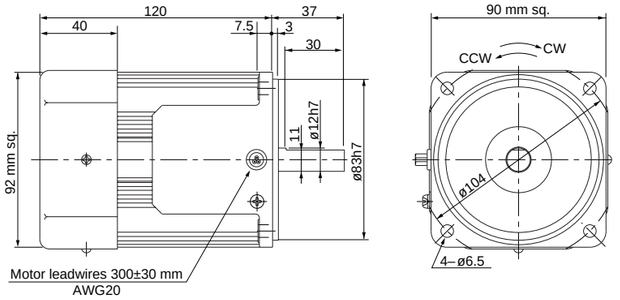


Motor (dimensions)

Scale: 1/3, Unit: mm

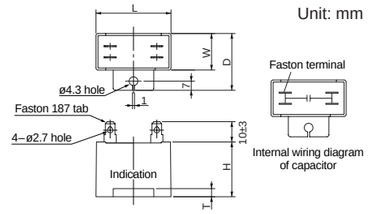
M91Z90S2LG(A) 2P 90 W 100 V (with fan)
M91Z90S2DG(A) 2P 90 W 110 V / 115 V (with fan)
M91Z90S2YG(A) 2P 90 W 200 V (with fan)
M91Z90S2GG(A) 2P 90 W 220 V / 230 V (with fan)

Mass 2.7 kg



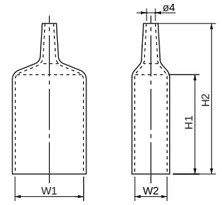
Capacitor (dimensions) [attachment]

Unit: mm



Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91Z90S2LG(A)	M0PC28M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90S2DG(A)	M0PC25M25G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90S2YG(A)	M0PC7M45G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91Z90S2GG(A)	M0PC6M45G	58	29	44	41	4	M0PC5829G	58	29	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

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

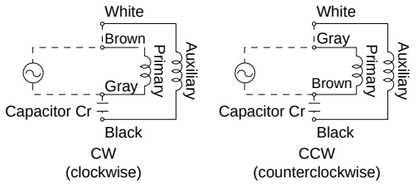
Option D-2

2-pole round shaft motor (Induction motor) — 90 mm sq. 150 W

• Specifications

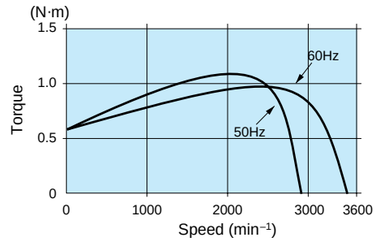
Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91ZA5S2LS	2	150	100	50	Cont.	240	2.5	2700	0.53 (5.4)	6.1	0.58 (5.9)	40 (180V)
					60		251	2.7	3275	0.44 (4.5)	5.9	0.58 (5.9)	
	M91ZA5S2YS	2	150	200	50	Cont.	235	1.2	2725	0.53 (5.4)	3.2	0.53 (5.4)	10 (400V)
					60		240	1.3	3300	0.43 (4.4)	3.0	0.53 (5.4)	

Connection diagram



Speed-torque characteristics

M91ZA5S2LS

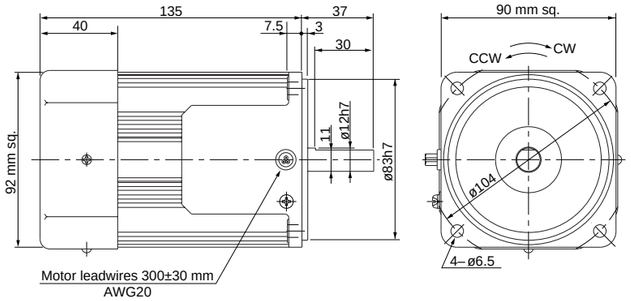


Motor (dimensions)

Scale: 1/3, Unit: mm

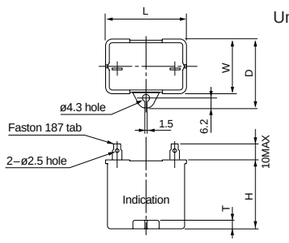
M91ZA5S2LS 2P 150 W 100 V (with fan)
M91ZA5S2YS 2P 150 W 200 V (with fan)

Mass 3.2 kg



Capacitor (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91ZA5S2LS	M0PC40M18	50.2	35	45.5	47	5	—
M91ZA5S2YS	M0PC10M40	50	34	45	45	6	—

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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

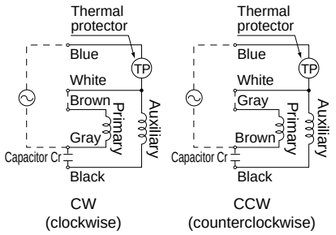
2-pole round shaft motor (Induction motor) — cULus CE 90 mm sq. 150 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min⁻¹)	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)	Capacitor (μF) (rated voltage)
90 mm sq.	M91ZA5S2LG M91ZA5S2LGA	2	150	100	50	Cont.	232	2.3	2625	0.55 (5.6)	5.4	0.50 (5.1)	40 (250V)
					60		250	2.7	3200	0.45 (4.6)	5.2	0.50 (5.1)	
	M91ZA5S2DG M91ZA5S2DGA	2	150	110 115	60 60	Cont.	238 253	2.3 2.2	3275 3300	0.44 (4.5) 0.43 (4.4)	5.6 5.8	0.53 (5.4) 0.53 (5.4)	35 (250V)
	M91ZA5S2YG M91ZA5S2YGA	2	150	200	50	Cont.	236	1.3	2525	0.57 (5.8)	2.3	0.50 (5.1)	10 (450V)
					60		271	1.5	3075	0.47 (4.7)	2.2	0.50 (5.1)	
	M91ZA5S2GG M91ZA5S2GGA	2	150	220	50	Cont.	230	1.1	2625	0.55 (5.6)	2.4	0.47 (4.8)	8 (450V)
					60		243	1.2	3200	0.45 (4.6)	2.3	0.47 (4.8)	
				230	50		237	1.1	2650	0.54 (5.5)	2.5	0.53 (5.4)	
					60		245	1.2	3250	0.44 (4.5)	2.4	0.53 (5.4)	

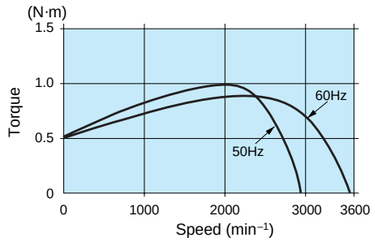
• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



Speed-torque characteristics

M91ZA5S2LG(A)

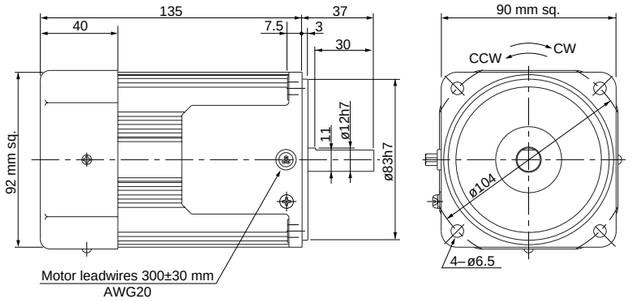


Motor (dimensions)

Scale: 1/3, Unit: mm

M91ZA5S2LG(A) 2P 150 W 100 V (with fan)
M91ZA5S2DG(A) 2P 150 W 110 V / 115 V (with fan)
M91ZA5S2YG(A) 2P 150 W 200 V (with fan)
M91ZA5S2GG(A) 2P 150 W 220 V / 230 V (with fan)

Mass 3.2 kg

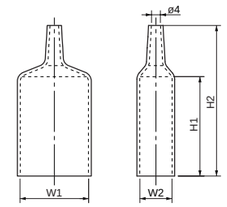


Capacitor (dimensions) [attachment]

Unit: mm

Capacitor cap (dimensions) [attachment]

Unit: mm



• Capacitor dimension list (mm)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (attachment)	W1	W2	H1	H2
M91ZA5S2LG(A)	M0PC40M25G	58	41	56	58	4	M0PC5841G	58	41	55	78
M91ZA5S2DG(A)	M0PC35M25G	58	41	56	58	4	M0PC5841G	58	41	55	78
M91ZA5S2YG(A)	M0PC10M45G	58	35	50	50	4	M0PC5835G	58	35	55	78
M91ZA5S2GG(A)	M0PC8M45G	58	35	50	50	4	M0PC5835G	58	35	55	78

• The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.

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

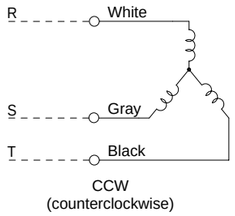
Option D-2

2-pole round shaft motor (3-phase motor) — 80 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
80 mm sq.	M8MX40S2YS	2	40	200	50	Cont.	68	0.24	2525	0.14 (1.5)	0.66	0.30 (3.1)
					60		67	0.22	3050	0.12 (1.2)	0.64	0.24 (2.5)
				220	50		69	0.24	2650	0.13 (1.4)	0.72	0.37 (3.8)
					60		65	0.22	3175	0.12 (1.2)	0.70	0.29 (3.0)

Connection diagram

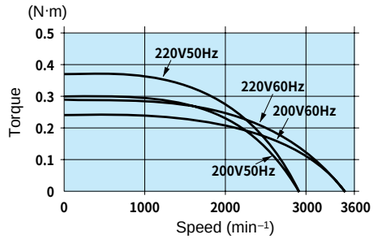


CCW
(counterclockwise)

Change any two lead wires of R, S and T for CW rotation.

Speed-torque characteristics

M8MX40S2YS

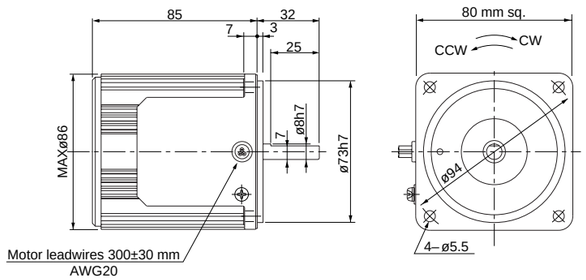


Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX40S2YS 2P 40 W 200 V / 220 V

Mass **1.5 kg**



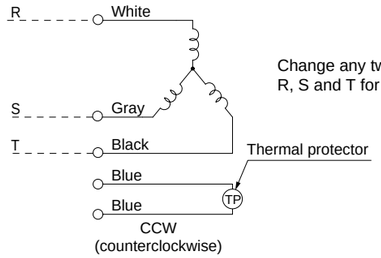
2-pole round shaft motor (3-phase motor) — 80 mm sq. 40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
80 mm sq.	M8MX40S2YG M8MX40S2YGA	2	40	200	50	Cont.	72	0.24	2525	0.14 (1.5)	0.66	0.30 (3.1)
				200	60		67	0.22	3050	0.12 (1.2)	0.64	0.24 (2.4)
				220	60		68	0.22	3175	0.12 (1.2)	0.70	0.29 (3.0)
				230	60		68	0.22	3200	0.12 (1.2)	0.70	0.31 (3.2)

• The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Connection diagram



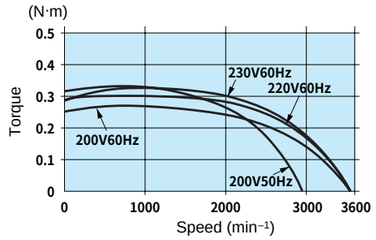
Change any two lead wires of R, S and T for CW rotation.

CCW
(counterclockwise)

(Refer to page A-58 for connection of thermal protector.)

Speed-torque characteristics

M8MX40S2YG(A)

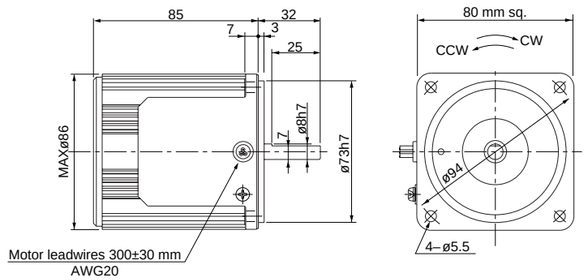


Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX40S2YG(A) 2P 40 W 200 V / 220 V / 230 V

Mass **1.5 kg**



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

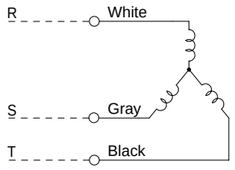
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

2-pole round shaft motor (3-phase motor) — 80 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
80 mm sq.	M8MX60S2YS	2	60	200	50	Cont.	115	0.38	2325	0.24 (2.4)	0.85	0.38 (3.9)
					60		118	0.37	2750	0.20 (2.1)	0.81	0.30 (3.1)
				220	50		113	0.38	2525	0.22 (2.3)	0.92	0.44 (4.5)
					60		105	0.33	3025	0.18 (1.9)	0.88	0.36 (3.7)

Connection diagram

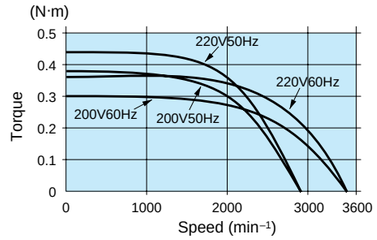


CCW
(counterclockwise)

Change any two lead wires of R, S and T for CW rotation.

Speed-torque characteristics

M8MX60S2YS

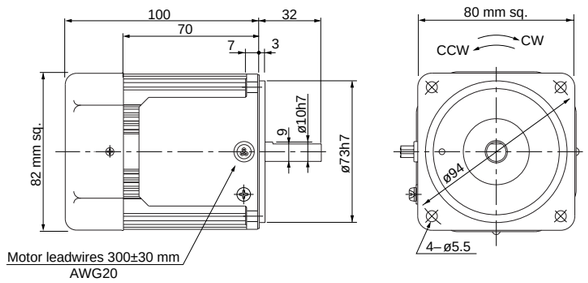


Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX60S2YS 2P 60 W 200 V / 220 V (with fan)

Mass **1.8 kg**



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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

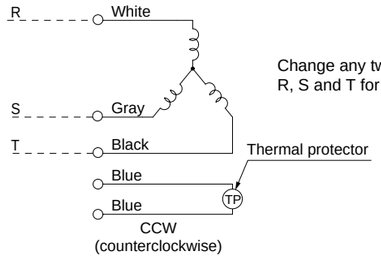
2-pole round shaft motor (3-phase motor) — 80 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
80 mm sq.	M8MX60S2YG M8MX60S2YGA	2	60	200	50	Cont.	115	0.38	2325	0.24 (2.4)	0.85	0.38 (3.9)
				200	60		118	0.37	2750	0.20 (2.1)	0.81	0.30 (3.1)
				220	60		105	0.33	3025	0.18 (1.9)	0.88	0.36 (3.7)
				230	60		105	0.33	3050	0.18 (1.9)	0.88	0.39 (4.0)

• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram



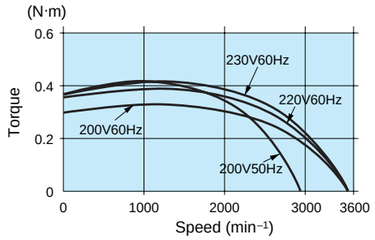
Change any two lead wires of R, S and T for CW rotation.

CCW
(counterclockwise)

(Refer to page A-58 for connection of thermal protector.)

Speed-torque characteristics

M8MX60S2YG(A)

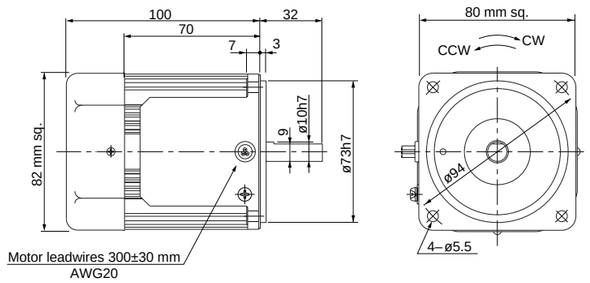


Motor (dimensions)

Scale: 1/3, Unit: mm

M8MX60S2YG(A) 2P 60 W 200 V / 220 V / 230 V (with fan)

Mass **1.8 kg**



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

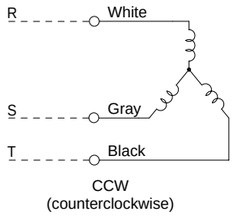
Option D-2

2-pole round shaft motor (3-phase motor) 90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MX60S2YS	2	60	200	50	Cont.	82	0.32	2825	0.20 (2.1)	1.9	0.96 (9.7)
					60		79	0.29	3400	0.16 (1.7)	1.7	0.69 (7.0)
				220	50		86	0.32	2875	0.20 (2.1)	2.1	1.1 (11)
					60		81	0.29	3450	0.16 (1.7)	1.9	0.84 (8.5)

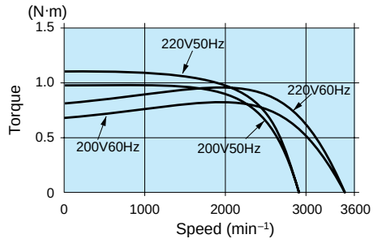
Connection diagram



Change any two lead wires of R, S and T for CW rotation.

Speed-torque characteristics

M9MX60S2YS

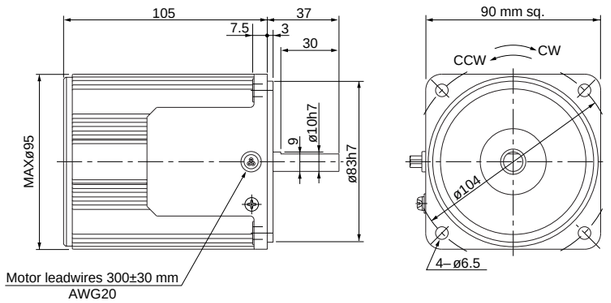


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MX60S2YS 2P 60 W 200 V / 220 V (with fan)

Mass 2.4 kg



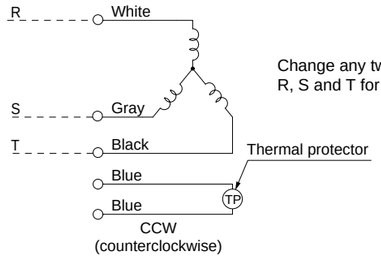
2-pole round shaft motor (3-phase motor) cULus CE 90 mm sq. 60 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating: Input (W)	Rating: Current (A)	Rating: Speed (min^{-1})	Rating: Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MX60S2YG M9MX60S2YGA	2	60	200	50	Cont.	87	0.32	2825	0.20 (2.1)	1.9	0.96 (9.7)
				200	60		87	0.31	3400	0.17 (1.7)	1.7	0.69 (7.0)
				220	60		87	0.30	3450	0.17 (1.7)	1.9	0.84 (8.5)
				230	60		87	0.30	3450	0.17 (1.7)	1.9	0.90 (9.2)

• The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Connection diagram

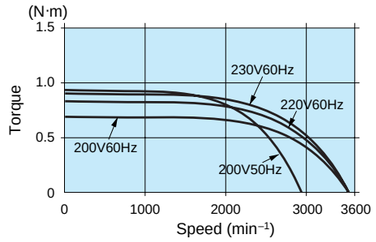


Change any two lead wires of R, S and T for CW rotation.

(Refer to page A-58 for connection of thermal protector.)

Speed-torque characteristics

M9MX60S2YG(A)

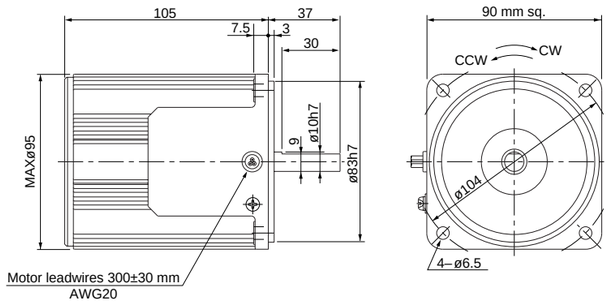


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MX60S2YG(A) 2P 60W 200 V / 220 V / 230 V (with fan)

Mass 2.4 kg



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

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

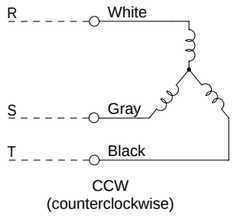
2-pole round shaft motor (3-phase motor)

90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MZ90S2YS	2	90	200	50	Cont.	144	0.71	2700	0.31 (3.2)	2.3	1.6 (16)
					60		134	0.53	3225	0.26 (2.7)	2.1	1.2 (12)
				220	50		167	0.96	2750	0.31 (3.2)	2.5	1.9 (19)
					60		137	0.59	3300	0.25 (2.6)	2.3	1.4 (15)

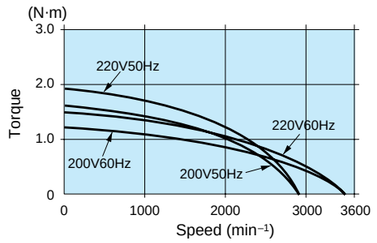
Connection diagram



Change any two lead wires of R, S and T for CW rotation.

Speed-torque characteristics

M9MZ90S2YS

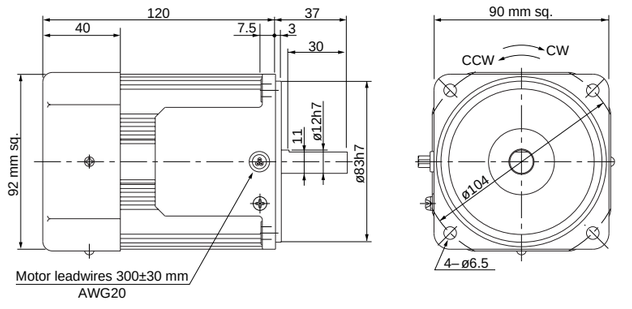


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MZ90S2YS 2P 90 W 200 V / 220 V (with fan)

Mass **2.7** kg



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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

2-pole round shaft motor (3-phase motor)

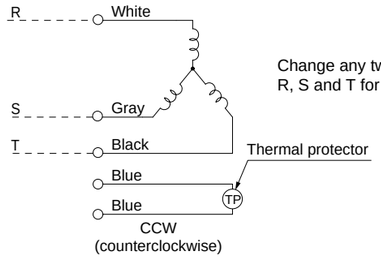
c UL us CE 90 mm sq. 90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MZ90S2YG M9MZ90S2YGA	2	90	200	50	Cont.	144	0.71	2700	0.32 (3.2)	2.3	1.6 (16)
				200	60		134	0.53	3225	0.27 (2.7)	2.1	1.2 (12)
				220	60		137	0.59	3300	0.26 (2.7)	2.3	1.4 (15)
				230	60		142	0.65	3325	0.26 (2.6)	2.4	1.5 (15)

• The models with a motor model number to which "A" is suffixed are not sold or available in Japan.

Connection diagram

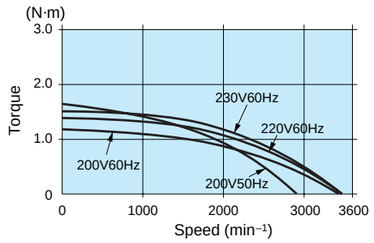


Change any two lead wires of R, S and T for CW rotation.

(Refer to page A-58 for connection of thermal protector.)

Speed-torque characteristics

M9MZ90S2YG(A)

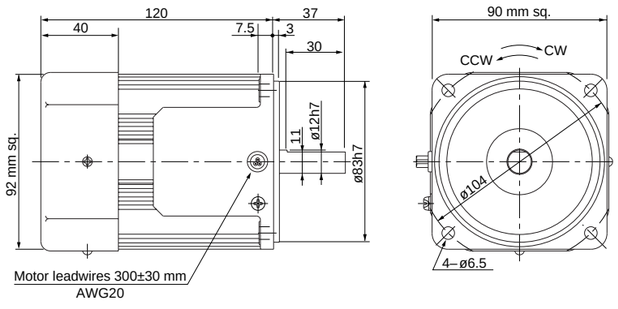


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MZ90S2YG(A) 2P 90 W 200 V / 220 V / 230 V (with fan)

Mass **2.7** kg



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

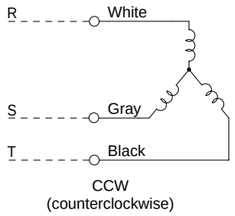
Option D-2

2-pole round shaft motor (3-phase motor) — 90 mm sq. 150 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MZA5S2YS	2	150	200	50	Cont.	235	1.1	2850	0.51 (5.2)	5.2	2.6 (26)
					60		227	0.81	3400	0.43 (4.4)	4.7	1.8 (19)
				220	50		274	1.5	2875	0.50 (5.1)	5.4	3.0 (31)
					60		233	0.87	3450	0.43 (4.4)	4.8	2.2 (23)

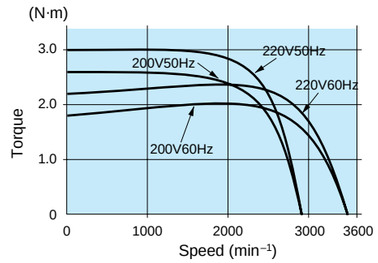
Connection diagram



Change any two lead wires of R, S and T for CW rotation.

Speed-torque characteristics

M9MZA5S2YS

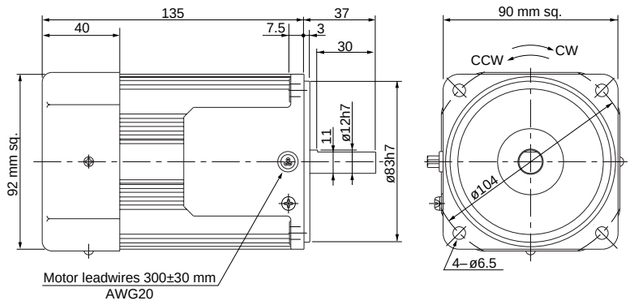


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MZA5S2YS 2P 150 W 200 V / 220 V (with fan)

Mass **3.2 kg**



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

Features B-342 | System configuration B-342 | Coding system B-342 | Model list B-343

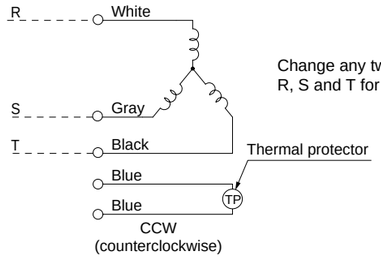
2-pole round shaft motor (3-phase motor) — c UL us CE 90 mm sq. 150 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Rating Input (W)	Rating Current (A)	Rating Speed (min^{-1})	Rating Torque N·m (kgf·cm)	Starting current (A)	Starting torque N·m (kgf·cm)
90 mm sq.	M9MZA5S2YG M9MZA5S2YGA	2	150	200	50	Cont.	236	1.3	2850	0.50 (5.1)	5.2	2.5 (25)
				200	60		207	0.84	3425	0.42 (4.3)	4.7	1.8 (18)
				220	60		218	0.99	3475	0.41 (4.2)	4.8	2.2 (22)
				230	60		229	1.2	3475	0.41 (4.2)	4.8	2.3 (23)

• The models with a motor model number to which “A” is suffixed are not sold or available in Japan.

Connection diagram

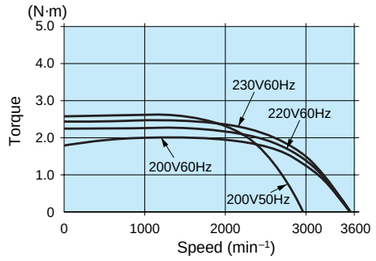


Change any two lead wires of R, S and T for CW rotation.

(Refer to page A-58 for connection of thermal protector.)

Speed-torque characteristics

M9MZA5S2YG(A)

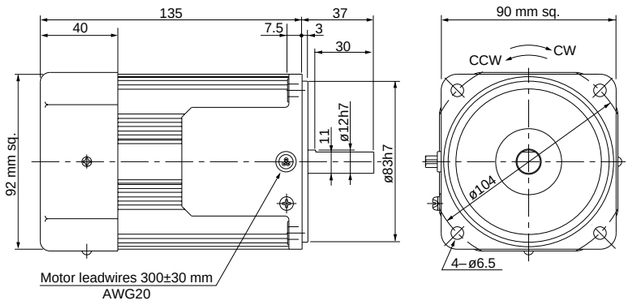


Motor (dimensions)

Scale: 1/3, Unit: mm

M9MZA5S2YG(A) 2P 150 W 200 V / 220 V / 230 V (with fan)

Mass **3.2 kg**



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

Option D-2

Gear Head

Contents

Outline of gear head

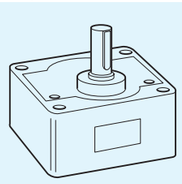
Features

- Various types of gear heads are available.
- The X type is available in a metal bearing model and or a ball bearing type.
- The P type (90 mm sq. only) is high torque type: its maximum permissible shaft torque is 29.4 N·m (300 kgf·cm)
- 22 reduction ratios from 1/3 to 1/180 are available for the X type; 23 reduction ratios from 1/3 to 1/200 are available for the Y and Z types.
  When the decimal gear head (reduction ratio: 1/10) is used, a reduction ratio of up to 1/1800 (1/2000 for the Y and Z types) can be attained.
- The X type and Z type of 90 mm sq. are available in right-angle type.

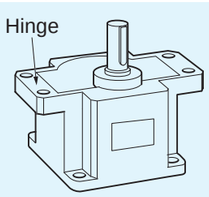
Gear type

A : 3 W or smaller / Hinge not attached (42 mm sq.)
X : 40 W or smaller / Hinge not attached
Z : 60 W or larger / Hinge not attached
Y : 60 W or larger / Hinge attached
R : 60 W or larger, High torque type / Hinge not attached
P : 60 W or larger, High torque type / Hinge attached

• Hinge not attached



• Hinge attached



• Gear type and reduction ratio list

Gear type		Motor capacity	Hinge	Reduction ratio																					
				1/3	1/3.6	1/5	1/6	1/7.5	1/9	1/10	1/12.5	1/15	1/18	1/20	1/25	1/30	1/36	1/50	1/60	1/75	1/90	1/100	1/120	1/150	1/180	1/200
A		3 W or smaller	Not attached	○	○	○	○	○	○	–	○	○	○	–	○	○	○	○	○	○	○	○	○	○	○	–
X		40 W or smaller	Not attached	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	–
Y		60W, 90W	attached	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Z			Not attached	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
P			attached	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	○	○	○	○	○	○	○	○
R			Not attached	–	–	–	–	–	–	–	–	–	–	–	–	–	–	○	○	○	○	○	○	○	○	○
Right-angle	X	40 W or smaller	Not attached	○	○	○	○	○	○	–	○	○	○	–	○	○	○	○	○	○	○	○	○	○	○	–
	Z	60W, 90W	Not attached	○	○	○	○	○	○	–	○	○	○	–	○	○	○	○	○	○	○	○	○	○	○	○

• Gear type and reduction ratio list (decimal gear head used)

Gear type		Motor capacity	Hinge	Reduction ratio												
				1/200	1/250	1/300	1/360	1/500	1/600	1/750	1/900	1/1000	1/1200	1/1500	1/1800	1/2000
X		40 W or smaller	Not attached	○	○	○	○	○	○	○	○	○	○	○	○	–
Y, P		60W, 90W	attached	○	○	○	○	○	○	○	○	○	○	○	○	○
Z, R			Not attached	○	○	○	○	○	○	○	○	○	○	○	○	○
Right-angle	X	40 W or smaller	Not attached	–	○	○	○	○	○	○	○	○	○	○	○	–
	Z	60W, 90W	Not attached	–	○	○	○	○	○	○	○	○	○	○	○	○

Coding system

M X 9 G 30 B A

- **X** Output type
  - X : 40 W or smaller / Hinge not attached
  - Z : 60 W or larger / Hinge not attached
  - Y : 60 W or larger / Hinge attached
  - R : 60 W or larger, High torque type / Hinge not attached
  - P : 60 W or larger, High torque type / Hinge attached
- **9** Size
  - 6 : 60 mm sq.
  - 7 : 70 mm sq.
  - 8 : 80 mm sq.
  - 9 : 90 mm sq.
- **G** Gear head
- **30** Reduction ratio
  - (Example) 30: Reduction ratio of 1/30
- **B** Bearing
  - B : Ball bearing
  - M : Metal bearing
  - XB : Decimal gear head
  - R : Right-angle gear head
    (90 mm sq.: Applicable to MX and MZ only)
- **A** Thin gear head
  - A : Applicable to 60 mm sq. and 70 mm sq. gear heads with a reduction ratio of 1/25 or smaller, Blank for others

* The motor and gear are sold separately.

M 4 G A 30 F

- **4** Size
  - 4 : 42 mm sq.
- **G** Gear head
- **A** Type
  - For 42 mm sq.
- **30** Reduction ratio
  - (Example) 30 : Reduction ratio of 1/30
- **F** Bearing
  - F : Ball bearing + Metal bearing

* The motor and gear are sold separately.

Calculation of torque at output shaft of gear head

• Standard gear head only

$$N_G = \frac{N_M}{i}$$

$$T_G = T_M \times i \times \eta$$

N_G : Speed of gear head (min^{-1})
N_M : Motor speed (min^{-1})
i : Reduction ratio of gear head
T_G : Output torque of gear head (N·m)
T_M : Motor torque (N·m)
η : Gear head efficiency

• With decimal gear head

$$N_G = \frac{N_M}{i \times i_D}$$

$$T_G = T_M \times i \times i_D \times \eta \times \eta_D$$

N_G : Speed of gear head (min^{-1})
N_M : Motor speed (min^{-1})
i : Reduction ratio of gear head
T_G : Output torque of gear head (N·m)
T_M : Motor torque (N·m)
η : Gear head efficiency
i_D : Reduction ratio of decimal gear head
η_D : Decimal gear head efficiency

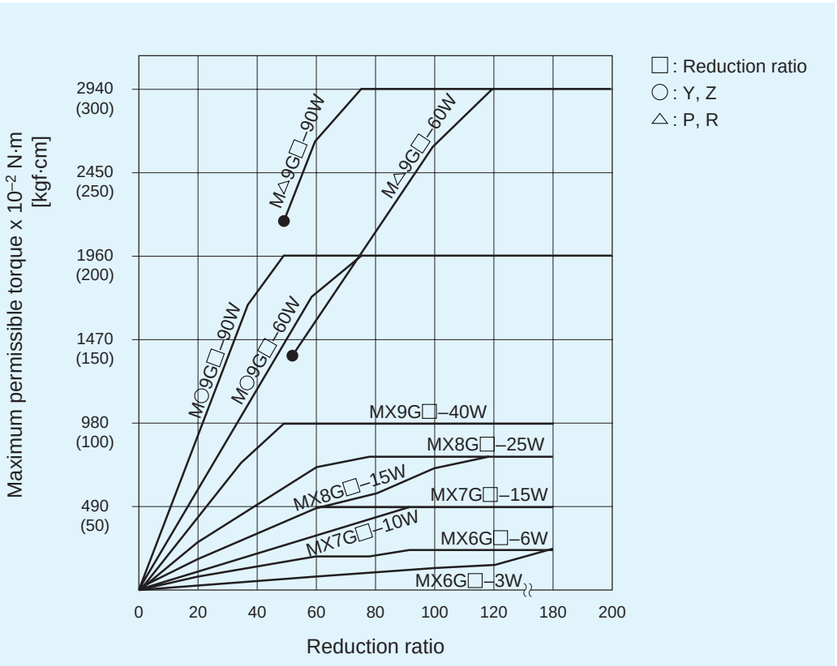
* In the case of the variable speed motor, regard the serviceability limit torque as the motor torque.

Outline of gear head

Max imum permissible torque

There is a limit to the strength of a gear due to its material and construction. The usable load torque determined based on this limit is called permissible torque. As can be seen from the above-mentioned formula, the load becomes larger when the reduction ratio is increased. If the gear head is used with the load exceeding the permissible torque, its life expectancy will be shortened significantly. Refer to the following graph and the permissible torque for each model and use the gear head at an appropriate load.

• Max imum permissible torque



Nominal reduction ratio and actual reduction ratio

Note that there is a difference between the nominal reduction ratio and actual reduction ratio of each gear head. Refer to the table below. When using the gear head, calculate the speed based on the actual reduction ratio.

• Gear head

Nominal reduction ratio	Actual reduction ratio								
	M4GA□	MX6G□	MX7G□	MX8G□	MX9G□	MZ9G□ MY9G□	MR9G□ MP9G□	Right-angle type MX9G□R	Right-angle type MZ9G□R
1/3	1/3	1/2.96	1/2.99	1/3.01	1/2.98	1/3.02	–	1/3.05	1/3.00
1/3.6	1/3.6	1/3.59	1/3.64	1/3.60	1/3.59	1/3.61	–	1/3.65	1/3.62
1/5	1/5	1/5.04	1/4.95	1/4.98	1/5.00	1/5.03	–	1/5.06	1/4.97
1/6	1/6	1/6.01	1/6.08	1/5.96	1/6.00	1/6.02	–	1/5.93	1/6.00
1/7.5	1/7.5	1/7.49	1/7.48	1/7.48	1/7.54	1/7.58	–	1/7.50	1/7.57
1/9	1/9	1/9.07	1/8.98	1/9.00	1/9.07	1/9.06	–	1/9.09	1/9.14
1/10	–	1/9.91	1/10.1	1/9.99	1/9.90	1/10.2	–	–	–
1/12.5	1/12.5	1/12.7	1/12.6	1/12.5	1/12.5	1/12.3	–	1/12.5	1/12.6
1/15	1/15	1/15.1	1/14.9	1/14.9	1/14.9	1/14.8	–	1/15.2	1/15.2
1/18	1/18	1/18.0	1/18.0	1/18.1	1/18.0	1/18.0	–	1/17.8	1/17.8
1/20	–	1/19.8	1/19.8	1/20.1	1/20.0	1/19.9	–	–	–
1/25	1/25	1/25.0	1/25.3	1/25.1	1/25.3	1/25.5	–	1/25.0	1/25.3
1/30	1/30	1/29.7	1/30.2	1/30.3	1/30.4	1/30.1	–	1/30.2	1/30.4
1/36	1/36	1/36.4	1/36.4	1/36.4	1/36.5	1/36.1	–	1/36.3	1/36.2
1/50	1/50	1/50.4	1/49.8	1/49.8	1/50.2	1/50.9	1/50.9	1/49.4	1/49.6
1/60	1/60	1/59.6	1/59.9	1/61.2	1/61.3	1/60.5	1/60.5	1/60.5	1/59.8
1/75	1/75	1/75.8	1/75.4	1/76.2	1/74.6	1/76.0	1/76.0	1/74.1	1/75.6
1/90	1/90	1/90.1	1/90.8	1/90.5	1/88.3	1/89.8	1/89.8	1/90.7	1/90.0
1/100	1/100	1/98.9	1/100.7	1/98.0	1/97.8	1/98.6	1/98.6	1/100.0	1/101.2
1/120	1/120	1/119.3	1/119.2	1/122.5	1/120.0	1/121.2	1/121.2	1/121.2	1/121.9
1/150	1/150	1/148.9	1/147.6	1/148.9	1/146.5	1/150.4	1/150.4	1/154.6	1/151.1
1/180	1/180	1/179.3	1/180.0	1/183.5	1/177.0	1/182.1	1/182.1	1/182.2	1/182.2
1/200	–	–	–	–	–	1/202.1	1/202.1	–	1/202.4

• Decimal gear head

Nominal reduction ratio	Actual reduction ratio				
	MX6G10XB	MX7G10XB	MX8G10XB	MX9G10XB	MZ9G10XB
1/10	1/10.04	1/9.93	1/9.94	1/10.0	1/9.97

Outline of gear head

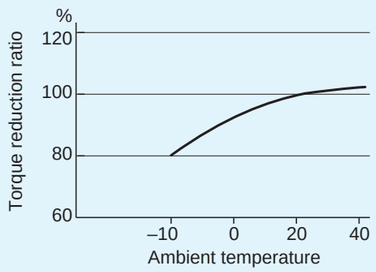
Gear head efficiency

Model No.	Reduction ratio																						Decimal gear head
	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200	10
M4GA□F			72%				—	61%			—		52%					41%						—
MX6G□B MX7G□B MX8G□B MX9G□B						81%												75%					—	81%
MZ9G□B MY9G□B			81%					75%							70%									81%
MR9G□B MP9G□B							—												70%					81%
MX6G□M MX7G□M MX8G□M MX9G□M						72%												61%					—	81%
MX9G□R			60%				—	60%			—		60%						45%				—	81%
MZ9G□R			60%				—	60%			—		60%					54%		45%				81%

* When the decimal gear head is used, the total efficiency is the product of gear head efficiency and decimal gear head efficiency.

Gear head efficiency and ambient temperature

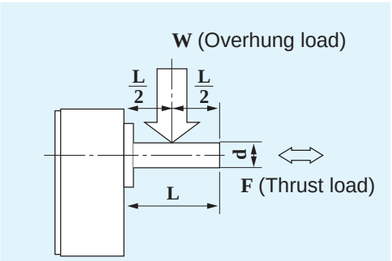
Calculate the actual gear head efficiency by multiplying the above-shown gear head efficiency at room temperature by the torque reduction ratio shown below.



Overhung load and thrust load

The overhung load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the figure below, the permissible value is determined based on the load applied to the L/2 position of the output shaft.
The thrust load is defined as a load applied to the output shaft in the axial direction.
Because the overhung load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible overhung load and thrust load shown in the table below.

• Overhung load and thrust load



• Permissible load list

Size	Model	Permissible overhung load N (kgf)	Permissible thrust load N (kgf)
42 mm sq.	M4GA□F	20 (2)	15 (2)
60 mm sq.	MX6G□B(A)	98 (10)	29 (3)
	MX6G□M(A)	49 (5)	
70 mm sq.	MX7G□B(A)	196 (20)	39 (4)
	MX7G□M(A)	98 (10)	
80 mm sq.	MX8G□B	294 (30)	49 (5)
	MX8G□M	200 (20)	
90 mm sq.	MX9G□B	392 (40)	98 (10)
	MX9G□M	294 (30)	
	MZ9G□B	588 (60)	147 (15)
	MY9G□B		
90 mm sq. High torque type	MR9G□B	748 (80)	147 (15)
	MP9G□B		
90 mm sq. Right-angle type	MX9G□R	392 (40)	98 (10)
	MZ9G□R	588 (60)	147 (15)

Service factor

Life expectancy of motor varies depending on load fluctuation. To determine the life expectancy, a factor called service factor, as shown in the table below is used.First choose the appropriate service factor according to the type of load and multiply the result by the required power to determine the design power.

• Service factor

Type of load	Typical load	Service factor		
		5 hours/day	8 hours/day	24 hours/day
Constant	Belt conveyor, One-directional rotation	0.8	1.0	1.5
Light-impact	Start/Stop, Cam-drive	1.2	1.5	2.0
Medium-impact	Instant FWD/REV, Instant stop	1.5	2.0	2.5
Heavy-impact	Frequent medium-impact	2.5	3.0	3.5

The required allowable shaft torque T_A of the gear head can be determined based on the service factor and actual load torque T_1:

$T_A = T_1 \times S_f$

T_A : Allowable torque of gear head (N·m)
T_1 : Actual load torque (N·m)
S_f : Service factor

Use the motor so that the allowable torque T_A calculated from the formula above falls within the allowable torque range.
* Though it seems that the motor can be operated even in overload when the service factor is 0.8, note that the service factor is defined for the allowable torque of the gear head. If the motor is operated in overload, the life of insulator may be shortened or the motor may be burned out due to an abnormal temperature rise.

Outline of gear head

Standard life ex pectancy

Standard life expectancy: Standard life expectancy when operated for 8 hours/day at the standard load (Service factor= 1.0)
***** The oil seal is excluded because it is a consumable.

• Calculation of life expectancy
Calculate the life expectancy while referring to the service factor table shown below.
When the service factor is 2.0, for example, the life expectancy is calculated as follows:
Life expectancy = 10,000 (h) / 2.0 = 5,000 (h)

• Standard life ex pectancy

	Life (hours)
Ball bearing Decimal gear head	10,000 hours*
Metal bearing	2,000 hours
Right-angle	5,000 hours
42 mm sq.	2,000 hours

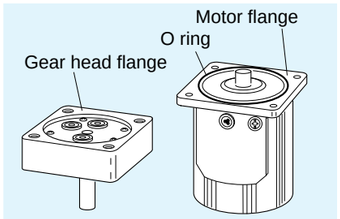
* 5,000 hours when used on reversible motor

Preparation

(1) Prepare a gear head that matches a motor described in this manual.
Use of incompatible gear head will cause malfunction.

(2) Check O-ring being correctly placed in a right place. If it is not, this may result in grease in the gear head coming out.

(3) Wipe off any grease on the gear head flange surface.



Assembling

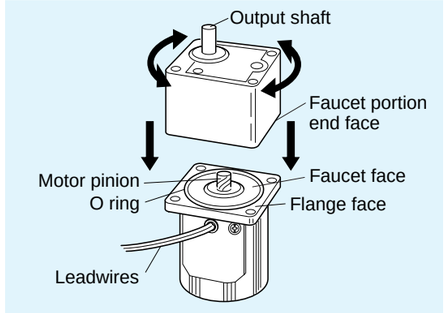
(1) Place the unit so that the motor shaft faces up.
Direction of the motor lead and output shaft of gear head must match an application.

(2) Do not contact a tooth tip of pinion shaft to a tooth tip of gear head.
Set each toothes of motor and gear head correctly and gently press and turn the gear head in counter and counter-clockwise.

(3) To attach the gear head to an application, use the " attaching screws" supplied with the gear head and tighten the screws with appropriate torque and with care not to pinch the O ring, so that the there is no gap between motor flange and gear flange.

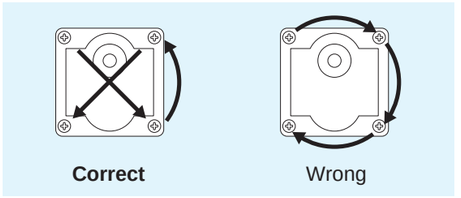
(4) The recommended torque is shown below.

Size	Screw size	Tightening torque
42 mm sq.	M3	6 to 1 N·m
60 mm sq.	M4	2 to 2.5 N·m
70 mm sq.	M5	2.5 to 3 N·m
80 mm sq.	M5	2.5 to 3 N·m
90 mm sq.	M6	3.5 to 4.5 N·m



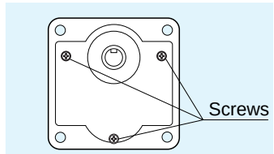
Assemble the motor shaft facing up.

(5) Tighten the screws correctly.


Correct Wrong

<Note>
Do not forcedly assemble the motor and gear head. Do not damage the tooth of the motor pinion and gear head. Incorrect assembly results in abnormal noise generation or shortened unit life.

DON' T	**Don' t touch screws on the output shaft of gear head.**	Will cause malfunction.



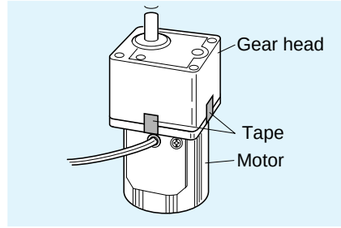
Considerations for installation of gear head

You may experience a sliping gear contact due to broken pinion tooth, locked gear or leaked grease as the gear head life comes closer.
Place a safety device to keep safe operation at any time even if such problems take place.

• Place a drop-proof device in an verticlly motioned application like a lifter.
• Place a device to open the door in a door application just in case the gear head is locked.
• Place an oil pan to prevent oil from coming out in an application like food/textile etc.
• Do not place an encoder, sensor, contact, etc near a gear head where the grease may leaking out. If not, please have a protection from grease.
• Have a routain check of the gear head to avoid unexpected accident.

<Precautions>
Keep the gear head attached to the motor. Otherwise, the O ring may become distorted or damaged, causing grease leakage.

• When reassembling, first replace the O ring with a new one.
• When installing a motor associated with the gear head to the application device, temporarily secure the motor and gear head with a tape until assembly completes.



Considerations for storage of gear head

When storing the gear head as a single unit, place it with the output shaft facing down.
(To prevent grease leakage)

Model list of gear head

Gear head (Cannot be used for C&B motor)

• Ball bearing

Size		Reduction ratio	Model No.	Hinge
60 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX6G3BA – MX6G18BA**	
		1/20, 1/25, 1/30, 1/36	**MX6G20BA – MX6G36B**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX6G50B – MX6G180B**	
70 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX7G3BA – MX7G18BA**	
		1/20, 1/25, 1/30, 1/36	**MX7G20BA – MX7G36B**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX7G50B – MX7G180B**	
80 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX8G3B – MX8G18B**	
		1/20, 1/25, 1/30, 1/36	**MX8G20B – MX8G36B**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX8G50B – MX8G180B**	
90 mm sq.	40W	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX9G3B – MX9G18B**	
		1/20, 1/25, 1/30, 1/36	**MX9G20B – MX9G36B**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX9G50B – MX9G180B**	
	Common to 60 W, 90 W	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9	**MZ9G3B – MZ9G9B**	
		1/10, 1/12.5, 1/15, 1/18	**MZ9G10B – MZ9G18B**	
		1/20, 1/25, 1/30, 1/36, 1/50, 1/60	**MZ9G20B – MZ9G60B**	
		1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	**MZ9G75B – MZ9G200B**	
		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9	**MY9G3B – MY9G9B**	○
		1/10, 1/12.5, 1/15, 1/18	**MY9G10B – MY9G18B**	○
		1/20, 1/25, 1/30, 1/36, 1/50, 1/60	**MY9G20B – MY9G60B**	○
		1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	**MY9G75B – MY9G200B**	○

* For the specifications for each item, refer to the page of the motor to which it can be applied.

• Metal bearing

Size		Reduction ratio	Model No.	Hinge
60 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX6G3MA – MX6G18MA**	
		1/20, 1/25, 1/30, 1/36	**MX6G20MA – MX6G36M**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX6G50M – MX6G180M**	
70 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX7G3MA – MX7G18MA**	
		1/20, 1/25, 1/30, 1/36	**MX7G20MA – MX7G36M**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX7G50M – MX7G180M**	
80 mm sq.		1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX8G3M – MX8G18M**	
		1/20, 1/25, 1/30, 1/36	**MX8G20M – MX8G36M**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX8G50M – MX8G180M**	
90 mm sq.	40W	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/10, 1/12.5, 1/15, 1/18	**MX9G3M – MX9G18M**	
		1/20, 1/25, 1/30, 1/36	**MX9G20M – MX9G36M**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX9G50M – MX9G180M**	

* For the specifications for each item, refer to the page of the motor to which it can be applied.

• Ball bearing and metal bearing

Size	Reduction ratio	Model No.	Hinge
42mm sq.	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/12.5, 1/15, 1/18	**M4GA3F – M4GA18F**	
	1/25, 1/30, 1/36, 1/50, 1/60	**M4GA25F – M4GA60F**	
	1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**M4GA75F – M4GA180F**	

* For the specifications for each item, refer to the page of the motor to which it can be applied.

• High torque gear head

Size	Reduction ratio	Model No.	Hinge
90 mm sq.	1/50, 1/60	**MR9G50B – MR9G60B**	
	1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	**MR9G75B – MR9G200B**	
	1/50, 1/60	**MP9G50B – MP9G60B**	○
	1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	**MP9G75B – MP9G200B**	○

• Right-angle gear head

Size		Reduction ratio	Model No.	Hinge
90 mm sq.	40W	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/12.5, 1/15, 1/18	**MX9G3R – MX9G18R**	
		1/25, 1/30, 1/36,	**MX9G25R – MX9G36R**	
		1/50, 1/60, 1/75, 1/90, 1/100, 1/120, 1/150, 1/180	**MX9G50R – MX9G180R**	
	Common to 60 W, 90 W	1/3, 1/3.6, 1/5, 1/6, 1/7.5, 1/9, 1/12.5, 1/15, 1/18, 1/25	**MZ9G3R – MZ9G25R**	
		1/30, 1/36, 1/50, 1/60,	**MZ9G30R – MZ9G60R**	
		1/75, 1/90, 1/100, 1/120, 1/150, 1/180, 1/200	**MZ9G75R – MZ9G200R**	

Model list of gear head

Gear head accessory

• Ball bearing / Metal bearing / Ball bearing and metal bearing

Size		Reduction ratio	Model No.	Accessory			
				Screw (mm)	Flat washer	Hexagon nut	Key
42 mm sq.		1/3 to 1/180	**M4GA3F – M4GA180F**	**M3** x **38** pan head screw: 2	For **M3**: 2	**M3**: 2	—
60 mm sq.		1/3 to 1/25	**MX6G3BA – MX6G25BA**	**M4** x **40** pan head screw: 4	For **M4**: 4	**M4**: 4	—
		1/30 to 1/180	**MX6G30B – MX6G180B**	**M4** x **50** pan head screw: 4	For **M4**: 4	**M4**: 4	—
70 mm sq.		1/3 to 1/25	**MX7G3BA – MX7G25BA**	**M5** x **50** pan head screw: 4	For **M5**: 4	**M5**: 4	**4** x **4** x **25** one-end round: 1
		1/30 to 1/180	**MX7G30B – MX7G180B**	**M5** x **55** pan head screw: 4	For **M5**: 4	**M5**: 4	**4** x **4** x **25** one-end round: 1
80 mm sq.		1/3 to 1/180	**MX8G3B – MX8G180B**	**M5** x **55** pan head screw: 4	For **M5**: 4	**M5**: 4	**4** x **4** x **25** one-end round: 1
90 mm sq.	40W	1/3 to 1/180	**MX9G3B – MX9G180B**	**M6** x **65** pan head screw: 4	For **M6**: 4	**M6**: 4	**4** x **4** x **25** one-end round: 1
	Common to 60 W, 90 W	1/3 to 1/200	**MZ9G3B – MZ9G200B**	**M6** x **85** hexagon socket head bolt: 4	For **M6**: 4	**M6**: 4	**5** x **5** x **25** one-end round: 1
		1/3 to 1/200	**MY9G3B – MY9G200B**	**M6** x **25** hexagon socket head bolt: 4	For **M6**: 4	**M6**: 4	**5** x **5** x **25** one-end round: 1

• High torque gear head

Size	Reduction ratio	Model No.	Accessory			
			Screw (mm)	Flat washer	Hexagon nut	Key
90 mm sq.	1/50 to 1/200	**MR9G50B – MR9G200B**	**M6** x **20** hexagon socket head bolt: 4	For **M6**: 4	—	**6** x **6** x **30** one-end round: 1
	1/50 to 1/200	**MP9G50B – MP9G200B**	**M6** x **25** hexagon socket head bolt: 4	For **M6**: 4	**M6**: 4	**6** x **6** x **30** one-end round: 1

• Right-angle gear head

Size		Reduction ratio	Model No.	Accessory			
				Screw (mm)	Flat washer	Hexagon nut	Key
90 mm sq.	40W	1/3 to 1/180	**MX9G3R – MX9G180R**	**M6** x **20** hexagon socket head bolt: 4	For **M6**: 4	—	**4** x **4** x **25** one-end round: 1
	Common to 60 W, 90 W	1/3 to 1/200	**MZ9G3R – MZ9G200R**	**M6** x **20** hexagon socket head bolt: 4	For **M6**: 4	—	**5** x **5** x **25** one-end round: 1

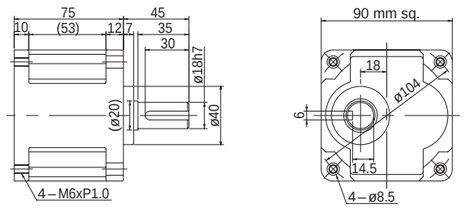
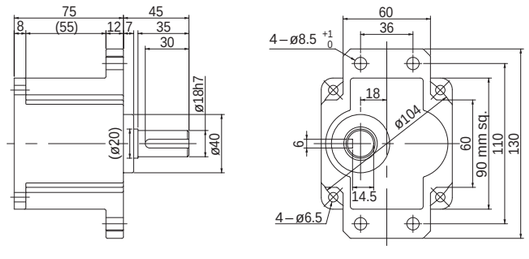
Decimal gear head (Cannot be used for C&B motor)

Size		Reduction ratio	Model No.	Applicable gear head	Page
60 mm sq.		1/10	**MX6G10XB**	**MX6G□BA** **MX6G□B**	**B-384**
70 mm sq.		1/10	**MX7G10XB**	**MX7G□BA** **MX7G□B**	**B-384**
80 mm sq.		1/10	**MX8G10XB**	**MX8G□B**	**B-384**
90 mm sq.	40W	1/10	**MX9G10XB**	**MX9G□B**	**B-384**
	Common to 60 W, 90 W	1/10	**MZ9G10XB**	**MZ9G□B** **MY9G□B** **MR9G□B** **MP9G□B**	**B-384**

• Decimal gear head fix ing screw (option) (page D-2)

Size	Reduction ratio	Applicable gear head	Gear fixing screw Model No.
60 mm sq.	**MX6G10XB**	**MX6G□BA** **MX6G□B** **MX6G□MA** **MX6G□M**	**M0PM4001**
70 mm sq.	**MX7G10XB**	**MX7G□BA** **MX7G□B** **MX7G□MA** **MX7G□M**	**M0PM5001**
80 mm sq.	**MX8G10XB**	**MX8G□B** **MX8G□M**	**M0PM5002**
90 mm sq. 40W	**MX9G10XB**	**MX9G□B** **MX9G□M**	**M0PM6003**
Common to 60 W, 90 W	**MZ9G10XB**	**MZ9G□B**	**M0PM6004**
		MY9G□B **MR9G□B** **MP9G□B**	**M0PM6002**

• Type of high torque gear head

Model No.	Dimensions (Scale: 1/4, Unit: mm)	Gear fixing screw
MR9G□B (Ball bearing, Hinge not attached)	 **Mass 1.7 kg**	**M6 x 20**
MP9G□B (Ball bearing, Hinge attached)	 **Mass 1.7 kg**	**M6 x 25**

Allowable shaft torque with high torque gear head directly connected

* The number of revolutions is calculated based on the synchronous rotating speed (1500 min^{-1}, 1800 min^{-1}). Usually, actual speed is slow by 2 to 20% the value shown in the table, depending on load condition.

• Hinge not attached 90 mm sq. / 60W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		50	60	75	90	100	120	150	180	200
Speed (min^{-1})	50Hz	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	36	30	24	20	18	15	12	10	9
Applicable gear head: MR9G50B–MR9G200B (ball bearing, hinge not attached)	50Hz	15.2 (155)	18.2 (186)	22.1 (225)	26.5 (270)	29.4 (300)				
	60Hz	12.7 (130)	15.2 (155)	18.6 (190)	22.1 (225)	24.6 (251)	29.4 (300)			
Rotational direction		Same as motor rotational direction								

• Hinge not attached 90 mm sq. / 90W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		50	60	75	90	100	120	150	180	200
Speed (min^{-1})	50Hz	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	36	30	24	20	18	15	12	10	9
Applicable gear head: MR9G50B–MR9G200B (ball bearing, hinge not attached)	50Hz	21.2 (216)	25.5 (260)	29.4 (300)						
	60Hz	17.6 (180)	21.2 (216)	26.7 (272)	29.4 (300)					
Rotational direction		Same as motor rotational direction								

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head: Bearing	Decimal gear head	Reduction ratio		500	600	750	900	1000	1200	1500	1800	2000
MR9G□B (ball bearing, hinge not attached)	MZ9G10XB	Speed (min^{-1})	50Hz	3	2.5	2	1.7	1.5	1.3	1	0.83	0.75
			60Hz	3.6	3	2.4	2	1.8	1.5	1.2	1	0.9
		Permissible torque	N·m (kgf·cm)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)
		Rotational direction		Same as motor rotational direction								

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

Allowable shaft torque with high torque gear head directly connected

* The number of revolutions is calculated based on the synchronous rotating speed (1500 min^{-1}, 1800 min^{-1}). Usually, actual speed is slow by 2 to 20% the value shown in the table, depending on load condition.

• With hinge Sq.90mm/60W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Speed reduction ratio		50	60	75	90	100	120	150	180	200
Rotating speed (min^{-1})	50Hz	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	36	30	24	20	18	15	12	10	9
Applicable gear head: MP9G50B–MP9G200B (Ball bearing, with hinge)	50Hz	15.2 (155)	18.2 (186)	22.1 (225)	26.5 (270)	29.4 (300)				
	60Hz	12.7 (130)	15.2 (155)	18.6 (190)	22.1 (225)	24.6 (251)	29.4 (300)			
Rotation direction		Same as on the motor								

• With hinge Sq.90mm/90W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

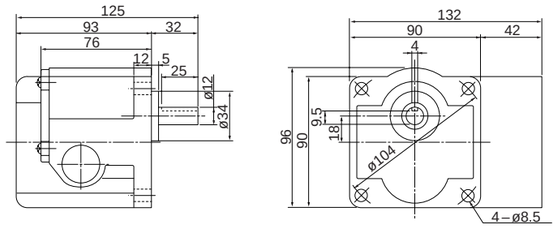
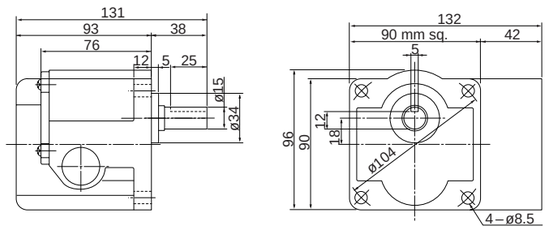
Speed reduction ratio		50	60	75	90	100	120	150	180	200
Rotating speed (min^{-1})	50Hz	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	36	30	24	20	18	15	12	10	9
Applicable gear head: MP9G50B–MP9G200B (Ball bearing, with hinge)	50Hz	21.2 (216)	25.5 (260)	29.4 (300)						
	60Hz	17.6 (180)	21.2 (216)	26.7 (272)	29.4 (300)					
Rotation direction		Same as on the motor								

• When intermediate gear head is used

Applicable gear head: Bearing	Intermediate gear head	Speed reduction ratio		500	600	750	900	1000	1200	1500	1800	2000
MP9G*B ((Ball bearing, with hinge)	MZ9G10XB	Rotating speed (min^{-1})	50Hz	3	2.5	2	1.7	1.5	1.3	1	0.83	0.75
			60Hz	3.6	3	2.4	2	1.8	1.5	1.2	1	0.9
		Allowable shaft torque	N·m (kgf·cm)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)	29.4 (300)
		Rotation direction		Same as on the motor								

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

• Type of right-angle gear head

Model No.	Dimensions (Scale: 1/4, Unit: mm)	Gear fixing screw
MX9G□R (Ball bearing)	 **Mass 2.5 kg**	**M6 x 20**
MZ9G□R (Ball bearing)	 **Mass 2.5 kg**	**M6 x 20**

*** Cannot be attached to the C&B motor.**

Allowable shaft torque with right-angle type gear head directly connected

* The number of revolutions is calculated based on the synchronous rotating speed (1500 min^{-1}, 1800 min^{-1}).
Usually, actual speed is slow by 2 to 20% the value shown in the table, depending on load condition.

• 90 mm sq. / 40W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
Speed (min^{-1})	50Hz	500	416.7	300	250	200	166.7	120	100	83.3	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3
	60Hz	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
Applicable gear head: MX9G3R – MX9G180R (ball bearing)	50Hz	0.60 (6.1)	0.72 (7.3)	0.98 (10)	1.18 (12)	1.47 (15)	1.76 (18)	2.45 (25)	2.94 (30)	3.53 (36)	5.00 (51)	6.00 (61)	7.18 (73)	9.80 (100)							
	60Hz	0.50 (5.1)	0.60 (6.1)	0.82 (8.4)	0.98 (10)	1.23 (13)	1.47 (15)	2.04 (21)	2.45 (25)	2.94 (30)	4.17 (43)	5.00 (51)	5.98 (61)	8.17 (83)	9.80 (100)						
Rotational direction		Same as motor rotational direction																			

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		250	300	360	500	600	750	1000	1200	1500	1800
Bearing	Decimal gear head	Speed (min^{-1})	50Hz	6	5	4.2	3	2.5	2	1.5	1.3	1	0.83
			60Hz	7.2	6	5	3.6	3	2.4	1.8	1.5	1.2	1
MX9G25R – MX9G180R	MX9G10XB	Permissible torque	N·m (kgf·cm)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)	9.80 (100)
		Rotational direction		Same as motor rotational direction									

Allowable shaft torque with right-angle type gear head directly connected

* The number of revolutions is calculated based on the synchronous rotating speed (1500 min^{-1}, 1800 min^{-1}).
Usually, actual speed is slow by 2 to 20% the value shown in the table, depending on load condition.

• 90 mm sq. / 60W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min^{-1})	50Hz	500	416.7	300	250	200	166.7	120	100	83.3	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3R – MZ9G200R (ball bearing)	50Hz	0.90 (9.2)	1.15 (12)	1.50 (15)	1.92 (20)	2.20 (22)	2.81 (29)	3.70 (38)	4.40 (45)	5.62 (57)	7.40 (75)	8.80 (90)	11.2 (114)	14.8 (151)	18.9 (193)	19.6 (200)						
	60Hz	0.70 (7.1)	0.90 (9.2)	1.17 (12)	1.50 (15)	1.72 (18)	2.20 (22)	2.90 (30)	3.44 (35)	4.40 (45)	5.79 (59)	7.40 (75)	8.80 (90)	116 (118)	14.8 (151)	15.3 (156)	19.6 (200)					
Rotational direction		Same as motor rotational direction																				

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800	2000
Bearing	MX9G10XB	Speed (min^{-1})	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.83	0.75
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1	0.9
MZ9G25R – MZ9G200R	MZ9G10XB	Permissible torque	N·m (kgf·cm)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)
		Rotational direction		Same as motor rotational direction											

• 90 mm sq. / 90W Unit of permissible torque: upper **(N·m)** / lower **(kgf·cm)**

Reduction ratio		3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180	200
Speed (min^{-1})	50Hz	500	416.7	300	250	200	166.7	120	100	83.3	60	50	41.7	30	25	20	16.7	15	12.5	10	8.3	7.5
	60Hz	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10	9
Applicable gear head: MZ9G3R – MZ9G200R (ball bearing)	50Hz	1.30 (13)	1.59 (16)	2.30 (24)	2.82 (29)	3.30 (34)	4.05 (41)	5.60 (57)	6.80 (69)	8.34 (85)	10.6 (108)	12.7 (130)	15.6 (159)	19.6 (200)								
	60Hz	1.06 (11)	1.30 (13)	1.88 (19)	2.30 (23)	2.69 (27)	3.30 (34)	4.56 (47)	5.54 (57)	6.80 (69)	8.15 (83)	10.6 (108)	12.7 (130)	16.0 (163)	19.6 (200)							
Rotational direction		Same as motor rotational direction																				

• Permissible torque at output shaft of gear head using decimal gear head

Applicable gear head		Reduction ratio		250	300	360	500	600	750	900	1000	1200	1500	1800	2000
Bearing	MX9G10XB	Speed (min^{-1})	50Hz	6	5	4.2	3	2.5	2	1.7	1.5	1.3	1	0.83	0.75
			60Hz	7.2	6	5	3.6	3	2.4	2	1.8	1.5	1.2	1	0.9
MZ9G25R – MZ9G200R	MZ9G10XB	Permissible torque	N·m (kgf·cm)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)	19.6 (200)
		Rotational direction		Same as motor rotational direction											

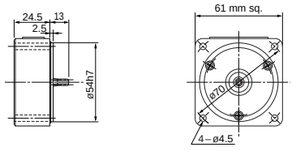
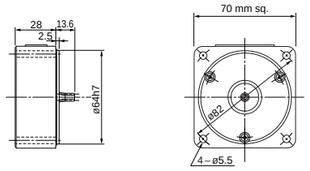
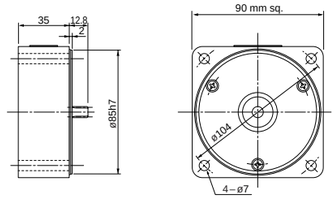
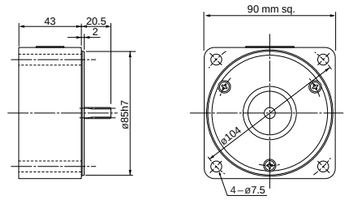
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

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

Decimal gear head

• Type of decimal gear head

* The decimal gear head fixing screw is sold separately. * Shown in □ is a gear ratio.

Model No.	Dimensions Scale: 1/4, Unit: mm	Applicable gear head	Gear fixing screw (option)
MX6G10XB	Mass 0.23 kg 	MX6G□BA MX6G□B MX6G□MA MX6G□M	M0PM4001 • M4 x 85 • Cross recessed pan head screw
MX7G10XB	Mass 0.35 kg 	MX7G□BA MX7G□B MX7G□MA MX7G□M	M0PM5001 • M5 x 95 • Cross recessed pan head screw
MX8G10XB	Mass 0.39 kg	MX8G□B MX8G□M	M0PM5002 • M5 x 85 • Cross recessed pan head screw
MX9G10XB	Mass 0.53 kg 	MX9G□B MX9G□M	M0PM6003 • M6 x 100 • Cross recessed pan head screw
MZ9G10XB	Mass 0.65 kg 	MZ9G□B	M0PM6004 • M6 x 125 • Hexagon socket head bol
		MY9G□B MP9G□B MR9G□B	M0PM6002 • M6 x 65 • Hexagon socket head bol

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