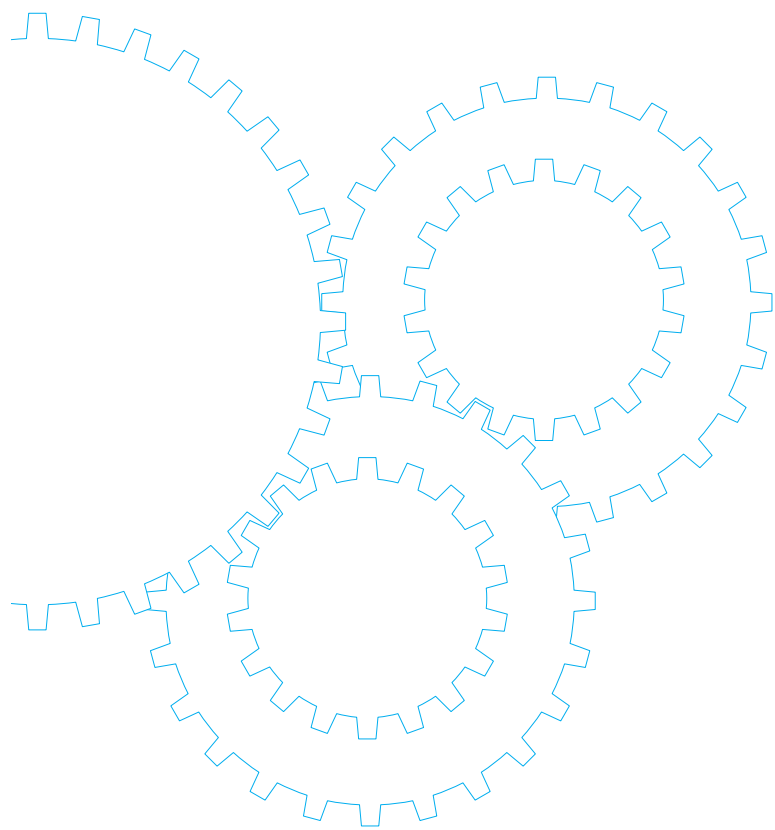


Variable Speed Induction Motor



Contents

- | | |
|--------------------------------------|-------|
| • Motor Overview | B-224 |
| • Model list | B-228 |
| • Product information for each model | B-232 |
| • Gear head combination dimensions | B-262 |
| • Round shaft motor dimensions | B-264 |

Outline of variable speed induction motor

Features

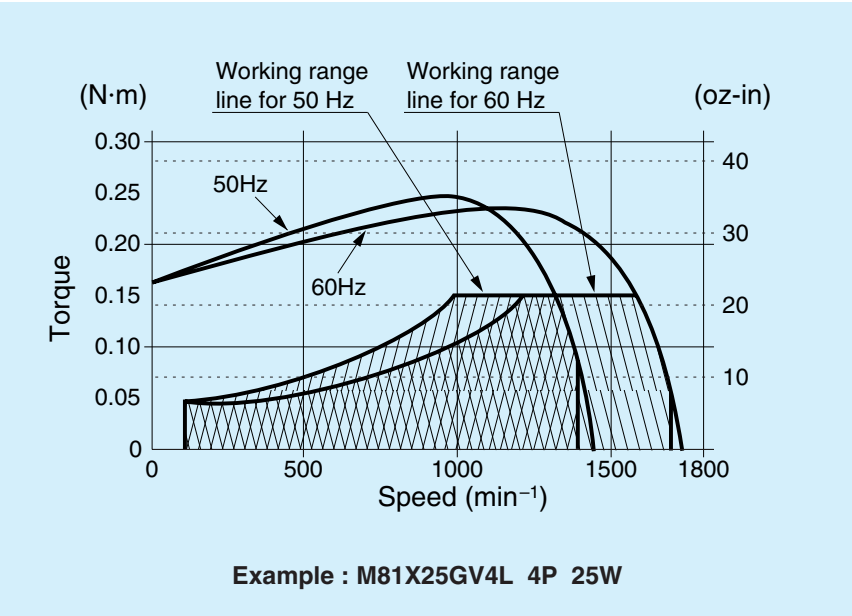
- By using it together with a speed controller, you can vary the speed over a wider range (90 to 1400 min⁻¹ for 50 Hz and 90 to 1700 min⁻¹ for 60 Hz).
- Various functions such as variable speed, braking, normal/reverse run and soft-start/soft-stop are available.
- Feedback control with the built-in tachogenerator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

Working range

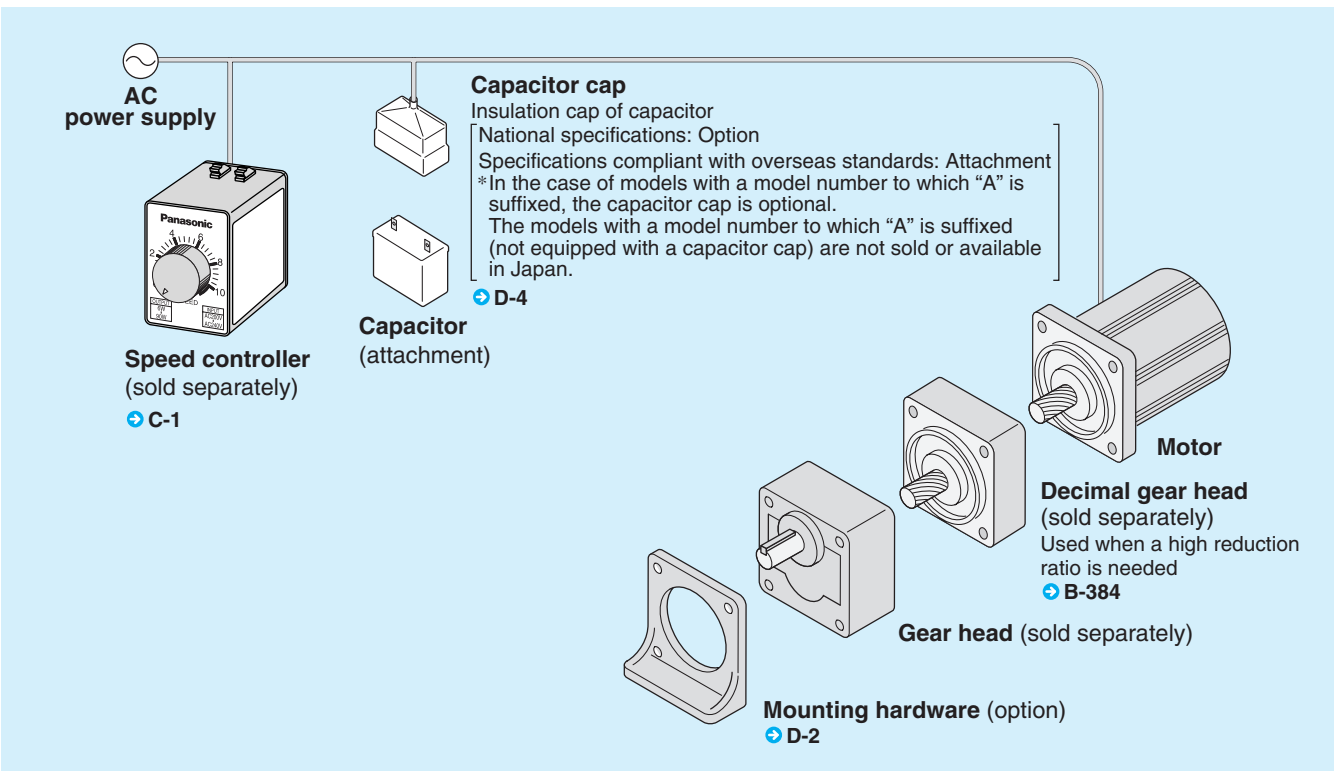
The working range line shows the working limit (at the constant rating) for the variable speed motor. The permissible torque should fall within the shaded portion.

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.

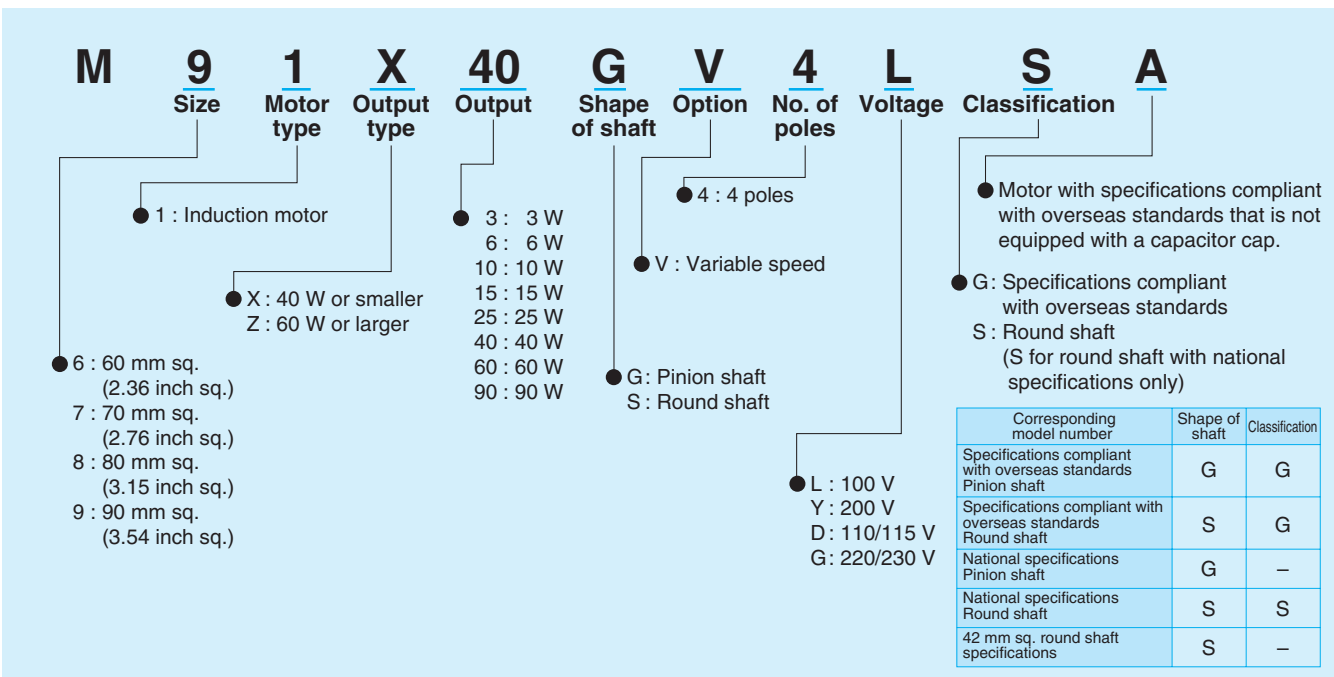
Working range line



System configuration diagram



Coding system



Fit tolerance

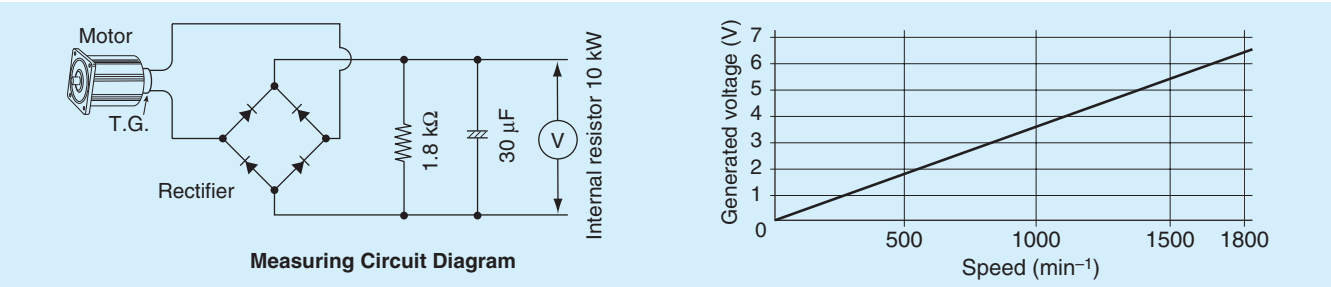
Fit tolerance symbol is used in the outside dimension diagram of motor and gear head. For further information, see "Fit tolerance" on page A-33.

Outline of variable speed induction motor

Voltage generation of tachogenerator

The tachogenerator 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.)

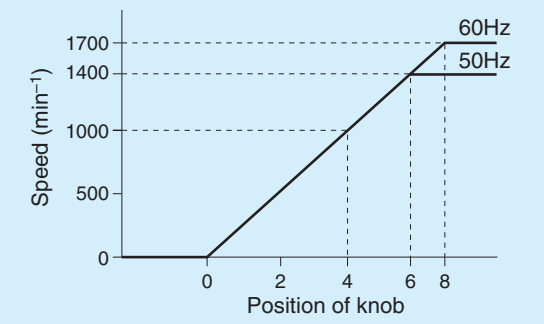
• Voltage generation of tachogenerator



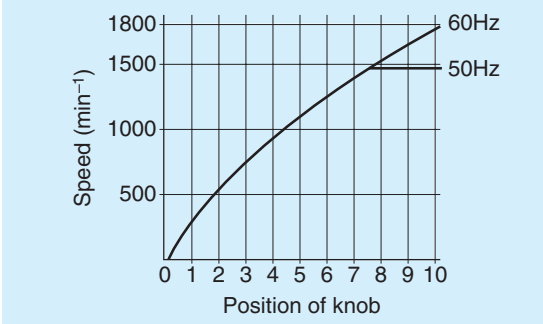
Setting of Speed

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 tachogenerator.)

• MGSD type



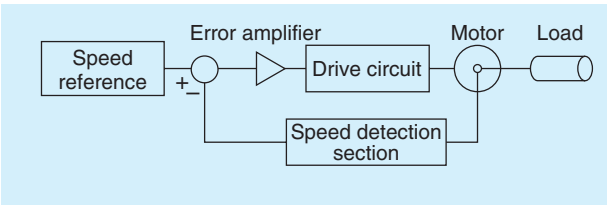
• SD and EX type



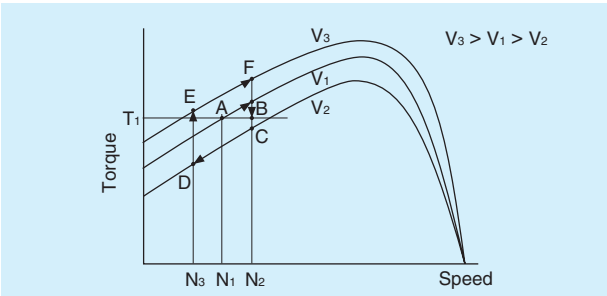
Principle of closed loop system speed control

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

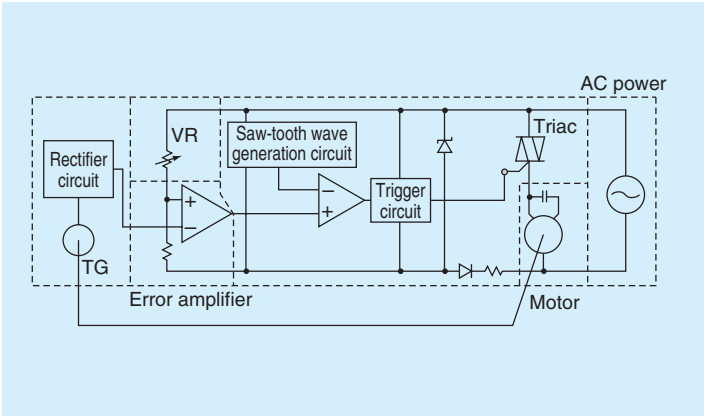
Fig. 2 shows the relation between the motor torque and speed when the voltage (primary voltage) applied to the motor is changed. Assume that the voltage is V_1 , the load torque is T_1 and the resulting speed is N_1 . If the motor is being accelerated at this point A, when the voltage is changed from V_1 to V_2 with the motor status at point B, the motor status moves to point C. Because load torque T_1 is larger than the motor torque at point C, the speed is reduced from N_2 .

When the voltage is increased to V_3 with the speed being N_3 , 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.

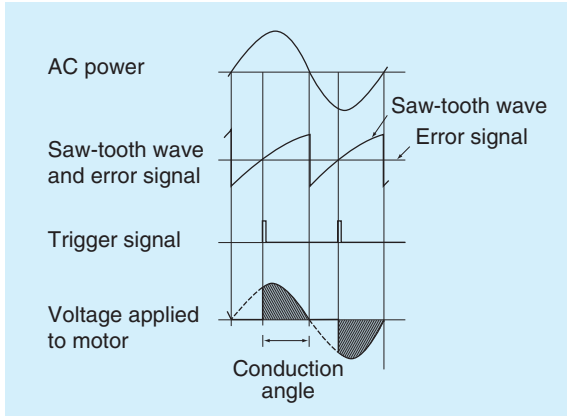
Operation of speed controller

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



Size	Output (W)	Leadwire type		
		Model number	Specifications	Page
60 mm sq. (2.36 inch sq.)	3	M61X3GV4L	100V	B-232
	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. (2.76 inch sq.)	10	M71X10GV4L	100V	B-238
	15	M71X10GV4Y	200V	B-238
		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. (3.15 inch sq.)	15	M81X15GV4L	100V	B-244
	25	M81X15GV4Y	200V	B-244
		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. (3.54 inch sq.)	40	M91X40GV4L	100V	B-250
		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
		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
		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

■ Hinge attached

Standard gear head		High torque gear head	Right-angle gear head	Gear head -Inch (U.S.A.)	Decimal gear head
Ball bearing	metal bearing				
MX6G□BA MX6G□B	MX6G□MA MX6G□M	—	—	MX6G□BU	MX6G10XB
MX7G□BA MX7G□B	MX7G□MA MX7G□M	—	—	MX7G□BU	MX7G10XB
MX8G□B	MX8G□M	—	—	MX8G□BU	MX8G10XB
MX9G□B	MX9G□M	—	MX9G□R	MX9G□BU	MX9G10XB
MZ9G□B	—	MR9G□B	MZ9G□R	MZ9G□BU	MZ9G10XB
MY9G□B		MP9G□B			

* 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-444 for dimensions and permissible torque of high torque gear head.
Refer to page B-446 for dimensions and permissible torque of right-angle gear head.
Refer to page B-451 for dimensions and permissible torque of gear head -Inch (U.S.A.).
Refer to page B-448 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. (2.36 inch 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. (2.76 inch 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. (3.15 inch 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. (3.54 inch 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. (2.36 inch sq.)	3	-----	M61X3GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
	6	-----	M61X6GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M61X6GV4Y	200	MGSDA1 ★	DV1231	DVSD48AY	DVEX48AY
		★	M61X6GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M61X6GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M61X6GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M61X6GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----
70 mm sq. (2.76 inch sq.)	10	-----	M71X10GV4L	100	MGSDA1 ★	DV1131	DVSD48AL	DVEX48AL
		-----	M71X10GV4Y	200	MGSDA1 ★	DV1231	DVSD48AY	DVEX48AY
	15	-----	M71X15GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M71X15GV4Y	200	MGSDA1 ★	DV1231	DVSD48AY	DVEX48AY
		★	M71X15GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M71X15GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M71X15GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M71X15GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----
80 mm sq. (3.15 inch sq.)	15	-----	M81X15GV4L	100	MGSDA1 ★	DV1132	DVSD48AL	DVEX48AL
		-----	M81X15GV4Y	200	MGSDA1 ★	DV1231	DVSD48AY	DVEX48AY
	25	-----	M81X25GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M81X25GV4Y	200	MGSDA1 ★	DV1234	DVSD48BY	DVEX48BY
		★	M81X25GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M81X25GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M81X25GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M81X25GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----
90 mm sq. (3.54 inch sq.)	40	-----	M91X40GV4L	100	MGSDA1 ★	DV1132	DVSD48BL	DVEX48BL
		-----	M91X40GV4Y	200	MGSDA1 ★	DV1234	DVSD48BY	DVEX48BY
		★	M91X40GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M91X40GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M91X40GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M91X40GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----
	60	-----	M91Z60GV4L	100	MGSDA1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M91Z60GV4Y	200	MGSDA1 ★	DV1234	DVSD48CY	DVEX48CY
		★	M91Z60GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M91Z60GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M91Z60GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M91Z60GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----
	90	-----	M91Z90GV4L	100	MGSDA1 ★	DV1134	DVSD48CL	DVEX48CL
		-----	M91Z90GV4Y	200	MGSDA1 ★	DV1234	DVSD48CY	DVEX48CY
		★	M91Z90GV4LG(A)	100	MGSDA1 ★	-----	-----	-----
		★	M91Z90GV4DG(A)	110/115	MGSDA1 ★	-----	-----	-----
		★	M91Z90GV4YG(A)	200	MGSDA1 ★	-----	-----	-----
		★	M91Z90GV4GG(A)	220/230	MGSDA1 ★	-----	-----	-----

* 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 (2.36 inch) sq. 3 W

- **Specifications**

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N-m (oz-in)		Starting current (A)	Starting torque N-m (oz-in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
60 mm sq.	M61X3GV4L	4	3	100	50	Cont.	90 to 1400	0.018 (2.55)	0.018 (2.55)	0.21	0.026 (3.68)	2 (200V)
					60		90 to 1700	0.018 (2.55)	0.018 (2.55)	0.21	0.026 (3.68)	

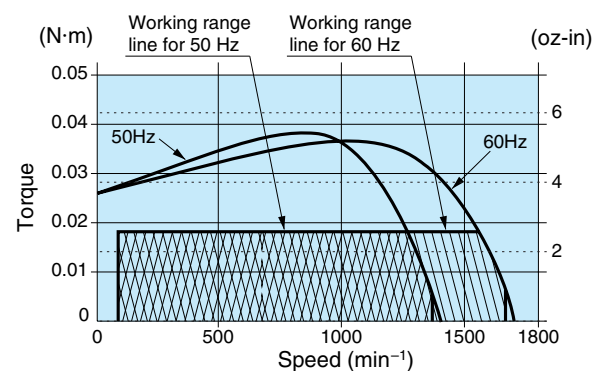
- The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

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

Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing	Speed													
MX6G□BA (ball bearing) MX6G□B (bearing) MX6G□MA (metal bearing) MX6G□M (bearing)	1200min ⁻¹	50Hz	0.044 (0.39)	0.052 (0.46)	0.073 (0.65)	0.088 (0.78)	0.11 (0.97)	0.13 (1.15)	0.14 (1.24)	0.18 (1.59)	0.22 (1.95)	0.26 (2.30)	0.29 (2.57)	0.365 (3.23)
		60Hz	0.044 (0.39)	0.052 (0.46)	0.073 (0.65)	0.088 (0.78)	0.11 (0.97)	0.13 (1.15)	0.14 (1.24)	0.18 (1.59)	0.22 (1.95)	0.26 (2.30)	0.29 (2.57)	0.365 (3.23)
	90min ⁻¹		0.044 (0.39)	0.052 (0.46)	0.073 (0.65)	0.088 (0.78)	0.11 (0.97)	0.13 (1.15)	0.14 (1.24)	0.18 (1.59)	0.22 (1.95)	0.26 (2.30)	0.29 (2.57)	0.365 (3.23)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio											Applicable decimal gear head	
Bearing	Speed		30	36	50	60	75	90	100	120	150		180
MX6G□BA (ball bearing) MX6G□B MX6G□MA (metal bearing) MX6G□M (bearing)	1200min ⁻¹	50Hz	0.39 (3.45)	0.47 (4.16)	0.65 (5.75)	0.78 (6.90)	0.98 (8.67)	1.18 (10.4)	1.31 (11.6)	1.57 (13.9)	1.96 (17.3)	2.35 (20.8)	
		60Hz	0.39 (3.45)	0.47 (4.16)	0.65 (5.75)	0.78 (6.90)	0.98 (8.67)	1.18 (10.4)	1.38 (12.2)	1.57 (13.9)	1.96 (17.3)	2.35 (20.8)	
	90min ⁻¹		0.39 (3.45)	0.47 (4.16)	0.65 (5.75)	0.78 (6.90)	0.98 (8.67)	1.18 (10.4)	1.38 (12.2)	1.57 (13.9)	1.96 (17.3)	2.35 (20.8)	
	Rotational direction		Reverse to motor rotational direction										
			MX6G10XB										

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.

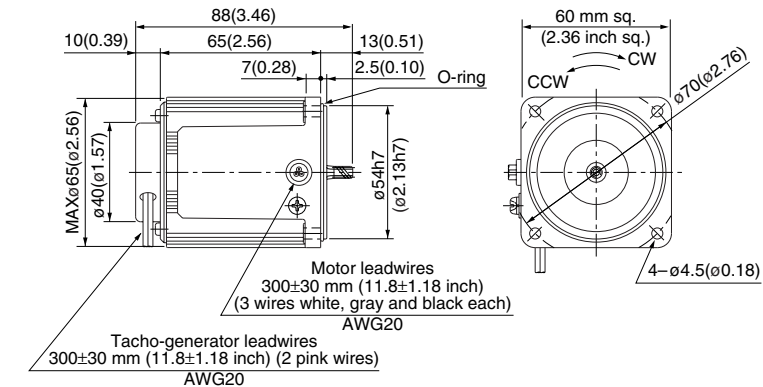
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

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

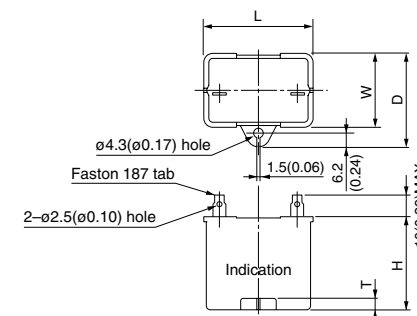
M61X3GV4L 4P 3 W 100 V

Mass 0.60 kg 1.32 lb	Helical gear	Module 0.5	Number of teeth 6
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Capacitor (dimensions) [attachment]

Unit: mm (inch)



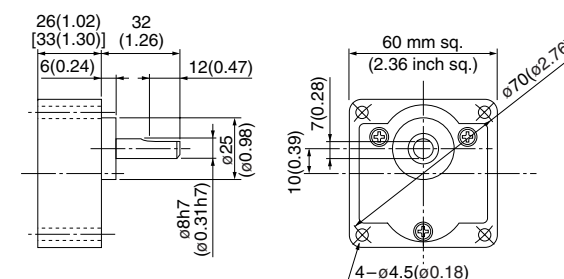
• **Capacitor dimension list** Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M61X3GV4L	M0PC2M20	39.5 (1.56)	16 (0.63)	26.5 (1.04)	30.5 (1.20)	4 (0.16)	M0PC3917

Gear head (dimensions)

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

MX6G□BA (ball bearing) / **MX6G□B** (ball bearing) Mass 0.24/0.3 kg (0.53/0.66 lb): Output shaft D cut
MX6G□MA (metal bearing) / **MX6G□M** (metal bearing) Mass 0.24/0.3 kg (0.53/0.66 lb): 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.

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
□ 60	M61X6GV4L	4	6	100	50	Cont.	90 to 1400	0.032 (4.53)	0.025 (3.54)	0.30	0.037 (5.24)	2.5 (200V)
					60	Cont.	90 to 1700	0.032 (4.53)	0.025 (3.54)	0.30	0.037 (5.24)	
	M61X6GV4Y	4	6	200	50	Cont.	90 to 1400	0.032 (4.53)	0.025 (3.54)	0.15	0.037 (5.24)	0.6 (400V)
					60	Cont.	90 to 1700	0.032 (4.53)	0.025 (3.54)	0.15	0.037 (5.24)	

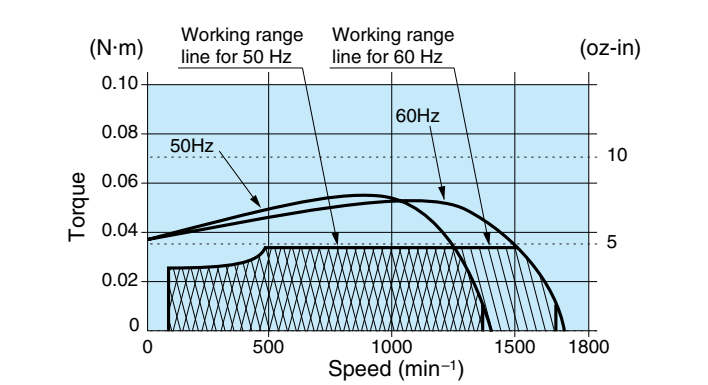
• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

Permissible torque at output shaft of gear head

Unit of permissible torque: upper (N·m) / lower (lb·in)																										
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25												
Bearing															Speed											
MX6G□BA (ball bearing) MX6G□B (bearing) MX6G□MA (metal bearing) MX6G□M (bearing)	1200min ⁻¹	50Hz													0.077 (0.68)	0.093 (0.82)	0.13 (1.15)	0.15 (1.33)	0.19 (1.68)	0.23 (2.04)	0.25 (2.21)	0.32 (2.83)	0.38 (3.36)	0.46 (4.07)	0.51 (4.51)	0.64 (5.66)
		60Hz													0.077 (0.68)	0.093 (0.82)	0.13 (1.15)	0.15 (1.33)	0.19 (1.68)	0.23 (2.04)	0.25 (2.21)	0.32 (2.83)	0.38 (3.36)	0.46 (4.07)	0.51 (4.51)	0.64 (5.66)
	90min ⁻¹														0.06 (0.53)	0.07 (0.62)	0.10 (0.89)	0.12 (1.06)	0.15 (1.33)	0.18 (1.59)	0.20 (1.77)	0.25 (2.21)	0.30 (2.66)	0.36 (3.19)	0.40 (3.54)	0.50 (4.43)
	Rotational direction		Same as motor rotational direction																							

Applicable gear head		Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing														
MX6G□BA (ball bearing) MX6G□B (bearing) MX6G□MA (metal bearing) MX6G□M (bearing)	1200min ⁻¹	50Hz	0.69 (6.11)	0.83 (7.35)	1.16 (10.3)	1.39 (12.3)	1.74 (15.4)	2.09 (18.5)	2.33 (20.6)	2.45 (21.7)	2.45 (21.7)	MX6G10XB		
		60Hz	0.69 (6.11)	0.83 (7.35)	1.16 (10.3)	1.39 (12.3)	1.74 (15.4)	2.09 (18.5)	2.33 (20.6)	2.45 (21.7)	2.45 (21.7)			
	90min ⁻¹		0.54 (4.78)	0.65 (5.75)	0.90 (7.97)	1.08 (9.56)	1.35 (11.9)	1.62 (14.3)	1.81 (16.0)	2.17 (19.2)	2.45 (21.7)		2.45 (21.7)	
	Rotational direction		Reverse to motor rotational direction											

Speed-torque characteristics



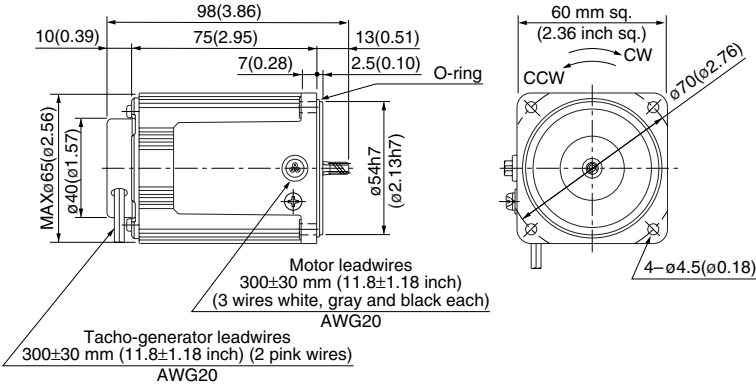
• Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

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

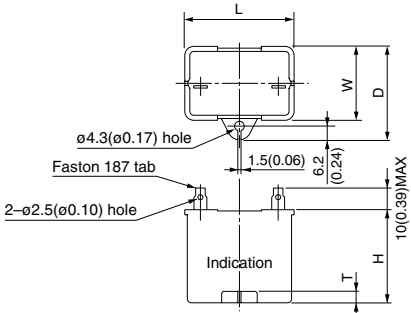
M61X6GV4L 4P 6 W 100 V
M61X6GV4Y 4P 6 W 200 V

Mass 0.71 kg 1.57 lb
Helical gear
Module 0.5
Number of teeth 6



Capacitor (dimensions) [attachment]

Unit: mm (inch)



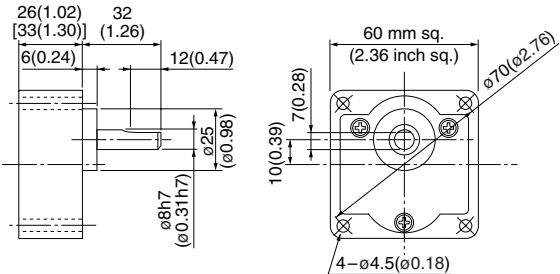
Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M61X6GV4L	M0PC2.5M20	39.5 (1.56)	16 (0.63)	26.5 (1.04)	30.5 (1.20)	4 (0.16)	M0PC3917
M61X6GV4Y	M0PC0.6M40	39.5 (1.56)	16.2 (0.64)	27 (1.06)	27 (1.06)	4 (0.16)	M0PC3917

Gear head (dimensions)

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

MX6G□BA (ball bearing) / MX6G□B (ball bearing) Mass 0.24/0.3 kg (0.53/0.66 lb): Output shaft D cut
MX6G□MA (metal bearing) / MX6G□M (metal bearing) Mass 0.24/0.3 kg (0.53/0.66 lb): 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)

c

60 mm (2.36 inch) sq.

6 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
60 mm sq.	M61X6GV4LG	4	6	100	50	Cont.	90 to 1400	0.044 (6.23)	0.034 (4.81)	0.32	0.049 (6.94)	3.5 (250V)
	M61X6GV4LGA				60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.33	0.049 (6.94)	
	M61X6GV4DG	4	6	110	60	Cont.	90 to 1700	0.034 (4.81)	0.034 (4.81)	0.33	0.044 (6.23)	2.5 (250V)
	M61X6GV4DGA				60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.34	0.049 (6.94)	
	M61X6GV4YG	4	6	200	50	Cont.	90 to 1400	0.044 (6.23)	0.034 (4.81)	0.14	0.049 (6.94)	0.8 (450V)
	M61X6GV4YGA				60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.14	0.049 (6.94)	
	M61X6GV4GG M61X6GV4GGA	4	6	220	50	Cont.	90 to 1400	0.044 (6.23)	0.034 (4.81)	0.14	0.042 (5.95)	0.6 (450V)
					60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.14	0.042 (5.95)	
				230	50		90 to 1400	0.044 (6.23)	0.034 (4.81)	0.15	0.048 (6.80)	
					60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.15	0.049 (6.94)	
					50		90 to 1400	0.044 (6.23)	0.034 (4.81)	0.15	0.048 (6.80)	
					60		90 to 1700	0.034 (4.81)	0.034 (4.81)	0.15	0.049 (6.94)	

- 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.

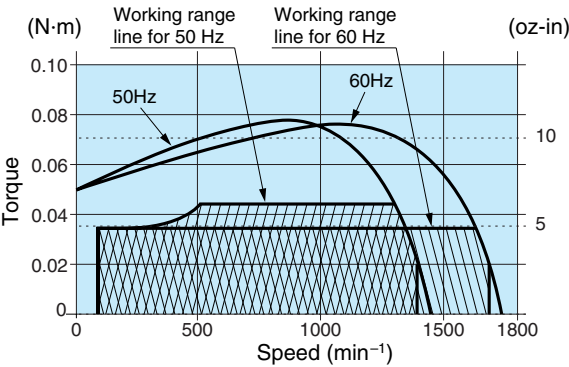
Permissible torque at output shaft of gear head

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

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX6G□BA MX6G□B MX6G□MA MX6G□M	1200min ⁻¹	50Hz	0.11 (0.97)	0.13 (1.15)	0.18 (1.59)	0.21 (1.86)	0.27 (2.39)	0.32 (2.83)	0.36 (3.19)	0.45 (3.98)	0.53 (4.69)	0.64 (5.66)	0.71 (6.28)	0.89 (7.88)
		60Hz	0.083 (0.73)	0.10 (0.89)	0.14 (1.24)	0.17 (1.5)	0.21 (1.86)	0.25 (2.21)	0.28 (2.48)	0.34 (3.01)	0.41 (3.63)	0.50 (4.43)	0.55 (4.87)	0.69 (6.11)
	90min ⁻¹	50Hz	0.08 (0.71)	0.10 (0.89)	0.14 (1.24)	0.17 (1.5)	0.21 (1.86)	0.25 (2.21)	0.28 (2.48)	0.34 (3.01)	0.41 (3.63)	0.50 (4.43)	0.55 (4.87)	0.69 (6.11)
		60Hz	0.083 (0.73)	0.10 (0.89)	0.14 (1.24)	0.17 (1.5)	0.21 (1.86)	0.25 (2.21)	0.28 (2.48)	0.34 (3.01)	0.41 (3.63)	0.50 (4.43)	0.55 (4.87)	0.69 (6.11)
Rotational direction		Same as motor rotational direction												

Applicable gear head		Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing														
MX6G□BA MX6G□B MX6G□MA MX6G□M	(ball bearing) (metal bearing)	1200min ⁻¹	50Hz	0.96 (8.50)	1.15 (10.2)	1.60 (14.2)	1.92 (17.0)	2.41 (21.3)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	MX6G10XB	
			60Hz	0.74 (6.55)	0.89 (7.88)	1.24 (11.0)	1.49 (13.2)	1.86 (16.5)	2.23 (19.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)		
		90min ⁻¹	50Hz	0.74 (6.55)	0.89 (7.88)	1.24 (11.0)	1.49 (13.2)	1.86 (16.5)	2.23 (19.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)		
			60Hz	0.74 (6.55)	0.89 (7.88)	1.24 (11.0)	1.49 (13.2)	1.86 (16.5)	2.23 (19.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)		
	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

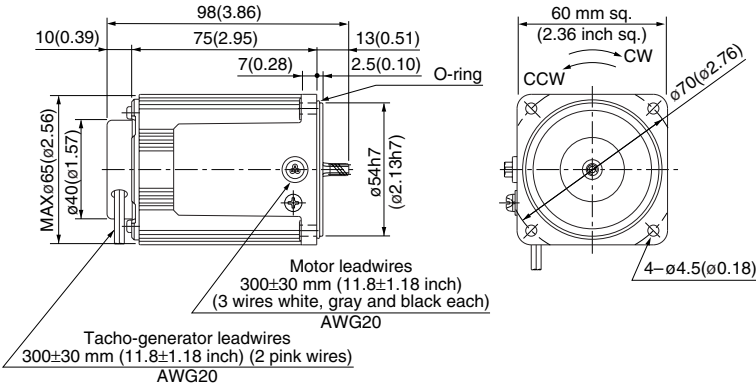
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

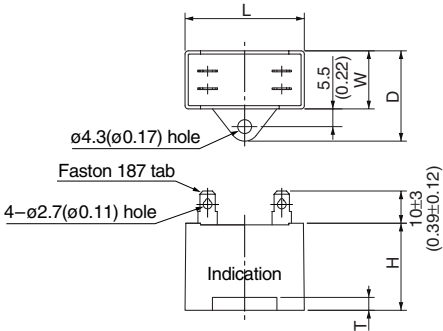
Scale: 1/3, Unit: mm (inch)

Mass	Helical gear	Module	Number of teeth
0.71 kg 1.57 lb		0.5	6



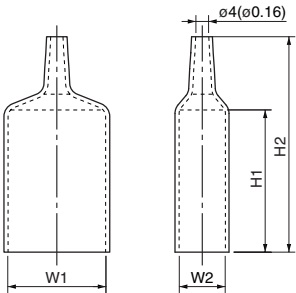
Capacitor (dimensions) [attachment]

Unit: mm (inch)



Capacitor cap (dimensions)

Unit: mm (inch)



Capacitor dimension list

Unit: upper (mm) / lower (inch)

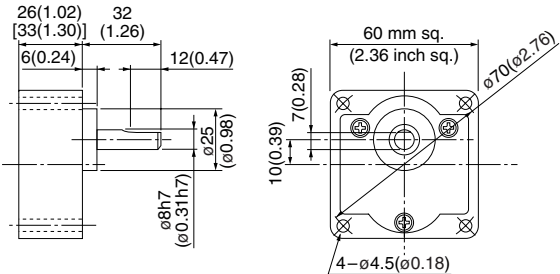
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M61X6GV4LG(A)	M0PC3.5M25G	31 (1.22)	17 (0.67)	27 (1.06)	27 (1.06)	4 (0.16)	M0PC3117G	31 (1.22)	17 (0.67)	50 (1.97)	73 (2.87)
M61X6GV4DG(A)	M0PC2.5M25G	31 (1.22)	17 (0.67)	27 (1.06)	27 (1.06)	4 (0.16)	M0PC3117G	31 (1.22)	17 (0.67)	50 (1.97)	73 (2.87)
M61X6GV4YG(A)	M0PC0.8M45G	31 (1.22)	17 (0.67)	27 (1.06)	27 (1.06)	4 (0.16)	M0PC3117G	31 (1.22)	17 (0.67)	50 (1.97)	73 (2.87)
M61X6GV4GG(A)	M0PC0.6M45G	31 (1.22)	14.5 (0.57)	24.5 (0.96)	23.5 (0.93)	4 (0.16)	M0PC3114G	31 (1.22)	14.5 (0.57)	45 (1.77)	68 (2.68)

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 (inch)

MX6G□BA (ball bearing) / MX6G□B (ball bearing)	Mass 0.24/0.3 kg (0.53/0.66 lb): Output shaft D cut
MX6G□MA (metal bearing) / MX6G□M (metal bearing)	Mass 0.24/0.3 kg (0.53/0.66 lb): 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)

70 mm (2.76 inch) sq. 10 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
70 mm sq.	M71X10GV4L	4	10	100	50	Cont.	90 to 1400	0.059 (8.36)	0.027 (3.82)	0.40	0.064 (9.06)	4 (200V)
					60		90 to 1700	0.059 (8.36)	0.027 (3.82)	0.40	0.066 (9.35)	
	M71X10GV4Y	4	10	200	50	Cont.	90 to 1400	0.059 (8.36)	0.027 (3.82)	0.20	0.064 (9.06)	1 (400V)
					60		90 to 1700	0.059 (8.36)	0.027 (3.82)	0.20	0.066 (9.35)	

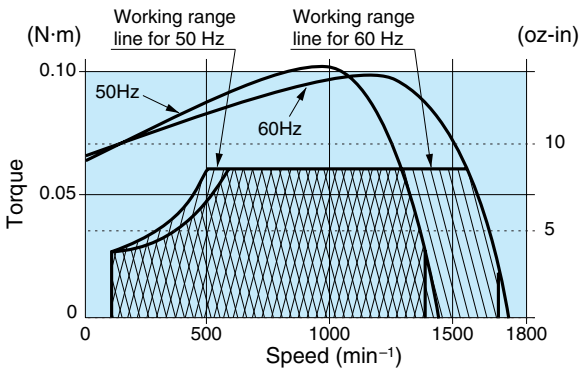
The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

Permissible torque at output shaft of gear head

Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz	0.14 (1.24)	0.17 (1.50)	0.23 (2.04)	0.28 (2.48)	0.35 (3.10)	0.43 (3.81)	0.47 (4.16)	0.59 (5.22)	0.71 (6.28)	0.86 (7.61)	0.95 (8.41)	1.19 (10.5)
		60Hz	0.14 (1.24)	0.17 (1.50)	0.23 (2.04)	0.28 (2.48)	0.35 (3.10)	0.43 (3.81)	0.47 (4.16)	0.59 (5.22)	0.71 (6.28)	0.86 (7.61)	0.95 (8.41)	1.19 (10.5)
	90min ⁻¹		0.065 (0.58)	0.078 (0.69)	0.11 (0.97)	0.31 (2.74)	0.16 (1.42)	0.19 (1.68)	0.21 (1.86)	0.27 (2.39)	0.32 (2.83)	0.39 (3.45)	0.43 (3.81)	0.54 (4.78)
	Rotational direction		Same as motor rotational direction											

Unit of permissible torque: upper (N·m) / lower (lb·in)													
Applicable gear head	Reduction ratio												Applicable decimal gear head
Bearing			Speed	30	36	50	60	75	90	100	120	150	180
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz		1.29 (11.4)	1.54 (13.6)	2.15 (19.0)	2.58 (22.8)	3.22 (28.5)	3.87 (34.3)	4.30 (38.1)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)
		60Hz		1.29 (11.4)	1.54 (13.6)	2.15 (19.0)	2.58 (22.8)	3.22 (28.5)	3.87 (34.3)	4.30 (38.1)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)
	90min ⁻¹			0.59 (5.22)	0.70 (6.20)	0.98 (8.67)	1.18 (10.4)	1.47 (13.0)	1.77 (15.7)	1.97 (17.4)	2.36 (20.9)	2.95 (26.1)	3.54 (31.3)
	Rotational direction		Reverse to motor rotational direction										

Speed-torque characteristics



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

Connection diagram

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

Working range line

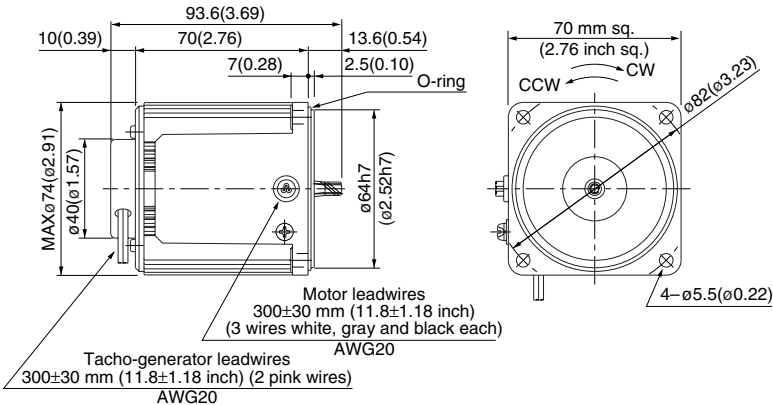
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

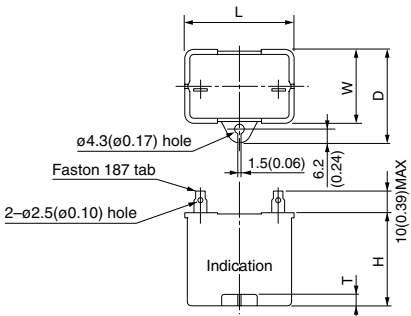
M71X10GV4L	4P	10 W	100 V
M71X10GV4Y	4P	10 W	200 V

Mass	Helical gear	Module	Number of teeth
0.88 kg 1.94 lb		0.5	7



Capacitor (dimensions) [attachment]

Unit: mm (inch)



Capacitor dimension list

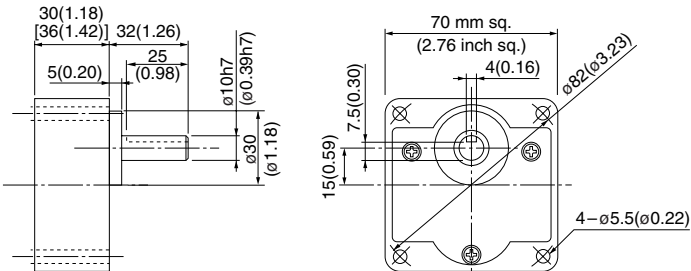
Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M71X10GV4L	M0PC4M20	39.5 (1.56)	16 (0.63)	26.5 (1.04)	30.5 (1.20)	4 (0.16)	M0PC3917
M71X10GV4Y	M0PC1M40	39.5 (1.56)	16.2 (0.64)	27 (1.06)	27 (1.06)	4 (0.16)	M0PC3917

Gear head (dimensions)

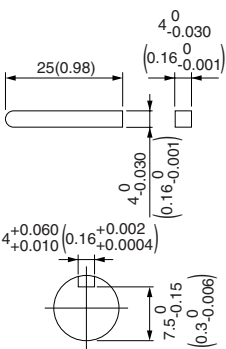
Scale: 1/3, Unit: mm (inch)

MX7G□BA (ball bearing) / MX7G□B (ball bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)
MX7G□MA (metal bearing) / MX7G□M (metal bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)



Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(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).)

(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)

70 mm (2.76 inch) sq.15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
70 mm sq.	M71X15GV4L	4	15	100	50	Cont.	90 to 1400	0.089 (12.6)	0.029 (4.11)	0.60	0.068 (9.63)	5 (200V)
					60	Cont.	90 to 1700	0.089 (12.6)	0.029 (4.11)	0.56	0.068 (9.63)	
	M71X15GV4Y	4	15	200	50	Cont.	90 to 1400	0.089 (12.6)	0.029 (4.11)	0.30	0.068 (9.63)	1.3 (400V)
					60	Cont.	90 to 1700	0.089 (12.6)	0.029 (4.11)	0.28	0.068 (9.63)	

• 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

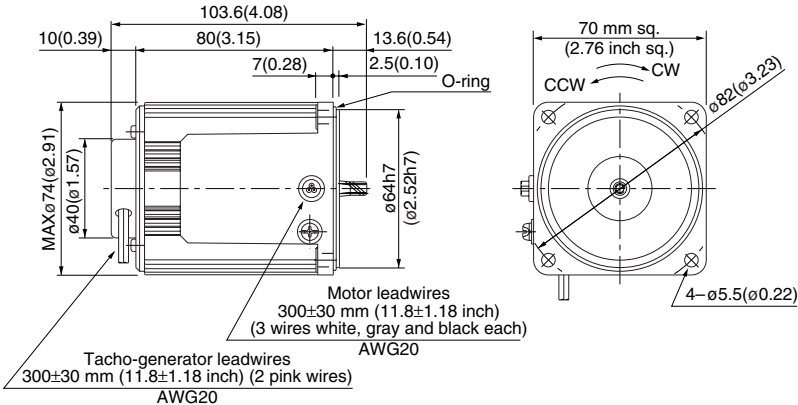
Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz	0.21 (1.86)	0.25 (2.21)	0.36 (3.19)	0.43 (3.81)	0.54 (4.78)	0.64 (5.66)	0.72 (6.37)	0.86 (7.61)	1.08 (9.56)	1.29 (11.4)	1.44 (12.8)	1.80 (15.9)
		60Hz	0.21 (1.86)	0.25 (2.21)	0.36 (3.19)	0.43 (3.81)	0.54 (4.78)	0.64 (5.66)	0.72 (6.37)	0.86 (7.61)	1.08 (9.56)	1.29 (11.4)	1.44 (12.8)	1.88 (16.6)
	90min ⁻¹		0.070 (0.62)	0.084 (0.74)	0.11 (0.97)	0.14 (1.24)	0.17 (1.50)	0.21 (1.86)	0.23 (2.04)	0.28 (2.48)	0.35 (3.10)	0.42 (3.72)	0.47 (4.16)	0.58 (5.13)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing	Speed												
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz	1.92 (17.0)	2.30 (20.4)	3.20 (28.3)	3.84 (34.0)	4.80 (42.5)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	MX7G10XB
		60Hz	1.92 (17.0)	2.30 (20.4)	3.20 (28.3)	3.84 (34.0)	4.80 (42.5)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	
	90min ⁻¹		0.63 (5.58)	0.75 (6.64)	1.05 (9.29)	1.26 (11.2)	1.58 (14.0)	1.89 (16.7)	2.11 (18.7)	2.53 (22.4)	3.16 (28.0)	3.79 (33.5)	
	Rotational direction		Reverse to motor rotational direction										

Motor (dimensions)

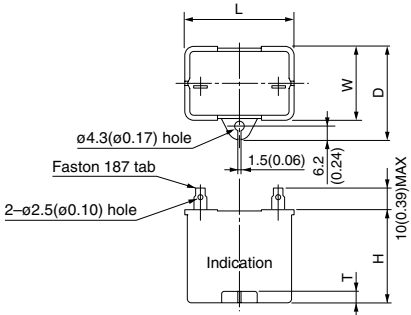
Scale: 1/3, Unit: mm (inch)

M71X15GV4L	4P	15 W	100 V	Mass 1.1 kg 2.43 lb	Helical gear	Module 0.5	Number of teeth 7
M71X15GV4Y	4P	15 W	200 V				



Capacitor (dimensions) [attachment]

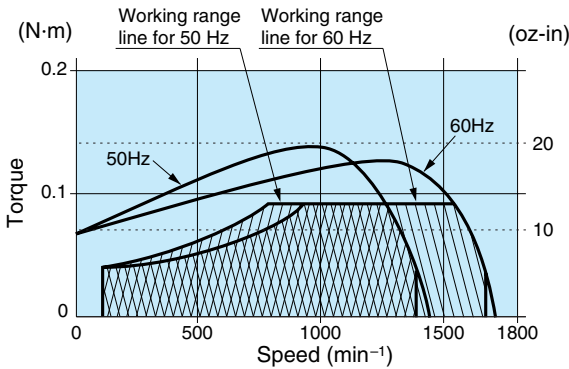
Unit: mm (inch)



• Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M71X15GV4L	M0PC5M20	39.5 (1.56)	16 (0.63)	26.5 (1.04)	30.5 (1.20)	4 (0.16)	M0PC3917
M71X15GV4Y	M0PC1.3M40	39.5 (1.56)	18.3 (0.72)	29 (1.14)	29 (1.14)	4 (0.16)	M0PC3922

Speed-torque characteristics



Connection diagram

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

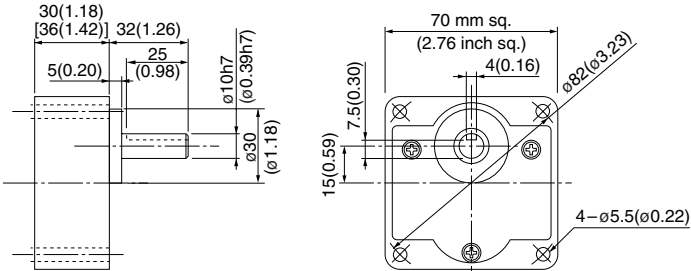
* Working range line

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.

Gear head (dimensions)

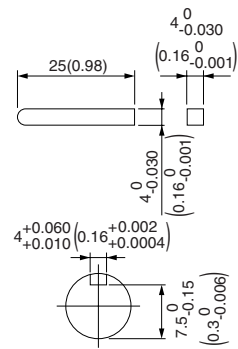
Scale: 1/3, Unit: mm (inch)

MX7G□BA (ball bearing) / MX7G□B (ball bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)
MX7G□MA (metal bearing) / MX7G□M (metal bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)



Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(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).)

(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)

c

70 mm (2.76 inch) sq.

15 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
70 mm sq.	M71X15GV4LG	4	15	100	50	Cont.	90 to 1400	0.11 (15.6)	0.049 (6.94)	0.57	0.080 (11.3)	5.5 (250V)
	M71X15GV4LGA				60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.56	0.080 (11.3)	
	M71X15GV4DG	4	15	110	60	Cont.	90 to 1700	0.088 (12.5)	0.049 (6.94)	0.58	0.080 (11.3)	4.5 (250V)
	M71X15GV4DGA				60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.61	0.088 (12.5)	
	M71X15GV4YG	4	15	200	50	Cont.	90 to 1400	0.11 (15.6)	0.049 (6.94)	0.24	0.080 (11.3)	1.3 (450V)
	M71X15GV4YGA				60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.24	0.080 (11.3)	
	M71X15GV4GG M71X15GV4GGA	4	15	220	50	Cont.	90 to 1400	0.11 (15.6)	0.049 (6.94)	0.27	0.080 (11.3)	1.2 (450V)
					60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.26	0.080 (11.3)	
				230	50		90 to 1400	0.11 (15.6)	0.049 (6.94)	0.28	0.10 (14.2)	
					60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.27	0.10 (14.2)	
					50		90 to 1400	0.11 (15.6)	0.049 (6.94)	0.28	0.10 (14.2)	
					60		90 to 1700	0.088 (12.5)	0.049 (6.94)	0.27	0.10 (14.2)	

- 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.
- 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.

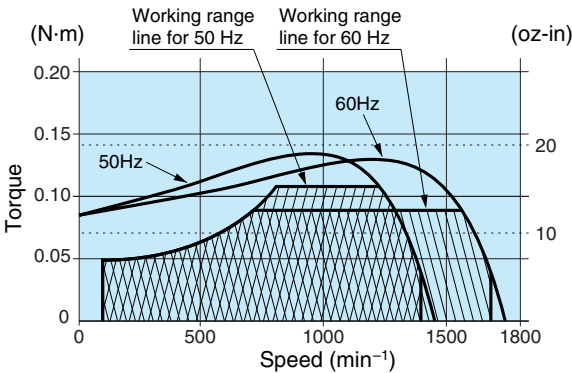
Permissible torque at output shaft of gear head

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

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz	0.27 (2.39)	0.32 (2.83)	0.45 (3.98)	0.53 (4.69)	0.67 (5.93)	0.80 (7.08)	0.89 (7.88)	1.11 (9.82)	1.34 (11.9)	1.60 (14.2)	1.78 (15.8)	2.23 (19.7)
		60Hz	0.21 (1.86)	0.26 (2.30)	0.36 (3.19)	0.43 (3.81)	0.53 (4.69)	0.64 (5.66)	0.71 (6.28)	0.89 (7.88)	1.07 (9.47)	1.28 (11.3)	1.43 (12.7)	1.78 (15.8)
	90min ⁻¹		0.12 (1.06)	0.14 (1.24)	0.20 (1.77)	0.24 (2.12)	0.30 (2.66)	0.36 (3.19)	0.40 (3.54)	0.50 (4.43)	0.60 (5.31)	0.71 (6.28)	0.79 (6.99)	0.99 (8.76)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing	Speed												
MX7G□BA (ball bearing) MX7G□B (bearing) MX7G□MA (metal bearing) MX7G□M (bearing)	1200min ⁻¹	50Hz	2.41 (21.3)	2.89 (25.6)	4.01 (35.5)	4.81 (42.6)	4.9 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	MX7G10XB
		60Hz	1.92 (17.0)	2.31 (20.4)	3.21 (28.4)	3.85 (34.1)	4.81 (42.6)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)		
	90min ⁻¹		1.07 (9.47)	1.29 (11.4)	1.79 (15.8)	2.14 (18.9)	2.68 (23.7)	3.21 (28.4)	3.57 (31.6)	4.29 (38.0)	4.90 (43.4)	4.90 (43.4)	
	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.

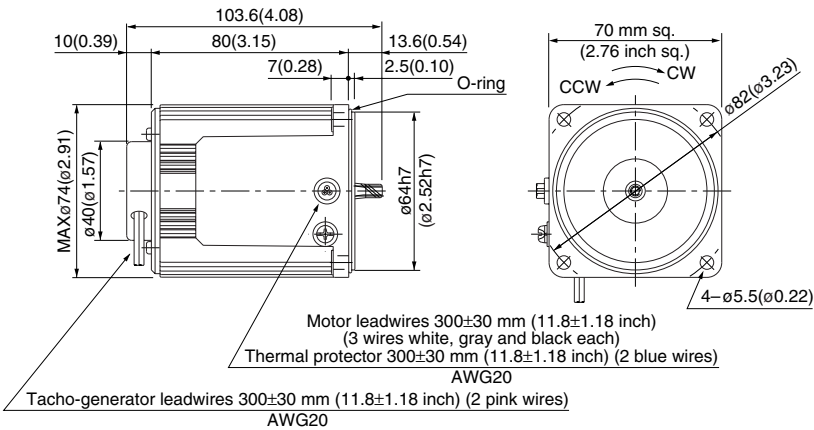
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

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

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 gear	Module	Number of teeth
1.1 kg 2.43 lb		0.5	7

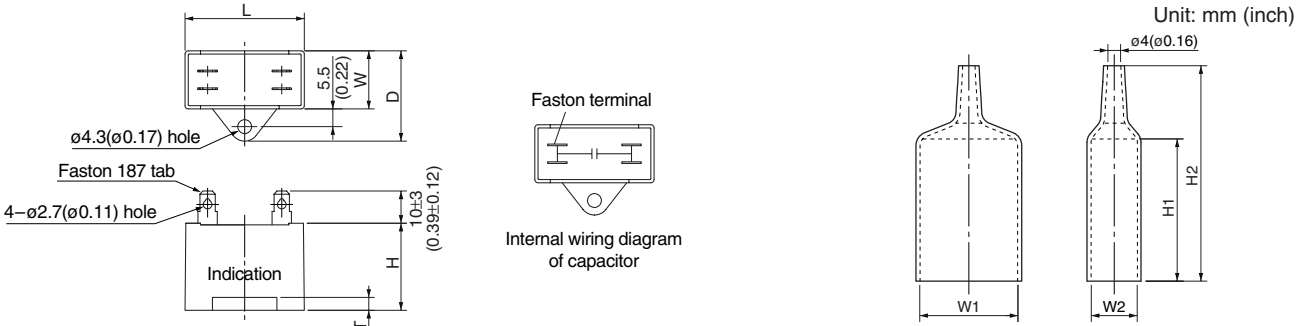


Capacitor (dimensions) [attachment]

Unit: mm (inch)

Capacitor cap (dimensions)

Unit: mm (inch)



Capacitor dimension list

Unit: upper (mm) / lower (inch)

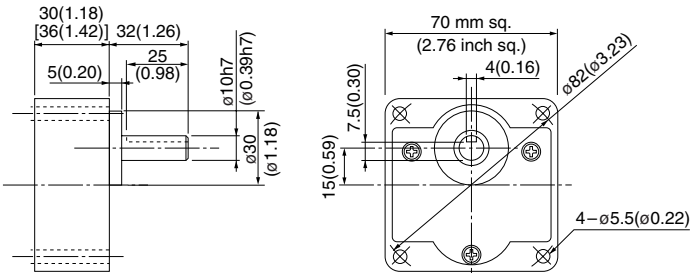
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M71X15GV4LG(A)	M0PC5.5M25G	38 (1.50)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC3821G	38 (1.50)	21 (0.83)	55 (2.17)	78 (3.07)
M71X15GV4DG(A)	M0PC4.5M25G	37 (1.46)	18 (0.71)	28 (1.10)	27 (1.06)	4 (0.16)	M0PC3718G	37 (1.46)	18 (0.71)	50 (1.97)	73 (2.87)
M71X15GV4YG(A)	M0PC1.3M45G	38 (1.50)	19 (0.75)	29 (1.14)	29 (1.14)	4 (0.16)	M0PC3819G	38 (1.50)	19 (0.75)	50 (1.97)	73 (2.87)
M71X15GV4GG(A)	M0PC1.2M45G	37 (1.46)	18 (0.71)	28 (1.10)	27 (1.06)	4 (0.16)	M0PC3718G	37 (1.46)	18 (0.71)	50 (1.97)	73 (2.87)

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

Gear head (dimensions)

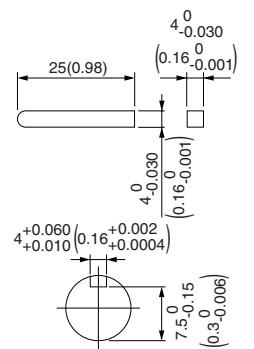
Scale: 1/3, Unit: mm (inch)

MX7G□BA (ball bearing) / MX7G□B (ball bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)
MX7G□MA (metal bearing) / MX7G□M (metal bearing)	Mass 0.38/0.45 kg (0.84/0.99 lb)



Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(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).)

(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)

80 mm (3.15 inch) sq.15 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
80 mm sq.	M81X15GV4L	4	15	100	50	Cont.	90 to 1400	0.12 (17.0)	0.039 (5.52)	0.72	0.12 (17.0)	6 (200V)
					60		90 to 1700	0.12 (17.0)	0.039 (5.52)	0.69	0.12 (17.0)	
	M81X15GV4Y	4	15	200	50	Cont.	90 to 1400	0.12 (17.0)	0.039 (5.52)	0.36	0.12 (17.0)	1.5 (400V)
					60		90 to 1700	0.12 (17.0)	0.039 (5.52)	0.35	0.12 (17.0)	

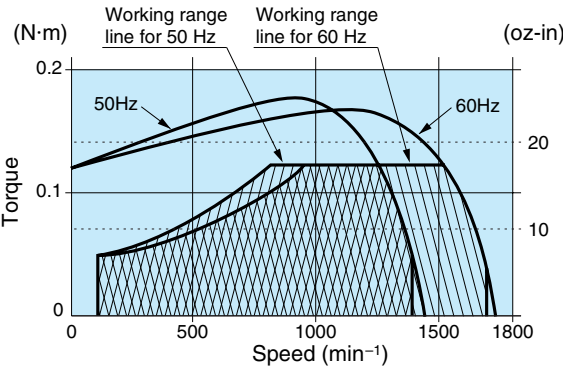
• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

• Permissible torque at output shaft of gear head

Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min ⁻¹	50Hz	0.29 (2.57)	0.34 (3.01)	0.48 (4.25)	0.58 (5.13)	0.72 (6.37)	0.87 (7.70)	0.97 (8.59)	1.21 (10.7)	1.45 (12.8)	1.74 (15.4)	1.94 (17.2)	2.43 (21.5)
		60Hz	0.29 (2.57)	0.34 (3.01)	0.48 (4.25)	0.58 (5.13)	0.72 (6.37)	0.87 (7.70)	0.97 (8.59)	1.21 (10.7)	1.45 (12.8)	1.74 (15.4)	1.94 (17.2)	2.43 (21.5)
	90min ⁻¹		0.094 (0.83)	0.11 (0.97)	0.15 (1.33)	0.18 (1.59)	0.23 (2.04)	0.28 (2.48)	0.31 (2.74)	0.39 (3.45)	0.47 (4.16)	0.56 (4.96)	0.63 (5.58)	0.78 (6.90)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing	Speed												
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min ⁻¹	50Hz	2.62 (23.2)	3.14 (27.8)	4.37 (38.7)	5.24 (46.4)	6.55 (58.0)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	MX8G10XB
		60Hz	2.62 (23.2)	3.14 (27.8)	4.37 (38.7)	5.24 (46.4)	6.55 (58.0)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	
	90min ⁻¹		0.84 (7.43)	1.01 (8.94)	1.41 (12.5)	1.69 (15.0)	2.12 (18.8)	2.54 (22.5)	2.83 (25.0)	3.39 (30.0)	4.24 (37.5)	5.09 (45.1)	
	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

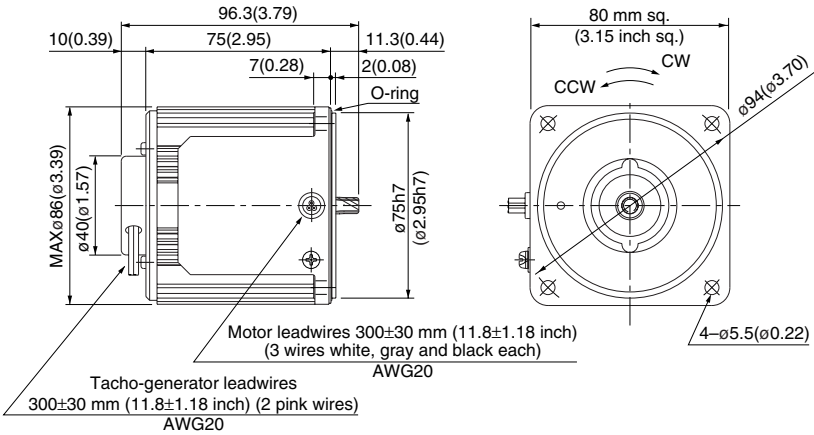
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

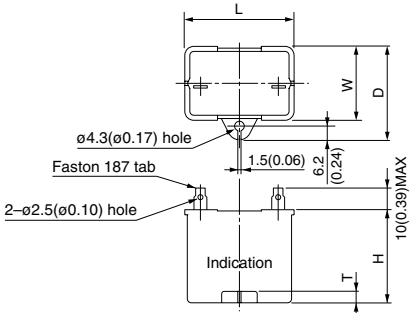
M81X15GV4L	4P	15 W	100 V
M81X15GV4Y	4P	15 W	200 V

Mass	Helical gear	Module	Number of teeth
1.2 kg 2.65 lb		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm (inch)



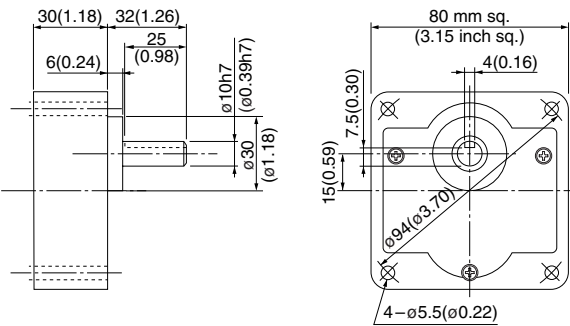
• Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X15GV4L	M0PC6M20	39.5 (1.56)	17.5 (0.69)	28 (1.10)	30.5 (1.20)	4 (0.16)	M0PC3917
M81X15GV4Y	M0PC1.5M40	39.5 (1.56)	22 (0.87)	32.5 (1.28)	32.5 (1.28)	4 (0.16)	M0PC3922

Gear head (dimensions)

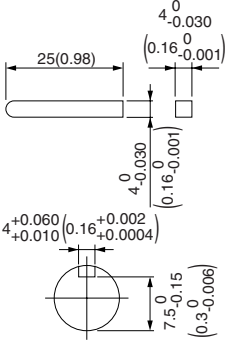
Scale: 1/3, Unit: mm (inch)

MX8G□B (ball bearing) / MX8G□M (metal bearing) Mass 0.6 kg (1.32 lb)



Key and keyway (dimensions) [attachment]

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.

(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)

80 mm (3.15 inch) sq. 25 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
80 mm sq.	M81X25GV4L	4	25	100	50	Cont.	90 to 1400	0.14 (19.8)	0.039 (5.52)	1.0	0.16 (22.7)	8 (200V)
					60		90 to 1700	0.14 (19.8)	0.039 (5.52)	1.0	0.16 (22.7)	
	M81X25GV4Y	4	25	200	50	Cont.	90 to 1400	0.14 (19.8)	0.039 (5.52)	0.5	0.16 (22.7)	2 (400V)
					60		90 to 1700	0.14 (19.8)	0.039 (5.52)	0.5	0.16 (22.7)	

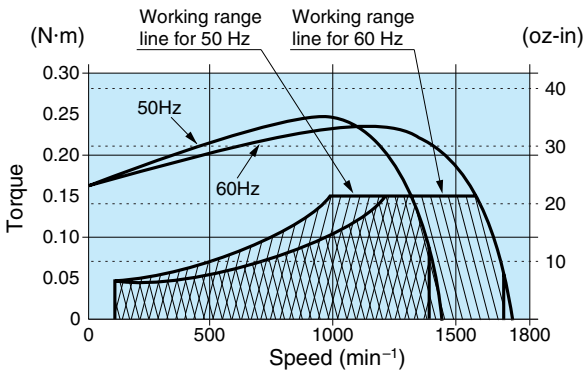
• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-264.

Permissible torque at output shaft of gear head

Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min ⁻¹	50Hz	0.34 (3.01)	0.40 (3.54)	0.56 (4.96)	0.68 (6.02)	0.85 (7.52)	1.02 (9.03)	1.13 (10.0)	1.41 (12.5)	1.70 (15.0)	2.04 (18.1)	2.26 (20.0)	2.83 (25.0)
		60Hz	0.34 (3.01)	0.40 (3.54)	0.56 (4.96)	0.68 (6.02)	0.85 (7.52)	1.02 (9.03)	1.13 (10.0)	1.41 (12.5)	1.70 (15.0)	2.04 (18.1)	2.26 (20.0)	2.83 (25.0)
	90min ⁻¹		0.094 (0.83)	0.11 (0.97)	0.15 (1.33)	0.18 (1.59)	0.23 (2.04)	0.28 (2.48)	0.31 (2.74)	0.39 (3.45)	0.47 (4.16)	0.56 (4.96)	0.63 (5.58)	0.78 (6.90)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio												Applicable decimal gear head	
Bearing			Speed	30	36	50	60	75	90	100	120	150		180
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min ⁻¹	50Hz	3.06 (27.1)	3.67 (32.5)	5.10 (45.1)	6.12 (54.2)	7.65 (67.7)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)		MX8G10XB
		60Hz	3.06 (27.1)	3.67 (32.5)	5.10 (45.1)	6.12 (54.2)	7.65 (67.7)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)		
	90min ⁻¹		0.84 (7.43)	1.01 (8.94)	1.41 (12.5)	1.69 (15.0)	2.12 (18.8)	2.54 (22.5)	2.83 (25.0)	3.39 (30.0)	4.24 (37.5)	5.09 (45.1)		
	Rotational direction		Reverse to motor rotational direction											

Speed-torque characteristics



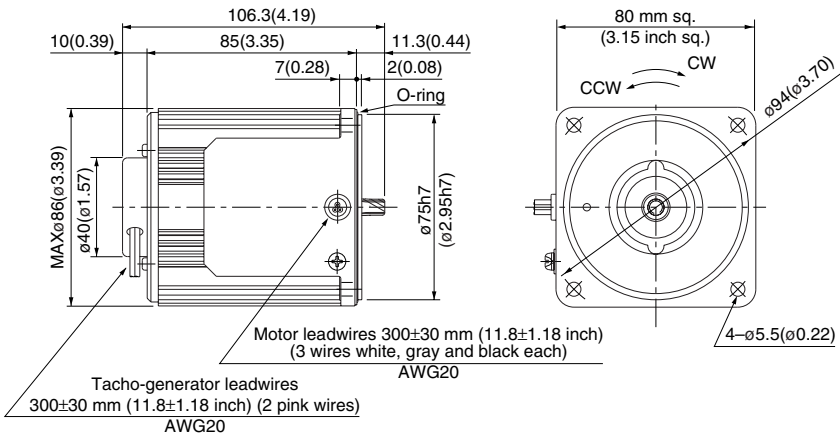
* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

Motor (dimensions)

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

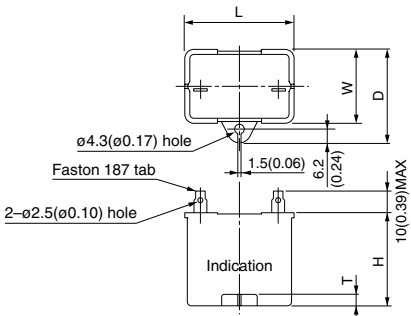
M81X25GV4L	4P	25 W	100 V
M81X25GV4Y	4P	25 W	200 V

Mass	Helical gear	Module	Number of teeth
1.5 kg 3.31 lb		0.5	9



Capacitor (dimensions) [attachment]

Unit: mm (inch)



Capacitor dimension list

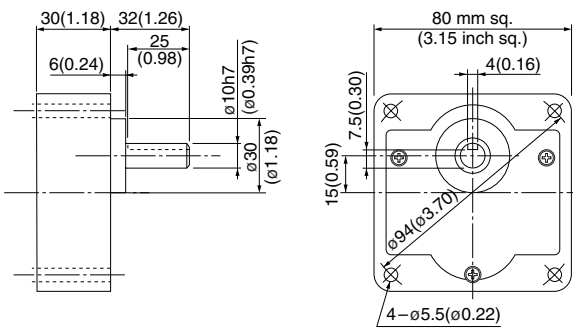
Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M81X25GV4L	M0PC8M20	39.5 (1.56)	22 (0.87)	32.5 (1.28)	30.5 (1.20)	4 (0.16)	M0PC3922
M81X25GV4Y	M0PC2M40	39.5 (1.56)	22 (0.87)	32.5 (1.28)	32.5 (1.28)	4 (0.16)	M0PC3922

Gear head (dimensions)

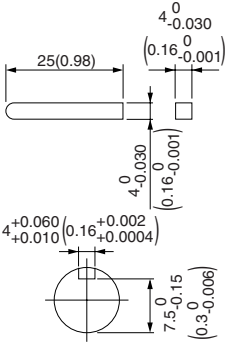
Scale: 1/3, Unit: mm (inch)

MX8G□B (ball bearing) / MX8G□M (metal bearing) Mass 0.6 kg (1.32 lb)



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 induction motor (leadwire)



80 mm (3.15 inch) sq. 25 W

- **Specifications**

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N-m (oz-in)		Starting current (A)	Starting torque N-m (oz-in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
80 mm sq.	M81X25GV4LG M81X25GV4LGA	4	25	100	50	Cont.	90 to 1400	0.19 (26.9)	0.049 (6.94)	1.1	0.13 (18.4)	8 (250V)
					60		90 to 1700	0.15 (21.2)	0.049 (6.94)	0.98	0.13 (18.4)	
	M81X25GV4DG M81X25GV4DGA	4	25	110	60	Cont.	90 to 1700	0.15 (21.2)	0.049 (6.94)	1.1	0.13 (18.4)	6 (250V)
					60		90 to 1700	0.15 (21.2)	0.049 (6.94)	1.1	0.13 (18.4)	
	M81X25GV4YG M81X25GV4YGA	4	25	200	50	Cont.	90 to 1400	0.19 (26.9)	0.049 (6.94)	0.43	0.13 (18.4)	2.1 (450V)
					60		90 to 1700	0.15 (21.2)	0.049 (6.94)	0.42	0.13 (18.4)	
	M81X25GV4GG M81X25GV4GGA	4	25	220	50	Cont.	90 to 1400	0.19 (26.9)	0.049 (6.94)	0.46	0.13 (18.4)	1.5 (450V)
					60		90 to 1700	0.15 (21.2)	0.049 (6.94)	0.44	0.13 (18.4)	
				230	50		90 to 1400	0.19 (26.9)	0.049 (6.94)	0.48	0.13 (18.4)	
					60		90 to 1700	0.15 (21.2)	0.049 (6.94)	0.45	0.13 (18.4)	

- 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-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.

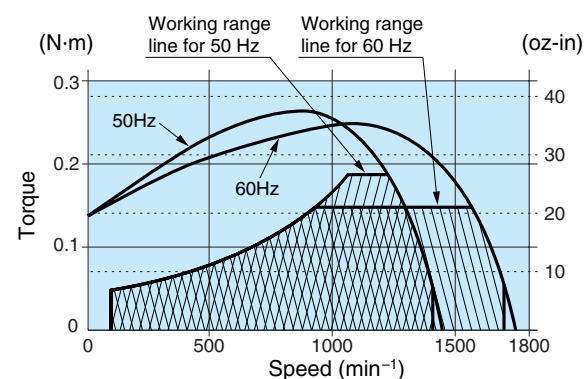
- **Permissible torque at output shaft of gear head**

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

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX8G□B (ball bearing)	1200min ⁻¹	50Hz	0.46 (4.07)	0.55 (4.87)	0.77 (6.82)	0.92 (8.14)	1.15 (10.2)	1.39 (12.3)	1.54 (13.6)	1.92 (17.0)	2.31 (20.4)	2.77 (24.5)	3.08 (27.3)	3.85 (34.1)
		60Hz	0.36 (3.19)	0.44 (3.89)	0.61 (5.40)	0.73 (6.46)	0.91 (8.05)	1.09 (9.65)	1.22 (10.8)	1.52 (13.5)	1.82 (16.1)	2.19 (19.4)	2.43 (21.5)	3.04 (26.9)
MX8G□M (metal bearing)	90min ⁻¹		0.12 (1.06)	0.14 (1.24)	0.20 (1.77)	0.24 (2.12)	0.30 (2.66)	0.36 (3.19)	0.40 (3.54)	0.50 (4.43)	0.60 (5.31)	0.71 (6.28)	0.79 (7.00)	0.99 (8.76)
		Rotational direction	Same as motor rotational direction											

Applicable gear head Bearing	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
	Speed												
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200min ⁻¹	50Hz	4.16 (36.8)	4.99 (44.2)	6.93 (61.3)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	MX8G10XB
		60Hz	3.28 (29.0)	3.94 (34.9)	5.47 (48.4)	6.56 (58.1)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	
	90min ⁻¹		1.07 (9.47)	1.29 (11.4)	1.79 (15.8)	2.14 (18.9)	2.68 (23.7)	3.21 (28.4)	3.57 (31.6)	4.29 (38.0)	5.36 (47.4)	6.43 (56.9)	
	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.

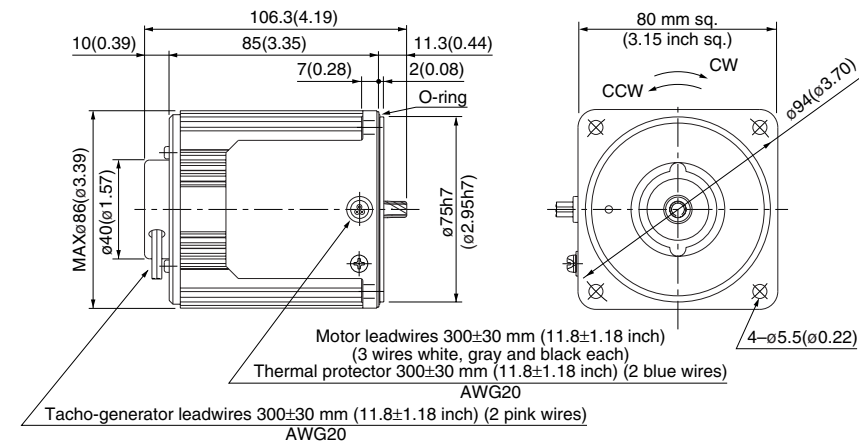
*** Working range line**

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 (inch)

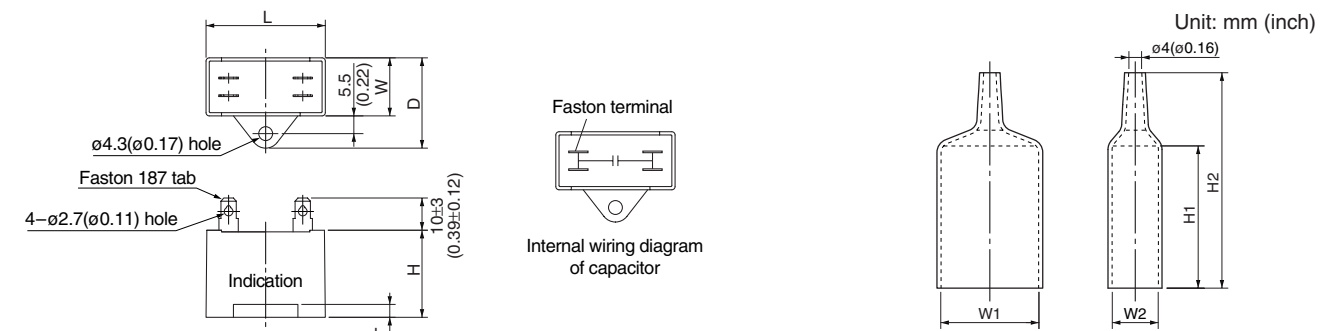
M81X25GV4LG(A)	4P	25 W	100 V	Mass 1.5 kg 3.31 lb	Helical gear	Module 0.5	Number of teeth 9
M81X25GV4DG(A)	4P	25 W	110 V / 115 V				
M81X25GV4YG(A)	4P	25 W	200 V				
M81X25GV4GG(A)	4P	25 W	220 V / 230 V				



Capacitor (dimensions) [attachment]

Unit: mm (inch)

Capacitor cap (dimensions)



• **Capacitor dimension list** Unit: upper (mm) / lower (inch)

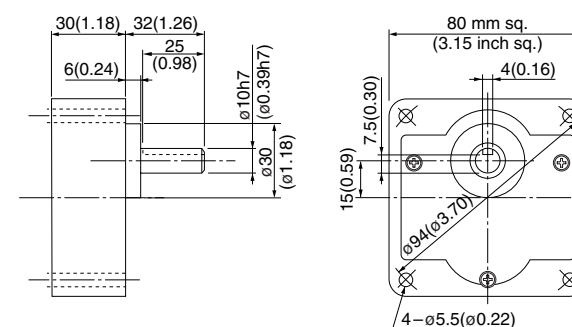
Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M81X25GV4LG(A)	M0PC8M25G	48 (1.89)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC4821G	48 (1.89)	21 (0.83)	55 (2.17)	78 (3.07)
M81X25GV4DG(A)	M0PC6M25G	38 (1.50)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC3821G	38 (1.50)	21 (0.83)	55 (2.17)	78 (3.07)
M81X25GV4YG(A)	M0PC2.1M45G	48 (1.89)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC4821G	48 (1.89)	21 (0.83)	55 (2.17)	78 (3.07)
M81X25GV4GG(A)	M0PC1.5M45G	38 (1.50)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC3821G	48 (1.89)	21 (0.83)	55 (2.17)	78 (3.07)

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

Gear head (dimensions)

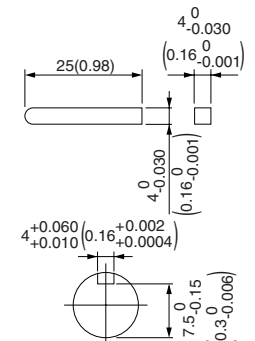
Scale: 1/3, Unit: mm (inch)

MX8G□B (ball bearing) / **MX8G□M** (metal bearing) Mass 0.6 kg (1.32 lb)



Key and keyway
(dimensions) [attachment]

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.

Variable speed induction motor (leadwire)

90 mm (3.54 inch) sq.40 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91X40GV4L	4	40	100	50	Cont.	90 to 1400	0.30 (42.5)	0.049 (6.94)	1.6	0.25 (35.4)	12 (200V)
					60	Cont.	90 to 1700	0.24 (34.0)	0.049 (6.94)	1.6	0.25 (35.4)	
	M91X40GV4Y	4	40	200	50	Cont.	90 to 1400	0.30 (42.5)	0.049 (6.94)	0.8	0.25 (35.4)	3 (400V)
					60	Cont.	90 to 1700	0.24 (34.0)	0.049 (6.94)	0.8	0.25 (35.4)	

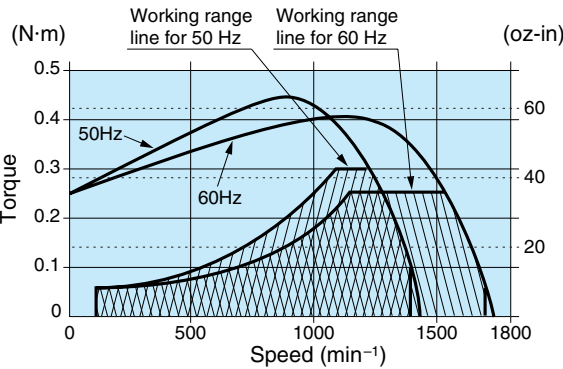
• The specifications and wire connections of the round shaft motor are the same as those of the pinion shaft type. For the dimensional outline drawing, refer to page B-265.

• Permissible torque at output shaft of gear head

Unit of permissible torque: upper (N·m) / lower (lb·in)														
Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing														
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min ⁻¹	50Hz	0.72 (6.37)	0.87 (7.70)	1.21 (10.7)	1.45 (12.8)	1.82 (16.1)	2.18 (19.3)	2.43 (21.5)	3.03 (26.8)	3.64 (32.2)	4.37 (38.7)	4.86 (43.0)	6.07 (53.7)
		60Hz	0.58 (5.13)	0.69 (6.11)	0.97 (8.59)	1.16 (10.3)	1.45 (12.8)	1.74 (15.4)	1.92 (17.0)	2.42 (21.4)	2.91 (25.8)	3.49 (30.9)	3.88 (34.3)	4.85 (42.9)
	90min ⁻¹		0.11 (0.97)	0.14 (1.24)	0.19 (1.68)	0.23 (2.04)	0.29 (2.57)	0.35 (3.10)	0.39 (3.45)	0.49 (4.34)	0.59 (5.22)	0.71 (6.28)	0.79 (6.99)	0.99 (8.76)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing													
MX9G□B (ball bearing) MX9G□M (metal bearing)	1200min ⁻¹	50Hz	6.54 (57.9)	7.84 (69.4)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	MX9G10XB
		60Hz	5.23 (46.3)	6.26 (55.4)	8.70 (77.0)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	
	90min ⁻¹		1.06 (9.38)	1.28 (11.3)	1.78 (15.8)	2.13 (18.9)	2.67 (23.6)	3.20 (28.3)	3.56 (31.5)	4.27 (37.8)	5.34 (47.3)	6.40 (56.6)	
	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

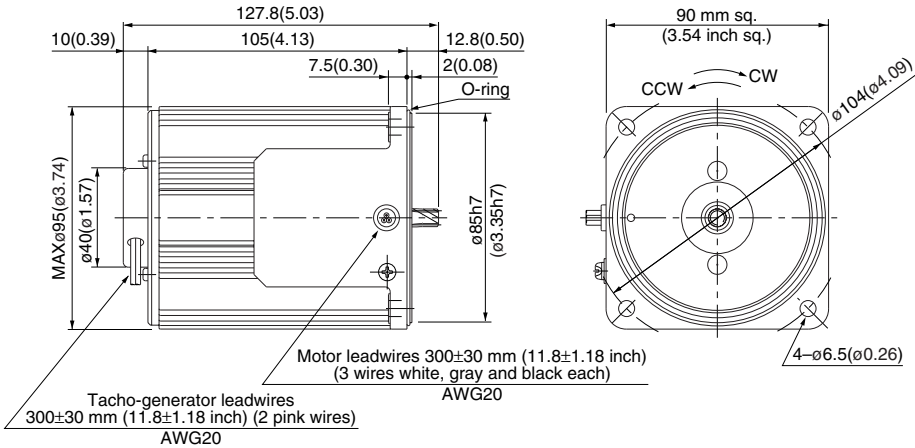
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

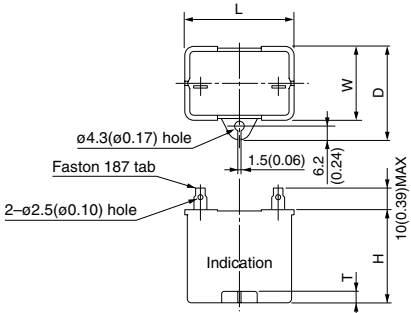
M91X40GV4L 4P 40 W 100 V
M91X40GV4Y 4P 40 W 200 V

Mass 2.4 kg 5.29 lb
Helical gear
Module 0.55
Number of teeth 9



Capacitor (dimensions) [attachment]

Unit: mm (inch)



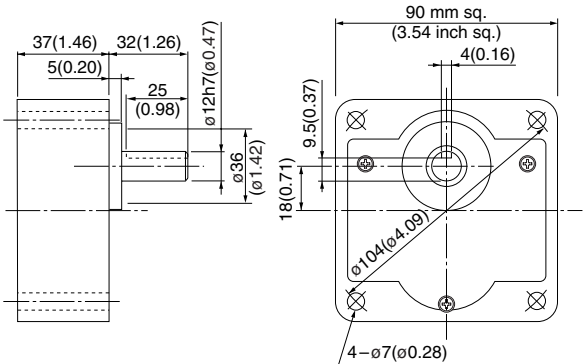
• Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91X40GV4L	M0PC12M20	39.5 (1.56)	26.7 (1.05)	37 (1.46)	32 (1.26)	4 (0.16)	M0PC3926
M91X40GV4Y	M0PC3M40	49.7 (1.96)	24 (0.94)	34.5 (1.36)	34.5 (1.36)	4 (0.16)	M0PC5026

Gear head (dimensions)

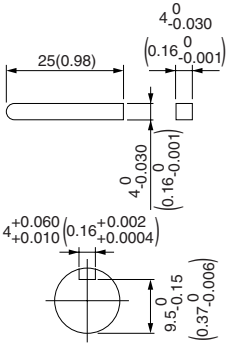
Scale: 1/3, Unit: mm (inch)

MX9G□B (ball bearing) / MX9G□M (metal bearing) Mass 0.8 kg (1.76 lb)



Key and keyway (dimensions) [attachment]

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.

(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)

US

90 mm (3.54 inch) sq.

40 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)		Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹		at 1200 min ⁻¹	at 90 min ⁻¹	
90 mm sq.	M91X40GV4LG	4	40	100	50	Cont.	90 to 1400	0.30 (42.5)	0.078 (11.0)	1.7	0.23 (32.6)	0.23 (32.6)	12 (250V)
	M91X40GV4LGA				60		90 to 1700	0.24 (34.0)	0.078 (11.0)	1.5	0.23 (32.6)	0.23 (32.6)	10 (250V)
	M91X40GV4DG	4	40	110	60	Cont.	90 to 1700	0.24 (34.0)	0.078 (11.0)	1.7	0.23 (32.6)	0.23 (32.6)	10 (250V)
	M91X40GV4DGA				60		90 to 1700	0.24 (34.0)	0.078 (11.0)	1.8	0.25 (35.4)	0.25 (35.4)	10 (250V)
	M91X40GV4YG	4	40	200	50	Cont.	90 to 1400	0.30 (42.5)	0.078 (11.0)	0.64	0.23 (32.6)	0.23 (32.6)	3 (450V)
	M91X40GV4YGA				60		90 to 1700	0.24 (34.0)	0.078 (11.0)	0.62	0.23 (32.6)	0.23 (32.6)	3 (450V)
	M91X40GV4GG M91X40GV4GGA	4	40	220	50	Cont.	90 to 1400	0.30 (42.5)	0.078 (11.0)	0.69	0.23 (32.6)	0.23 (32.6)	2.5 (450V)
					60		90 to 1700	0.24 (34.0)	0.078 (11.0)	0.65	0.23 (32.6)	0.23 (32.6)	
				230	50		90 to 1400	0.30 (42.5)	0.078 (11.0)	0.72	0.25 (35.4)	0.25 (35.4)	
					60		90 to 1700	0.24 (34.0)	0.078 (11.0)	0.68	0.25 (35.4)	0.25 (35.4)	

• 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 (lb·in)

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
Bearing	Speed													
MX9G□B (ball bearing)	1200min ⁻¹	50Hz	0.73 (6.46)	0.87 (7.70)	1.22 (10.8)	1.46 (12.9)	1.82 (16.1)	2.19 (19.4)	2.43 (21.5)	3.04 (26.9)	3.65 (32.3)	4.37 (38.7)	4.86 (43.0)	6.08 (53.8)
		60Hz	0.58 (5.13)	0.70 (6.20)	0.97 (8.59)	1.17 (10.4)	1.46 (12.9)	1.75 (15.5)	1.94 (17.2)	2.43 (21.5)	2.92 (25.8)	3.50 (31.0)	3.89 (34.4)	4.86 (43.0)
MX9G□M (metal bearing)	90min ⁻¹		0.19 (1.68)	0.23 (2.04)	0.32 (2.83)	0.38 (3.36)	0.47 (4.16)	0.57 (5.04)	0.63 (5.58)	0.79 (6.99)	0.95 (8.41)	1.14 (10.1)	1.26 (11.2)	1.58 (14.0)
	Rotational direction		Same as motor rotational direction											

Applicable gear head	Reduction ratio		30	36	50	60	75	90	100	120	150	180	Applicable decimal gear head
Bearing	Speed												
MX9G□B (ball bearing)	1200min ⁻¹	50Hz	6.56 (58.1)	7.87 (69.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	MX9G10XB
		60Hz	5.25 (46.5)	6.30 (55.8)	8.75 (77.4)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	9.80 (86.7)	
MX9G□M (metal bearing)	90min ⁻¹		1.71 (15.1)	2.05 (18.1)	2.84 (25.1)	3.41 (30.2)	4.26 (37.7)	5.12 (45.3)	5.69 (50.4)	6.82 (60.4)	8.53 (75.5)	9.80 (86.7)	
	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 (inch)

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 gear	Module	Number of teeth
2.4 kg 5.29 lb		0.55	9

Capacitor (dimensions) [attachment]

Unit: mm (inch)

Capacitor cap (dimensions)

Unit: mm (inch)

Capacitor dimension list

Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M91X40GV4LG(A)	M0PC12M25G	58 (2.28)	22 (0.87)	32 (1.26)	35 (1.38)	4 (0.16)	M0PC5822G	58 (2.28)	22 (0.87)	55 (2.17)	78 (3.07)
M91X40GV4DG(A)	M0PC10M25G	58 (2.28)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC5821G	58 (2.28)	21 (0.83)	55 (2.17)	78 (3.07)
M91X40GV4YG(A)	M0PC3M45G	58 (2.28)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC4821G	48 (1.89)	21 (0.83)	55 (2.17)	78 (3.07)
M91X40GV4GG(A)	M0PC2.5M45G	48 (1.89)	21 (0.83)	31 (1.22)	31 (1.22)	4 (0.16)	M0PC4821G	48 (1.89)	21 (0.83)	55 (2.17)	78 (3.07)

* 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 (inch)

MX9G□B (ball bearing) / MX9G□M (metal bearing) Mass 0.8 kg (1.76 lb)

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.

B-252

Features B-224

System configuration B-225

Coding system B-225

Model list B-228

Gear head combination B-263

Round shaft motor B-265

Decimal gear head B-448

Gear head -inch (U.S.A.) B-449

Controls C-4

Option D-2

B-253

Variable speed induction motor (leadwire)

90 mm (3.54 inch) sq. 60 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91Z60GV4L	4	60	100	50	Cont.	90 to 1400	0.43 (60.9)	0.078 (11.0)	2.3	0.46 (65.1)	20 (200V)
					60	Cont.	90 to 1700	0.36 (51.0)	0.078 (11.0)	2.4	0.46 (65.1)	
	M91Z60GV4Y	4	60	200	50	Cont.	90 to 1400	0.43 (60.9)	0.078 (11.0)	1.2	0.46 (65.1)	5 (400V)
					60	Cont.	90 to 1700	0.36 (51.0)	0.078 (11.0)	1.2	0.46 (65.1)	

• 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-265.

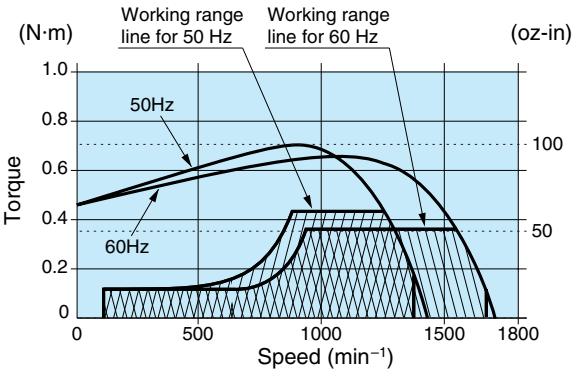
Permissible torque at output shaft of gear head

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

Applicable gear head Bearing	Reduction ratio		Speed												
			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 (8.67)	1.17 (10.4)	1.57 (13.9)	1.87 (16.6)	2.35 (20.8)	2.80 (24.8)	3.14 (27.8)	3.92 (34.7)	4.70 (41.6)	5.60 (49.6)	6.27 (55.5)	7.55 (66.8)	9.01 (79.8)
		60Hz	0.82 (7.26)	0.98 (8.67)	1.31 (11.6)	1.57 (13.9)	1.96 (17.4)	2.35 (20.8)	2.62 (23.2)	3.28 (29.0)	3.92 (34.7)	4.70 (41.6)	5.29 (46.8)	6.32 (55.9)	7.55 (66.8)
	90min ⁻¹		0.18 (1.59)	0.22 (1.95)	0.31 (2.74)	0.37 (3.27)	0.47 (4.16)	0.56 (4.96)	0.63 (5.58)	0.70 (6.20)	0.84 (7.43)	1.00 (8.85)	1.12 (9.91)	1.40 (12.4)	1.68 (14.9)
	Rotational direction		Same as motor rotational direction						Reverse to motor rotational direction						

Applicable gear head	Reduction ratio		Speed										Applicable decimal gear head	
Bearing			36	50	60	75	90	100	120	150	180	200		
MZ9G□B （ ball bearing hinge not attached） MY9G□B （ ball bearing hinge attached）	1200min ⁻¹	50Hz	10.8 (95.6)	15.2 (135)	18.1 (160)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	MZ9G10XB		
		60Hz	9.11 (80.6)	12.7 (112)	15.2 (135)	19.0 (168)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)			
	90min ⁻¹		1.81 (16.0)	2.50 (22.1)	3.00 (26.6)	3.75 (33.2)	4.50 (39.8)	5.00 (44.3)	6.00 (53.1)	7.50 (66.4)	9.00 (79.7)			10.0 (88.5)
	Rotational direction		Same as motor rotational direction											

Speed-torque characteristics



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

Connection diagram

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

Working range line

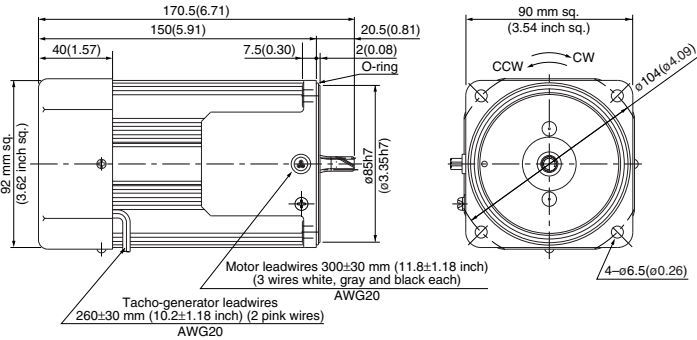
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Scale: 1/4, Unit: mm (inch)

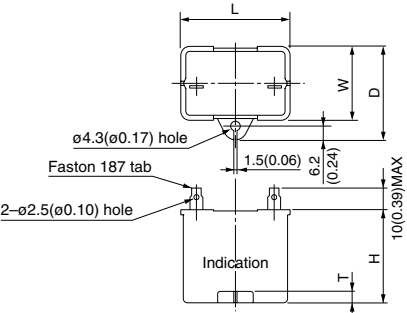
M91Z60GV4L	4P	60 W	100 V (with fan)
M91Z60GV4Y	4P	60 W	200 V (with fan)

Mass	Helical gear	Module	Number of teeth
2.7 kg 5.95 lb		0.6	9



Capacitor (dimensions) [attachment]

Unit: mm (inch)



Capacitor dimension list

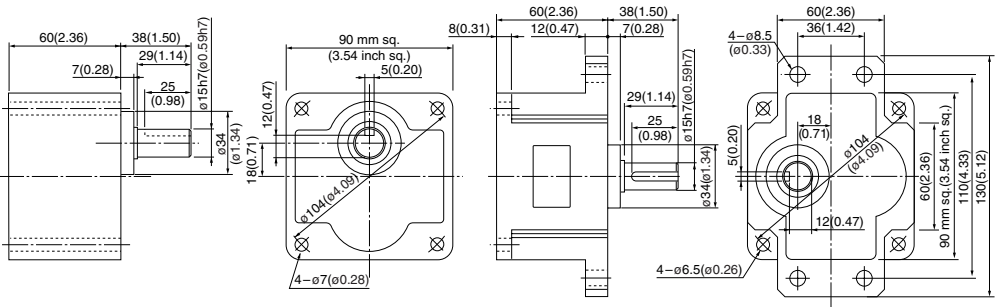
Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91Z60GV4L	M0PC20M20	50.2 (1.98)	26.7 (1.05)	37 (1.46)	36 (1.42)	5 (0.20)	M0PC5026
M91Z60GV4Y	M0PC5M40	50 (1.97)	30.5 (1.20)	41 (1.61)	41.5 (1.63)	4 (0.16)	M0PC5032

Gear head (dimensions)

Scale: 1/4, Unit: mm (inch)

MZ9G□B (ball bearing / hinge not attached)	MY9G□B (ball bearing / hinge attached)
Mass 1.4 kg (3.09 lb)	Mass 1.4 kg (3.09 lb)

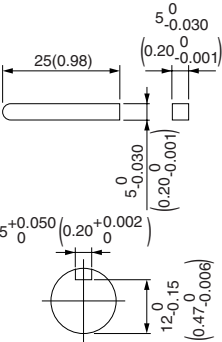


Note) MZ / MY is available for a gear head of either type.

(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)

US

90 mm (3.54 inch) sq.

60 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91Z60GV4LG	4	60	100	50	Cont.	90 to 1400	0.44 (62.3)	0.10 (14.2)	3.0	0.37 (52.4)	20
	M91Z60GV4LGA				60		90 to 1700	0.35 (49.6)	0.10 (14.2)	2.7	0.37 (52.4)	(250V)
	M91Z60GV4DG	4	60	110	60	Cont.	90 to 1700	0.35 (49.6)	0.10 (14.2)	3.0	0.40 (56.6)	18
	M91Z60GV4DGA			115	60		90 to 1700	0.35 (49.6)	0.10 (14.2)	3.1	0.43 (60.9)	(250V)
	M91Z60GV4YG	4	60	200	50	Cont.	90 to 1400	0.44 (62.3)	0.10 (14.2)	1.3	0.37 (52.4)	5
	M91Z60GV4YGA				60		90 to 1700	0.35 (49.6)	0.10 (14.2)	1.2	0.37 (52.4)	(450V)
	M91Z60GV4GG M91Z60GV4GGA	4	60	220	50	Cont.	90 to 1400	0.44 (62.3)	0.10 (14.2)	1.5	0.40 (56.6)	5 (450V)
				60	60		90 to 1700	0.35 (49.6)	0.10 (14.2)	1.3	0.40 (56.6)	
				230	50		90 to 1400	0.44 (62.3)	0.10 (14.2)	1.5	0.43 (60.9)	
				60	60		90 to 1700	0.35 (49.6)	0.10 (14.2)	1.4	0.43 (60.9)	

• 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-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 (lb·in)

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
Bearing	Speed														
MZ9G□B (ball bearing hinge not attached)	1200min ⁻¹	50Hz	1.07 (9.47)	1.28 (11.3)	1.78 (15.8)	2.14 (18.9)	2.67 (23.6)	3.21 (28.4)	3.56 (31.5)	4.01 (35.5)	4.81 (42.6)	5.77 (51.1)	6.42 (56.8)	8.02 (71.0)	9.62 (85.1)
		60Hz	0.85 (7.52)	1.02 (9.03)	1.42 (12.6)	1.70 (15.0)	2.13 (18.9)	2.55 (22.6)	2.84 (25.1)	3.19 (28.2)	3.83 (33.9)	4.59 (40.6)	5.10 (45.1)	6.38 (56.5)	7.65 (67.7)
MY9G□B (ball bearing hinge attached)	90min ⁻¹		0.24 (2.12)	0.29 (2.57)	0.41 (3.63)	0.49 (4.34)	0.61 (5.40)	0.73 (6.46)	0.81 (7.17)	0.91 (8.05)	1.09 (9.65)	1.31 (11.6)	1.46 (12.9)	1.82 (16.1)	2.19 (19.4)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head	Reduction ratio		36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
Bearing	Speed												
MZ9G□B (ball bearing hinge not attached)	1200min ⁻¹	50Hz	10.4 (92.0)	14.4 (127)	17.3 (153)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	MZ9G10XB
		60Hz	8.27 (73.2)	11.5 (102)	13.8 (122)	17.2 (152)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	
MY9G□B (ball bearing hinge attached)	90min ⁻¹		2.36 (20.9)	3.28 (29.0)	3.94 (34.9)	4.92 (43.5)	5.90 (52.2)	6.56 (58.1)	7.87 (69.7)	9.84 (87.1)	11.8 (104)	13.1 (116)	
	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 (inch)

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 gear	Module	Number of teeth
2.7 kg 5.95 lb		0.6	9

Capacitor (dimensions) [attachment]

Unit: mm (inch)

Capacitor cap (dimensions)

Unit: mm (inch)

Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M91Z60GV4LG(A)	M0PC20M25G	58 (2.28)	29 (1.14)	44 (1.73)	41 (1.61)	4 (0.16)	M0PC5829G	58 (2.28)	29 (1.14)	55 (2.17)	78 (3.07)
M91Z60GV4DG(A)	M0PC18M25G	58 (2.28)	29 (1.14)	44 (1.73)	41 (1.61)	4 (0.16)	M0PC5829G	58 (2.28)	29 (1.14)	55 (2.17)	78 (3.07)
M91Z60GV4YG(A)	M0PC5M45G	58 (2.28)	29 (1.14)	44 (1.73)	41 (1.61)	4 (0.16)	M0PC5829G	58 (2.28)	29 (1.14)	55 (2.17)	78 (3.07)
M91Z60GV4GG(A)	M0PC5M45G	58 (2.28)	29 (1.14)	44 (1.73)	41 (1.61)	4 (0.16)	M0PC5829G	58 (2.28)	29 (1.14)	55 (2.17)	78 (3.07)

* 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 (inch)

MZ9G□B (ball bearing / hinge not attached)	MY9G□B (ball bearing / hinge attached)
Mass 1.4 kg (3.09 lb)	Mass 1.4 kg (3.09 lb)

Key and keyway (dimensions) [attachment]

MZ9G□B	MY9G□B
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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.

B-256

Features B-224

System configuration B-225

Coding system B-225

Model list B-228

Gear head combination B-263

Round shaft motor B-265

Decimal gear head B-448

Gear head -inch (U.S.A.) B-449

Controls C-4

Option D-2

B-257

Variable speed induction motor (leadwire)

90 mm (3.54 inch) sq.90 W

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91Z90GV4L	4	90	100	50	Cont.	90 to 1400	0.59 (83.6)	0.25 (35.4)	2.3	0.53 (75.1)	25 (200V)
					60		90 to 1700	0.54 (76.5)	0.25 (35.4)	2.2	0.56 (79.3)	
	M91Z90GV4Y	4	90	200	50	Cont.	90 to 1400	0.59 (83.6)	0.25 (35.4)	1.1	0.57 (80.7)	6.2 (375V)
					60		90 to 1700	0.54 (76.5)	0.25 (35.4)	1.1	0.59 (83.6)	

• 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 (lb·in)

Applicable gear head	Reduction ratio		Speed												
			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 (12.7)	1.71 (15.1)	2.38 (21.1)	2.86 (25.3)	3.57 (31.6)	4.29 (38.0)	4.77 (42.2)	5.36 (47.4)	6.43 (56.9)	7.72 (68.3)	8.58 (75.9)	10.97 (97.1)	12.8 (113)
		60Hz	1.31 (11.6)	1.57 (13.9)	2.18 (19.3)	2.62 (23.2)	3.27 (28.9)	3.93 (34.8)	4.37 (38.7)	4.91 (43.5)	5.89 (52.1)	7.07 (62.6)	7.86 (69.6)	9.82 (86.9)	11.7 (104)
	90min ⁻¹		0.60 (5.31)	0.72 (6.37)	1.01 (8.94)	1.21 (10.7)	1.51 (13.4)	1.81 (16.0)	2.02 (17.9)	2.26 (20.0)	2.71 (24.0)	3.25 (28.8)	3.62 (32.0)	4.52 (40.0)	5.43 (48.1)
	Rotational direction		Same as motor rotational direction						Reverse to motor rotational direction						

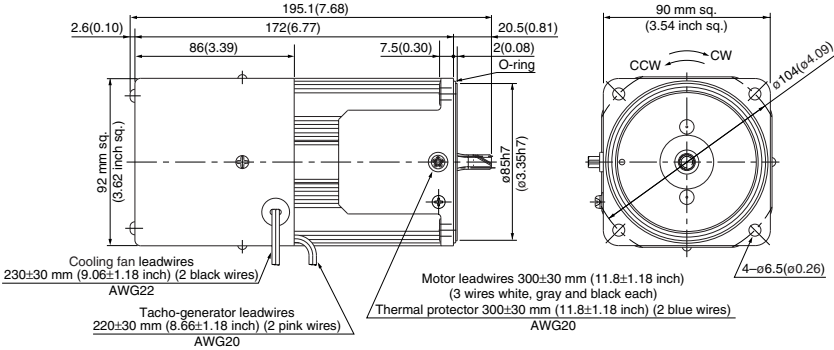
Applicable gear head	Reduction ratio												Applicable decimal gear head
Bearing	Speed		36	50	60	75	90	100	120	150	180	200	
MZ9G□B （ ball bearing hinge not attached） MY9G□B （ ball bearing hinge attached）	1200min ⁻¹	50Hz	13.7 (121)	19.2 (170)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	MZ9G10XB
		60Hz	12.6 (112)	17.6 (156)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	19.6 (174)	
	90min ⁻¹		5.83 (51.6)	8.10 (71.7)	9.72 (86.0)	12.1 (107)	14.5 (128)	16.2 (143)	19.4 (172)	19.6 (174)	19.6 (174)	19.6 (174)	
	Rotational direction		Same as motor rotational direction										

Motor (dimensions)

Scale: 1/4, Unit: mm (inch)

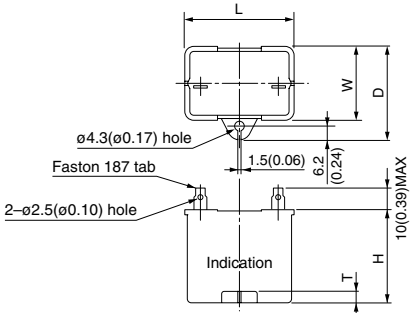
M91Z90GV4L	4P	90 W	100 V (Forced cooling fan)
M91Z90GV4Y	4P	90 W	200 V (Forced cooling fan)

Mass	Helical gear	Module	Number of teeth
3.5 kg 7.72 lb		0.6	9



Capacitor (dimensions) [attachment]

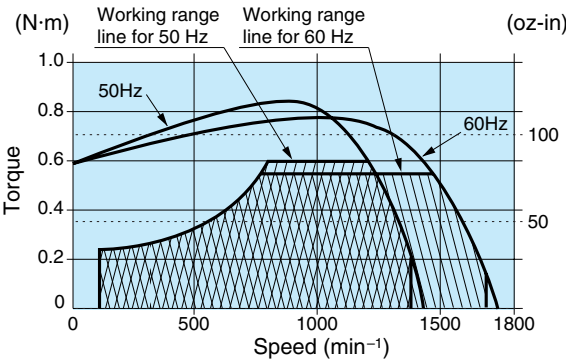
Unit: mm (inch)



• Capacitor dimension list Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap (option)
M91Z90GV4L	M0PC25M20	50.2 (1.98)	31 (1.22)	41 (1.61)	42 (1.65)	5 (0.20)	M0PC5032
M91Z90GV4Y	M0PC6.2M38	50 (1.97)	30.5 (1.20)	41 (1.61)	41.5 (1.63)	4 (0.16)	M0PC5032

Speed-torque characteristics



Connection diagram

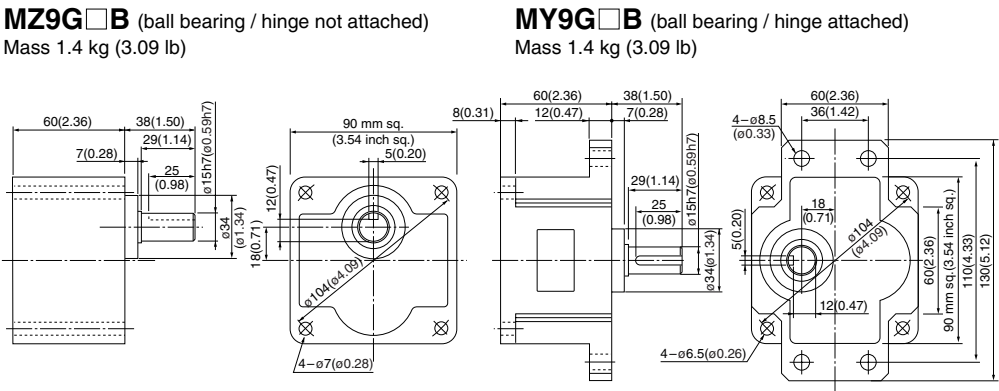
* For the connection diagram showing wiring with the speed controller, refer to pages C-6 to C-35.

* Working range line

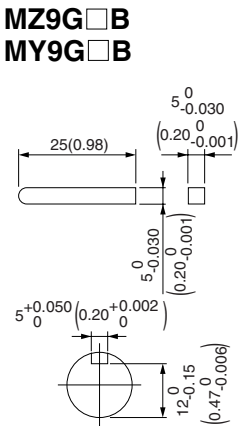
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Gear head (dimensions)

Scale: 1/4, Unit: mm (inch)



Key and keyway (dimensions) [attachment]



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.

* 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)

US

90 mm (3.54 inch) sq.

90 W

Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91Z90GV4LG	4	90	100	50	Cont.	90 to 1400	0.69 (97.7)	0.29 (41.1)	3.0	0.61 (86.4)	30 (250V)
	M91Z90GV4LGA				60		90 to 1700	0.54 (76.5)	0.29 (41.1)			
	M91Z90GV4DG	4	90	110	60	Cont.	90 to 1700	0.54 (76.5)	0.29 (41.1)	3.0	0.61 (86.4)	25 (250V)
	M91Z90GV4DGA				60		90 to 1700	0.54 (76.5)	0.29 (41.1)			
	M91Z90GV4YG	4	90	200	50	Cont.	90 to 1400	0.69 (97.7)	0.29 (41.1)	1.4	0.61 (86.4)	7.5 (450V)
	M91Z90GV4YGA				60		90 to 1700	0.54 (76.5)	0.29 (41.1)			
	M91Z90GV4GG M91Z90GV4GGA	4	90	220	50	Cont.	90 to 1400	0.69 (97.7)	0.29 (41.1)	1.5	0.60 (85.0)	6 (450V)
					60		90 to 1700	0.54 (76.5)	0.29 (41.1)			
					50		90 to 1400	0.69 (97.7)	0.29 (41.1)			
					60		90 to 1700	0.54 (76.5)	0.29 (41.1)			

• 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-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 (lb·in)

Applicable gear head	Reduction ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
Bearing	Speed														
MZ9G□B (ball bearing hinge not attached)	1200min ⁻¹	50Hz	1.68 (14.9)	2.01 (17.8)	2.79 (24.7)	3.35 (29.7)	4.19 (37.1)	5.03 (44.5)	5.59 (49.5)	6.29 (55.7)	7.55 (66.8)	9.05 (80.1)	10.1 (89.4)	12.6 (112)	15.1 (134)
		60Hz	1.31 (11.6)	1.57 (13.9)	2.19 (19.4)	2.62 (23.2)	3.28 (29.0)	3.94 (34.9)	4.37 (38.7)	4.92 (43.5)	5.90 (52.2)	7.09 (62.8)	7.87 (69.7)	9.84 (87.1)	11.8 (104)
MY9G□B (ball bearing hinge attached)	90min ⁻¹		0.70 (6.20)	0.85 (7.52)	1.17 (10.4)	1.41 (12.5)	1.76 (15.6)	2.11 (18.7)	2.35 (20.8)	2.64 (23.4)	3.17 (28.1)	3.81 (33.7)	4.23 (37.4)	5.29 (46.9)	6.34 (56.1)
	Rotational direction		Same as motor rotational direction							Reverse to motor rotational direction					

Applicable gear head	Reduction ratio		36	50	60	75	90	100	120	150	180	200	Applicable decimal gear head
Bearing	Speed												
MZ9G□B (ball bearing hinge not attached)	1200min ⁻¹	50Hz	16.3 (144)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	MZ9G10XB
		60Hz	12.8 (113)	17.7 (157)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	
MY9G□B (ball bearing hinge attached)	90min ⁻¹		6.85 (60.6)	9.51 (84.2)	11.4 (101)	14.3 (127)	17.1 (151)	19.0 (168)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)	
	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 (inch)

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 gear	Module	Number of teeth
3.5 kg 7.72 lb		0.6	9

Capacitor (dimensions) [attachment]

Unit: mm (inch)

Capacitor cap (dimensions)

Unit: mm (inch)

Capacitor dimension list

Unit: upper (mm) / lower (inch)

Model number of motor	Model number of capacitor (attachment)	L	W	D	H	T	Capacitor cap	W1	W2	H1	H2
M91Z90GV4LG(A)	M0PC30M25G	58 (2.28)	35 (1.38)	50 (1.97)	50 (1.97)	4 (0.16)	M0PC5835G	58 (2.28)	35 (1.38)	55 (2.17)	78 (3.07)
M91Z90GV4DG(A)	M0PC25M25G	58 (2.28)	35 (1.38)	50 (1.97)	50 (1.97)	4 (0.16)	M0PC5835G	58 (2.28)	35 (1.38)	55 (2.17)	78 (3.07)
M91Z90GV4YG(A)	M0PC7.5M45G	58 (2.28)	35 (1.38)	50 (1.97)	50 (1.97)	4 (0.16)	M0PC5835G	58 (2.28)	35 (1.38)	55 (2.17)	78 (3.07)
M91Z90GV4GG(A)	M0PC6M45G	58 (2.28)	29 (1.14)	44 (1.73)	41 (1.61)	4 (0.16)	M0PC5829G	58 (2.28)	29 (1.14)	55 (2.17)	78 (3.07)

* 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 (inch)

MZ9G□B (ball bearing / hinge not attached)
Mass 1.4 kg (3.09 lb)

MY9G□B (ball bearing / hinge attached)
Mass 1.4 kg (3.09 lb)

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.

B-260

Features B-224

System configuration B-225

Coding system B-225

Model list B-228

Gear head combination B-263

Round shaft motor B-265

Decimal gear head B-448

Gear head -inch (U.S.A.) B-449

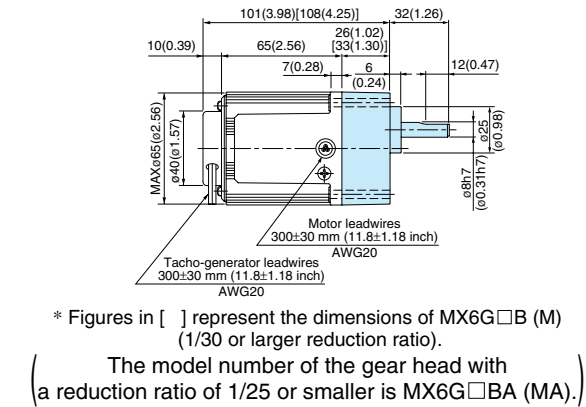
Controls C-4

Option D-2

B-261

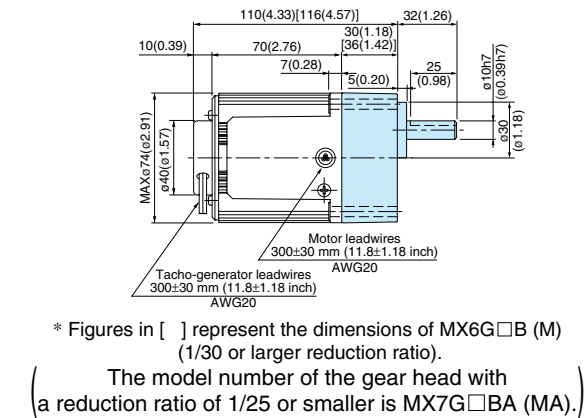
60 mm sq. (2.36 inch sq.)3 W

M61X3GV4L + MX6G□BA(MA) / MX6G□B(M)



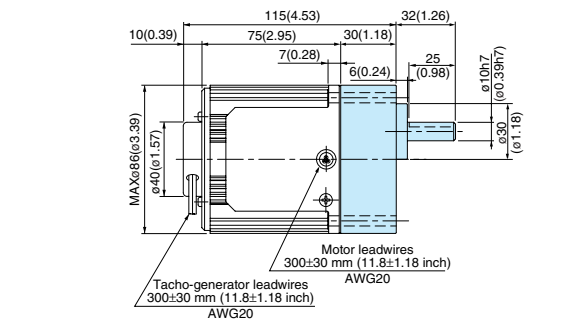
70 mm sq. (2.76 inch sq.)10 W

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



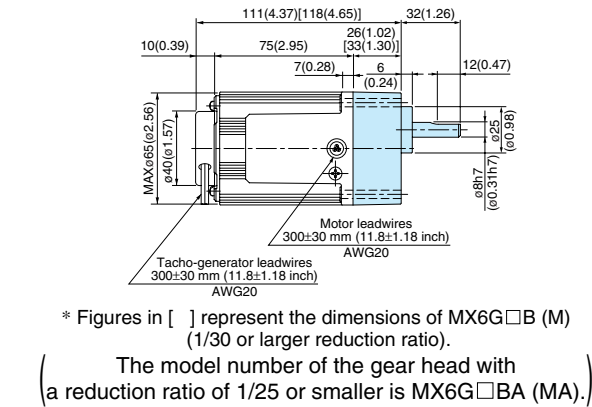
80 mm sq. (3.15 inch sq.)15 W

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



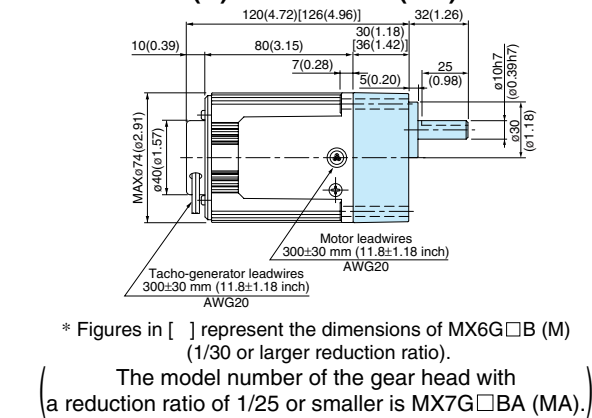
60 mm sq. (2.36 inch sq.)6 W

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)



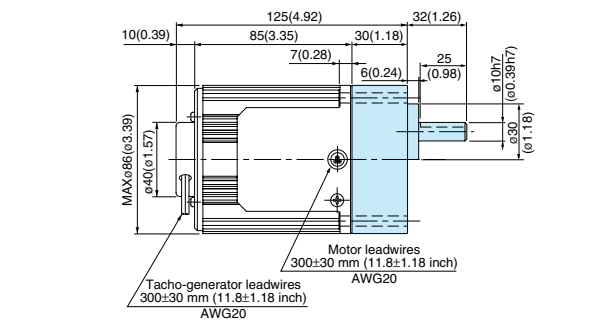
70 mm sq. (2.76 inch sq.)15 W

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)



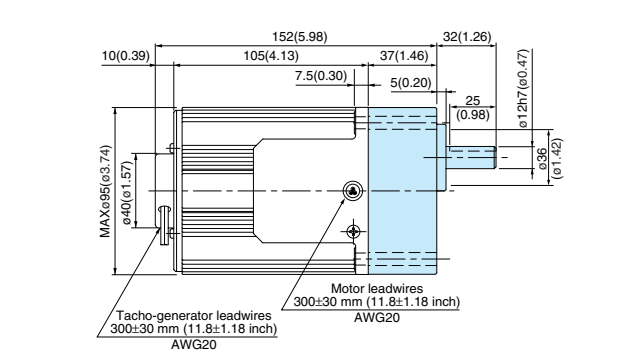
80 mm sq. (3.15 inch sq.)25 W

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)



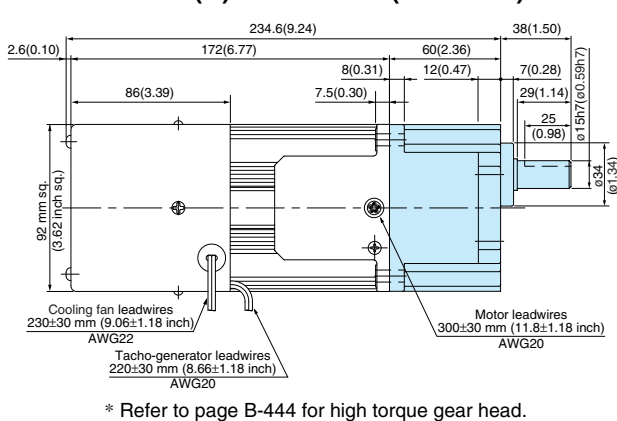
90 mm sq. (3.54 inch sq.)40 W

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)



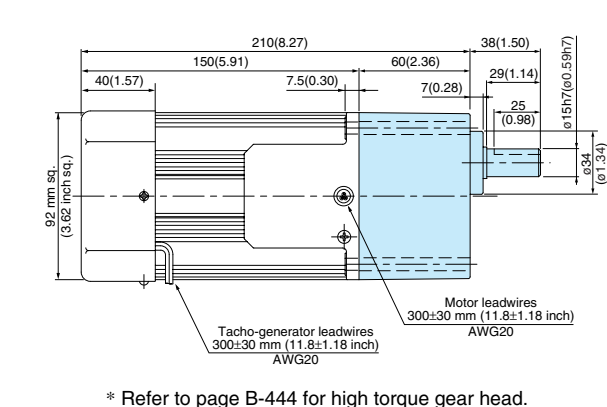
90 mm sq. (3.54 inch sq.)90 W

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)



90 mm sq. (3.54 inch 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)



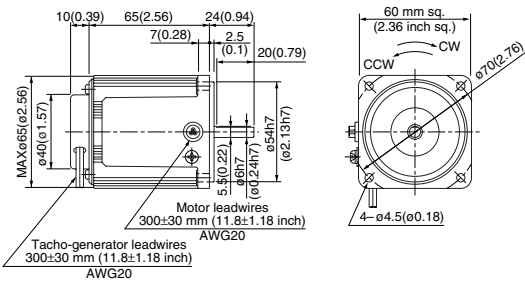
*The models with a motor model number to which "A" is suffixed are not equipped with a capacitor cap.
*The models with a motor model number to which "A" is suffixed are not sold or available in Japan.
(Note) Because the dimensions may be subject to change, also check the determinate dimensions if the gear head is to be used for design.

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 motor
C&B motor
2-pole round shaft motor
Gear head
Gear head - inch (U.S.A.)

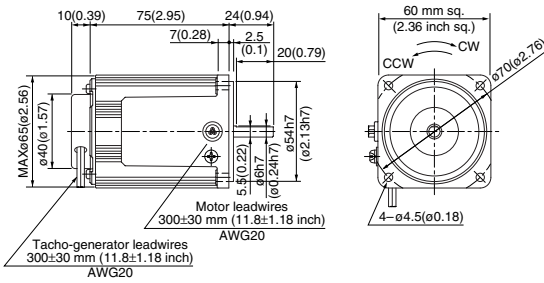
Variable speed induction motor (4-pole round shaft / leadwire)

Dimensions
Scale: 1/4, Unit: mm (inch)

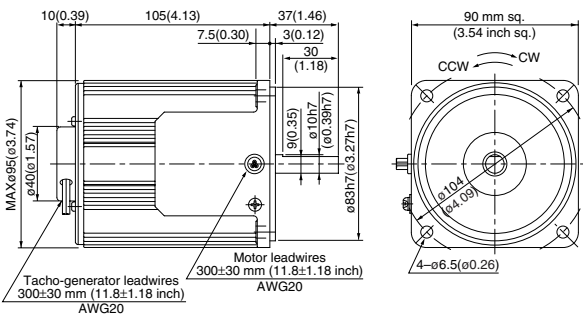
60 mm sq. (2.36 inch sq.) 3 W Mass 0.6 kg (1.32 lb)
M61X3SV4LS



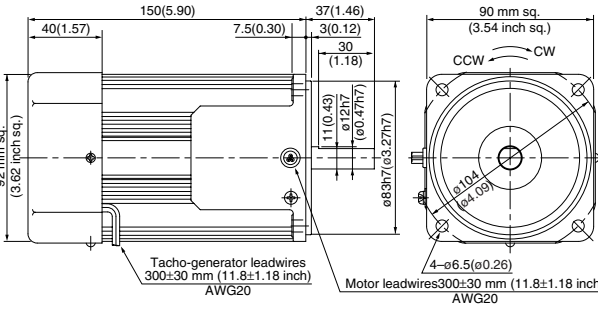
60 mm sq. (2.36 inch sq.) 6 W Mass 0.71 kg (1.57 lb)
M61X6SV4LS
M61X6SV4YS
M61X6SV4LG(A)
M61X6SV4YG(A)
M61X6SV4DG(A)
M61X6SV4GG(A)



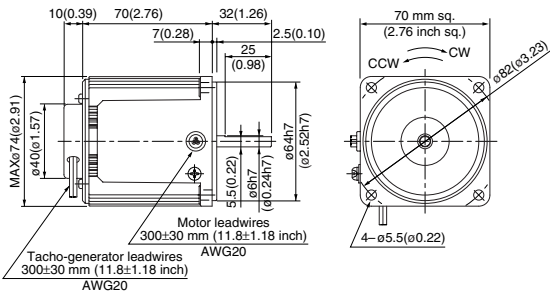
90 mm sq. (3.54 inch sq.) 40 W Mass 2.4 kg (5.29 lb)
M91X40SV4LS
M91X40SV4YS
M91X40SV4LG(A)
M91X40SV4YG(A)
M91X40SV4DG(A)
M91X40SV4GG(A)



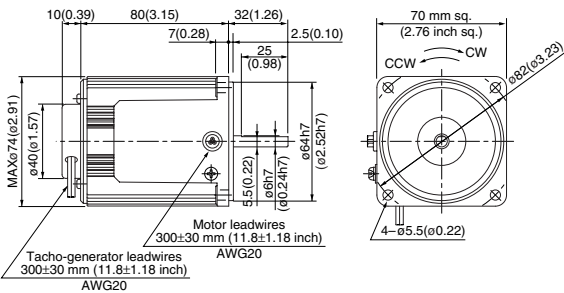
90 mm sq. (3.54 inch sq.) 60 W Mass 2.7 kg (5.95 lb)
M91Z60SV4LS (with fan)
M91Z60SV4YS (with fan)
M91Z60SV4LG(A) (with fan)
M91Z60SV4DG(A) (with fan)
M91Z60SV4YG(A) (with fan)
M91Z60SV4GG(A) (with fan)



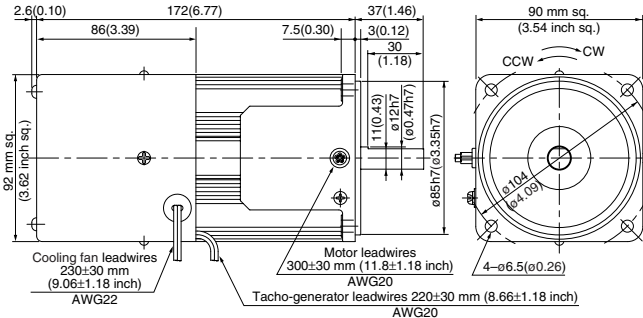
70 mm sq. (2.76 inch sq.) 10 W Mass 0.88 kg (1.94 lb)
M71X10SV4LS
M71X10SV4YS



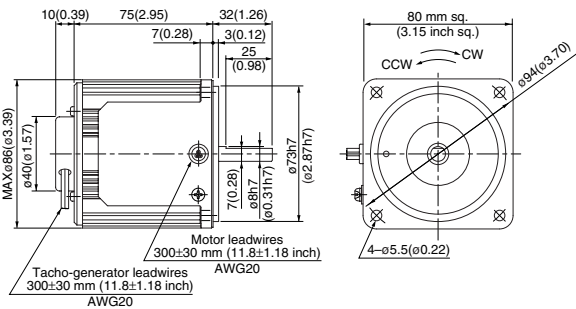
70 mm sq. (2.76 inch sq.) 15 W Mass 1.1 kg (2.43 lb)
M71X15SV4LS
M71X15SV4YS
M71X15SV4LG(A)
M71X15SV4YG(A)
M71X15SV4DG(A)
M71X15SV4GG(A)



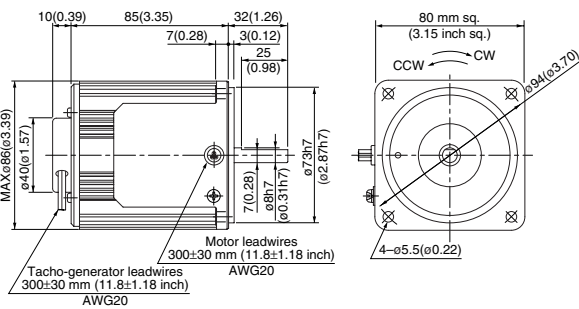
90 mm sq. (3.54 inch sq.) 90 W Mass 3.5 kg (7.72 lb)
M91Z90SV4LS (Forced cooling fan)
M91Z90SV4YS (Forced cooling fan)
M91Z90SV4LG(A) (Forced cooling fan)
M91Z90SV4DG (A) (Forced cooling fan)
M91Z90SV4YG (A) (Forced cooling fan)
M91Z90SV4GG(A) (Forced cooling fan)



80 mm sq. (3.15 inch sq.) 15 W Mass 1.2 kg (2.65 lb)
M81X15SV4LS
M81X15SV4YS



80 mm sq. (3.15 inch sq.) 25 W Mass 1.5 kg (3.31 lb)
M81X25SV4LS
M81X25SV4YS
M81X25SV4LG(A)
M81X25SV4YG(A)
M81X25SV4DG(A)
M81X25SV4GG(A)



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*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.

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

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 motor
C&B motor
2-pole round shaft motor
Gear head
Gear head -inch (U.S.A.)

