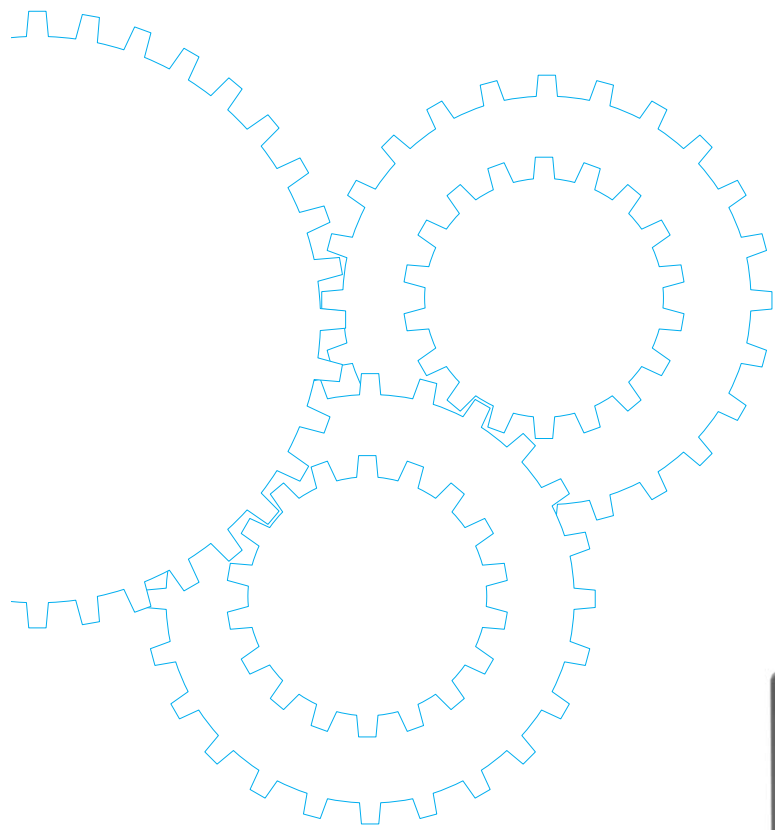


Variable Speed Unit Motor



Contents

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

Outline of variable speed unit motor

Features

- A variable speed motor is combined with a one-touch connection speed controller.
- The speed controller is available in an analog setting type (MUSN series) or a digital setting type (MUXN series).

<MUSN series>

- Analog setting type with a speed setting knob, RUN-STOP and rotational direction change
- The cable can be extended up to 5 m using an option
(A 1-meter extension cable is included with the motor.)

<MUXN series>

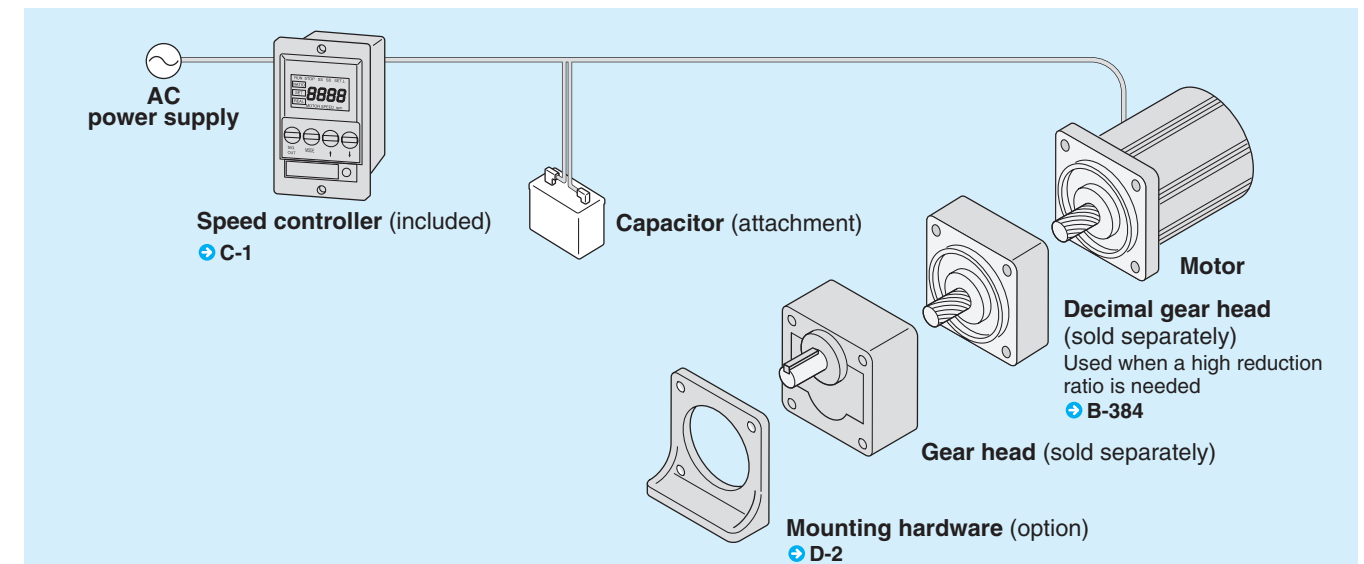
- Multifunction digital setting type using a microcomputer
 1. The speed can be set digitally.
 2. The motor speed can be converted to the gear head speed and conveyor speed instantaneously.
 3. The actual speed can be displayed digitally.
 4. Soft-start/soft-down function
 5. Set conditions backup function
 6. Set lock function
- The cable can be extended up to 5 m using an option
(A 1-meter extension cable is included with the motor.)

Specifications

	MUSN Series	MUXN Series
Output	6W : 15W : 25W : 40W : 60W : 90W	6W : 15W : 25W : 40W : 60W : 90W
Rated voltage	100 / 200V	100 / 200V
Power supply frequency	50Hz / 60Hz	50Hz / 60Hz
Speed control range	90 to 1400min ⁻¹ / 90 to 1700min ⁻¹	90 to 1400min ⁻¹ / 90 to 1700min ⁻¹
Speed variation	5% (standard value)	5% (standard value)
Speed setting	Analog setting	Digital setting
Operating temperature range	-10 to 40°C	0 to 40°C
Storage temperature range	-20 to 60°C	-10 to 60°C
Soft-start/soft-down time	—	0.1 to 30 sec

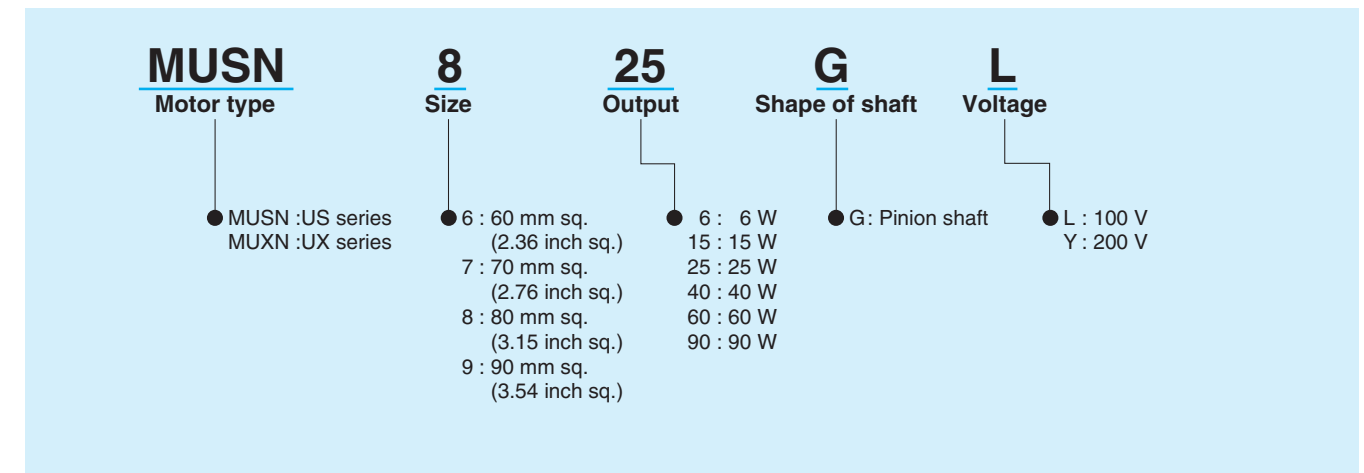
- The 90 W models contain a thermal protector to prevent burnout for 90 W.

System configuration diagram



* For the 40 W or lower models, the capacitor is built into the speed controller.

Coding system



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.

Model list of variable speed unit motor

Pinion shaft motor / speed controller (Set)

Applicable gear head

Size	Output (W)	MUSN Series			MUXN Series		
		Model number	Specifications	Page	Model number	Specifications	Page
60 mm sq. (2.36 inch sq.)	6	MUSN606GL	100V	B-328	MUXN606GL	100V	B-328
		MUSN606GY	200V	B-328	MUXN606GY	200V	B-328
70 mm sq. (2.76 inch sq.)	15	MUSN715GL	100V	B-330	MUXN715GL	100V	B-330
		MUSN715GY	200V	B-330	MUXN715GY	200V	B-330
80 mm sq. (3.15 inch sq.)	25	MUSN825GL	100V	B-332	MUXN825GL	100V	B-332
		MUSN825GY	200V	B-332	MUXN825GY	200V	B-332
90 mm sq. (3.54 inch sq.)	40	MUSN940GL	100V	B-334	MUXN940GL	100V	B-334
		MUSN940GY	200V	B-334	MUXN940GY	200V	B-334
	60	MUSN960GL	100V	B-336	MUXN960GL	100V	B-336
		MUSN960GY	200V	B-336	MUXN960GY	200V	B-336
	90	MUSN990GL	100V	B-338	MUXN990GL	100V	B-338
		MUSN990GY	200V	B-338	MUXN990GY	200V	B-338

Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
Ball bearing	metal bearing			
MX6G□BA MX6G□B	MX6G□MA MX6G□M	—	—	MX6G10XB
MX7G□BA MX7G□B	MX7G□MA MX7G□M	—	—	MX7G10XB
MX8G□B	MX8G□M	—	—	MX8G10XB
MX9G□B	MX9G□M	—	MX9G□R	MX9G10XB
MZ9G□B	—	MR9G□B	MZ9G□R	MZ9G10XB
MY9G□B	—	MP9G□B		

■ Hinge attached

* 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-448 for dimensions of decimal gear head.

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
		Motor model No.	Motor model No.	Motor model No.	Page
60 mm sq.	MUSN606GL	M61X6GD4L	100V	DVUS606L	C-36
	MUXN606GL			DVUX606L	C-36
	MUSN606GY	M61X6GD4Y	200V	DVUS606Y	C-36
	MUXN606GY			DVUX606Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	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			
								Speed (min ⁻¹)	at 1200 min ⁻¹	at 90 min ⁻¹			
60 mm sq.	M61X6GD4L	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)	
							90 to 1700	0.032 (4.53)	0.025 (3.54)	0.30			
	M61X6GD4Y	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)	
							90 to 1700	0.032 (4.53)	0.025 (3.54)	0.15			

• Permissible torque at output shaft of gear head

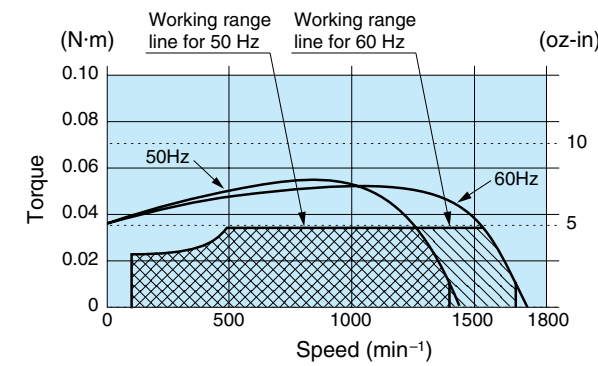
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Permissible Torque											
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
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	50Hz	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)
		60Hz	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 Bearing	Speed	Reduction ratio	Permissible Torque										Applicable decimal gear head
			30	36	50	60	75	90	100	120	150	180	
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)	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)	2.45 (21.7)	
	90min ⁻¹	50Hz	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)	
		60Hz	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											

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

Speed-torque characteristics



Connection diagram

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

* Working range line

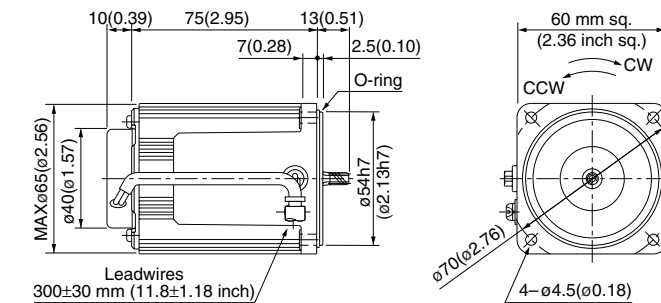
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

M61X6GD4L	4P 6 W 100 V
M61X6GD4Y	4P 6 W 200 V

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

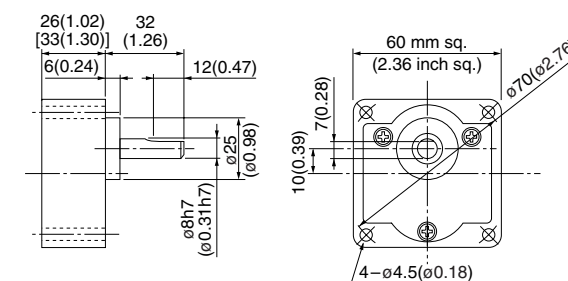


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

Scale: 1/3, Unit: mm (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.

Induction motor
Reversible motor
3-phase motor
Electromagnetic brake motor
Variable speed induction 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.)

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
70 mm sq.	MUSN715GL	M71X15GD4L	100V	DVUS715L	C-36
	MUXN715GL			DVUX715L	C-36
	MUSN715GY	M71X15GD4Y	200V	DVUS715Y	C-36
	MUXN715GY			DVUX715Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
								at 1200 min ⁻¹	at 90 min ⁻¹			
70 mm sq.	M71X15GD4L	4	15	100	50	Cont.	90 to 1400	0.089 (12.6)	0.029 (4.11)	0.60	0.068 (9.63)	5 (200V)
							90 to 1700	0.089 (12.6)	0.029 (4.11)	0.56	0.068 (9.63)	
	M71X15GD4Y	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)
							90 to 1700	0.089 (12.6)	0.029 (4.11)	0.28	0.068 (9.63)	

• Permissible torque at output shaft of gear head

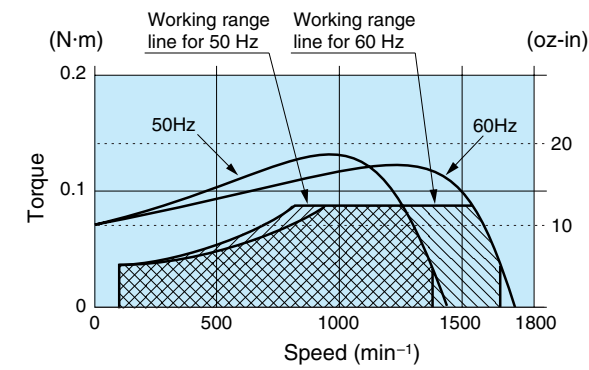
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Permissible torque											
			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	0.21 (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 Bearing	Speed	Reduction ratio	Permissible torque										Applicable decimal gear head	
			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	1.92 (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)	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)	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											

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

Speed-torque characteristics



Connection diagram

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

* Working range line

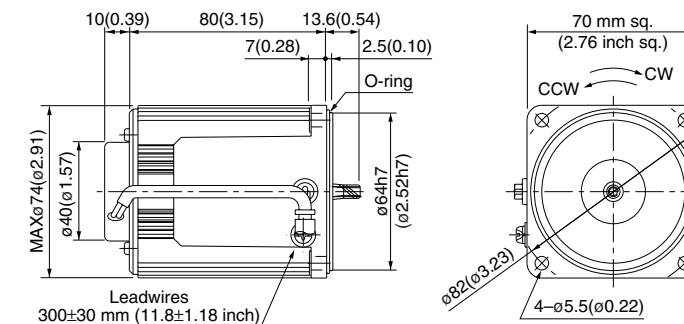
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Motor model No.	Pole	Power (W)	Voltage (V)
M71X15GD4L	4P	15 W	100 V
M71X15GD4Y	4P	15 W	200 V

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

Mass	Helical gear	Module	Number of teeth
1.1 kg (2.43 lb)		0.5	7

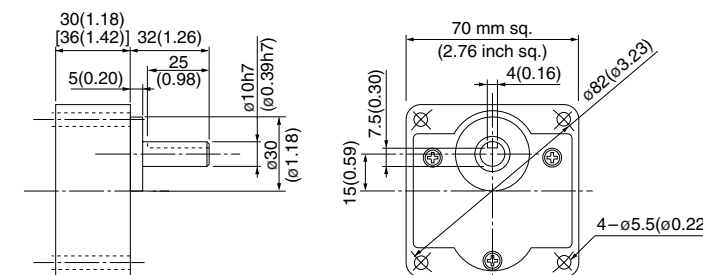


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

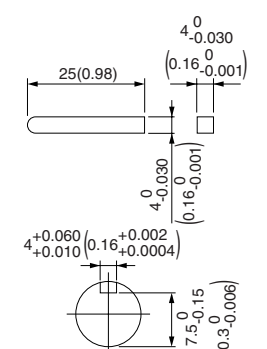
Scale: 1/3, Unit: mm (inch)

Gear head model No.	Mass (kg/lb)
MX7G□BA (ball bearing) / MX7G□B (ball bearing)	0.38/0.45 (0.84/0.99 lb)
MX7G□MA (metal bearing) / MX7G□M (metal bearing)	0.38/0.45 (0.84/0.99 lb)



Key and keyway (dimensions) [attachment]

Key and keyway model No.	Dimensions (mm)
MX7G□BA(B)	4 ^{+0.030} _{-0.000} (0.16 ^{+0.001} _{-0.000})
MX7G□MA(M)	4 ^{+0.060} _{+0.010} (0.16 ^{+0.002} _{+0.0004})



* 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.

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.)

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
80 mm sq.	MUSN825GL	M81X25GD4L	100V	DVUS825L	C-36
	MUXN825GL			DVUX825L	C-36
	MUSN825GY	M81X25GD4Y	200V	DVUS825Y	C-36
	MUXN825GY			DVUX825Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	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			
80 mm sq.	M81X25GD4L	4	25	100	50	Cont.	90 to 1400	0.14 (19.8)	0.039 (5.52)	1.0	0.16 (22.7)	8 (200V)
							90 to 1700	0.14 (19.8)	0.039 (5.52)	1.0	0.16 (22.7)	
	M81X25GD4Y	4	25	200	50	Cont.	90 to 1400	0.14 (19.8)	0.039 (5.52)	0.5	0.16 (22.7)	2 (400V)
							90 to 1700	0.14 (19.8)	0.039 (5.52)	0.5	0.16 (22.7)	

• Permissible torque at output shaft of gear head

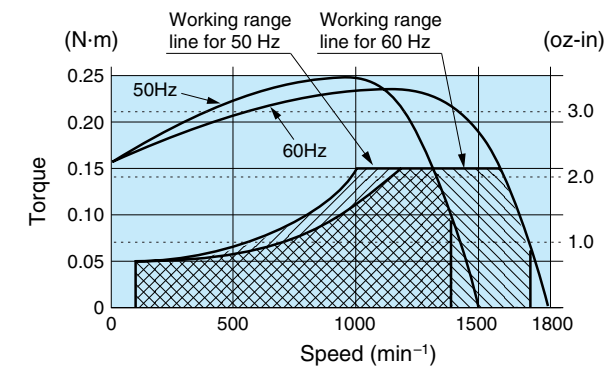
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Reduction ratio											
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX8G□B (ball 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 (8.1)	2.26 (20.0)	2.83 (25.0)
MX8G□M (metal bearing)	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 Bearing	Speed	Reduction ratio	Reduction ratio									Applicable decimal gear head	
			30	36	50	60	75	90	100	120	150		180
MX8G□B (ball 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)	
MX8G□M (metal bearing)	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										

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

Speed-torque characteristics



Connection diagram

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

* Working range line

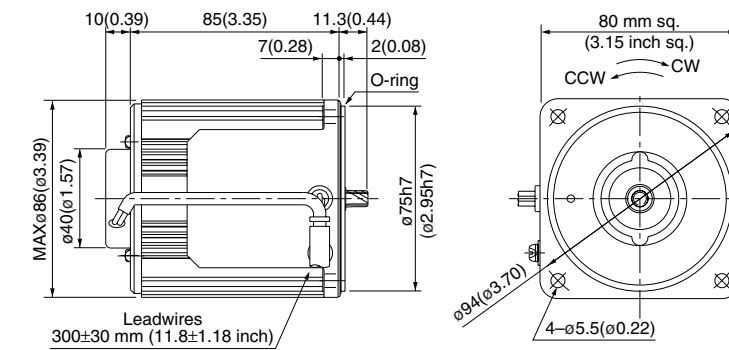
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Motor model No.	Pole	Power (W)	Voltage (V)
M81X25GD4L	4P	25 W	100 V
M81X25GD4Y	4P	25 W	200 V

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

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

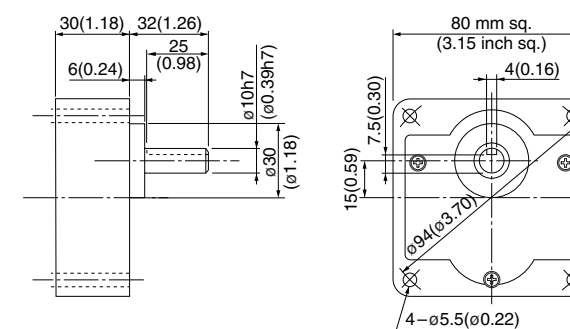


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

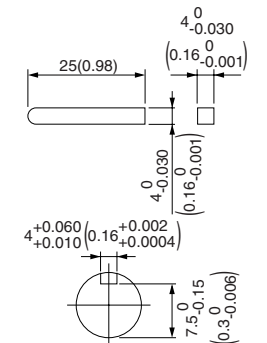
MX8G□B (ball bearing) / MX8G□M (metal bearing) Mass 0.6 kg (1.32 lb)

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



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.

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.)

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage		
90 mm sq.	MUSN940GL	M91X40GD4L	100V	DVUS940L	C-36
	MUXN940GL			DVUX940L	C-36
	MUSN940GY	M91X40GD4Y	200V	DVUS940Y	C-36
	MUXN940GY			DVUX940Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	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			
90 mm sq.	M91X40GD4L	4	40	100	50	Cont.	90 to 1400	0.30 (42.5)	0.049 (6.94)	1.6	0.25 (35.4)	12 (200V)
							90 to 1700	0.24 (34.0)	0.049 (6.94)	1.6	0.25 (35.4)	
	M91X40GD4Y	4	40	200	50	Cont.	90 to 1400	0.30 (42.5)	0.049 (6.94)	0.8	0.25 (35.4)	3 (400V)
							90 to 1700	0.24 (34.0)	0.049 (6.94)	0.8	0.25 (35.4)	

• Permissible torque at output shaft of gear head

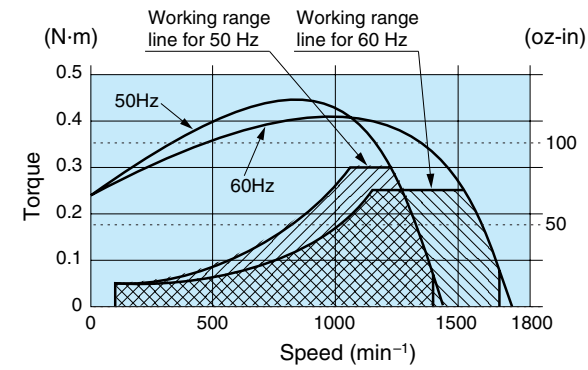
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Reduction ratio											
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25
MX9G□B (ball 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)
MX9G□M (metal bearing)	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 Bearing	Speed	Reduction ratio	Reduction ratio										Applicable decimal gear head	
			30	36	50	60	75	90	100	120	150	180		
MX9G□B (ball 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)	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)	9.80 (86.7)	
MX9G□M (metal bearing)	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											

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

Speed-torque characteristics



Connection diagram

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

* Working range line

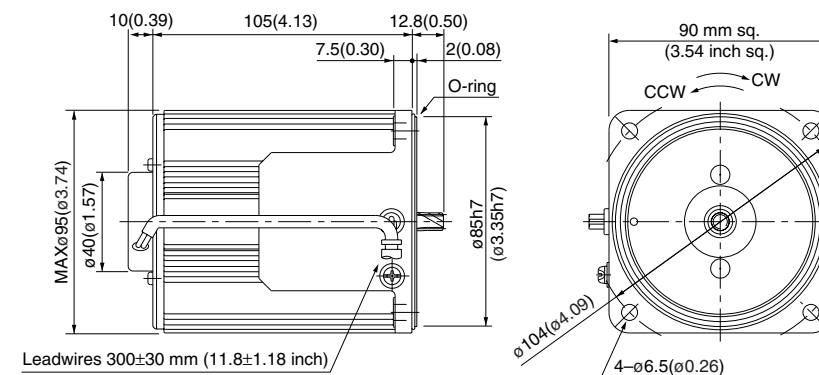
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Motor model No.	Poles	Power (W)	Voltage (V)
M91X40GD4L	4P	40 W	100 V
M91X40GD4Y	4P	40 W	200 V

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

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

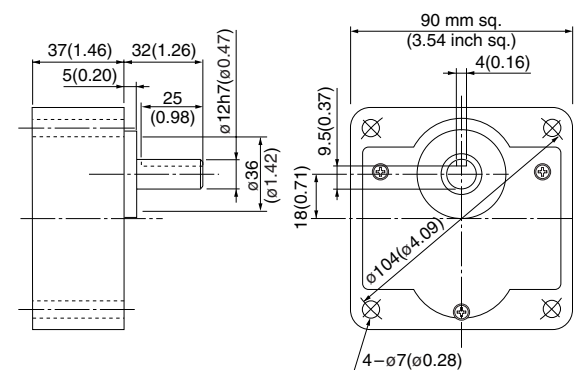


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

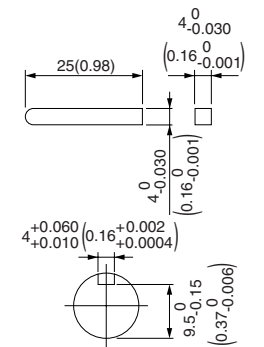
MX9G□B (ball bearing) / MX9G□M (metal bearing) Mass 0.8 kg (1.76 lb)

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



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.

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.)

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
90 mm sq.	MUSN960GL	M91Z60GD4L	100V	DVUS960L	C-36
	MUXN960GL			DVUX960L	C-36
	MUSN960GY	M91Z60GD4Y	200V	DVUS960Y	C-36
	MUXN960GY			DVUX960Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	Permissible Torque N·m (oz·in)		Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
								at 1200 min ⁻¹	at 90 min ⁻¹			
90 mm sq.	M91Z60GD4L	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		90 to 1700	0.36 (51.0)	0.078 (11.0)	2.4	0.46 (65.1)	
	M91Z60GD4Y	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		90 to 1700	0.36 (51.0)	0.078 (11.0)	1.2	0.46 (65.1)	

• Permissible torque at output shaft of gear head

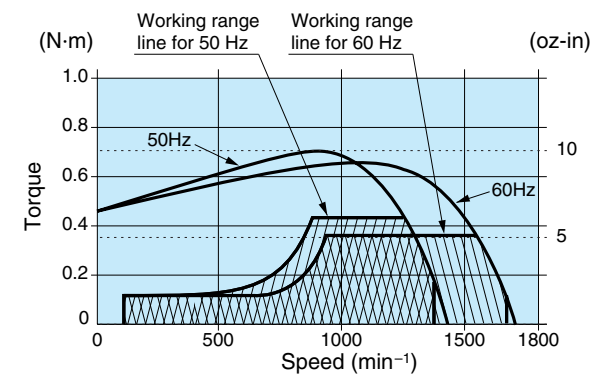
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Reduction ratio												
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing / hinge not attached)	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)
MY9G□B (ball bearing / hinge attached)	90min ⁻¹	50Hz	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)
		60Hz	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 Bearing	Speed	Reduction ratio	Reduction ratio								Applicable decimal gear head			
			36	50	60	75	90	100	120	150		180	200	
MZ9G□B (ball bearing / hinge not 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)	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)	19.6 (173)	19.6 (173)	
MY9G□B (ball bearing / hinge attached)	90min ⁻¹	50Hz	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)		
		60Hz	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												

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

Speed-torque characteristics



Connection diagram

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

* Working range line

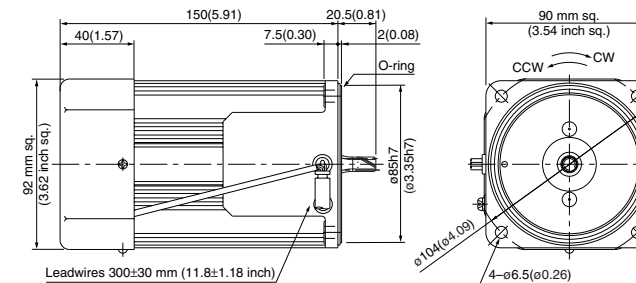
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

M91Z60GD4L 4P 60 W 100 V (with fan)
M91Z60GD4Y 4P 60 W 200 V (with fan)

Scale: 1/4, Unit: mm

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



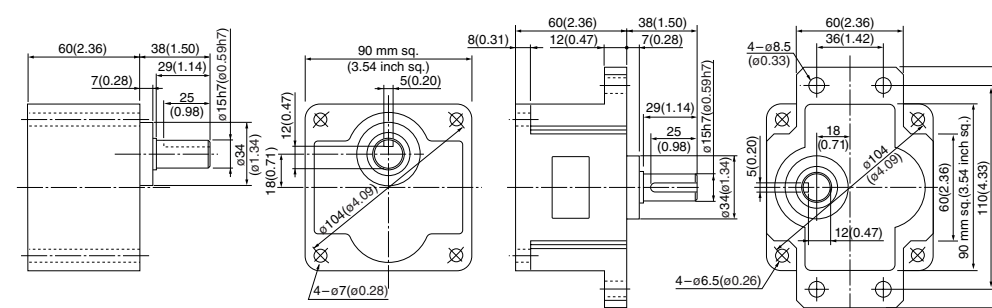
* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

Scale: 1/4, Unit: mm (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)

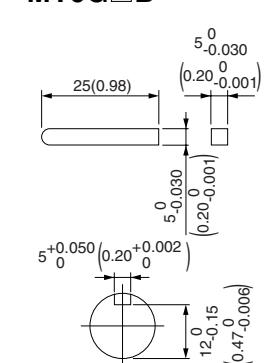


Note) MZ / MY is available for a gear head of either type.

(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



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.)

• Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Motor model No.	Motor model No.	Voltage	Motor model No.	Page
90 mm sq.	MUSN990GL	M91Z90GD4L	100V	DVUS990L	C-36
	MUXN990GL			DVUX990L	C-36
	MUSN990GY	M91Z90GD4Y	200V	DVUS990Y	C-36
	MUXN990GY			DVUX990Y	C-36

* The motor or speed controller is not sold singly. Place an order using the unit model number.

• Specifications

Size	Motor model No.	Number of pole (P)	Output (W)	Voltage (V)	Frequency (Hz)	Rating (min)	Variable speed range	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			
90 mm sq.	M91Z90GD4L	4	90	100	50	Cont.	90 to 1400	0.59 (83.6)	0.25 (35.4)	2.3	0.53 (75.1)	25 (200V)
							90 to 1700	0.54 (76.5)	0.25 (35.4)	2.2	0.56 (79.3)	
	M91Z90GD4Y	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)
							90 to 1700	0.54 (76.5)	0.25 (35.4)	1.1	0.59 (83.6)	

• Permissible torque at output shaft of gear head

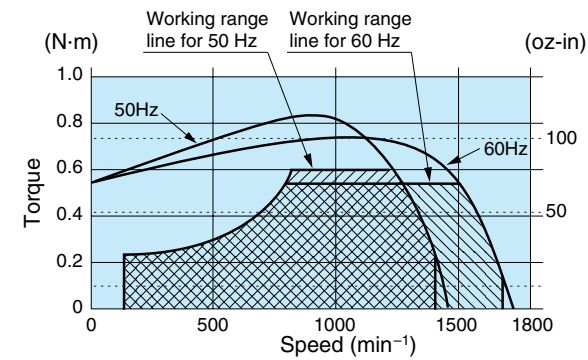
Unit of permissible torque: upper (N·m) / lower (lb·in)

Applicable gear head Bearing	Speed	Reduction ratio	Permissible torque												
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
MZ9G□B (ball bearing hinge not 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)
MY9G□B (ball bearing hinge attached)	90min ⁻¹	50Hz	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)
		60Hz	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 Bearing	Speed	Reduction ratio	Permissible torque										Applicable decimal gear head		
			36	50	60	75	90	100	120	150	180	200			
MZ9G□B (ball bearing hinge not 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)	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)	19.6 (174)	19.6 (174)	
MY9G□B (ball bearing hinge attached)	90min ⁻¹	50Hz	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)	19.6 (174)		
		60Hz	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)	19.6 (174)		
Rotational direction		Same as motor rotational direction													

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

Speed-torque characteristics



Connection diagram

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

* Working range line

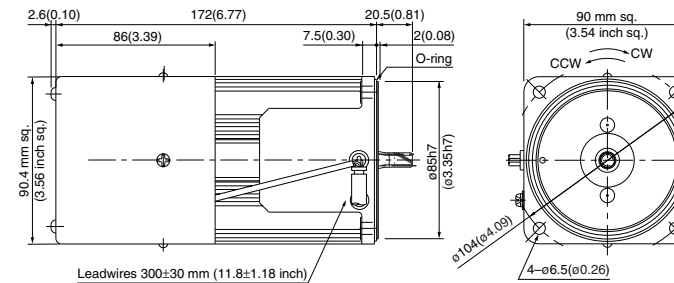
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Scale: 1/4, Unit: mm

M91Z90GD4L 4P 90 W 100 V (Forced cooling fan)
M91Z90GD4Y 4P 90 W 200 V (Forced cooling fan)

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



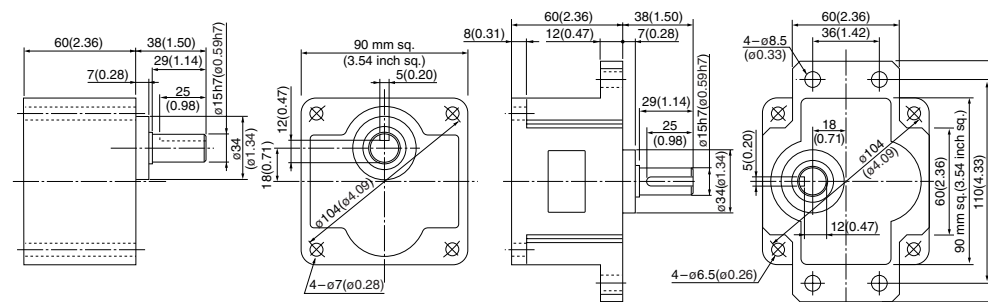
* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

Scale: 1/4, Unit: mm (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)

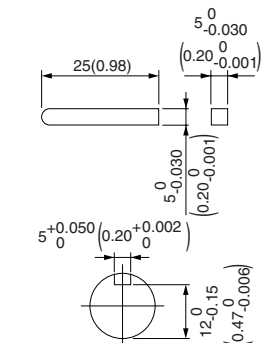


Note) MZ / MY is available for a gear head of either type.

(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



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.)

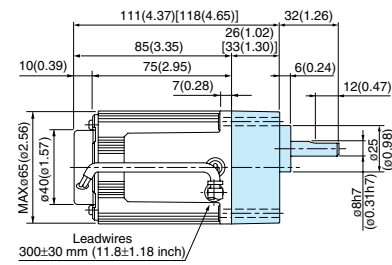
Variable speed unit motor

Gear head combination dimensions

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

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

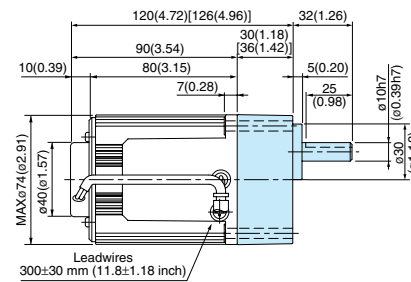
M61X6GD4L + MX6G□BA(MA) / MX6G□B(M)
M61X6GD4Y + MX6G□BA(MA) / MX6G□B(M)



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

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

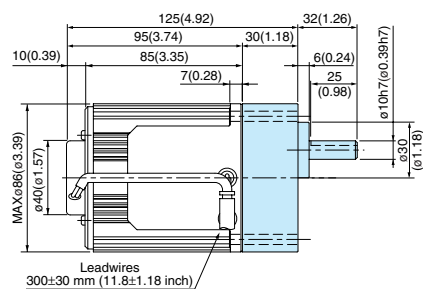
M71X15GD4L + MX7G□BA(MA) / MX7G□B(M)
M71X15GD4Y + MX7G□BA(MA) / MX7G□B(M)



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

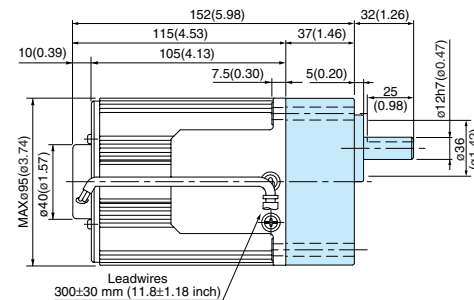
80 mm sq. (3.15 inch sq.) 25 W

M81X25GD4L + MX8G□B(M)
M81X25GD4Y + MX8G□B(M)



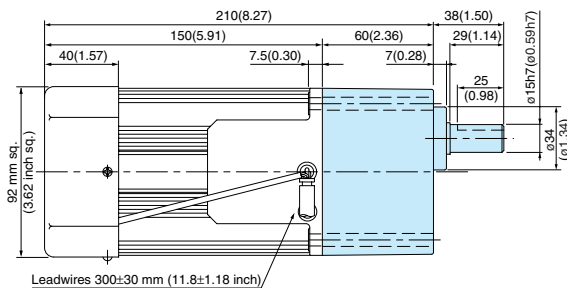
90 mm sq. (3.54 inch sq.) 40 W

M91X40GD4L + MX9G□B(M)
M91X40GD4Y + MX9G□B(M)



90 mm sq. (3.54 inch sq.) 60 W

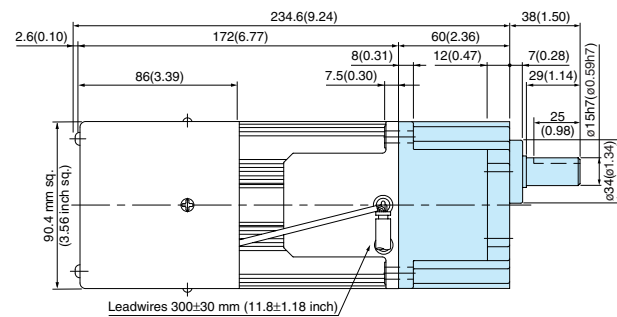
M91Z60GD4L + MZ9G□B (MY9G□B)
M91Z60GD4Y + MZ9G□B (MY9G□B)



* Refer to page B-444 for high torque gear head.

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

M91Z90GD4L + MY9G□B (MZ9G□B)
M91Z90GD4Y + MY9G□B (MZ9G□B)



* Refer to page B-444 for high torque gear head.

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