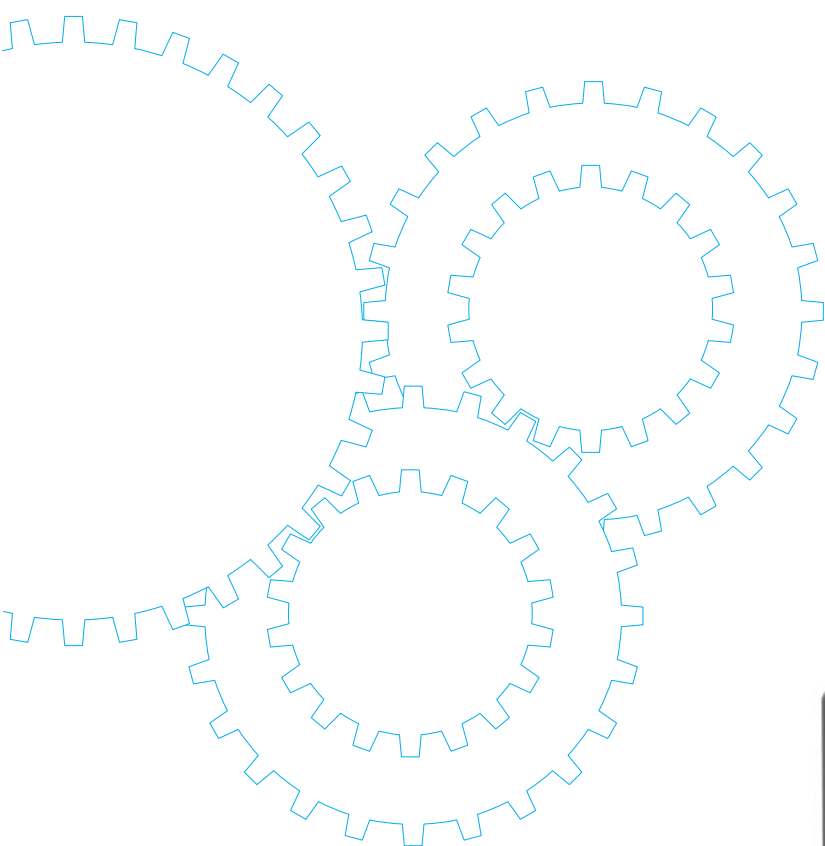


Variable Speed Unit Motor



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 (p.D-4)
When the motor and speed controller are ordered separately, they are however available as spare parts without extension cable and instruction manual attached. Option cable can be ordered as necessary (p. D-4).

<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. Backup function of setting conditions
 6. Set lock function
- The cable can be extended up to 5 m using an option (p.B-325)
When the motor and speed controller are ordered separately, they are however available as spare parts without extension cable and instruction manual attached. Option cable can be ordered as necessary (p.B-325).

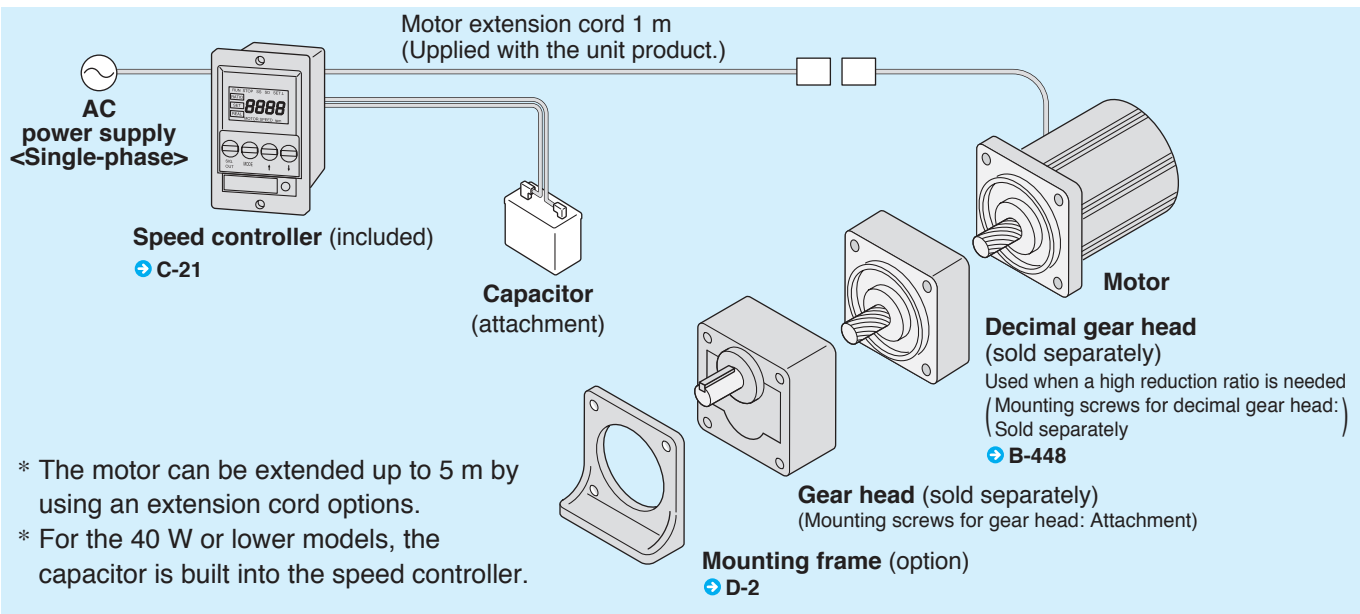
Note) Variable speed unit motor start-stop operation must not exceed 6-cycles per minute or damage may occur.

Specifications

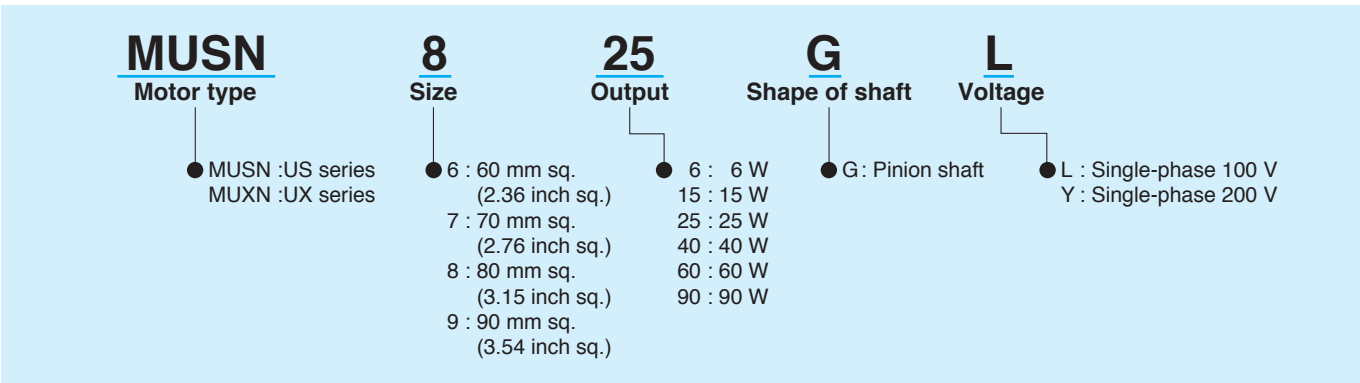
	MUSN Series	MUXN Series
Output	6 W : 15 W : 25 W : 40 W : 60 W : 90 W	6 W : 15 W : 25 W : 40 W : 60 W : 90 W
Rated voltage	Single-phase 100 V / 200 V	Single-phase 100 V / 200 V
Power supply frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Speed control range	90 r/min to 1400 r/min / 90 r/min to 1700 r/min	90 r/min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

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

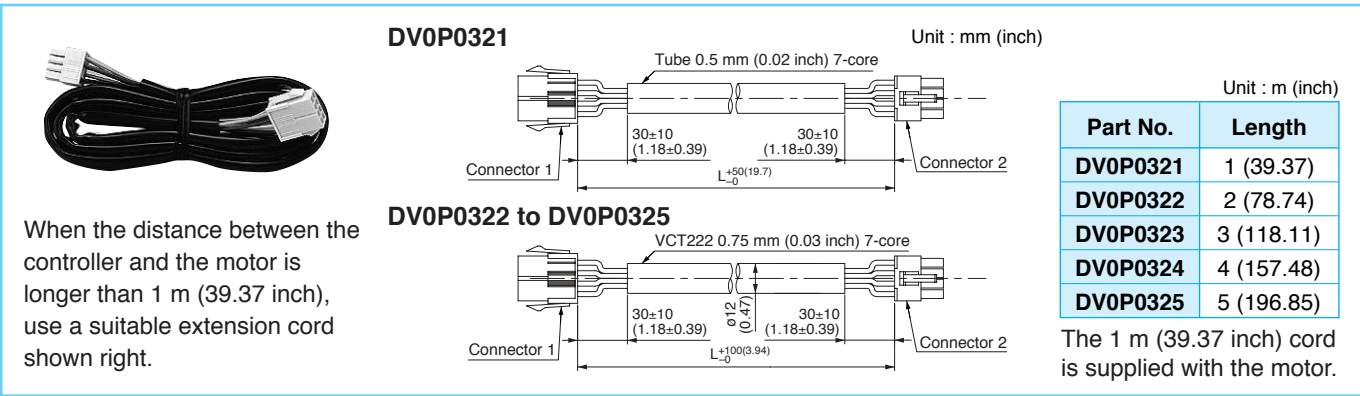
System configuration diagram



Coding system



Unit type motor extension cord



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

								Hinge attached				
Size	Output (W)	MUSN Series			MUXN Series			Standard gear head		High torque gear head	Right-angle gear head	Decimal gear head
		Model number	Specifications	Page	Model number	Specifications	Page	Ball bearing	metal bearing			
60 mm sq. (2.36 inch sq.)	6	MUSN606GL	100 V	B-328	MUXN606GL	100 V	B-328	MX6G□BA MX6G□B	MX6G□MA MX6G□M	—	—	MX6G10XB
		MUSN606GY	200 V	B-328	MUXN606GY	200 V	B-328					
70 mm sq. (2.76 inch sq.)	15	MUSN715GL	100 V	B-330	MUXN715GL	100 V	B-330	MX7G□BA MX7G□B	MX7G□MA MX7G□M	—	—	MX7G10XB
		MUSN715GY	200 V	B-330	MUXN715GY	200 V	B-330					
80 mm sq. (3.15 inch sq.)	25	MUSN825GL	100 V	B-332	MUXN825GL	100 V	B-332	MX8G□B	MX8G□M	—	—	MX8G10XB
		MUSN825GY	200 V	B-332	MUXN825GY	200 V	B-332					
90 mm sq. (3.54 inch sq.)	40	MUSN940GL	100 V	B-334	MUXN940GL	100 V	B-334	MX9G□B	MX9G□M	—	MX9G□R	MX9G10XB
		MUSN940GY	200 V	B-334	MUXN940GY	200 V	B-334					
	60	MUSN960GL	100 V	B-336	MUXN960GL	100 V	B-336	MZ9G□B MY9G□B	—	MR9G□B MP9G□B	MZ9G□R	MZ9G10XB
		MUSN960GY	200 V	B-336	MUXN960GY	200 V	B-336					
	90	MUSN990GL	100 V	B-338	MUXN990GL	100 V	B-338					
		MUSN990GY	200 V	B-338	MUXN990GY	200 V	B-338					

* 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	
	Model No.	Model No.	Voltage	Model No.	Page
60 mm sq.	MUSN606GL	M61X6GD4L	100 V	DVUS606L	C-21
	MUXN606GL			DVUX606L	C-21
	MUSN606GY	M61X6GD4Y	200 V	DVUS606Y	C-21
	MUXN606GY			DVUX606Y	C-21

* When ordering the motor and speed controller as a set, 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 (r/min)	at 1200 r/min	at 90 r/min			
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 (200 V)
					60		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 (400 V)
					60		90 to 1700	0.032 (4.53)	0.025 (3.54)	0.15		

Permissible torque at output shaft of gear head

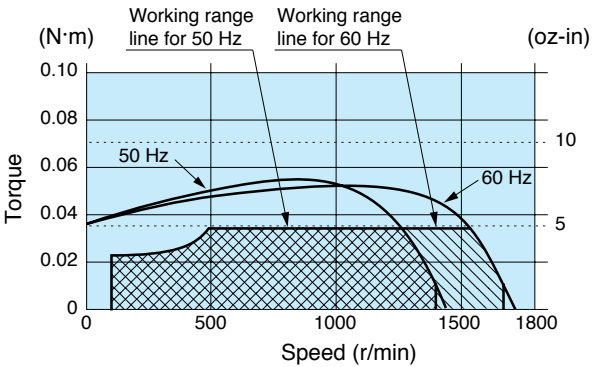
Applicable gear head Bearing		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·in)																					
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
MX6G□BA (ball bearing)	1200 r/min	50 Hz	0.077 (0.68)	0.093 (0.82)	0.13 (1.15)	0.15 (1.33)	0.19 (1.68)	0.23 (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)	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)
MX6G□B (ball bearing)		60 Hz	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)	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)
MX6G□MA (metal bearing)		90 r/min		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)	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)
MX6G□M (metal bearing)	Rotational direction		Same as motor rotational direction													Reverse to motor rotational direction								

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

Applicable gear head			Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)											
Bearing	Decimal gear head	Speed			200	250	300	360	500	600	750	900	1000	1200	1500	1800
MX6G□BA (ball bearing)	MX6G10XB	1200 r/min	50 Hz	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	
MX6G□B (ball bearing)			60 Hz	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	
MX6G□MA (metal bearing)		90 r/min	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	2.45 (21.7)	
MX6G□M (metal bearing)			Rotational direction	Same as motor 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-21 to C-26.

* Working range line

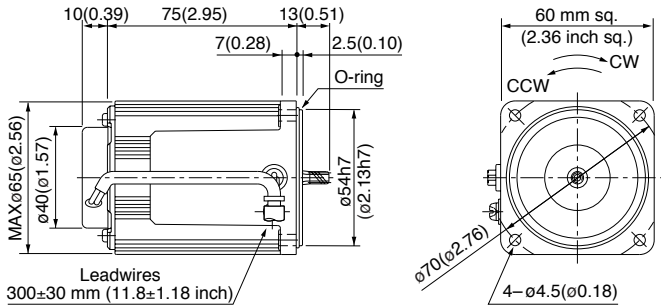
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

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

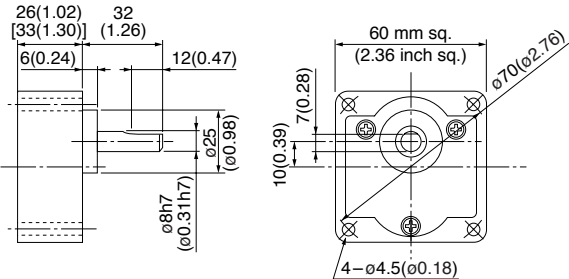
Mass	Helical gear	Module	Number of teeth
0.71 kg 1.57 lb		0.5	6



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

Gear head (dimensions)

MX6G□BA (ball bearing) Mass 0.24 kg (0.53 lb): Output shaft D cut
MX6G□MA (metal bearing) Mass 0.24 kg (0.53 lb): Output shaft D cut
MX6G□B (ball bearing) Mass 0.3 kg (0.66 lb): Output shaft D cut
MX6G□M (metal bearing) Mass 0.3 kg (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 reversible motor
Variable speed electromagnetic 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

70_{mm} (2.76 inch) sq. 15 W

- **Unit specifications**

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Model No.	Model No.	Voltage	Model No.	Page
70 mm sq.	MUSN715GL	M71X15GD4L	100 V	DVUS715L	C-21
	MUXN715GL			DVUX715L	C-21
	MUSN715GY	M71X15GD4Y	200 V	DVUS715Y	C-21
	MUXN715GY			DVUX715Y	C-21

* When ordering the motor and speed controller as a set, 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	Starting torque N-m (oz-in)	Capacitor (μF) (rated voltage)
							Speed (r/min)	at 1200 r/min	at 90 r/min	(A)		
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 (200 V)
					60		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 (400 V)
					60		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**

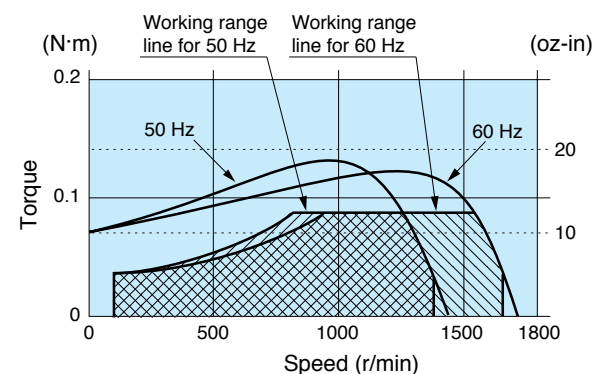
Applicable gear head		Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)																				
				Speed																				
Bearing		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	
MX7G□BA (ball bearing)	1200 r/min	50 Hz	0.21 (1.86)	0.25 (2.21)	0.36 (3.19)	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)	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)	
MX7G□B (ball bearing)		60 Hz	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)	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)	
MX7G□MA (metal bearing)	90 r/min		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)	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)
MX7G□M (metal bearing)		Rotational direction	Same as motor rotational direction													Reverse to motor rotational direction								

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

Applicable gear head		Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb-in)											
Bearing	Decimal gear head			Speed	200	250	300	360	500	600	750	900	1000	1200	1500
MX7G□BA (ball bearing) MX7G□B (ball bearing) MX7G□MA (metal bearing) MX7G□M (metal bearing)	MX7G10XB	1200 r/min	50 Hz	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)
			60 Hz	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)
		90 r/min		3.77 (33.4)	4.71 (41.7)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)	4.90 (43.4)
		Rotational direction		Same as motor 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-21 to C-26.

*** Working range line**

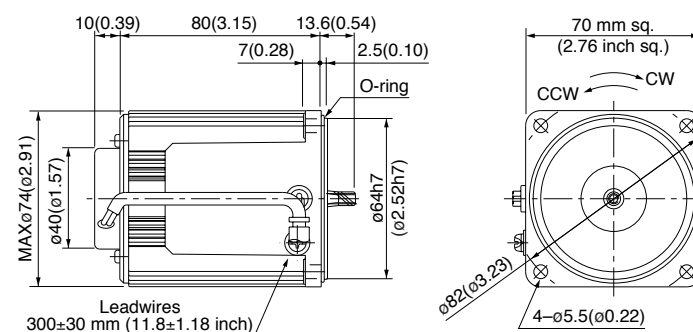
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

M71X15GD4L	4P	15 W	100 V
M71X15GD4Y	4P	15 W	200 V

Mass 1.1 kg 2.43 lb	Helical gear	Module 0.5	Number of teeth 7
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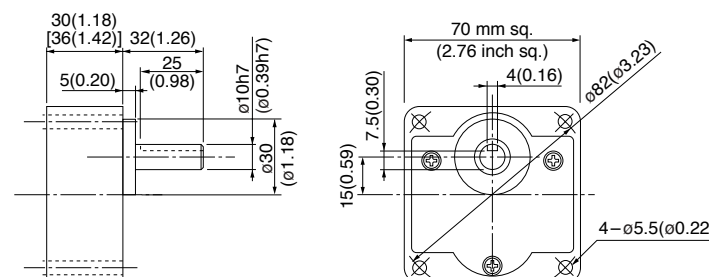
* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

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

MX7G□BA (ball bearing) Mass 0.38 kg (0.84 lb)
MX7G□MA (metal bearing) Mass 0.38 kg (0.84 lb)

MX7G□B (ball bearing) Mass 0.45 kg (0.99 lb)
MX7G□M (metal bearing) Mass 0.45 kg (0.99 lb)

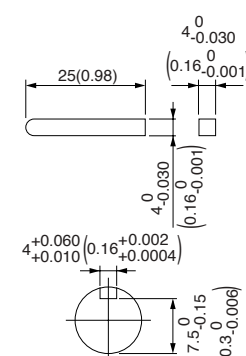


* Figures in [] represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).
(The model number of the gear head with a reduction ratio of 1/25 or smaller is MX7G□BA (MA).)

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

Key and keyway
(dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)



Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Model No.	Model No.	Voltage	Model No.	Page
80 mm sq.	MUSN825GL	M81X25GD4L	100 V	DVUS825L	C-21
	MUXN825GL			DVUX825L	C-21
	MUSN825GY	M81X25GD4Y	200 V	DVUS825Y	C-21
	MUXN825GY			DVUX825Y	C-21

* When ordering the motor and speed controller as a set, 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 (r/min)	at 1200 r/min	at 90 r/min			
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 (200 V)
					60		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 (400 V)
					60		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

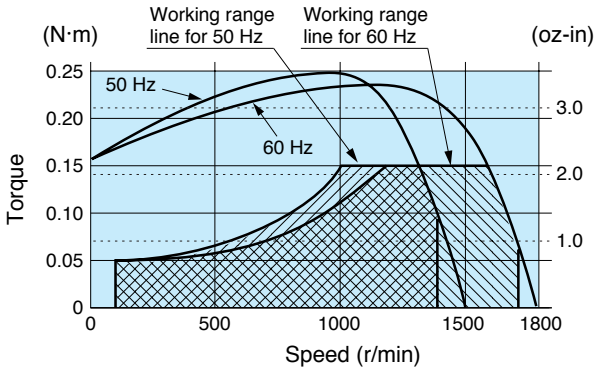
Applicable gear head		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·in)																					
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Bearing		Speed																						
MX8G□B (ball bearing)	1200 r/min	50 Hz	0.34 (3.01)	0.40 (3.54)	0.56 (4.96)	0.68 (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)	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)
		60 Hz	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)	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)
	90 r/min		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)	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	Same as motor rotational direction												Reverse to motor rotational direction									

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

Applicable gear head		Speed	Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)											
					200	250	300	360	500	600	750	900	1000	1200	1500	1800
MX8G□B (ball bearing)	MX8G□M (metal bearing)	1200 r/min	50 Hz		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)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)
			60 Hz		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)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)
		90 r/min			5.07 (44.9)	6.34 (56.1)	6.90 (61.1)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)	7.84 (69.4)
			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-21 to C-26.

Working range line

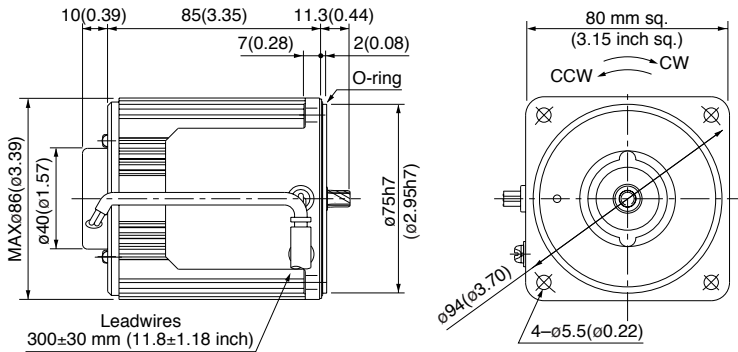
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

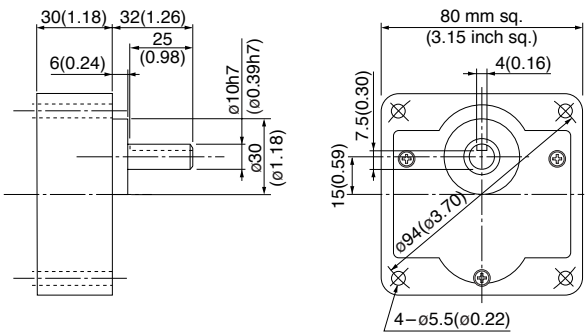


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

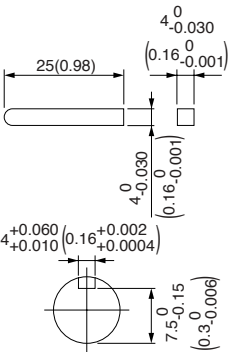
Scale: 1/3, Unit: mm (inch)

MX8G□B (ball bearing)	Mass 0.6 kg (1.32 lb)	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 unit motor

90 mm (3.54 inch) sq. 40 W

Unit specifications

Size	Unit	Set configuration			
		Motor		Speed Controller	
	Model No.	Model No.	Voltage	Model No.	Page
90 mm sq.	MUSN940GL	M91X40GD4L	100 V	DVUS940L	C-21
	MUXN940GL			DVUX940L	C-21
	MUSN940GY	M91X40GD4Y	200 V	DVUS940Y	C-21
	MUXN940GY			DVUX940Y	C-21

* When ordering the motor and speed controller as a set, 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 (r/min)	at 1200 r/min	at 90 r/min	at 90 r/min			
90 mm sq.	M91X40GD4L	4	40	100	50	Cont.	90 to 1400	0.30 (42.5)	0.049 (6.94)	0.049 (6.94)	1.6	0.25 (35.4)	12 (200 V)
					60		90 to 1700	0.24 (34.0)	0.049 (6.94)	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)	0.049 (6.94)	0.8	0.25 (35.4)	3 (400 V)
					60		90 to 1700	0.24 (34.0)	0.049 (6.94)	0.049 (6.94)	0.8	0.25 (35.4)	

Permissible torque at output shaft of gear head

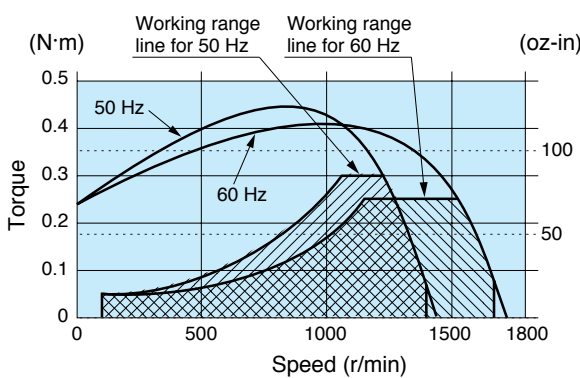
Applicable gear head		Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)																				
				3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150
Bearing		Speed																						
MX9G□B (ball bearing)	1200 r/min	50 Hz	0.72 (6.37)	0.87 (7.70)	1.21 (10.7)	1.45 (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)	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)
		60 Hz	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)	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)
	90 r/min		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)	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	Same as motor rotational direction												Reverse to motor rotational direction									

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

Applicable gear head		Speed	Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)											
					200	250	300	360	500	600	750	900	1000	1200	1500	1800
MX9G□B (ball bearing)	MX9G□M (metal bearing)	1200 r/min	50 Hz	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)	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)	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)
		90 r/min	60 Hz	6.37 (56.4)	7.96 (70.4)	8.67 (76.7)	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)	9.80 (86.7)	9.80 (86.7)
				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-21 to C-26.

Working range line

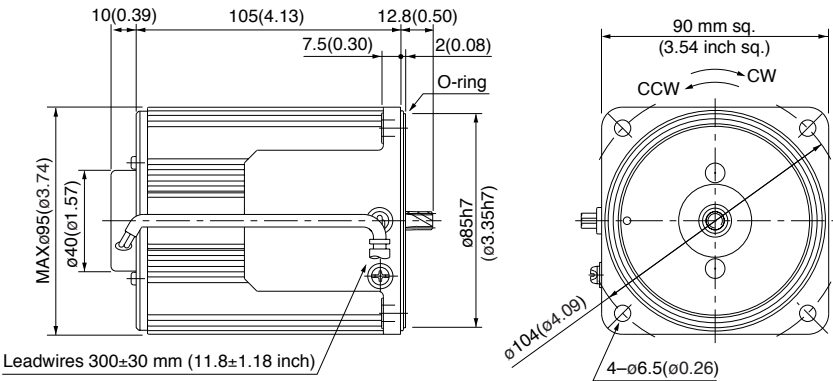
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

M91X40GD4L 4P 40 W 100 V
M91X40GD4Y 4P 40 W 200 V

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

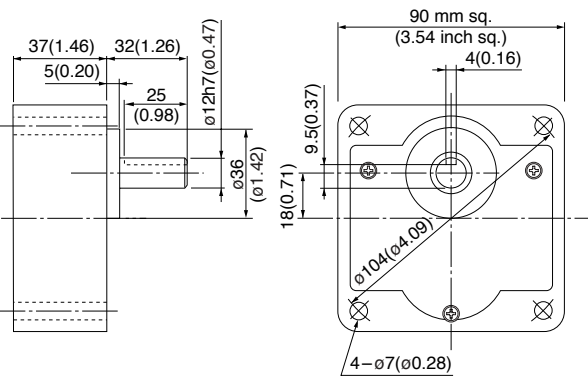


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

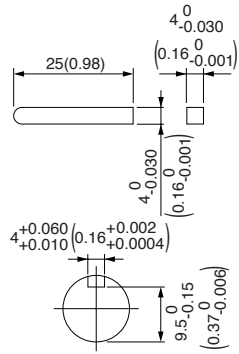
Scale: 1/3, Unit: mm (inch)

MX9G□B (ball bearing) Mass 0.8 kg (1.76 lb) 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.

• Unit specifications

Size	Unit	Set configuration				
		Motor			Speed Controller	
	Model No.	Model No.	Voltage	Model No.	Page	
90 mm sq.	MUSN960GL	M91Z60GD4L	100 V	DVUS960L	C-21	
	MUXN960GL			DVUX960L	C-21	
	MUSN960GY	M91Z60GD4Y	200 V	DVUS960Y	C-21	
	MUXN960GY			DVUX960Y	C-21	

* When ordering the motor and speed controller as a set, 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 (r/min)	at 1200 r/min	at 90 r/min	at 90 r/min			
90 mm sq.	M91Z60GD4L	4	60	100	50	Cont.	90 to 1400	0.43 (60.9)	0.078 (11.0)	0.078 (11.0)	2.3	0.46 (65.1)	20 (200 V)
					60		90 to 1700	0.36 (51.0)	0.078 (11.0)	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)	0.078 (11.0)	1.2	0.46 (65.1)	5 (400 V)
					60		90 to 1700	0.36 (51.0)	0.078 (11.0)	0.078 (11.0)	1.2	0.46 (65.1)	

• Permissible torque at output shaft of gear head

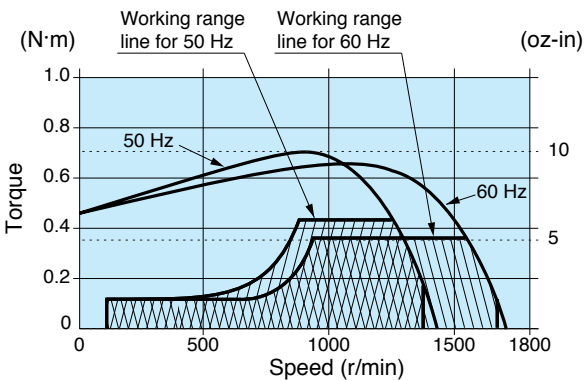
Applicable gear head		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·in)																							
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200	
Bearing		Speed																								
MZ9G□B (ball bearing) (hinge not attached)	1200 r/min	50 Hz	0.98 (8.67)	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)	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)
		60 Hz	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)	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)	90 r/min		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)	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							Reverse to motor rotational direction							Same as motor rotational direction									

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

Applicable gear head Bearing		Speed	Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)												
					250	300	360	500	600	750	900	1000	1200	1500	1800	2000	
MZ9G□B (ball bearing) (hinge not attached)	MZ9G10XB	1200 r/min	50 Hz		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)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)
			60 Hz		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)	19.6 (173)	19.6 (173)	19.6 (173)	19.6 (173)
		90 r/min			11.5 (102)	13.8 (122)	14.9 (132)	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)	19.6 (173)
				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-21 to C-26.

* Working range line

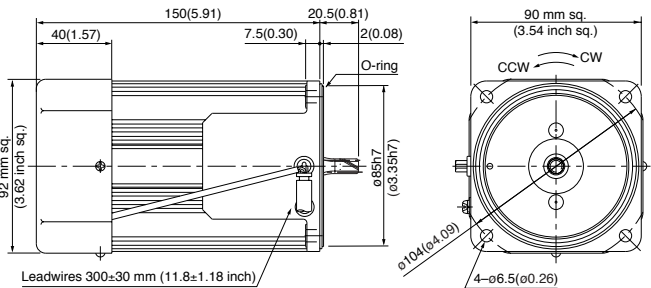
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

Scale: 1/4, Unit: mm

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

Mass	Helical gear	Module	Number of teeth
2.7 kg 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)

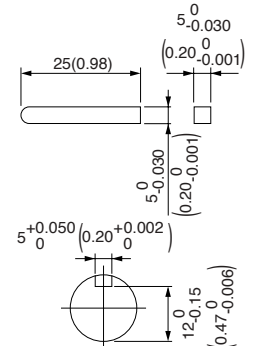
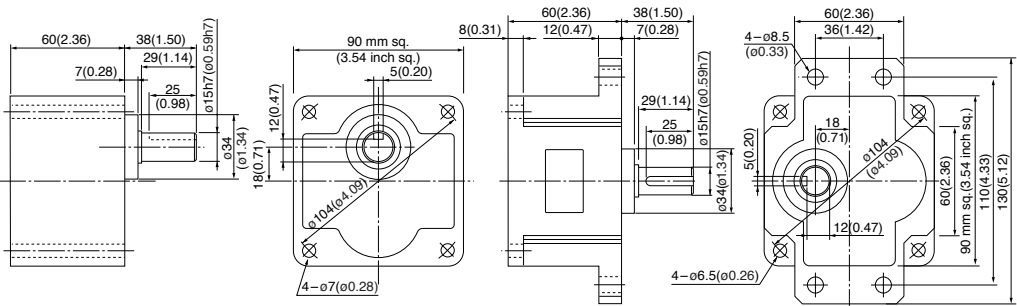
Scale: 1/4, Unit: mm (inch)

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)

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.

Unit specifications

Size	Unit	Set configuration				
		Motor		Speed Controller		
	Model No.	Model No.	Voltage	Model No.	Page	
90 mm sq.	MUSN990GL	M91Z90GD4L	100 V	DVUS990L	C-21	
	MUXN990GL			DVUX990L	C-21	
	MUSN990GY	M91Z90GD4Y	200 V	DVUS990Y	C-21	
	MUXN990GY			DVUX990Y	C-21	

* When ordering the motor and speed controller as a set, 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 (r/min)	at 1200 r/min	at 90 r/min	at 90 r/min			
90 mm sq.	M91Z90GD4L	4	90	100	50	Cont.	90 to 1400	0.59 (83.6)	0.25 (35.4)	0.25 (35.4)	2.3	0.53 (75.1)	25 (200 V)
					60		90 to 1700	0.54 (76.5)	0.25 (35.4)	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)	0.25 (35.4)	1.1	0.57 (80.7)	6.2 (375 V)
					60		90 to 1700	0.54 (76.5)	0.25 (35.4)	0.25 (35.4)	1.1	0.59 (83.6)	

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

Permissible torque at output shaft of gear head

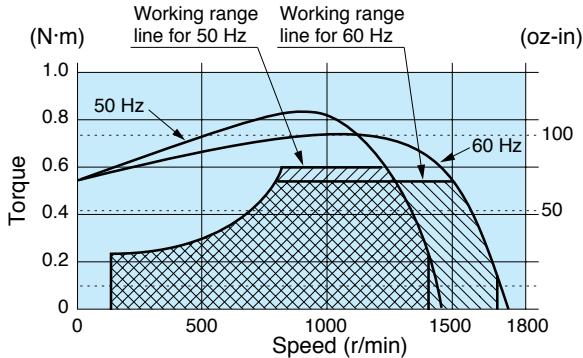
Applicable gear head		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·in)																							
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200	
Bearing	Speed																									
MZ9G□B (ball bearing) (hinge not attached)	1200 r/min	50 Hz	1.43 (12.7)	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)	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)
		60 Hz	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)	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)
MY9G□B (ball bearing) (hinge attached)	90 r/min		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)	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							Reverse to motor rotational direction							Same as motor rotational direction									

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

Applicable gear head		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·in)												
Bearing	Decimal gear head		Speed	250	300	360	500	600	750	900	1000	1200	1500	1800	2000
MZ9G□B (ball bearing) (hinge not attached)	MZ9G10XB	1200 r/min	50 Hz	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)	19.6 (173)	19.6 (173)	19.6 (173)
			60 Hz	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)	19.6 (173)	19.6 (173)	
90 r/min			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)	19.6 (173)	19.6 (173)	19.6 (173)	
MY9G□B (ball bearing) (hinge attached)															
		Rotational direction		Same as motor 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-21 to C-26.

Working range line

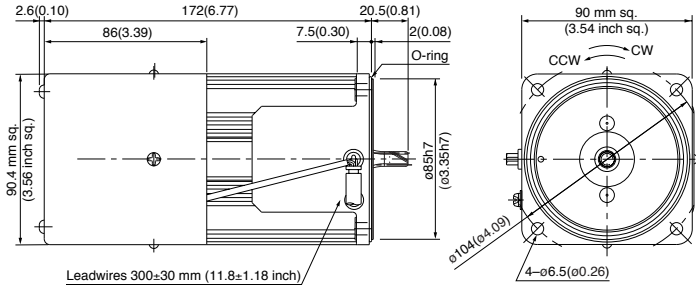
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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



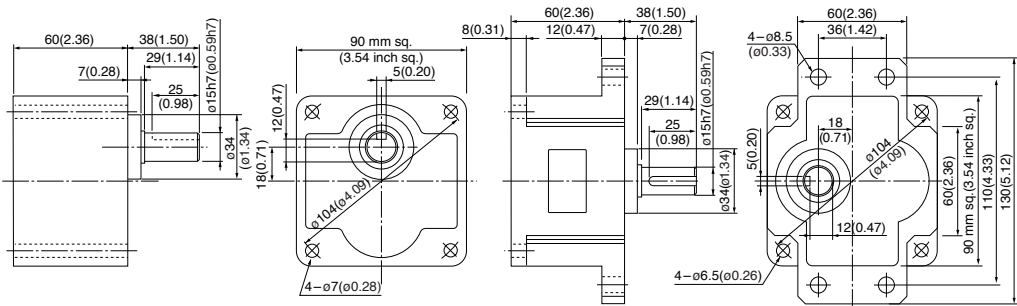
* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

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

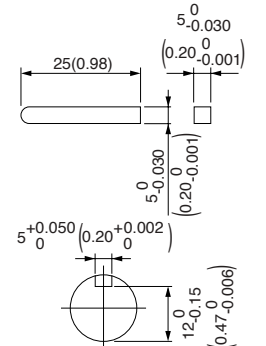
MZ9G□B (ball bearing / hinge not attached)
Mass 1.4 kg (3.09 lb)

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



Key and keyway (dimensions) [attachment]

MZ9G□B
MY9G□B



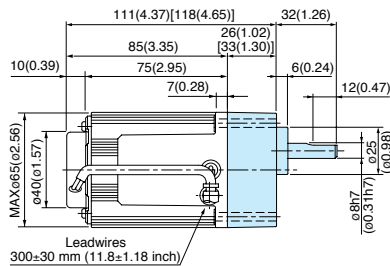
Note) MZ / MY is available for a gear head of either type.

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

* Gear head is sold separately.

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

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

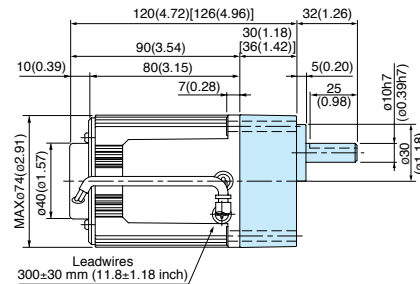


* Figures in [] represent the dimensions of MX6G□B (M) (1/30 or larger reduction ratio).

(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)

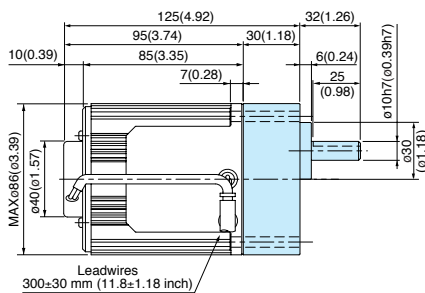


* Figures in [] represent the dimensions of MX7G□B (M) (1/30 or larger reduction ratio).

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

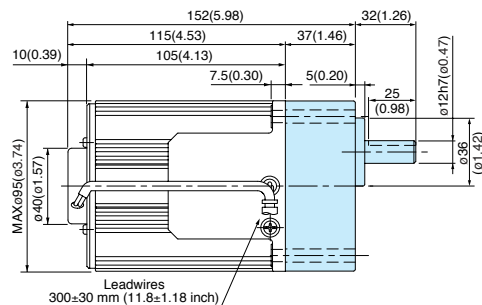
80 mm sq. (3.15 inch sq.) 25 W

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



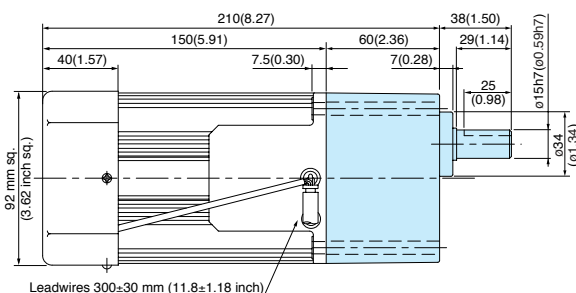
90 mm sq. (3.54 inch sq.) 40 W

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



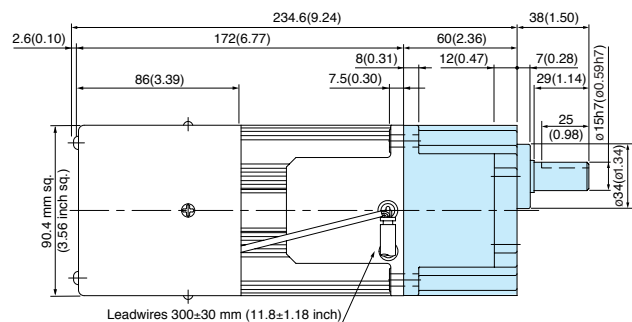
90 mm sq. (3.54 inch sq.) 60 W

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



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.

* 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.