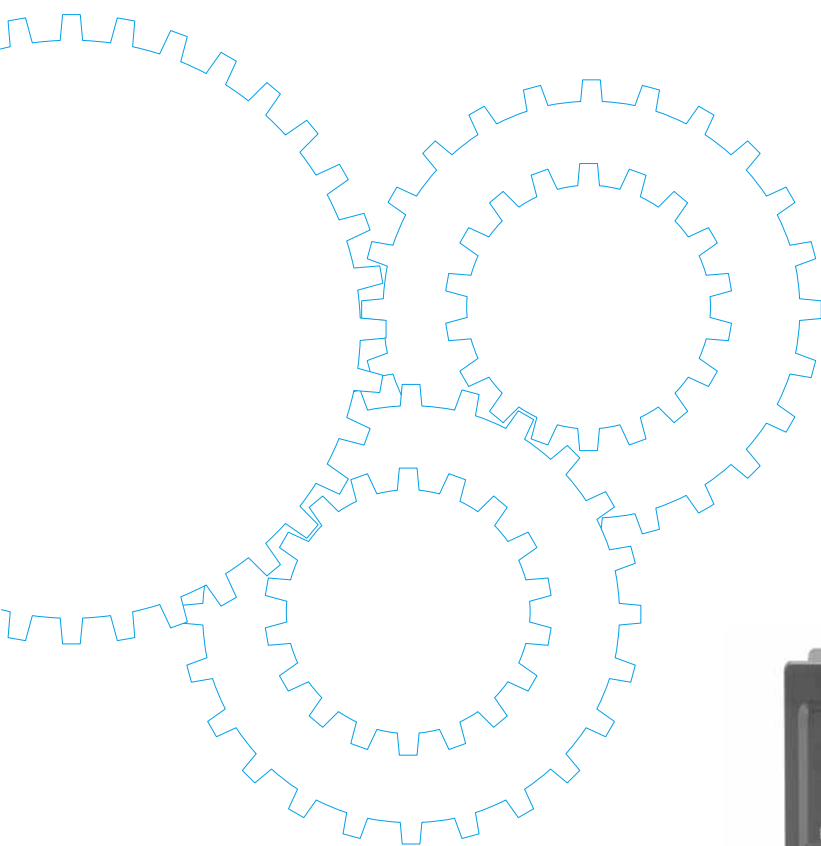


Variable Speed Unit Motor



Contents

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

Model list of variable speed unit motor

Pinion shaft motor / speed controller (Set)

Applicable gear head

Size	Output (W)	MUSN Series		
		Model number	Specifications	Page
60 mm sq. (2.36 inch sq.)	6	MUSN606GL	100 V	B-328
		MUSN606GY	200 V	B-328
70 mm sq. (2.76 inch sq.)	15	MUSN715GL	100 V	B-330
		MUSN715GY	200 V	B-330
80 mm sq. (3.15 inch sq.)	25	MUSN825GL	100 V	B-332
		MUSN825GY	200 V	B-332
90 mm sq. (3.54 inch sq.)	40	MUSN940GL	100 V	B-334
		MUSN940GY	200 V	B-334
	60	MUSN960GL	100 V	B-336
		MUSN960GY	200 V	B-336
	90	MUSN990GL	100 V	B-338
		MUSN990GY	200 V	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 MY9G□B	—	MR9G□B MP9G□B	MZ9G□R	MZ9G10XB

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.

Variable speed unit motor

60 mm (2.36 inch) sq. 6 W

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
	MUSN606GY	M61X6GD4Y	200 V	DVUS606Y	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			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

* The part number of reduction gear ratio less than 1/25 is MX6G□BA (MA).

Applicable gear head		Reduction Ratio	Unit of permissible torque: upper (N·m) / lower (lb·ft)																							
Bearing	Speed		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)	2.45 (21.7)		
MX6G□M (metal bearing)		Rotational direction	Same as motor rotational direction													Reverse to motor rotational direction										

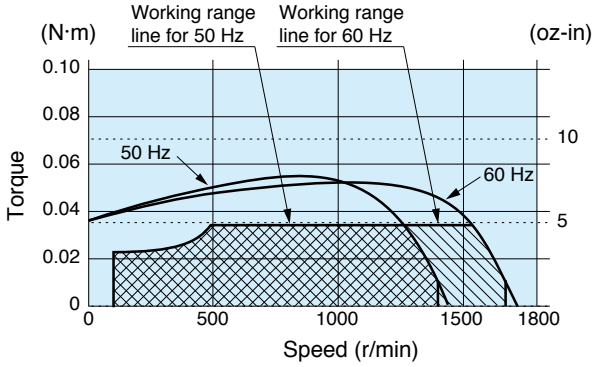
Permissible torque at output shaft of gear head using decimal gear head

* For external dimensions of the decimal gear head, refer to page B-448.

Applicable gear head		Reduction Ratio													
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)
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-24.

Working range line

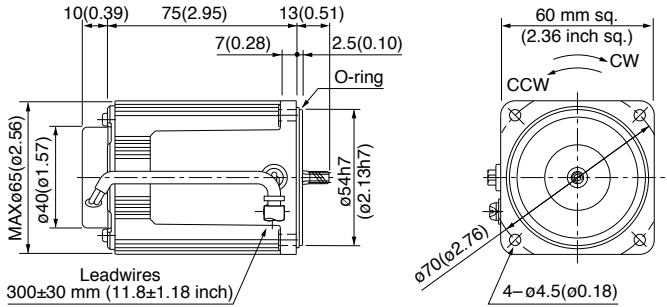
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high 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 0.71 kg 1.57 lb
Helical gear
Module 0.5
Number of teeth 6

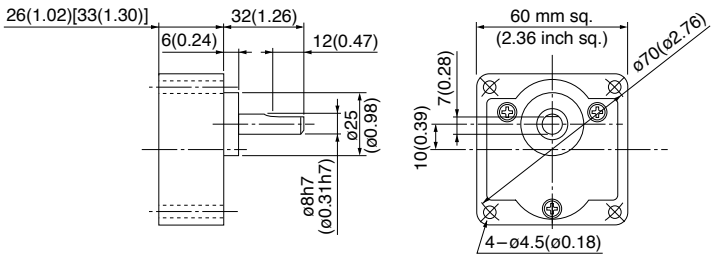


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

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

< □ is 25 or less >
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
< □ is 30 or more >
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).

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

Gear head combination B-340 Decimal gear head B-448 Gear head -inch (U.S.A.) B-449 Controls C-4 Option D-2

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
	MUSN715GY	M71X15GD4Y	200 V	DVUS715Y	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			
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

* The part number of reduction gear ratio less than 1/25 is MX7G□BA (MA).

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	36	50	60	75	90	100	120	150	180		
	Speed																									
Bearing																										
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)	4.90 (43.4)		
		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)	4.90 (43.4)		
MX7G□B (ball bearing)	90 r/min			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)				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)				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)	
Rotational direction			Same as motor rotational direction													Reverse to motor rotational direction										

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

* For external dimensions of the decimal gear head, refer to page B-448.

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

Applicable gear head		Reduction Ratio		200	250	300	360	500	600	750	900	1000	1200	1500	1800
Bearing	Decimal gear head														
MX7G□BA (ball 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)
MX7G□B (ball bearing)			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)
MX7G□MA (metal bearing)		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)	
MX7G□M (metal bearing)				Reverse to motor rotational direction											
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.

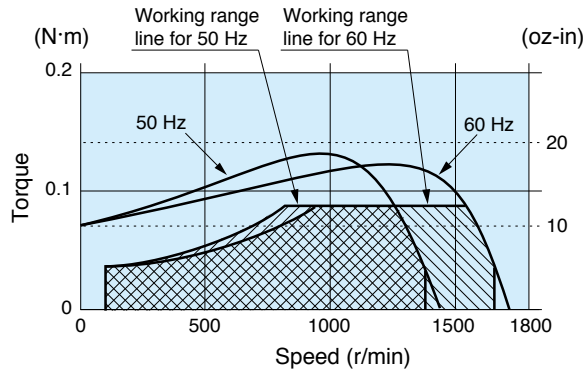
Features B-324

System configuration B-325

Coding system B-325

Model list B-326

Speed-torque characteristics



Connection diagram

* For the connection diagram showing wiring with the speed controller, refer to pages C-21 to C-24.

Working range line

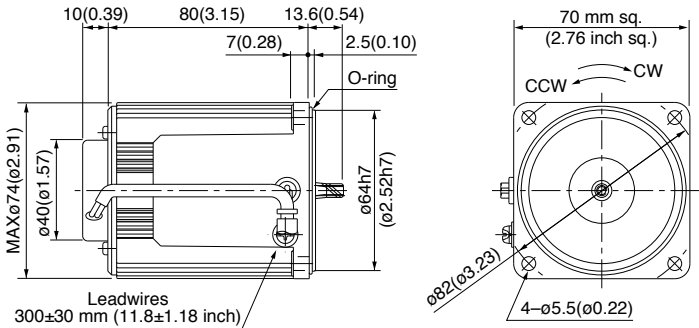
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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



* 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)

< □ is 25 or less >

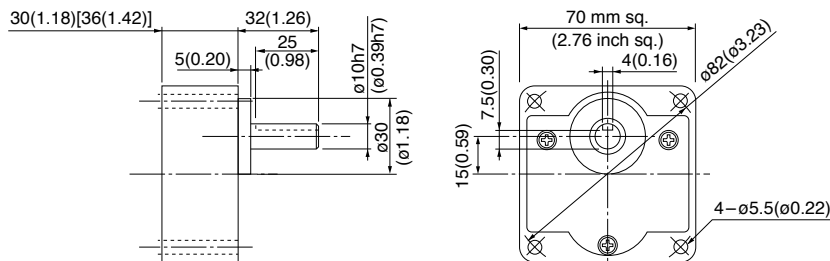
MX7G□BA (ball bearing) Mass 0.38 kg(0.84 lb)

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

< □ is 30 or more >

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).

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

Gear head combination B-340

Decimal gear head B-448

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

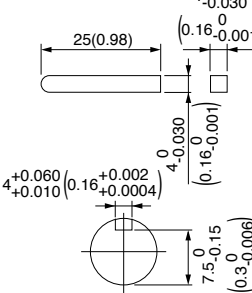
Controls C-4

Option D-2

Key and keyway (dimensions) [attachment]

MX7G□BA(B)
MX7G□MA(M)

Unit: mm (inch)



Variable speed unit motor

80 mm (3.15 inch) sq. 25 W

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
	MUSN825GY	M81X25GD4Y	200 V	DVUS825Y	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

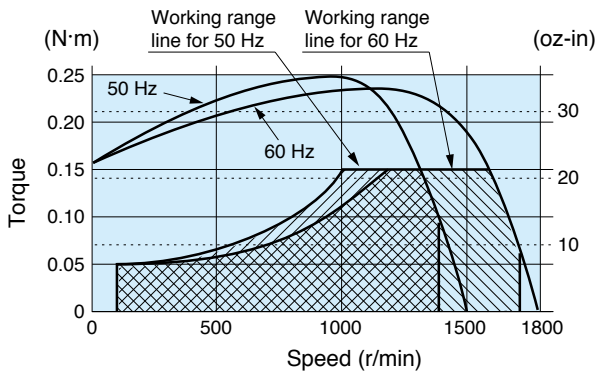
Applicable gear head Bearing		Reduction Ratio		Unit of permissible torque: upper (N·m) / lower (lb·in)																				
		Speed		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150
MX8G□B (ball bearing) MX8G□M (metal bearing)	1200 r/min	50 Hz	0.34 (3.01)	0.40 (3.54)	0.56 (4.96)	0.68 (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		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)	MX8G10XB	1200 r/min	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)
	MX8G□M (metal bearing)	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-24.

Working range line

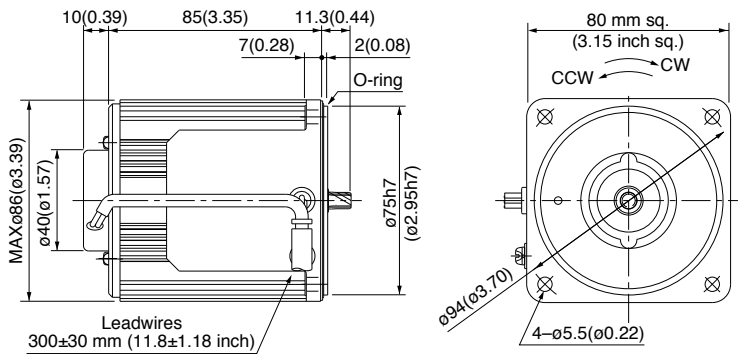
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

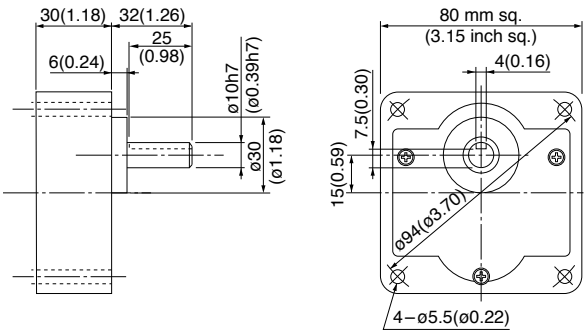


* The motor or speed controller is not sold singly. Place an order using the unit model number.

Gear head (dimensions)

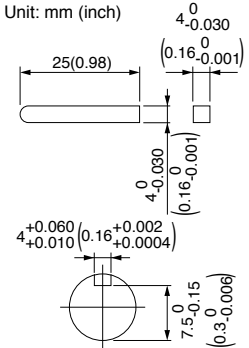
Scale: 1/3, Unit: mm (inch)

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.

Gear head combination B-340	Decimal gear head B-448	Gear head -inch (U.S.A.) B-449	Controls C-4	Option D-2
-----------------------------	-------------------------	--------------------------------	--------------	------------

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
	MUSN940GY	M91X40GD4Y	200 V	DVUS940Y	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			
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 (200 V)
					60		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 (400 V)
					60		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

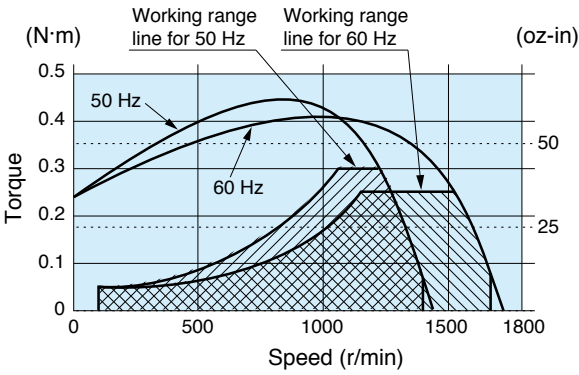
Applicable gear head		Unit of permissible torque: upper (N·m) / lower (lb·in)																						
		Reduction Ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180
Bearing		Speed																						
MX9G□B (ball bearing)	1200 r/min	50 Hz	0.72 (6.37)	0.87 (7.70)	1.21 (10.7)	1.45 (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		Reduction Ratio Speed	200	250	300	360	500	600	750	900	1000	1200	1500	1800	
Bearing	Decimal gear head		200	250	300	360	500	600	750	900	1000	1200	1500	1800	
MX9G□B (ball bearing)	MX9G10XB	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)	
			60 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)	
90 r/min			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)		
MX9G□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-24.

Working range line

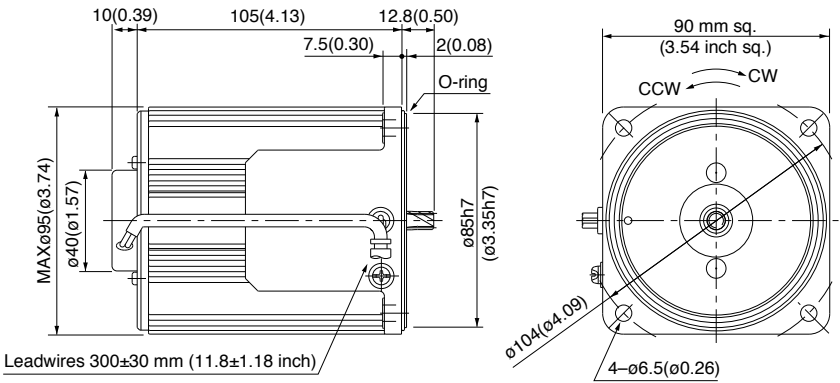
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

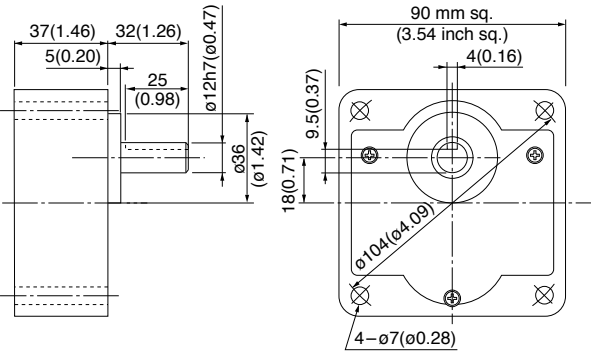


* The motor or speed controller is not sold singly. Place an order using the unit model number.

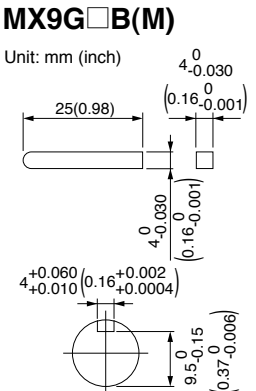
Gear head (dimensions)

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]



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

Gear head combination B-340	Decimal gear head B-448	Gear head -inch (U.S.A.) B-449	Controls C-4	Option D-2
-----------------------------	-------------------------	--------------------------------	--------------	------------

Variable speed unit motor

90 mm (3.54 inch) sq. 60 W

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
	MUSN960GY	M91Z60GD4Y	200 V	DVUS960Y	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			Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (r/min)	at 1200 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)	2.3	0.46 (65.1)	20 (200 V)
					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 (400 V)
					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

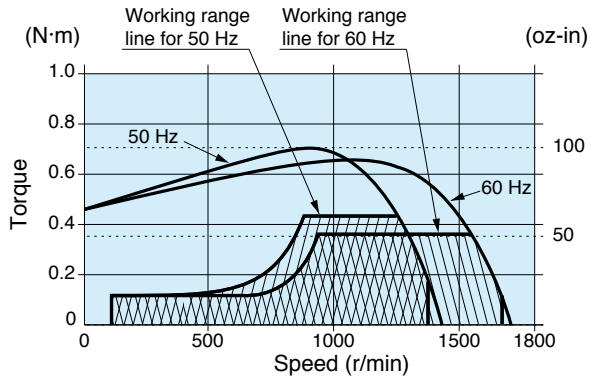
Applicable gear head Bearing		Reduction Ratio Speed	Unit of permissible torque: upper (N·m) / lower (lb·in)																							
			3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200	
MZ9G□B (ball bearing hinge not attached)	1200 r/min	50 Hz	0.98 (8.67)	1.17 (10.4)	1.57 (13.9)	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)	
		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)	
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		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	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)
MY9G□B (ball bearing / hinge attached)	MZ9G10XB	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)
		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-24.

Working range line

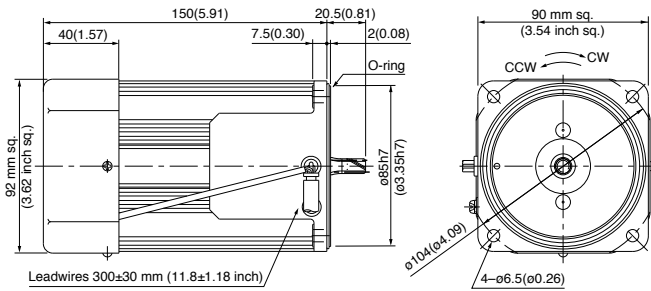
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

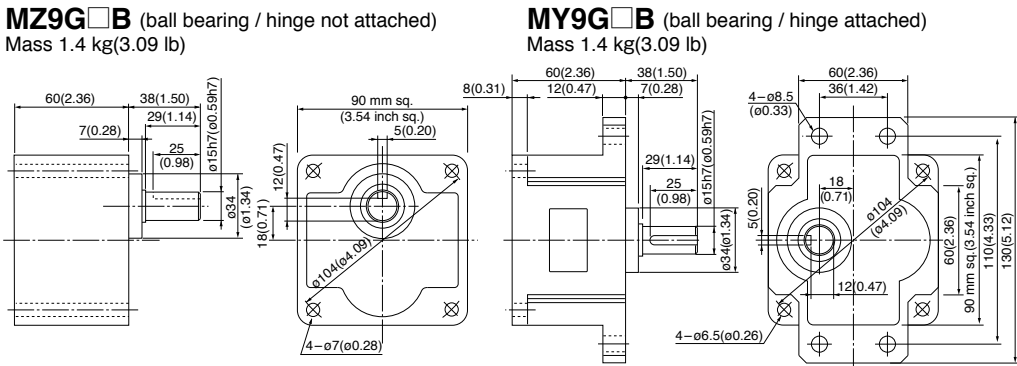
Mass 3.2 kg (7.05 lb)
Helical gear
Module 0.6
Number of teeth 9



* 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)



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

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

Gear head combination B-340 Decimal gear head B-448 Gear head -inch (U.S.A.) B-449 Controls C-4 Option D-2

Variable speed unit motor

90 mm (3.54 inch) sq. 90 W

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
	MUSN990GY	M91Z90GD4Y	200 V	DVUS990Y	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			Starting current (A)	Starting torque N·m (oz·in)	Capacitor (μF) (rated voltage)
							Speed (r/min)	at 1200 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)	2.3	0.53 (75.1)	25 (200 V)
					60		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 (375 V)
					60		90 to 1700	0.54 (76.5)	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

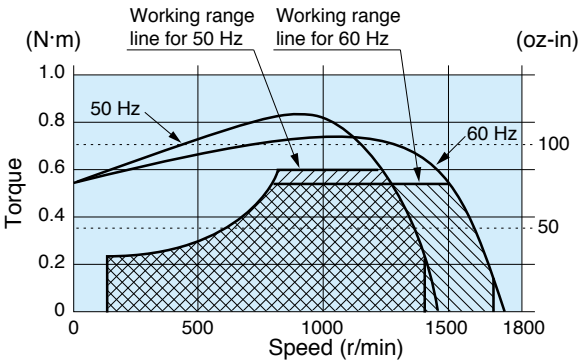
Unit of permissible torque: upper (N·m) / lower (lb·in)																									
Applicable gear head	Reduction Ratio		3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30	36	50	60	75	90	100	120	150	180	200
Bearing	Speed																								
MZ9G□B (ball bearing hinge not attached)	1200 r/min	50 Hz	1.43 (12.7)	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)
		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)
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)
		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)											
			250	300	360	500	600	750	900	1000	1200	1500	1800	2000
Bearing	Decimal gear head	Speed	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)
		1200 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)
Bearing	Decimal gear head	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)
		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-24.

Working range line

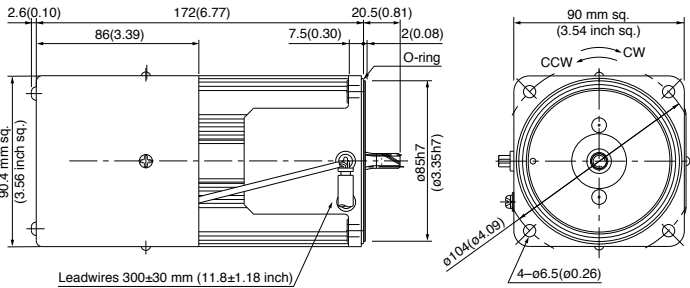
The working range line shows the working limit for the variable speed motor. The permissible torque should fall within the shaded portion. If you use the motor with the permissible torque exceeding the working range line (falling within the portion not shaded), the motor may be burned out due to a high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

Motor (dimensions)

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

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

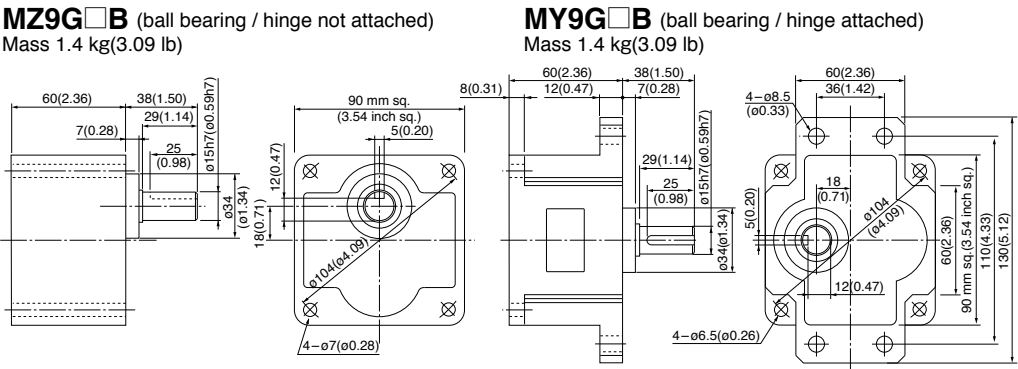
Mass	Helical gear	Module	Number of teeth
3.5 kg 7.72 lb		0.6	9



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

Gear head (dimensions)

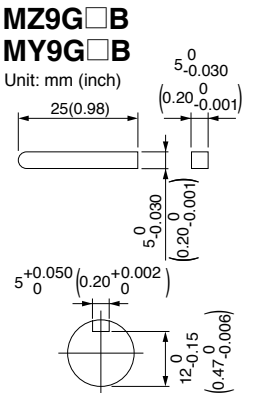
Scale: 1/4, Unit: mm (inch)



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]



Variable speed unit motor

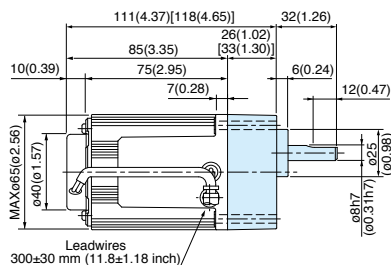
Gear head combination dimensions

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

* Gear head is sold separately.

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

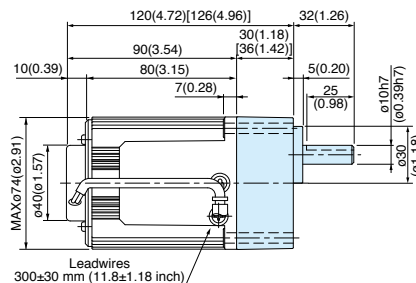
M61X6GD4L + MX6G□BA(MA) / MX6G□B(M)
M61X6GD4Y + MX6G□BA(MA) / MX6G□B(M)



* 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

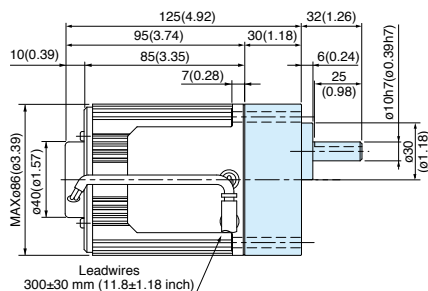
M71X15GD4L + MX7G□BA(MA) / MX7G□B(M)
M71X15GD4Y + MX7G□BA(MA) / MX7G□B(M)



* 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).

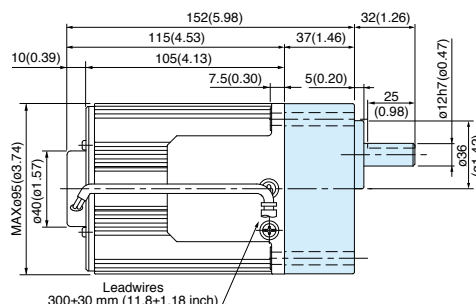
80 mm sq. (3.15 inch sq.) 25 W

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



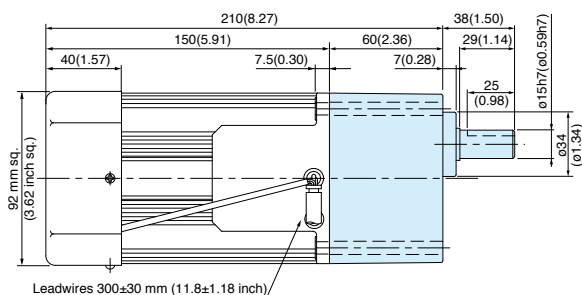
90 mm sq. (3.54 inch sq.) 40 W

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



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

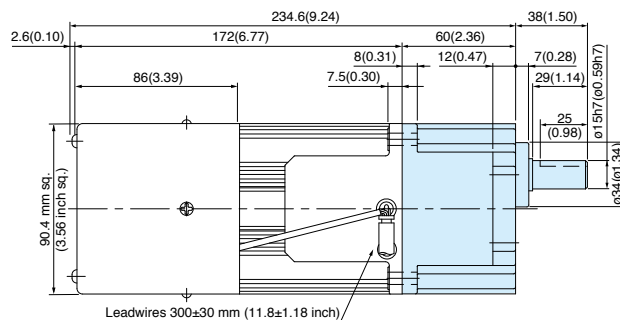
M91Z60GD4L + MZ9G□B (MY9G□B)
M91Z60GD4Y + MZ9G□B (MY9G□B)



* 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.

Features B-324

System configuration B-325

Coding system B-325

Model list B-326