LONG LIFE, HIGH QUALITY DC BRUSH MOTORS

NEW

DMN Series

NIDEC SERVO CORPORATION

LONG LIFE, HIGH QUALITY DC BRUSH MOTORS

An optimized solution is achieved by combining our latest design and production technologies.

Features

- **Long-life** : Intermittent operation over 1 million cycles with optmized brush design. [1]
- **Continuous operating life of 3000 hours.** [1]
- **High output** : High heat dissipation and heat resistance achieves higher output
- **High strength** : High radial load capacity due to robust construction, large diameter output shaft and ball bearings
- Low noise and increased insulation due to new resin brush holders.
- Large selection of gear heads and reduction ratios are available to meet all needs.
- Also available with magnetic revolution sensor and noise filter [2]

*1 Differs depending on environment and application. Contact us for details. *2 Scheduled for release April2006.

Long life

High quality

High output

LOW noise

RoHS-compliant

■ SELECTION CHART

	Specifications				Gearbox								
					A	L	36G	43G	50G	6DG	6DGF	8DG	8DGF
	Output	Voltage	Holding torque	Speed	36x61mm	38x100mm	φ37mm	□43mm	φ50mm	□61mm	□61mm	□80mm	□80mm
	W	V	mN·m	r/min									
DMN29BA	3.0	12	7.8	3700	●	●	●	●	●	●			
DMN29BB		24			●	●	●	●	●	●			
DMN37SA	4.6	12	9.8	4500					●	●			
DMN37SB		24							●	●			
DMN37BA	7.2	12	14.7	4700					●	●	●	●	
DMN37BB		24							●	●	●	●	
DMN37KA	9.2	12	24.5	3600					●	●	●	●	
DMN37KB		24							●	●	●	●	
DMN37JB	14.7	24	39.2	3600							●	●	●

■ MOTOR DESIGNATIONS

● MOTOR ONLY

DMN 37 B A

- **SERIES NAME** — DMN series
- **MOTOR DIAMENTER in** — φ29mm / φ37mm
- **OUTPUT POWER**
  - S : STANDARD TYPE
  - B : HIGH POWER TYPE1
  - K : HIGH POWER TYPE2
  - J : HIGH POWER TYPE3
- **RATED VOLTAGE**
  - A : DC12V
  - B : DC24V

● GEARED MOTORS

DMN 29 B 36G 10 B

- **OUTPUT POWER**
  - S : STANDARD TYPE
  - B : HIGH POWER TYPE1
  - K : HIGH POWER TYPE2
- **GEABOX TYPE**
  - 36G
  - 43G
  - 50G
  - L
- **GEAR RATIO**
- **RATED VOLTAGE**
  - A : DC12V
  - B : DC24V

● A TYPE GEARED MOTORS

DMN 29 B A - 002

- **OUTPUT POWER**
  - B : HIGH POWER TYPE1
- **GEABOX TYPE**
  - A
- **RATED VOLTAGE**
  - 002 : DC24V
  - 003 : DC12V

● MOTOR WITH SENSOR

DMN 37B 6HFP A

- **OUTPUT POWER**
  - S : STANDARD TYPE
  - B : HIGH POWER TYPE1
  - K : HIGH POWER TYPE2
  - J : HIGH POWER TYPE3
- **TYPE OF PINION SHAFT**
  - 6HP : 6DG (MATCHING GEARBOX)
  - 6HFP : 6DGF (MATCHING GEARBOX)
  - 8HP : 8DG (MATCHING GEARBOX)
  - 8HFP : 8DGF (MATCHING GEARBOX)
- **RATED VOLTAGE**
  - A : DC12V
  - B : DC24V

● GEARBOX SUPPLIED SEPARATELY

6DG 15 F

- **GEABOX TYPE**
  - 6DG : 6DGF
  - 8DG : 8DGF
- **GEAR RATIO**

※Motors combined with gear heads are manufactured to oder.
The model code to be like: DMN37B6DGF15B

■Life time

DME Series	DME25	DME33	DME34	DME37	DME44
	1000Hours			2000Hours	
DMN Series	DMN29			DMN37	
	3000Hours			3000Hours	

■Continuous Operation :
※The motor life-time is dependent upon actual application conditions. Please consult us for more information.

■Brush Wear Rate

Spring force(g)

DME44
DMN37

DMN37
44%Reduction

DME44
73%Reduction

Amount of brush wear-out（mm）

Less change in spring force

■Brush Length

DMN29   DMN37

DME33   30   40   DME44

DME33→DMN29
2.5mm→4.5mm 80%Increase

DME44→DMN37
5.0mm→7.0mm 40%Increase

※Brush Size (shown before use)
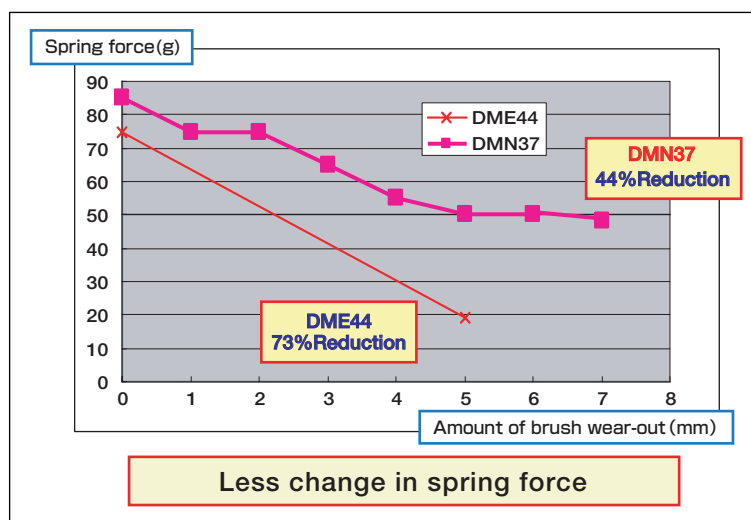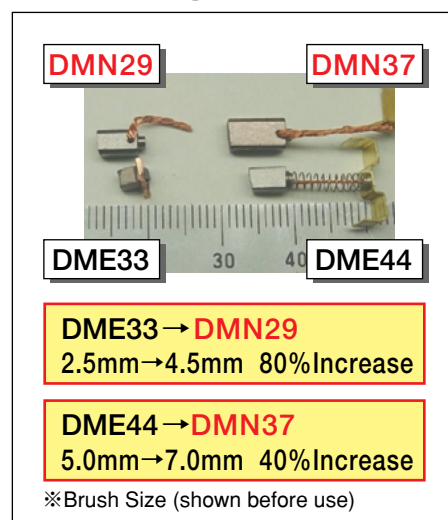
Comparison of Noise

■ DME25/33/34 ⇨ DMN29 ■

Noise（dBA）

| DME25BB | DME33BB | DME34BB | DMN29BB |
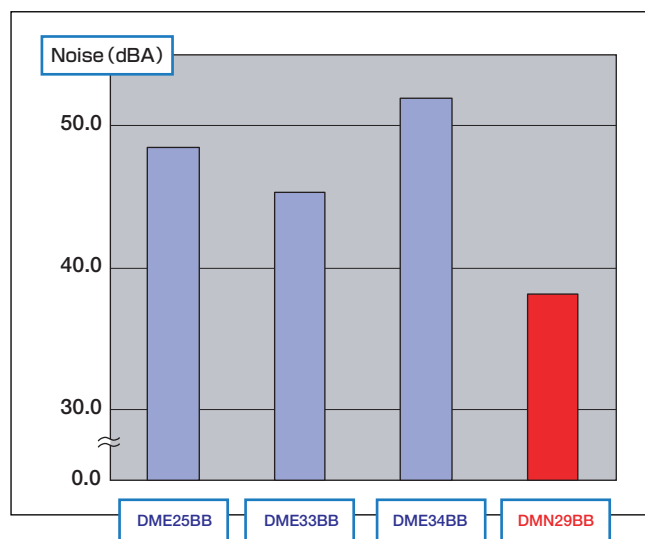
By adoption of Resin Brush Holder, Noise reduced by 8dB compared to DME25, 33, 34

■ DME37 ⇨ DMN37 ■

Noise（dBA）

| DME37JB CW/CCW | DMN37JB CW/CCW |
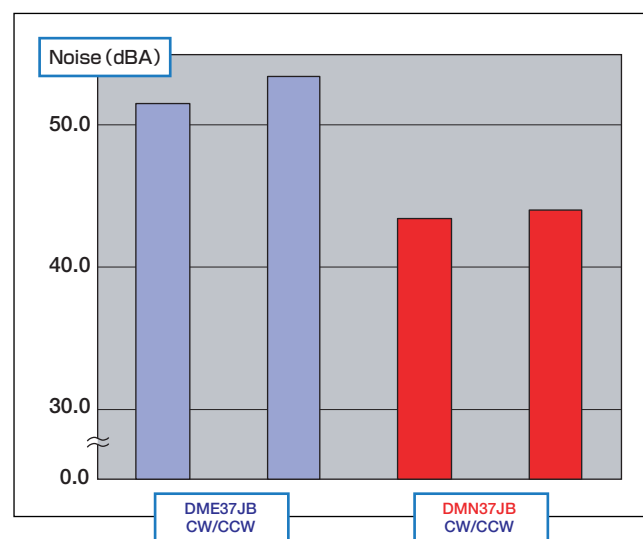
By adoption of Resin Brush Holder, Noise reduced by 8dB compared to DME37

DMN29 Series

■Specification

TYPE	RATED						NO LOAD		STALL		WEIGHT	
	OUT PUT	VOLTAGE	TORQUE		CURRENT	SPEED	CURRENT	SPEED	TORQUE			
	W	V	mN·m	oz·in	A	r/min	A	r/min	mN·m	oz·in	g	lb
DMN29BA	3.0	12	7.8	1.11	0.42	3700	0.07	5000	30	4.17	90	0.20
DMN29BB	3.0	24	7.8	1.11	0.21	3700	0.05	5000	30	4.17	90	0.20

■Outline

DMN29

■DIMENSIONS Unit mm(inch)

2-M2.6DEPTH 3MAX (0.118 MAX)
P.C.D=φ16 ±0.2 (P.C.D=0.63dia. ±0.008)
NAME PLATE
φ2.5 HOLE (0.098dia.)
10 (0.394)

φ29 (1.142dia.) φ27.8 (1.094dia.)
φ10 0/-0.1 (0.394dia. 0/-0.004)
φ2.5 0/-0.01 (0.098dia. 0/-0.0004)
12 (0.472)
2.7 (0.106)
38.8 (1.528)
3.2 (0.126)
φ10 (0.394dia.)

(+)TERMINAL (RED)
(-)TERMINAL (BLACK)
24.6 (0.969)

0.8 (0.032)
6.2 (0.244)
1.5 (0.059)
2-2.8×0.5t (2-0.110×0.02t)
2-φ1.2 ±0.2 (2-0.047dia.±0.008)
(+)(-) TERMINAL DETAILED DRAWING
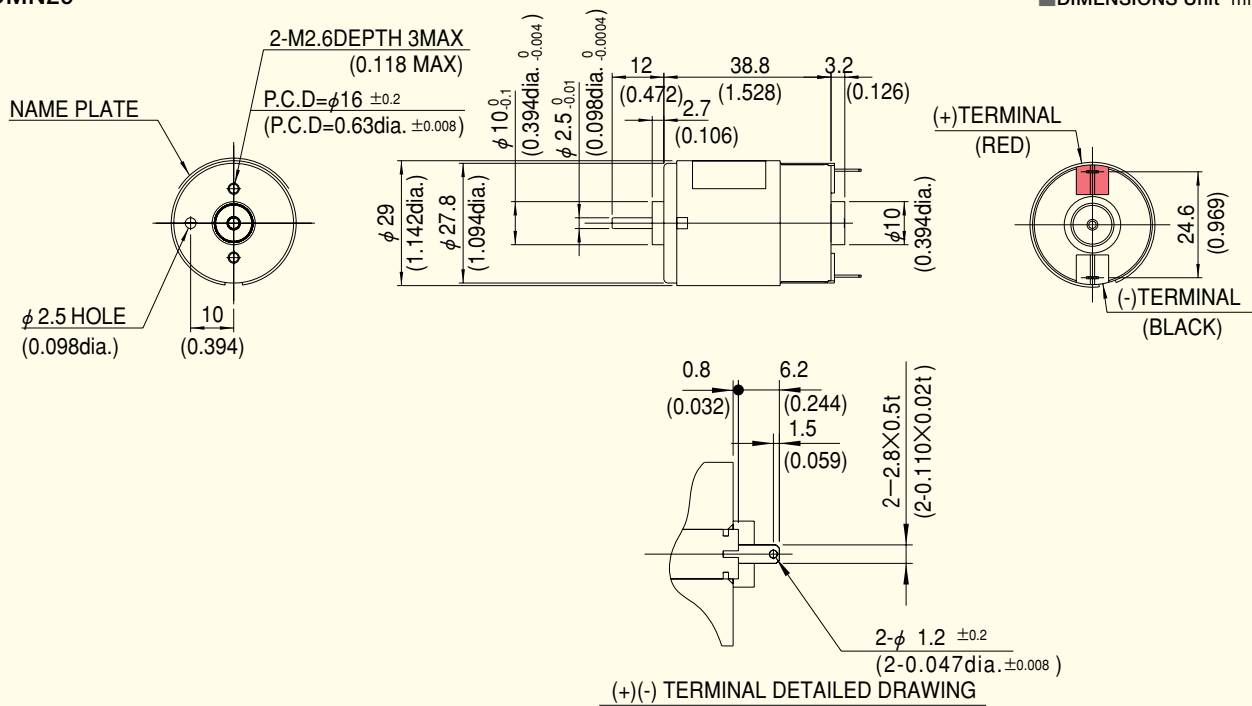
■CURRENT, SPEED-TORQUE CURVE

■CONNECTION

RED HOLDER (+)
BLACK HOLDER (−)
CW

A
Intermittent Operation
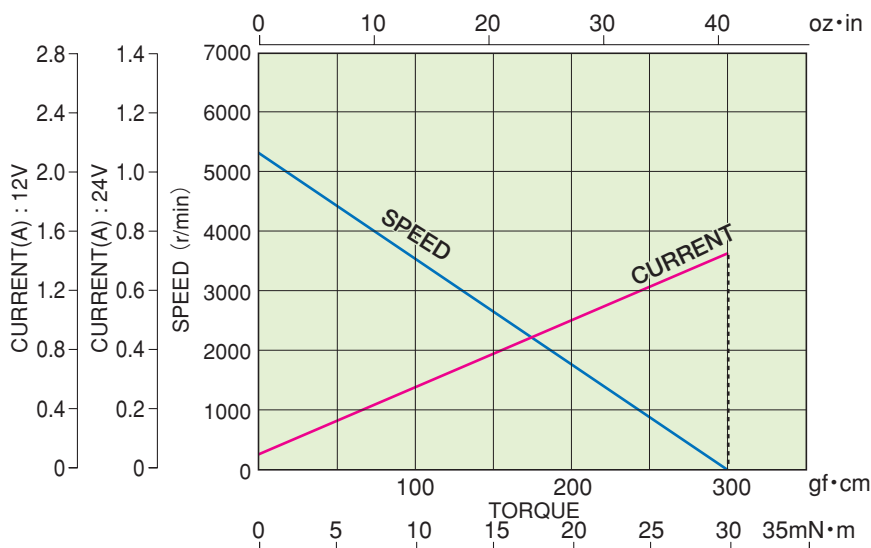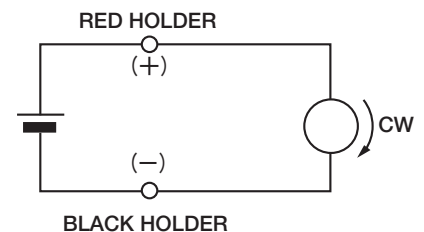
■Specification

GEAR RATIO	DMN29BA-002 DMN29BA-003		
	RATED TORQUE		SPEED
	N·m	oz·in	r/min
※ 78.9	0.190	27.8	56

※Rotation of gearbox shaft is in reverse of rotation of motor.

■Outline

DMN29BA-002, 003 WEIGHT：140g 0.31 lb ■DIMENSIONS Unit mm(inch)
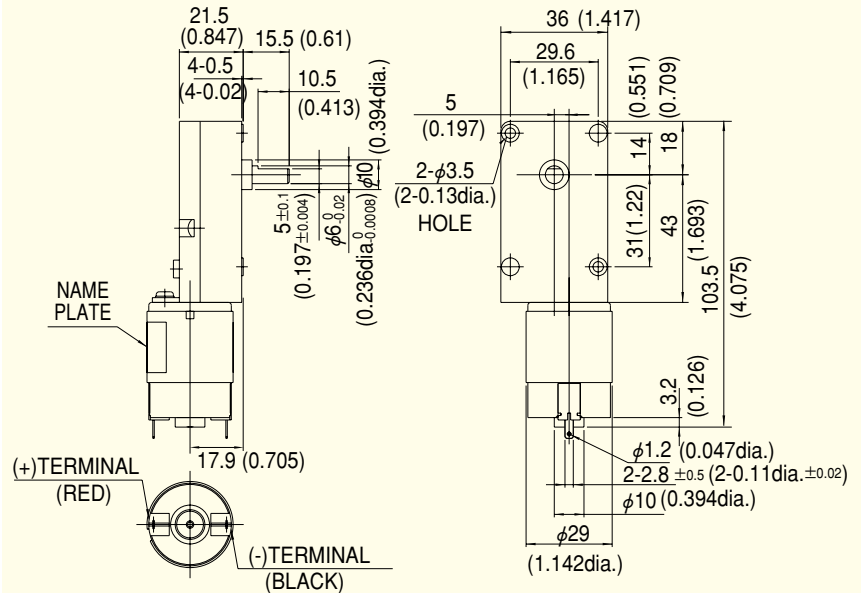
L
Intermittent Operation
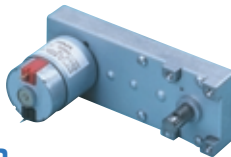
■Specification

GEAR RATIO	DMN29BL□◇		
	RATED TORQUE		SPEED
	N·m	oz·in	r/min
30	0.14	19.5	123
50	0.23	32.0	74.0
120	0.56	77.9	30.8
150	0.69	90.8	24.7
200	0.92	131	18.5
255	0.98	139	15.3

※Enter the required reduction ratio in the □.
※Enter the required voltage A or B in the ◇.

■Outline

DMN29BL□◇ WEIGHT：250g 0.55 lb ■DIMENSIONS Unit mm(inch)
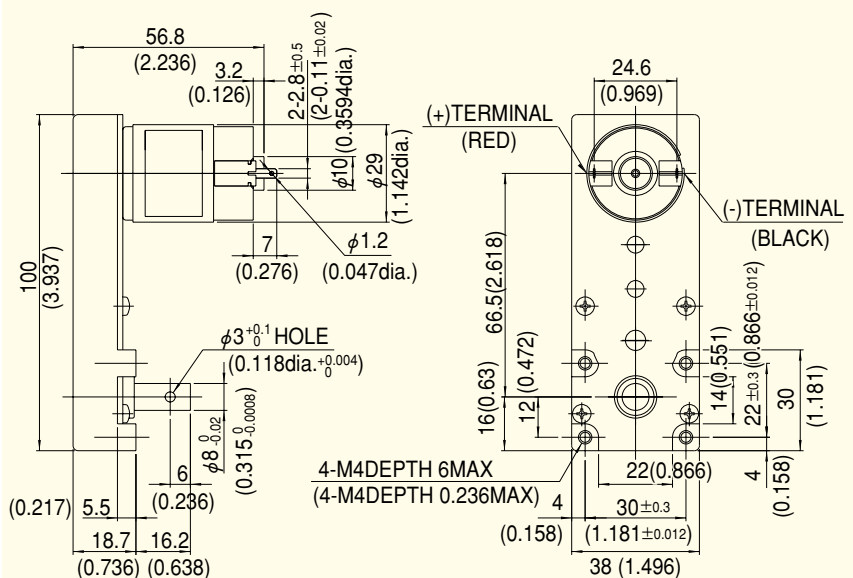
36G
Intermittent Operation

■Specification

GEAR RATIO	DMN29B36G□◇		
	RATED TORQUE		SPEED
	N·m	oz·in	r/min
10	0.064	9.04	370
※ 18	0.098	13.9	206
※ 20	0.11	15.3	185
※ 30	0.17	23.6	123
50	0.25	36.2	74.0
60	0.30	43.1	61.7
75	0.38	54.3	49.3
100	0.39	55.6	40.1
※ 120	0.39	55.6	34.0
※ 150	0.39	55.6	28.4
※ 180	0.39	55.6	24.4
※ 200	0.39	55.6	22.2
※ 250	0.39	55.6	18.2
※ 300	0.39	55.6	15.4
400	0.39	55.6	11.7
500	0.39	55.6	9.5
600	0.39	55.6	8.0

※Enter the required reduction ratio in the □.
※ ▭ Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

DMN29B36G□◇
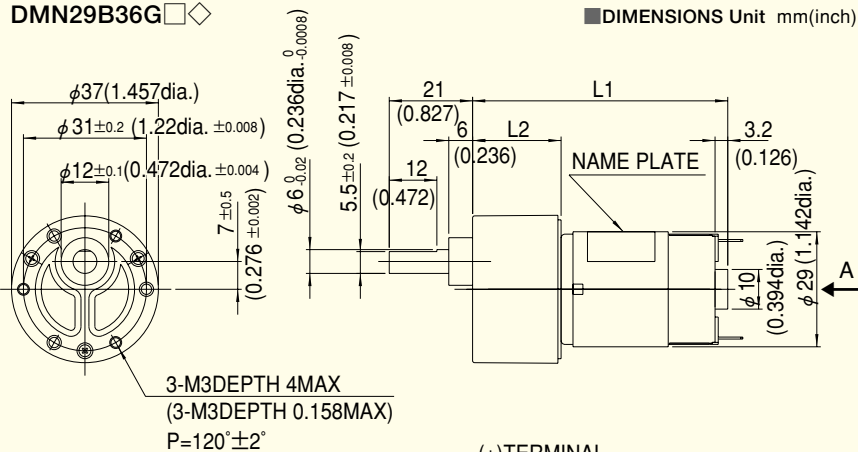

■DIMENSIONS Unit mm(inch)

GEAR RATIO	L1		L2		WEIGHT	
	mm	inch	mm	inch	g	lb
10	61.8	2.433	19.8	0.780		
18～30	64.3	2.531	22.3	0.878	190	0.42
50～100	66.8	2.630	24.8	0.976		
120～300	69.3	2.728	27.3	1.075	210	0.46
400～600	71.8	2.827	29.8	1.173		

(+)TERMINAL (RED)
(-)TERMINAL (BLACK)
View A

43G
Intermittent Operation

■Specification

GEAR RATIO	DMN29B43G□◇		
	RATED TORQUE		SPEED
	N·m	oz·in	r/min
10	0.064	9.04	370
※ 18	0.098	13.9	206
※ 20	0.11	15.3	185
※ 30	0.17	23.6	123
50	0.25	36.2	74.0
60	0.30	43.1	61.7
75	0.38	54.3	49.3
100	0.39	55.6	40.1
※ 120	0.39	55.6	34.0
※ 150	0.39	55.6	28.4
※ 180	0.39	55.6	24.4
※ 200	0.39	55.6	22.2
※ 250	0.39	55.6	18.2
※ 300	0.39	55.6	15.4
400	0.39	55.6	11.7
500	0.39	55.6	9.5
600	0.39	55.6	8.0

※Enter the required reduction ratio in the □.
※ ▭ Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

DMN29B43G□◇

■DIMENSIONS Unit mm(inch)

GEAR RATIO	L1		L2		WEIGHT	
	mm	inch	mm	inch	g	lb
10	60.3	2.374	18.3	0.721		
18～30	62.8	2.472	20.8	0.819	190	0.42
50～100	65.3	2.571	23.3	0.917		
120～300	67.8	2.669	25.8	1.016	210	0.46
400～600	70.3	2.768	28.3	1.114		

(+)TERMINAL (RED)
(-)TERMINAL (BLACK)
View A

50G Continuous Operation

■Specification

GEAR RATIO	DMN29B50G□◇		
	RATED TORQUE		SPEED
	N·m	oz·in	r/min
9	0.057	8.07	411
18	0.11	15.3	206
※27	0.15	26.9	137
※36	0.21	29.2	103
※54	0.31	43.1	68.5
※72	0.41	58.4	51.4
96	0.49	72.3	38.5
144	0.74	104	25.7
192	0.98	139	19.3
256	0.98	139	15.8

※Enter the required reduction ratio in the □.
※☐ Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

DMN29B50G□◇ WEIGHT：230g 0.51lb

φ50(1.969dia.)
17±0.2 17±0.2
(0.669±0.008)(0.669±0.008)
8±0.2 (0.315±0.008)
10±0.2 (0.394±0.008)
20±0.2 (0.787±0.008)

3-M4DEPTH 5MAX
(3-M4DEPTH 0.197MAX)

φ12±0.1(0.472dia.±0.004)
φ6₋0.02(0.236dia.₋0.008)
5.5±0.2(0.217dia.±0.008)

25(0.984) 72.6(2.158)
12 (0.472) 4 (0.158) 30.6 (1.205) NAME PLATE 3.2 (0.126)

φ29 (1.142dia.)
φ10(0.394dia.)
A

(+)TERMINAL (RED)
(−)TERMINAL (BLACK)
24.6 (0.969)
View A

6DG Continuous Operation

■Specification

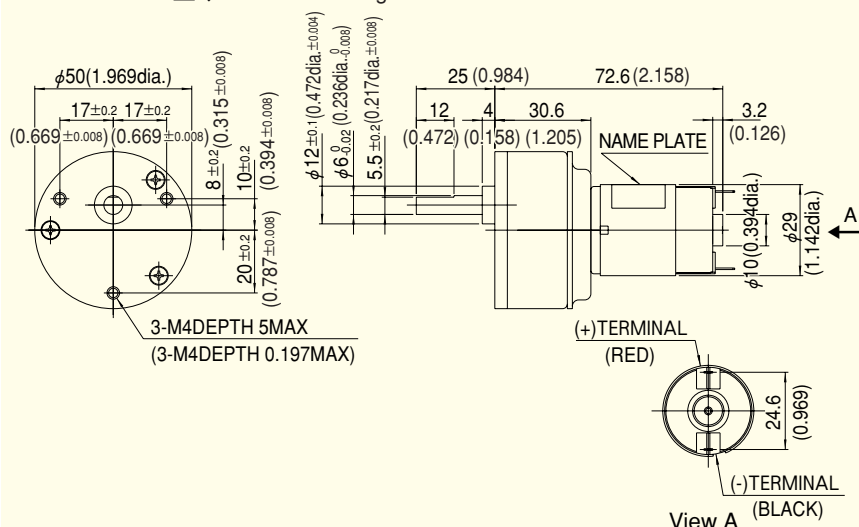| 6DG□	DMN29B6HP◇		
GEAR RATIO	RATED TORQUE		SPEED
	N·m	oz·in	r/min
3	0.019	26.4	1233
3.6	0.023	32.0	1028
5	0.032	44.5	740
6	0.038	54.3	617
7.5	0.048	68.5	493
9	0.057	8.07	411
12.5	0.079	11.3	296
15	0.10	13.5	247
18	0.11	15.3	206
※25	0.14	19.5	148
※30	0.17	2.6	123
※36	0.21	29.2	103
※50	0.29	40.3	74.0
※60	0.34	48.7	61.7
※75	0.43	59.8	49.3
※90	0.51	72.3	41.1
※100	0.57	80.7	37.0
※120	0.69	97.4	30.8
150	0.77	109	24.7
180	0.93	131	20.6
225	0.98	136	17.3
250	0.98	139	16.0
300	0.98	139	13.9
360	0.98	139	12.0
450	0.98	139	9.9
※500	0.98	139	8.9
※600	0.98	139	7.6
※750	0.98	139	6.2
※900	0.98	139	5.2
※1500	0.98	139	3.2
※1800	0.98	139	2.7

※Enter the required reduction ratio in the □.
※☐ Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

DMN29B6HP◇+6DG□ WEIGHT：350g 0.77lb
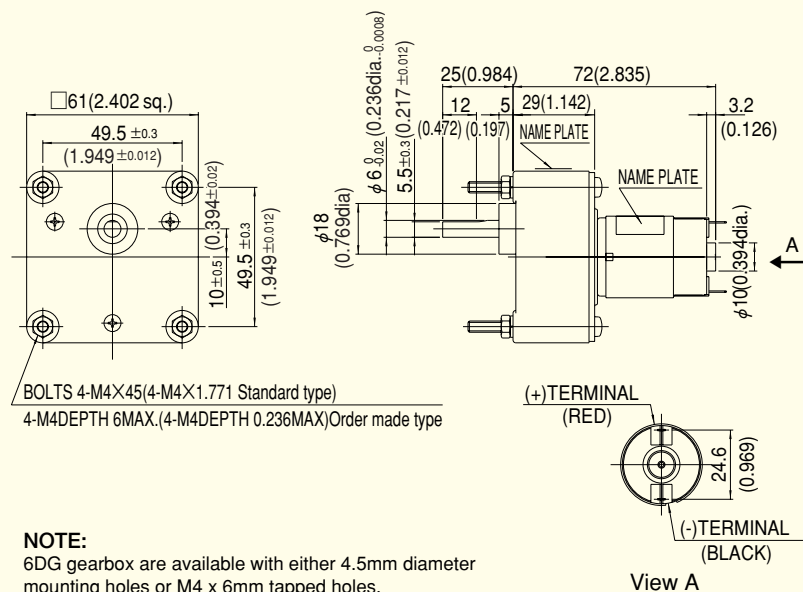
□61(2.402 sq.)
49.5±0.3 (1.949±0.012)
10±0.5 (0.394±0.02)
49.5±0.3 (1.949±0.012)
φ18 (0.769dia.)

BOLTS 4-M4×45(4-M4×1.771 Standard type)
4-M4DEPTH 6MAX.(4-M4DEPTH 0.236MAX)Order made type

φ6₋0.02(0.236dia.₋0.0008)
5.5±0.3(0.217dia.±0.012)

25(0.984) 72(2.835)
12 (0.472) 5 (0.197) 29(1.142) NAME PLATE 3.2 (0.126)
NAME PLATE
φ10(0.394dia.)
A

(+)TERMINAL (RED)
(−)TERMINAL (BLACK)
24.6 (0.969)
View A

NOTE:
6DG gearbox are available with either 4.5mm diameter mounting holes or M4 x 6mm tapped holes.
● Gearboxes with 4.5mm diameter mounting holes are available from stock.
 When ordering, please write the motor model and gearbox model numbers separately, as in the following example :
  DMN29B6HP◇ (Pinion shaft motor)
  6DG□ (Gearbox)
● Gearboxes with M4 x 6mm tapped mounting holes are available on request.
 When ordering, please write the combine motor and gearbox model, as in the following example : **DMN29B6H□◇**
● Enter the required reduction ratio in the □.
● Enter the required voltage A or B in the ◇.

DMN37 Motor

DMN37 Series

■Specification

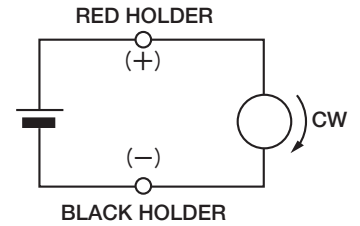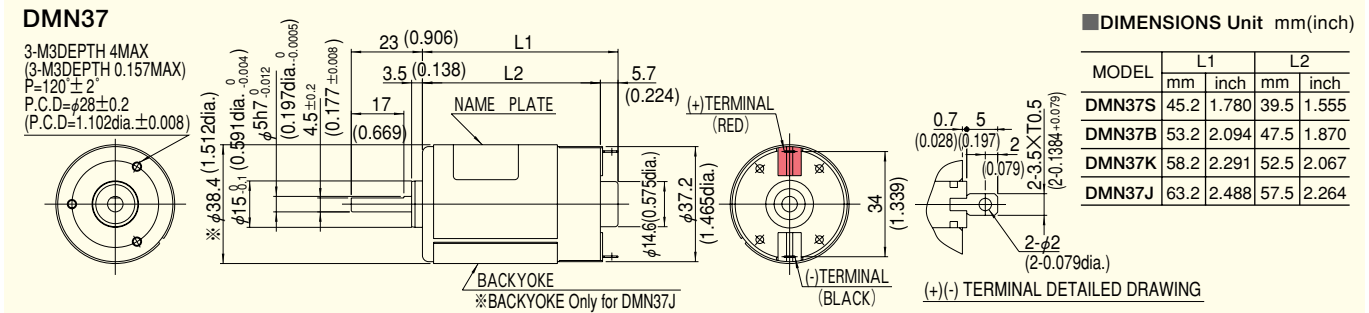| TYPE	RATED						NO LOAD		STALL		WEIGHT	
	OUT PUT	VOLTAGE	TORQUE		CURRENT	SPEED	CURRENT	SPEED	TORQUE			
	W	V	mN·m	oz·in	A	r/min	A	r/min	mN·m	oz·in	g	lb
DMN37SA	4.6	12	9.8	1.39	0.78	4500	0.26	5500	54	7.64	130	0.29
DMN37SB	4.6	24	9.8	1.39	0.37	4500	0.12	5500	54	7.64	130	0.29
DMN37BA	7.2	12	14.7	2.09	1.01	4700	0.25	5500	98	13.89	180	0.40
DMN37BB	7.2	24	14.7	2.09	0.53	4700	0.13	5500	98	13.89	180	0.40
DMN37KA	9.2	12	24.5	3.48	1.20	3600	0.27	4300	160	23.61	210	0.46
DMN37KB	9.2	24	24.5	3.48	0.60	3600	0.14	4300	160	23.61	210	0.46
DMN37JB	14.7	24	39.2	5.56	0.94	3600	0.16	4300	240	24.72	240	0.53

※Intermittent ratings are given for DMN37JB.（DUTY50%）

■Connection

RED HOLDER
(+)

(−)

BLACK HOLDER

CW

■Outline

DMN37

3-M3DEPTH 4MAX
(3-M3DEPTH 0.157MAX)
P=120°±2°
P.C.D=φ28±0.2
(P.C.D=1.102dia.±0.008)

NAME PLATE

BACKYOKE
※BACKYOKE Only for DMN37J

(+)TERMINAL
(RED)

(-)TERMINAL
(BLACK)

(+)(-) TERMINAL DETAILED DRAWING

■DIMENSIONS Unit mm(inch)

MODEL	L1		L2	
	mm	inch	mm	inch
DMN37S	45.2	1.780	39.5	1.555
DMN37B	53.2	2.094	47.5	1.870
DMN37K	58.2	2.291	52.5	2.067
DMN37J	63.2	2.488	57.5	2.264

■CURRENT, SPEED-TORQUE CURVE

DMN37SA, DMN37SB

DMN37BA, DMN37BB

DMN37KA, DMN37KB

DMN37JB

50G
Continuous Operation
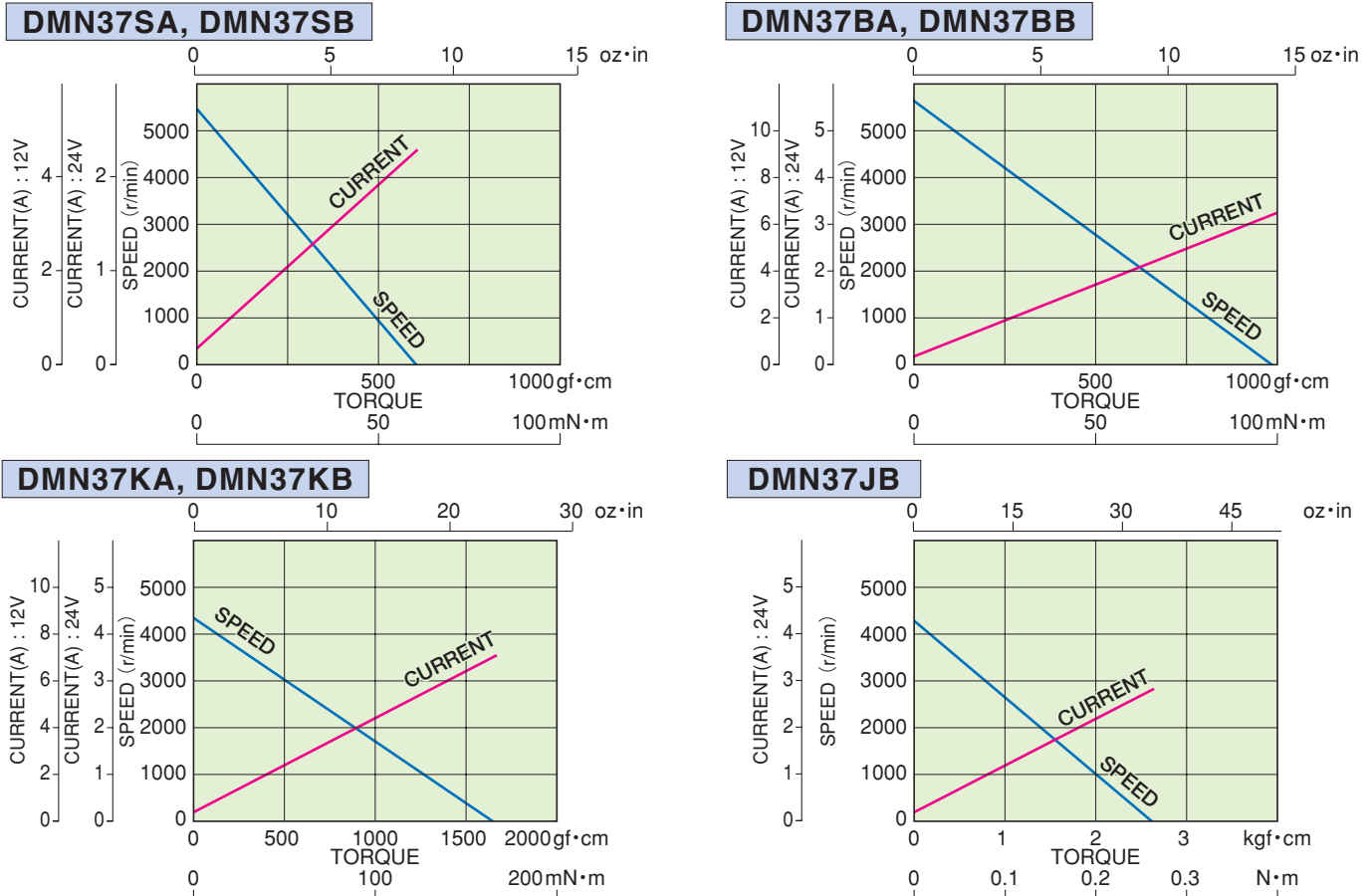
■Specification

GEAR RATIO	DMN37S50G□◇			DMN37B50G□◇			DMN37K50G□◇		
	RATED TORQUE		SPEED	RATED TORQUE		SPEED	RATED TORQUE		SPEED
	N·m	oz·in	r/min	N·m	oz·in	r/min	N·m	oz·in	r/min
9	0.071	10.2	500	0.10	15.3	522	0.17	25.0	400
18	0.13	19.5	250	0.21	30.6	261	0.35	50.1	200
※ 27	0.18	28.4	166	0.28	40.3	174	0.48	68.2	133
※ 36	0.25	36.2	125	0.38	54.3	130	0.63	90.4	100
※ 54	0.38	54.3	83.3	0.58	82.1	87.0	0.96	136	66.6
※ 72	0.51	72.3	62.5	0.76	110	65.2	0.98	136	52.3

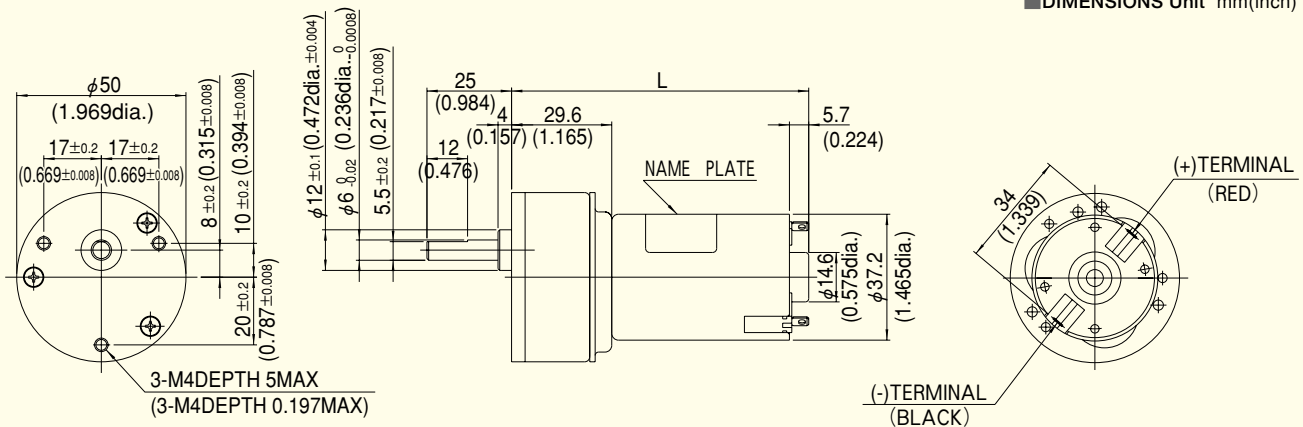※Enter the required reduction ratio in the □.
※ ▭ Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

■DIMENSIONS Unit mm(inch)

MODEL	L		WEIGH	
	mm	inch	g	lb
DMN37S50G□◇	74.8	2.945	270	0.60
DMN37B50G□◇	82.8	3.260	320	0.71
DMN37K50G□◇	87.8	3.457	350	0.77

6DG
Continuous Operation

■Specification

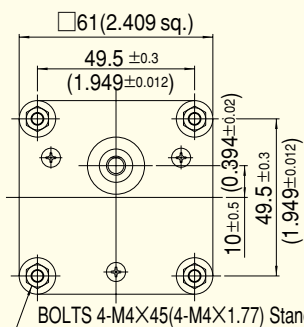| 6DG□	DMN37S6HP◇			DMN37B6HP◇			DMN37K6HP◇		
GEAR RATIO	RATED TORQUE		SPEED	RATED TORQUE		SPEED	RATED TORQUE		SPEED
	N·m	oz·in	r/min	N·m	oz·in	r/min	N·m	oz·in	r/min
3	0.024	3.34	1500	0.035	5.0	1567	0.060	8.49	1200
3.6	0.028	4.03	1250	0.042	6.0	1306	0.072	10.2	1000
5	0.039	5.56	900	0.059	8.3	940	0.098	13.9	720
6	0.047	6.68	750	0.072	10.2	783	0.12	16.7	600
7.5	0.060	10.2	600	0.089	12.7	627	0.15	20.9	480
9	0.072	13.9	500	0.11	15.3	522	0.18	25.0	400
12.5	0.098	16.7	360	0.15	20.9	376	0.25	34.8	288
15	0.12	19.5	300	0.18	25.0	313	0.29	41.7	240
18	0.14	25.0	250	0.22	30.6	261	0.35	00.0	200
※ 25	0.18	30.6	180	0.26	37.6	188	0.44	62.6	144
※ 30	0.22	36.2	150	0.32	45.9	157	0.53	75.1	120
※ 36	0.25	50.1	125	0.38	54.3	131	0.64	90.4	100
※ 50	0.35	59.8	90.0	0.53	75.1	94	0.89	127	72
※ 60	0.42	75.1	75.0	0.64	90.4	78	0.98	139	61
※ 75	0.53	90.4	60.0	0.80	114	63	0.98	139	51
※ 90	0.64	102	50.0	0.96	136	52	0.98	139	43
※ 100	0.72	121	45.0	0.98	139	48	0.98	139	39
※ 120	0.85	136	37.5	0.98	139	41	0.98	139	33
150	0.96	139	30.0	0.98	139	33	0.98	139	27
180	0.98	139	25.9	0.98	139	28	0.98	139	23
225	0.98	139	21.4	0.98	139	23	0.98	139	18
250	0.98	139	19.6	0.98	139	21	0.98	139	17
300	0.98	139	16.6	0.98	139	17	0.98	139	14
360	0.98	139	14.1	0.98	139	15	0.98	139	12
450	0.98	139	11.5	0.98	139	12	0.98	139	9.3
※ 500	0.98	139	10.3	0.98	139	11	0.98	139	8.4
※ 600	0.98	139	8.7	0.98	139	8.9	0.98	139	7.0
※ 750	0.98	139	7.0	0.98	139	7.2	0.98	139	5.6
※ 900	0.98	139	5.9	0.98	139	6.0	0.98	139	4.7
※ 1500	0.98	139	3.6	0.98	139	3.6	0.98	139	2.8
※ 1800	0.98	139	3.0	0.98	139	3.0	0.98	139	2.4

※Enter the required reduction ratio in the □.
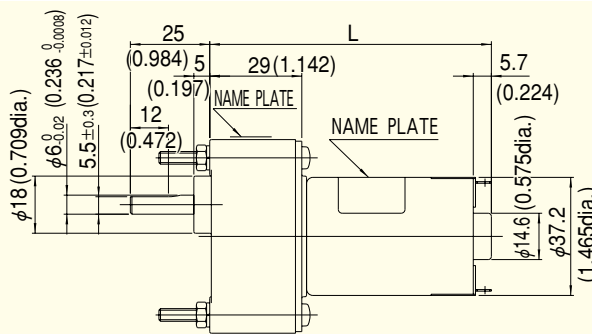※ [____] Rotation of gearbox shaft is in reverse of rotation of motor.
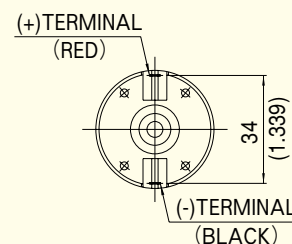※Enter the required voltage A or B in the ◇.

■Outline

DMN37□6HP◇+6DG□

□61(2.409 sq.)

49.5 ±0.3
(1.949±0.012)

10±0.5 (0.394±0.02)
49.5 ±0.3
(1.949±0.012)

BOLTS 4-M4×45(4-M4×1.77) Standard type
4-M4 DEPTH 6MAX.(4-M4 DEPTH 0.23MAX.) Order made type

25
(0.984)
5
(0.197)
12
(0.472)

29(1.142)

φ6.0.02 (0.236 -0.0008)
5.5±0.3(0.217±0.012)
φ18(0.709dia.)

NAME PLATE

L
NAME PLATE

5.7
(0.224)

φ14.6(0.575dia.)
φ37.2
(1.465dia.)

■DIMENSIONS Unit mm(inch)

(+)TERMINAL
（RED）

(-)TERMINAL
（BLACK）

34
(1.339)

NOTE:
6DG gearbox are available with either 4.5mm diameter mounting holes or M4 x 6mm tapped holes.
● Gearboxes with 4.5mm diameter mounting holes are available from stock.
  When ordering, please write the motor model and gearbox model numbers
  separately, as in the following example: **DMN37B6HP◇** (Pinion shaft motor) **6DG□** (Gearbox)
● Gearboxes with M4 x 6mm tapped mounting holes are available on request.
  When ordering, please write the combine motor and gearbox model, as in the following
  example : **DMN37B6H□◇**
● Enter the required reduction ratio in the □.
● Enter the required voltage A or B in the ◇.

MODEL	L		WEIGHT	
	mm	inch	g	lb
DMN37S6HP◇+6DG□	75.7	2.980	390	0.86
DMN37B6HP◇+6DG□	83.7	3.295	440	0.97
DMN37K6HP◇+6DG□	88.7	3.492	470	1.0

6DGF
Continuous Operation

■Specification

6DG□F	DMN37B6HFP◇			DMN37K6HFP◇			DMN37J6HFPB		
GEAR RATIO	RATED TORQUE		SPEED	RATED TORQUE		SPEED	RATED TORQUE		SPEED
	N·m	oz·in	r/min	N·m	oz·in	r/min	N·m	oz·in	r/min
3	0.035	5.01	1560	0.059	13.5	1200	0.095	13.5	1200
3.6	0.042	5.98	1300	0.072	15.3	1000	0.11	15.3	1000
5	0.059	0.00	940	0.098	22.3	720	0.16	22.3	720
6	0.072	10.2	783	0.12	26.4	600	0.19	26.4	600
7.5	0.089	12.7	626	0.15	33.4	480	0.24	33.4	480
9	0.11	15.3	522	0.18	40.3	400	0.28	40.3	400
※ 12.5	0.13	18.1	376	0.22	50.1	288	0.35	50.1	288
※ 15	0.16	22.3	313	0.26	59.8	240	0.42	59.8	240
※ 18	0.19	26.4	261	0.32	72.3	200	0.51	72.3	200
※ 25	0.26	37.6	188	0.44	102	144	0.72	102	144
※ 30	0.32	45.9	156	0.53	121	120	0.85	121	120
※ 36	0.38	54.3	130	0.64	139	100	0.98	139	100
50	0.48	68.2	94.0	0.80	181	72.0	1.3	181	72.0
60	0.58	82.1	78.3	0.96	209	60.0	1.5	209	60.0
75	0.73	103	62.6	1.2	264	48.0	1.9	264	48.0
90	0.86	122	52.2	1.4	320	40.0	2.3	320	40.0
100	0.96	136	47.0	1.6	348	36.0	2.5	348	36.3
120	1.2	163	39.1	1.9	348	30.0	2.5	348	31.2
150	1.4	199	31.3	2.4	348	24.0	2.5	348	25.7
180	1.7	235	26.1	2.5	348	20.6	2.5	348	21.8

※Enter the required reduction ratio in the □.
※[   ] Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

■DIMENSIONS Unit mm(inch)

□61(2.402 sq.)
49.5 ±0.3 (1.949±0.012)
10 ±0.5 (0.394±0.02)
49.5 ±0.3 (1.949±0.012)

φ8 ⁰₋₀.₀₂ (0.315 ⁰₋₀.₀₀₀₀₈)
7 ±0.3 (0.276±0.012)
φ18 (0.709dia.)

32 (1.26)
13 (0.512)
5 (0.197)
44 (1.732)
NAME PLATE
L
NAME PLATE

5.7 (0.224)
φ14.6 (0.575dia.)
φ37.2(1.465dia.)
※φ38.4 (1.512)
34 (1.339)

(+)TERMINAL (RED)
(-)TERMINAL (BLACK)

BACKYOKE
※BACKYOKE Only for DMN37J

BOLTS 4-M4×60(4-M4×2.36) Standard type
4-M4 DEPTH 6MAX.(4-M4 DEPTH 0.236MAX.) Order made type
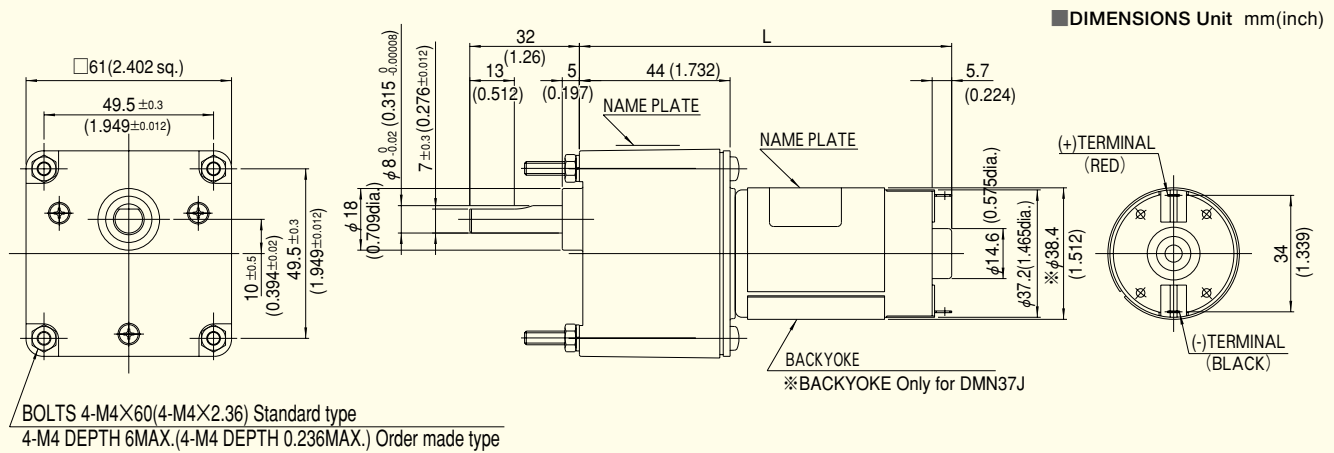
NOTE:
6DGF gearbox are available with either 4.5mm diameter mounting holes or M4 x 6mm tapped holes.
● Gearboxes with 4.5mm diameter mounting holes are available from stock.
When ordering, please write the motor model and gearbox model numbers
separately, as in the following example: **DMN37B6HFP◇** (Pinion shaft motor) 6DG□F (Gearbox)
● Gearboxes with M4 x 6mm tapped mounting holes are available on request.
When ordering, please write the combine motor and gearbox model, as in the following
example : **DMN37B6H□F◇**
● Enter the required reduction ratio in the □.
● Enter the required voltage A or B in the ◇.

MODEL	L		WEIGHT	
	mm	inch	g	lb
DMN37B6HFP◇+6DG□F	98.7	3.880	580	1.3
DMN37K6HFP◇+6DG□F	103.7	4.083	610	1.3
DMN37J6HFPB+6DG□F	108.7	4.280	640	1.4

■Specification

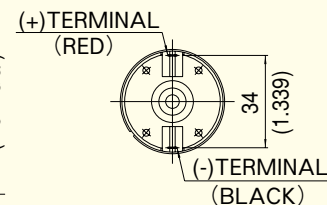| 8DG□	DMN37B8HP◇			DMN37K8HP◇			DMN37J8HPB		
	RATED TORQUE		SPEED	RATED TORQUE		SPEED	RATED TORQUE		SPEED
GEAR RATIO	N·m	oz·in	r/min	N·m	oz·in	r/min	N·m	oz·in	r/min
3	0.035	5.01	1567	0.060	8.49	1200	0.10	12.5	1200
3.6	0.042	5.98	1306	0.072	10.2	1000	0.11	15.3	1000
5	0.060	8.49	940	0.10	13.9	720	0.16	22.3	720
6	0.072	10.2	783	0.12	16.7	600	0.19	26.4	600
7.5	0.089	12.7	627	0.15	20.9	480	0.24	33.4	480
9	0.11	15.3	522	0.18	25.0	400	0.28	40.3	400
12.5	0.15	20.9	376	0.25	34.8	288	0.39	55.6	288
15	0.18	25.0	313	0.29	41.7	240	0.47	66.8	240
18	0.22	306	261	0.35	50.1	200	0.57	80.7	200
※ 25	0.26	37.6	188	0.44	62.6	144	0.72	102	144
※ 30	0.32	45.9	157	0.53	75.1	120	0.85	121	120
※ 36	0.38	54.3	131	0.64	90.4	100	1.0	139	100
※ 50	0.53	75.1	94	0.89	127	72	1.4	195	72
※ 60	0.64	90.4	78	1.1	153	60	1.7	236	60
※ 75	0.80	114	63	1.3	181	48	2.2	306	48
※ 90	0.96	136	52	1.6	223	40	2.5	362	40
※ 100	1.1	153	47	1.8	250	36	2.8	403	36
※ 120	1.3	181	39	2.2	306	30	3.4	487	30
※ 150	1.4	195	31	2.4	334	24	3.8	543	24
※ 180	1.7	236	26	2.8	403	20	3.9	556	21
225	2.2	306	21	3.6	515	16	3.9	556	17
250	2.4	334	19	3.9	556	14	3.9	556	15
300	2.8	403	16	3.9	556	12	3.9	556	13
360	3.4	487	13	3.9	556	11	3.9	556	11
450	3.9	556	11	3.9	556	8.7	3.9	556	9.0
※ 500	3.9	556	10	3.9	556	7.8	3.9	556	8.1
※ 600	3.9	556	8.2	3.9	556	6.6	3.9	556	6.8
※ 750	3.9	556	6.7	3.9	556	5.4	3.9	556	5.5
※ 900	3.9	556	5.7	3.9	556	4.5	3.9	556	4.6
※ 1500	3.9	556	3.5	3.9	556	2.8	3.9	556	2.8
※ 1800	3.9	556	2.9	3.9	556	2.3	3.9	556	2.4

※Enter the required reduction ratio in the □.
※[____] Rotation of gearbox shaft is in reverse of rotation of motor.
※Enter the required voltage A or B in the ◇.

■Outline

■DIMENSIONS Unit mm(inch)

□80(3.15 sq.)
66.5±0.3(2.618±0.012)
φ34(1.339 dia.)
15±0.5(0.591±0.02)
66.5±0.3(2.618±0.012)

φ8 0/-0.02(0.315 dia. 0/-0.0008)
7±0.3(0.276±0.012)
35(1.378)
14(0.551)
5(0.197)
NAME PLATE
L2
L1
5.7(0.224)
φ14.6(0.575 dia.)
φ37.2(1.465 dia.)
※φ38.4(1.512 dia.)
34(1.339)

NAME PLATE
BACKYOKE
※BACKYOKE Only for DME37J
BOLT

(+)TERMINAL (RED)
(−)TERMINAL (BLACK)

NOTE:
When ordering, please write the motor model and gearbox model numbers separately, as in the following example:
DMN37B8HPB (Pinion shaft motor)
8DG□ (Gearbox)

MODEL	GEAR RATIO	L1		L2		BOLT		WEIGHT	
		mm	inch	mm	inch	mm	inch	g	lb
DMN37B8HP◇+8DG□	3～180	86.7	3.413	32	1.260	M5×50	M5×1.967	780	1.7
	225～1800	96.7	3.807	42	1.654	M5×60	M5×2.362	880	1.9
DMN37K8HP◇+8DG□	3～180	91.7	3.610	32	1.260	M5×50	M5×1.967	810	1.8
	225～1800	101.7	4.004	42	1.654	M5×60	M5×2.362	910	2.0
DMN37J8HPB+8DG□	3～180	96.7	3.807	32	1.260	M5×50	M5×1.967	840	1.9
	225～1800	106.7	4.201	42	1.654	M5×60	M5×2.362	940	2.1

8DGF
Continuous Operation

■Specification

8DG□F	DMN37J8HFPB		
GEAR RATIO	RATED TORQUE		SPEED
	N·m	oz·in	r/min
3	0.10	13.5	1200
3.6	0.11	15.3	1000
5	0.16	22.3	720
6	0.19	26.4	600
7.5	0.24	33.4	480
9	0.29	40.3	400
12.5	0.40	55.6	288
15	0.48	66.8	240
18	0.57	80.7	200
※ 25	0.71	102	144
※ 30	0.86	121	120
※ 36	1.0	139	100
50	1.4	198	72
60	1.7	236	60
75	2.1	306	48
90	2.6	362	40
100	2.9	403	36
120	3.4	467	30
150	3.9	543	24
180	4.6	654	20

※Enter the required reduction ratio in the □.
※ ▢ Rotation of gearbox shaft is in reverse of rotation of motor.

■Outline

■DIMENSIONS Unit mm(inch)

NOTE:
When ordering, please write the motor model and gearbox model numbers separately, as in the following example:
DMN37J8HFPB (Pinion shaft motor)
8DG□F (Gearbox)

MODEL	GEAR RATIO	L1		L2		BOLT		WEIGHT	
		mm	inch	mm	inch	mm	inch	g	lb
DMN37J8HFPB+8DG□F	3~18	96.7	3.807	32	1.260	M5×50	M5×1.969	840	1.9
	25~180	106.7	4.201	42	1.654	M5×60	M5×2.362	940	2.1

DC BRUSH Motors
DMN Series

Structure
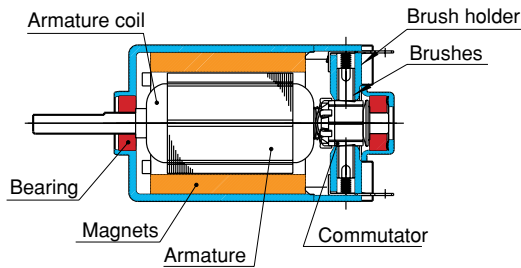
Fig. 1

- **Brushes**
  The brush is an important part that serves as a commutating mechanism. The brush's service life (in accordance with wear) will be the service life of the direct-current motor.
- **Commutator**
  In general, copper is the material used, but to counteract how it softens at high temperatures, a small amount of silver is mixed with it.
- **Armature coil**
  In general, electric wire known as magnet wire is used. Wire diameter is selected in accordance with the motor's specifications, and the wire is connected to the commutator bar by means of welding, soldering or other such methods.
- **Armature**
  For the armature, magnetic steel sheet is used to increase magnetic flux density.
- **Magnets**
  Broadly speaking, the magnets used in the motor can be classified in terms of whether they are ferrite, alnico, rare earth, etc. Magnets are selected in accordance with usage purpose, based on their features.
- **Bearing**
  There are ball bearings and sleeve bearings, and they are used in accordance with purpose.
  The ball bearing is the type that is appropriate for uses involving large bending loads.

Current and rotating torque characteristics

The magnet DC motor has dropping characteristics (rotation speed) and rising characteristics, as shown in Figure 2. When applied voltage V is changed, as shown in Figure 2, torque rotating speed characteristics will be proportional to the value for V, but current torque characteristics will only change very slightly. (For details, please refer to the relational expression for current and torque rotating speed.)
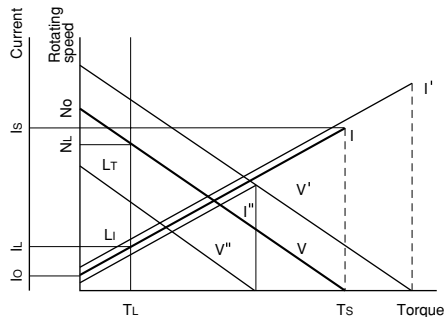

Fig. 2

How to view characteristics

As shown in Figure 2, at applied voltage V, when load torque T_L is added to the motor, rotating speed and current will be N_L and I_L, respectively. When V has been changed to V'V", the result can be similarly sought. No-load rotating speed, No, and stalling (starting) torque, T_S, will be proportional to the applied voltage; thus, the values for when a 24V motor, for example, is used at 20V

or 18V will be on the order of those shown in Table 1. (No-load current Io will be sufficiently small compared with the stalling current and can thus be disregarded.) When changing the rated voltage substantially (from 24V to 6V, for example), it will be necessary to depend on actual measurement.

However, use at something other than the rated voltage could cause abnormal brush wear and startup malfunctions. Thus, we ask that you confirm the usage conditions.

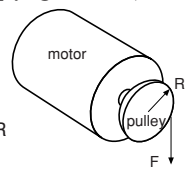| Voltage	No-load rotating speed No	Stalling torque Ts	Stalling current Is
24V	5000r/min	40mN-m	1.0A
20V	$\frac{20}{24} \times 5000$ 4166	$\frac{20}{24} \times 40$ 33	$\frac{20}{24} \times 1$ 0.83
18V	$\frac{18}{24} \times 5000$ 3750	$\frac{18}{24} \times 40$ 30	$\frac{18}{24} \times 1$ 0.75

Table 1

Explanation of Terminology

Term/Symbol	Content
No-load rotating speed No	Rotating speed with no load
No-load current Io	Input current with no load
Stalling torque Ts	Max. value for motor-generated torque. In general, a DC motor's stalling torque is equal to its starting torque.
Load torque T_L	As shown in Figure 3, when a pulley with radius R is attached to the motor and force of F is applied to the pulley's circumference, the torque generated, T_L, can be derived by multiplying F and R ($F \times R = T_L$). $T_L = F \times R$ Fig. 3 Note : Using the lock with voltage applied could cause burnout.

Relational expressions for torque, rotating speed and current

Relational expressions are as follows.
If the no-load rotating speed from formula 1 is taken to be No, when load torque T_L is zero, there will be no load; thus, if $T_L = 0$, the following will be the case.
No-load rotating speed No will be determined from the size of the motor's friction torque, T_0. If T_0 is low, the no-load rotating speed from formula 3 will be roughly proportional to the applied voltage. In addition, stalling (starting) torque will equal the load torque when rotating speed N from formula 1 is zero, resulting in the following:
Starting torque will be roughly proportional to the applied voltage. Current will be as follows.

From this formula, when load torque T_L and friction torque are constant, the current will be constant with no relation to applied voltage. The no-load current will be the value that makes the load torque zero in formula 5, but friction torque T_0 will change slightly, in accordance with rotating speed; thus, there will be some change caused by the applied voltage.
If motor output is designated as P (W), torque as T (N·m) and rotating speed as N (r/min), motor output P (W) will be as follows.

$P = 0.105 \times T \times N$ ···························Formula 6
N : Rotating speed　　　　　T_0 : Motor's friction torque
V : Applied voltage　　　　　T_L : Load torque
r : Armature-circuit resistance　K_1 and K_2 : Motor-specific constant

Technical Description

Operating Precautions

DC motors are compact and display high output, and their speed is easy to control. They may be driven by battery or any other power supply and are therefore also easy to use. However, inappropriate power supply may lead to burnout or abnormal brush wear.
Problems with power supply, installation, and general precautions and problems with a motor installed in-circuit will be described.

• Overload and lock-up
An excessive amount of load torque is applied during overloaded driving or when locked up, causing an excessive current flow with heat damage being incurred by the motor. Therefore, overloaded or locked-up use is to be avoided. (Locking up for 5 or more seconds results in damage to a motor. Do not lock up a motor for 5 or more seconds.)

• Applied voltage
Be sure to use a motor at its rated voltage (±IUVI), and avoid any surge voltage. We can specially manufacture motors designed with an electrical path protecting the motor from surges and reversed polarity. Please contact us for details.

• Applying non-rated supply voltages
Applying a voltage higher than the motor's rating results in a temperature increase, leading to heat damage or lowered service life. Scoring of the commutator surface by sparks and mechanical brush wear arising from vibration may also occur.
Applying a voltage lower than the motors rating may eventually result in the motor failing to start. This is due to the build up of carbon powder on the commutator.
Motors are manufactured for use within ±IOVo of their rated specifications.
Please contact us if you need to use motors outside their ratings.

• Brush wear promoted by power supply ripples
Brush wear may be mechanical wear due to brush and commutator abrasion or electrical wear due to sparking between the brush and commutator, the latter being the most common. Brush wear is there fore greatly affected by ripples in the power supply voltage, and use of general regulated DC is recommended, However, when rectifying AC for use by a motor, be sure to use full-wave rectification with a capacitor or similar element in a smoothing circuit.

• Ambient conditions
The service life of a DC motor is dependant upon its rectifying action.
Care must be taken to ensure good commutation, as dust, oil, gas, water, etc.
Water, etc, on the commutator surface results in poor rectification and increases brush wear.

• Changing the brush position
The brushes are generally fixed in position such that rotational speed and current characteristics are maintained equivalent in both clockwise and counter-clockwise directions. These are basically determined based on the position of the magnetic poles. Rotating the motor after not carefully relocating parts such as the brush holder (for fixing the brushes) or rear cover results in misalignment of the brushes and magnets. This will produce change in the above characteristics in the rotational direction or cause poor rectification, leading to abnormal brush wear. Therefore, changing of the brush positioning is to be avoided.

• Installed orientation
Motors are generally designed for use with a horizontal output shaft.
Special consideration must be given to components including bearings and grease washers when intended for an upward- or downward-facing output shaft. Please contact us for details.
Further, avoid installing a motor in a manner in which grease from the gear head would tend to enter the motor (e.g., with an upward-facing output shaft).

• Noise generation
Electrical noise is generated as a result of sparks from commutation between the brushes and commutator. Please contact us for assistance with lowering noise.

• Gear heads for intermittent drive

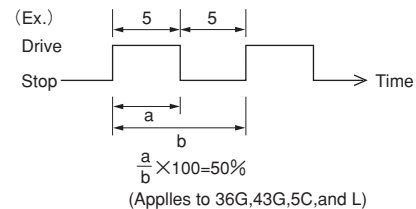$$\frac{a}{b}\times100=50\%$$
(Applles to 36G,43G,5C,and L)   Fig.4

The gearhead is assembled with a fixed shaft about which a gear revolves and transmits power. It is not suited to continuous drive. You should maintain the duty ratio between ON and OFF states at no more than 50%, with the maximum ON state not exceeding 5 seconds.

• Motor and gear head combination
When combining a gear head with a pinion shaft, gently fit the gear head on turning it right and left, being careful that the pinion and the gear in the gear head do not strongly clash with each other.
Using force will cause noise-producing scratches in the pinion and the gear. Scratches are Failures by a decreased service life and are the cause of unforeseen accidents.

• Load variation
Even with torque below the rated load, a motor will incur more damage than might be imagined if there is frequent load variation. Exercise caution with operating conditions and load restrictions.

• Insulation resistance
The insulation resistance of a brush motor will naturally continue to decrease as its running time increases. The figures for resistance given in the catalog are for a new motor.

• Service life
Service life depends greatly on operating conditions and environment.
Please contact us for details.

• Other aspects
Oil may seep out of the grease in the gear head depending on operating conditions, storage environment, etc, This does not present any problems in the use of the gear head.
However, contamination of the machine or equipment to which the geared motor is fitted may occur.