

DC-Gearmotor

Graphite Commutation

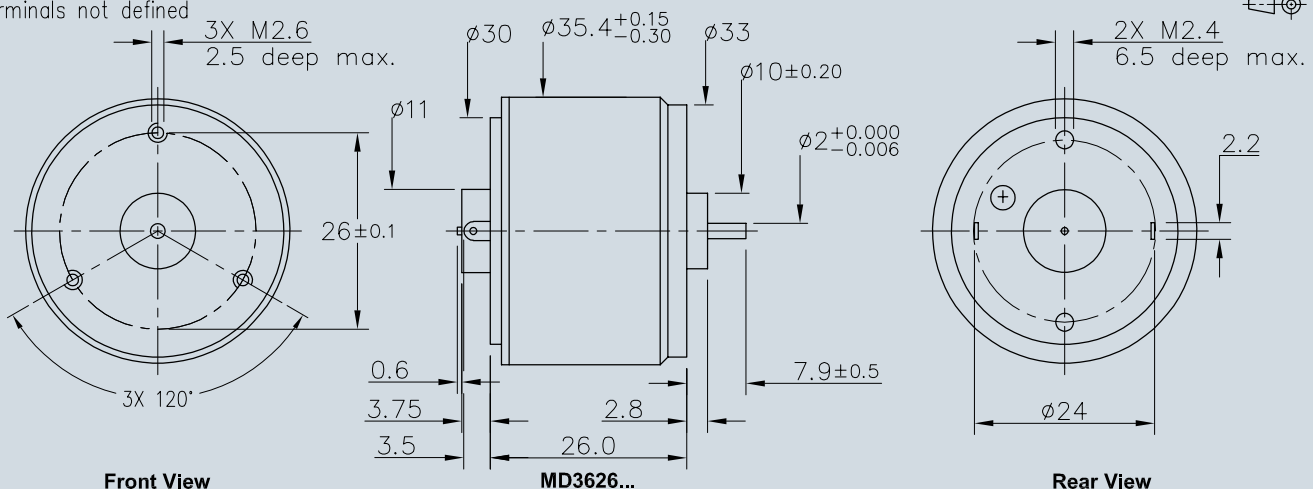
16.7 mNm

For combination with:
Gearheads: MD35C, MD35P

Series MD3644

		MD3644A	012V	024V		
1	Nominal voltage	U_N	12	24	Volt	
2	Winding resistance	R	± 12%	2.30	7.50	Ω
3	Output power	$P_{2 \text{ max.}}$	14.67	17.67	W	
4	Efficiency	$\eta_{\text{ max.}}$	67	64	%	
5	No-load speed	n_o	± 15%	5,400	6,800	rpm
6	No-load current max. (shaft \varnothing 3.175 mm)	I_o	± 50%	0.167	0.130	A
7	Stall torque	M_H	107.17	103.47	mNm	
8	Friction torque	M_R	3.43	4.20	mNm	
9	Speed constant	k_n	465	295	rpm/V	
10	Back-EMF constant	k_E	2.15	3.39	mV/rpm	
11	Torque constant	k_M	20.54	32.33	mNm/A	
12	Current constant	k_I	0.049	0.031	A/mNm	
13	Slope of n-M curve	$\Delta n / \Delta M$	50	66	rpm/mNm	
14	Rotor inductance	L	3,700	9,500	μH	
15	Mechanical time constant	τ_m	24	22	ms	
16	Rotor inertia	J	44	31	gcm^2	
17	Angular acceleration	$\alpha_{\text{ max.}}$	24	33	$\cdot 10^3 \text{ rad/s}^2$	
18	Thermal resistance	$R_{\text{th } 1} / R_{\text{th } 2}$	14 / 16		$^{\circ}\text{C/W}$	
19	Thermal time constant	τ_{w1} / τ_{w2}	670 / 900		s	
20	Operating temperature range:					
	- motor		- 10 to + 60		$^{\circ}\text{C}$	
	- rotor, max. permissible		+ 120		$^{\circ}\text{C}$	
21	Shaft bearing		sintered bronze sleeves			
22	Shaft load max.:					
	- with shaft diameter		3.175		mm	
	- radial at 3,000 rpm (3 mm from bearing)		5		N	
	- axial at 3,000 rpm		2		N	
23	Shaft play					
	- radial (7 mm from motor face)	\leq	0.05		mm	
	- axial	\leq	0.5		mm	
24	Housing material		steel, trivalent chromate			
25	Weight		100		g	
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{e \text{ max.}}$	7,000	7,000	rpm	
28	Torque up to	$M_{e \text{ max.}}$	16.7	14.6	mNm	
29	Current up to (thermal limits)	$I_{e \text{ max.}}$	1.013	0.561	A	

Orientation with respect to motor terminals not defined



For combination with:
DC-Micromotors:
M3138U, MD3626, MD3644

Series MD35C

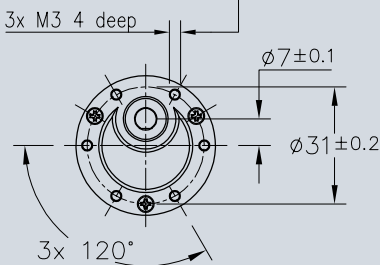
	MD35C
Housing material	zinc die cast
Geartrain material	metal, plastic
Recommended max. input speed for:	
– continuous operation	5,000 rpm
Backlash, at no-load	≤ 3°
Bearings on output shaft	sintered bronze
Shaft load, max.:	
– radial (10 mm from mounting face)	≤ 30 N
– axial	≤ 25 N
Shaft press fit force. max.	≤ 60 N
Shaft play (on bearing output):	
– radial	≤ 0.1 mm
– axial	≤ 0.35 mm
Operating temperature range	– 10 to + 60 °C

Specifications

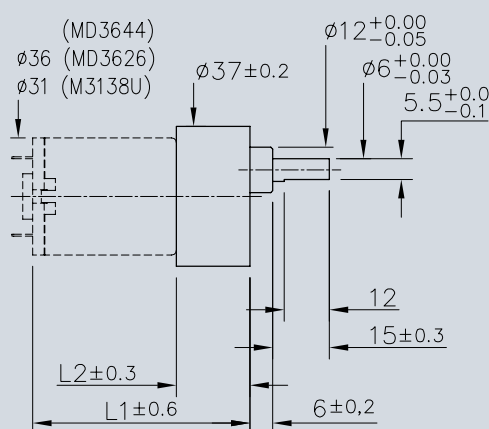
reduction ratio (nominal)	number of gear stages	weight sintered type	length without motor L2	length with motor MD3138 L1	length with motor MD3530 L1	length with motor MD3626 L1	length with motor MD3644 L1	output torque		direction of rotation (reversible)	efficiency
								continuous operation M max. mNm	intermittent operation M max. mNm		
29:1	3	95.4	20.8	58.8	50.8	46.8	64.8	192	576	CCW	73
35:1	4	102.4	23.3	61.3	53.3	49.3	67.3	192	576	CW	66
49:1	4	102.4	23.3	61.3	53.3	49.3	67.3	294	882	CW	66
59:1	4	102.4	23.3	61.3	53.3	49.3	67.3	294	882	CW	66
80:1	4	102.4	23.3	61.3	53.3	49.3	67.3	392	1,176	CW	66
102:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,764	CCW	59
115:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,764	CCW	59
129:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,176	CCW	59
150:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,176	CCW	59
181:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,764	CCW	59
200:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,764	CCW	59
241:1	5	107.5	25.8	63.8	55.8	51.3	69.8	588	1,764	CCW	59
302:1	6	114.6	28.3	66.3	58.3	54.3	72.3	588	1,764	CW	53
494:1	6	114.6	28.3	66.3	58.3	54.3	72.3	588	1,764	CW	53
684:1	6	114.6	28.3	66.3	58.3	54.3	72.3	588	1,764	CW	53

weight includes washer, pinion and screws

Orientation with respect to motor terminals not defined



Front View



MD35C

For combination with:
DC-Micromotors:
M3138U, MD3530, MD3626, MD3644

Series MD35P

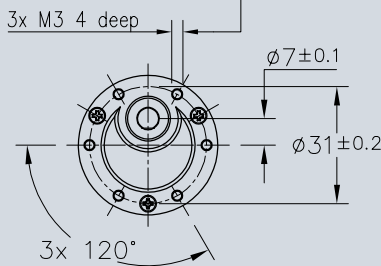
	MD35P
Housing material	zinc die cast
Geartrain material	metal, plastic
Recommended max. input speed for:	
– continuous operation	5,000 rpm
Backlash, at no-load	≤ 3°
Bearings on output shaft	sintered bronze
Shaft load, max.:	
– radial (10 mm from mounting face)	≤ 25 N
– axial	≤ 20 N
Shaft press fit force, max.	≤ 90 N
Shaft play (on bearing output):	
– radial	≤ 0.1 mm
– axial	≤ 0.35 mm
Operating temperature range	– 10 to + 60 °C

Specifications

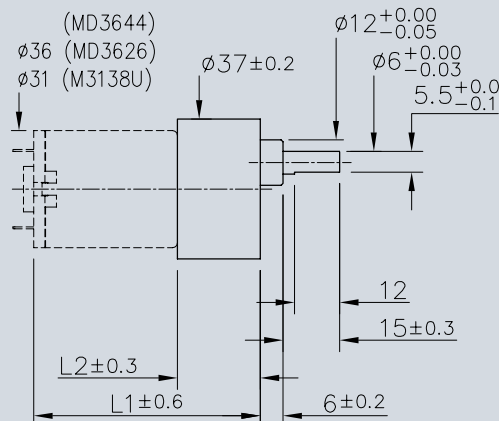
reduction ratio (nominal)	number of gear stages	weight sintered type	length without motor L2	length with motor MD3138 L1	length with motor MD3530 L1	length with motor MD3626 L1	length with motor MD3644 L1	output torque		direction of rotation (reversible)	efficiency
								continuous operation M max. mNm	intermittent operation M max. mNm		
6:1 10:1	2	g 89.4	mm 19.0	mm 57.0	mm 49.0	mm 45.0	mm 63.0	98	294	CW	81
18:1 25:1	3	96.5	21.5	59.5	51.5	47.5	65.5	98	294	CCW	73
30:1	3	96.5	21.5	59.5	51.5	47.5	65.5	196	588	CCW	73
50:1 60:1	4	104.6	24.0	62.0	54.0	50.0	68.0	294	882	CW	66
75:1 90:1	4	104.6	24.0	62.0	54.0	50.0	68.0	392	1,176	CW	66
100:1	4	104.6	24.0	62.0	54.0	50.0	68.0	588	1,764	CW	66
120:1 150:1 180:1	5	110.7	26.5	64.5	56.5	52.5	70.5	588	1,764	CCW	59
200:1 250:1	5	110.7	26.5	64.5	56.5	52.5	70.5	588	1,764	CCW	59
270:1 300:1	5	110.7	26.5	64.5	56.5	52.5	70.5	588	1,764	CCW	59
400:1 500:1 540:1	6	118.8	29.0	67.0	59.0	55.0	73.0	588	1,764	CW	53
600:1 750:1 900:1	6	118.8	29.0	67.0	59.0	55.0	73.0	588	1,764	CW	53
1,000:1	6	118.8	29.0	67.0	59.0	55.0	73.0	588	1,764	CW	53
1,500:1 1,800:1 3,000:1	7	126.0	31.5	69.5	61.5	57.5	75.5	588	1,764	CCW	48

weight includes washer, pinion and screws

Orientation with respect to motor terminals not defined



Front View



MD35P

Series MD35P

Part number	Ratio	Description	Stocked item
MD35P 6:1	6:1	Sintered bronze bearings	X
MD35P 10:1	10:1	Sintered bronze bearings	X
MD35P 18:1	18:1	Sintered bronze bearings	X
MD35P 25:1	25:1	Sintered bronze bearings	X
MD35P 30:1	30:1	Sintered bronze bearings	X
MD35P 50:1	50:1	Sintered bronze bearings	X
MD35P 60:1	60:1	Sintered bronze bearings	X
MD35P 75:1	75:1	Sintered bronze bearings	X
MD35P 90:1	90:1	Sintered bronze bearings	X
MD35P 100:1	100:1	Sintered bronze bearings	X
MD35P 120:1	120:1	Sintered bronze bearings	X
MD35P 125:1	125:1	Sintered bronze bearings	X
MD35P 150:1	150:1	Sintered bronze bearings	X
MD35P 180:1	180:1	Sintered bronze bearings	X
MD35P 200:1	200:1	Sintered bronze bearings	X
MD35P 250:1	250:1	Sintered bronze bearings	X
MD35P 270:1	270:1	Sintered bronze bearings	X
MD35P 300:1	300:1	Sintered bronze bearings	X
MD35P 400:1	400:1	Sintered bronze bearings	X
MD35P 500:1	500:1	Sintered bronze bearings	X
MD35P 540:1	540:1	Sintered bronze bearings	X
MD35P 600:1	600:1	Sintered bronze bearings	X
MD35P 750:1	750:1	Sintered bronze bearings	X
MD35P 900:1	900:1	Sintered bronze bearings	X
MD35P 1000:1	1000:1	Sintered bronze bearings	X
MD35P 1500:1	1500:1	Sintered bronze bearings	X
MD35P 1800:1	1800:1	Sintered bronze bearings	X
MD35P 3000:1	3000:1	Sintered bronze bearings	X