Characteristics:

water proof with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 178.0 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 9000.00 mNm
Maximum Output Power	: 23.10 W
Maximum Efficiency	: 20%

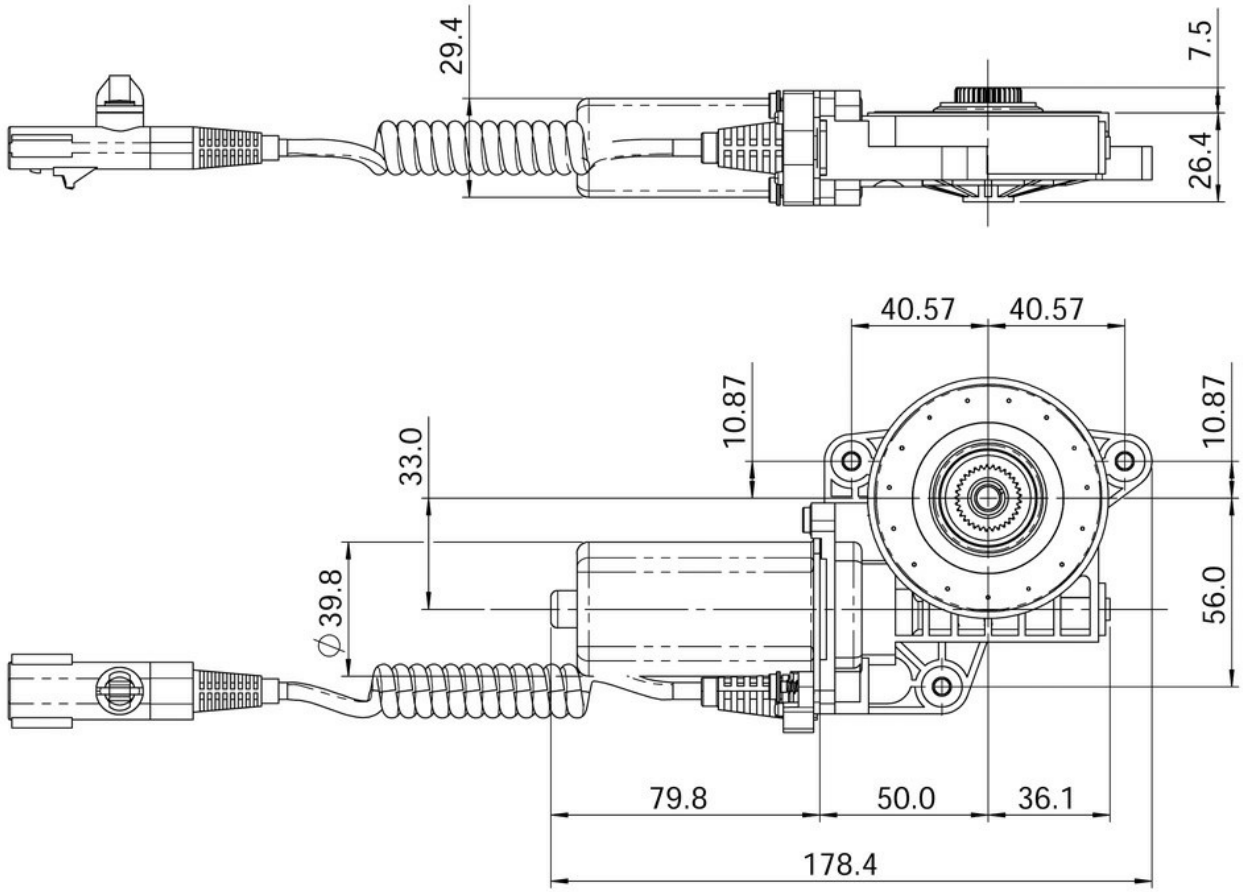
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	22.00	5.75	11.75
Efficiency (%)	-	-	20	-
Output Power (W)	-	-	15.17	23.10
Speed (rpm)	98	-	79	50
Torque (mNm)	-	9000.00	1826.20	4410.00

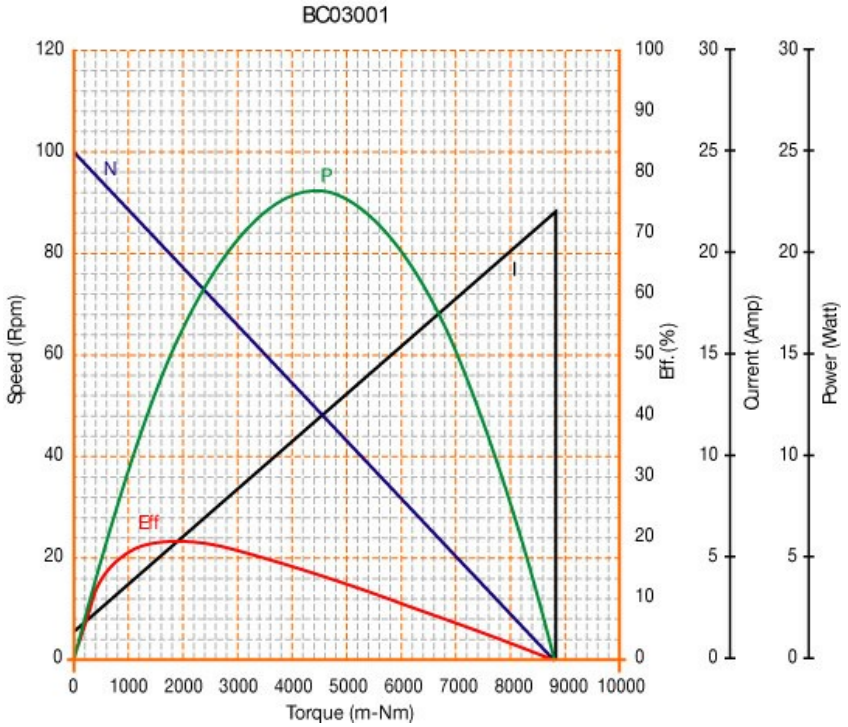
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

water proof with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 173.7 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 9000.00 mNm
Maximum Output Power	: 23.10 W
Maximum Efficiency	: 20%
Weight	: 500 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

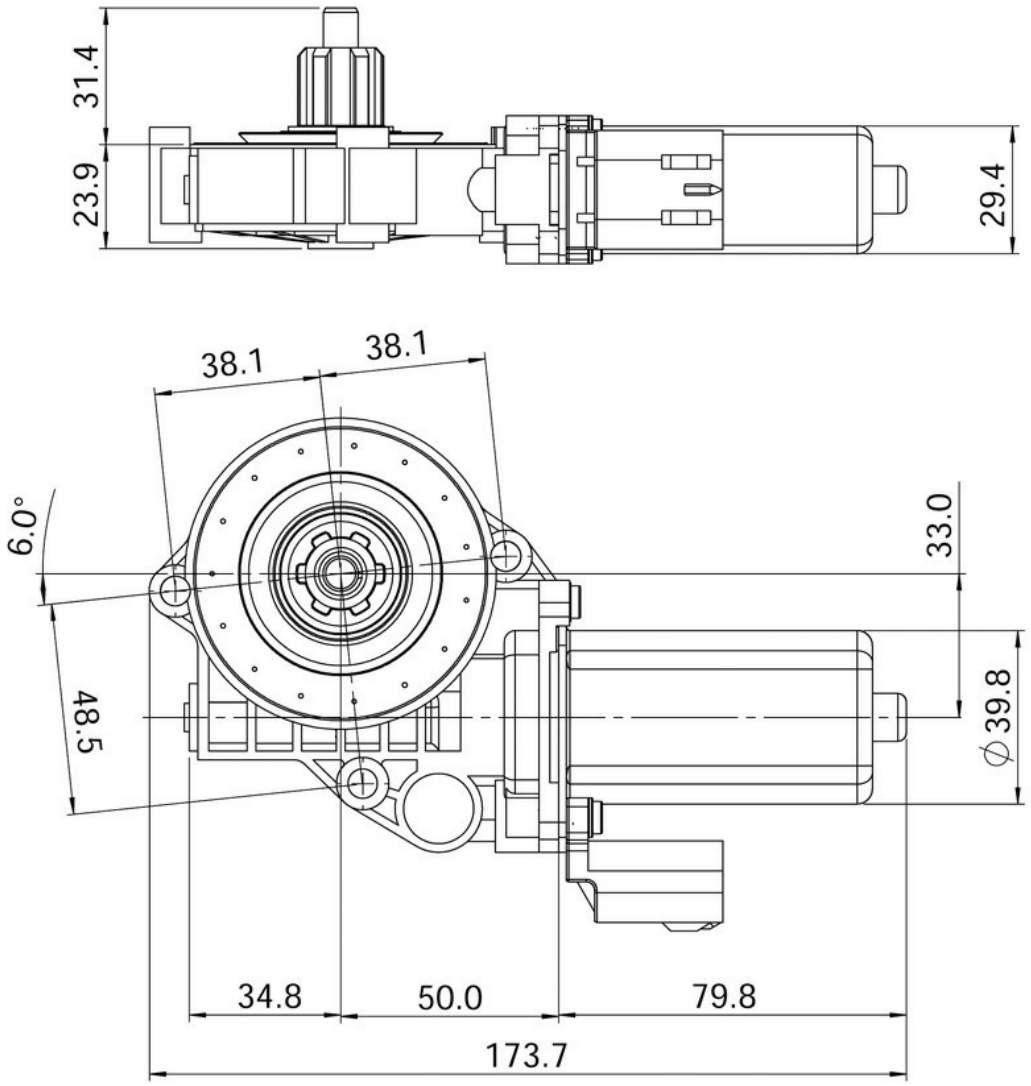
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	22.00	5.75	11.75
Efficiency (%)	-	-	20	-
Output Power (W)	-	-	15.17	23.10
Speed (rpm)	98	-	79	50
Torque (mNm)	-	9000.00	1826.20	4410.00

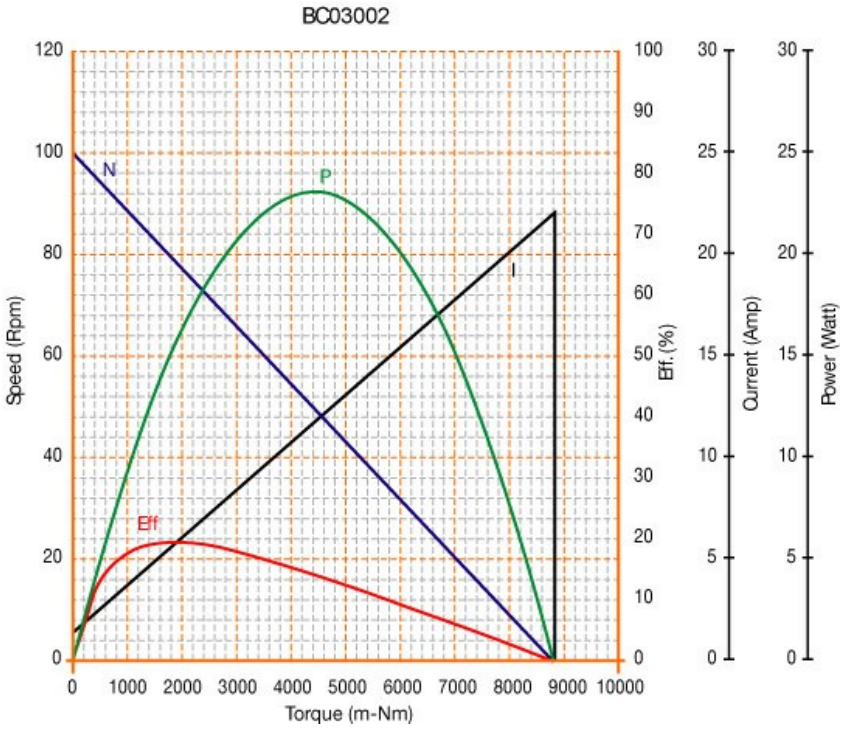
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Reliable, Fast response

Specifications:

Dimensions	: Ø 46.0 X 23.0 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 7700 rpm
Stall Torque	: 440.00 mNm
Maximum Output Power	: 86.00 W
Maximum Efficiency	: 63%
Weight	: 168 g
Operating Temperature Range	: -30 to 110 °C
Storage Temperature Range	: -40 to 120 °C

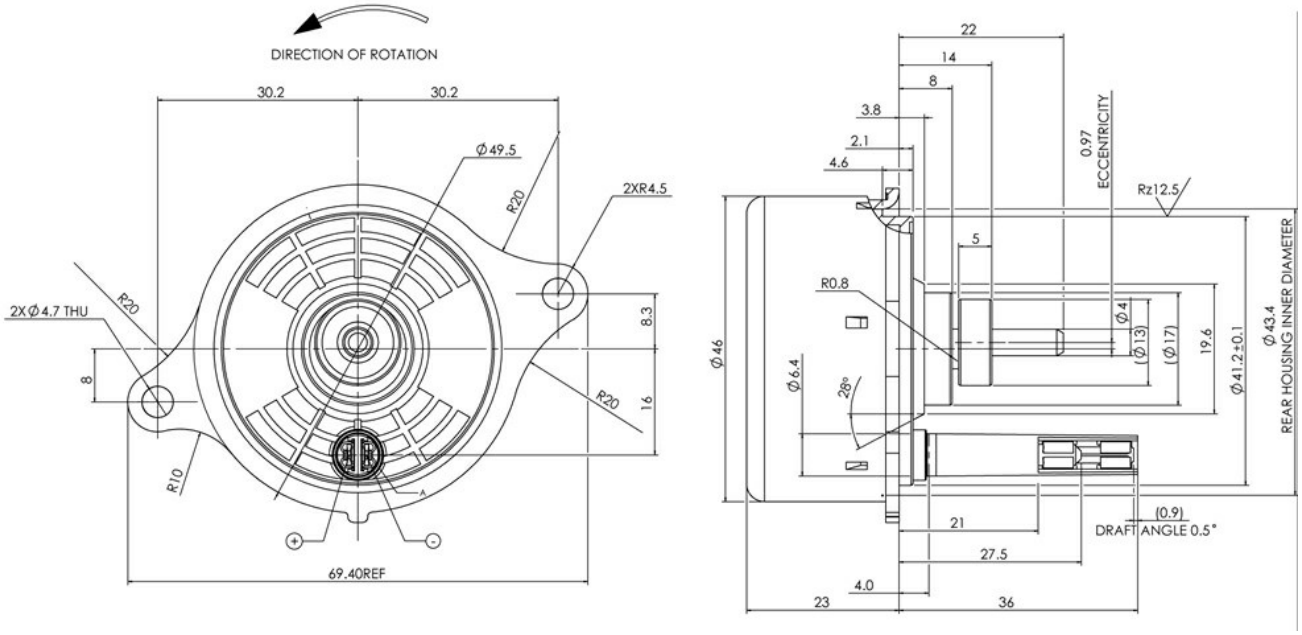
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	2.00	33.00	7.10	16.00
Efficiency (%)	-	-	63	45
Output Power (W)	-	-	53.00	86.00
Speed (rpm)	7700	-	6100	45
Torque (mNm)	-	440.00	82.00	219.00

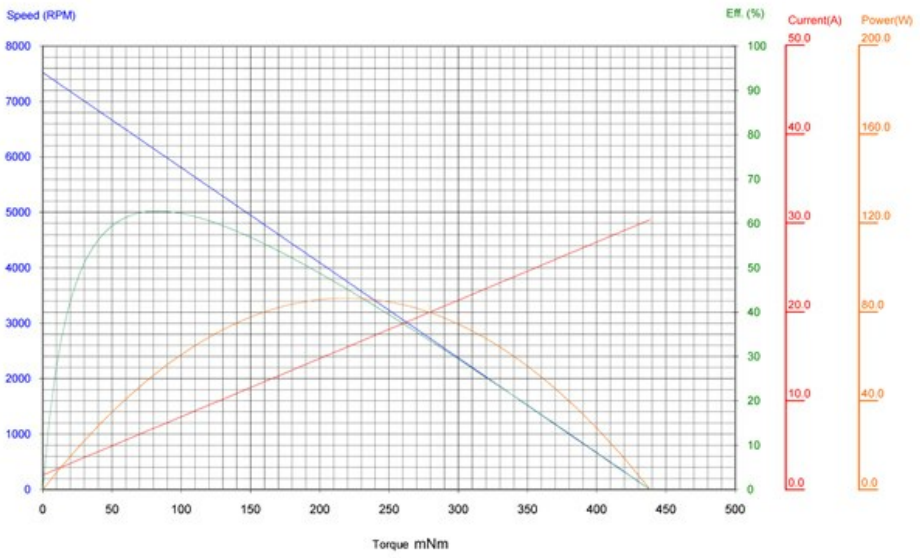
Application Examples:

Anti-lock Braking System (ABS)

Outline Drawing:



Performance Curves:



Units in Metric

S36-PP

Low Voltage DC Motors

Characteristics:

Fast Response, High Starting Torque, Consistent Current, Advanced EMC suppression

Specifications:

Dimensions :	Ø 35.7 X 57.0mm
Shaft Diameter :	Ø 3.175mm
Test Voltage :	14 Vdc
No Load Speed *:	16000 rpm
No Load Current*:	1.5 Amp
Stall Torque* :	500 mNm Ref.
Maximum Output Power:	220 W Ref.
Maximum Efficiency:	70 %
Weight:	245 g
Operation Temperature:	-40 to 80 °C
Storage Temperature:	-40 to 110 °C

* Typical

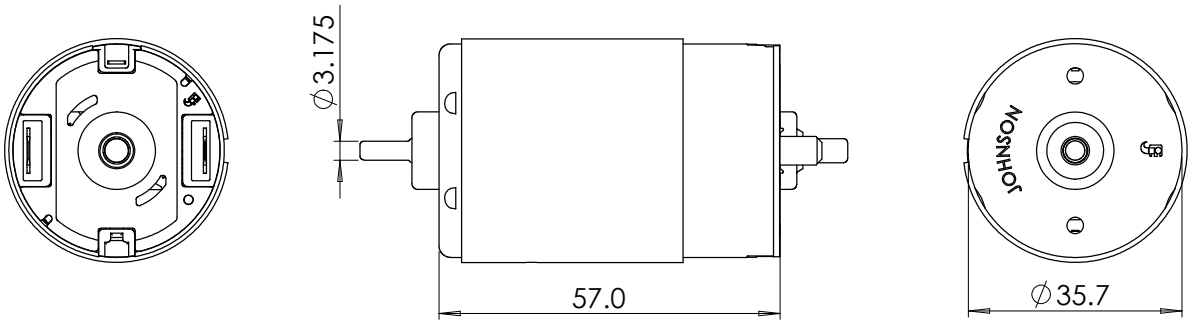
Performance:

	No Load	Stall	Max Efficiency	Max Power
Current (A)	1.50	-	-	-
Efficiency (%)	-	-	70	45
Output Power (W)	-	-	85	220
Speed (rpm)	16000	-	14500	8100
Stall Torque (mNm)	-	500	-	-

Application Examples:

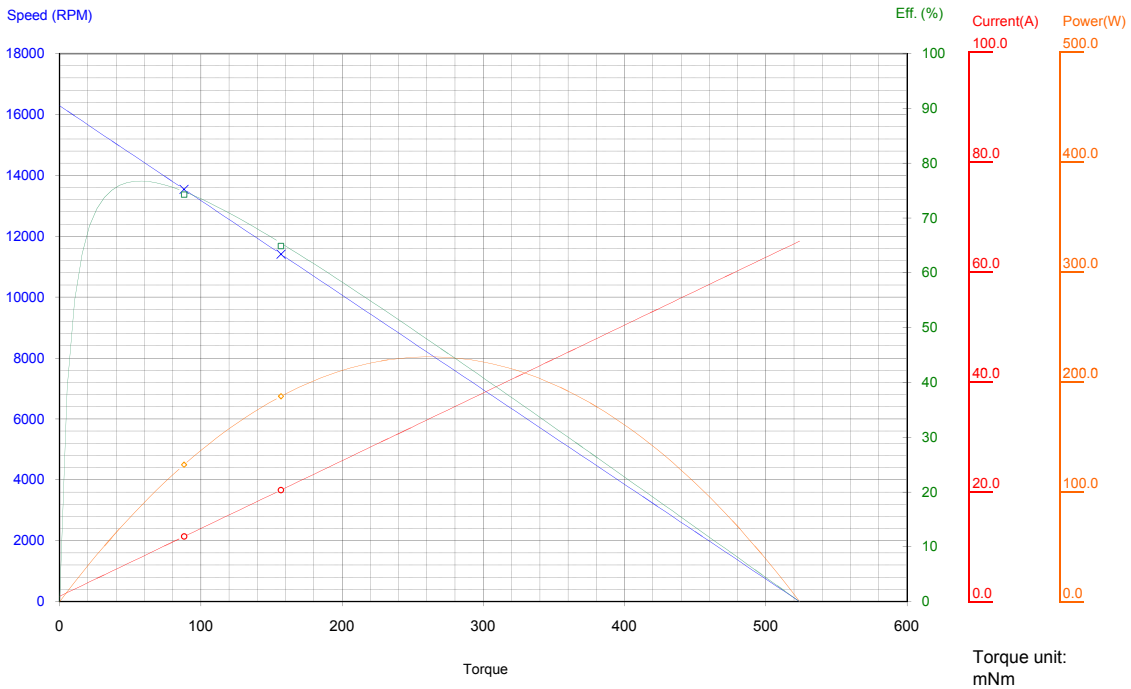
Seatbelt Pretensioner

Drawing:



Unit in mm

Performance Curve:



Torque unit: mNm

Characteristics:

standard lumbar support motor with low audible noise and overload protection

Specifications:

Dimensions	: Ø 35.8 X 65.0 mm
Shaft Diameter	: Ø 3.175 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 5700 rpm
Stall Torque	: 166.54 mNm
Maximum Output Power	: 24.78 W
Maximum Efficiency	: 63%
Weight	: 234 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

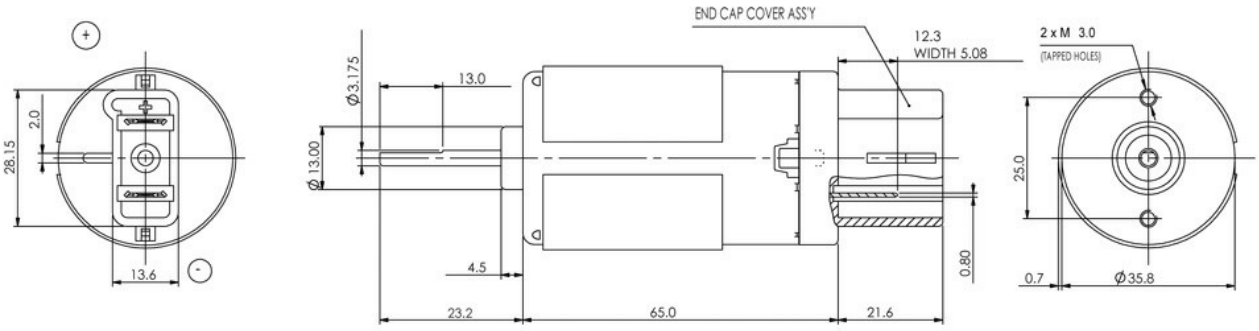
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.33	8.48	1.67	4.40
Efficiency (%)	-	-	63	-
Output Power (W)	-	-	13.64	24.78
Speed (rpm)	5700	-	4700	2800
Torque (mNm)	-	166.54	27.42	83.27

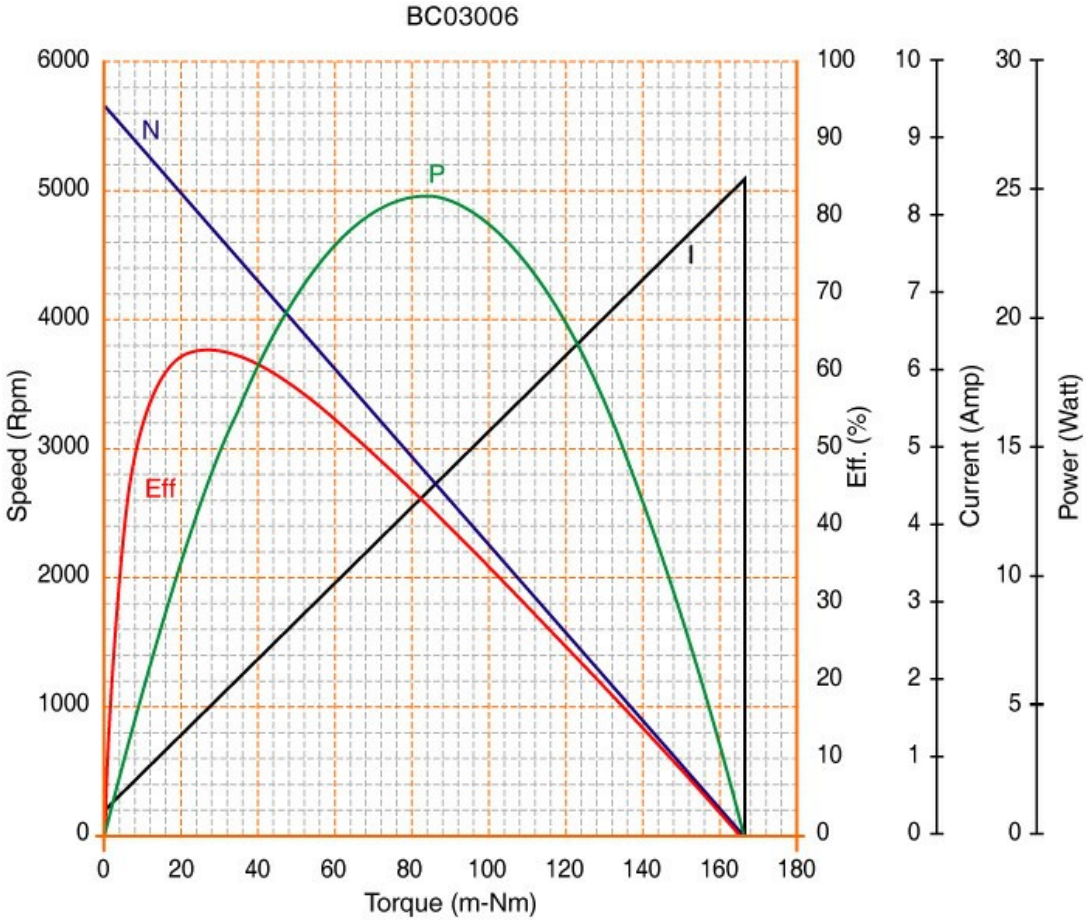
Application Examples:

Lumbar Supports

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

typically used for pedal adjuster applications but can be easily adapted for other applications

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 72.0 mm
Shaft Diameter	: Ø 4.005 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 4000 rpm
Stall Torque	: 246.89 mNm
Maximum Output Power	: 26.02 W
Maximum Efficiency	: 68%

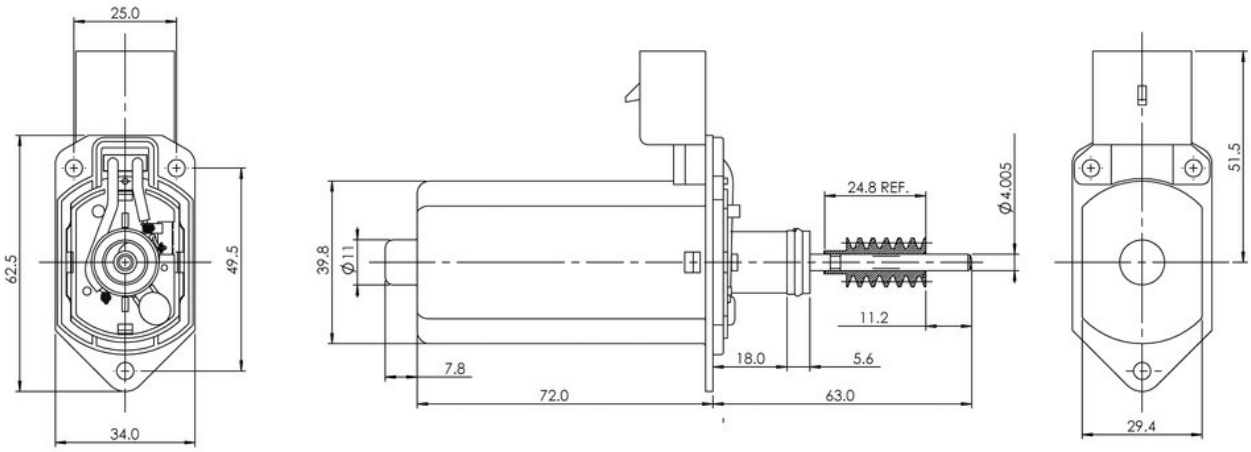
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.33	9.14	1.74	4.74
Efficiency (%)	-	-	68	-
Output Power (W)	-	-	13.96	26.02
Speed (rpm)	4000	-	3400	2000
Torque (mNm)	-	246.89	39.40	123.45

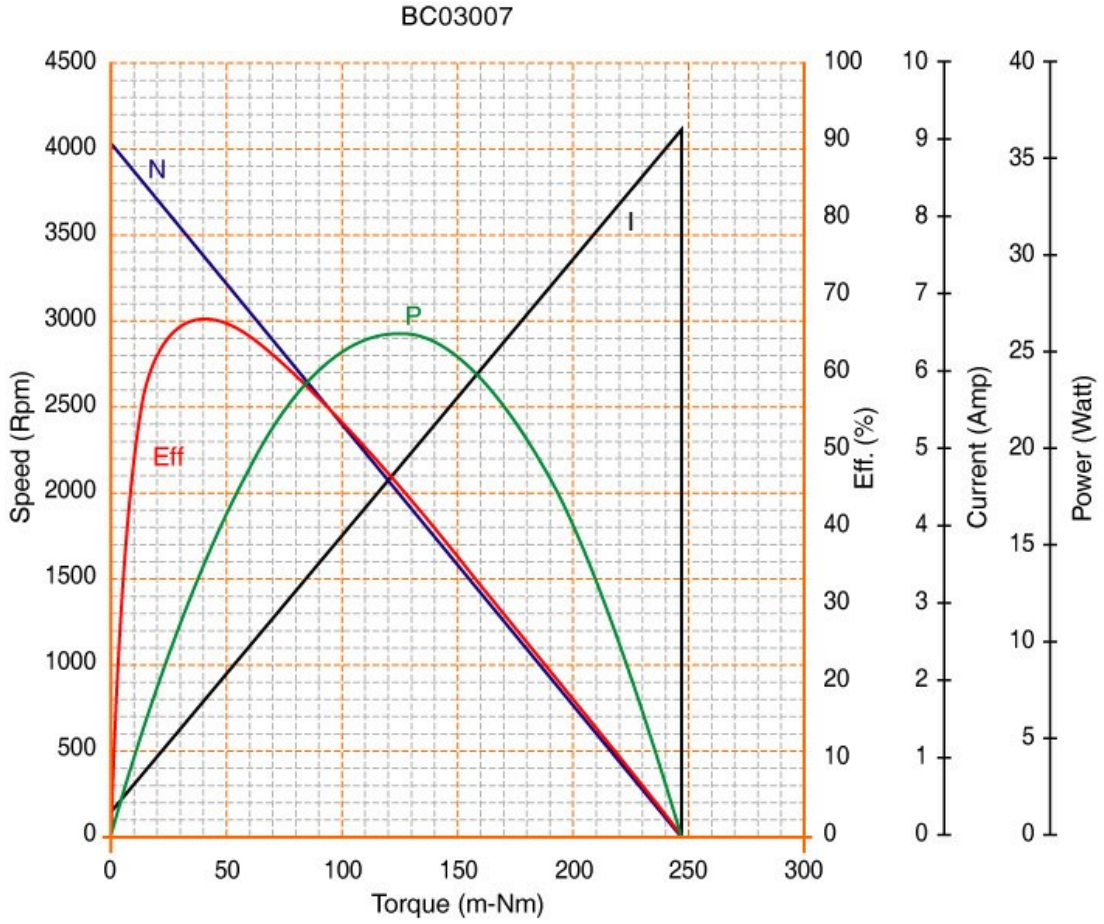
Application Examples:

Pedal Adjustor

Outline Drawing:



Performance Curves:



Units in Metric

Specifications:

Dimensions	: Ø 35.8 X 50.0 mm
Shaft Diameter	: Ø 3.175 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 3882 rpm
Stall Torque	: 97.70 mNm
Maximum Output Power	: 9.93 W
Maximum Efficiency	: 64%
Weight	: 167 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

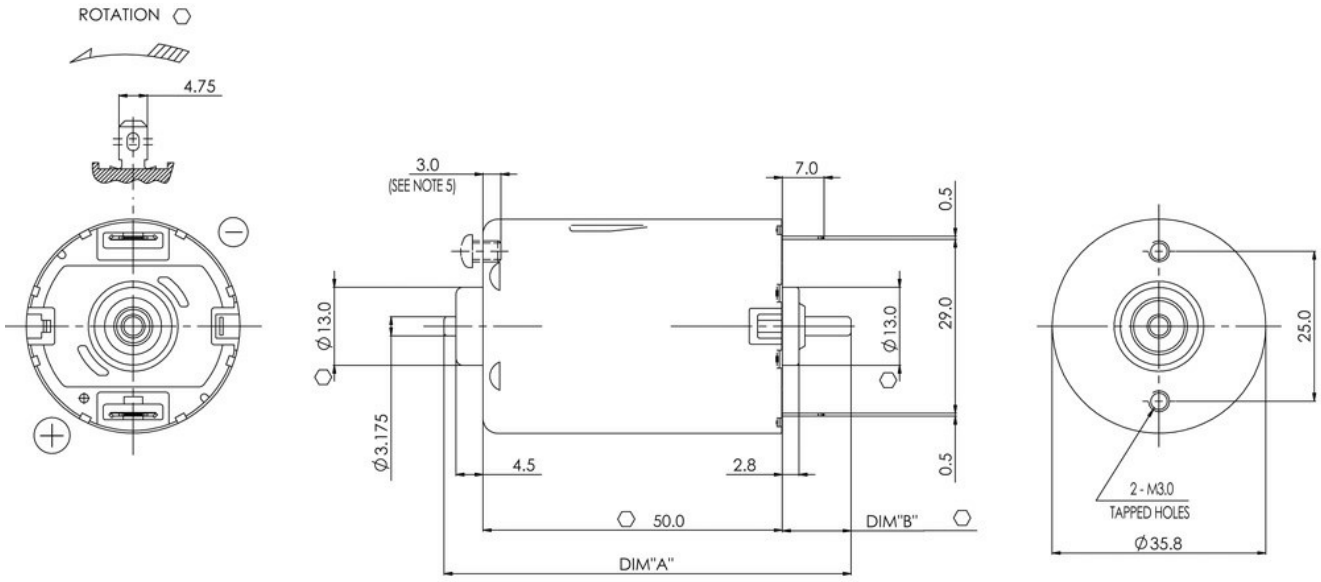
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.14	3.29	0.69	1.72
Efficiency (%)	-	-	64	-
Output Power (W)	-	-	5.57	9.93
Speed (rpm)	3882	-	3208	1941
Torque (mNm)	-	97.70	16.69	48.85

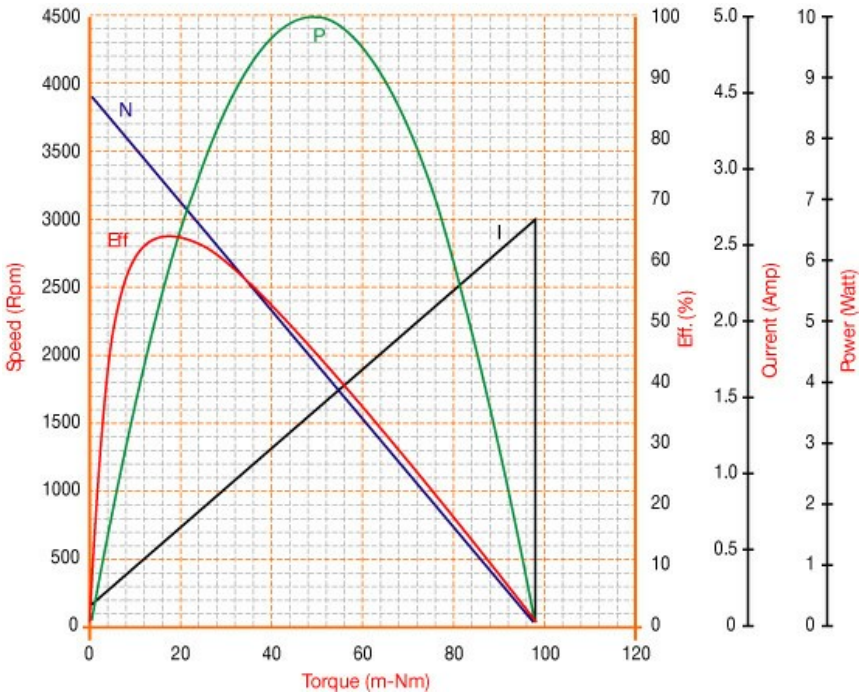
Application Examples:

Headrest Adjusters

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

door closure assistant motor with optional EMI suppression

Specifications:

Dimensions	: Ø 35.8 X 57.0 mm
Shaft Diameter	: Ø 3.175 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 4646 rpm
Stall Torque	: 267.76 mNm
Maximum Output Power	: 32.58 W
Maximum Efficiency	: 67%
Weight	: 252 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

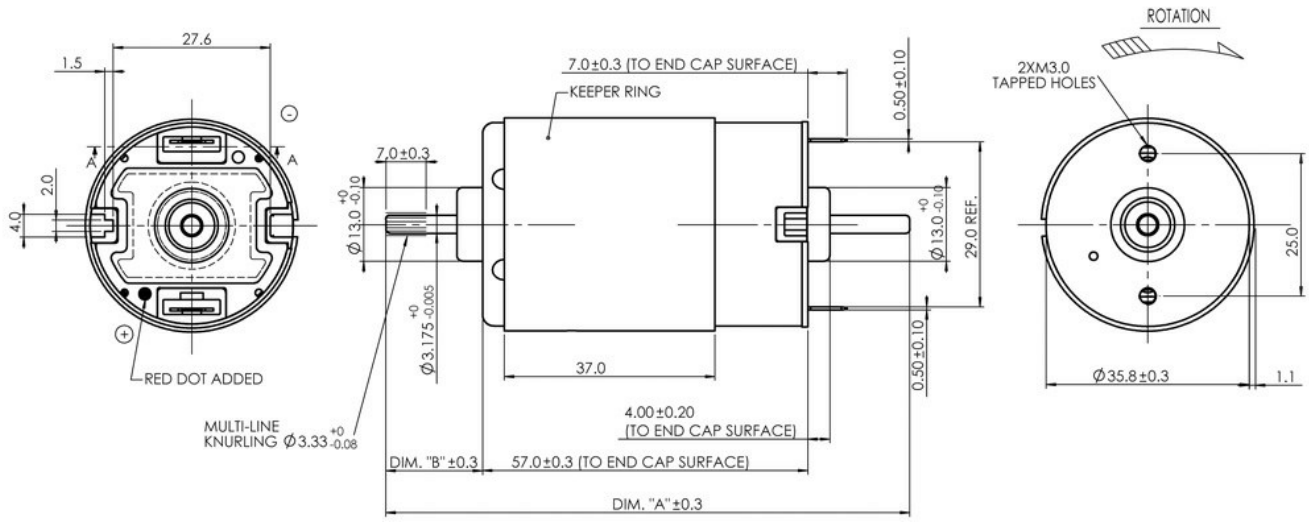
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.30	12.26	1.92	6.28
Efficiency (%)	-	-	67	-
Output Power (W)	-	-	15.26	32.58
Speed (rpm)	4646	-	4017	2323
Torque (mNm)	-	267.76	36.26	133.88

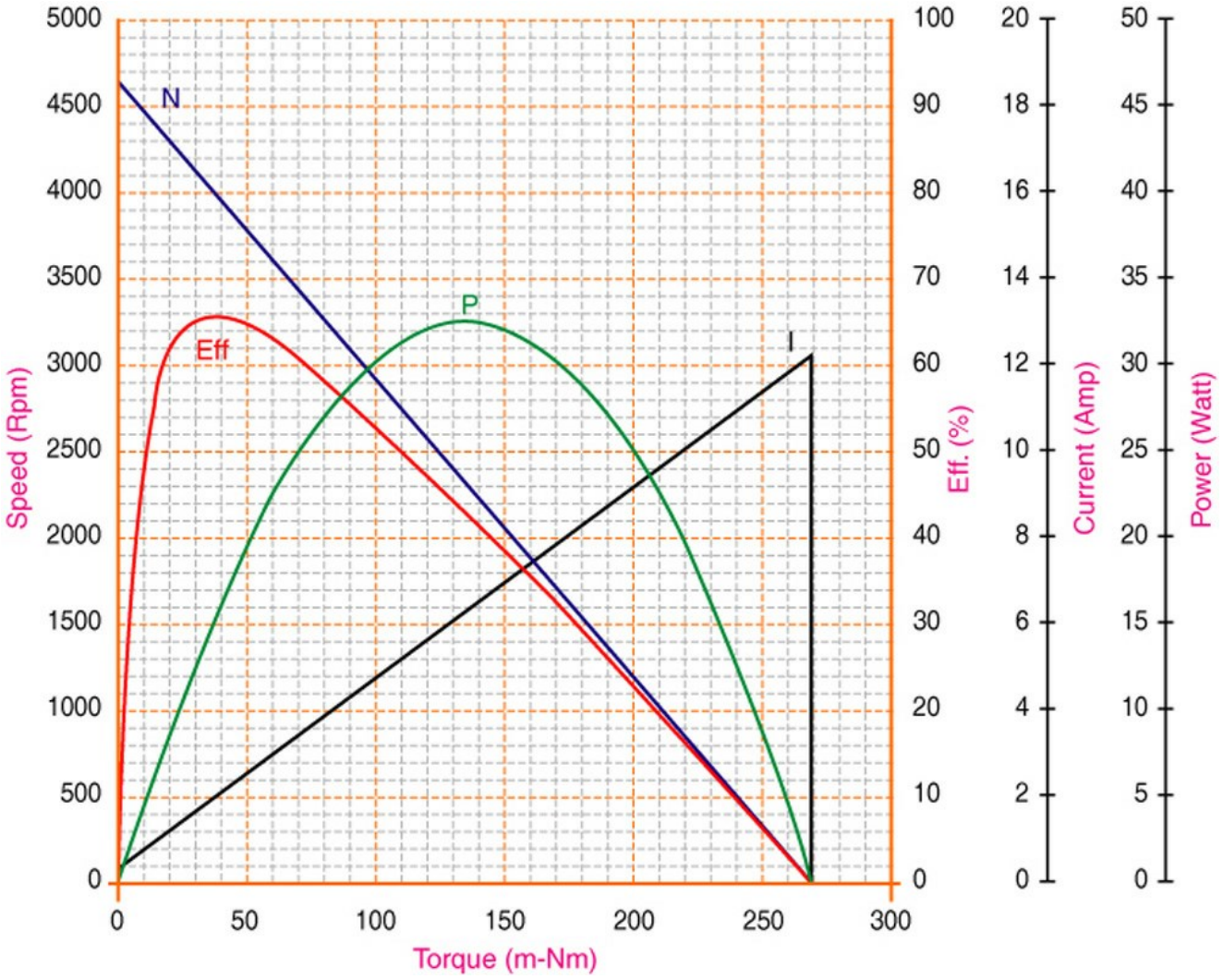
Application Examples:

Door Closure Assist

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High power density, Compact, Low noise

Specifications:

Dimensions	: Ø 35.9 X 87.3 mm
Shaft Diameter	: Ø 3.175 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 10200 rpm
No Load Current	: 0.44 A
Nominal Speed	: 8147 rpm
Nominal Torque	: 54.86 mNm
Nominal Current	: 6.18 A
Stall Torque	: 334.52 mNm
Stall Current	: 31.57 A
Maximum Output Power	: 88.44 W
Maximum Efficiency	: 64%
Weight	: 249 g
Operating Temperature Range	: -40 to 80 °C
Storage Temperature Range	: -40 to 110 °C

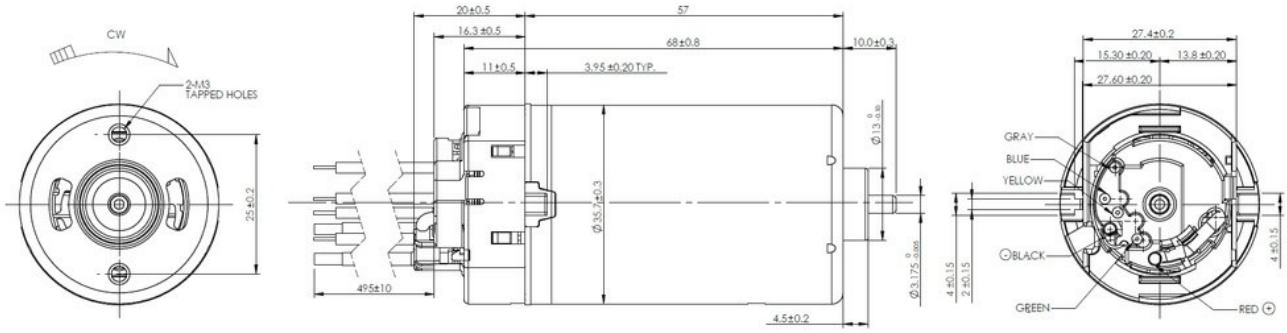
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.44	31.57	6.18	16.38
Efficiency (%)	-	-	64	43
Output Power (W)	-	-	46.80	88.44
Speed (rpm)	10200	-	8147	4872
Torque (mNm)	-	334.52	54.86	167.26

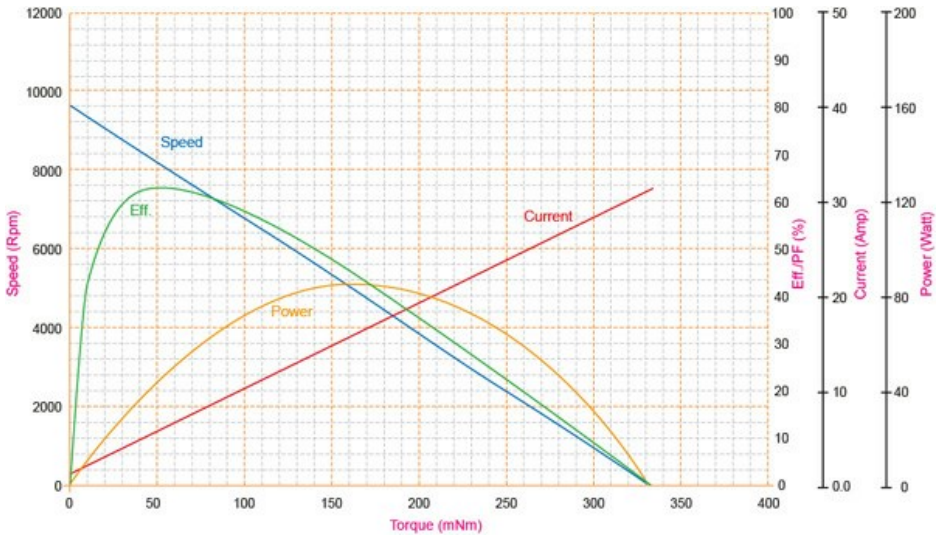
Application Examples:

Power Lift Gate

Outline Drawing:



Performance Curves:



Units in Metric

Specifications:

Dimensions	: Ø 35.8 X 116.0 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 4706 rpm
Stall Torque	: 221.35 mNm
Maximum Output Power	: 27.28 W
Maximum Efficiency	: 71%
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C
Electrcial Connection	: Male Terminal

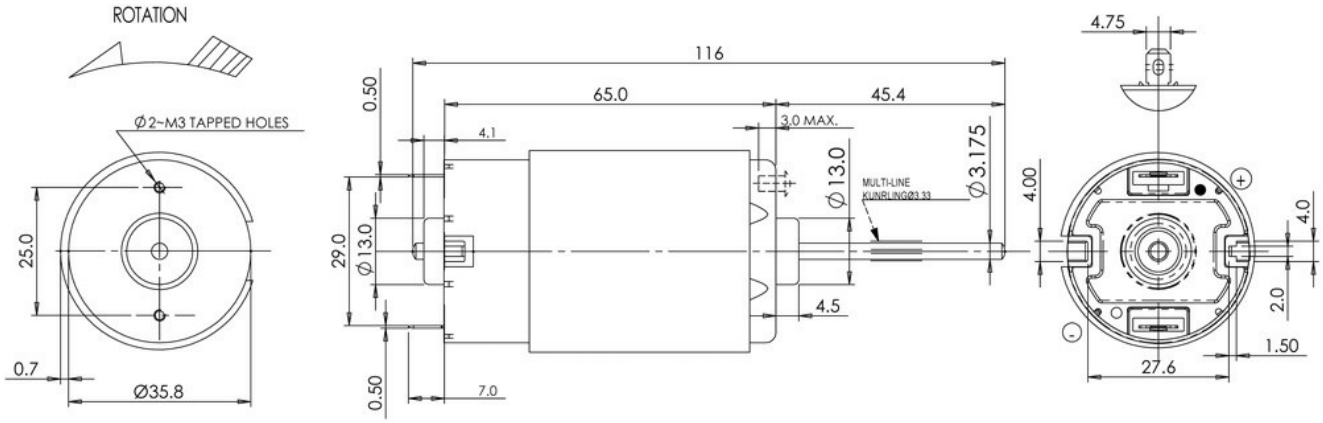
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.22	9.71	1.48	4.96
Efficiency (%)	-	-	71	-
Output Power (W)	-	-	12.50	27.28
Speed (rpm)	4706	-	4085	2353
Torque (mNm)	-	221.35	29.21	110.68

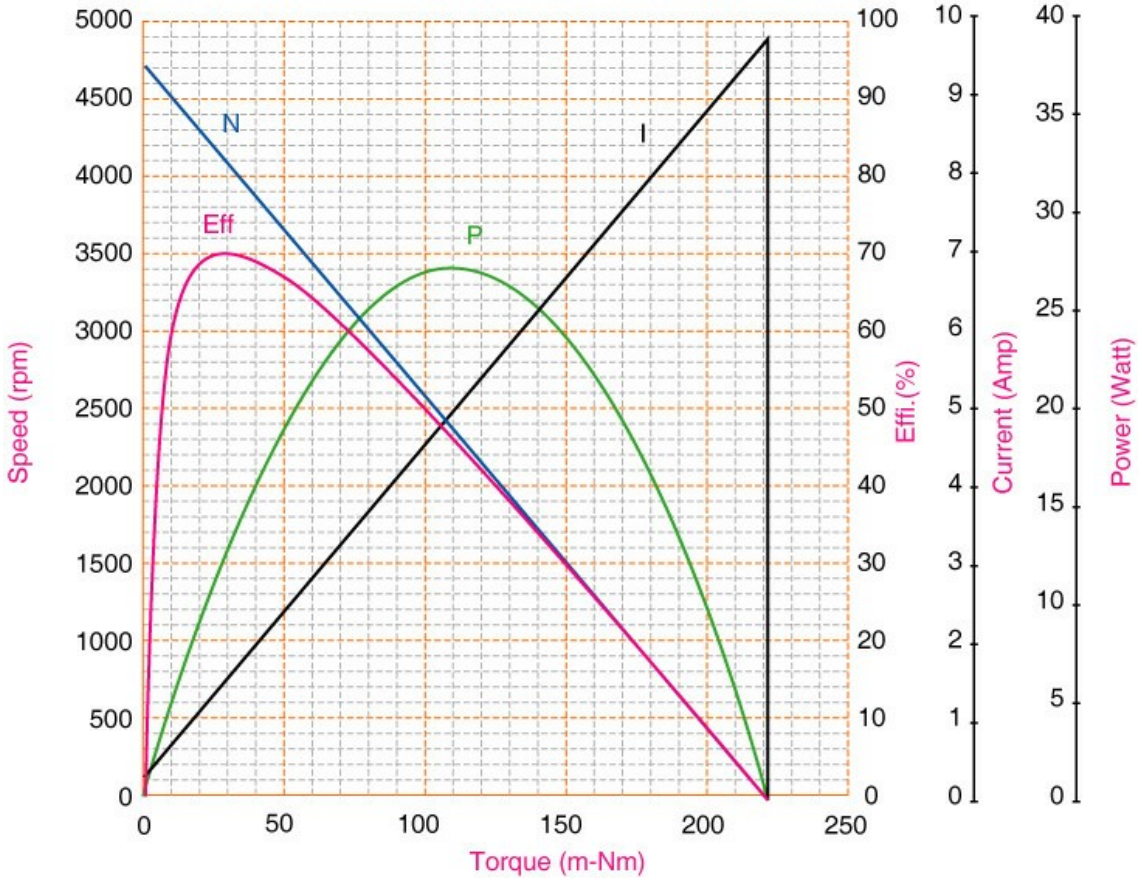
Application Examples:

Latching / Cinching

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Highly reliable, Long life, Fast response

Specifications:

Dimensions	: Ø 35.8 X 57.0 mm
Shaft Diameter	: Ø 4.005 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 4103 rpm
No Load Current	: 0.24 A
Nominal Speed	: 3336 rpm
Nominal Torque	: 23.98 mNm
Nominal Current	: 1.06 A
Stall Torque	: 128.28 mNm
Stall Current	: 4.59 A
Maximum Output Power	: 13.78 W
Maximum Efficiency	: 59%
Weight	: 167 g
Operating Temperature Range	: -40 to 140 °C
Storage Temperature Range	: -40 to 140 °C

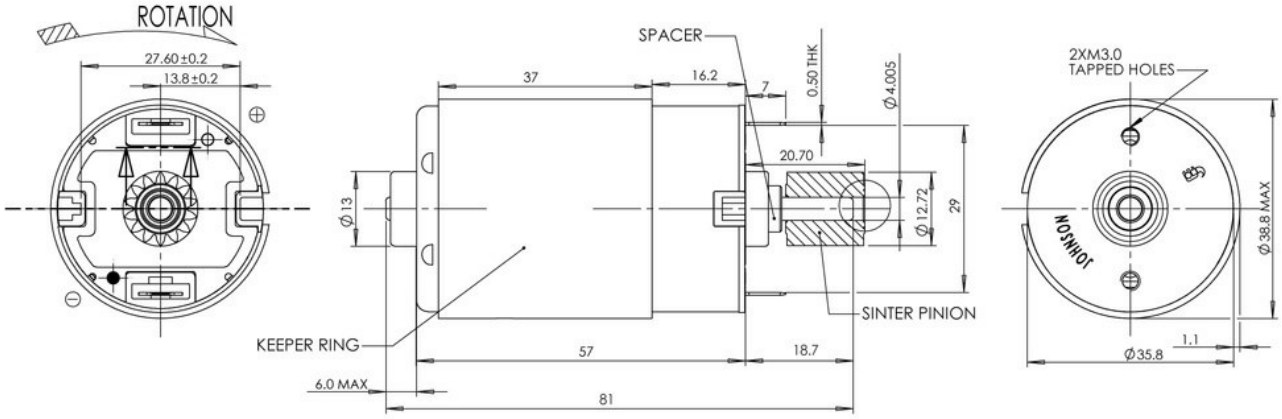
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.24	4.59	1.06	2.42
Efficiency (%)	-	-	59	42
Output Power (W)	-	-	8.38	13.78
Speed (rpm)	4103	-	3336	2052
Torque (mNm)	-	128.28	23.98	64.14

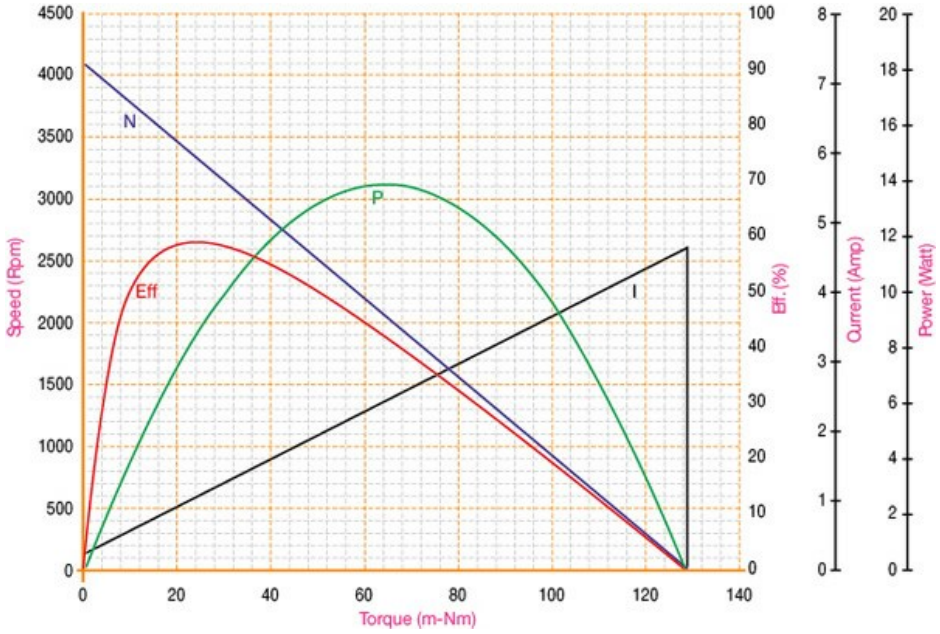
Application Examples:

Exhaust Gas Recirculation, Turbo Wastegate

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Highly reliable, Compact, High power density and Fast response

Specifications:

Dimensions	: Ø 38.1 X 57.0 mm
Shaft Diameter	: Ø 3.174 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 10125 rpm
No Load Current	: 0.57 A
Nominal Speed	: 8944 rpm
Nominal Torque	: 37.48 mNm
Nominal Current	: 4.34 A
Stall Torque	: 321.36 mNm
Stall Current	: 32.88 A
Maximum Output Power	: 85.00 W
Maximum Efficiency	: 67%
Weight	: 232 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 120 °C

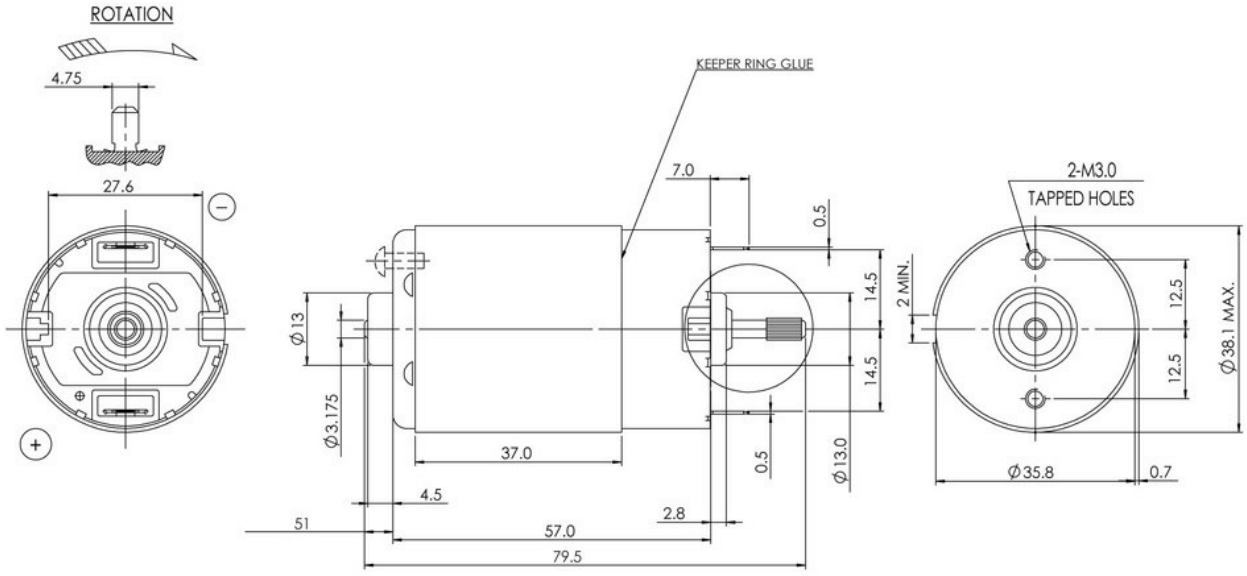
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.57	32.88	4.34	16.73
Efficiency (%)	-	-	67	43
Output Power (W)	-	-	35.12	85.00
Speed (rpm)	10125	-	8944	5062
Torque (mNm)	-	321.36	37.48	160.68

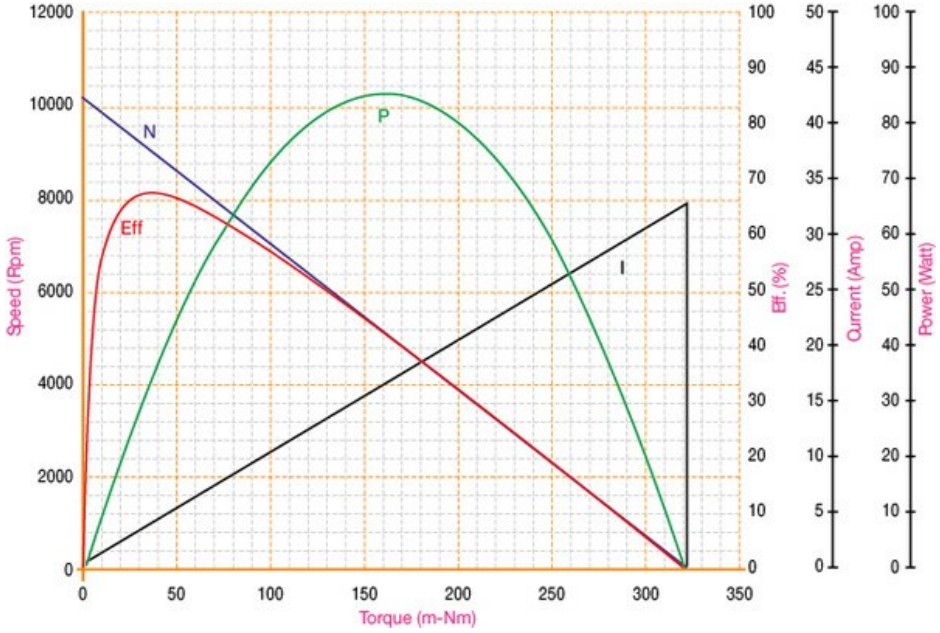
Application Examples:

Electric Parking Brake, Seat Belt Tensioner

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Highly reliable, Compact, High power density and Fast response

Specifications:

Dimensions	: Ø 38.3 X 65.0 mm
Shaft Diameter	: Ø 4.005 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 8618 rpm
No Load Current	: 0.58 A
Nominal Speed	: 7723 rpm
Nominal Torque	: 52.10 mNm
Nominal Current	: 4.99 A
Stall Torque	: 501.92 mNm
Stall Current	: 43.06 A
Maximum Output Power	: 113.00 W
Maximum Efficiency	: 70%
Weight	: 279 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 120 °C

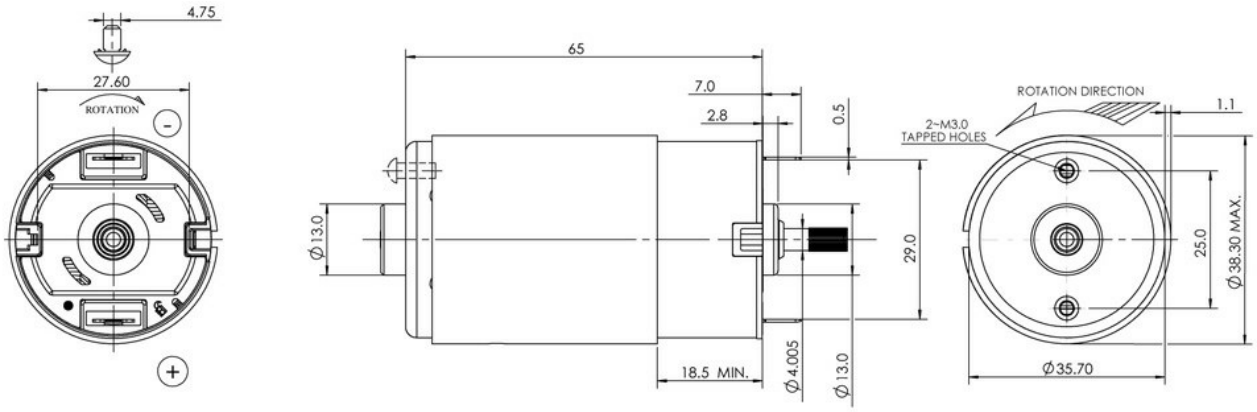
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.58	43.06	4.99	21.82
Efficiency (%)	-	-	70	41
Output Power (W)	-	-	42.16	113.00
Speed (rpm)	8618	-	7723	4309
Torque (mNm)	-	501.92	52.10	250.96

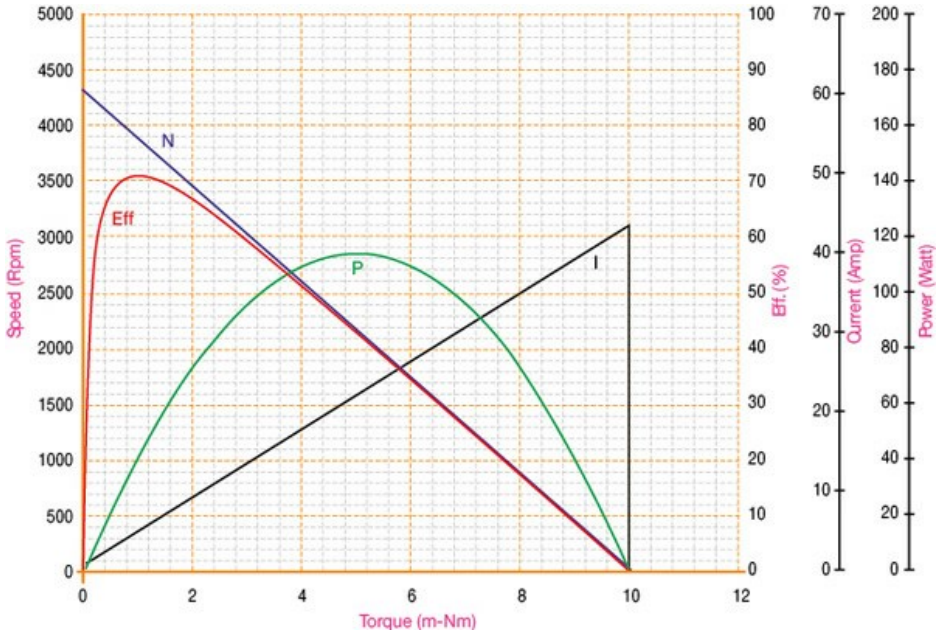
Application Examples:

Electric Parking Brake

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High Torque, Low Noise, High Reliability

Specifications:

Dimensions	: Ø 43.3 X 128.8 mm
Shaft Diameter	: Ø 8.000 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 3400 rpm
Stall Torque	: 710.00 mNm
Maximum Output Power	: 65.72 W
Maximum Efficiency	: 66%
Weight	: 645 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 95 °C

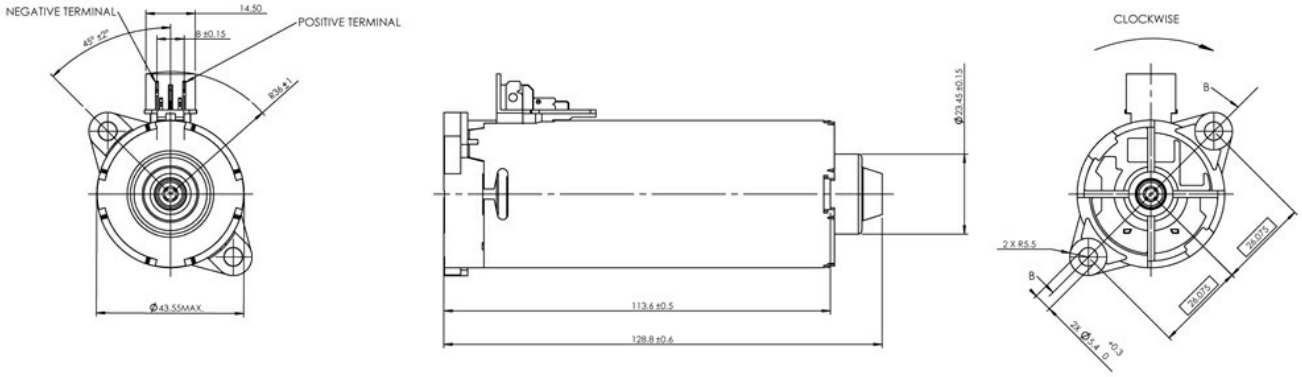
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.80	21.88	4.19	11.34
Efficiency (%)	-	-	66	45
Output Power (W)	-	-	35.48	65.72
Speed (rpm)	3400	-	3019	1798
Torque (mNm)	-	710.00	112.16	348.82

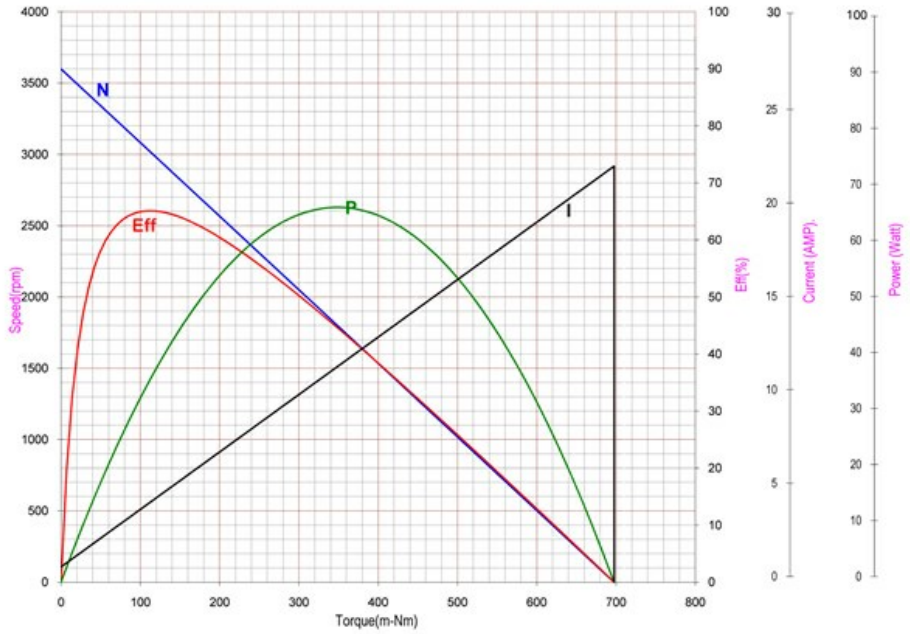
Application Examples:

Seat Adjusters

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High Torque, Low Noise, High Reliability

Specifications:

Dimensions	: Ø 43.3 mm
Shaft Diameter	: Ø 8.000 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 3600 rpm
Stall Torque	: 465.00 mNm
Maximum Output Power	: 41.95 W
Maximum Efficiency	: 77%
Weight	: 460 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 95 °C

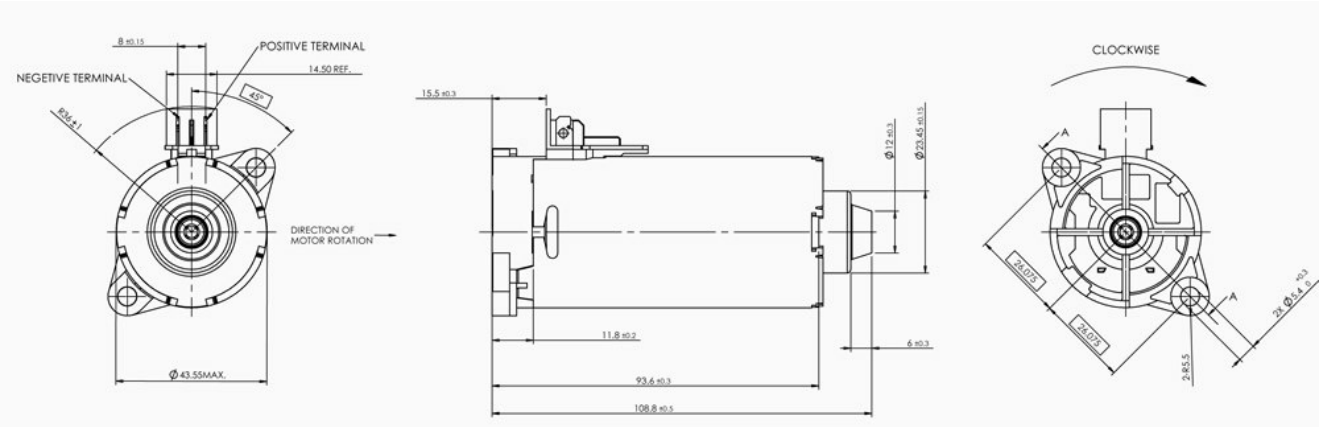
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.56	11.32	2.52	5.94
Efficiency (%)	-	-	77	54
Output Power (W)	-	-	24.98	41.95
Speed (rpm)	3600	-	3035	1855
Torque (mNm)	-	465.00	78.57	215.93

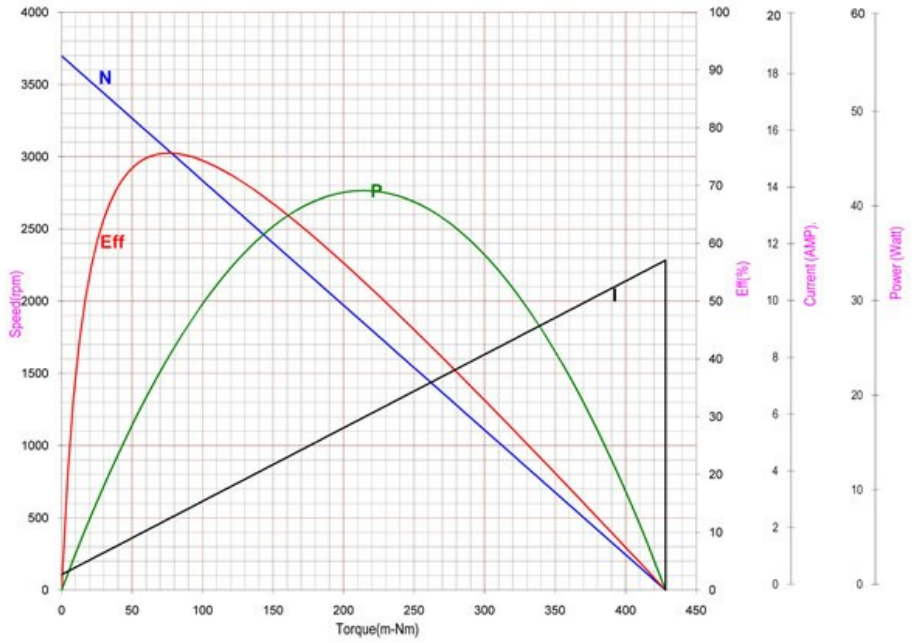
Application Examples:

Seat Adjusters

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

it works in high temperature and resists corrosion with black chromating coating

Specifications:

Dimensions	: Ø 35.8 X 72.0 mm
Shaft Diameter	: Ø 5.005 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 4425 rpm
Stall Torque	: 303.59 mNm
Maximum Output Power	: 35.15 W
Maximum Efficiency	: 62%

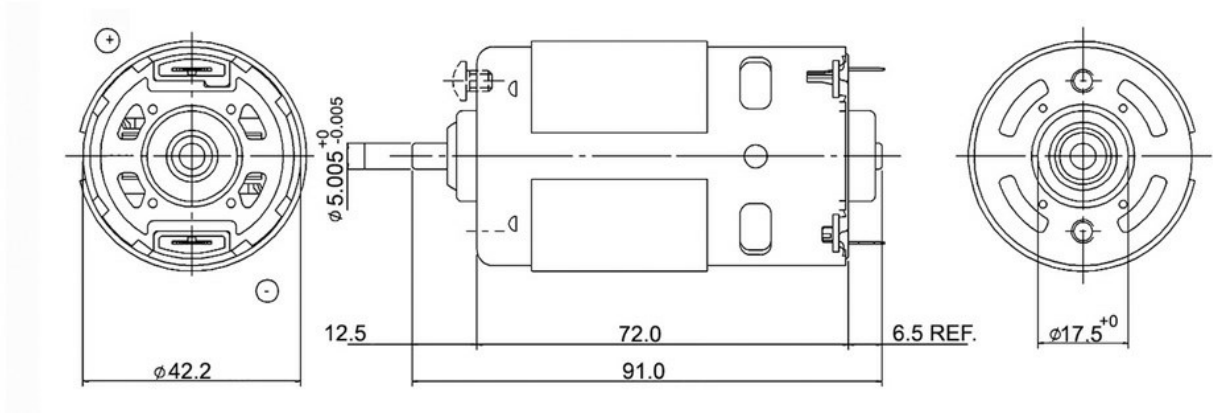
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.26	6.10	1.25	3.18
Efficiency (%)	-	-	62	-
Output Power (W)	-	-	19.84	35.15
Speed (rpm)	4425	-	3673	2213
Torque (mNm)	-	303.59	51.61	151.79

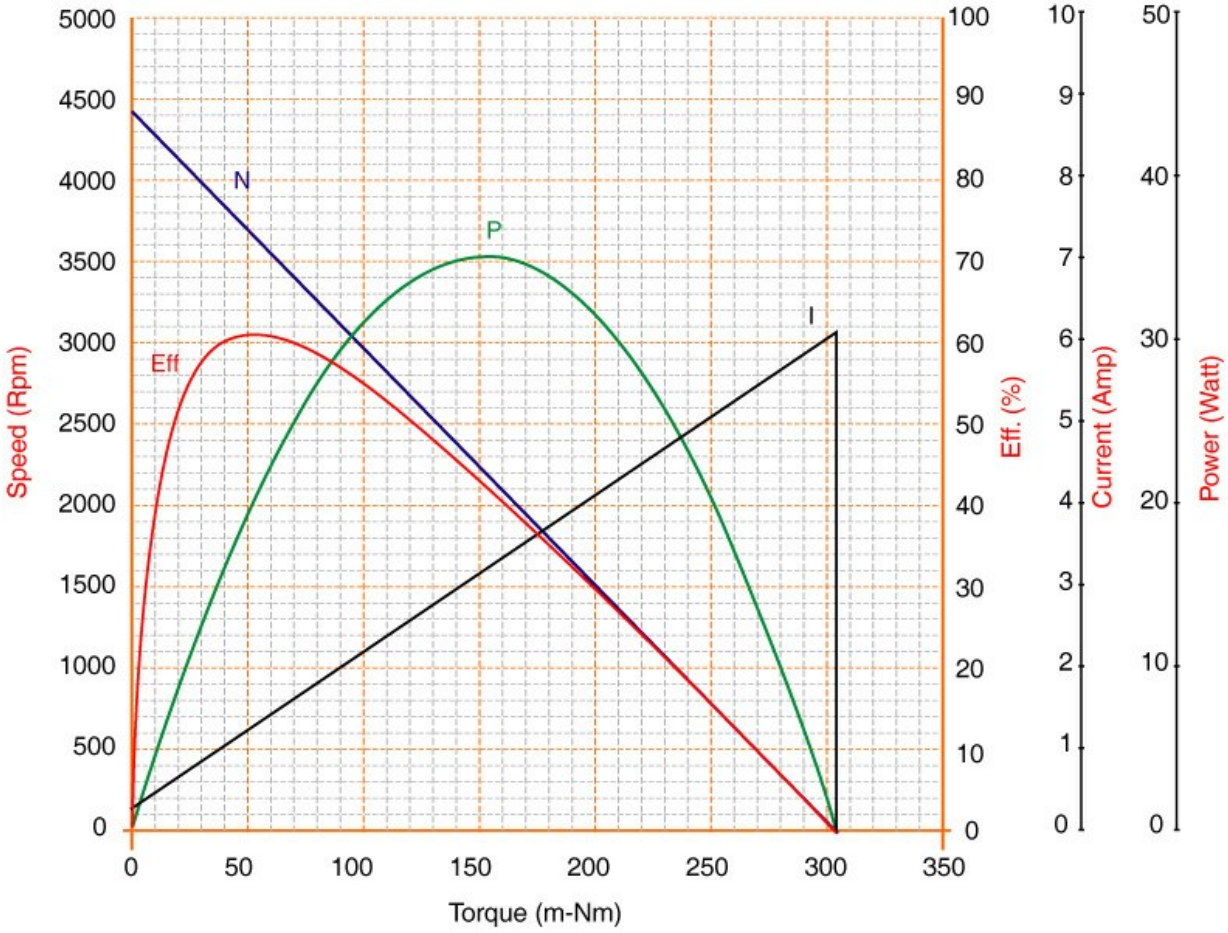
Application Examples:

Circulation Pumps

Outline Drawing:



Performance Curves:



Units in Metric

Specifications:

Dimensions	: Ø 42.2 X 72.0 mm
Shaft Diameter	: Ø 5.005 mm
Input Voltage	: 26.0 V DC
No Load Speed	: 4400 rpm
Stall Torque	: 303.59 mNm
Maximum Output Power	: 35.15 W
Maximum Efficiency	: 61%

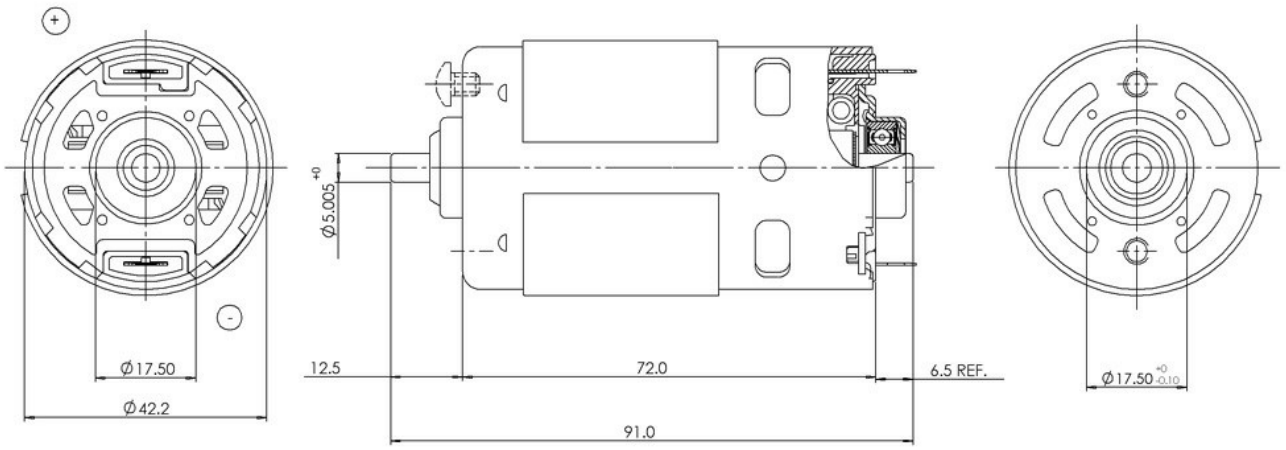
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.26	6.10	1.25	3.18
Efficiency (%)	-	-	61	-
Output Power (W)	-	-	19.84	35.15
Speed (rpm)	4400	-	3700	2200
Torque (mNm)	-	303.59	51.61	151.79

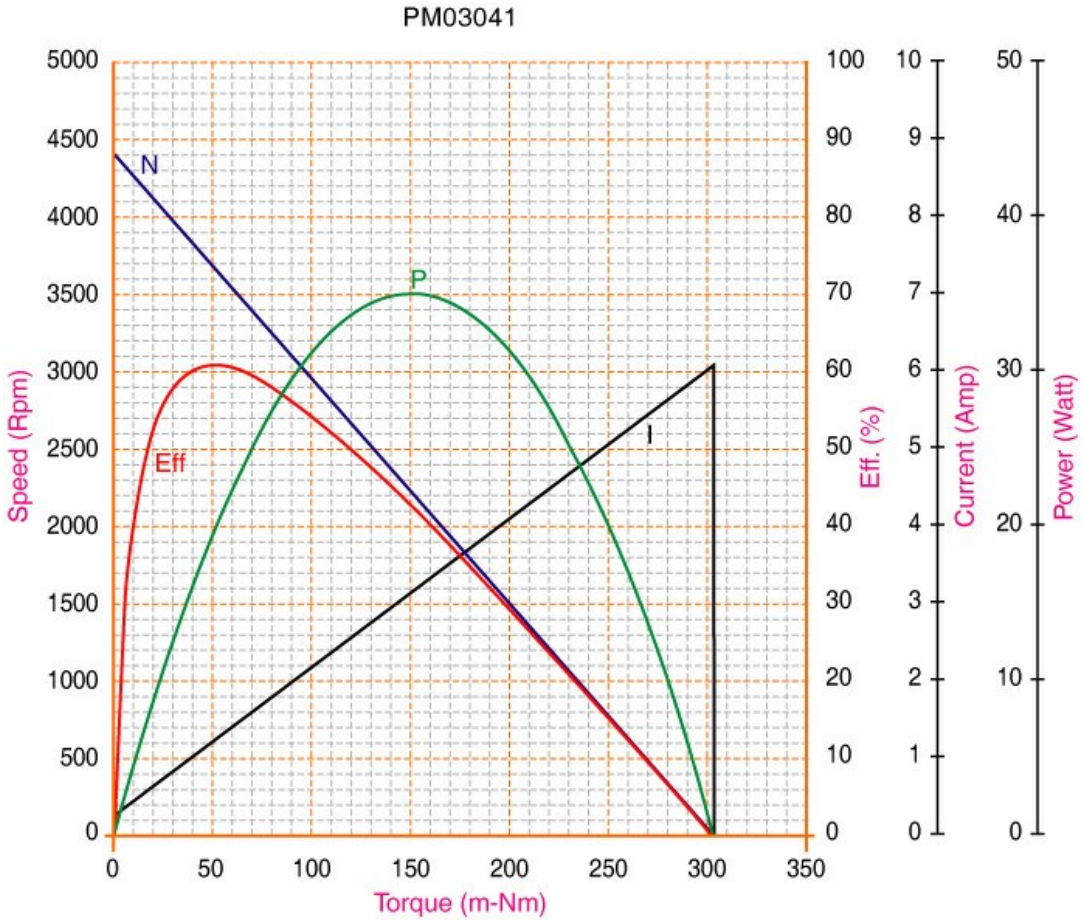
Application Examples:

Circulation Pumps

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

coated with black chromating to protect against corrosion

Specifications:

Dimensions	: Ø 42.2 X 72.0 mm
Shaft Diameter	: Ø 5.005 mm
Input Voltage	: 26.0 V DC
No Load Speed	: 4500 rpm
Stall Torque	: 335.00 mNm
Maximum Output Power	: 39.21 W
Maximum Efficiency	: 70%

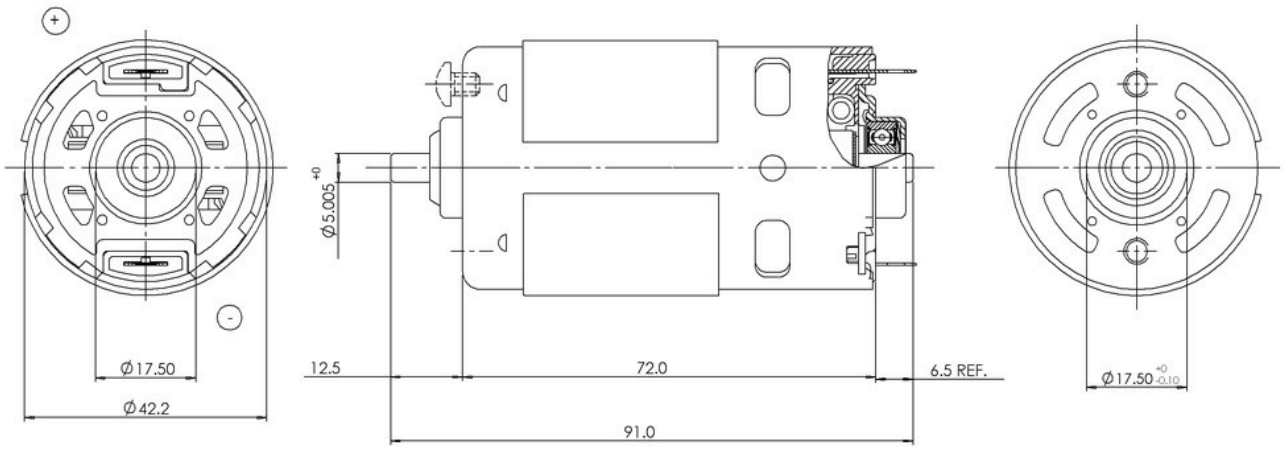
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.23	6.06	1.17	3.14
Efficiency (%)	-	-	70	-
Output Power (W)	-	-	21.32	39.21
Speed (rpm)	4500	-	3700	2200
Torque (mNm)	-	335.00	54.35	167.50

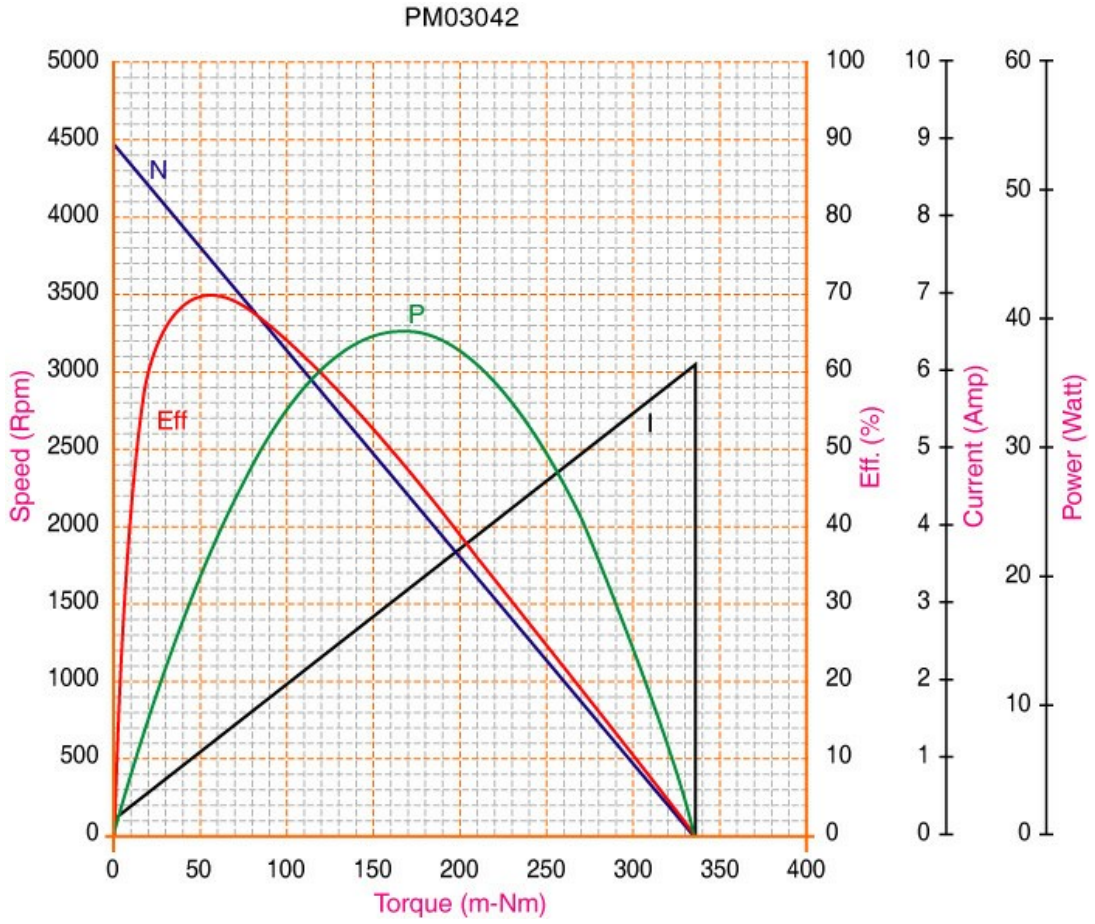
Application Examples:

Circulation Pumps

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Highly reliable, Compact, High power density and Fast response

Specifications:

Dimensions	: Ø 45.0 X 66.0 mm
Shaft Diameter	: Ø 4.005 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 15921 rpm
No Load Current	: 2.26 A
Nominal Speed	: 13936 rpm
Nominal Torque	: 84.58 mNm
Nominal Current	: 15.87 A
Stall Torque	: 678.32 mNm
Stall Current	: 111.38 A
Maximum Output Power	: 282.85 W
Maximum Efficiency	: 65%
Weight	: 370 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

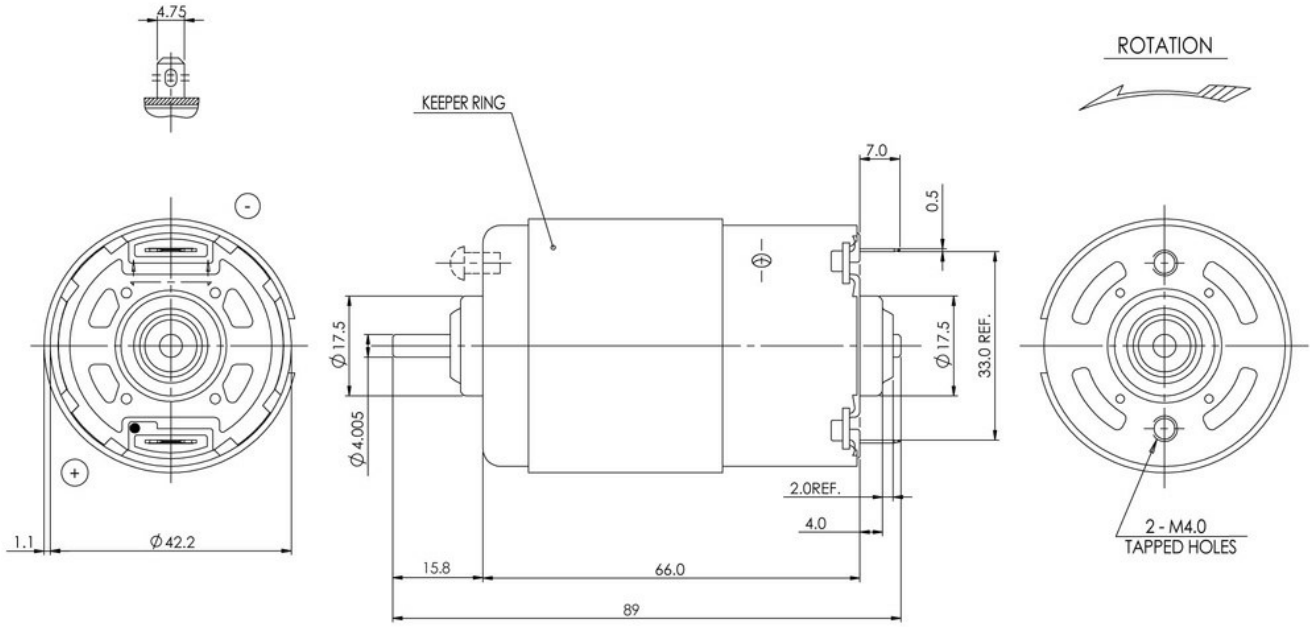
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	2.26	111.38	15.87	56.82
Efficiency (%)	-	-	65	41
Output Power (W)	-	-	123.48	282.85
Speed (rpm)	15921	-	13936	7961
Torque (mNm)	-	678.32	84.58	339.16

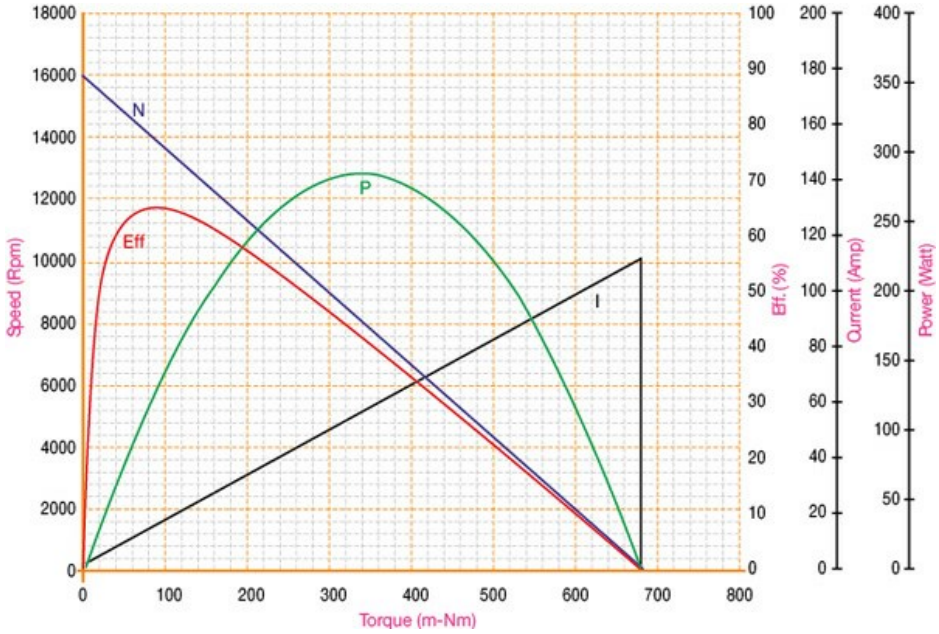
Application Examples:

Electric Parking Brake

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

specially designed for tire air pump

Specifications:

Dimensions	: Ø 42.2 X 66.0 mm
Shaft Diameter	: Ø 5.005 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 10900 rpm
Stall Torque	: 506.39 mNm
Maximum Output Power	: 145.06 W
Maximum Efficiency	: 75%

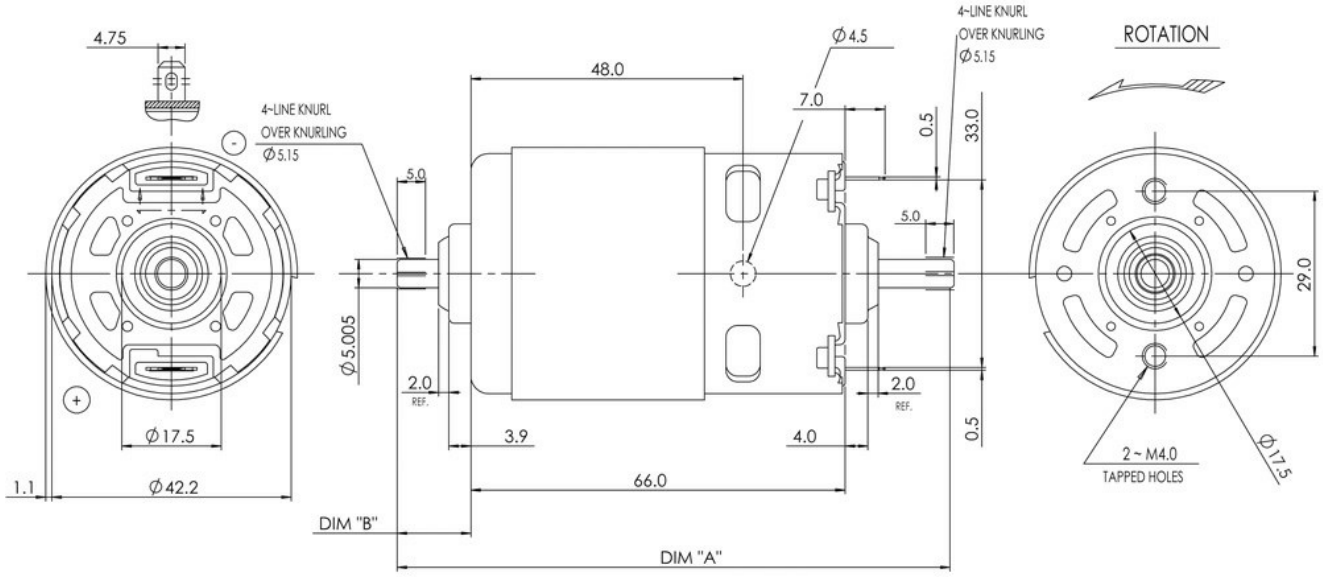
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.38	506.39	8.12	24.51
Efficiency (%)	-	-	75	-
Output Power (W)	-	-	72.18	145.06
Speed (rpm)	10900	-	9300	5500
Torque (mNm)	-	506.39	73.72	253.20

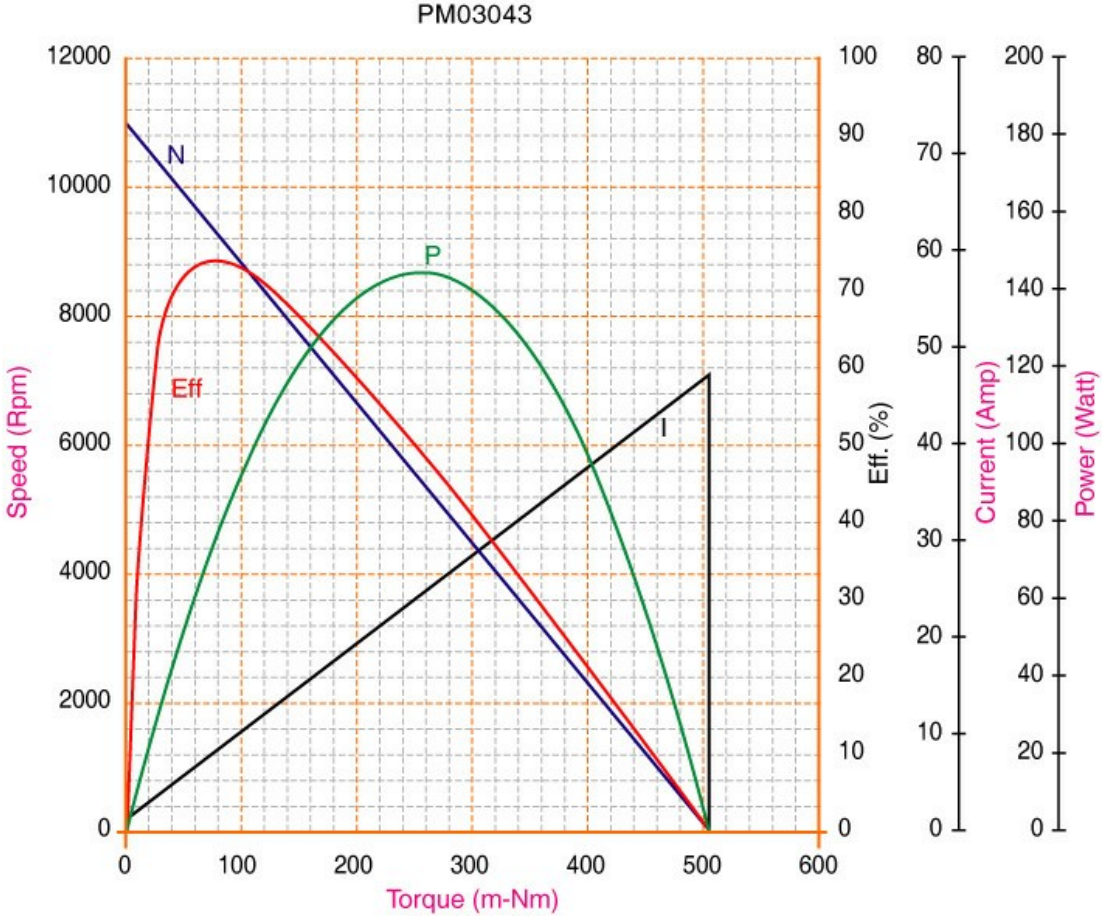
Application Examples:

Air Pumps

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

ultra long life with 2 ball bearings, used for a secondary air pump, it can operate at high tem

Specifications:

Dimensions	: Ø 52.0 X 85.0 mm
Shaft Diameter	: Ø 6.005 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 6400 rpm
Stall Torque	: 915.92 mNm
Maximum Output Power	: 153.63 W
Maximum Efficiency	: 67%

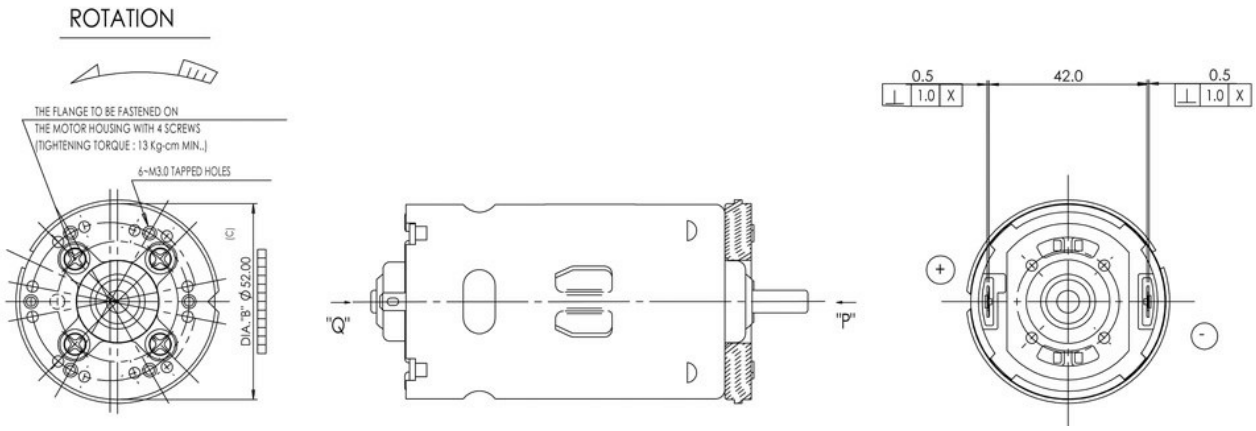
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.20	53.65	8.02	27.43
Efficiency (%)	-	-	67	-
Output Power (W)	-	-	69.50	153.63
Speed (rpm)	6400	-	5600	3200
Torque (mNm)	-	915.92	119.07	457.96

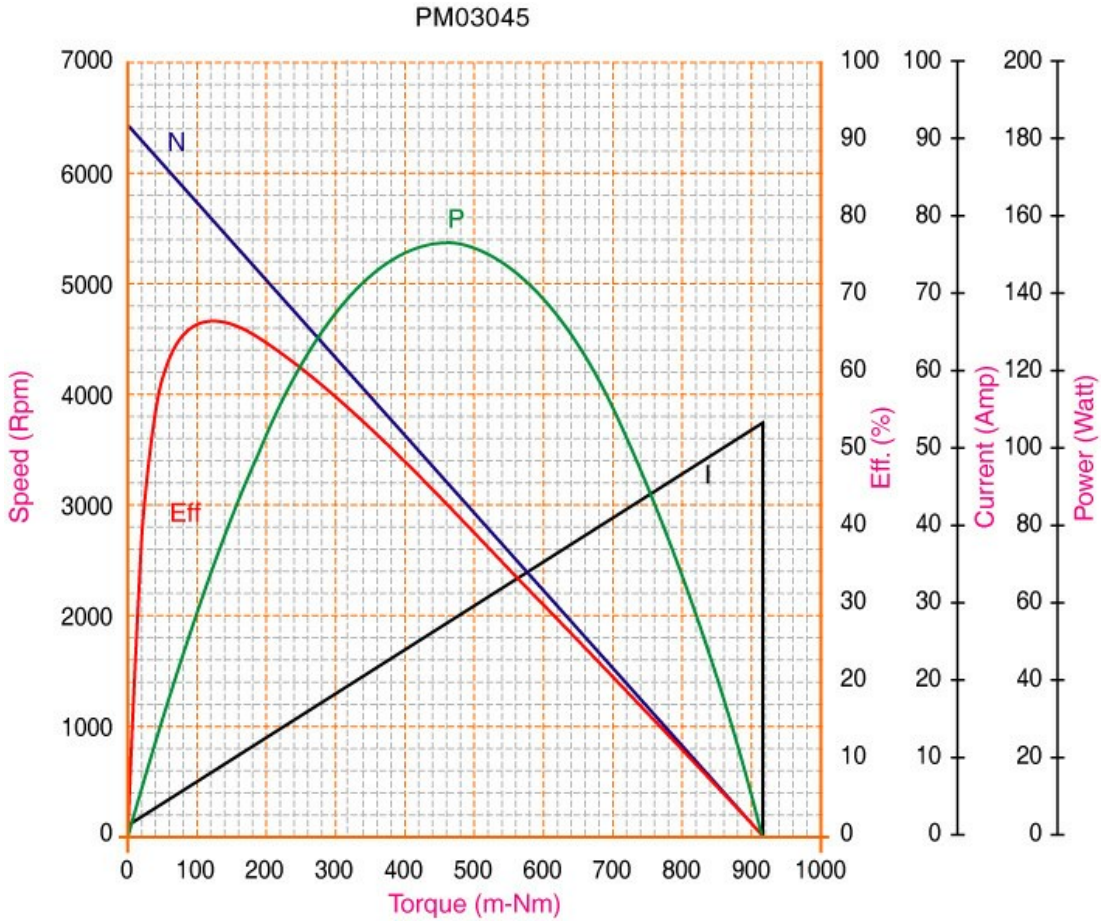
Application Examples:

Air Pumps

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

sunroof control motor with optional EMI suppression and thermal protectionsunroof control motor with optional EMI suppression and thermal protection

Specifications:

Dimensions	: Ø 51.9 X 85.0 mm
Shaft Diameter	: Ø 6.355 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 7441 rpm
Stall Torque	: 1216.55 mNm
Maximum Output Power	: 237.07 W
Maximum Efficiency	: 71%
Weight	: 670 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

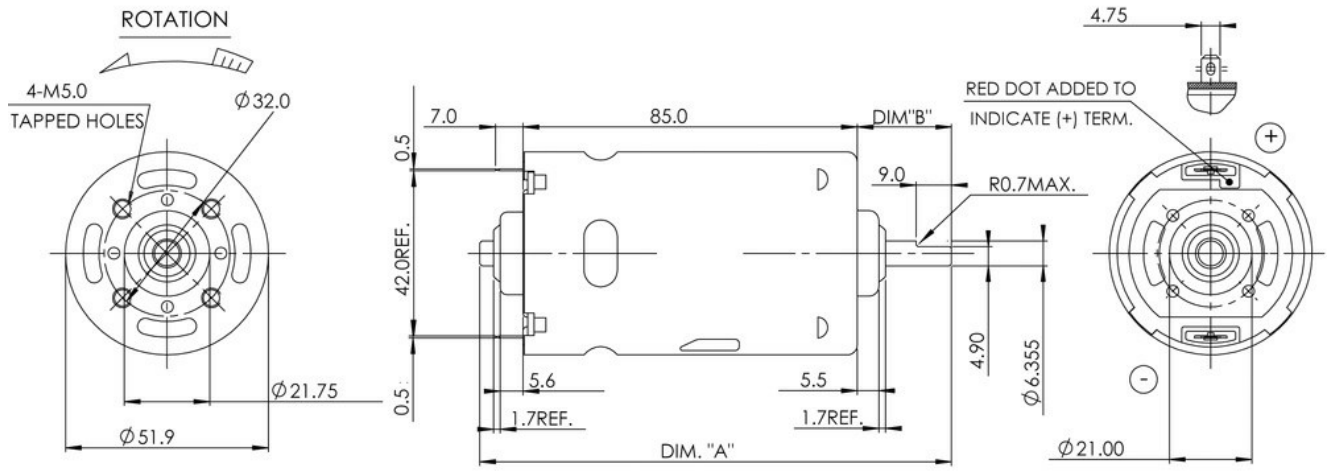
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.41	87.51	11.11	44.46
Efficiency (%)	-	-	71	-
Output Power (W)	-	-	94.78	237.07
Speed (rpm)	7441	-	6603	3720
Torque (mNm)	-	1216.55	137.03	608.27

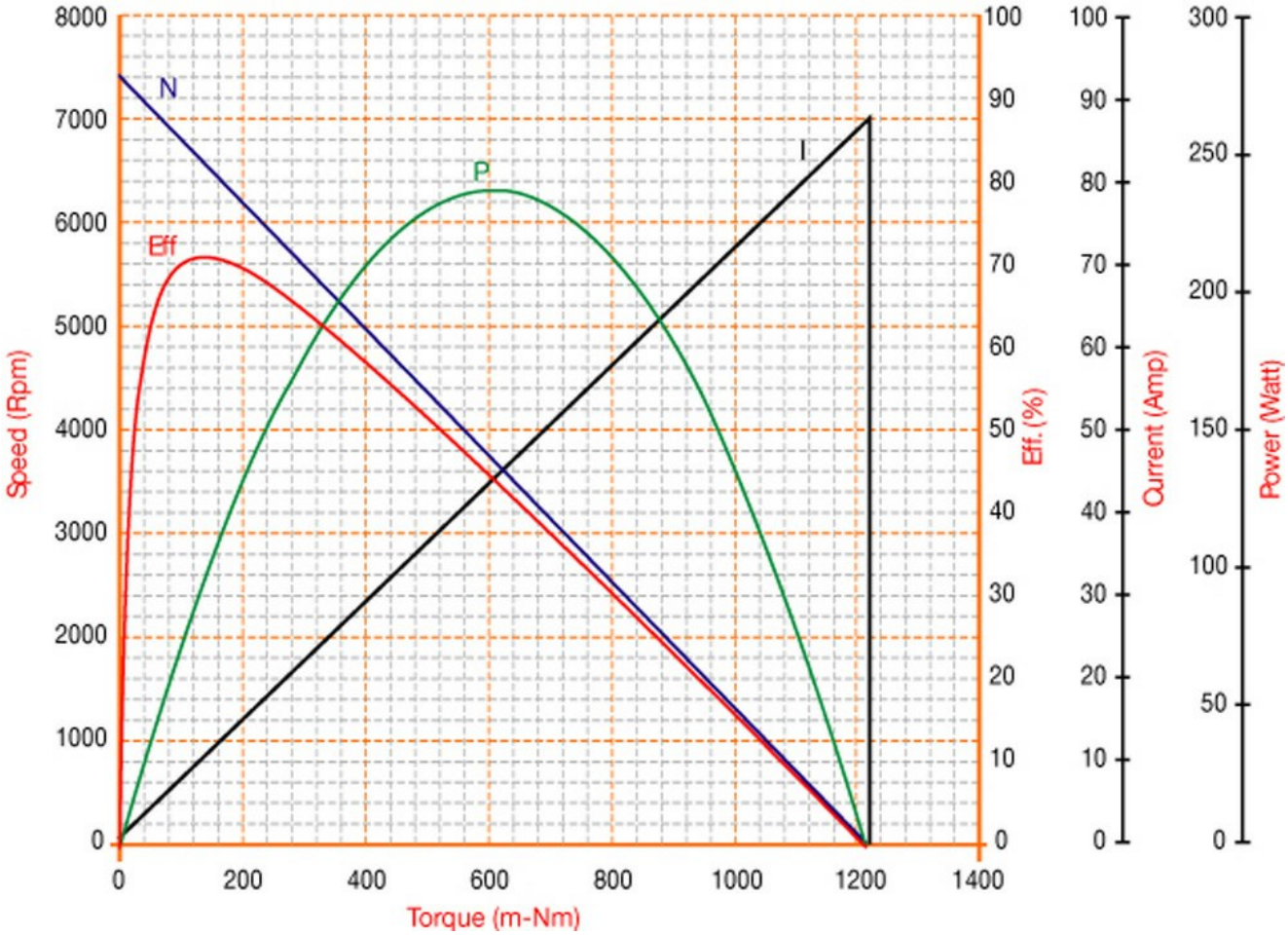
Application Examples:

Sunroof Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

high torque flat motor with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 142.6 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 7000 rpm
Stall Torque	: 418.04 mNm
Maximum Output Power	: 76.66 W
Maximum Efficiency	: 61%
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

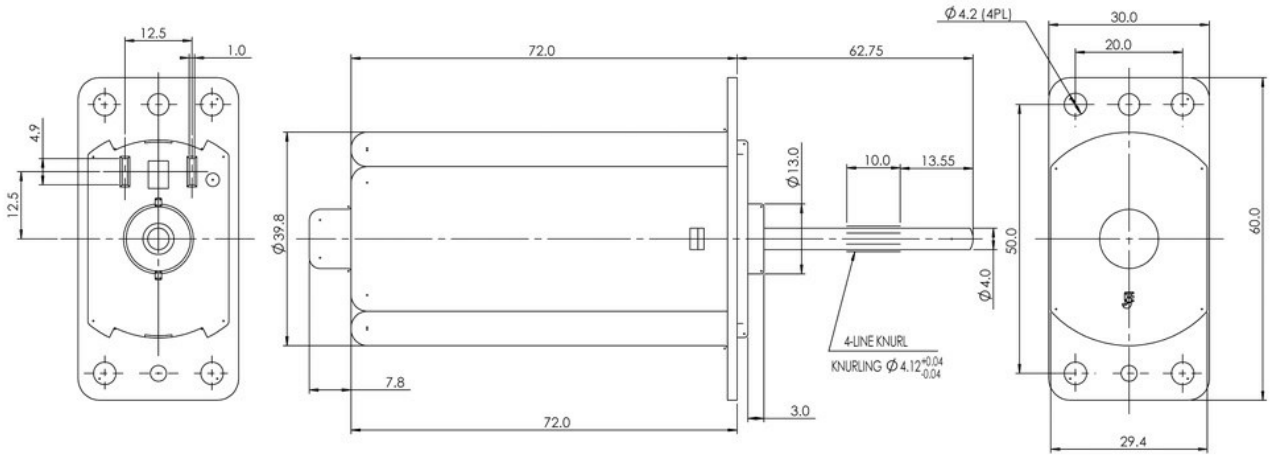
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.06	29.77	5.63	15.41
Efficiency (%)	-	-	61	-
Output Power (W)	-	-	41.00	76.66
Speed (rpm)	7000	-	5900	3500
Torque (mNm)	-	418.04	66.45	209.02

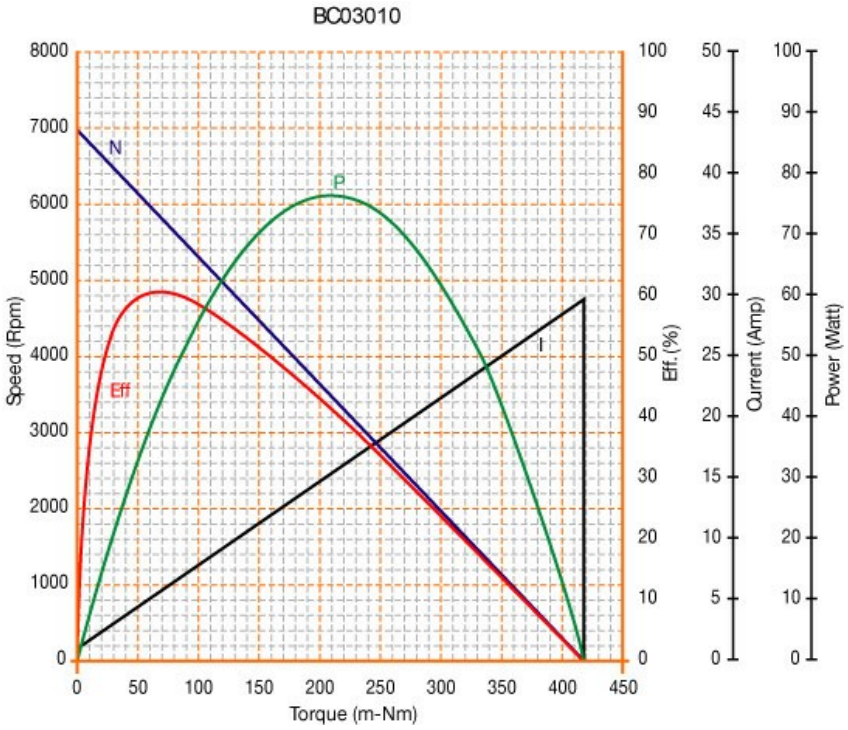
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

high torque flat motor with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 153.8 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 6500 rpm
Stall Torque	: 375.00 mNm
Maximum Output Power	: 65.97 W
Maximum Efficiency	: 75%
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

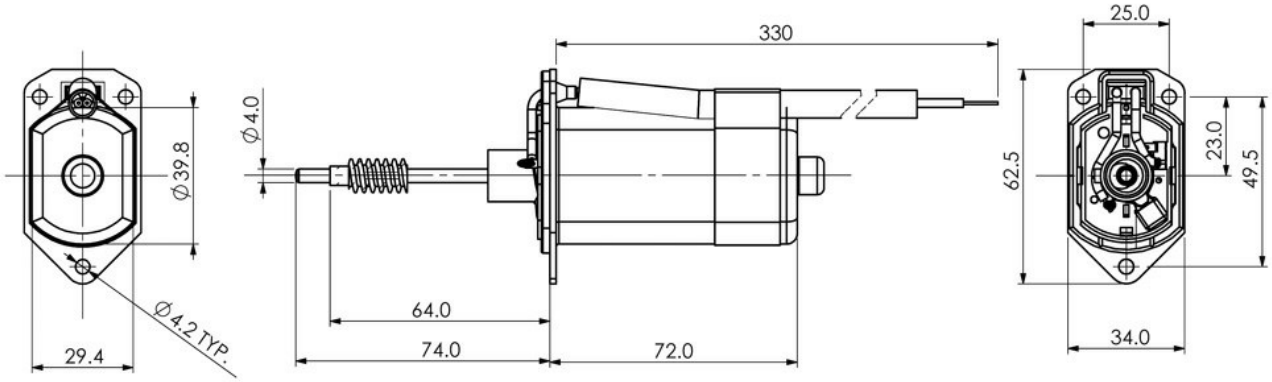
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.64	23.00	3.28	11.47
Efficiency (%)	-	-	75	-
Output Power (W)	-	-	29.33	65.97
Speed (rpm)	6500	-	5800	3300
Torque (mNm)	-	375.00	48.07	188.65

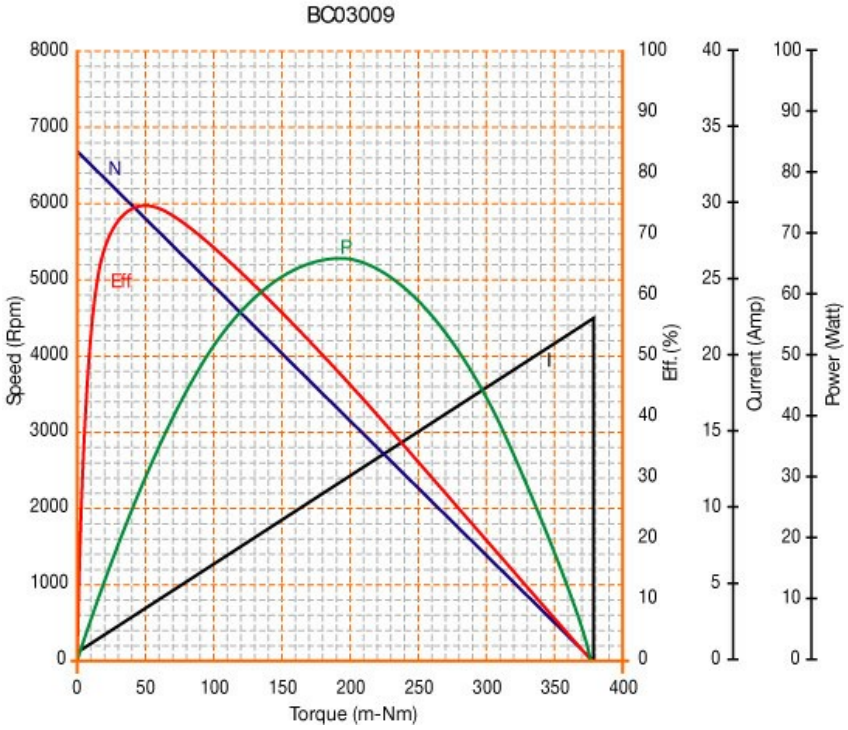
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

water proof with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 180 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 90 rpm
Stall Torque	: 9000.00 mNm
Maximum Output Power	: 21.79 W
Maximum Efficiency	: 24%
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

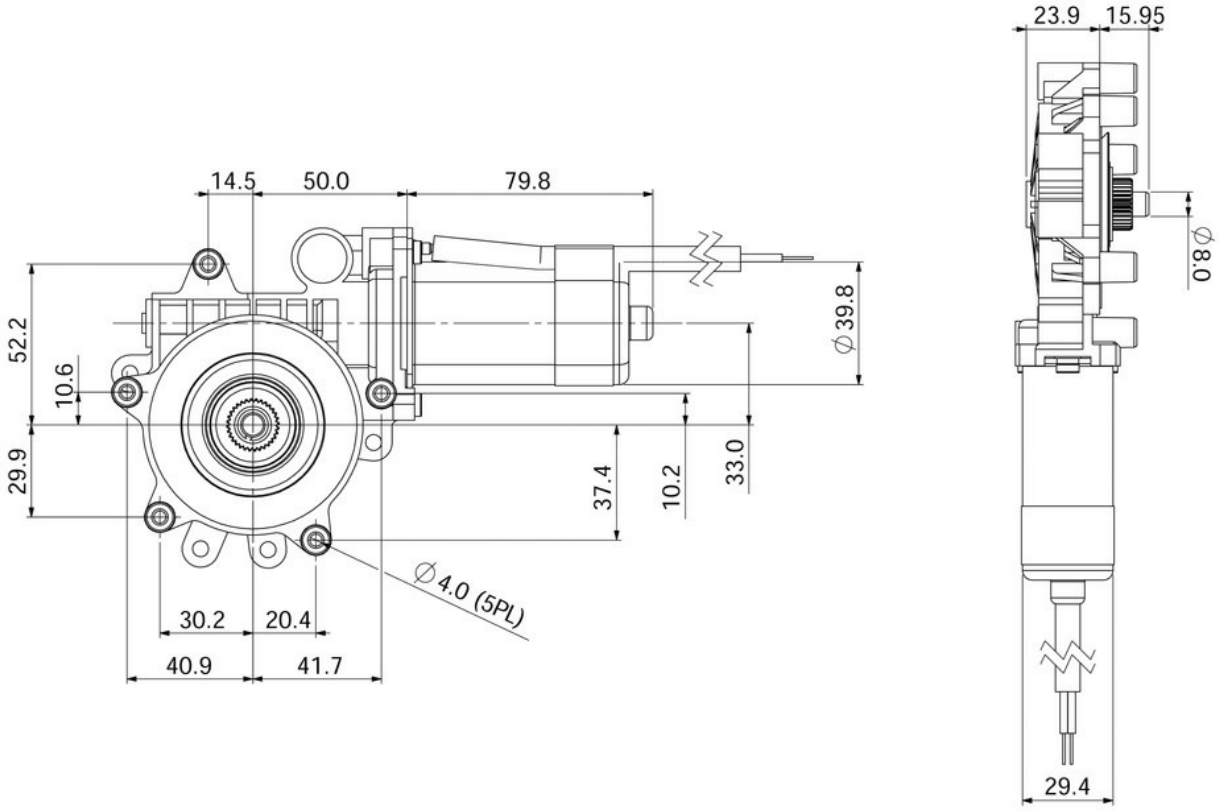
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	23.00	4.86	10.93
Efficiency (%)	-	-	24	-
Output Power (W)	-	-	13.41	21.79
Speed (rpm)	90	-	72	44
Torque (mNm)	-	9000.00	1777.39	4676.73

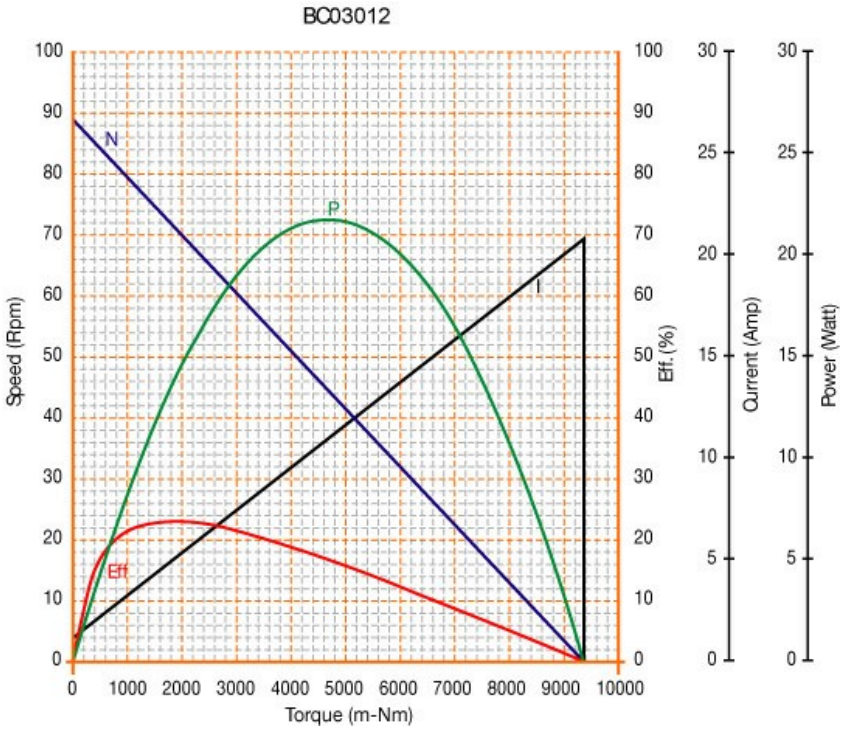
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Specifications:

Dimensions	: Ø 39.8 X 34 X 134.8 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 7894 rpm
Stall Torque	: 394.73 mNm
Maximum Output Power	: 81.61 W
Maximum Efficiency	: 62%
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C
Electrcial Connection	: Female Terminal

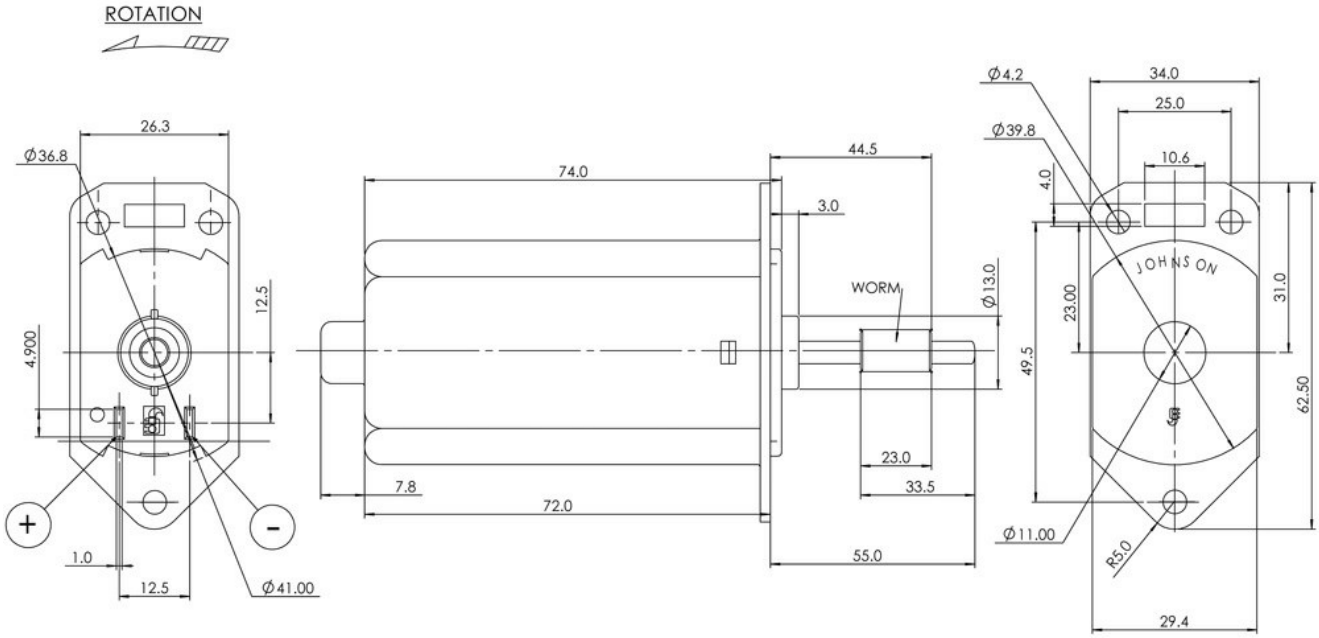
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.22	30.97	6.15	16.10
Efficiency (%)	-	-	62	-
Output Power (W)	-	-	45.10	81.61
Speed (rpm)	7894	-	6587	3947
Torque (mNm)	-	394.73	65.37	197.37

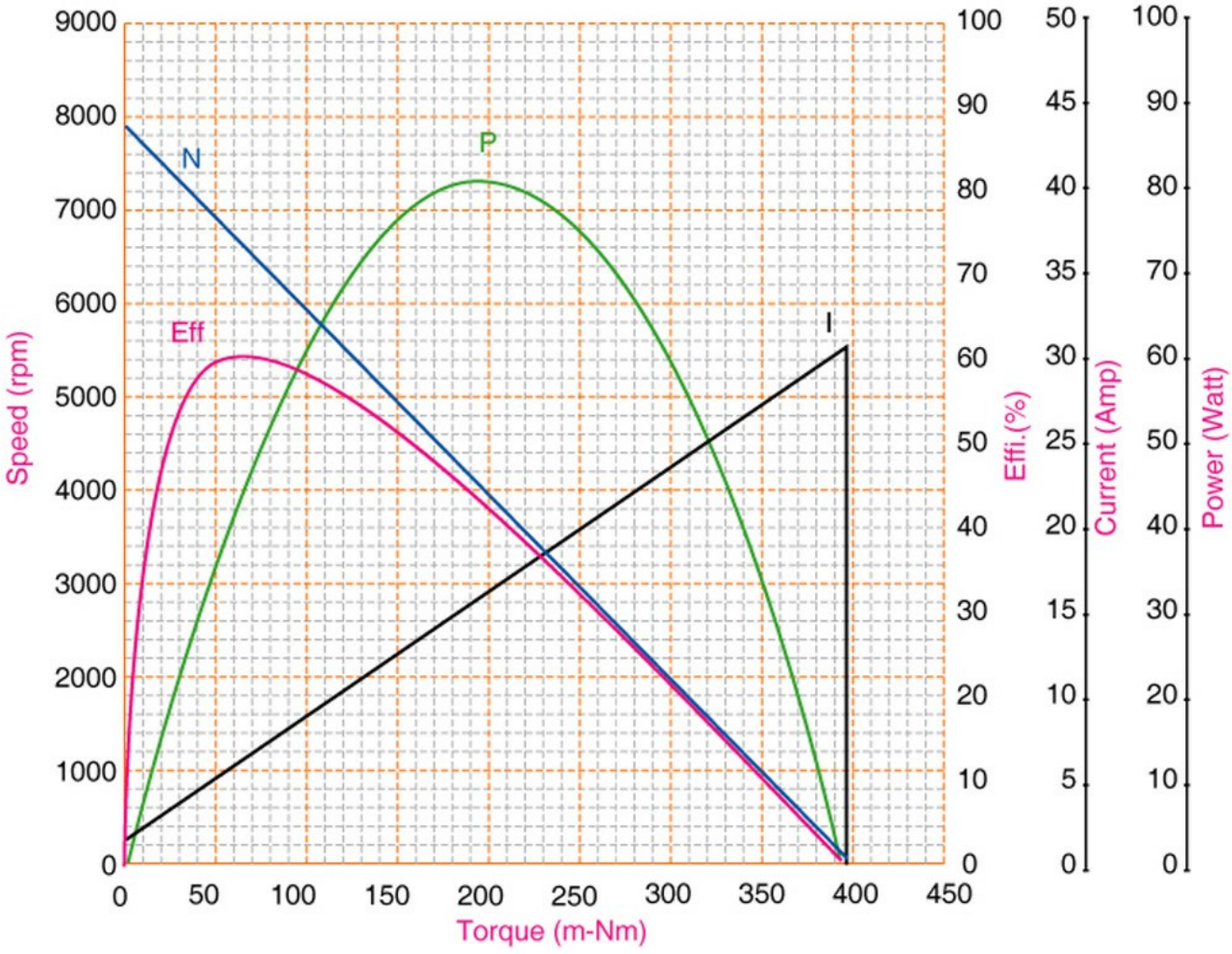
Application Examples:

Latching / Cinching

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High Torque, Low Noise, High Reliability

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 184 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 255 rpm
Stall Torque	: 23000.00 mNm
Maximum Output Power	: 16.35 W
Maximum Efficiency	: 25%
Weight	: 520 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

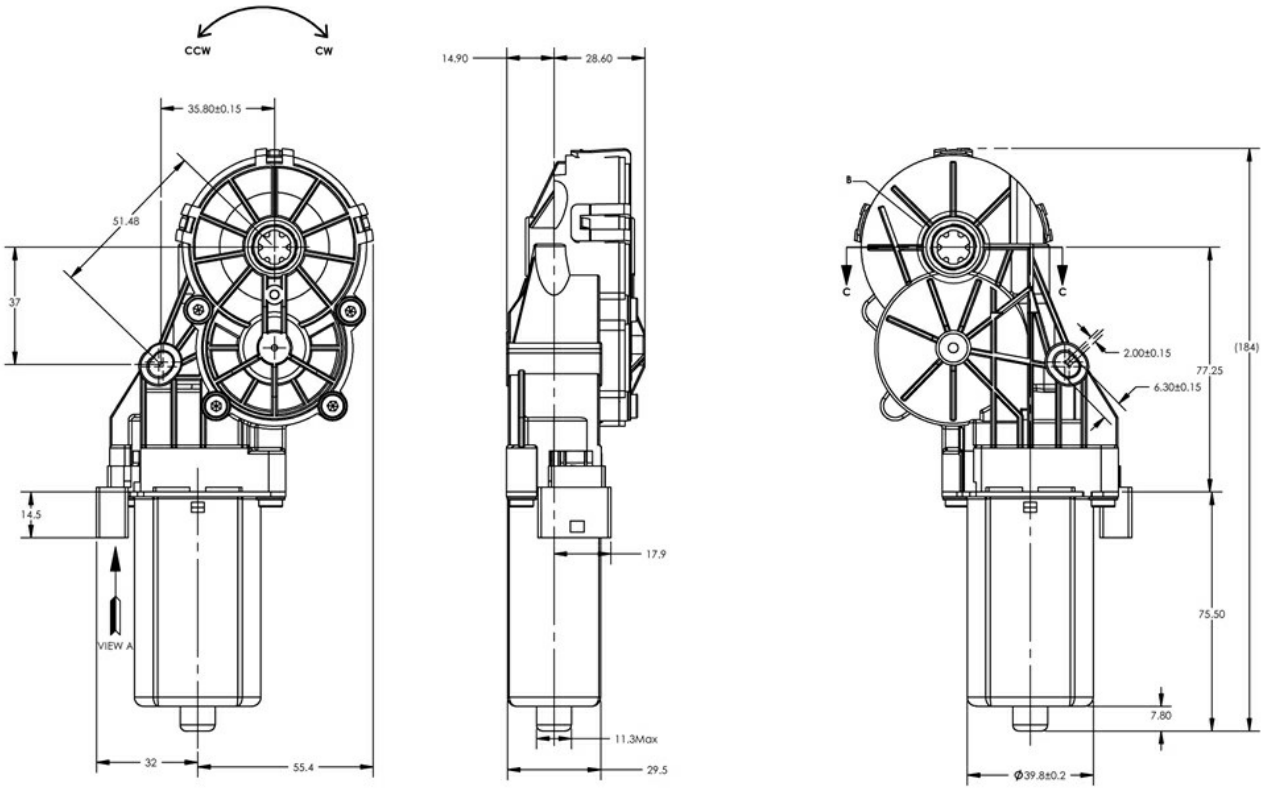
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.66	13.37	2.98	7.02
Efficiency (%)	-	-	25	17
Output Power (W)	-	-	9.76	16.35
Speed (rpm)	255	-	22	14
Torque (mNm)	-	23000.00	4154.73	11379.97

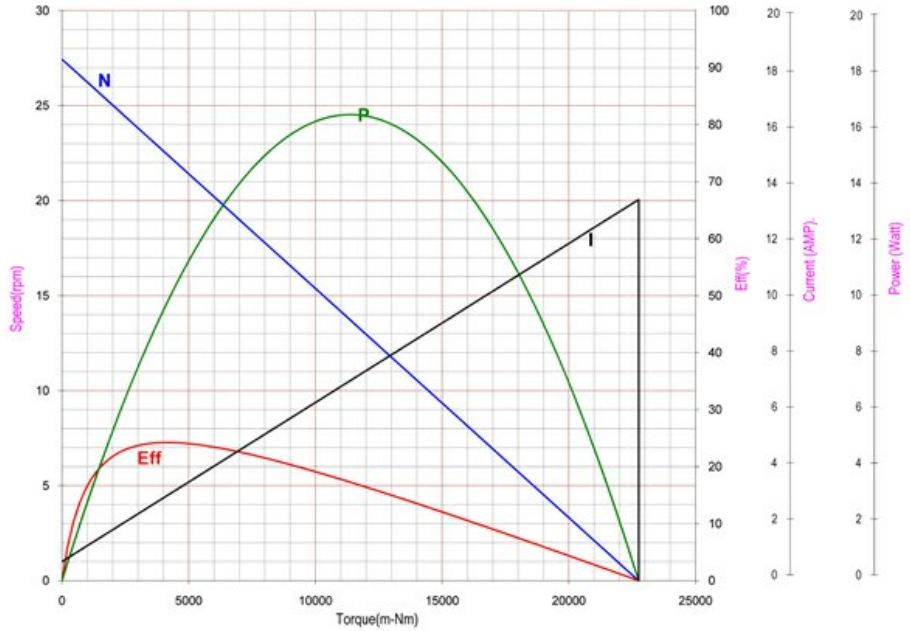
Application Examples:

Seat Adjusters

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

Highly reliable, Long life, Fast response

Specifications:

Dimensions	: Ø 46 X 121 mm
Shaft Diameter	: Ø 9.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 5116 rpm
No Load Current	: 2.69 A
Nominal Speed	: 3876 rpm
Nominal Torque	: 176.80 mNm
Nominal Current	: 11.52 A
Stall Torque	: 796.42 mNm
Stall Current	: 40.41 A
Maximum Output Power	: 103.86 W
Maximum Efficiency	: 52%
Operating Temperature Range	: -40 to 120 °C
Storage Temperature Range	: -40 to 120 °C

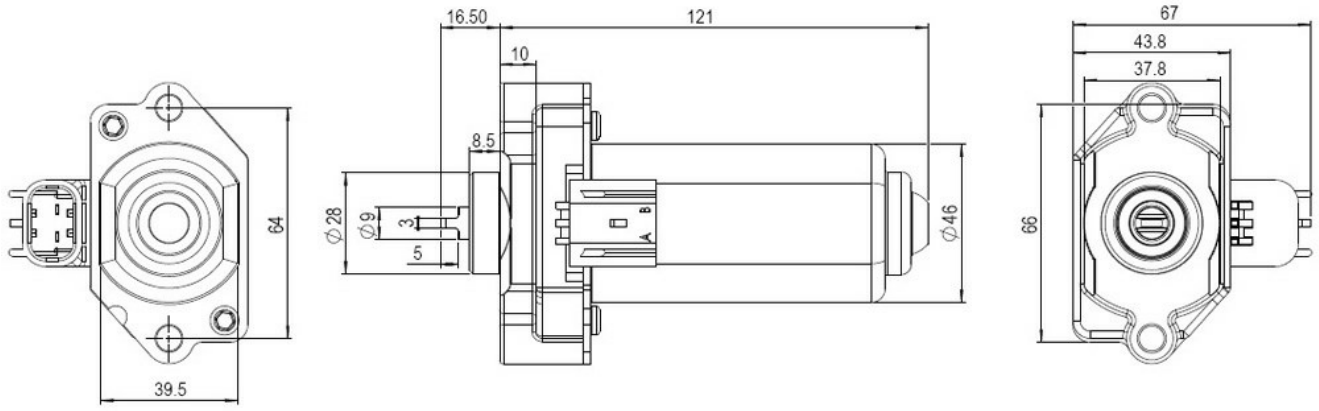
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	2.69	40.41	11.52	21.84
Efficiency (%)	-	-	52	40
Output Power (W)	-	-	71.76	103.86
Speed (rpm)	5116	-	3876	2491
Torque (mNm)	-	796.42	176.80	398.21

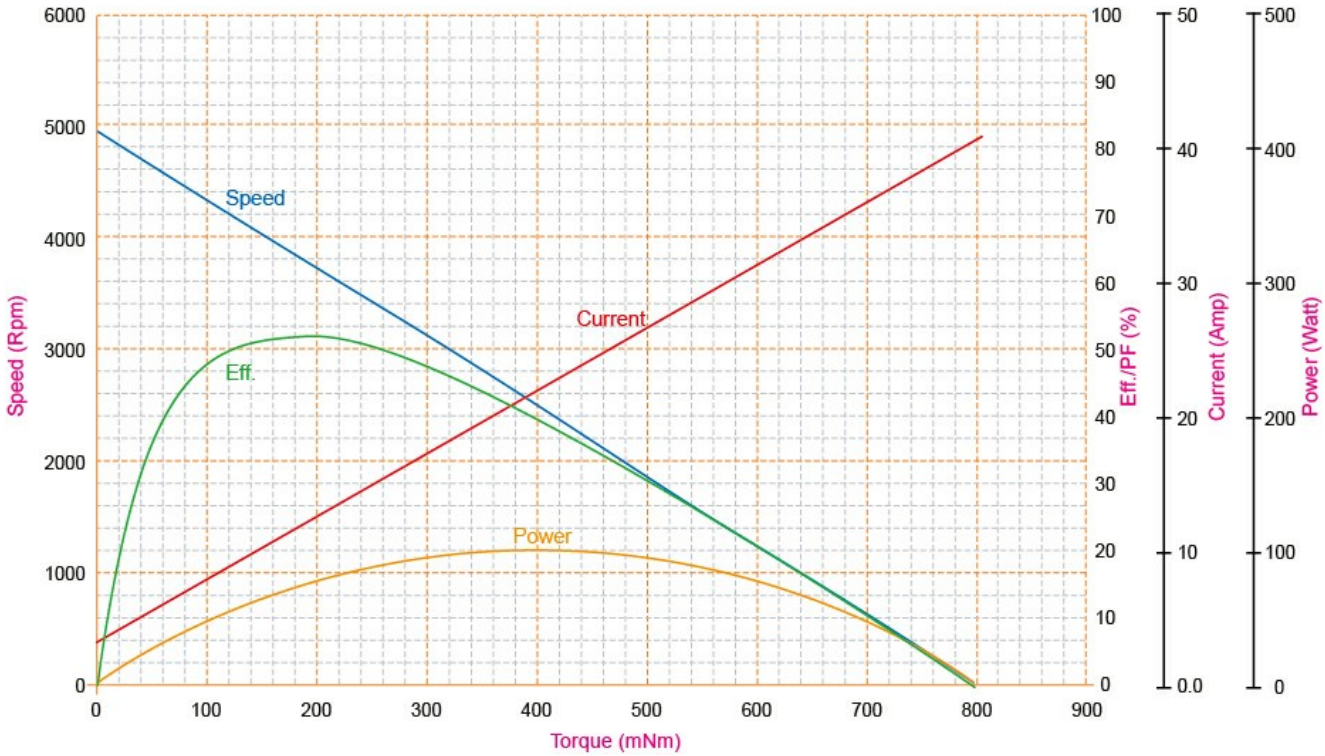
Application Examples:

Automated Manual Transmission, Brake Assists

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

high torque flat motor with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 159.0 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 7300 rpm
Stall Torque	: 300.00 mNm
Maximum Output Power	: 53.90 W
Maximum Efficiency	: 53%
Operating Temperature Range	: -40 to 80 °C
Storage Temperature Range	: -40 to 80 °C

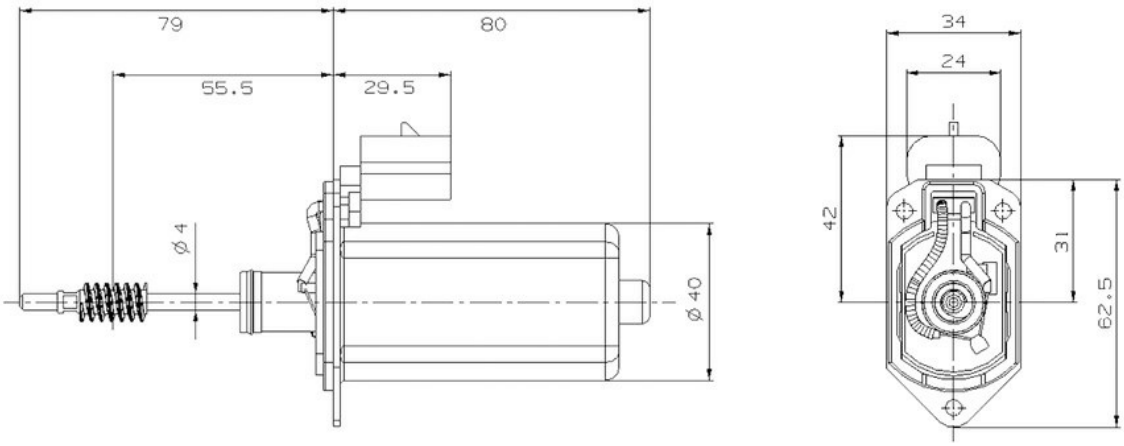
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	0.87	21.00	5.27	10.00
Efficiency (%)	-	-	53	-
Output Power (W)	-	-	37.19	53.90
Speed (rpm)	7300	-	5400	3500
Torque (mNm)	-	300.00	65.16	147.00

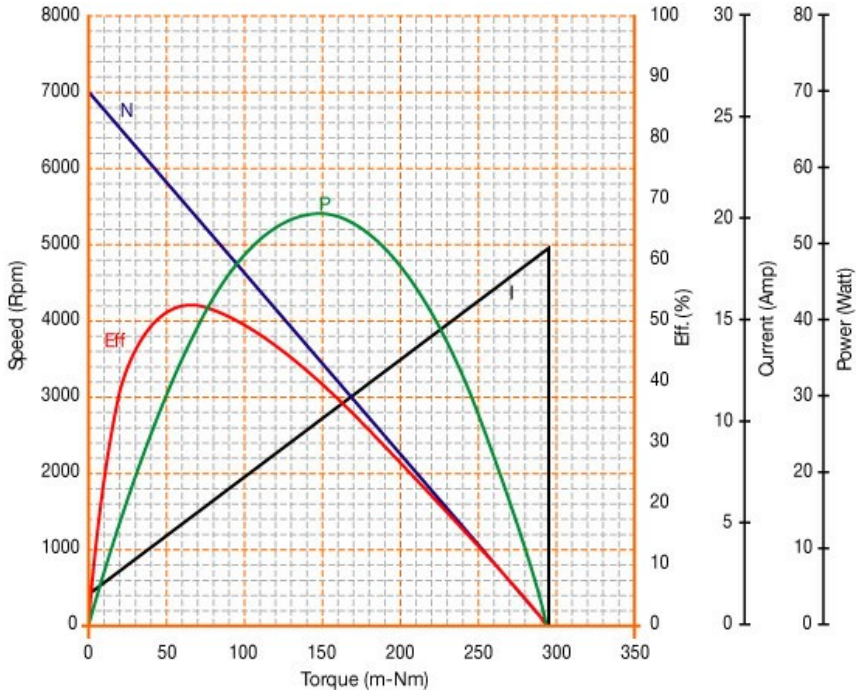
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

compact yet high torque, the market leader for power window application

Specifications:

Dimensions	: Ø 39.8 X 29.5 X 184.8 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 9000.00 mNm
Maximum Output Power	: 23.10 W
Maximum Efficiency	: 20%
Weight	: 500 g
Operating Temperature Range	: -40 to 80 °C
Storage Temperature Range	: -40 to 80 °C

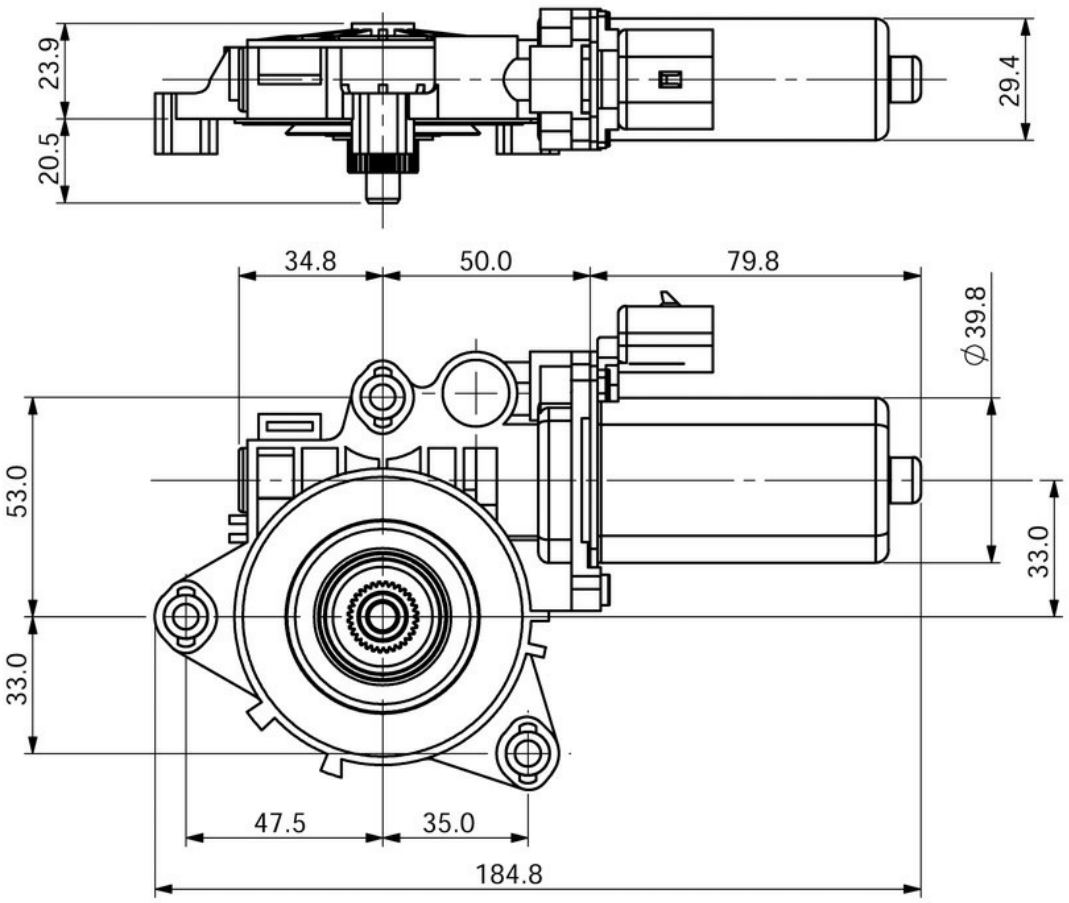
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	-	5.75	11.75
Efficiency (%)	-	-	20	-
Output Power (W)	-	-	15.17	23.10
Speed (rpm)	98	-	79	50
Torque (mNm)	-	9000.00	1826.20	4410.00

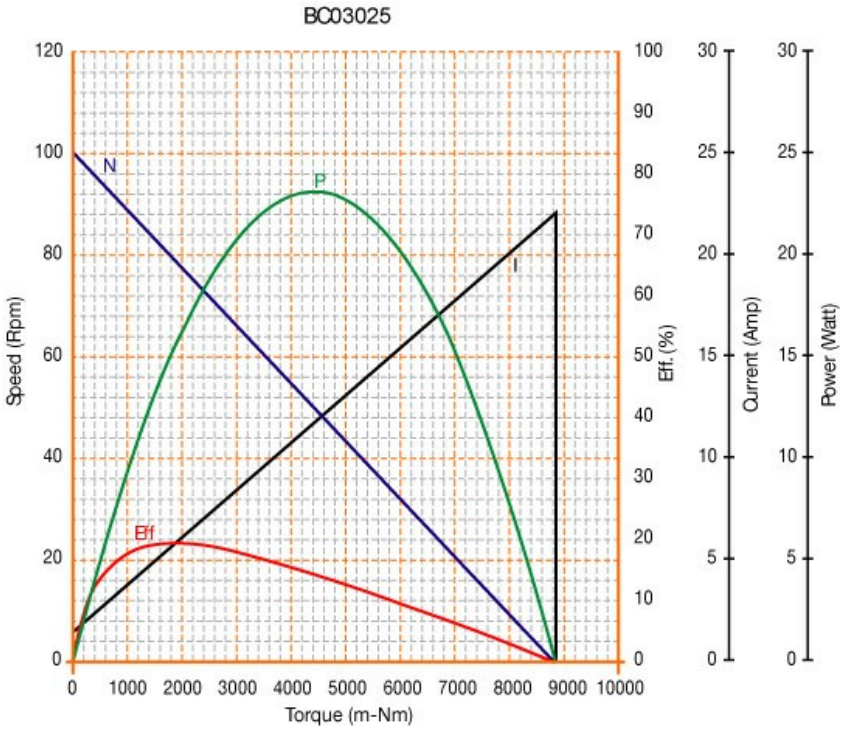
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

the lower power version specially designed for rear window application

Specifications:

Dimensions	: Ø 40.0 X 185.0 mm
Shaft Diameter	: Ø 4.000 mm
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 8000.00 mNm
Maximum Output Power	: 20.12 W
Maximum Efficiency	: 19%
Weight	: 500 g
Operating Temperature Range	: -40 to 80 °C
Storage Temperature Range	: -40 to 80 °C

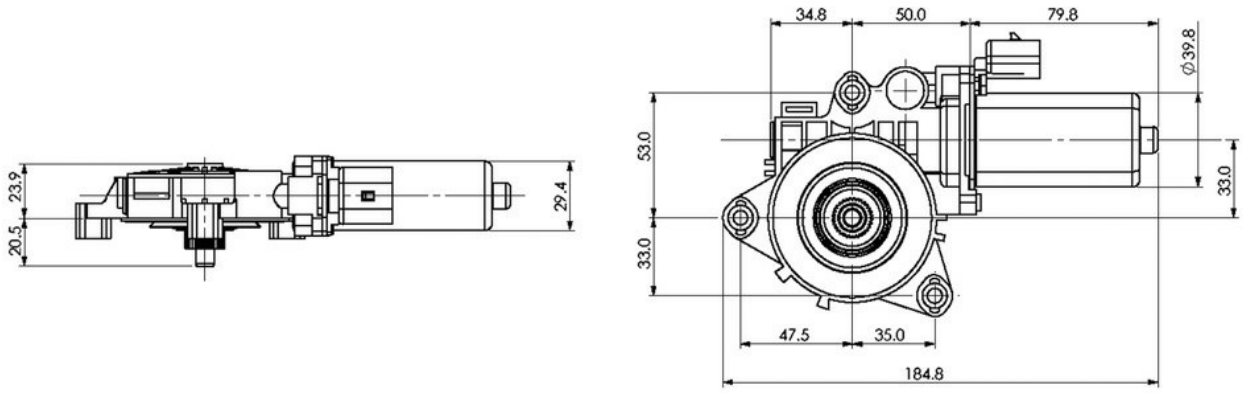
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	20.00	5.48	10.75
Efficiency (%)	-	-	19	-
Output Power (W)	-	-	13.58	20.12
Speed (rpm)	98	-	98	49
Torque (mNm)	-	8000.00	1685.48	3920.00

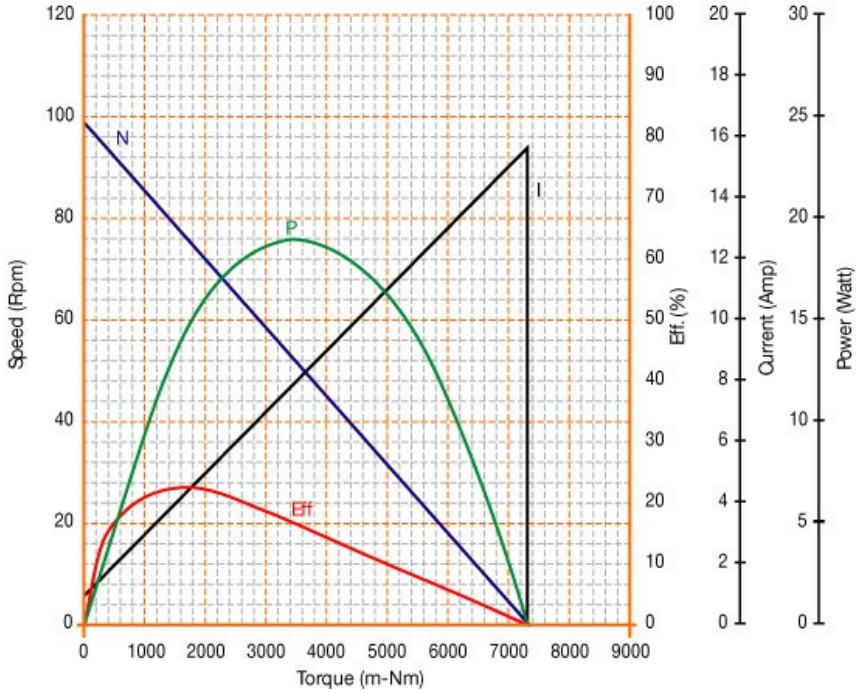
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

the lower power version specially designed for rear window application

Specifications:

Dimensions	: Ø 1.5748 X 7.28345 in
Shaft Diameter	: Ø 0.157 in
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 70.81 lb.in
Maximum Output Power	: 0.03
Maximum Efficiency	: 19%
Weight	: 18 oz
Operating Temperature Range	: -40 to 176 °F
Storage Temperature Range	: -40 to 176 °F

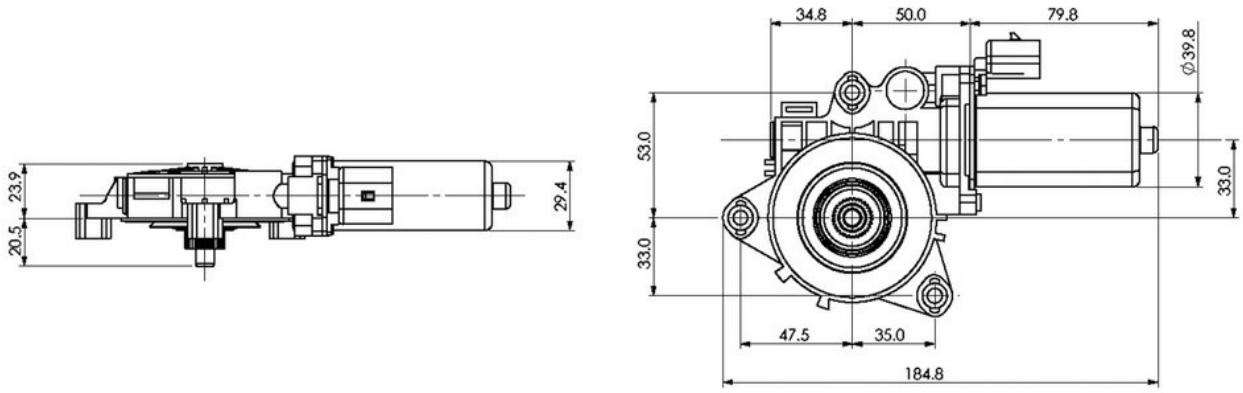
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	20.00	5.48	10.75
Efficiency (%)	-	-	19	-
Output Power (hp)	-	-	0.02	0.03
Speed (rpm)	98	-	98	49
Torque (Lb.in)	-	70.81	14.92	34.70

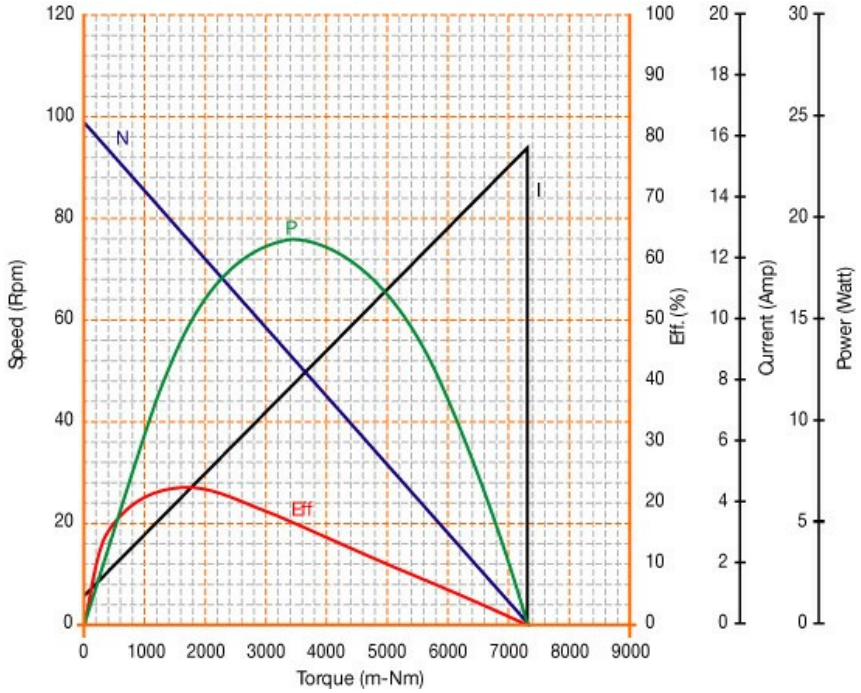
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

equipped with EMI suppression and overloaded current protection

Specifications:

Dimensions	: Ø 1.56693 X 1.16142 X 6.53542 in
Shaft Diameter	: Ø 0.157 in
Input Voltage	: 13.5 V DC
No Load Speed	: 95 rpm
Stall Torque	: 79.66 lb.in
Maximum Output Power	: 0.03
Maximum Efficiency	: 21%
Weight	: 18 oz
Operating Temperature Range	: -40 to 176 °F
Storage Temperature Range	: -40 to 176 °F

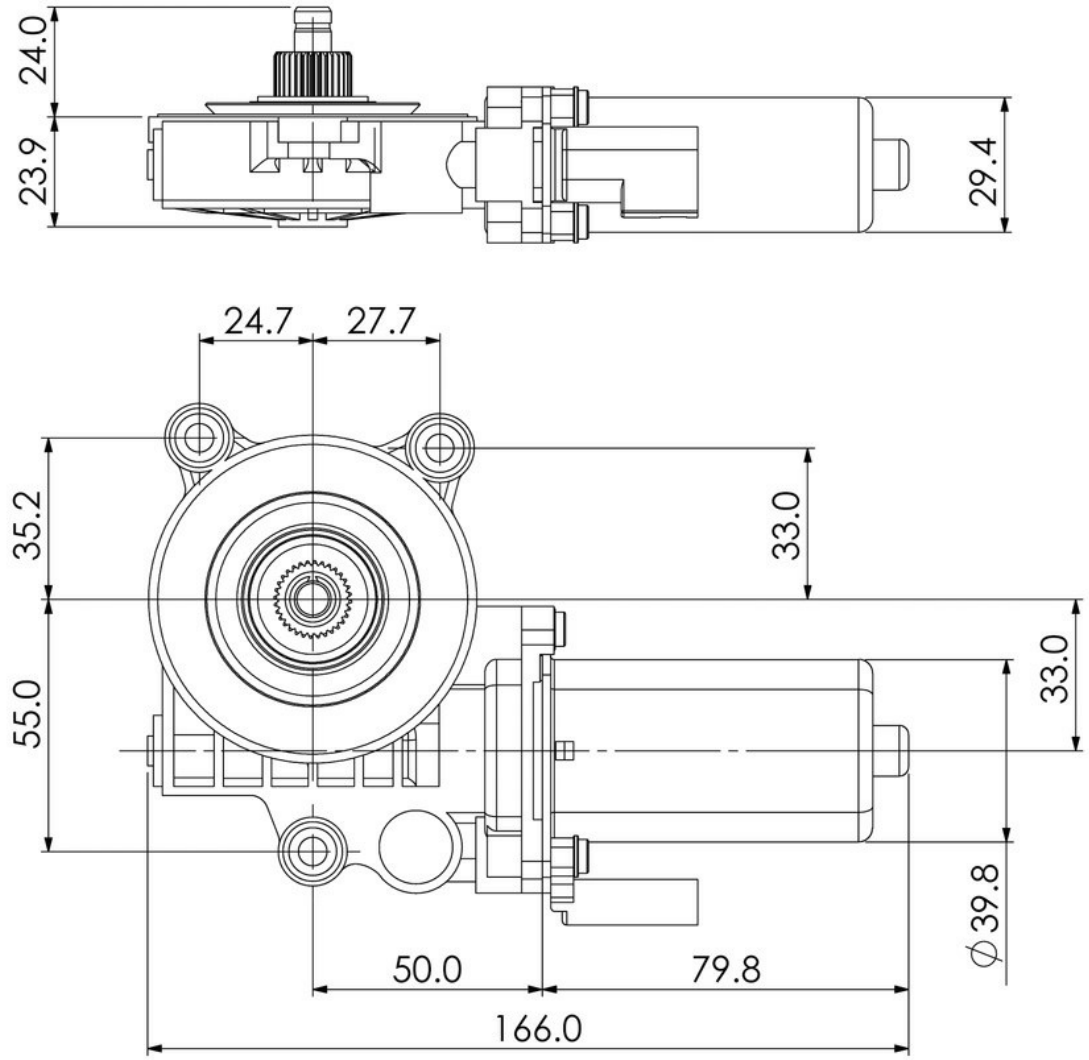
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	23.00	5.54	11.00
Efficiency (%)	-	-	21	-
Output Power (hp)	-	-	0.02	0.03
Speed (rpm)	95	-	79	50
Torque (Lb.in)	-	79.66	16.62	39.03

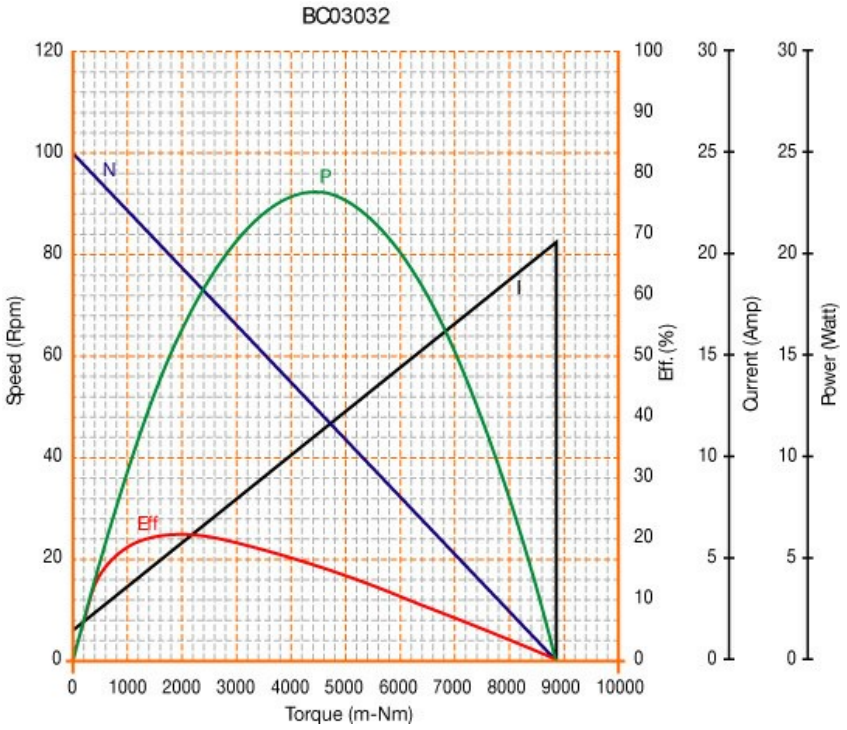
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

water proof with EMI suppression and overload protection

Specifications:

Dimensions	: Ø 1.5748 X 6.53542 in
Shaft Diameter	: Ø 0.157 in
Input Voltage	: 13.5 V DC
No Load Speed	: 98 rpm
Stall Torque	: 79.66 lb.in
Maximum Output Power	: 0.03
Maximum Efficiency	: 20%
Weight	: 18 oz
Operating Temperature Range	: -40 to 176 °F
Storage Temperature Range	: -40 to 176 °F

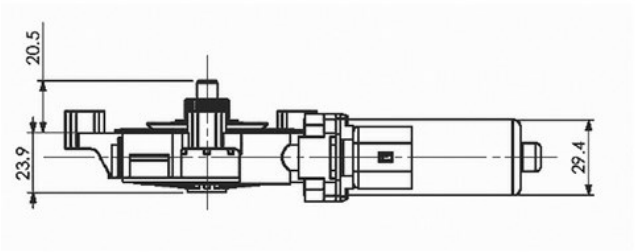
Performance Data:

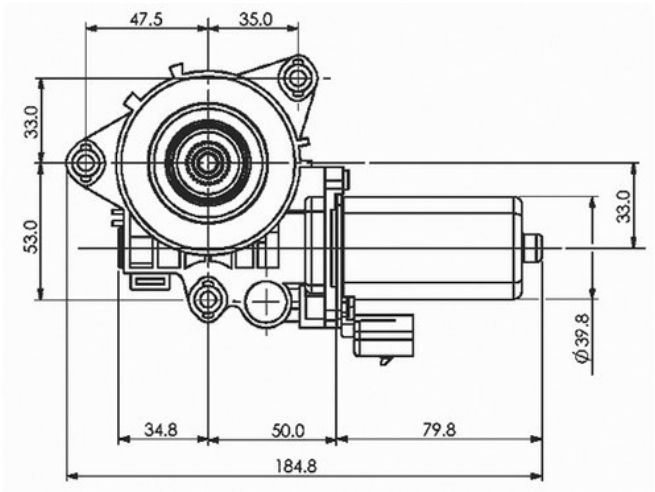
	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	22.00	5.75	11.75
Efficiency (%)	-	-	20	-
Output Power (hp)	-	-	0.02	0.03
Speed (rpm)	98	-	79	50
Torque (Lb.in)	-	79.66	16.16	39.03

Application Examples:

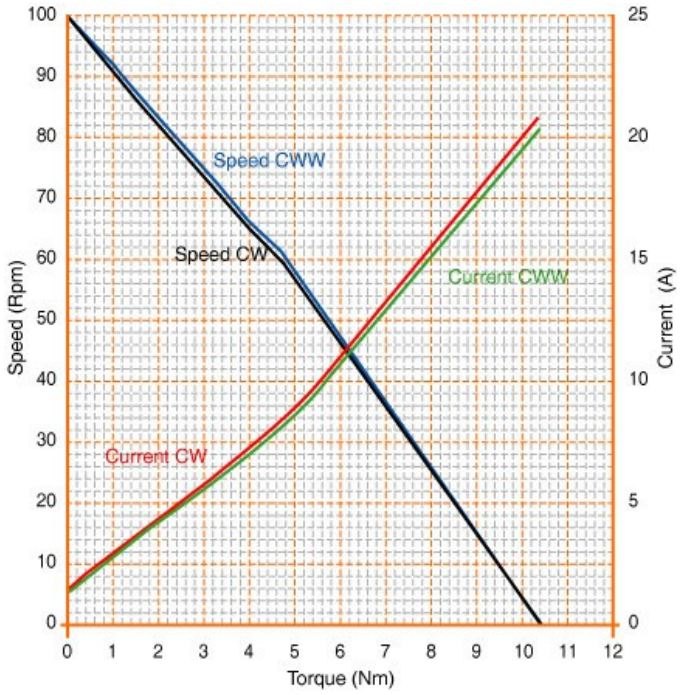
Window Lift Drives

Outline Drawing:





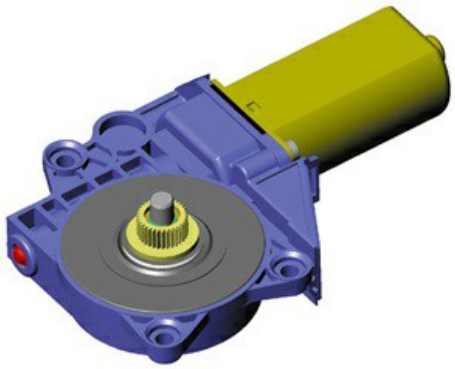
Performance Curves:



Units in Metric

Characteristics:

water proof with EMI protection and EMI



Specifications:

Dimensions	: Ø 1.5748 X 6.53542 in
Shaft Diameter	: Ø 0.157 in
Input Voltage	: 13.0 V DC
No Load Speed	: 65 rpm
Stall Torque	: 79.66 lb.in
Maximum Output Power	: 0.02
Maximum Efficiency	: 25%
Weight	: 17 oz
Operating Temperature Range	: -40 to 185 °F
Storage Temperature Range	: -40 to 185 °F

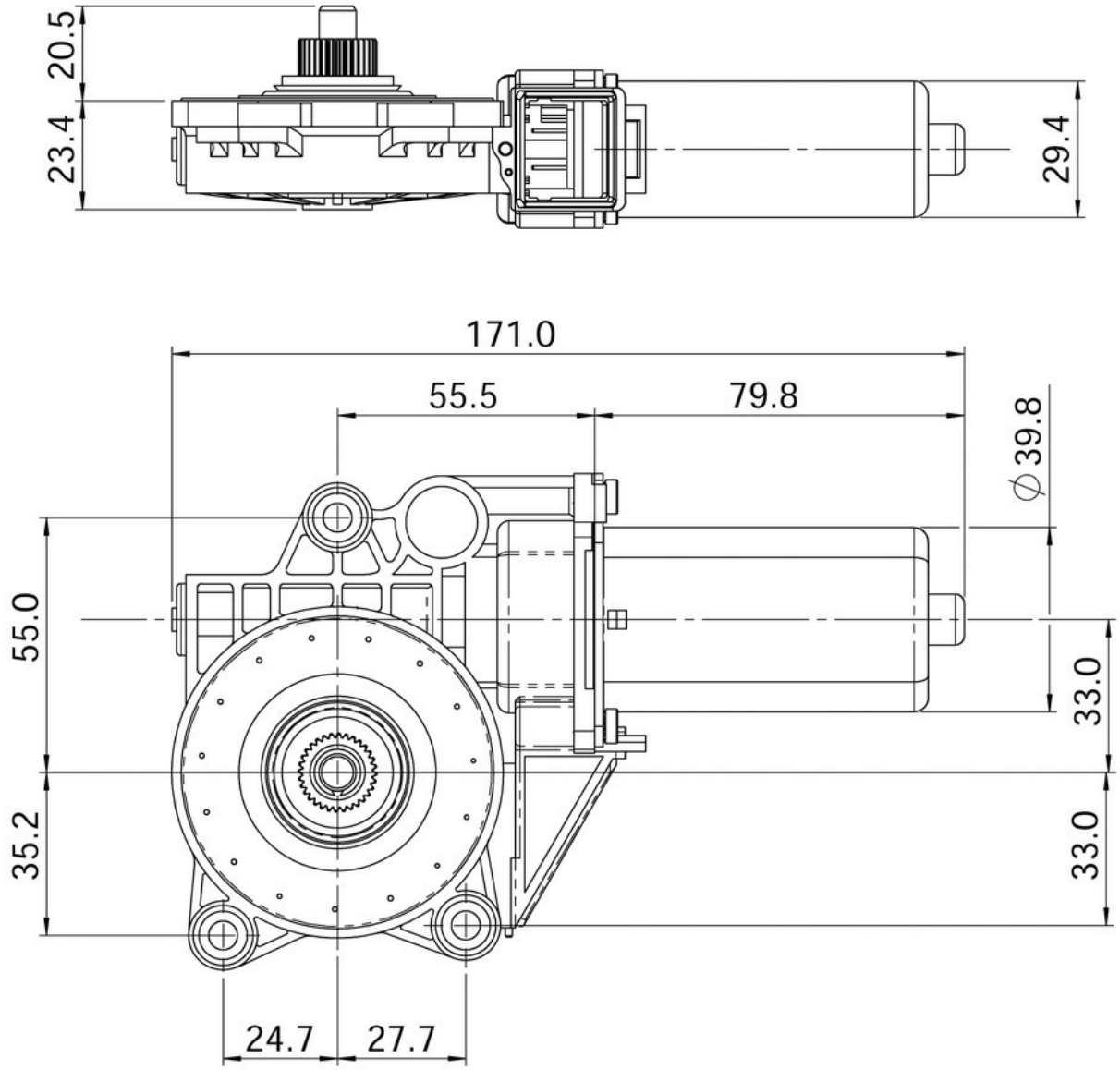
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	17.00	3.32	6.00
Efficiency (%)	-	-	25	-
Output Power (hp)	-	-	0.01	0.02
Speed (rpm)	65	-	50	33
Torque (Lb.in)	-	79.66	18.08	39.03

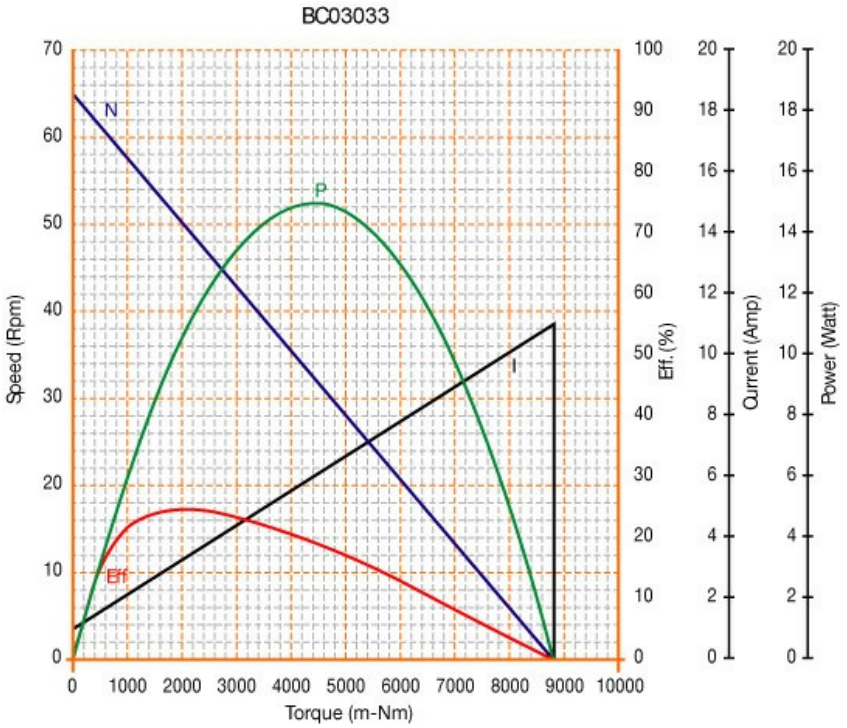
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

24 V windowlift motor with hall effect sensors for anti-pinch application

Specifications:

Dimensions	: Ø 44.0 X 38.0 X 170.0 mm
Shaft Diameter	: Ø 9.000 mm
Input Voltage	: 9.0 V DC
No Load Speed	: 95 rpm
Stall Torque	: 12000.00 mNm
Maximum Output Power	: 32.03 W
Maximum Efficiency	: 24%
Weight	: 640 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

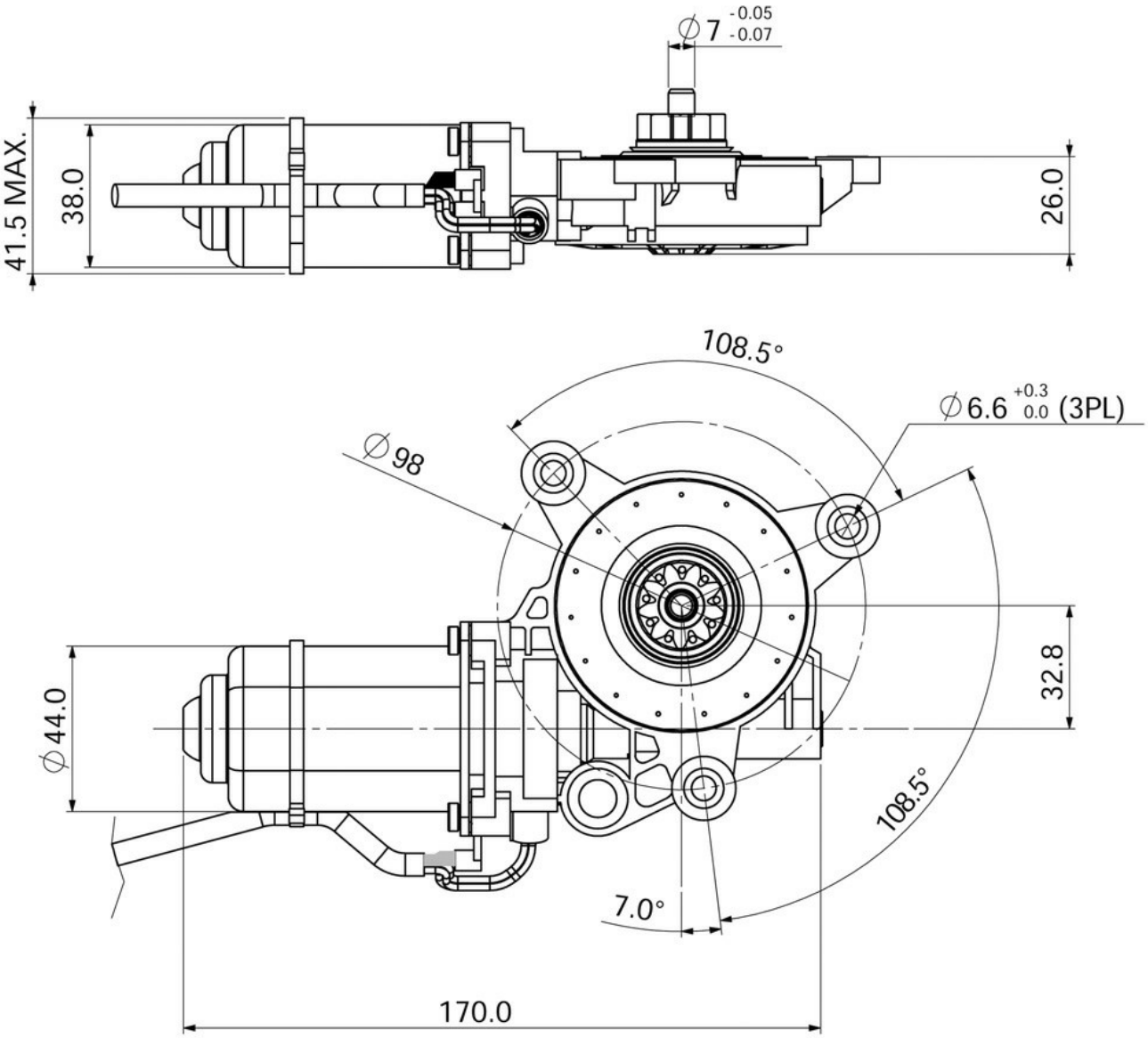
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	18.00	3.46	6500.00
Efficiency (%)	-	-	24	-
Output Power (W)	-	-	22.27	32.03
Speed (rpm)	95	-	74	48
Torque (mNm)	-	12000.00	2853.88	6370.00

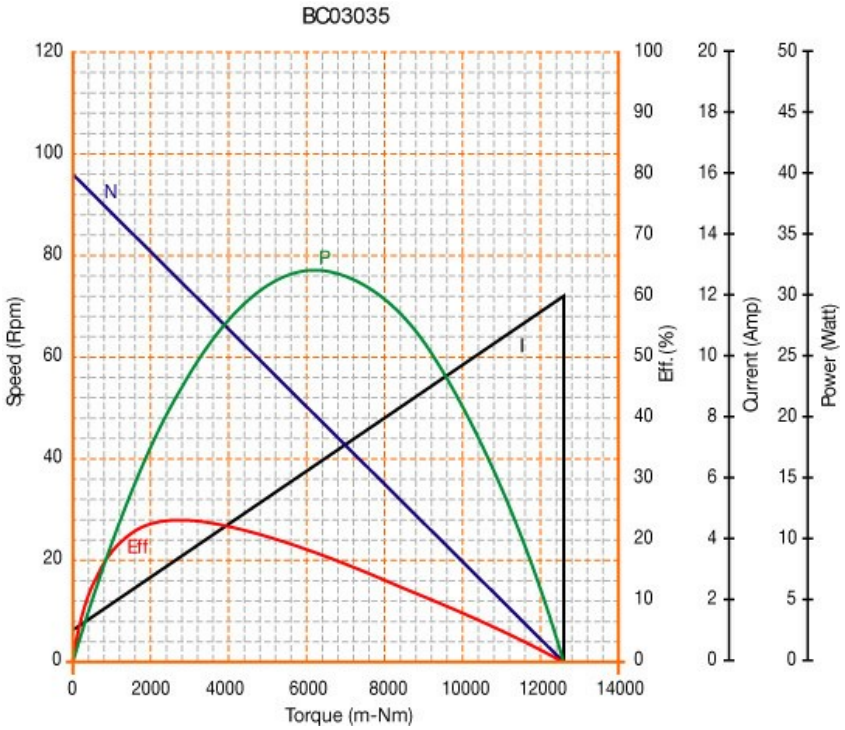
Application Examples:

Window Lift Drives

Outline Drawing:



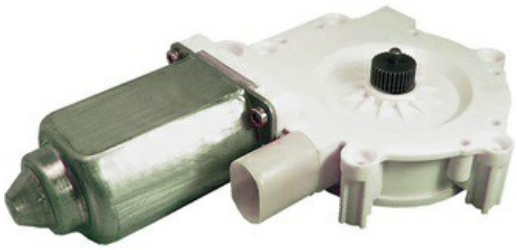
Performance Curves:



Units in Metric

Characteristics:

housing width: 38mm, winding: 15 x 0.55, E.M.C.: 2L + 1C



Specifications:

Dimensions	: Ø 48.5 X 192.5 mm
Shaft Diameter	: Ø 9.000 mm
Input Voltage	: 13.0 V DC
No Load Speed	: 85 rpm
Stall Torque	: 15000.00 mNm
Maximum Output Power	: 32.73 W
Maximum Efficiency	: 23%
Weight	: 721 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

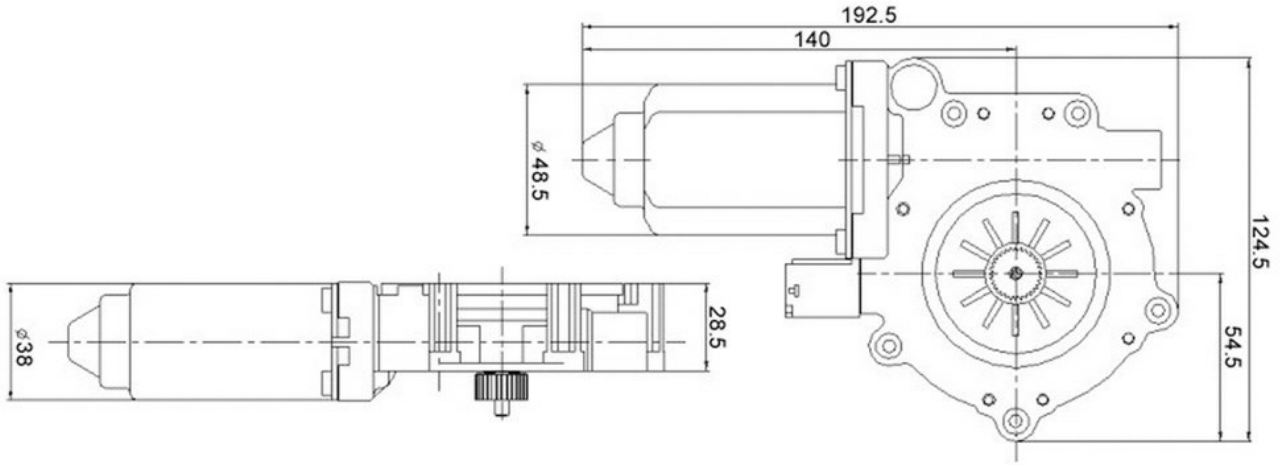
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.50	30.00	6.71	15.75
Efficiency (%)	-	-	23	-
Output Power (W)	-	-	19.55	32.73
Speed (rpm)	85	-	69	43
Torque (mNm)	-	15000.00	2686.34	7350.00

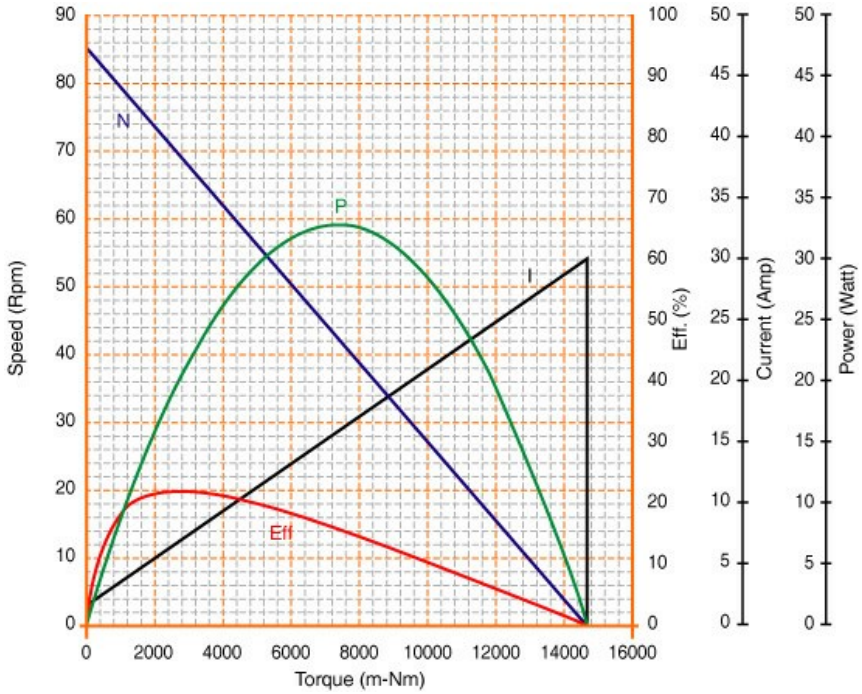
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

New generation window lift drive with low weight and low noise

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 67.0 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 88 rpm
No Load Current	: 1.40 A
Stall Torque	: 7000.00 mNm
Stall Current	: 16.20 A
Maximum Output Power	: 17.00 W
Maximum Efficiency	: 21%
Weight	: 450 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 100 °C
Certification	: RoHS

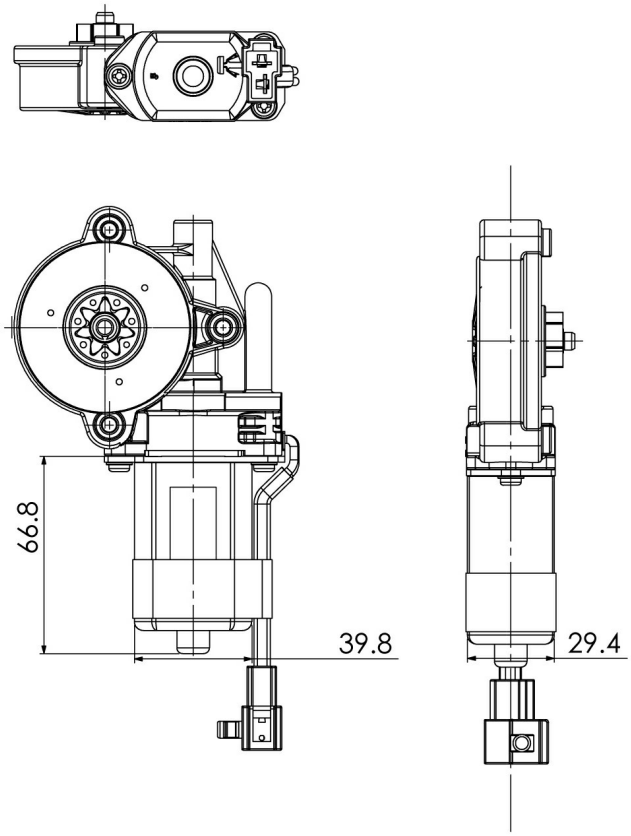
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.40	16.20	4.80	8.80
Efficiency (%)	-	-	21	16
Output Power (W)	-	-	12.00	17.00
Speed (rpm)	88	-	69	45
Torque (mNm)	-	7000.00	1700.00	3700.00

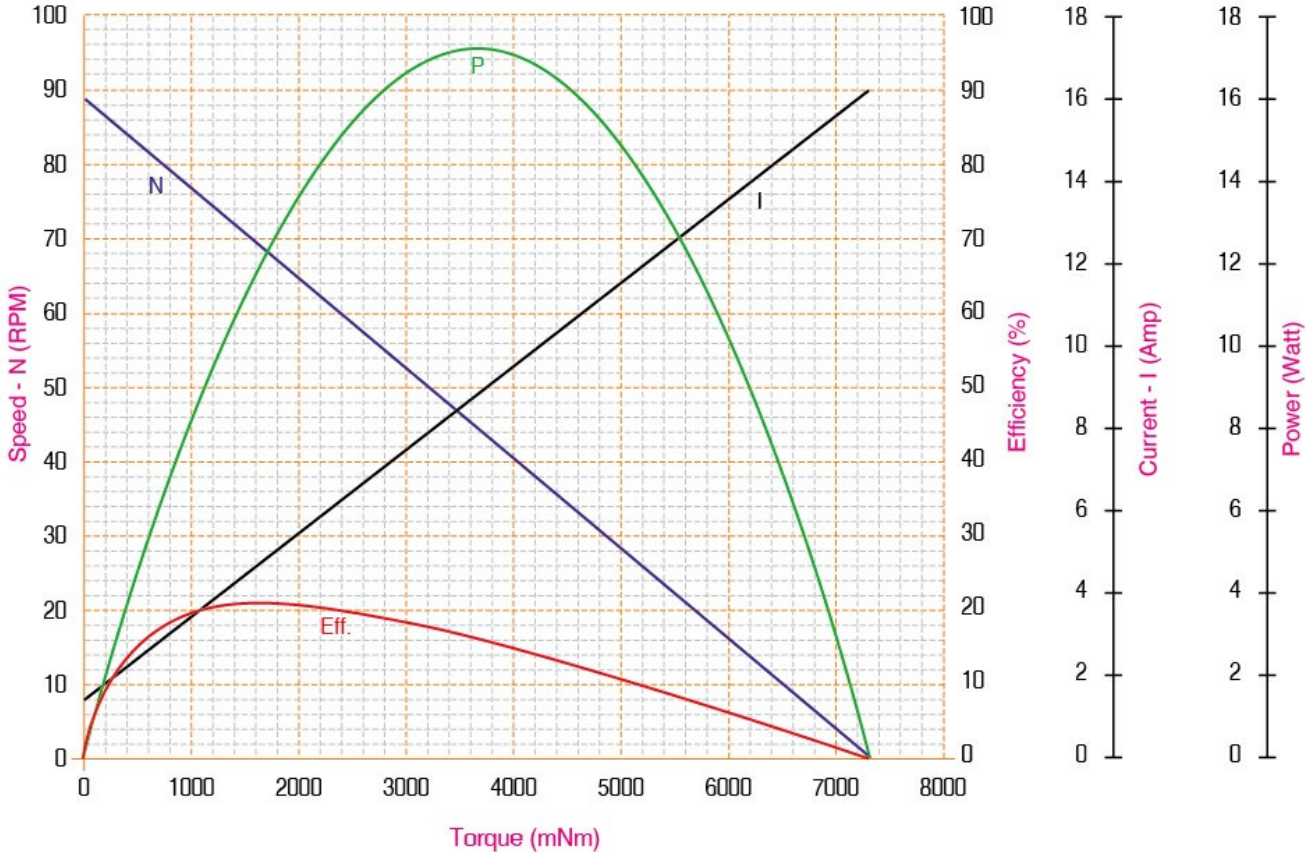
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

New generation window lift drive with low weight and low noise

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 67 mm mm
Input Voltage	: 12.0 V DC
No Load Speed	: 90 rpm
No Load Current	: 1.70 A
Stall Torque	: 8000.00 mNm
Stall Current	: 18.70 A
Maximum Output Power	: 19.00 W
Maximum Efficiency	: 20%
Weight	: 450 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 100 °C
Certification	: RoHS

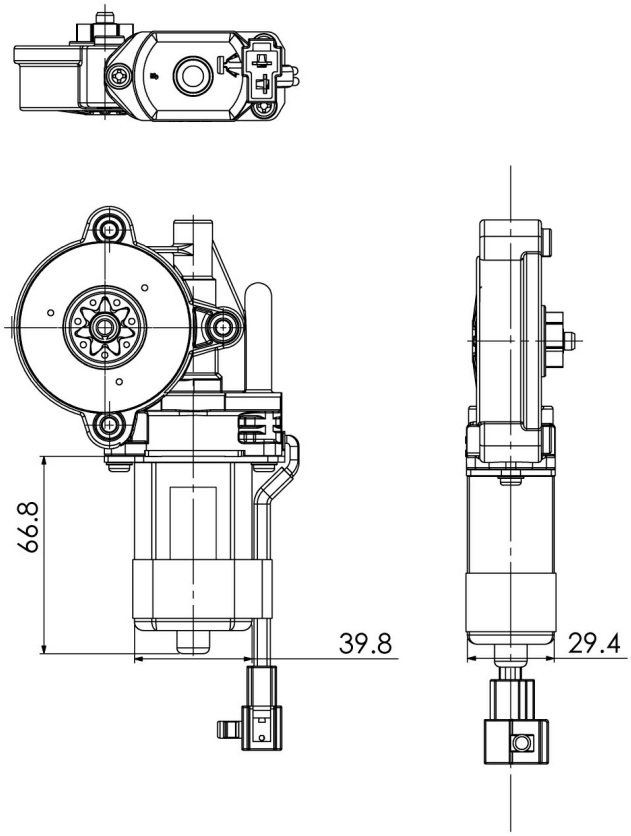
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.70	18.70	5.60	10.20
Efficiency (%)	-	-	20	16
Output Power (W)	-	-	13.00	19.00
Speed (rpm)	90	-	70	45
Torque (mNm)	-	8000.00	1800.00	4000.00

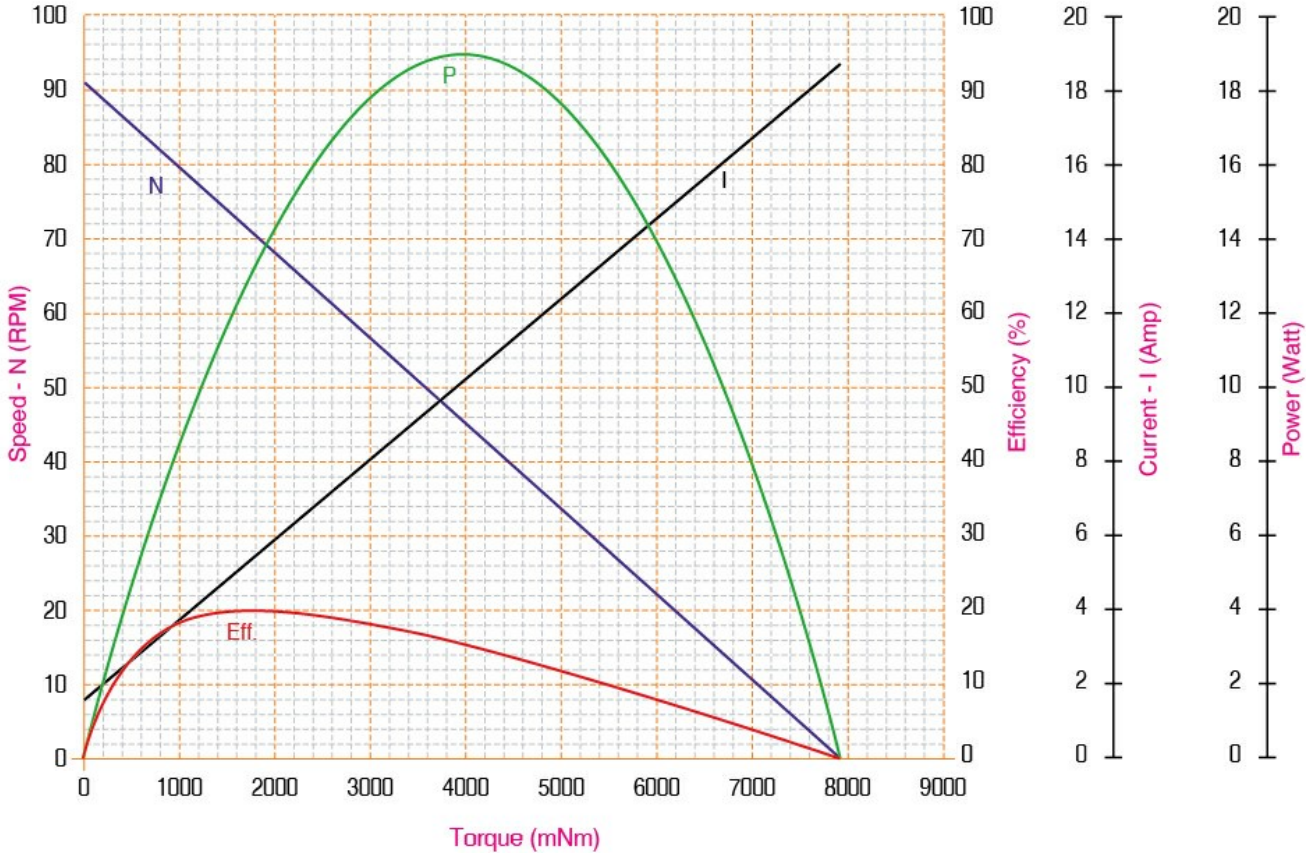
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

New generation window lift drive with low weight and low noise

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 67.0 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 92 rpm
No Load Current	: 1.70 A
Stall Torque	: 9000.00 mNm
Stall Current	: 20.50 A
Maximum Output Power	: 22.00 W
Maximum Efficiency	: 21%
Weight	: 450 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 100 °C
Certification	: RoHS

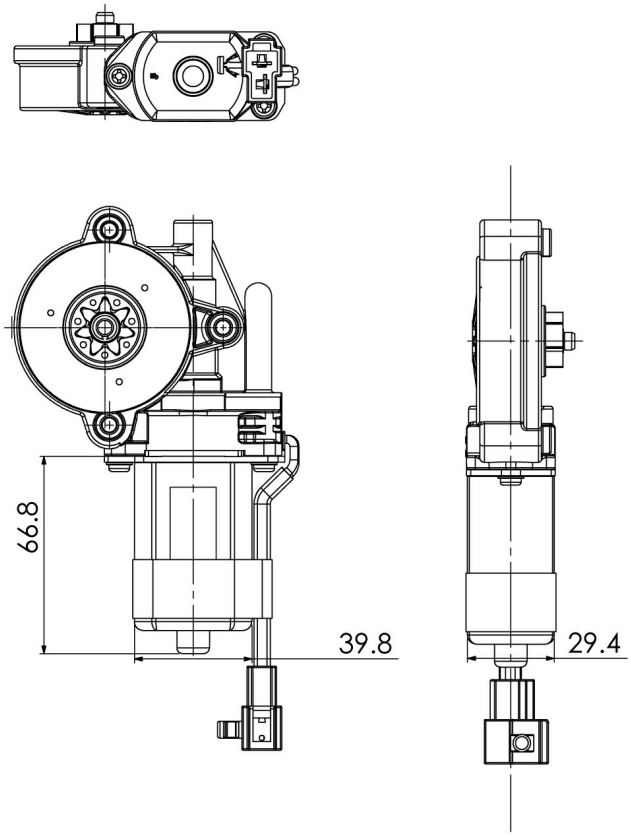
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.70	20.50	5.90	11.00
Efficiency (%)	-	-	21	16
Output Power (W)	-	-	15.00	22.00
Speed (rpm)	92	-	72	47
Torque (mNm)	-	9000.00	2000.00	4500.00

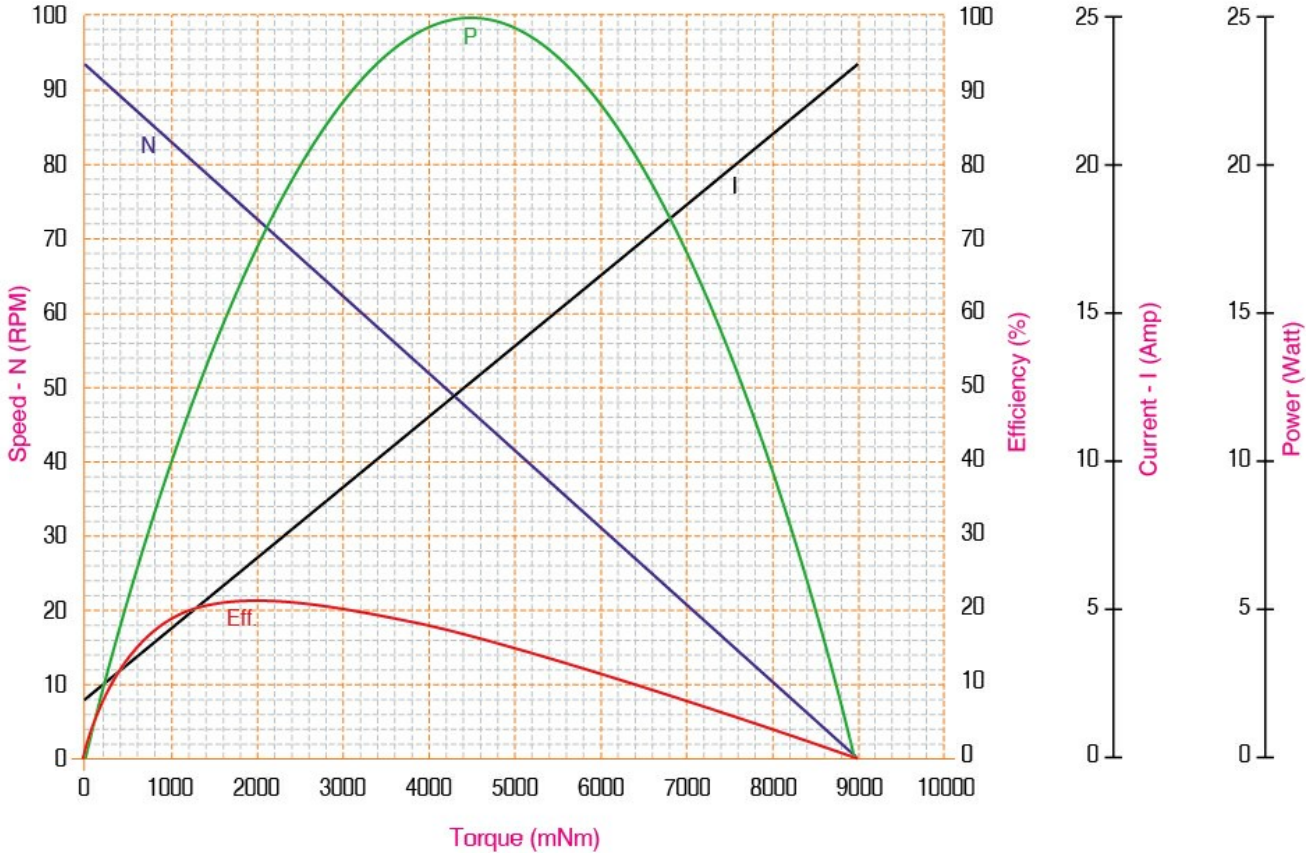
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

New generation window lift drive with low weight and low noise

Specifications:

Dimensions	: Ø 39.8 X 29.4 X 67.0 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 88 rpm
No Load Current	: 1.40 A
Stall Torque	: 7000.00 mNm
Stall Current	: 16.20 A
Maximum Output Power	: 17.00 W
Maximum Efficiency	: 21%
Weight	: 450 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 100 °C
Certification	: RoHS

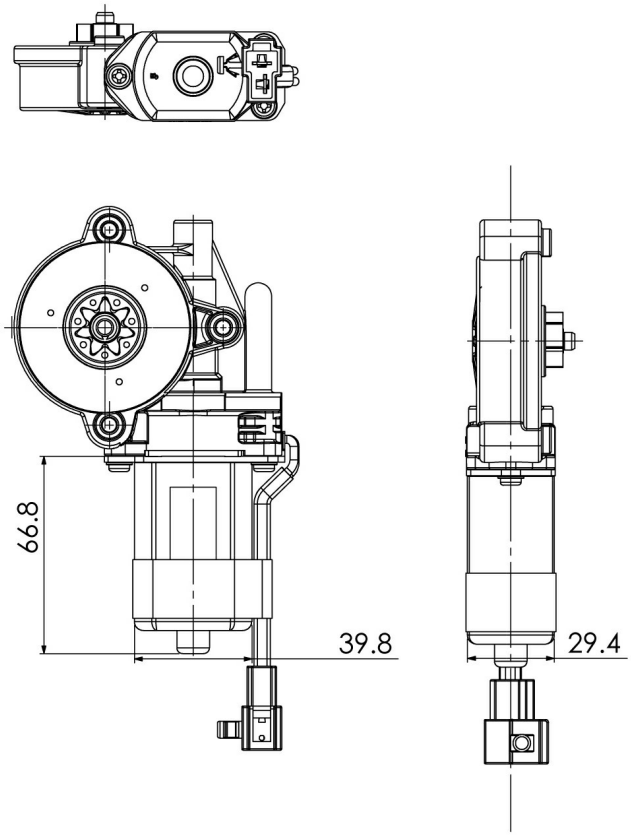
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.40	16.20	4.80	8.80
Efficiency (%)	-	-	21	16
Output Power (W)	-	-	12.00	17.00
Speed (rpm)	88	-	69	45
Torque (mNm)	-	7000.00	1700.00	3700.00

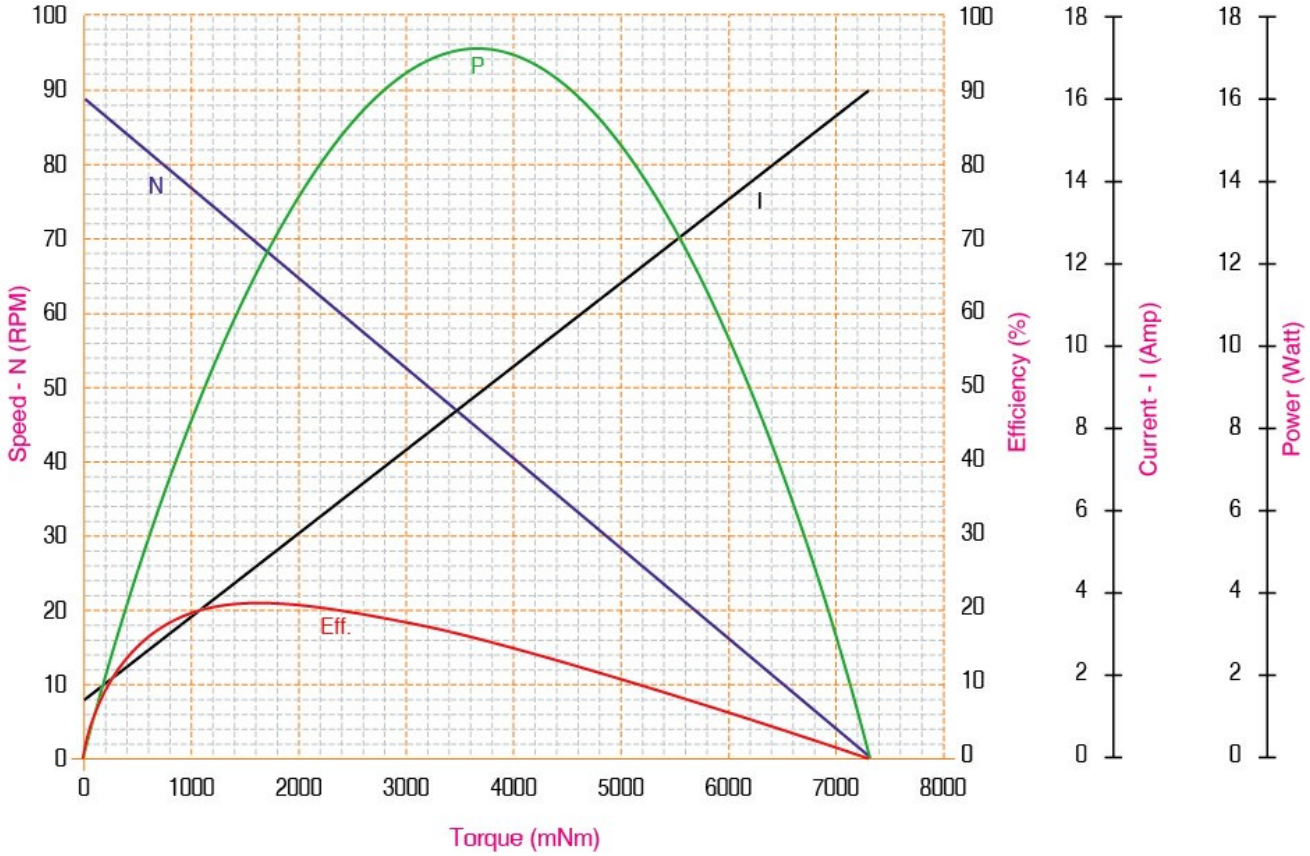
Application Examples:

Window Lift Drives

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High Torque Density, High Reliability

Specifications:

Dimensions	: Ø 38.0 X 83.0 mm
Shaft Diameter	: Ø 8.000 mm
Input Voltage	: 9.5 V DC
No Load Speed	: 5000 rpm
Stall Torque	: 580.00 mNm
Maximum Output Power	: 75.92 W
Maximum Efficiency	: 71%
Weight	: 340 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 85 °C

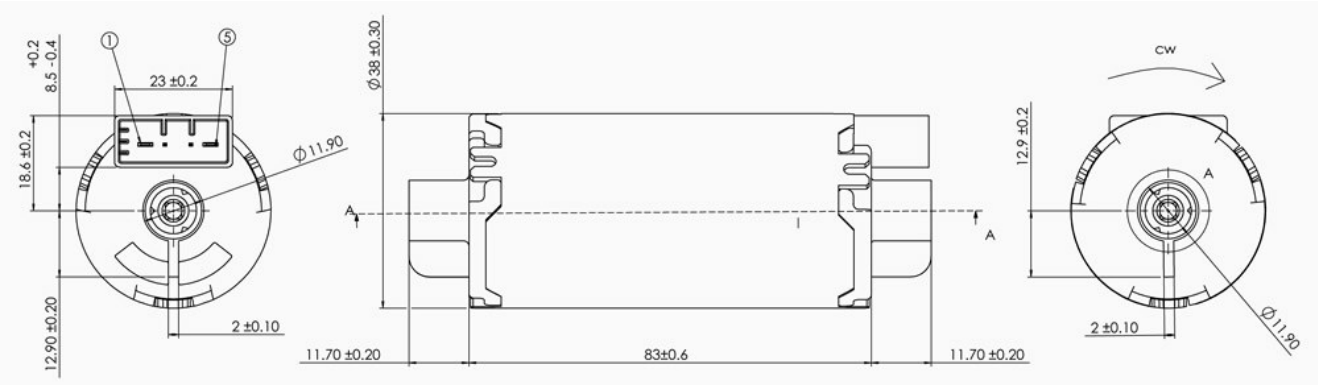
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.20	32.00	6.20	16.60
Efficiency (%)	-	-	71	48
Output Power (W)	-	-	41.28	75.92
Speed (rpm)	5000	-	4189	2500
Torque (mNm)	-	580.00	94.10	290.00

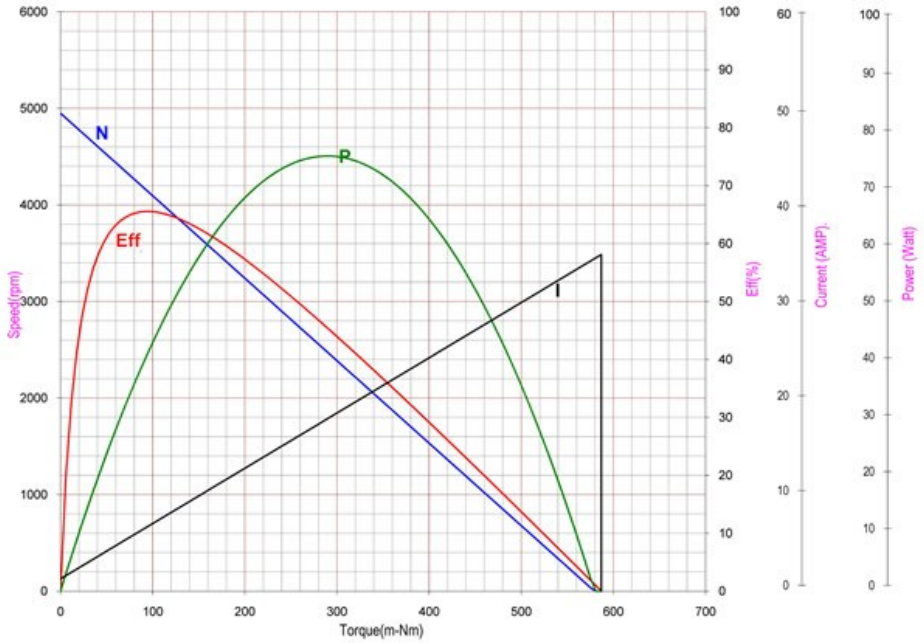
Application Examples:

Power Lift Gate

Outline Drawing:



Performance Curves:



Units in Metric

S600C Low Voltage DC Motors

Characteristics:

High stall torque & high EMC & long life

Specifications:

Dimensions :	Ø 38.3 X 65.0mm
Shaft Diameter :	Ø 4.005mm
Test Voltage :	12 Vdc
No Load Speed *:	8700 rpm
No Load Current*:	1.1 Amp
Stall Torque* :	580 mNm Ref.
Maximum Output Power:	129 W Ref.
Maximum Efficiency:	72 %
Weight:	279.4 g
Operation Temperature:	-40 to 85 °C
Storage Temperature:	-40 to 120 °C

* Typical

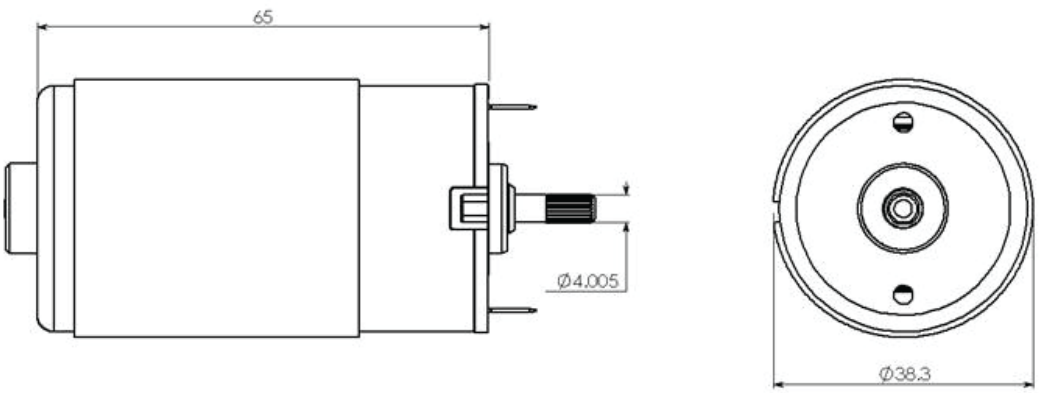
Electrical Performance:

	No Load	Stall	Max Efficiency	Max Power
Current (A)	1.1	-	-	-
Efficiency (%)	-	-	72	43.0
Output Power (W)	-	-	48	129
Speed (rpm)	8700	-	7620	4249
Stall Torque (mNm)	-	580	-	-

Application:

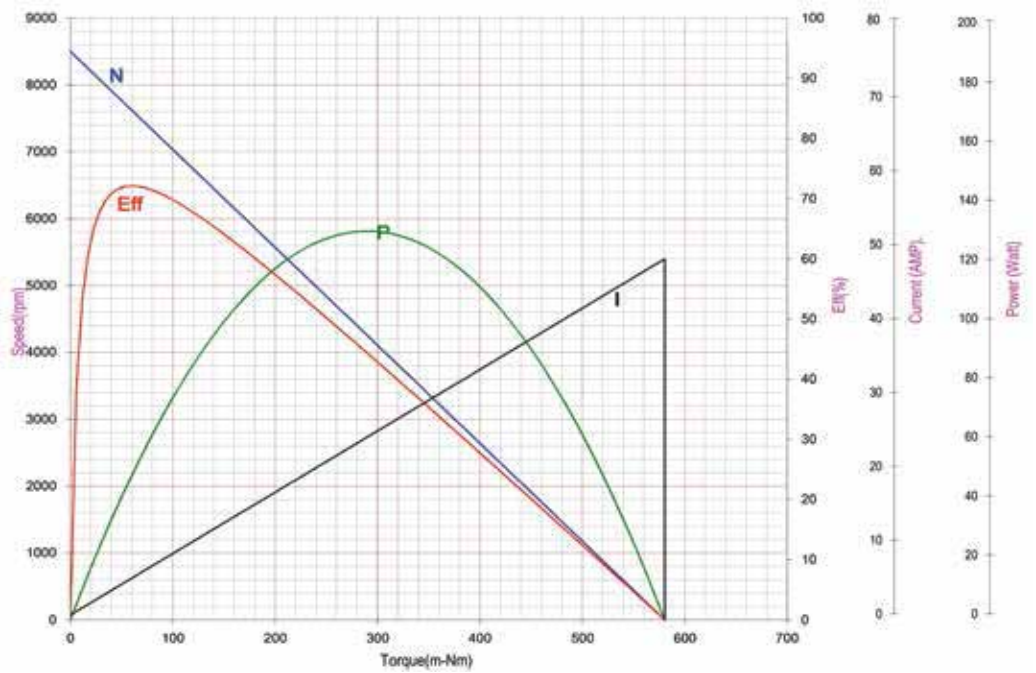
Electric Parking Brake

Drawing:



Unit in mm

Performance Curve:



Characteristics:

High stall torque, compact size, Long life, High reliability

Specifications:

Dimensions	: Ø 46.0 X 130.0 mm
Shaft Diameter	: Ø 9.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 5350 rpm
No Load Current	: 2.00 A
Nominal Speed	: 4120 rpm
Nominal Torque	: 160.00 mNm
Nominal Current	: 13.00 A
Stall Torque	: 790.00 mNm
Stall Current	: 45.00 A
Torque Constant	: 20.51 mNm/A
Dynamic Resistance	: 0.30 Ω
Motor Regulation	: 7 rpm/mNm
Maximum Output Power	: 112.40 W
Maximum Efficiency	: 57%
Pole Number	: 2
Life Test Condition	: -40 to 120 °C
Weight	: 760 g
Operating Temperature Range	: -40 to 120 °C
Storage Temperature Range	: -40 to 120 °C
Electrcial Connection	: Electrical Connection

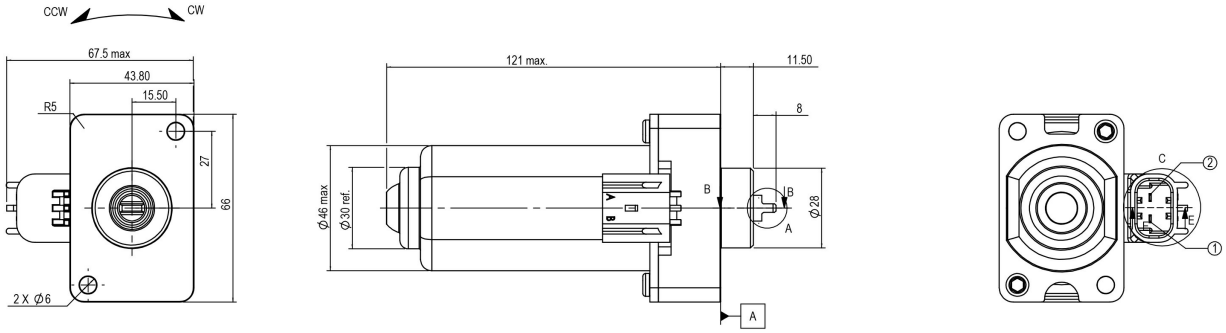
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	2.00	45.00	10.65	22.10
Efficiency (%)	-	-	57	43
Output Power (W)	-	-	73.08	112.40
Speed (rpm)	5350	-	4092	2571
Torque (mNm)	-	790.00	170.48	417.25

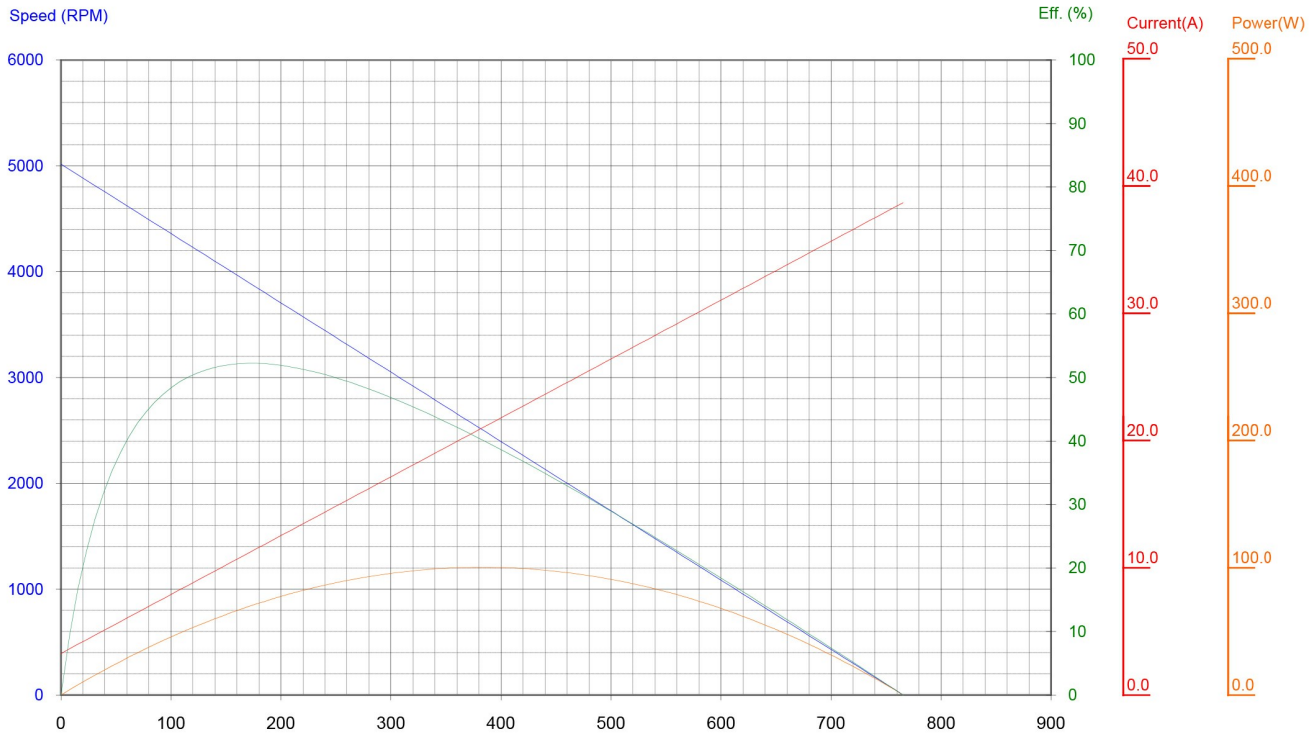
Application Examples:

Automated Manual Transmission, Dual Clutch Transmission

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High power & faster brake

Specifications:

Dimensions :	Ø 42.3 X 66.0mm
Shaft Diameter :	Ø 4.000mm
Test Voltage :	12 Vdc
No Load Speed *:	12690 rpm
No Load Current*:	2.2 Amp
Stall Torque* :	830 mNm Ref.
Maximum Output Power:	270 W Ref.
Maximum Efficiency:	60.2 %
Weight:	274g
Operation Temperature:	-40 to 110 °C
Storage Temperature:	-40 to 120 °C

* Typical

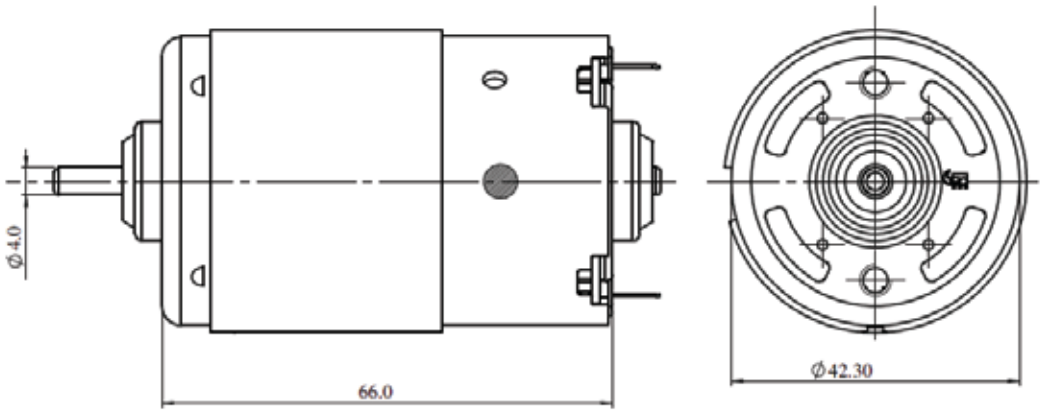
Electrical Performance:

	No Load	Stall	Max Efficiency	Max Power
Current (A)	2.20	-	-	
Efficiency (%)	-	-	60.2	38
Output Power (W)	-	-	103	270
Speed (rpm)	12690	-	11090	6200
Stall Torque (mNm)	-	830	-	-

Application:

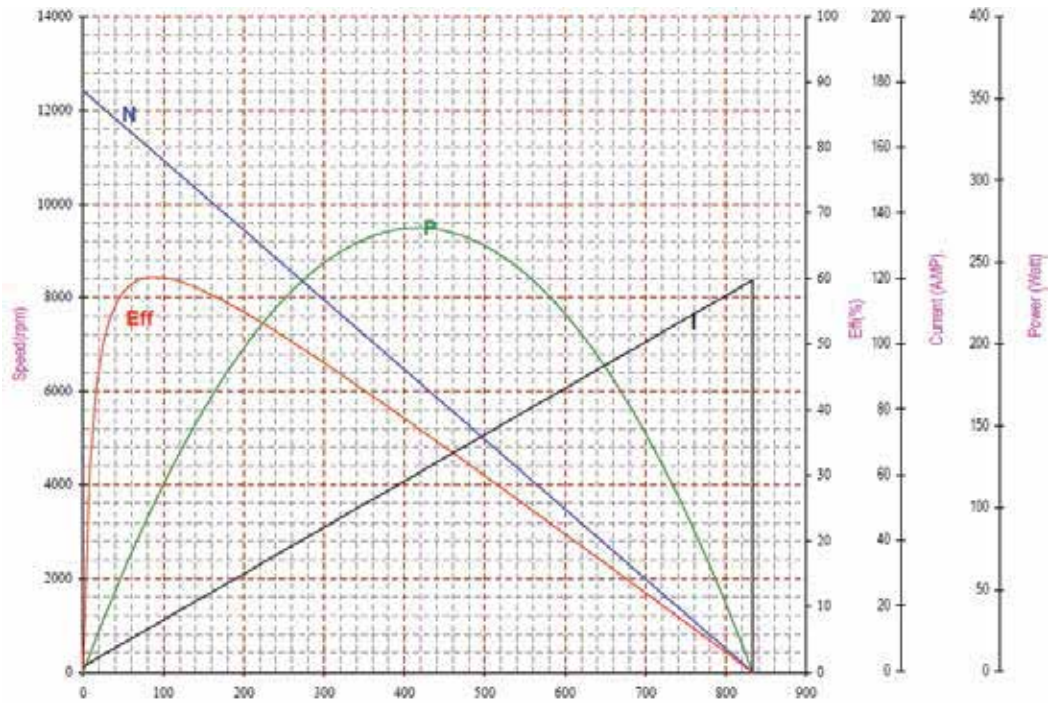
Electric Parking Brake

Drawing:



Unit in mm

Performance Curve:



Characteristics:

High stall torque, Long life, High reliability

Specifications:

Dimensions	: Ø 54.0 X 110.0 mm
Shaft Diameter	: Ø 8.000 mm
Input Voltage	: 12.0 V DC
No Load Speed	: 5500 rpm
No Load Current	: 1.30 A
Nominal Speed	: 4125 rpm
Nominal Torque	: 0.25 mNm
Nominal Current	: 15.00 A
Stall Torque	: 1000.00 mNm
Stall Current	: 55.00 A
Torque Constant	: 20.41 mNm/A
Dynamic Resistance	: 0.22 Ω
Motor Regulation	: 5 rpm/mNm
Maximum Output Power	: 150.00 W
Maximum Efficiency	: 67%
Pole Number	: 2
Life Test Condition	: -40 to 120 °C
Weight	: 950 g
Operating Temperature Range	: -40 to 120 °C
Storage Temperature Range	: -40 to 140 °C
Electrcial Connection	: Electrical Connection

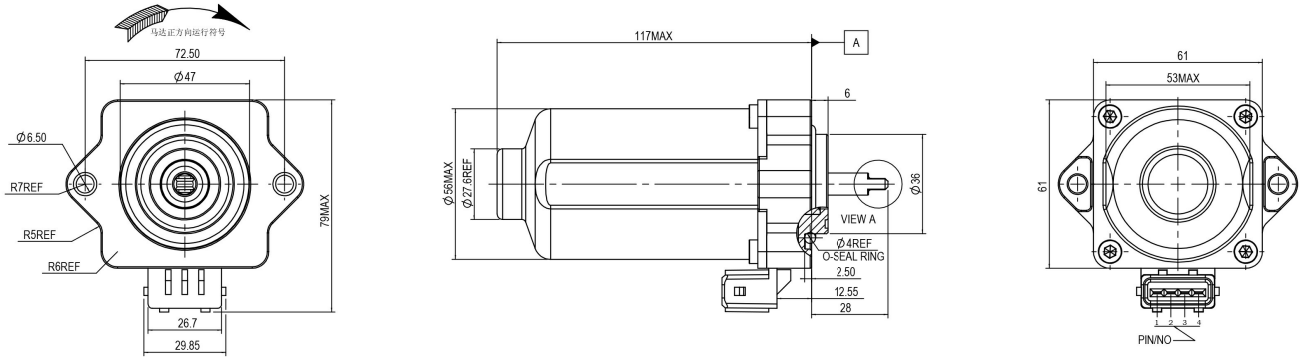
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	1.30	55.00	9.77	27.41
Efficiency (%)	-	-	67	47
Output Power (W)	-	-	78.82	150.00
Speed (rpm)	5500	-	4633	2744
Torque (mNm)	-	1000.00	162.37	521.80

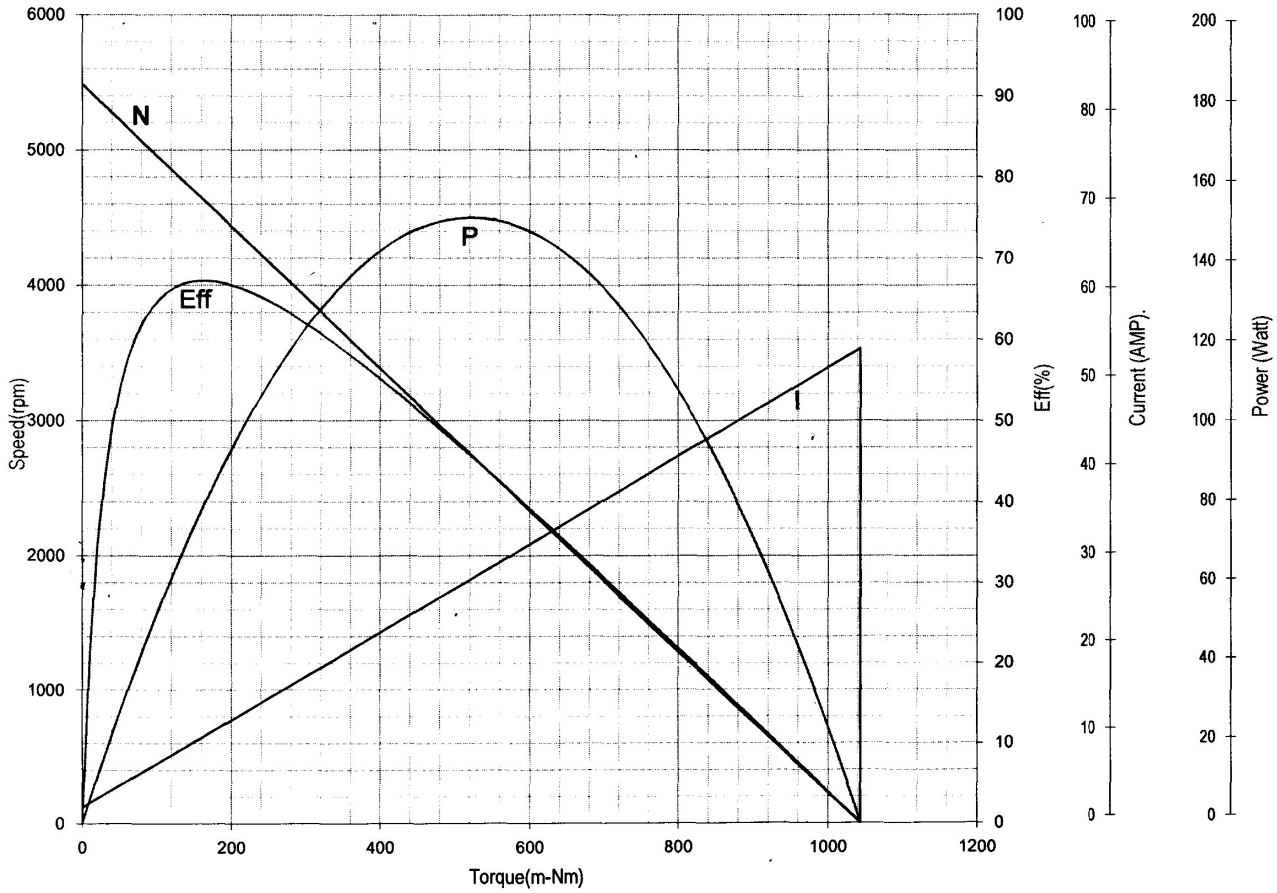
Application Examples:

Automated Manual Transmission, Dual Clutch Transmission

Outline Drawing:



Performance Curves:



Units in Metric

Characteristics:

High Torque, Low Noise, High Reliability

Specifications:

Dimensions	: Ø 43.3 X 150.0 mm
Shaft Diameter	: Ø 8.000 mm
Input Voltage	: 12.6 V DC
No Load Speed	: 165 rpm
Stall Torque	: 5500.00 mNm
Maximum Output Power	: 24.51 W
Maximum Efficiency	: 24%
Weight	: 1200 g
Operating Temperature Range	: -40 to 85 °C
Storage Temperature Range	: -40 to 95 °C

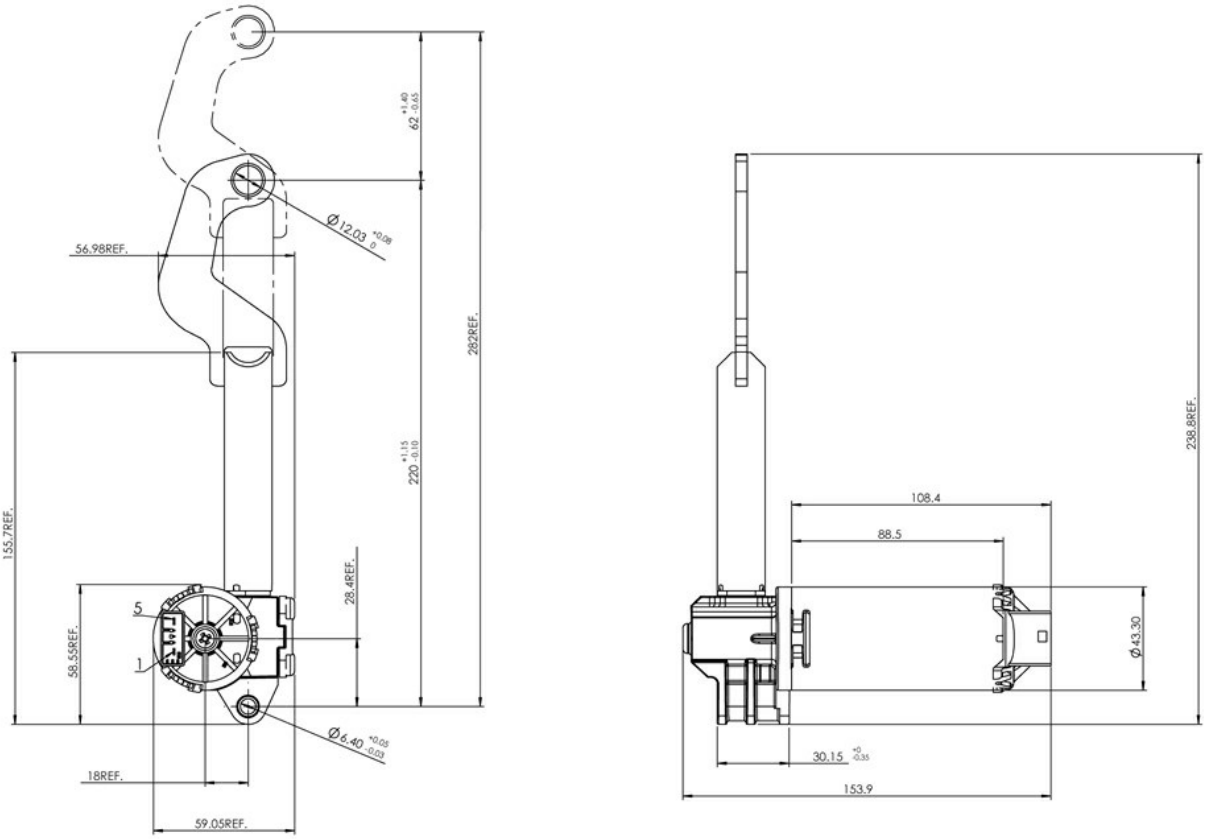
Performance Data:

	No Load	Stall	Maximum Efficiency	Maximum Power
Current (A)	2.57	16.83	6.58	9.70
Efficiency (%)	-	-	24	20
Output Power (W)	-	-	19.85	24.51
Speed (rpm)	165	-	115	80
Torque (mNm)	-	5500.00	1646.74	2929.24

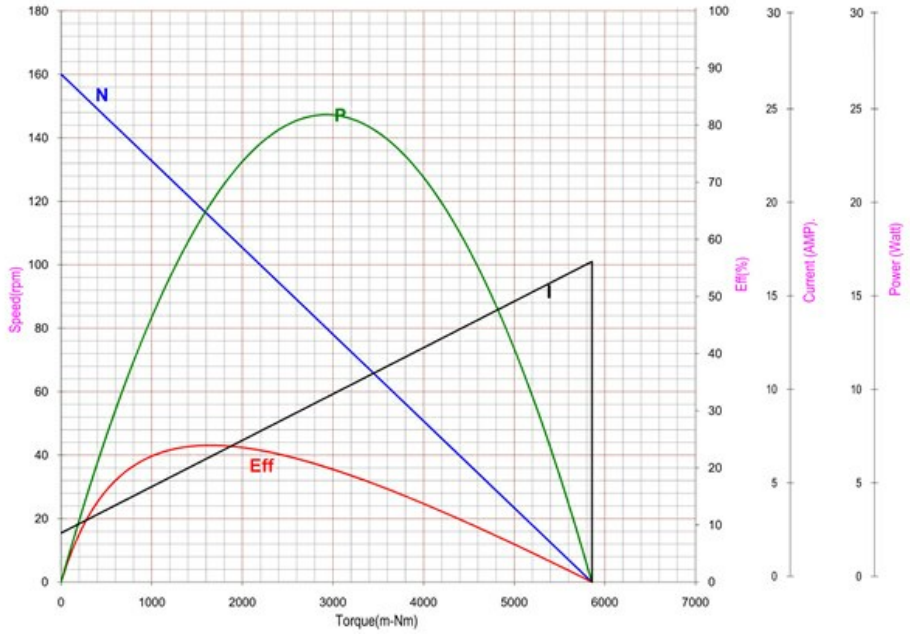
Application Examples:

Seat Adjusters

Outline Drawing:



Performance Curves:



Units in Metric