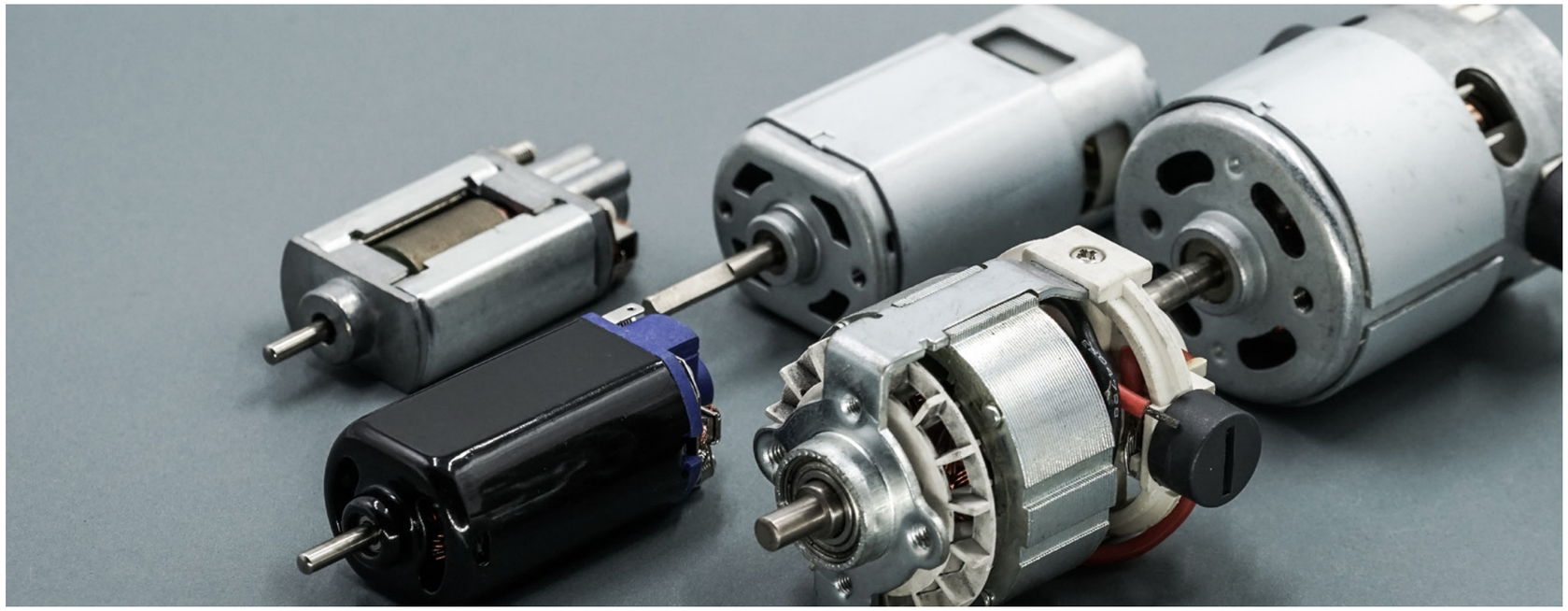
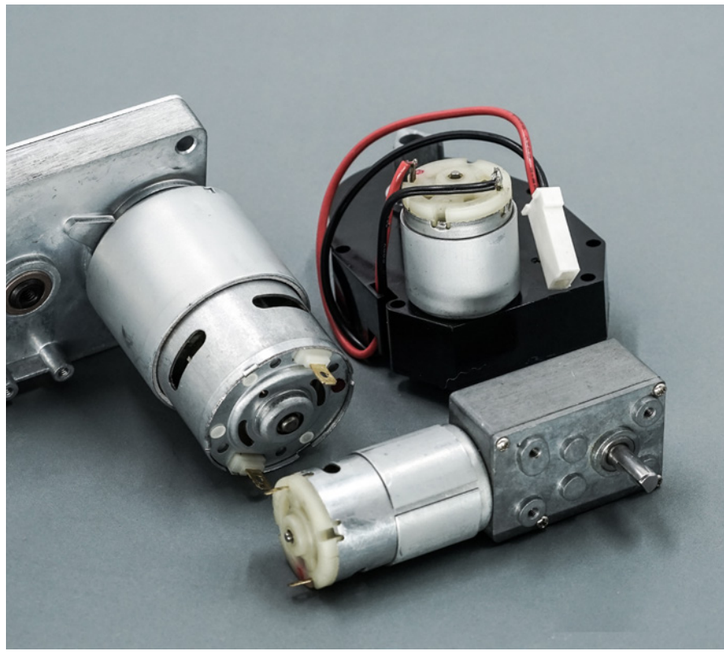
法拉棣
FARADYI

FARADYI MOTOR

法拉棣電機





CONTENT 目錄

MOTOR CATALOG
馬達型錄

FR390/395AA	Flat	¢ 2.3	¢ 27.8	71
FR398	Round	¢ 2.3	¢ 27.8	72
FF450	Flat	¢ 3.175	¢ 30.0xF25.0	73
FF460	Flat	¢ 3.175	¢ 30.0xF16.0	74
FF470	Flat	¢ 3.175	¢ 30.0xF16.0	75
FF480	Flat	¢ 3.175	¢ 30.0xF16.0	76
FR590/598	Flat	¢ 3.175	¢ 35.8	77
FR5412	Flat	¢ 3.175	¢ 35.8	78
FR5512A	Round	¢ 3.175	¢ 35.8	79
FR5512B	Round	¢ 3.175	¢ 35.8	80
FF5612	Flat	¢ 4.0	¢ 38.5xF32.0	81
FR750/755	Round	¢ 5.0	¢ 42.0	82
FR770/775	Round	¢ 5.0	¢ 42.0	83
FR7105	Round	¢ 5.0	¢ 42.0	84
FR7512	Round	¢ 5.0	¢ 42.0	85
FR7712	Round	¢ 5.0	¢ 42.0	86
FR777	Round	¢ 8.0	¢ 44.6	87
FR845	Round	¢ 5.0	¢ 46.4	88
FR855	Round	¢ 5.0	¢ 46.4	89
FR34	Round	¢ 8.0	¢ 50.8	90
FR9812	Round	¢ 6.35	¢ 52.0	91
FR987AG	Round	¢ 6.35	¢ 52.0	92
FR987AP	Round	¢ 6.35	¢ 52.0	93
FR1263	Round	¢ 8.0	¢ 77.4	94
FR775+EN	Round	¢ 5.0	¢ 42.0	95

Geared Motor	Shape	Shaft	DimeterDiameter	Page
FF050+IG13	Other	¢ 3.0	¢ 13.0	98
FF180+IG22	Other	¢ 4.0	¢ 22.0	99
FR540+IG32	Other	¢ 6.0	¢ 32.0	100
FR750+IG42	Other	¢ 8.0	¢ 42.0	101
FR775+IG43	Other	¢ 8.0	□ 42.5	102
FF180+RA20	Other	¢ 4.0	¢ 20.7	103
FR370+RA25	Other	¢ 4.0	¢ 27.0	104
FF260+RB25	Other	¢ 3.5	¢ 27.0	105
FR380+RB30	Other	¢ 5.0	¢ 30.0	106
FR385+RB35P	Other	¢ 6.0	¢ 37.0	107
FR540+RB35C	Other	¢ 6.0	¢ 37.0	108
FR550+RB35C+Brake	Other	¢ 6.0	¢ 37.0	109
FFN20+SA12	Other	¢ 3.0	12.0 x10.0	110
FR300+RB32	Other	¢ 5.0	¢ 32.8	111
FR500+RB35A	Other	¢ 5.0	¢ 37.0	112
FR280+RB42	Other	¢ 4.0	¢ 42.0	113
FR260+RB42P	Other	¢ 7.0	55.5	114
FR390+SB49	Other	¢ 6.0	49x32x23	115
FR775+SB76	Other	¢ 9.525	76.2x69.85	116
FR365+SB88	Other		89x63.5	117
FR365+SB89	Other	¢ 16.64	89.4x63.5	118
FR540+SB91	Other	¢ 8.0	91x56	119

BLDC Motor	Shape	Shaft	DimeterDiameter	Page
FB366	Round	¢ 2.3	¢ 27.7	122
FB546	Round	¢ 3.175	¢ 35.8	123
FB756	Round	¢ 5.0	¢ 42.0	124
FB836	Round	¢ 5.0	¢ 46.0	125

BLDC Geared Motor	Shape	Shaft	DimeterDiameter	Page
FB366+SB89	Other	¢ 16.64	¢ 89.4x63.5	128

COMPANY INTRODUCTION
公司簡介

东莞市法拉棣科技有限公司是一家集研发、生产和销售无刷直流电机、直流有刷电机和直流减速电机及相关配件为一体的现代科技创新企业。
公司拥有强大的 OEM/ODM 能力和周到的服务。产品畅销国内外市场，欧美、日本、非洲、澳洲、东南亚、中东等市场，深受客户好评。
公司秉持“质量至上、持续进取、精益求精、勇于创新”的经营理念和“诚信踏实、及时优质、卓越高效、客户满意”的服务宗旨，为客户提供价廉物美的电机产品和售前、售后的优质服务。

Faradyi Technology Co., Ltd is an innovation centric enterprise with integrated R&D, production and sales of brushless DC motors, DC brush motors, DC gear motors and related accessories.
The company excels in OEM/ODM with thorough and satisfactory service. Products are popular and well received in both domestic and foreign markets, including Europe, America, Asia, Africa, Australia, Middle East and other markets.
The company adheres to its business philosophy of "Quality, continuous improvement, excellence, innovation" for its products and "integrity, practicality, timeliness, efficiency” for its services. It is dedicated for providing value in its motors and services for customer satisfaction.

MOTOR INSTRUCTION MANUAL
馬達使用說明

為確保安全、正確地使用朴威電機的馬達，請確認你已認真閱讀本說明書之全部內容。獲取更多訊息，請與我們的業務員或代理電聯，或直接訪問朴威電機的網站 www.promotor-sz.com。

Please make sure you have carefully read this manual in its entirety to ensure the correct and safe use of Pro Motor's product. For more information, please contact our sales, agent, or visit our website directly: www.promotor-sz.com

Warning
安全警示

1. 不可將馬達裸導線或端子插入插座中，可能導致觸電。
Do not insert the motor’s plain conductor or terminal into the socket as it may cause electric shock.

2. 通電時，不可觸摸接電元件，如：馬達端子，可能導致觸電。
When power is on, do not touch the connected components such as the motor terminals because it may cause electric shock.

3. 通電時，手或手指不可接觸轉動部件，可能導致受傷。
When power is on, do not touch any rotating parts with your hands or fingers as it may result in injury.

4. 通電時，不可卡死馬達軸，即使短時間的卡死，也可能導致馬達快速的溫升，並使之損壞。
When power is on, DON’T leave the motor shaft locked; even being locked for just a short period of time may cause excess heat buildup and damage the motor.

5. 馬達運行過程中，由於安裝、負載或環境等因素的影響，可能會有較高的溫度需注意避免燙傷的發生。
When the motor is running, temperature might increase due to effects from installation, electrical load, and environmental factors. Approach with caution to avoid being burnt.

Motor Selection
馬達的選擇

1. 馬達是一種通過供给電源（電能）使馬達軸旋轉產生機械能，而帶動（或拖動）其它物體移動或旋轉的動力元件，所以選擇馬達前請首先考慮您的目的。
A motor is a power element that generates mechanical energy by supplying power (electricity) to rotate the motor shaft, which in turn moves (or drags) other objects or rotates them. Please think about what your purpose is before selecting a motor.

2. 確定馬達的電源類型（如乾電池、可充電電池、整流變壓、恆壓電源等等）、電壓大小，電源容量等。
Please determine the motor's power supply type (e.g., dry battery, rechargeable battery, rectifier transformer, constant voltage power, etc.), voltage size, power capacity, etc.

3. 再考慮負載大小（扭力或功率或工作電流等）、負載類型（連續、斷續）。
Then you need to consider the load size (torque or power or operating current, etc.) and load type (continuous, intermittent).

4. 再選擇可允許的馬達外型尺寸、連接方式等。
Select the motor dimensions, connection method, etc.

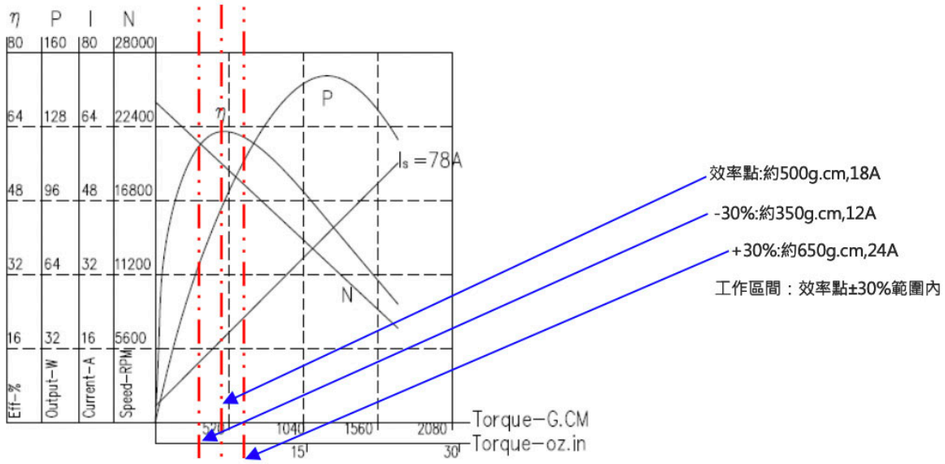
5. 再確認馬達使用的環境狀況（溫度、濕度、有無強制冷卻等）。
Check the environmental conditions (temperature, humidity, any forced cooling, etc.) of where the motor will be placed.

6. 最後別忘了您心中的價位是多少。
Finally, don't forget to tell us what your target price is

Usage and Handling
使用說明

1. 我們的馬達是永磁性馬達，因此必須保證使用場所乾淨、整潔，不建議有鐵質細碎零件在現場，它們很容易吸附進馬達表面及裡面，最後影響馬達性能甚至卡死馬達。
Our motors are permanent magnet motors, so it is necessary to ensure that the motor is operating in a clean and tidy environment. It is not recommended to have fine iron parts on the site because they can be absorbed into the surface and inside of the motor, which ultimately affects the performance of the motor or even jams it.

2. 馬達的力量（或功率）是有一定範圍的，因此要求絕對不能在過載的條件下使用。要判斷是否過載，最簡單的方法就是參考馬達性能曲線，正常額定負載點一般是指馬達最大效率點，若超出最大效率點工作，不能超過 30%。例如下圖中最大效率點扭力是 500gcm, 電流是 18A, 則正常工作點應該在 650gcm 或 24A 以下，不能超出最大功率點進行工作。即使是瞬間的，馬達的堵轉是絕對不允許的。若有可能出現瞬間堵轉，應在打樣或正式生產前特別說明。
（有關最大效率點、最大功率點、堵轉點可參考所附性能規格書上的曲線圖）。
The motor's torque or power has a certain range and therefore requires that it should never be used under overload conditions. The simplest way to determine if the motor is overloaded is to refer to the motor performance curve. The normal rated load point generally refers to the maximum efficiency point of the motor, if the motor operates beyond the maximum efficiency point, it cannot exceed by 30%. For example, the maximum efficiency point in the figure below is 500gcm torque and the current is 18A, then the normal operating point should be below 650gcm or 24A. You can not leave the motor operating when it exceeds the maximum power point. Stalling is absolutely forbidden, even for just one second. If there is a possibility of stalling, it should be specifically stated before proofing or production.
(For the maximum efficiency point, maximum power point, and stall point, please refer to the graph in the attached performance specification).



3. 在馬達上連接導線、開關、繼電器、驅動 IC 等等時，必須考量其容量及熱負荷要相配，否則，可能會燒壞導致失效。
When connecting leads, switches, relays, motor driver ICs, and others, you must match the capacity and the thermal load. Otherwise it may burn out and cause failure.

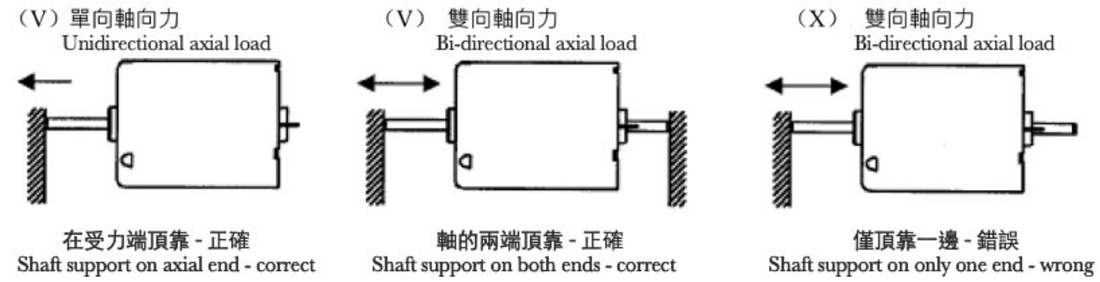
4. 確保馬達在實際所用設備中的匹配和可靠性，包含如下項目：
可靠性、電器性能、機械性能、機械 / 電器噪音、儲存環境（偏離正常室温的高低温環境）、大氣影響等等。
Ensure the compatibility and reliability of the motor with respect to the actual set of equipment used. This includes the following:
Reliability, electrical performance, mechanical performance, mechanical/electrical noise, storage environment (high and low temperatures that deviate from normal room temperature), atmospheric effects, etc.

5. 馬達工作時所使用電源的內阻（本身即電器迴路），高低電壓，大電流，脈衝波（含 PWM）等都會影響馬達的壽命。
The internal resistance of the power supply used in the operation of the motor (the circuit itself), high and low voltage, high current, pulse wave (including PWM) will all affect the life of the motor.

6. 馬達壽命終結導致的端子間短路或特殊環境條件下導致的換向器短路，都有可能發生。為避免由此造成燒機的問題，應加裝保險絲等防護措施。
Short circuit between terminals due to end of motor life or short circuit between commutator due to specific environmental/use conditions might occur. To prevent circuit burnout, take protective measures such as using fuses.

7. 隨著馬達使用時間的增加，馬達的絕緣性能會下降。因此在有關的電器設備中應良好的接地。
The longer you use the motor, the lower its insulation resistance becomes. Therefore, there should be good grounding in the relevant electrical equipment.

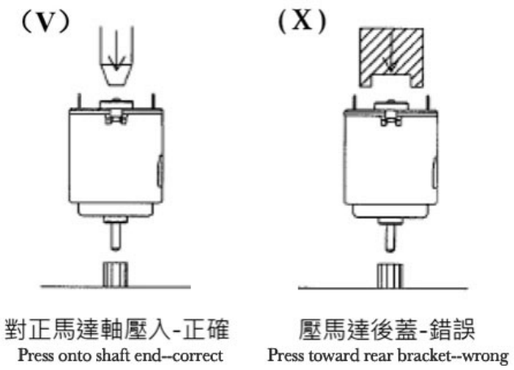
8. 蝸桿、風扇等可對馬達軸產生不利的軸向力，進而影響馬達壽命。
了解馬達壽命，應該將馬達安裝在實際使用的產品並在設計的工作條件下進行測試。
若有較大的軸向力，應考慮加裝某些機構頂住軸端（如下圖），否則有可能出問題。
Worm gear, fan, and others can produce adverse axial forces on the motor shaft, which in turn affects the motor life. The motor should be installed in the actual product in use and tested under the designed operating conditions. If there is a greater axial load, consideration should be given to adding some mechanism to bear against the shaft end (pictured below), otherwise there may be a problem.



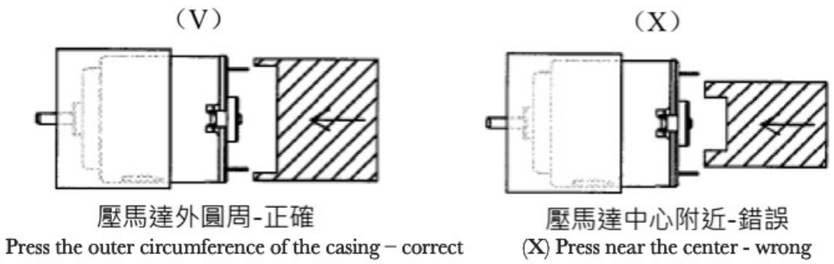
9. 輸出端的傳動系統，會產生徑向力並作用於馬達軸承上，如：皮帶傳動，務必注意否則將會導致馬達壽命的縮短。
The transmission system at the output generates a radial force and acts on the motor bearing, e.g., belt drive. Please take note, otherwise it will shorten the life-span of the motor.

10. 過大的徑向力，如旋轉偏心輪，會產生明顯的震動，也會大大 的縮短馬達的壽命，使用中必須實際裝機並在工作條件下檢查這類負面因素的影響。
Excessive radial force, such as rotating the eccentric wheel, will produce significant vibration and shorten the life of the motor greatly. Please check if such negative factors exist while the motor is operating on your machine.

11. 將皮帶輪、齒輪等壓入馬達軸中時，應對正馬達軸的另一端垂直壓入，請勿壓馬達蓋或其它部位。
When press fitting the belt pulley, gear, and others into the motor output shaft, press it vertically against the other end of the positive motor shaft. Do not press the motor cover or other parts.



12. 將馬達外殼套入筒體中時，應該壓馬達的外圓周，施力於端蓋中心附近的任何零件上都有可能使馬達不起動，因此不可在中心附近施壓，另外還要特別注意，過緊的套住小馬達的外殼會影響運轉時的轉速。
When putting the motor casing into the barrel, you should press the outer circumference of the motor, applying force on any part near the center of the lid may cause the motor to strain, so do not apply pressure near the center. Also pay special attention to the fact that overtightening the small motor’s casing will affect the motor speed when it is running.



壓馬達外圓周-正確
(V) Press the outer circumference of the casing – correct

壓馬達中心附近-錯誤
(X) Press near the center - wrong

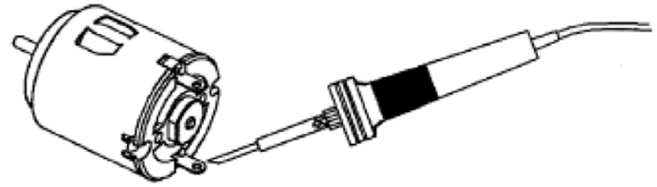
13. 安裝馬達時，不能施加外力使馬達機殼變形；鎖螺絲時，也不能太大力，注意控制螺絲長度，以免螺絲深入機殼太長碰到內部轉子線圈或其它零件，這些都有可能影響馬達安裝面的平面度或其它性能。
When installing the motor, do not apply external force to deform the motor casing; do not apply too much force when locking the screws also. Pay attention to controlling the length of the screws so that the screws do not penetrate too deep into the casing and touch the internal rotor coil or other parts, which may affect the motor mounting surface or performance.

14. 安裝馬達用到熔接劑時，小心不要讓任何熔接劑流入到軸承或馬達內部。
When installing the motor with welding agent, be careful not to let any welding agent flow into the bearing or the inside of the motor.

15. 使用中需要用潤滑油脂時，小心油脂不能流入馬達中，可能導致馬達不啟動等問題。
When you need to lubricate the motor, make sure that the grease does not flow into the motor, as it may cause the motor not to start.

16. 如果馬達與設備設施的連接需要使用超聲波熔接，那麼得注意超聲波可能對馬達內部零件有損傷。
If mounting the motor to your equipment requires ultrasonic welding, then please note that ultrasonic may cause damage to the motor's internal parts.

17. 焊接時，應盡量快速，防止端子周圍的塑膠熱變形或受壓變形；還要採取必要的措施，如：蓋住焊點周圍的孔洞等，防止錫渣、松香等濺入馬達中。插入式端子馬達焊錫時更應小心以防松香等順着端子孔流入，而引起馬達不通電等問題。
Welding should be done as fast as possible to prevent the plastic around the terminals from thermal deformation or pressure deformation. Necessary measures such as covering the holes around the solder joints should also be taken to prevent tin slag and rosin from splashing into the motor. When soldering a plug-in terminal motor, you should be careful to prevent rosin from flowing in along the



18. 不要觸摸馬達軸承，以防軸承油被吸附，而引起馬達噪音。
Do not touch the motor bearing as it might absorb bearing oil and create excessive motor noise.

19. 不要擦拭馬達殼上用油墨印上的代碼，以防變模糊或褪色。
Do not wipe the ink printed identification code on the motor casing as it might cause the code to blur or fade.

Usage Storage Environment
使用 / 儲存環境

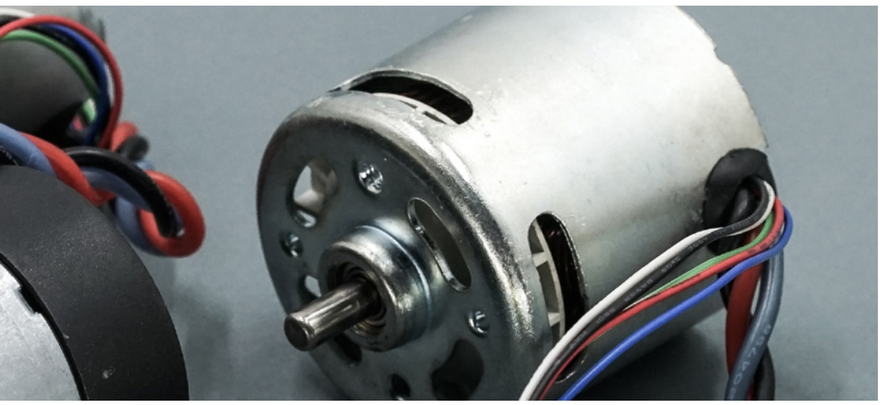
1. 不要在高温高濕的環境下存放，更不要在有腐蝕性氣體的環境中存放，這些都會損傷馬達。建議的儲存環境是：温度：10~30° C，濕度：30%~95%。倉儲時間超過 6 個月（潤滑脂馬達 3 個月以上）的馬達，應特別保管，以防馬達性狀的變化。
Do not store in a high-temperature and high-humidity environment, especially not in an environment with corrosive gas, which will all damage the motor. The recommended storage environment is between 10~30° C in temperature and 30%~95% in humidity. Motors that have been in storage for more than 6 months (grease motors for more than 3 months) should be kept under special care to prevent changes in motor performance.

2. 殺蟲劑等及其氣體都會腐蝕馬達的金屬件。如果馬達及其製品的包裝料，如纸箱、棧板等需要殺蟲處理，必須要避免馬達暴露在這種環境中。
If the packaging materials for the motor and its products, such as cartons, pallets, and others require insecticidal treatment, it is essential to avoid exposing the motor to this environment.

3. 當你的產品中有使用到含矽材料时，應注意避免下述情况發生。矽材料，含有少量分子矽的成分，如果不小心附著於馬達換向器、碳刷或其他零件中，在電能的整合作用下，有可能聚合或分解為 SiO2，SiC 或其他化合物，它們會使換向器與碳刷間的接觸電阻快速增大。同時，當安裝或使用馬達於你的產品中時，還要仔細檢查熔接劑、密封材料等可能產生有毒有害氣體的物料，如：氰化物或鹵素化合物分解的有毒有害氣體。
When silicon-containing materials are used in your products, extra care should be taken. Silicon material contains a small amount of molecular silicon. If it is accidentally attached to the motor commutator, carbon brush or other parts, under the integration of electrical energy, it may polymerize or decompose into SiO2, SiC or other compounds. This will cause the contact resistance between the commutator and carbon brush to increase rapidly. Also, when installing or using the motor in your product, you should also carefully check the welding agent, sealing material and other materials that may produce toxic and harmful gases.
Examples: toxic and harmful gases decomposed by cyanide or halogen compounds.

4. 環境及工作溫度對馬達性能或壽命會有或多或少的影響，因此對於濕熱環境必須加以特別留意。
The operating environment and temperature will affect the motor’s performance and life, so special attention must be paid to hot and humid environments.

SPRAY WORDS INSTRUCTION OF MOTOR
馬達噴字說明



Coil Winding 繞線規格

25. Diametor of wire
線徑
(25 = 0.25 mm)

73. Number of turns
圈數
(73 = 73 turns)

Date Code 日期

9. Year
年
(9 = 2019)

40. Week
週
(40 = 40th)

1. Day
日
(1 = Monday)

MODEL INSTRUCTION OF MOTOR
馬達標準型號說明

1.PMDC Series 有刷馬達（範例型號）

FF450CA-6525-88

F. Company 公司代號
F = Faradyi（第一個F）

F. Appearance 外型
F = Flat 扁圓形
R = Round 圓形

450. Name 馬達名

C. Type of Magnet 磁石類別

A. End Plate Sub Assy 後殼類別
A、B、C、D、E、F = Plastic cap 膠蓋
G、H、K、M、N、P = Metal cap 鐵蓋

6525. Wire Coiling 繞線規格

88. Length of shaft 軸芯長度

2.Geared Motor 齒輪箱馬達 (範例型號)

FR540CA-16285-RB35C-50

F. Company 公司代號
F = Faradyi

R. Appearance 外型
F = Flat 扁圓形
R = Round 圓形

540. Name 馬達名

50. Reduction Ratio 減速比

C. Type of Magnet 磁石類別

A. End Plate Sub Assy 後殼類別
A、B、C、D、E、F = Plastic cap 膠蓋
G、H、K、M、N、P = Metal cap 鐵蓋

16285. Wire Coiling 繞線規格

RB35C. Geared Box Item 齒輪箱編號

3.BLDC Series 無刷馬達 (範例型號)

FB366PG-4033-52

F. Company 公司代號
F = Faradyi

B. Brushless Motor 無刷馬達代號

366. Name 馬達名

P. Type of Magnet 磁石類別

G. End Plate Sub Assy 後殼類別
A、B、C、D、E、F = Plastic cap 膠蓋
G、H、K、M、N、P = Metal cap 鐵蓋

4033. Wire Coiling 繞線規格

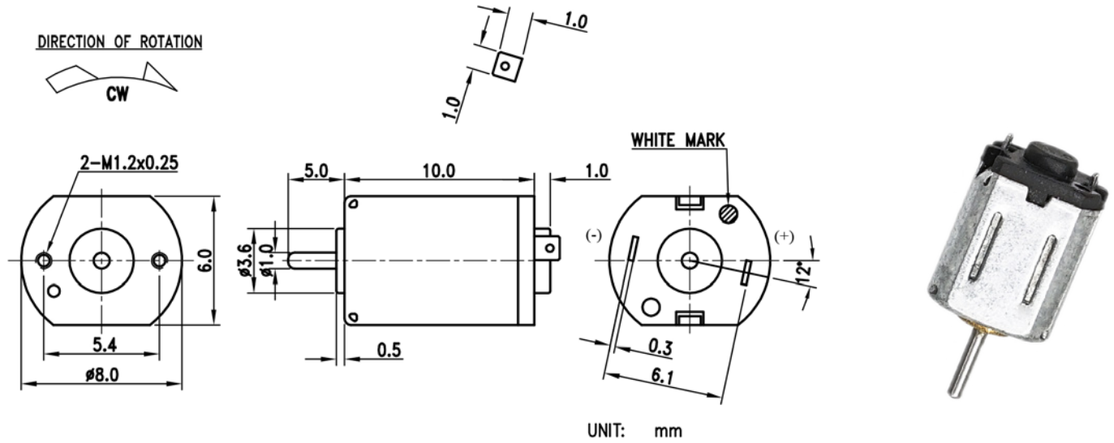
52. Length of shaft 軸芯長度

PMDC SERIES
有刷馬達

FFK10

PMDC SERIES
Typical Application :
Automatic Locks

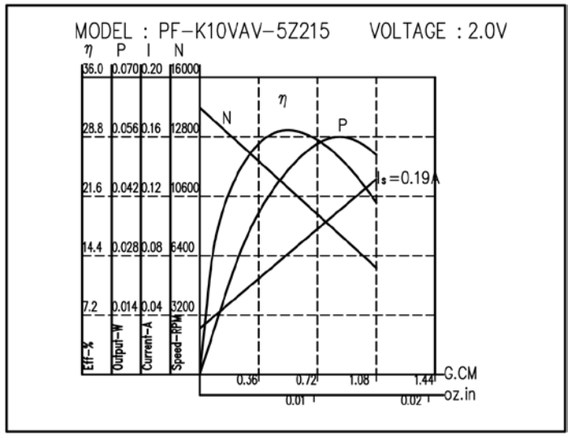
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFK10VAV-5Z215	1.0~3.0	2.0V CONSTANT	14000	0.04	9597	0.09	0.007	0.52	0.05	29	0.023	1.65

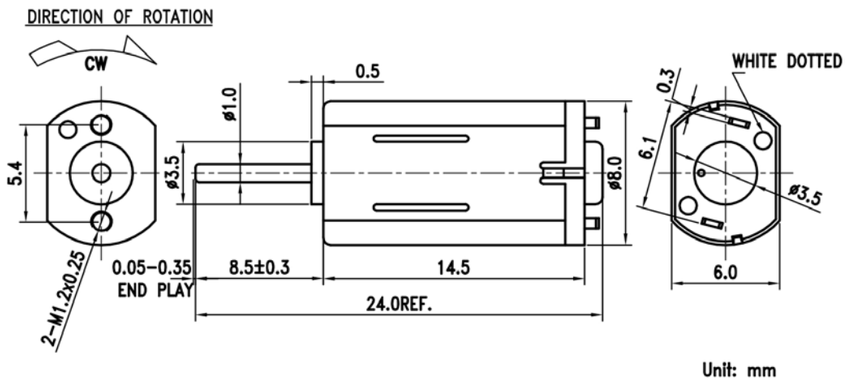
3.Curves



FFK20

PMDC SERIES
Typical Application :
Automatic Locks

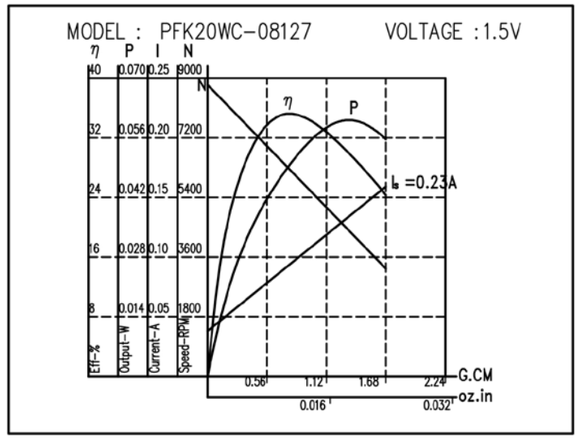
1.Typical Figure

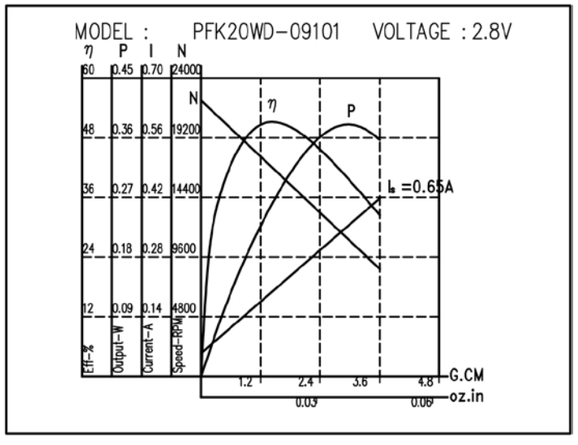


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFK20WC-08127	1.5~3.5	1.5V CONSTANT	8600	0.038	6260	0.093	0.01	0.74	0.047	35	0.03	2.5
FFK20WD-09101	1.5~3.5	2.8V CONSTANT	22200	0.054	17230	0.19	0.02	1.3	0.23	51	0.08	5.9

3.Curves

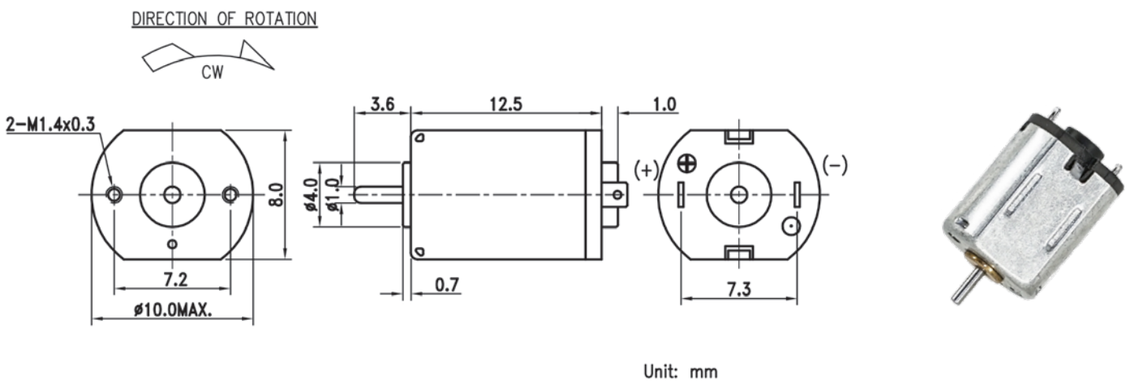




FFM10

PMDC SERIES
Typical Application :
Precision Instruments

1.Typical Figure

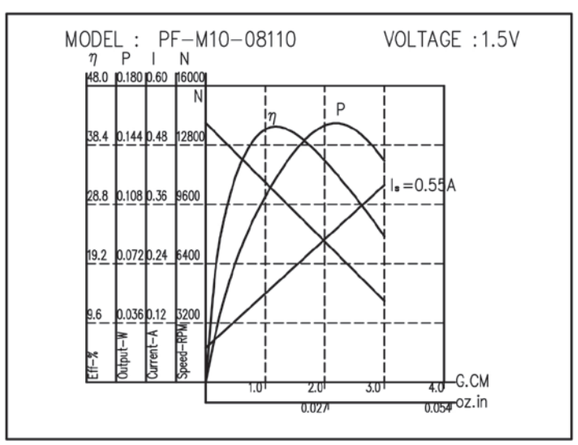


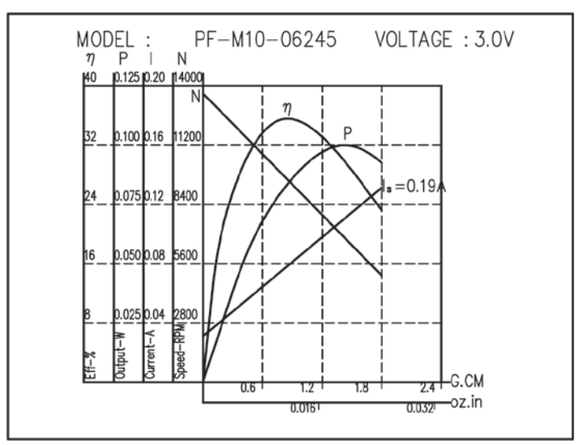
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFM10-08110	1.0-2.4	1.5V CONSTANT	14000	0.07	10300	0.2	0.02	1.15	0.12	41	0.06	4.4
FFM10-06245	2.0-4.0	3.0V CONSTANT	13640	0.031	9715	0.077	0.01	0.82	0.08	35.5	0.04	2.85

3.Curves

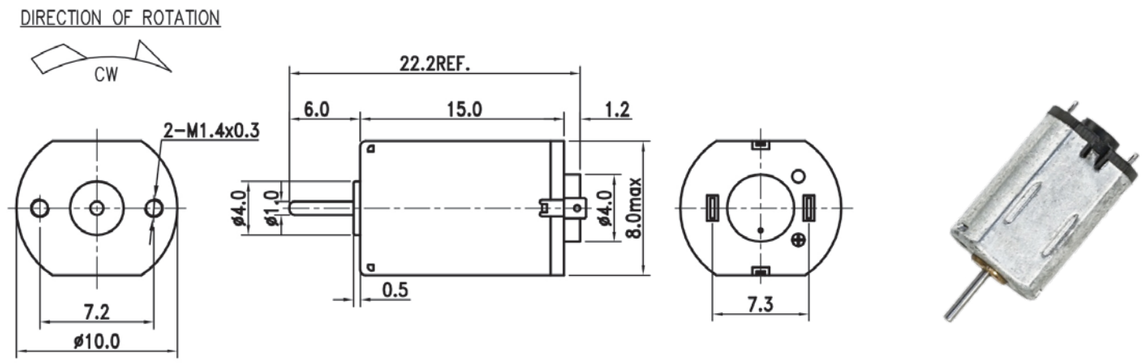




FFM20

PMDC SERIES
Typical Application :
Precision Instruments

1.Typical Figure

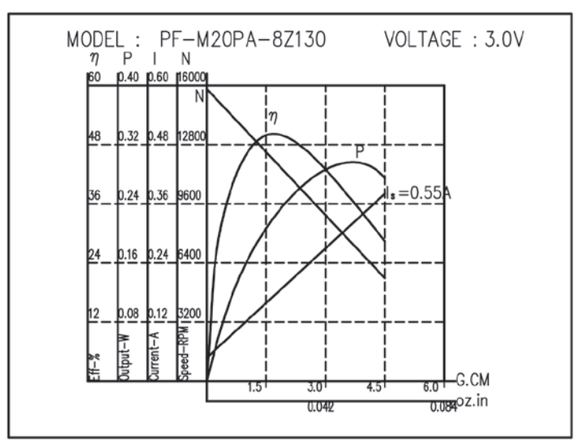


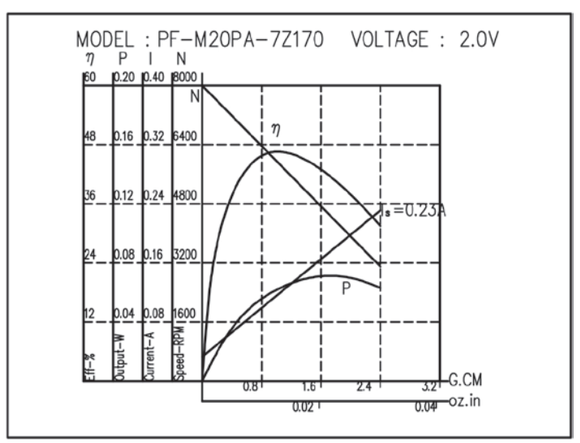
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFM20PA-8Z130	2.0~3.0	3.0V CONSTANT	15200	0.045	11800	0.16	0.02	1.6	0.19	51	0.1	7
FFM20PA-10100	1.0~3.5	2.4V CONSTANT	16800	0.056	13100	0.21	0.02	1.7	0.23	53	0.11	7.7
FFM20PA-7Z170	2.0~4.0	2.0V CONSTANT	8000	0.025	6000	0.075	0.01	0.9	0.065	45	0.05	3.6

3.Curves

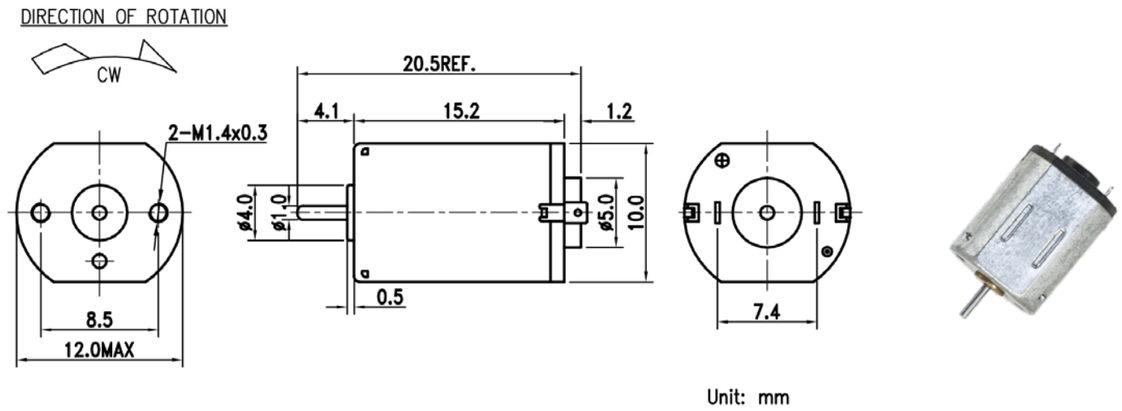




FFN20

PMDC SERIES
Typical Application : Engraver Tools

1.Typical Figure

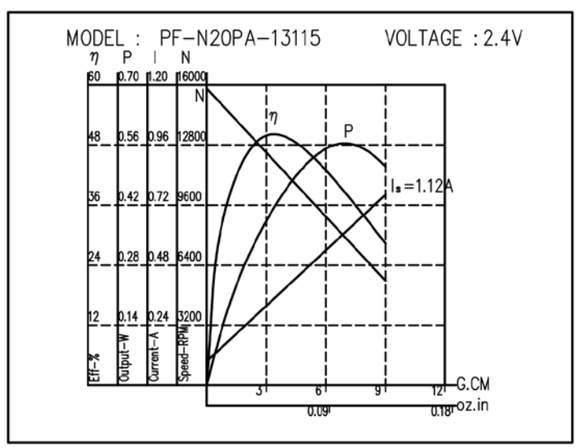


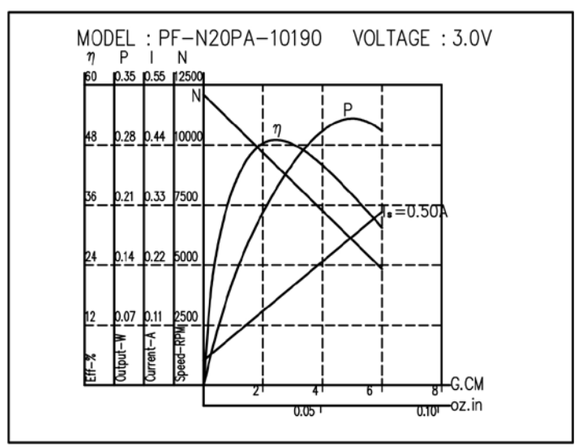
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFN20PA-13115	1.5~3.0	2.4V CONSTANT	15800	0.096	12230	0.33	0.04	3.14	0.39	50	0.19	13.9
FFN20PA-10190	2.0~5.0	3.0V CONSTANT	12100	0.045	9300	0.15	0.03	2.3	0.22	49	0.14	10
FFN20PA-08260	2.0~5.0	4.8V CONSTANT	14200	0.037	11000	0.13	0.04	2.72	0.31	50	0.17	12

3.Curves

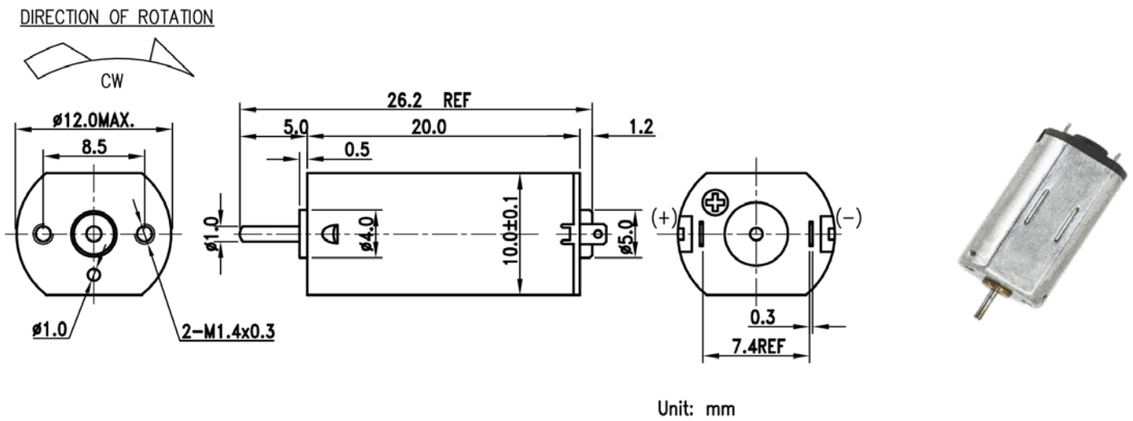




FFN30

PMDC SERIES
Typical Application : Electric Precision Screwdriver

1.Typical Figure

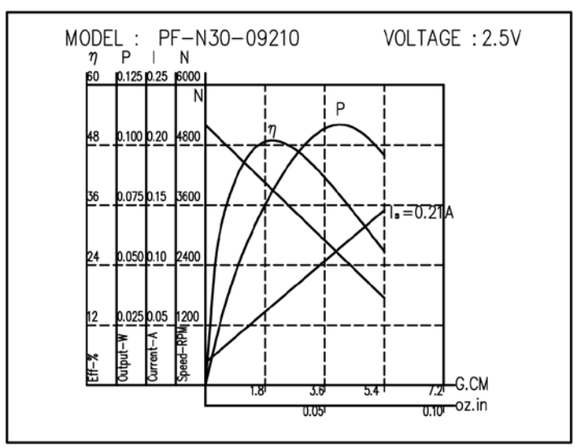


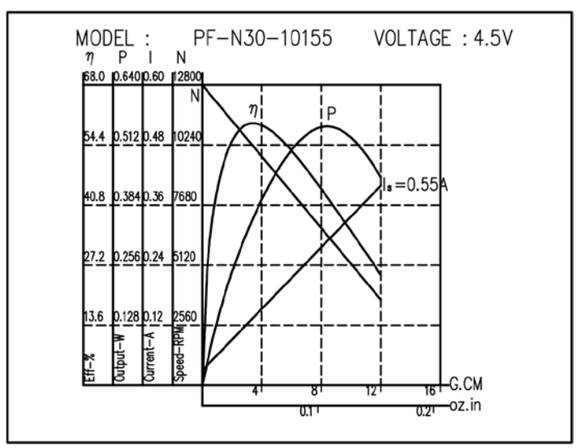
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FFN30-09210	2.0~5.0	2.5V CONSTANT	5200	0.019	4000	0.063	0.03	1.88	0.074	49	0.11	8.12
FFN30-10155	3.0~6.0	4.5V CONSTANT	12800	0.029	10400	0.126	0.04	3.15	0.35	59	0.24	17

3.Curves

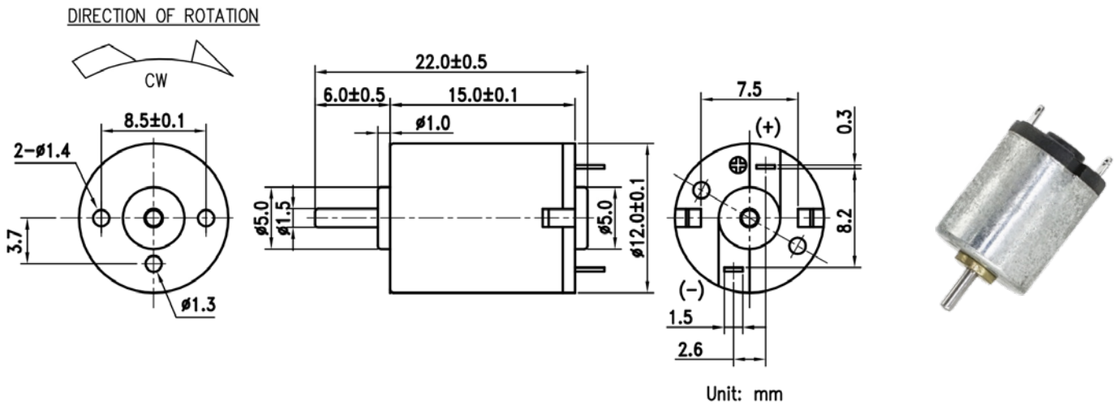




FR1215

PMDC SERIES
Typical Application :
Remote Toy Cars

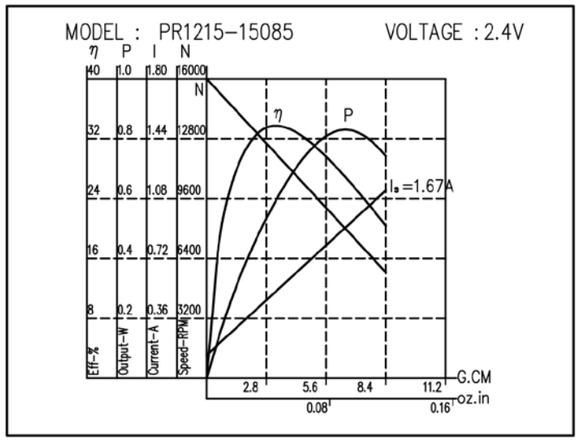
1.Typical Figure

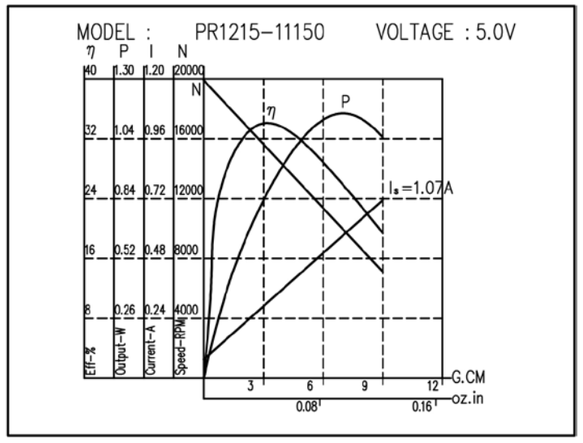


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR1215-15085	2.0~3.0	2.4V CONSTANT	16000	0.14	12400	0.483	0.04	2.92	0.58	32	0.18	13
FR1215-11150	4.0~6.0	5.0V CONSTANT	19900	0.075	15700	0.283	0.04	2.93	0.76	34	0.19	14

3.Curves

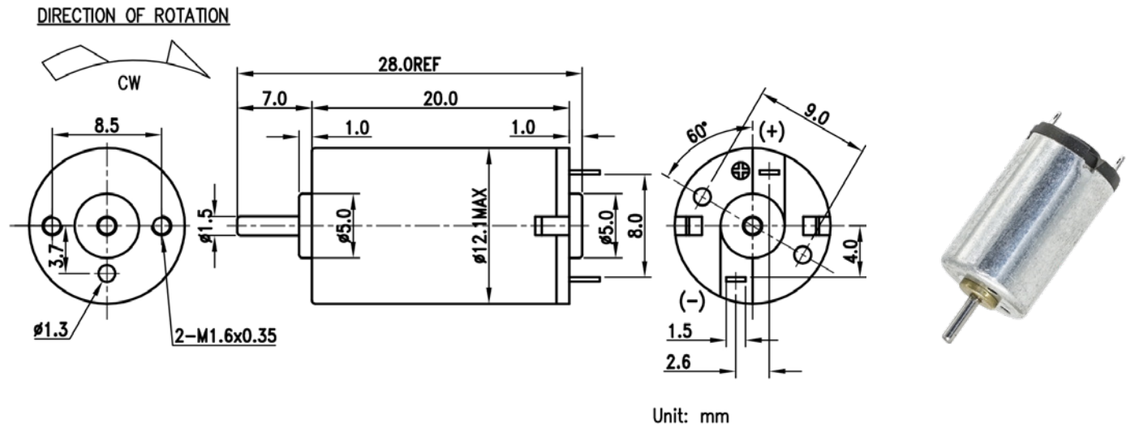




FR1220

PMDC SERIES
Typical Application :
Electric Toothbrushes

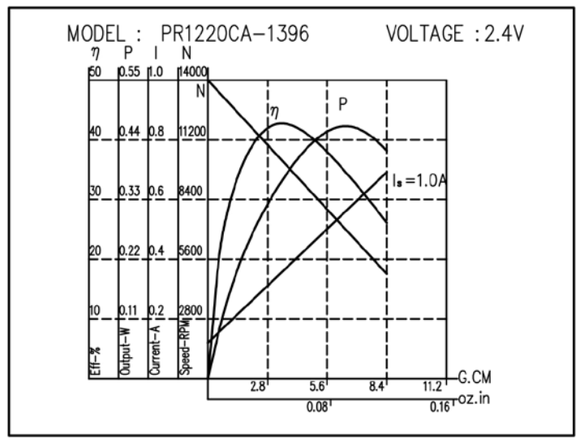
1.Typical Figure

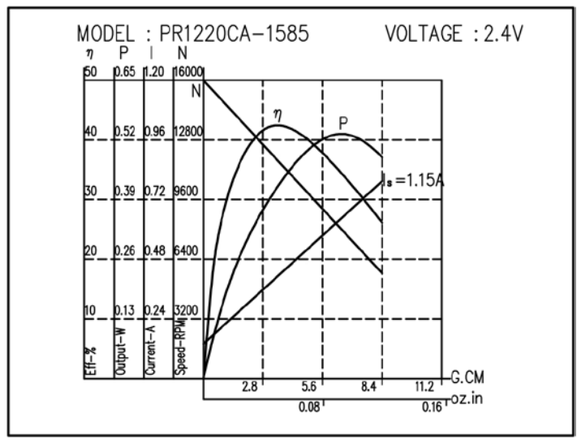


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR1220CA-1396	1.5~3.0	2.4V CONSTANT	14000	0.12	10400	0.35	0.05	3.33	0.36	43	0.18	12.9
FR1220CA-1585	1.5~3.0	2.4V CONSTANT	16000	0.14	11860	0.4	0.05	3.35	0.41	42	0.18	13

3.Curves

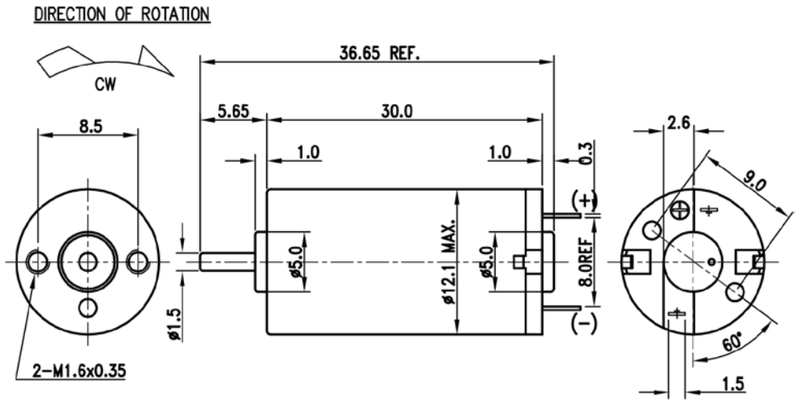




FR1230

PMDC SERIES
Typical Application :
Electric Toothbrushes

1.Typical Figure

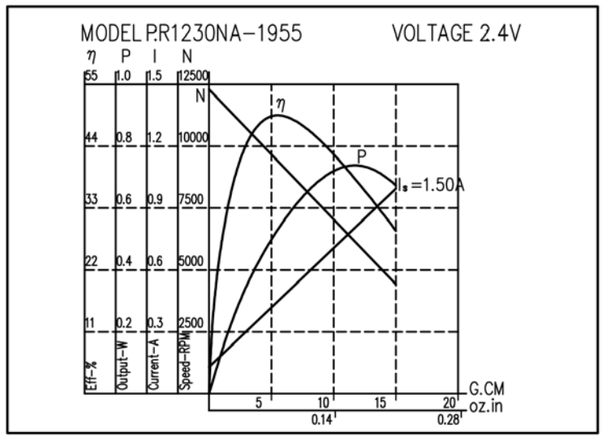


Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR1230NA-1955	1.0~3.0	2.4V CONSTANT	12300	0.13	9500	0.44	0.075	5.4	0.53	50	0.33	23.8
FR1230NA-11140	3.0~6.0	6.0V CONSTANT	12800	0.07	10100	0.26	0.115	8.3	0.86	54	0.55	39.5

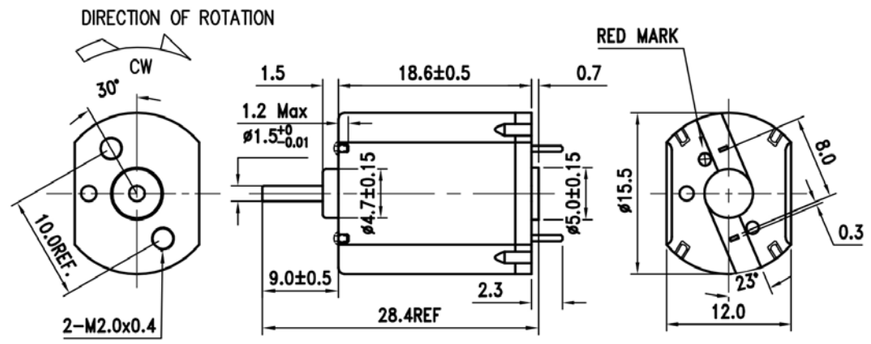
3.Curves



FF030

PMDC SERIES
Typical Application :
Remote Control Toys

1.Typical Figure

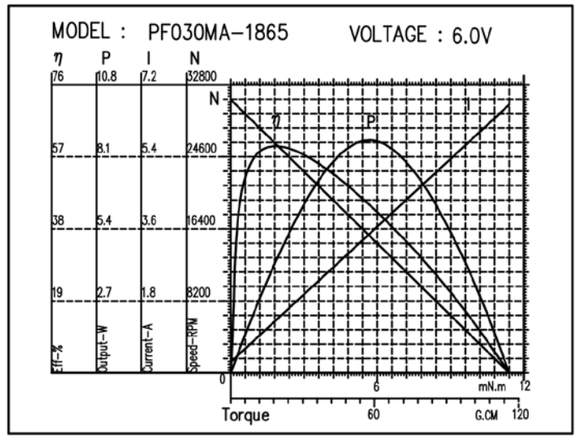


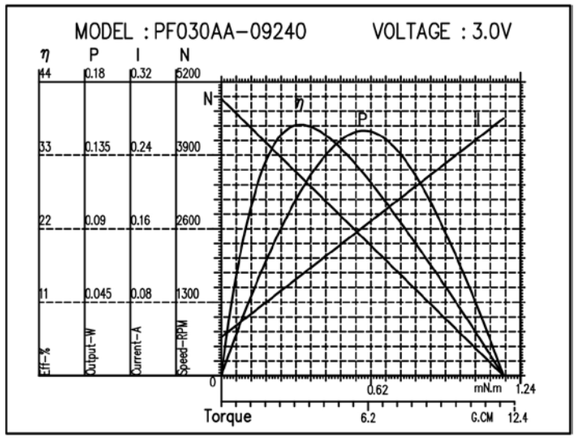
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF030MA-1865	4.5~6.0	6.0V CONSTANT	31000	0.273	25871	1.35	0.271	19.49	5.18	63.73	1.614	116.1
FF030AA-08220	4.5~6.0	6.0V CONSTANT	10800	0.035	8540	0.13	0.064	4.57	0.4	52.53	0.295	21.2
FF030AA-09240	2.5~3.5	3.0V CONSTANT	5100	0.042	3546	0.108	0.047	3.36	0.12	37.54	0.167	12

3.Curves

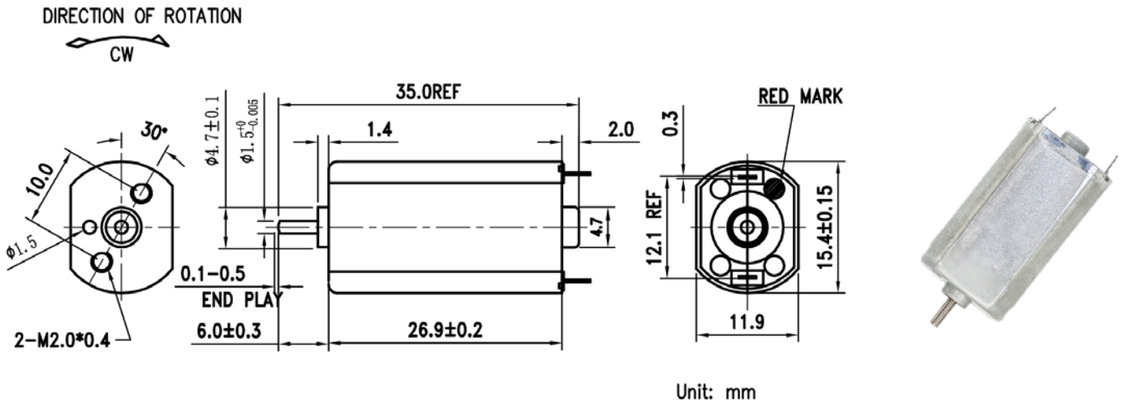




PF050

PMDC SERIES
Typical Application :
CD/DVD Players

1.Typical Figure

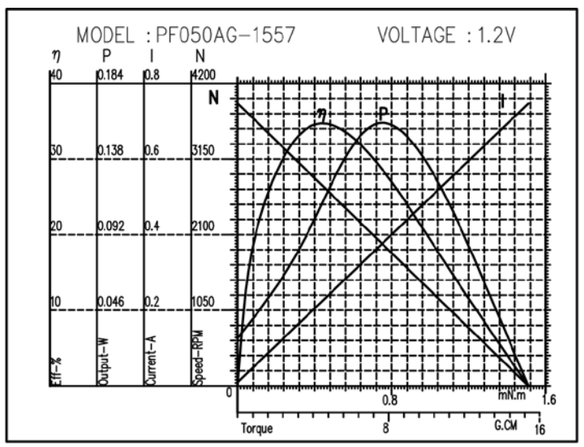


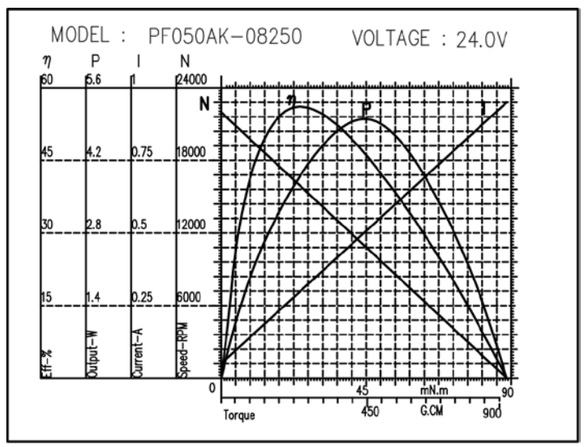
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF050EK-12111	6.0~8.0	7.0V CONSTANT	12700	0.109	10136	0.39	0.193	13.9	1.45	52.36	0.892	64.2
FF050AK-2633	2.5~3.5	3.0V CONSTANT	21000	0.29	17255	1.33	0.193	13.85	2.45	61.3	1.079	77.6
FF050AG-1557	1.0~1.5	1.2V CONSTANT	4000	0.126	2782	0.31	0.062	4.48	0.13	34.73	0.214	15.4
FF050AK-10170	8.0~10.0	9.0V CONSTANT	12500	0.046	10750	0.17	0.114	8.2	0.91	59.2	0.784	56.4
FF050AK-08250	20~28	24V CONSTANT	22000	0.06	17582	0.24	0.248	17.8	3.22	56.1	1.232	88.6

3.Curves

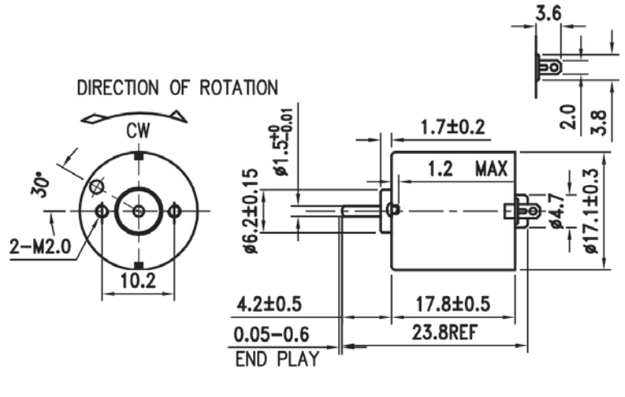




PR020

PMDC SERIES
Typical Application :
Remote Control Toys

1.Typical Figure

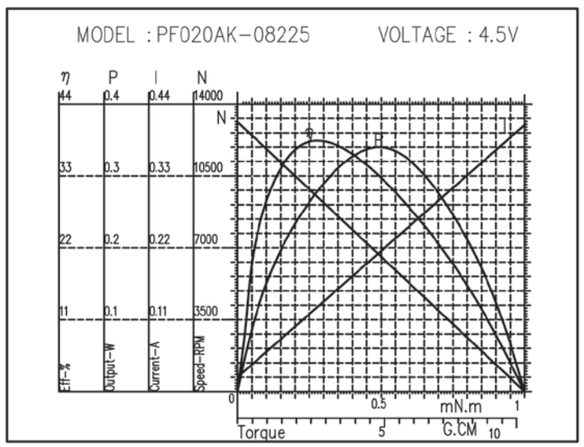


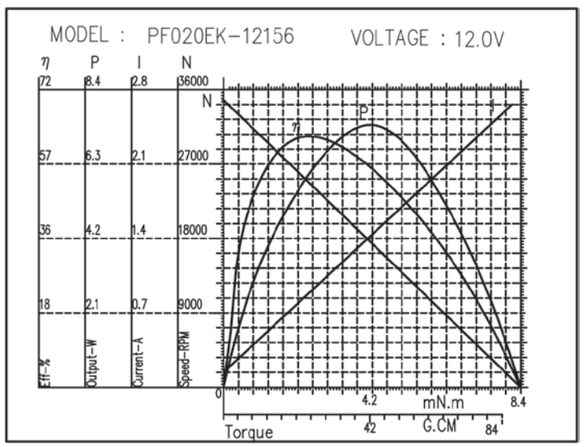
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR020AK-08225	3.5~5.0	4.5V CONSTANT	13100	0.059	9505	0.155	0.038	2.75	0.27	38.4	0.139	10
FR020EK-12175	8.0~10.0	9.0V CONSTANT	22500	0.125	17832	0.517	0.203	14.62	2.68	57.49	1.044	75.1
FR020NK-11175	4.5~6.0	6.0V CONSTANT	21000	0.098	16879	0.359	0.092	6.58	1.14	52.87	0.427	30.7
FR020EG-17106	3.5~5.5	4.8V CONSTANT	19200	0.228	15365	0.91	0.215	15.5	2.45	56.08	1.073	77.2
FR020EK-12156	11~14	12.0V CONSTANT	34520	0.109	28636	0.54	0.196	14.08	4.14	63.76	1.168	84

3.Curves



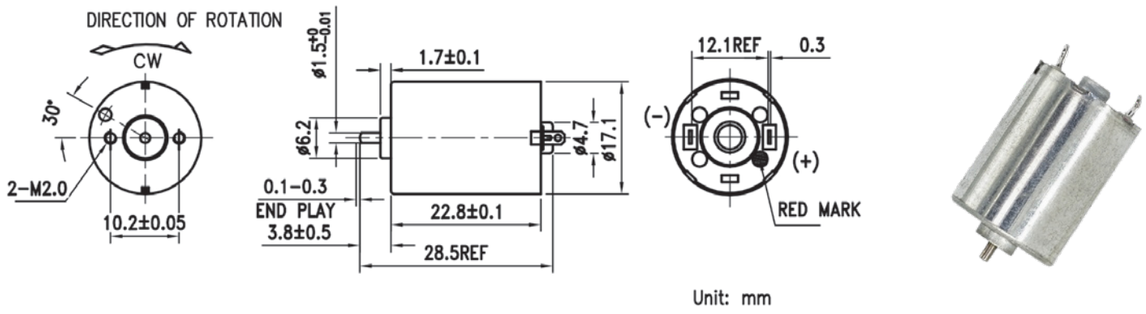


FR130

PMDC SERIES

Typical Application :
Micro Servo

1.Typical Figure

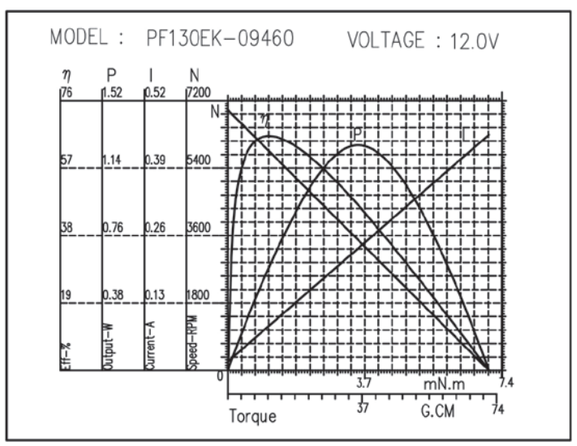


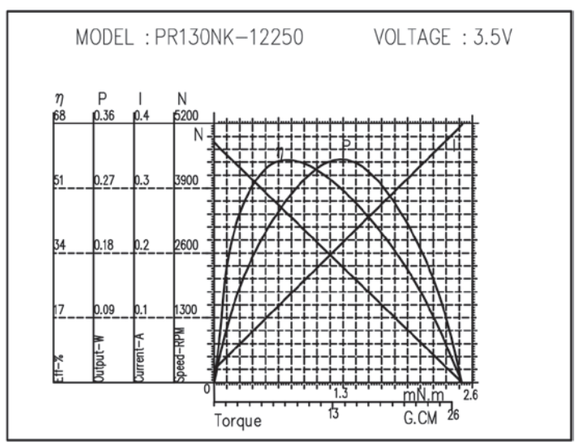
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR130EG-2366	4.5~6.0	6.0V CONSTANT	23000	0.259	19396	1.417	0.396	28.51	5.68	66.78	2.565	184.5
FR130EK-09460	11~14	12V CONSTANT	6900	0.017	5788	0.085	0.158	11.35	0.68	65.98	0.999	71.9
FR130NG-2078	3.5~5.0	4.5V CONSTANT	18600	0.203	15007	0.912	0.224	16.09	2.48	60.42	1.299	88.4
FR130NK-12250	3.0~4.0	3.5V CONSTANT	4800	0.023	3887	0.096	0.067	4.84	0.19	57.7	0.348	25

3.Curves





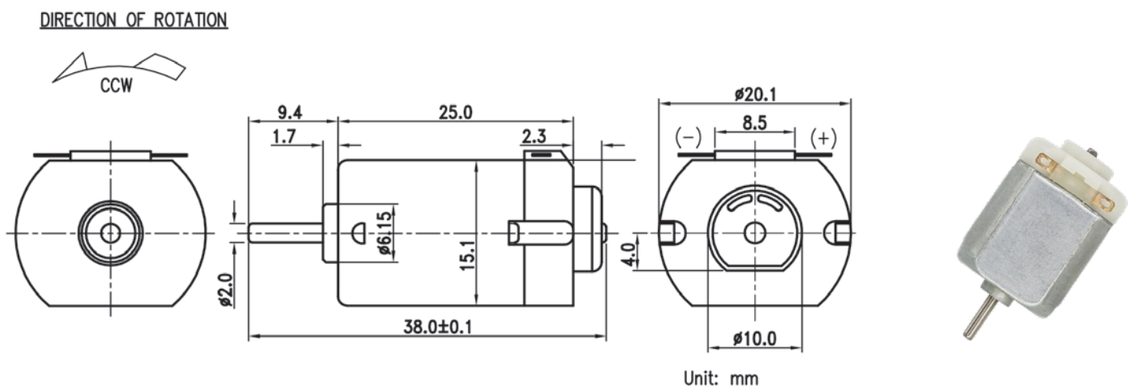
FF130AA

PMDC SERIES

Typical

Application :

1.Typical Figure

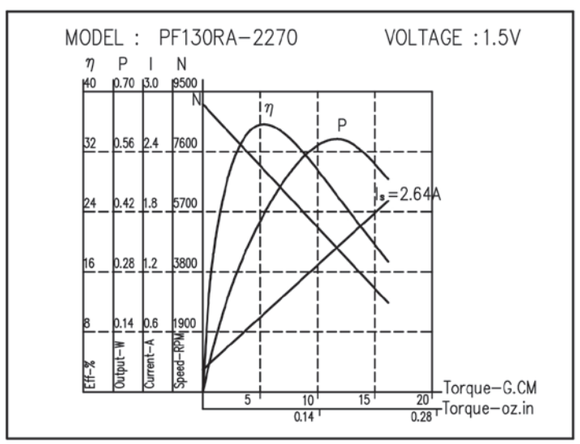


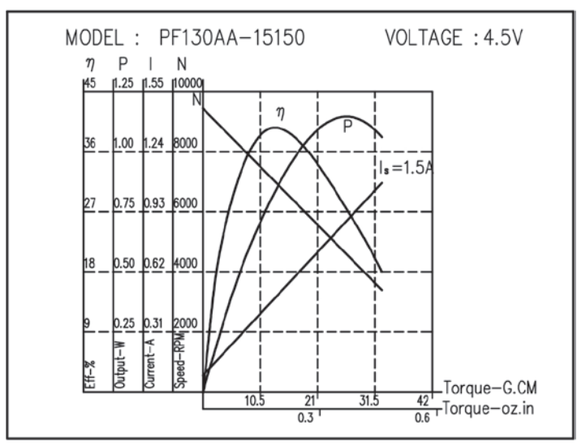
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF130RA-2270	1.5~3.0	1.5V CONSTANT	9100	0.22	7100	0.76	0.08	5.85	0.43	38	0.36	26
FF130RA-18100	1.5~3.0	1.5V CONSTANT	6200	0.17	4800	0.41	0.07	4.82	0.23	36.6	0.29	21
FF130RA-2365	1.5~3.0	3.0V CONSTANT	18000	0.32	14200	1.17	0.13	9.64	1.4	39.8	0.64	46
FF130RA-12240	4.5~6.0	3.0V CONSTANT	5200	0.06	3800	0.15	0.08	6	0.23	51	0.31	22
FF130AA-15150	3.0~6.0	4.5V CONSTANT	9800	0.14	7500	0.43	0.14	9.8	0.75	39	0.64	46

3.Curves



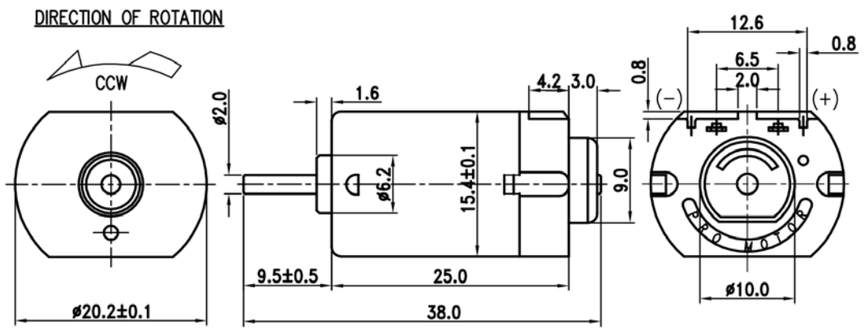


FF130AE

PMDC SERIES

Typical Application :
Back View Auto Mirrows

1.Typical Figure

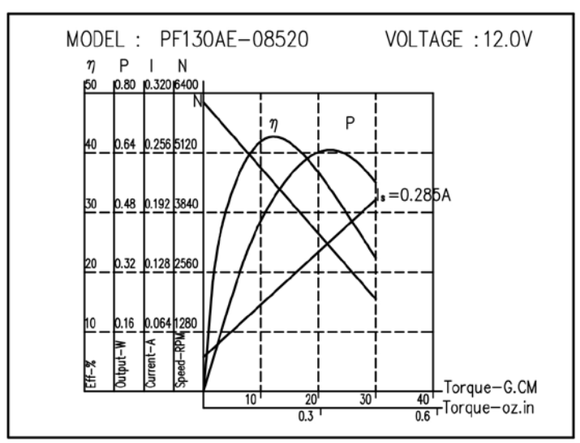


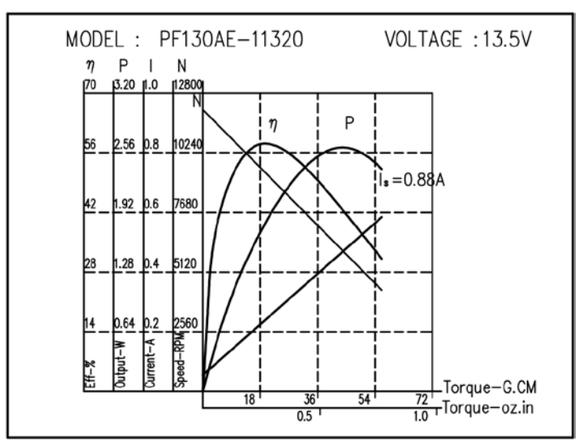
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF130AE-08520	10.0～18.0	12.0V CONSTANT	6200	0.037	4560	0.103	0.15	11	0.5	41	0.57	40.7
FF130AE-11320	10.0～18.0	13.5V CONSTANT	12090	0.055	9670	0.22	0.24	17	1.67	56	1.17	84.3

3.Curves



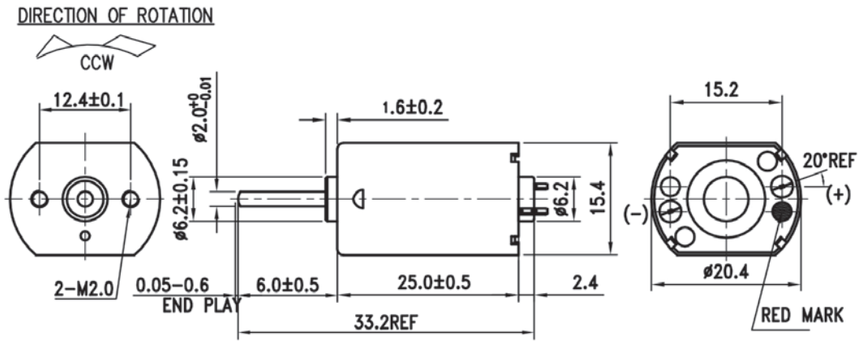


PF130AG

PMDC SERIES

Typical Application :
Central Door Locks

1.Typical Figure

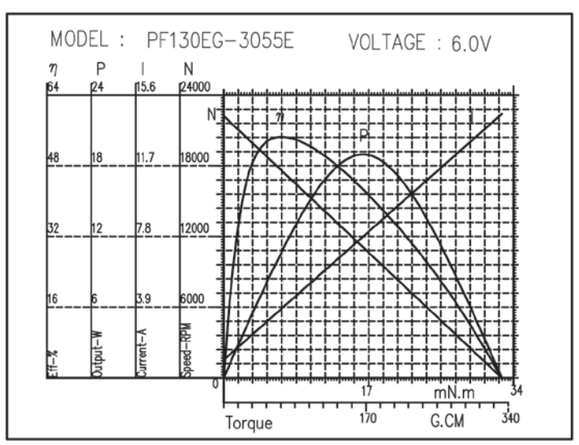


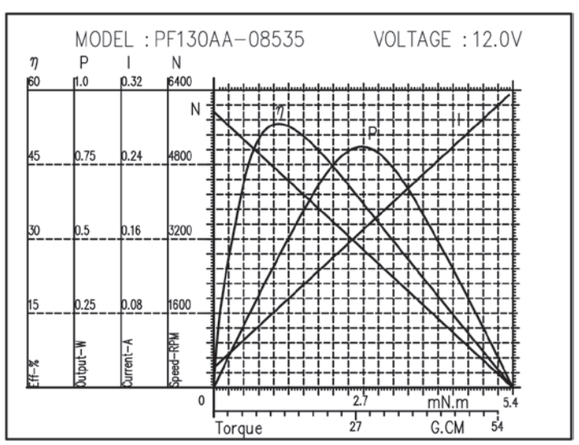
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF130EG-3055E	4.5～6.0	6.0V CONSTANT	22000	0.999	17613	3.815	0.96	68.99	12.48	54.48	4.62	332.4
FF130RG-2073	3.5～4.0	3.7V CONSTANT	18000	0.287	13751	0.932	0.163	11.69	1.65	47.88	0.691	49.7
FF130AB-20122	11～14	12.0V CONSTANT	25600	0.214	21679	1	0.46	33.1	7.37	61.63	0.45	162.4
FF130AG-09465	21～25	24.0V CONSTANT	14500	0.048	11730	0.203	0.329	23.68	2.85	58.38	1.724	124
FF130AA-08535	11～14	12.0V CONSTANT	5900	0.022	4672	0.085	0.158	11.34	0.54	53.26	0.741	53.3

3.Curves

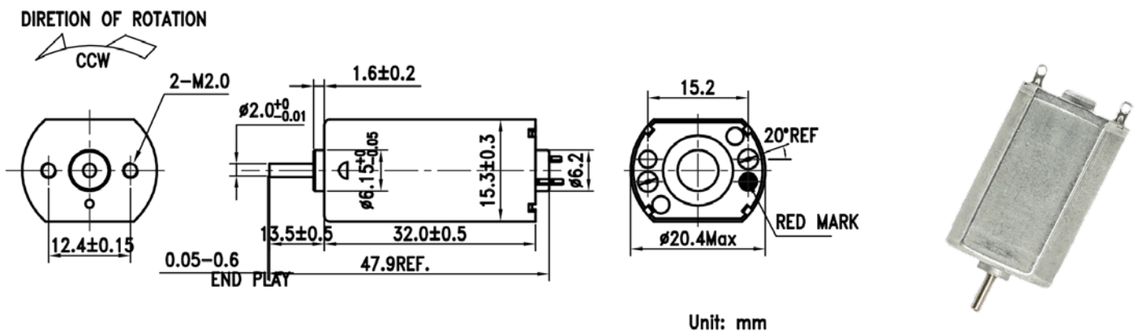




FF180

PMDC SERIES
Typical Application :
Electric Shavers

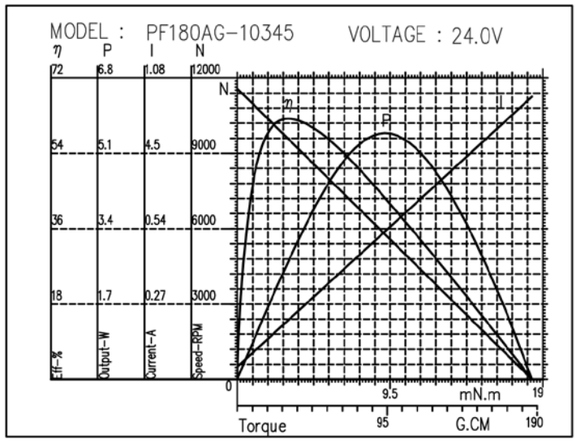
1.Typical Figure

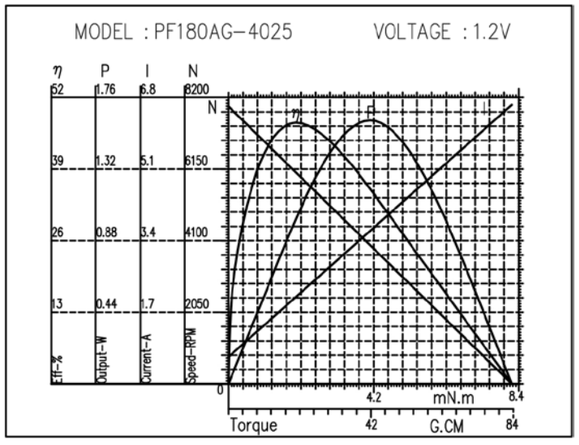


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF180AG-4025	1.0~1.5	1.2V CONSTANT	8100	0.642	5765	2.06	0.276	19.84	1.18	47.43	1.162	83.6
FF180AG-10345	21~25	24V CONSTANT	11500	0.045	9569	0.214	0.452	32.5	3.2	62.29	2.595	186.7
FF180EG-2565	4.5~6.0	6.0V CONSTANT	13000	0.296	11096	1.56	0.753	54.17	6.17	65.73	4.73	340.4
FF180RG-20103	11.~14.	12.0V CONSTANT	23500	0.22	19655	1.03	0.53	38.06	7.68	61.94	3.01	216.7
FF180CK-13220	11~14	12.0V CONSTANT	9000	0.04	7672	0.227	0.33	23.46	1.85	67.85	2.18	156.5

3.Curves

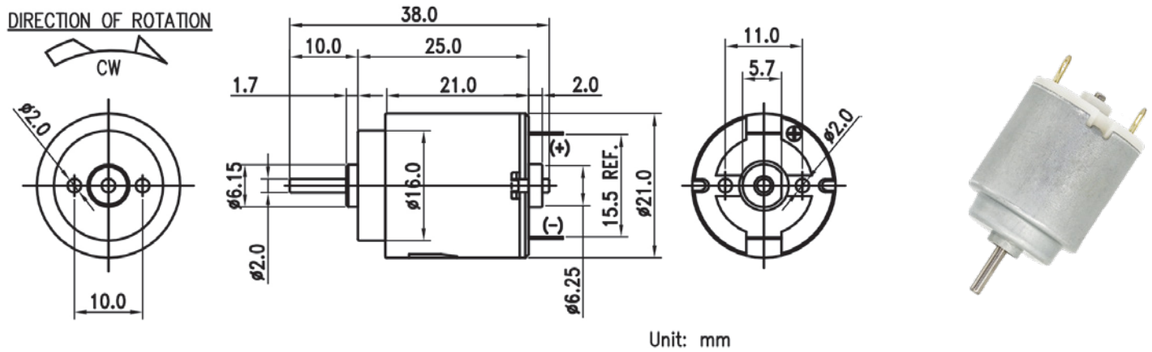




FR140

PMDC SERIES
Typical Application :
Electric Massagers

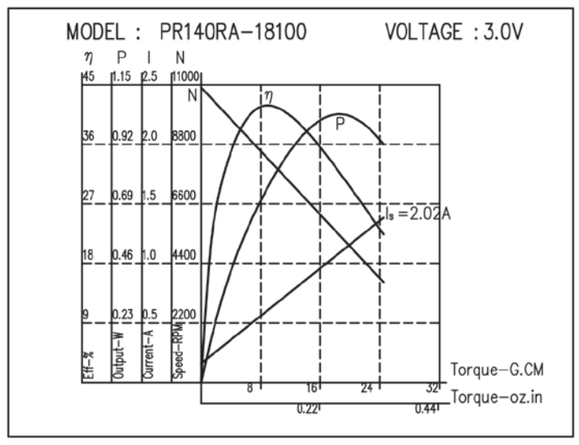
1.Typical Figure

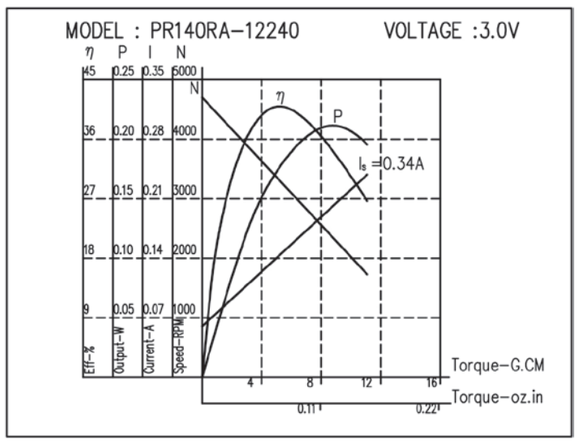


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR140RA-14150	1.5~4.5	3.0V CONSTANT	7600	0.1	5650	0.29	0.09	6.7	0.39	44.5	0.36	26
FR140RA-18100	1.5~3.0	1.5V CONSTANT	5700	0.14	4320	0.38	0.07	4.9	0.22	38.2	0.26	19
		3.0V CONSTANT	10900	0.16	8550	0.56	0.11	8	0.71	41.5	0.51	37
FR140RA-12240	1.5~6.0	3.0V CONSTANT	4700	0.06	3200	0.15	0.07	5.1	0.17	37	0.25	18
FR140RA-10300	3.0~12.0	3.0V CONSTANT	4200	0.05	2930	0.11	0.05	3.3	0.1	32	0.15	11

3.Curves

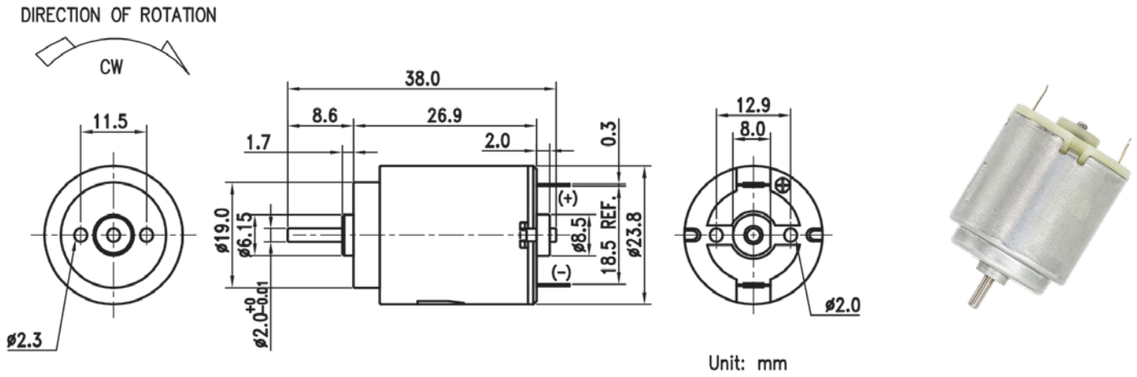




FR260

PMDC SERIES
Typical Application :
Electric Massagers

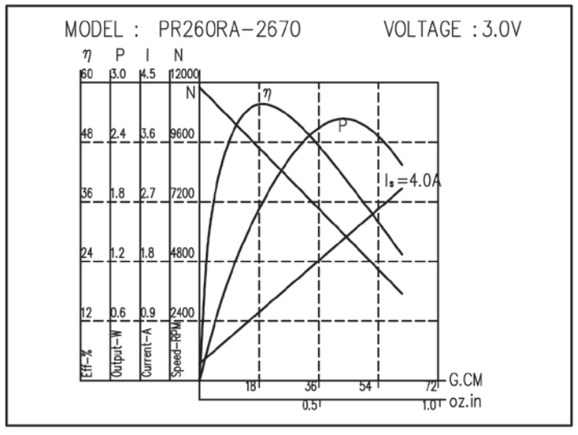
1.Typical Figure

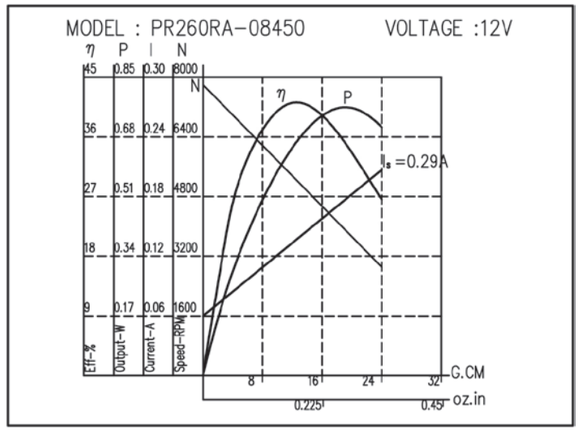


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR260RA-2670	1.5~3.0	3.0V CONSTANT	11800	0.26	9400	1	0.25	18	1.7	55.6	1.21	87
FR260RA-08450	6.0~25	12V CONSTANT	7800	0.06	5800	0.12	0.14	9.8	0.59	42.3	0.53	38
FR260RA-18130	1.5~6.0	1.5V CONSTANT	3300	0.1	2500	0.23	0.08	6.1	0.16	44.8	0.35	25
		3.0V CONSTANT	6900	0.11	5500	0.36	0.14	9.9	0.55	50.9	0.67	48
FR260RA-22100	3.0~6.0	6.0V CONSTANT	17000	0.26	15550	1.02	0.29	21	2.88	47.5	1.42	102

3.Curves

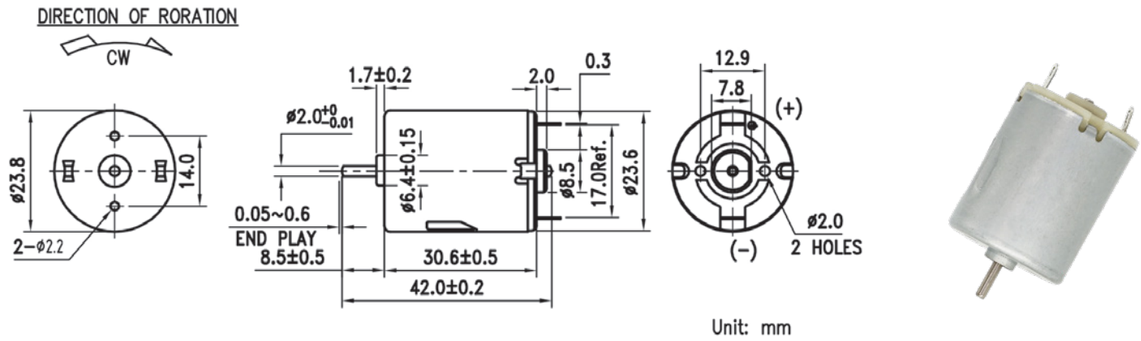




FR280

PMDC SERIES
Typical Application :
Electric Massagers

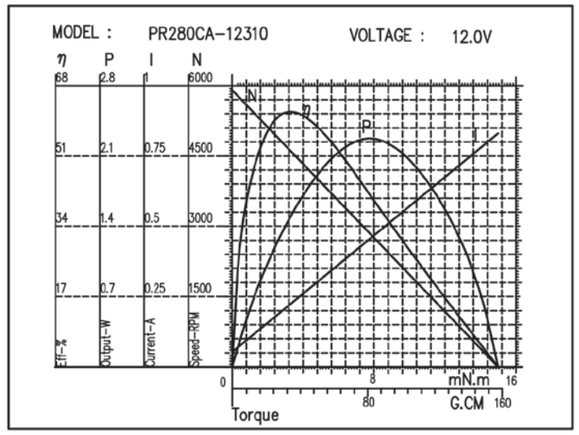
1.Typical Figure

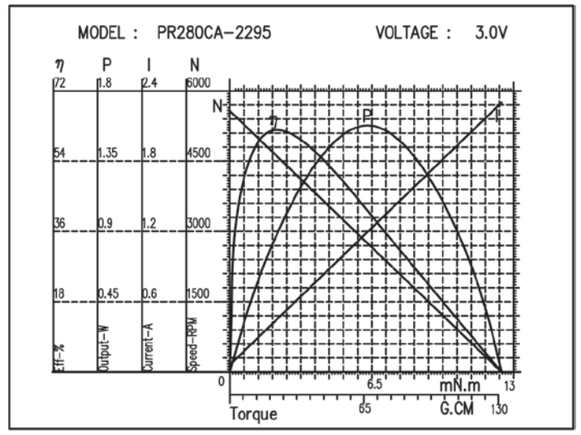


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR280CA-2295	2.5-3.5	3.0V CONSTANT	5000	0.104	4065	0.49	0.303	21.8	0.91	62	1.73	124.4
FR280CC-2295	4.5-6.0	6.0V CONSTANT	9400	0.13	7970	0.73	0.501	36	2.95	67.3	3.28	236.2
FR280CA-12310	11.0-14.0	12.0V CONSTANT	5900	0.039	4856	0.18	0.371	26.66	1.33	61.4	2.09	150
FR280RA-2665	7.5-9.0	8.4V CONSTANT	25000	0.311	19991	1.25	0.4	28.8	5.92	56.4	2.01	144.5
FR280RC-08520	3.5-5.0	4.5V CONSTANT	1700	0.011	1241	0.032	0.066	4.73	0.06	42.4	0.254	18.3

3.Curves

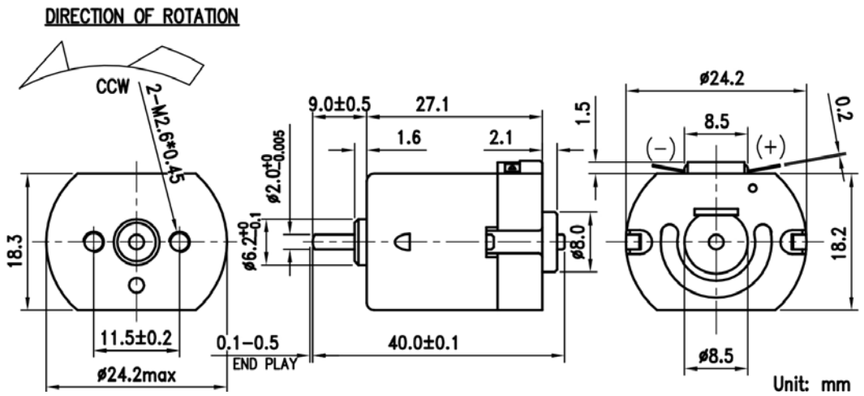




FF260

PMDC SERIES
Typical Application :
Electric Massagers

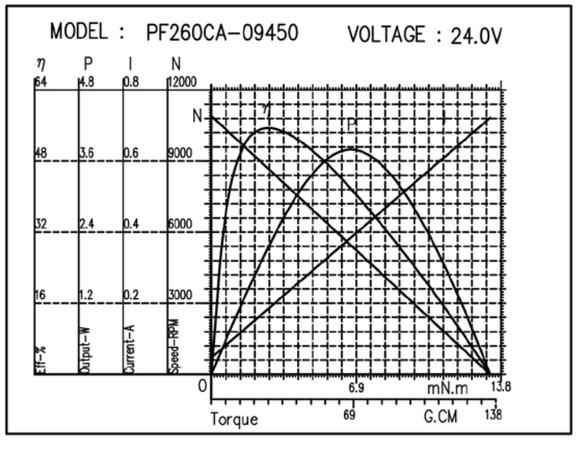
1.Typical Figure

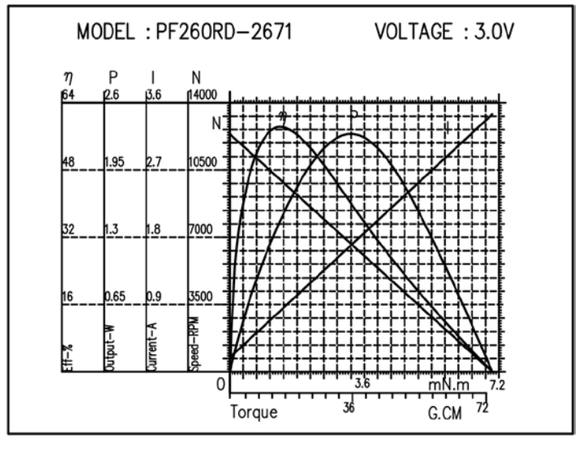


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF		
			rpm	A	rpm	A	oz-in / g-cm	w	%	oz-in	g-cm
FF260CA-09450	21.0-25.0	24V CONSTANT	10700	0.047	8700	0.184	0.38 / 27.51	2.46	55.52	1.88	135.4
FF260CB-2671	3.5-5.0	4.5V CONSTANT	13700	0.22	11141	0.97	0.314 / 22.6	2.58	59.4	1.68	121.1
FF260PA-13265	11.0-14.0	12V CONSTANT	9200	0.079	7299	0.31	0.39 / 27.83	2.09	55.73	1.913	137.6
FF260PD-2671	2.5-3.5	3.0V CONSTANT	12300	0.192	10002	0.81	0.192 / 13.8	1.42	58.3	1.004	72.2

3.Curves

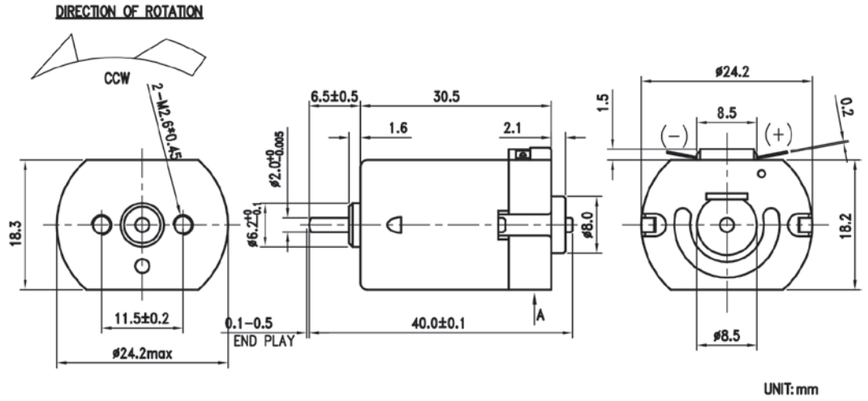




FF280AA

PMDC SERIES
Typical Application :
Central Door Locks

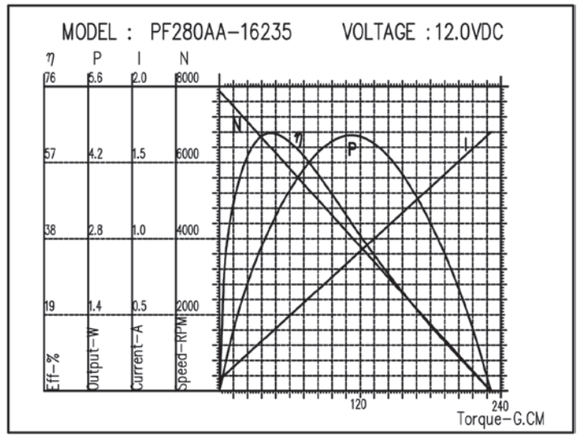
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF		
			rpm	A	rpm	A	oz-in / g-cm	w	%	oz-in	g-cm
FF280AA-16235	9.0-15.0	12V CONSTANT	8000	0.075	6550	0.35	0.55 / 40	2.65	63.1	3.21	231.5

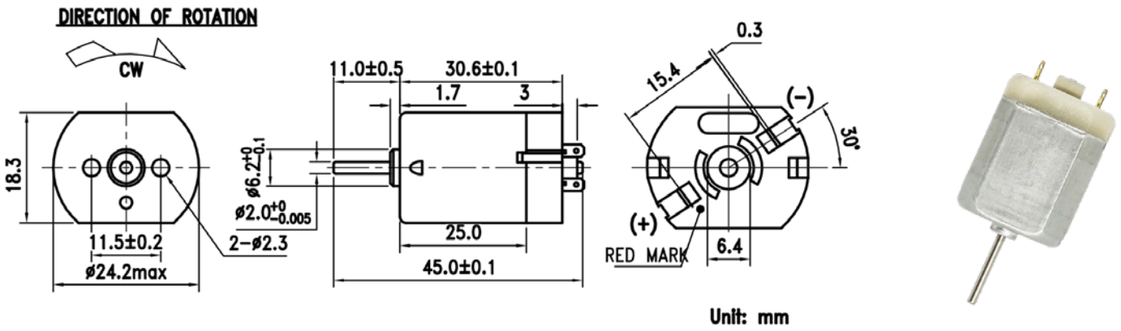
3.Curves



FF280AB

PMDC SERIES
Typical Application :
Central Door Locks

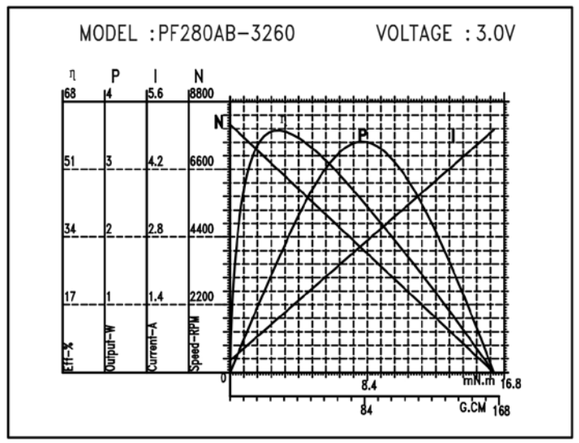
1.Typical Figure

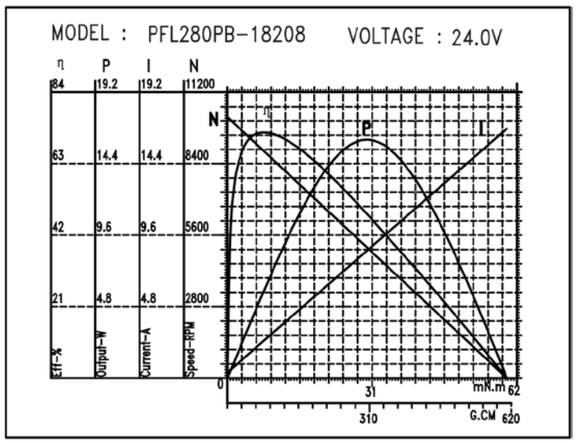


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF280AB-18165	11.0-14.0	12V CONSTANT	12400	0.103	10230	0.549	0.576	41.42	4.35	66	3.645	262.2
FF280AB-3260	2.5-3.5	3.0V CONSTANT	8000	0.245	6593	1.109	0.415	29.84	2.02	60.7	2.292	164.9
FFL280PB-18208	21.0-25.0	24V CONSTANT	10500	0.063	8893	0.419	1.11	79.66	7.28	72.22	8.48	610.1

3.Curves

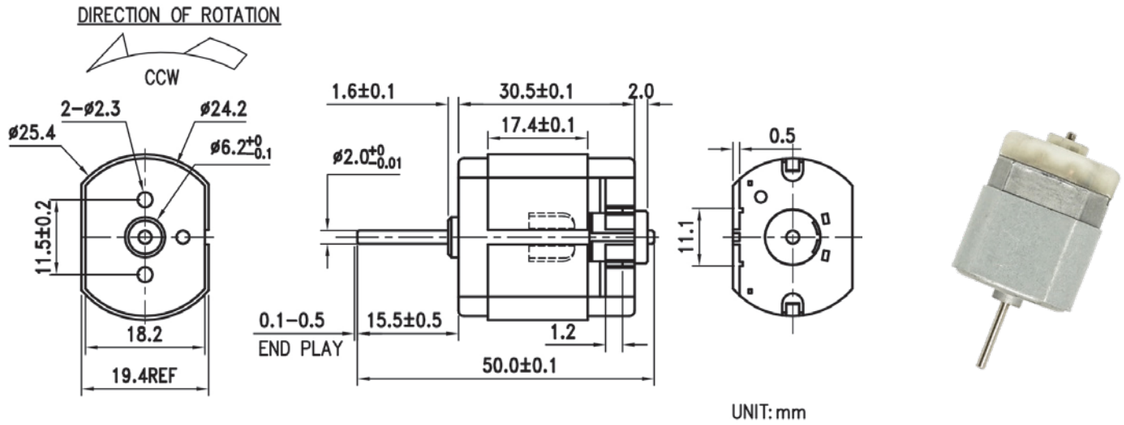




FF280AE

PMDC SERIES
Typical Application :
Back View Auto Mirrows

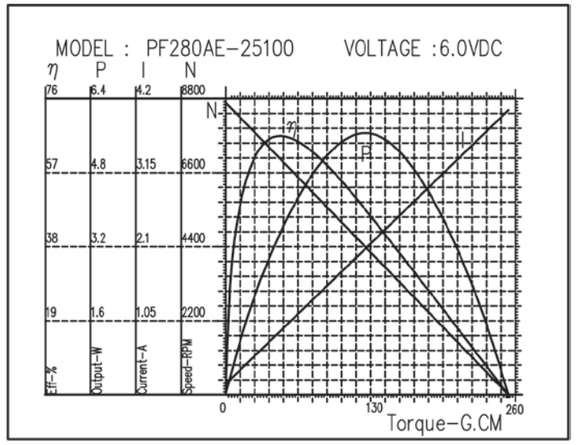
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF280AE-25100	3.0-9.0	6.0V CONSTANT	8500	0.14	7330	0.75	0.55	40	2.98	66.5	3.51	254

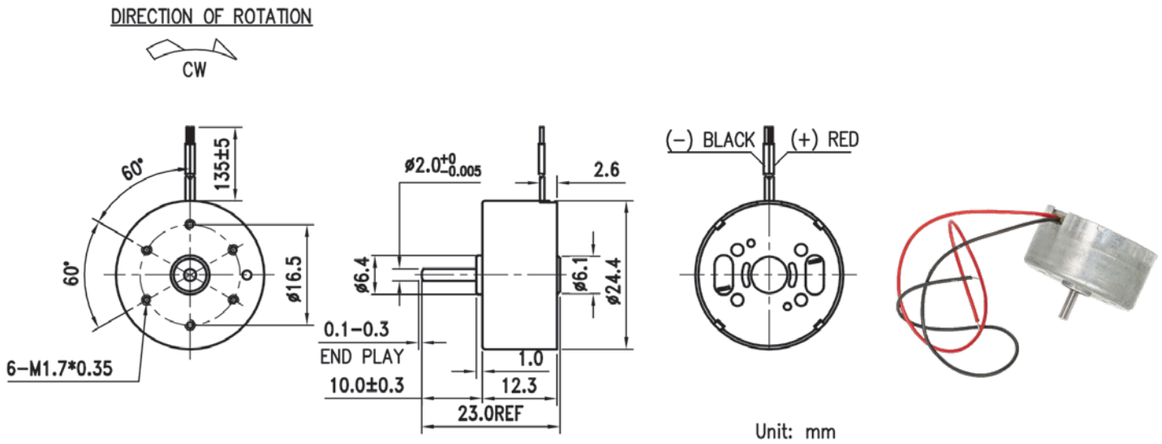
3.Curves



FR300

PMDC SERIES
Typical Application :
CD Players/CD-ROM

1.Typical Figure

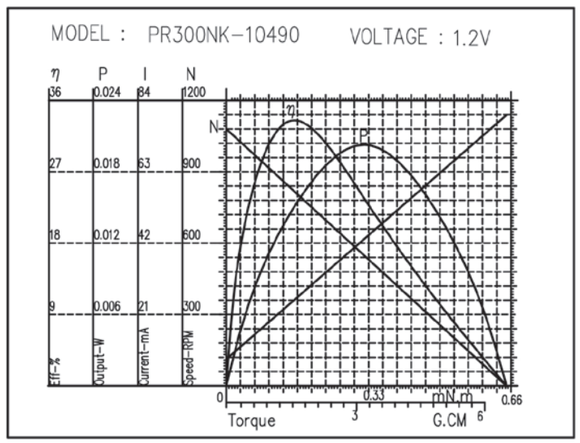


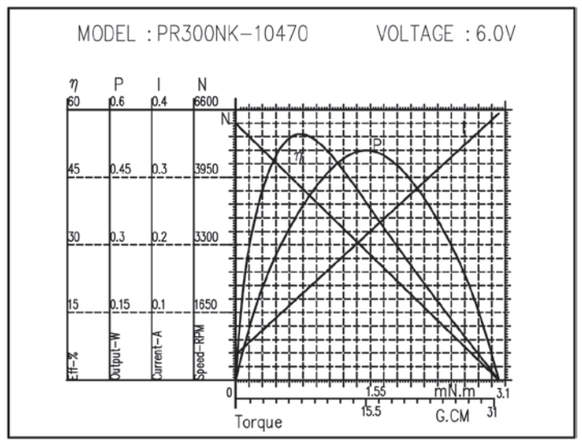
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR300NK-10490	1.0-1.5	1.2V CONSTANT	1050	0.014	763	0.033	0.024	1.7	0.01	33.5	0.09	6.5
FR300NK-10430	1.5-3.0	2.0V CONSTANT	2200	0.017	1647	0.051	0.038	2.72	0.05	44.7	0.152	10.9
FR300NK-10470	4.5-6.0	6.0V CONSTANT	6400	0.027	5046	0.103	0.09	6.5	0.34	54.5	0.44	31.3
FR300NK-08600	3.5-5.0	4.5V CONSTANT	3600	0.019	2651	0.055	0.054	3.92	0.11	43	0.213	15.3

3.Curves

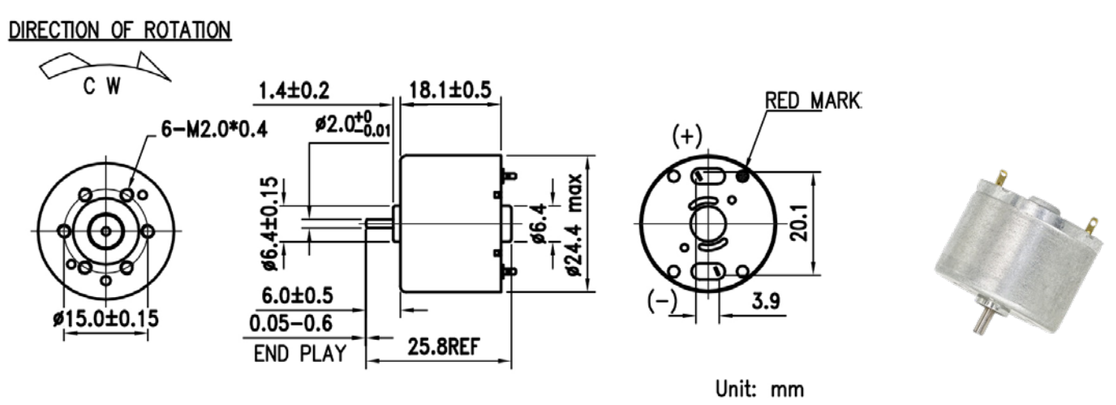




FR310

PMDC SERIES
Typical Application :
Air Fresheners

1.Typical Figure

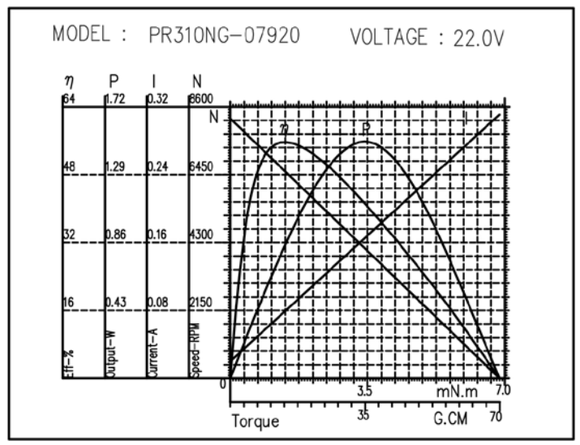


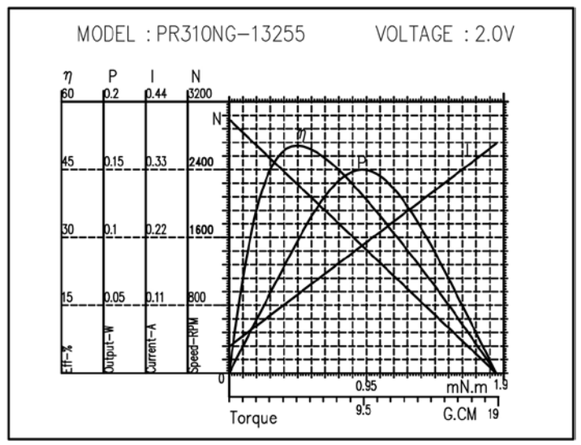
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR310NG-07920	20.0-24.0	22.0V CONSTANT	8000	0.02	6649	0.08	0.197	14.17	0.97	55.71	0.973	70
FR310NG-13255	1.5-2.5	2.0V CONSTANT	3000	0.044	2234	0.126	0.067	4.81	0.11	43.56	0.263	18.9
FR310NK-11510	11.0-14.0	12.0V CONSTANT	7600	0.02	6482	0.11	0.192	13.79	0.92	67.7	1.273	91.6
FR310NK-09560	4.5-6.0	6.0V CONSTANT	3500	0.024	2578	0.066	0.084	6.01	0.16	40.3	0.313	22.5
FR310AG-10355	4.0-5.5	5.0V CONSTANT	5000	0.069	3772	0.18	0.121	8.7	0.34	37.99	0.44	31.4

3.Curves

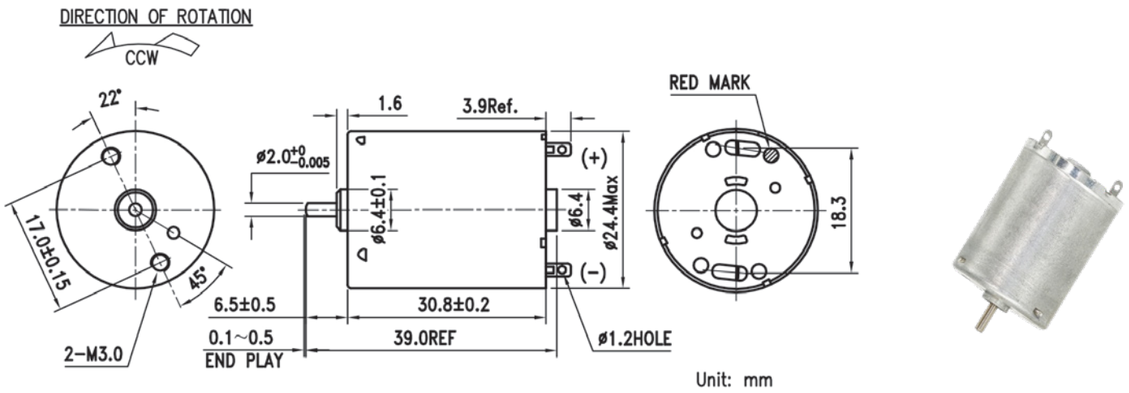




FR370

PMDC SERIES
Typical Application :
Blood Pressure Meters

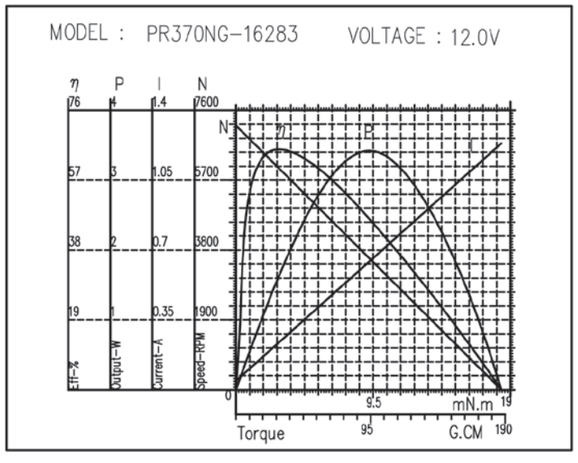
1.Typical Figure

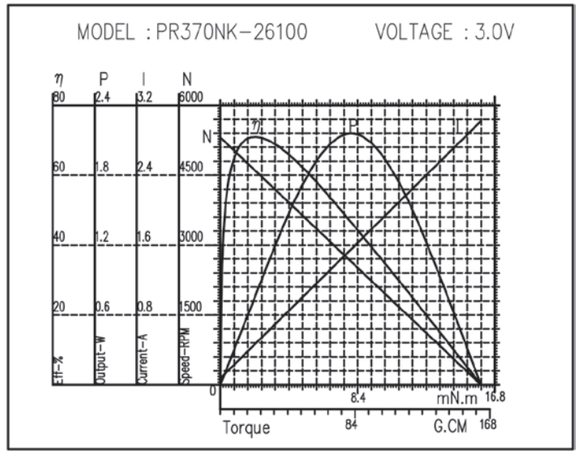


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR370NG-16283	11.0-14.0	12.0V CONSTANT	7200	0.045	5956	0.235	0.42	30.14	1.84	65.35	2.6	186.8
FR370NK-26100	2.5-3.5	3.0V CONSTANT	5000	0.061	4500	0.47	0.3	21.5	1	71	2.26	162.5
FR370AG-15315	9.0-11.0	10.8V CONSTANT	4700	0.04	3923	0.2	0.5	35.74	1.44	65.39	3.09	222.5
FR370AG-26102	4.0-5.5	5.0V CONSTANT	7000	0.147	5966	0.77	0.572	41.17	2.52	65.47	3.57	256.8
FR370EG-5525E	6.0-8.0	7.2V CONSTANT	31500	1.463	26781	8.86	2.25	161.81	44.52	69.71	15.87	1141.9

3.Curves

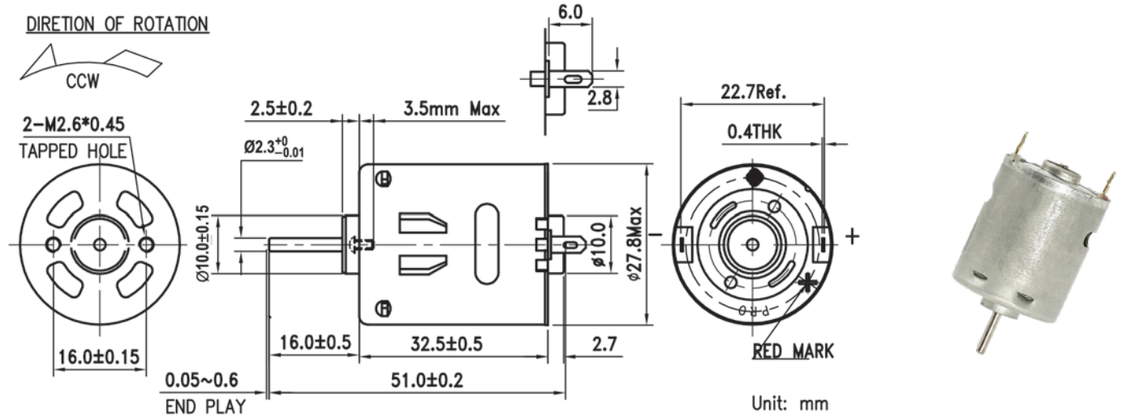




FR360/365AG

PMDC SERIES
Typical Application :
Washer-pumps

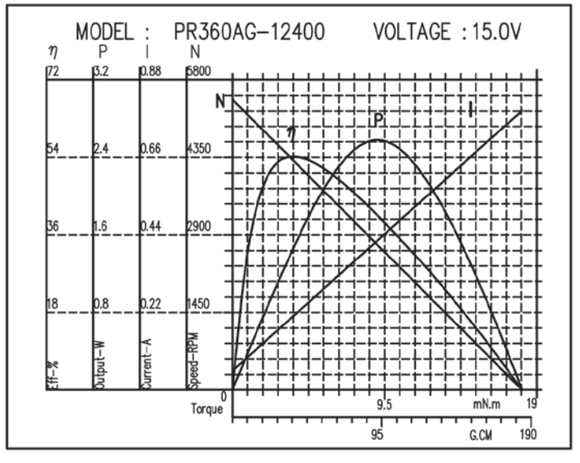
1.Typical Figure

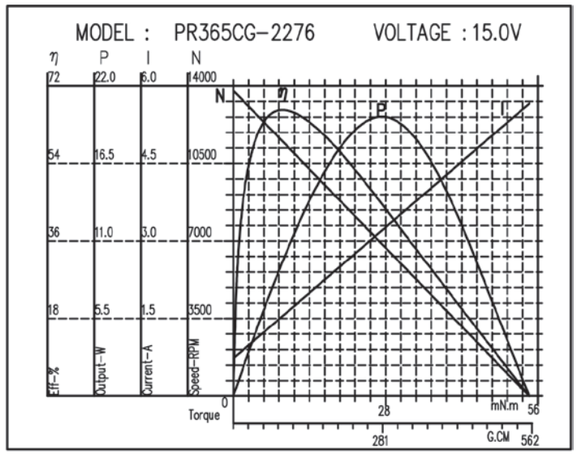


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR360CG-09720	12.0-16.0	14.8V CONSTANT	2500	0.027	1820	0.08	0.197	27.91	0.52	43.96	1.54	110.7
FR360AG-12400	13.0-17.0	15.0V CONSTANT	5500	0.07	4306	0.21	0.067	38.47	1.7	54.26	2.56	184.5
FR360CG-3852	2.5-3.5	3.0V CONSTANT	8100	0.45	6623	2.01	0.192	53.2	3.62	60.1	5.42	389.9
FR360AG-15120	11.0-14.0	12.0V CONSTANT	7500	0.116	5930	0.43	0.63	45.2	2.75	53.3	2.95	212.4
FR365CG-2276	13.0-17.0	15.0V CONSTANT	14000	0.194	11640	1.049	1.22	87.45	10.46	66.42	7.79	560.1

3.Curves

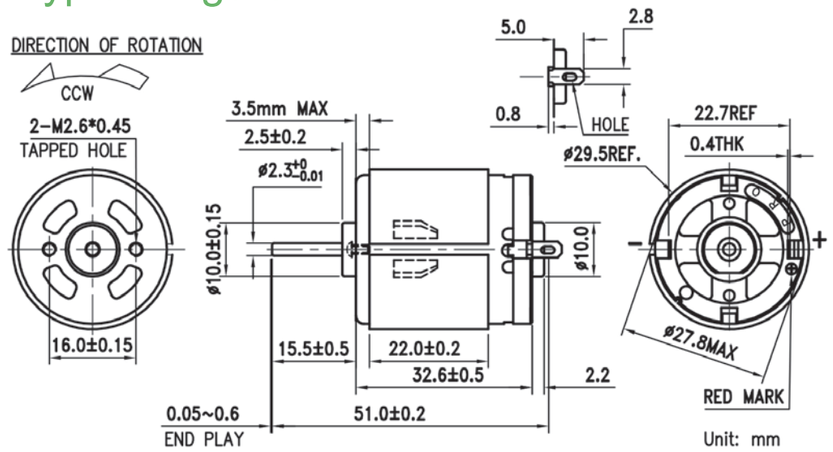




FR360/365AA

PMDC SERIES
Typical Application : Hair Dryers

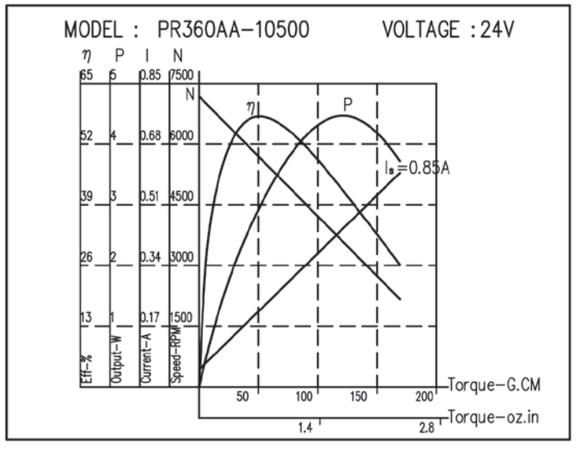
1.Typical Figure

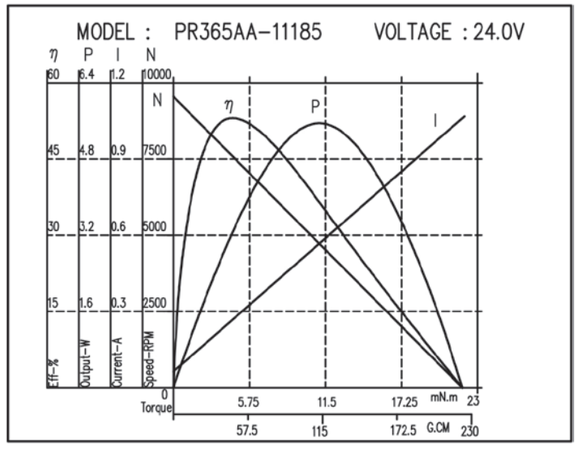


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR360AA-2583	4.5-6.0	6.0V CONSTANT	10500	0.308	8412	1.23	0.7	48.2	4.16	56.3	3.35	241
FR360AA-10500	20.0-28.0	24V CONSTANT	7200	0.05	5800	0.2	0.65	46.8	2.8	57.85	3.4	242.4
FR365AA-11185	21.0-25.0	24V CONSTANT	9850	0.079	7593	0.29	0.65	47.6	3.75	53.1	3.09	222.6
FR365AA-1877	18.0-22.0	20V CONSTANT	20000	0.213	16797	0.99	0.98	70.7	12.2	61.58	5.55	399.2
FR365CA-2268	4.5-6.0	6.0V CONSTANT	6300	0.162	5030	0.65	0.59	42.76	2.2	56.46	2.99	214.8

3.Curves

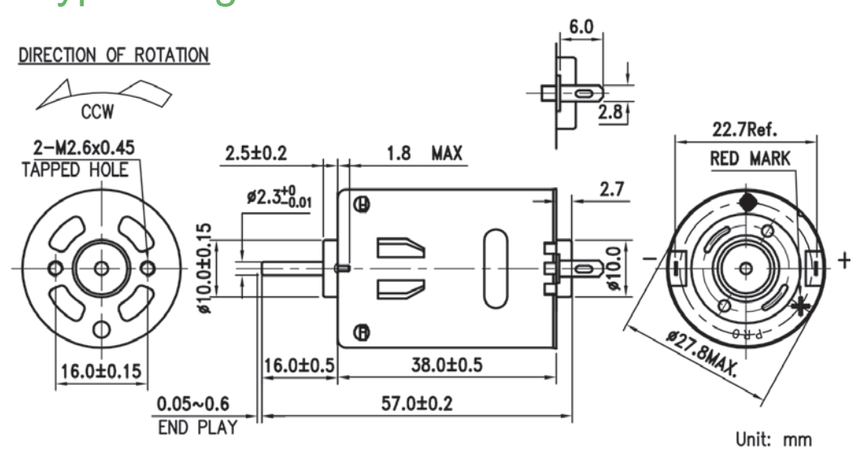




FR380/385AG

PMDC SERIES
Typical Application : Remote Control Toys

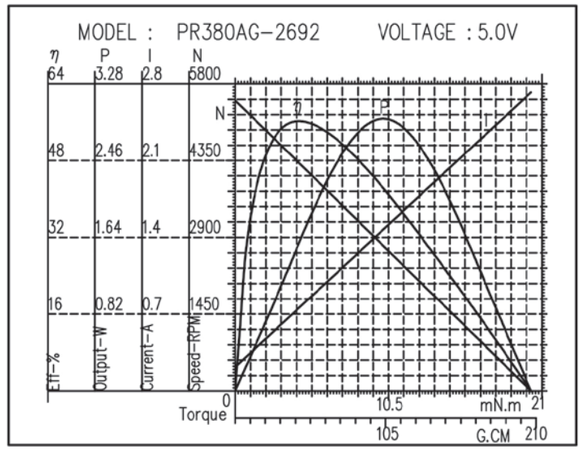
1.Typical Figure

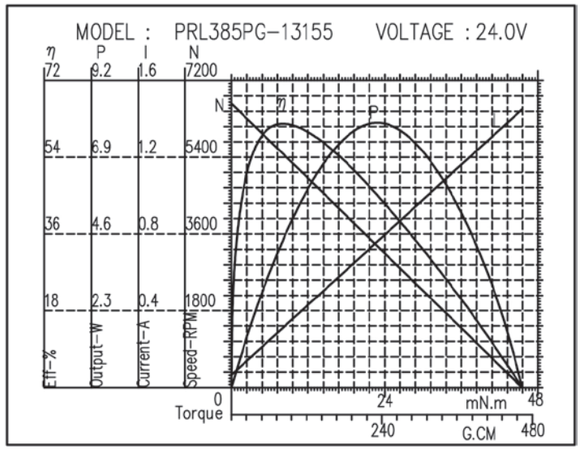


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR380AG-2692	4.0-5.5	5.0V CONSTANT	5400	0.204	4309	0.75	0.62	44.43	1.97	52.74	2.87	206.7
FR380CG-4540	6.0-8.0	7.2V CONSTANT	18500	0.621	15768	3.272	1.33	95.63	15.49	65.69	8.34	600.3
FR380PG-6517E	6.0-8.0	7.2V CONSTANT	37800	2.2	31840	11.74	2.36	170	56	66	15.05	108.3
FRL385PG-13155	21.0-25.0	24.0V CONSTANT	6700	0.066	5488	0.309	1.13	81.61	4.6	61.89	6.45	464.2
FR385CG-3521	4.5-6.0	6.0V CONSTANT	13000	0.66	11058	3.52	1.71	122.7	13.9	66	10.8	776.7

3.Curves

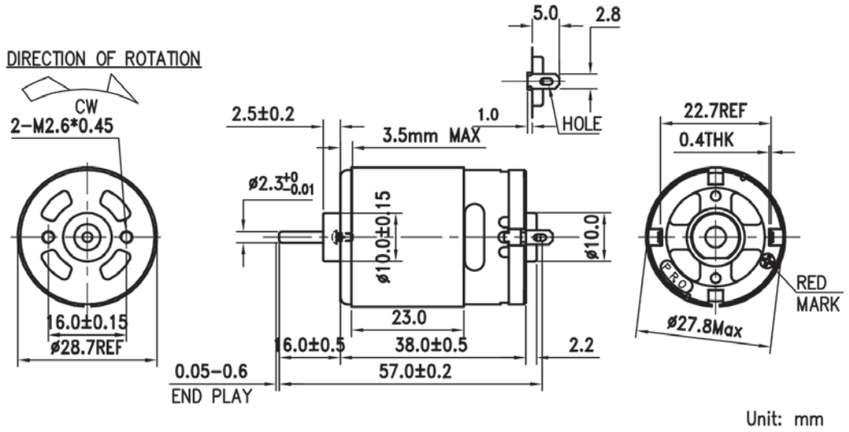




FR380/385AA

PMDC SERIES
Typical Application :
Hair Dryers

1.Typical Figure

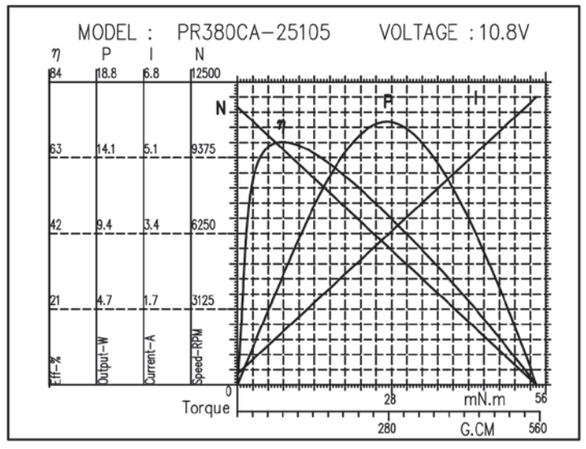


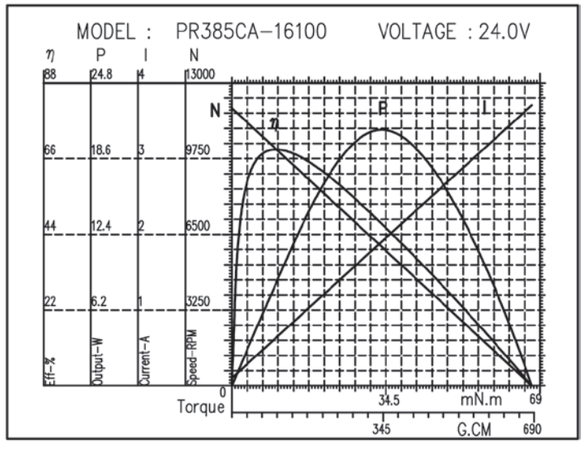
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR380CA-25105	9.0-11.0	10.8V CONSTANT	11500	0.208	9735	1.16	1.17	84.33	8.43	67.32	7.7	554.1
FRL380PA-4536	3.5-4.0	3.6V CONSTANT	8600	0.724	6931	2.9	1.16	83.5	5.94	56.5	6.92	498
FR385AA-14145	11.0-14.0	12V CONSTANT	4300	0.065	3339	0.21	0.49	35.5	1.22	48	2.1	151
FR385CA-16100	21.0-25.0	24V CONSTANT	11900	0.109	10168	0.636	1.39	100.34	10.48	68.64	9.53	685.5

3.Curves

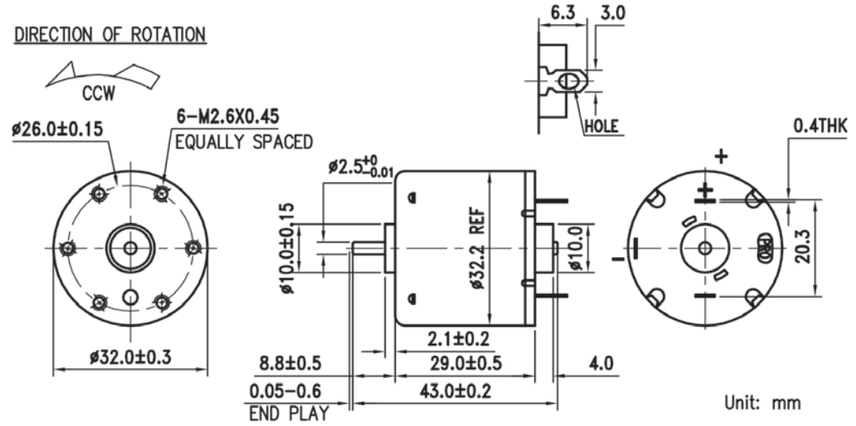




FR440

PMDC SERIES
Typical Application :
Blood Pressure Meters

1.Typical Figure

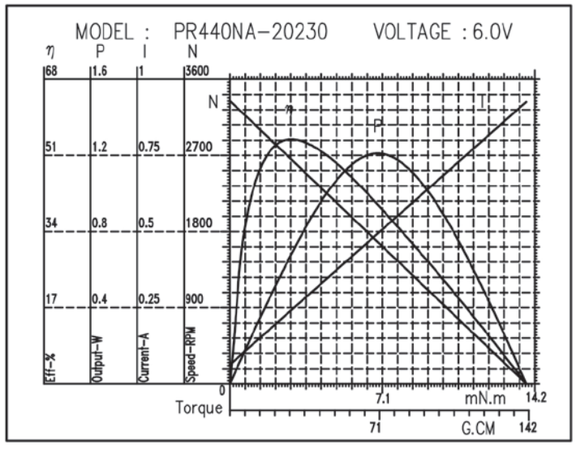


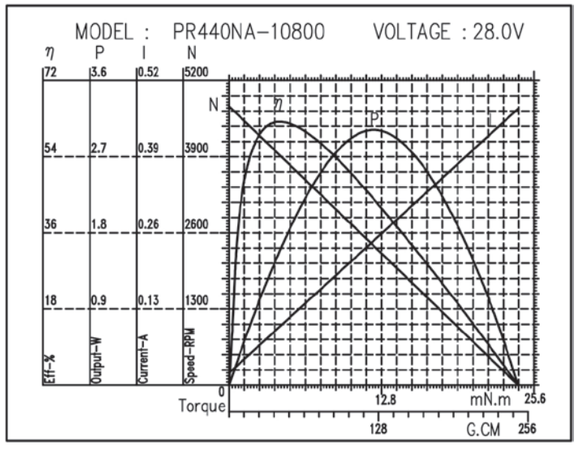
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR440NA-20230	4.5-6.0	6.0V CONSTANT	3300	0.063	2656	0.242	0.4	29.07	0.79	54.65	1.95	140.6
FR440NA-15385	12.0-15.0	13.5V CONSTANT	4700	0.046	3915	0.212	0.61	43.73	1.75	61.34	3.41	245.5
FR440NA-19190	11.0-14.0	12.0V CONSTANT	8800	0.116	7260	0.54	0.74	53	3.96	61.4	4.14	298.2
FR440NA-11670	21.0-25.0	24.0V CONSTANT	4800	0.026	4003	0.12	0.63	45.41	1.87	62.54	3.65	262.5
FR440NA-10800	26.0-32.0	28.0V CONSTANT	4700	0.021	3928	0.1	0.6	43.08	1.74	62.27	3.44	247.4

3.Curves

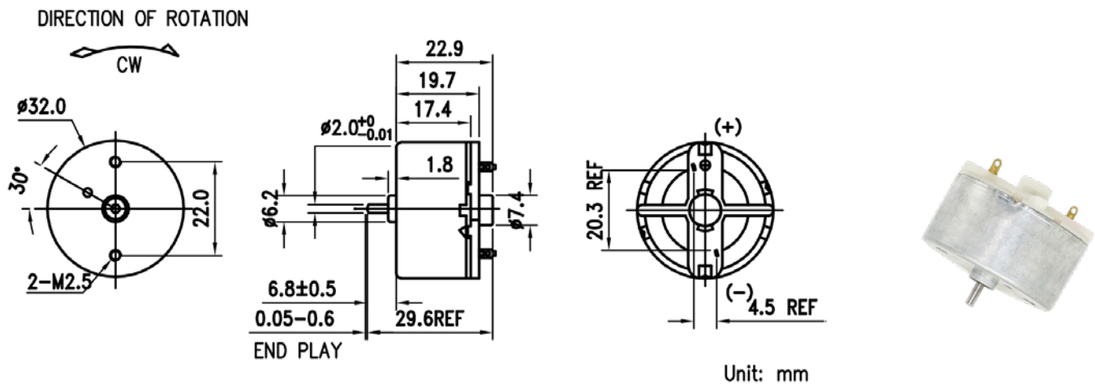




FR500

PMDC SERIES
Typical Application :
Air Fresheners

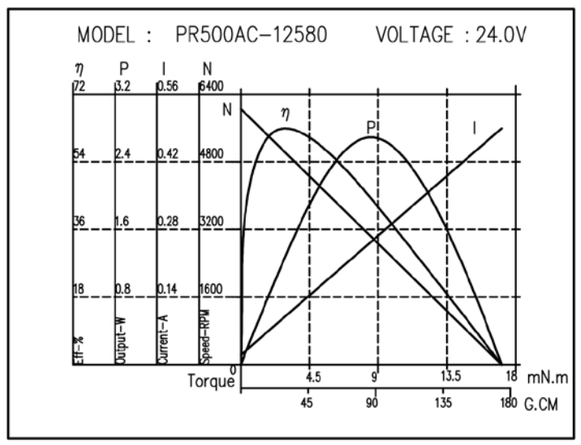
1.Typical Figure

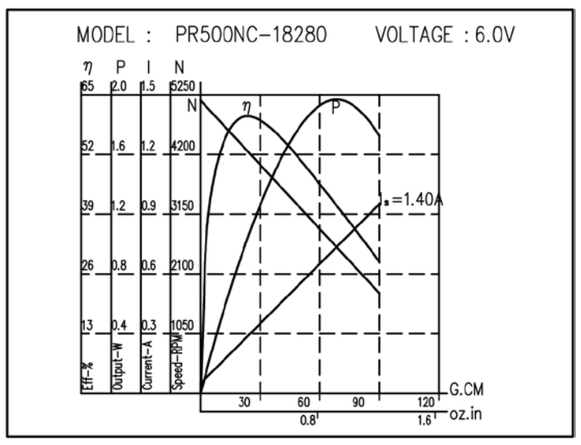


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR500AC-12580	21.0-25.0	24.0V CONSTANT	6000	0.02	4988	0.101	0.415	29.86	1.53	62.85	2.42	174
FR500AA-19230	4.5-6.0	6.0V CONSTANT	5350	0.063	4487	0.327	0.386	27.76	1.28	65.18	2.39	171.9
FR500NC-10830	11.0-14.0	12.0V CONSTANT	3750	0.016	3045	0.073	0.238	17.1	0.54	61	1.33	95.4
FR500NA-11725	9.0-11.0	10.8V CONSTANT	4000	0.019	3357	0.09	0.258	18.54	0.64	63.41	1.52	109.6
FR500NC-18280	4.5-6.0	6.0V CONSTANT	5150	0.05	4300	0.26	0.29	21	0.92	59	1.87	135

3.Curves

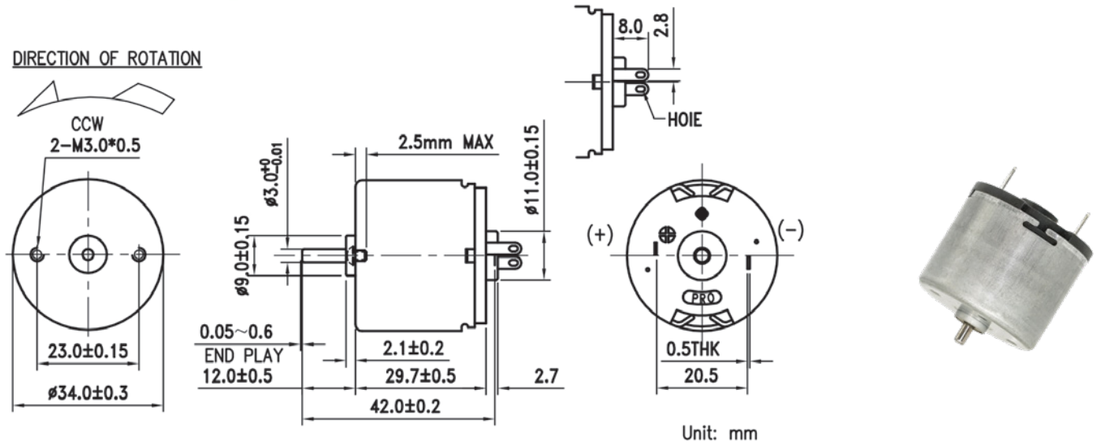




FR510

PMDC SERIES
Typical Application :
Blood Pressure Meters

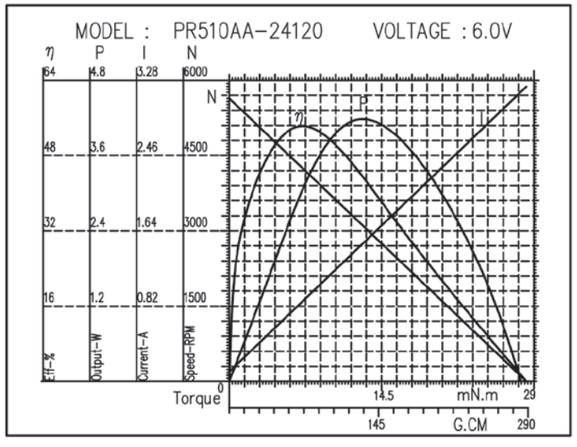
1.Typical Figure

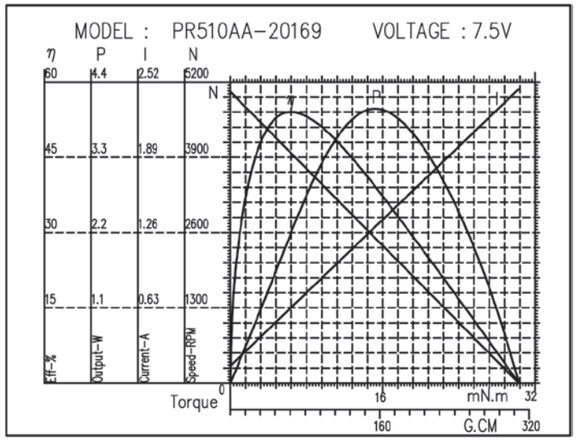


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR510AA-2681	3.5-4.0	3.7V CONSTANT	5000	0.28	3824	0.85	0.5	36.22	1.42	45	2.03	146.3
FR510AA-24120	4.5-6.0	6.0V CONSTANT	5500	0.222	4467	0.84	0.84	60.08	2.76	54.34	4.01	288.7
FR510AA-20169	6.0-8.0	7.5V CONSTANT	5000	0.154	3986	0.65	0.9	64.49	2.64	54.36	4.31	309.9
FR510AA-18233	11.0-14.0	12.0V CONSTANT	6000	0.119	4963	0.554	1.12	80.4	4.1	61.63	6.32	454.5
FR510AA-14355	21.0-25.0	24.0V CONSTANT	8000	0.071	6677	0.36	1.15	82.8	5.68	64.8	7.06	507.6

3.Curves

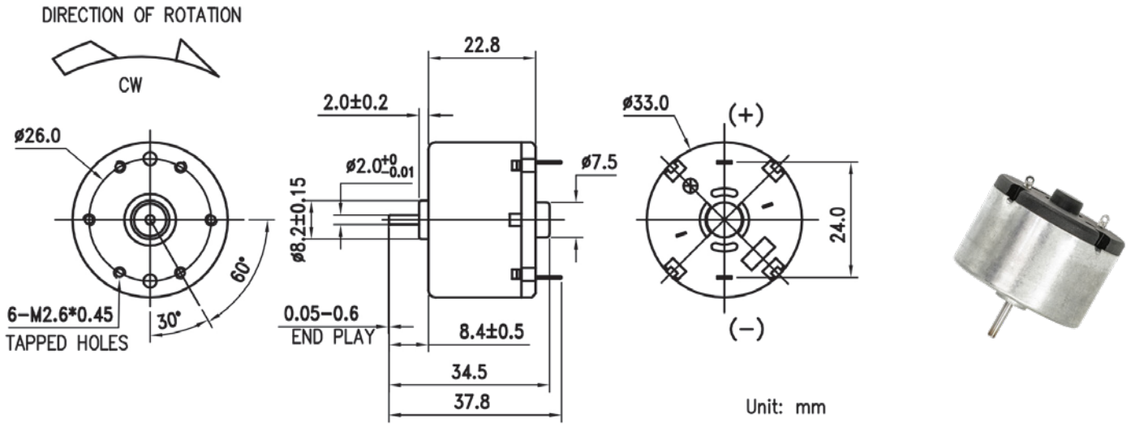




PR520

PMDC SERIES
Typical Application :
Code Scanners

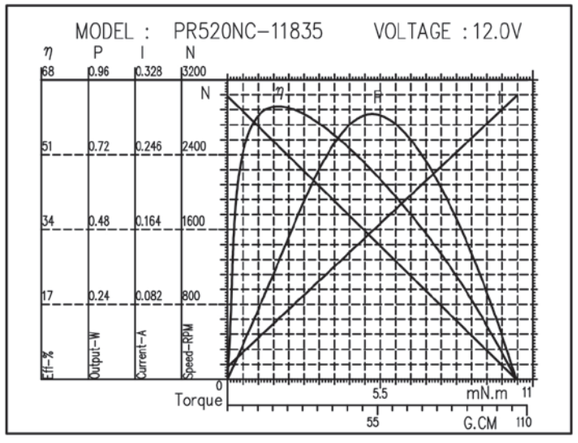
1.Typical Figure

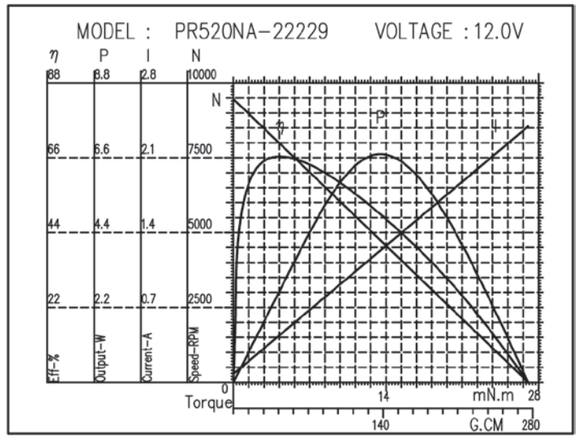


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR520NC-11835	11.0-14.0	12.0V CONSTANT	3000	0.014	2566	0.07	0.26	18.6	0.49	61.99	1.47	106.1
FR520NC-12615	21.0-25.0	24.0V CONSTANT	7200	0.02	6329	0.146	0.56	40.29	2.62	74.53	4.64	335
FR520NA-10900	26.0-32.0	28.5V CONSTANT	6900	0.02	5827	0.562	0.46	33.27	1.99	65.83	2.91	209.6
FR520NA-22229	11.0-14.0	12.0V CONSTANT	9200	0.082	7985	0.443	0.6	43.09	3.53	66.41	3.84	275.9
FR520NA-24135	11.0-14.0	12.0V CONSTANT	17000	0.152	14526	0.863	0.66	47.13	7.03	67.87	4.37	314.6

3.Curves

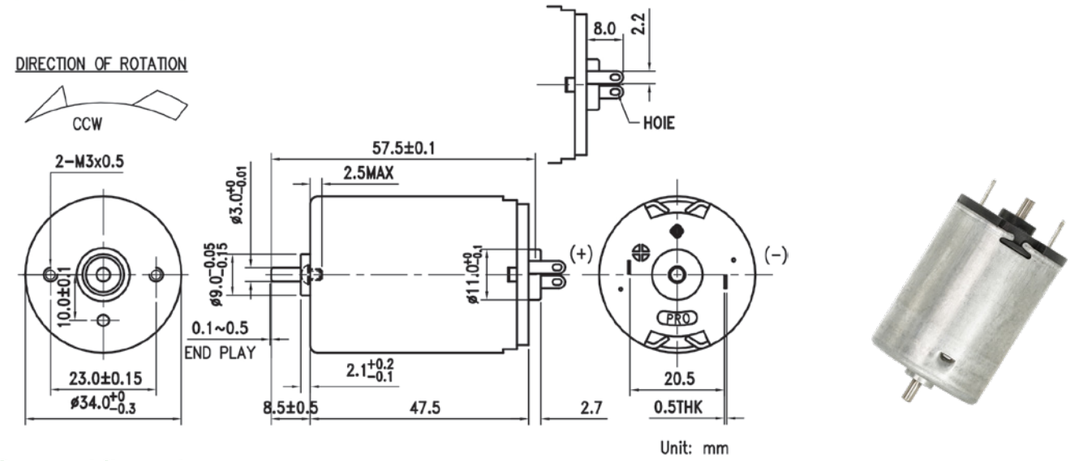




PR530

PMDC SERIES
Typical Application :
Electric Shredders

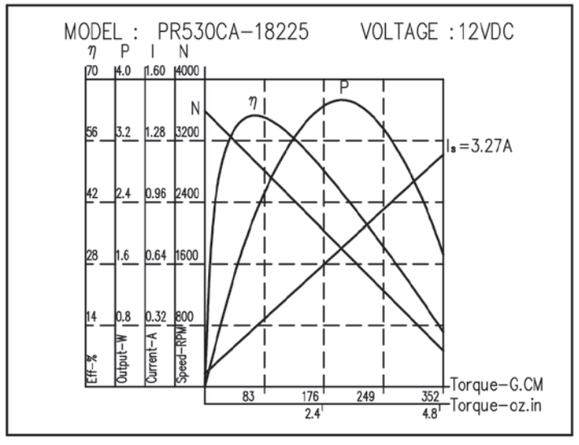
1.Typical Figure

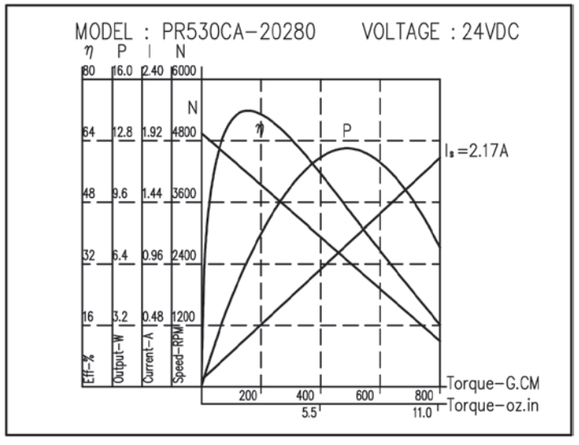


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR530CA-18225	9.0-15.0	12V CONSTANT	3590	0.07	2930	0.31	1.03	74.5	2.24	60	5.62	405
FR530CA-20280	18.0-30.0	24V CONSTANT	4950	0.052	4300	0.34	1.78	128	5.76	71	13.55	976

3.Curves



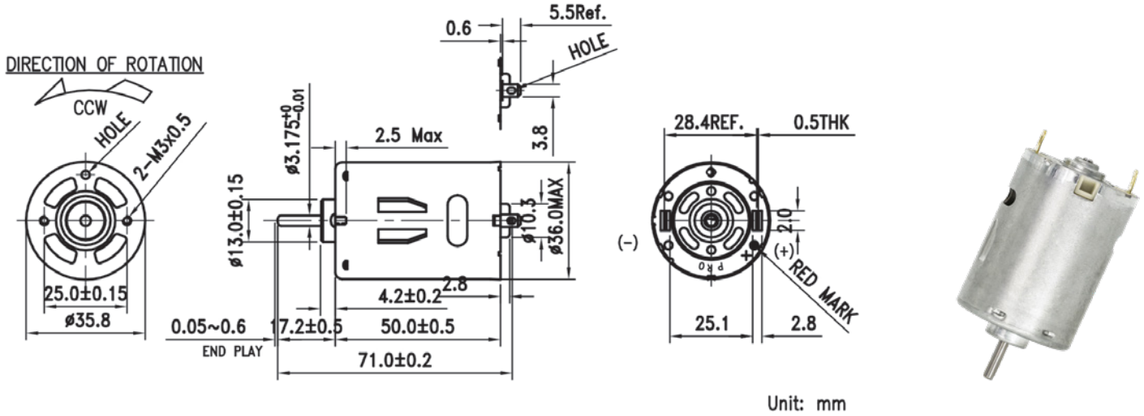


FR540/545AG

PMDC SERIES

Typical Application :
Remote Control Toys

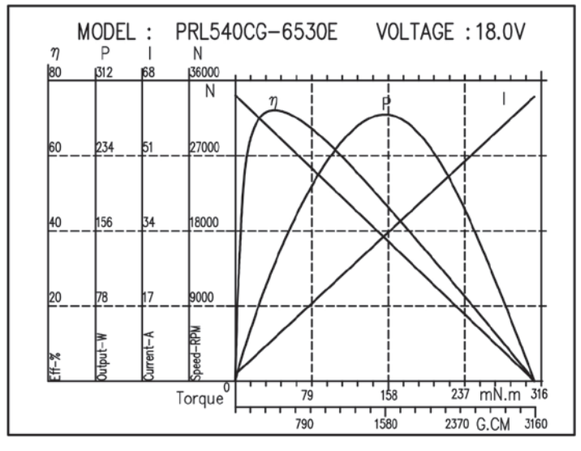
1.Typical Figure

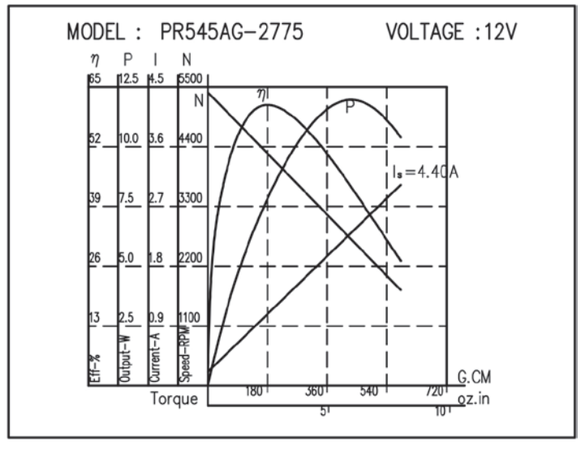


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FRL540CG-6530E	16.0-21.0	18.0V CONSTANT	35000	1.473	29724	9.74	5.75	413.99	126.42	72.04	43.08	3151.2
FR540CG-8516E	3.5-5.5	4.8V CONSTANT	16000	2.184	13818	12.55	4.03	289.94	41.16	68.23	27.2	1956.5
FRL540FG-8520E	6.0-8.0	7.2V CONSTANT	19800	2.249	16713	13.87	5.68	408.81	70.19	70.2	40.73	2930.4
FR545AG-16185	21.0-25.0	24.0V CONSTANT	3700	0.072	3205	0.33	2.02	144.98	4.77	60.8	11.16	803.1
FR545AG-2775	12.0-24.0	12.0V CONSTANT	5400	0.21	4400	1	2.15	155	7.05	61	12	860

3.Curves



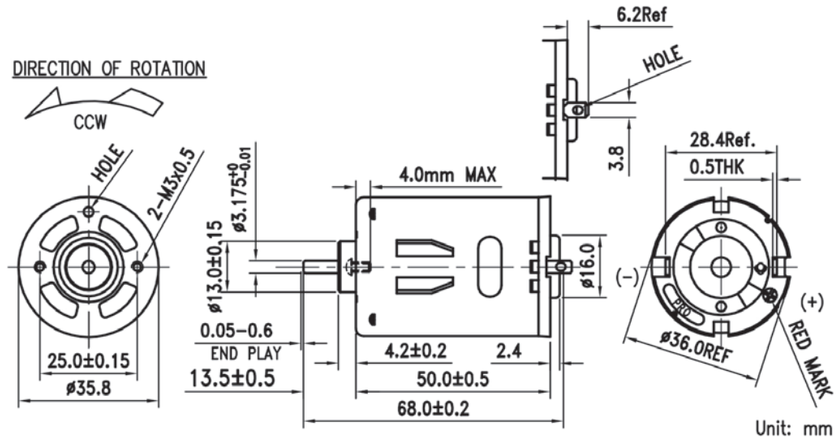


FR540/545AA

PMDC SERIES

Electric Massagers

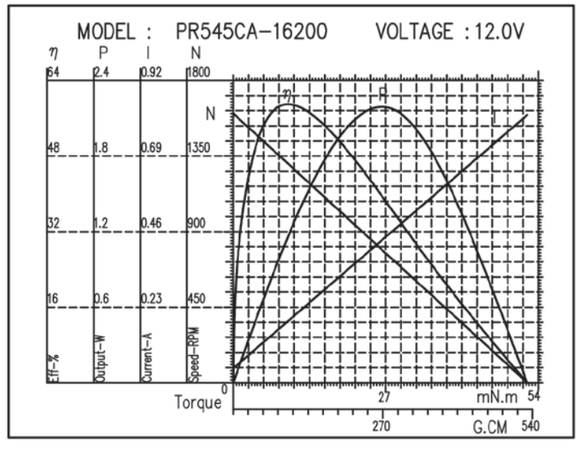
1.Typical Figure

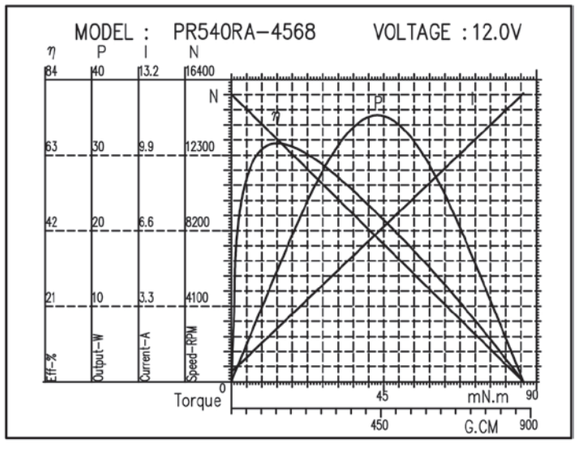


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR545CA-16200	11.0-14.0	12.0V CONSTANT	1600	0.044	1303	0.19	1.39	100.12	1.34	58.93	7.38	531
FR545FA-16215	28.0-34.0	30.0V CONSTANT	4200	0.046	3556	0.268	2.1	150.87	5.51	68.58	14.3	1028.5
FR545AA-20125	4.5-6.0	6.0V CONSTANT	1500	0.099	1126	0.3	0.95	68.33	0.79	44.38	3.79	273
FR540CA-7520	3.0-4.0	3.5V CONSTANT	9800	1.05	8230	5.25	1.94	139.5	11.8	64.1	11.66	839
FR540RA-4568	11.0-14.0	12.0V CONSTANT	15000	0.434	13170	2.34	1.91	137.73	18.63	66.33	12.23	879.9

3.Curves

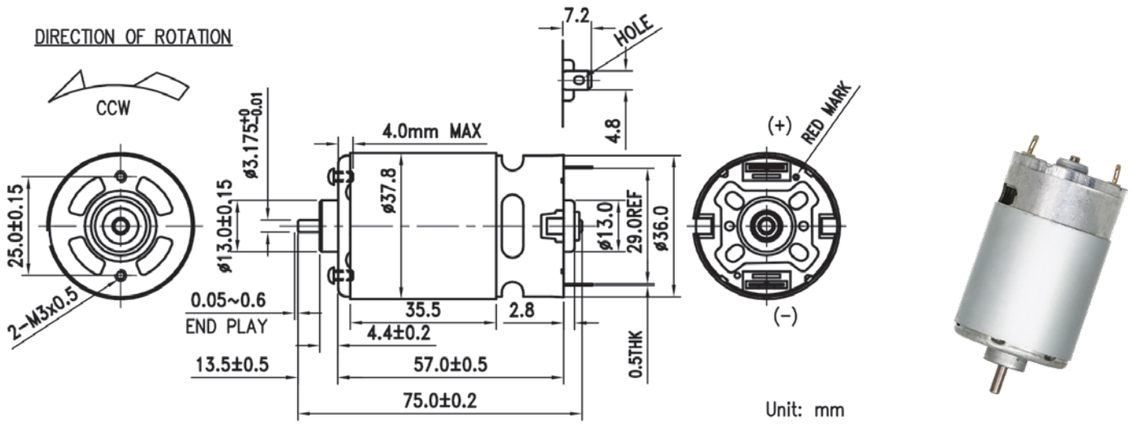




FR550/555AG

PMDC SERIES
Typical Application :
Remote Control Toys

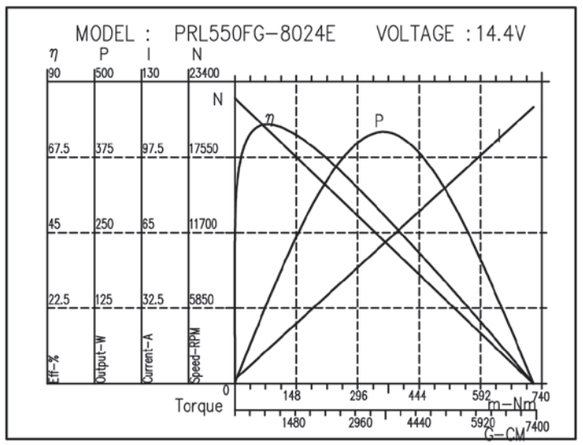
1.Typical Figure

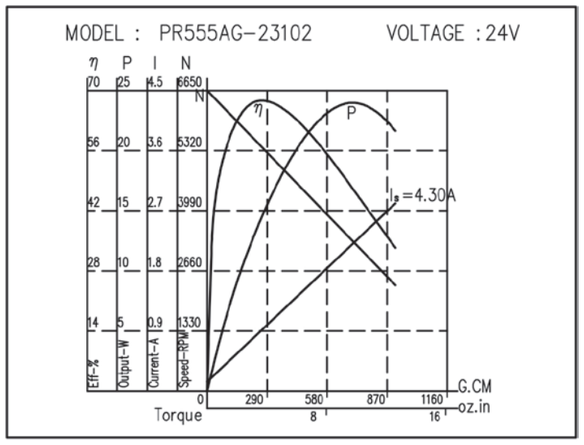


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR550AG-5015E	3.5-5.0	4.5V CONSTANT	13000	1.896	10855	8.45	2.86	205.48	22.91	60.17	15.59	1121.7
FRL550FG-8024E	13.0-16.0	14.4V CONSTANT	21800	1.748	19722	14.43	11.02	792.86	160.6	77.24	101.99	7337.2
FR550CG-9012E	6.0-8.0	7.2V CONSTANT	27000	4.535	22842	24.79	7.07	508.34	119.28	66.76	45.69	3287.2
FR555AG-18155	12.0-30.0	24.0V CONSTANT	3850	0.1	3150	0.45	2.8	204	6.6	61	16	1128
FR555AG-23102	18.0-30.0	24.0V CONSTANT	6650	0.14	5630	0.8	3	216	12.5	67	20	1406

3.Curves

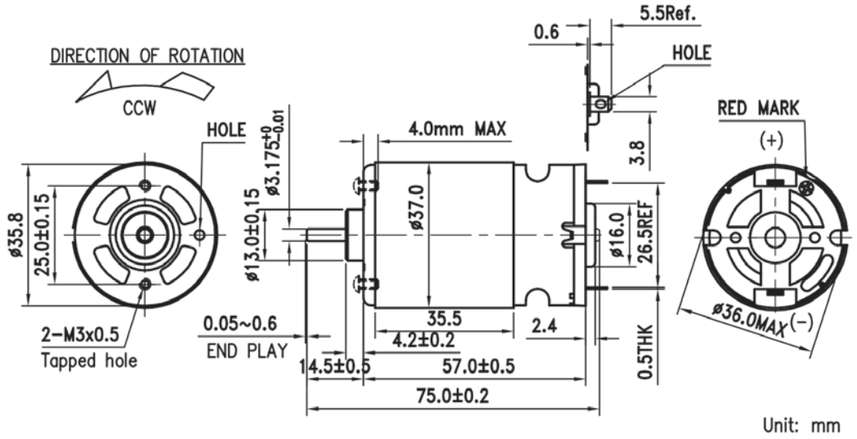




FR550/555AA

PMDC SERIES
Typical Application :
Washer-pumps

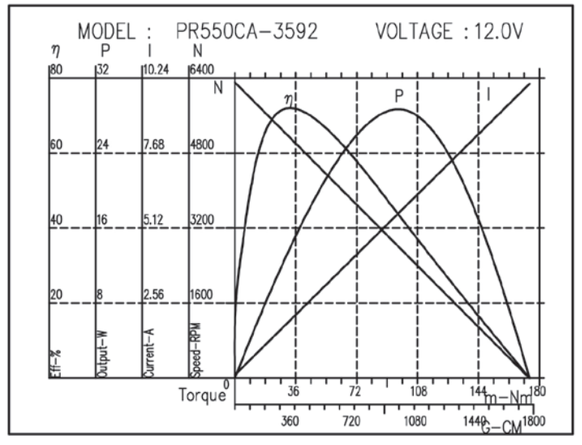
1.Typical Figure

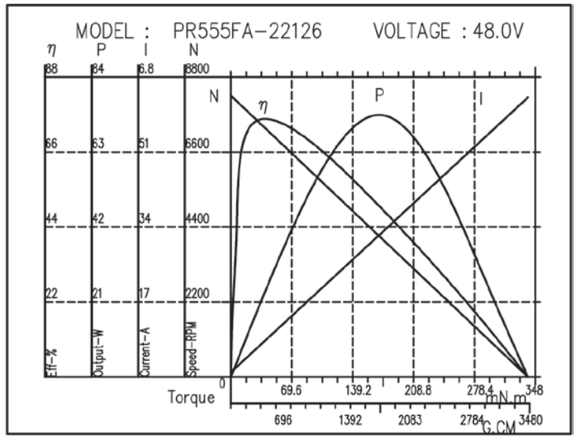


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR550CA-3592	11.0-14.0	12V CONSTANT	6300	0.208	5487	1.44	3.14	226	12.72	73.28	24.93	1793
FR555FA-22126	40.0-50.0	48V CONSTANT	8300	0.107	7311	0.82	5.54	398	29.93	75.69	48.14	3466
FR555CA-2573	11.0-14.0	12V CONSTANT	3500	0.12	2969	0.64	2.4	173	5.27	68.59	16.39	1179

3.Curves



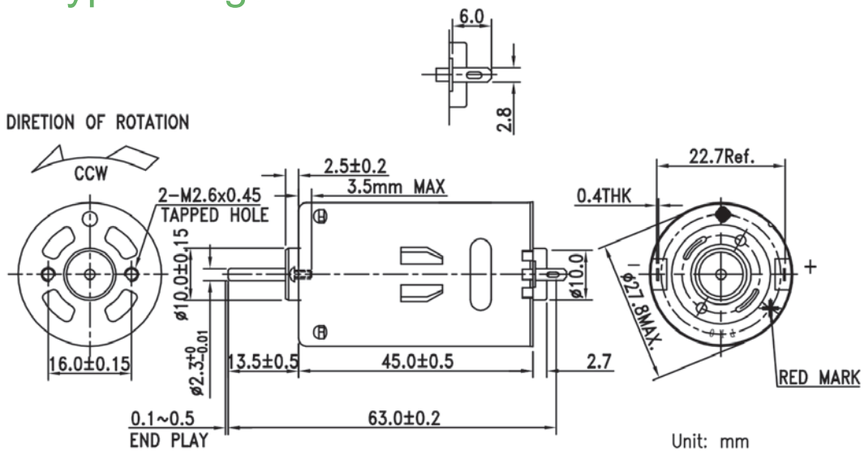


FR390/395CG

PMDC SERIES

Typical Application :
Remote Control Toys

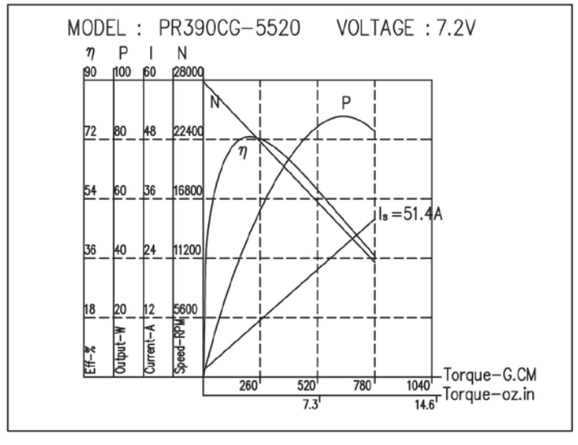
1.Typical Figure

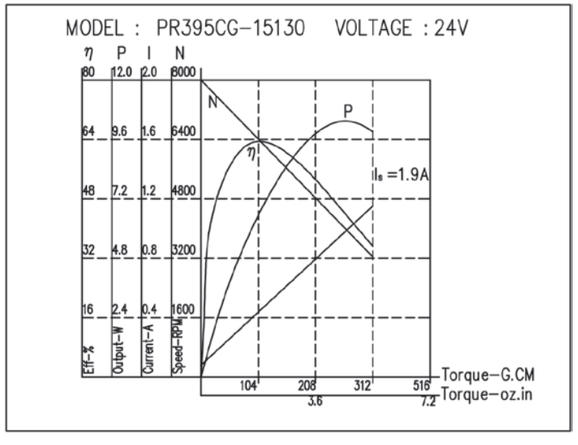


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR390CG-5520	6.0-9.0	7.2V CONSTANT	27900	1.3	24070	8.17	2.33	168	41.6	71	17	1225
FR395CG-15130	18.0-30.0	24V CONSTANT	8000	0.08	6630	0.39	1.2	86	5.9	63	7	504

3.Curves



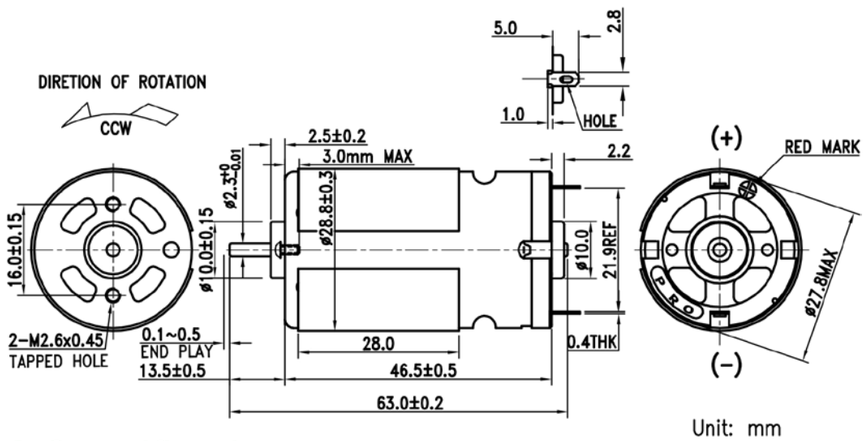


FR390/395CA

PMDC SERIES

Remote Control Toys

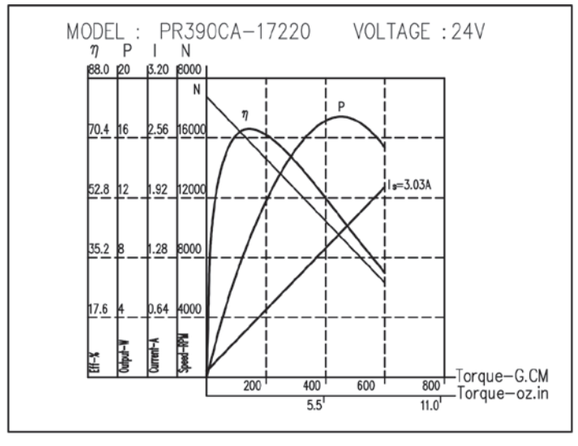
1.Typical Figure

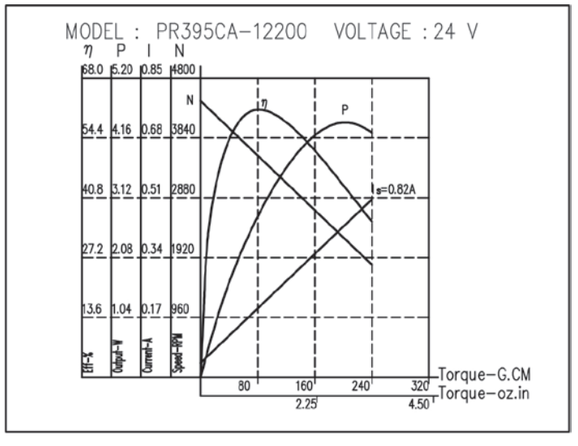


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR390CA-17220	18.0-30.0	24V CONSTANT	7500	0.067	6529	0.45	1.62	117	7.8	72.5	12.55	904
FR390CA-4045	3.0-8.0	6.0V CONSTANT	9600	0.35	8162	1.98	1.34	96.6	8.1	67.8	8.93	643
FR395CA-12200	18.0-30.0	24V CONSTANT	4430	0.04	3627	0.18	0.98	70.6	2.63	72.5	5.32	383

3.Curves

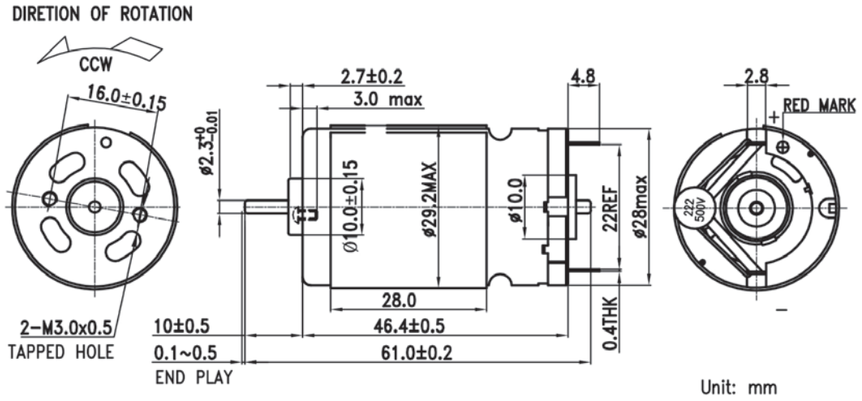




FR398

PMDC SERIES
Typical Application :
Screw Drivers

1.Typical Figure

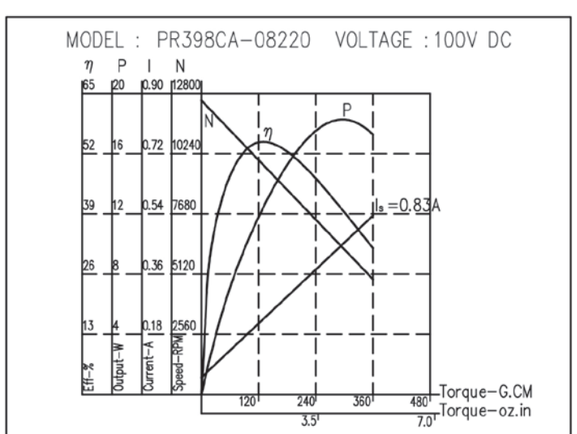


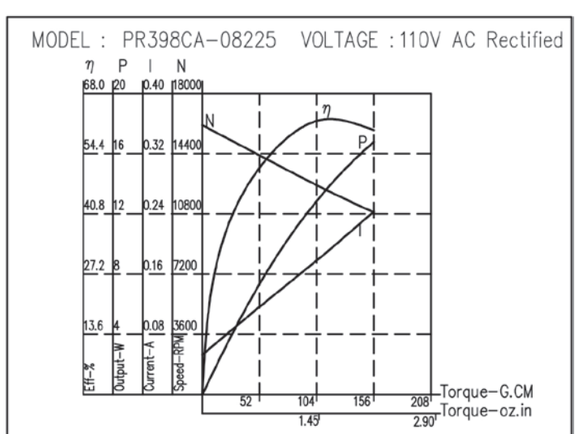
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR398CA-08220	90.0-120.0	100V CONSTANT	12500	0.05	10030	0.2	1.56	112	11.58	57	7.9	569
FR398CA-08225	90.0-120.0	110V CONSTANT	16500	0.05	12700	0.18	1.51	109	13.63	62	8.47	610

3.Curves

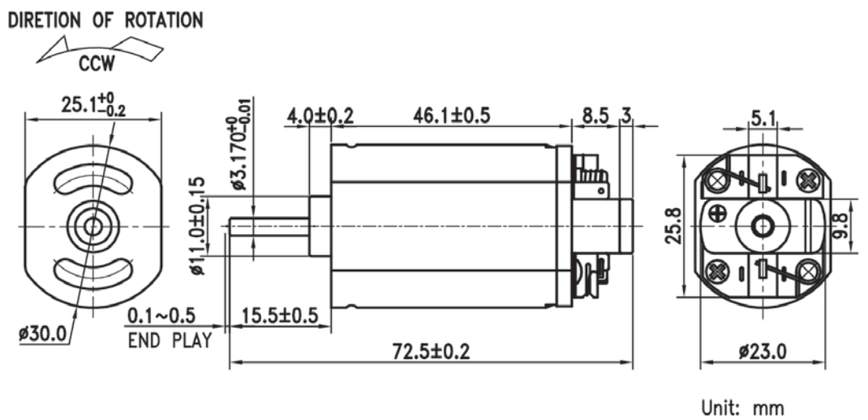




FF450

PMDC SERIES
Typical Application :
Automatic Toy Guns

1.Typical Figure

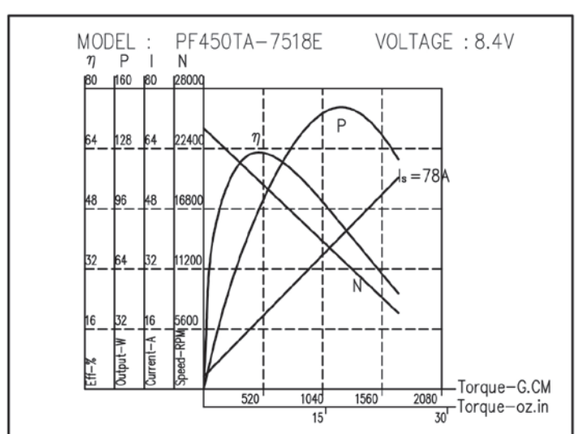


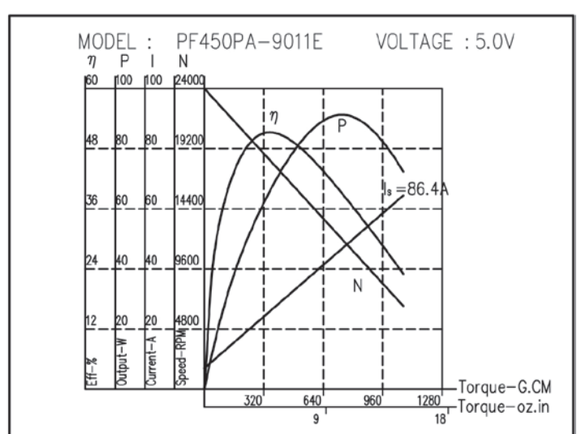
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF450CA-7021E	6.0-8.4	8.4V CONSTANT	26700	2.1	22960	12.8	4.4	318	75	70	31.3	2250
FF450MA-6525E	6.0-12.0	8.4V CONSTANT	20000	3.3	16150	13.9	5.67	408	67.7	58	29.5	2124
FF450TA-7518E	6.0-12.0	8.4V CONSTANT	24300	3.4	20100	16	5.76	415	86	63	33.4	2404
FF450PA-8514E	6.0-12.0	8.4V CONSTANT	30500	5	25280	24.2	6.9	494	128	63	40	2888
FF450PA-9011E	4.0-6.0	5.0V CONSTANT	24000	7	18680	24.6	4.6	328	62.98	51	20.6	1481

3.Curves

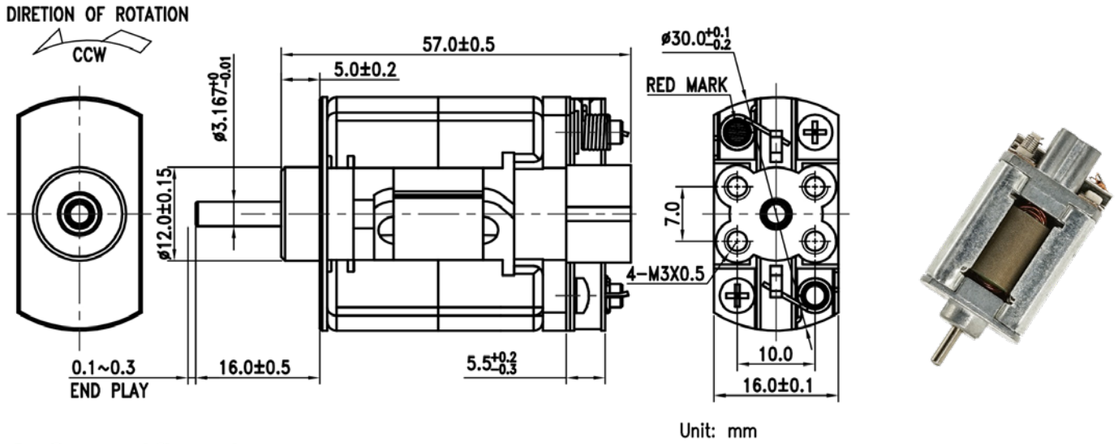




FF460

PMDC SERIES
Typical Application :
Automatic Toy Guns

1.Typical Figure

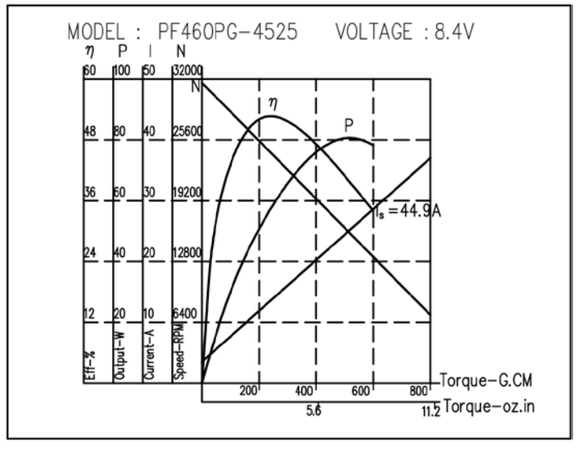


Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF460PG-4525	6.0-10.0	8.4V CONSTANT	31600	3.4	24784	12.4	2.98	214.3	54.5	52.6	13.8	992.9

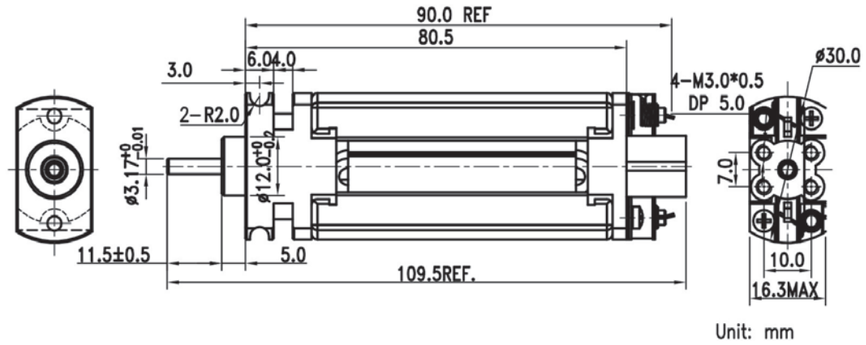
3.Curves



FF480

PMDC SERIES
Typical Application :
Automatic Toy Guns

1.Typical Figure

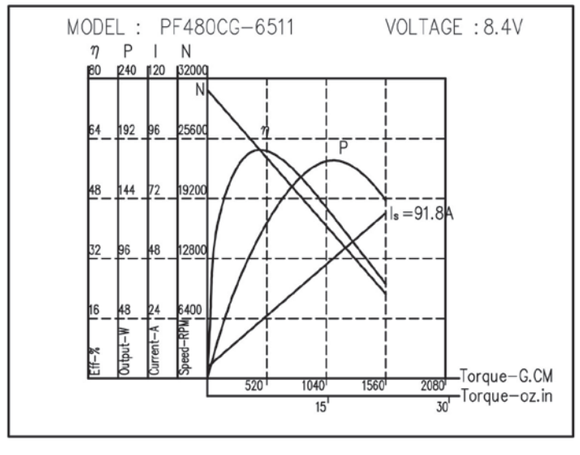


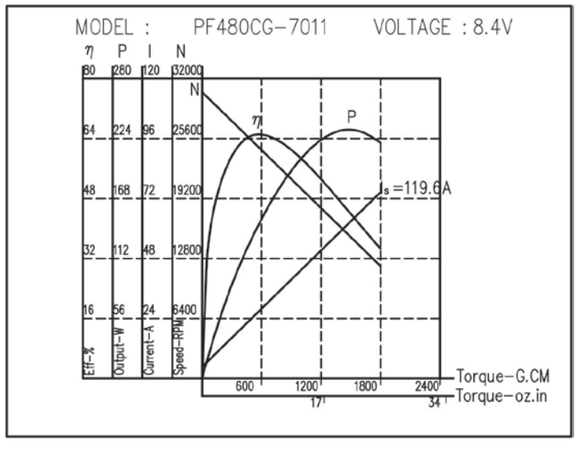
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF480CG-6511	6.0-12.0	8.4V CONSTANT	30570	4.6	25215	20.32	5.55	400	103.6	61	30.6	2205
FF480CG-7011	6.0-12.0	8.4V CONSTANT	30570	4.6	25560	23.5	6.75	485	127.4	64.6	41	2960

3.Curves

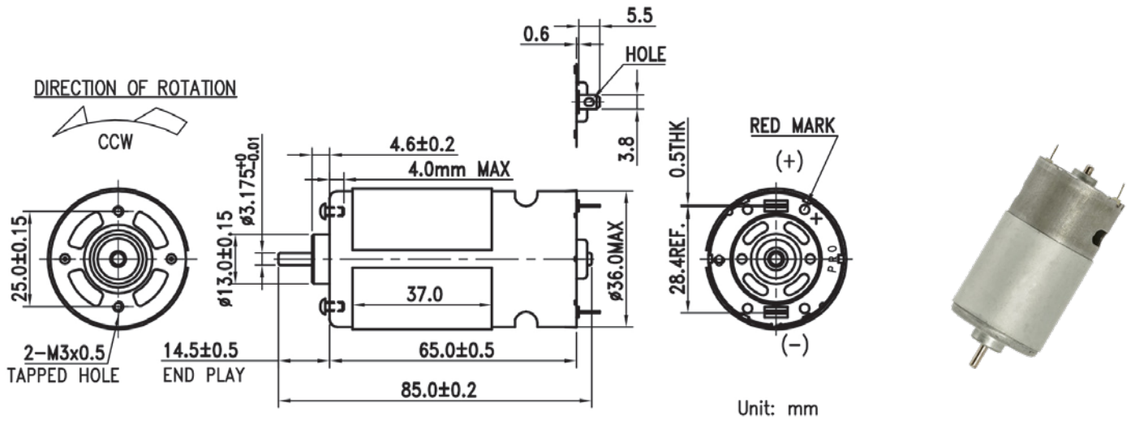




FR590/598

PMDC SERIES
Typical Application :
Power Tools.
Mini Scooters

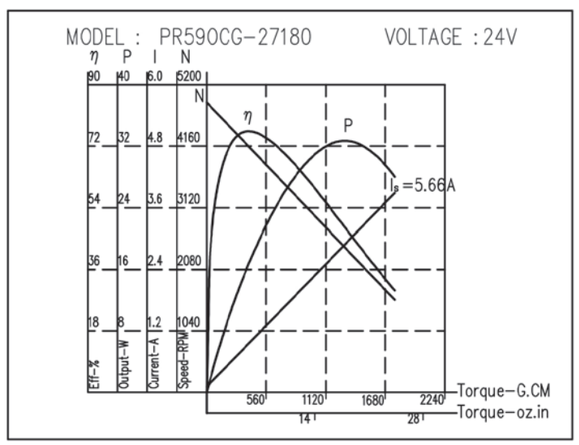
1.Typical Figure

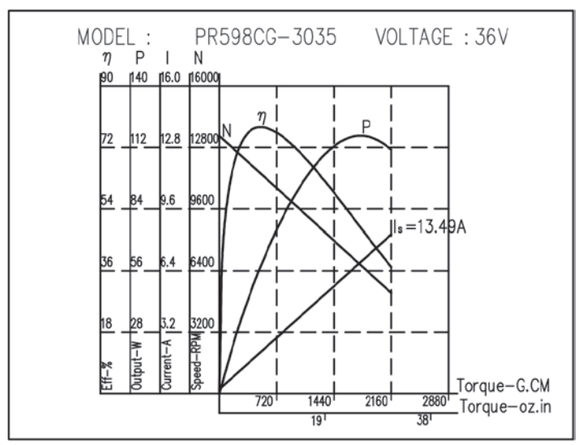


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR590CG-27180	20.0-30.0	24V CONSTANT	4900	0.11	4300	0.79	4.4	318	14	74	36	2599
FR590CG-7522	6.0-9.0	7.2V CONSTANT	12050	1.26	10570	9	6.1	441	48	74	50	3582
FR598CG-3055	30.0-40.0	36V CONSTANT	13400	0.23	11850	1.76	5.5	394	48	75.5	47.4	3411

3.Curves

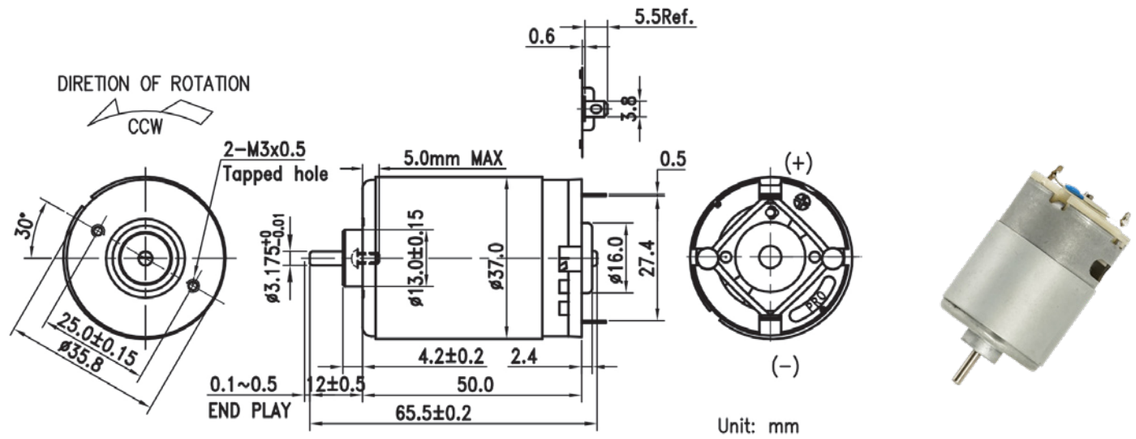




FR5412

PMDC SERIES
Typical Application :
Vacuum Cleaners.
Power Tools

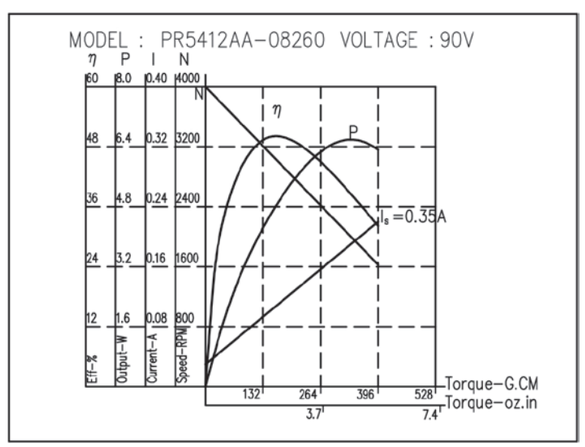
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR5412AA-08260	90-120	90V CONSTANT	4000	0.03	3090	0.1	2	145	4.62	50	8.9	641

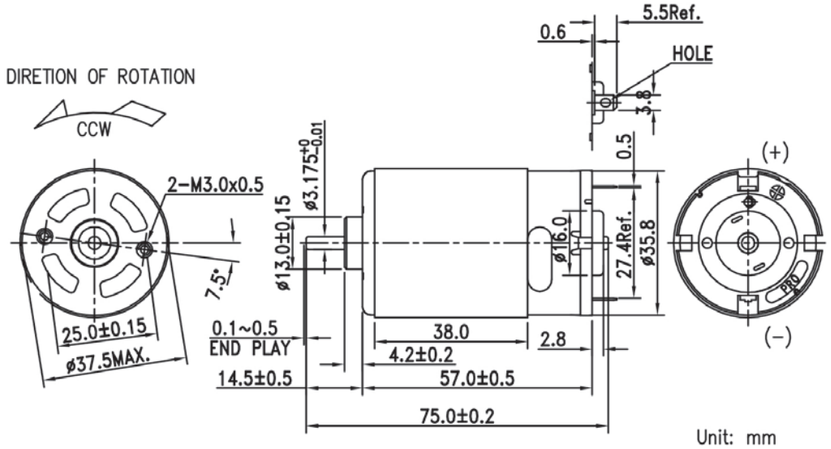
3.Curves



FR5512A

PMDC SERIES
Typical Application :
Vacuum Cleaners

1.Typical Figure

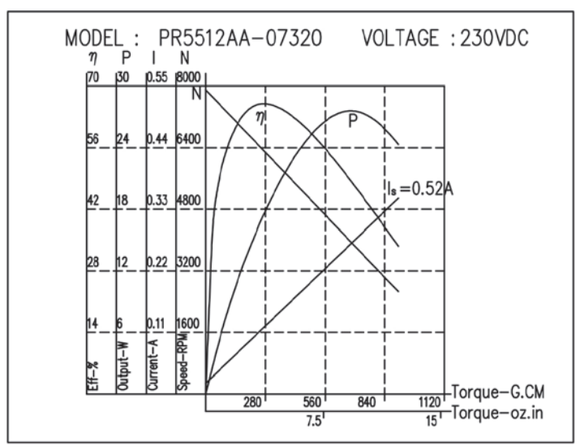


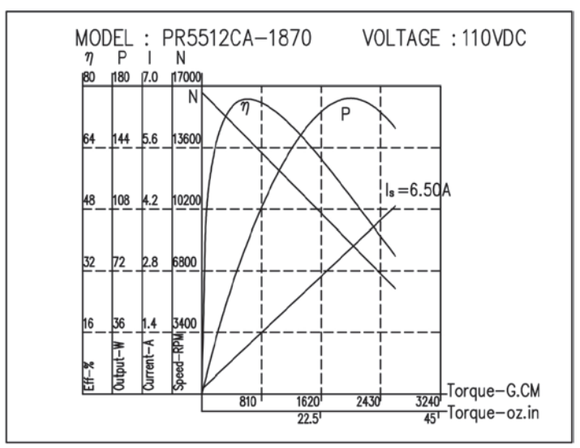
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF		
			rpm	A	rpm	A	oz-in / g-cm	w	%	oz-in	g-cm
FR5512AA-07320	200.0-230.0	230V CONSTANT	7900	0.02	6630	0.1	3 / 219	15	65	19	1360
FR5512AA-09205	100.0-230.0	100V CONSTANT	5500	0.03	4540	0.16	2.9 / 210	9.8	62	17	1208
FR5512AA-09220	100.0-230.0	220V CONSTANT	10900	0.04	9400	0.17	3.8 / 273	26.4	71	28	1988
FR5512CA-1870	100.0-120.0	110V CONSTANT	16700	0.11	14800	0.85	6.5 / 465	70.5	76	56	4040

3.Curves

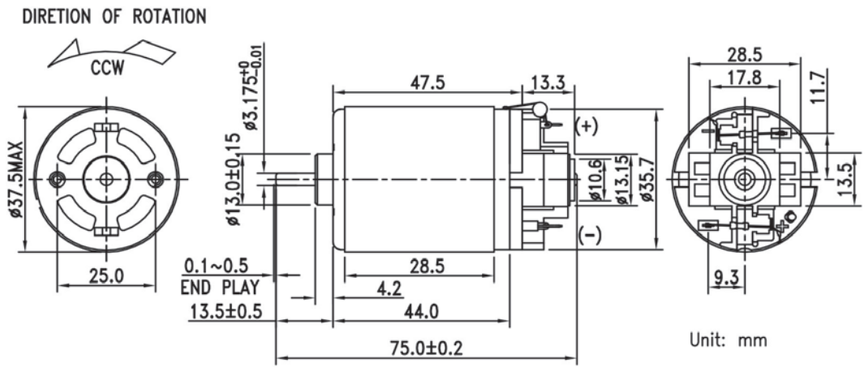




FR5512B

PMDC SERIES
Typical Application :
Power Tools

1.Typical Figure

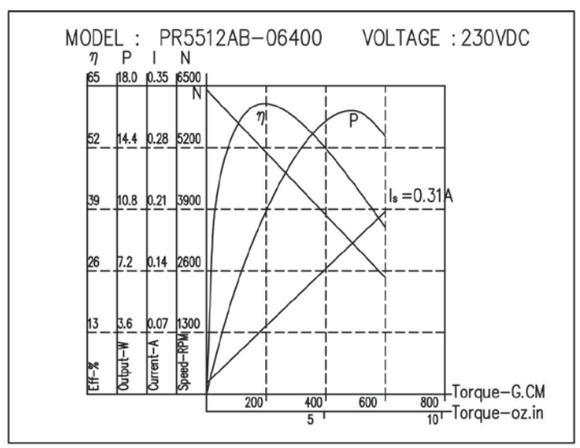


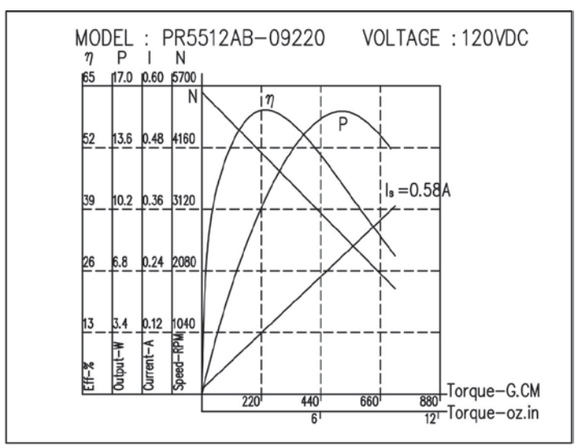
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY					STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	OUTPUT	EFF		
			rpm	A	rpm	A	oz-in / g-cm	w	%	oz-in	g-cm
FR5512AB-06400	200.0-230.0	230V CONSTANT	6500	0.018	5245	0.08	2.6 / 186	10	58	13.4	963
FR5512AB-09205	100.0-230.0	100V CONSTANT	5500	0.03	4540	0.16	2.9 / 210	9.8	62	17	1208
FR5512AB-09220	100.0-230.0	120V CONSTANT	5690	0.03	4635	0.13	2.75 / 198	9.4	60	15	1065

3.Curves

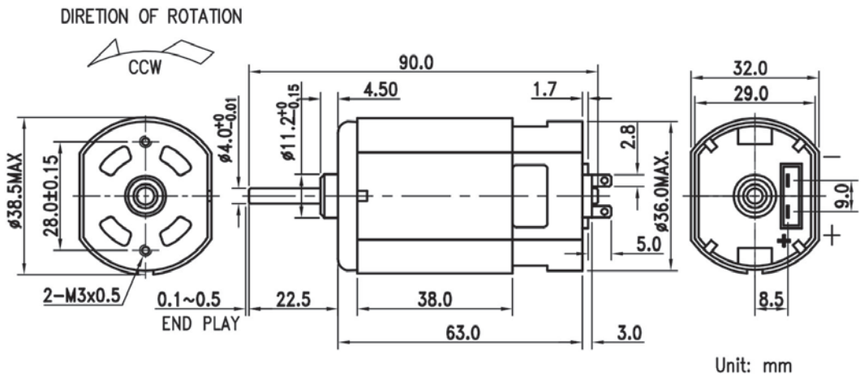




FF5612

PMDC SERIES
Typical Application :
Power Tool.Ice makers

1.Typical Figure

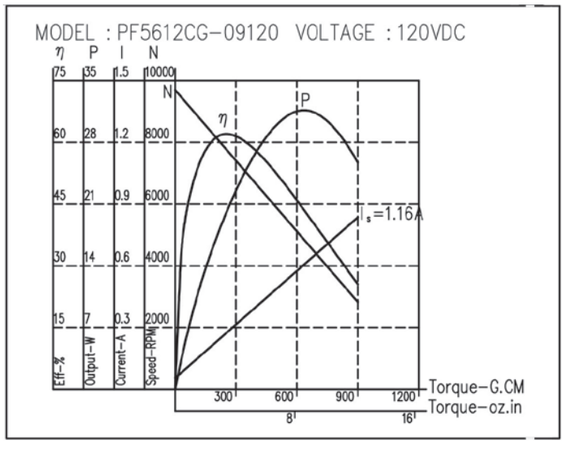


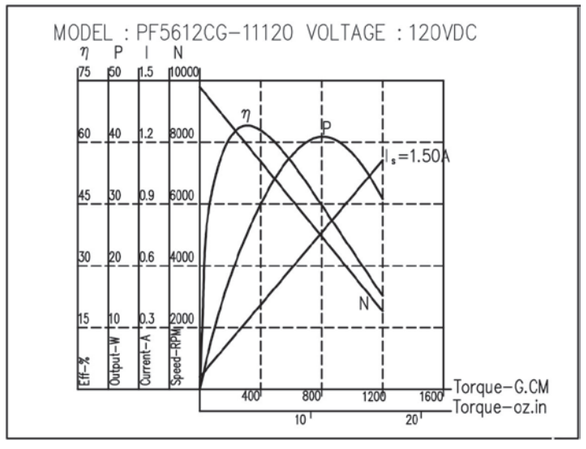
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FF5612CG-09120	100.0-150.0	120V CONSTANT	9700	0.053	7995	0.25	3.1	224	18.4	62	17.64	1270
FF5612CG-11120	100.0-150.0	120V CONSTANT	9840	0.06	8190	0.3	3.76	271	23	64	22.5	1620

3.Curves

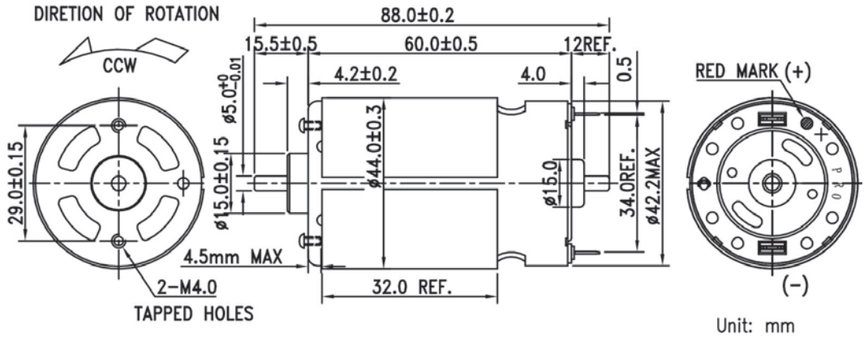




FR750/755

PMDC SERIES
Typical Application :
Cordless Vacuum Cleaners

1.Typical Figure

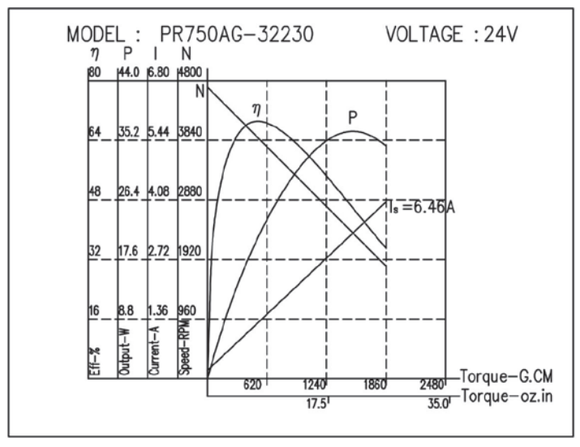


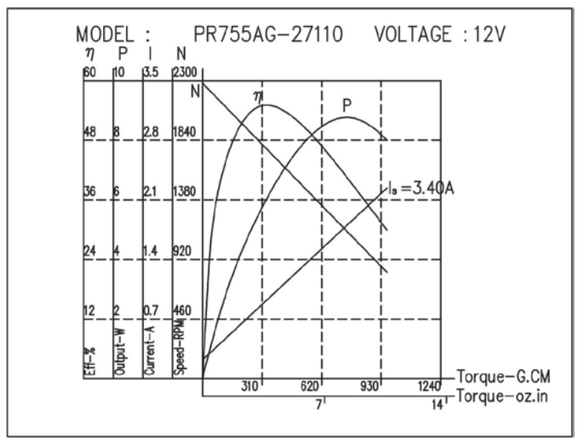
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR750AG-32230	12.0-30.0	24V CONSTANT	4694	0.19	4010	1.11	6.17	444	18.3	69	42.1	3030
FR750AG-7535	6.0-15.0	12V CONSTANT	14800	2	12465	10.7	9.18	661	84.7	66	58.2	4191
FR755AG-3855	12.0-30.0	24V CONSTANT	9200	0.35	7500	2.06	5.8	420	34	69	40	2890
FR755AAG-27110	12.0-30.0	12V CONSTANT	2280	0.22	1890	0.76	3.3	240	4.6	55	21	1500

3.Curves

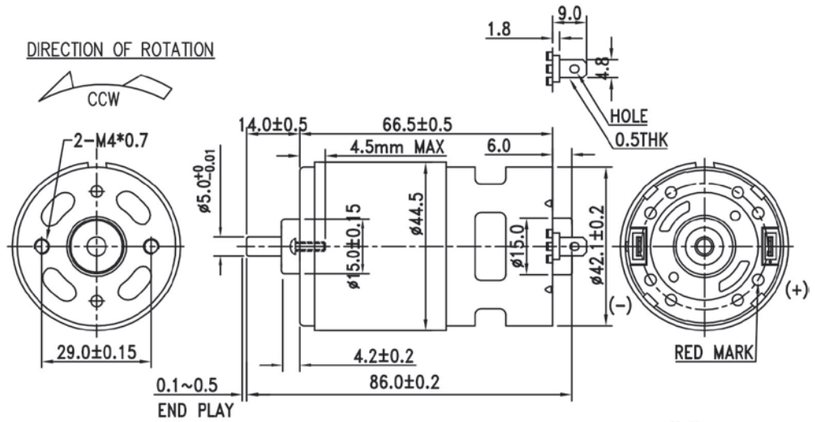




FR770/775

PMDC SERIES
Typical Application : Cordless Vacuum Cleaners

1.Typical Figure

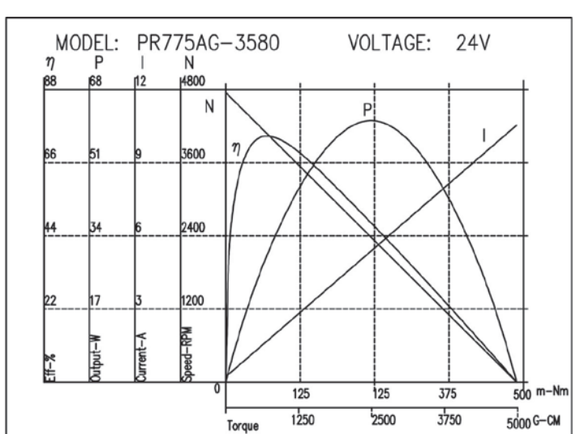


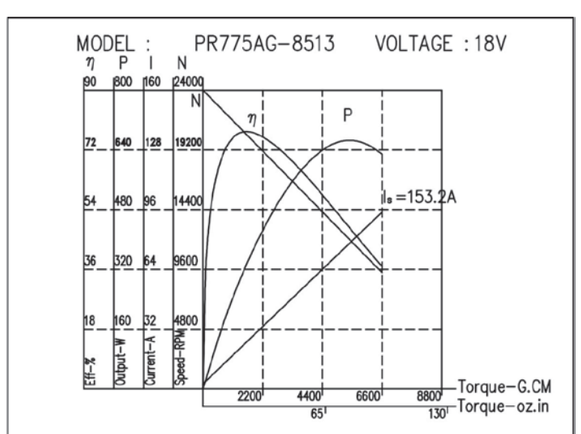
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR770AG-7534	10.0-15.0	12V CONSTANT	12000	1.32	10700	11.25	13.2	950	105	78	125.4	9030
FR775AG-3580	18.0-30.0	24V CONSTANT	4750	0.21	4160	1.49	8.55	616	25	74	69.15	4980
FR775AG-8513	12.0-30.0	18V CONSTANT	24000	2.73	21170	20.45	17.7	1272	276.7	75	150	10801

3.Curves

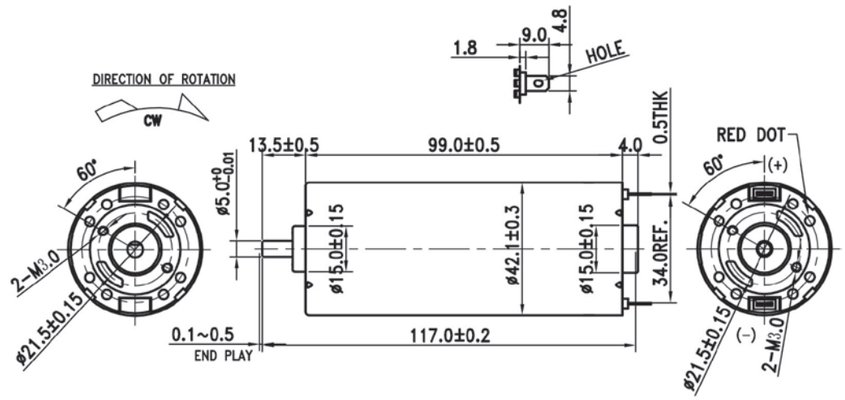




FR7105

PMDC SERIES
Typical Application : Cordless Power Tools

1.Typical Figure

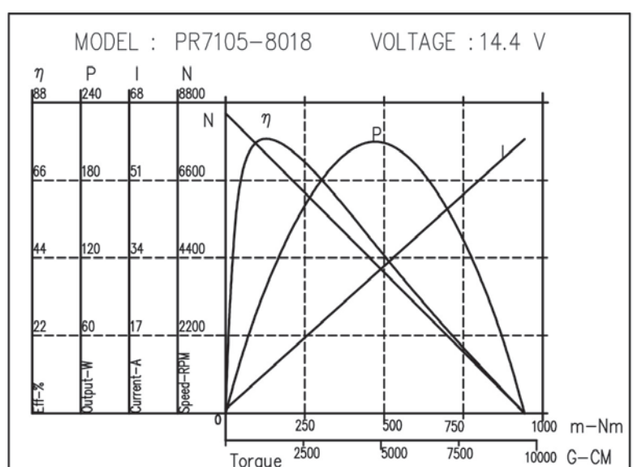


Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR7105-8018	10.0-18.0	14.4V CONSTANT	8500	0.9	7580	7.3	14.5	1045	81	77	133.3	9600

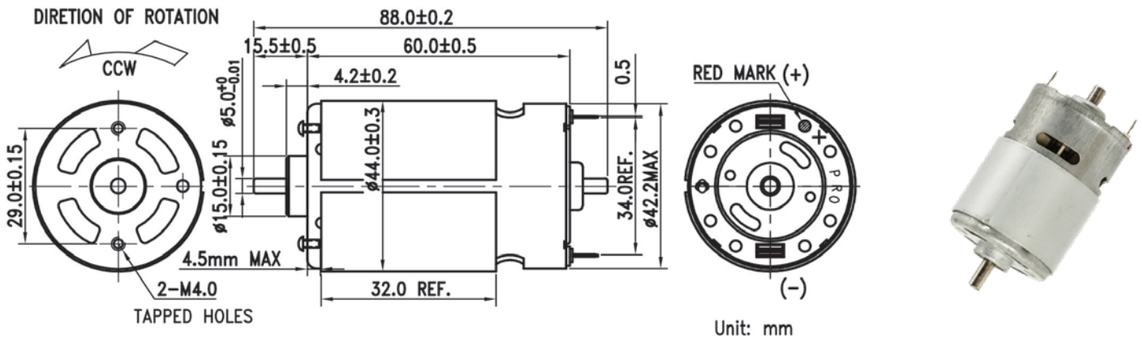
3.Curves



FR7512

PMDC SERIES
Typical Application : Cordless Power Tools

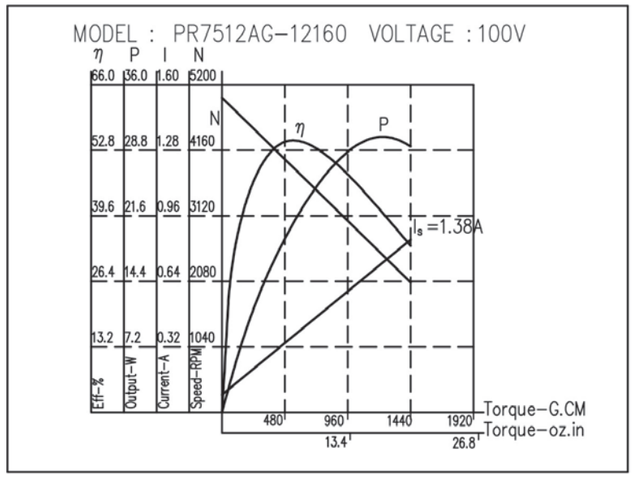
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR7512AG-12160	100.0-120.0	100V CONSTANT	5000	0.086	4000	0.34	6.56	472	19.4	56	32.8	2359

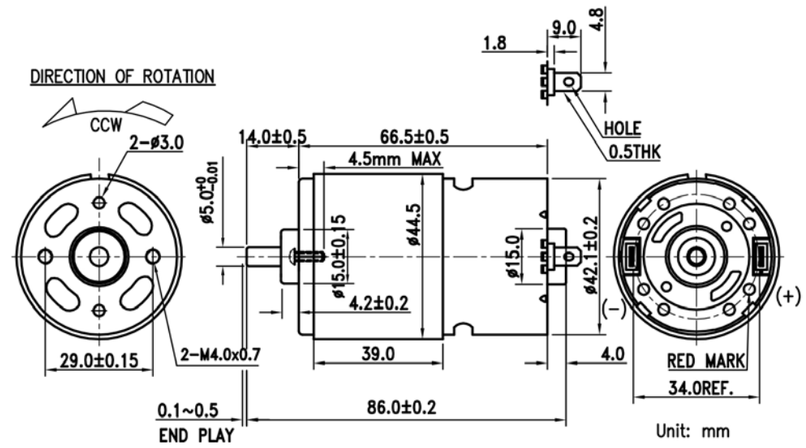
3.Curves



FR7712

PMDC SERIES
Typical Application : Cordless Vacuum Cleaners

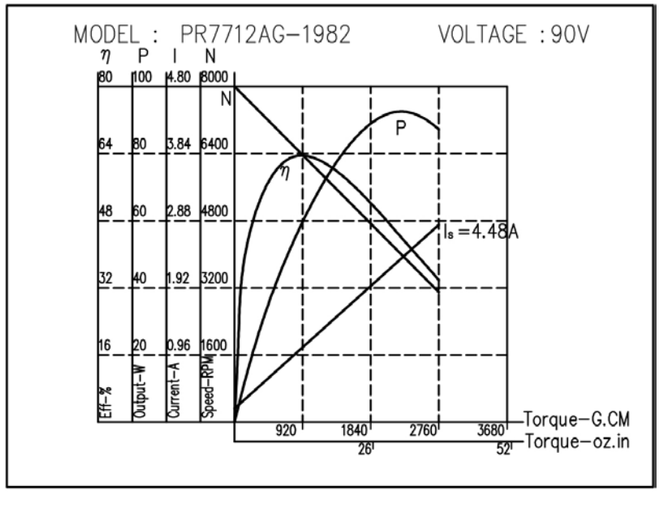
1.Typical Figure



2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR7712AG-1982	80.0-120.0	90V CONSTANT	8000	0.19	6630	0.92	10.7	769	52.4	63	62.5	4504

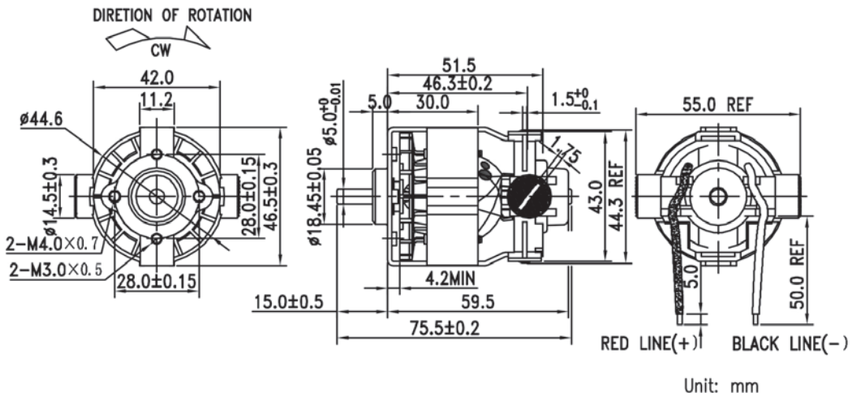
3.Curves

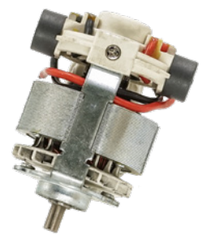


FR777

PMDC SERIES
Typical Application :
Cordless Power Tools

1.Typical Figure



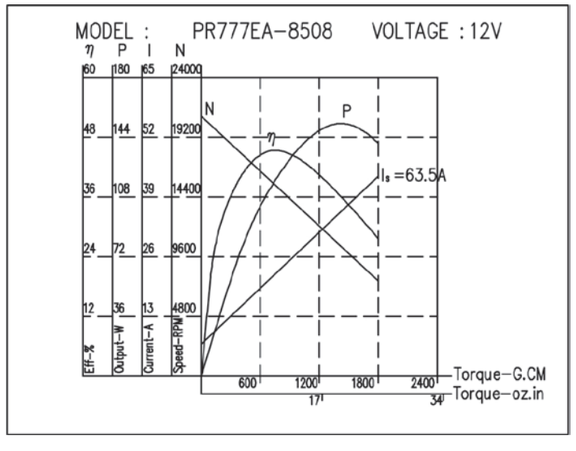


Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR777EA-8508	6.0-15.0	12V CONSTANT	20900	6.8	15750	20.8	9.71	699	113	45	39.41	2838

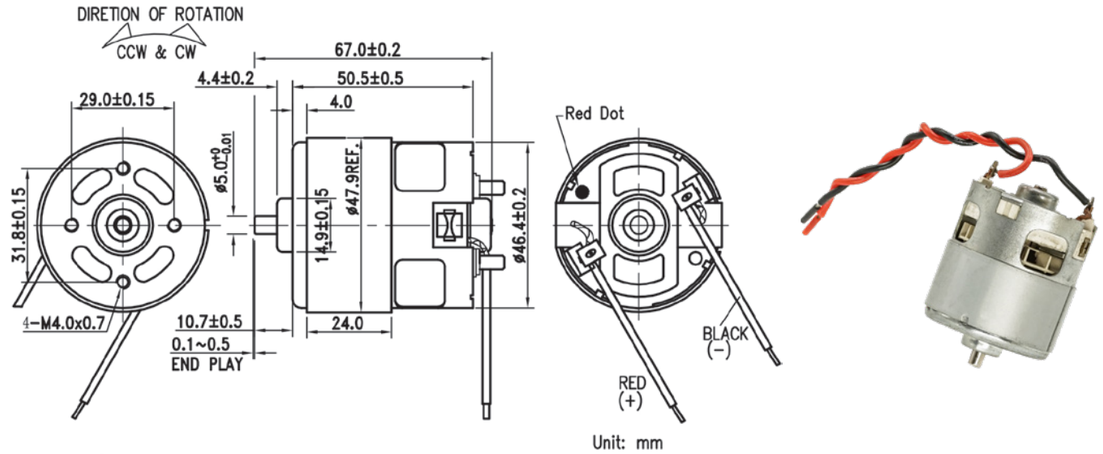
3.Curves



FR845

PMDC SERIES
Typical Application :
Cordless Power Tools

1.Typical Figure

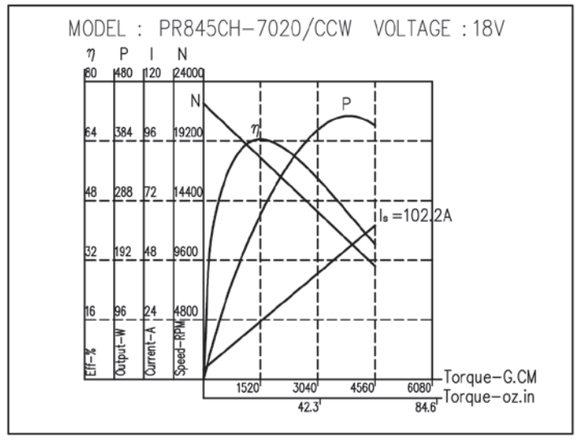


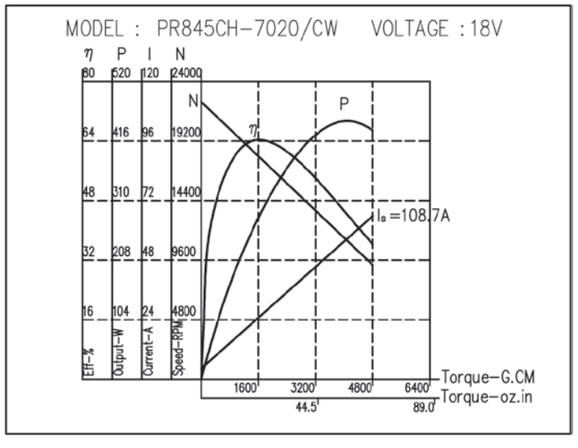
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR845CH-7020	12.0-24.0	18V CONSTANT	22200	4.1	18500	20.5	17.25	1242	235.9	64	103.35	7442
FR845CH-7020	12.0-24.0	18V CONSTANT	22360	4.4	18600	21.9	18.26	1315	250.4	63.8	109	7849

3.Curves

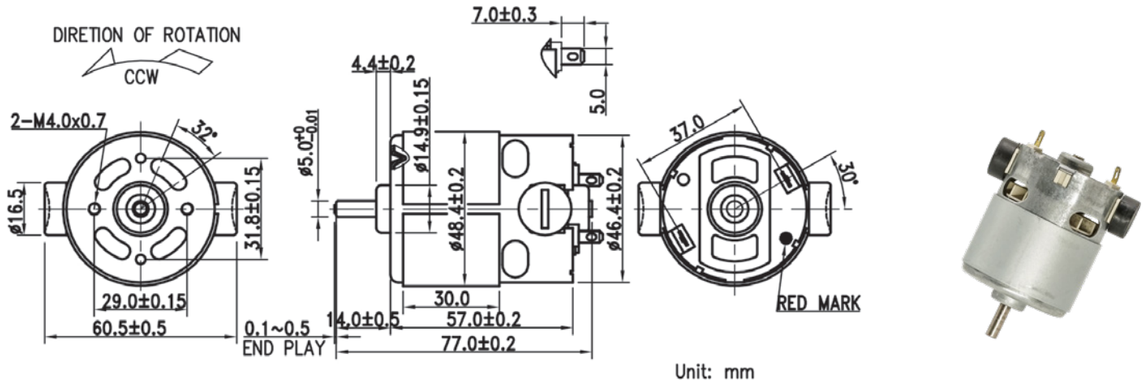




FR855

PMDC SERIES
Typical Application :
Cordless Power Tools

1.Typical Figure

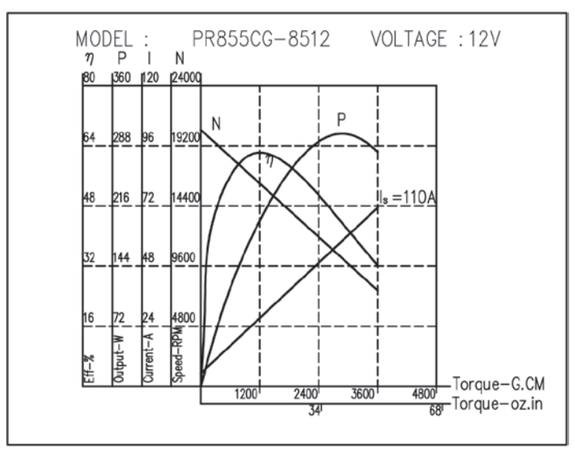


Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR855CG-8512	6.0-15.0	12V CONSTANT	20500	5.1	16890	23.8	14.1	1016	176	62	79.85	5750

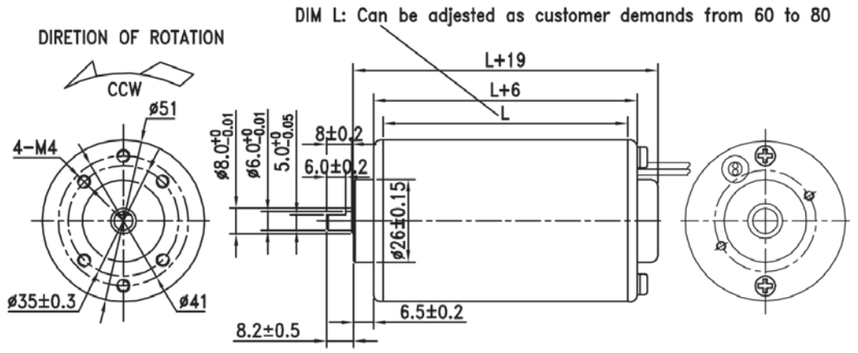
3.Curves



FR34

PMDC SERIES
Typical Application :
Air Compressors

1.Typical Figure

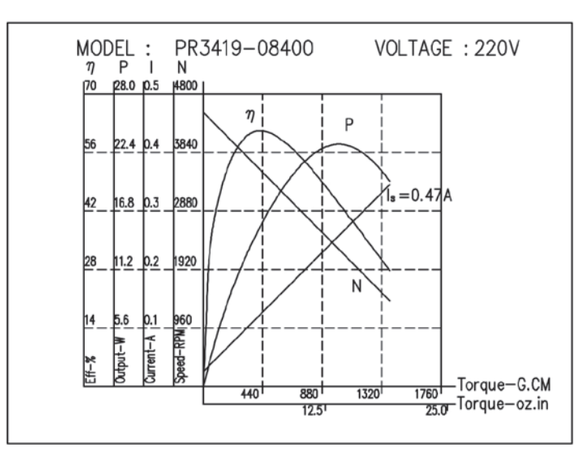


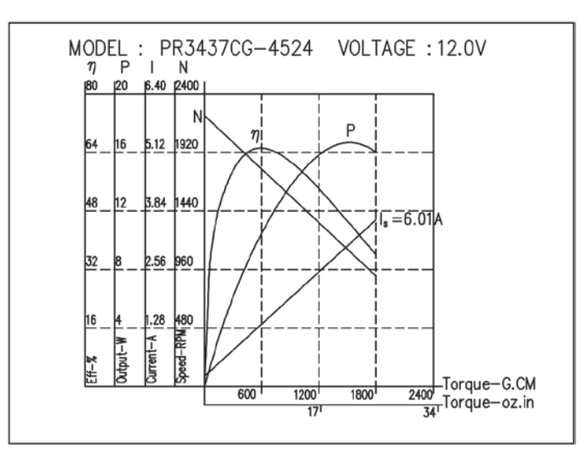
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR3419-08400	200.0-240.0	220V CONSTANT	4500	0.025	3657	0.11	5.2	376	14.13	59	27.9	2007
FR3420-2839	18.0-30.0	24V CONSTANT	4550	0.3	3698	1.3	6.8	488	18.53	59	36.2	2605
FR3435-3820	18.0-30.0	24V CONSTANT	6000	0.6	4884	2.63	10.4	749	37.57	59.5	55.9	4027
FR3437CG-4524	10.0-14.0	12V CONSTANT	2220	0.23	1857	1.18	6.65	479	9.13	65	40.6	2925

3.Curves

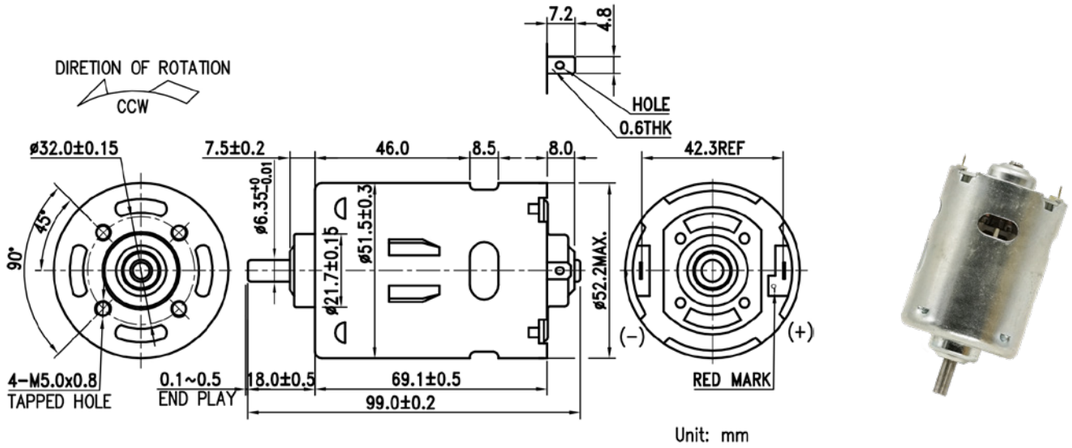




FR9812

PMDC SERIES
Typical Application :
Air Compressors

1.Typical Figure

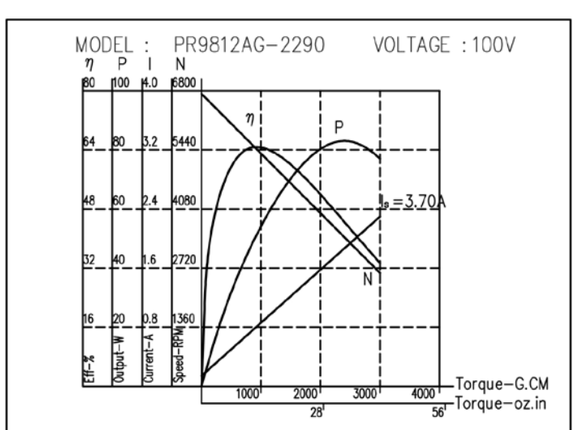


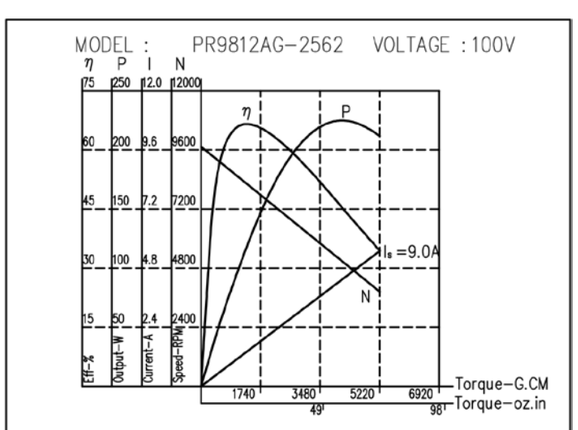
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR9812AG-2290	80.0-120.0	100V CONSTANT	6800	0.15	5670	0.75	11	792	48.2	64	69.3	4990
FR9812AG-2562	80.0-120.0	100V CONSTANT	9734	0.23	8400	1.5	16.4	1180	101	67.8	39.41	8620

3.Curves

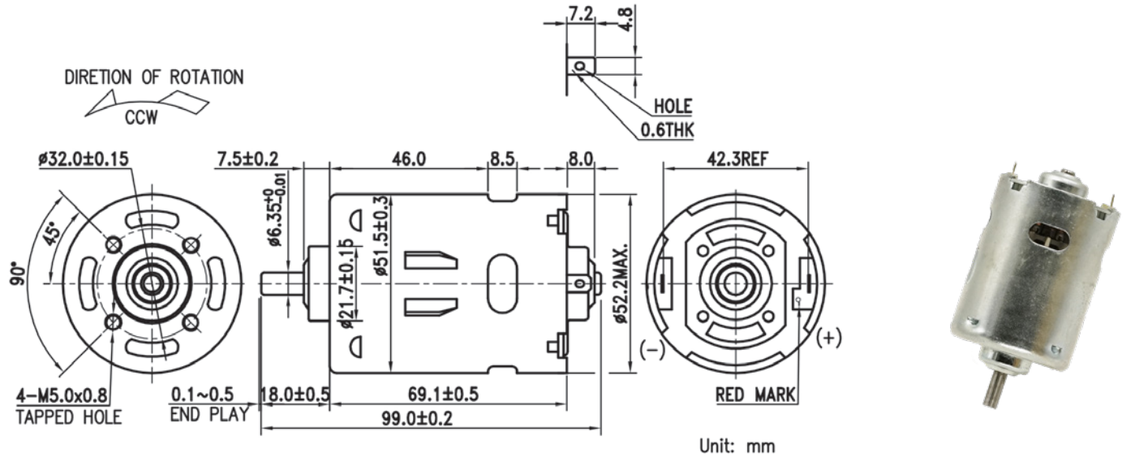




FR987AG

PMDC SERIES
Typical Application :
Cordless Vacuum Cleaners

1.Typical Figure

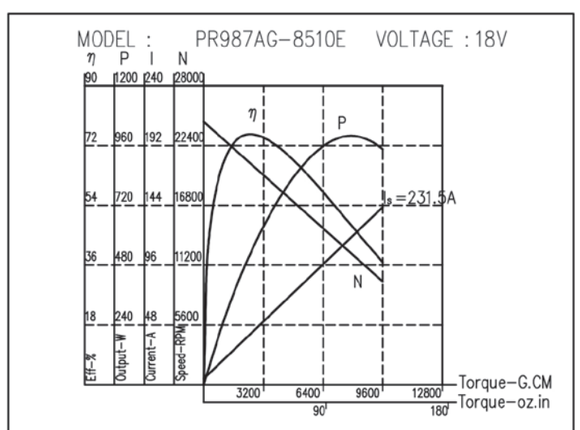


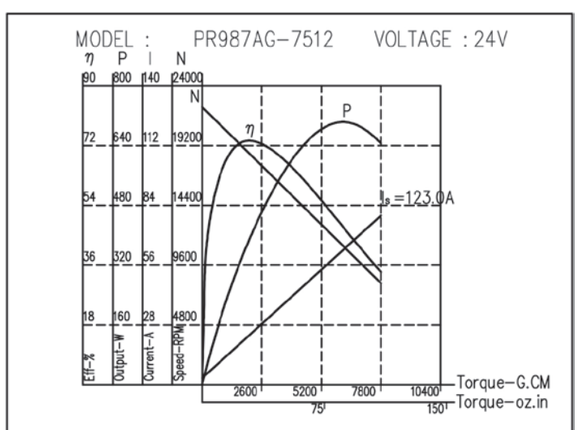
Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR987AG-8510	12.0-30.0	18V CONSTANT	24640	4.87	21520	33.6	27.77	2000	442	73	219.35	15795
FR987AG-7512	12.0-30.0	24V CONSTANT	22300	3	19300	19.2	27.21	1959	329	71	170.6	12285

3.Curves



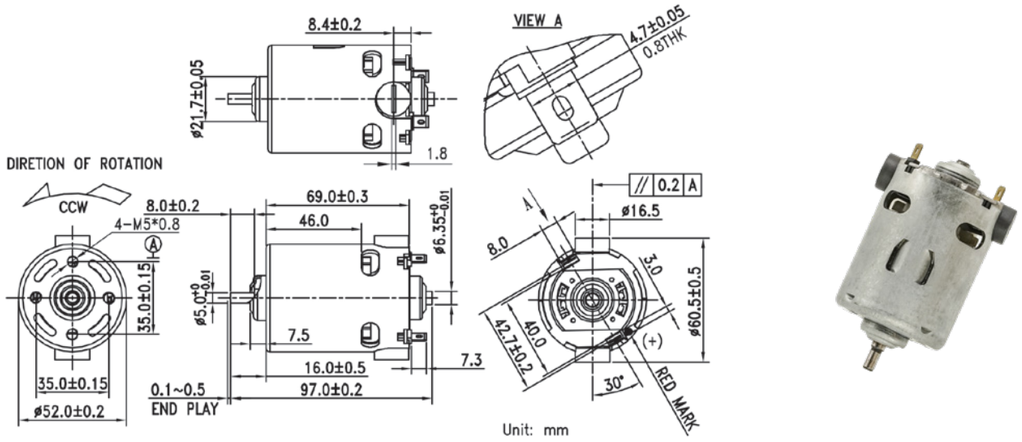


FR987AP

PMDC SERIES

Typical Application : Cordless Vacuum Cleaners

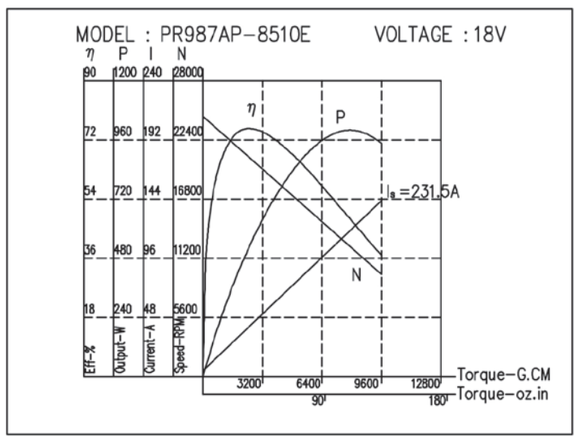
1.Typical Figure

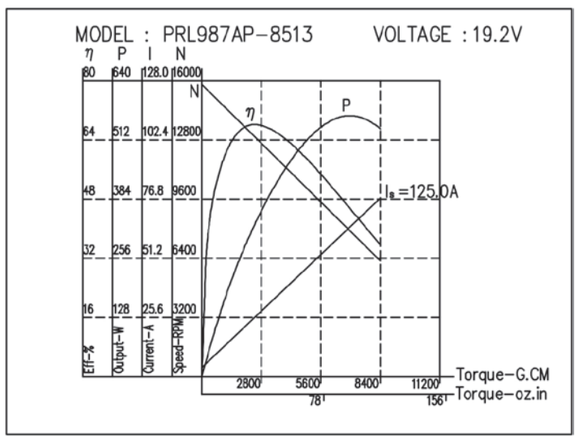


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR987AP-8510	12.0-30.0	18V CONSTANT	24640	4.87	21520	33.6	27.77	2000	442	73	219.35	15795
FRL987AP-8513	12.0-30.0	19.2V CONSTANT	15800	3.93	13420	22.18	29.07	2093	288.6	68	193.14	13908

3.Curves



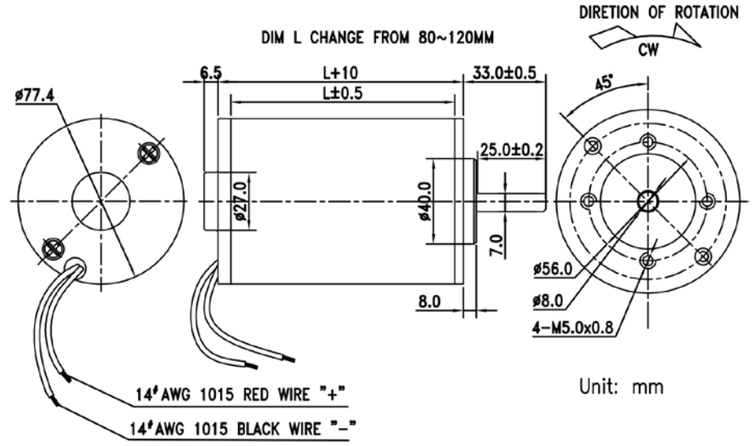


FR1263

PMDC SERIES

Typical Application : Air Compressors

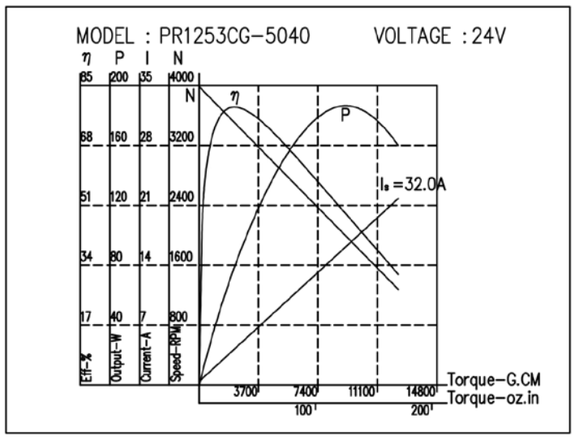
1.Typical Figure

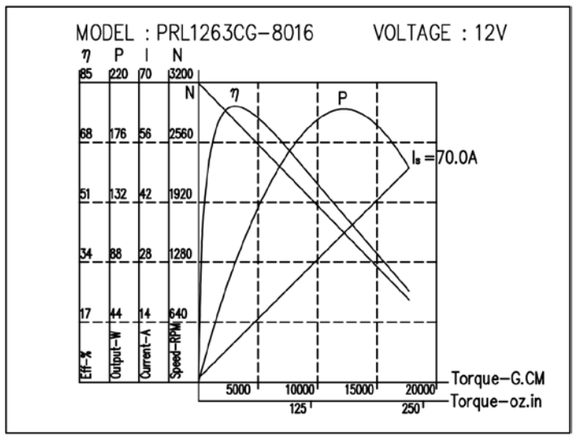


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR1253CG-5040	20.0-25.0	24V CONSTANT	3980	0.4	3575	3.6	26	1858	68	79	253	18240
FR1253CG-8016	10.0-15.0	12V CONSTANT	4890	1.3	4330	10	29	2065	92	76	251	18070
FRL1263CG-6528	20.0-30.0	24V CONSTANT	3710	0.5	3400	5.5	43	3098	108	83	513	36970
FRL1263CG-8016	10.0-15.0	12V CONSTANT	3200	0.95	2860	8.1	36	2574	76	78	340	24452

3.Curves



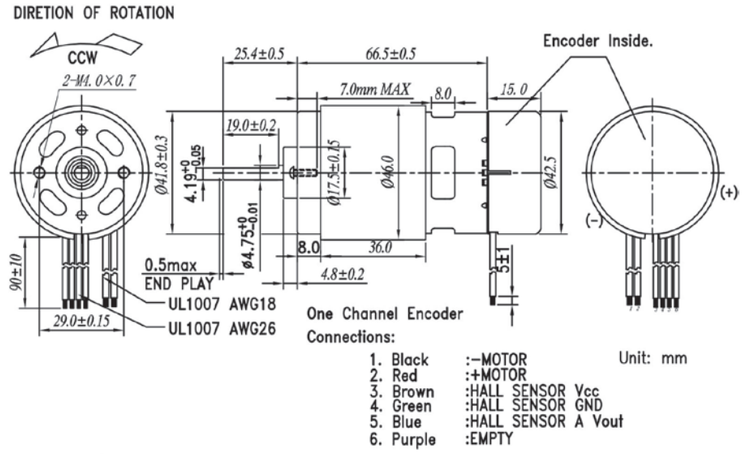


FR775+EN

PMDC SERIES

Typical Application :
Coffee Machines

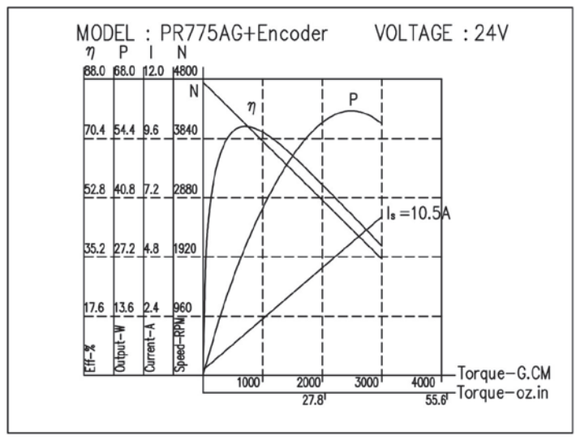
1.Typical Figure

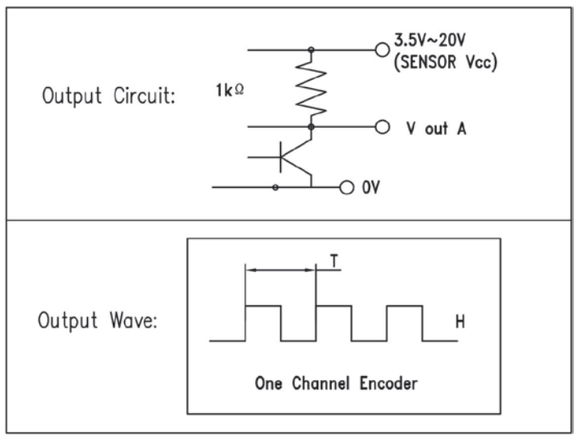


2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FR775AG-Encoder	12.0-30.0	24V CONSTANT	4750	0.21	4160	1.49	8.55	616	26	74	66	4971

3.Curves





GEARED MOTOR
齒輪箱馬達

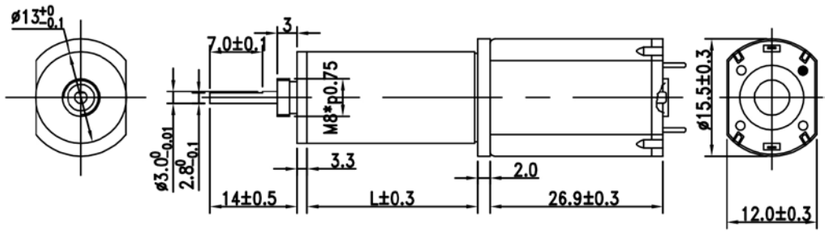
法拉棣
FARADYI

FF050+IG13

GEARED MOTOR

Typical Application :
Robot Kits

1.Typical Figure



Unit: mm

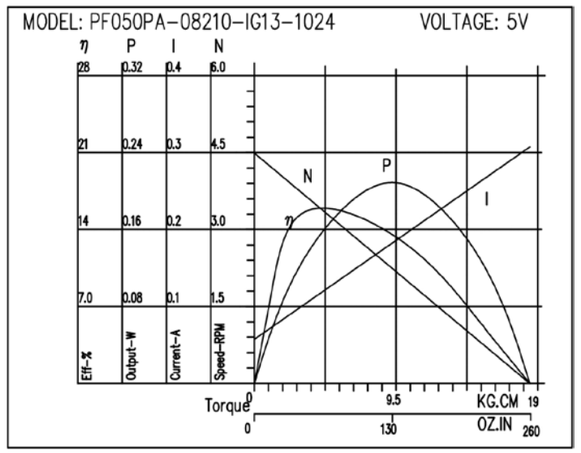
GEAR BOXES SPECIFICATIONS

Reduction ratio	1/4	1/16	1/64	1/256	1/1024	1/4096
Rated tolerance torque (kg.cm Max)	0.8	1.2	1.6	1.8	2.0	2.0
Max momentary tolerance torque (kg.cm)	2.4	3.6	4.8	5.4	6.0	6.0
L	10.2	13.5	16.8	20.1	23.4	26.7

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FF050PA-08210-IG13-1024	3.0-8.0	5V CONSTANT	4.5	0.09	4	0.15	2	27.77

3.Curves

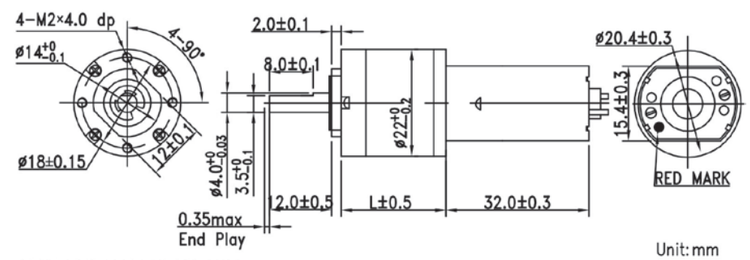


FF180+IG22

GEARED MOTOR

Typical Application :
Automatic Curtains

1.Typical Figure



Unit: mm

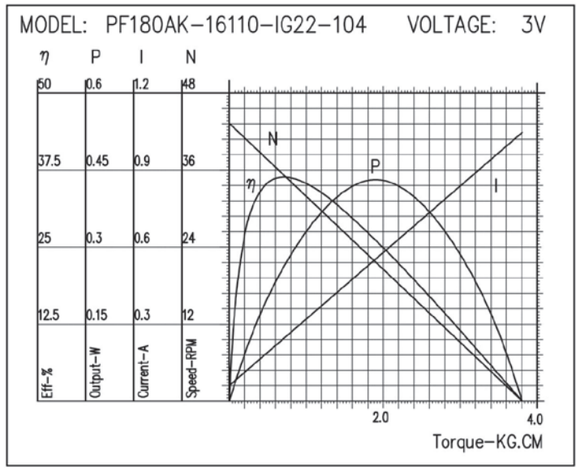
GEAR BOXES SPECIFICATIONS

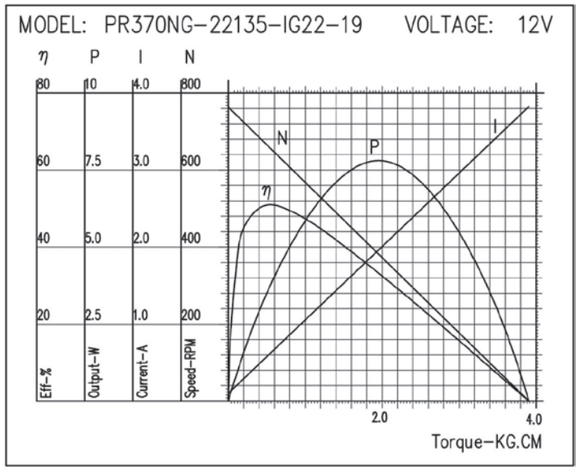
Reduction ratio	1/4	1/14 ~1/19	1/62 ~1/104	1/231 ~1/455	1/1014 ~1/1996
Rated tolerance torque (kg.cm Max)	1.0	1.5	2.0	2.5	3.0
Max momentary tolerance torque (kg.cm)	3.0	4.5	6.0	7.5	9.0
L	14.4	18.05	21.7	25.35	29.0

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FF180AK-16110-IG22-104	3.0-8.0	3V CONSTANT	43.3	0.12	32	0.33	1	13.9
FR370NG-22135-IG22-19	8.0-16.0	12V CONSTANT	763	0.1	665	0.57	0.5	6.95

3.Curves



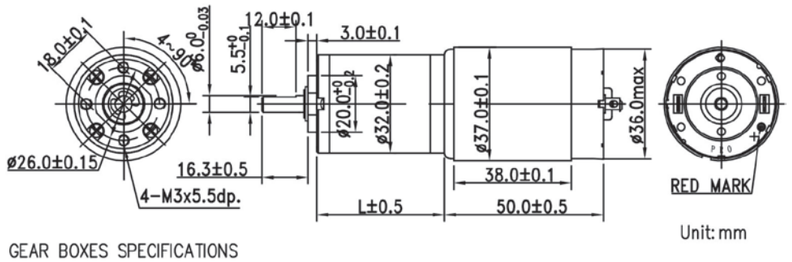


FR540+IG32

GEARED MOTOR

Typical Application : Power Tools

1.Typical Figure



Unit: mm

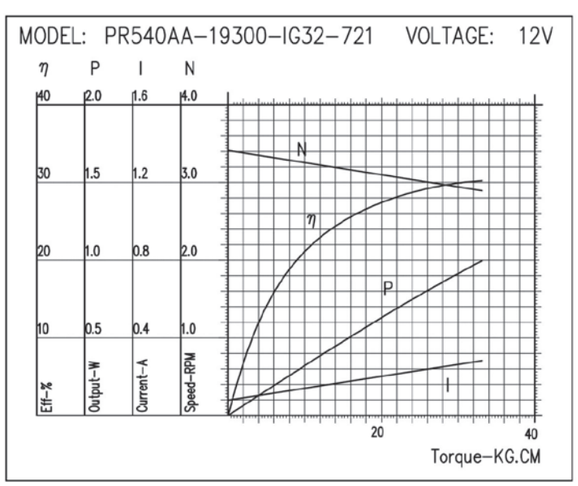
GEAR BOXES SPECIFICATIONS

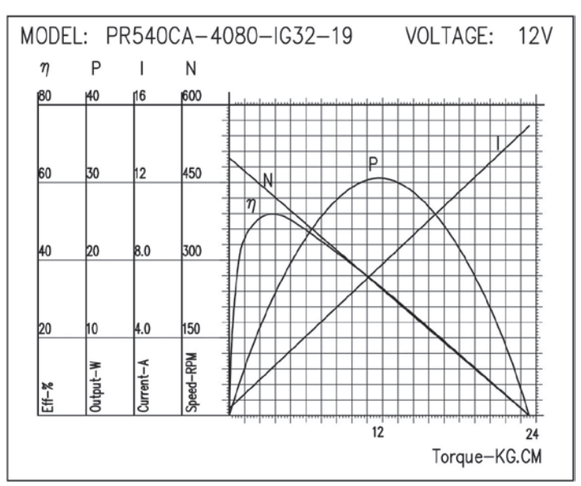
Reduction ratio	1/4 ~1/5	1/14 ~1/19	1/27 ~1/35	1/51 ~1/71	1/100 ~1/139	1/189 ~1/939
Rated tolerance torque (kg.cm Max)	2.0	4.0	6.0	8.0	10.0	12.0
Max momentary tolerance torque (kg.cm)	6.0	12.0	18.0	24.0	30.0	36.0
L	20.6	27.0	27.0	33.4	33.4	39.8

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR540AA-19300-IG32-721	3.0-24.0	12V CONSTANT	3.4	0.08	3.3	0.14	10	139
FR540CA-4080-IG32-19	3.0-24.0	12V CONSTANT	497	0.36	370	4.06	6	83.4

3.Curves



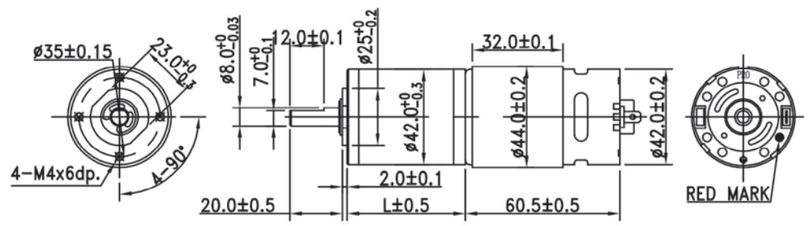


FR750+IG42

GEARED MOTOR

Typical Application : Electric Branch Scissors

1.Typical Figure



Unit: mm

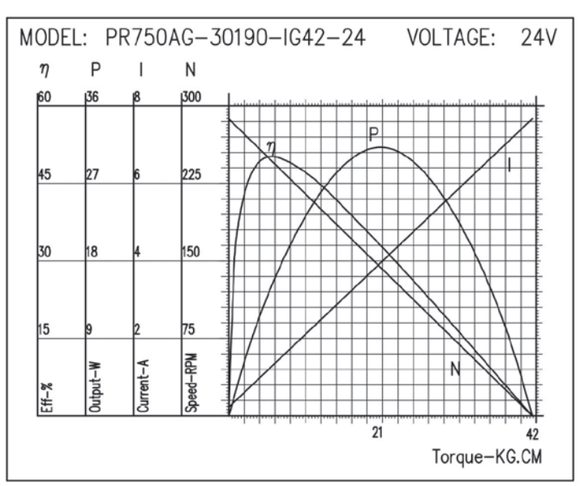
GEAR BOXES SPECIFICATIONS

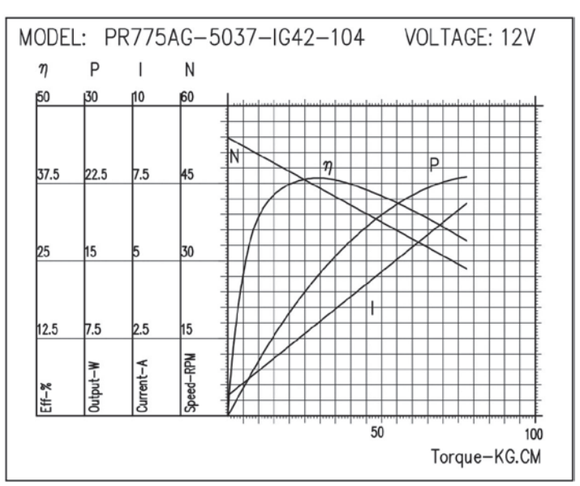
Reduction ratio	1/4	1/14 ~1/24	1/49 ~1/84	1/104 ~1/144	1/212 ~1/294	1/504 ~1/864	1/1062 ~1/3600
Rated tolerance torque (kg.cm Max)	3.0	8.0	18.0	20.0	25.0	30.0	30.0
Max momentary tolerance torque (kg.cm)	9.0	24.0	54.0	60.0	75.0	90.0	90.0
L	32.5	39.2	45.9	45.9	52.6	52.6	59.6

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR750AG-30190-IG42-24	6.0-24.0	24V CONSTANT	287	0.22	229	1.72	8	111.1
FR775AG-5037-IG42-104	6.0-24.0	12V CONSTANT	53.8	0.66	44	3	30	417

3.Curves

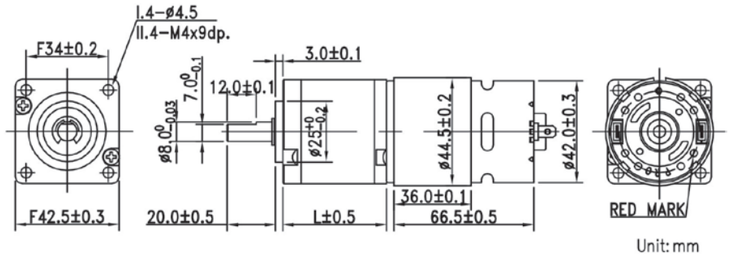




FR775+IG43

GEARED MOTOR
Typical Application :
Machines

1.Typical Figure



Unit: mm

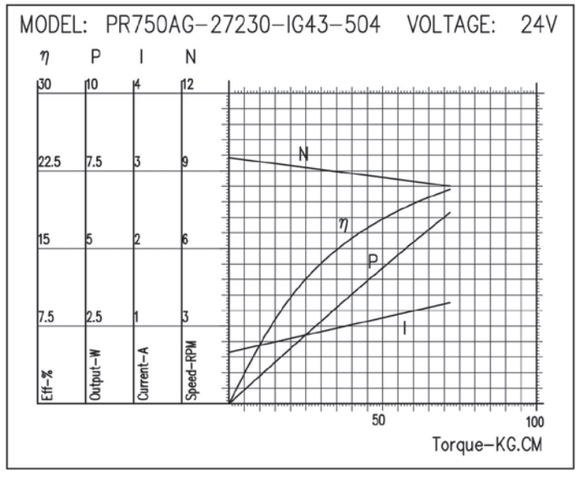
GEAR BOXES SPECIFICATIONS

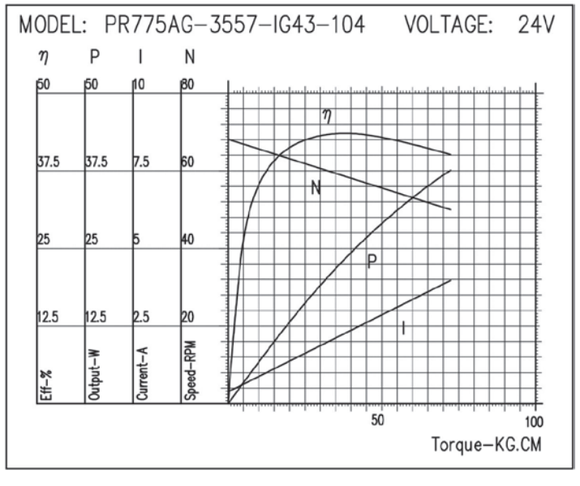
Reduction ratio	1/4	1/14 ~1/24	1/49 ~1/84	1/104 ~1/144	1/212 ~1/294	1/504 ~1/864
Rated tolerance torque (kg.cm Max)	4.0	8.0	15.0	20.0	25.0	30.0
Max momentary tolerance torque (kg.cm)	12.0	24.0	45.0	60.0	75.0	90.0
L	26.15	32.95	39.75	39.75	46.45	46.45

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR750AG-27230-IG43-504	6.0-24.0	24V CONSTANT	9.5	0.66	9.1	0.82	24	333.6
FR775AG-3557-IG43-104	6.0-24.0	24V CONSTANT	68.2	0.37	63.1	1.34	20	278

3.Curves

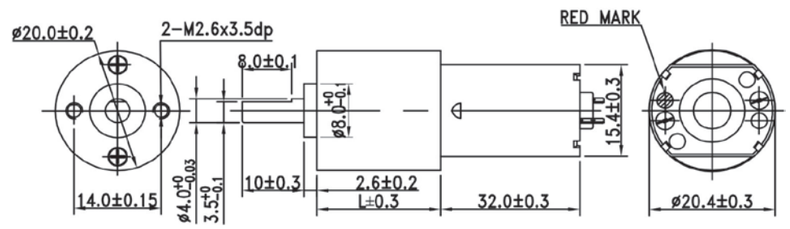




FF180+RA20

GEARED MOTOR
Typical Application :
Automatic Curtains

1.Typical Figure



Unit: mm

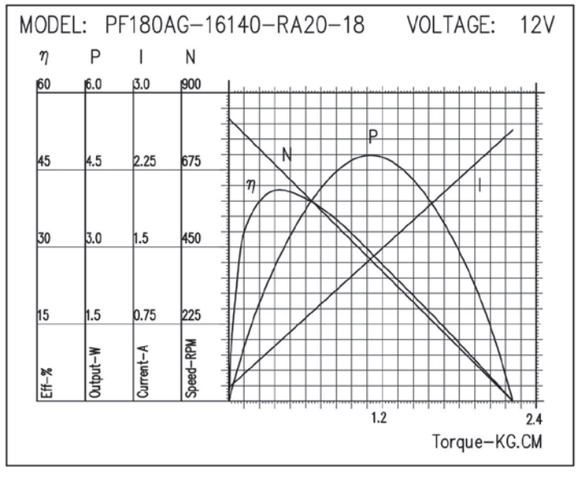
GEAR BOXES SPECIFICATIONS

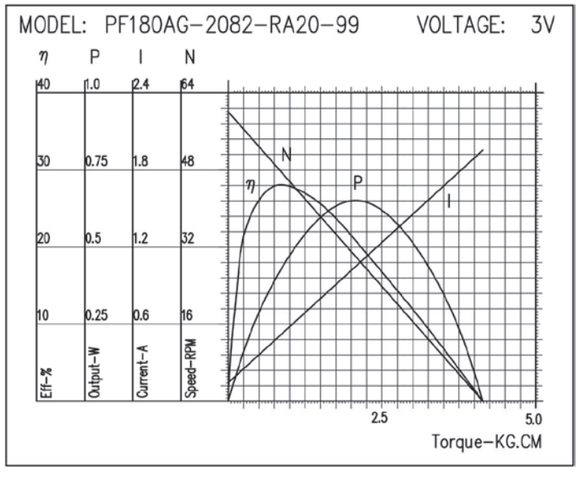
Reduction ratio	1/10 ~1/13	1/18 ~1/29	1/42 ~1/67	1/80 ~1/99	1/120 ~1/150	1/179 ~1/866
Rated tolerance torque (kg.cm Max)	0.4	0.6	1.0	1.2	1.5	1.8
Max momentary tolerance torque (kg.cm)	1.2	1.8	3.0	3.6	4.5	5.4
L	16.5	20.0	20.0	21.8	21.8	25.3

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FF180AG-16140-RA20-18	3.0-24.0	12V CONSTANT	826	0.13	639	0.69	0.5	6.95
FF180AG-2082-RA20-99	3.0-24.0	3V CONSTANT	60	0.14	42.6	0.66	1.2	16.7

3.Curves



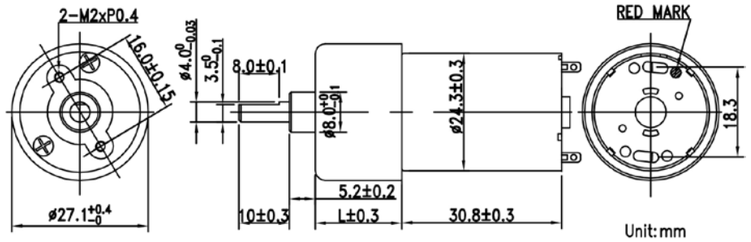


FR370+RA25

GEARED MOTOR

Typical Application :
Claw Machines

1.Typical Figure



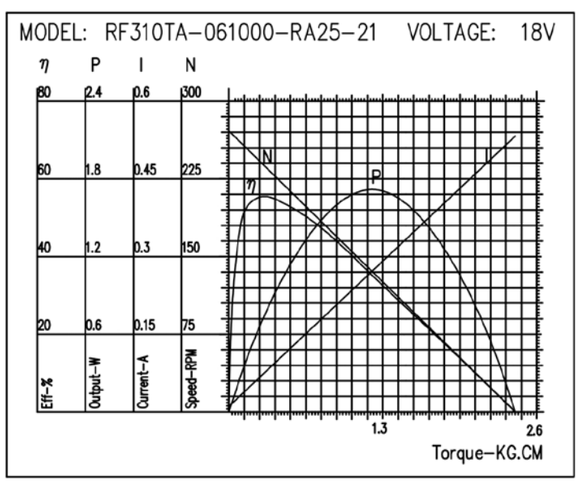
GEAR BOXES SPECIFICATIONS

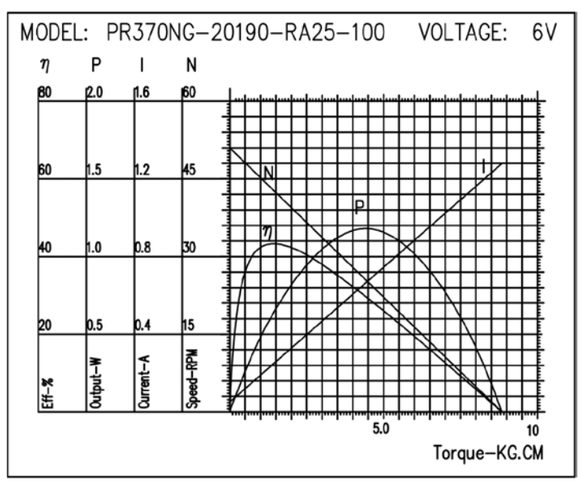
Reduction ratio	1/6 ~1/10	1/15 ~1/21	1/30 ~1/44	1/60 ~1/77	1/100 ~1/112	1/150 ~1/360	1/400 ~1/1153
Rated tolerance torque (kg.cm Max)	0.3	0.4	0.6	0.8	1.0	1.2	1.5
Max momentary tolerance torque (kg.cm)	0.9	1.2	1.8	2.4	3.0	3.6	4.5
L	17.3	17.3	17.3	17.3	17.3	17.3	19.3

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FF310TA-061000-RA25-21	3.0-24.0	18V CONSTANT	271	0.011	251	0.05	0.2	2.78
FR370NG-20190-RA25-100	3.0-24.0	6V CONSTANT	51	0.05	45.2	0.19	1	13.9

3.Curves



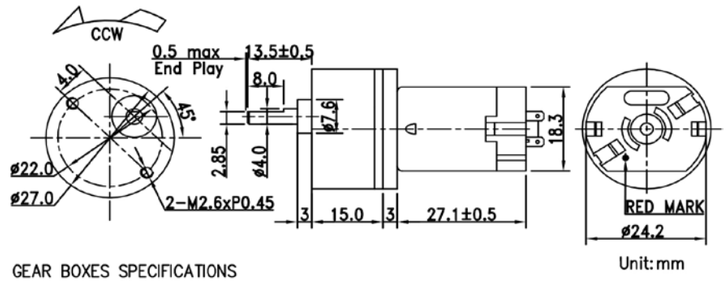


FF260+RB25

GEARED MOTOR

Typical Application :
Auto-rotation Lamps

1.Typical Figure



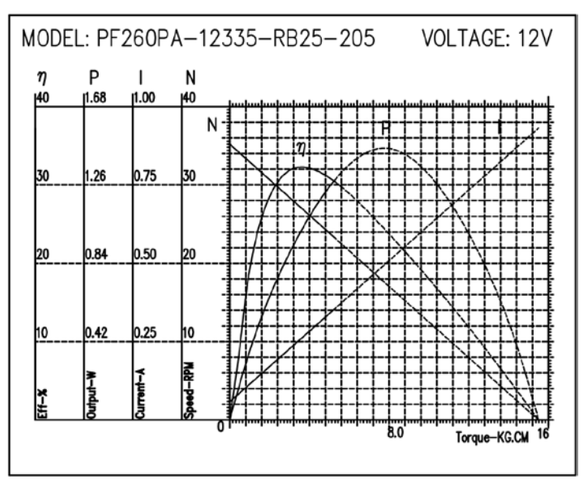
GEAR BOXES SPECIFICATIONS

Reduction ratio	1/73	1/205	1/266
Rated tolerance torque (kg.cm Max)	1.0	1.5	1.5
Max momentary tolerance torque (kg.cm)	3.0	4.5	4.5
L	15.0	15.0	15.0

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FF260PA-12335-RB25-205	6.0-18.0	12V CONSTANT	35	0.08	33	0.13	1.5	20.8
FR310NK-08550-RB25-266	6.0-18.0	12V CONSTANT	26	0.02	24	0.06	1.5	20.8

3.Curves

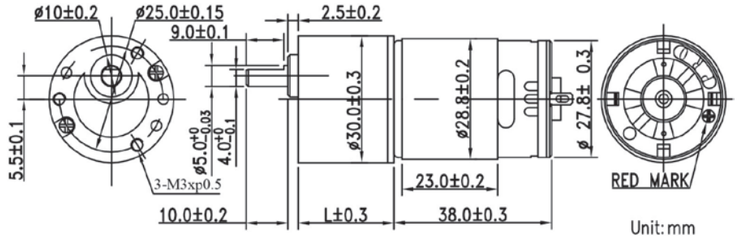


FR380+RB30

GEARED MOTOR

Typical Application :
Vaccum Cleaners

1.Typical Figure



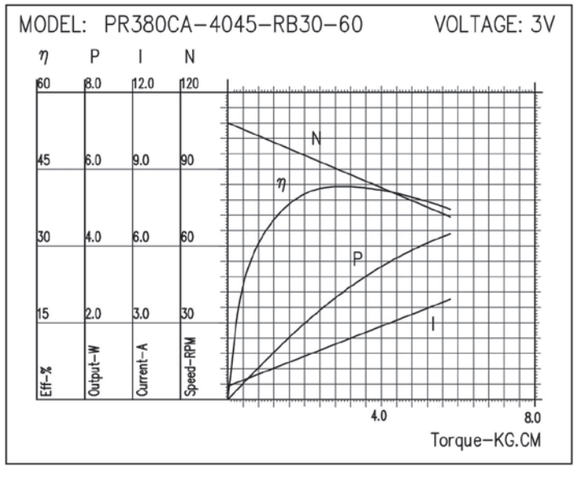
GEAR BOXES SPECIFICATIONS

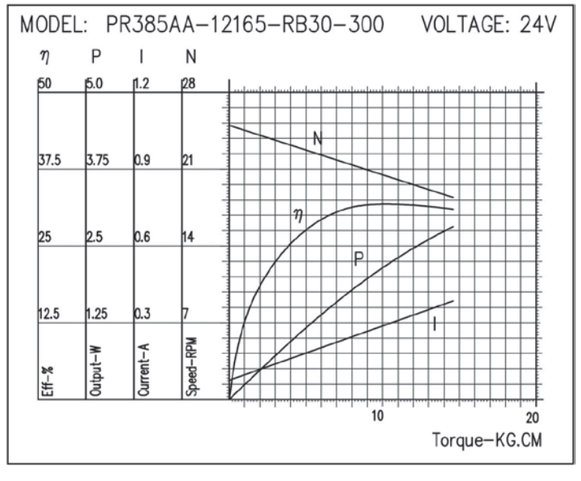
Reduction ratio	1/20	1/30 ~1/36	1/50 ~1/75	1/75 ~1/100	1/120 ~1/150	1/180 ~1/1000
Rated tolerance torque (kg.cm Max)	1.0	1.5	2.0	3.0	4.0	4.5
Max momentary tolerance torque (kg.cm)	3.0	4.5	6.0	9.0	12.0	13.5
L	23.0	23.0	23.0	23.0	28.0	28.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR380CA-4045-RB30-60	3.0-24.0	3V CONSTANT	108	0.53	95.3	1.66	2	27.77
FR385AA-12165-RB30-300	3.0-24.0	24V CONSTANT	25	0.07	21.4	0.24	7.92	110

3.Curves



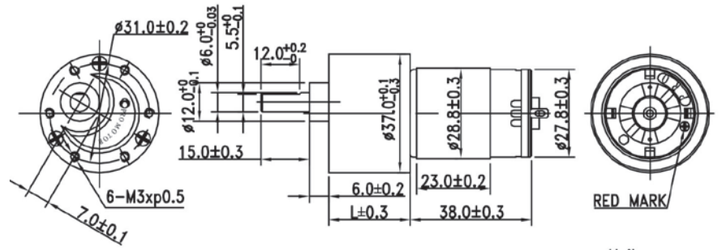


FR385+RB35P

GEARED MOTOR

Auto Paper Towel Dispensers

1.Typical Figure



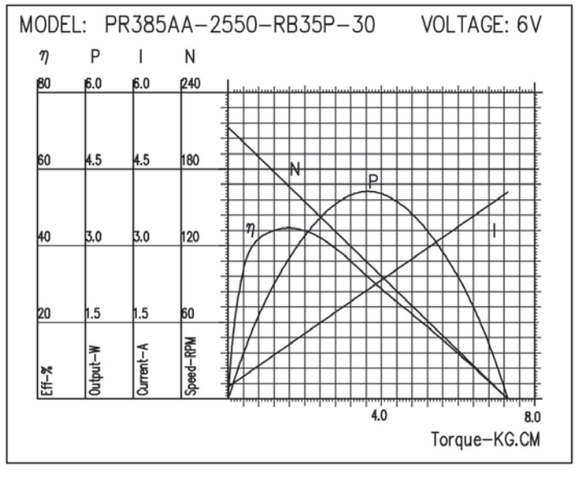
GEAR BOXES SPECIFICATIONS

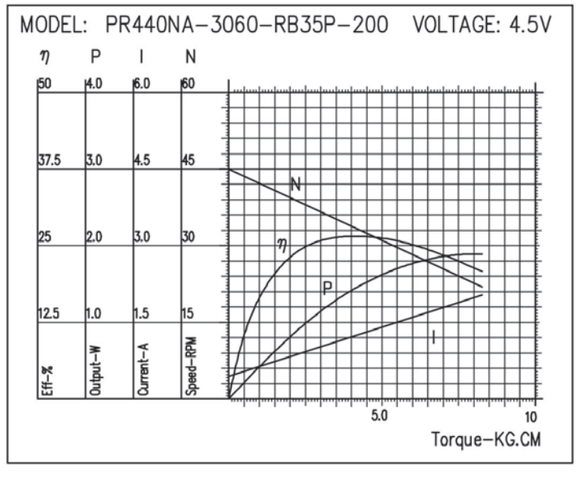
Reduction ratio	1/18	1/30	1/50 ~1/75	1/90 ~1/100	1/120 ~1/300	1/400 ~1/1000	1/1500 ~1/3000
Rated tolerance torque (kg.cm Max)	1.0	1.2	2.0	3.0	4.0	4.0	4.0
Max momentary tolerance torque (kg.cm)	3.0	3.6	6.0	9.0	12.0	12.0	12.0
L	22.0	22.0	24.5	24.5	27.0	29.5	32.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR385AA-2550-RB35P-30	3.0-6.0	6V CONSTANT	213	0.23	178	0.84	1.2	16.7
FR440NA-3060-RB35P-200	3.0-4.5	4.5V CONSTANT	45	0.44	35	1.1	3.5	48

3.Curves

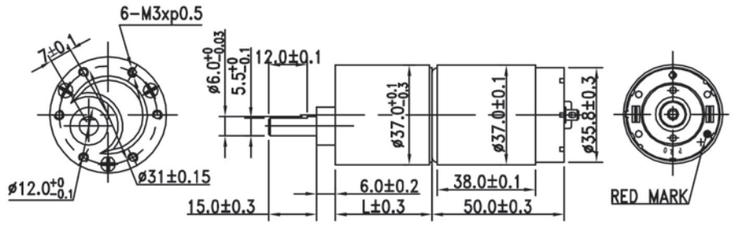




FR540+RB35C GEARED MOTOR

Typical Application : Game Machines

1.Typical Figure



Unit: mm

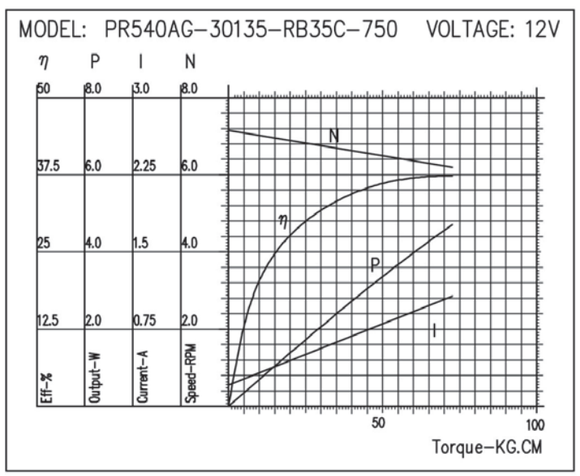
GEAR BOXES SPECIFICATIONS

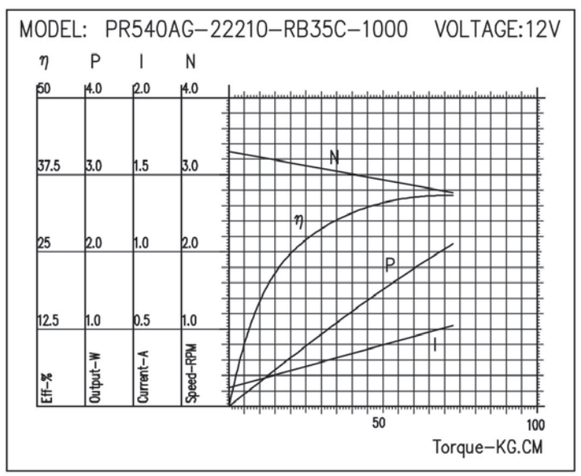
Reduction ratio	1/6 ~1/10	1/18	1/30	1/50 ~1/70	1/75 ~1/90	1/100	1/120 ~1/300	1/350 ~1/1000	1/1500 ~1/3000
Rated tolerance torque (kg.cm Max)	1.0	1.0	2.0	3.0	4.0	6.0	6.0	6.0	6.0
Max momentary tolerance torque (kg.cm)	3.0	3.0	6.0	9.0	12.0	18.0	18.0	18.0	18.0
L	19.5	22.0	22.0	24.5	24.5	24.5	27.0	29.5	32.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR540AG-30135-RB35C-750	6.0-24.0	12V CONSTANT	7.2	0.21	7	0.37	15	208.5
FR540AG-22210-RB35C-1000	6.0-24.0	12V CONSTANT	3.3	0.12	3.2	0.17	10	139

3.Curves

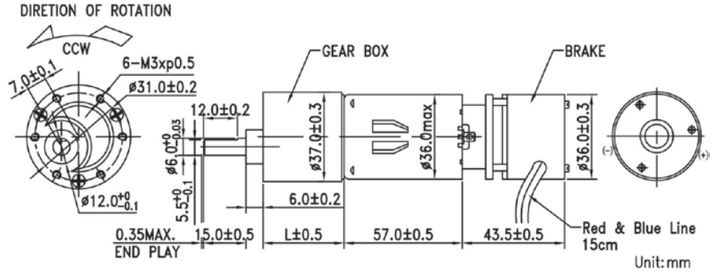




FR550+RB35C +Brake GEARED MOTOR

Typical Application : Kids'Electric Cars

1.Typical Figure



Unit: mm

GEAR BOXES SPECIFICATIONS

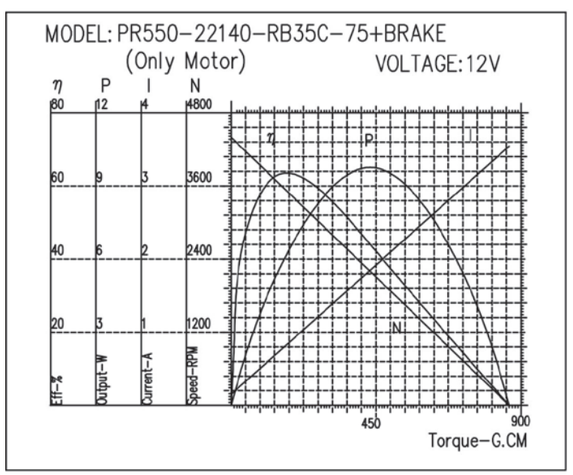
Reduction ratio	1/6 ~1/10	1/18	1/30	1/50 ~1/70	1/75 ~1/90	1/100	1/120 ~1/300	1/350 ~1/1000	1/1500 ~1/3000
Rated tolerance torque (kg.cm Max)	1.0	1.0	2.0	3.0	4.0	6.0	6.0	6.0	6.0
Max momentary tolerance torque (kg.cm)	3.0	3.0	6.0	9.0	12.0	18.0	18.0	18.0	18.0
L	19.5	22.0	22.0	24.5	24.5	24.5	27.0	29.5	32.0

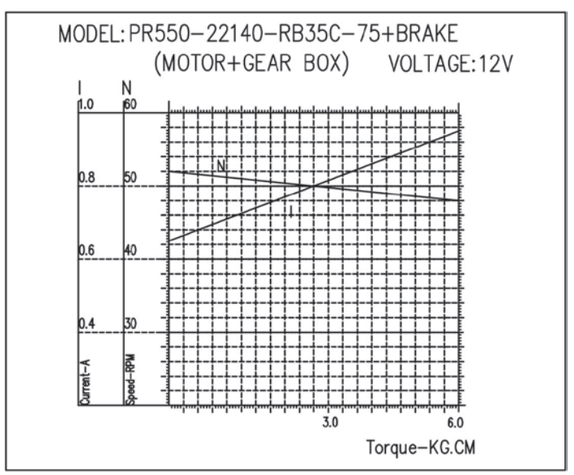
2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE		
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE
			rpm	A	rpm	A	Kg-cm / oz-in
FR550AG-22140-RB35C-75 +BRAKE	6.0-15.0	12V CONSTANT	52	0.6	50	0.9	6 / 83.3

BRAKE				
WORKING VOLTAGE	RATED VOLTAGE	RATED CURRENT	RATED TORQUE	BRAKE LAG
V	V	A	Kg-cm	sec
6.0-15.0	12	0.4max	2 min.	0.5 max.

3.Curves



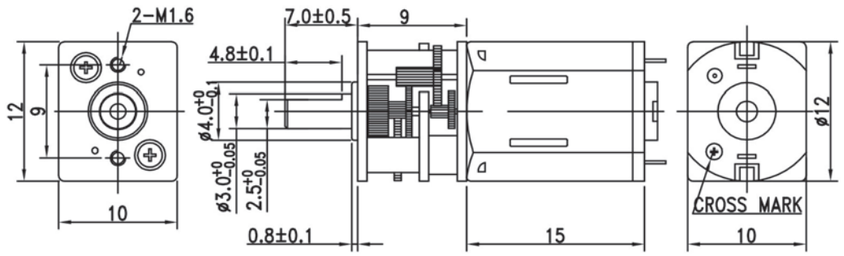


FFN20+SA12

GEARED MOTOR

Typical Application :
Automatic Door Locks

1.Typical Figure



Unit: mm

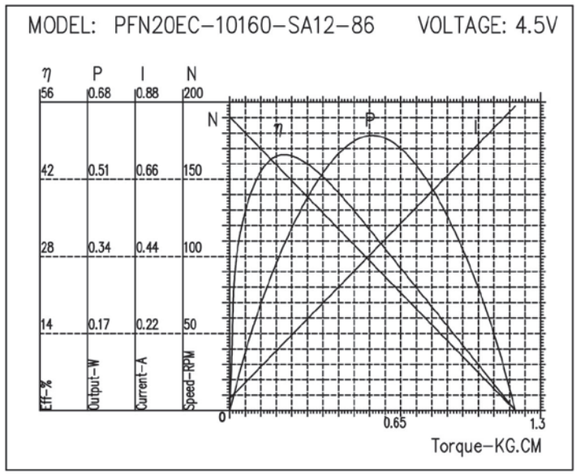
GEAR BOXES SPECIFICATIONS

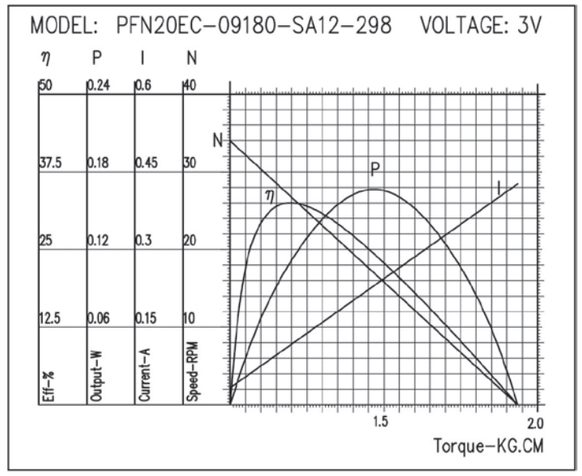
Reduction ratio	1/10	1/19~29	1/60~86	1/102~134	1/197~298
Rated tolerance torque (kg.cm Max)	0.2	0.3	0.5	0.8	1.0
Max momentary tolerance torque (kg.cm)	0.6	0.9	1.5	2.4	3.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FFN20EC-10160-SA12-86	3.0-6.0	4.5V CONSTANT	190	0.03	160	0.17	0.2	2.78
FFN20EC-09180-SA12-298	1.5-5.0	3V CONSTANT	34	0.03	28	0.1	0.5	6.94

3.Curves



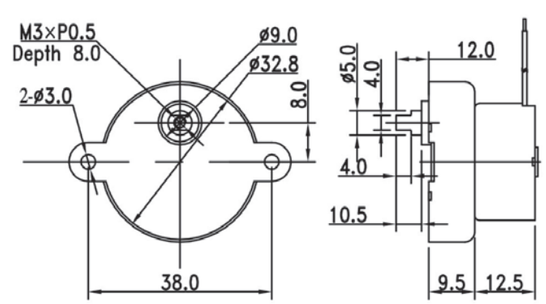


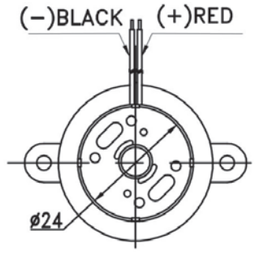
FR300+RB32

GEARED MOTOR

Typical Application :
Voltage-stablizers

1.Typical Figure





Unit: mm

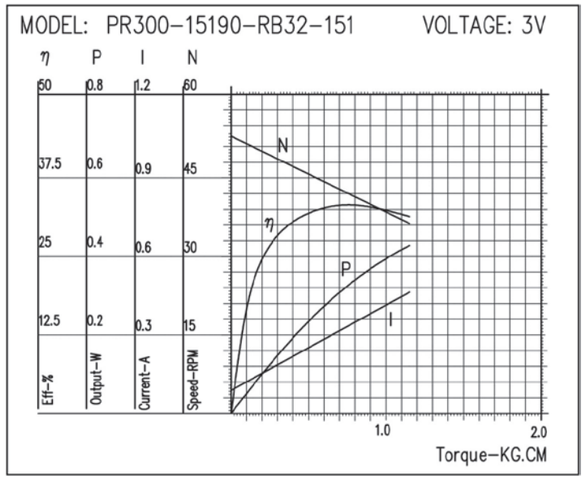
GEAR BOXES SPECIFICATIONS

Reduction ratio	1/30	1/64	1/151	1/758
Rated tolerance torque (kg.cm Max)	0.15	0.30	0.75	2.5

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR300-15190-RB32-151	3.0-6.0	3V CONSTANT	53	0.09	42	0.35	0.75	10.4

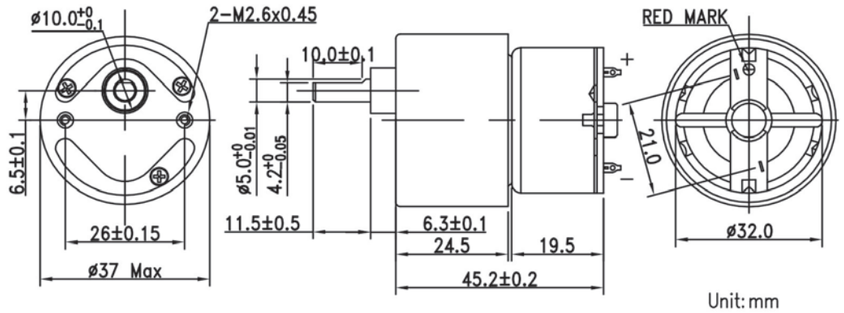
3.Curves



FR500+RB35A GEARED MOTOR

Typical Application : Vending Machines

1.Typical Figure



Unit: mm

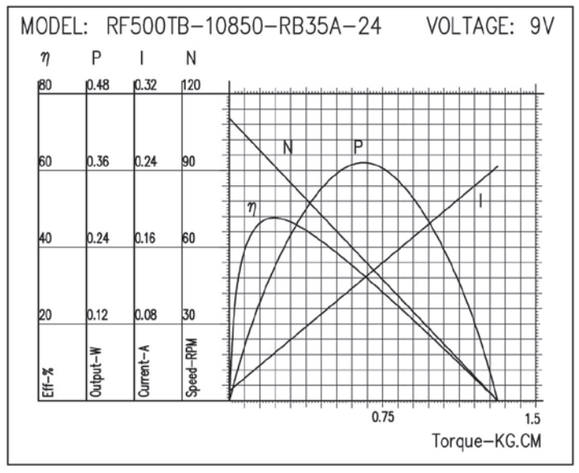
GEAR BOXES SPECIFICATIONS

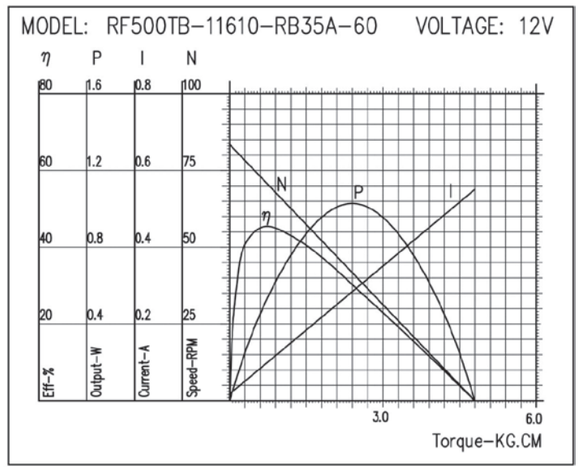
Reduction ratio	1/24	1/60
Rated tolerance torque (kg.cm Max)	0.5	1.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR500NC-10850-RB35A-24	3.0-9.0	9V CONSTANT	110	0.01	86	0.065	0.3	4.17
FR500NC-11610-RB35A-60	3.0-12.0	12V CONSTANT	83.5	0.02	65.5	0.13	1	13.89

3.Curves

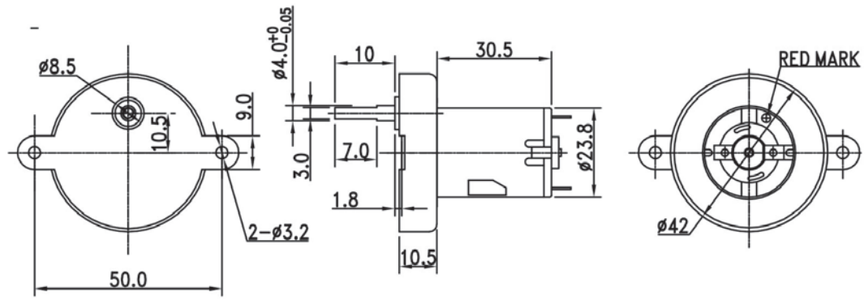




FR280+RB42 GEARED MOTOR

Typical Application : Voltage-stablizers

1.Typical Figure



Unit: mm

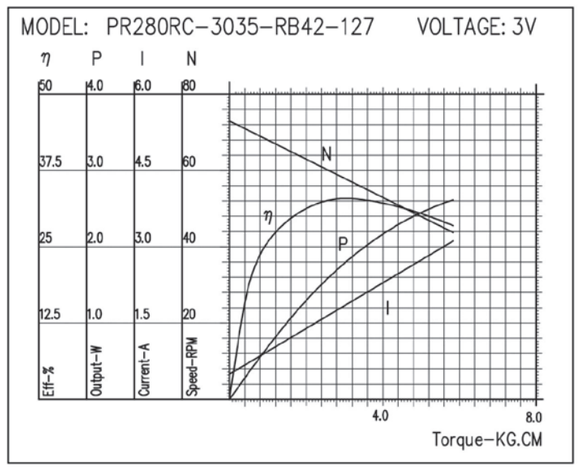
GEAR BOXES SPECIFICATIONS

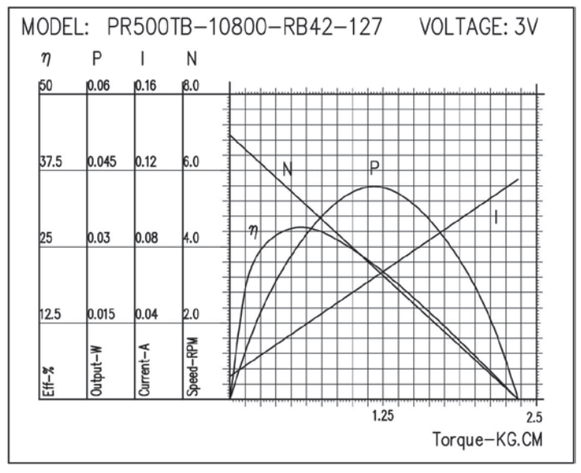
Reduction ratio	1/127
Rated tolerance torque (kg.cm Max)	1.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR280RC-3035-RB42-127	3.0-9.0	3V CONSTANT	73	0.5	68	0.9	1	13.89
FR500NC-10800-RB42-127	3.0-9.0	3V CONSTANT	6.9	0.012	6	0.025	0.3	4.17

3.Curves



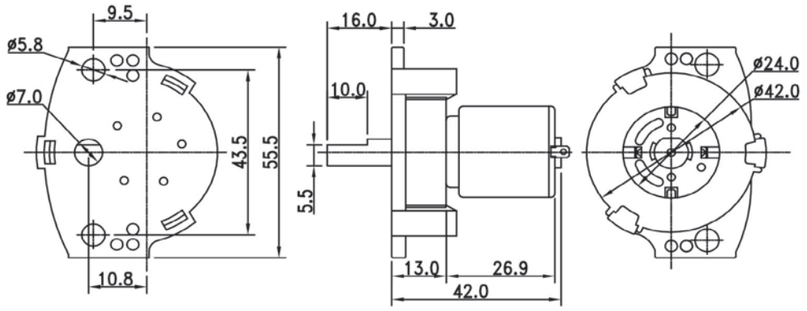


FR260+RB42P

GEARED MOTOR

Typical Application :
Voltage-stablizers

1.Typical Figure



Unit: mm

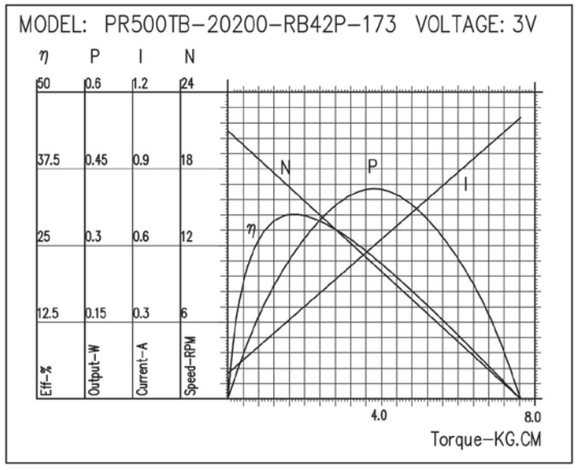
GEAR BOXES SPECIFICATIONS

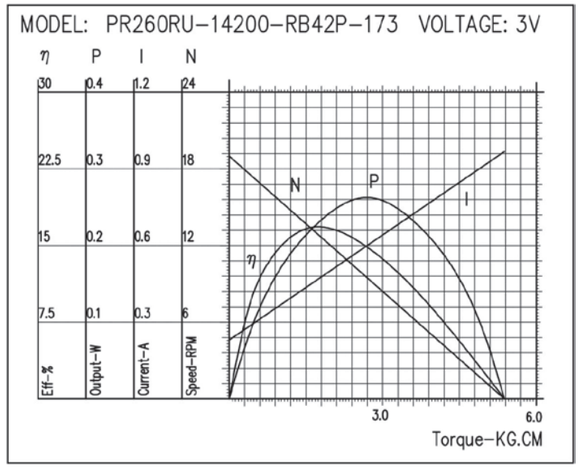
Reduction ratio	1/173
Rated tolerance torque (kg.cm Max)	1.4

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR500NC-20200-RB42P-173	3.0-6.0	3V CONSTANT	21	0.1	17	0.28	1.4	19.44
FR260RU-14200RB42P-173	3.0-6.0	9V CONSTANT	19	0.23	15.5	0.35	1	13.89

3.Curves



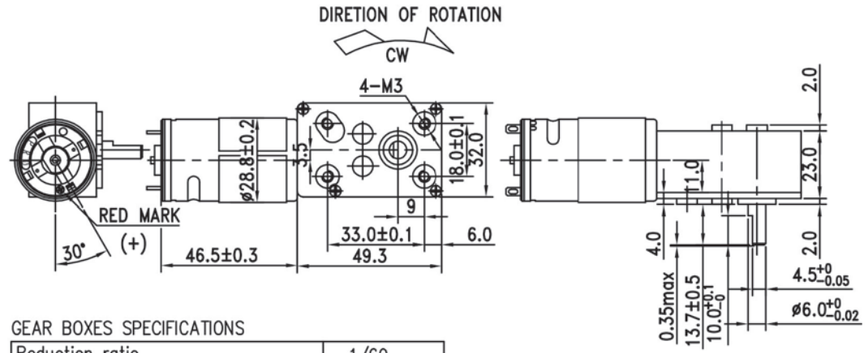


FR395+SB49

GEARED MOTOR

Typical Application :
Automatic
Doors&Windows

1.Typical Figure



Unit: mm

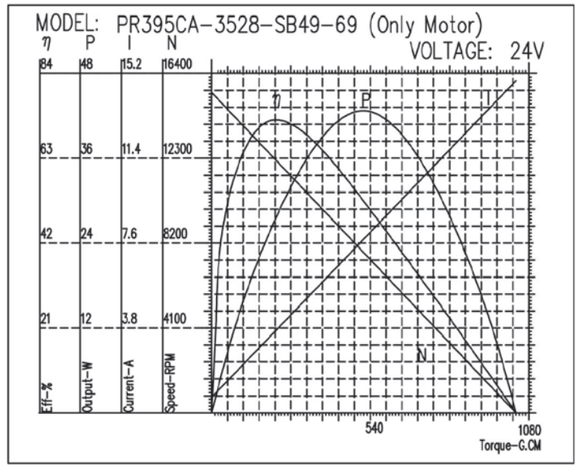
GEAR BOXES SPECIFICATIONS

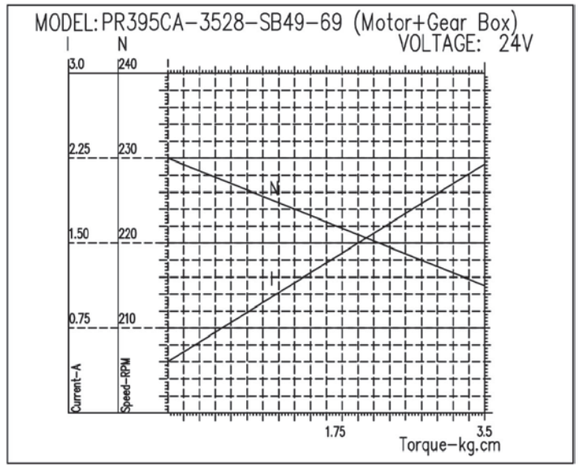
Reduction ratio	1/69
Rated tolerance torque (kg.cm Max)	3.5

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR395CA-3528-SB49-69	8.0-16.0	12V CONSTANT	230	0.35	215	2	3.5	48.6

3.Curves



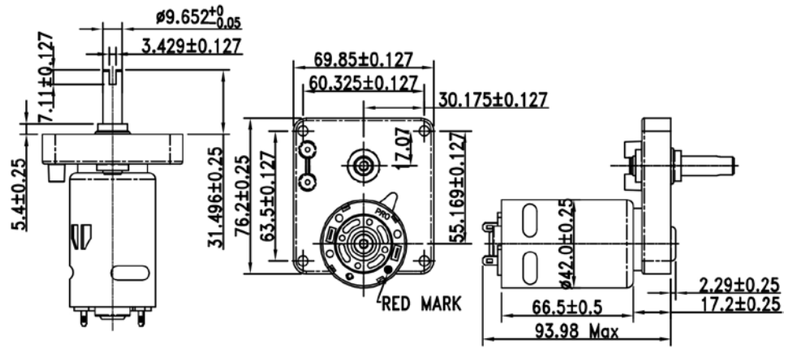


FR775+SB76

GEARED MOTOR

Typical Application : Coffee Machines

1.Typical Figure



Unit: mm

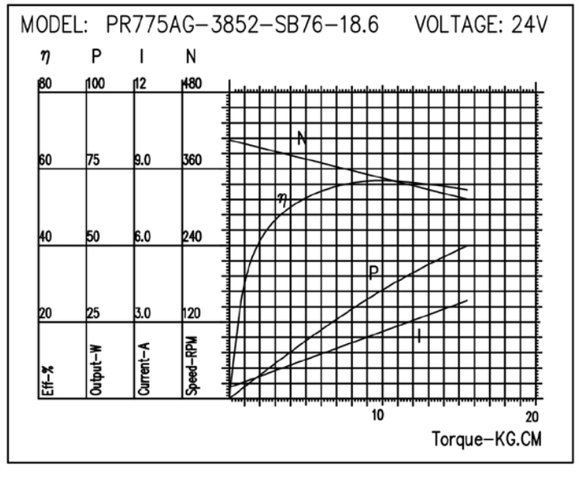
GEAR BOXES SPECIFICATIONS

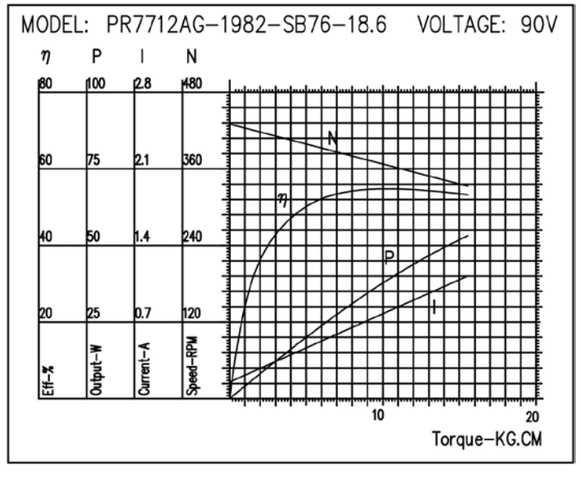
Reduction ratio	1/18.6,1/32.4
Rated tolerance torque (kg.cm Max)	8.64

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR775AG-3852-SB76-18.6	12.0-30.0	24V CONSTANT	405	0.44	361	2	8.64	120
FR7712AG-1982-SB76-18.6	90.0-110.0	90V CONSTANT	430	0.15	376	0.68	8.64	120

3.Curves



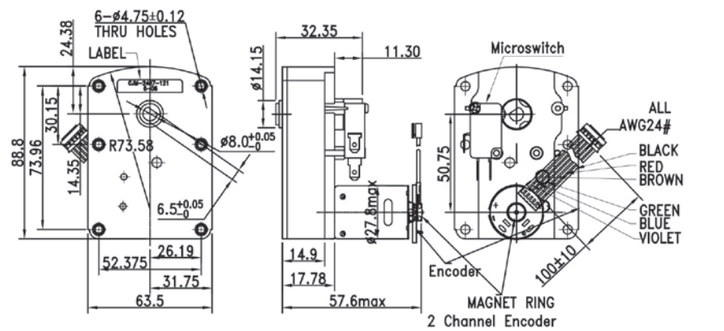


FR365+SB88

GEARED MOTOR

Typical Application : Vending Machines

1.Typical Figure



GEAR BOXES SPECIFICATIONS

Unit: mm

Reduction ratio	1/420
Rated tolerance torque (kg.cm Max)	10.1

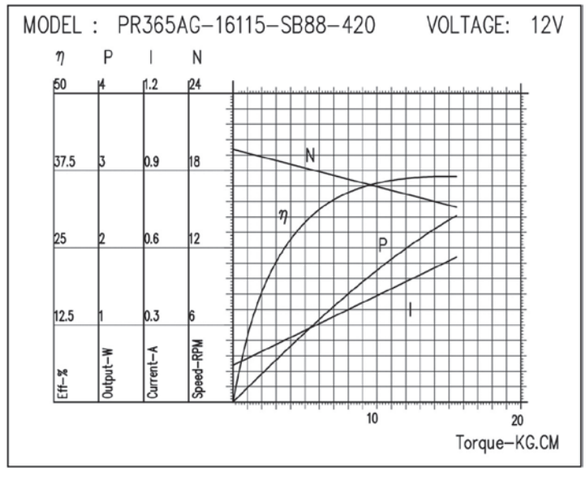
Connections:

1.	Black	:-MOTOR
2.	Red	:+MOTOR
3.	Brown	:HALL SENSOR Vcc
4.	Green	:HALL SENSOR GND
5.	Blue	:HALL SENSOR A Vout
6.	Violet	:HALL SENSOR B Vout

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR365AG-16115-SB88-420	3.0-12.0	12V CONSTANT	19.6	0.14	16.8	0.4	10.1	140

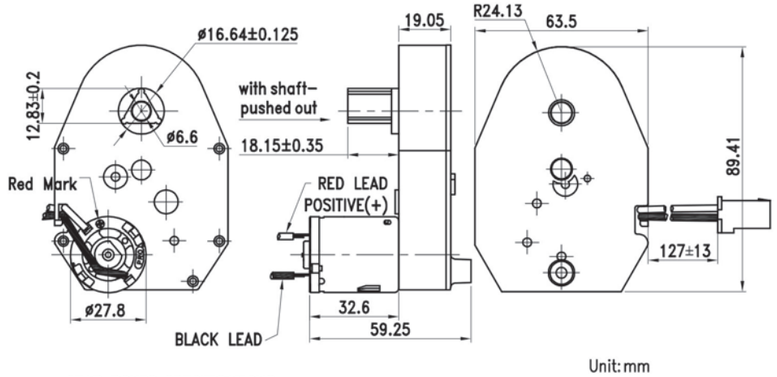
3.Curves



FR365+SB89

GEARED MOTOR
Typical Application : Vending Machines

1.Typical Figure



Unit: mm

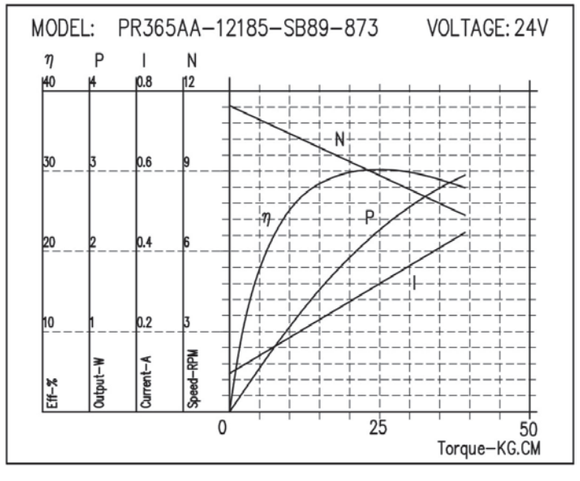
GEAR BOXES SPECIFICATIONS

Reduction ratio	1/873
Rated tolerance torque (kg.cm Max)	27.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR365AA-12185-SB89-873	24.0-30.0	24V CONSTANT	11	0.1	8.8	0.32	27	375

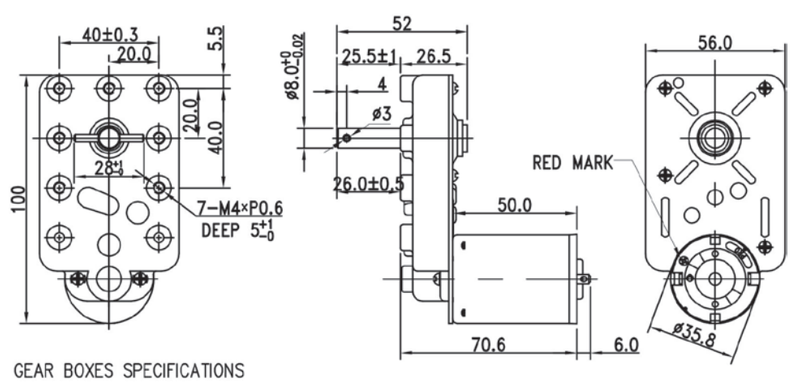
3.Curves



FR540+SB91

GEARED MOTOR
Typical Application : Vending Machines

1.Typical Figure



Unit: mm

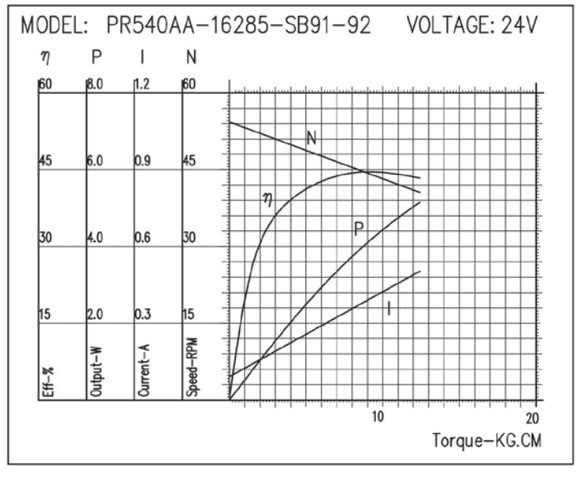
GEAR BOXES SPECIFICATIONS

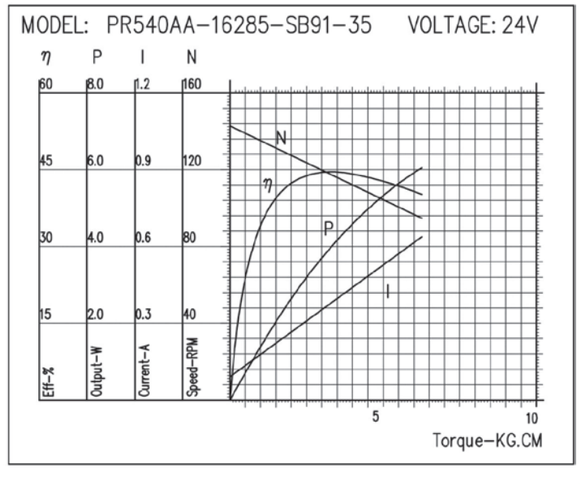
Reduction ratio	1/35	1/92
Rated tolerance torque (kg.cm Max)	2.0	5.0

2.Specification

MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR540AA-16285-SB91-92	24.0-30.0	24V CONSTANT	55	0.09	50	0.25	5	70.5
FR540AA-16285-SB91-35	24.0-30.0	24V CONSTANT	143	0.09	127	0.26	2	28.2

3.Curves





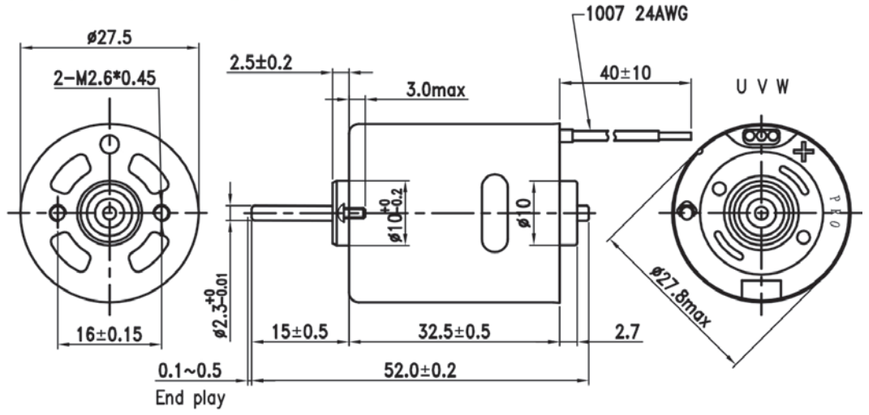
BLDC SERIES
無刷馬達

FB366

BLDC SERIES

Typical Application :
Model Airplanes

1.Typical Figure



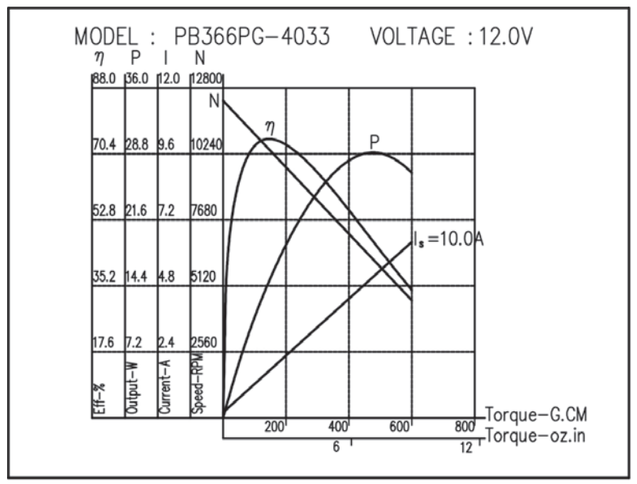
NOTICE: ABOVE DWG ONLY SHOW MOTOR ,NOT INCLUDING DRIVING PCB

Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FB366PG-4033	10.0-14.0	12V CONSTANT	12300	0.2	10799	1.42	1.57	113	12.6	73.8	12.72	916

3.Curves

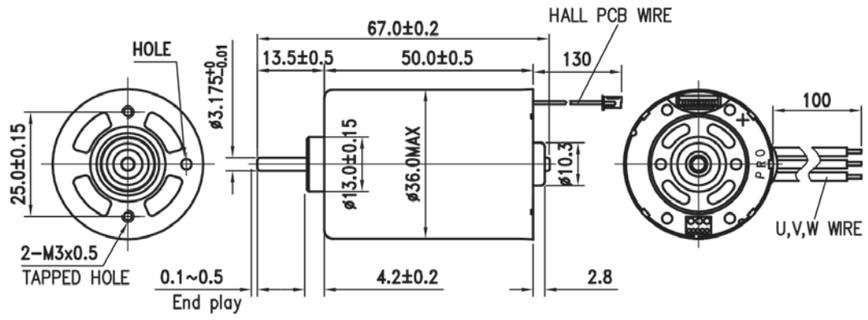


FB546

BLDC SERIES

Cordless Power Tools

1.Typical Figure



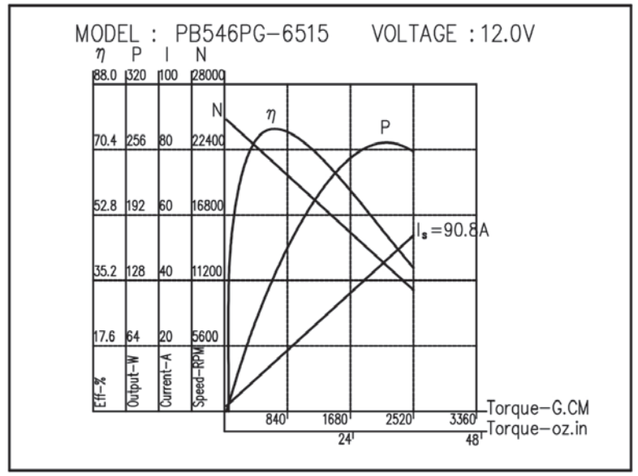
NOTICE: ABOVE DWG ONLY SHOW MOTOR ,NOT INCLUDING DRIVING PCB

Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FB546PG-6515	10.0-14.0	12V CONSTANT	25000	1.6	22070	12.1	6.67	4800	108.9	75	56.9	4097

3.Curves



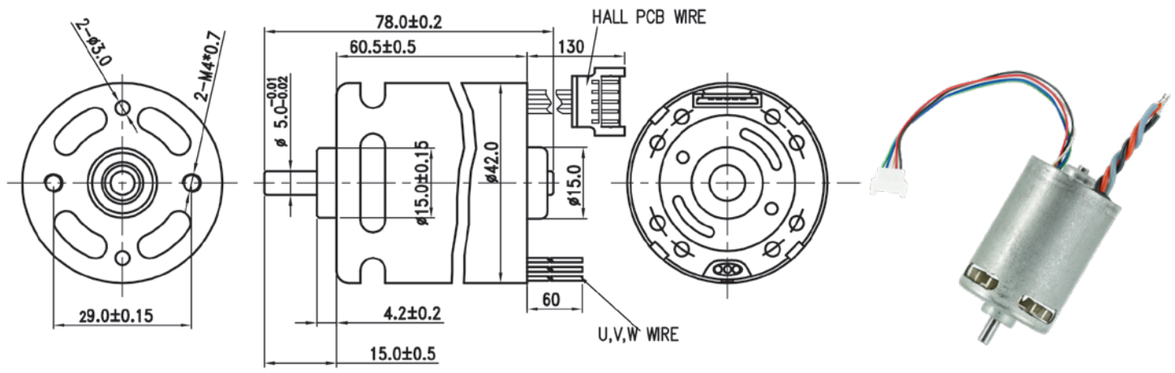
FB756

BLDC SERIES

Typical Application :

R

1.Typical Figure



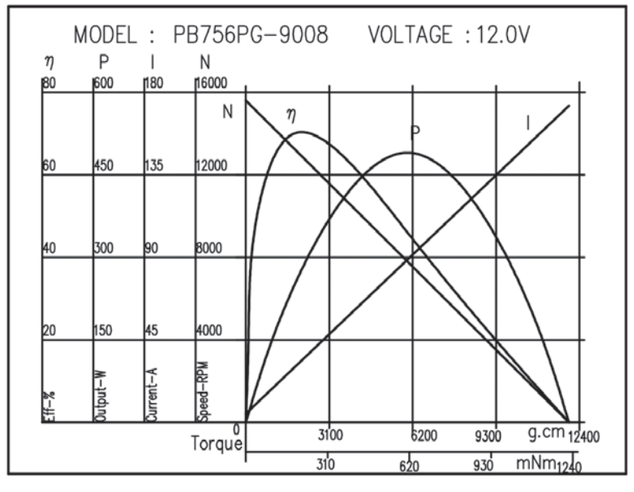
NOTICE: ABOVE DWG ONLY SHOW MOTOR ,NOT INCLUDING DRIVING PCB

Unit: mm

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FB756PG-9008	10.0-18.0	12V CONSTANT	15600	4.7	13391	28.5	24.1	1733	238.4	69.7	170.1	12236

3.Curves

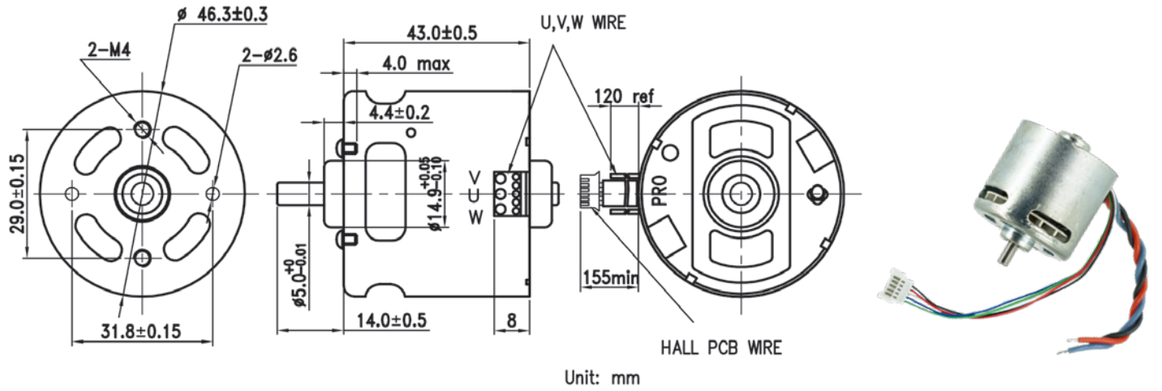


FB836

BLDC SERIES

Cordless Power Tools

1.Typical Figure



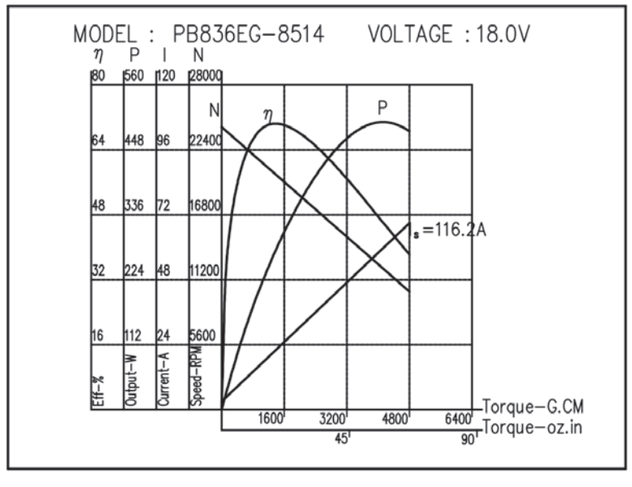
Unit: mm

NOTICE: ABOVE DWG ONLY SHOW MOTOR ,NOT INCLUDING DRIVING PCB

2.Specification

MODEL	VOLTAGE		NO LSAD		AT NAXIMUM EFFICIENCY						STALL TORQUE	
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE		OUTPUT	EFF		
			rpm	A	rpm	A	oz-in	g-cm	w	%	oz-in	g-cm
FB836EG-8514	16.0-21.0	18V CONSTANT	24360	3.1	20940	19	15.46	1113	239.4	70	110	7924

3.Curves



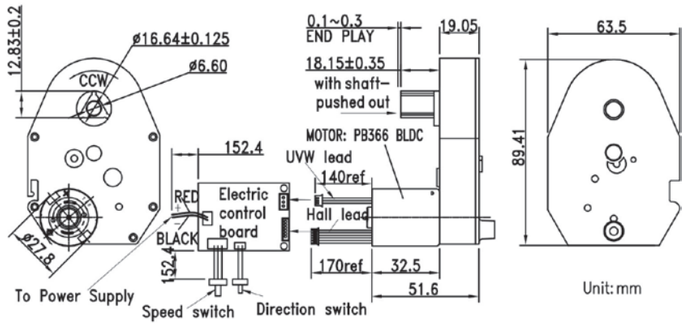
BLDC GEARED MOTOR
無刷齒輪箱馬達

FB366+SB89

BLDC SERIES

Typical Application :
Vending Machines

1.Typical Figure



GEAR BOXES SPECIFICATIONS

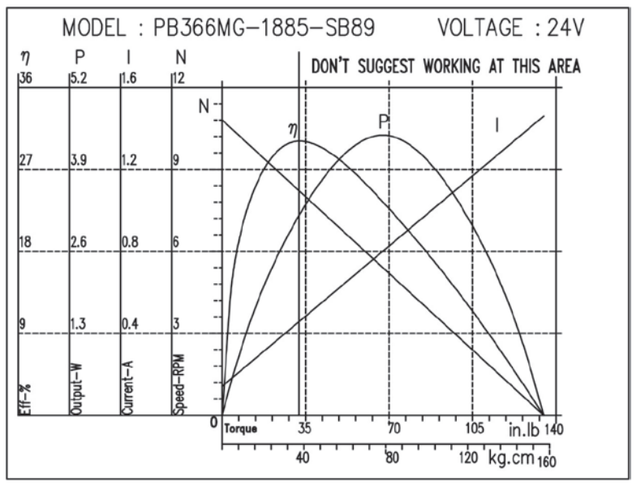
Reduction ratio	1/873
Rated tolerance torque (kg.cm Max)	27.0

NOTE:
Electric control board only shown for illustration,not provided with motor

2.Specification

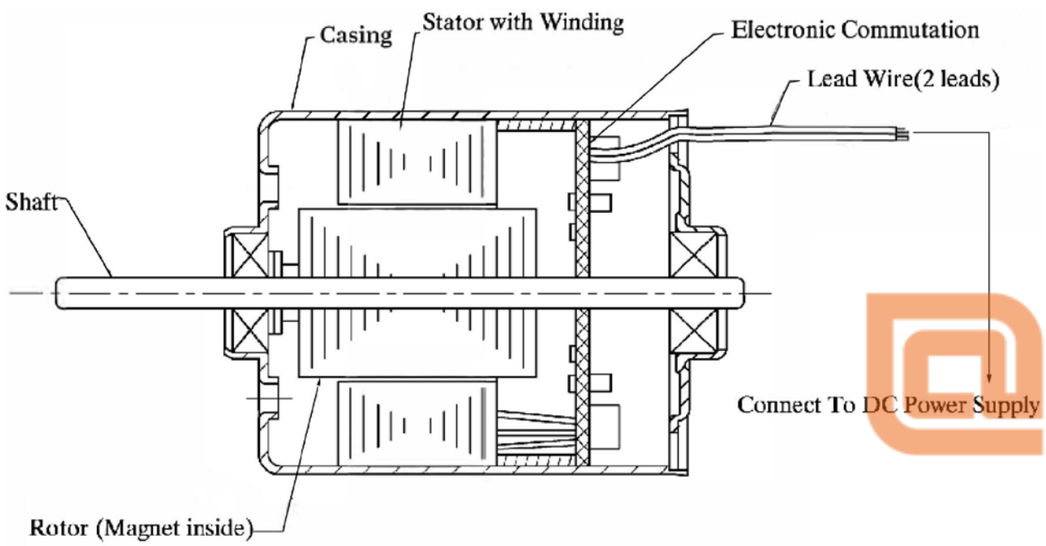
MODEL	VOLTAGE		NO LOAD		RATED TORQUE			
	OPERATING RANGE	NOMINAL	SPEED	CURRENT	SPEED	CURRENT	TORQUE	
			rpm	A	rpm	A	Kg-cm	oz-in
FR366MC-1885-SB89	24.0-30.0	24V CONSTANT	11	0.14	9	0.35	27	23.5

3.Curves



BLDC SERIES NOTICE
無刷馬達規範

Simply Type Brushless Motor



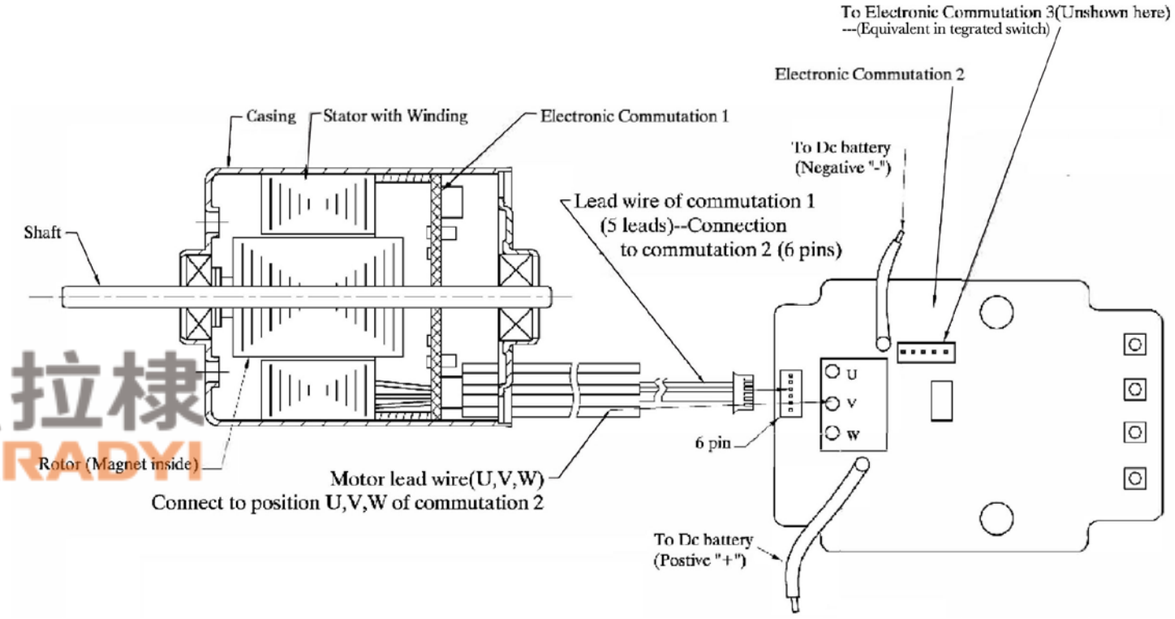
Notes:

SIMPLY TYPE BRUSHLESS MOTOR

1.Only 2 lead wires;
2.Electronic commutation inside the motor.
3.Lead wire connect to Dc power supply and motor running.When connecting the lead wire to power supply ,it is important for postive lead wire to "+" terminal of power supply,and negative to "-".Or the commutation will be destroyed.
4.Dc power may be power supply or battery or other Dc power.
5.Only single direction rotation,such as Cw or Ccw,no double rotation.

Complex Type Brushless Motor

With HALL SERSOR



Notes:

COMPEX TYPE BRUSHLESS MOTOR

1. 3 sets of electronic commutation. set 1 inside motor,the others outside motor.
2.Commutation 1 --signal board;
Commutation 2--controlling (driving)board;
Commutation 3--switch.
3.DC power must be battery,and positive "+",negtive"-" each connection to commutation 2.
4.Introduction of commutation function :
1)Low voltage protection;
2) Over voltage protection;
3) Over current protection;
4)Stalled protection;
5)Fast braking;
6)Controlling speed as the feedback to load or current;
7)Multi-mode operation (adding the life time of battery);
8) Saving operating histroy.

法拉棣
FARADYI