

# *QS Motor*

Reporter: Steven Shi



**QSMOTOR**

2015-01-21 V1.1

# Motor Detail

- (1). Company Introduction
- (2). Advantage of Qs Motor
- (3). V1/V2/V3 Type Motor
- (4). Steel Seal & Life Time of Motor
- (5). Performance Curve and Drawing
- (6). Trade Details

# (1). Motor Introduction

Taizhou Quanshun Motor Co., Ltd. started to research the electric vehicle motor in 2000, and began to produce in mass production of **Brushless DC PMSM electric hub motor**(350w-800w) in 2003, which called "**QS Motor**".

In 2006, Quanshun researched and developed the mass produce high power Brushless DC electric hub motor(1000w~8000w), which open a new big market.

QS motor has the diversified models with the complete range of motor power, By using high-grade inner configuration, the motors have high efficiency(85%~92%) and low loss on electricity transform, long working life(3~5 years). The Full and complete inspection for all motors before shipping, Low repair rate(<1%). We also support the OEM/ODM. The other advantage of Quanshun motor is it with patent magnetic circuit design, automatic transmission, etc.



For the certificates, QS Motor has passed ISO9000, CE certificates, and we strictly implement TS16949 system. Meanwhile, we own factory inspection report by SGS.

For the Products research & development, QS motor Invest 5% of sales in products research & development annually.

Exported assembly electric vehicle: we cooperated with indigenous high-end electric motorcycle manufacturers, such as: UGbest, Jonway, Yadea, Luyuan, E-max.

And We established a long-term cooperation relationship with **Terra Motors** in Japan, **Lightning Motorcycles** in America.



## (2). Advantages of Qs Motor

1. MANUFACTURER of high quality Electric Bike/Scooter/Motorcycle/Tricycle/Car Hub in-wheel motor (CE approved) with competitive price for 10 years! Ranging 350W~10kW, 48~150V, 30~120KPH, with the customers of Terra Motors, Current Motor, Cromotor, Lightning Motorcycles, etc.
2. Good Quality Control. Choose good raw materials from the beginning to the end, All the motor are inspected before delivery.  
Long working life(3-5 years), High Efficiency (84-92%), repair rate less than 1%.
3. Well-trained sales and engineers provide you with professional solutions & after sale issues. CAD Drawing & Test Report are available.
4. Support OEM/ODM and open mold. Main parameters could be customized, e.g., RPM, dimension of axle/shaft, PCD & CB, customized Logo;



### (3). V1/V2/V3 Type Motor

There are three types,  
Normal/V1 type (low cost), Export/V2 type (Cost-effective) and Extra/V3 type (Best Performance).

#### 1. Difference between V1 & V2

Holder: Iron(V1), Aluminum (V2)

Hall: One hall with Normal connector(V1), Two halls with Waterproof connector(V2)

Stator: V2 have a stronger configuration, more cooper, thicker section surface, energy saving in usage.

Magnetic Steel Grade:  $V2 \geq V1$

Efficiency: 84~87%(V1) 86~88%(V2)

In short, normal type is standard configuration, while export type is high configuration.

The price differs because of the cost of raw materials.

#### 2. Difference between V2 & V3

The raw materials are alike, main difference in inner construction.

For V3 (16 Pole Pairs): stronger configuration than V2, wider lamination, more cooper wire/phase wire and thicker Cross-sectional area section, bear more current in usage.

Magnetic Steel: V3 is wider and thicker.

Efficiency: 86~88%(V2) 88~92%(V3)

Thus, V3 have best performance.



## (4). Steel Seal & Life Time of Motor

We could laser print it on side cover or edge of side cover.

For Extra/V3 type motors(e.g. WP20040X140607 7355)

WP= Extra/V3 type 200=2000W, 300=3000W

40 means winding X means 32 pieces magnetic steel

140607 means producing date, 07th, June, 2014. 7355, is producing serial number

For Export/V2 type motors(e.g. QSMOTOR 48V3000W 140720 604329)

140720 is the producing date, it's 20th, July, 2014.

60 mean is rated speed, it's 60km/h. 4329 is producing serial number.

P.S.: We define power base on rated output power, rather than peak output power.

The life time of motor depends on usage.

For general usage, it's about 3-5 years, and it will be 5-7 years if it work in good condition.

For testing and abusing usage, the lifetime will decrease accordingly.

E.g., For 3kW V2/V3 motor, we suggest peak 70-80A battery current for general usage (72V). It's most stable configuration & longest life time.

Some EV enthusiast adjust it to be 150A, the output power is far more than 3kW. QS motor could also work, which might not as stable as former one. For a long time in high current/power, the motor might over heat & even burnt. We strongly suggest to install Thermic Probe (KTY 83/122), so that controller will turn off when it's 120°C inside of motor.

We call it overvoltage usage, the life time might be shorter, and V3 will work better than V2.

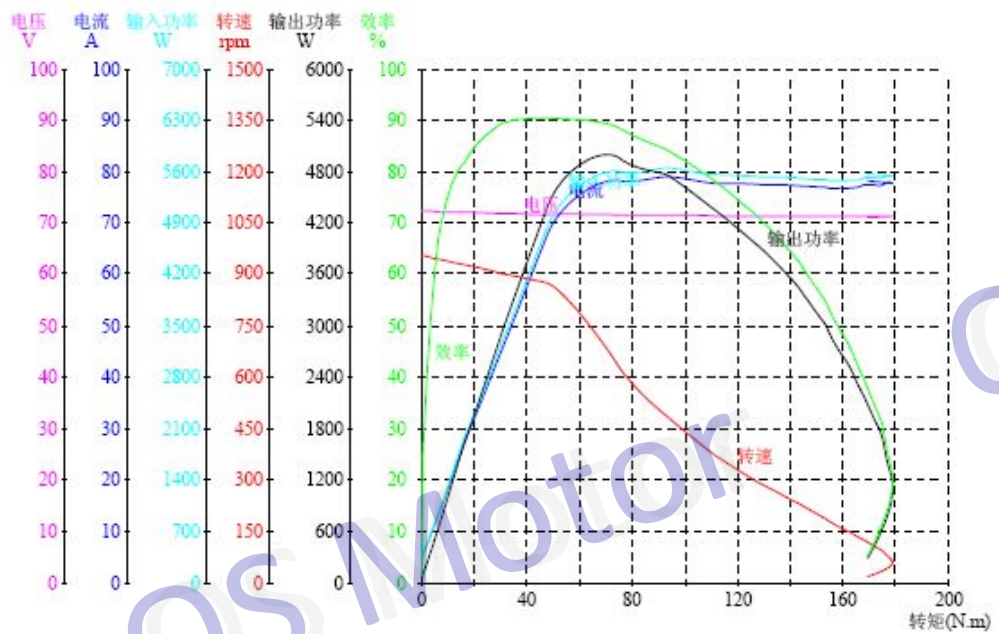


# (5). Performance Curve and Drawing

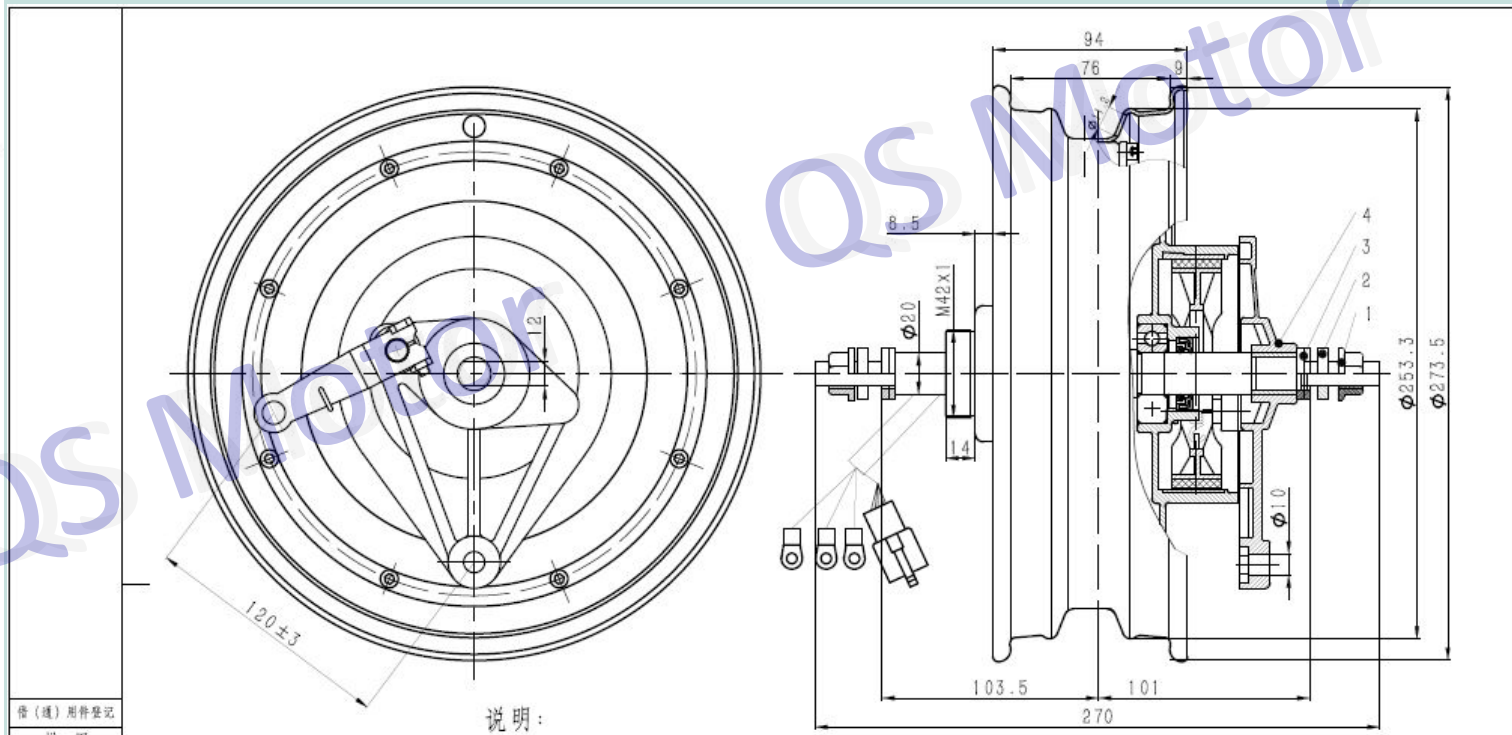
They're available for general motors, here is one sample below(10寸\*3.0 3kW V3 type Hub Motor).

电机测试报告

客户名称(Customer): 额定电压(Voltage):  
 客户档案(Filename): 10 206 ZN72v3000w 2098183 956 轴径: 33mm (Hub):  
 电机型号(Type): 测试人员(Tester):  
 电机编号(Number): 测试日期(Test Date): 2014.09.22



特征点	电压	电流	输入功率	转矩	转速	输出功率	效率
	V	A	W	N.m	rpm	W	%
不加载点	72.36	4.204	304.2	0.0	956.5	4.00	1.3
最高效率点	71.56	67.15	4805	47.5	873.3	4351	90.5
最大输出功率点	71.52	79.05	5654	69.0	704.6	5097	90.1
最大转矩点	71.24	77.53	5524	182.2	52.9	1009	18.2
结束点	71.17	78.14	5560	169.2	16.4	290.5	5.2



- 说明:
- M16x1.5螺母2只(左右各一只)。
  - 5mm防转垫片(左右各一只)。
  - 3mm平垫片4只(左右各2只)。
  - 110截刹, 管高22。

借(通)用件登记
描图
CAD制图
旧底图总号
底图总号
签字
日期

技术参数:  
 1、电压 (Voltage) : 36~72V  
 2、功率 (Power) : 500~800W  
 3、速度 (Speed) : 30~45km/h

				10寸3.0宽		QS-205DJ-WX10C3	
				205截刹电机外形图		图样标记 重量 比例	
				(30H)		S A 1:1	
						共 12 张 第 1 张	
						台州市全顺电机有限公司	



# (6). Trade Details

## For produce time

For normal double shaft motor, 6-8 working days after receiving the payment.

For single-shaft or customized motor, 12-15 working days after receiving the payment.

## For Payment

Generally, we prefer T/T, Money Gram, Western Union 100% in advance (for sample).

Meanwhile, we could also accept paypal.

There will be extra cost for transaction fee: Total cost\*4.4%+0.3

Withdraw fee: USD 35.0 (We could bear USD 31.5, and charge USD 3.5 for you).

## For Package

Standard export packing 1. polyfoam + carton box 2. Or according to customer's requirements



## Motor Type

- (1). Electric Scooter-motorcycle Motor & kits
- (2). Electric Spoke Motor & kits
- (3). Electric Car Motor & kits
- (4). Electric Single-Shaft Motor & kits
- (5). Electric E-bike Integrated Motor & kits
- (6). BLDC PMSM Non Hubmotor(New)

# Performance

Power (W)	Battery Current (A)	Voltage (V)	Wheel Size (Inch)	Matching Tyre Model(e.g.)	Stator Diameter (mm)	Magnet Height (mm)	Speed (KPH)		
							48V	60V	72V
500	30	48-72	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	28	30-40	30-40	35-40
800	35	48-72	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	30	30-45	30-45	35-45
1000	40	48-96	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	35/40	30-50	30-50	35-50
1500	50	48-96	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	45	30-60	30-60	35-60
			13x3.5"	120/70-13 130/60-13	273	28			
2000	50-70	48-96	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	45/50	30-65	30-70	35-70
			12x3.5"	90/90-12, 120/70-12	260	35			
			13x3.5"	120/70-13 130/60-13	273	28			
3000	60-70	48-96	10x2.15", 10x3.0", 12x2.15", 12x3.5"	3.0-10, 3.5-10, 90/90-12, 120/70-12	205	50	30-65	35-70	40-70
	70-75	48-96	12x3.5"	90/90-12, 120/70-12	260	40	30-65	35-70	40-75
	70-80	48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	40	40-65	40-80	45-80
4000	80-100	48-96	12x3.5"	90/90-12, 120/70-12	235	45	45-65	45-80	45-90
	80-100	48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	40			
5000	80-120	48-96	12x3.5"	90/90-12, 120/70-12	260	45	45-65	45-80	45-90
		48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	45	45-65	45-80	45-100
6000	90-150	48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	45	45-70	45-90	45-110
7000	100-170	48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	50	45-70	45-90	45-115
8000	100-200	48-144	13x3.5", 14x1.75", 14x2.5", 16x3.0"	130/60-13, 90/90-14, 110/80-14, 110/80-16	273	50	45-70	45-90	45-120

P.S.: Above chart for reference only. In practice, the speed will be fluctuated according to **Wheel Size, Loading Weight, EV Cross Section Area, Rolling Resistance & Wind Resistance**

## Specification



Hub Motor Specification			
Motor Manufacturer	Taizhou Quanshun (QS) Motor Co., Ltd.		
Power	500~3000W	1500W~5000W	2000~10000W
Motor Type	BLDC Permanent Magnet Outer Rotor Motor with CE Approved, Support Regenerative Braking & Reverse function		
<b>E-Scooter Motor</b>	10"~12" 205 Motor	12" 260 Motor	13"~16" 273 Motor
<b>E-Bike Motor</b>	205 Spoke Motor	/	273 spoke Motor
<b>E-Tricycle Motor</b>	10"~12" 205 Motor	/	13"~16" 273 Motor
<b>E-car Motor</b>	205 E-car Motor	/	273 E-car Motor
Magnet Height	28~50mm	28~45mm	28~50mm
Motor pole pairs Np	16(V3) or 23(V2)	16(V3) or 24(V2)	16(V3) or 28(V2)
Voltage	DC48V~144V	DC48V~144V	DC48V~144V
Battery Current Limit	35~80A	50~100A	60~200A
Max Torque	80-160N.m	100~250N.m	150-350N.m
Max RPM	300-1100RPM	400~1300RPM	500-1500RPM
Max Speed	40-90km/h	50~110km/h	70-120km/h
Customize	Voltage, RPM, Torque, Drop-outs, PCD & CB		
Phase Angle	120 degree		
Efficiency	85.0~92.0%		
Thermic Probe	KTY 83/122, KTY84/130, 10K@25C NTC(Optional)		
Adapt Wheel/Tire	10inch~16inch (E-scooter), 12inch~28inch(Ebike), 12inch~24inch(E-car)		
Adapt Controllers	Square Wave Controller(e.g. Kelly) Sine Wave Controller(e.g. Sabovton, Linbo, Sevcon)		
G.W./N.W.	11.5~26.0kg/10~24.0kg (per piece)		
Brake	Disc or Drum		
Water Proof Grade	IP54		
Hall	Two Hall(one for spare hall, in case of damage)		
Certification	Aduit Report & CE by SGS, ISO/TS		
Application	Electric Scooter/Motorcycle/Bike/Tricycle/Car		

# 1. Electric Scooter-motorcycle Motor & kits

We have the Electric motorcycle wheel Motor from 10inch to 16inch, and which power is 500W-10000W. It could be balck, white or golden, even white & luminous.

## 10inch Motor Features

10x2.15" 10x3.0"



## 12inch Motor Features

12x2.15" 12x3.0" 12x3.5"



**13inch Motor Features**  
13x3.5"



**14inch Motor Features**  
14x1.75" 14x2.5"



**16inch Motor Features**  
16x3.0"



## 17inch Motor Features(New)

17x3.5"

17\*3.5" (2kW-8kW)



## Dual Stator Motor Features

10x3.0" 13x3.5"

10inch(2\*3kW)

13inch (2\*8kW)



## White & Luminous

Most motors are available

white & luminous



**Water Cooled Motor  
(customized)**  
above 5kW



**Spin Motor without Hall  
sensor(New Type)**  
15"



QS Motor

QS Motor





# Applications



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Web: <http://www.cnqsmotor.com/en/>  
<http://tzquanshun.en.alibaba.com/>

# Electric scooter/motorcycle kits

**We could provide the following kits:**

1. Controller
2. Throttle twist
3. Brake system
4. Tyre
5. Ignition
6. DC convertor

For Controller, we work closely with Kelly Controller, Sabvoton Controller & Lingbo Controller, meanwhile, we cooperate with domestic cheaper controller such as HY, GB etc.

**So we could provide a suitable controller in a good price also.**



## 2. Electric spoke motor and kits

We produce 205 spoke motor from **500W to 3000W**, apply to e-bicycle and e-scooter/motorcycle.

If apply to e-bicycle, single/three freewheel are available, drop-out at least 150mm, disc brake **6\*M5, PCD 44mm**.

If apply to e-scooter/motorcycle, drop-out at least 200mm, disc brake **3\*M8, Ø80mm**.

And 273 spoke motor from **3000W to 8000W**, apply to e-bicycle and e-scooter/motorcycle.

The drop-out at least 200mm, disc brake **3\*M8, Ø80mm**.

QS205-02B is bicycle type, 500w (New)

Drop-outs 135mm

QS205-01B is bicycle type, 800w-3kw

Drop-outs 150mm, PCD6\*44mm

QS205-01M is motorcycle type, 800w-3kw

Drop-outs 200mm, PCD3\*80mm

QS273-01M is motorcycle type, 3kw-8kw

Drop-outs 200mm, PCD3\*80mm

QS273-01B is bicycle type, 1.5kw-4kw (Developing)

Drop-outs 150mm, PCD6\*44mm

QS205-02B



QS205-01B



QS205-01M



QS273-01M



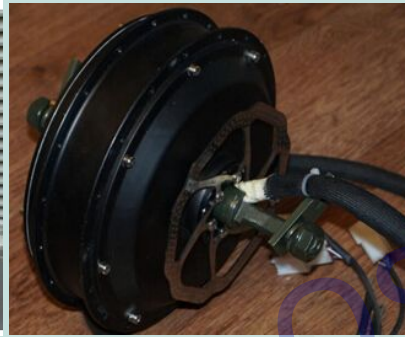
QS273-01B

TBD



# 205 Spoke Hub Motor and kits

1. Motor (500W-3000W)
2. Controller
3. Throttle Twist
4. Hand brake system
5. Speedometer
6. Spoke Wheel



# 273 Spoke Hub Motor and Kits

1. Motor (3W-8kW)
2. Controller
3. Throttle Twist
4. Hand brake system
5. Spoke Wheel



### 3. Electric Car Motor & kits

We produce 205 hub motor from **1000W to 3000W**, which could fit in 10inch and 13inch wheels (PCD could be customized,  $CB \geq 60\text{mm}$ ).

And 273 hub motor from **3000W to 8000W**, which could fit in  $\geq 14\text{inch}$  (PCD could be customized,  $CB \geq 60\text{mm}$ ).

The most hot sale power is **8000W extra type motor (50mm magnet height)**, which the max power could reach to 12kW. And the efficiency is above 87.0%.

The max power of our hub motor is 12kW 273 (70mm magnet height) e-car motor, which the max power could be reach to 15kW.

QS Motor

QS Motor



# Specification for QS Best selling 8000W extra type motor



## Hub Motor Specification

Motor	Taizhou Quanshun (QS) Motor Co., Ltd.		
Motor Type	BLDC Permanent Magnet Outer Rotor Motor (Gearless)		
Power	8000W(Rated), 11500W (Peak)		
<b>E-Scooter Motor</b>	13"~16" 273 Motor	<b>E-Tricycle Motor</b>	13"~16" 273 Motor
<b>E-Bike Motor</b>	273 Spoke Motor	<b>E-car Motor</b>	273 E-car Motor
Magnet	50mm (273) height, 16 (V3)/28 (V2) pole pairs		
Phase	16mm <sup>2</sup>		
Voltage	48~150V(13"-16")		
	DC 72V	DC 96V	DC 120V
Battery Work Current	100-200A	70-150A	60-120A
Max Torque	200 N.m-350 N.m	200 N.m-350 N.m	200 N.m-350 N.m
Max RPM	880RPM-1405RPM	880RPM-1405RPM	880RPM-1405RPM
Max Speed	45km/h-120km/h	45km/h-120km/h	45km/h-120km/h
Customize	Voltage, RPM, Torque, Drop-outs, PCD & CB, Disc brake		
Service	Support ODM/OEM, Sample is available		
Phase Angle	120 degree		
Efficiency	85.0~92.0%		
Thermic Probe	KTY 83/122, KTY84/130, 10K@25C NTC(Optional)		
Adapt Wheel/Tire	E-scooter: 13" 14" 16"; E-bike: Above 17inch Wheel E-car: Above 13inch Wheel (Not include 13inch)		
Adapt Controllers	Kelly KEB 72101/72121, Linbo 72502 & Sevcon Gen4	Kelly KEB 96401 & Sevcon Gen4	Kelly KHB14201 & Sevcon Gen4
G.W./N.W.	24kg/22.5kg (13inch), 25.5kg/24kg(E-car)		
Brake	Disc brake		
Cooling System	Air Cooling		
Water Proof	IP54		
Hall	Two Hall(one for spare hall, in case of damage)		
Certification	Aduit Report, ISO/TS		
Application	Electric Scooter/Motorcycle/Bike/Tricycle/Car		



## 205 E-car motor features



## 273 E-car motor features



QS Motor

QS Motor

QS Motor





273 E-car motor 12kw for high-end market

## E-Car Motor 273 12kw



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<http://tzquanshun.en.alibaba.com/>

## Video to show the performance of the 205 E-car motor

### Small Electric Vehicle with 205 Hub Motor/Mind Reading Tire - TVC

<https://www.youtube.com/watch?v=qx64FpzW1ps&feature=youtu.be>

<https://www.youtube.com/watch?v=e53JXQXksg4>



## Video to show the performance of the 273 E-car motor

<https://www.youtube.com/watch?v=lulGfWG6LF8>

<https://www.youtube.com/watch?v=ZSXjzwrpG-g>

<https://www.youtube.com/watch?v=GIYgeWST3RE&feature=youtu.be>

<https://www.youtube.com/watch?v=DnK0JSpmXyU>



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## Electric car motor and kits

We could provide the following kits:

1. Controller
2. Throttle pedal
3. Disc Brake system
4. Speedometer
5. Battery



## (4). Electric Single-shaft Motor & kits

### E-scooter Standard Motor

Wheel Size: 10~16inch

Power Range: 500~10000W

Voltage: 48V~144V

Work current: 30A~200A

Magnet height: 28mm~50mm

Speed Range: 30~120km/h

Efficiency: 85%~92%

Application: Electric Scooter/Motorcycle/Tricycle/Car

QS Motor

QS Motor

10inch

12inch

13inch

14inch

16inch



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## Separated Wheel Motor 13x3.5" 1500w-8000w (New)

For this motor, the wheel is separated from hub motor.

When there is damage on tire, the motor don't need to take wheel motor part from e-scooter.

If the wheel get damaged, it could be replaced and no need to change a new motor or wheel with magnet, which is simplified and low maintenance cost.

Video of the motor:

[http://v.youku.com/v\\_show/id\\_XODA5ODQ2ODgw.html](http://v.youku.com/v_show/id_XODA5ODQ2ODgw.html)

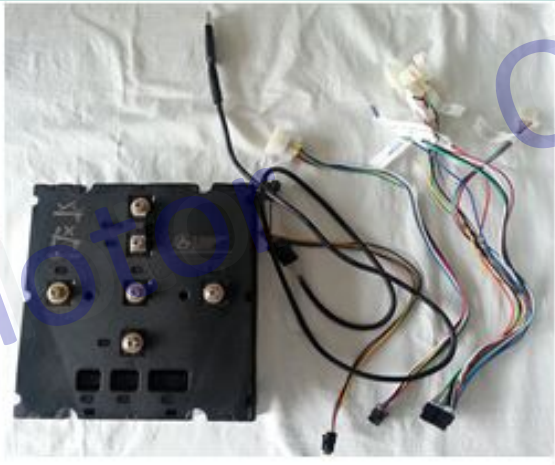
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## (4). Electric Single-shaft Motor & kits



## (5). Electric E-bike Integrated Motor & kits

### E-Bike Starndard Motor

Wheel Size: 14" 16" 18"

Power Range: 500W

Voltage: 48V

Work current: 30A

Magnent height: 28mm

Speed Range: 20~40km/h

Efficiency: 84%~87%

Application: Electric Mini Tricycle/Car

P.S.: It could be double-shaft or single-shaft.

### E-Bike Starndard Motor

Wheel Size: 20"

Power Range: 500~1500W

Voltage: 48~72V

Work current: 30~50A

Magnent height: 28~45mm

Speed Range: 20~60km/h

Efficiency: 84%~87%

Application: Electric Mini Tricycle/Car



20\*2.125"



## (6). BLDC PMSM Non Hubmotor(New)

BLDC PMSM Non Hubmotor is our new product which is published at the end of 2014. We could customized the motor under the following parameter:

**Motor Type:** 133/177 Diameter

**Power Range:** 2000W~8000W

**Voltage:** 48V~144V

**Work current:** 70A~200A

**Speed Range:** 30km/h~120km/h

**Efficiency:** 87%~92%

**Application:** Electric Scooter/Motorcycle/Tricycle/Car



### Specification(8kW)

BLDC PMSM Inner Rotor Built-in Disc Motor

Magnet: 171mm Diameter, 100mm height,  
5 pole pairs

Rated Output Power: 8000W rated

Rated Voltage: 72V

Rated Torque: 36.6N.m

Efficiency: 92.3%

Rated Speed: 2009RPM

No load Speed: 3075.3RPM

Rated Current: 117.7A

No load Current: 10.93A

Application: Electric Motorcycle/Tricycle/Mini Car

P.S.: No-Load RPM could be customized to be 5000-6000RPM, generally, it's 2000-3000RPM.





# Thank you !

## **Taizhou Quanshun Motor Co., LTD.**

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2015-1-21