



# What Drone Motor Sizes Do I Need for My FPV?

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## Considerations for Drone Motor Sizes When Choosing a Drone Motor

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Choosing the right drone motor sizes is essential for optimizing your FPV drone's performance, whether you're aiming for speed, agility, or stability. Drone motor sizes directly impact the drone's power, efficiency, and overall flight characteristics. Understanding the differences between various motor sizes will help you make an informed decision that aligns with your specific flying needs, from racing to freestyle or cinematic flying.

In this guide, we will be concentrating on the drone motor sizes, which is one of the most important factors you should consider when you are choosing the right motor for your FPV drone. If you want to learn more about how to choose a drone motor, read this guide on **[How to choose fpv drone motor a detailed guide 2024](#)**

## What Drone Motor Sizes We Need?

### Brushless Drone Motor Components

There are two major components to a brushless motor:

- Rotor – the rotating component with the magnets arranged in a radial manner
- Stator – the portion with electromagnets that is non-rotating

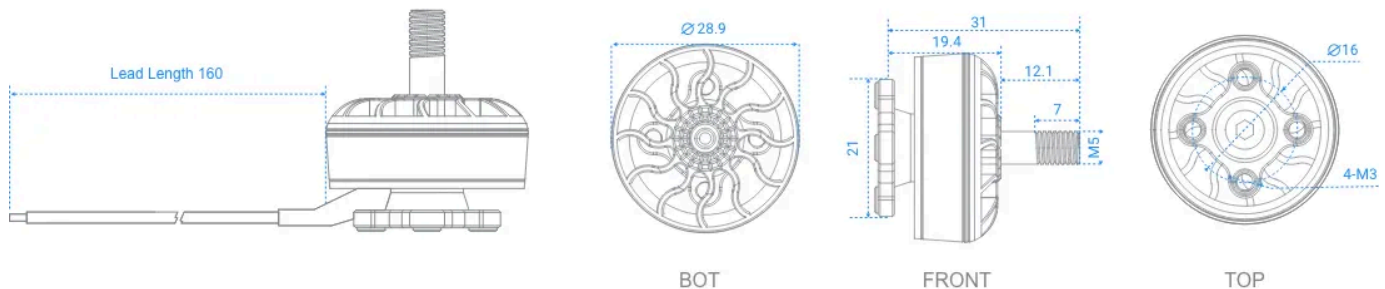
### Brushless Drone Motor Sizes Explained

Just like the [meps motor 2306](#) for example:





- outer diameters: 29.31mm±2



A group of four numerals, such as 2207, 2306, or whatever number it may be, designates a motor. It indicates the rotor's height and diameter in millimeters (mm). The thrust that a motor produces increases with size.

- Taller stator: greater maximum speed and appalling low speed control
- Wider stator: improved handling at lower speeds and a lower top speed

2208 Brushless Motor: 22 represents the stator width (or stator diameter), 08 represents the stator height, both measured in millimetres.

2217 Brushless Motor: 22 represents the stator width (or stator diameter), 17 represents the stator height, both measured in millimetres.



### MEPS SZ2306 5Inch Freestyle Motor

Freestyle Specialist- Provides ample power and stability for fast-paced flying,

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## Comparing Taller and Wider Stators

Because the mass of a wider motor is farther from the rotational axis, it takes more energy to alter the RPM when the motor is spinning, resulting in greater inertia. Therefore, even if they have the same stator volume and torque output, broader and shorter motors are typically less responsive than narrower and taller motors. Smaller magnets on the motor bell of wider and shorter motors can also lower the motor's output.





capacity to produce magnetic flux diminishes with temperature, which affects torque output and efficiency.

A motor stator's width and height essentially serve as a compromise between cooling and responsiveness. Depending on how you fly, you should make a choice. For example, bigger stator motors may provide greater cooling for slow cinewhoops hauling a heavier GoPro. Taller stator lengths may be preferable for sports drones or racing drones that react quickly. Larger stators also make it possible for larger bearings, which can enhance performance, lifespan, and smoothness.

Not necessarily are larger stators better. For instance, **2207 motors** can manage standard 5" propellers. However, utilizing considerably heavier 2506 motors with the same KV may not yield any appreciable advantages since they would still generate the same thrust with the same propellers, or the weight may even result in less responsiveness. Higher KV motors are an option if you want to increase performance without gaining weight. However, because of the higher torque requirements, the 2506 motor in this case would probably perform better with 6" propellers than the 2207.

## Choosing the Right Drone Motor Sizes for Your FPV

To ascertain the optimal drone motor sizes for your FPV drone, proceed as follows:

- First: Size of Frame
- Second: Size of Prop
- Third: Size of Motor

You can determine the suitable motor size by determining the frame size. The prop size is limited by the frame size, and in order to generate thrust efficiently, each prop size requires a varied motor RPM. This is the application of motor KV. Verify the motors' torque to ensure it can turn the propeller of your choosing. One aspect of this is the stator size. Higher KV and bigger stator diameters frequently result in higher current draw.





1102  
1.5mm



0802  
1.0mm



0703  
1.0mm



0603  
0.8mm

## Drone Motor Sizes Chart:

Frame Size	Prop Size	Motor Size	KV
150mm or smaller	3" or smaller	1105 -1306 or smaller	3000KV and higher
180mm	4"	1806, 2204	2600KV – 3000KV
210mm	5"	2205-2208, 2305-2306	2300KV-2600KV
250mm	6"	2206-2208, 2306	2000KV-2300KV
350mm	7"	2506-2508	1200KV-1600KV
450mm	8", 9", 10" or larger	26XX and larger	1200KV and lower

## Matching Drone Motor Size to Propeller Size

Matching Drone Motor Size to Prop Size for Optimal Performance: The size of your propellers should match the motor size for optimal efficiency and performance. Larger motors generally work better with larger props (e.g., a 2207 motor with 5-inch props),

Overall, understanding the right combination ensures your drone performs as expected, without overloading the motors or underutilizing their potential.

## Battery Compatibility

**Voltage Considerations (3S, 4S, 6S):** The voltage of your battery (measured in S, where each cell is 3.7V) significantly impacts motor performance. Higher voltage (e.g., 6S) can produce more power and efficiency, but requires motors with a lower KV rating to maintain balance and avoid overheating. For instance, a 6S setup might pair well with a 1700KV motor, while a 4S setup could use a 2300KV motor for similar performance. Ensuring your drone motor's KV rating matches your battery voltage will help prevent issues like excessive heat, poor efficiency, or even motor burnout.

## Recommendations Drone Motor Sizes for FPV

### Drone Motor Size Guide:

Drone Type	Frame Size	Recommend ed Motor Size	KV for 4S	KV for 6S	Batter
TinyWhoop	65mm	0702, 0802, 0603	19,000-32,000	–	1S
	75mm	0802, 1002	19,000-25,000	–	1S
	85mm	1003, 1103, 1203	10,000-14,000	–	2S
Toothpick	2"	1002, 1003	16,000-22,000	–	1S
	2"	1202.5, 1003	10,000-14,000	–	2S
	2.5"	1203, 1403, 1104	10,000-14,000	6,000-10,000	2S-3S





Freestyle/Racing	3"	1104, 1204, 1304	4,000-7,000	3,000-6,000	3S-4S
	3.5"	1404, 1504	3,500-5,000	2,500-4,500	4S-6S
Freestyle	4"-4.5"	2205, 2304.5	2,500-3,500	2,200-3,300	4S-6S
Freestyle/Racing	5"-5.5"	2207, 2306, 2306.5	2,100-2,750	1,700-2,100	4S-6S
Freestyle/Long Range	6"	2308	–	1,300-1,800	6S
Long Range	7"	2408, 2508, 2806.5	1,600-1,900	1,000-1,400	4S-6S
Heavy Lift/Long Range	8"	2808, 2809, 3110	–	900-1,200	6S-10

## Best Motor Sizes for Micros:

### TinyWhoops:

**65mm:** For a micro drone of this motor sizes, often classified as a tiny whoop, the perfect drone motor size varies on the application of your drone. If weight is your priority, a 070 motor will fit your needs with it also being zippier and coming in a large range of ultrahigh KVs. If torque and power at the cost of efficiency is your priority, for a 65mm, 0802 is the best choice, with 0603 being for the chunkier builds like a meteor 65 pro. For these drones, the KV options are vast ranging from 19,000 up to 32,000 so for more control choose a lower KV but for raw thrust, high KV is the only way. The [MEPS 0802 motors](#) are a great choice for this.





more might suffer in a 75mm high weight class, 1002 with a KV ranging from 15,000 to 25,000 is more than enough for high performance and efficiency. If power is your true goal or you are using a 75mm frame with larger ducts such as the meteor 75 pro or the Fractal 75 pro max, a 1002 motor with the same KV range will work well at the cost of some weight and efficiency. The MEPS 0802 motors are well suited for these builds as well.

**85mm:** These ducted whoops are truly no longer for indoor and are no outdoor rippers, mainly running 2s batteries with an xt30 connector. There are many different sizes for motor which can be employed but the ideal ones used on most bnf drones are xx03, meaning something like a 1003, 1103 or 1203 will work fine with these larger whoops. The recommended KV is from 10,000 to 14,000 max for 2s. The **MEPS 1103 motors** are a great fit for this drone class.

## Best Motor Sizes for Toothpicks:

**2" 1s:** A toothpick of this specifications will be using smaller motors for a lighter weight with motor sizes ranging from 1002 at minimum with 1003 being on the high end. The recommended KV would be from 16,000 to 22,000 at the high end.

**2" 2s:** These toothpick drones are truly powerful and can harness a larger outdoor area. Motor recommendations range from xx2.5 to xx3 such as 1202.5 and 1003 motors. Use the same KV as the 85mm drones which employ the same sized propeller. The MEPS 1103 motor is a great option for this size.



### MEPS SZ1103 Whoop Racing FPV Motor

Lightweight & Compact - Perfect for micro drones, allowing for increased agility and speed.

★★★★★ 4.9

US\$10.9

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**2.5" :** These drones almost always use 2s and 3s so for a build of this spec, larger motor must be used such as xx03 to xx04 such as a 1203, 1403 or 1104 and similar sizes. The recommended KV would be anywhere from 10,000 to 14,000 on 2s and 6,000 to 10,000 on 3s. The lower KV MEPS 1103 motor is a great option for 3s power.

## Best Motor Sizes for Freestyle&Racing Flight:

### Small Sized Drones:







The recommended drone motor size would be something like an xx04, such as an 1104, 1204 or 1304 motor. For 3s, the recommended KV would be anything from 4,000 and 7,000 and for 4s anything from 3,000 to 6,000 should provide plenty of power for this class.

**3.5"** : This class of drones is the limit for a micro and these drones commonly use 4s-6s batteries. For drone motor size, the recommended size for this class of large micros is xx04 motors, such as 1404, 1504 and similar sizes. The recommended KV for 4s is 3,500 to 5,000 and for 6s, the recommended KV would be ranging from 2,500 to 4,500. The [MEPS 1404 motors](#) would be a great choice with a build of this size for drone motor.



### Medium Sized Drones:

**4" - 4.5"** : These drones are almost full-sized freestyle drones. They may be similar size, but the performance is dramatically different, with the 4-4.5" drones being much lighter and nimble. The recommended drone motor sizes for this frame would be xx04.5-xx05, such as a 2205 or 2304.5 motor. The recommended KV for 4s is 2,500-3,500 and for 6s, the recommended KV would be 2,200 to 3,300.

### Full Sized Drones:

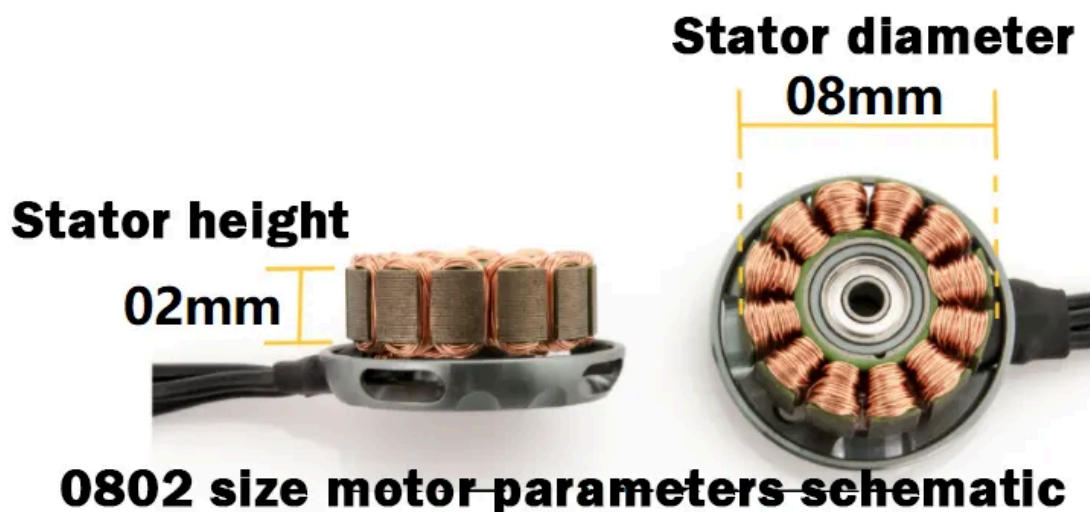






battery voltage and flight style. The **2207 motor** is overall larger and gives more torque and thrust while the **2306 motor** is generally smoother and more efficient, due to the wider and shallower stator for better cooling. There are many variations that are both smaller and larger than these sizes such as the Racerstar Racing Edition 2205 motors made for the 5 inch and the larger SZ 2408 motors from MEPS. There are many motor sizes in the middle as well such as the Diatone Mamba Toka 2306.5 motors sitting in the middle of the standard 2207 and 2306 sizes. The recommended KV for 4s is 2,100-2,750 and the recommended KV for 6s would be 1,700-2,100.

**6"** : This drone sits in the middle of a 5" freestyle drone and 7" long range drone. A 6" drone is versatile as a cruiser and light freestyle drone, mainly used with 6s power. These drones use slightly larger motors with the recommended size being xx08, such as a 2308 motor. The recommended KV for 6s is anywhere from 1,300-1,800. A great motor for this application is the **MEPS 2408 motor**.



## Best Size for Large Drone Motors

### 7 Inch Drone Motor





and 6-inch drones, 7-inch drones require larger motors with higher torque to drive the longer propellers.

- Recommended Motor Size: xx08-xx09, such as 2408, 2508, or 2806.5
- Recommended KV Ratings:  
4S Battery: 1,600-1,900KV  
6S Battery: 1,000-1,400KV
- Key Features:  
Low KV motors with larger propellers improve efficiency and reduce current draw  
Higher torque enhances load capacity and stable cruising  
Ideal for long-range FPV or extended flight applications

A great motor choice for 7-inch drones is the [MEPS SZ2806.5](#), which offers a perfect balance of power and efficiency. Another great option for this is the GEPRC 2809 SPEEDX2 motors as they are great value and provide great thrust to weight ratios.



### MEPS SZ2806.5 Cinematic FPV Motor

Longer endurance, greater load, specially designed for the needs of long-range aerial photography drone.

★★★★★ 4.9

US\$26.9

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## 8 Inch Drone Motor

8-inch drone motors are designed for even larger drones, primarily used for professional aerial photography, mapping, and industrial applications. These drones typically run on higher-voltage batteries (such as 6S or above) for improved efficiency and use high-thrust motors to support larger propellers.

- Recommended Motor Size: xx09-xx10, such as 2808, 2809, or 3110
- Recommended KV Ratings:  
6S Battery: 900-1,200KV  
8S-10S Battery: 600-900KV
- Key Features:  
Higher torque for heavy-lift applications such as professional aerial cinematography





Ideal for endurance flights, mapping, patrolling, and search-and-rescue operations

For 8 inch drone motors, a solid choice are the [MEPS NEON 2808](#) and [NEON 2812](#), which delivers reliable thrust and optimized flight efficiency for long-duration operations.

## Best Motor Sizes for Cinewhoops:

**2"** : This small indoor Cinewhoop uses the same sized motors as the other 2" prop spinning drones, with the ideal motor size being xx03 such as 1003 and 1103. And the ideal KV being 10,000 to 14,000. A great choice is the MEPS 1103 motor.

**2.5"** : This is the step up from the 2.5" Cinewhoop using a 4s battery, with it being one of the most versatile drones you can get. They do well both indoors and outdoors with the recommended drone motor size being xx04, such as 1404 and the recommended KV being 4,000-6,000. The MEPS 1404 motor is a great fit for this.

**3"** : This is a Cinewhoop to be mainly used outdoors in some larger indoor applications. The recommended drone motor size would again be xx04, such as a 1504 motor. The Recommended KV would be from 3,500-4,300 for 4s and 3,000-3,800 for 6s. The MEPS 1404 motors would work well on this build as well.

**3.5"** : This is a Cinewhoop for outdoor use with much better performance and efficiency than the others. The recommended motor size would be xx04-xx05.5 such as a 2004 or 2005 motor. The recommended KV for 4s would be 2,300-2,800 and 1,700-2,200 for 6s. The [MEPS 2004 motors](#) are a great option for a build like this.

## Drone Motors Matching from MEPS





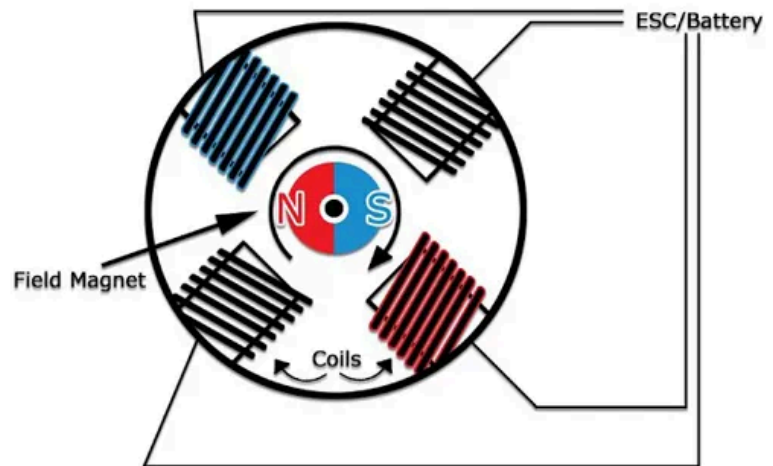
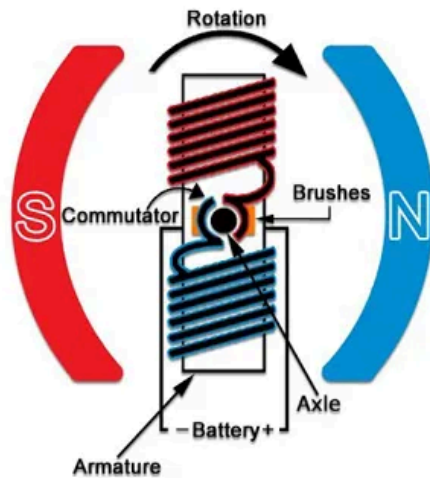
For detail informtion, you can check the article: [MEPS Motors Size Choosing Guide](#)

## FAQ-What' s a Brushless Motor

What' s a Brushless Motor? Simply put that an FPV drone motor that is brushless has no brushes, as the name suggests. The rotor and the stator are the two distinct parts that make up a brushless motor. The core component that the rotor is attached into is called the stator. The stator is composed of a network of radial electromagnets that, when a current flows through the windings, alternately turn on and off to create a momentary magnetic field. A set of permanent magnets housed in the rotor are positioned near the electromagnets of the semi-permanent stator. Rotation is produced by the stator and rotor magnets' attractive and repulsive interactions. After the rotor is constructed, its shaft is placed into two ball bearings in the stator to keep the rotor rotating smoothly and linearly.


The brushless motor cannot be driven directly, even though it is powered by DC current. Rather than requiring brushes or a commutator, the brushless motor is directly connected to the control electronics. Because the rotor and stator do not come into direct touch, brushless motor longevity is exceptional. In terms of efficiency, the brushless motor outperforms the brushed motor as well. In applications requiring high power outputs and efficiency—such as tiny and micro multicopter applications—



**Brushed DC Motor****VS****Brushless DC Motor**

### [Brushed vs Brushless Motor: What's the Difference?](#)

Typically, mini drones and lightweight configurations use brushed motors. Because of the brushes on its lower half, it may be powered directly by direct current DC; nonetheless, it is not very effective in scenarios when maximum power is required. Brushless motors, on the other hand, might be a better choice if you're designing a racing drone, which will place a high demand on the motor because of its weight and capacity.

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