

Brushless DC Motor

ABSTRACT

A brushless DC motor, comprising a stator having paired stator teeth, a rotor having paired magnetic poles and a rotating shaft fixed in the center of the rotor, wherein each of the stator teeth is wound with a winding, in each cross section of the stator, the connecting line between the intersection point of a tooth top arc of the stator tooth and the tooth axis of the stator tooth and the center of the tooth top arc can form a mechanical eccentric angle θ with the tooth axis of the stator tooth, which is more than 0 degree and smaller than 90 degrees. The tooth top circle of the stator tooth is designed to be an arc, which is eccentric relative to the rotating center of the rotor, such that the brushless DC motor can eliminate the starting “dead point” and start successfully; a driving current following the rule of sinusoidal wave also can be coordinated, to make air gap magnetic field change uniformly according to the rule of sinusoidal wave, thus reducing the torque ripple and the vibration noise.

Figure 5