

LASER CUTTING MACHINE RACK STRAIGHT TEETH AND HELICAL TEETH WHICH IS BETTER

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The linear axis transmission methods commonly used in [laser cutting machine](#) tools include ball screw, rack and pinion, and linear motor.

The rack is a special gear distributed on the bar-shaped body. It is divided into a straight tooth rack and a helical tooth rack, which are paired with a straight tooth cylindrical gear and a helical tooth cylindrical gear respectively. Rack and pinion transmission is widely used and can realize high speed and large stroke.

For a rack and rack drive, which one is better, a straight toothed rack or a helical toothed rack?

The answer is: helical rack, its advantages are mainly reflected in the following aspects:

1. Good meshing performance: When spur gears mesh, their contact line is a straight line parallel to the axis. When the tooth profile enters or exits meshing along the tooth width at the same time, it is easy to cause impact and noise, and the transmission stability is poor. It is not suitable for high-speed gear transmission. The contact line of the helical gear teeth is a straight line inclined to the gear axis. When the helical cylindrical gear meshes, there is a certain limit due to the tooth height. During the meshing process of the two tooth profiles, the length of the contact line gradually increases from zero, and gradually shortens from a certain position until it is disengaged.
2. High degree of coincidence: it can reduce the load of each pair of gear teeth, thereby improving the load-bearing capacity of the gear, making the transmission stable and prolonging the service life of the gear.
3. The helical standard gear has fewer teeth without undercutting than the spur gear. Therefore, a more compact structure can be obtained by using helical gear transmission.