High speed DC motor – Tips and tricks.

Brushless high speed DC motor with modifications for easy load assembly.

Press fitting is the most common method customers use to assemble loads and drive elements to the motor shaft in production environments. Especially if the application requires the use of a high speed DC motor. Whilst machining the motor shaft with a flat and using set screws to secure the drive element to the motor shaft is very common for small quantities, or low speed applications, high speed applications often require a more balanced solution. The higher the speed and acceleration requirements of the motor, the higher the required strength for this affixation and so increases the press fit force. It is here that many high speed motor manufacturers let down their customers with a very simple omission; access to the rear shaft of the motor. Without this simple feature, customers press fitting onto the motor shaft with the required force for high speeds, often need to exert more force than the bearing system of the motor can withstand. This process in turn causes micro damage to the balls within the bearing system reducing the lifespan of the motor. The motor pictured in this example is a 25mm 250w high speed brushless DC motor with the ability to accelerate to 62,200rpm in 2.32ms. For this example the motor has been manufactured with a pilot hole in the rear cover allowing support of the shaft for the pressing process. The motors drive shaft end has also been manufactured with a tolerance to match the load bore and a shoulder to locate the end travel in the pressing process.

Contact maxon motor Australia for high speed DC motor applications and adaptation. Ph:+61 2 9457 7477.

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