

Correctly Assemble and Use a Collet



Checking and using a collet

Collets are designed to hold a designated range of diameter tools. Use the proper collet size for the bit - one too large or too small can damage the collet. Collets also may not offer enough holding force to secure the bit, which may also damage the bit or work piece. ShopBot recommends Technik collets for inch sized shank tools (such as the ones sold through ShopBot). Collet specifications can be found at <http://www.techniksusa.com/metal/cnaerpci.htm>.

Inspect collet and nut for wear and cleanliness before each use. If material gets into the collet, the collet will compress onto the tool unevenly, reducing clamping force. If there is material on the outside of the collet or it's mating surface in the spindle, it will cause the collet to seat crookedly, causing runout. Material on the internal bore of the collet will cause the bit to seat unevenly, causing runout. If there are marks on the bit, left by the collet, there has been tool slippage in the collet due to dirt in an improperly clamping collet.

Collets are made of spring steel and should be replaced after approximately 600-700 hours of run time. To tell if a collet is damaged or past its prime, look for burr marks or wear of the collet bore. The temper of collet steel can also be damaged by excessive heat. An easy way to check this is to insert a collet into a nut and check that the collet remains seated when shaken. If the collet easily falls out then it has lost its' spring and should be discarded.

For a more in depth discussion of collet wear and possible causes, please refer to <http://www.cncrouter-shop.com/us/tool-maintenance>.

Collet and Tool Installation

After selecting the proper collet and inspecting all mating surfaces outlined above, insert the collet into the nut at a slight angle and engage the collet groove into the locking ring of the nut. It will snap in with a click and should be held captive by the nut.



Loosely thread the nut onto the spindle and insert the tool. Ensure tool is seated fully into the collet with most of the shank engaged in the holder. Ensure that none of the chip recess is in the collet bore. If the recesses are inserted into the collet bore it can damage the collet by driving chips up into the collet. The more shaft that can be inserted into the collet, the better the collet's holding ability. Conversely, the longer the tool extends from collet, the greater the chance of resonance and chatter. The picture on the cover page shows a great example of a properly installed tool. Once satisfied with the extension, snugly torque the nut onto the spindle. Torque specs for the nut/collet assembly are available from Technik: http://www.techniksusa.com/metal/torque_chart.htm.



