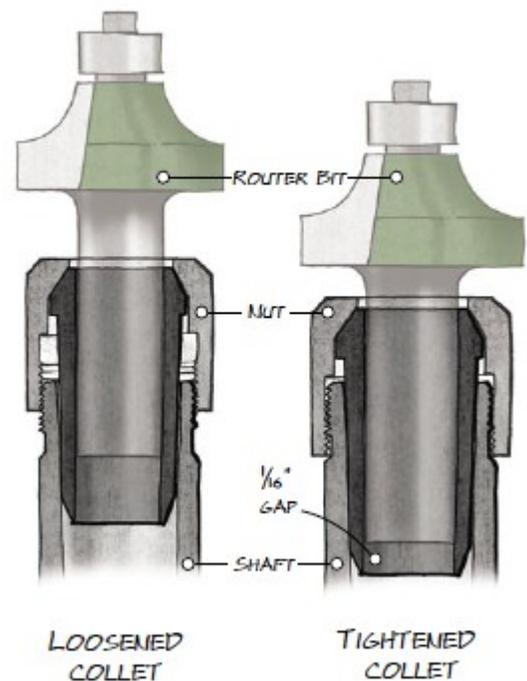


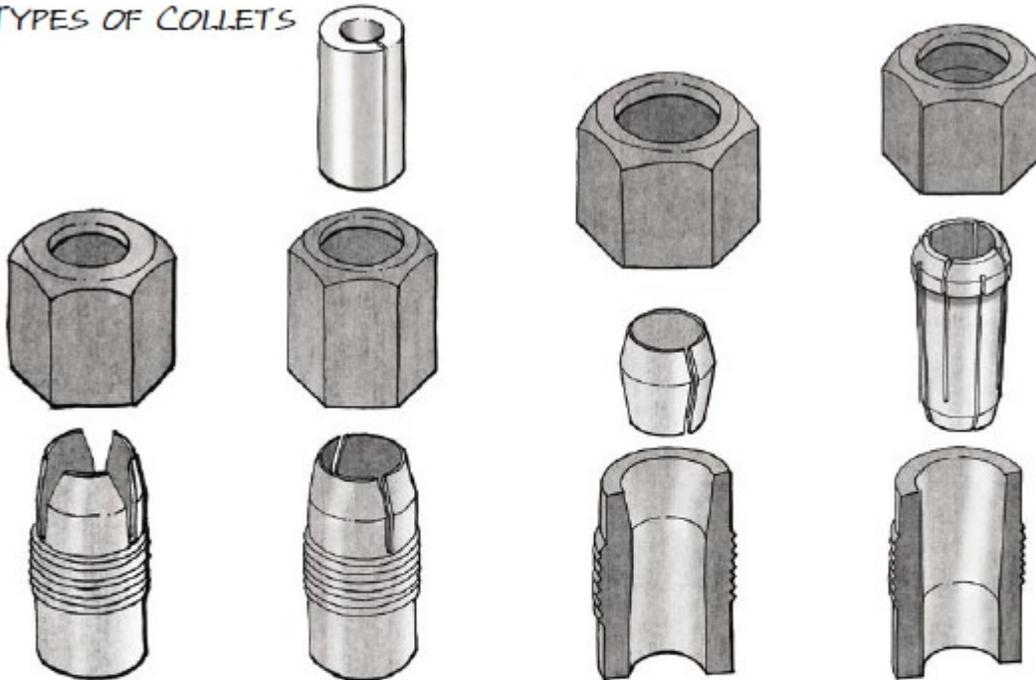
How a Collet Works

- A collet is the steel sleeve that holds a router bit in a router. The collet works with the router shaft (connected directly to the motor) and the collet nut.
- Collets are machined to perfectly mate with the tapered recess in the end of the shaft and to hold a router bit with just enough clearance to slip the bit in and out when loose.
- For the best grip, a router bit should be fully inserted into the collet and then backed out about $1/16$ " (leaving between $3/4$ " and 1 " of the shaft in the collet). The gap allows the collet and bit to be pulled down as the nut is tightened. If the bit is bottomed out in the shaft before tightening, the bit has nowhere to move and the collet won't tighten properly.



- Many routers have self-releasing collets that can cause confusion when releasing a bit. These collets have a mechanical connection that holds the bit in the collet tightly, even after the nut has been loosened. As you continue to loosen the nut, the mechanical connection releases and the bit will then come loose.
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TYPES OF COLLETS



SPLIT SHAFT

- SPLIT SPLINES ARE MACHINED DIRECTLY ONTO THE END OF THE SHAFT
- HOLDING PRESSURE IS ONLY EXERTED AGAINST PART OF THE BIT SHANK
- WHEN THE COLLET WEARS, THERE'S NO WAY TO REPLACE IT

SPLIT SHAFT WITH SLEEVE ADAPTERS

- ADAPTERS USED IN BOTH SPLIT AND TAPERED SHAFTS
- SLEEVES ALLOW USE OF BOTH $\frac{1}{4}$ " AND $\frac{1}{2}$ " SHANK BITS
- DEDICATED COLLETS WITHOUT SLEEVES PREFERABLE

TAPERED SHAFT WITH SINGLE SLIT

- MORE COMMON ARRANGEMENT
- LESS FLEXIBLE BECAUSE OF SINGLE SLIT
- LESS POSITIVE CONTACT ON BIT SHANK THAN MULTI-SLIT COLLET

TAPERED SHAFT WITH MULTI-SLIT

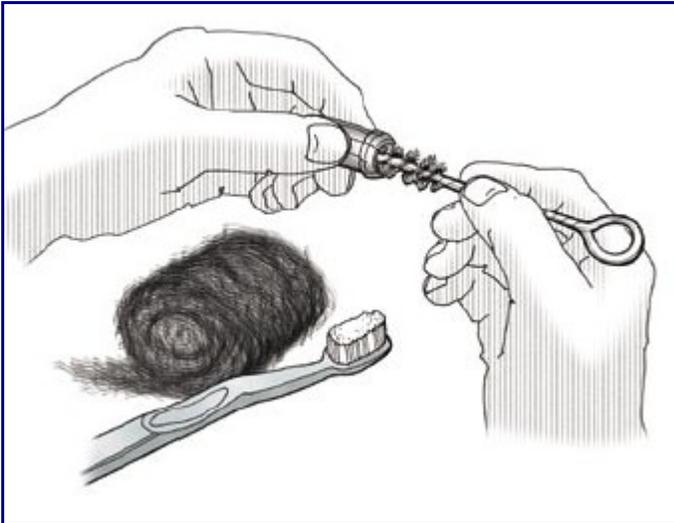
- ALLOWS POSITIVE, EVEN PRESSURE ON ALL SIDES OF BIT SHAFT
- BEST HOLD
- COLLET IS OFTEN ATTACHED TO NUT AS SINGLE ASSEMBLY

Proper Collet Maintenance

• As with most tools, parts that have metal-to-metal contact, or are in contact with dust and pitch, will wear over time or require maintenance. Worn, scratched, dirty or out-of-round collets will not provide adequate holding power and can increase run-out and vibration.

• To extend the life of your collet, never tighten a collet without a bit in place. This can compress or deform the collet, leading to an improper fit on the bit.

Pitch and dust can build up in and on the collet, as well as in the recess of the shaft and inside the collet nut. A simple cleaning every so often will ensure a tight fit on the bit.



Think of the collet as a consumable item in your router. Much like the brakes on your car, the collet will wear and become less efficient over time. If you notice problems holding bits, it may just be time to replace the collet.

- Clean the collet parts with a rag dampened with a cleaning solution such as Naptha.
- Use a small brush with either nylon or brass bristles to reach into close areas. These bristles will clean the collet without damaging the metal surfaces.
- Use #0000 steel wool or a synthetic scouring pad to remove burrs or nicks from the collet. Don't use sandpaper;; this will only add scratches to the collet.
- A bronze cleaning brush commonly used for gun cleaning will also help smooth out damaged surfaces.

– From the [Autumn 2006 issue](#) of Woodworking Magazine; *illustrations by Matt Bantly*

[Router Collets PDF](#)