

## TIP 14 — Removing Tapered Tools from the Headstock without a Hammer/ Nhut Le and Larry Simon

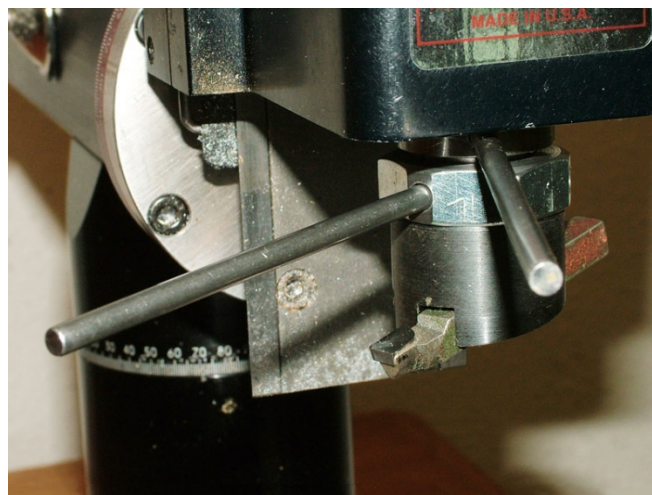
An e-mail from Nhut Le says he was looking for a way to remove #1 Morse tapered tools from the headstock without having to whack the drawbolt head with a mallet to break the taper loose. He took a 3/4-16 NF nut and milled it down so that he could thread it onto the external thread of the headstock. When it comes time to remove a fly cutter or other tool with a #1 Morse taper, he just loosens the drawbolt and then threads the nut down against the body of the tool. As he unscrews the nut, it pulls the tapered tool out of the hole rather than driving it out from the other end. It is not only easier on the threads of your tool and drawbolt, it also keeps from knocking the tool out of alignment by banging away on a stuck taper.

**NOTE:** This does require that you install the remover before you install the tool. Unless this nut is pre-installed, it will not work on an already stuck taper. For that see Tip 15.

[Larry Simon](#) took this tip one step further by providing a spacer ring so the nut will also work when removing 1/4" and 3/8" Jacobs drill chucks from the spindle. Larry also added three Tommy bar holes in the nut to provide an easy way to turn it without using a wrench. He was kind enough to provide a sample of his finished product for photography as well as a dimensioned plan. Larry used to work as a draftsman and plan checker at the Manitowoc Crane Company in Wisconsin and is the builder of a large model of a construction crane that now resides in the [Craftsmanship Museum](#).



*Photo 1 shows the thinned nut with Tommy bar holes.*



*Photo 2 shows the nut being used to remove a fly cutter using the Tommy Bars. A wrench can also be used on the nut's flats for more leverage.*

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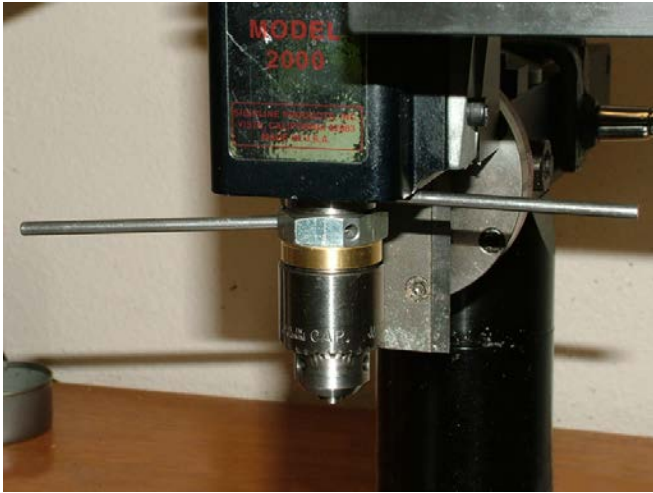


Photo 3 shows the brass spacer ring in place to remove a 1/4" Jacobs drill chuck.

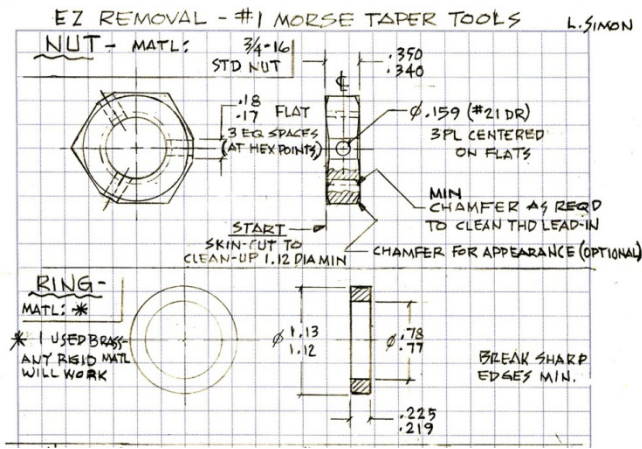


Photo 4 shows a dimensioned plan. See Page 3 for a larger version.

#### Instructions for use:

1. Before installing your #1 Morse taper accessory, thread the nut up onto the spindle snug against the shoulder.
2. Install the accessory, tightening the drawbolt as you normally would.
3. To remove a typical #1 Morse taper accessory like a fly cutter, mill arbor or boring tool without banging on the drawbolt and possibly altering your machine's alignment (or damaging the bearing races), first loosen the drawbolt 2 or 3 turns. Then use Tommy bars or a wrench to back the nut off until it presses down on top of the tool, freeing the taper from the spindle.
4. To remove a 1/4" or 3/8" Jacobs drill chuck, install the spacer ring before installing the chuck. Removal is done the same way.

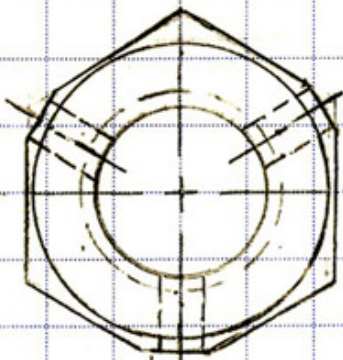
Note that the spacer ring is not intended for the smaller 5/32" Jacobs drill chuck. The chuck arbor on that chuck has a double taper and you are equally likely to press the chuck out of its arbor as you are to press the arbor out of the spindle.

Larry Simon, Carlsbad, CA

# EZ REMOVAL - #1 MORSE TAPER TOOLS L. SIMON

NUT - MATL: 3/4-16

STD NUT | .350



.18 FLAT  
.17  
3 EQ SPACES  
(AT HEX POINTS)

φ

.340

φ .159 (#21 DR)  
3 PL CENTERED  
ON FLATS

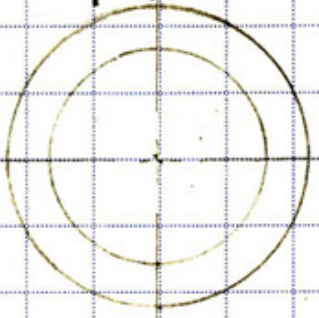
MIN  
CHAMFER AS REQD  
TO CLEAN THD LEAD-IN

START →  
SKIN-CUT TO  
CLEAN-UP 1.12 DIA MIN

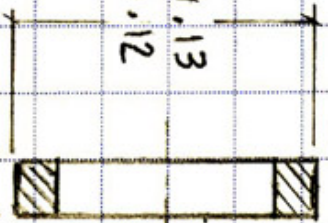
CHAMFER FOR APPEARANCE (OPTIONAL)

RING -  
MATL: \*

\* 1 USED BRASS -  
ANY RESID MATL  
WILL WORK



φ 1.13  
1.12



φ .78

.225  
.219

BREAK SHARP  
EDGES MIN.