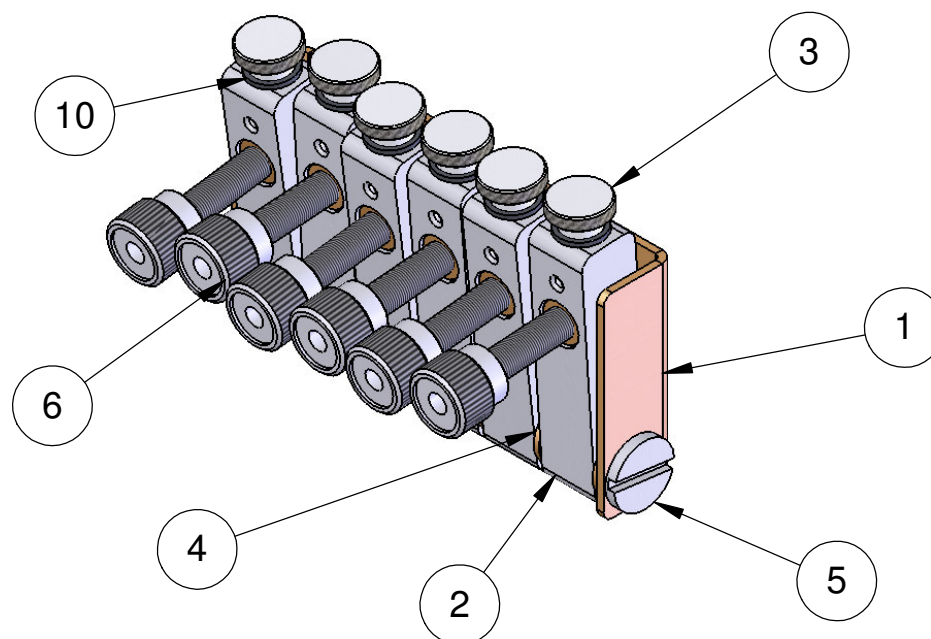
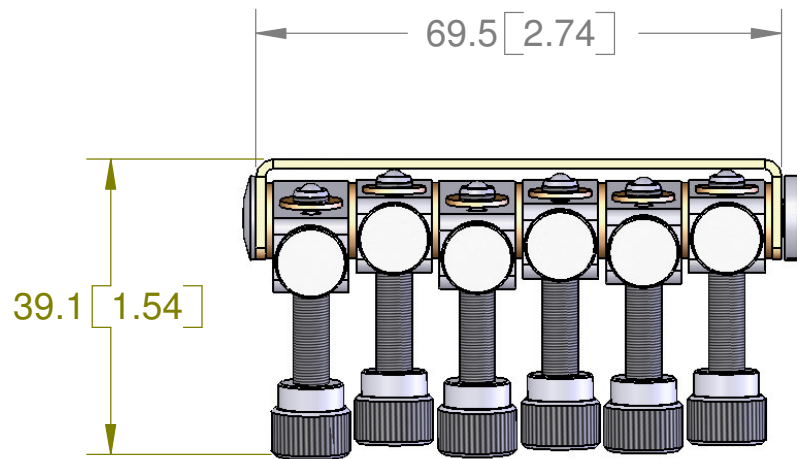


ITEM NO.	QTY.	PART NO.	DESCRIPTION	VENDOR	MATERIAL	COST
1	1	Tuning Plate	Tuning Plate		Brass	
2	6	Pivoting Tuning Arm	Tuning Arm		Al 6061-T6	
3	6	91830A101	Thumb Screw #4-40	McMaster-Carr	CRES 18-8	\$2.55 each
4	7	91635A230	Washer 1mm Thick	McMaster-Carr	Brass	\$5.12 for 100
5	1	93121A372	Screw, Binding Post	McMaster-Carr	Aluminum	Comes with barrel
6	1	93121A372	Barrel, Binding Post	McMaster-Carr	Aluminum	\$4.60 for 10
7	6	F19SSN1	Threaded Bushing, 3/16-100	Thor Labs		\$6.30 each
8	6	F19SSK1	Removable Knob 3/16-100	Thor Labs		\$4.70 Each
9	6	F19SS125	Ultra Fine Hex Adjuster 1.25" Long	Thor Labs		\$10.50 each
10	6	98017A610	#4 Flat Washer	McMaster Carr		\$7.08 for 500

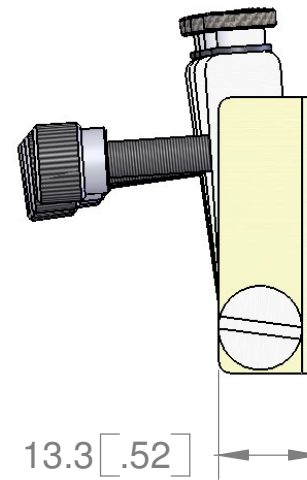
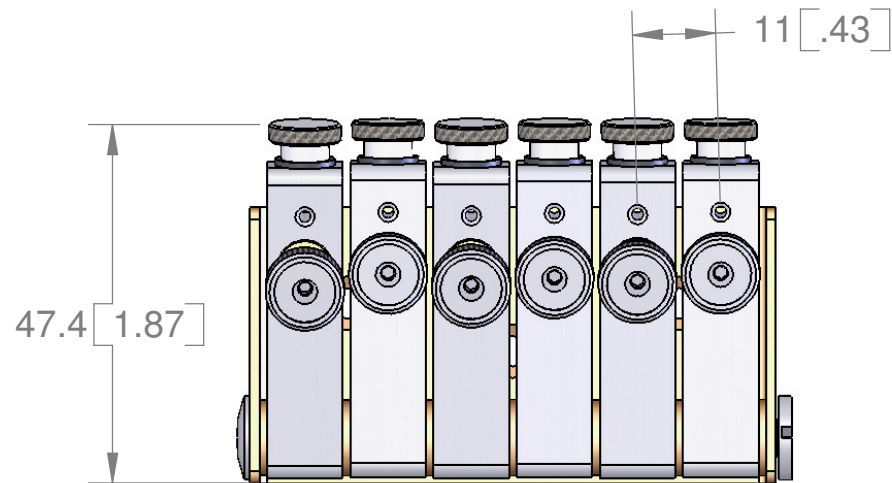


## "Tuning Tailstop" - (#3a)

A design for a simple, "DIY" tuning system for use with headless guitars.  
 (This particular design is intended for a copy of a Klien guitar  
 with a Schaller or Wilkinson fixed roller bridge.)

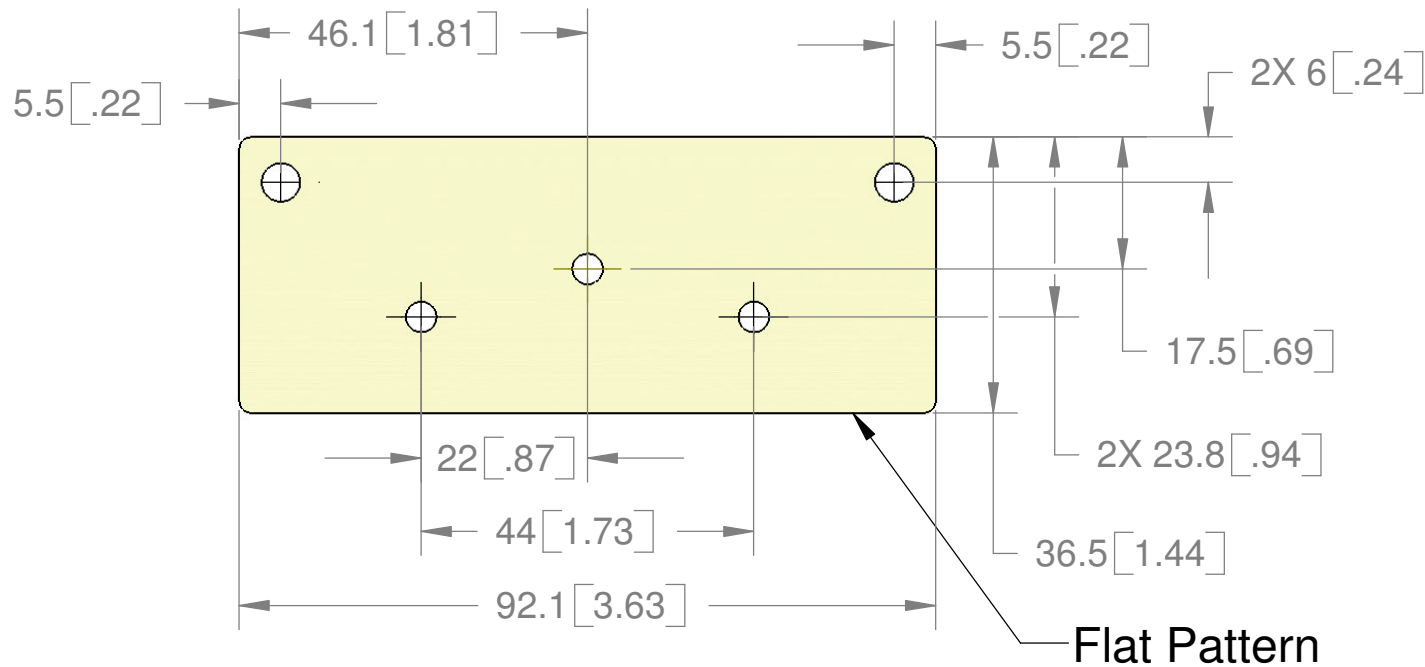
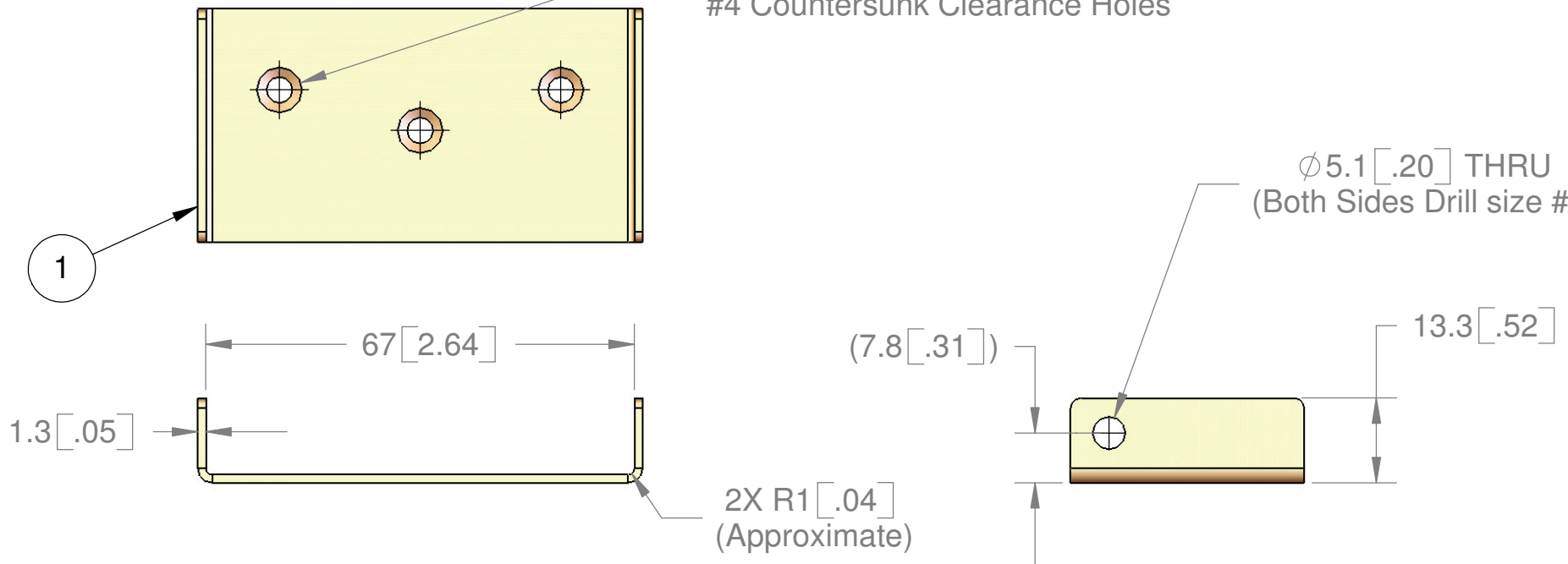


Overall Dimensions



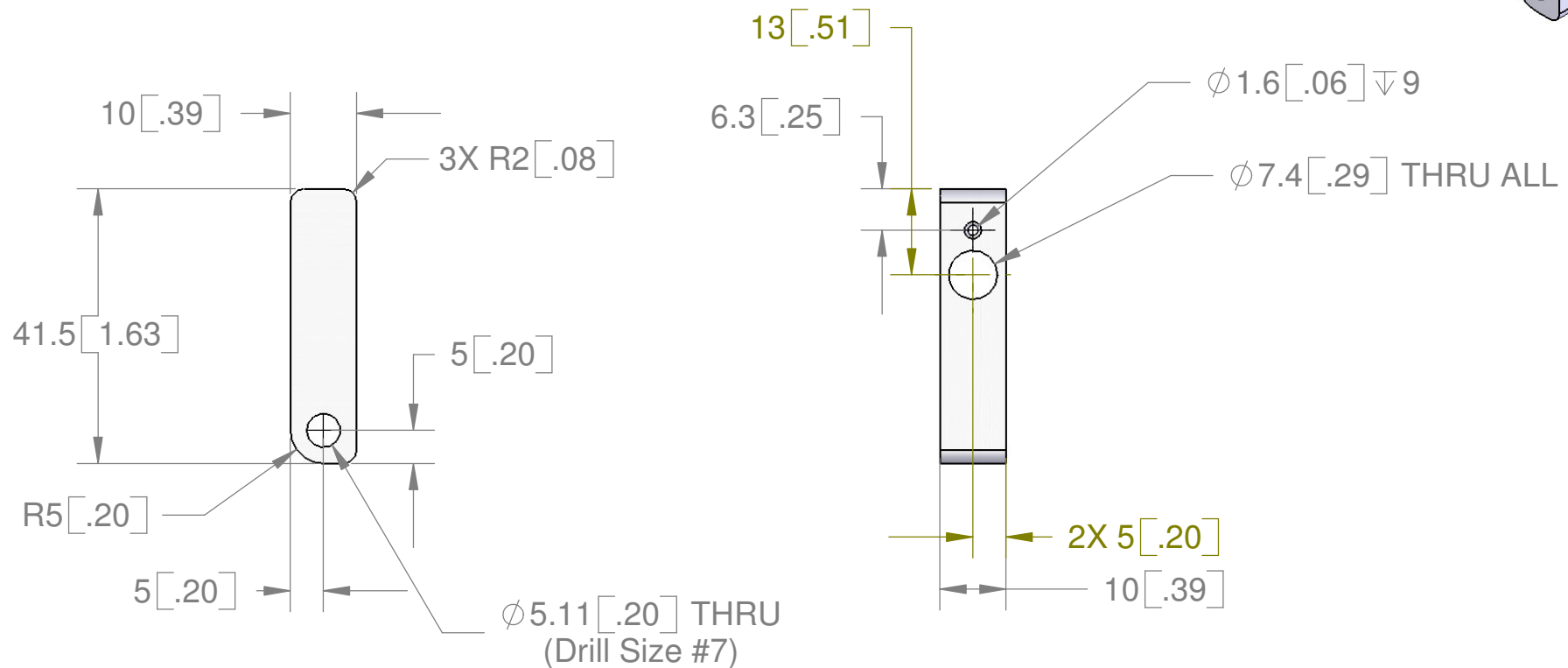
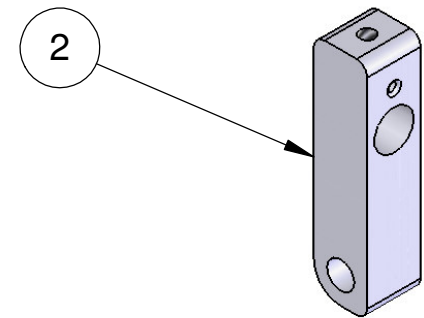
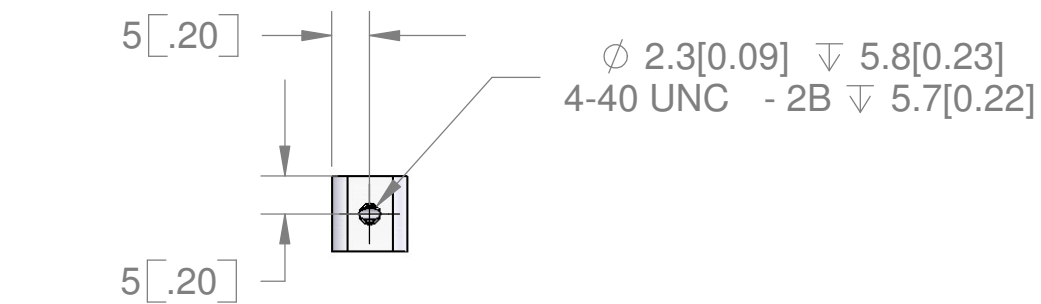
3X  $\phi$  3.8[0.15] THRU ALL  
 $\checkmark$   $\phi$  7.1[0.28] X 100°  
 #4 Countersunk Clearance Holes

$\phi$  5.1[.20] THRU  
 (Both Sides Drill size #7)



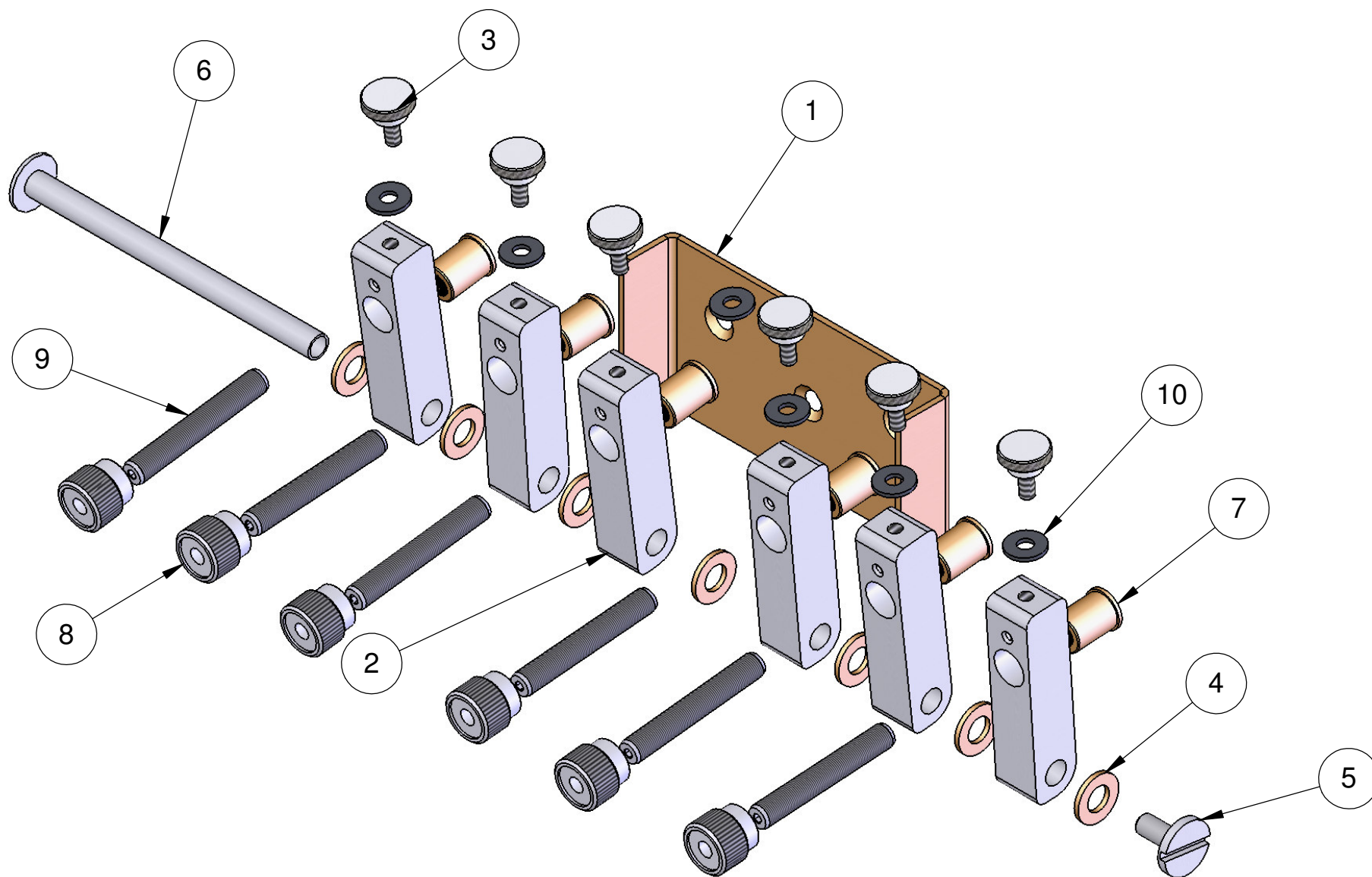
## Tuning Plate

Could be made from:  
 1403A43 (McMaster-Carr)  
 0.050" X 4" X 6"  
 Brass 'Push Plate'  
 \$11.80



## Pivoting Tuning Arm

Could be made from:  
8975K792 (McMaster-Carr)  
10mm X 10mm X 6'  
Al 6061-T6 Bar  
\$8.93



Exploded View

# General Notes:

This "Tuning Tailstop" is intended to be attached to the end of the guitar with woodscrews- I used machine screws with brass inserts installed in the guitar body. You'll need to have a flat spot at the end of the guitar, or else modify this design a bit.

A major goal of this design was to allow someone with limited tools, skill, and cash to fabricate it. So, in the interest of saving shipping costs, I pulled most of the hardware and raw materials out of the McMaster-Carr online catalog. This 'upgraded' version of the design, I used 3/16"-x 100 'optical nudgers' from Thor Labs instead of simple thumb screws- this increased the price a bit. (Cost of materials listed: \$179.80 [w/o tax or shipping])

However, I've always been a big fan of building things out of whatever already happens to be laying around in the garage- especially for a first attempt- so feel free to use whatever materials you're comfortable with.

To actually use the "Tuning Tailstop":

1. Loosen all the thumbscrews fully.
2. The ball-end of the guitar string gets attached at the 'head' end of the neck-
3. Thread the other end through the string hole in the appropriate tuning arm.
4. Pull the string end "up" until it is tight, then wrap it around the base of the small thumbscrew once, and turn the small thumbscrew to clamp it in place.
5. Turn the large thumbscrew to bring the string up to pitch.



Other tools that may help:

#4-40 bottoming hand tap:  
PN: 27175A112 \$9.05

Some possible enhancements/modification to the design:

Have the pivoting tuning arms anodized.

Install #4-40 helicoils to extend the life of the tuning arms where the string is clamped.

Make the tuning arms out of steel instead. \* You may find it necessary to 'file to fit'!

Have everything chromed!