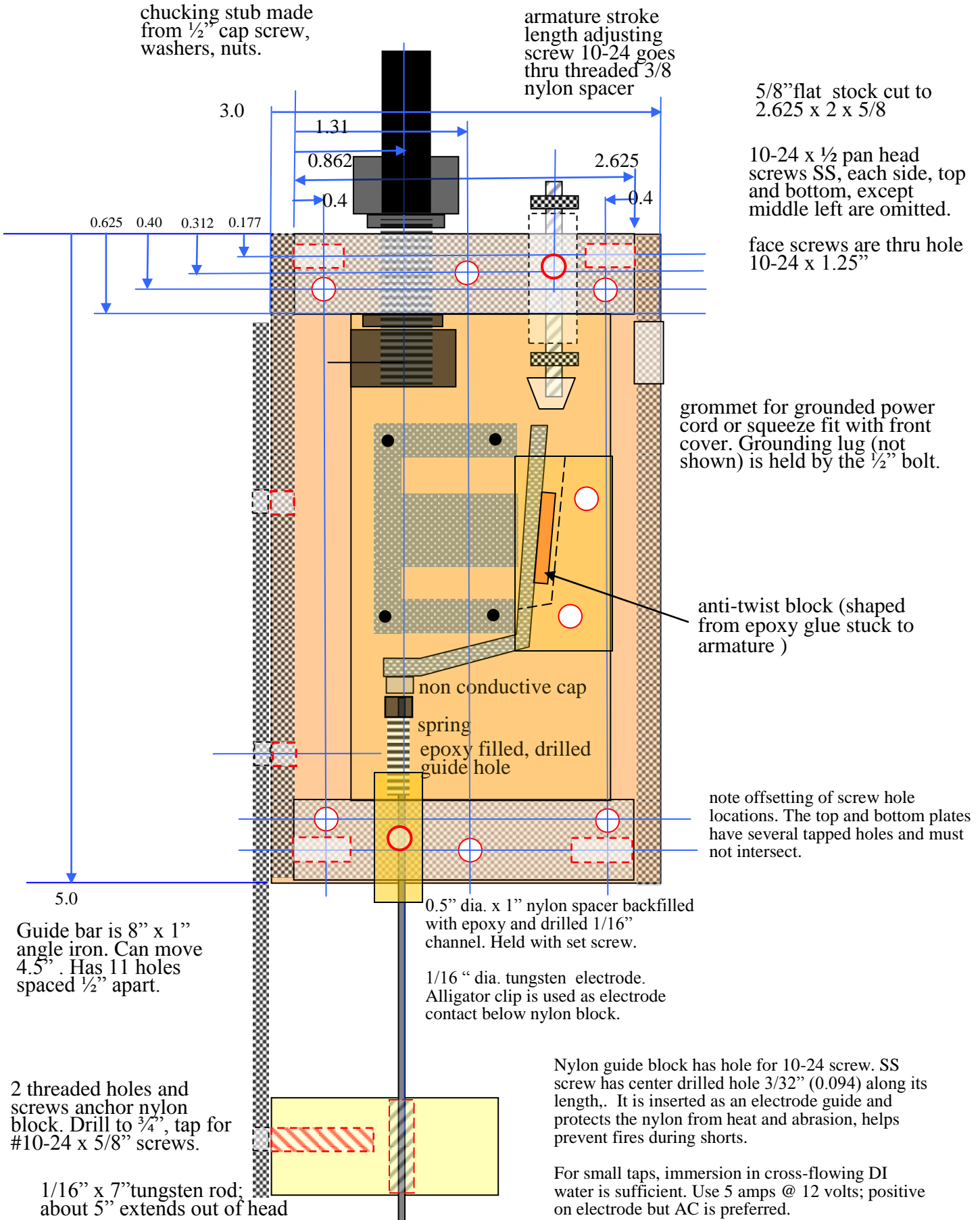
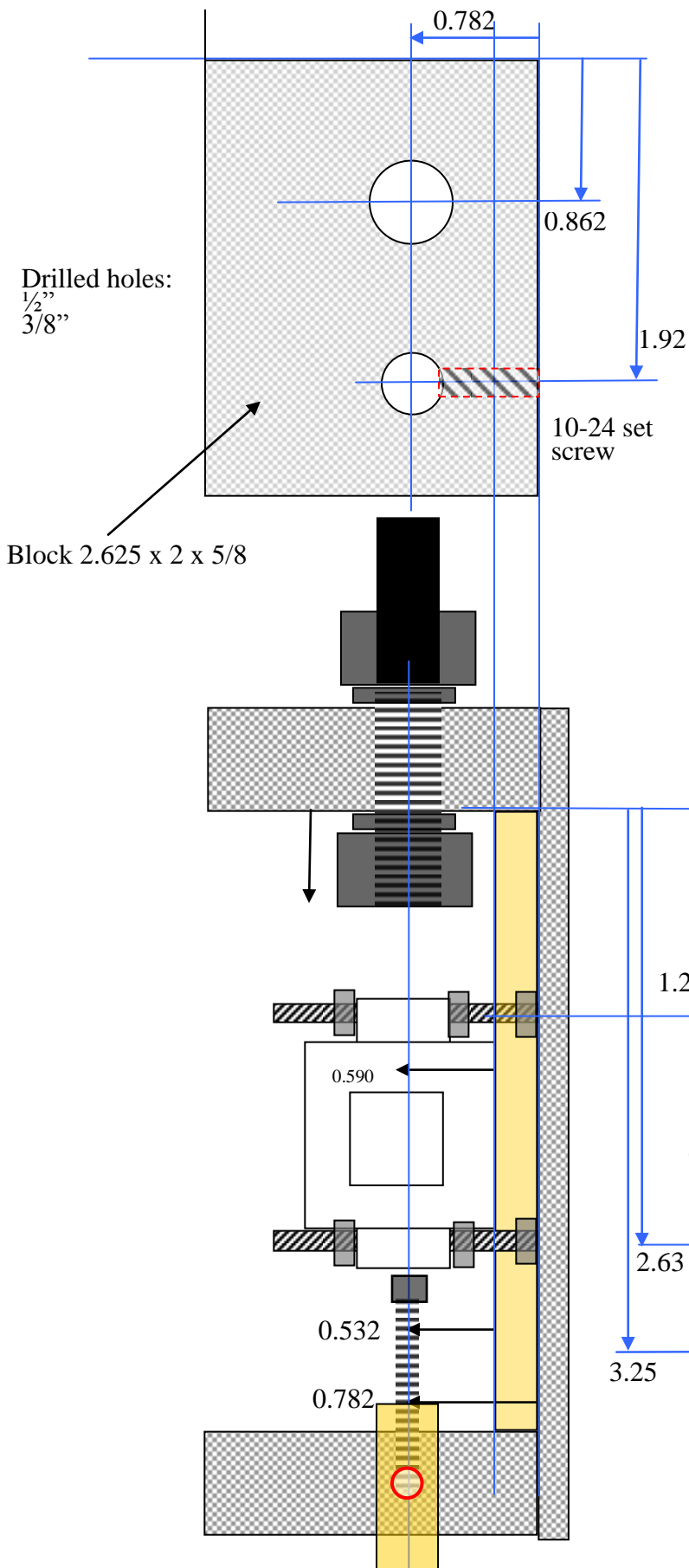


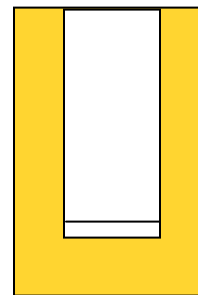
# Broken Tap Disintegrator

conceptual sketch (Preliminary)  
front elevation view

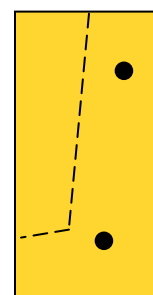




1.5 x 1.0  
Nylon

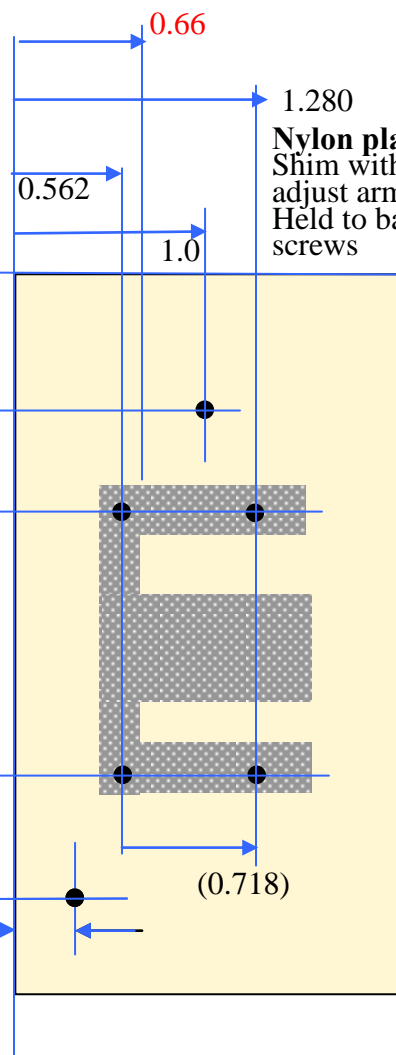


1.5 x 0.75  
Nylon



**Nylon armature keeper:**

1.5 x 1 x  $\frac{3}{4}$ "  
 Milled channel is 0.5" wide,  $\frac{5}{16}$  deep at top,  
 $\frac{3}{16}$  deep at bottom. Angle is about 10 degrees



**Nylon plate 2" x 3" x  $\frac{1}{4}$ "**  
 Shim with plastic sheet to adjust armature height.  
 Held to back plate with 2 screws

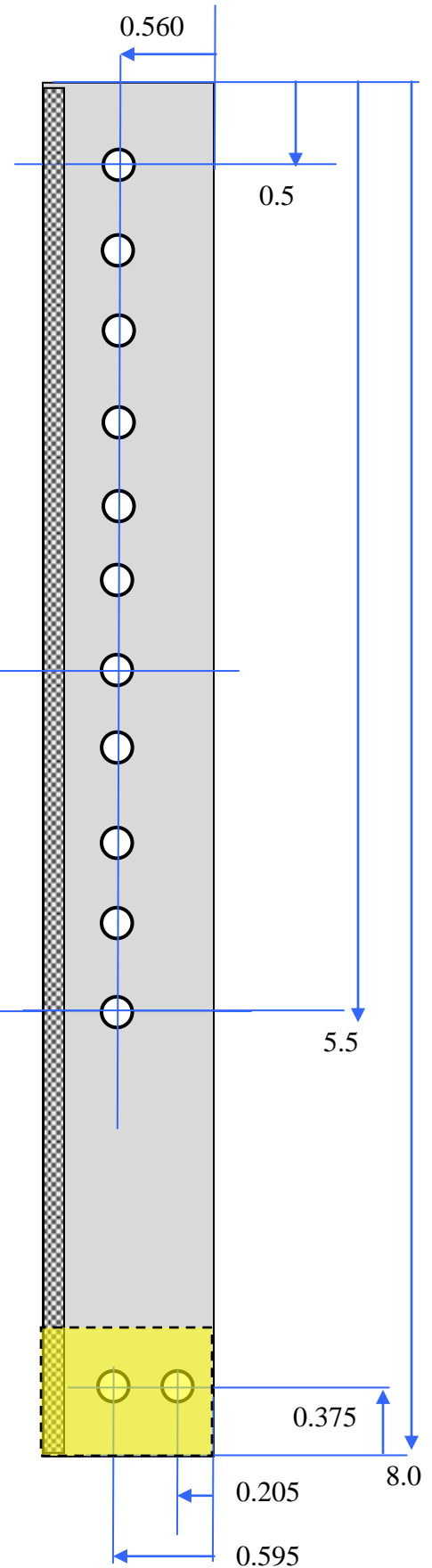
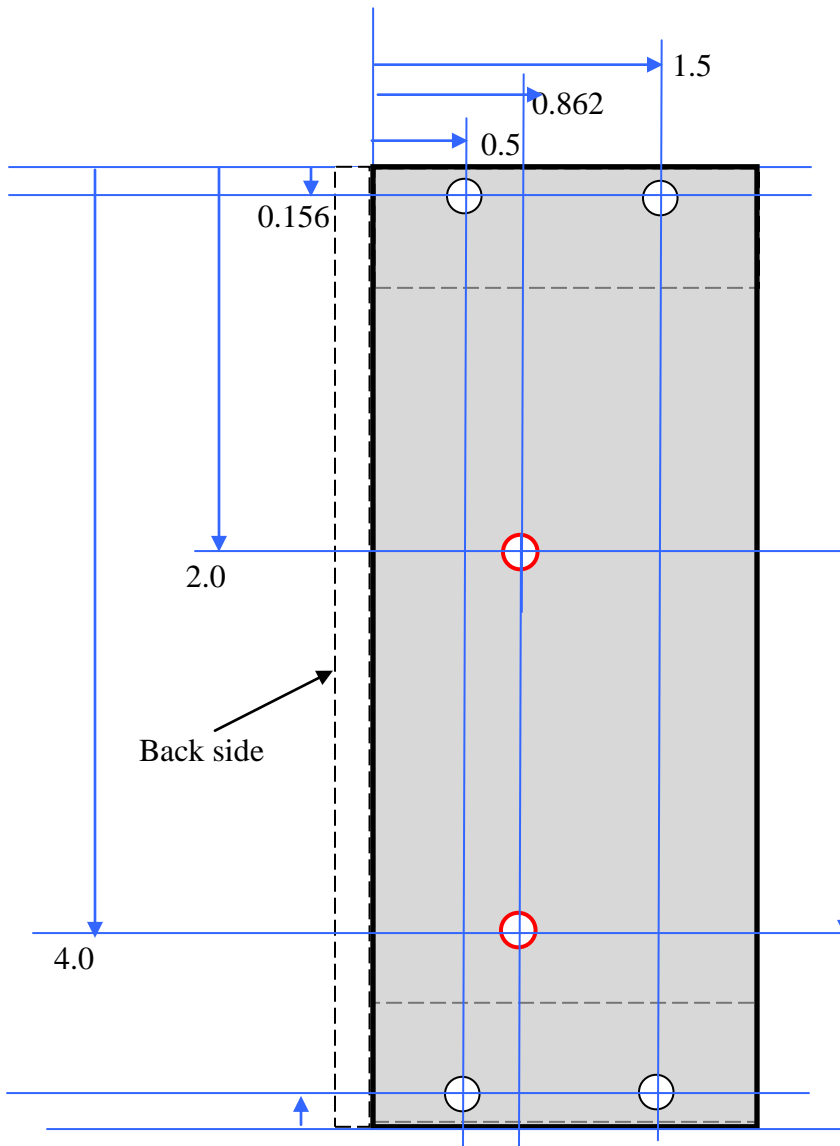
**Nylon spacers (pre-drilled):**

- $\frac{1}{2}$ " x 1" (for electrode feed thru)
- $\frac{3}{8}$ " x 1" (feed thru for armature screw)
- $\frac{3}{8}$  x  $\frac{1}{2}$ " (armature screw tip)
- set screws prevent movement of standoffs

10-24 set screw anchors nylon spacer and serves to adjust tension.

spring is about 1 x long,  $\frac{3}{16}$ " OD. and seats inside spacer; drill for loose fit.

**Left side plate**  
**2" x 5" x 3/16"**



The 4 peripheral holes on this plate are 10-24 clearance holes and are countersunk for flat head screws.

The 2 midsection holes are threaded 10-24

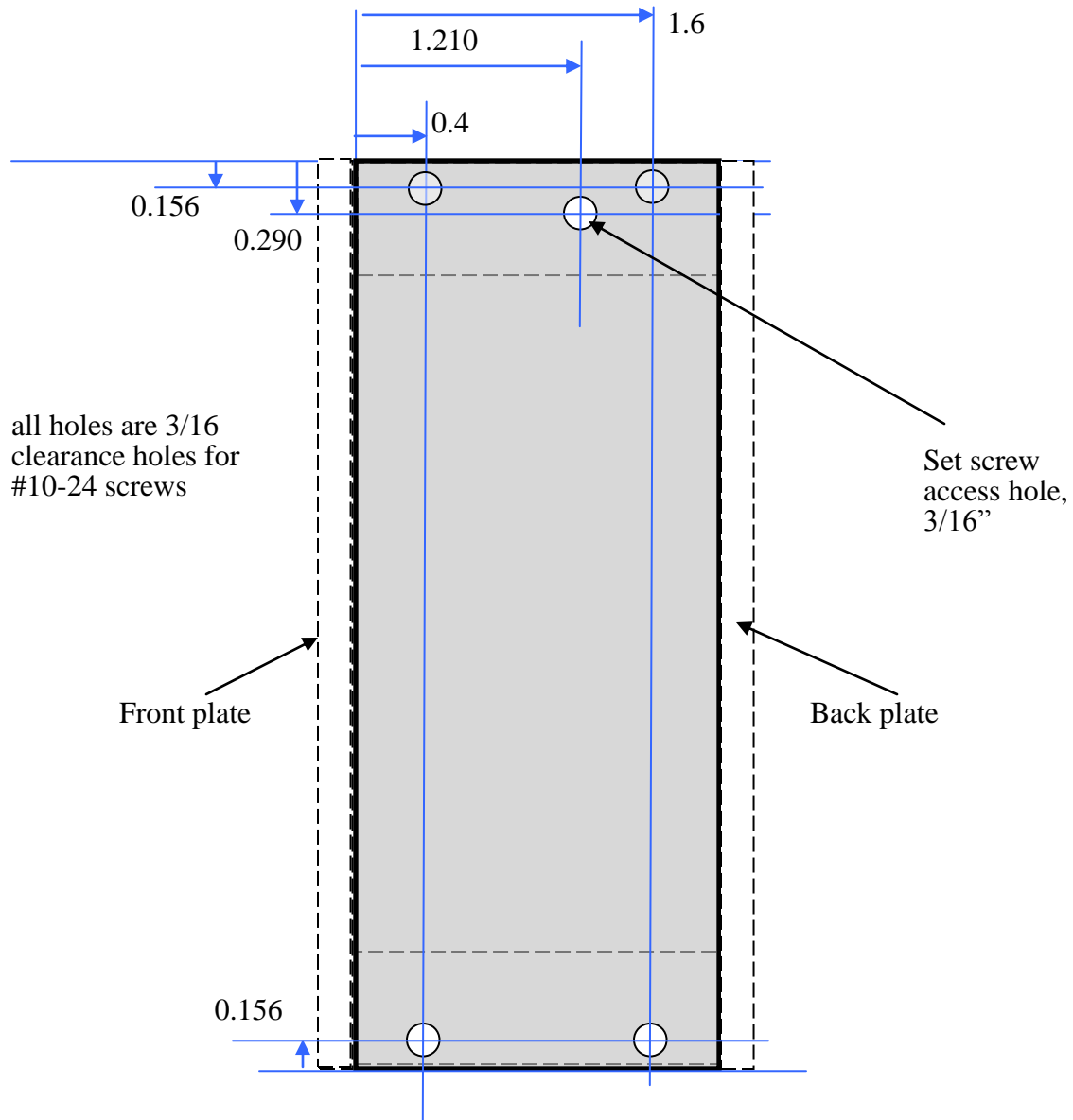
**Guide bar:**  
 8" x 1" angle iron"  
 Eleven holes are 1/2 inch apart.

bottom two holes are for mounting nylon block

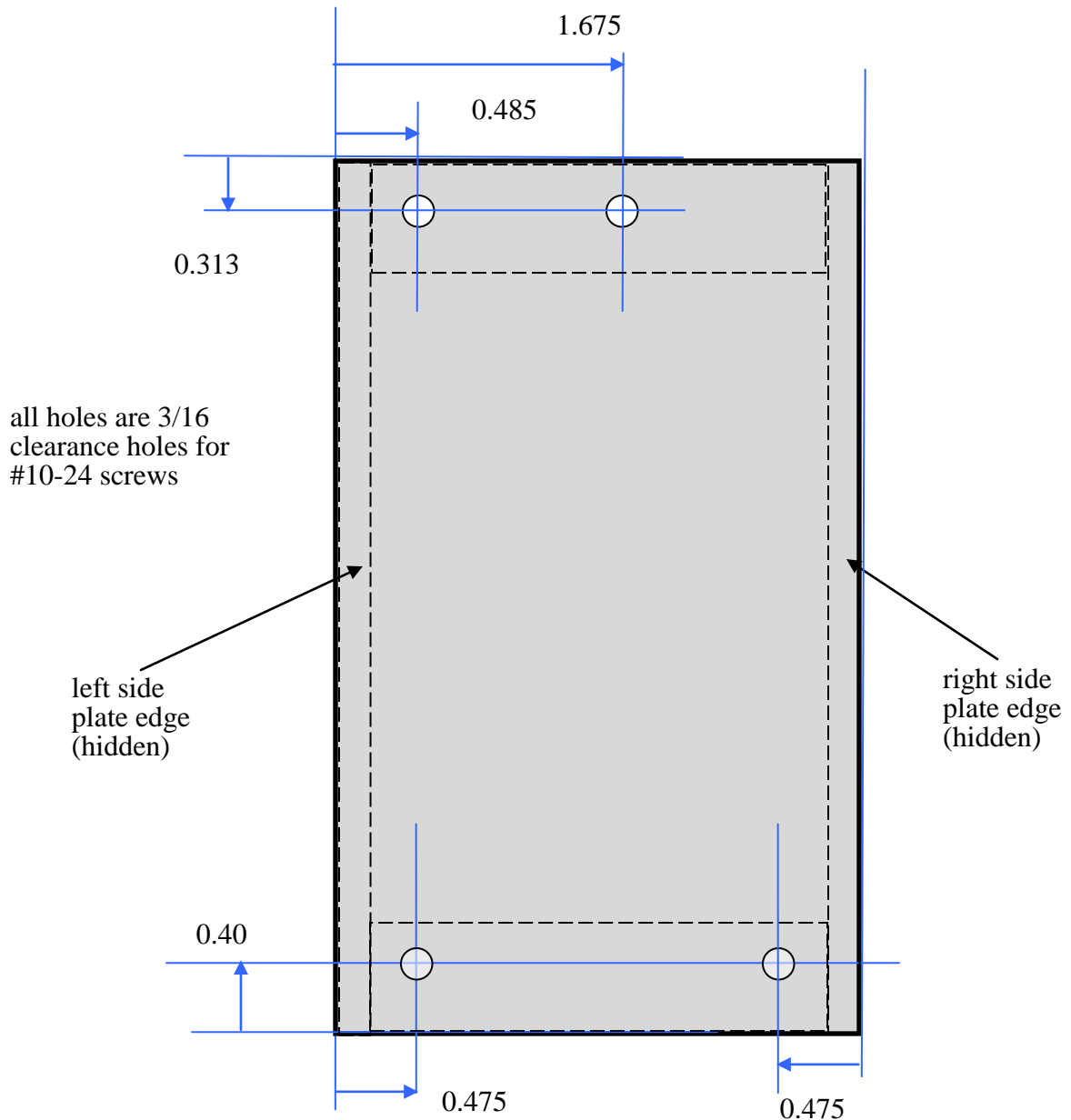
**Nylon guide block:**  
 1" x 3/4" x 3/4"

Exact hole location for electrode guide screw is to-be-determined during pre-assembly.

# Right side plate 2" x 5" x 3/16"



## Front plate 3" x 5" x 3/16"



### Major metal parts:

3" x 5" x 3/16" front and back plates  
2" x 5" x 3/16" left and right side plates  
2.625" x 2" x 5/8" top and bottom plates

8" x 1" angle iron for guide bar.

### Major nylon parts:

1" x 3/4" x 3/4" guide block  
1.5 x 1" x 3/4" armature keeper  
3.75 x 2" x 1/4" vibrator subassembly

### Nylon spacers (predrilled #10 usually)

1/2" x 1" (for electrode feed thru)  
3/8" x 1" (feed thru for armature screw)  
3/8 x 1/2" (armature screw tip)

# Broken Tap Disintegration (“Tap Burner”)

## Overview:

This document presents a conceptual sketch for a broken tap disintegrator that is intended for *small* broken taps, specifically 10-24 thread, or thereabouts. It uses a longitudinally vibrating 1/16” solid tungsten electrode which is powered with about 5 to 10 amps @ 12 volts (AC preferred). The tiny cross section may require multiple passes even on a 10-24 tap. In the initial test, about 15 minutes was required to penetrate a broken 10-24 tap in a 3/16” steel plate.

The vibration generator comes from a broken ACE Hardware brand “Professional Electric Engraver”. The driven electrode is electrically isolated from the disintegrator metal case, which in turn is safety grounded via the AC power cord. The electrode is connected via a simple alligator clip positioned on the vibrating electrode *below* the nylon guide block. The power source was a 12v battery charger in parallel with a small 3Ahr battery. AWG #14 wire was used for the connections. During use, a drill press quill is used to slowly feed the disintegrator with the vibrating electrode into the work. The work has DI water flowing across (or through) the active area to remove particles and cool the electrode.

The pictures shown here are of a test version, not the final unit.

**Note: Drawings have not been rechecked for accuracy, missing dimensions, etc.**

## On line Refs:

Commercial disintegrators for larger taps use a hollow molybdenum tube instead of a solid electrode, and have DI water flowing thru it during a disintegration operation. These run at 100-150 amps and can disintegrate large taps in a couple of minutes without damaging nearby threads in the substrate.

<http://www.youtube.com/watch?v=YbeKxFBZrF8>

<http://www.youtube.com/watch?v=y9PzvVUBp-M>

<http://www.youtube.com/watch?v=2W4xZYRkWG0>

Reliable EDM <http://www.youtube.com/watch?v=eaeEn1Gs4aQ> , <http://ReliableEDM.com>

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