

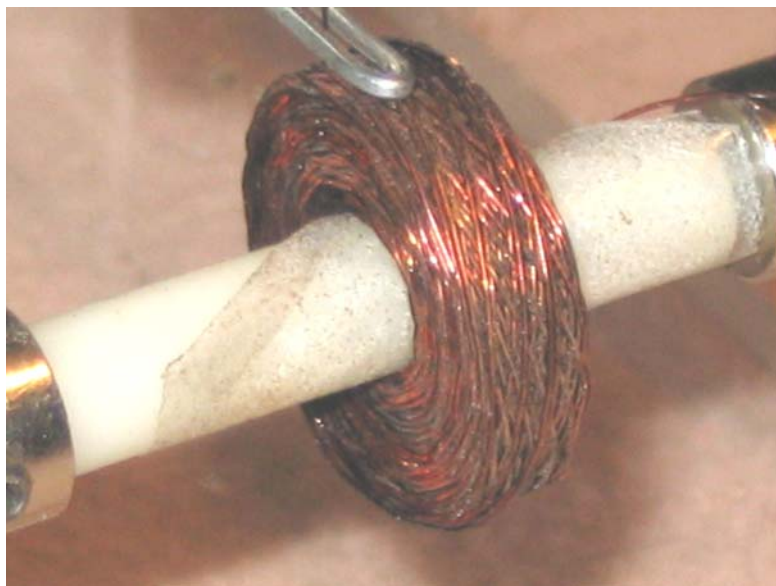
Coil winder

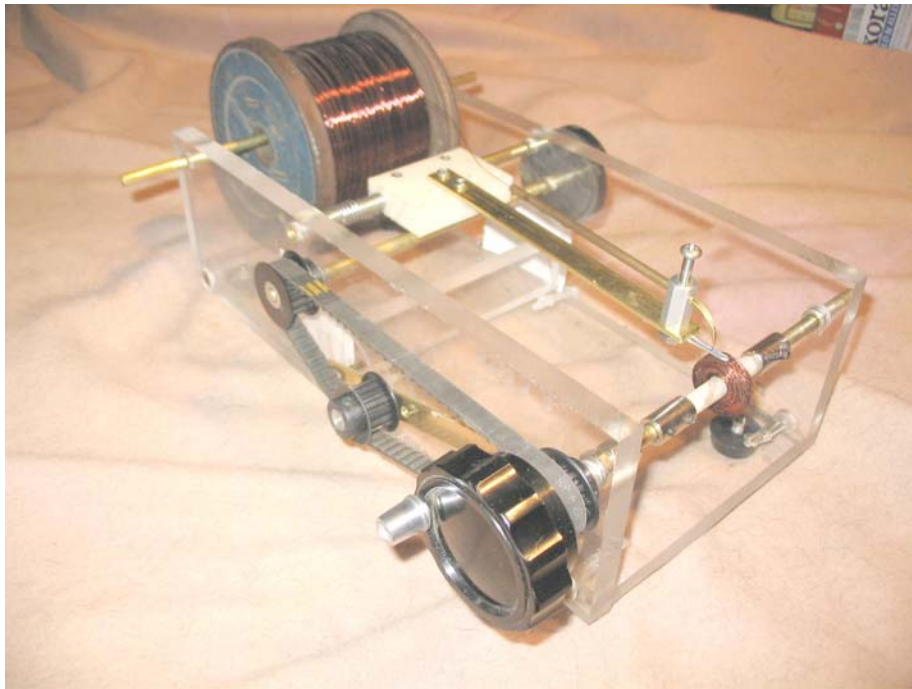
By Lloyd Godsey KK7IZ

First let me say this machine was the product of an overflowing junk box and an overactive imagination inspired by some 1935 technology. If you want to make a change to fit your needs or supplies on hand have at it. The sides and bottom could be wood or metal or a combination of the two. I used plastic because I had it on hand.

The only thing I could not come up with surplus was a drive mechanism that other people could duplicate. So..... I went to Standard Drive Products. I highly recommend you get their catalog 790-2 to enhance your dreams or nightmares. On line go to www.sdp-si.com. Go crazy. Careful how you order, if you order with on line form they tell me there is no minimum charge, if you order with an email or by phone there is a \$50 minimum. Best to call them for clarification.

Other caution notes. When you cut the long sides of the bottom, be sure your saw is 90' to the table, otherwise the sides may tip in or out and the holes won't align for the shafts. The other thing is the holes in the sides should be drilled with the 2 side pieces clamped together, and drilled in a drill press. If your drill press has a tilt table make absolutely sure it is 90' to the drill bit. Otherwise ain't nuttin gonna work right.





A picture is worth a thousand words so take a good look at this. Remember, prototype is pictured, yours will look slightly different.

I will detail the components of the unit and then we will assemble it.

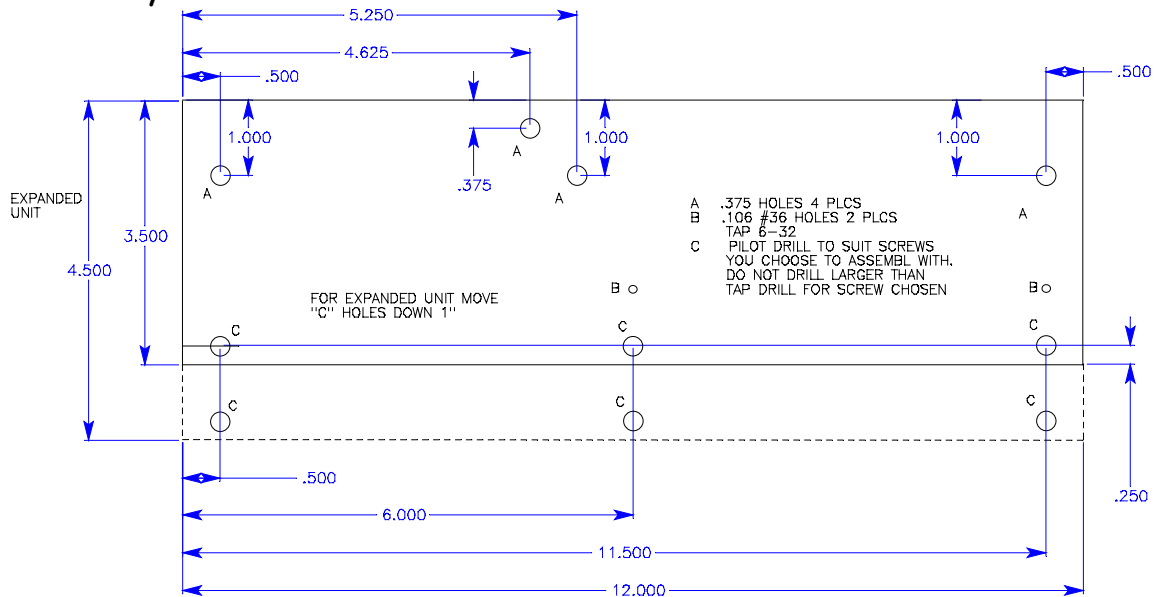
First, decide how big a machine you want to build. I discovered that some of the reels of cotton-covered wire I had collected would not fit on the machine as I built it. I would add 1" to the height. Also I would like to have a little bit more room between the side plates so would make it 1" wider. Diagrams reflect both configurations.

This unit develops the basket weave effect because the camshaft is turning slightly faster than the take up shaft. ALWAYS put the largest timing belt pulley behind the take up crank. Different weave patterns can be developed by reversing timing gears 2 and 3 (idler) or using one of the optional gears on the cam drive shaft and any other gear for the idler.

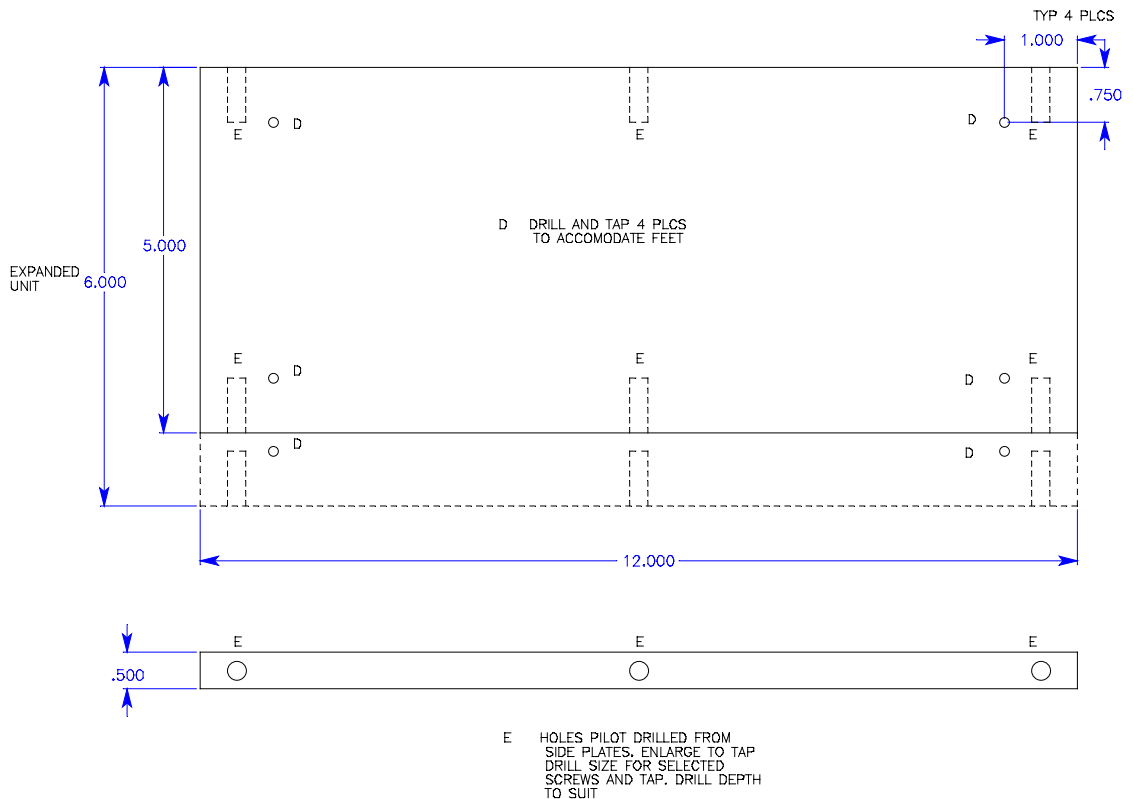
Parts list See supplier sources list last page

	5" wide machine	6" wide machine
1 pc 1/2" plexiglass	5" X 12"	6" X 12"
2 pcs 1/2" plexiglass	3 1/2" x 12"	4 1/2" x 12"
1 pc 1/4" dia brass rod cam axle	8"	9"
1 pc 1/4" dia brass rod cam follower	7"	8"
File or grind a smooth round end on 1 end of this shaft.		
1 piece feed spool holder	7"	8"
2 piece 1/4" dia brass rod take up bobbin	2 1/2"	2 1/2"
2 piece 1/4" dia brass rod take up bobbin	3 1/2"	3 1/2"
2 piece 1/4" dia brass rod take up bobbin	4 1/2"	4 1/2"
2" round plastic stock to make cams as required		
2 or more 1/4" shaft couplings		
2 or more 1/4" shaft locks		
2 springs 5/16" x 1 1/2" compression		
1 spring 5/16" x 3/4" extension		
1 piece brass bar stock .096 x 1/2"		
1 piece brass round tube stock 3/16" OD x 1/8" ID		
1 piece brass round tube stock 1/8" OD x 1/16" ID		
8 each 3/8" OD x 1/4" ID x 1/2" long oilite bearings		
1 each 3/8" x 3/4" hex standoff, 8-32 stud on 1 end, tapped 8-32 on other		
6 each screws for assembly, 10-32 x 1" or 1/4-20 x 1"		
2 each 6-32 x 1" long screws		
2 each 6-32 screws 1/2" long		
1 each 4-40 x 1/2" countersunk head screws		
4 feet and screws as required		
1 each crank or knob		
1 timing pulley (# 1) SDP A 6Z 3-16DF03708 (.999 OD)		
1 timing pulley (# 2) SDP A 6Z 3-15DF03708 (.955 OD)		
1 timing pulley (# 3) SDP A 6Z 3-14DF03708 (.891 OD)		
1 timing belt SDP A 6R 3-080037		
Optional other gears		
1 timing pulley SDP A 6Z 3-13DF03708 (.828 OD)		
1 timing pulley SDP A 6Z 3-17DF03708 (1.082 OD)		
1 timing pulley SDP A 6Z 3-18DF03708 (1.146 OD)		

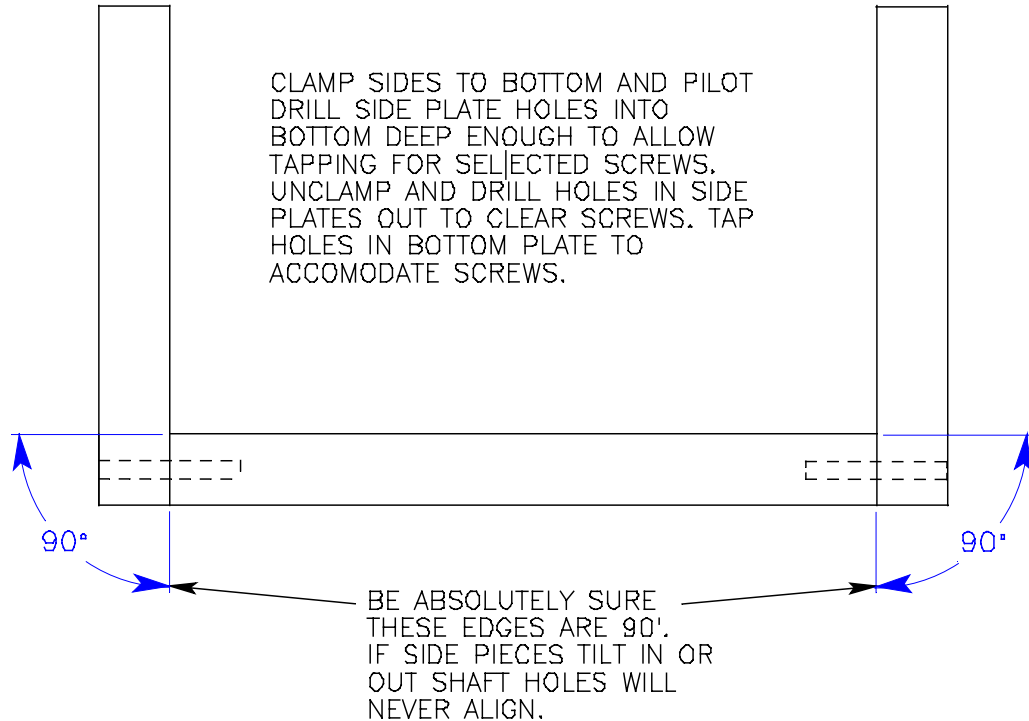
Item 1. Side plates. If you drill and tap them both identical, you can assemble the unit as either a right handed or left handed unit, depending on which one you are more comfortable with.



Drilling pattern for side plates
 Material 1/2" acrylic sheet plexiglass
 Press Oilite bearings into 3/8" "A" holes at this time



Drilling pattern for bottom plate



SIDE PLATE TO BOTTOM ASSEMBLY DETAILS.

Note: screws for assembling should be 10-32 or 1/4-20.

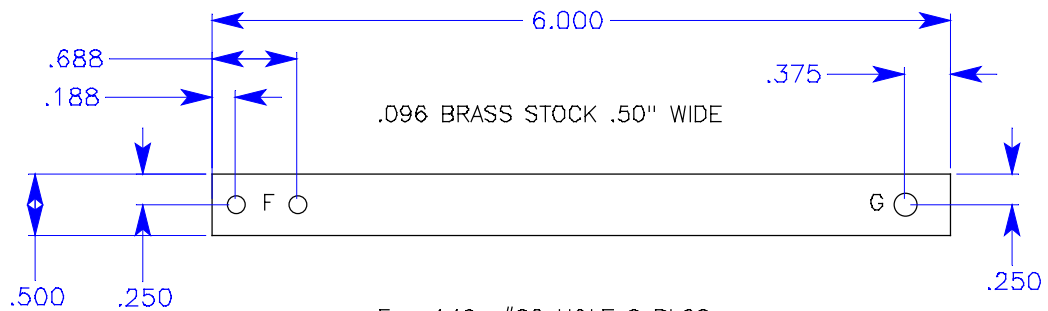
If you don't mind the screw heads sticking out, go ahead and assemble. Or you can use countersunk screws and countersink the plastic. On my first one, I had some 1/4-20 hex head cap screws on hand so I drilled part way thru the side to bring screw head flush with outside.

First start screws thru side plates and into bottom plate.

DO NOT TIGHTEN

At this time cut several of the 1/4" brass rods and insert them in the bearings. Tighten bottom plate screws while checking the free rotation of the shafts. They should not bind. If necessary enlarge the "C" holes on one plate to allow alignment. When satisfied, tighten all screws.

Now for the small stuff.

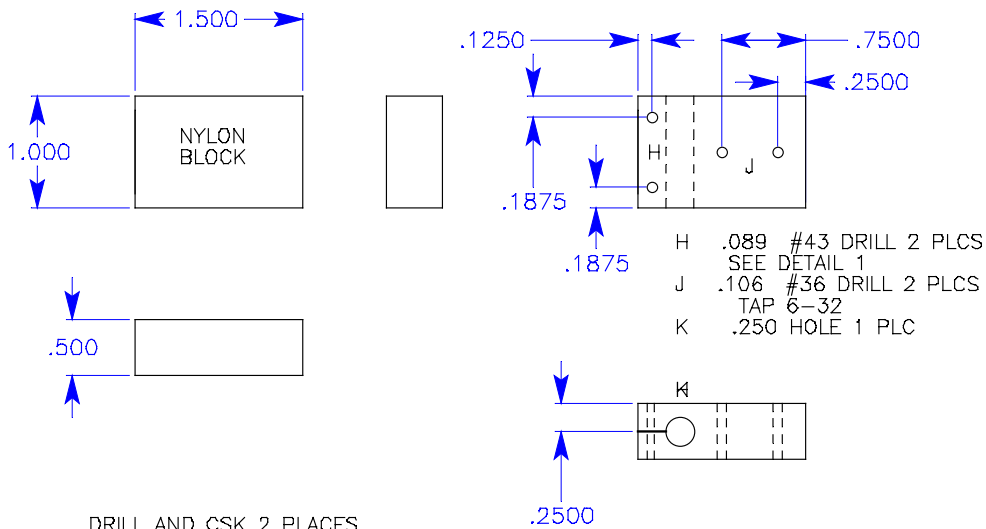


F .140 #28 HOLE 2 PLCS

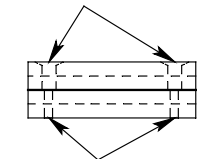
G .166 #19 HOLE 1 PLC

Arm Details

Suggestion, make this piece first, then use "F" holes to center "J" holes in nylon block



DRILL AND CSK 2 PLACES



SAW SLOT



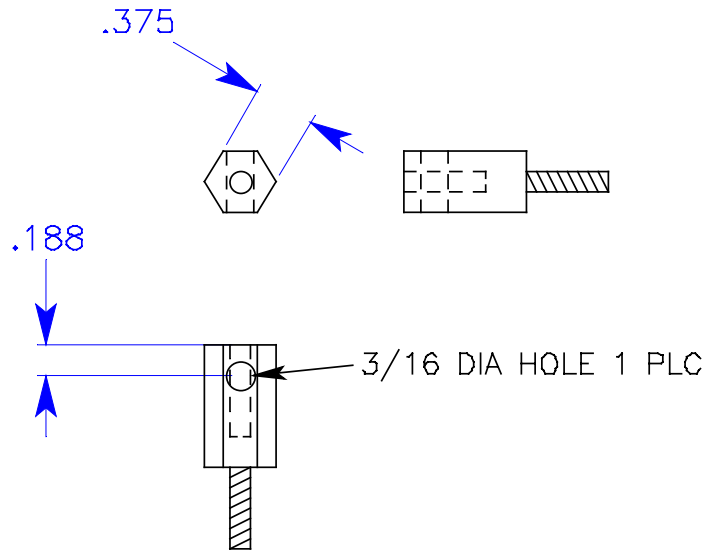
USING FINE SAW, CUT SLOT ACROSS BLOCK AS SHOWN

INSERT A THIN PIECE OF METAL INTO SLOT TO USE AS A DRILL STOP

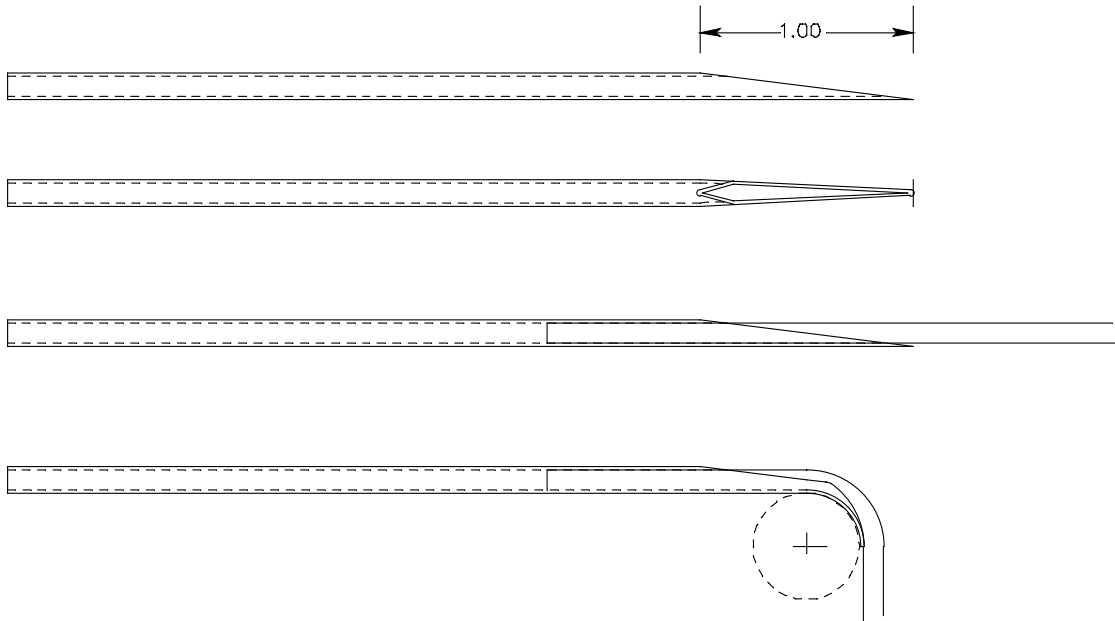
DRILL TOP PORTION OF HOLE .113 #33 TO CLEAR 4-40 SCREW AND COUNTERSINK TOP SIDE FOR SCREW HEAD. TAP LOWER PORTION OF HOLE 4-40

Details of carriage block Wire Guide Assembly

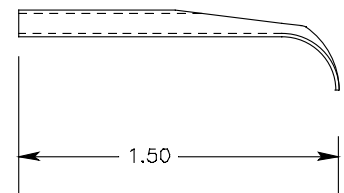
3/8" HEX SPACER .75 LONG
 1 END TAPPED 8-32, OTHER END HAS
 8-32 STUD 1/2" LONG
 DRILL AS SHOWN



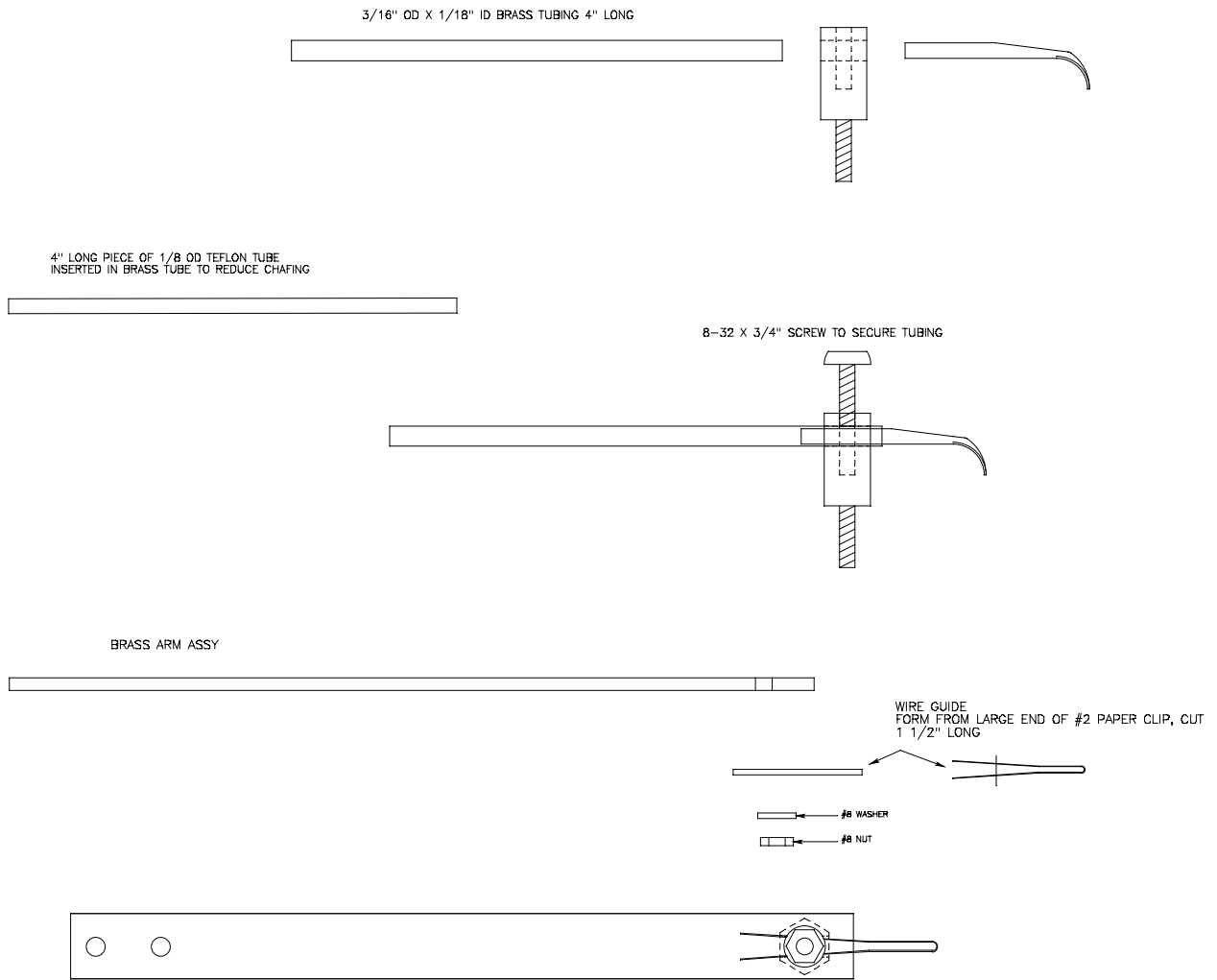
Details of feed horn



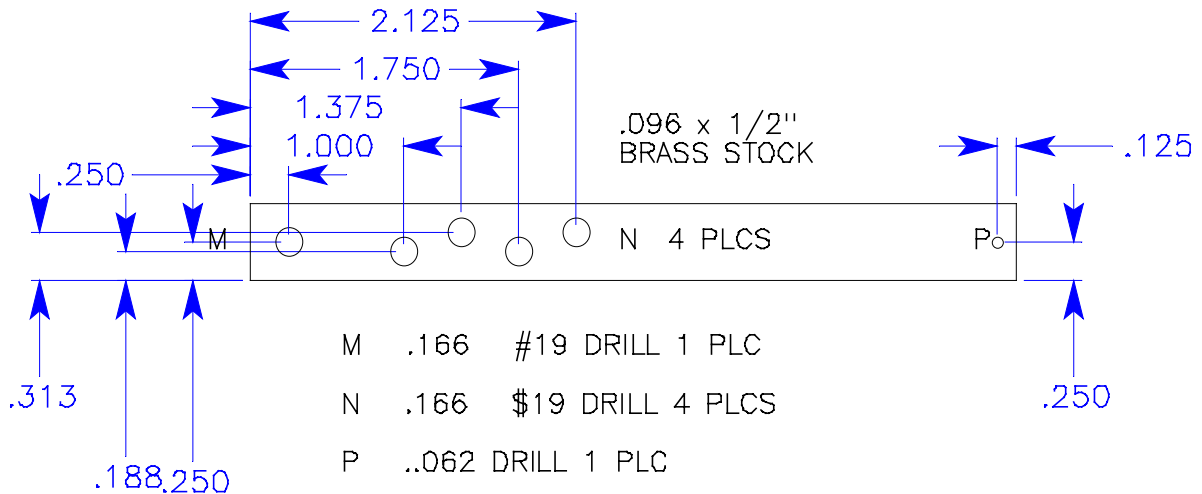
1/8" OD X 1/16" ID BRASS TUBING. FILE OR GRIND TAPER
 ON 1 END 1" LONG. INSERT 3/32 ROD INTO END APPROX 4"
 CAREFULLY BEND TAPERED SECTION AROUND A 1" DIA MANDRAL
 90 DEGREES. REMOVE WIRE AND CUT SECTION APPROX 1.5" LONG.
 SEE DIAGRAM



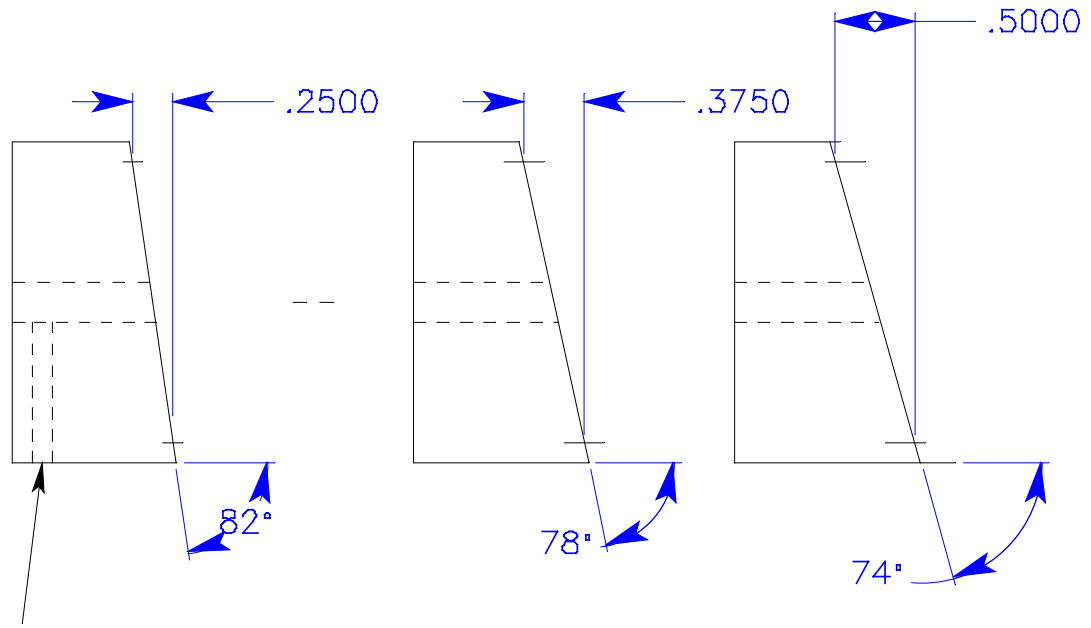
Feed Assembly



Idler arm details



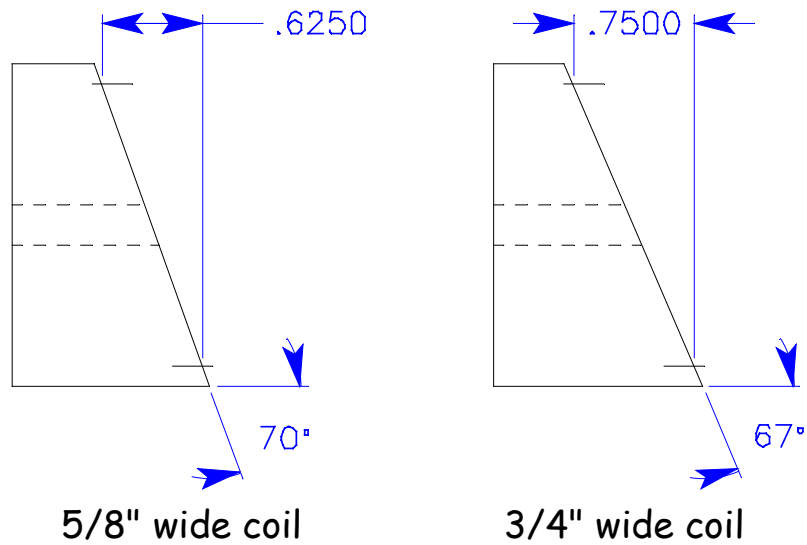
Cam Details



1/4" wide coil

3/8" wide coil

1/2" wide coil



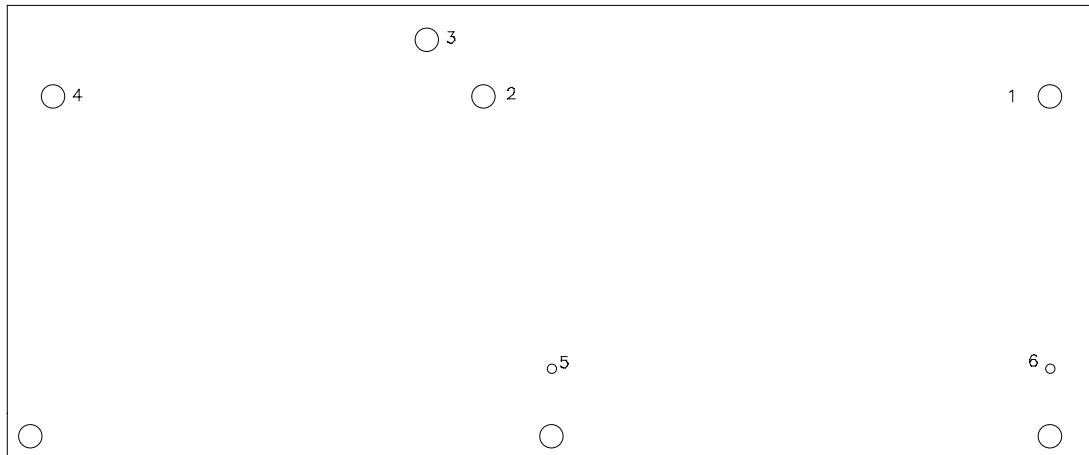
5/8" wide coil

3/4" wide coil

Cut from 2" dia plastic, center drilled 1/4"

A 6-32 set screw should be provided thru wide side to secure to shaft.
Length of each cam depends on what you are comfortable working with.

Now we have all the major components, lets put it together and see if we can make it work.



Insert cam follower shaft in hole 3 round end first. Put a pair of overlapping springs over the shaft. Slide carriage block assembly onto shaft. Slide shaft thru matching hole in other side plate.

Insert cam axle shaft in hole 2 and pass thru other side plate. Place timing pulley 2 on end of shaft, hub in. Place any cam on other end of shaft.

Turning timing pulley 2 should turn cam, and carriage block should move back and forth. Tension can be adjusted by turning the 2 springs in or out to vary tension.

Obtain a short #6 screw and a 1/4 x 1" round bushing threaded 6-32 on 1 end. Put screw thru one of the center N holes in idler arm and screw the bushing to it. Place 2 washers on a #6 screw, put thru hole M in idler arm, put on 2 or 3 more washers and screw onto hole 5. Put 1 washer on a 6-32 screw and pass it thru the loop in end of 3/4" spring. Install a second washer and screw into hole 6. The other end of the spring hooks into hole P in idler arm. Slide timing pulley 3 on idler shaft HUB OUT.

Decision time.

How big a coil are you going to make. Select coil width cam and install on shaft.

The configurations of the take up shaft are limited only by your imagination. Start by installing your crank knob on 3 1/2" shaft. Then place

timing pulley 1 on shaft next to it, hub away from crank. Insert shaft in hole 1 and install a locking collar. Put a 1/4" shaft coupling on the end of shaft and tighten set screw. . Insert a piece of plastic coil form stock in the shaft coupling and tighten set screw. Install another shaft coupling on other end of coil form stock and tighten setscrew. Pass a piece of 1/4" brass stock thru hole 1 of other side plate from outside and into shaft coupling. Tighten setscrew.

Install belt over timing pulley 1, then timing pulley 2, then lift idler and slip belt under it. You can adjust belt tension to suit you by moving idler shaft on arm up or down the shaft.

Place spool of wire on feed axle, pass end of wire thru feed tube, down over feed horn and thru wire guide. Wire guide should be positioned directly over center of axle and ride lightly on it.

You are now ready to wind a coil.

Possibilities:

Want a multi-pi coil or IF transformer?

Loosen carriage block and slide 1/2' to one side of center. Wind one coil. Slide carriage block 1" (or that ever distance you want the center to center distance of coils) and wind second coil. For IF transformer, leave enough wire slack between the two coils to work with, for multi-pi coils, keep interconnecting lead short.

Before you squawk, counter and maybe motor drive are coming.

Material sources

Timing gears and belts Stock Drive Products www.sdp-si.com

Shaft locks H.H. Smith #181 Newark Electronics

Shaft couplings H.H. Smith #120 Newark Electronics

Brass stock Ace Hardware
 McMaster-Carr
 Hobby shop

Hex stand off McMaster-Carr P/N 93505-167

Idler shaft McMaster-Carr P/N 93330A449

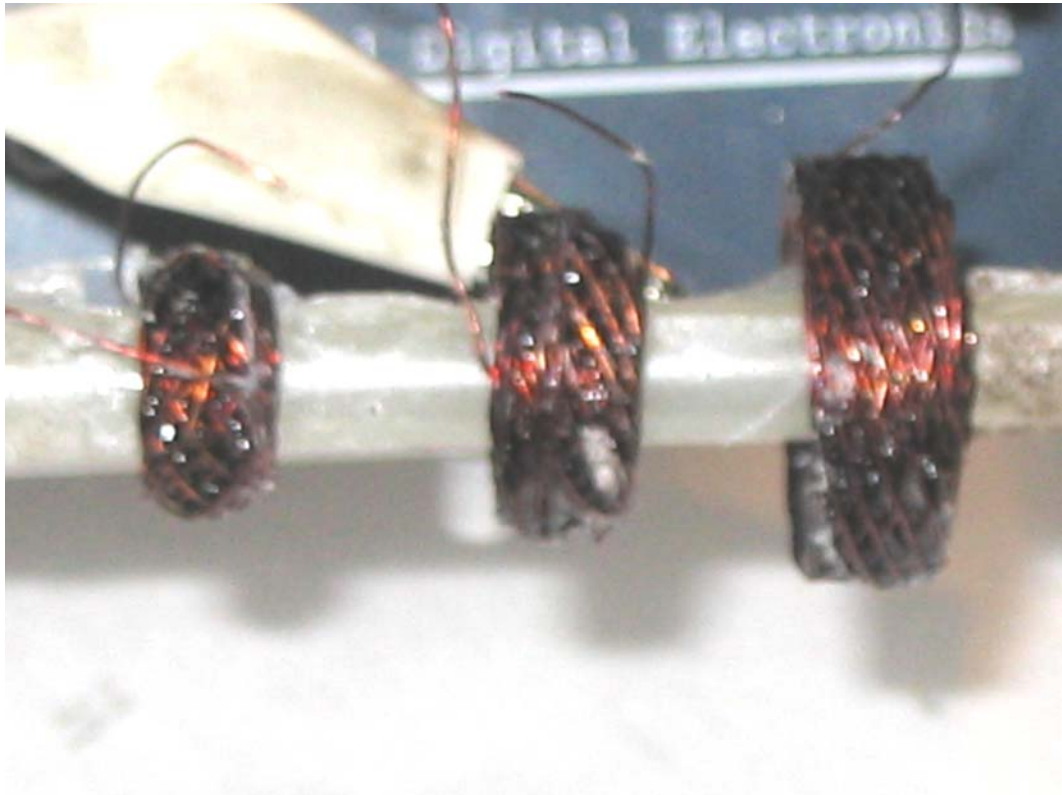
Bearings McMaster-Carr P/N 9368T15
 Ace Hardware 1" bearings, cut in half

Plastic and nylon material Local purchase

Screws and hardware Ace Hardware

Springs Harbor Freight spring collection

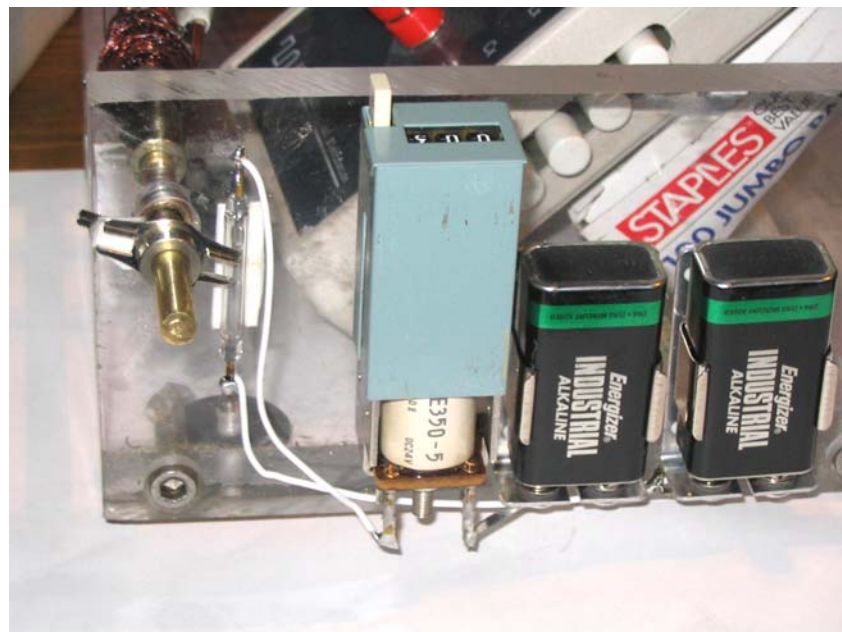
More on the coil winder



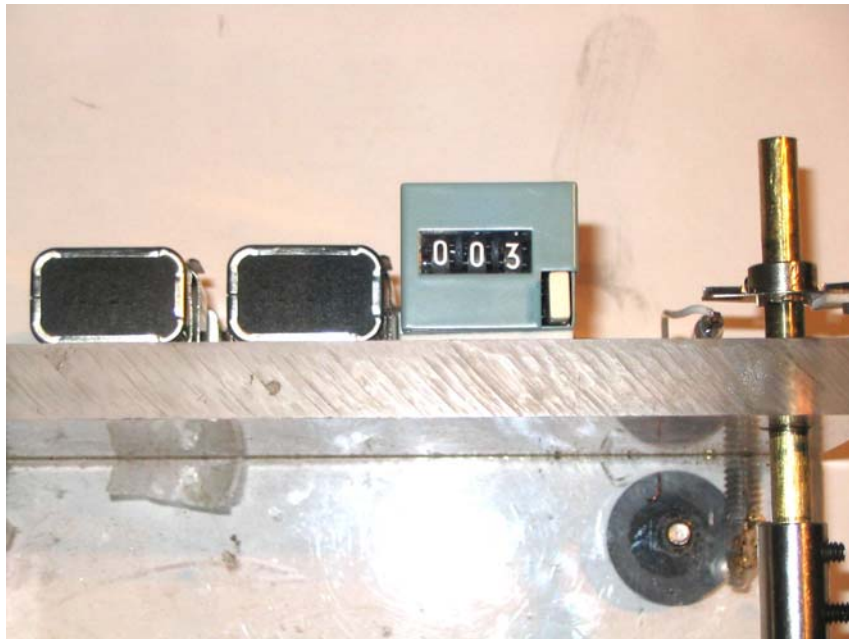
50 turns	100 turns	150 turns
11.95 uh	19.87 uh	146.5 uh
#28 wire on 1/4" form		



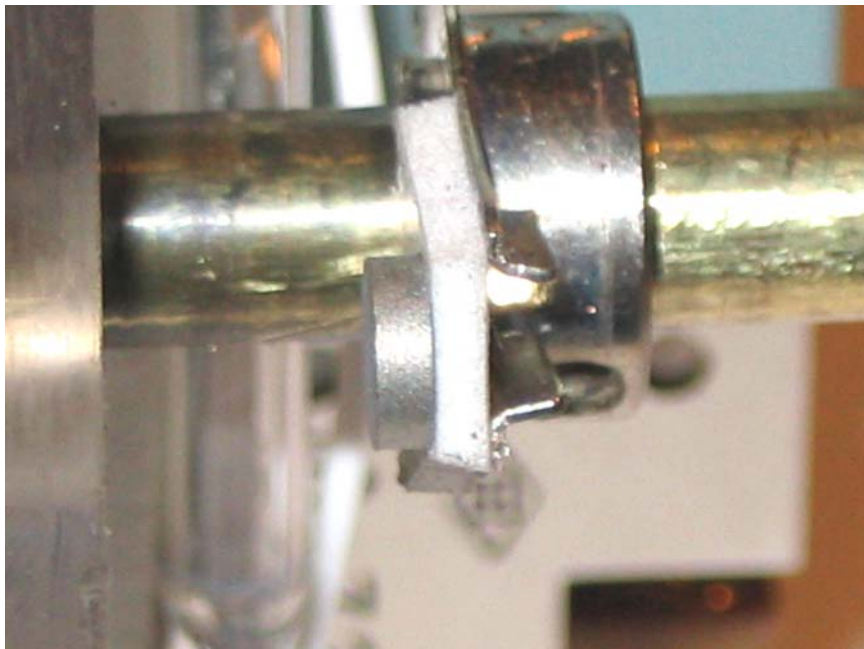
Counter details



Side view



Top view



Close up of rare earth magnet