

**COLFAX TACTICAL**  
**Milling out the fire control pocket- Jan.2011**  
**Step by step**  
**Using a milling machine with digital read out (DRO)**  
**Please read and understand this prior to starting!**

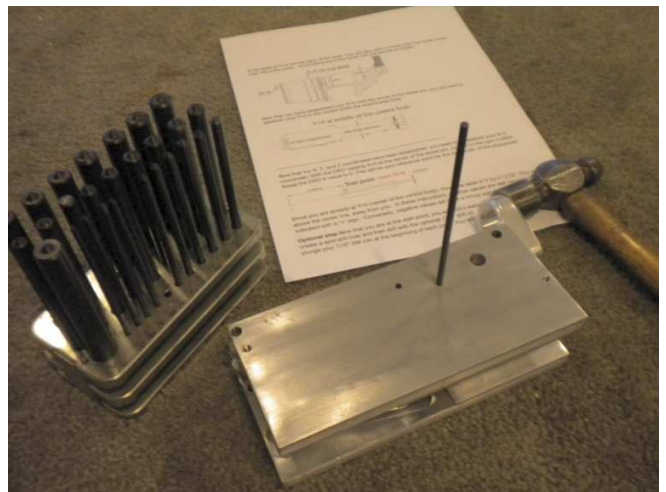
The Colfax Tactical CD that is supplied with each lower has two complete tutorials on it. One tutorial (Justin's Solid Tutorial) is for machining the fire control pocket on a home type drill press. That tutorial will be more suited for the individual with very limited machining experience. The other tutorial (Machining the AR15 by Ray Brandes) is for the individual with more advanced machining capabilities.

For those of you with a milling machine, and equipped with DRO on the X and Y axis, and with the knowledge to use it, the attached instructions should help save some time. I suggest that you first read through all of this prior to starting.

The picture shows the three holes that need to be drilled in the side of the fire control body. They are hammer, trigger, and selector holes and are 5/32", 5/32", and 3/8", respectively. The Colfax Tactical fixture (jig) has those holes pre drilled. The supplied dowel pins will properly orient the forging in the fixture. You can use the side fixture holes as a drill guide or your can use the holes for marking the forging with a set of transfer punches. Your fixture (jig) will last a lot longer if you use the side holes to mark the locations with transfer punches.

Here is a suggested order of events:

- 1) Assemble the lower in the jig.
- 2) Transfer punch the side holes (hammer, trigger, and selector)
- 3) Remove from the jig
- 4) Place sideways in vise jaws and drill the selector hole only.
- 5) Remove from vise and return to jig assembly.
- 6) Put entire assemble back into vise.
- 7) Mill out the fire control pocket including the trigger slot.
- 8) Drill the hammer and trigger holes.



Picture shows transfer punching the trigger hole

You can see from the above sequence that we are drilling the selector hole prior to milling out the fire control pocket. The reason is that there is a step on the inside opposite wall of the fire control pocket (after milling out) that can cause the 3/8" drill to drift. By pre drilling while it is still solid, we avoid the potential of drifting. Conversely, the hammer and trigger holes are drilled after completing the fire control pocket milling.

**Tools needed:**

- 1) Transfer punch set
- 2) Colfax Tactical jig
- 3) Machinist (ball peen) hammer
- 4) 3/8" drill (new or very sharp)

- 5) 5/32" drill (new or very sharp)
  - 6) Center cutting 7/16" end mill (em) with a 0.75" length of cut (loc) and another center cutting 7/16" em with a 1.25" loc. The reason for the two loc's of the same diameter is to keep the end mill chatter down to a minimum. A shorter end mill will give a smoother finish cut. You can start with the shorter em in the main area of the fire control pocket (fcp). Then when you go as deep as you can with the shorter em, switch to the longer one to finish it. Please remember that your feed rate can be faster with the shorter em and you will need to slow it down with the longer loc. You will also want to do the middle section with the longer em. The rear section (near the buffer tower) can be finished with the short em since it is only going 0.630 deep as long as the tool holder or spindle does not hit the buffer tower.
  - 7) You will also need a 5/16" center cutting em for the trigger slot. From the deck, it needs to be long enough to reach down 1.35" without the tool holder hitting the top of the deck. The actual loc needed is minimal so a 0.500" loc em is just fine.
  - 8) Optional tool: # 3 starter bit (spot drill) and a new (sharp) 7/16" drill bit. See more below.
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Begin the process by assembling the lower into the jig. Transfer punch all three holes. The selector is a 3/8" and the hammer and trigger holes are both a 5/32". Remove the lower from the jig. Place the lower in the (soft) jaws of your vise. Although you can do it like the below left picture, I prefer to mount mine as in the right side picture. I use an old magnetic block as a "spacer". Although all Colfax Tactical lowers have a flat milled across the bottom of the trigger area that is parallel with the upper deck, I still prefer the safety of using a block. The block helps to prevent crushing of the trigger guard "ears".



After carefully drilling the selector hole, remove the lower from the vise and put back into jig. Secure the fixture into the vise jaws. Now we are ready to tackle the fire control pocket.

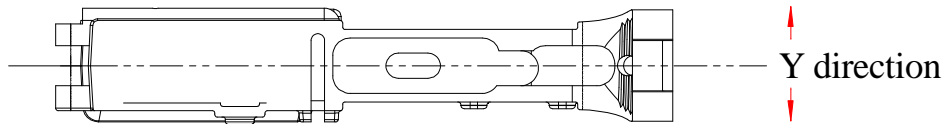
The lower supplied by us has the rear portion of the take down lug pocket completed. You can compensate for that when you reach that step.

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Be sure to understand what is X and what is Y.

← X direction →



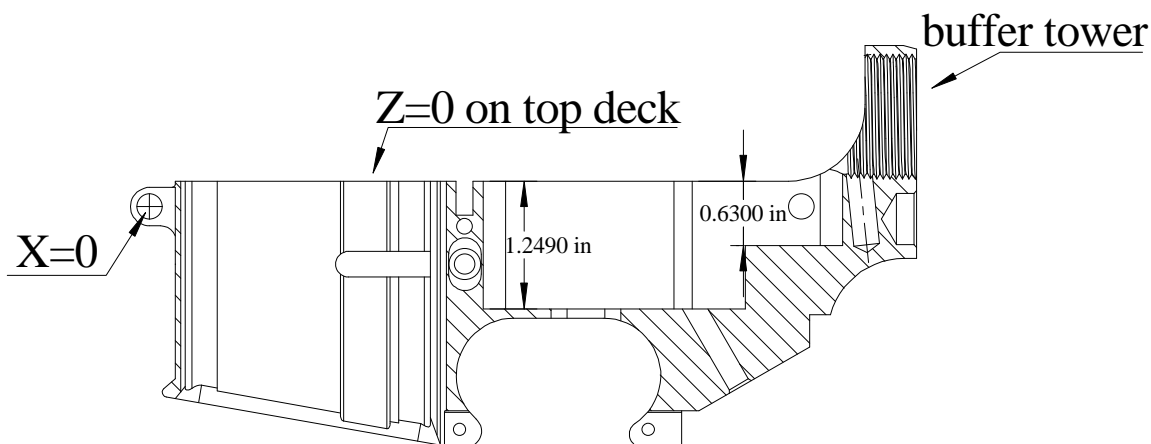
Be sure to know what direction the table moves when rotating the handles!

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The first step in milling out the fire control pocket is to place your lower into the jig with the buffer oriented to the right side. Place a 1/4" dowel pin in the front pivot pin holes. Indicate off of the side of the dowel pin with an edge finder. See picture on right. Then move over to the center of the dowel pin the appropriate amount to establish X=0. Be sure to compensate for the diameter of your particular edge finder and for the dowel pin diameter. For example, my edge finder is 0.200" diameter. So, from the edge finder against the edge of the dowel pin, I will need to move it 0.100" (edge finder radius) + 0.125" (dowel pin radius) = 0.225" to be over the center of the dowel pin. Reset your DRO to X=0.

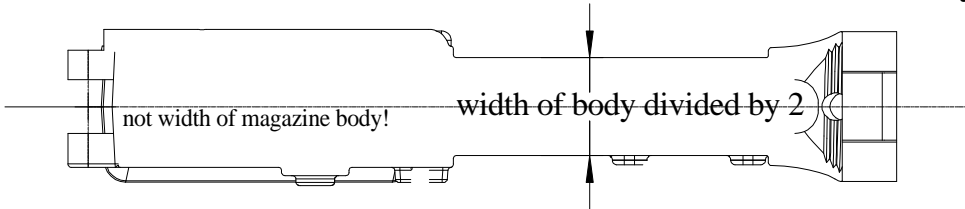


In all cases Z=0 on the top deck of the lower. You will also want to check your tool holder when near the buffer tower. Avoid hitting the buffer tower with the spindle or holder!

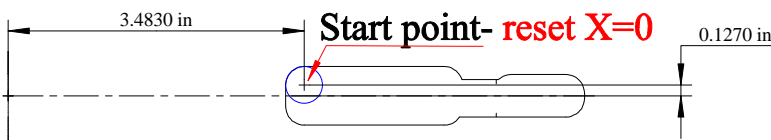


Now that you have established your X=0 over the center of the dowel pin, you will need to establish your Y=0 in the middle of the fire control area body.

### Y=0 at middle of fire control body



Now that our X, Y, and Z coordinates have been established, you need to reestablish your X=0 coordinate. With the DRO reading X=0 at the center of the dowel pin, move it to the right 3.4830". Reset the DRO X value to 0. This will be your reference point for the remainder of the sequences.

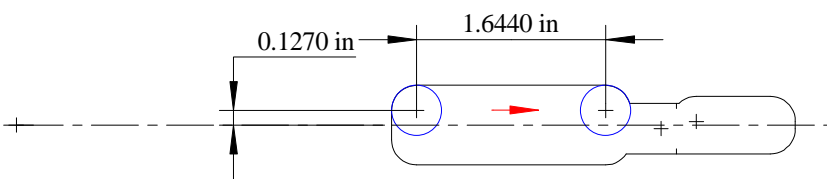


Since you are already at Y=0 (center of fire control body), move the table in Y by 0.1270". This is above the center line, away from you. In these instructions, positive values are **not** normally indicated with a "+" sign. Conversely, negative values *will have* a minus sign (-).

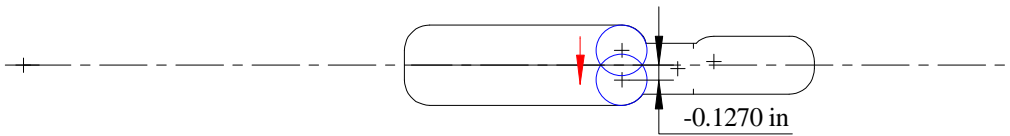
**Optional step**-Now that you are at the start point, you will find it easier in the long run, if you create a spot-drill hole and then drill with the optional 7/16" drill bit. This will create a hole to plunge your 7/16" EM into at the beginning of each pass. You will want to drill 1.2490" deep to the *tip of the drill bit*. **Do not** compensate for the start angle length of the drill bit. It will cause you to drill too deep. You can clean up the bottom later.

With the 7/16" em in the tool holder centered over your start coordinates, and Z=0 is set on the deck, go ahead and start the machine. Raise the knee 0.100" thus plunging the em into the drilled hole 0.100" deep. Use coolant and be sure to lock your spindle for all milling cuts.

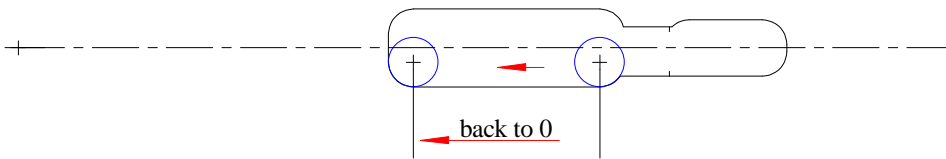
You will move the table in X to 1.6440.



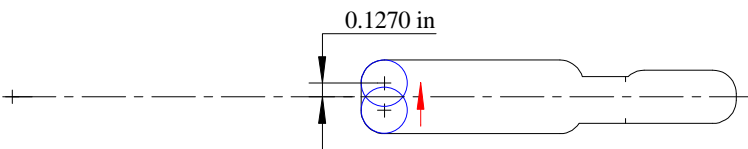
Now move the table in Y to -0.1270”.



Now move the table in X back to 0.

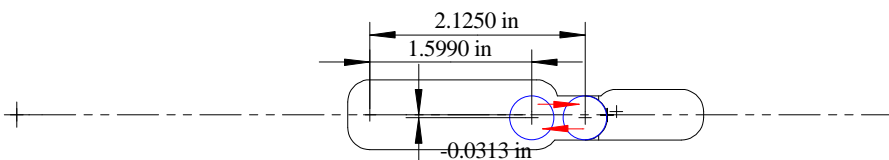


Now move the table in Y back to the starting point.



You can now raise the knee by another 0.100” and repeat the process. Continue doing so until you have milled out the cavity. Mill spec calls for 1.2490” deep. As you descend into the cavity, keep an eye on your end mill. Depending on the length of the shorter em, you will need to swap it out with the longer em at some point. Be sure to reset Z=0. Also as you approach the bottom of the cavity, the “sound” will change as you raise the knee to plunge downwards. That is because you will be running out of the pre drilled 7/16” hole.

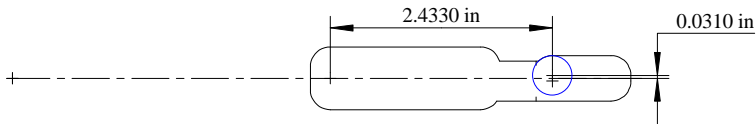
After you have completed the main portion for the fire control cavity, you can move onto the middle section. You can change back to the shorter end mill. Begin by lowering the knee back down to its starting point. You should reset your Z=0. Move the table to X= 1.5990” and Y=-0.0313” (notice the negative sign). Raise the knee by 0.100”. Move the table in X to 2.1250” on the DRO. Move back to 1.5990. Raise the knee again by 0.100”. Repeat the process until you have milled it to 1.2490” deep.



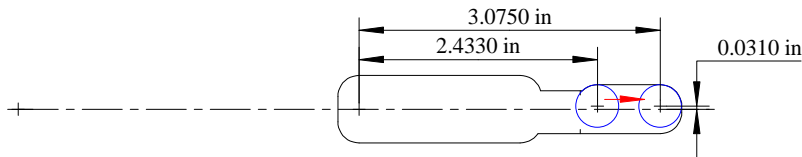
Now you can go on with the last part-the rear section. Our lowers have the take down lug cavity already milled out. You may choose to open it in width (Y direction) just a bit in order for your specific upper to easily drop into place.

This time you will only be milling 0.630" deep so you can use the shorter 7/16" em as long as you can go that deep without bumping the buffer tower with the machine spindle or the tool holder.

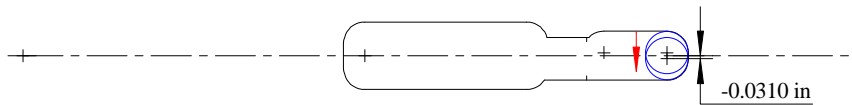
Begin by moving the X axis to 2.4330". Move Y to 0.0310". Raise the knee again to its original position. Reset Z=0 to the deck if necessary. Raise the knee by 0.100".



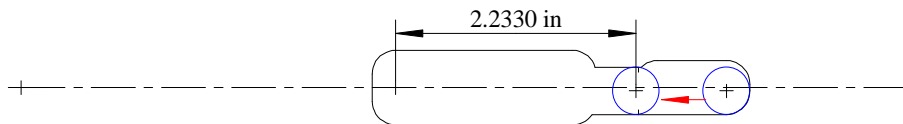
Move the table in the X axis to 3.0750".



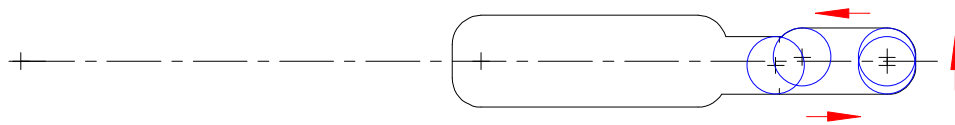
Move the table in Y to -0.0310".



Move the table in X to 2.2330". Notice that we mill this line a bit further forward than our start point.



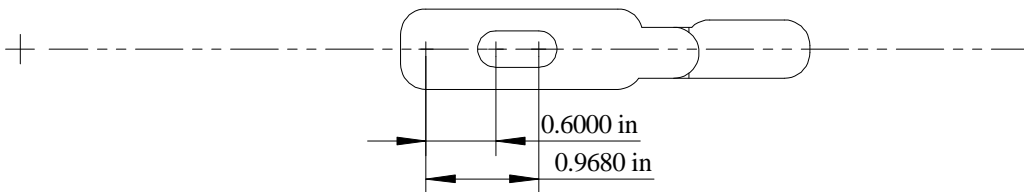
Now raise the knee another 0.0100". This start point is where you ended in the above step. Follow your path backwards to the point that you started at for the rear section.



Raise the knee again repeating the process until you are 0.630" deep



With the fire control pocket completed, we can move onto the trigger slot. You will use the 5/16" end mill to cut out the trigger slot. You need to be sure that your end mill is a center cutting em. Move the table to X=0.600" and Y=0.000". Slowly plunge the end mill through the bottom of the fire control pocket. Although you can not really see when you are plunged through the bottom of the FCP, you will be able to hear when you are plunged through. Move the table to 0.9680' in X. Raise the tool and you are finished!



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Now you can remove the lower from the jig and secure back into the vise to drill the hammer and trigger holes. The set up is the same as when you drilled the 3/8" selector hole. You should have already punch marked the two locations. Using a transfer punch as a locator, align the spindle over one of the two holes. Drill it through with a 5/32". Now do the same for the other 5/32" hole.

Congratulations - You are finished!

