

CUSTOM FIT BANGLE IN FUSION 360

(Fusion 360 Tutorial - Beginner Level - Written by Maz a.k.a. Rose M.)
(Required Tools: Digital Calipers)



STEP 1: MEASURE SIZE FOR BANGLE

- Use digital calipers to measure the distance from the thumb knuckle to the pinky knuckle while the hand is cupped. First, pose your hand to be shaped like a narrow cup. Second, measure the distance from the thumb knuckle to the pinky knuckle. Make sure the calipers are comfortably snug pressing the two knuckles together.

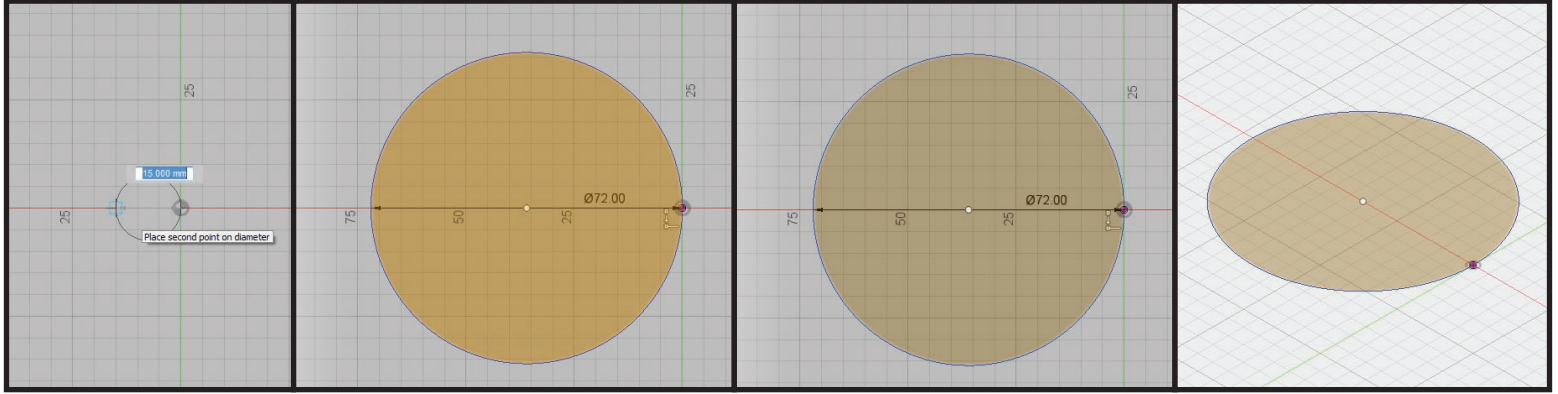
Round the measurement either up or down and record.
Such as 72.5mm=73mm or 69.38mm=69mm



STEP 2: CREATE CIRCLE SKETCH OF MEASUREMENT

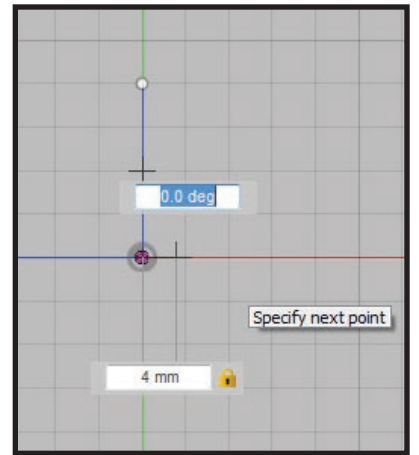
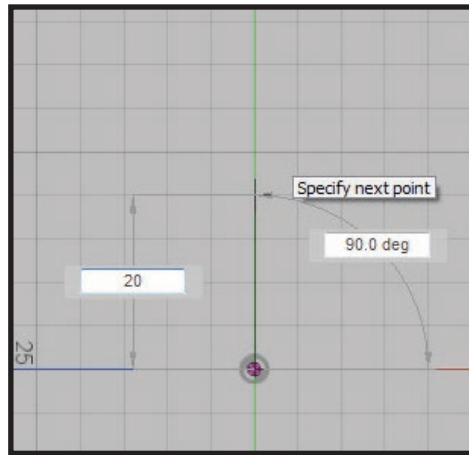
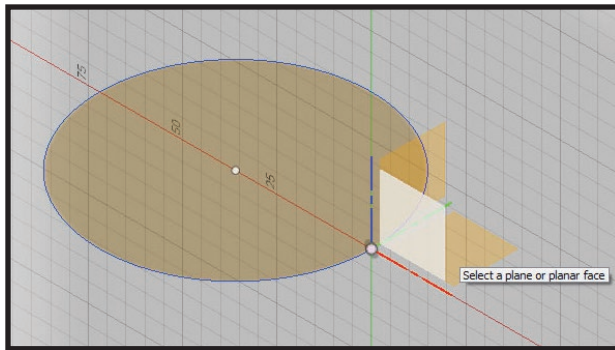
- In the toolbar at the top, go to "Sketch > Circle > 2-Point Circle", and click on the floor plane to begin sketch. Snap the cursor to the center starting point of the plane, click once to start the circle, and move the mouse to the left pulling out

the circle sketch. Set the circle diameter to the recorded measurement. To do this, enter the value into the text box floating near the circle sketch (such as 70mm). To place the circle sketch, click once in place or press "Enter/Return" twice. Near the top right, click "Stop Sketch" to close the sketch action.

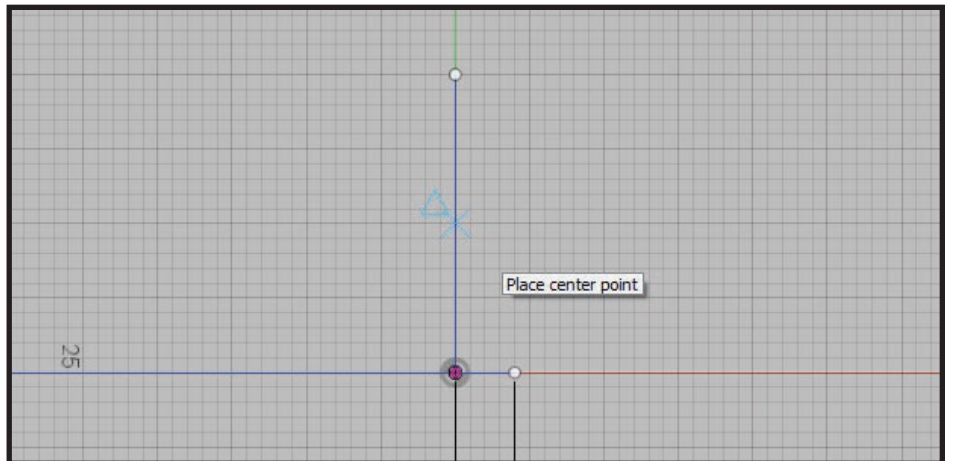


STEP 3: CREATE PROFILE SHAPE OF BANGLE

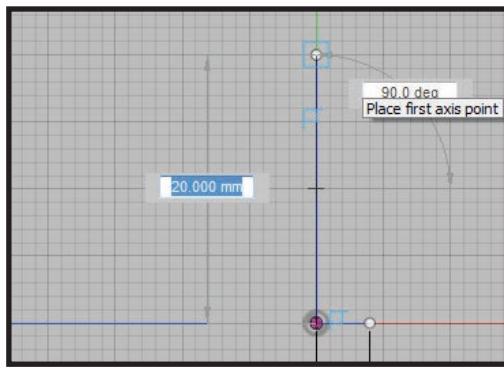
- On the keyboard, press "L" to activate line sketch, and click the back plane to select. Snap the cursor to the center starting point of the plane, and click to place the first point. Move the cursor up, set the next point at "20mm 90° ". and press "Enter/Return twice" to place point. Press "L" on the keyboard to activate line sketch. Snap the cursor to the center starting point of the plane, and click to place the first point. Move the cursor to the right, set next point at "4mm 0° ", and press "Enter/Return twice" to place point.



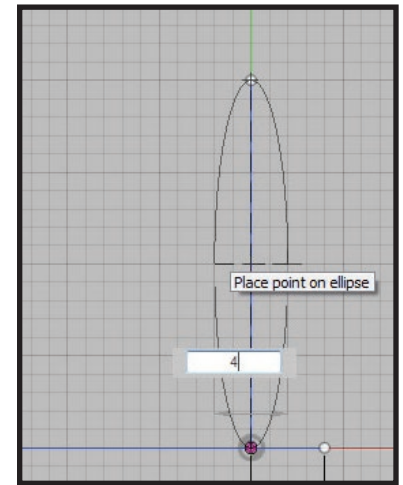
- In the toolbar at the top, go to "Sketch > Ellipse", place cursor over the "20mm" line, drag mouse along "20mm" line until the cursor snaps to the "Δ X" icon (center point of distance between two points), click to set center point of ellipse.



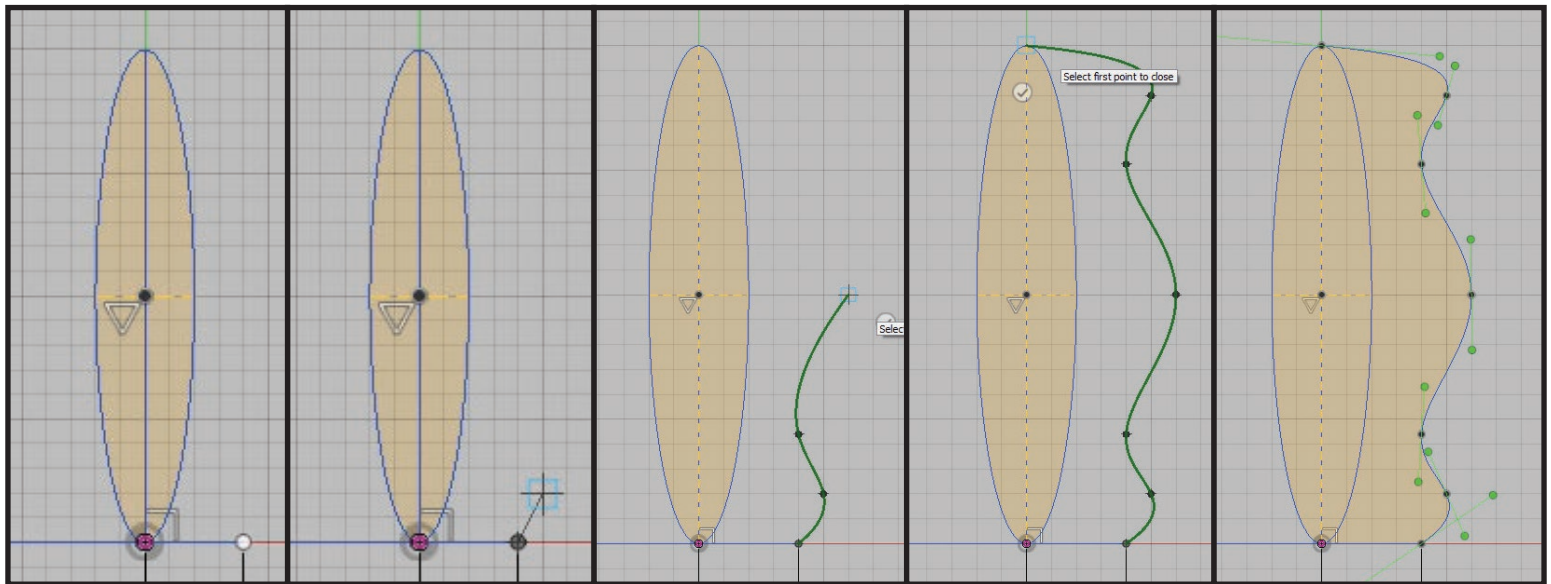
Drag mouse cursor to top of "20mm" line and place first diameter point.



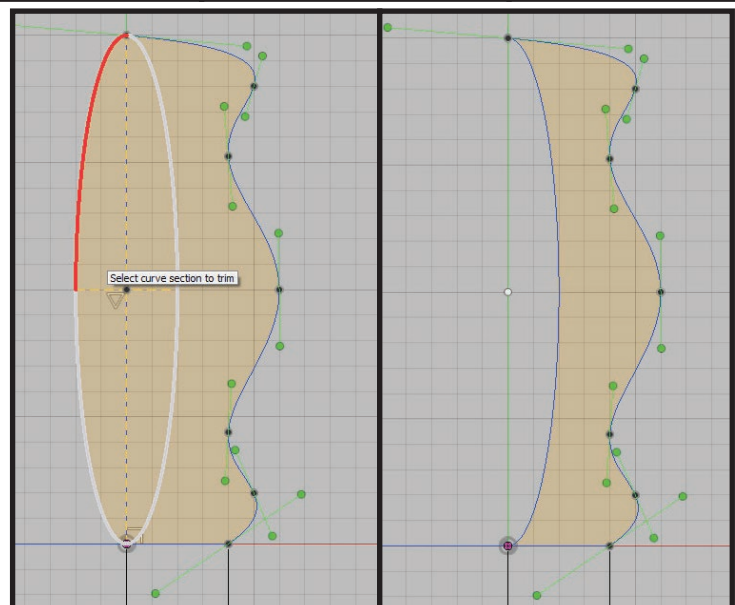
Drag mouse cursor left or right, set second diameter to "4mm", and press "Enter/Return twice" or click in place.



- In the toolbar at the top, go to "Sketch > Spline", and click the last point created on the "4mm" line. Creatively place points, creating a curvy line, to travel upward to the last point of the "20mm" line. Click on the point at the top of the "20mm" line to close sketch. (Do not cross the ellipse!)

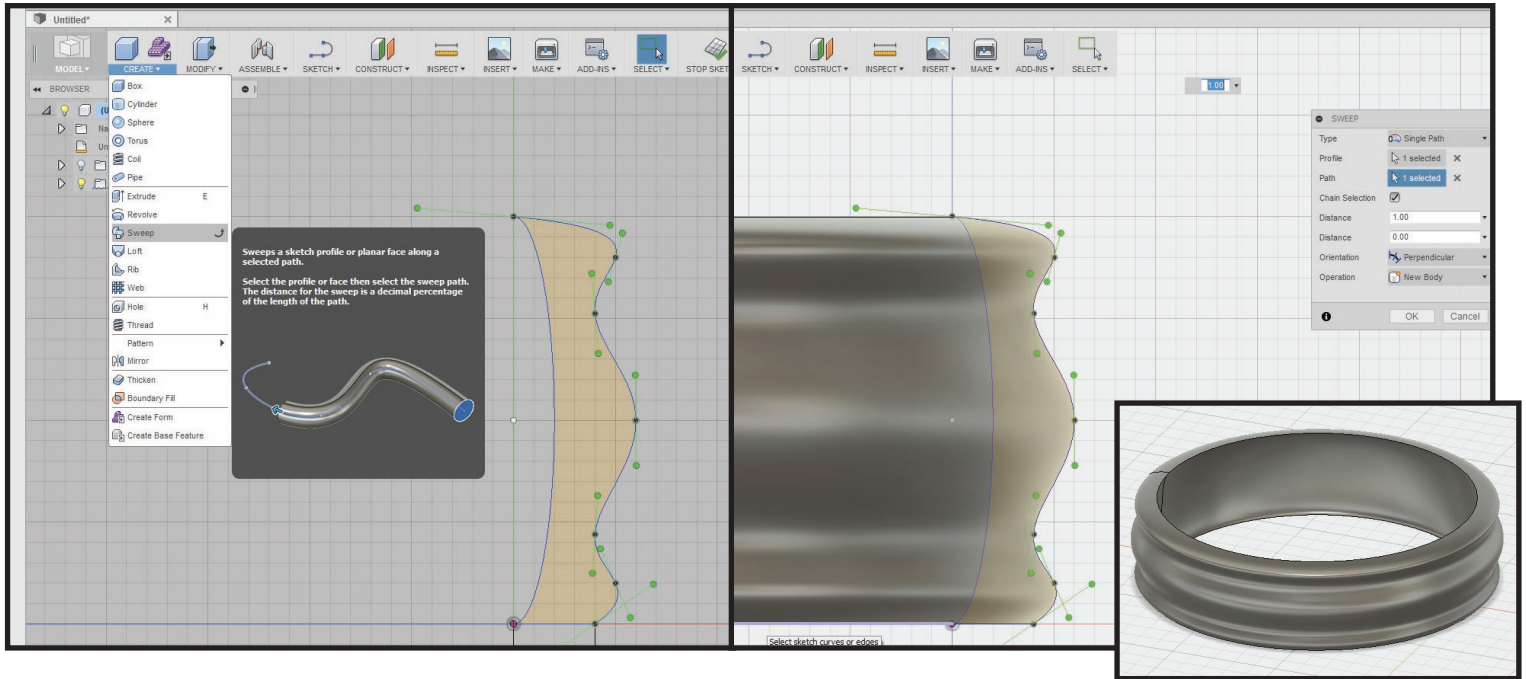


- Clean up the sketch. In the toolbar at the top, go to "Sketch > Trim", hover over a line, it will turn red if trimmable, hover over the curve of the ellipse on the left side of the "20mm" line, and click to remove the top and bottom quarters of the ellipse on the left side. Hover over the "20mm" line and click to remove. Press "ESC" to deactivate the trim tool.



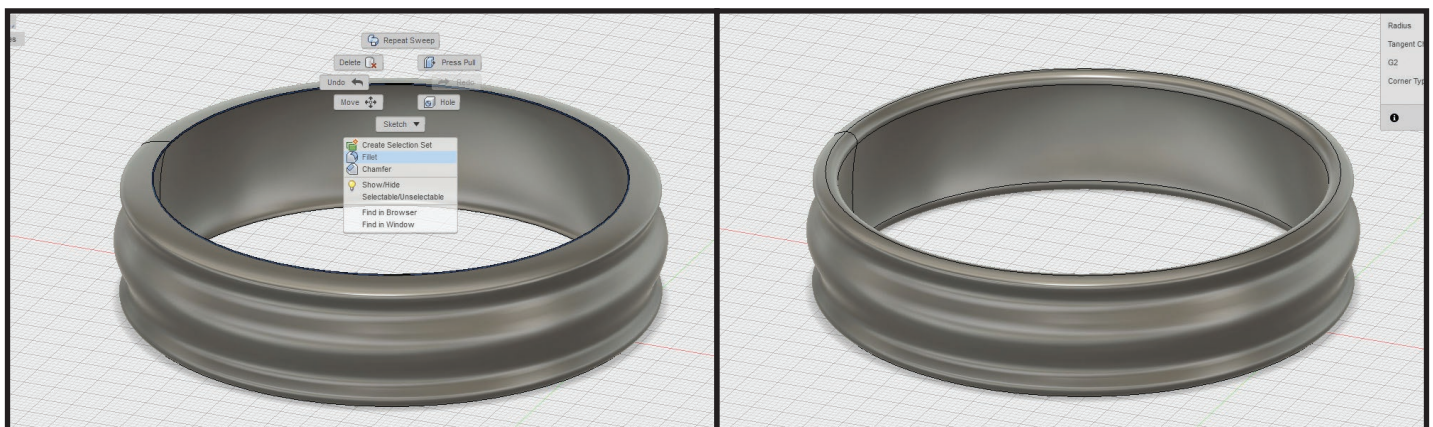
STEP 4: CREATE SOLID BANGLE GEOMETRY FROM SKETCHES

• While still active in the sketch from the previous step go to “Create > Sweep” in the toolbar at the top. Review the pop-up dialog box on the right. In the dialog box on the right make sure the profile text is selected (it should say “no selection” highlighted blue). Click in the center of the profile sketch(it will turn orange) to set as profile for the sweep. In the dialog box on the right, click on “no selection” near “Path” and click on the line of the circle sketch near the profile. Press “Enter/Return” or click “Okay” in the dialog box on the right to accept.



STEP 5: CURVE SHARP INNER EDGES FOR COMFORT

• Press/Pull the top and bottom inside edges of the bangle. To do this press “Q” on the keyboard or in the toolbar at the top go to “Modify > Press/Pull”. Set viewing angle to the “Top+Front+Right” perspective to see both the top and bottom edges. Click on the top and bottom inner edges of the bangle, set radius to “1mm” or click+drag arrow icon to “1mm”. Press “Enter/Return” to accept or click “Okay” in the dialog box on the right.



TECHNICALLY THE BANGLE IS FINISHED AND READY TO BE COMFORTABLY WORN BY YOU, BUT!!! IT COULD BE WAY COOLER, SO LETS ADD MORE STUFF.

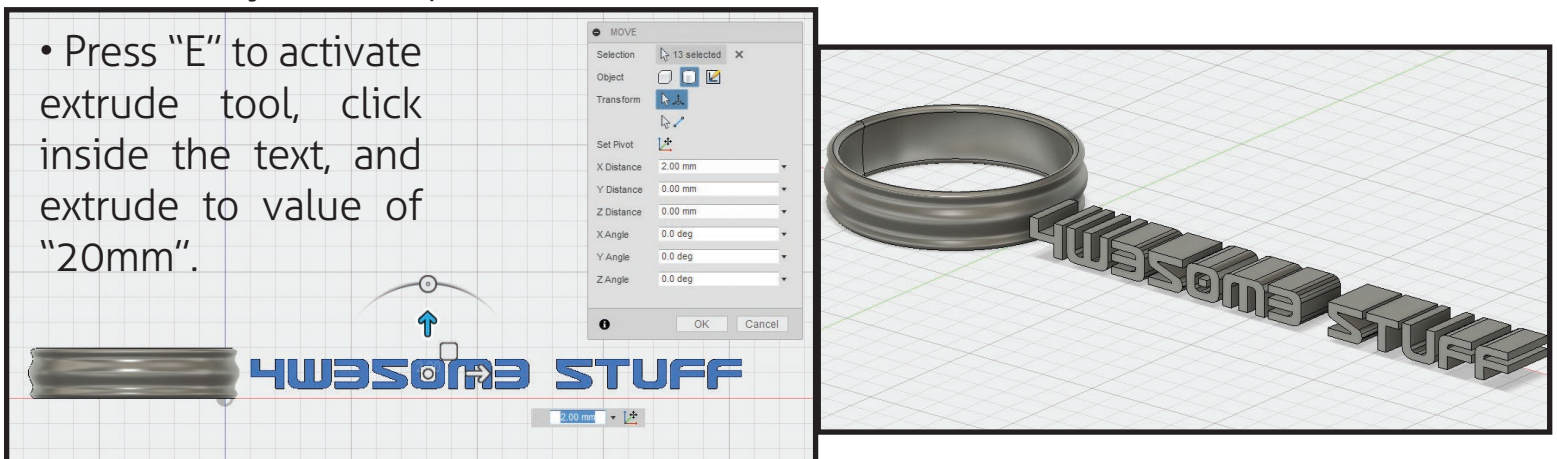
STEP 6: CREATE AWESOME TEXT TO PUT ON BANGLE

• In the toolbar at the top, go to “Sketch > Text”, click the back plane to select, and click near bangle to place text starting point. In the dialog box on the right, type in the text of your choice and set the values to your desire.



Keep in mind the height of the text, keep it inside the height of the bangle to make sure it'll fit vertically. If you decide to type a phrase, keep in mind that you'll be placing each letter to the contour of the bangle.

Once finished editing the values in the dialog box on the right, press “Enter/Return” or click “Okay” to accept.



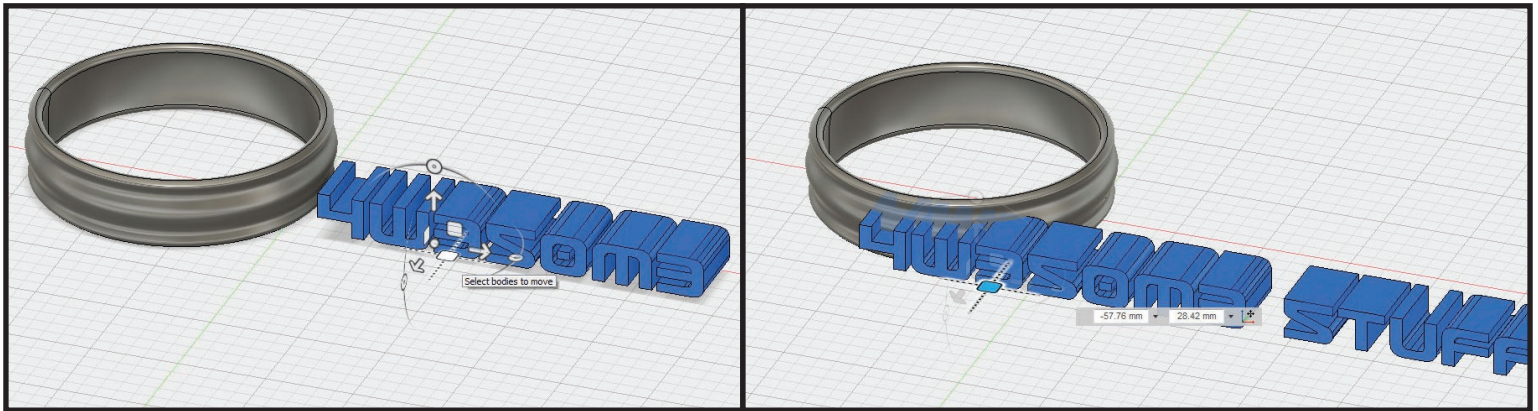
NOT ALL FONTS WORK PROPERLY IN FUSION! OH NO!

- If text isn't extruding, it will have to be manually fixed as a sketch. First change the text to a sketch. To do this, select the text, open the right click wheel menu, and select "Explode Text". (If the explode text did not work, you'll need to select a different font entirely.)

- Clean up the text. Using the trim tool, trim any parts of the text sketch that are inside the letters. To activate trim sketch tool, press "T" on the keyboard. Sometimes there are weird triangles inside the points of letters, especially cursive. If at any point the sketch turns clear instead of staying orange, undo the trim, and avoid trimming the one line that makes the sketch not closed.

- Once the sketch is cleaned up, extrude the text sketch "20mm". Activate extrude tool by pressing "E" on the keyboard or in the toolbar at the top go to "Modify > Extrude".

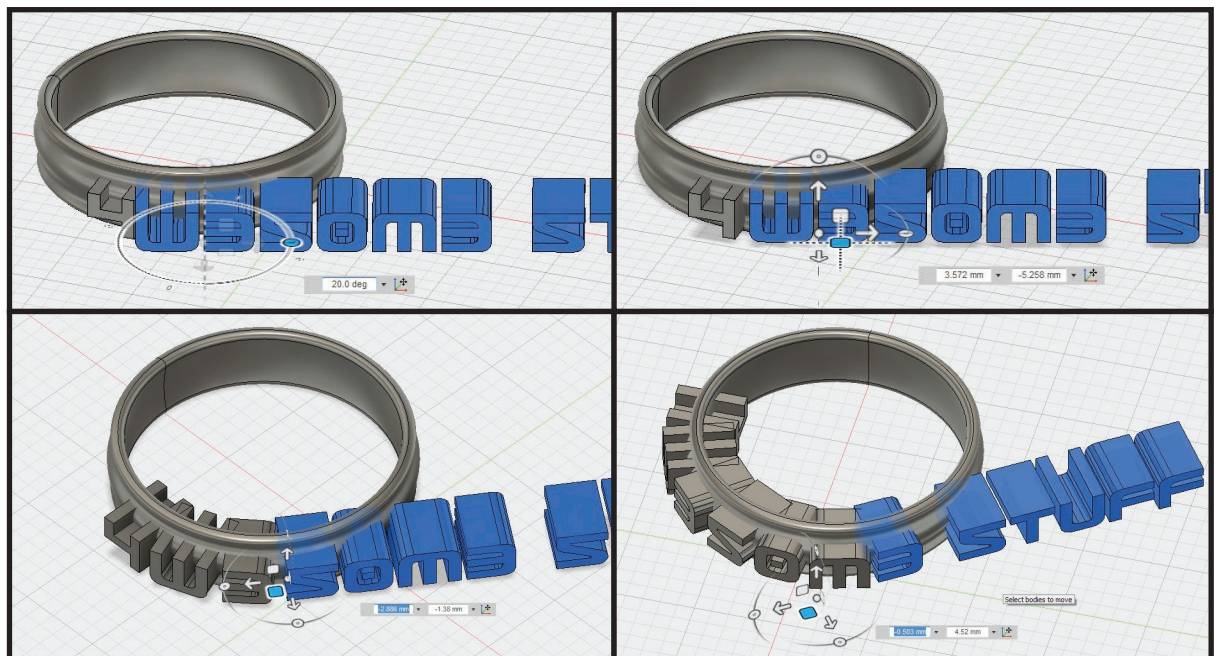
STEP 7: POSITION LETTERS/WORDS/PHRASE ON BANGLE



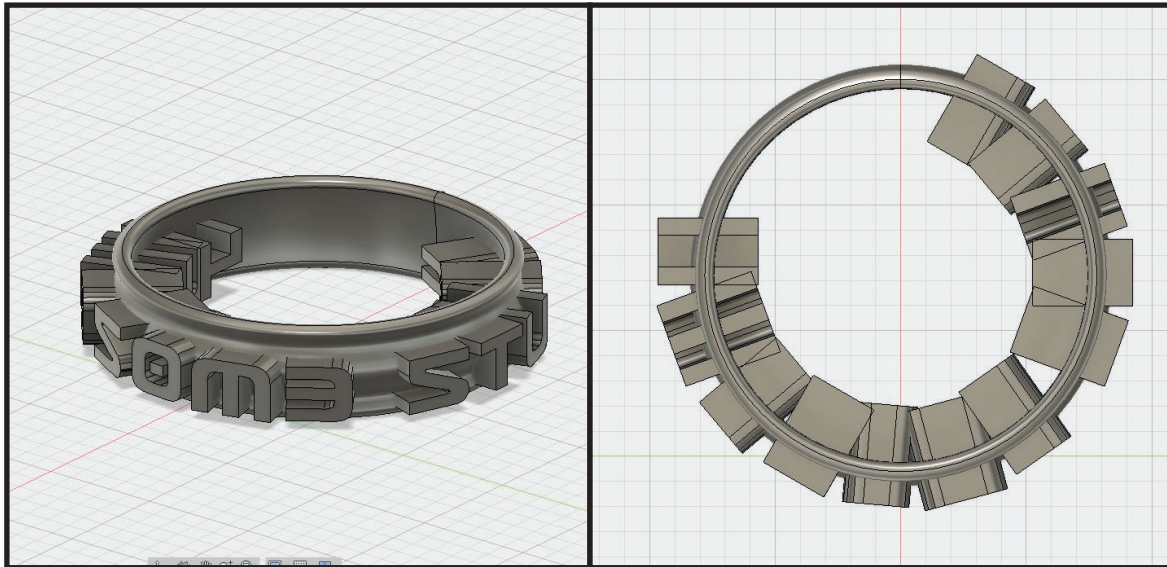
- Set viewing angle to the "Front" perspective to see all letters/words/phrase and bangle in workspace. Press "M" to activate the move tool, draw selection box over all letters/words/phrase, and click + drag the up/down arrow to position vertically on bangle.

- Set viewing angle to the "Top + Front + Right" perspective to see all letters/words/phrase and bangle in workspace. Click + drag the floor plane white square, position onto bangle.

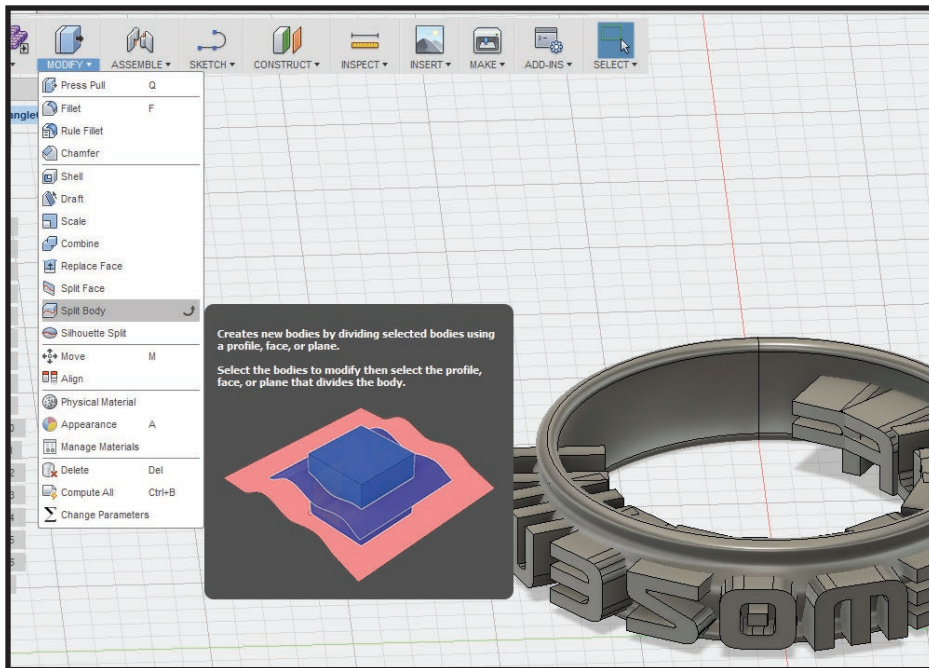
Each letter has to be positioned separately.



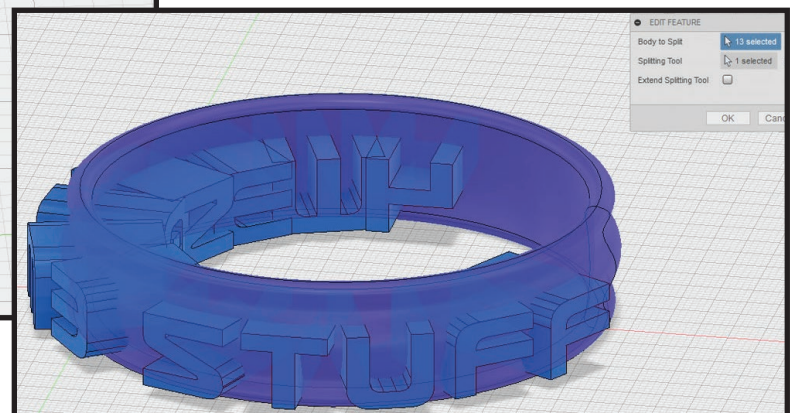
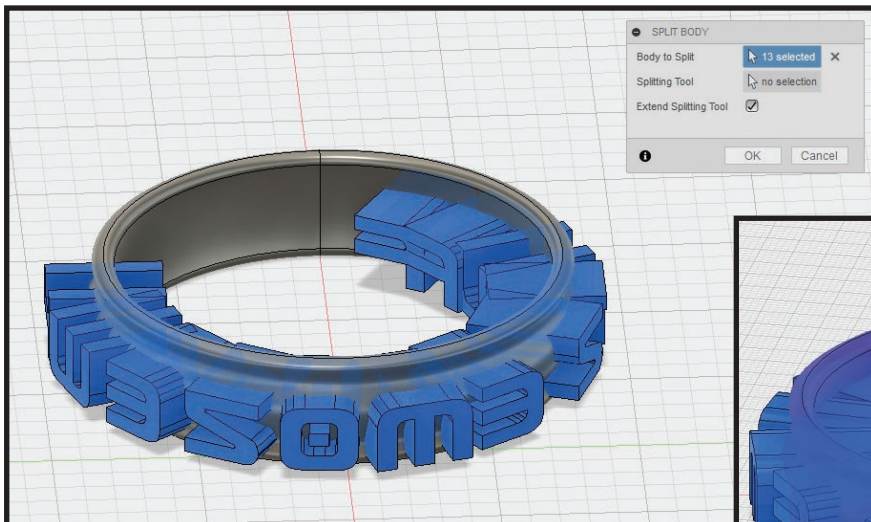
Make it so the letters/words/phrase intersect both the outer and inner walls of the bangle.



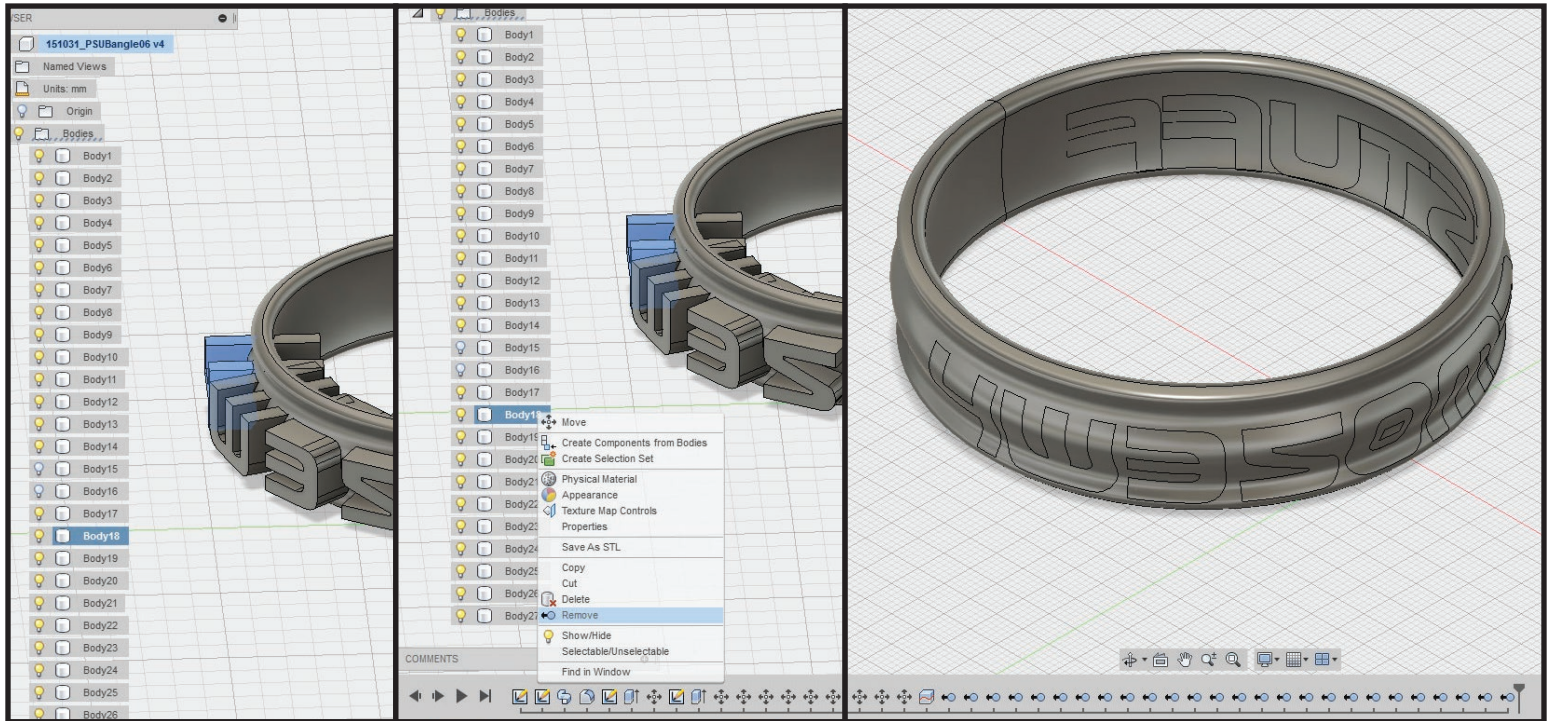
STEP 3: CUT LETTERS/WORDS/PHRASE TO CONTOUR OF BANGLE



- Split bodies of the letters/words/phrase to same contour as bangle surface. To do this, in the toolbar at the top, go to "Modify > Split Body", select all the letters/words/phrase as bodies to split, select the gray text near "Splitting Tool" in the dialog box on the right, select the bangle body, and press "Enter/Return" to accept.

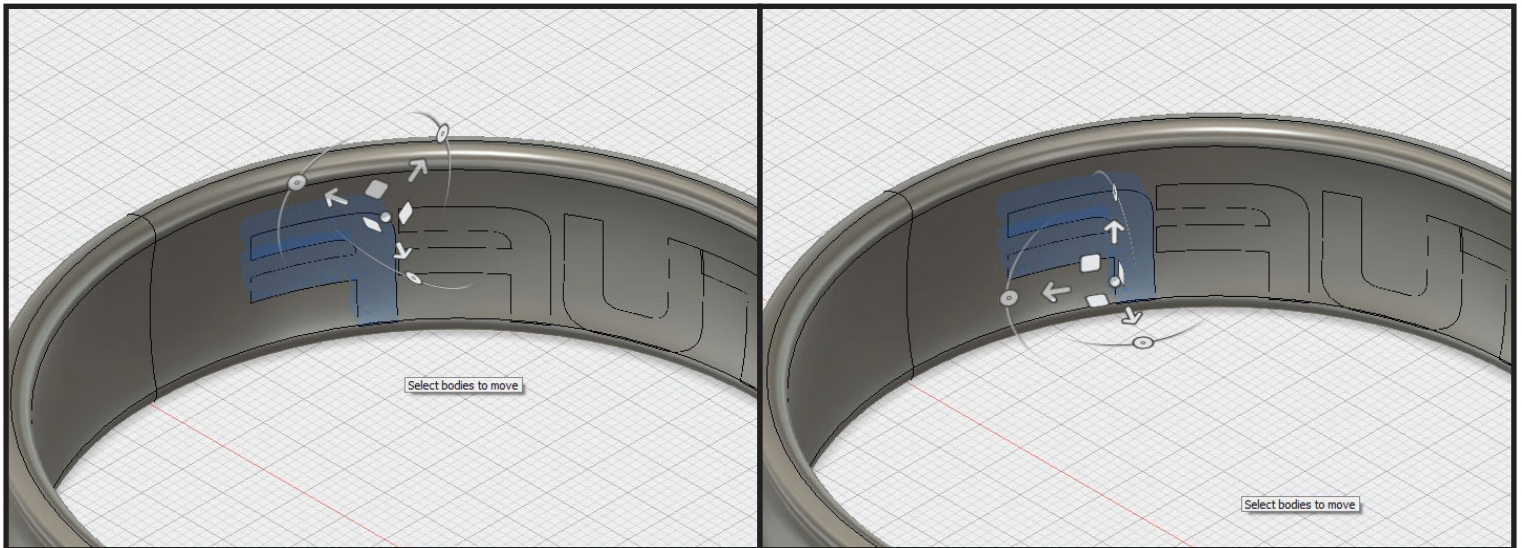


- Remove the left over remnants from splitting the bodies. To do this, go to the browser tree on the left, expand the “Bodies” section, hover over the body titles to highlight bodies in the workspace, when finding a body that is outside the contour of the bangle surface, select the title in browser tree, open the right click or option click menu, and select “Remove” to delete body.

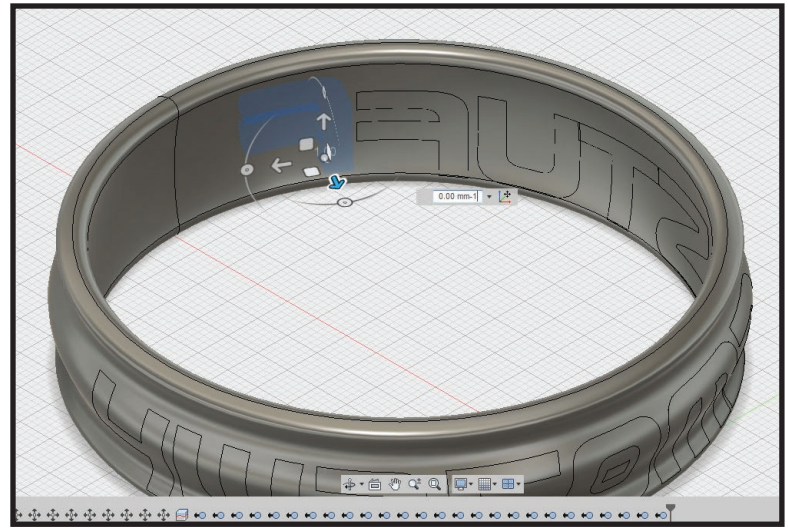


STEP 9: RAISE LETTERS/WORDS/PHRASE TO CONTOUR OF BANGLE

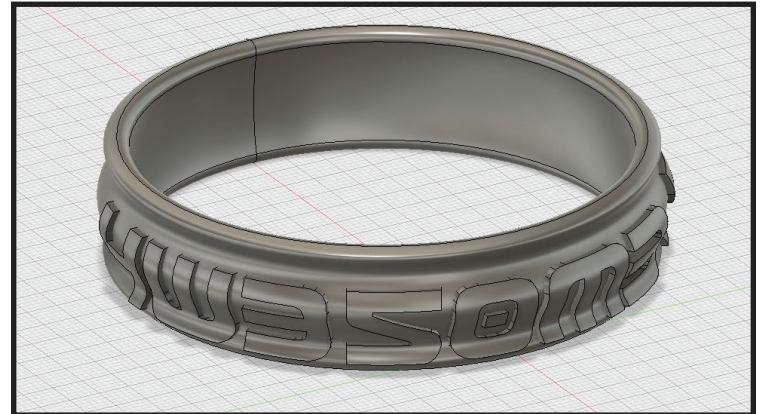
- Set viewing angle to the “Top+Back+Left” perspective to see all letters/words/phrase and bangle in workspace. Press “M” on the keyboard to activate move tool and click one of the letters/words to select. If the pivot point is not in the general center of the letter/word, change the pivot point. To do this, click the icon near “Pivot Point” in the dialog box, hover over the letter/word body in the workspace, snap move gizmo to general center of letter/word, click to place gizmo position, and click the check icon near “Set Pivot” in the dialog box on the right.



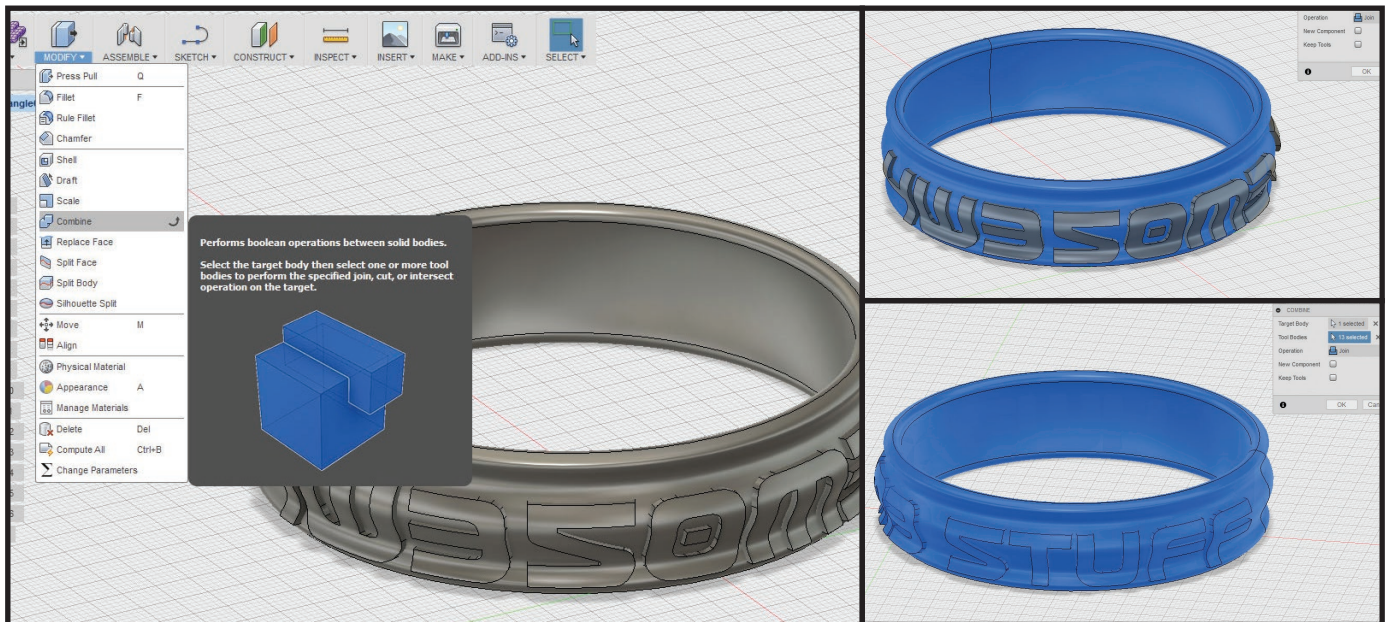
• Move the letter/word “-1mm” on the “Z axis”. Click + drag Z arrow or set value in the dialog box on the right to “Z Distance: - 1.00 mm”, press “Enter/Return” or click “Okay” in the dialog box on the right to accept. Depending on pivot point of gizmo, value could be “1.00mm” instead of “-1.00mm”.



Repeat this step for all letters/words/phrase bodies.



• Combine all bodies into single geometry. To do this, in the toolbar at the top, go to “Modify > Combine”, click the bangle body, click all other letters/words/phrase bodies, in the dialog box on the right set “Operation” to “Join”, and press “Enter/Return” or click “Okay” to accept.



YAY! YOUR CUSTOM FIT BANGLE IS READY TO EXPORT FOR PRINTING!