DCS: Detent Calculator Spreadsheet and Software

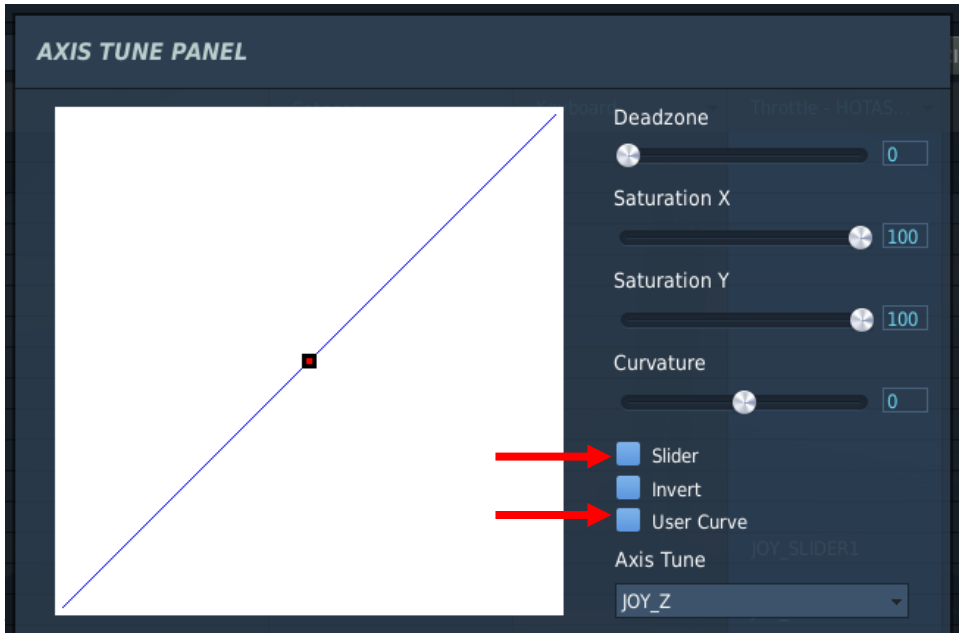
by JC of DI and Bailey

Why?

DCS does not currently have a native option to adjust in-game throttle curves to account for a physical detent. While there are tutorials that exist to find an approximate curve, I wanted to find a way to create two linear sections that could be adjusted based on the location of a physical throttle detent. No installation required. You can open the original Spreadsheet with any .xlsx editor of your choice, or you may use the Software created by Bailey to generate your custom numbers. Both tools have been tested to ensure they give the same results, so it is purely user preference which you use.

How?

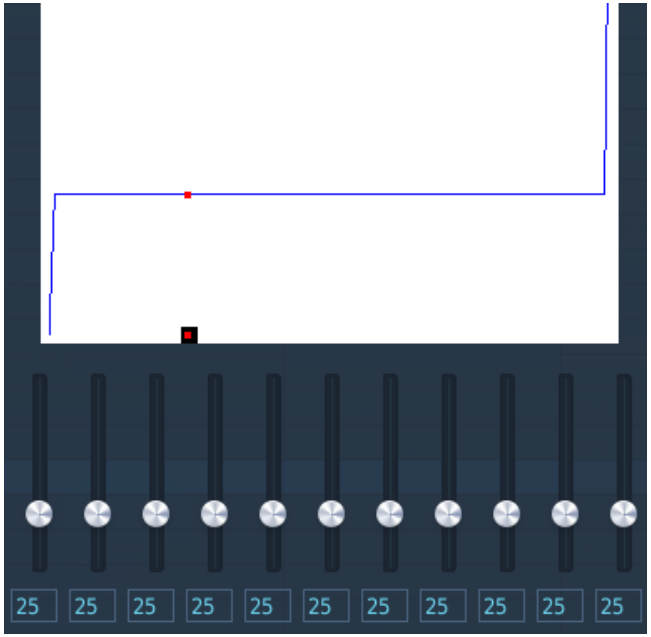
Step 1: Setting the Curve



Before we can use the Calculation tool, we must determine the physical detent location on your throttle. Open any aircraft controls menu in DCS and open the thrust “Axis Tune” menu. If you have a split throttle, just choose one of the axes for now to focus on. The other will be similar enough that we can set it based on the first (or you can adjust it later by repeating this process if your axes have differing alignments).

The image at left is how DCS has a thrust axis set up by default. Please note this calculation tool is designed with the default deadzone (0) and saturations (100) in mind. In order to find our detent location and eventually create the new curves, set the axis to act as a Slider and enable the User Curve feature (see the arrows). While here, move your throttle around and notice the symbols on this graph. With it set to a slider, there is a red and black square along the bottom of the window. The red square represents the current throttle axis input. The black box around the red square represents the output that the game is converting from your axis input. With the default curves, these symbols should follow each other.

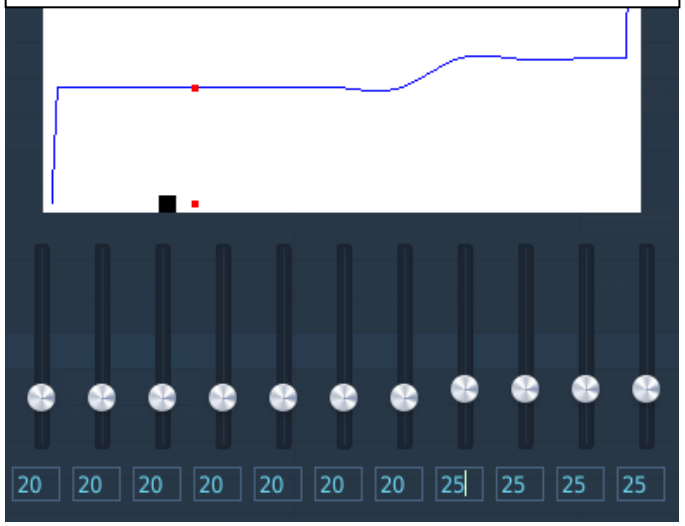
Step 2: Finding our Detent Location



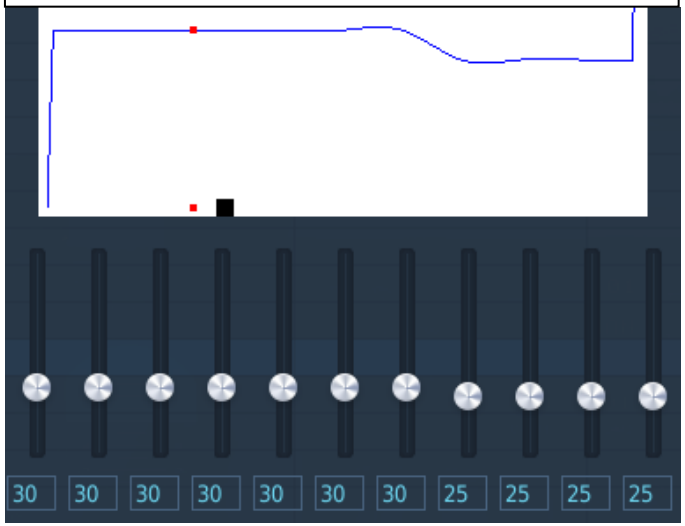
We now need to find the percentage location of our detent. With the slider and user curve options ticked, we will move our throttle to its detent location. This is where we want our MIL location to be – any further and we should expect to be in afterburner. At first, you will just see that the red and black squares will be positioned together under a perfectly sloped line. In order to find out what "percentage" our MIL location is, we can flatten the curve as in the example above. We will want to make the black output box line up with our red input box again as in the example to the left. If the black output box is to the *left* of the red square, you must raise the curve percentage. If the black output box is to the *right* of the red square, lower the curve percentage.

Given that you can only enter whole numbers, you may not get a complete match, but this should be okay. Choose the closest whole number that you can. From the example provided, 25 is the closest match we have found for our throttle detent. For the rest of this guide, we will use 25 in examples but you will use your personal detent location that you have found through this process.

Black box lined up left of red square – physical detent location is a higher number than 20.



Black box lined up right of red square – physical detent location is a lower number than 30.



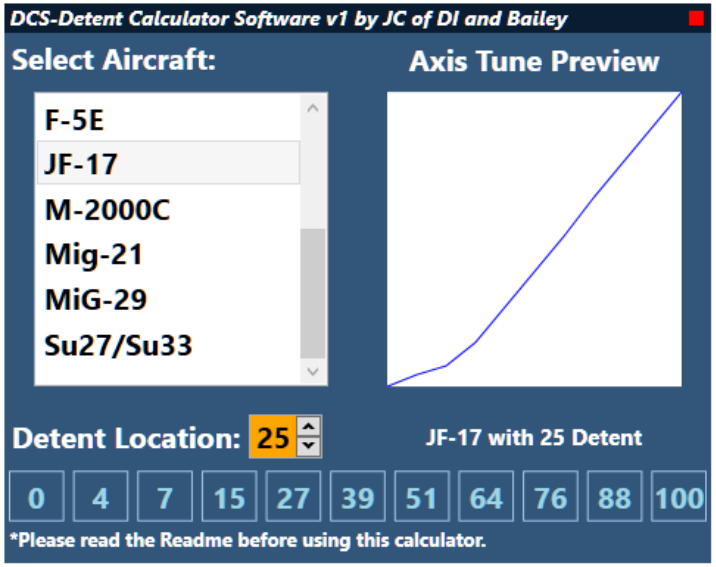
Step 3: Open the Detent Calculator Spreadsheet or Software

Spreadsheet Method

JF-17			Standard	Detented
			0	0
A/B Location	8		10	4
MIL Location	9		20	7
Detent Location	25		30	15
A/D Slope	1.213333		40	27
A/D Int	-21.3333		50	39
			60	51
			70	64
			80	76
			90	88
			100	100

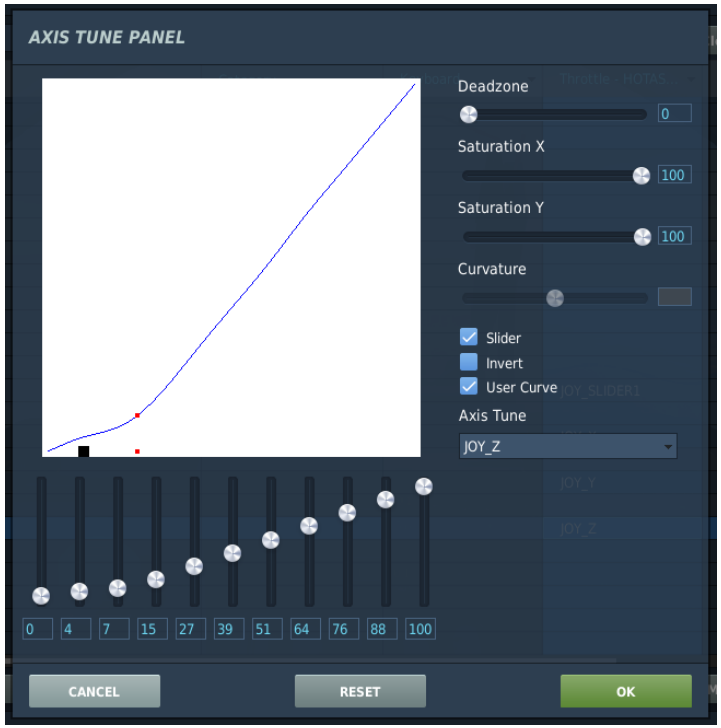
With our detent number found, we can go to the DCS spreadsheet. Open the spreadsheet and select the tab for the plane of your choice. The only cell you should need to change is the highlighted “Detent Location” value, which we will set as the whole number that we found earlier. The “Detented” column on the far right will be your new values that you will plug into the User Curves. If you have dual throttles, the detent should be close enough that we can mirror these numbers for the other throttle axis in a twin-engine jet.

Software Method



With our detent number found, we can open the Detent Calculator Software. Select the plane of your choice using the list on the left pane and enter your Detent Location found in Step 2 into the yellow entry field. Once entered, you should see a graphical representation of your curve appear on the right and curve numbers will populate along the bottom of the window. These will be the new values that you will plug into the DCS User Curve fields. If you have dual throttles, the detent should be close enough that we can mirror these numbers for the other throttle axis in a twin-engine jet.

Once the User Curves are added click OK to complete, hop into free flight and confirm that any movement forward of the detent location engages afterburner. Also check that returning the physical throttle to the detent location reduces engines back to MIL. Also check on twin-engine jets that both engines respond as desired. To complete our example, note the final image on the next page of our completed curves for a JF-17 with a physical throttle detent at 25. Do note that DCS applies a smoothing filter to curves, so on some aircraft it may be difficult to perfectly achieve the intended “linear” look to the graph. The in-game result should be effective nonetheless.



FAQ:

Q: I set it up correctly, but I want afterburners to be further past MIL.

A: Subtract 2 to your Detent Location number in your choice of Calculator tool and readjust your curves. In the example from earlier, we would use 23 as our Detent Location in the tool despite our actual location of 25.

Q: The MIL position is incorrect.

A: The most likely culprit is an incorrect Detent Location. Please ensure that your Detent Location number was found with your physical throttle at its MIL location.

Q: My left engine reaches afterburner before my right engine.

A: Some physical dual-throttles have a small misalignment when linked which can cause one engine to run higher than the other. If you find this is the case for you, repeat the process to find the Detent Location for your second axis and enter it into the Calculator. In testing this has shown to overcome a small axis misalignment and create a more aligned engine response.

What else?

Thank you to Mouchi56 for being the first user and tester of DCS: Detent Calculation Spreadsheet.

Inspired by countless amazing community tools and individuals. Thank you to everyone in the DCS community who takes their time to help others.

Special credit to Bailey who helped in countless ways, including creating all the code to convert my spreadsheet into the standalone Detent Calculator Software. If you would like to check out the code, head over to GitHub here: https://github.com/asherao/DCS-Detent-Calculator
Find more of Bailey's work on the DCS User Files site. https://www.digitalcombatsimulator.com/en/files/filter/user-is-asherao/apply/

The aircraft A/B and MIL values were determined by me in March of 2021 through in-game testing. The numbers are not infallible, but I am confident in them after multiple tests. I have protected portions of the spreadsheet to prevent any accidental loss of data, but if you would like to modify it yourself there is no password required to unprotect the document.

If there are any questions, concerns, or feature requests please feel free to reach me on Discord, username JCofDI#7932. (uppercase i)

Thank you very much for your time. Enjoy the flights!
– JC