

Brett Wolfe's 'ECON Mode' writeup

ALLISON MODE BUTTON

There are TWO TOTALLY DIFFERENT "LET THE TRANSMISSION CHOOSE THE CORRECT GEAR" MODES/PROGRAMS in the Allison ECU which is the "electronic brain" controlling shifting and other functions.

In **ECONOMY MODE**, the transmission will not downshift even at WOT (Wide Open Throttle) until the engine pulls down to peak torque RPM in some application and 200 RPM lower than "regular mode" in others.

In **REGULAR MODE**, the transmission WILL downshift much earlier (to maintain higher engine RPM).

ONLY at higher throttle positions is there any difference, so on flat ground you will NOT notice any difference (except accelerating from a stop IF you are at or close to wide open throttle).

It can make a BIG difference in rolling hills. If you are in rolling hills and regular mode (particularly with the cruise control on), it is common for the transmission to shift down to 5th on the uphill and back to 6th on the downhill. Repeat this process hundreds of times. In economy mode, you will stay in 6th gear unless the hill is so steep or so long that the engine can not pull it without dropping below peak torque RPM. If you can pull a hill in a higher gear (lower engine RPM) AND the engine does not overheat, **THAT IS WHAT CATERPILLAR RECOMMENDATIONS FOR THE MOST ECONOMICAL WAY TO CLIMB A HILL with a modern turbo, after-cooled diesel engine.**

If you know you will need a lower gear because of the steepness of the grade and/or are engine temperature is rising higher than thermostatically controlled temperature, if driving in economy mode, use the down arrow to drop a gear (this is what I do) or switch out of economy mode. Be sure to switch back into economy mode when past the steep section, or agree to pump extra fuel in the tank.

IF your engine begins to overheat, your HP/weight ratio is low OR if it irritates you to lose a few mph on a hill in the name of saving fuel, in the hills, by all means drive in regular mode.

It confuses me to hear people advocate driving in economy mode only on flat ground, as there is not 1% difference in shift RPM's between regular and economy mode on flat ground, excepting accelerating from a stop if you use WOT.

Every time you start the coach, the transmission is in regular mode. This is the default setting. IF you push the mode button, it goes to "economy mode" AND the light illuminates.

There is no "absolute" on how much difference in fuel economy driving in economy mode will have. On flat ground where you will be in 6th gear irrespective of what mode you are in, there will be ZERO difference. The MOST difference in mileage will be in rolling hills, where in regular mode, particularly if on cruise control you will start up a hill in 6th gear, go to WOT in 6th gear, downshift of 5th gear still at WOT (WHERE IT IS USING A LOT MORE FUEL). After the hill is crested, the transmission will up-shift to 6th, then likely coast a little in 6th gear (unless you are driving with the exhaust brake on- if you are it then applies the exhaust brake AND downshifts TOWARD the pre-select gear which is generally either 2nd or 4th). And so on 6-5-6-5-6-5-6-5.....

A modern turbo inter-cooled diesel is much more efficient at low RPM high throttle settings. This is NOT my opinion. It is stated in just those words in the Cat Owner's Manual.

Note: In either mode, you are free (and welcome) to use the up and down arrows to PRO-ACTIVELY choose the correct gear. You can not screw anything up- even if you down-arrow to 1st gear at 70mph, the transmission understands that you meant "please downshift to the next lower gear as soon as the engine RPM will not exceed the pre-set amount. Then downshift again when safe....."

By the same token, you can shift between regular and economy mode as often as you want with the transmission in any gear when you make the change.

OPINION: I drive in economy mode 99% of the time, including in REAL mountains, but use the up and down arrows to choose the proper gear. I use regular mode ONLY when I am willing to say, "I am willing to throw a lot of fuel away to gain a little performance." When passing on 2 lane roads, THIS IS the case.

Notes:

First, the Allison will not allow you to do anything that will harm the drive train. So using the up or down arrows or mode button will be just fine. In fact, if you are driving 60 mph and use the down arrow to select 2nd gear, NOTHING BAD will happen. The transmission ECU "understands" that you asked it to downshift one gear at a time until 2nd gear is reached, but it will not downshift until it will not over-revving the engine after the shift.

Now, when descending grades, the first thing you should do is turn on the EXHAUST BRAKE. That does two things- turns on the exhaust brake AND signals the transmission to down shift TOWARD (not to) the "pre-select" gear. The pre-select gear will display in the only/left display window. That does NOT mean you have shifted to the "pre-select" gear any more than when you are at a stoplight and it reads 6th that you are in 6th gear. It merely means, that is the gear it will toward as conditions allow.

The only "trouble" you can get into with economy mode is overheating the engine IF the cooling system is not kept clean. The engine and transmission are very happy lugging all the way down to peak torque RPM and staying there all day- again as long as you don't overheat.

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