Transmission oil change. ZF video: https://www.youtube.com/watch?v=D0f3AYoE3cI

Determine when car is level using bubble leveler!

The ISTA directions have the wheels off the ground and able to turn freely. During the procedure you are requested to release the parking brake and engage Reverse. The wheels will begin to rotate!! ***Keep the tire area clear and remember even though the car is NOT moving the tires are turning. Remember to apply the foot brake to stop the tire rotation before engaging Drive or Park.*** *ISTA does not remind you to do this, because it is written to trained technicians.*

For diagnosis, testing, and training I have had the tires rotating off the ground in class many times. With students and "first timers" this can go wrong fast. Shifting from reverse to drive without stopping is not good for the transmission. Some of you may have seen someone put a car in park while moving!

Not a good sound and the actual parts are not that robust (things can break!)

You can view the transmission temperature with many different types of scan-tools and software now that you have the ISTA directions provided.

This is a procedure that requires following the directions.

Attached PDF list of vehicle applications for the ZF8HP transmission.

The other note I would like to add to this is you must have all the doors closed.

Even when you have DSC off, the car will automatically activate the brakes once you leave Park and go into D/R if you have the doors open.

There are work arounds to this depending on your needs, just use screwdriver or something to close the latch on the driver door, just make sure you unlatch the lock by pulling the interior door handle before trying to close the door again.

Rear and Front differential gear oil

https://blog.fcpeuro.com/how-to-replace-bmw-f30-rear-differential-fluid

G1 is GL4 G2 is GL **S671090312**

USE ALL 4ea JACKS AND THE 2ea DRIVE UP RAMPS!!!!

The oil level in the oil pan should only be flush with the engine RUNNING. That's why it originally came out gushing through the fill hole. When the engine is running, oil is sucked from the reservoir to the torque converter that leads to an 'normal' filled oil pan. Once you shutdown the engine, oil seeps back to the reservoir that makes it look like it was overfilled (and it can exit through the fill hole). This is absolutely normal. In all manuals it says clearly that **the final top-up is with a running engine AND level**, else you underfill your transmission, like in your case.

To fill the transmission, go to the hardware store, buy a funnel and about 5' of flexible vinyl tube to fit the funnel. That will allow you to fill the transmission from the top of the engine bay while the car is still running. When the transmission is full, you go under the car and put back the fill plug (engine still running) Used a stubby allen wrench -- worked great. Just needed to attach an 8mm socket to get enough leverage to crack it loose.

General steps: https://f10.5post.com/forums/showthread.php?t=2106774

Fill procedure, I did not follow FCP Euro structure and loaded up ISTA which had a slightly different process, close but not quite the same. I'll trust ISTA.
- Engine OFF, fill through fill port until it drips out.
- Leave fill port open for now
- Start Engine
- Go immediately under and fill again until it drips out.
- Close fill port by hand.
- Shift through Reverse, Drive, Manual 1-8 holding each for 10-seconds (the gears 4-8 kept changing back to 1 for whatever reason so I just kept manually going through it 10-15x to cover myself)
- Rev the engine in PARK to 2,000 rpm for 30-seconds to completely ensure torque converter is filled.
- Back to Park, Parking Brake ON. Engine left On.
- Verify fluid temperature of ~40C.
- Remove fill port, check if its dripping, add more until drips, leave fill port off until the drips slow down to a slow trickle.
- Replace fill port, tighten.
- Now turn engine OFF. You're done.

ZF8 transmission service DIY

After spending hours on YouTube, forums, and here, I finally decided to bite the bullet and change my F10 535xi's transmission fluid and pan myself. Ordered all the materials, did the change today.

Here's what you need to know, that no one else will tell you.

1. **Yes, you can do it on just jack stands, but it's not gonna be pretty.** Contorting my 170lb 5'10" body under the car and frequently coming in/out was not easy. The fill pump I bought was the kind that screws to the bottle and works like a soap dispenser. It is also very tall in nature, so I had to wedge it in just the right position under the car (between the heat shield and exhaust pipes) for me to be able to pump correctly. This got a little dangerous later on. More on this in a minute.
2. **Buy a good fill tool. Don't cheap out.** I got the cheap $5 one from FCP. This tool would probably work great if you had a lift, and poured all the fluid into a giant reservoir. I had neither of these things. This pathetic little pump, designed to fit right into the ZF 8 Lifeguard bottles, could only squeeze out HALF A LITER at a time. Which means that every time I finished pumping in half a liter, I had to take the pump out, come out from under the car, open a fresh bottle, swap the pump onto their, and go back under for round 2. And when that's over, I'd have to combine the two half filled bottles into a full bottle, rinse, and repeat. This made the process take much longer than it probably should have. Oh, and did I

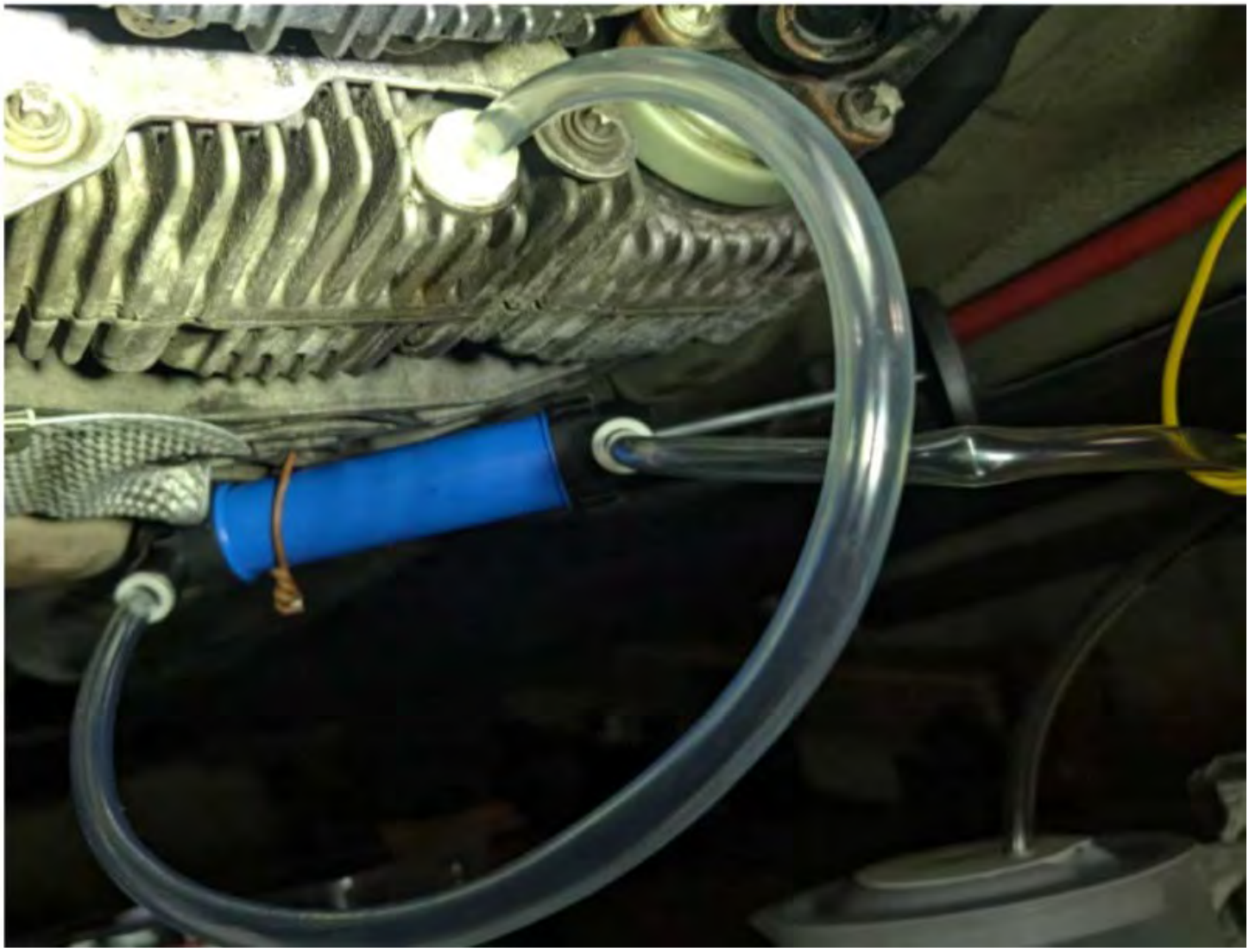
mention the hose is only 20” or so long? Forget about having someone else swap bottles for you, because you have to have the damn thing right next to you under the car.

3. **Those down pipes are no joke, and are mere INCHES from the fill hole.** I got to get very up close and personal with the pipes while I was doing the car-on portion of the fill. Between the short hose on the pump and the height of the pump itself, I was finding myself positioned in rather precarious ways to actually insert the tube into the fill hole, keep the hose out of the way of the pipes (they’re hot enough to melt it), and operate the pump. All with two hands. And I had to repeat this process twice, because it only can pump a half liter at a time. Amazing design. I only burned myself twice, and they were rather minor burns. But coming within a mere inch of those exhaust pipes, with my hands AND my face, was the scariest part of the whole ordeal.
4. **You will get covered in fluid. Just accept it. It’s gonna happen.** Especially if you use jackstands or ramps, your working room is very limited, and you will probably spill on yourself or the ground. Put down cardboard to catch these spills. And leave a drain pan underneath while you’re taking the old ZF8 pan off. This isn’t what actually got my hands covered, though - that was due to the constant swapping of bottles, and in/out of the fill tube. The whole fill process is a MESSY thing, and you’ll need to put back on the bolt as soon as you see fluid start to spill out. I used latex gloves, and washed my hands thoroughly with cold water after. I then took a shower for good measure.
5. **The torque spec for ZF8 models with plastic pans is 10Nm.** I kept seeing 4Nm and 10Nm online. 10Nm seemed like the better choice, and I’m glad that’s what I went with - I later discovered, per ZF themselves, the 4Nm spec is for aluminum pans.
6. **You will likely only use 4.5-5.5 quarts of fluid.** Mine took 4.5 during the main fill, and another quart during the car-on fill. Each time I filled until there was a steady stream dripping out. The drain process does not remove all 7 quarts from your transmission. A full drain requires unhooking hoses, etc that isn’t entirely needed.

The whole process took about 3 hours. It was quite a harrowing ordeal contending with the exhaust pipes.

If you don’t have a lift, and are considering DIYing this, think very long and hard about it. Personally, I wish I would have had a shop do it. Keep these things in mind:

- Make sure you crack the fill plug BEFORE you drain. You don’t want it to be stuck/seized and then you can’t fill the trans at all.
- Know where your fill bolt is, and how close it is to any sources of danger.
- Have a GOOD pump with a LONG hose. Preferably one that you can pour all the fluid into then pump it all at once.
- Have a helper. Two aren’t really needed but a second set of hands is huge.
- If you have XDrive, DO NOT use ramps. You will need all four tires off the ground and level.
- Be prepared to get messy. Not so much when you’re draining and taking the old pan off, but when you’re filling.
- Make sure the o-ring is not on the pickup tube inside the trans before putting the new pan on. It should be attached to the old pan, or in the old pan itself. If it’s still attached to the metal pickup tube, remove it and discard it - you get a new one with the new pan.
  ==========
- Just get some rigid electric wire to hold up this style of pump, and cut a rubber grommet to size so it snags into the fill hole. This picture is from when I did the transfer case service, but it's the same principle for the automatic transmission and differentials: Also shown is that the suction hose goes into a closed tupperware container, it really helps to be spill-free underneath the car. With some basic planning and forethought the transmission service is a relative breeze even on jack stands. I'd really recommend doing the differentials first to cut your teeth on the overall workflow.



I used a modified procedure on filling. I know it takes about 7 liters of fluid, so I just fill it initially, start it up, flip through the gears, top up once, shift through the gears and top up once more, usually i get 6.25 - 6.5L in there. Then I drive it for a week and put it back up after warming it up with a short drive. When I check, it's usually 3-4mm below the fill hole, so usually just around .5L tops it up perfectly. The second look also lets you see if you have any leaks Only thing i can add is practice putting ur fill plug in before you do the final running fill. It sucks having to dick with a fill plug for 5 minutes while ur under a running car on jackstands with the trans engaged and hot fluid dumping out.

Failure to comply with this requirement will result in serious damage to the automatic transmission.
Conditions for the oil adjustment:
- Initial condition: Transmission oil temperature 30 °C to 40 °C
- Final condition: Transmission oil temperature 40 °C to 50 °C
ZF only lists the final fill window for 8HP's to be between 40°C and 50°C.

Remove trans skid plate: 8x 8mm and 2ea 10mm https://www.youtube.com/watch?v=XObN94hkQ-Q

Loosen/remove exhaust heat shield parts: 3ea x 13mm

Loosen trans fill plug: 1ea x 8mm allen socket or allen wrench (short):

Remove drain plug and drain fluid: 1ea 10mm Allen Socket or wrench (Have a bucket below)

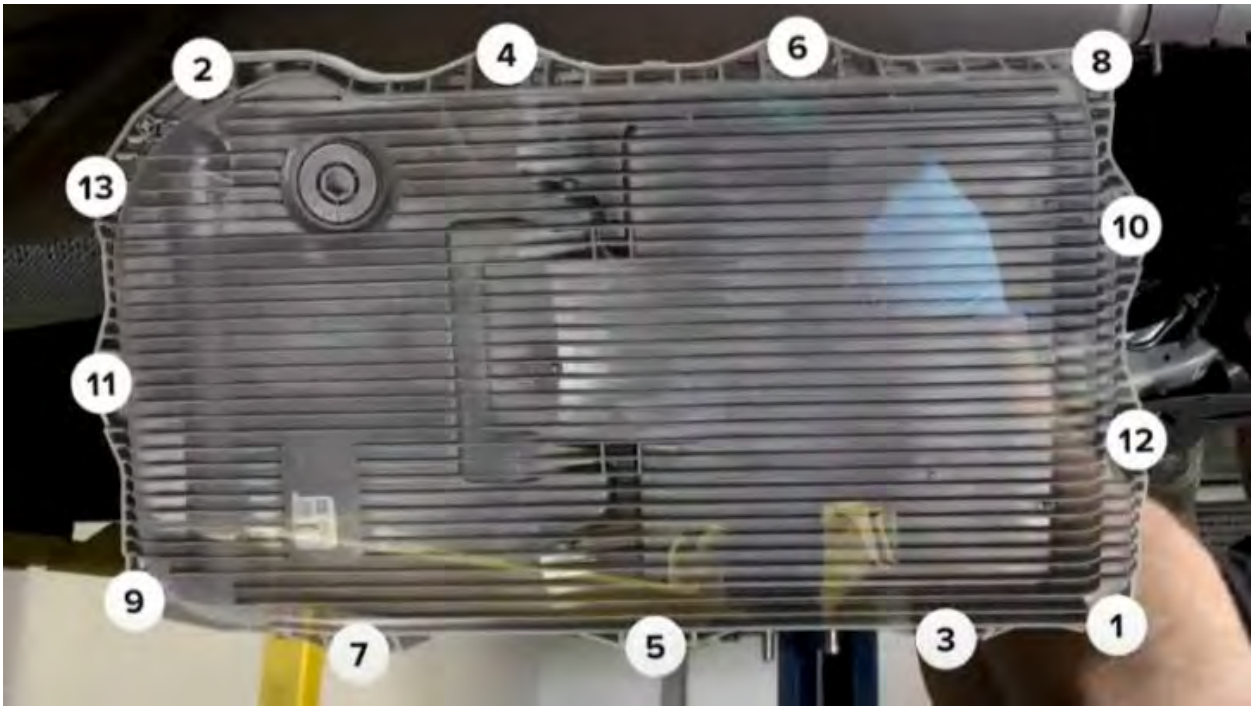
Remove trans pan screws: 24ea x T40 (After broke free: drill socket) Leave screws in far corner until drains: tilt pan

Take off old o-ring from fill tube into pan

Clean all mating surfaces

Oil lubricate new o-ring and new pan gasket seals

New T40 bolts: **10 NM (7.3 foot/lbs**) Use proper sequence to torque them



Fill transmission until overflows while engine off AND **INSTALL FILL PLUG (hand tight)**

Drain plug (ensure new plug is): 8 NM (6 ft/lbs)

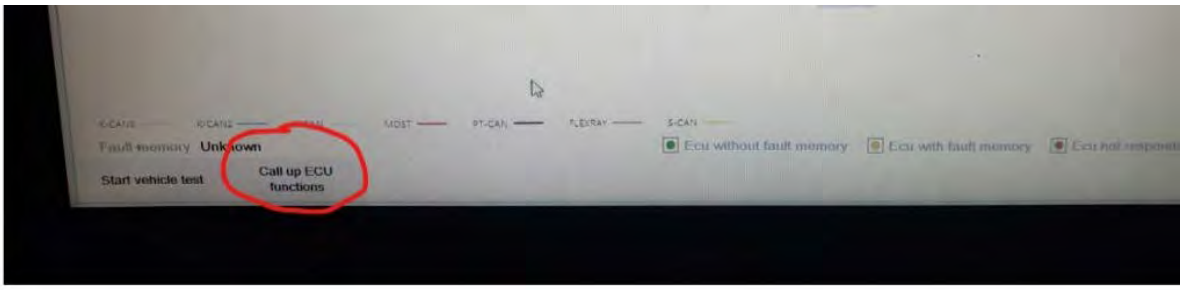
Fill Plug: 35 NM (26.5 ft/lbs)

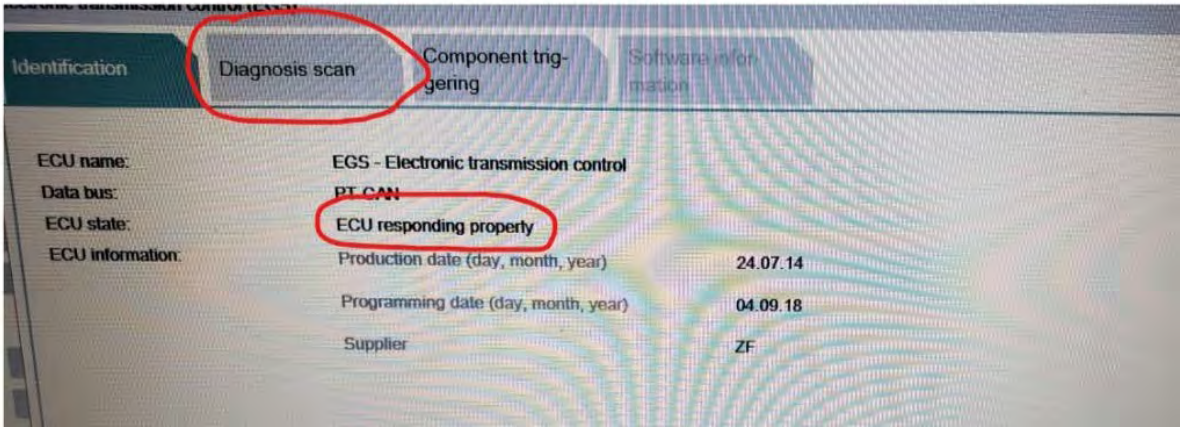
For me it took 30 minutes from 20 to 40°C and then 10 minutes more more for 45°C

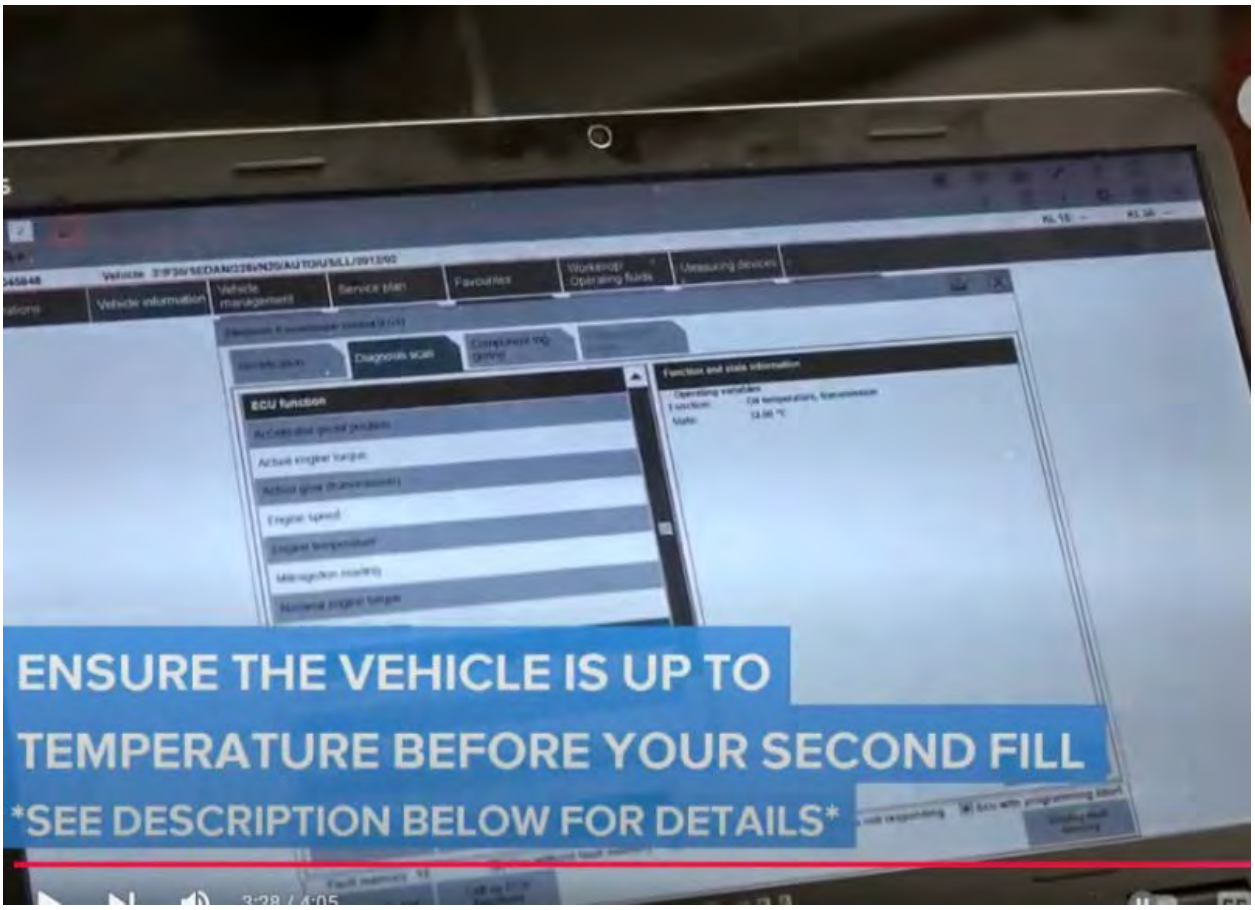
ISTA+: to read Trans Oil temp from ECUs screen go to EGS module, call ECU functions and Diagnostic Scan, select any reading you need

F30, 328I N26 **HAS** a transmission oil cooler, should “drive” car **until transmission temp is over 75C (167 F** – you can see this in the instrument cluster or use ISTA+)

If you have a brake bleed kit, clean it out and use it for the atf.


Fault memory Unknown
Start vehicle test
Call up ECU functions
Ecu without fault memory
Ecu with fault memory


Identification
Diagnosis scan
Component trig-gering
ECU name:
EGS - Electronic transmission control
Data bus:
PT-CAN
ECU state:
ECU responding properly
ECU information:
Production date (day, month, year)
24.07.14
Programming date (day, month, year)
04.09.18
Supplier
ZF


ECU function
ENSURE THE VEHICLE IS UP TO
TEMPERATURE BEFORE YOUR SECOND FILL
SEE DESCRIPTION BELOW FOR DETAILS