2008 SEQUOIA

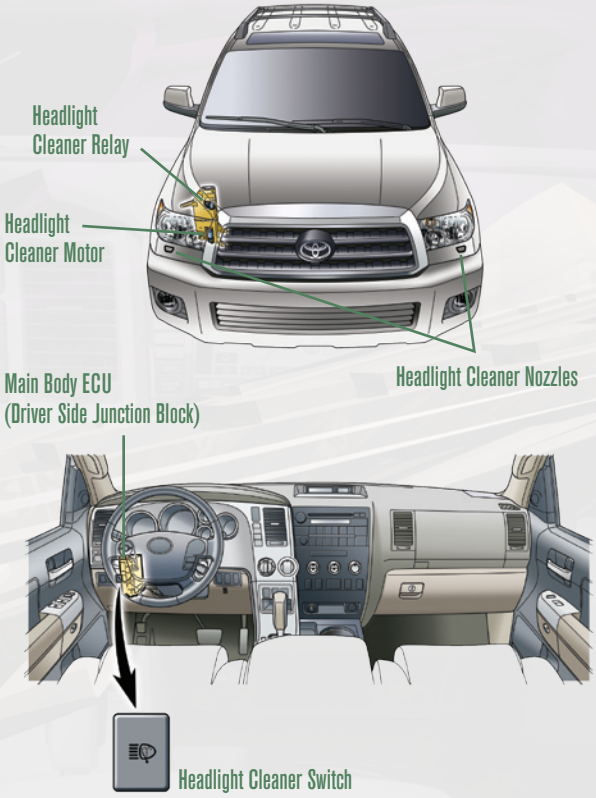
New Model Highlights

The 2008 Sequoia is a top-notch contender with ample space, power and capability. The larger body size gives the driving public an eyeful, from the grille to the bumper. Toughness is what you expect from a full-size SUV. The Sequoia stands tall and tough next to the best of them.

From the front, you'll recognize the SUV's strong resemblance to the Tundra. A new feature is headlamp washers controlled by a switch mounted on the instrument panel, to the left of the steering wheel. A dedicated washer pump is attached to the shared washer bottle located beneath the hood. When the switch is activated, system pressure extends the washers to clean the headlamps.

The bold and functional exterior styling features 18-inch wheels. Drivers can opt for larger 20-inch wheels. Many standard and optional features are available with the SR5, Limited, and the all-new Platinum grade. The 25 percent larger side view mirrors have LED turn signal indicators, and the mirrors tilt down when the vehicle is in reverse to provide a better view for the driver.

HEADLIGHT CLEANER SWITCH



From the rear, notice the power back door and power window. Door operation is controlled in the following ways:

- By using the remote keyless entry.
- By using the switch that is mounted on the instrument panel, to the left of the steering wheel.
- By using the switch that is mounted at the left rear door jamb.

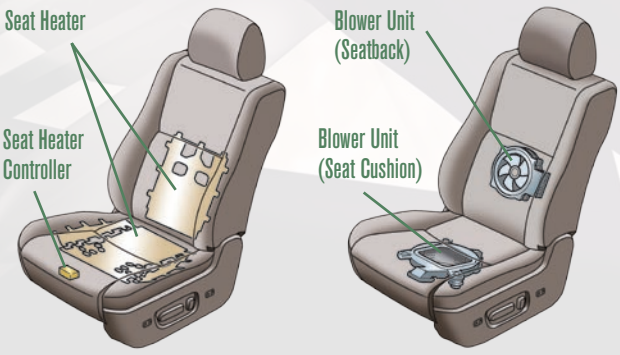
The front mounted switch "press and hold" or "press to actuate" choices are programmable with Techstream. The rear-mounted switch must be pressed AND held to actuate the door closing function. **Note:** A backup camera, mounted above the license plate, is available with the navigation system.

The Sequoia has a roomy interior that provides an expanse of comfort, convenience and configurability. There's a host of features available, including Bluetooth,® navigation, steering wheel-mounted controls, a multi-information display, and DVD entertainment for the passengers in the rear seats.

Seat configuration is available for seven or eight passengers. The standard seating arrangement accommodates seven passengers comfortably. A second row center console is available for additional seven-passenger convenience. A split, folding second row seat configuration allows eight passengers to ride in comfort.

For the seven-passenger seat configuration, power reclining and folding third row seats are available. This row has jamb protection and requires initialization to operate properly. Both the second and third row seats fold flat, along with an available fold-flat front passenger seat.

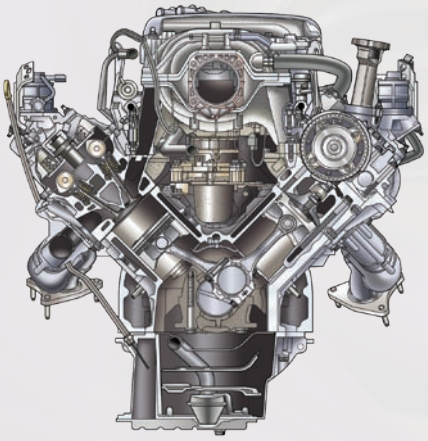
7-PASSENGER MODEL (WITH CONSOLE FOR REAR NO. 1 SEAT)



The driver and front passenger seats are available with heating and ventilation. The second row seats are available with heaters.

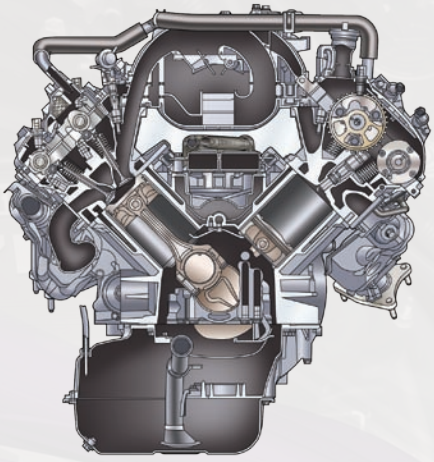
To maintain an ideal temperature inside, automatic 3-zone climate control is available. For each row of seats, the temperature can be individually controlled. Room temperature sensors are located in the front lower dash panel and in the left rear quarter panel trim.

2UZ-FE ENGINE



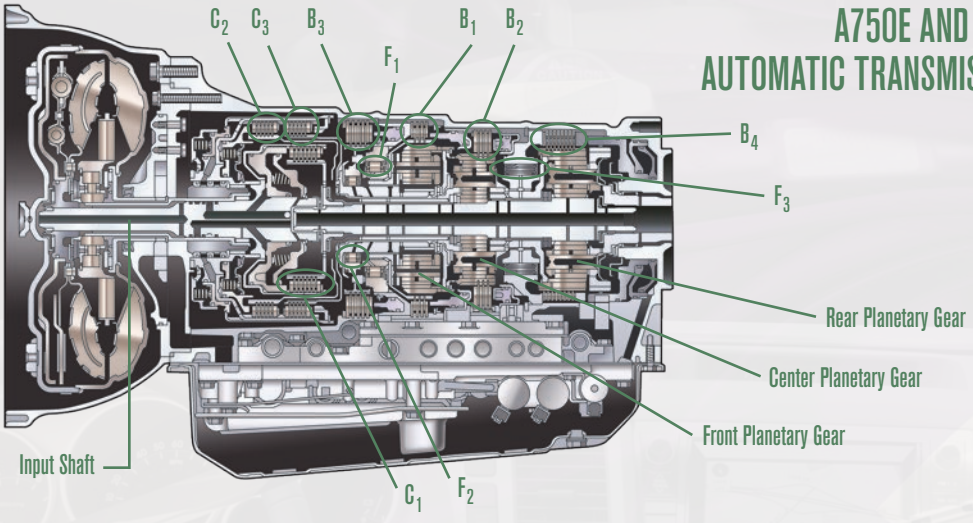
A full-size SUV requires performance and the Sequoia delivers a healthy dose. The 2008 Sequoia offers two engine sizes. First up is the 2UZ-FE 4.7-liter *i-Force* V8. This familiar engine retains the timing belt to drive the dual overhead camshafts with Variable Valve Timing with intelligence (VVT-i).

3UR-FE ENGINE

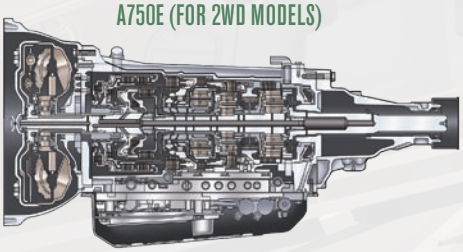


Next up is the 3UR-FE engine that displaces 5.7 liters. With dual VVT-i, this is a powerful, efficient V8 engine that is great for performance and maximum towing. Both of these engines use dual air injection to perform as cleanly and efficiently as possible.

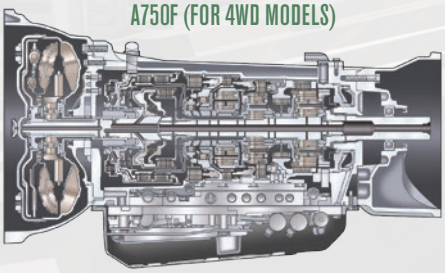
A750E AND A750F AUTOMATIC TRANSMISSIONS



A750E (FOR 2WD MODELS)



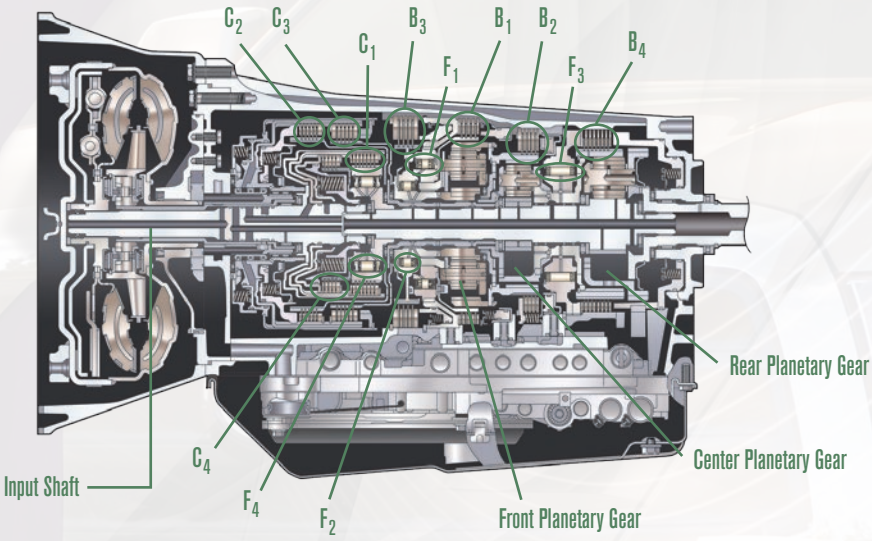
A750F (FOR 4WD MODELS)

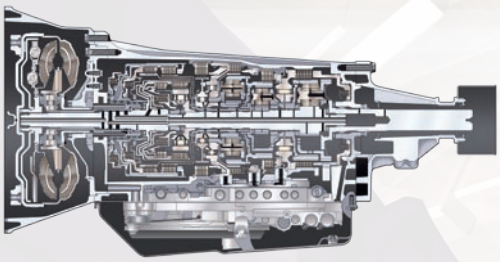


A host of automatic transmissions manage the engine power and delivery through the drivetrain. An A750E is matched to the 2UZ-FE engine. With 4-wheel drive, the A750F is attached to the transfer assembly.

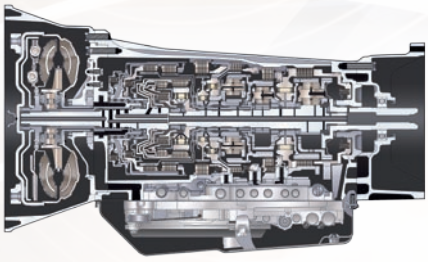
With the 3UR-FE engine, the AB60E is used for 2-wheel drive while the AB60F allows for 4-wheel drive. This combination features Tow/Haul logic that is activated by engaging the dash-mounted switch. With Tow/Haul in active mode, transmission and engine performance is maximized to compensate for towing heavy equipment, or for hauling people and their gear.

AB60E AND AB60F AUTOMATIC TRANSMISSIONS





AB60E (FOR 2WD MODELS)



AB60F (FOR 4WD MODELS)

Reliability is provided to the transmission by controlling fluid temperature. Keeping the transmission cool and lubricated during heavy operation is imperative to performance and durability. To start, a transmission warmer is attached directly to the transmission. It warms the fluid during start up and maintains the ideal temperature for viscosity performance. To prevent overheating, an air to oil cooler is mounted in front of the radiator. This cooler requires a thermostatic bypass valve to control ATF flow.

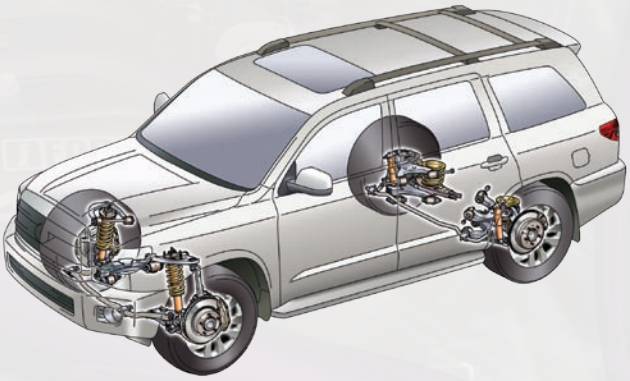
Note: When checking the ATF level on a Sequoia that is equipped with an air to oil cooler, the thermostatic valve must be bypassed to allow continuous flow and proper fluid level adjustment.

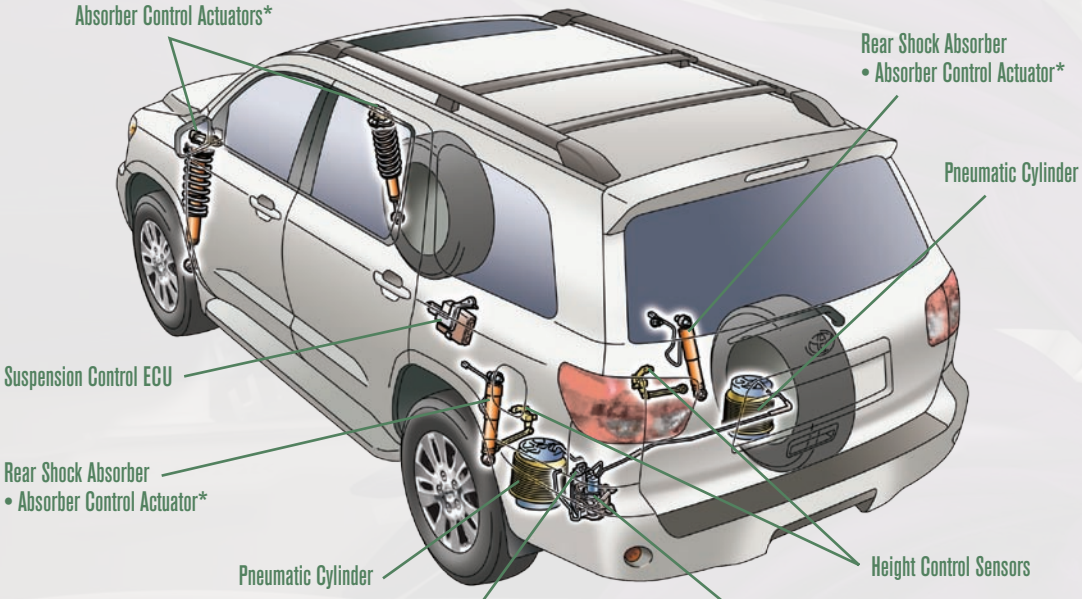
The JF3A transfer distributes power to the wheels while in 4-wheel drive mode. This is a further evolution of the JF1A transfer that was introduced in the Tundra. It incorporates the same durable drive chain and 6-pinion planetary gear set and adds to this a TORSEN® center differential. The 4WD Control ECU actuates and confirms engagement of the transfer and Automatic Disconnecting Differential (ADD).

DOUBLE-WISHBONE FRONT AND REAR SUSPENSIONS

Comfort and performance define the vehicle's suspension system. The Sequoia's fully independent suspension is available with auto-leveling and Adaptive Variable Suspension (AVS) to ensure smooth transport over rough terrain while providing stable handling on paved roads.

Up front, a familiar double-wishbone upper and lower control arm configuration is supported by using a coil spring over each shock absorber. Alignment is adjusted using cams that are located at the lower control arms.





* Only for Platinum Grade

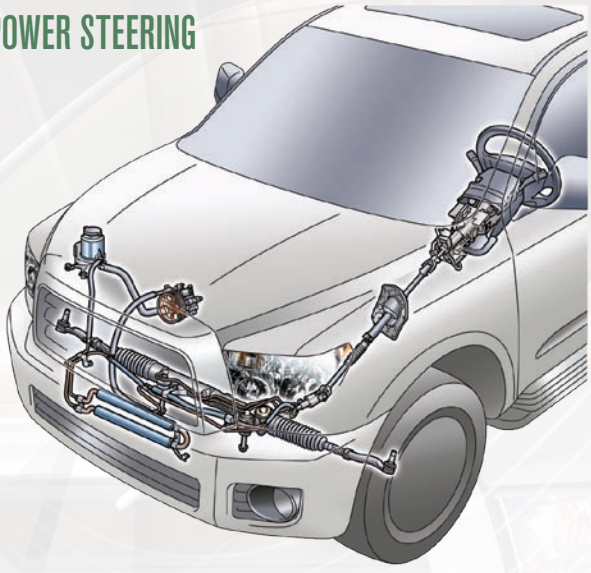
For the big news, examine the back of the SUV. A fully independent rear suspension cushions the ride for normal handling, and it effectively limits jounces or rolls that are experienced while towing. This compact arrangement is standard with conventional coil springs that are mounted low and toward the rear. Camber and caster are adjusted with cams at the lower control arms.

An auto-leveling rear suspension is available. Pneumatic cylinders are used in place of coil springs to cushion the ride and set the ride height. A height control compressor and valves are located at the left rear corner. A height control indicator light has been added to the instrument panel tachometer.

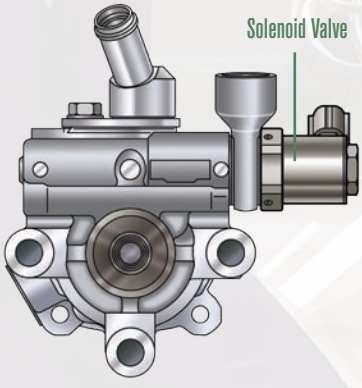
In addition to the auto-leveling suspension, the Platinum grade Sequoia features Adaptive Variable Suspension (AVS). AVS uses absorber control actuators at each shock to adjust the suspension setting from sport to comfort using a dash mounted switch. A suspension control ECU controls the system to enhance handling and to control vehicle roll and yaw.

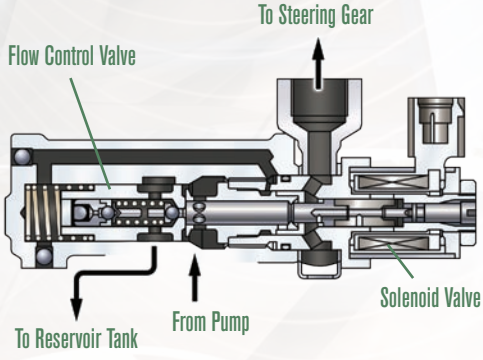
POWER STEERING

Steering is assisted hydraulically. The system has an important new feature. A flow control valve, attached to the power steering pump, regulates fluid flow using a duty cycle solenoid. At low speed and heavy load, the fluid pressure is directed through the system to increase steering assist. At higher vehicle speeds and low load, the solenoid directs fluid to the reservoir to reduce steering assist. This reduces engine accessory load, which saves energy and fuel. DEXRON®-III type ATF is used in the steering system.



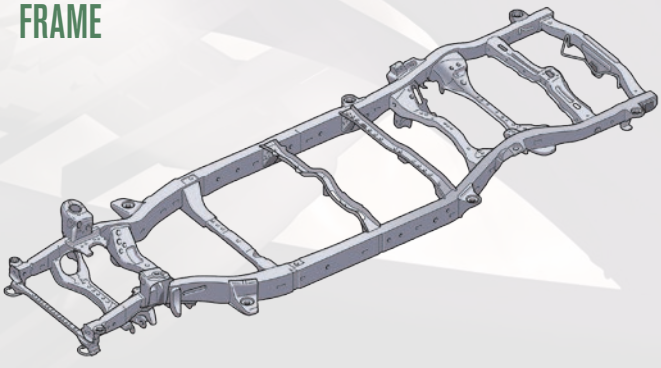
VANE PUMP





CROSS SECTION

FRAME



The suspension components are linked together with a sturdy frame that is capable of managing and delivering the available power. The Sequoia frame is a fully closed cross-sectional structure with side members made from high-strength sheet steel. At the front, a cross member prevents low height vehicles from getting under the vehicle in the event of a collision. The available hydro-formed towing hitch cross member is an integral frame component that completes the rear.

New Method for Inspecting AUTOMATIC TRANSMISSION FLUID LEVEL

Introduced on the 2004 model year 4Runner and Land Cruiser, WS Automatic Transmission Fluid (WS ATF) is not new. It was developed to increase service intervals to 100,000 miles and to improve the overall shifting performance of Toyota transmissions. All 2008 model year vehicles (except the Corolla and Matrix) are equipped with WS ATF. The next generation 2009 Corolla and Matrix will be equipped with WS ATF. This article focuses on important facts and service tips for working with WS ATF.

Although some companies may claim to have a compatible fluid, most likely the substitute fluids have not been evaluated or approved by Toyota. In many cases, the aftermarket fluids do not have the same qualities of Toyota Genuine WS ATF and can cause shift quality, MIL "ON" and/or transmission damage issues. Today's transmissions are designed with tighter tolerances that require very specific ATF properties to operate correctly. The use of any other type of ATF will likely prevent the transmission from operating as it was designed. Please refer to applicable Toyota Technical Service Bulletins (TSBs).

Background

A new automatic transmission fluid (ATF) level inspection method was introduced because of the extended service intervals and the design of the new overflow type transmissions and transaxles that are equipped with WS ATF. The new design eliminated the need for a dipstick and tube which prevents the customer from adding the wrong type of ATF.

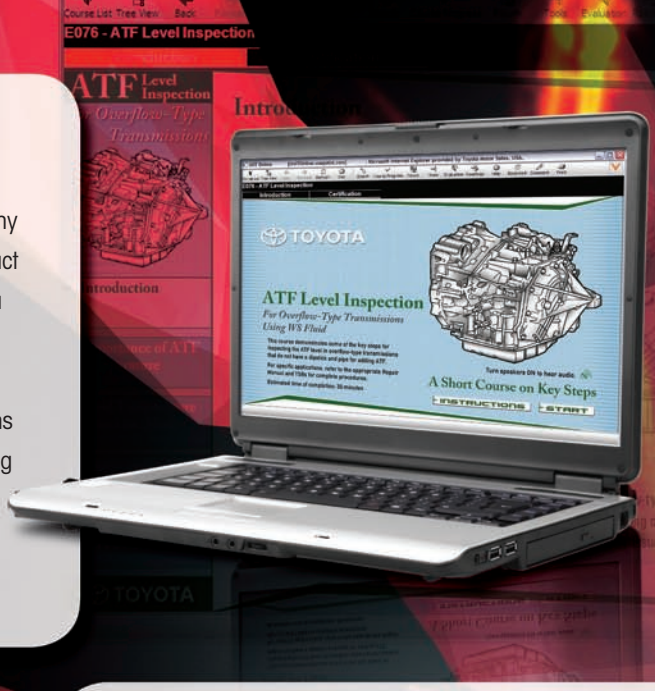
Essential Special Service Tool

The dipstick and tube for adding WS ATF to the transmission have been replaced with a refill plug and hole. This is a large, threaded hole that is usually located on the side of the transmission or transaxle case. Toyota has issued an essential Special Service Tool (SST) 00002-11100-02 for use with this refill hole. It has a quick disconnect fitting that is equipped with one-way valves to reduce spills and decrease the time it takes to complete the ATF level inspection procedure. All dealers should have this tool available for use. If not, contact SPX/OTC at 1-800-933-8335.

Note: When checking a vehicle that is equipped with an overflow type transmission or transaxle, always confirm the ATF temperature range. If the ATF level is inspected and adjusted at a temperature higher than the specification, the vehicle will be low on ATF. If the ATF level is inspected at a temperature lower than specification, the vehicle may have excess ATF. Please refer to applicable Toyota Technical Service Bulletins for correct temperature range specifications. (Some temperature ranges in the TBSs differ from the Repair Manual, so please check carefully.)

E076 – ATF Level Inspection Web Module

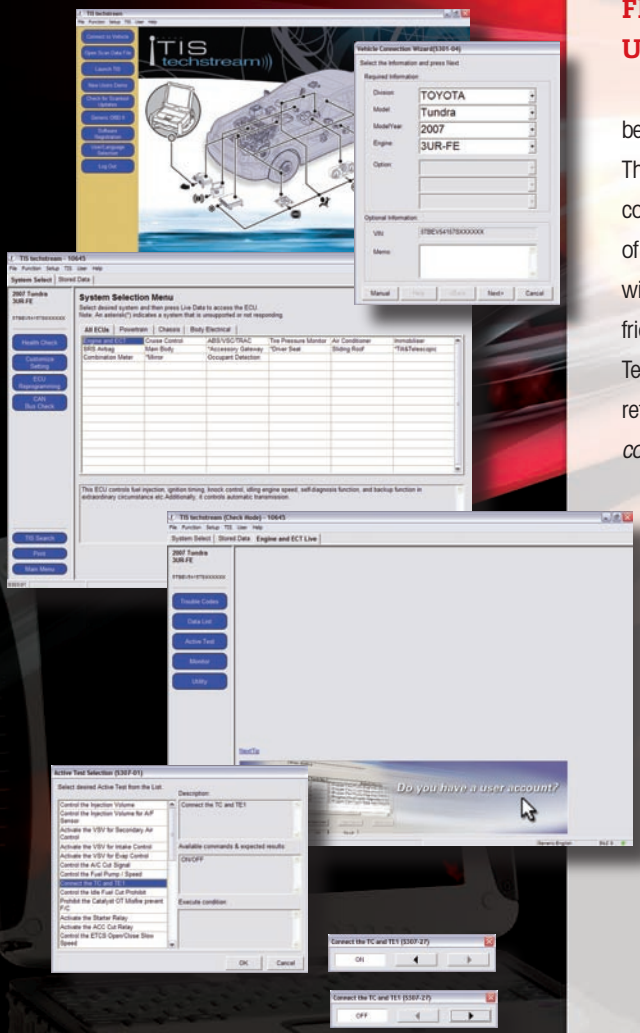
Because this procedure may be new to many technicians, the University of Toyota and Product Quality and Service Support recently released a web module (E076 – "ATF Level Inspection") that explains the mechanics of the ATF level inspection process on overflow type transmissions and transaxles equipped with WS ATF. Following this procedure is critical — failure to do so could result in shift quality, MIL "ON" and/or transmission damage issues.



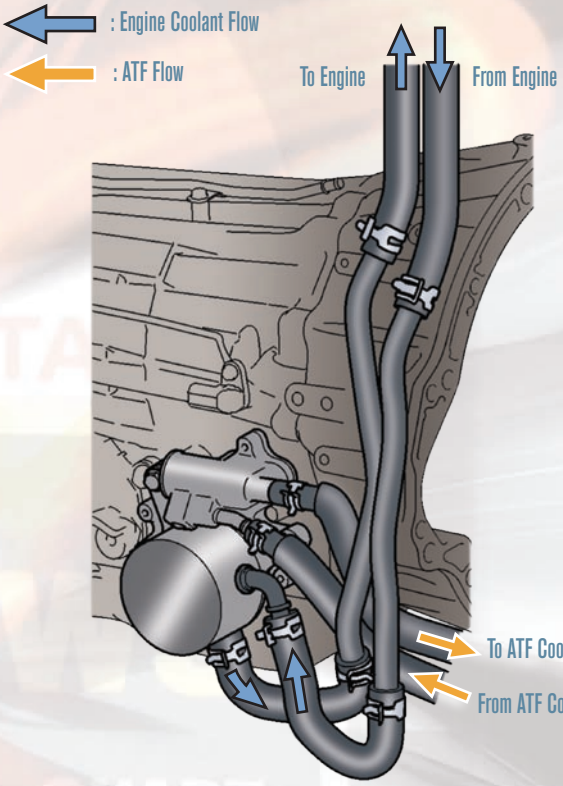
Fluid Temperature Detection Mode Using TIS Techstream

Those who are familiar with this inspection process may not be aware of a new addition, the "fluid temperature detection mode." This added feature triggers the ECM to control the engine at a constant speed and turn on the cooling fans to slow the warming of the ATF. This feature extends the window of time the technician will have to adjust the ATF level, making the process more user friendly. The fluid temperature detection mode is activated via Techstream Active Test and a few additional steps. **Note:** Please refer to the applicable Toyota Technical Service Bulletin for *complete* instructions. The following steps can be used as a guide:

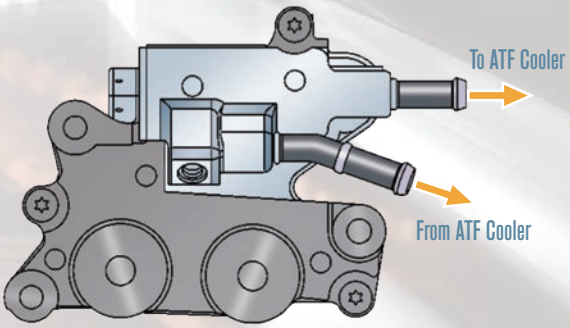
1. Using TIS Techstream, perform TC and TE1 Active Test located under System Select ⟶ Engine/ECT ⟶ Active Test ⟶ Connect TC and TE1.
2. Use the arrows to turn TC and TE1 Active Test ON.
3. Depress and hold down the brake pedal.
4. Start the engine.
5. Slowly move the shift lever from "P" to "R" to "N" to "D", then back to "P", allowing each gear to fully engage prior to moving to the next gear position.
6. While observing the "D" shift indicator (or "A/T OIL TEMP" indicator) on the combination meter, move the shift lever back and forth between "N" and "D" at an interval of 1.5 seconds for 6 seconds or more.
7. Confirm the "D" (or ATF Temperature) indicator comes on for 2 seconds in Neutral.



ATF WARMER / COOLER



TRAMISSION FLUID THERMOSTAT



2007–2008 Tundra, 2008 Sequoia and 2008 Land Cruiser 6-Speed AB60 Transmission

The latest change to the Toyota lineup is the addition of the thermostatic valve and cooler on the 6-speed AB60 transmission. This is only on trucks with a towing package. This valve, located on the passenger side of the transmission, needs to be depressed and locked with a pin during the ATF level inspection process. Failure to do so will result in an incorrect ATF level and shift quality, MIL "ON" and/or transmission damage issues. Please refer to applicable Toyota Technical Service Bulletins.

Andrew Curtin
Product Engineer, Quality Assurance – Powertrain

TPWS *Update*

All 2008 model year Toyota vehicles are now equipped with Direct Tire Pressure Warning Systems to meet the federal mandate.

#	MODEL	MODEL YEAR	SYSTEM TYPE
1	4Runner	2004	DENSO Pacific
2	Tundra	2005 – 2006	
3	Sequoia	2005 – 2007	
4	Land Cruiser	2006 –	
5	Prius		
6	RAV4		
7	Tacoma		
8	Avalon	2007 –	
9	Camry		
10	Scion tC		
11	Solara		
12	Corolla	2008 –	
13	FJ Cruiser		
14	Highlander		
15	Highlander HV		
16	Matrix		
17	Scion xB		
18	Scion xD		
19	Yaris		
20	Sienna	2007 –	TRW
21	Tundra		
22	Sequoia	2008 –	

New additions to the 2008 model year Direct Tire Pressure Warning System includes:

- TRW System (2007 to current model year Tundra and Sienna, and the new generation 2008 model year Sequoia).
- Reduction in the amount of time it takes to detect diagnostic codes; reduced from 51 minutes to 20 minutes key ON engine OFF (TRW system requires 20 minutes of consistent driving above 3 mph).
- Diagnostic Trouble Code C2126 – Transmitter ID not Received.

Most Toyota models use the DENSO Pacific Direct Tire Pressure Warning System. The 2007 to current model year Sienna and Tundra, and the next generation 2008 model year Sequoia are equipped with the TRW Direct Tire Pressure Warning System. Although the two systems have the same purpose, there are a few differences to be aware of:

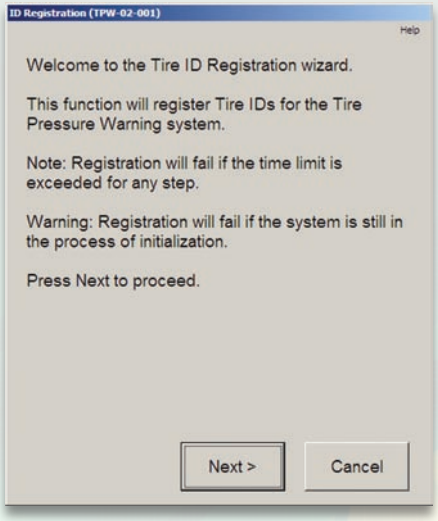
- TRW Tire Pressure Sensors have 8 ID numbers that need to be registered in the Tire Pressure Warning System. The DENSO Pacific Tire Pressure Sensors have 7 ID numbers that need to be registered.
- TRW system requires that the vehicle be driven consistently for 20 minutes above 3 mph to detect a diagnostic trouble code stored in the Tire Pressure Warning System ECU.

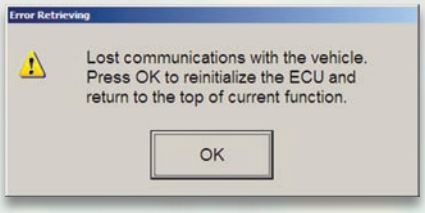
Prior to the 2008 model year, after the system became initialized, the ignition had to be "ON" for 51 minutes before a diagnostic trouble code could be detected. It now only requires that the ignition be "ON" for 20 minutes. **Reminder:** The 2007 to current model year Sienna and Tundra, and the next generation 2008 model year Sequoia uses the TRW system and requires that the vehicle be consistently driven above 3 mph for 20 minutes for the system to detect a diagnostic trouble code stored in the Tire Pressure Warning System ECU.

New Diagnostic Trouble Code C2126 (Transmitter ID not Received) is stored in the Tire Pressure Warning System ECU when one or more of the Tire Pressure Sensor ID Numbers do not match what is registered in the ECU. The Tire Pressure Warning Light blinks for 1 minute and then turns "ON." Refer to the Repair Manual for C2126 diagnostic information. After ignition is "ON" for 20 minutes (DENSO Pacific System) or 20 minutes of consistent driving above 3 mph (TRW System), the actual DTC will be stored, for example, C2121 (Transmitter ID Number One not Received).

When the Tire Pressure Warning ECU successfully receives radio wave signals from all of the Tire Pressure Sensor Transmitters that have their IDs stored in the ECU, DTC C2126 is cleared and the Tire Pressure Warning Light will turn OFF. **Note:** The most common cause for DTC C2126 is after a tire and wheel swap has been performed and the new Tire Pressure Sensor ID Numbers were not registered in the ECU.

Reminder: When attempting to re-register the Tire Pressure Sensor ID Numbers using Techstream after a repair or tire and wheel swap, it may be necessary to jump terminals TC and CG at the DLC3 connector. 2006 – 2007 Land Cruiser vehicles require terminals TC and E1 at DLC1. The Techstream condition is shown below:



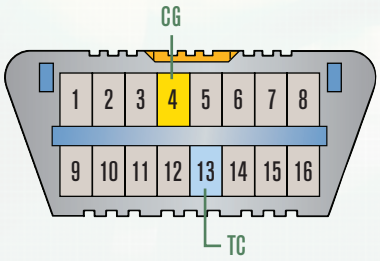


>> Select "OK."

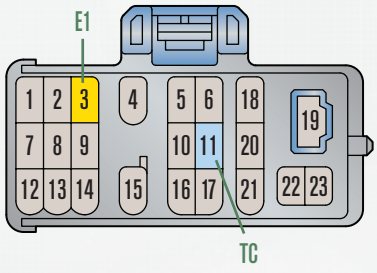
>> Disconnect Techstream and jump terminals TC and CG at the DLC3 connector (for Land Cruiser: jump terminals TC and E1 at DLC1) for 15 seconds with the ignition "ON" and engine OFF.

>> After 15 seconds, remove the jumper wire and reconnect Techstream to register the Tire Pressure Sensor ID numbers.

DLC3



2006–2007 LAND CRUISER DLC1 CONNECTOR



Additional Direct Tire Pressure Warning System Diagnostic information can be found in TSB PG004-06 (Direct Tire Pressure Warning System Diagnostic Tip) and the Fourth Quarter 2006 issue of *Toyota Tech*.

Jason Chambers
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