

The 1988 Camry A/TM

Making Camry A/TM Repairs Easier

Mounting Questions About Torque Converter Bolts

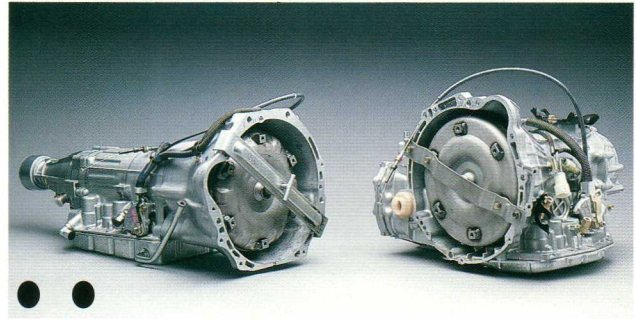
Mix-N-Match Transaxles

Make Reman the Automatic Choice



Toyota Remanufactured Automatic Transmissions

Quality... Every Step of the Way



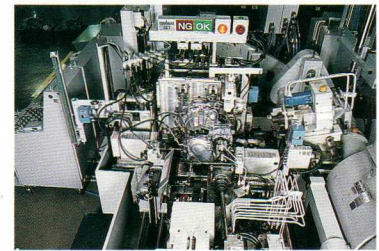
Every Remanufactured Automatic Transmission in Toyota's newly-expanded lineup has been assembled and tested to meet original equipment specifications *before* it is installed in your customer's vehicle.



Cores and component parts are meticulously cleaned using the latest techniques and equipment, removing all traces of contamination.



Individual parts are carefully inspected against original equipment standards. All soft parts such as gaskets and O-rings are replaced. Hard parts that do not meet O.E. specifications are replaced with new parts.



Every transmission is then tested on a state-of-the-art computer-controlled dynamometer which simulates actual driving conditions. And no unit is shipped until a master technician performs final checks -- helping you avoid costly come backs later!

**Genuine Toyota Quality.
An Excellent Warranty.
Toyota Remanufactured Automatic Transmissions.**

"I love what you do for me."





SERVICE NEWS

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WHAT IS A STAR DEALER?

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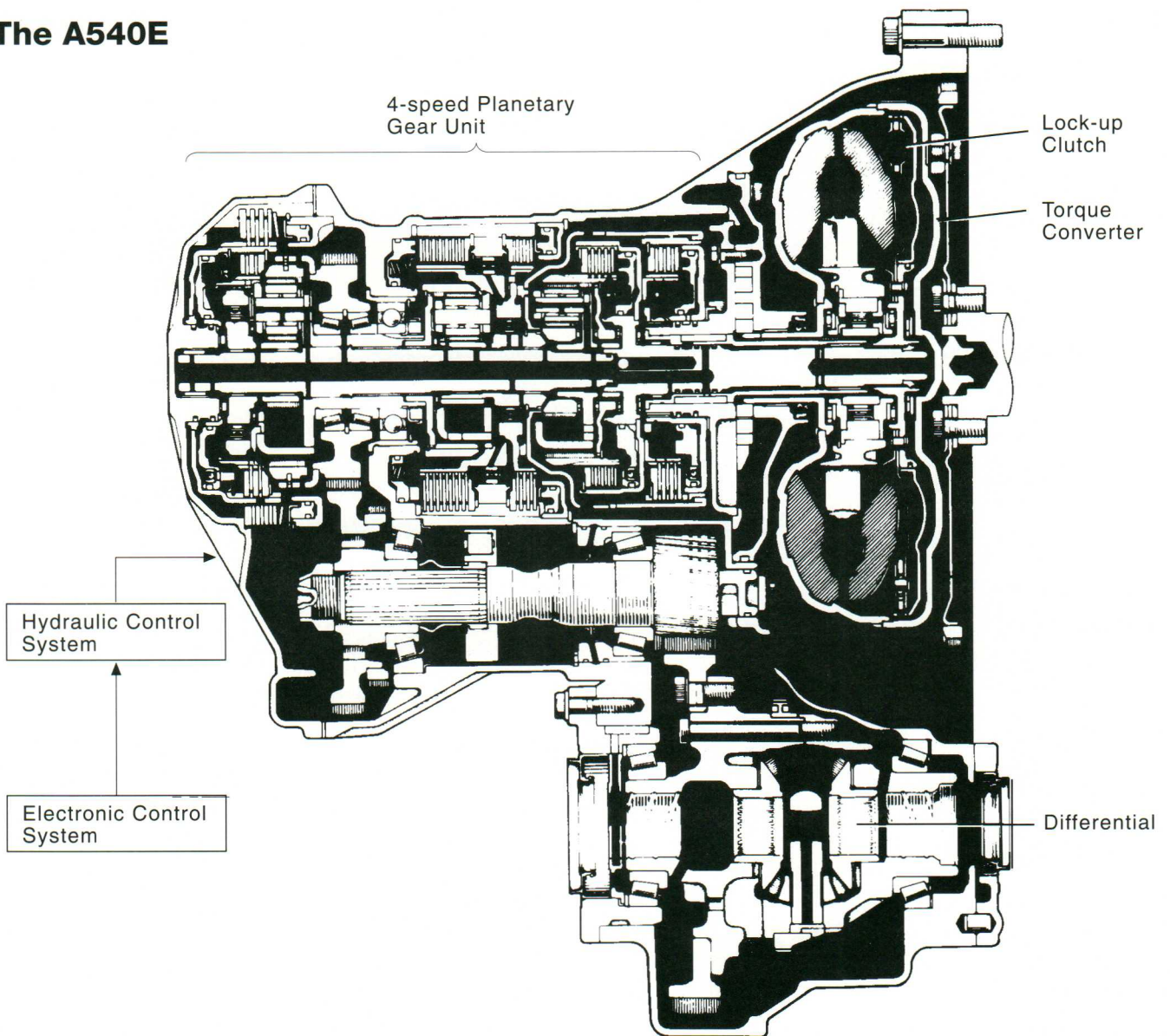
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The 1988 Camry Automatic Transaxle

DESCRIPTION OF COMPONENTS

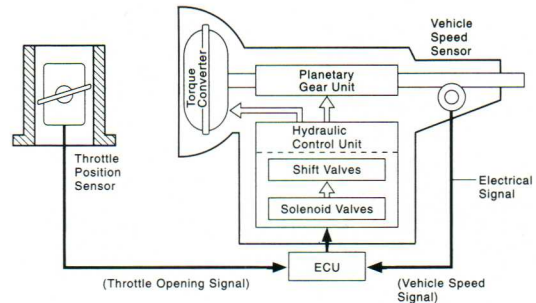
The A540E



Features

The Camry A540E automatic transaxle is a four-speed, electronically controlled transaxle (ECT). It was developed exclusively for use with a transversely mounted engine. A lock-up is built into the torque converter.

The A540E transaxle is comprised of a torque converter, a four-speed planetary gear unit, the differential, the hydraulic control system and the electronic control system.



THE ELECTRONICALLY CONTROLLED TRANSAXLE

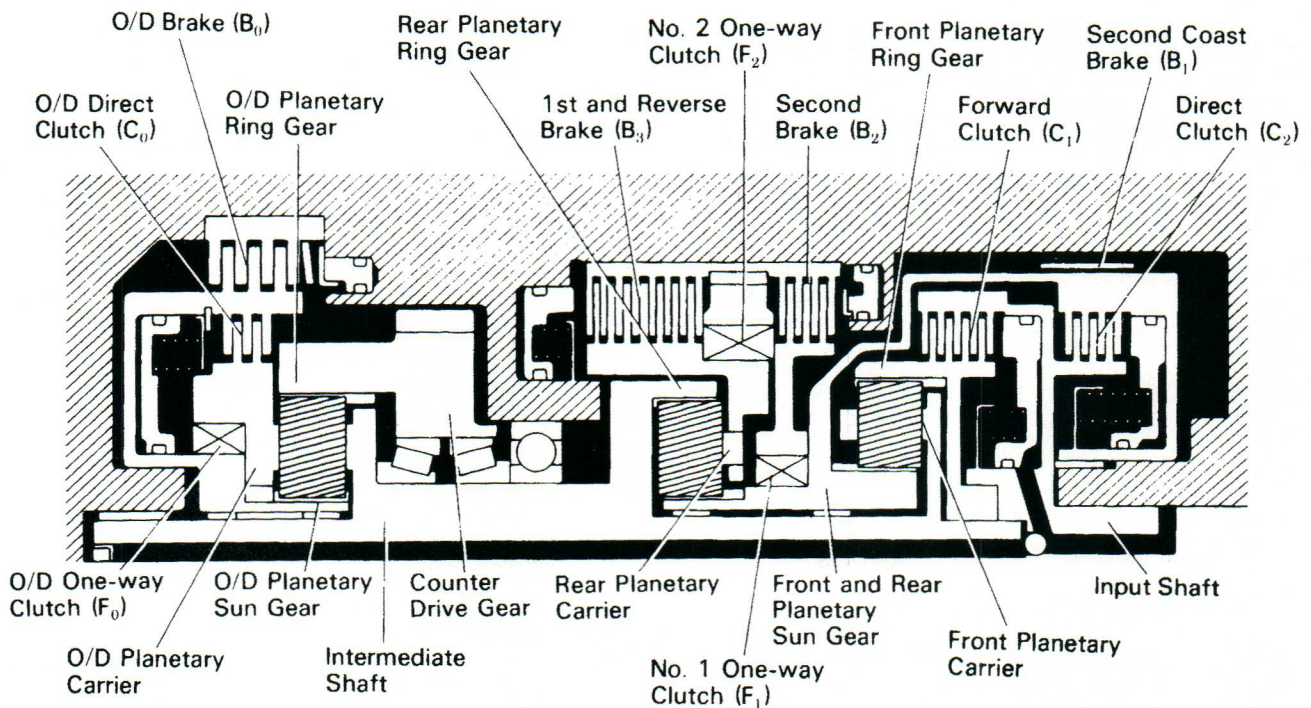
Unlike conventional automatic transmissions, the A540E uses an ECT to control shift timing. The ECT electronically senses vehicle speed and throttle opening and sends this information to the Electronically Controlled Unit (ECU). Based on this information, the ECU adjusts the operation of the clutches and brakes, and thus, shift timing. Otherwise, the ECT operates much the same as a fully hydraulically controlled A/T.

THE PLANETARY GEAR UNIT

The planetary gear unit is comprised of three sets of planetary gears, three clutches which transmit power to the planetary gears and four brakes and three one-way clutches which immobilize the planetary carrier and planetary sun gear.

Engine power is transmitted to the planetary gears from the torque converter by a series of clutches. Using the brakes and one-way clutches, either the planetary carrier or the planetary sun gear is immobilized, which alters the revolution speed of the planetary gear unit.

Shift changes are made by altering the com-



Features

combination of clutch and brake operation. Each clutch and brake operates by hydraulic pressure. Gear position is based on throttle opening angle and vehicle speed.

OPERATION OF EACH ELEMENT OF THE PLANETARY GEAR UNIT

Forward Clutch (C1) Connects input shaft and front planetary ring gear

Direct Clutch (C2) Connects input shaft and front & rear planetary sun gear

2nd Coast Brake (B1) Prevents front & rear planetary sun gear from turning either clockwise or counterclockwise

2nd Brake (B2) Prevents outer race of F1 from turning either clockwise or counterclockwise, thus preventing front & rear planetary sun gear from turning counterclockwise

1st & Reverse Brake (B3) Prevents rear planetary carrier from turning either clockwise or counterclockwise

No. 1 One-Way Clutch (F1) When B2 is operating, prevents front & rear planetary sun gear from turning counterclockwise

No. 2 One-Way Clutch (F2) Prevents rear planetary carrier from turning counterclockwise

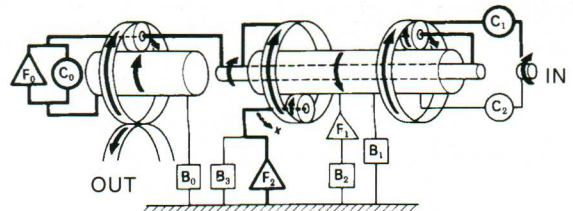
O/D Direct Clutch (C0) Connects overdrive sun gear and overdrive planetary carrier

O/D Brake (B0) Prevents overdrive sun gear from turning either clockwise or counterclockwise

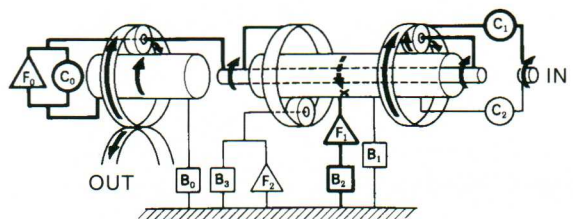
O/D One-Way Clutch (F0) When transmission is being driven by engine, connects overdrive sun gear and overdrive carrier

POWER TRAIN DIAGRAMS

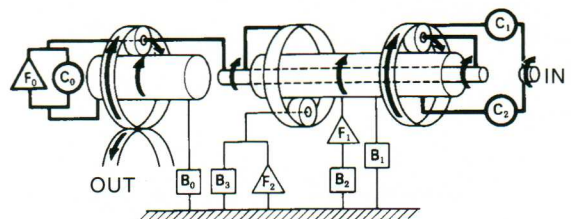
D or 2 Range 1st Gear



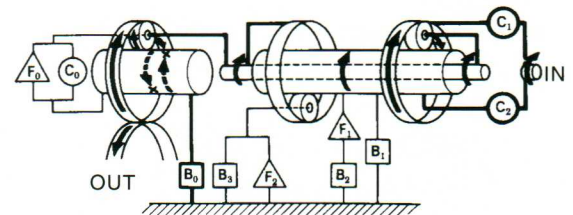
D Range 2nd Gear



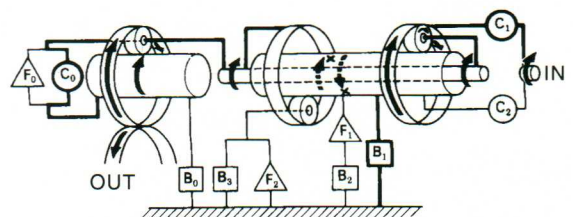
D Range 3rd Gear



D Range O/D Gear

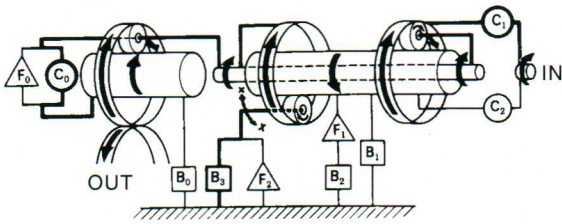


2 Range 2nd Gear

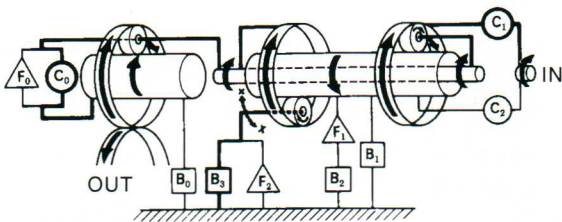


Features

L Range 1st Gear



R Range Reverse Gear

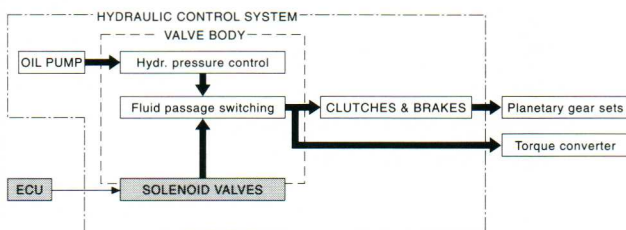


THE HYDRAULIC CONTROL SYSTEM

The hydraulic control system is made up of the oil pump, the valve body, the solenoid valves, and the clutches and brakes, as well as the fluid passages that connect all of these components.

The hydraulic control system controls the amount of hydraulic pressure acting on the torque converter, clutches and brakes based on the hydraulic pressure created by the oil pump.

The hydraulic control system of the ECT is the same as that of hydraulically controlled A/Ts with the exception of the solenoid valves. There are three solenoid valves on the valve body, which are turned on and off based on signals from the ECU. The solenoid valves operate the shift valves. When the solenoid valves are turned on, the shift valves switch the fluid passages so that fluid goes to the torque converter and planetary gear units.



Line Pressure

Line pressure operates all of the clutches and brakes in the transmission. If the primary regulator valve is not operating properly, line pressure will either be too high or too low. Line pressure that is too high will lead to shifting shock and engine power loss. Line pressure that is too low will cause the clutches and brakes to slip, which can prevent the vehicle from moving.

Throttle Pressure

Throttle pressure is based on the opening angle of the engine throttle valve. The throttle pressure acts on the primary regulator valve and, accordingly, line pressure is regulated in response to the throttle valve opening.

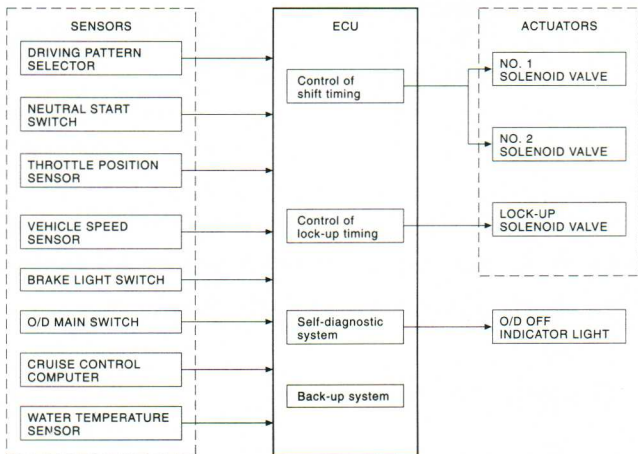
In the ECT, the throttle pressure is used only for regulating line pressure. An improperly adjusted transmission throttle cable can cause line pressure that is too high or too low. This can cause shifting shock or clutch and brake slippage.

THE ELECTRONIC CONTROL SYSTEM

The electronic control system controls the shift points and the operation of the lock-up switch. It is made up of the following components:

- Sensors. The sensors sense vehicle speed, throttle opening and other conditions and send this data to the ECU.
- ECU. The ECU determines shift and lock-up timing based on signals from sensors. It also controls the solenoid valves of the hydraulic control unit.
- Actuators. These three solenoid valves control the hydraulic pressure acting on the hydraulic valves to control shifting and lock-up timing.

Features



ECU FUNCTIONS

Control of Shift Timing

The ECU is programmed with optimum shift patterns for each shift lever position (D, 2, L range) and driving mode (Normal and Power).

Based on the appropriate shift pattern, the ECU turns the No. 1 and No. 2 solenoid valves on or off based on vehicle speed signals from the vehicle speed sensor and throttle opening signals from the throttle position sensor. This way, the ECU operates each shift valve, opening or closing the fluid passages to the clutches and brakes to permit the up-shift and down-shift of the transmission.

NOTE: The electronic control system only controls shift timing and lock-up control when the vehicle is traveling forward. In reverse, park and neutral, the transmission is mechanically operated.

Overdrive Control

Driving in overdrive is possible if the O/D main switch is on and the shift lever is in the D range. When the vehicle is being driven using the cruise control system, if the actual vehicle speed drops to about 6 mph below the set speed while the vehicle is running in overdrive, the CCS com-

puter sends a signal to the TCCS ECU to release the overdrive and prevent the transmission from shifting back into overdrive until the actual vehicle speed reaches the speed set in the CCS memory.

Control of Lock-Up System

The TCCS ECU has a lock-up clutch operation pattern for each driving mode (normal or power) programmed in its memory. Based on these patterns, the ECU turns the lock-up solenoid valve on or off in accordance with the vehicle speed signals received from the vehicle speed sensor and the throttle opening signals from the throttle position sensor. Depending on whether the lock-up solenoid valve is on or off, the lock-up relay valve performs a changeover of the fluid passages for the converter pressure acting on the torque converter to engage or disengage the lock-up clutch.

If any of the following conditions exist, the ECU turns off the lock-up solenoid valve to disengage the lock-up clutch:

1. The brake light switch comes on during braking.
2. The IDL points of the throttle position sensor close (throttle valve fully closed).
3. The vehicle drops 6 mph or more below the set speed while the cruise control system is operating.
4. The coolant temperature falls below 60°C (140°F).

The purpose of 1 and 2 is to prevent the engine from stalling if the front wheels lock up. The purpose of 3 is to cause the torque converter to operate to obtain torque multiplication. The purpose of 4 is to improve general driveability and to speed up transmission warm-up.

Troubleshooting the 1988 Camry Automatic Transaxle

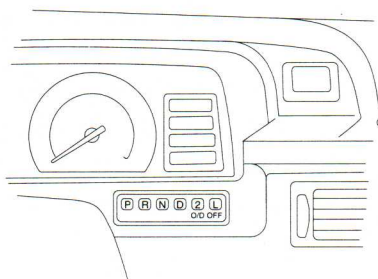
BASIC TROUBLESHOOTING

Before troubleshooting an ECT, you must first determine whether the problem is electrical or mechanical. If you know the cause, use the general troubleshooting procedure and refer to the appropriate pages of the repair manual.

DIAGNOSIS SYSTEM TROUBLESHOOTING

A self-diagnosis system is built into the electrical control system. If the problem is electrical, a code will be stored in the memory. A warning is indicated by the overdrive OFF indicator.

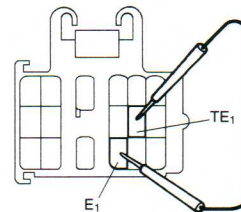
Warning and diagnostic codes can only be read when the overdrive switch is ON. If it is OFF, the overdrive OFF indicator will be lit continuously and will not blink.



- If a malfunction (short or open circuit) has occurred within the speed sensors (No. 1 or 2) circuit or solenoids (No. 1 or 2) circuit, the overdrive OFF light will blink to warn the driver. There is no warning if a malfunction occurs with the lock-up solenoid.

- The diagnostic code can be read by the number of blinks of the overdrive OFF indicator

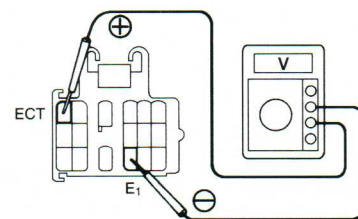
when terminals TE1 and E1 are short-circuited. (This procedure is detailed later).



- The throttle position sensor or brake signal are not indicated, but you can inspect them by checking the voltage at terminal ECT of the service connector.

- The signals to each gear can be checked by measuring the voltage at terminal ECT of the service connector while driving.

The diagnostic code is retained in the memory of the CPU and, due to back-up voltage, is not cancelled when the engine is turned off. After you make the repair, you must turn the ignition switch off and remove the fuse EFI (15A) or disconnect the TCCS ECU connector to cancel out the diagnostic codes.



- Always check the battery before you begin. Low battery voltage can cause faulty operation of the diagnosis system.

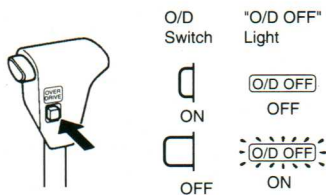
- Use a voltmeter and ohmmeter that have an impedance of at least 10kΩ/V.

Features

Check the O/D OFF indicator light.

1. Turn the ignition switch ON.
2. The O/D OFF light will come on when the O/D switch is placed at OFF.
3. When the O/D switch is set to ON, the O/D OFF light should go out.

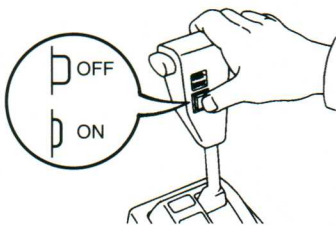
If the O/D OFF light flashes when the O/D switch is set to ON, the electronic control system is faulty.



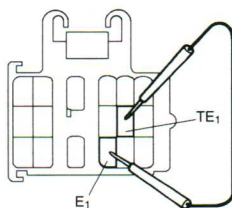
TO READ DIAGNOSTIC CODES:

1. Turn ignition switch and O/D switch to ON. Do NOT start the engine.

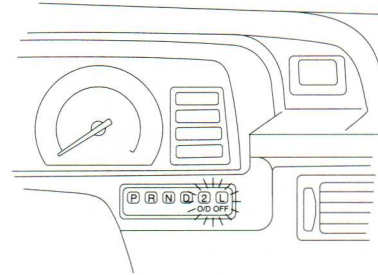
Note: Warning and diagnostic codes can be read only when the overdrive switch is ON. If it is OFF, the overdrive OFF light will light continuously and will not blink.



2. Short TE1, terminal circuit of service connector. Short terminals TE1 and E1 of the service connector, using a service wire.

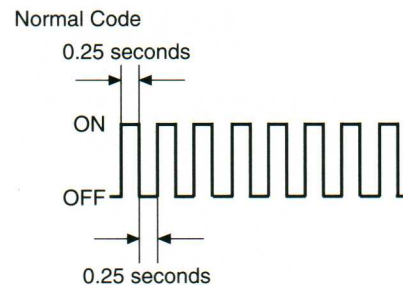


3. Read diagnostic codes. Read the diagnostic codes as indicated by the number of times the O/D OFF light flashes.

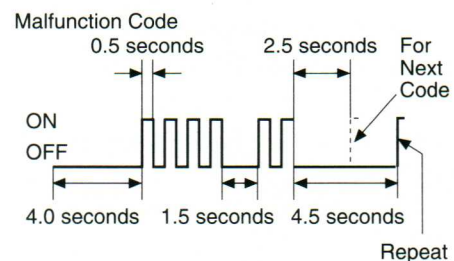


(Diagnostic Code Indication)

- The light will blink once every 0.25 seconds if the system is operating normally.









- If there is a malfunction, the light will blink once every 0.5 seconds. The number of blinks will equal the first number and, after a 1.5 second pause, the second number of the two digit diagnostic code. If there are two or more codes, there will be a 2.5 second pause between each code. If there are several trouble codes, the indication will begin from the smaller value and continue to the larger.



4. Remove service wire.

Features

DIAGNOSTIC CODES

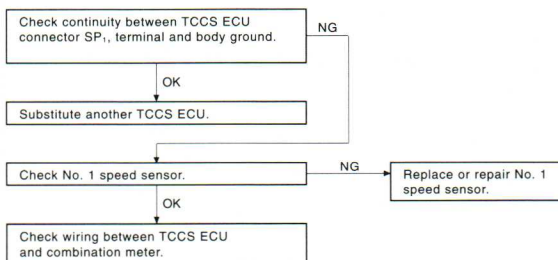
Code No.	Light Pattern	Diagnosis System
-		Normal
42		Defective No. 1 Speed sensor (in combination meter) - Severed wire harness or short circuit.
61		Defective No. 2 Speed sensor (in ATM) - Severed wire harness or short circuit.
62		Severed No. 1 solenoid or short circuit - Severed wire harness or short circuit.
63		Severed No. 2 solenoid or short circuit - Severed wire harness or short circuit.
64		Severed lock-up solenoid or short circuit - Severed wire harness or short circuit.

If codes 42, 61, 62 or 63 are output, the over-drive OFF indicator light will begin to blink immediately to warn the driver. An impact or shock can cause the blinking to stop, but the code will still remain in the TCCS ECU memory until it is cancelled. There is no warning for a diagnostic code 64.

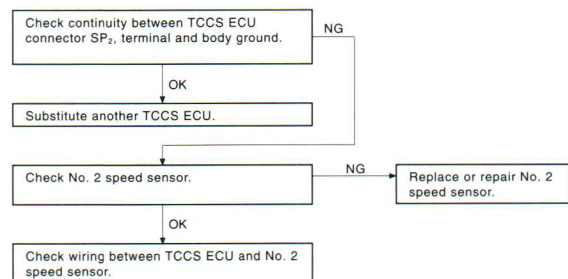
If codes 62, 63 or 64 appear, there is an electrical malfunction in the solenoid. Problems caused by mechanical failure will not appear.

If there is a simultaneous malfunction of both the No. 1 and 2 speed sensors, no diagnostic code will appear and the fail-safe system will not function. When driving in the D range, the transmission will not up-shift from first gear, regardless of vehicle speed.

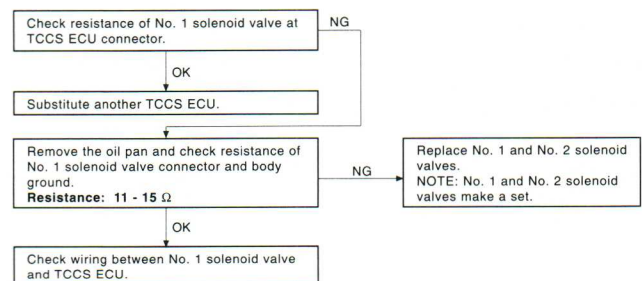
If a code 42 (No. 1 speed sensor) is output, follow this troubleshooting procedure:



If a code 61 (No. 2 speed sensor) is output, follow this procedure:

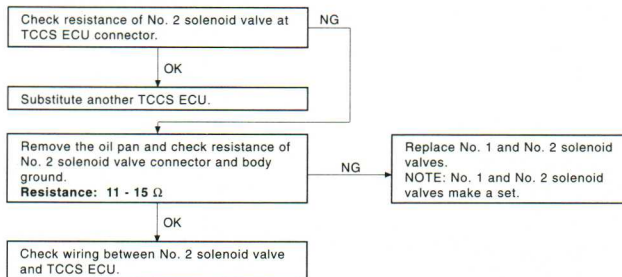


Follow this procedure for a code 62 (No. 1 solenoid valve circuitry):

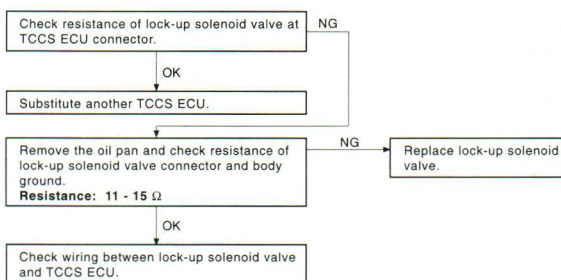


Features

Follow this procedure for a code 63 (No. 2 solenoid valve):

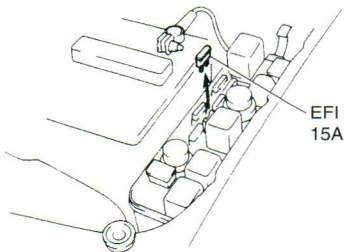


This is the procedure for a code 64 (lock-up solenoid valve):



CANCELLING DIAGNOSTIC CODES

After making your repair, the diagnostic codes retained in the TCCS ECU memory must be erased by removing the fuse EFI (15A) for 10 seconds or more, depending on the ambient temperature (the lower the temperature, the longer the fuse must be left out) with the ignition switch OFF.



Note: You also can cancel the codes by removing the negative battery terminal, but in this case, other memory systems will be cancelled out.

- Diagnostic codes can be cancelled out by disconnecting the TCCS ECU connector.

- If the diagnostic code is not cancelled out, it will be retained in the TCCS ECU and appear with a new code in the event of future trouble.

After you have cancelled the codes, perform a road test to confirm that a “normal code” is now read on the O/D OFF indicator.

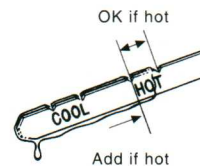
MAKING A PRELIMINARY CHECK

If you find there are no problem codes stored in the TCCS ECU memory, you must conduct a preliminary check of the system.

1. Check fluid level. Before you check the fluid level, you must:

- Make sure that the vehicle has been driven so that the engine and transmission are at normal operating temperature. (Fluid temperature: 70-80°C or 158-176°F)

- Use only the COOL range on the dipstick as a rough reference when the fluid is replaced or the engine does not run.



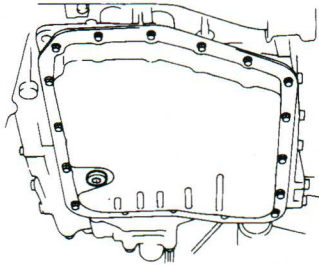
- Park the vehicle on a level surface and set the parking brake.
- While the engine is idling, shift the shift lever into all position from P to L, and return to P.
- Pull out the transmission dipstick and wipe it clean.
- Push the dipstick back into the tube.
- Pull out the dipstick and check that the fluid level is in the HOT range.

Features

If the fluid is low, add more, being sure not to overfill. **Fluid Type: ATF Dexron® II**

2. Check fluid condition. The fluid should be replaced if it smells burned or is black.

- a. Remove the drain plug and drain fluid.

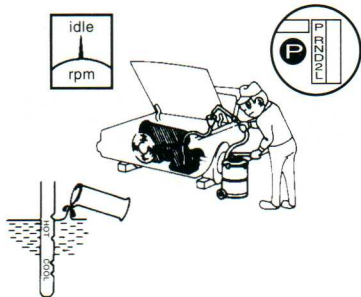


- b. Securely reinstall the drain plug.
- c. Add new fluid through the oil filler tube, with the engine OFF.

Fluid Type: ATF Dexron® II

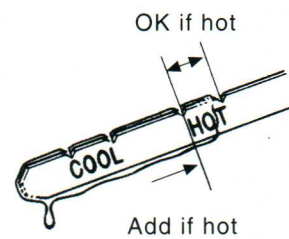
Capacity: Dry fill: 6.2 US qts. (5.9 liters)

Drain and refill: 2.6 US qts. (2.5 liters)



- d. Start the engine and shift the shift lever into all positions from P to L and then shift back into the P position.
 - e. Check the fluid level while the engine is idling. Add fluid up to the COOL level on the dipstick.
 - f. Check the fluid level with the normal operating temperature (158-176°F or 70-80°C) and add as necessary.
- Please note: Dexron® is a registered trademark of General Motors.

DO NOT OVERFILL

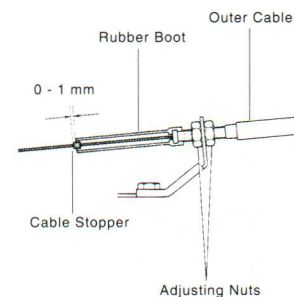


3. Inspect the throttle cable.

- a. Check that the throttle valve opens all the way by depressing the accelerator pedal to the floor. If the valve does not open fully, adjust the accelerator cable.
- b. Fully depress the accelerator pedal.
- c. Measure the distance between the end of the boot and the stopper on the cable.

Standard distance is: 0-1mm (0-.04 in.)

If the distance is not standard, adjust the cable with the adjusting nuts.



4. Inspect the shift lever position.

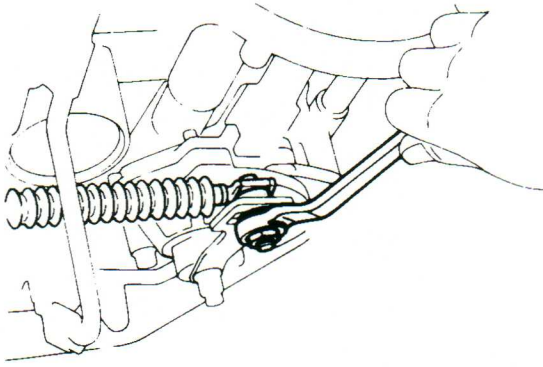
Check that the shift lever can be shifted smoothly and accurately from the N position to all other positions. Also check that the position indicator indicates the correct position.

If the indicator is not aligned with the correct position, make these adjustments:

- a. Loosen the swivel nut on the manual shift lever.
- b. Push the manual shift lever fully toward the right side of the vehicle.
- c. Return the lever two notches to the NEUTRAL position.

Features

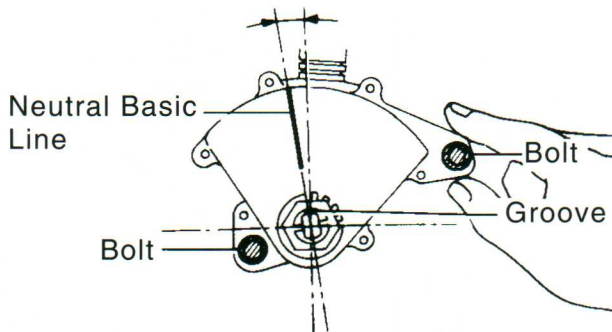
- d. Set the shift lever to N.
- e. While holding the lever lightly toward the R range side, tighten the swivel nut.



5. Adjust the neutral start switch

Make the following adjustments if the engine will start with the shift selector in any range other than N or P.

- a. Loosen the neutral start switch bolts and set the shift selector to the N range.
- b. Align the groove and neutral basic line.
- c. Hold in position and tighten the bolts.
Torque: 55 kg-cm (48 in.-lb, 5.4 N•m)

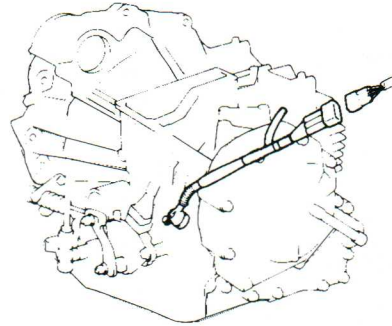


6. Inspect idle speed (N range) Idle speed: 700 rpm.

If you find nothing wrong after making a preliminary check, move on to the manual shifting test. The manual shifting test can pinpoint whether the problem is with the electrical circuit or if it is a mechanical problem in the transmission.

MANUAL SHIFTING TEST

1. Disconnect the solenoid wire.



2. Inspect the manual driving operation.

Check that the shift and gear positions correspond with the table below.

Gear position	D range	2 range	L range	R range	R range
Shift position	O/D	O/D	1st	reverse	pawl lock

If the L, 2 and D range gear positions are difficult to distinguish, perform the following road test:

While driving, shift through the L, 2 and D ranges. Check that the gear change corresponds to the shift position. If any problems are found in the road test, the problem lies in the transmission itself.

3. Reconnect the solenoid wire.

If the vehicle performs well during the manual shifting test, you should perform an electrical control system check. Repair or replace any problems that you find with the electronic control system. If you found problems during the manual shifting test, conduct a stall test, a time lag test and a hydraulic test to pinpoint the problem and make the appropriate repairs.

The proper procedures for these tests can be found in the appropriate repair manuals.

Features

GENERAL TROUBLESHOOTING

Problem	Possible Causes	Remedy
Fluid discolored or smells burnt	Fluid contaminated Torque converter faulty Transmission faulty	Replace fluid Replace torque converter Disassemble and inspect transmission
Vehicle does not move in any forward range or reverse	Shift cable out of adjustment Valve body or primary regulator faulty Parking lock pawl faulty Torque converter faulty Converter drive plate broken Oil pump intake screen blocked Transmission faulty	Adjust shift cable Inspect valve body Inspect parking lock pawl Replace torque converter Replace drive plate Clean screen Disassemble and inspect transmission
Shift lever position incorrect	Shift cable out of adjustment Manual valve and lever faulty Transmission faulty	Adjust shift cable Inspect valve body Disassemble and inspect transmission
Harsh engagement into any drive range	Throttle cable out of adjustment Valve body or primary regulator faulty Accumulator pistons faulty Transmission faulty	Adjust throttle cable Inspect valve body Inspect accumulator pistons Disassemble and inspect transmission
Delayed 1-2, 2-3 or 3-O/D up-shift or down-shifts from O/D-3 or 3-2 and shifts back to O/D or 3	Electronic control faulty Valve body faulty Solenoid valve faulty	Inspect electronic control Inspect valve body Inspect solenoid valve
Slips on 1-2, 2-3 or O/D up-shift, or shudders on acceleration	Shift cable out of adjustment Throttle cable out of adjustment Valve body faulty Solenoid valve faulty Transmission faulty	Adjust shift cable Adjust throttle cable Inspect valve body Inspect solenoid valve Disassemble and inspect transmission
Drag, binding, or tie-up on 1-2, 2-3 or O/D up-shift	Shift cable out of adjustment Valve body faulty Transmission faulty	Adjust shift cable Inspect valve body Disassemble and inspect transmission
No lock-up in 2nd, 3rd or O/D	Electronic control faulty Valve body faulty Solenoid valve faulty Transmission faulty	Inspect electronic control Inspect valve body Inspect solenoid valve Disassemble and inspect transmission
Harsh down-shift	Throttle cable out of adjustment Throttle cable and cam faulty Accumulator pistons faulty Valve body faulty Transmission faulty	Adjust throttle cable Inspect throttle cable and cam Inspect accumulator pistons Inspect valve body Disassemble and inspect transmission
No down-shift when coasting	Valve body faulty Solenoid valve faulty Electronic control faulty	Inspect valve body Inspect solenoid valve Inspect electronic control
Down-shift occurs too quickly or too late when coasting	Throttle cable faulty Valve body faulty Transmission faulty Solenoid valve faulty Electronic control faulty	Inspect throttle cable Inspect valve body Disassemble and inspect transmission Inspect solenoid valve Inspect electronic control
No O/D-3, 2-3 or 2-1 kick-down	Solenoid valve faulty Electronic control faulty Valve body faulty	Inspect solenoid valve Inspect electronic control Inspect valve body
No engine braking in 2 or L range	Solenoid valve faulty Electronic control faulty Valve body faulty Transmission faulty	Inspect solenoid valve Inspect electronic control Inspect valve body Disassemble and inspect transmission
Vehicle does not hold in park	Shift cable out of adjustment Parking lot pawl cam and spring faulty	Adjust shift cable Inspect cam and spring

The proper procedures mentioned above can be found in the appropriate repair manual.

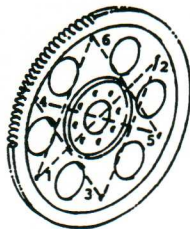
'orque Converter Mounting Bolts

Using the wrong torque converter mounting bolts to reinstall a transmission assembly can become a mounting problem for you and your customers. A critical part of the repair is to ensure that the right bolts are used when mounting the torque converter to the flex plate.

Why? If the bolts are too long, they will dimple the front cover of the torque converter. This dimpling can cause internal damage to the torque converter lock-up clutch disc, which in turn can cause damage to the transmission and valve body. This damage cannot be immediately seen or detected by the technician.

The best way to prevent using the wrong bolts is to take care not to mix torque converter mounting bolts with similar-looking bolts.

After selecting the correct torque converter mounting bolts, you will notice that one of the six bolts is a different color. Mount this bolt first—being sure only to hand-tighten it. This bolt helps you to center the flex plate onto the torque converter.



Now mount each of the remaining bolts, hand-tightening only. Progressively torque all six bolts (see diagram above) in a cross pattern, using a three-step process. Reference the applicable repair manual for factory specification torque values.

TORQUE CONVERTER SET BOLT

Model	Prod. Date	Part Number	Length	Quantity
EL3#	8/86-9/86	90109-08107	12mm	1
		90119-08269	12mm	5
	9/86-	90109-08113	12mm	1
		90119-08498	12mm	5
AE9#	8/87-	90109-08113	12mm	1
		90119-08498	12mm	5
AW15 (4A-GE)	8/85-	90109-08113	12mm	1
		90119-08498	12mm	5
AW16 (4A-GZE)	8/87-	90119-09010	12.8mm	1
		90119-09010	12mm	5
ST1#, SV2#	8/85-	90109-08113	12mm	1
		90119-08498	12mm	5
VV2#	2/88-	90119-09010	12.8mm	1
		90119-09009	12.8mm	5
MA7#	1/86-	90119-09010	12.8mm	1
		90119-09009	12.8mm	5
MX7#	8/84-1/85	90109-08107	12mm	1
		91611-60812	12mm	5
	1/85-8/88	90109-08113	12mm	1
MX83	1/88-	90119-08498	12mm	5
		90119-09010	12.8mm	1
		90119-09009	12.8mm	5
YR2#	8/83-8/85	90109-08107	12.8mm	1
		91611-60812	12mm	5
YR2#, 3#	8/85-	90119-08519	10.5mm	1
		90119-08520	10.5mm	5
RN5#, 6#	3/83-5/85	90109-08107	12mm	1
		91611-60812	12mm	5
RN5#, 6#, 7#	5/85-8/87	90109-08113	12mm	1
		90119-08498	12mm	5
RN8#, 9#, 1##	8/87-	90119-09010	12.8mm	1
		90119-09009	12.8mm	5
		90119-09010	12.8mm	1
VN6#, 8#, 9#, 1##	11/87-	90119-09009	12.8mm	5
		90119-09010	12.8mm	1
FJ62	8/87-	90119-08523	14mm	1
		90119-08497	14mm	5

Transmission Cooler Flushing

An often overlooked part of the transmission remounting procedure is flushing and cleaning. Whether the transmission is a reman unit, new or recently overhauled, if the transmission fluid has been contaminated, the transmission cooler lines and cooler must be flushed and its components cleaned.

While you are checking for fluid contamination, also inspect the torque converter for contamination as well as correct operation of internal components. (Ask your Toyota dealer for the appropriate repair manual for correct procedures). If the contamination cannot be flushed from the system or the internal components do not pass inspection, you should replace the torque converter. Checking for contamination and the functioning of internal components is not necessary if you are installing a remanufactured Toyota automatic transmission, since this procedure was performed during the remanufacturing process.

Fluid contamination is the result of residue that has built up from the worn or failed transmission components of the vehicle's original transmission. Failing to flush and clean a contaminated system can have serious affects on the performance and durability of the newly installed unit.

TO FLUSH THE SYSTEM, FOLLOW THIS SIMPLE PROCEDURE:

- 1. Remove both of the rubber hoses that connect to the transmission cooler lines at the transmission assembly.**
- 2. Insert the end of the inlet hose into a container. (The container should be large enough to hold all of the automatic transmission fluid and residue that will be drained from the A/TM cooler and lines).**
- 3. Using an OSHA-approved air nozzle, blow compressed air (at approximately 50 psi) into the outlet hose of the cooler line.**
- 4. Continue to blow air into the cooler and lines until all of the fluid has been removed.**
- 5. Fill the transmission cooler and lines with new automatic transmission fluid and repeat steps one through four.**
- 6. Fill the cooler with new automatic transmission fluid and reconnect the cooler lines to the automatic transmission.**

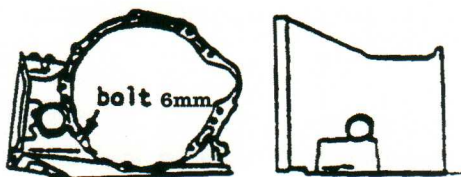
Automatic Transaxle Interchangeability

There are three different types of A131# and A240# automatic transaxle assemblies and cases, all of which are interchangeable. The assembly or case you receive will depend on the current availability of the part. The following information will help you to identify the case that you have received.

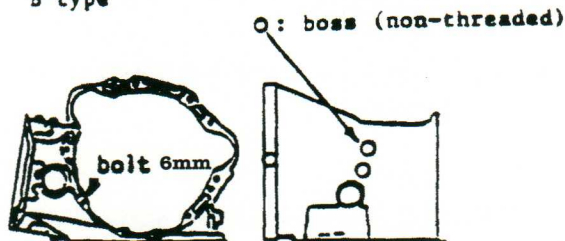
A131#

The three different types of A131# automatic transaxle case designs are identified as A,B and C.

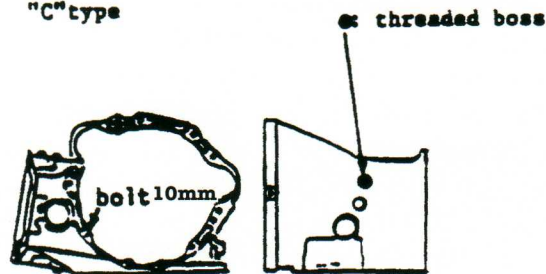
"A" type



"B" type



"C" type



These three designs were created for different production dates.

"A" type: Produced from 8/83-4/87.
VIN: Beg. production to JT2AE82*#H3528644

"B" type: Produced from 3/87-4/87.
VIN: (JT2AE82*#) H3507005 to H3528644

"C" type: Produced from 4/87 to 8/87.
VIN: (JT2AE82*#) H3516932 to H3548739

Vehicles produced during the month of March may be equipped with either an "A" or "B" type. Vehicles produced during the month of April may be equipped with either an "A," "B," or "C" type.

Parts numbers for the three types are as follows:

Part Number	Part Name
"A" type 30500-12031	Transaxle Assy, A/T
"B" type —	
"C" type 30500-12032	
35104-12063	Case Sub-Assy, A/T
*35104-12160	
35104-12161	

* Not available for replacement parts.

Tech Tips

To replace an “A” type with a “B” type you will need the following parts:

Parts Description	“A” Type Previous Part No.	“B” Type New Part No.
1. Clamp, oil cooler tube	32923-12070	32923-12071
2. Tube sub-assembly transmission oil filler	35013-12140	35013-12141
3. Plate, RR end	11355-15050	11355-15060
4. Pipe, water inlet	16322-15010	16322-15030
5. Pipe, water by-pass No. 2	16278-16010	16278-16060
6. Pipe, water by-pass No. 1	16268-15040	16268-15060

To replace an “A” type with a “C” type, the following parts are needed:

Parts Description	“A” Type Previous Part No.	“C” Type New Part No.
1. Clamp, oil cooler tube	32923-12070	32923-12071
2. Tube sub-assembly transmission oil filler	35013-12140	35013-12141
3. Plate, RR end	11355-15050	11355-15060
4. Pipe, water inlet	16322-15010	16322-15030
5. Pipe, water by-pass No. 2	16278-16010	16278-16060
6. Pipe, water by-pass No. 1	16268-15040	16268-15060
7. Plug, (differential drain)	N/A	90341-18021
8. Gasket (for differential plug)	N/A	90430-18008
9. Cover, flywheel housing under	11361-15021	11361-16040
10. Bolt with washer*	91621-60614	91611-61025

To replace a “B” type with a “C” type, you will need the following parts:

Parts Description	“B” Type Previous Part No.	“C” Type New Part No.
1. Plug (differential drain)	N/A	90341-18021
2. Gasket (for differential drain)	N/A	90430-18008
3. Cover, flywheel housing under	11361-15021	11361-16040
4. Bolt with washer*	91621-60614	91611-61025

To replace a “C” type with an “A” or “B” type, you will need these parts:

Parts Description	“C” Type Previous Part No.	“A” or “B” Type New Part No.
1. Bolt with washer*	91611-41025	91621-60614

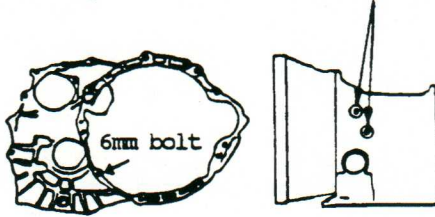
*Two are required

Tech Tips

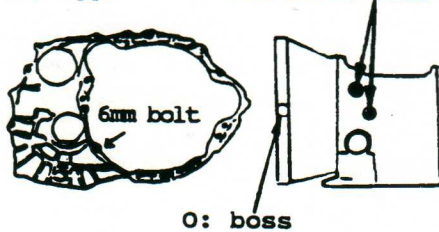
A240#

Like the A131#, there are three different types of automatic transaxle/cases for the A240#. The three types are classified as “D,” “E,” and “F”

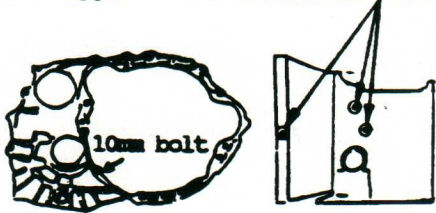
(D) Type ●: threaded boss



(E) Type ●: threaded boss



(F) Type ●: threaded boss



These three designs were created for different production dates for the FX-16, MR2 and Corolla.

FX-16

“D” type: Produced from 8/86 - 4/87

VIN: Beg. production to 1NXAE8#G#HZ428540

“E” type: Produced from 3/87-4/87

VIN: (1NXAE8#G#) HZ421401 to HZ428540

“F” type: Produced from 4/87 to 3/88

VIN: (1NXAE8#G#) HZ425141 to JZ522780

MR2

“D” type: Produced from 8/86 - 4/87

VIN: (JT2AW15*#) H0091542 to H0117654

“E” type: Produced from 3/87-4/87

VIN: (JT2AW15*#) H0112558 to H0117654

“F” type: Produced from 4/87 to present

VIN: (JT2AW15*#) H0114901 to present

Corolla

“D” type: Produced from 8/84 - 4/87

VIN: (JT2AE8#*#) F3129725 to H3528644

“E” type: Produced from 3/87-4/87

VIN: (JT2AE8#*#) H3507005 to H3528644

“F” type: Produced from 4/87 to 7/87

VIN: (JT2AE8#*#) H3516932 to H3548739

PART NUMBER INFORMATION

Model	Part Number	Part Name
FX16	“D” Type 30500-12101	Transaxle Assy A/T Case Sub-Assy A/T
	35105-12020	
	“E” Type 35105-12030*	
MR2	30500-17040	Transaxle Assy A/T Case Sub-Assy A/T
	35105-12020	
	“F” Type 35105-12010	
AE8#	30500-20281	Transaxle Assy A/T Case Sub-Assy A/T
	35105-12151	
	35105-12020	

* Not available as a replacement part

Tech Tips

To replace a “D” or “E” type with an “F” type on the FX-16 or MR2, the following parts are needed:

Parts Description	“D” or “E” Type Previous Part No.	“F” Type New Part No.
1. Plate, RR end	11355-15050	11355-15060
2. Cover, flywheel housing under	11361-15021	11361-16040
3. Bolt with washer*	91621-60614	91611-61025

To replace an “F” type with a “D” or “E” type on the FX-16 or MR2, you will need:

Parts Description	“F” Type Previous Part No.	“D” or “E” Type New Part No.
1. Bolt with washer*	91611-41025	91621-60614

To replace a “D” type with an “F” type on the Corolla, you will need the following parts:

Parts Description	“D” Type Previous Part No.	“F” Type New Part No.
1. Plate, RR end	11355-15050	11355-15060
2. Pipe, water inlet	16322-15010	16322-15030
3. Pipe, water by-pass No. 2	16278-16010	16278-16060
4. Pipe, water by-pass No. 1	16268-15040	16268-15060
5. Cover, flywheel housing under	11361-15021	11361-16040
6. Bolt with washer*	91621-60614	91611-61025

To replace an “F” type with a “D” or “E” type on the Corolla, you will need the following parts:

Parts Description	“F” Type Previous Part No.	“D” or “E” Type New Part No.
1. Bolt with washer*	91611-61025	91621-60614

To replace an “E” type with an “F” type on the Corolla, you will need the following parts:

Parts Description	“E” Type Previous Part No.	“F” Type New Part No.
1. Cover, flywheel housing under	11361-15021	11361-16040
2. Bolt with washer*	91611-61025	91621-60614

* Requires two bolts

Remanufactured Automatic Transmissions

Toyota reman automatic transmissions can help save you time — and improve customer satisfaction — if you know when to choose a reman unit.

A reman unit is a good choice if the transmission overhaul will cost more than a reman unit.

A reman unit may be a good choice if the transmission overhaul will cost about the same as a reman unit.

A reman unit may not be a good choice if the repair can be made without removing the transmission from the vehicle or if only the torque converter or front pump seal needs replacement.

What does a reman unit offer?

Each Toyota reman unit is fully dyno-tested and meets Toyota original equipment specifications. The torque converter — which is flushed, inspected and tested or replaced — is included. All 4X4 reman transmissions include the transfer case assembly.

Each reman ATM is also covered by a 12-month limited warranty, regardless of mileage.

When do you know to choose reman over repair?

Say, for example, you're working on a 1986 Camry that has 82,000 miles on it. The customer says that the car feels like it is slipping in reverse. You've checked the transmission fluid, and it smells slightly burnt.

Next, you check and adjust the throttle cable, measure stall speed, perform a lag test and measure the line pressure. You disconnect the ECT solenoids and connect the ECT checker. You then perform a manual shift and solenoid operation test. Based on the results of your tests, you conclude that the car would need a new direct clutch and an overhaul kit.

In this situation, the cost of a complete overhaul and the cost of a reman unit are comparable. In this situation, it is best to give the customer the

choice. If the customer chooses the reman unit, he or she gets a 12-month limited warranty, regardless of mileage, and gets the vehicle back faster than he or she would if the transmission is overhauled. You save valuable repair time that enables you to move on to your next repair.

Toyota's reman automatic transmission lineup currently includes:

- Corolla A131L, A240L and A241H
- Camry A140E, A140L, A540E and A540H
- Celica A140E and A140L
- Cressida A43D and A340E
- Truck A43D and A340H
- Van A44DL and A45DL

When you install a reman unit, take special care when you remove the old core. The old core should have no signs of exterior damage or stress, which could be the result of an accident. Exterior damage resulting from an internal component failure is OK. The core should be complete; no incomplete, partially disassembled or completely disassembled cores should be returned to Toyota. Non-Toyota cores and cores previously removed from different vehicles also should not be sent to Toyota.

Drain the fluids from the old core. You'll note that some components from the old core must be transferred to the reman unit, and vice versa. Remove the dipstick, oil filler tube and brackets from the old core and place them on the reman unit. Place the miscellaneous plugs that were on the reman ATM onto the old core to protect the openings.

The throttle cable, torque converter, differential, ring gear case and carrier cover also must be returned. If the vehicle has 4WD, exchange the transfer case assembly, too.

The core is now ready to be returned to Toyota.

Are insurance companies asking you to paint over inferior replacement parts?

When working on Toyotas, it's wise to use only Genuine Toyota Body Parts, even though insurance companies often suggest that you use imitation replacements. Imitation replacement parts simply may not meet Toyota's high quality standards for fit and corrosion resistance.

You'll appreciate what the real thing does for you. Genuine Toyota Body Parts have proven quality and durability. They look right, fit right and maintain maximum corrosion protection—which can save you work now and complaints later. What's more, Toyota dealers offer you competi-



tive prices, prompt delivery and the technical advice you may need.

See your local STAR Dealer for more information, and *Accept No Substitutes*. Use only Genuine Toyota Body Parts. They'll make both you and your repairs look good.

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And if you have any questions, use another four letter word: Call. 1-800-772-4228.

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