

2001-02 AUTOMATIC TRANSMISSIONS

Servicing - Toyota

APPLICATION

TRANSAXLE APPLICATION (CARS)

Application	Trans. Model
Avalon	A-541E
Camry	
2001	
2.2L	A-140E
3.0L	A-541E
2002	
2.4L	U-241E
3.0L	U-140E
Camry Solara	
2001	
2.2L	A-140E
3.0L	A-541E
2002	
2.4L	U-241E
3.0L	A-541E
Celica	
1.8L	U-240E
1.8L	U-341E
Corolla	
1.8L	A-131L
1.8L	A-245E
ECHO	U-340E
Prius	P-111

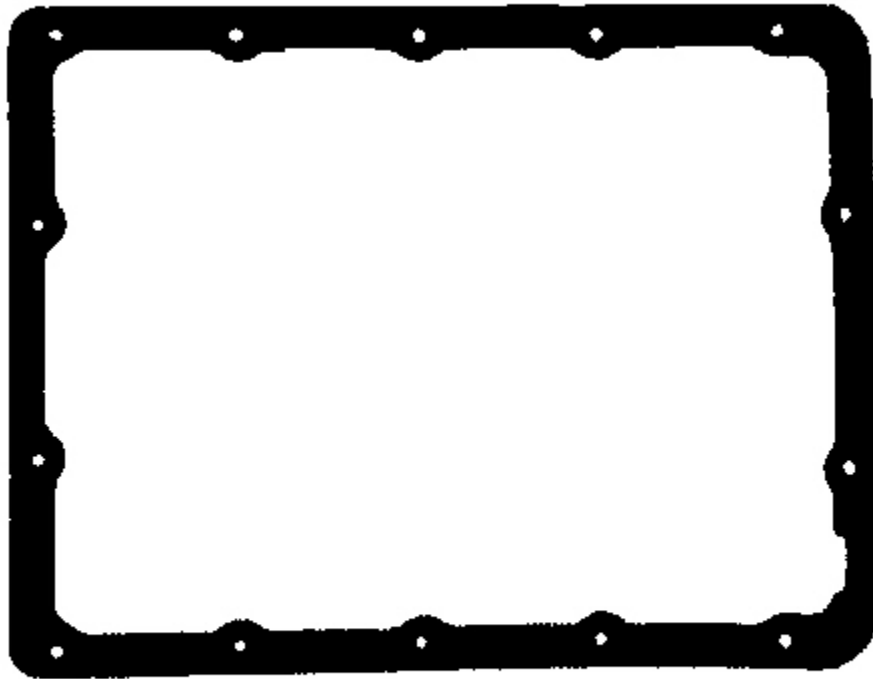
TRANSAXLE/TRANSMISSION APPLICATION (SUV, TRUCKS & VANS)

Application	Trans. Model
Highlander	
2.4L	U-140F
2.4L	U-241E
3.0L	U-140F
3.0L	U-140E
Land Cruiser	(1) A-343F
RAV4	

2WD	U-241E
4WD	U-140F
Sequoia	
2WD	(1) A-340E
4WD	(1) A-341F
Sienna	A-541E
Tacoma	
2WD	
2.4L	A-44D
2.7L	A-340E
3.4L	A-340E
4WD	
2.7L	A-340F
3.4L	A-340F
Tundra	
2WD	(1) A-340E
4WD	(1) A-340F
4Runner	
2WD	A-340E
4WD	A-340F
(1) Equipped with separate transmission oil cooler.	

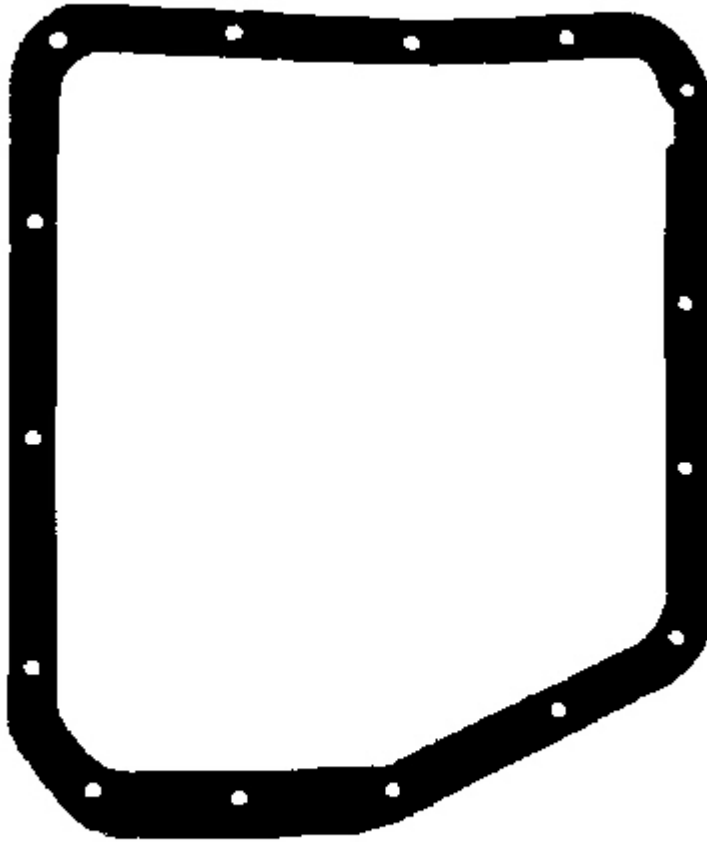
IDENTIFICATION

OIL PAN GASKET



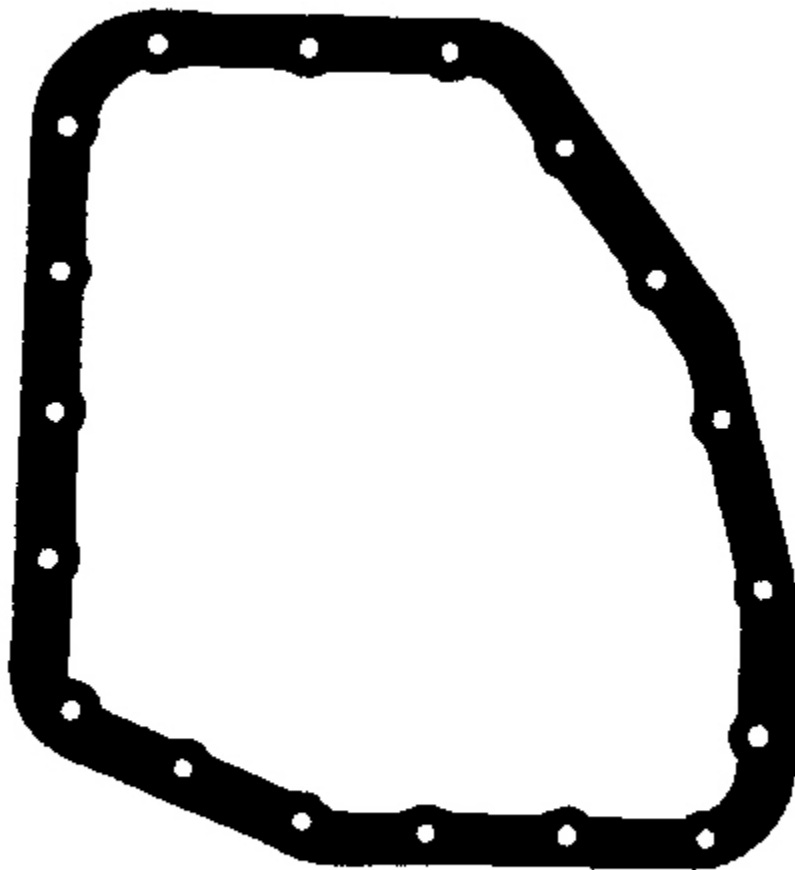
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Fig. 1: Identifying Oil Pan Gasket (A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



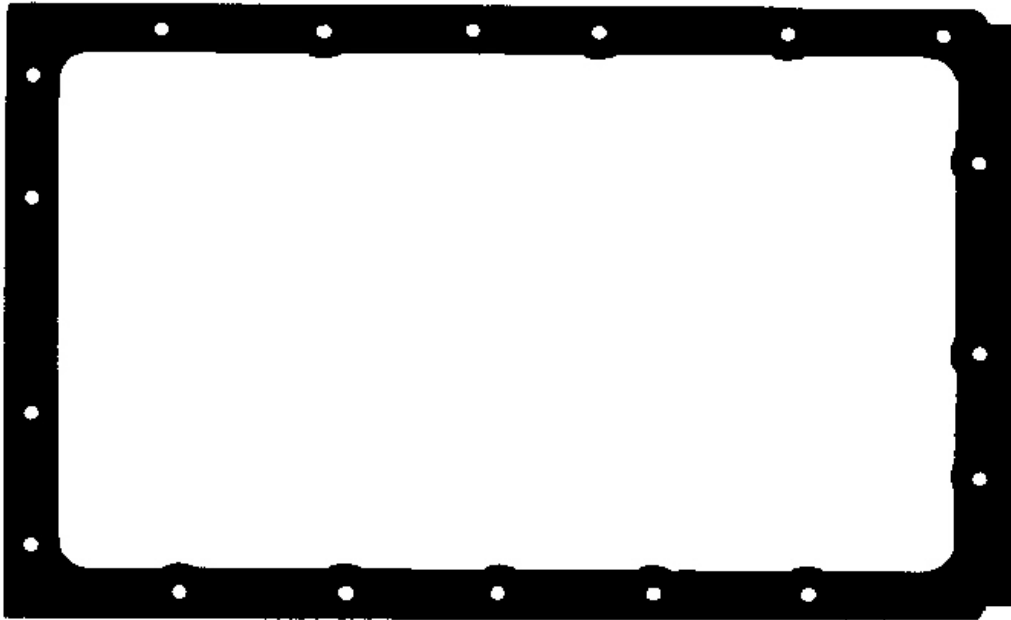
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Fig. 2: Identifying Oil Pan Gasket (A-131L & A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



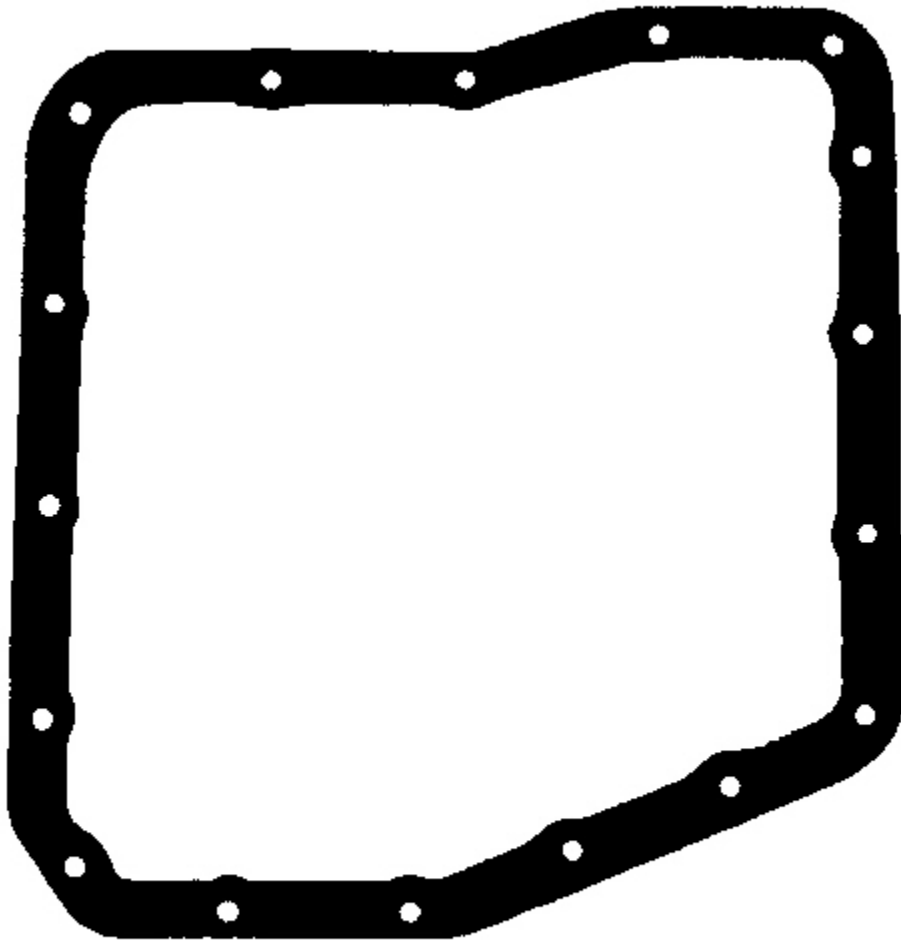
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Fig. 3: Identifying Oil Pan Gasket (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



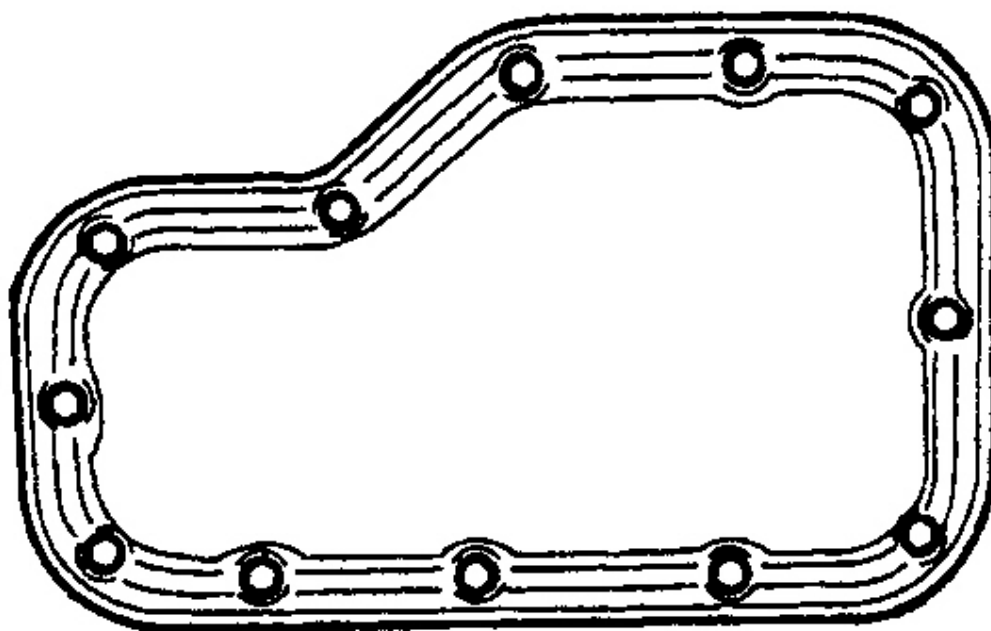
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Fig. 4: Identifying Oil Pan Gasket (A-340E & A-340F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



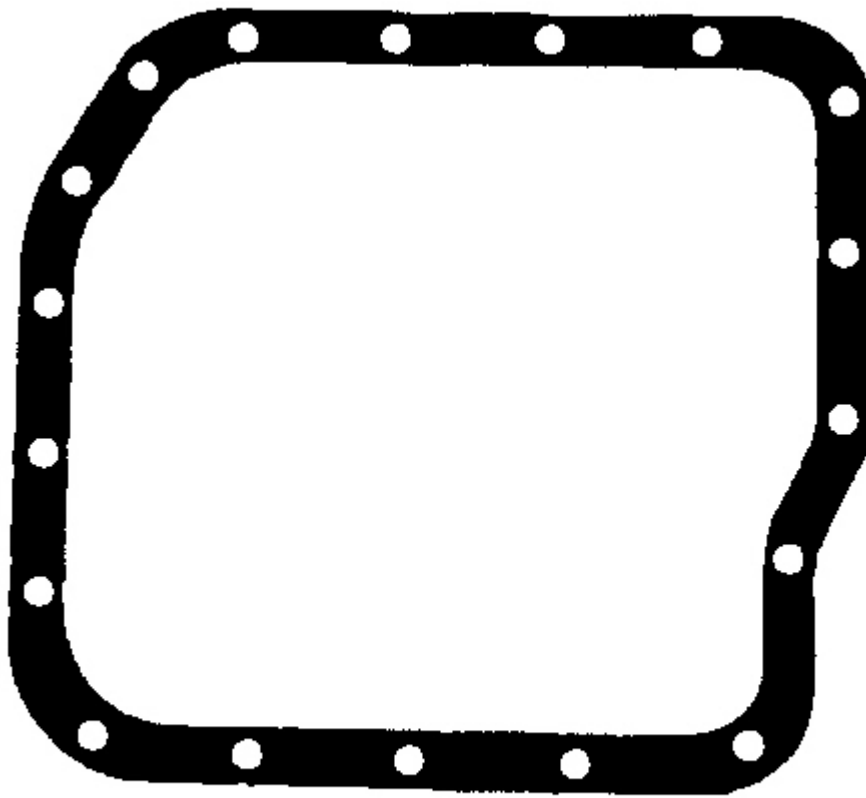
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Fig. 5: Identifying Oil Pan Gasket (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



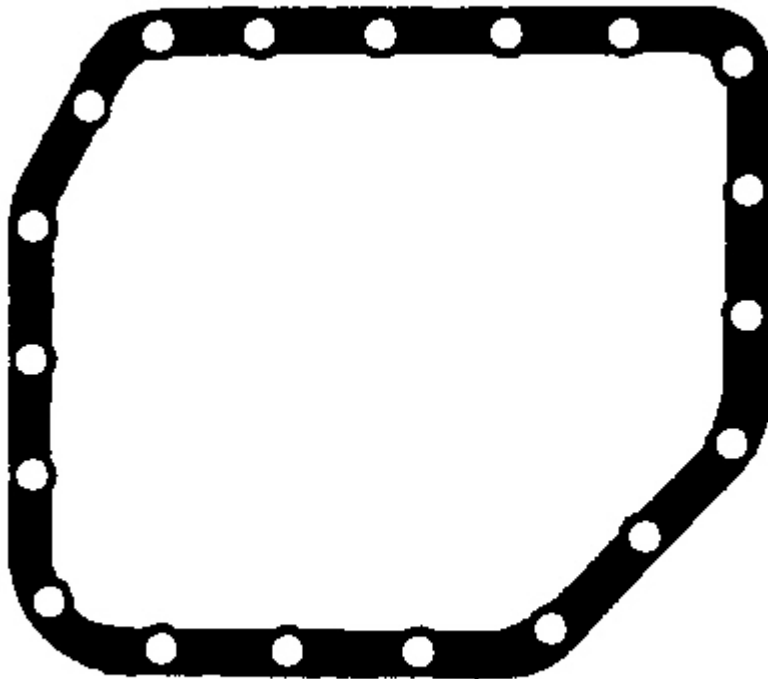
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Fig. 6: Identifying Oil Pan Gasket (P-111)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 7: Identifying Oil Pan Gasket (U-140E, U-140F, U-240E & U-241E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 8: Identifying Oil Pan Gasket (U-340E, U-341E & A-343F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LUBRICATION

SERVICE INTERVALS

NOTE: Limited information is available for Prius (hybrid vehicle) maintenance. See dealer for detailed information.

Differential

Inspect every 4 months or 4,000 miles. Change fluid under severe driving conditions every 15,000 miles or 12 months. On Sequoia only, replace the differential fluid every 5000 miles on vehicles used for extended trailer towing.

Transaxle/Transmission

For cars and Sienna, under normal driving conditions, check transmission fluid level every 4 months or 4,000 miles. Normal operating conditions service interval information is not available for transmission fluid. Under severe conditions such as trailer towing, police, taxi, local delivery service or operating under dusty conditions, replace transmission fluid every 30,000 miles or 24 months.

CHECKING FLUID LEVELS

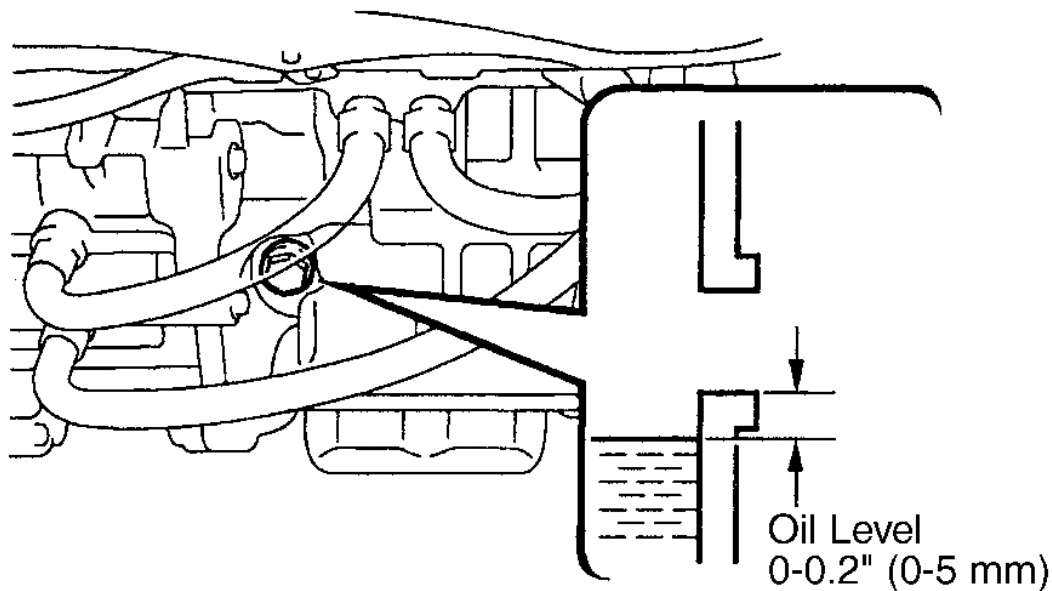
NOTE: When checking fluid level for the transmission, if vehicle has been operating in heavy traffic, towing a trailer or at high speeds in hot weather, wait 30 minutes before checking fluid level.

Transaxle/Transmission (Except Prius)

1. Drive vehicle until engine and transmission reach normal operating temperature. Park vehicle on level surface and apply parking brake. With engine idling and brakes applied, move gearshift lever through all positions ending in "P" position.
2. Check fluid level on transmission dipstick. Fluid level should be in HOT range marked on dipstick. Add proper type of fluid if necessary. See **RECOMMENDED FLUIDS** . DO NOT overfill.

Transaxle (Prius)

1. Drive vehicle until engine and transaxle reaches normal operating temperature. Park vehicle on level surface and apply parking brake. With engine idling and brakes applied, move gearshift lever through all positions ending in "P" position.
2. Raise and support vehicle. Carefully remove transaxle fill plug to check level. Fluid level should be within .2" (5 mm) of bottom of fill plug opening. See **Fig. 9** . If fluid is low, fill with proper type fluid until fluid is level with fill plug opening. See **RECOMMENDED FLUIDS** . DO NOT overfill.



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Fig. 9: Checking Transaxle Fluid level (Prius)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

RECOMMENDED FLUIDS

DIFFERENTIAL FLUID TYPE

Application	Fluid Type
All Models	SAE 75-90 APL GL-5 Gear Oil

TRANSAXLE/TRANSMISSION FLUID TYPE

Application	Fluid Type
Camry, Camry Solara, Celica, ECHO, Highlander, Prius & RAV4 ⁽¹⁾	Type T Or T-IV ATF
All Others	Dexron-II Or Dexron-III ATF
⁽¹⁾ RAV4 EV uses Dexron-III ATF	

FLUID CAPACITIES

TRANSAXLE/TRANSMISSION FLUID CAPACITIES ⁽¹⁾

Application	Qts. (L)
Avalon	5.0 (4.8)
Camry	

2001		
A-140E		2.6 (2.5)
A-541E		5.0 (4.8)
2002		
U-140E		3.7 (3.5)
U-241E		4.1 (3.9)
Celica		
U-240E		4.3 (4.1)
U-341E		3.1 (2.9)
Corolla		
A-131L		2.6 (2.5)
A-245E		3.3 (3.1)
ECHO		3.1 (2.9)
Highlander		
2WD		3.5 (3.3)
4WD		4.1 (3.9)
Land Cruiser		2.1 (2.0)
Prius		4.9 (4.6)
RAV4		
U-241E		3.5 (3.3)
U-140F		4.1 (3.9)
Sequoia		2.1 (2.0)
Sienna		5.0 (4.8)
Solara		
2001		
A-140E		2.6 (2.5)
A-541E		5.0 (4.8)
2002		
A-140E		2.6 (2.5)
A-541E		5.0 (4.8)
Tacoma		
2WD (2.4L)		2.5 (2.4)
2WD (2.7L & 3.4L)		1.7 (1.6)
4WD		2.1 (2.0)
Tundra & 4Runner		
2WD		1.7 (1.6)
4WD		2.1 (2.0)
(1) Approximate capacity is listed.		

DRAINING & REFILLING

CAUTION: A large amount of material debris including steel (magnetic) and non-magnetic (brass, aluminum or clutch fiber particles) may indicate excessive transmission wear or damage. Check the magnet in the oil pan for steel particles which indicate bearing, plate or hardware damage.

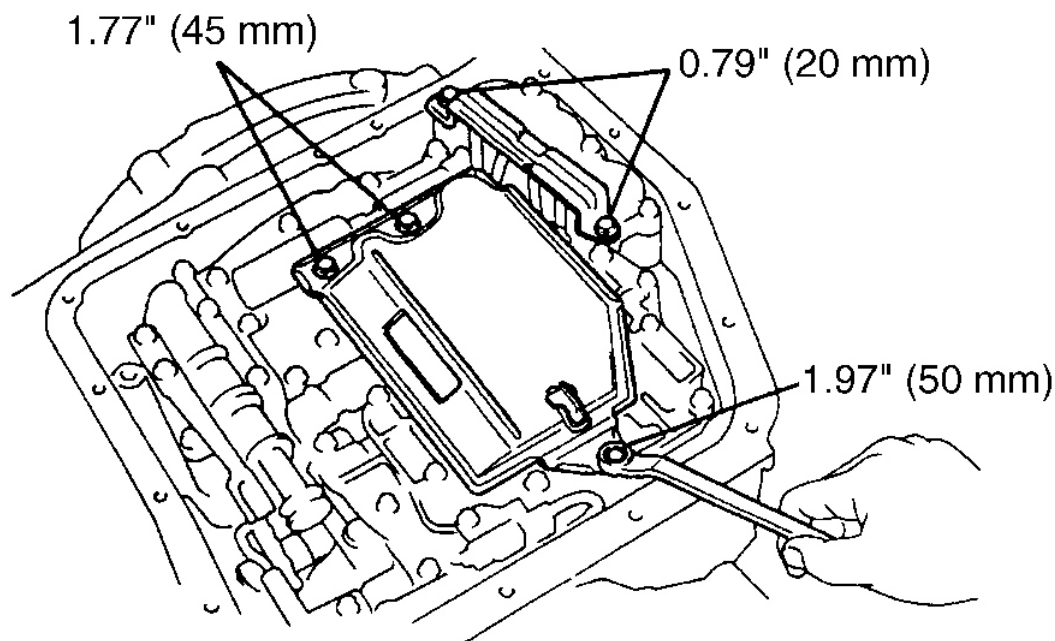
CAUTION: When working with FIPG sealing material, you must observe the following: Using a razor blade and gasket scraper, remove all FIPG sealing material from the gasket surfaces. Thoroughly clean all components to remove all loose material. Clean both sealing surfaces with a non-residue solvent. Apply FIPG in an approximately 0.04" (1 mm) wide bead along the sealing surface. Parts must be assembled within 10 minutes of application. Otherwise, the FIPG sealing material must be removed and reapplied.

NOTE: Always warm transmission/transaxle to operating temperature of 158-176°F (70-80°C) prior to draining and refilling.

NOTE: When removing transmission/transaxle oil pan and filter, note bolt size and length for reassembly reference.

A-131L & A-140E (Camry, Camry Solara & Corolla)

1. Raise and support vehicle. Remove drain plug and drain transmission fluid into proper container. Remove the bolts and the transmission oil pan and gasket. Carefully remove oil pan. Inspect for excess debris in bottom of oil pan.
2. Remove bolts, transmission fluid filter and gasket. See **Fig. 10** . Clean oil pan.
3. Install the magnets in the oil pan. Replace the fluid filter and install a NEW oil pan gasket. Install and tighten the oil pan and drain plug to specification. See **TORQUE SPECIFICATIONS** . Fill with appropriate fluid and check for proper level. See **CHECKING FLUID LEVEL** .



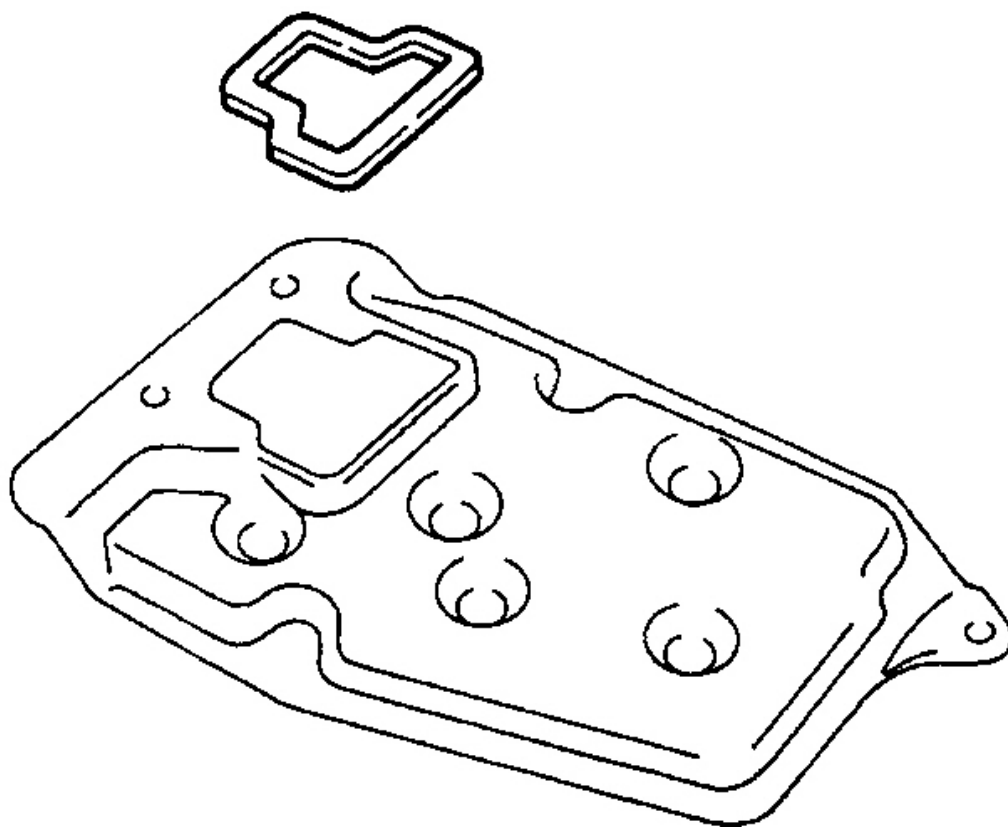
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Fig. 10: Removing & Installing Fluid Filter & Pipe Bracket (A-131L)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A-245E (Corolla)

1. Raise and support vehicle. Remove left side engine undercover. Remove drain plug and drain ATF. Remove oil pan and gasket. Remove the 18 bolts. Discard the gasket. Remove the 3 bolts, fluid filter and gasket. Clean gasket surfaces, being careful not to damage sealing surfaces.
2. Install a NEW gasket on fluid filter. Install fluid filter and gasket with the 3 bolts. See **Fig. 11** . Install the 2 magnets in oil pan. Install a NEW gasket on the oil pan and install them on the transaxle. Install the 18 bolts and drain plug. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install left side engine undercover. Fill with proper ATF and check fluid level. See **CHECKING FLUID LEVEL** .



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Fig. 11: Removing & Installing Fluid Filter & Gasket (A-245E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A-340E & A-340F (Sequoia, Tacoma, Tundra & 4Runner)

1. Raise and support vehicle. Remove drain plug to drain fluid. To remove oil pan, remove all 19 bolts, and install gasket cutter in space between pan and transmission body. Using gasket cutter, carefully cut old sealer around entire surface of pan. See **Fig. 12** . Remove fluid filter and gaskets.
2. Clean transmission oil pan. Remove and clean the magnets in the pan of all metal particles. Install fluid filter and gaskets. See **Fig. 13** . Install a bead of FIPG sealant. (Part No. 08826-00090), (Three Bond 1281) or equivalent to oil pan. See **Fig. 14** . Reinstall transmission oil pan. Tighten bolts to specification. Install drain plug and tighten to specification. See **TORQUE SPECIFICATIONS** . With engine off, add NEW fluid through oil filler tube.
3. Start engine and move gearshift lever through all positions. Place gearshift lever back into Park. Check fluid level. Add fluid to bring level up to COOL mark on dipstick.

4. Recheck fluid level when engine and transmission reaches operating temperature of 158-176°F (70-80° C). Add fluid up to HOT mark on dipstick. See **FLUID CAPACITIES** .

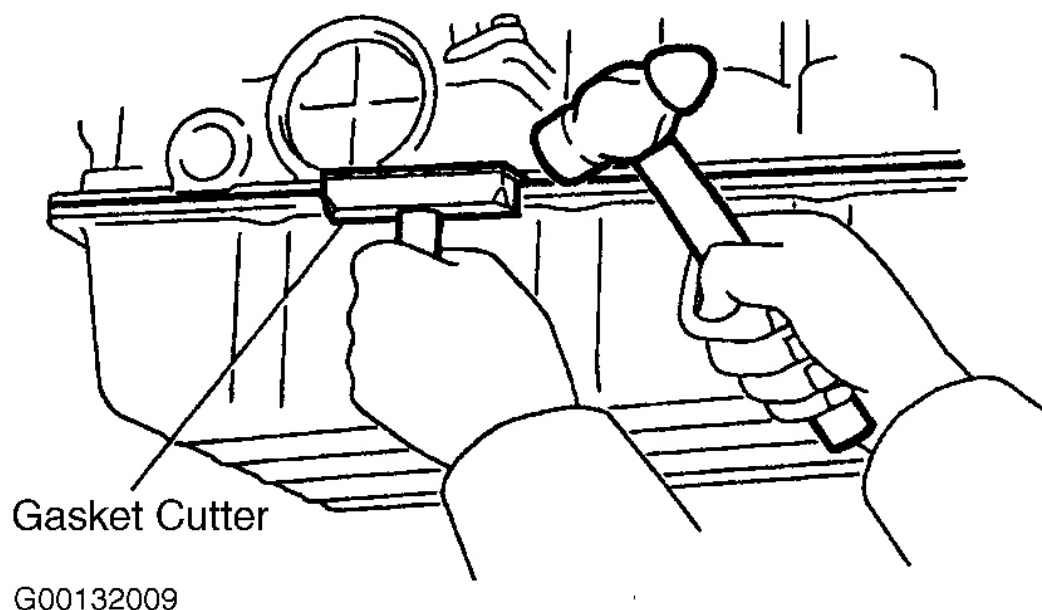
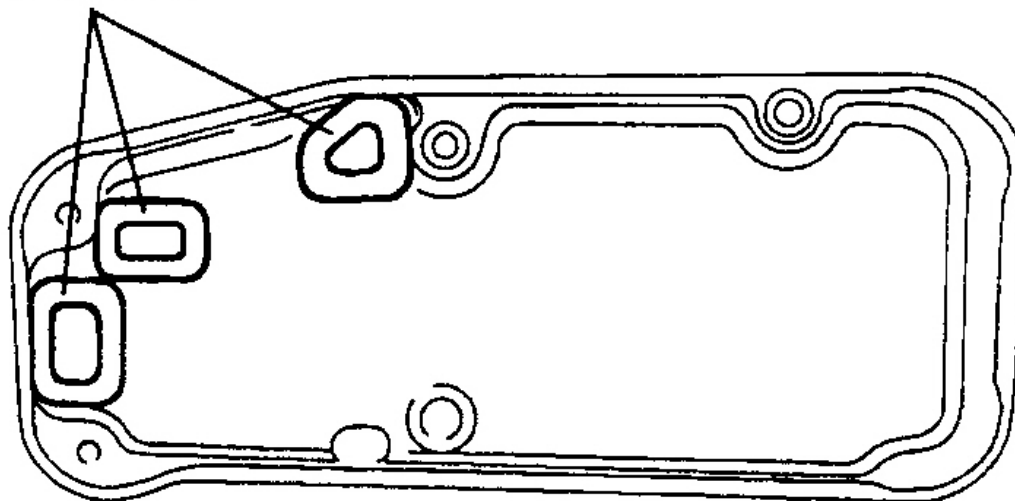


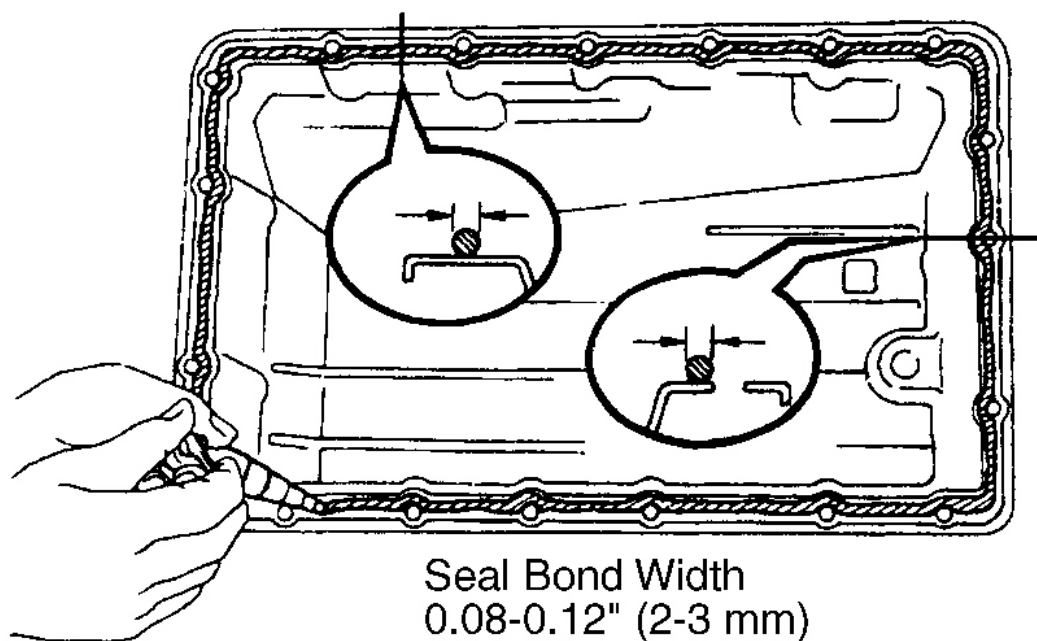
Fig. 12: Removing Oil Pan Sealer Using Gasket Cutter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Gasket



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Fig. 13: Removing & Installing Fluid Filter & Gaskets
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



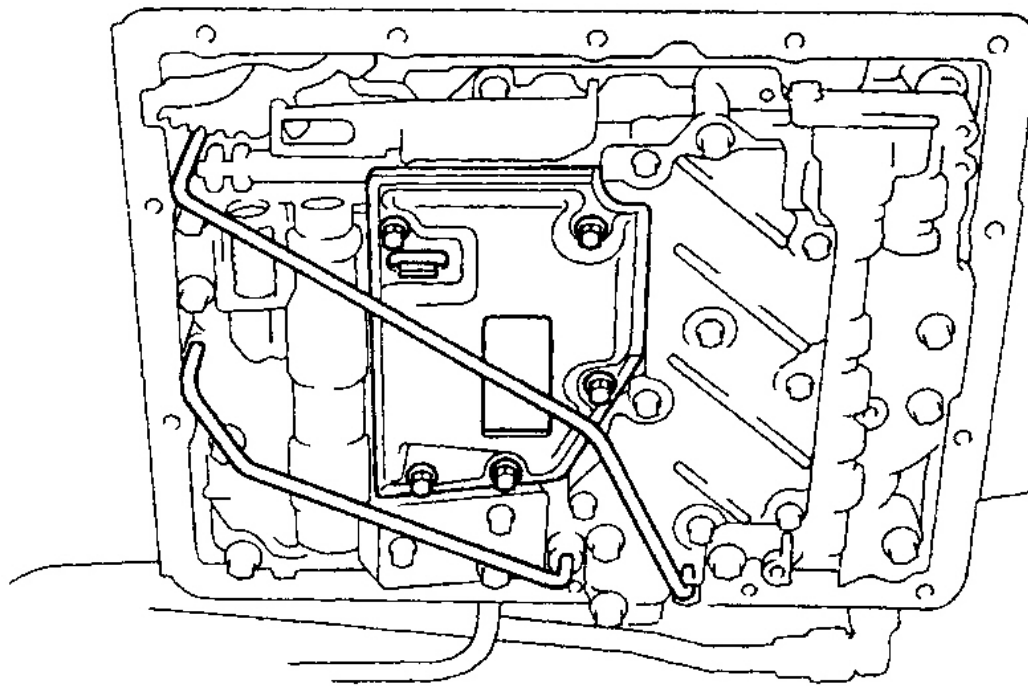
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Fig. 14: Installing Bead Of Sealer To Oil Pan

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

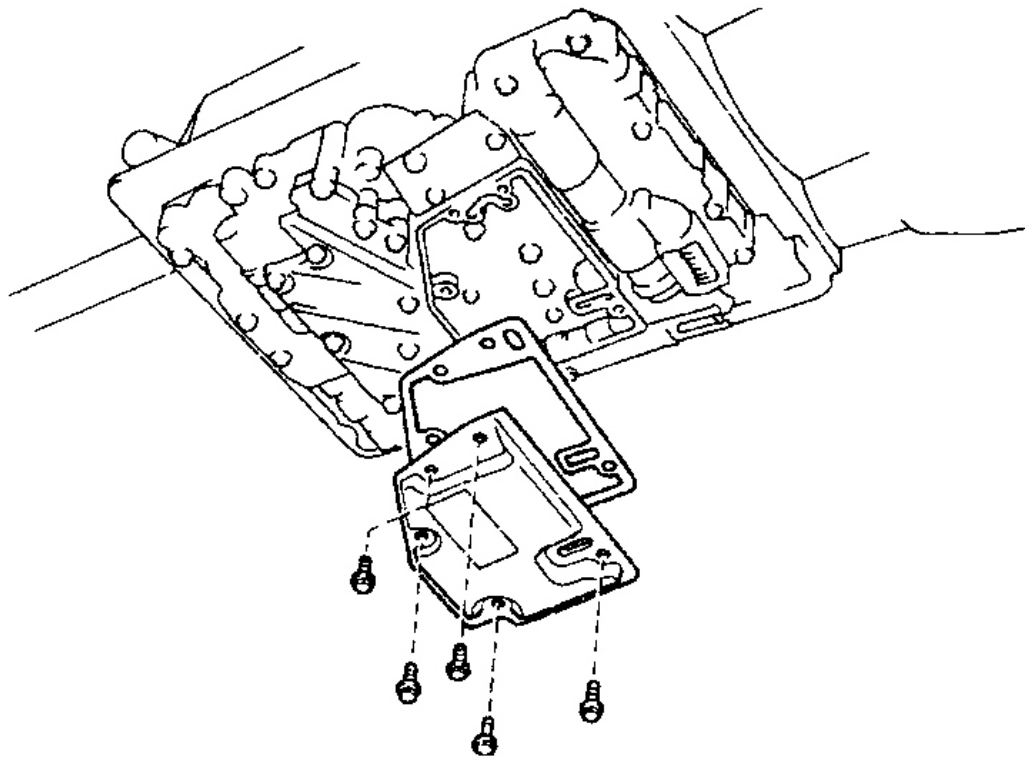
A-44D (Tacoma)

1. Raise and support vehicle. Remove drain plug and drain transmission fluid. Remove the 14 bolts and transmission oil pan and gasket. Carefully remove the oil pan. Inspect for excess debris in bottom of oil pan. Remove oil pipes by prying both ends of pipes down to access fluid filter. See **Fig. 15**.
2. Remove bolts, transmission fluid filter and gasket. See **Fig. 16**. Thoroughly clean transmission oil pan. Install transmission fluid filter and gasket. Install oil pipes by lightly tapping on the ends using a plastic hammer. Install a NEW oil pan gasket. Install oil pan and tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Fill transmission through dipstick tube to specified capacity using recommended fluid. See **RECOMMENDED FLUIDS**.
3. Ensure vehicle is on a level surface. Apply parking brake. Start engine and apply brakes. Bring engine to operating temperature. Move gearshift lever through all gears, ending in Park. Recheck fluid level and add as necessary. DO NOT overfill.



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Fig. 15: Removing & Installing Oil Pipes (A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

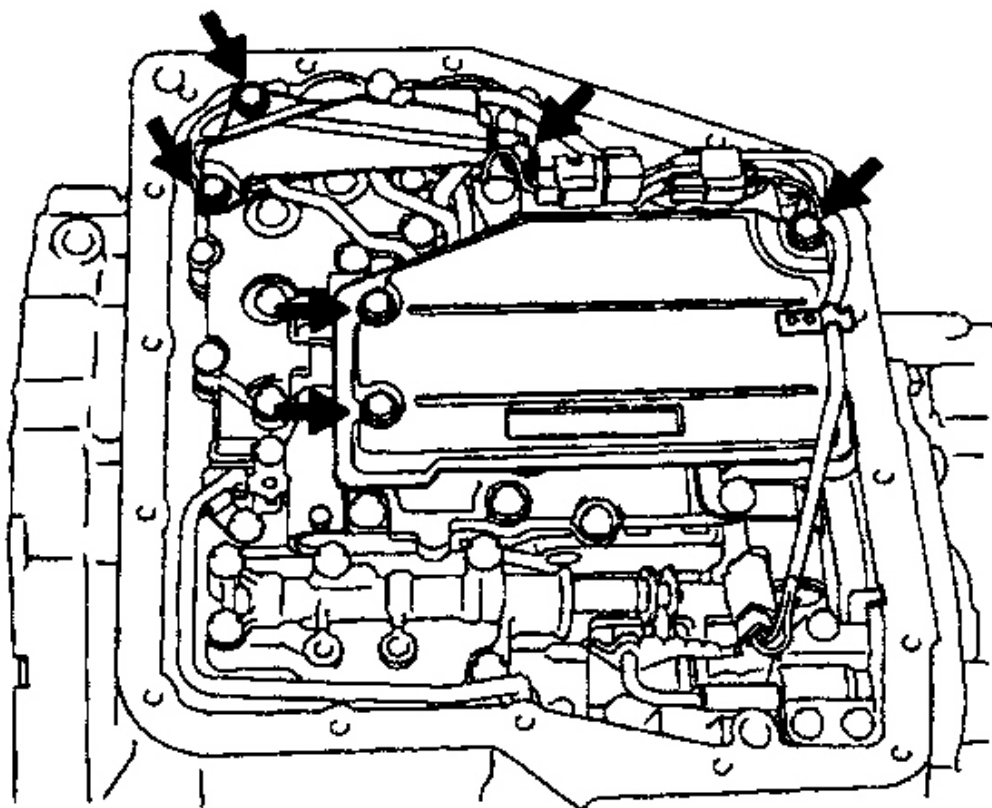


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Fig. 16: Removing & Installing Fluid Filter & Gasket (A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A-541E (Avalon, Camry, Solara & Sienna)

1. Raise and support the vehicle. Using a hexagon wrench, remove the drain plug and drain fluid. Remove 17 oil pan bolts, and carefully remove the oil pan assembly. Discard the gasket. Remove the 3 bolts and fluid filter. See [Fig. 17](#) . Clean the oil pan.
2. Install the fluid filter. Install and tighten the 3 bolts. See **TORQUE SPECIFICATIONS** . Install the 3 magnets in indentations of the oil pan. Install oil pan and a NEW gasket. Install and tighten the 17 bolts. See **TORQUE SPECIFICATIONS** .



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Fig. 17: Removing & Installing Fluid Filter Assembly (A-541E)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

U-140 Series & U-240 Series (Camry, Celica, Highlander, Solara & RAV4)

1. Raise and support vehicle. Remove the 18 oil pan bolts and oil pan. Remove the gasket and the 2 magnets from oil pan. Clean oil pan for reassembly. Disconnect the 5 shift solenoid valve connectors. Remove the fluid temperature sensor wiring harness bolt and remove sensor. See **Fig. 99** . Remove the fluid filter assembly. See **Fig. 100** . Remove the "O" ring from the filter.
2. Coat the NEW fluid filter "O" ring with ATF and install, with the 3 bolts. See **Fig. 100** . Coat the NEW "O" ring for the fluid temperature sensor with ATF and install with the lock plate and bolt. Connect the 5 shift solenoid valve connectors. Install the 2 magnets in oil pan and install oil pan with NEW gasket. Apply THREE BOND, or equivalent, on oil pan bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** .

U-340E & U-341E (Celica & ECHO)

1. Raise and support vehicle. Remove left side engine undercover. Remove drain plug and drain ATF. Remove oil pan and gasket. Remove the 3 bolts and fluid filter. Clean oil pan and magnets.
2. Install the "O" ring on fluid filter. Install the fluid filter with the 3 bolts. Install the 2 magnets in oil pan. Install oil pan and a NEW gasket with the 19 bolts. Install a NEW gasket and drain plug. Install left side engine undercover. Add ATF and check fluid level. See **LUBRICATION** .

P-111 (Prius)

1. Drive vehicle until engine and transmission reach normal operating temperature. Park vehicle on level surface and apply parking brake. With engine idling and brakes applied, move gearshift lever through all positions ending in "P" position. Turn engine off.
2. Raise and support vehicle. Carefully remove the transaxle drain plug and drain ATF into a suitable container. See **Fig. 18** . Remove the 12 oil pan bolts and remove the oil pan and gasket.
3. Remove the magnet from the oil pan and clean all metallic particles from the magnet. See **Fig. 19** . Remove the bolt and oil strainer. See **Fig. 20** .
4. Clean the oil pan and dry using compressed air. Install the magnet back into oil pan in the original position. Install a NEW gasket and install the oil pan and bolts. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Remove filler plug. See **Fig. 9** . Fill transmission to specification with proper fluid. See **FLUID CAPACITIES** . Apply liquid sealer to threads of filler plug and install. Tighten to specification. See **TORQUE SPECIFICATIONS** .

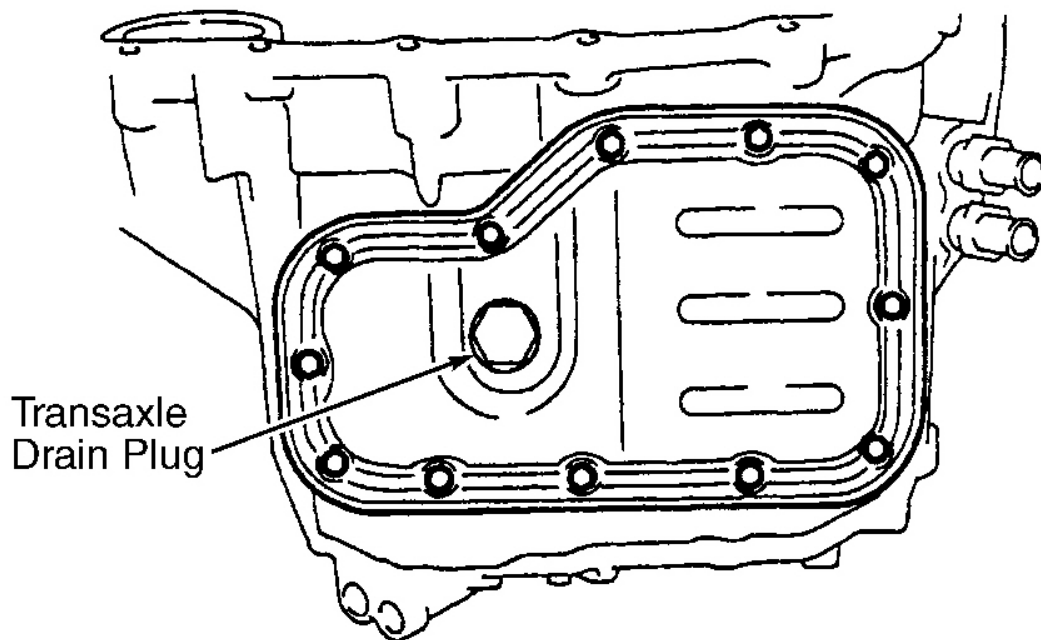
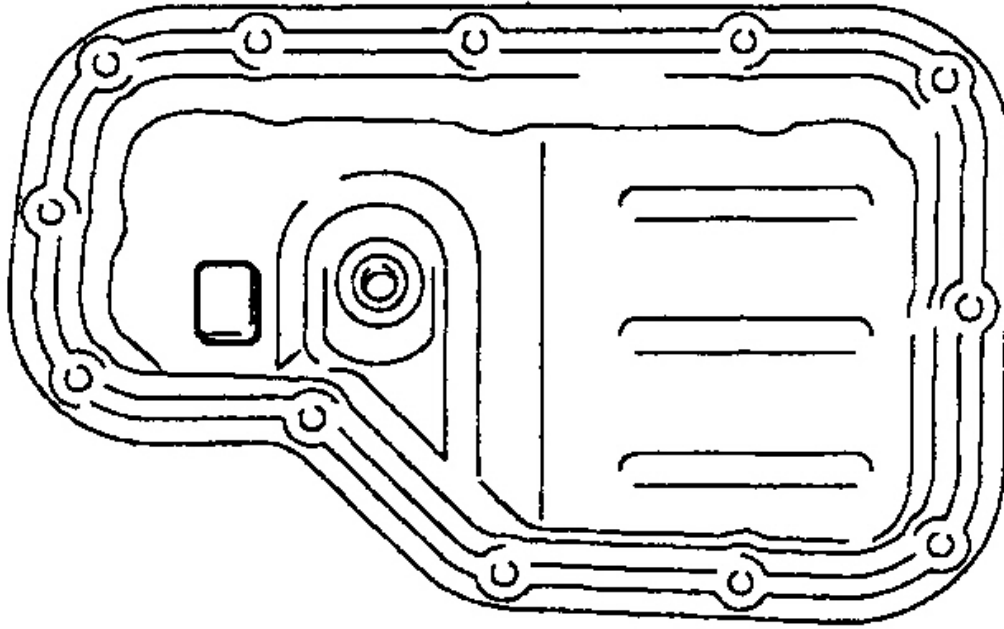
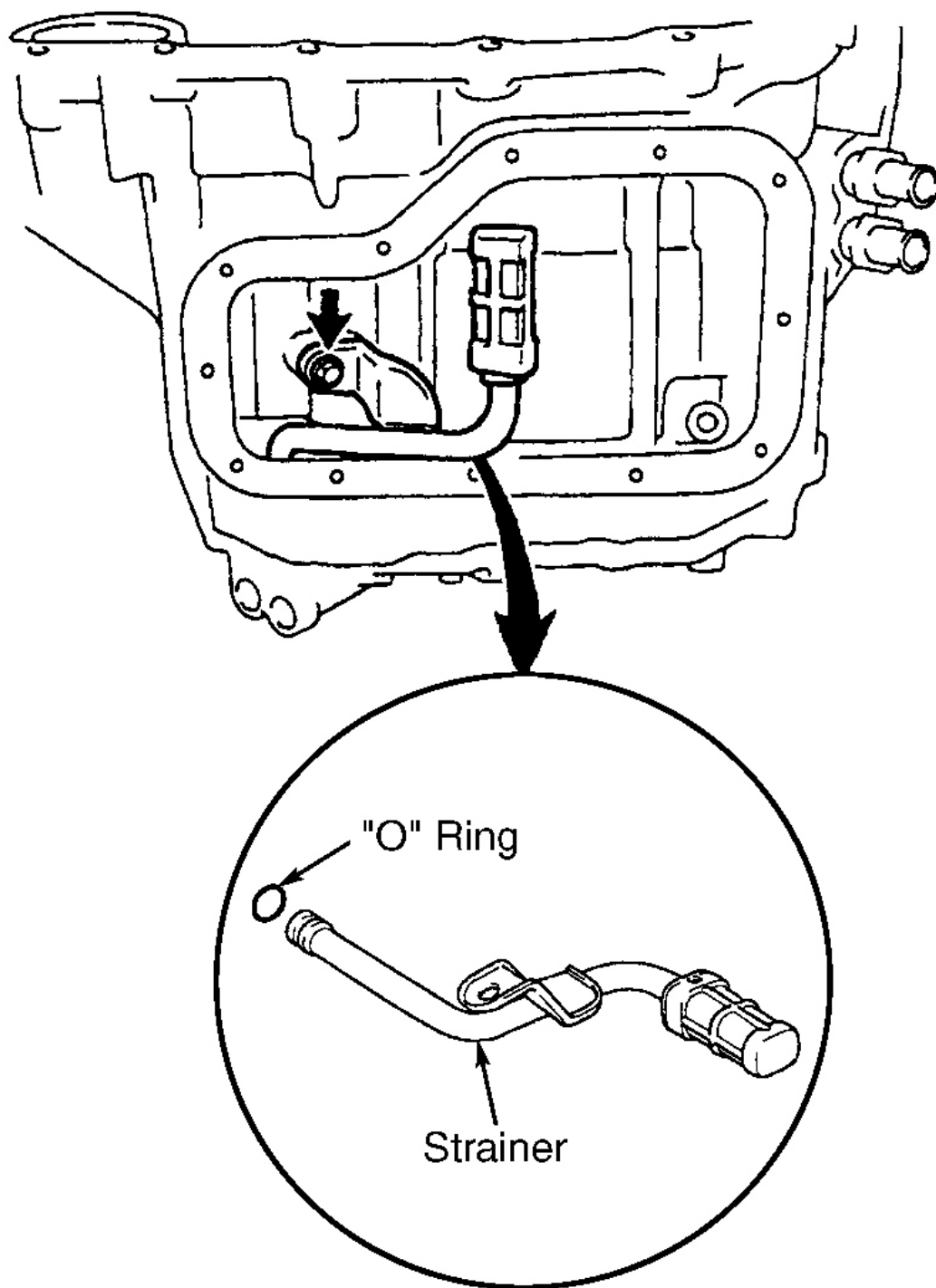


Fig. 18: Locating Transaxle Drain Plug (Prius)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 19: Locating Transaxle Oil Pan Magnet (Prius)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 20: Removing & Installing Oil Strainer & Bolt (Prius)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE REPAIRS

Various components may be serviced without transmission removal, depending on application. For servicing of these components, see appropriate component under **ADJUSTMENTS** and/or **REMOVAL & INSTALLATION** . For additional information on testing electrical components, see appropriate DIAGNOSIS article.

ADJUSTMENTS

WARNING: Vehicles are equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicles, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations throughout interior and exterior of vehicles, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

SHIFT CABLE

Land Cruiser

1. Apply parking brake. Loosen nut on shift lever on side of transmission. See **Fig. 21** . Move control shaft lever fully toward rear of vehicle.
2. Move control shaft lever 2 notches to Neutral position. Place gearshift lever to "N" position. While holding control shaft lever slightly toward Reverse position, tighten control rod nut.
3. Start engine. Ensure vehicle moves forward when moving gearshift lever from "N" to "D" position, and rearward when shifting to "R" position.

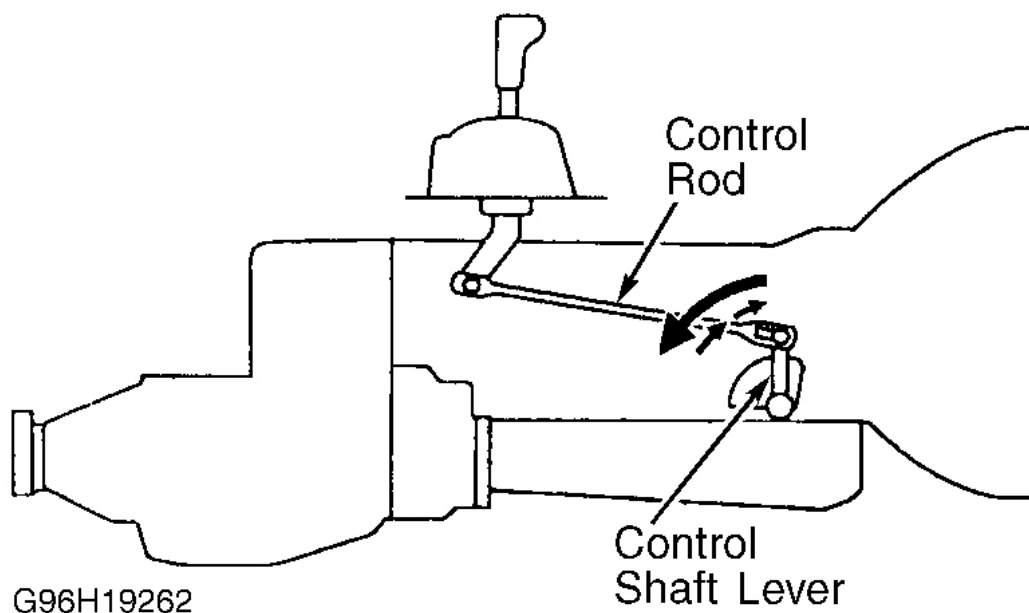


Fig. 21: Adjusting Shift Cable (Land Cruiser)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Tacoma & 4Runner With Floor Shift

1. Raise and support vehicle. Apply parking brake. Loosen nut on shift lever on side of transmission. See **Fig. 22** . Move control shaft lever fully toward rear of vehicle.
2. Push control rod forward 2 notches to Neutral position. Set gearshift lever to "N" position. Tighten nut for control rod at gearshift. While holding control shaft lever slightly toward "R" position, tighten control rod nut.
3. Start engine. Ensure vehicle moves forward when shifting gearshift lever from "N" to "D" position, and rearward when shifting to "R" position.

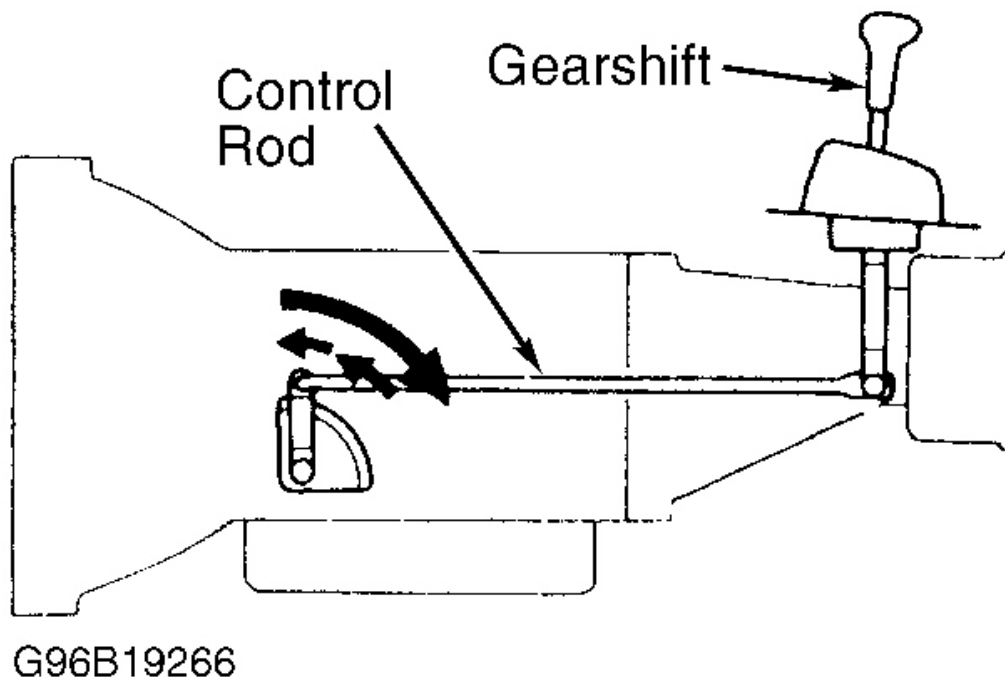


Fig. 22: Adjusting Gearshift Cable With Floor Shift
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Tacoma With Column Shift

1. Apply parking brake. Loosen swivel nut on manual shift lever on side of transmission. See **Fig. 23** . Move manual shift lever downward to Park position.
2. Move manual shift lever upward 2 notches to Neutral position. Set gearshift lever to "N" position. While holding manual gearshift lever slightly toward "R" position, tighten swivel nut.
3. Start engine. Ensure vehicle moves forward when shifting gearshift from "N" to "D" position, and moves rearward when shifting to "R" position.

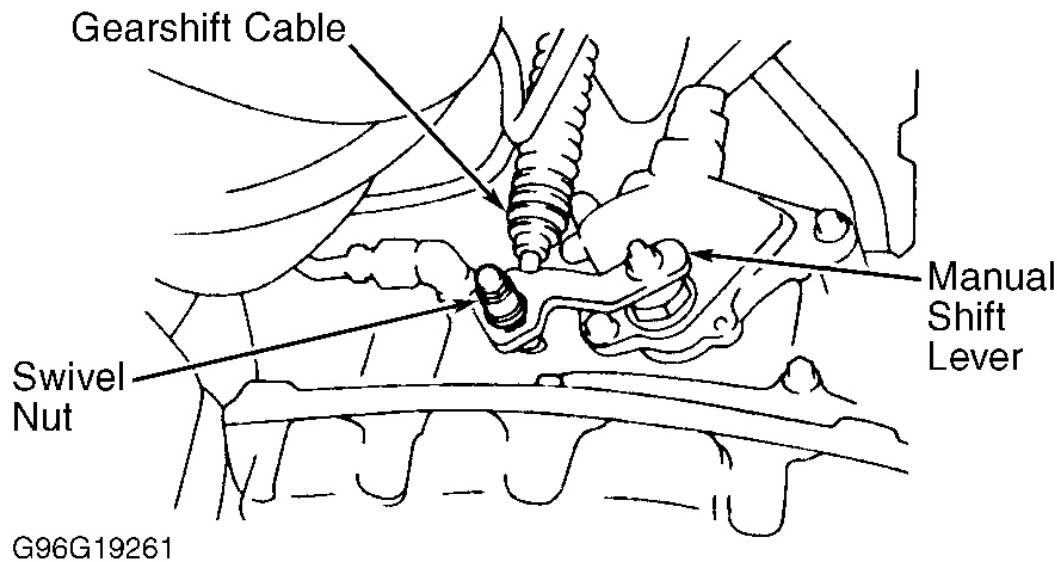


Fig. 23: Adjusting Gearshift Cable With Column Shift (Tacoma)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

PARK/NEUTRAL POSITION SWITCH

NOTE: Park/Neutral Position switch may also be referred to as PNP switch.

1. Check if engine can be started with gearshift lever only in "N" or "P" positions. If adjustment is needed, loosen PNP switch retaining bolt(s). Position gearshift in Neutral. Align neutral line on PNP switch with groove on shaft. See **Fig. 24** or **Fig. 25** .
2. Hold PNP switch in this position and tighten retaining bolt to specification. See **TORQUE SPECIFICATIONS** . Ensure vehicle only starts with gearshift lever in "P" or "N" position.

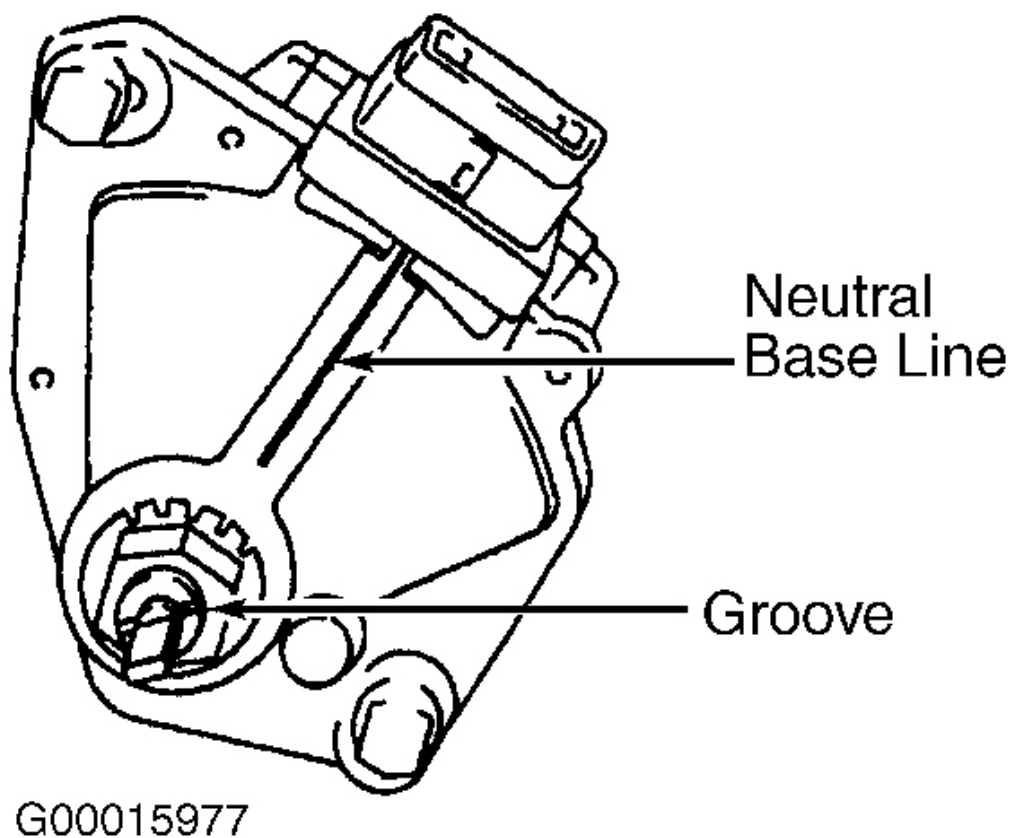


Fig. 24: Adjusting Park/Neutral Position Switch (Except Avalon)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

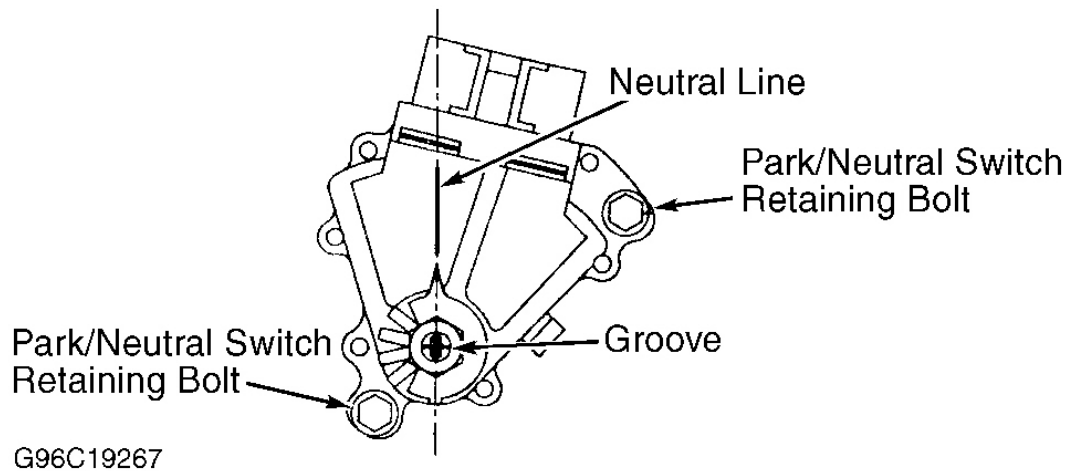


Fig. 25: Adjusting Park/Neutral Position Switch (Avalon)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THROTTLE VALVE CABLE

Avalon, Camry, Corolla, RAV4, Sienna, Solara, Tacoma, Tundra & 4Runner

1. Ensure accelerator pedal is in released position and throttle valve is fully closed. No slack should exist in throttle valve cable at throttle body. Measure distance between outer cable and stopper on throttle valve cable. See **Fig. 26** .
2. Loosen adjusting nuts on throttle valve cable. Tighten or loosen adjusting nuts until proper distance is obtained. On Avalon, distance should be .031-.059" (.80-1.50 mm). On all other models, distance should be 0-.04" (0-1.0 mm). Tighten adjusting nuts. Recheck distance once adjusting nuts are tightened.

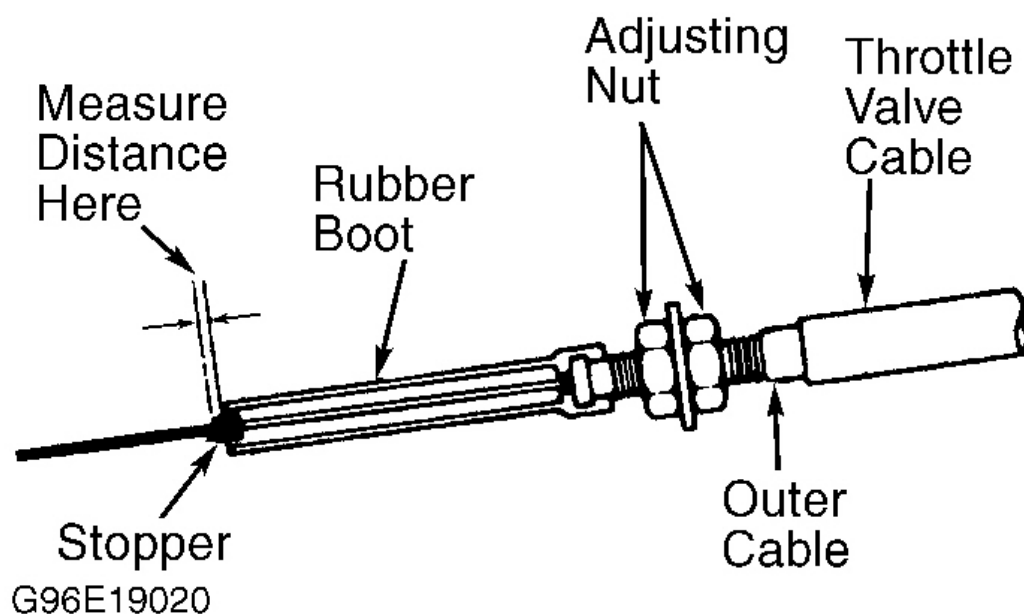


Fig. 26: Measuring Distance Of Throttle Valve Cable
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL & INSTALLATION

WARNING: Vehicles are equipped with Supplemental Inflatable Restraint (SIR) system. When servicing vehicles, use care to avoid accidental air bag deployment. SIR system-related components are located in various locations throughout interior and exterior of vehicles, depending on application. Do not use electrical test equipment on or near these circuits. If necessary, deactivate SIR system before servicing components. See AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. Before disconnecting battery, see appropriate COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION.

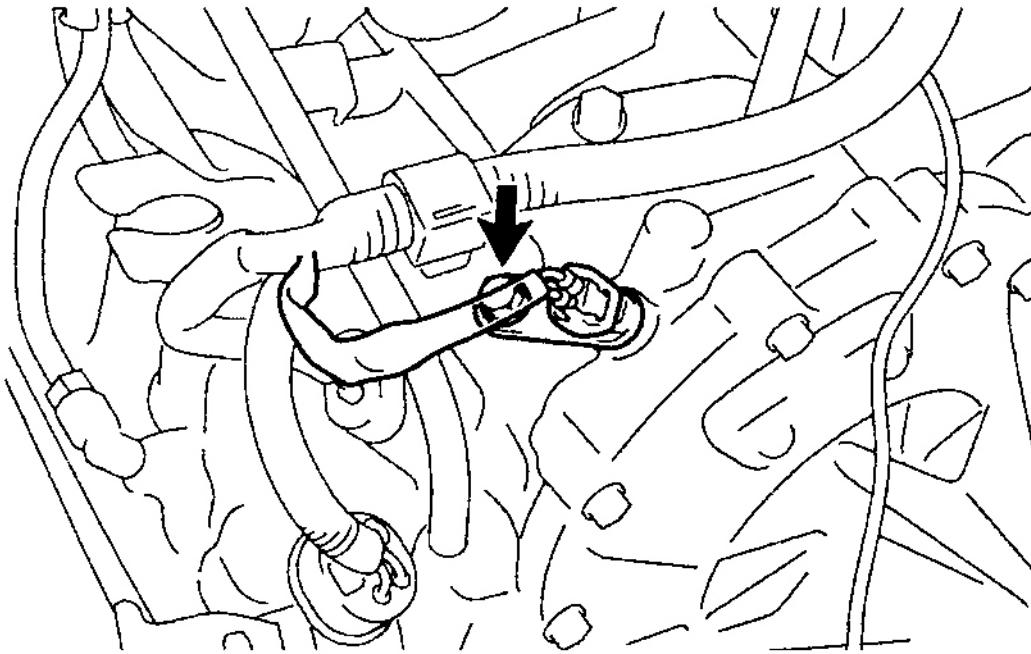
COUNTER GEAR SPEED SENSOR

NOTE: On some models, it may be necessary to access sensor by removing air

cleaner, battery and/or ECM and bracket.

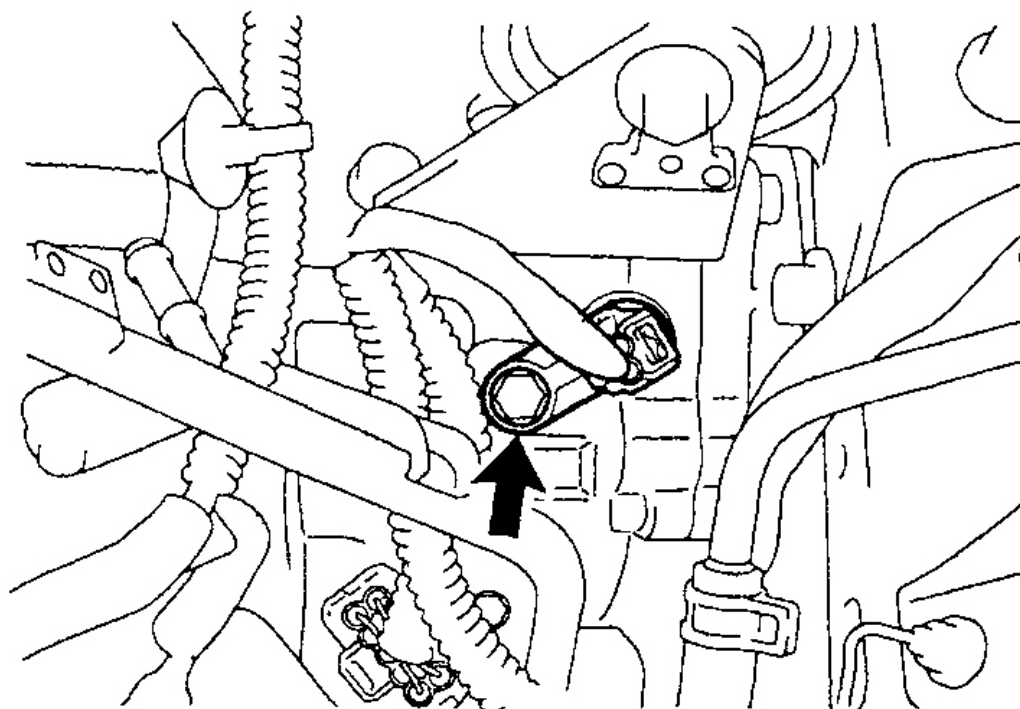
Camry (U-140E) & (U-241E), Solara (U-241E), Celica (U-240E) & RAV4

1. Disconnect the counter gear speed sensor connector. See **Fig. 27** and **Fig. 28** . Remove the bolt and counter gear speed sensor. See **Fig. 29** . Remove the "O" ring from the counter gear speed sensor.
2. Coat a NEW "O" ring with ATF and install it to the counter gear speed sensor. Install the counter gear speed sensor with the bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** . Connect the counter gear speed sensor connector.



G00134925

Fig. 27: Locating Counter Gear Speed Sensor (Camry & Solara)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134927

Fig. 28: Locating Counter Gear Speed Sensor (Celica & RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

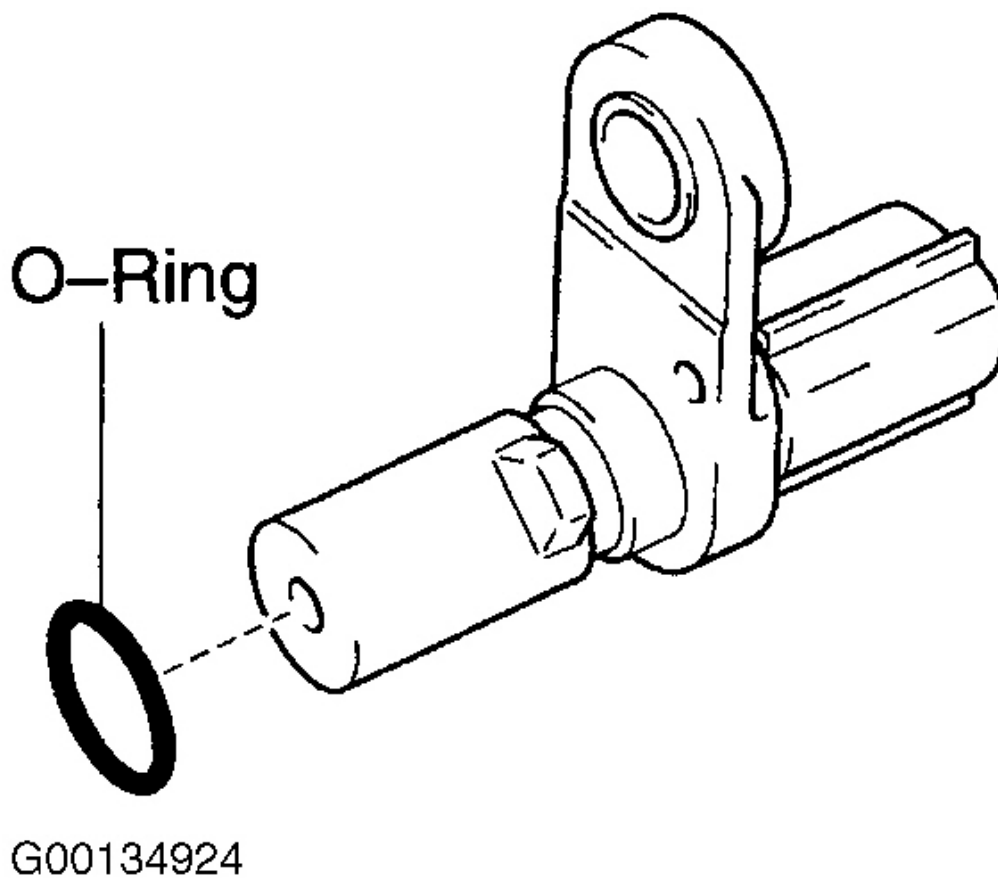


Fig. 29: Removing & Installing Speed Sensor
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

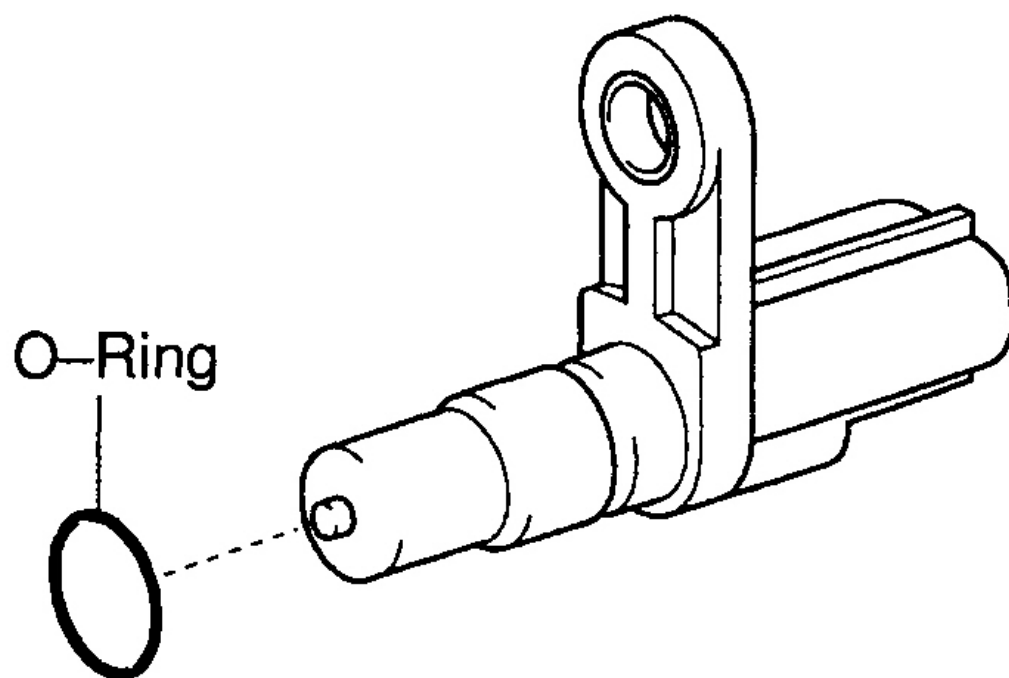
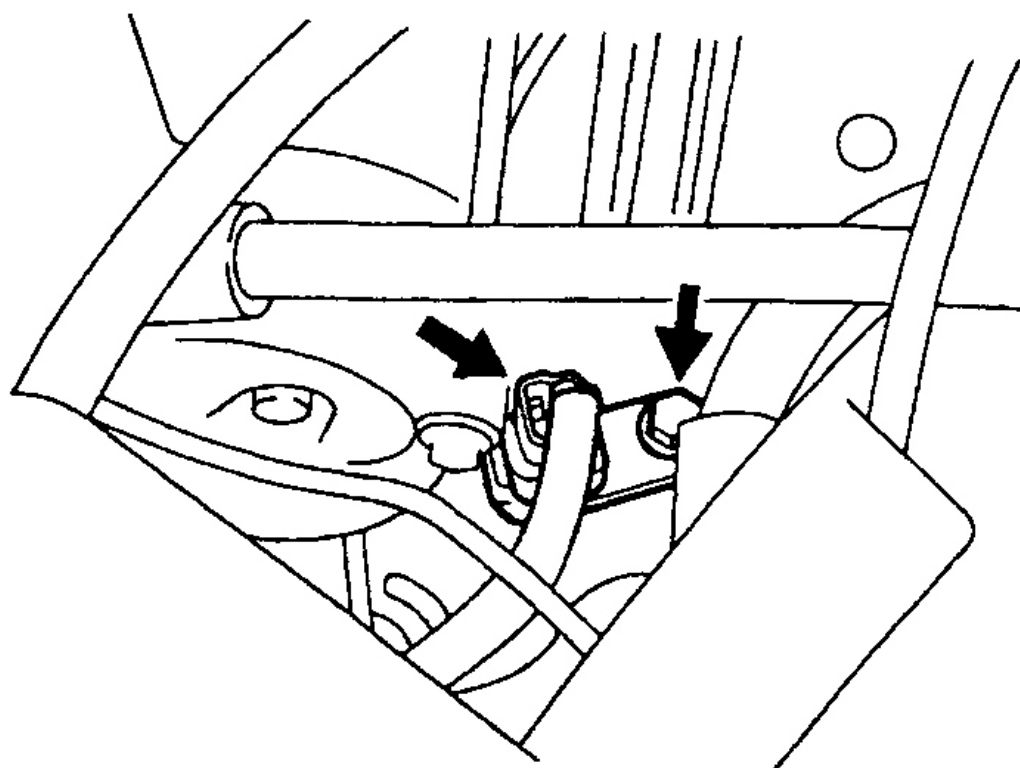
DIRECT CLUTCH SPEED SENSOR

NOTE: Sensor may be referred to as O/D direct clutch speed sensor on some models.

NOTE: On some models, it may be necessary to access sensor by removing air cleaner, air cleaner bracket, battery and/or ECM and bracket.

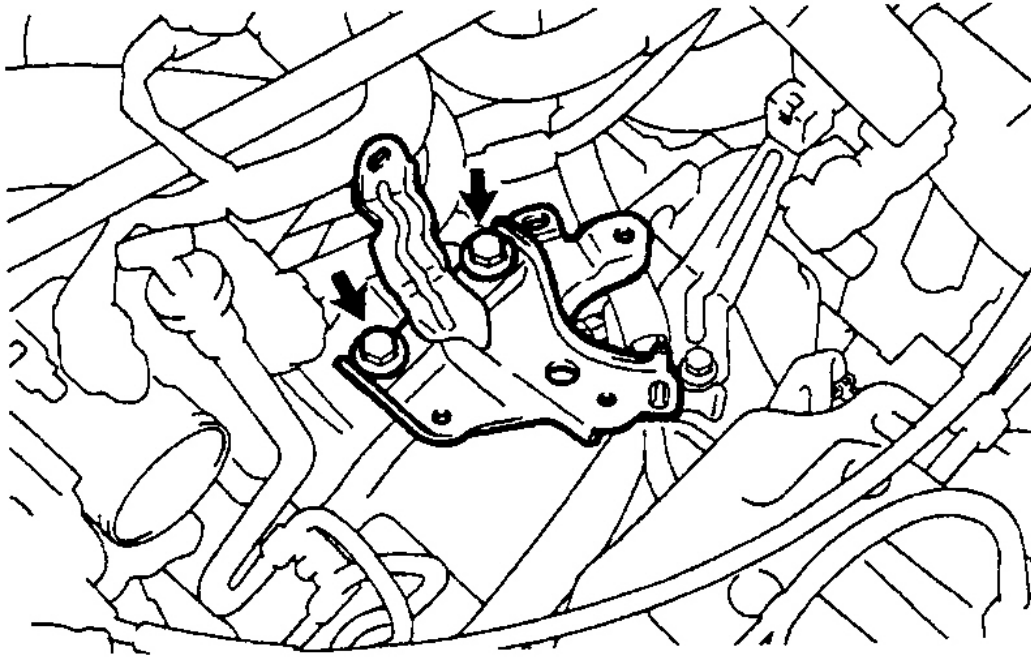
Avalon, Camry, Sienna & Solara (A-541E), ECHO (A-340E), Sequoia & Tundra (A-340E & A-340F)

Disconnect O/D direct clutch speed sensor connector. Remove the bolt and sensor. See **Fig. 30** . Remove the "O" ring from direct clutch speed sensor assembly. Coat a NEW "O" ring with ATF and install the "O" ring. Install O/D direct clutch speed sensor and bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



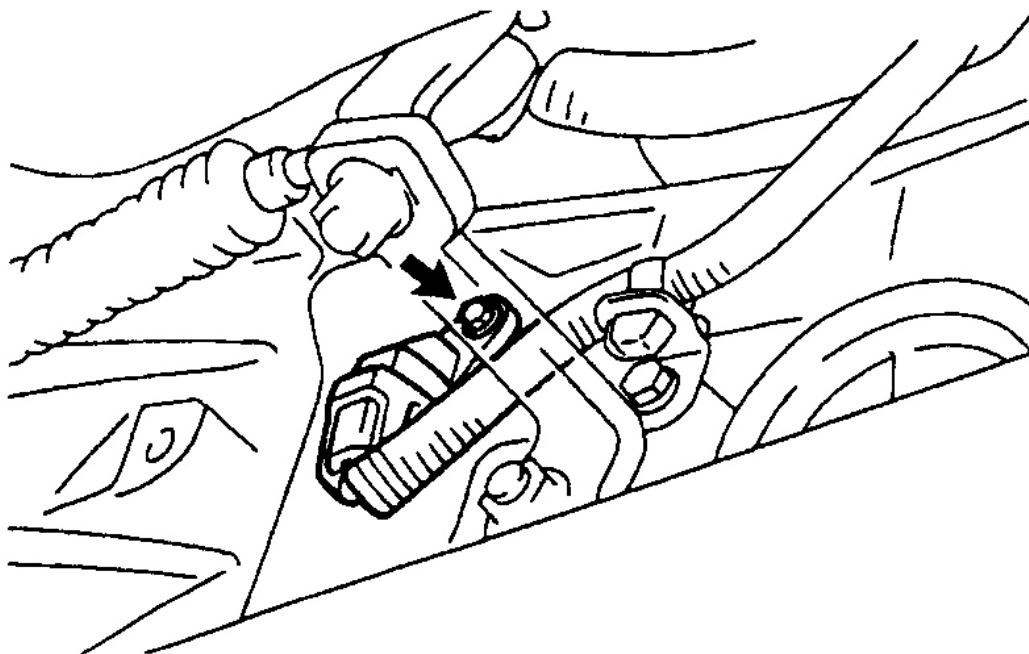
G00134922

Fig. 30: Removing & Installing Direct Clutch Speed Sensor (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134929

Fig. 31: Removing & Installing Air Cleaner Bracket (ECHO)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134885

Fig. 32: Removing & Installing Direct Clutch Speed Sensor (Sequoia & Tundra)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FLUID TEMPERATURE SENSOR (CELICA - U-240E)

Removal

Raise and support vehicle. Remove oil pan and filter. See **DRAINING & REFILLING** under LUBRICATION. Remove the bolt and lock plate, and remove the fluid temperature sensor. Remove clamps from 2 wire connectors.

Installation

Install 2 clamps to hold wiring harness. Install fluid temperature sensor with the lock plate and bolt. Tighten bolt to specification. See **TORQUE SPECIFICATIONS** . Connect the 5 shift solenoid valve connectors. Install fluid filter and oil pan. Fill with correct fluid to correct level. See **DRAINING & REFILLING** under LUBRICATION.

FLUID TEMPERATURE SENSOR (CELICA - U-341E)

Removal

Raise and support vehicle. Remove oil pan and filter. See **DRAINING & REFILLING** under LUBRICATION. Remove the bolt and lock plate, and remove the fluid temperature sensor. Remove "O" ring from the fluid temperature sensor.

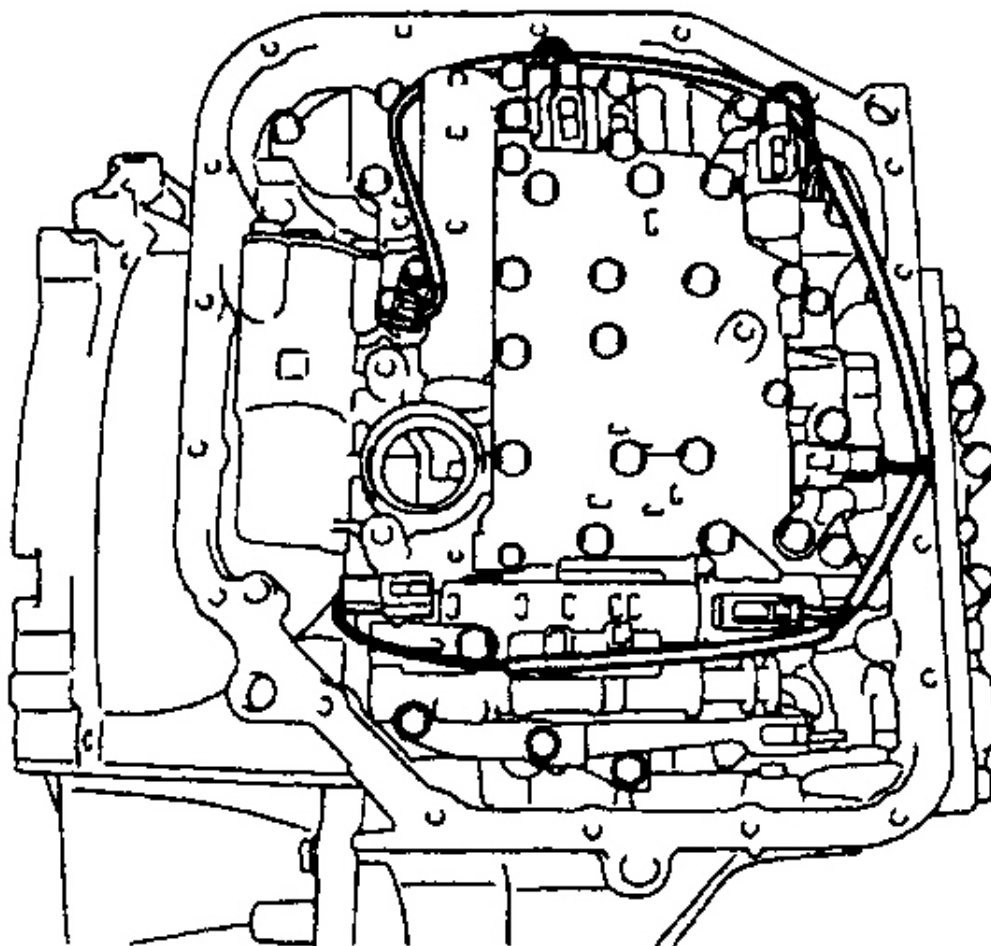
Installation

Coat a NEW "O" ring with ATF and install on sensor. Install fluid temperature sensor with the lock plate and bolt. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Install fluid filter and oil pan. Fill with correct fluid to proper level. See **DRAINING & REFILLING** under LUBRICATION.

FLUID TEMPERATURE SENSOR (ECHO)

Removal

Raise and support vehicle. Remove left side engine undercover. Remove oil pan and filter. See **DRAINING & REFILLING** under LUBRICATION. Disconnect 5 shift solenoid valve connectors. Remove the bolt and lock plate, and remove the fluid temperature sensor and harness. See **Fig. 33** . Remove the "O" ring from the fluid temperature sensor.



G00134938

Fig. 33: Removing & Installing Fluid Temperature Sensor & Wiring Harness (ECHO)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

Coat a NEW "O" ring with ATF and install on the fluid temperature sensor. Install the fluid temperature sensor and harness with the lock plate and bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** . Connect 5 shift solenoid valve connectors. Install fluid filter and oil pan. Fill with correct fluid to proper level. See **DRAINING & REFILLING** under LUBRICATION.

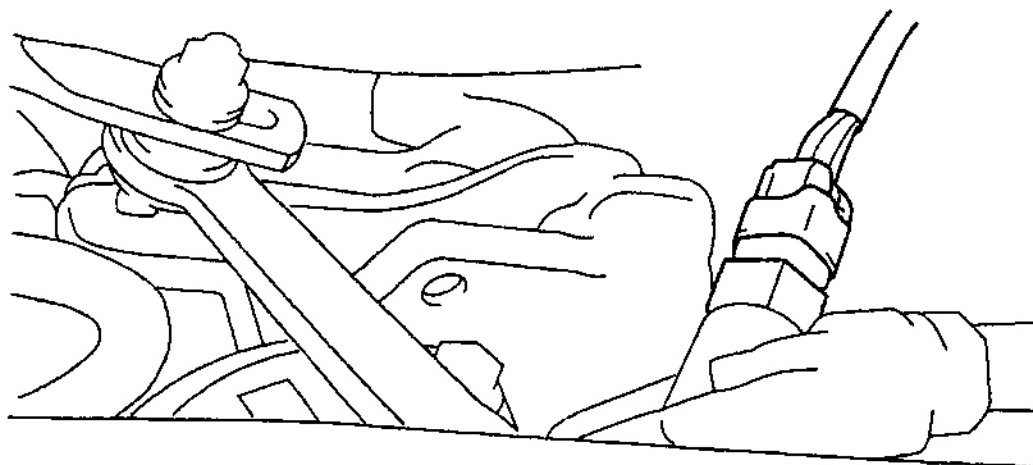
FLUID TEMPERATURE SENSOR (LAND CRUISER)

Removal

Raise and support vehicle. Remove No. 2 engine undercover. Disconnect fluid temperature sensor connector. Remove the fluid temperature sensor. See **Fig. 34** . Remove the "O" ring from the fluid temperature sensor.

Installation

Coat a NEW "O" ring with ATF and install on the fluid temperature sensor. Install the fluid temperature sensor. Tighten the sensor to specification. See **TORQUE SPECIFICATIONS** . Install the sensor connector and the No. 2 engine undercover.



G00132025

Fig. 34: Removing & Installing Fluid Temperature Sensor (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FLUID TEMPERATURE SENSOR (RAV4)

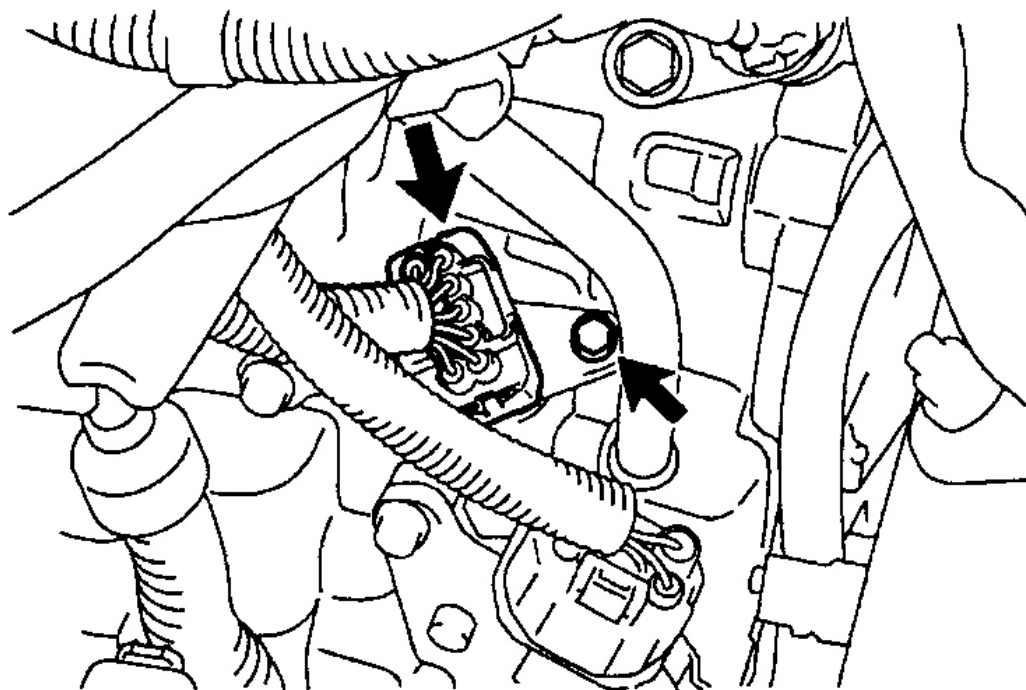
Removal

NOTE: When removing the solenoid bolt, do not remove the solenoid wiring harness.

Raise and support the vehicle. Disconnect solenoid connector. Remove the solenoid retainer bolt. See **Fig. 35** . Remove the left side engine cover. Drain fluid and remove transaxle oil pan. See **DRAINING & REFILLING** under LUBRICATION. Disconnect the 5 shift solenoid connectors. Remove the bolt and lock plate. See **Fig. 36** . Remove the fluid temperature sensor. Separate the wiring harness from the 2 clamps.

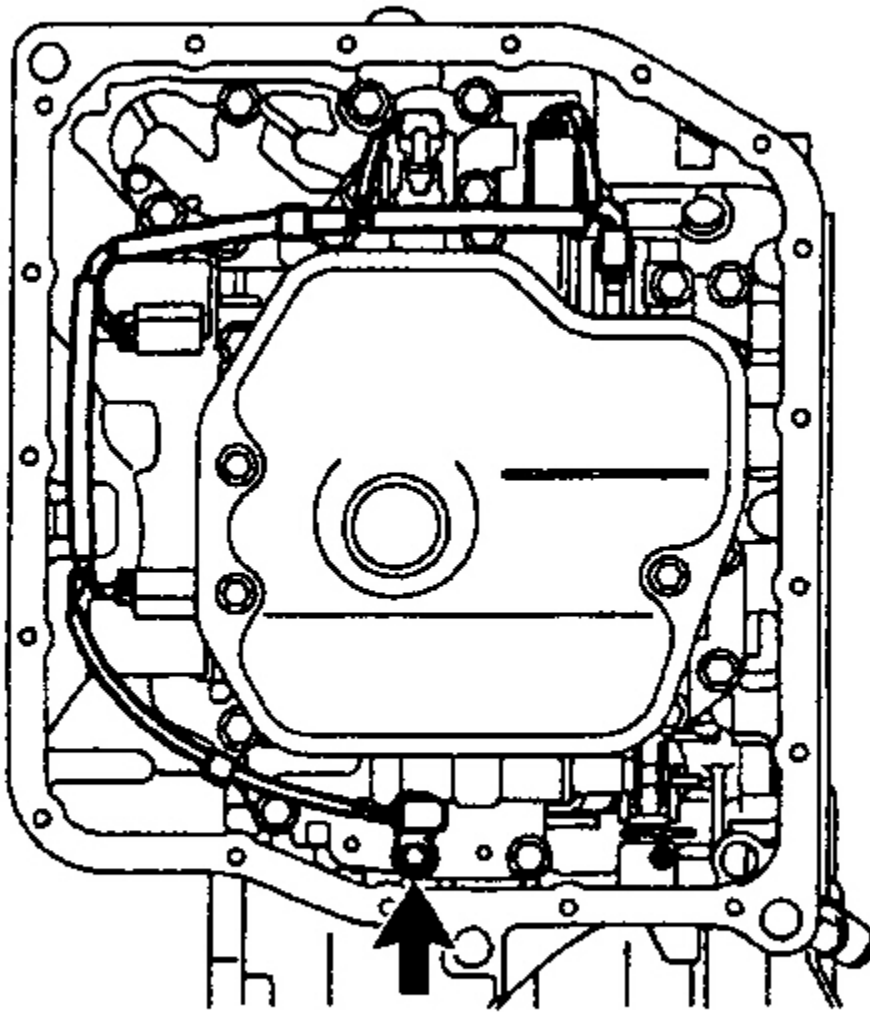
Installation

Clamp wiring harness to the 2 clamps. Install the temperature sensor with the lock plate and bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** . Connect the 5 shift solenoid connectors. Install the oil pan. Install solenoid wiring harness retainer bolt. Install solenoid connector and install left side engine undercover. Fill transmission with correct fluid to proper level. See **DRAINING & REFILLING** under LUBRICATION.



G00134939

Fig. 35: Locating Solenoid Wire Retainer Bolt (RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134940

Fig. 36: Removing & Installing Lock Plate & Bolt (RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FLUID TEMPERATURE SENSOR (SEQUOIA)

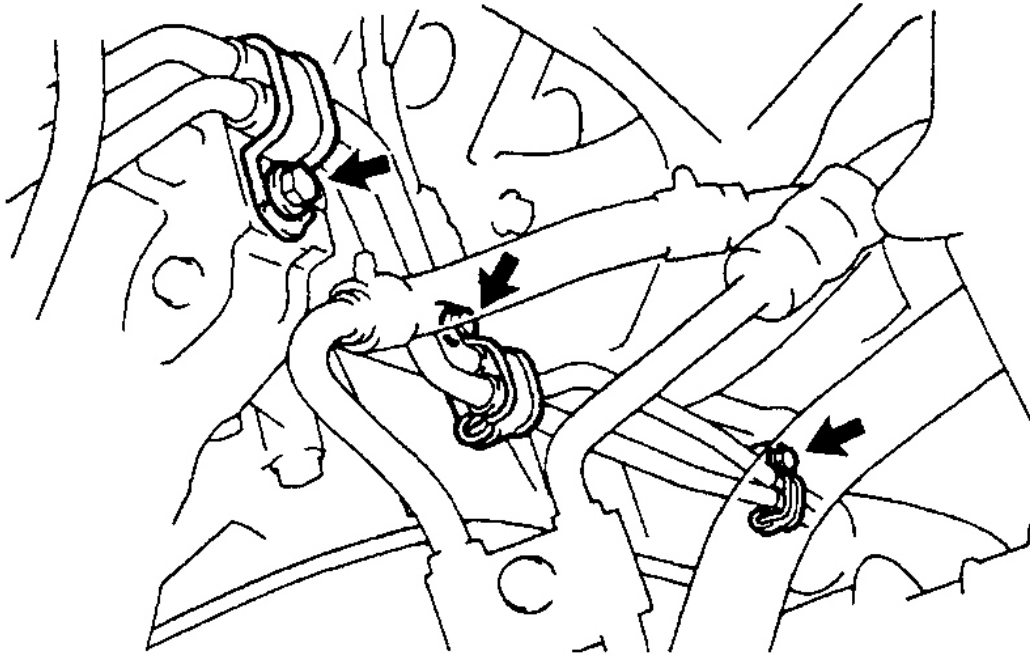
Removal

Remove the 3 oil cooler pipe bolts and clamps. See **Fig. 37** . Disconnect the fluid temperature sensor connector.

Remove the fluid temperature sensor. See **Fig. 38** . Remove the "O" ring from sensor.

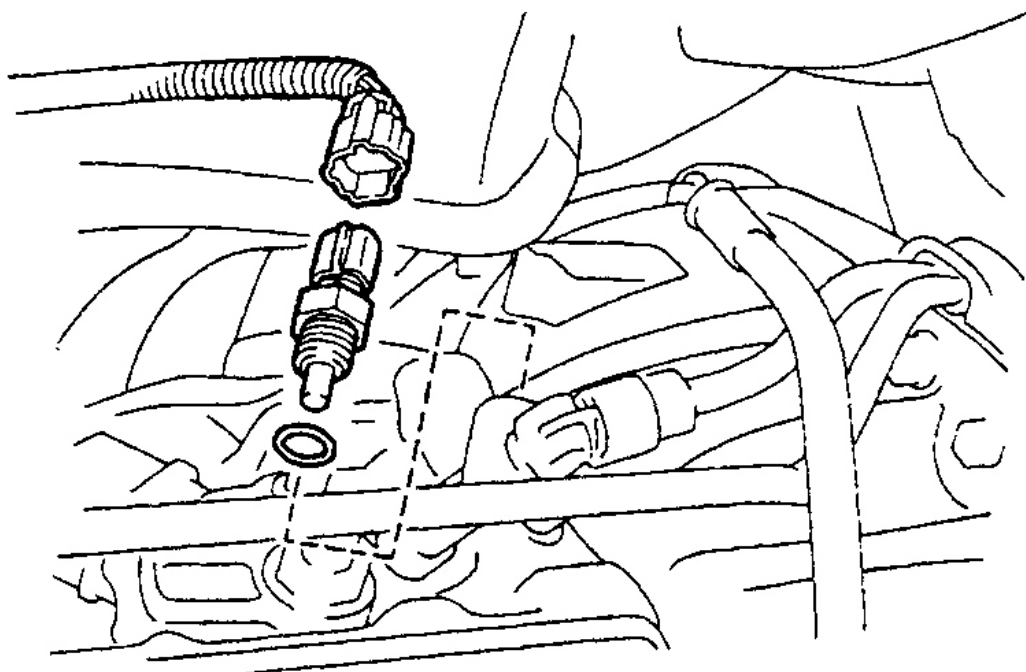
Installation

Coat a NEW "O" ring with ATF and install it onto fluid temperature sensor. Install the fluid temperature sensor. Tighten to specification. Install the connector and install the oil cooler pipe clamps and bolts.



G00134942

Fig. 37: Locating Oil Cooler Pipe Clamps & Bolts (Tacoma & Sequoia)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134941

Fig. 38: Removing & Installing ATF Fluid Temperature Sensor (Tacoma & Sequoia)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FLUID TEMPERATURE SENSOR (SIENNA)

Removal

Raise and support vehicle. Remove transaxle oil pan. See **DRAINING & REFILLING** under LUBRICATION. Disconnect solenoid connector. Remove valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Remove solenoid wire, bolt and fluid temperature sensor. Remove the "O" ring.

Installation

Coat a NEW "O" ring with ATF and install onto fluid temperature sensor. Install the solenoid wire and fluid temperature sensor. Install bolt and tighten to specification. See **TORQUE SPECIFICATIONS** . Install valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Install connector to fluid temperature sensor. Install oil pan. Fill with correct fluid to proper level. See **DRAINING & REFILLING** under LUBRICATION.

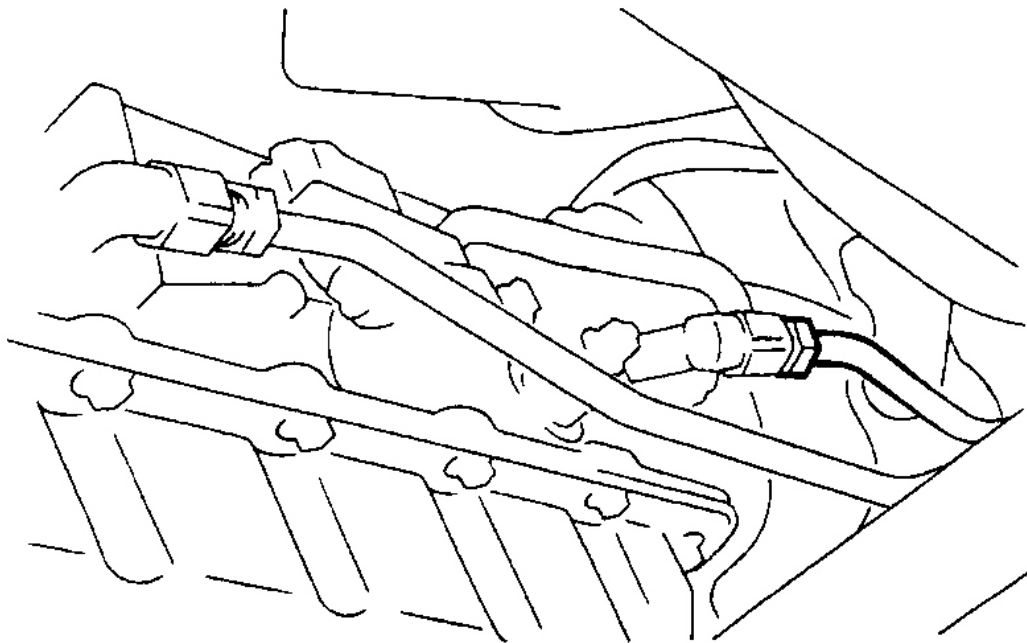
FLUID TEMPERATURE SENSOR (TACOMA)

Removal

Remove the 3 oil cooler pipe bolts and clamps. See **Fig. 37** . Remove the oil cooler elbow. See **Fig. 39** . Disconnect the fluid temperature sensor connector. Remove the fluid temperature sensor. See **Fig. 38** . Remove the "O" ring from sensor.

Installation

Coat a NEW "O" ring with ATF and install it onto fluid temperature sensor. Install fluid temperature sensor. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install the connector and install the oil cooler pipe elbows, pipes, clamps and bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00134943

Fig. 39: Locating Oil Cooler Pipe Elbows (Tacoma)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

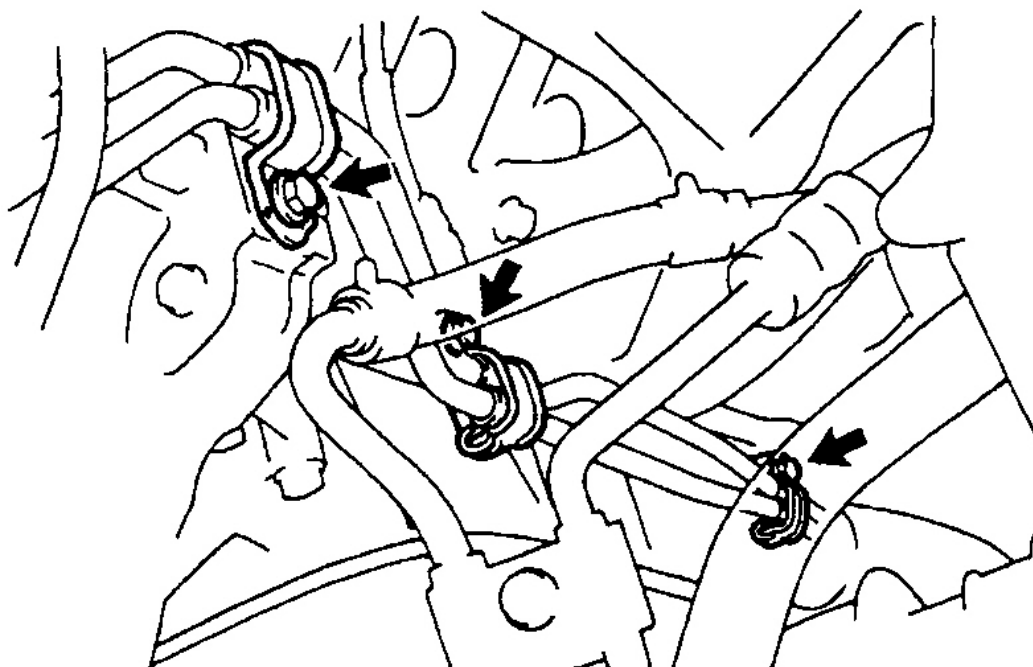
FLUID TEMPERATURE SENSOR (TUNDRA)

Removal

NOTE: For the 4.7L engine, begin at step 1 . For other engines, begin at step 2 .

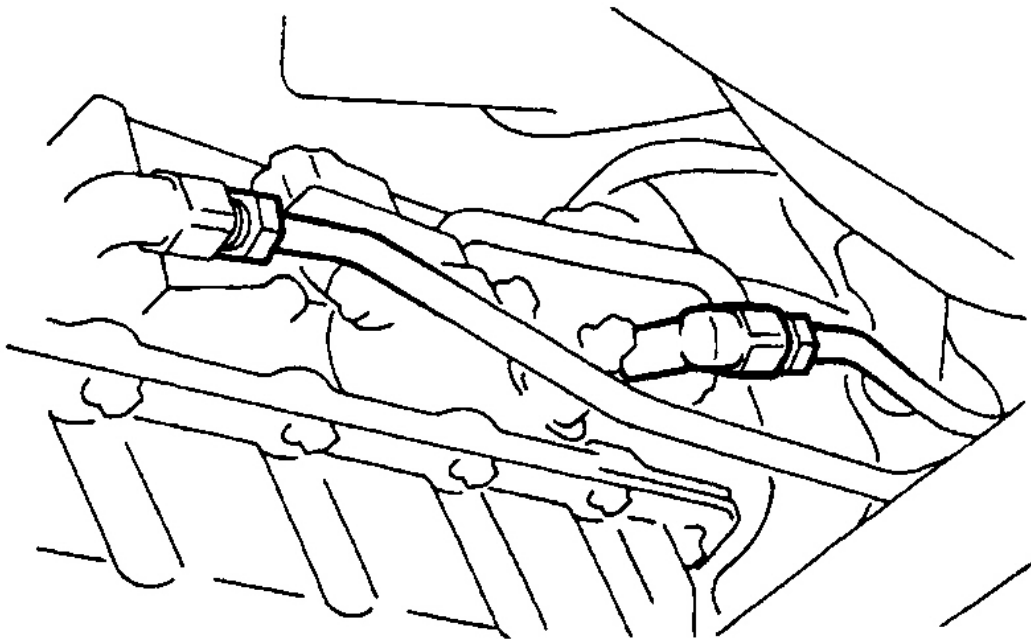
1. On 4.7L engines, disconnect the 3 bolts and the oil cooler pipes. See **Fig. 40** . Remove the elbow from the transmission (4.7L). See **Fig. 41**
2. Disconnect the fluid temperature sensor connector. Remove the fluid temperature sensor. See **Fig. 42** .

Remove the "O" ring from the fluid temperature sensor.



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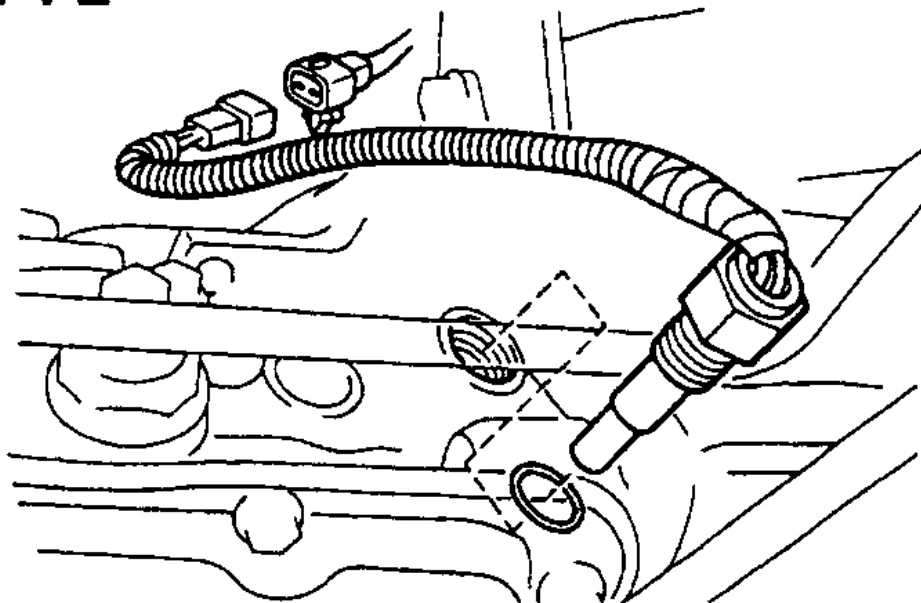
Fig. 40: Removing & Installing Oil Cooler Clamps (Tundra - 4.7L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



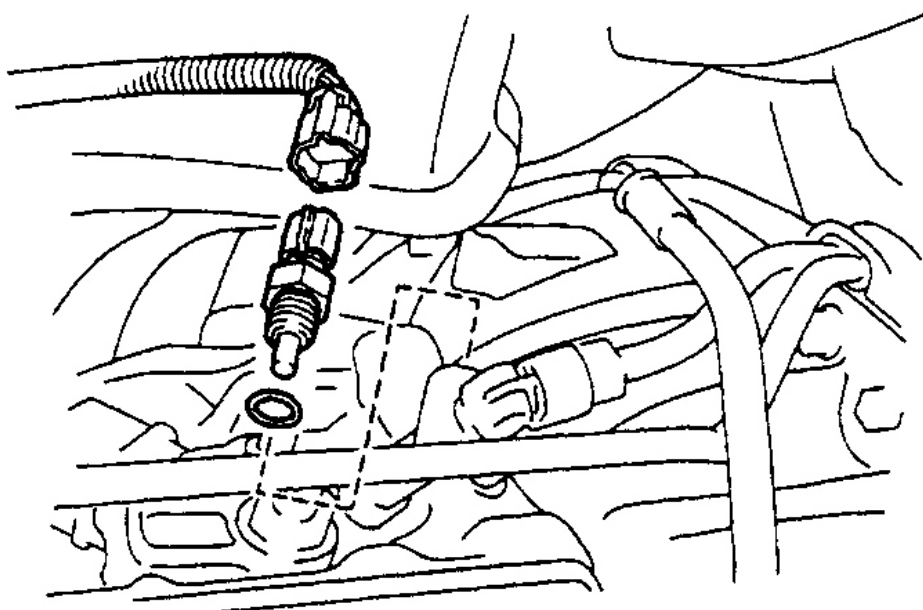
G00134882

Fig. 41: Removing & Installing Oil Cooler Pipes (Tundra - 4.7L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

5VZ-FE



2UZ-FE



G00134883

Fig. 42: Removing & Installing Fluid Temperature Sensor (Tundra - 4.7L)

Installation

NOTE: On all engines except 4.7L, stop at step 2 .

1. To install, coat a NEW "O" ring with ATF and install on the fluid temperature sensor.
2. Install the fluid temperature sensor, being careful not to twist wiring. Install bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Check fluid level. See **LUBRICATION** . On 4.7L engines go to next step.
3. Install the elbow on the transmission. Connect oil cooler pipe. Tighten pipe to specification. Install 3 clamps with the 3 bolts.

FLUID TEMPERATURE SENSOR (4RUNNER)

Removal

Disconnect the fluid temperature sensor connector. Remove the fluid temperature sensor. See **Fig. 42** . Remove the "O" ring from the fluid temperature sensor.

Installation

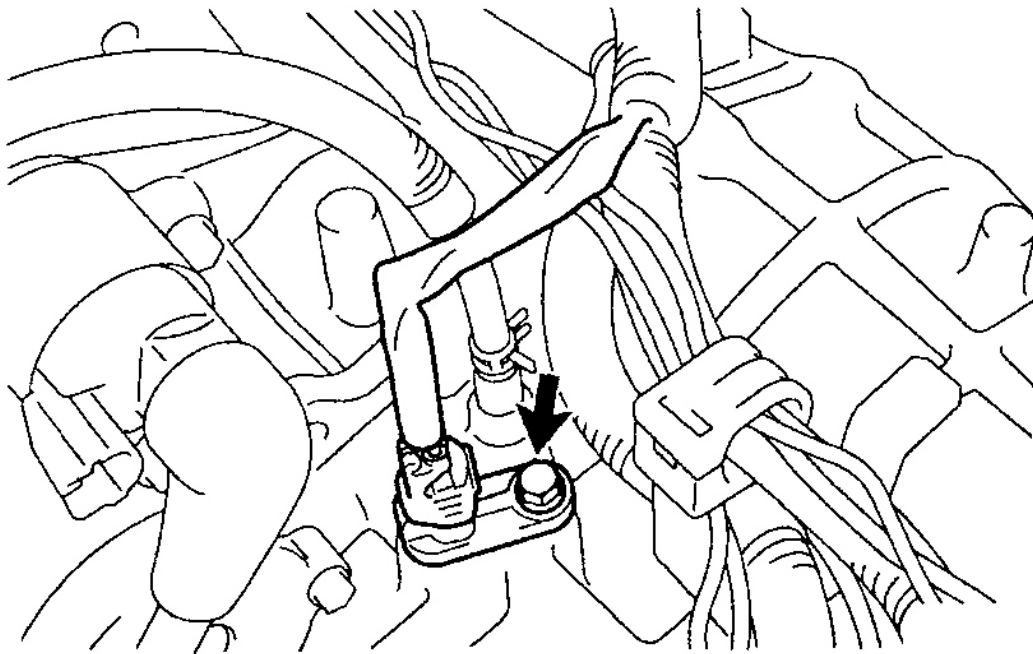
To install, coat a NEW "O" ring with ATF and install on the fluid temperature sensor. Install the fluid temperature sensor, being careful not to twist wiring. Tighten to specification. See **TORQUE SPECIFICATIONS** . Check fluid level. See **LUBRICATION** .

INPUT TURBINE SPEED SENSOR

NOTE: On some models, it may be necessary to access sensor by removing air cleaner, battery and/or ECM and bracket.

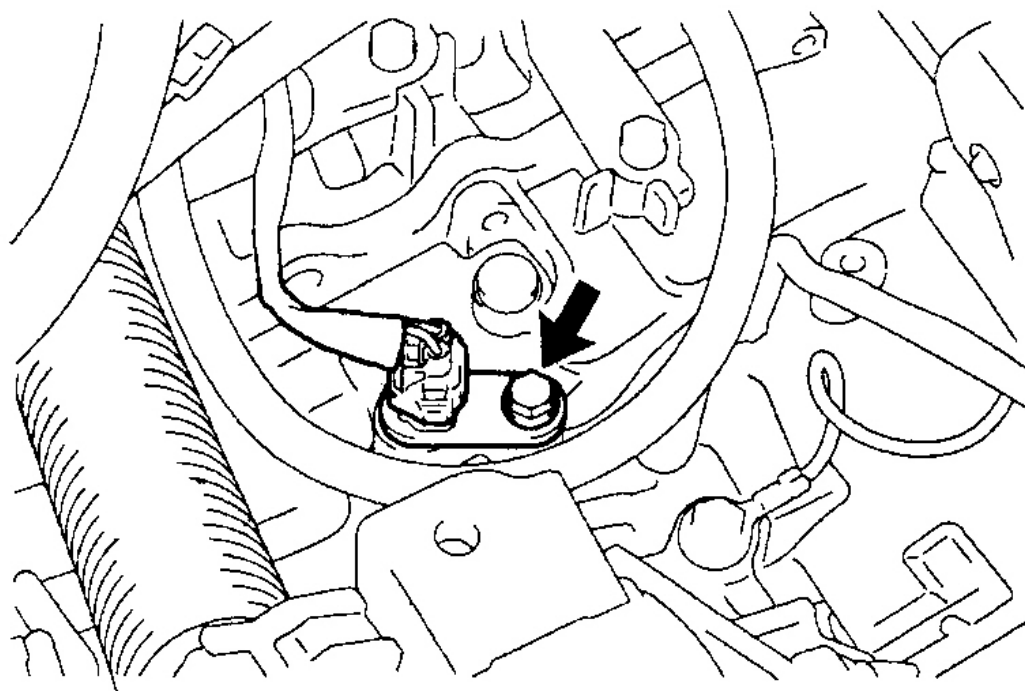
Removal & Installation (Celica U-240E, RAV4, U-140E & U-241E & Solara U-241E)

1. Disconnect the input turbine speed sensor connector. See **Fig. 43 -Fig. 45** . Remove the bolt and input turbine speed sensor. See **Fig. 29** . Remove the "O" ring from the input turbine speed sensor.
2. Coat a NEW "O" ring with ATF and install it to the input turbine speed sensor. Install the input turbine speed sensor with the bolt. See **TORQUE SPECIFICATIONS** . Connect the input turbine speed sensor connector.



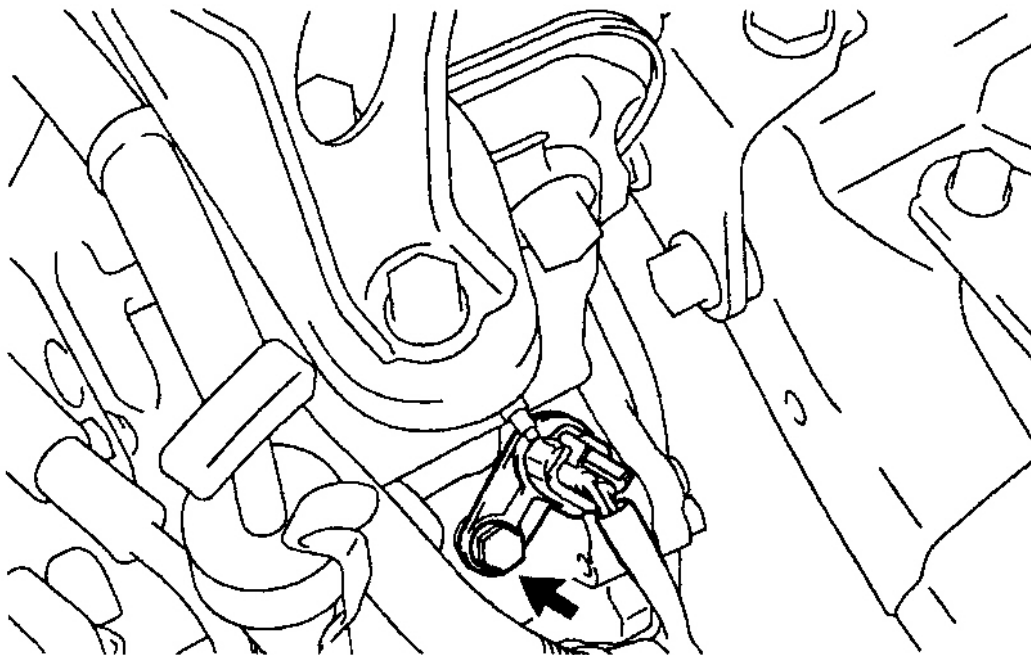
G00134923

Fig. 43: Locating Input Turbine Speed Sensor (Solara)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134926

Fig. 44: Locating Input Turbine Speed Sensor (Celica)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



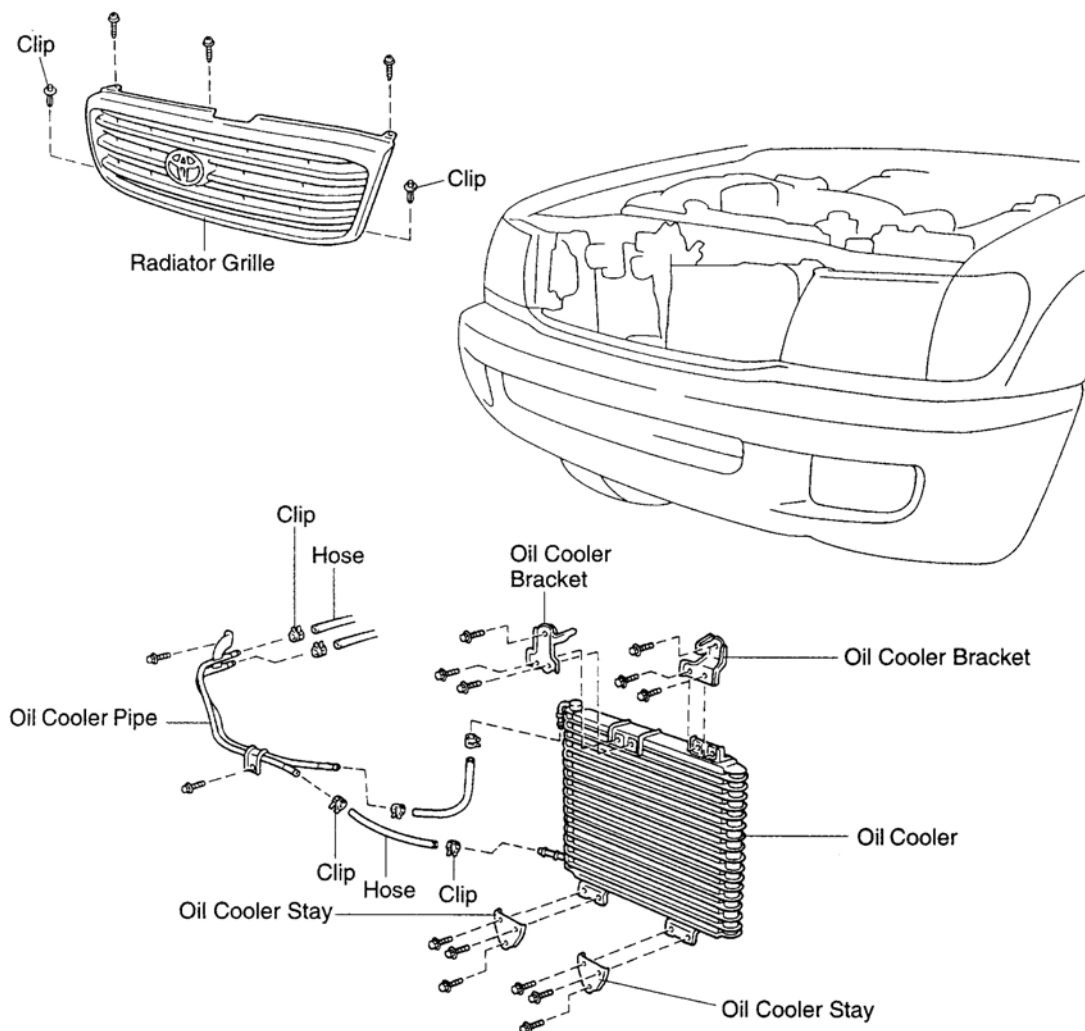
G00134932

Fig. 45: Locating Input Turbine Speed Sensor (RAV4)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OIL COOLER ASSEMBLY

Removal & Installation (Land Cruiser)

1. Remove the 3 screws holding the radiator grille. Using a screwdriver, remove the 2 radiator grille retainer clips. See **Fig. 46** . Remove the radiator grille. Loosen the 2 clips and disconnect the oil cooler 2 hoses.
2. Remove the 8 bolts, 2 oil cooler brackets and 2 stays. Remove the 4 bolts and oil cooler. See **Fig. 46** . Loosen the 2 oil cooler pipe clips and disconnect the 2 hoses. Remove the 2 bolts and oil cooler pipe bracket.
3. To install, install the oil cooler pipe bracket with 2 bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Connect the 2 oil cooler pipe hoses with the 2 clips. Install the 2 cooler pipe brackets and stays with the 8 bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** .
4. Install the oil cooler using the 4 bolts. Connect the oil cooler hoses using the retainer clips. Install the grille using the 2 clips and the 3 screws. Tighten to specification. See **TORQUE SPECIFICATIONS** .



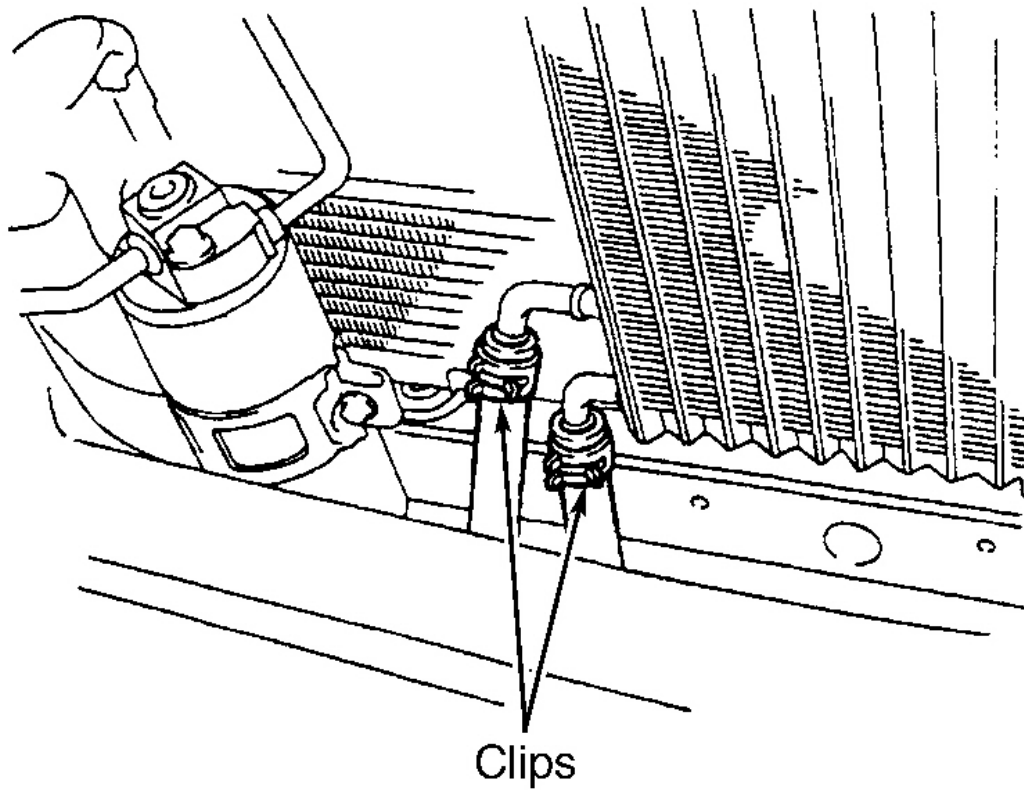
G00134946

Fig. 46: Removing & Installing Oil Cooler Assembly (Land Cruiser)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Sequoia & Tundra)

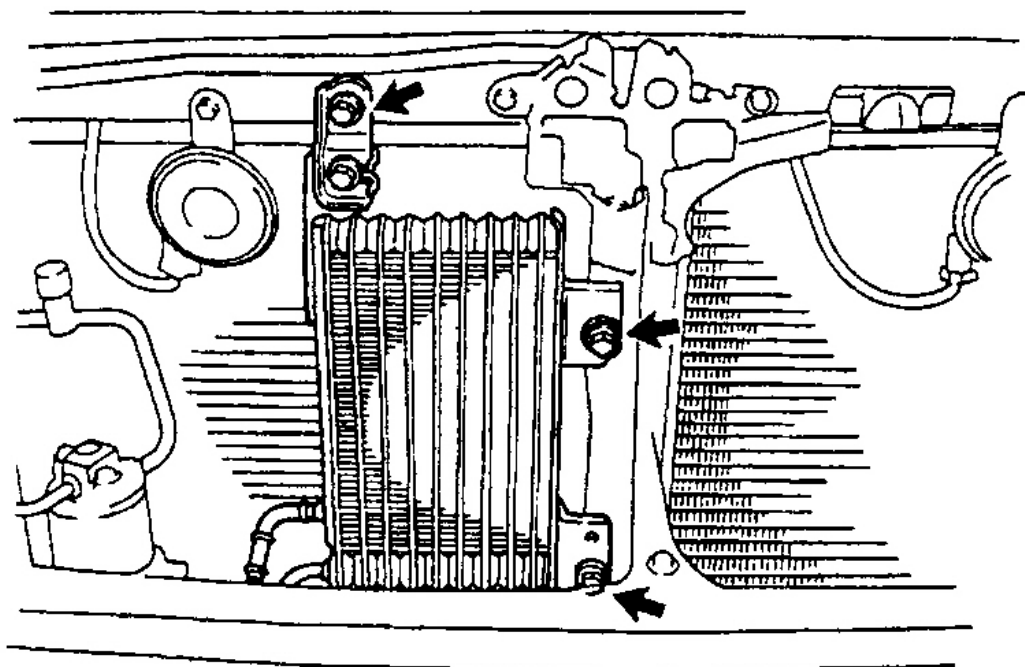
1. Loosen the 2 clips and disconnect the 2 hoses at cooler. See **Fig. 47** . Remove the 3 bolts and oil cooler. See **Fig. 48** . Go to next step.
2. Remove the bolt, transmission oil cooler bracket and grommet. Remove the 2 grommets and condenser mounting insulators from the oil cooler. See **Fig. 49** . Loosen the 2 clips and disconnect the 2 oil cooler tube hoses. Remove the bolt and oil cooler tube. Loosen the 2 clips and disconnect the 2 oil cooler hoses. See **Fig. 50** .
3. To install, install the oil cooler tube and connect the 2 hoses (transmission side) with the 2 clips. See **Fig. 50** . Install the oil cooler tube hoses (cooler side) with the 2 clips. Go to next step.
4. Install the grommets and bracket onto the oil cooler. Tighten bolts to specifications. Install the oil cooler to the vehicle. Tighten to bolts specifications. See **TORQUE SPECIFICATIONS** . Install the 2 hoses to

the oil cooler using the 2 clips. See **Fig. 47** .



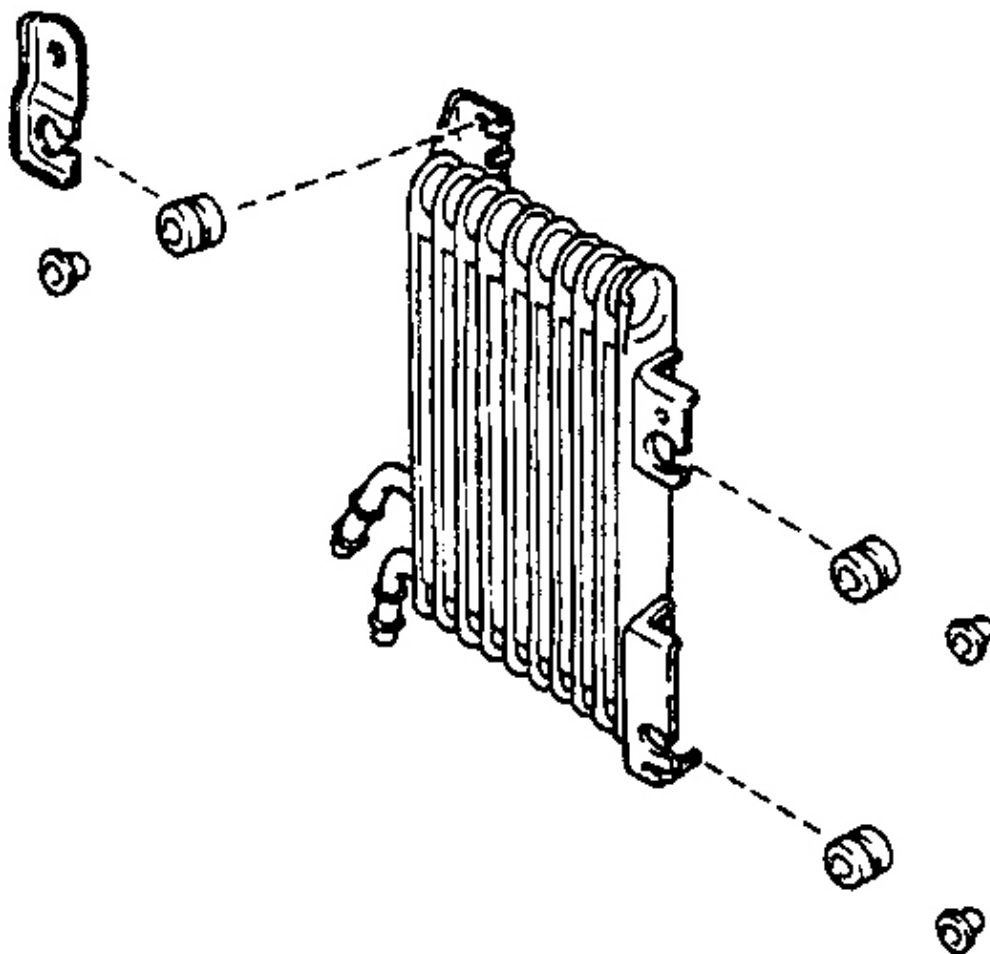
G00134947

Fig. 47: Locating Oil Cooler Clips (Sequoia & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



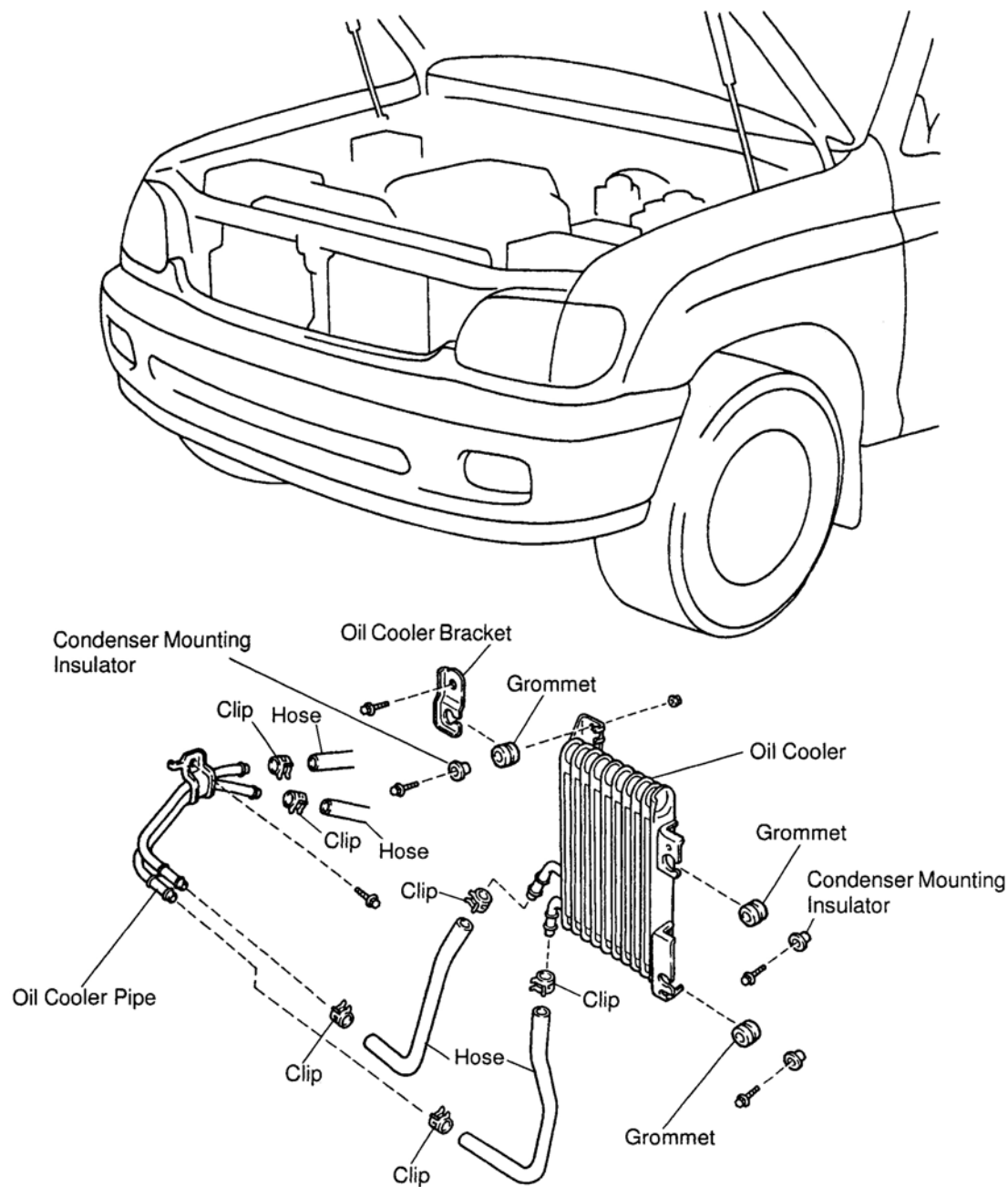
G00134948

Fig. 48: Removing & Installing Oil Cooler Assembly (Sequoia & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134949

Fig. 49: Removing & Installing Oil Cooler Brackets & Grommets (Sequoia & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134950

Fig. 50: Disassembled View Of Oil Cooler Components (Sequoia & Tundra)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

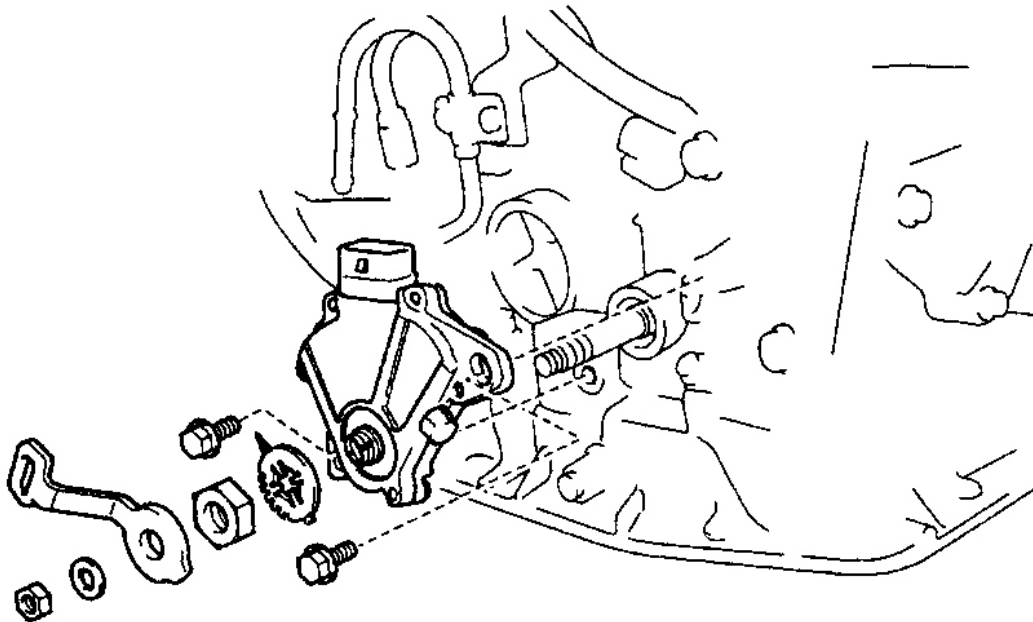
PARK/NEUTRAL POSITION SWITCH

Removal & Installation (Corolla)

1. To remove, disconnect control cable from the control shaft lever. Remove the nut, washer and control

shaft lever. Using a screwdriver, pry off the locking washer. Remove the nut and the locking washer. See **Fig. 51** . Remove the 2 bolts and the PNP switch.

2. Install the PNP switch with 2 bolts. Install the nut stopper and the nut. Stake the nut with the lock plate. Install the control shaft lever, washer and nut. Connect the control cable to the control shaft lever. Check that the engine starts with the gearshift lever only in the Neutral or Park position, but not in any other position. If not, carry out the adjustment procedure. See **PARK/NEUTRAL POSITION SWITCH** under ADJUSTMENTS.



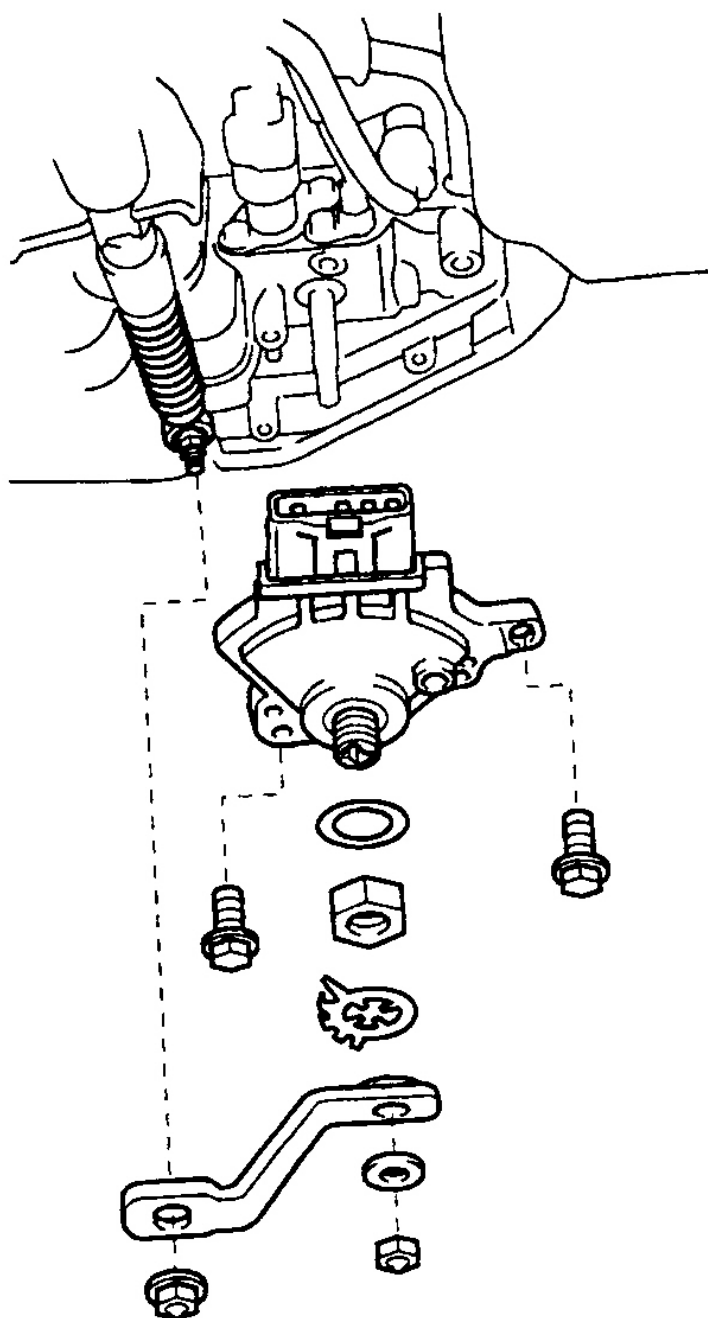
G00115785

Fig. 51: Removing & Installing PNP Switch Assembly (Corolla)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (2001 Camry & Solara - A140E)

1. Remove engine undercover and control shaft lever nut and control shaft lever. Disconnect the PNP switch connector and pry off the lock plate. See **Fig. 52** . Remove the 2 PNP switch retaining bolts. Remove switch.
2. Install PNP switch with the 2 bolts. Tighten to 48 INCH lbs. (5.4 N.m). Install a NEW lock plate and nut. Tighten to 61 INCH lbs. (6.9 N.m). Bend the claws on lock plate to fix the nut. Go to next step.
3. Install the control shaft lever, washer and nut. Tighten to 133 INCH lbs. (15 N.m). Connect PNP switch wiring connector and check for proper operation. Vehicle should only start in the Neutral and Start positions. Go to next step.
4. If the switch does not operate properly, see **PARK/NEUTRAL POSITION SWITCH** under

ADJUSTMENTS.

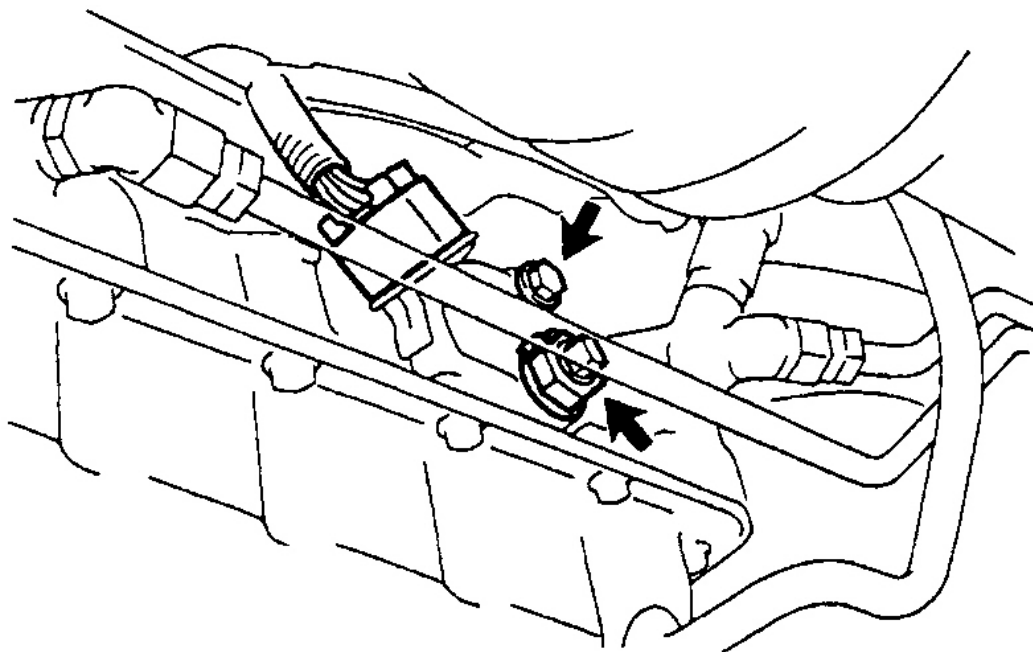


G00132080

Fig. 52: Removing & Installing PNP Switch (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Highlander, Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner - A-340E, A-340F & A-343F)

1. Disconnect oil cooler pipe (if equipped). See **Fig. 40** and **Fig. 41** . Disconnect the PNP switch connector, pry off the lock washer and remove nut. See **Fig. 53** . Remove the bolt and remove PNP switch.
2. To install, install PNP switch and bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install a NEW lock plate and nut. Bend the claws on lock plate to hold the nut in place. Install the PNP switch connector. Make sure the engine only starts in Park and Neutral positions. If engine starts in any other position, see **PARK/NEUTRAL POSITION SWITCH** under ADJUSTMENTS. Install oil cooler pipe (if equipped). See **Fig. 40** and **Fig. 41** .



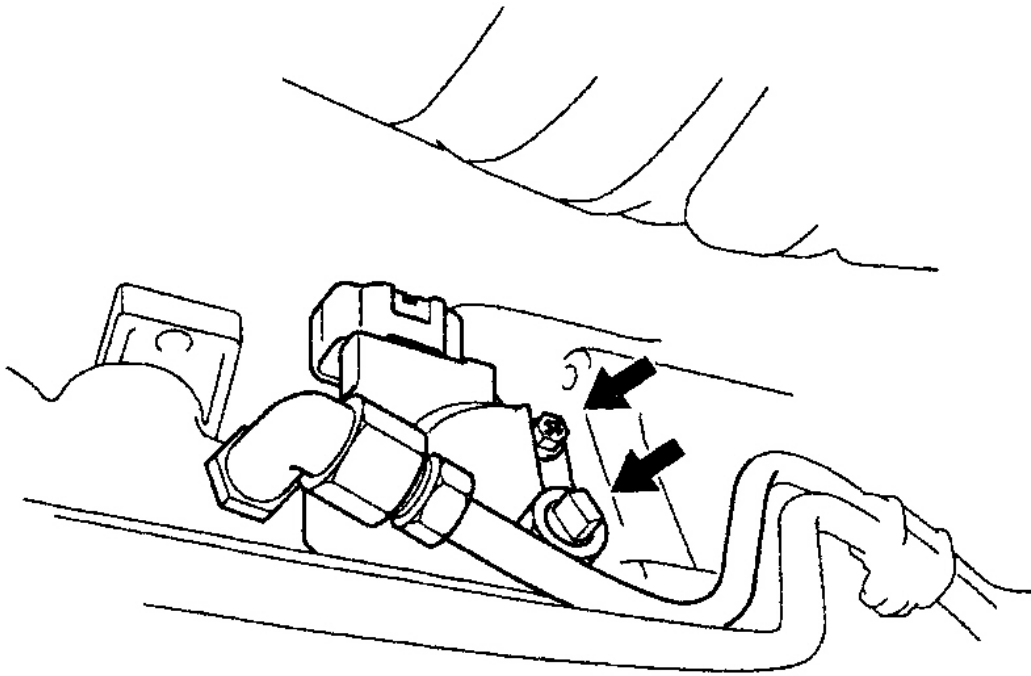
G00134886

Fig. 53: Removing & Installing PNP Switch (A-340E, A-340F & A-343F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Tacoma A-44D)

1. Raise and support vehicle. Remove front exhaust pipe and heat insulator. Remove the 3 oil cooler pipe clamps. Disconnect the oil cooler pipe. Remove elbow and "O" ring. See **Fig. 54** . Disconnect the connector. Pry off the lock washer and remove the nut. Remove the bolt and PNP switch.
2. Install the PNP switch and bolt. Tighten to specification. Install a NEW lock plate and the nut. Tighten to specification. See **TORQUE SPECIFICATIONS** . Bend claws on the lock plate to fix the nut. Adjust the PNP switch. See **PARK/NEUTRAL POSITION SWITCH** under ADJUSTMENTS. Connect the connector. Install elbow and NEW "O" ring. Connect the oil cooler pipe. Install the 3 oil cooler pipe

clamps. Install front exhaust pipe and heat insulator.

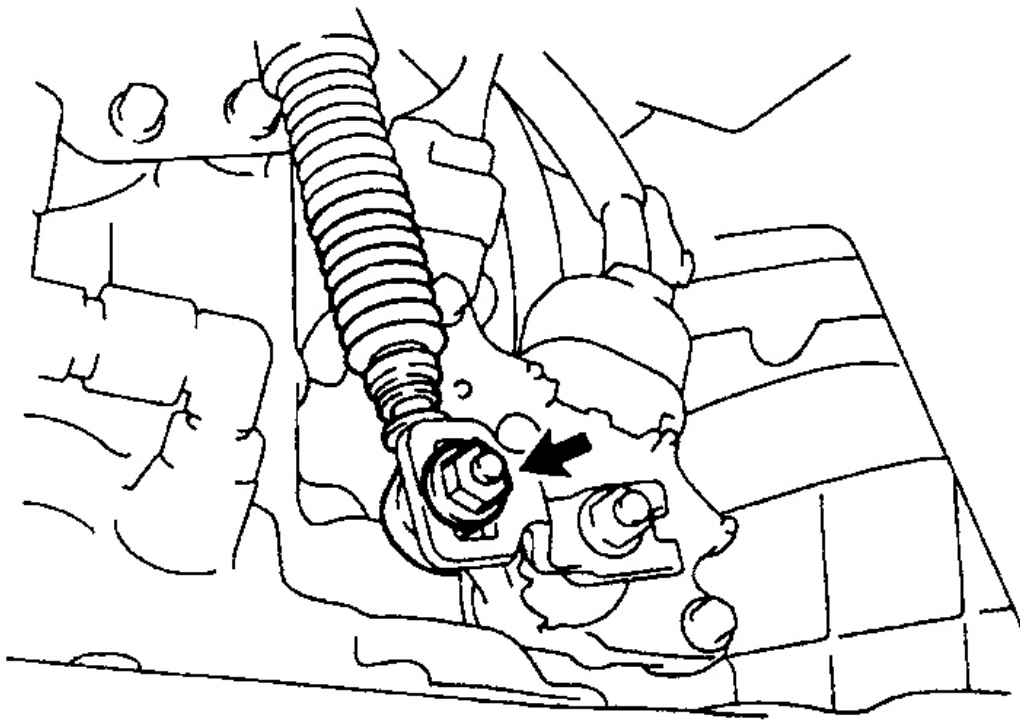


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Fig. 54: Removing & Installing PNP Switch (Tacoma A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

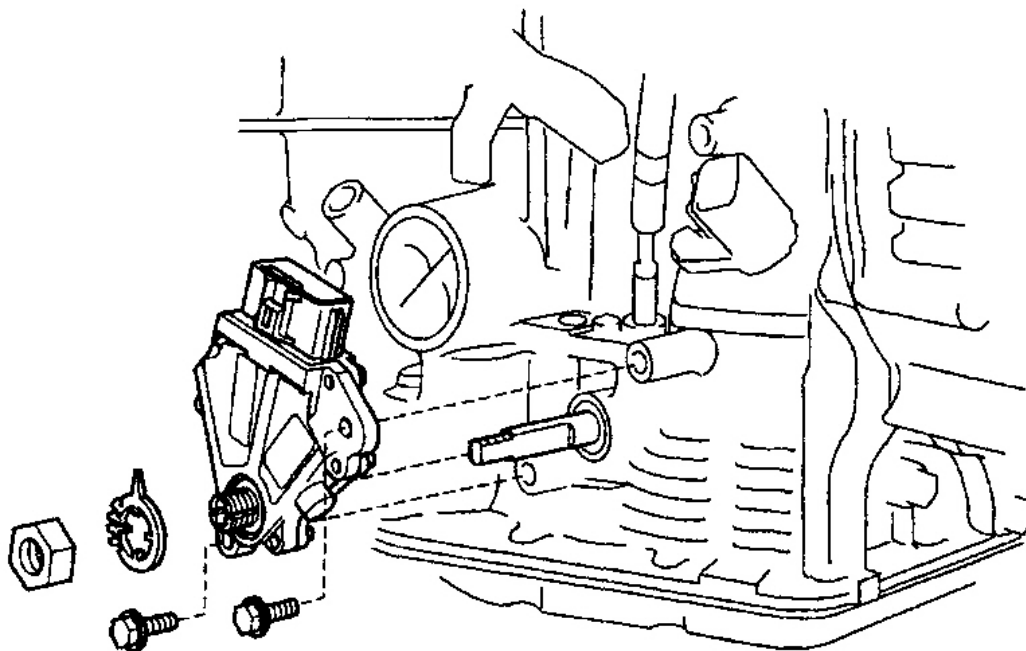
Removal & Installation (Avalon, Camry, Sienna & Solara A-541E)

1. Raise and support vehicle. Remove engine undercover. Disconnect PNP switch connector. Remove the clip from shift control cable. Remove the nut and control cable. Go to next step.
2. Remove the nut, washer and transaxle control shaft lever. Using a screwdriver, pry off the lock plate. Remove the nut and lock plate. Remove the 2 bolts and pull out the PNP switch. See **Fig. 56** .
3. To install, temporarily install the PNP switch with the 2 bolts. Install a NEW lock plate and nut. Tighten to specification. Stake the nut with the lock plate. Install the transaxle control shaft lever and washer. Go to next step.
4. Install and tighten the nut to specification. See **TORQUE SPECIFICATIONS** . Install the control cable and nut. Install the clip to the shift control cable.



G00134945

Fig. 55: Removing & Installing Gearshift Cable Nut (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

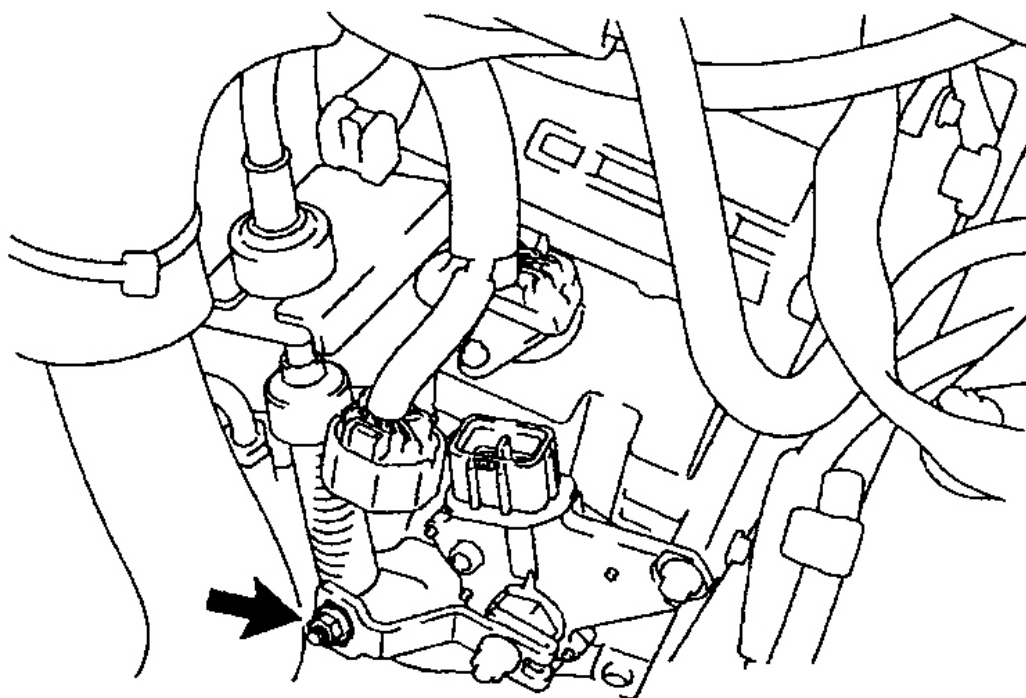


G00134919

Fig. 56: Removing & Installing Park/Neutral Position Switch (A-541E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

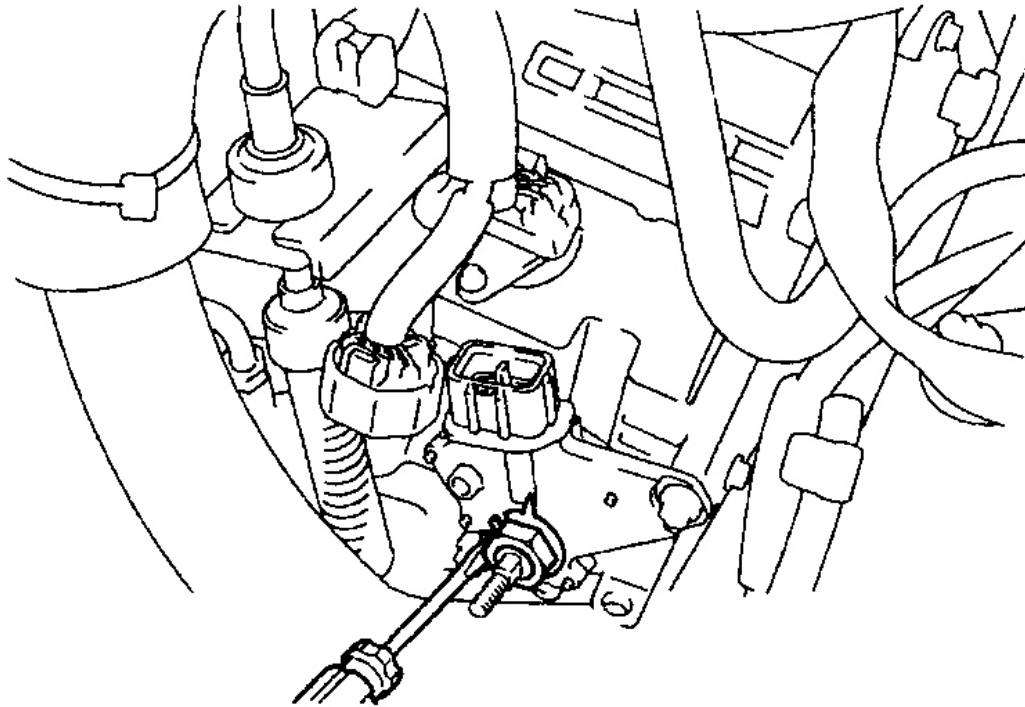
Removal & Installation (Camry, Celica, Highlander, RAV4 & Solara U-240E, U-241E & U-341E)

1. Remove air cleaner (if necessary). Disconnect the PNP switch connector. Remove the nut, washer and control gearshift lever. See **Fig. 57** . Using a screwdriver, pry off the lock plate. See **Fig. 58** . Remove the nut and lock plate. Remove the 2 bolts and pull out the PNP switch.
2. To install, install PNP switch with the 2 bolts and tighten to specification. Install a NEW lock plate and nut and tighten to specification. Bend the claws on the lock plate to secure nut. Install control gearshift lever with the nut and tighten. Install shift control cable to the control shaft and tighten to specification. See **TORQUE SPECIFICATIONS** .
3. Install the connector to PNP switch. Check system operation. If vehicle starts in any position except Park and Neutral, adjust switch. See **PARK/NEUTRAL POSITION SWITCH** under ADJUSTMENTS. Install air cleaner (if necessary) and road test vehicle.



G00134917

Fig. 57: Removing & Installing PNP Switch Nut (U-240E, U-241E & U-341E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134918

Fig. 58: Prying Off PNP Lock Plate (U-240E, U-241E & U-341E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SHIFT SOLENOIDS & VALVE BODY

CAUTION: A large amount of material debris including steel (magnetic) and non-magnetic (brass, aluminum or clutch fiber particles) may indicate excessive transmission wear or damage. Check the magnet in the oil pan for steel particles which indicate bearing, plate or hardware damage.

CAUTION: When removing transmission/transaxle oil pan, filter and valve body components, note bolt size, location and length for reassembly reference.

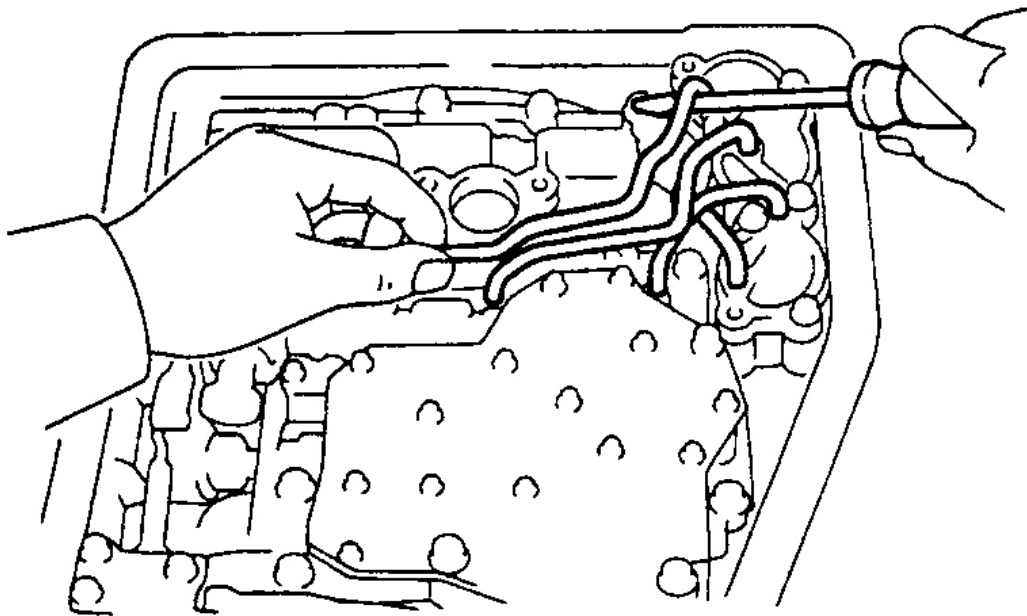
NOTE: The procedure for shift solenoid valve SL is a separate operation on A-140E.
See SHIFT SOLENOID SL .

Removal & Installation (Corolla A-131L)

1. Raise and support vehicle. Remove drain plug and drain transmission fluid into proper container. Remove

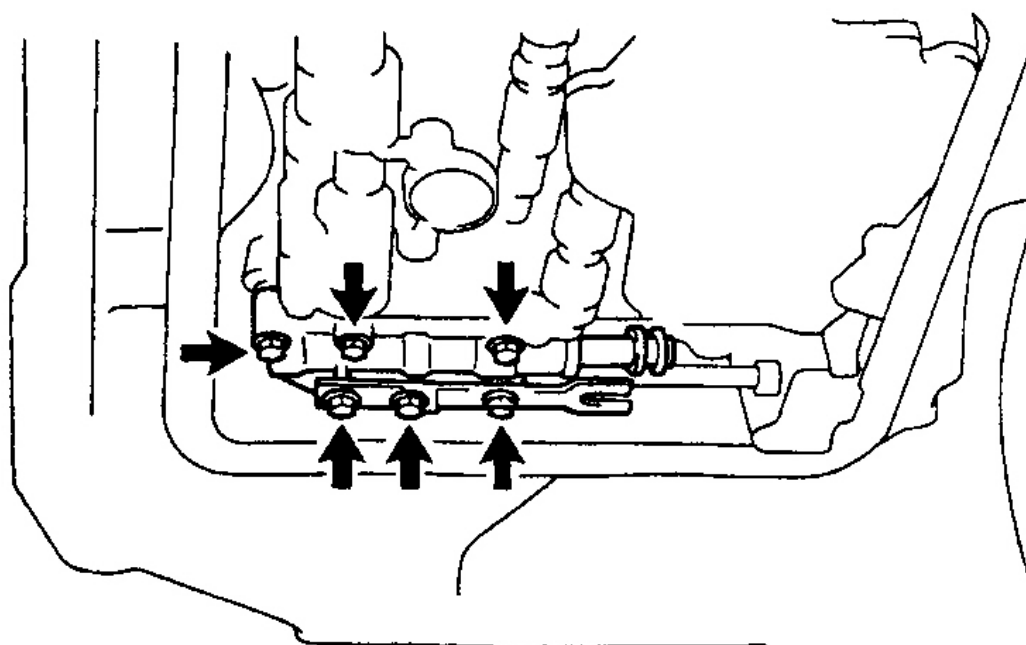
the 15 bolts and transmission oil pan and gasket. Carefully remove oil pan. Inspect for excess debris in bottom of oil pan. Go to next step.

2. Remove bolts, transmission fluid filter and gasket. Remove the 2 oil pipe bracket bolts. See **Fig. 10** . Remove the 4 oil pipes, using a screwdriver to gently pry down. See **Fig. 59** . Go to next step.
3. Remove the manual detent spring and manual valve body. See **Fig. 60** . Remove the 14 valve body bolts. Disconnect throttle valve cable and the valve body. See **Fig. 61** . Remove the 2nd brake apply gasket and governor oil strainer. See **Fig. 62** .
4. To install, replace the brake apply gasket. Connect throttle valve cable, being careful not to pinch the solenoid wiring. Install valve body and bolts. See **Fig. 63** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Go to next step.
5. Install the manual valve body and manual valve. Tighten bolts to specification. Install the 4 oil pipes and oil pipe bracket and bolts. Tighten to specification. Install the fluid filter and bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install magnets in the oil pan, install a NEW oil pan gasket and install and tighten drain plug. Fill with proper fluid to correct level. See **LUBRICATION** .



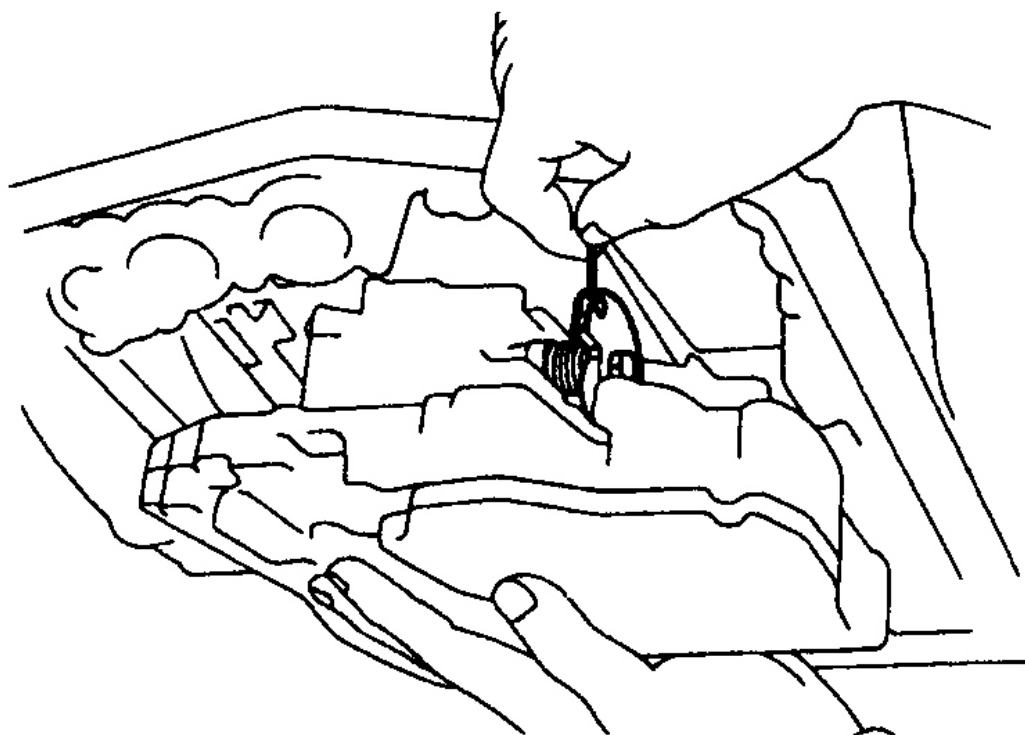
G00132051

Fig. 59: Removing & Installing Oil Pipes (A-131L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



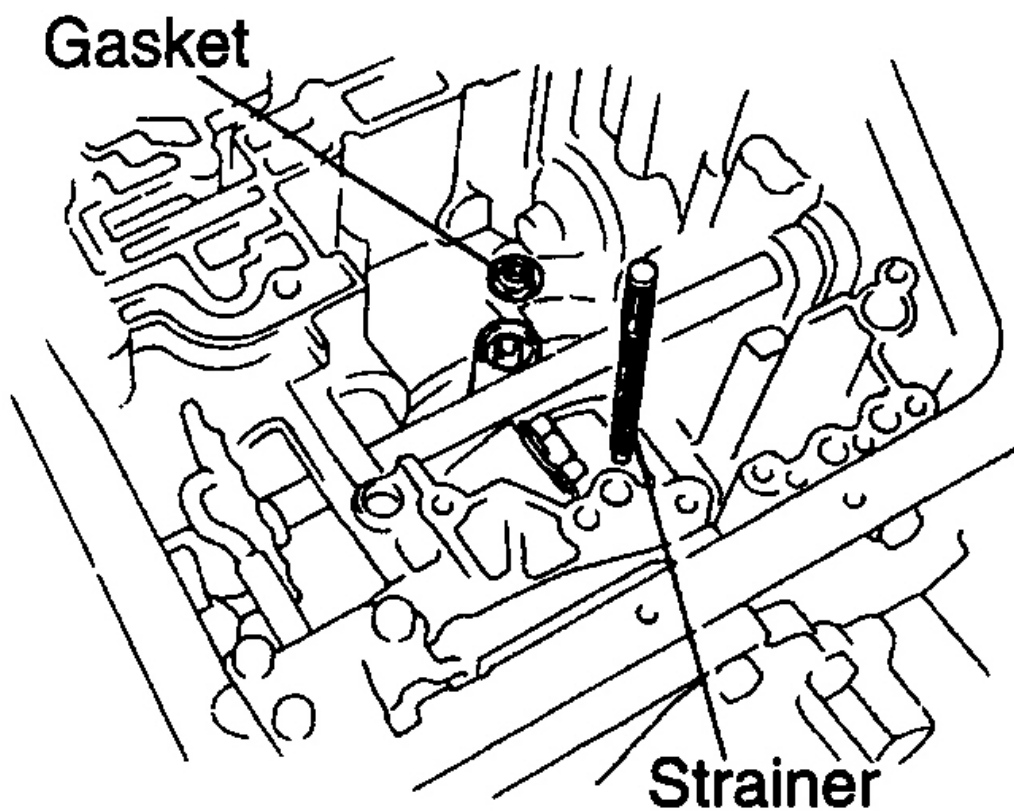
G00132052

Fig. 60: Removing Manual Detent Spring & Manual Valve Body (A-131L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



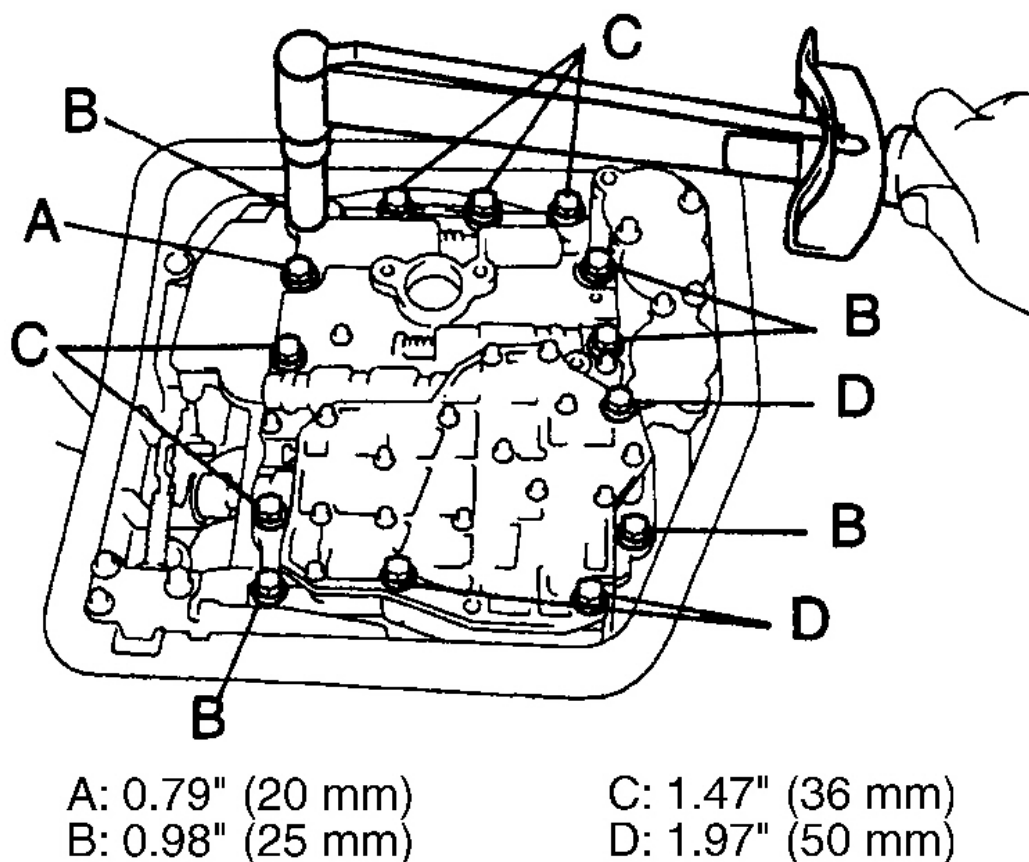
G00132053

Fig. 61: Disconnecting & Connecting Throttle Valve Cable (A-131L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132054

Fig. 62: Removing & Installing 2nd Brake Apply Gasket & Oil Strainer (A-131L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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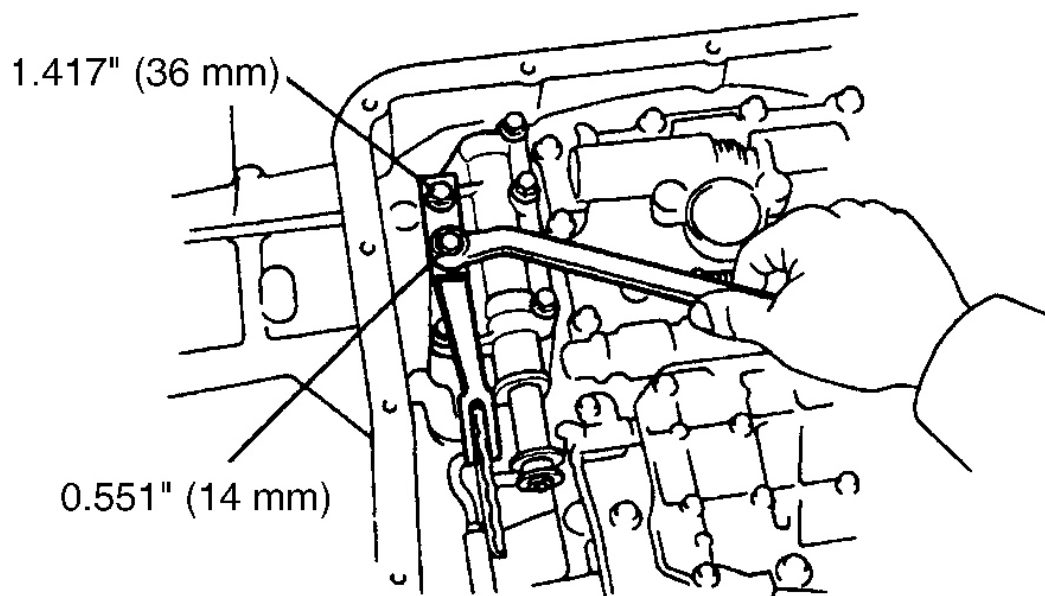
Fig. 63: Installing & Torquing Valve Body Bolts (A-131L)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Camry & Solara A-140E)

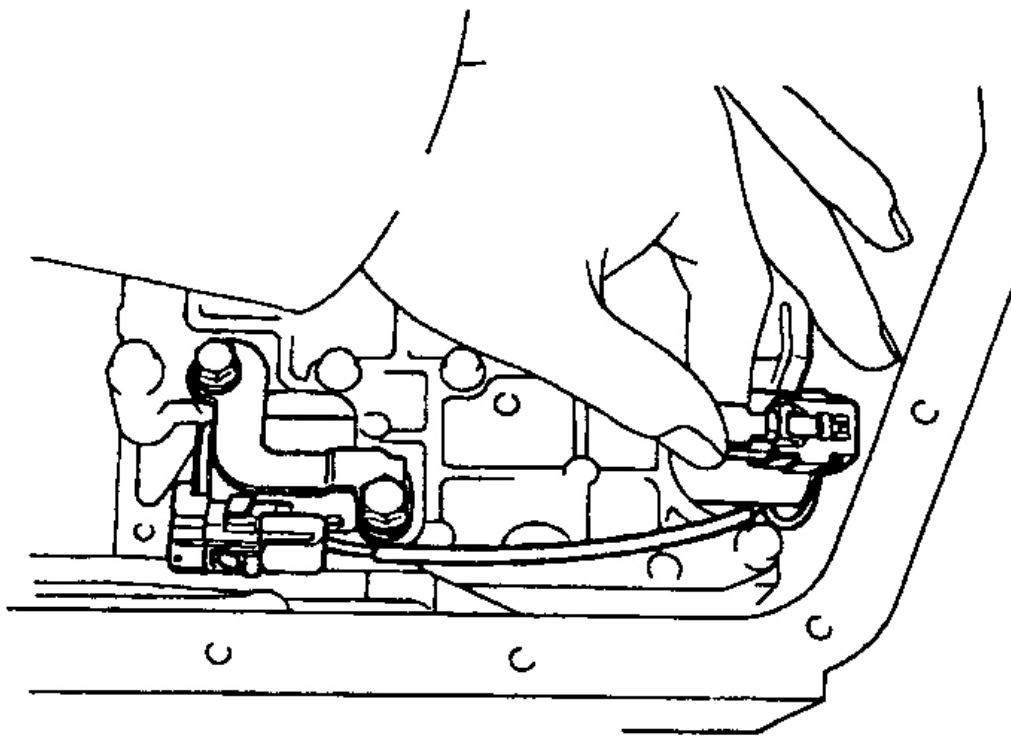
1. Raise and support the vehicle. Remove engine undercover. Remove drain plug and drain ATF. Remove the oil pan bolts, and carefully remove oil pan assembly. See **DRAINING & REFILLING** under LUBRICATION. Discard the gasket. Go to next step.
2. Remove the detent spring on manual valve body. See **Fig. 64** . Remove the manual valve body. Remove fluid filter assembly. Remove the oil pipe bracket. Disconnect the solenoid connectors. See **Fig. 65** . Carefully pry up on the 4 oil pipes using a large screwdriver. See **Fig. 66** . Remove the oil pipes. Go to next step.
3. Remove the 12 valve body bolts. Remove the throttle valve cable. See **Fig. 61** . Remove the valve body. Remove the 2nd brake apply gasket. Remove shift solenoid valves No. 1 and 2. See **Fig. 67** . Remove the 2 "O" rings from both solenoids.

4. For assembly, coat NEW "O" rings with ATF and install on the shift solenoids. Install both shift solenoids into valve body. Tighten to specification. See **TORQUE SPECIFICATIONS** . While holding the cam down by hand, slip the cable end into the slot, being careful not to pinch any wiring. Go to next step.
5. Install valve body using the proper bolts in the correct location. See **Fig. 68** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Using a plastic hammer, install the 4 pipes into the positions shown. See **Fig. 69** . Be careful not to damage pipes during installation. Go to next step.
6. Connect the black wire harness to shift solenoid No. 2 and the white wire to shift solenoid No. 1. Install the fluid filter, using the correct length bolts in the proper locations. See **Fig. 70** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Align manual valve with the pin on manual shaft lever. Lower manual valve body in place. Loosely install the 4 bolts first, then tighten to specification. See **TORQUE SPECIFICATIONS** . Go to next step.
7. Install detent spring on the manual valve body and temporarily install the 2 bolts first. Then tighten to specification. See **TORQUE SPECIFICATIONS** . Check that the manual valve lever is touching the center of detent spring tip roller. Install magnets in the oil pan. Install a NEW gasket on oil pan, and install oil pan and drain plug. Tighten to specification. See **TORQUE SPECIFICATIONS** . Fill with proper fluid to correct level. See **LUBRICATION** .



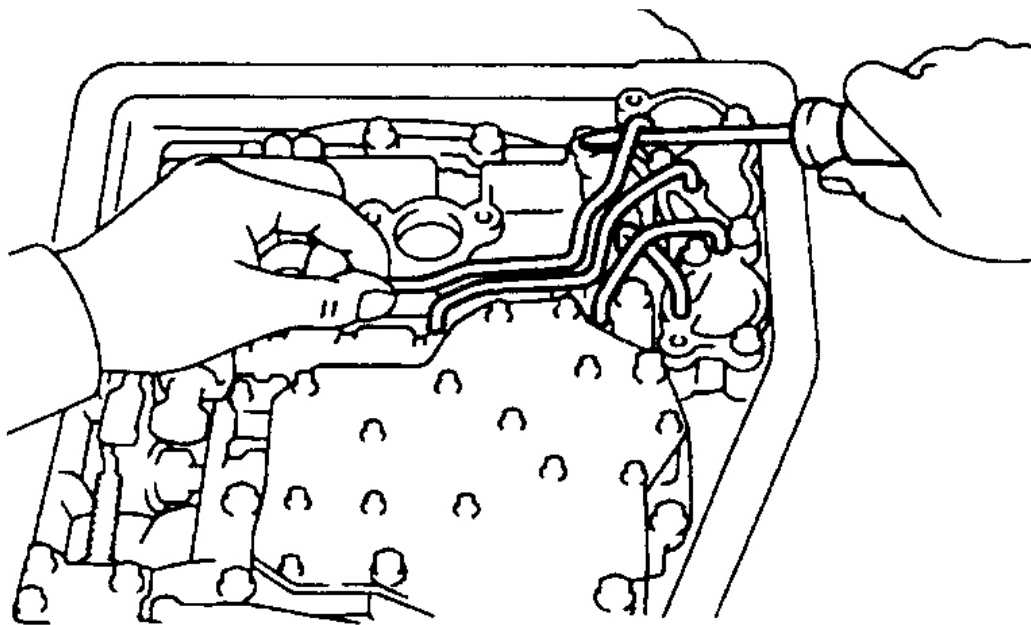
G00132070

Fig. 64: Removing & Installing Detent Spring (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



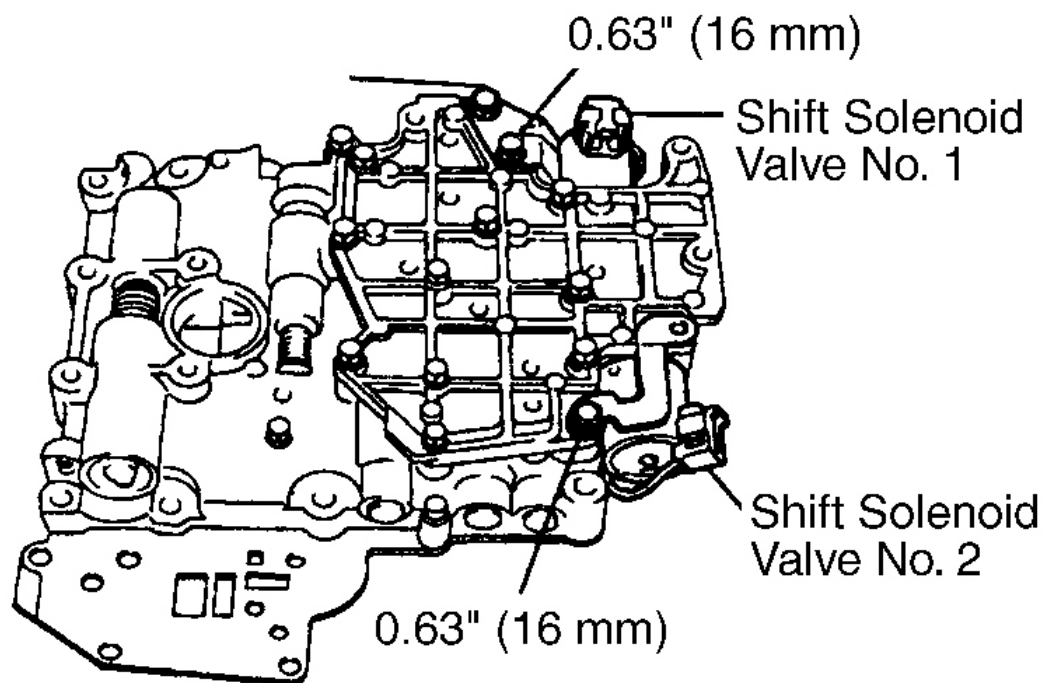
G00132071

Fig. 65: Disconnecting & Connecting Solenoid Connectors (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



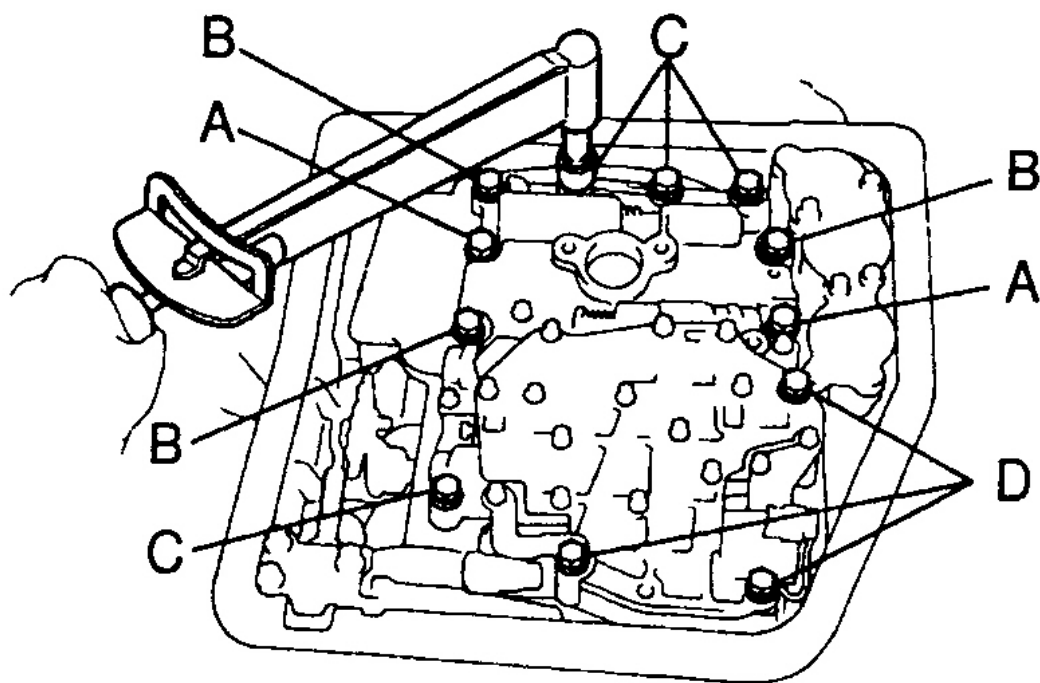
G00132072

Fig. 66: Removing Oil Feed Pipes (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132074

Fig. 67: Removing & Installing Shift Solenoids (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

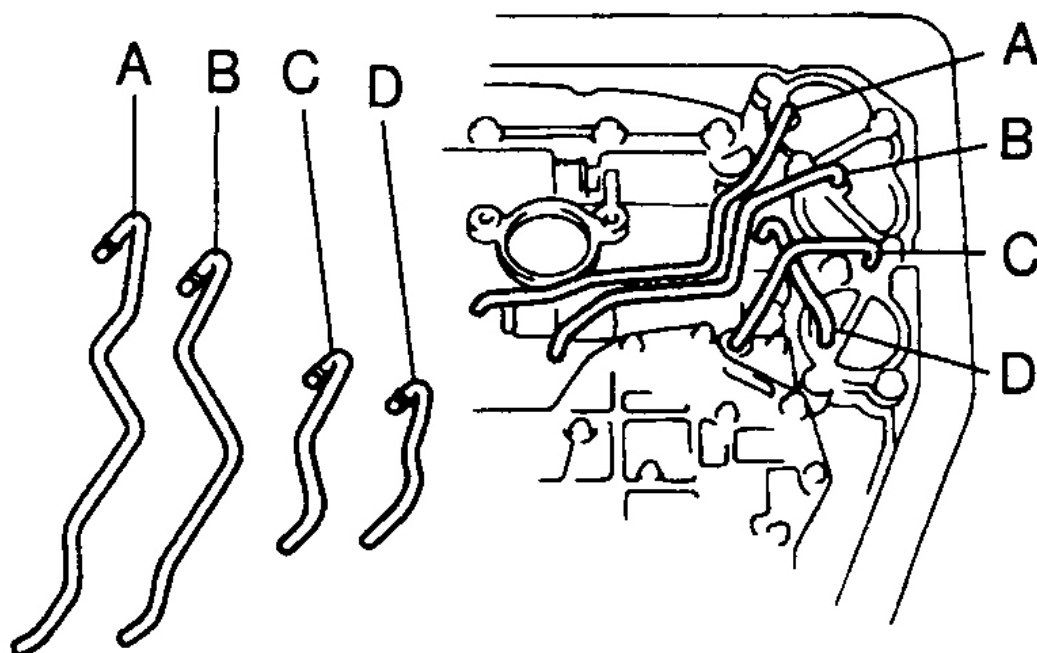


A: 0.79" (20 mm)
B: 0.98" (25 mm)

C: 1.42" (36 mm)
D: 1.97" (50 mm)

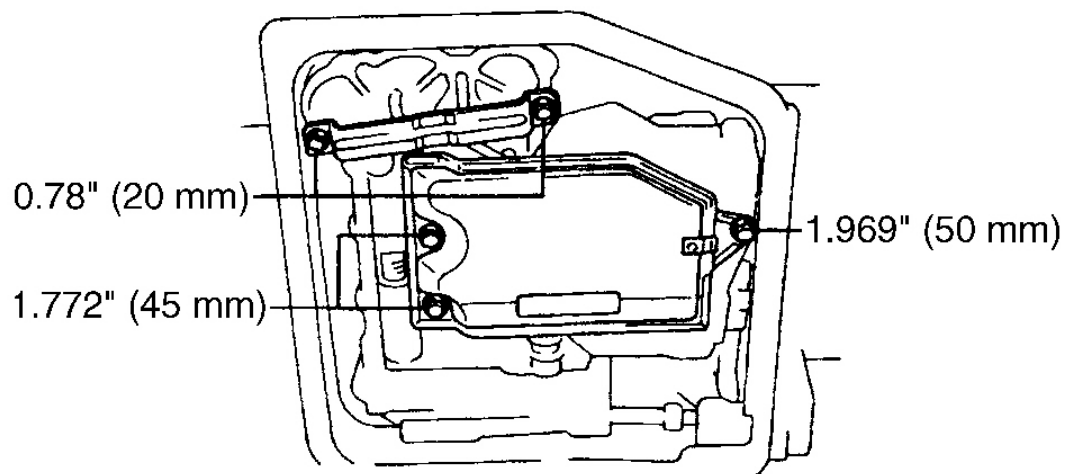
G00132075

Fig. 68: Tightening Valve Body Bolts & Bolt Length (A-140E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132076

Fig. 69: Installing Oil Feed Pipes (A-140E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



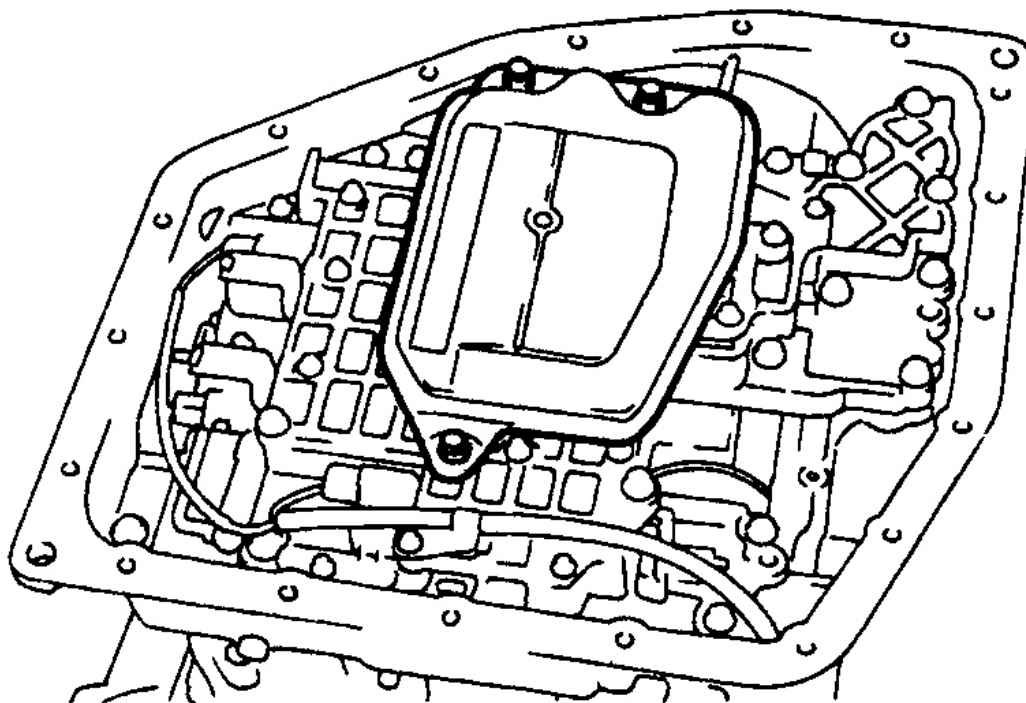
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Fig. 70: Installing Fluid Filter Bolts (A-140E)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

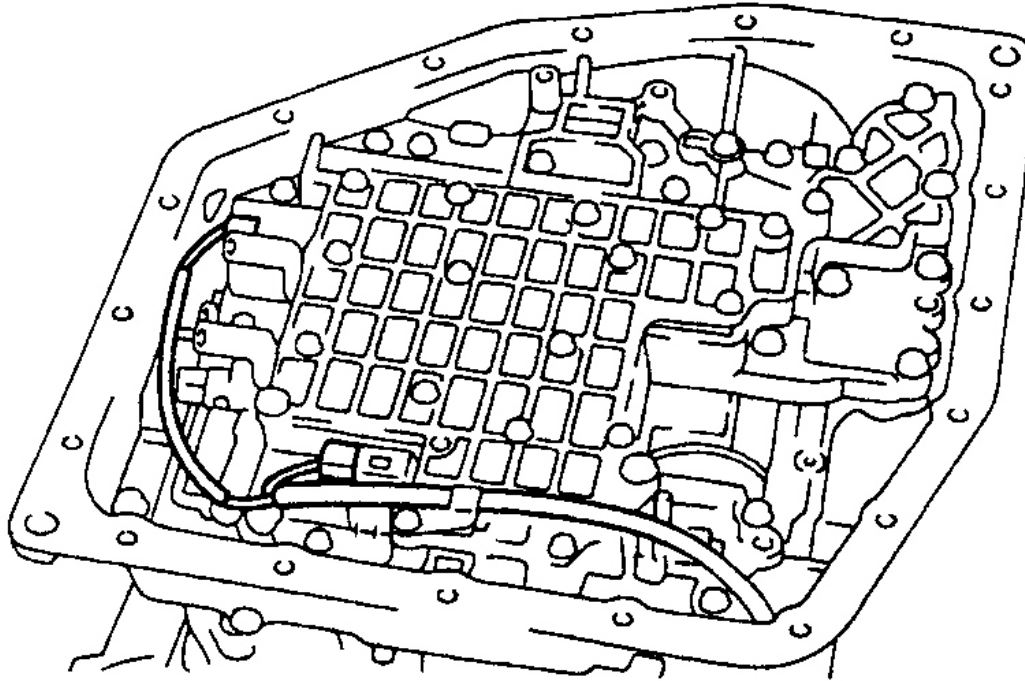
Removal & Installation (Corolla A-245E)

1. Raise and support vehicle. Remove left side engine undercover. Remove drain plug and drain ATF. Remove the 18 bolts. Discard the gasket. Remove the 3 bolts, fluid filter and gasket. See **Fig. 71** . Disconnect 3 solenoid connectors. See **Fig. 72** . Remove the bolt and manual detent spring. See **Fig. 73** . Go to next step.
2. Remove the bolt and wire retainer. See **Fig. 74** . Remove the 17 bolts. See **Fig. 77** . Disconnect throttle valve cable from the cam. While disconnecting the manual valve connecting rod from the manual valve lever, remove valve body with the manual valve together. See **Fig. 76** .
3. To install, while connecting the manual valve connecting rod to the manual valve lever, install valve body with the manual valve together. Connect throttle valve cable to the cam. Install the 17 bolts. Install wire retainer and bolt. Install manual detent spring and bolt. Go to next step.
4. Connect 3 solenoid connectors. Install a NEW gasket to fluid filter. Install fluid filter and gasket with the 3 bolts. See **Fig. 11** . Install 2 magnets in oil pan. Install a NEW gasket on the oil pan and install on transaxle. Install the 18 bolts and drain plug. Install left side engine undercover. Fill with proper fluid to correct level. See **LUBRICATION** .



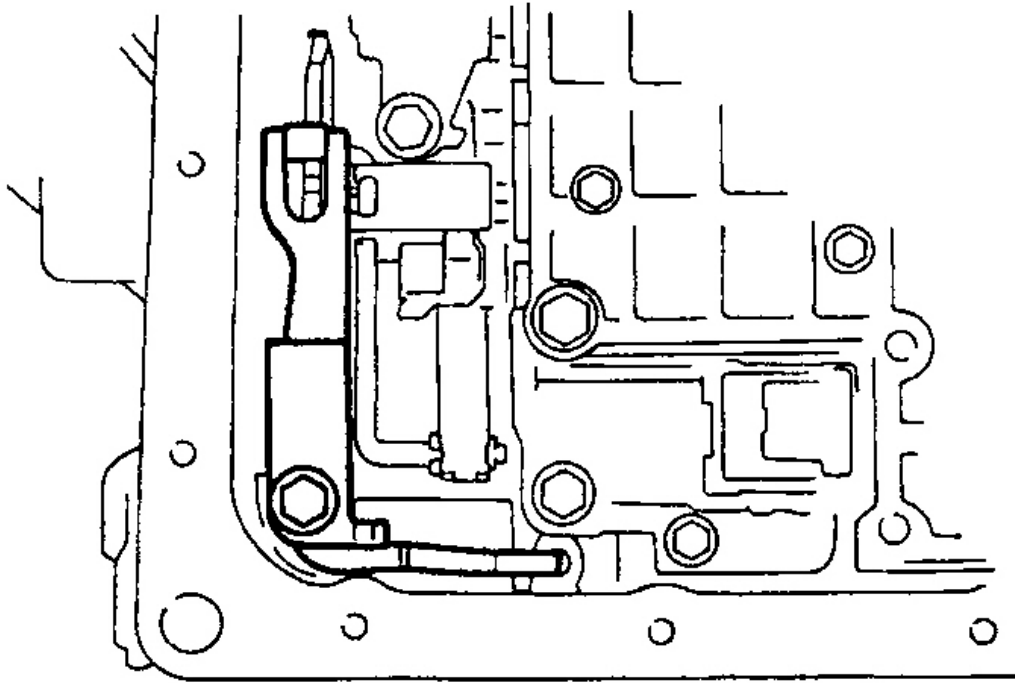
G00132063

Fig. 71: Removing & Installing Fluid Filter (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



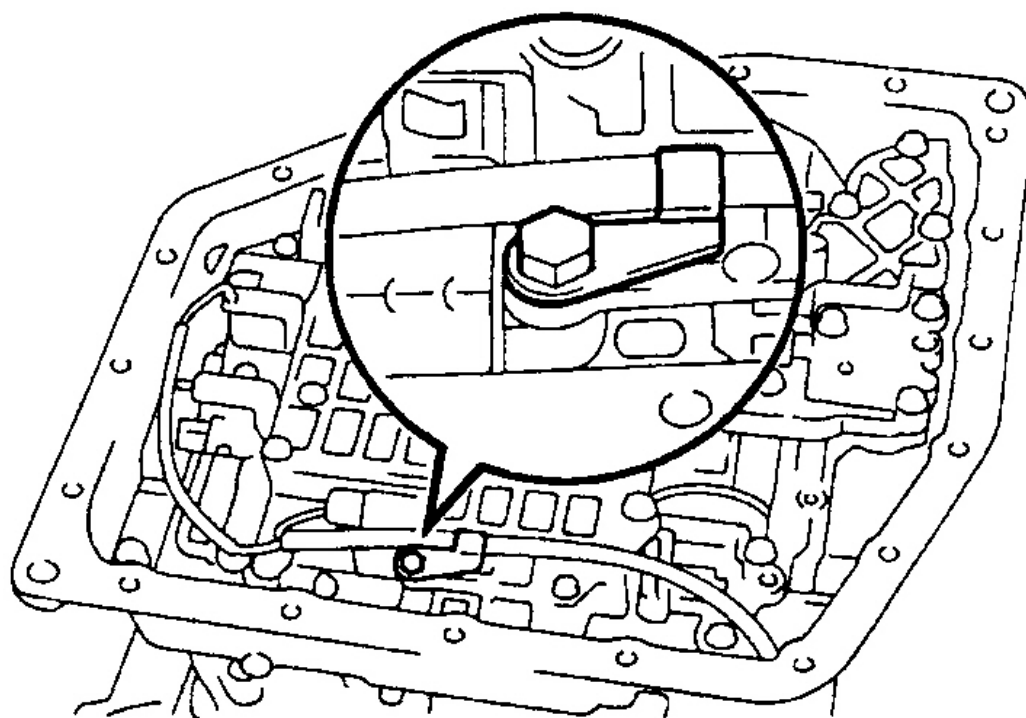
G00132064

Fig. 72: Disconnecting & Connecting Solenoid Connectors (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



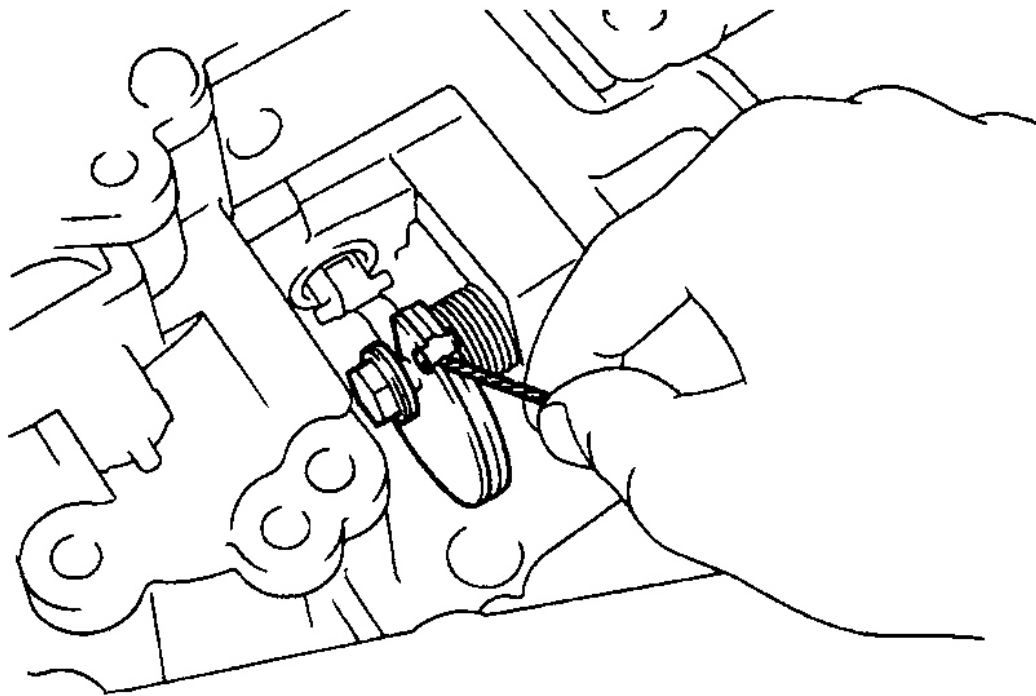
G00132065

Fig. 73: Removing & Installing Manual Detent Spring (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



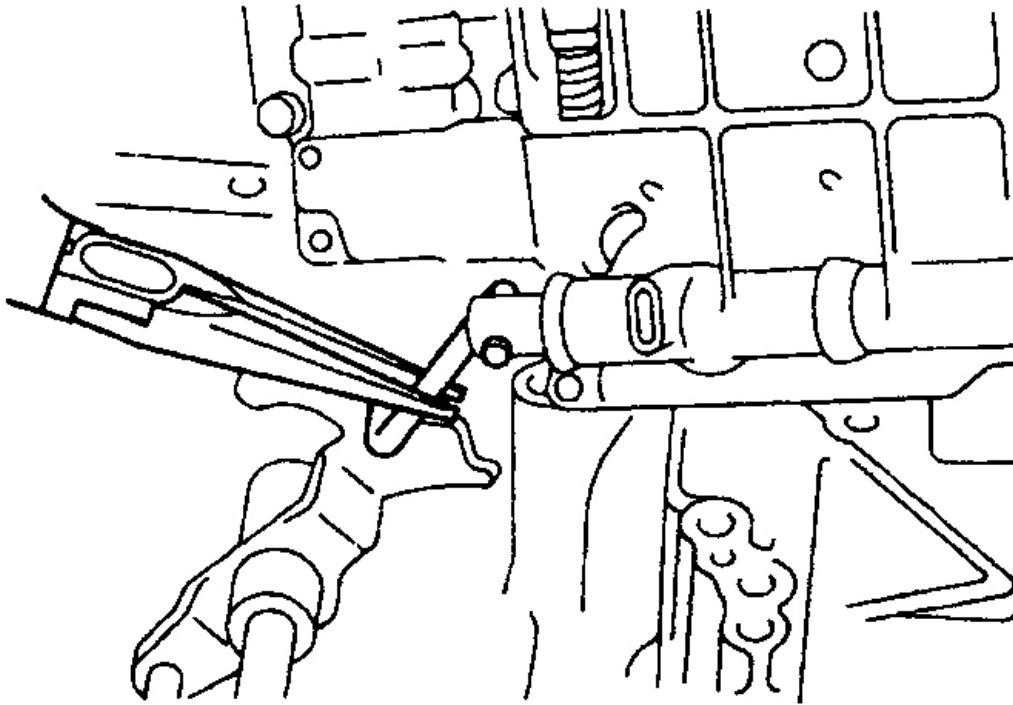
G00132066

Fig. 74: Removing & Installing Wire Retainer Bolt (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



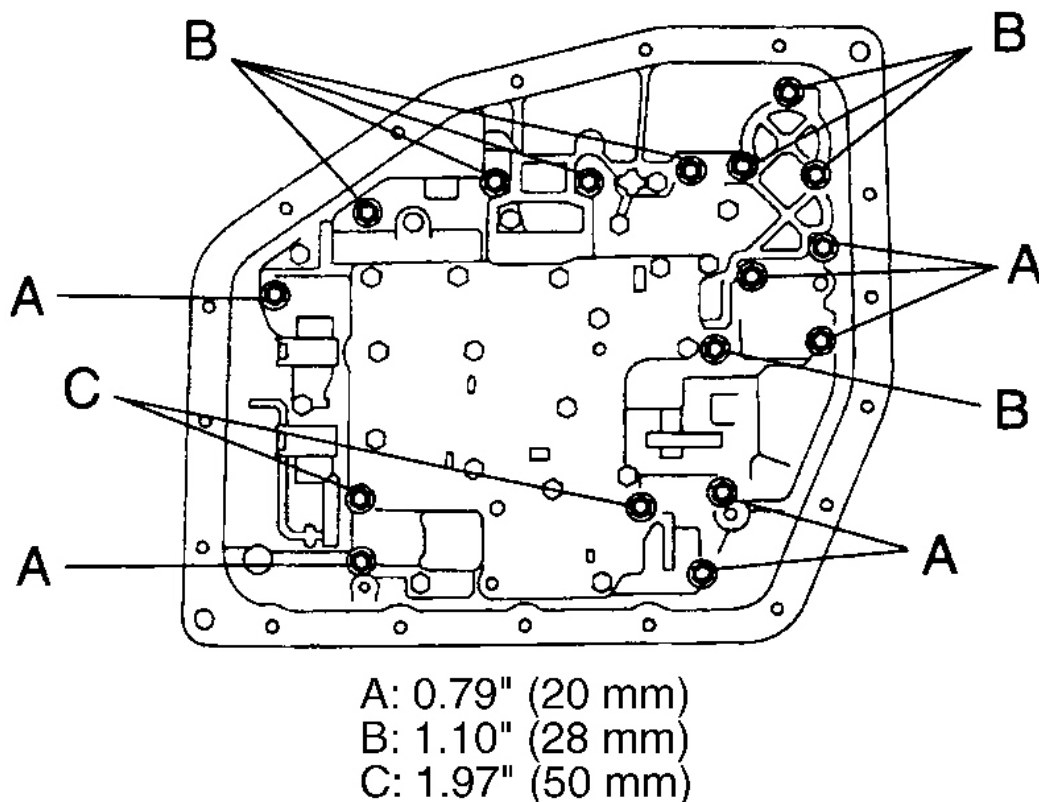
G00132067

Fig. 75: Disconnecting & Connecting Throttle Valve Cable At Cam (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132068

Fig. 76: Removing & Installing Manual Valve With Valve Body (A-245E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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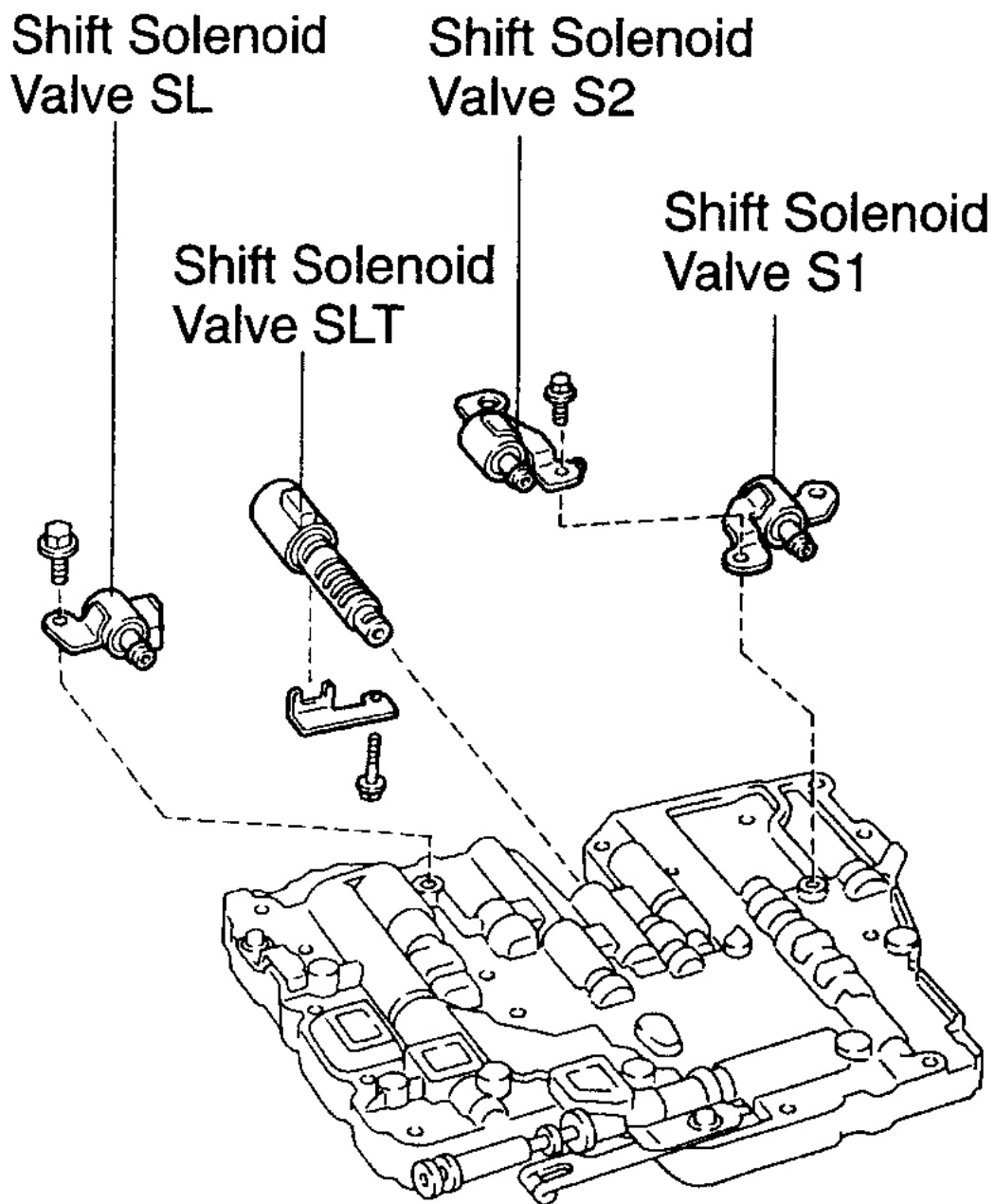
Fig. 77: Tightening Valve Body Bolts & Bolt Length (A-245E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner A-340E, A-340F & A-343F)

CAUTION: When working with FIPG sealing material, you must observe the following:
 Using a razor blade and gasket scraper, remove all of FIPG sealing material from the gasket surfaces. Thoroughly clean all components to remove all loose material. Clean both sealing surfaces with a non-residue solvent. Apply FIPG in an approximately 0.04" (1 mm) wide bead along the sealing surface. Parts must be assembled within 10 minutes of application. Otherwise, the FIPG sealing material must be removed and reapplied.

1. Raise and support the vehicle. Remove oil pan. See **DRAINING & REFILLING** under LUBRICATION. Remove fluid filter. See **Fig. 81** or **Fig. 82** . Remove oil pipes (if equipped). Disconnect all the shift solenoid connectors. Remove the valve body bolts and lower valve body. On models with 4.7L engines, disconnect throttle valve cable from the cam. See **Fig. 80** . Go to next step.

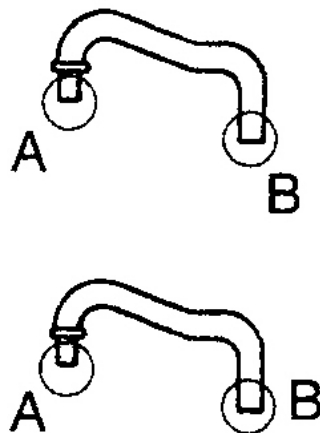
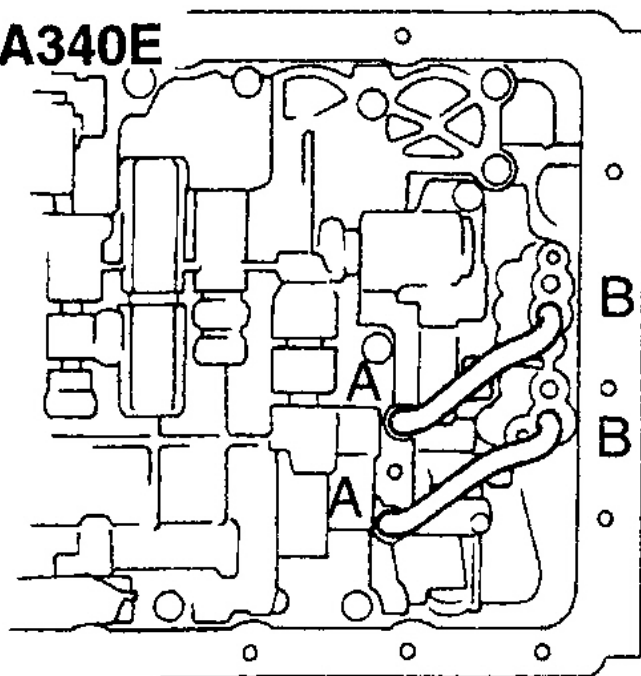
2. Disconnect wiring harness connectors from shift solenoids. Remove shift solenoid valve lock plate bolts and shift solenoid valves. See **Fig. 78** . Remove the "O" rings from shift solenoid valves. On models with 3.4L engines, remove the detent spring and manual valve.
3. To install, on models with 3.4L engines, install manual valve and the detent spring and tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Install NEW "O" rings on the shift solenoid valves. Go to next step.
4. Install the shift solenoid valves and lock plate with the bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Align the groove of the manual valve with pin of lever. Install valve body and bolts. See **Fig. 83 -Fig. 87** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Go to next step.
5. Install shift solenoid wiring harness connectors. On models with 4.7L engines, connect the throttle valve cable from the cam. Install fluid filter. Install oil pipes if equipped. Install oil pan and bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Fill with proper fluid to correct level. See **LUBRICATION** .



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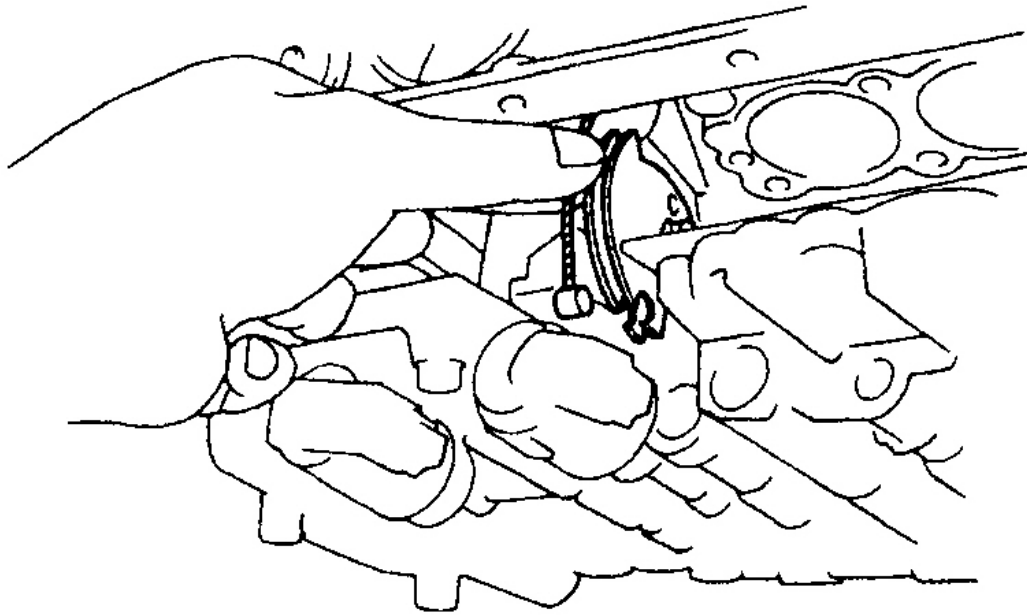
Fig. 78: Removing & Installing Shift Solenoids (Land Cruiser & Sequoia)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A340E



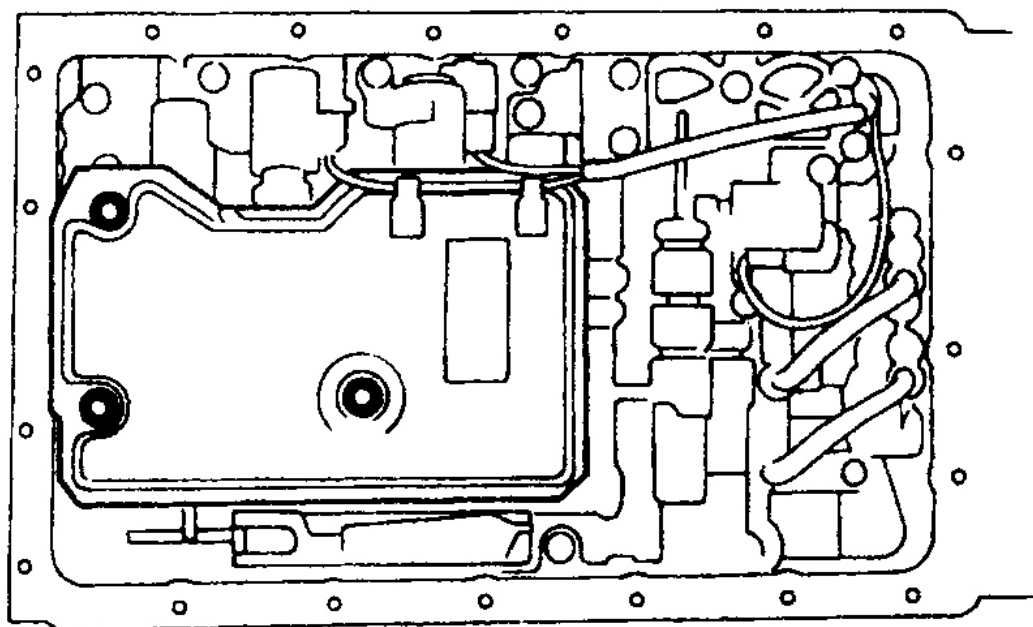
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Fig. 79: Removing & Installing Oil Feed Pipes (A-340E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



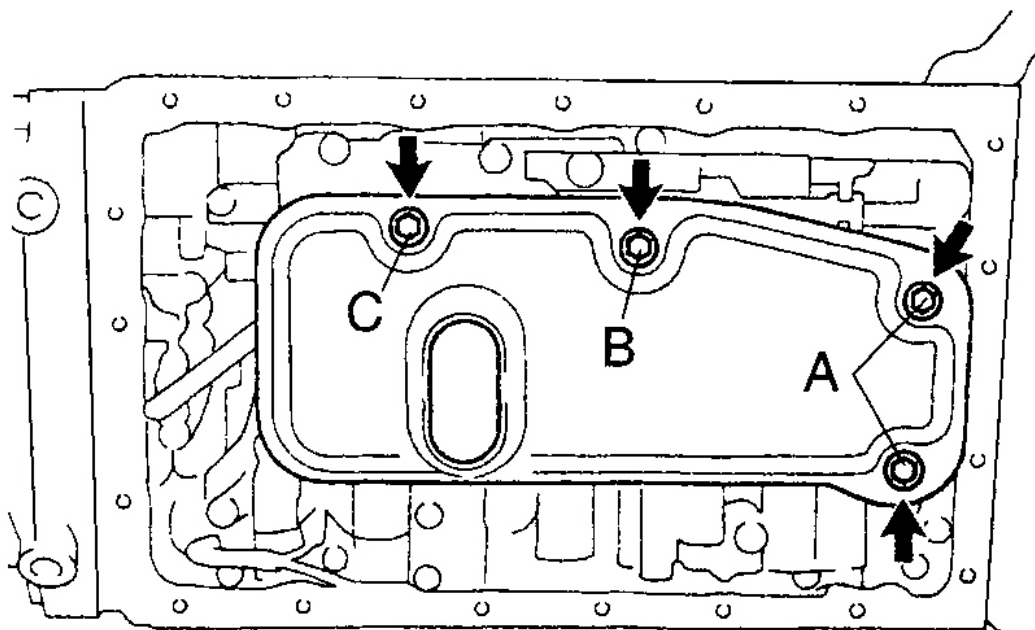
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Fig. 80: Removing & Installing Throttle Valve Cable To Cam
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134892

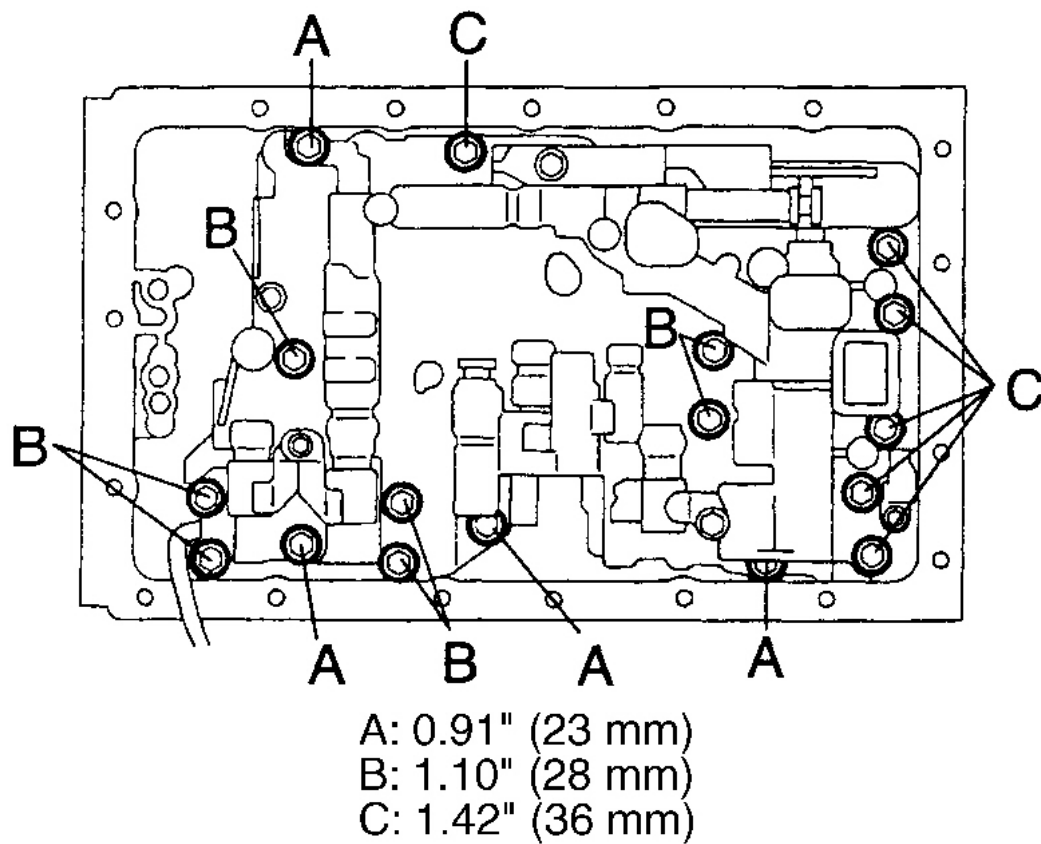
Fig. 81: Removing & Installing Fluid Filter (A-340E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 0.55" (14 mm)
B: 0.79" (20 mm)
C: 0.91" (23 mm)

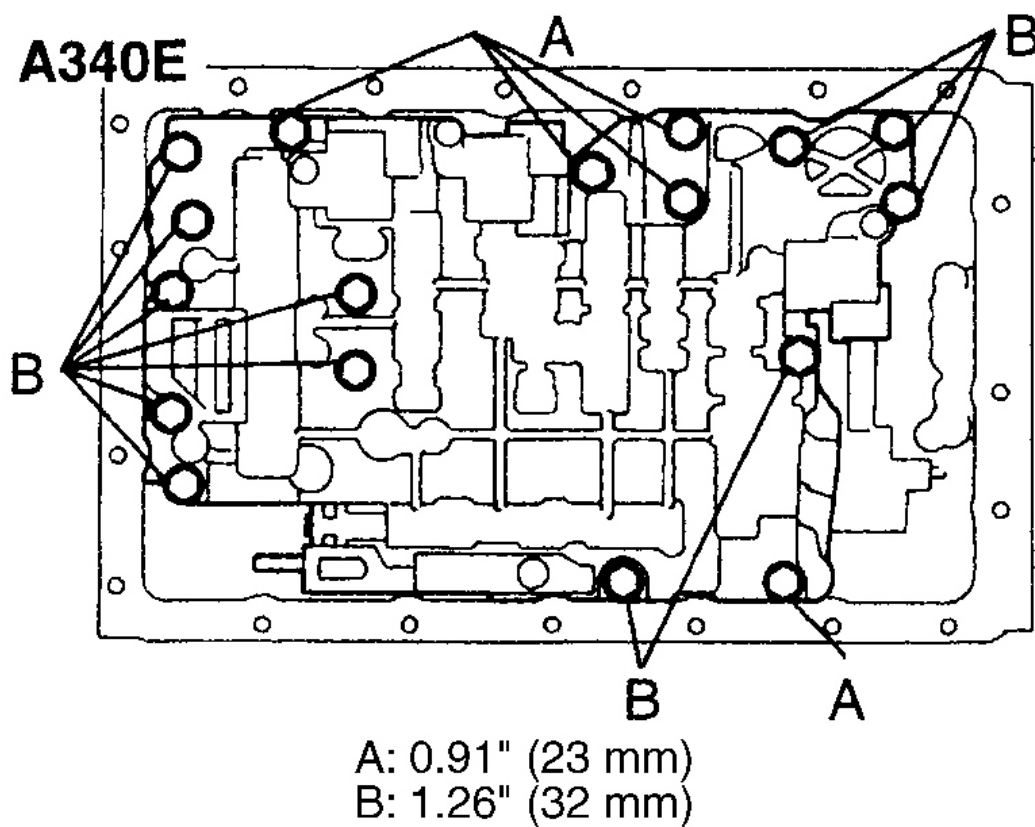
G00134893

Fig. 82: Removing & Installing Fluid Filter (A-340F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



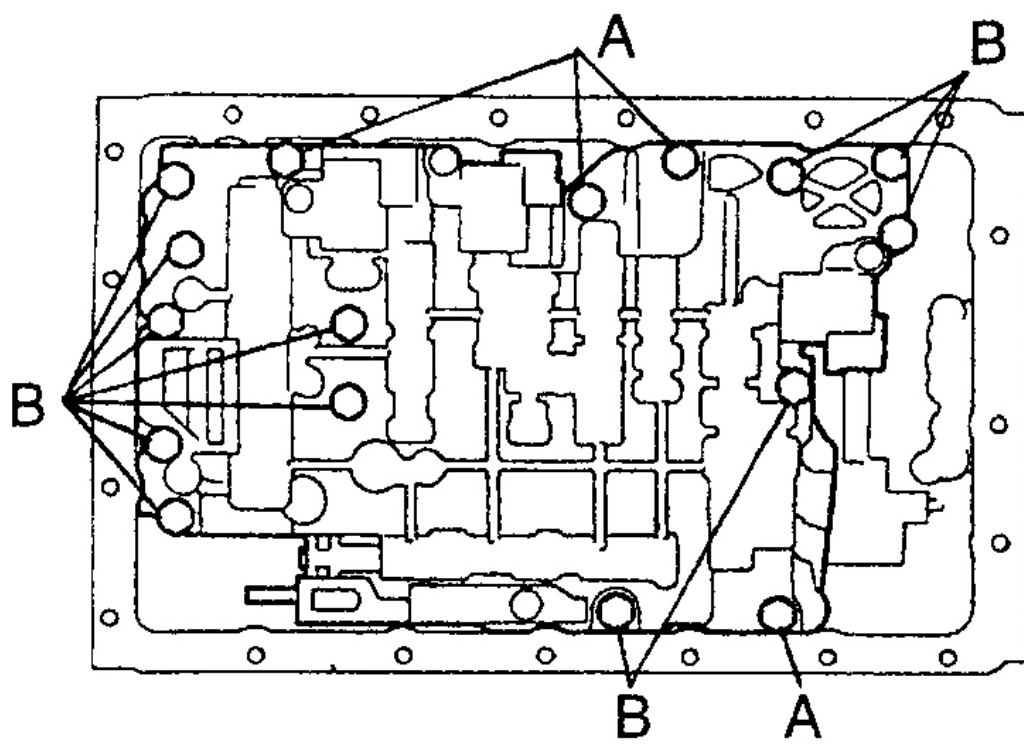
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Fig. 83: Removing & Installing Valve Body Bolts (Land Cruiser & Sequoia)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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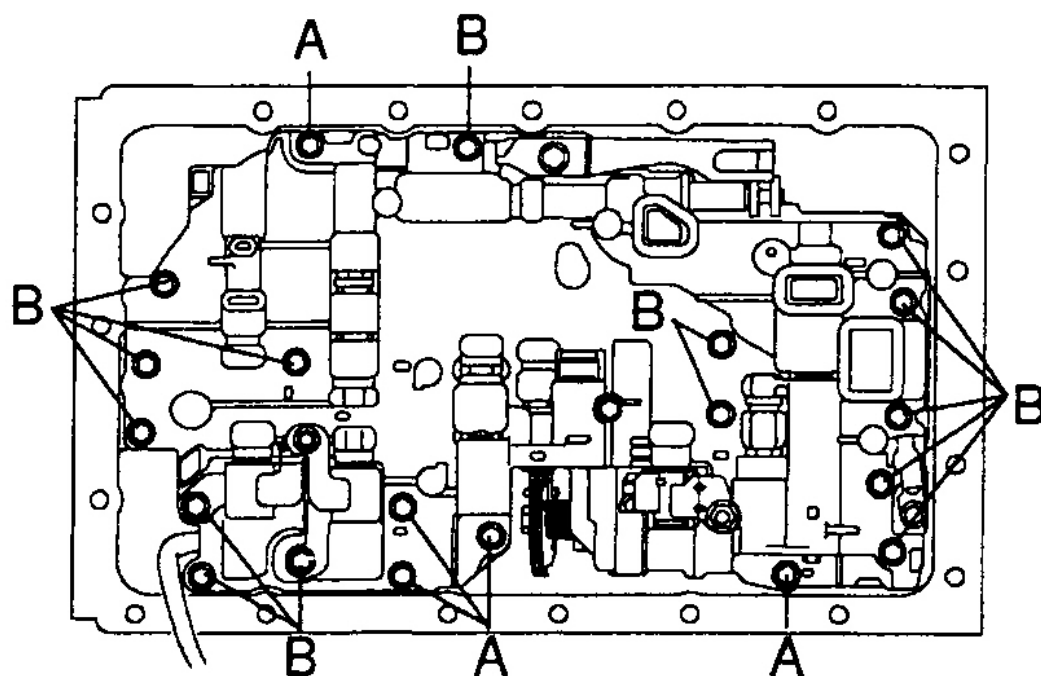
Fig. 84: Removing & Installing Valve Body Bolts (Tacoma A-340E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 0.91" (23 mm)
B: 1.26" (32 mm)

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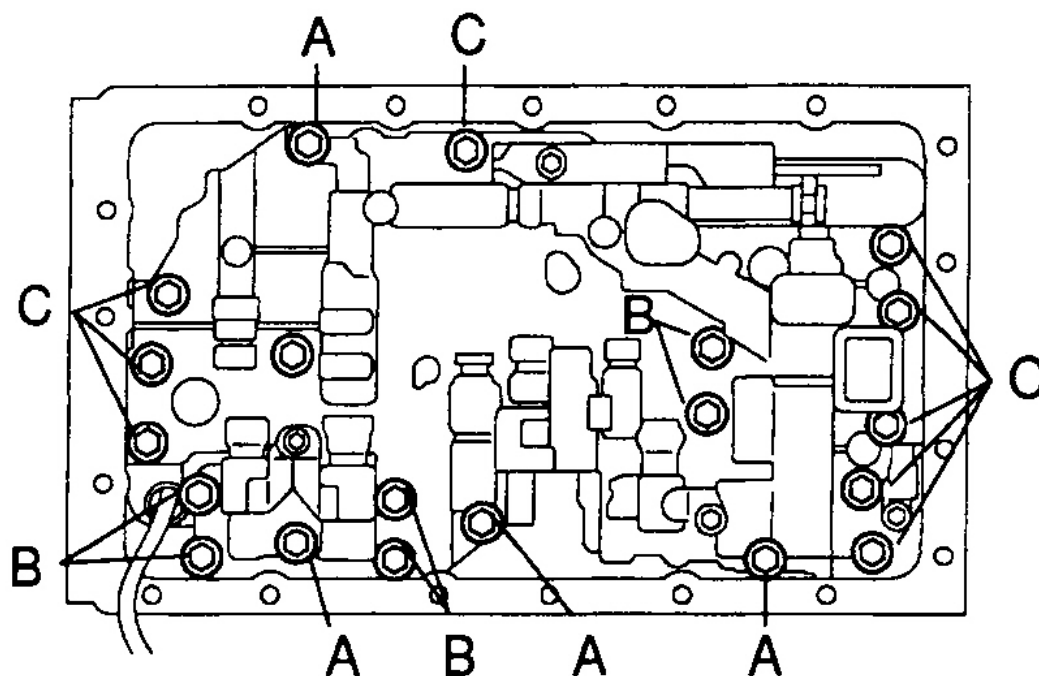
Fig. 85: Removing & Installing Valve Body Bolts (Tacoma A-340F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 0.91" (23 mm)
B: 1.26" (32 mm)

G00134894

Fig. 86: Removing & Installing Valve Body Bolts (Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 0.91" (23 mm)
 B: 1.10" (28 mm)
 C: 1.42" (36 mm)

G00134895

Fig. 87: Removing & Installing Valve Body Bolts (4Runner)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Tacoma A-44D)

NOTE: To prevent contamination, clean the exterior of transmission.

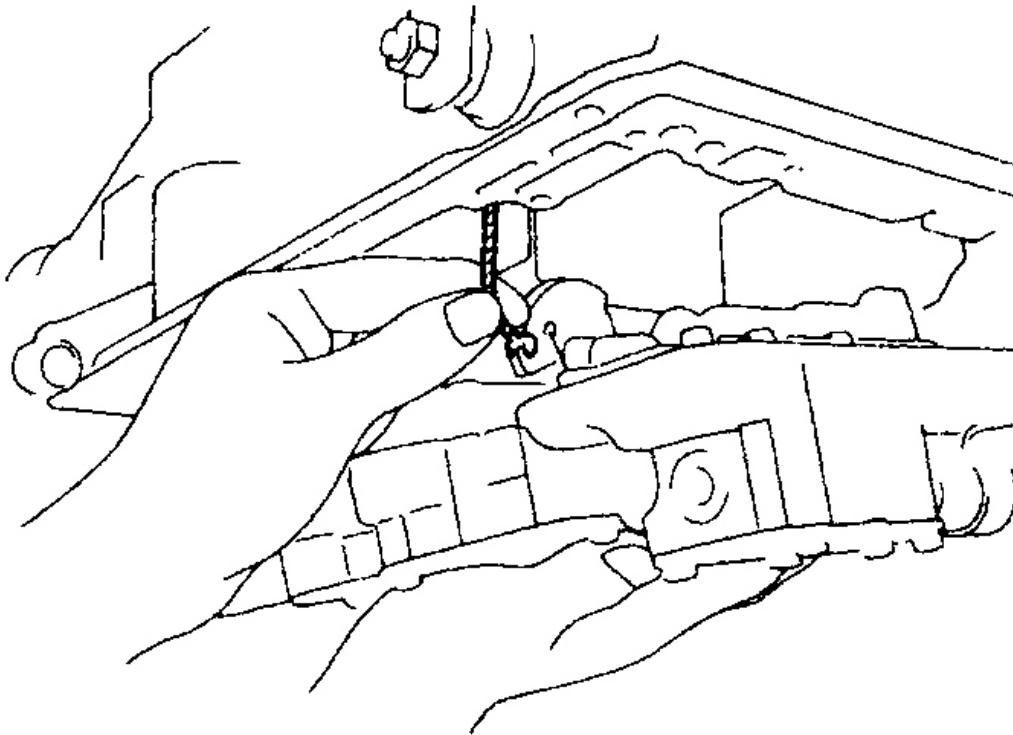
1. Raise and support the vehicle. Remove drain plug and drain ATF. Remove the oil pan. See **DRAINING & REFILLING** under LUBRICATION. Remove the gasket and clean the sealing surface. Go to next step.

CAUTION: Be careful not to bend or damage the pipes.

2. Pry up both pipe ends with a large screwdriver and remove the 2 pipes. See **Fig. 15** . Remove the 5 bolts, fluid filter and gasket. Remove the 17 valve body bolts. See **Fig. 90** . Disconnect the throttle valve cable

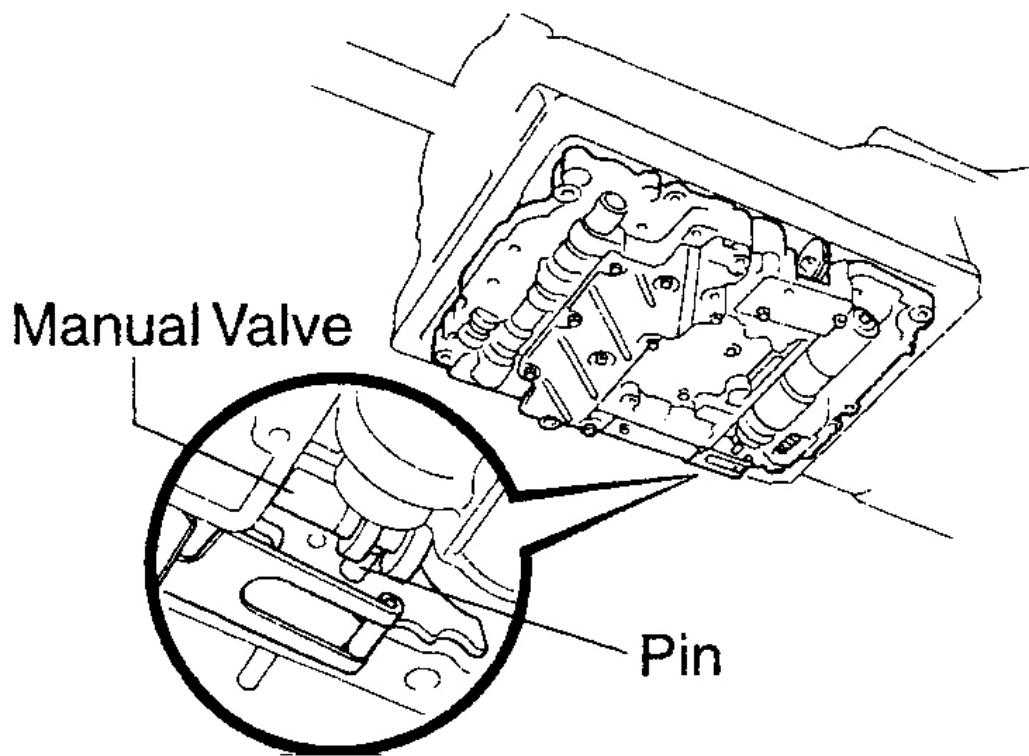
from the cam. See **Fig. 88** . Remove valve body.

3. To install, hold the cam down with your hand, and connect throttle valve cable. Install the 17 bolts as shown. See **Fig. 90** . Align the groove of manual valve to the pin of lever. See **Fig. 89** . Install a NEW gasket to fluid filter. Install fluid filter to valve body with the 5 bolts. See **Fig. 16** . Go to next step.
4. Using a plastic hammer, install the 2 pipes. Install the 2 magnets in oil pan. Install a NEW gasket on the transmission case. Install oil pan and drain plug. Tighten to specification. See **TORQUE SPECIFICATIONS** . Fill with proper fluid to correct level. See **LUBRICATION** .



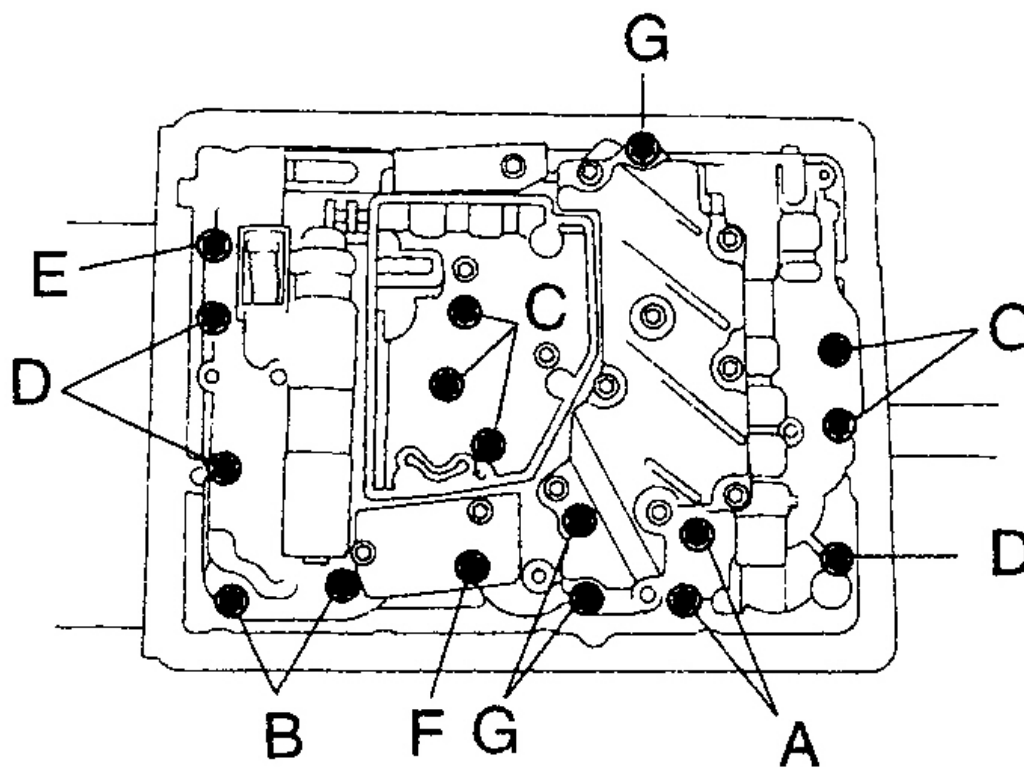
G00132045

Fig. 88: Disconnecting & Connecting Throttle Cable From Cam (A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132047

Fig. 89: Aligning Manual Valve To Lever Pin (A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 0.79" (20 mm)

B: 0.98" (25 mm)

C: 1.18" (30 mm)

D: 1.42" (35 mm)

E: 1.57" (40 mm)

F: 1.85" (47 mm)

G: 2.17" (55 mm)

G00132046

Fig. 90: Identifying Valve Body Bolt Lengths & Location (A-44D)

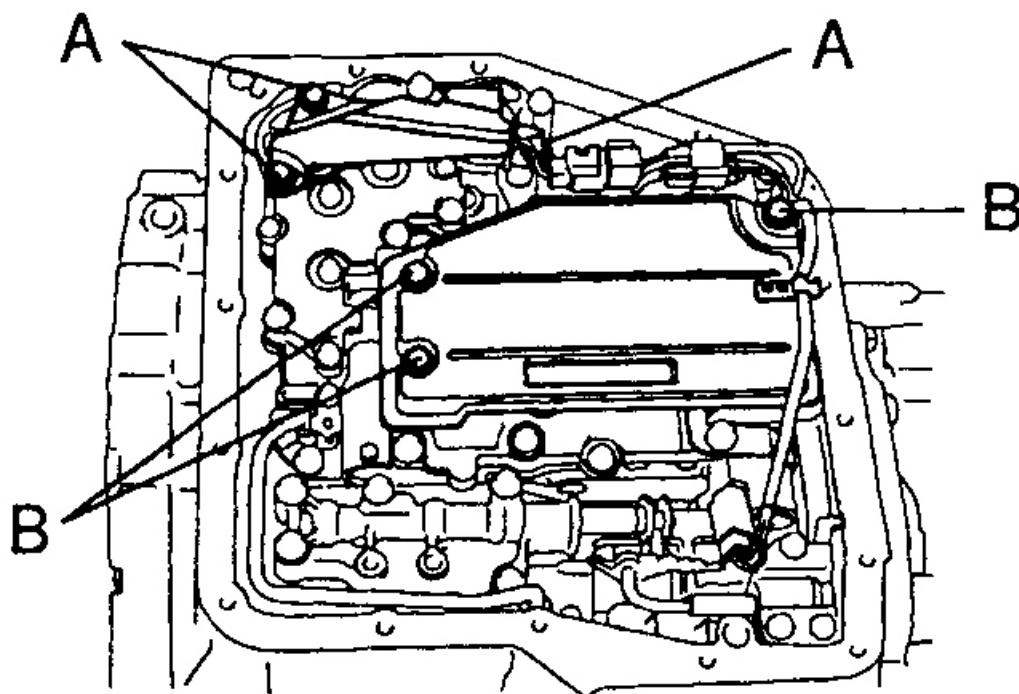
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Avalon, Camry, Solara & Sienna A-541E)

1. Raise and support vehicle. Using a hexagon wrench, remove drain plug and drain fluid into a suitable container. Remove oil pan bolts, and carefully remove oil pan assembly. See **DRAINING & REFILLING** under LUBRICATION. Discard the gasket. Remove the 3 bolts and fluid filter. See **Fig. 91**. Remove the 3 bolts and apply pipe bracket. Pry up both pipe ends with a large screwdriver and remove the 5 oil feed pipes. See **Fig. 92**. Go to next step.
2. Remove the 2 bolts and detent spring. Remove the bolt and pry up on the pipe with a screwdriver and

remove the pipe. Remove the 5 manual valve body bolts and manual valve body. See **Fig. 93** . Remove the 2 oil feed pipe bolts, connector clamp and pipe retainer. See **Fig. 95** . Pry up on the pipe with a screwdriver and remove the pipe. Go to next step.

3. Remove the 9 valve body bolts. Disconnect throttle valve cable from the cam and remove valve body. Remove the 2nd apply gasket. Remove the 3 bolts, shift solenoid valve No. 1 and No. 2 with the retainer. See **Fig. 96** . Go to next step.
4. Remove the "O" rings from shift solenoid valve No. 1 and No. 2. Remove the bolt and shift solenoid valve SL. See **Fig. 97** . Remove the "O" rings from shift solenoid valve SL. Remove the bolt and shift solenoid valve SLN. See **Fig. 98** . Remove the "O" ring from shift solenoid valve SLN. Go to next step.
5. To install, coat the 2 NEW "O" rings with ATF and install them on shift solenoid valve SL and shift solenoid valve SLN. Install solenoids and tighten the bolts. See **TORQUE SPECIFICATIONS** . Go to next step.
6. Coat the 2 NEW "O" rings with ATF and install it to shift solenoid valve SLN. Install shift solenoid valve SLN. Install and tighten the bolt. Coat the 2 NEW "O" rings with ATF and install it to shift solenoid valve No. 1 and No. 2. Install the solenoids valves. Install and tighten the 3 bolts. While holding the cam down with your hand, slip the cable end into the slot. Install valve body. Install and tighten the 9 bolts. Hand tighten the bolts first, then tighten to specification. See **TORQUE SPECIFICATIONS** . Install apply pipe. Go to next step.
7. Install the connector clamp and pipe retainer. Install and tighten the 2 bolts. Align the manual valve with the pin on the manual shaft lever. Install manual valve body. Hand tighten the 5 bolts first. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Place the detent springs on the manual valve body and hand tighten the 2 bolts first. Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Check that the manual valve lever is touching the center of the detent spring tip roller. Using a plastic hammer, install the pipe into position. Install and tighten the bolt to specification. Using a plastic hammer, install the 5 oil feed pipes into position. Go to next step.
8. Install the fluid filter and apply pipe bracket. Install and tighten the 6 bolts to specification. See **TORQUE SPECIFICATIONS** . Install the 3 magnets in indentations of oil pan. Install oil pan with a NEW gasket. Install the 17 oil pan bolts and the drain plug and tighten to specification. See **TORQUE SPECIFICATIONS** . Fill with proper fluid to correct level. See **LUBRICATION** .



Torque - A: 89 INCH Lbs. (10 N.m)

B: 97 INCH Lbs. (11 N.m)

Length - A: 0.866" (22 mm)

B: 2.087" (53 mm)

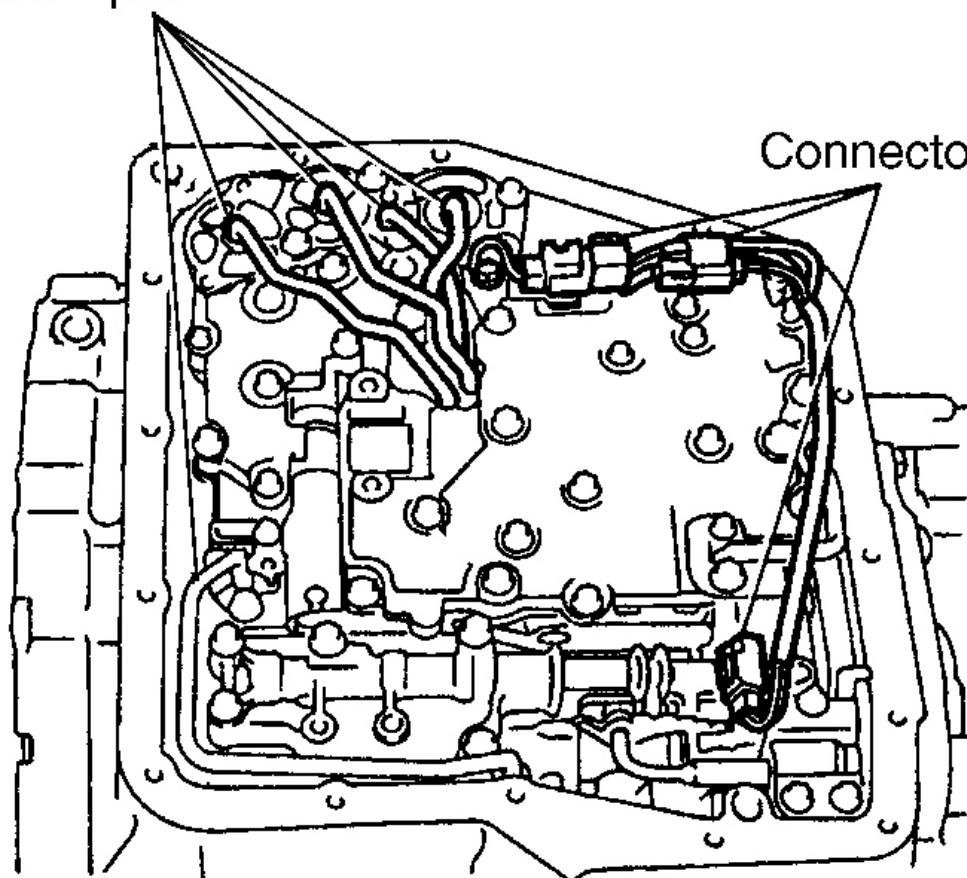
G00134944

Fig. 91: Removing & Installing Fluid Filter Bolts & Filter (A-541E)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

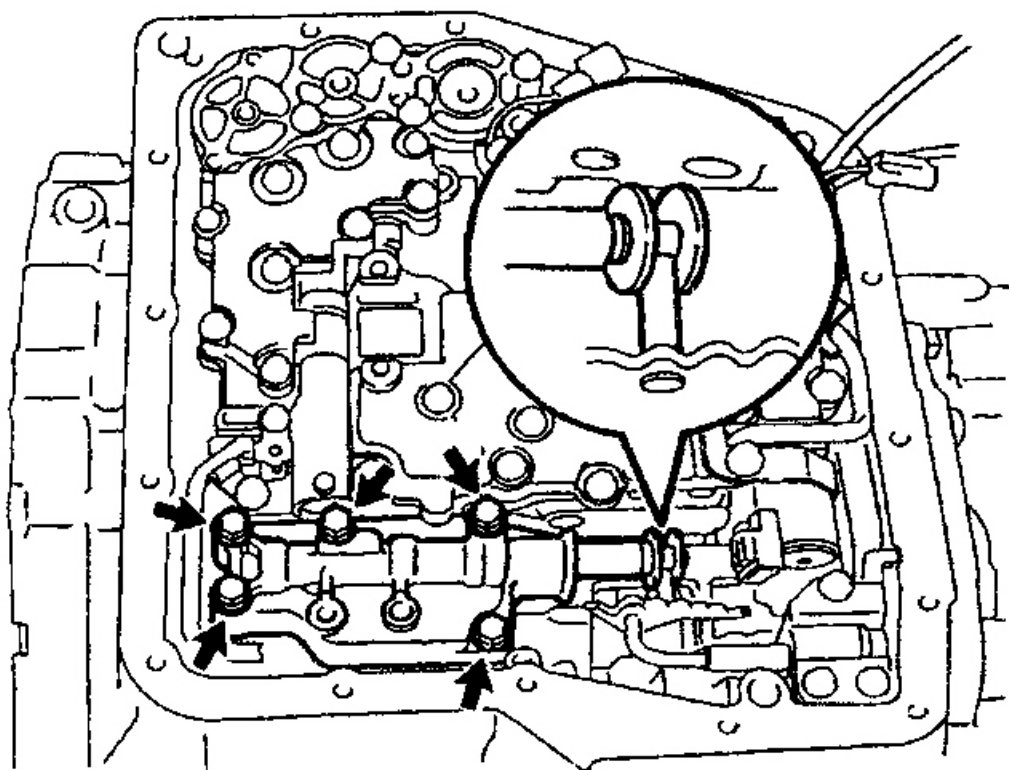
Oil Pipes

Connectors



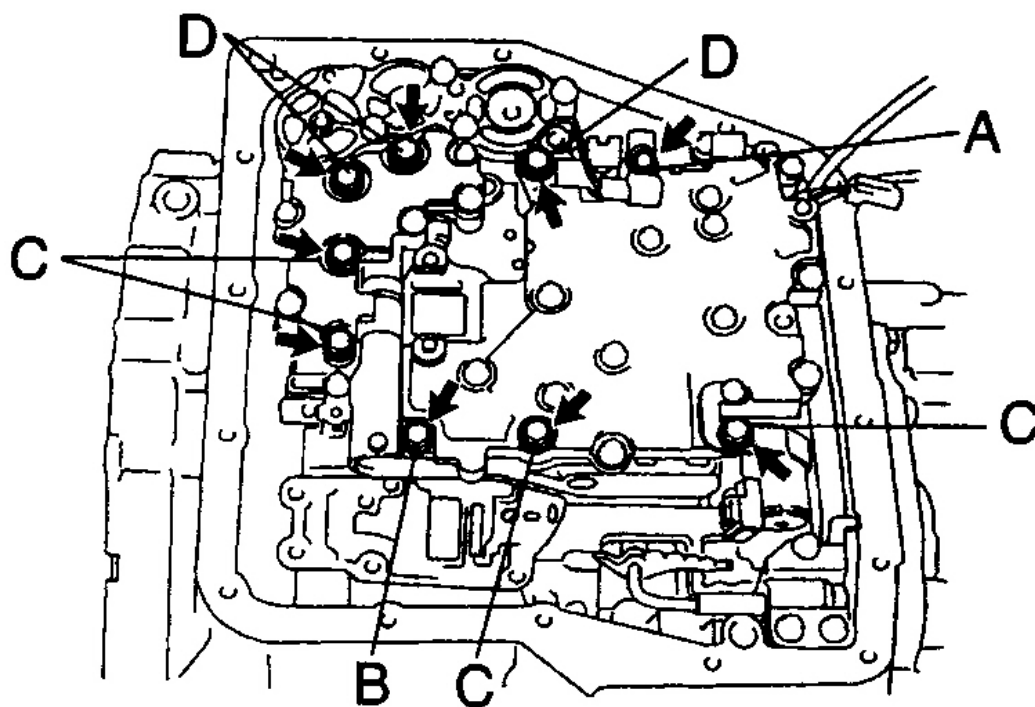
G00134898

Fig. 92: Removing & Installing 5 Oil Feed Pipes (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134899

Fig. 93: Removing & Installing Manual Valve Body (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 1.181" (30 mm)

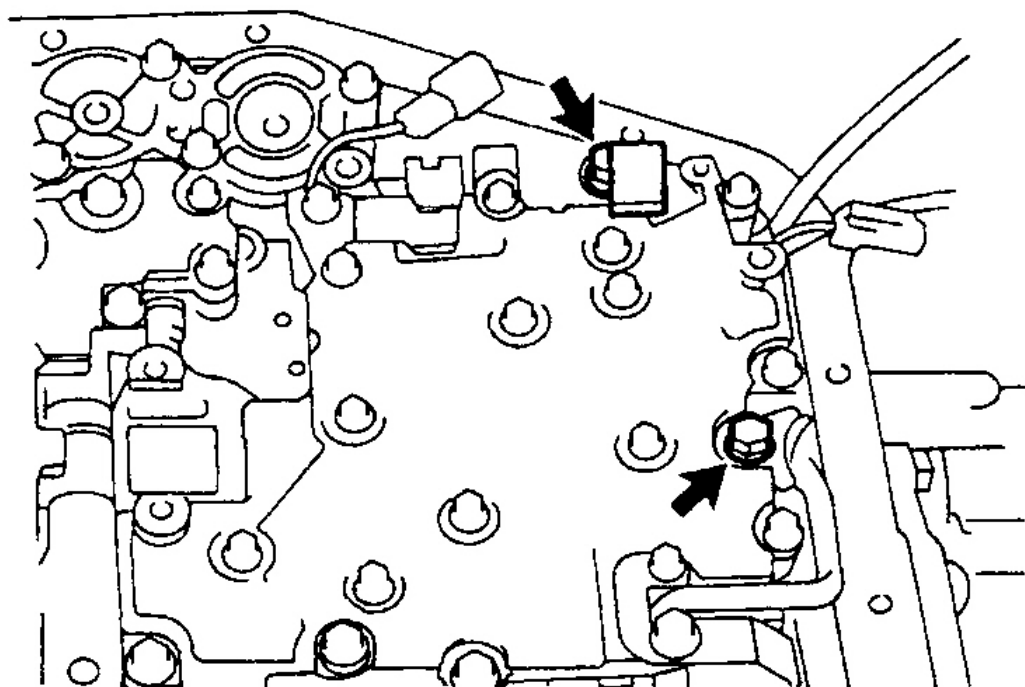
B: 1.693" (43 mm)

C: 1.890" (48 mm)

D: 2.047" (52 mm)

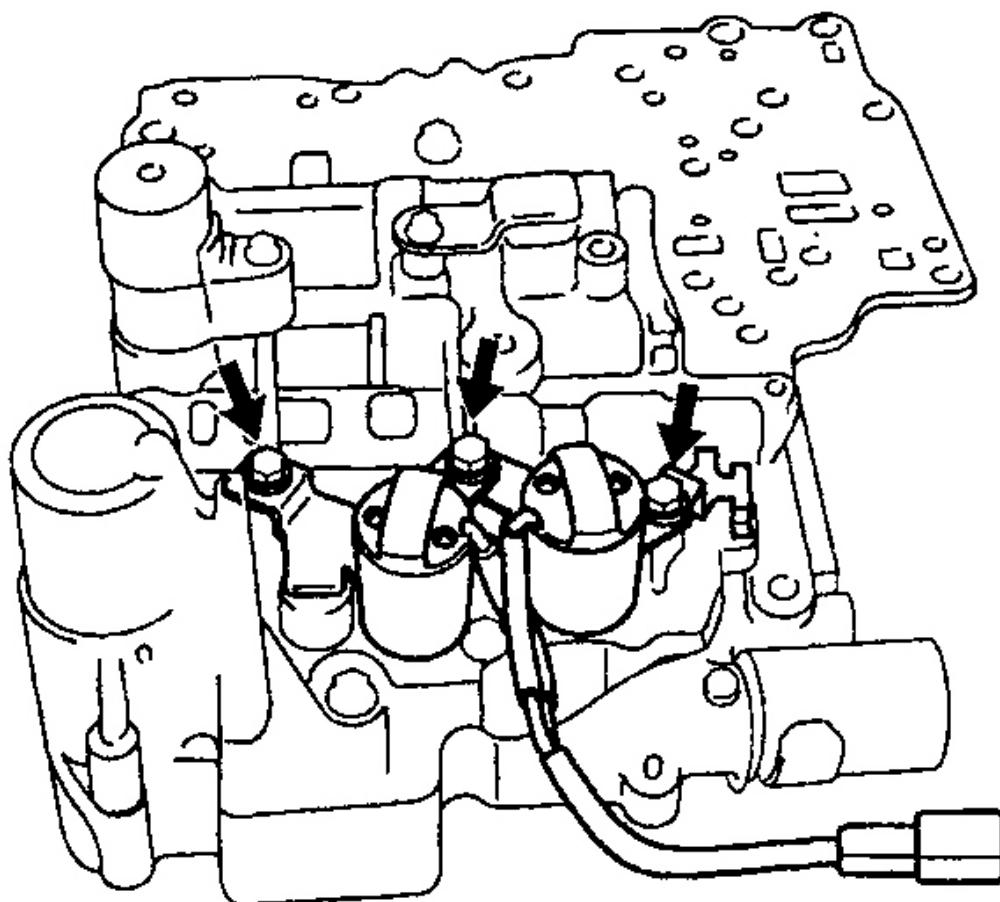
G00134904

Fig. 94: Removing & Installing Valve Body Bolts (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



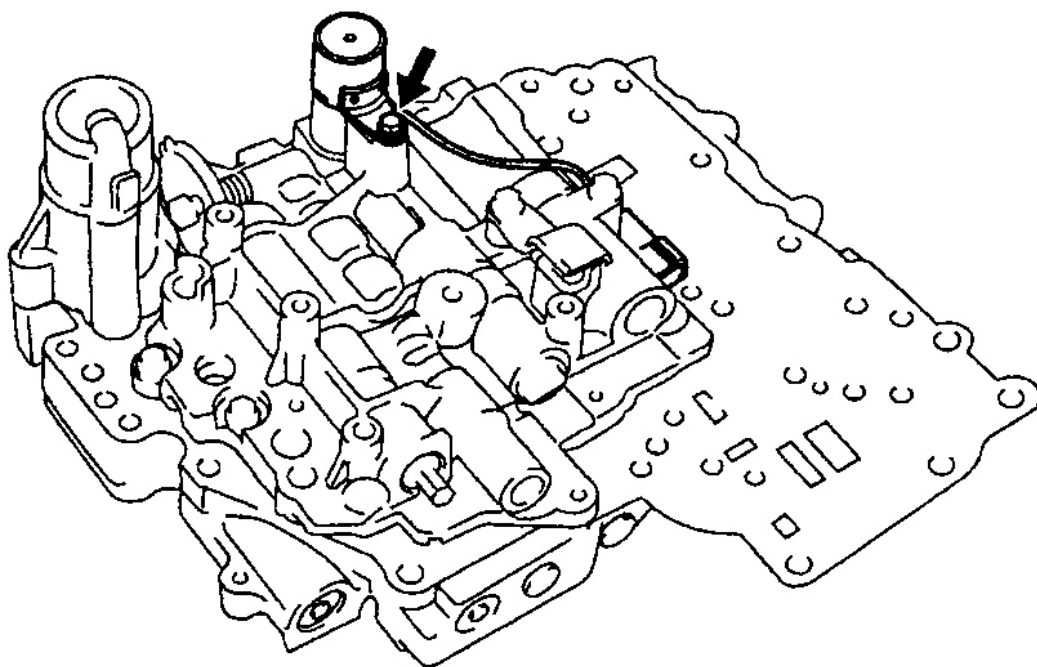
G00134900

Fig. 95: Removing & Installing Clamp & Pipe Retainer (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



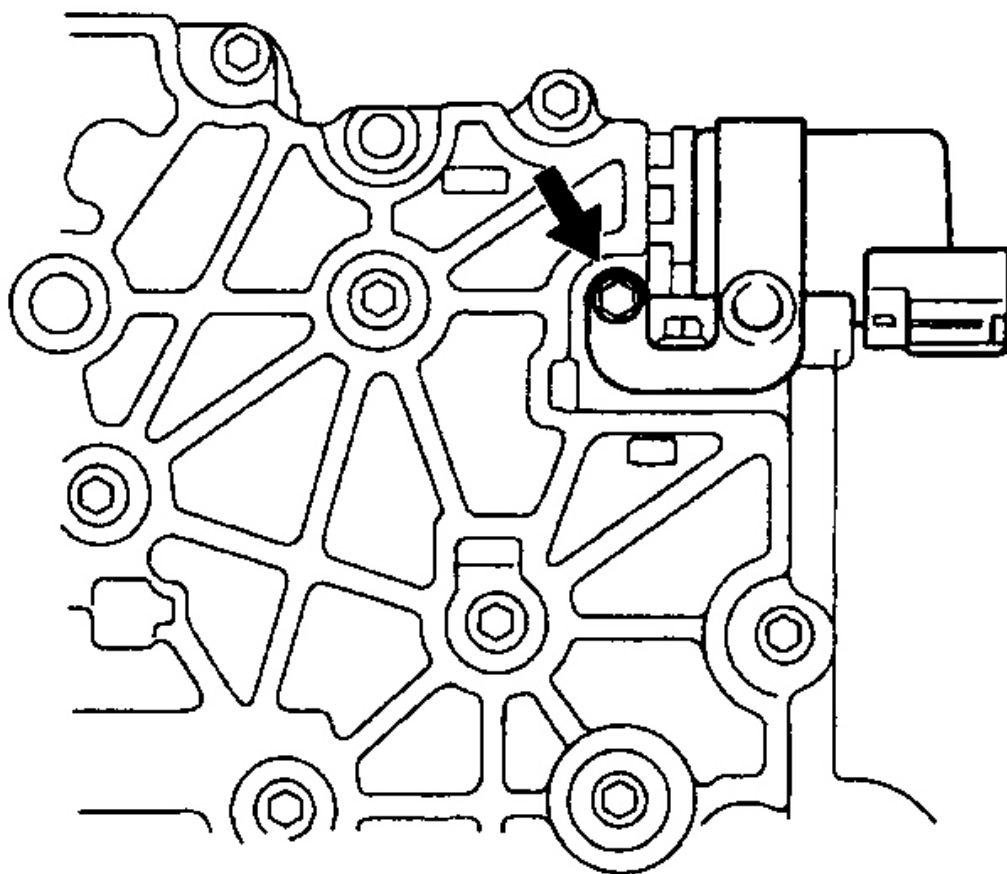
G00134901

Fig. 96: Removing & Installing Shift Solenoids & Retainer (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134902

Fig. 97: Removing & Installing Shift Solenoid SL (A-541E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134903

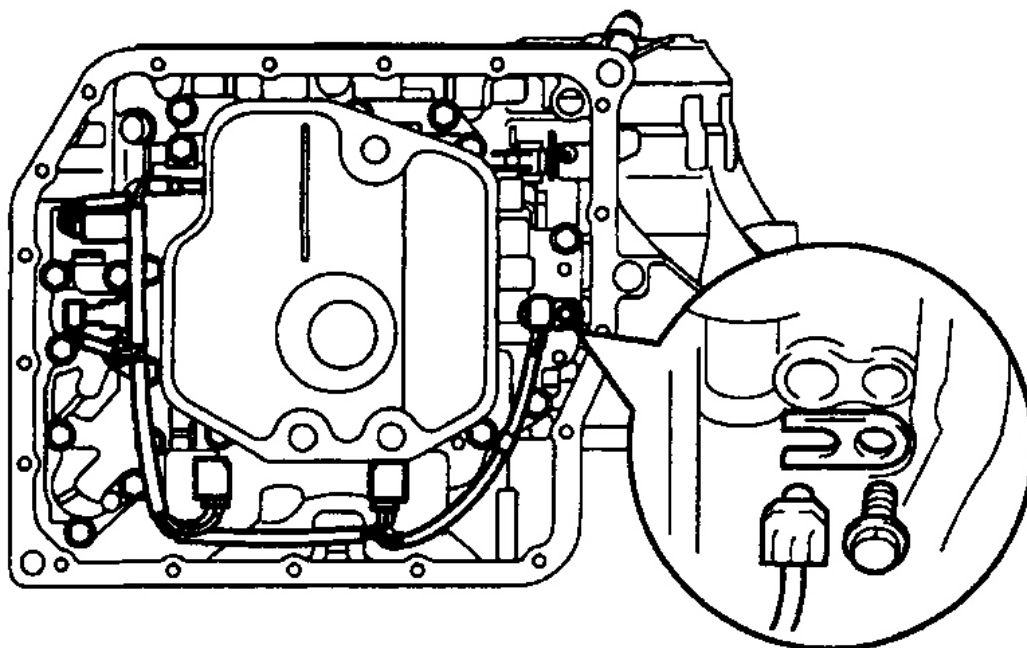
Fig. 98: Removing & Installing Shift Solenoid SLN (A-541E)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Camry, Solara, Celica, Highlander & RAV4 U-140 & U-240)

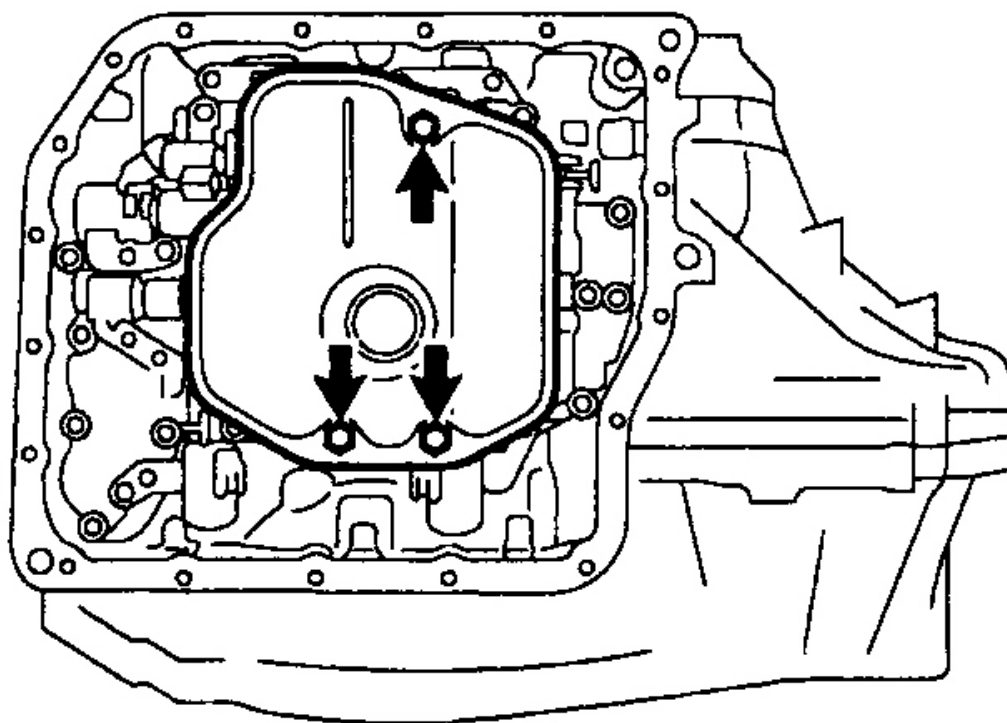
1. Raise and support vehicle. Remove the 18 oil pan bolts and pan. See **DRAINING & REFILLING** under LUBRICATION. Remove the gasket and the 2 magnets from oil pan. Clean oil pan and magnets for reassembly. Go to next step.
2. Disconnect the 5 connectors, the fluid temperature sensor wiring harness bolt, lock plate and remove sensor. See **Fig. 99** . Remove fluid filter assembly. See **Fig. 100** . Remove the "O" ring from the filter. Go to next step.
3. Support the valve body and remove the 17 bolts and valve body. See **Fig. 101** . Remove the check ball body and spring. See **Fig. 102** . Remove the 5 bolts and the 5 shift solenoid valves. See **Fig. 103** . Go to next step.

4. To assemble, install the 5 shift solenoid valves with the 5 bolts. See **Fig. 103** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Install spring and check ball body. Align the groove of manual valve with the pin of lever. Install valve body. See **Fig. 101** . Tighten bolts to specification. See **TORQUE SPECIFICATIONS** . Go to next step.
5. Coat NEW fluid filter "O" ring with ATF and install with the 3 bolts. Tighten to specification. See **Fig. 100** . See **TORQUE SPECIFICATIONS** . Go to next step.
6. Coat a NEW fluid temperature sensor "O" ring with ATF and install with the lock plate and bolt. Connect the 5 shift solenoid valve connectors. Install the 2 magnets in the oil pan. Install oil pan and gasket. Apply THREE BOND, or equivalent, on the oil pan bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Fill with proper fluid to correct level. See **LUBRICATION** .



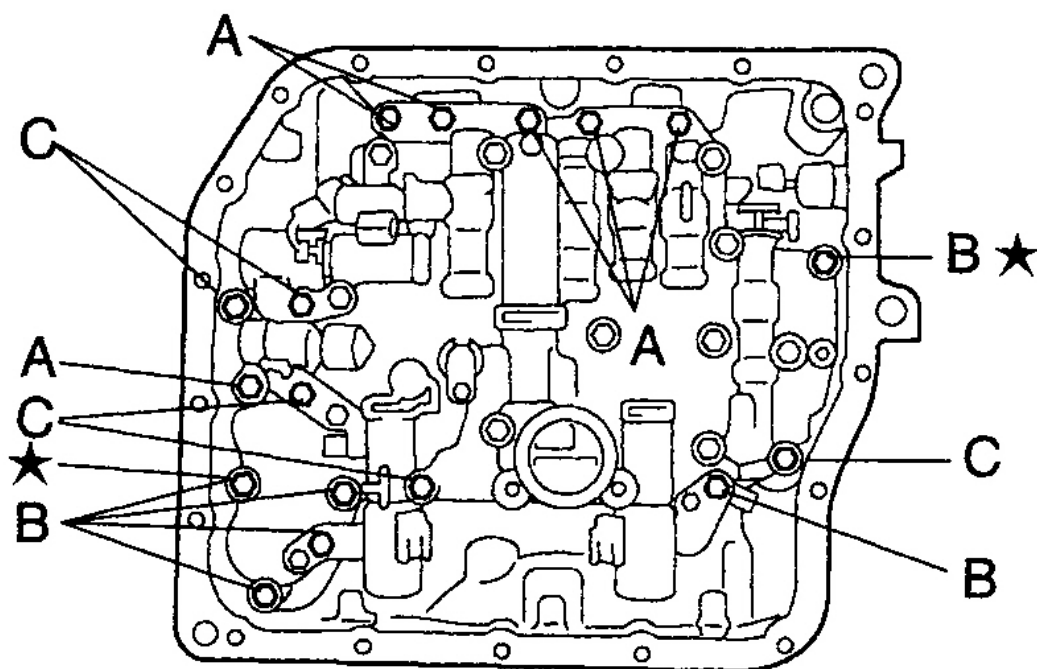
G00134905

Fig. 99: Removing & Installing Fluid Temperature Sensor & Harness (U-140E & U-240E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134906

Fig. 100: Removing & Installing Fluid Filter Assembly (U-140E & U-240E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

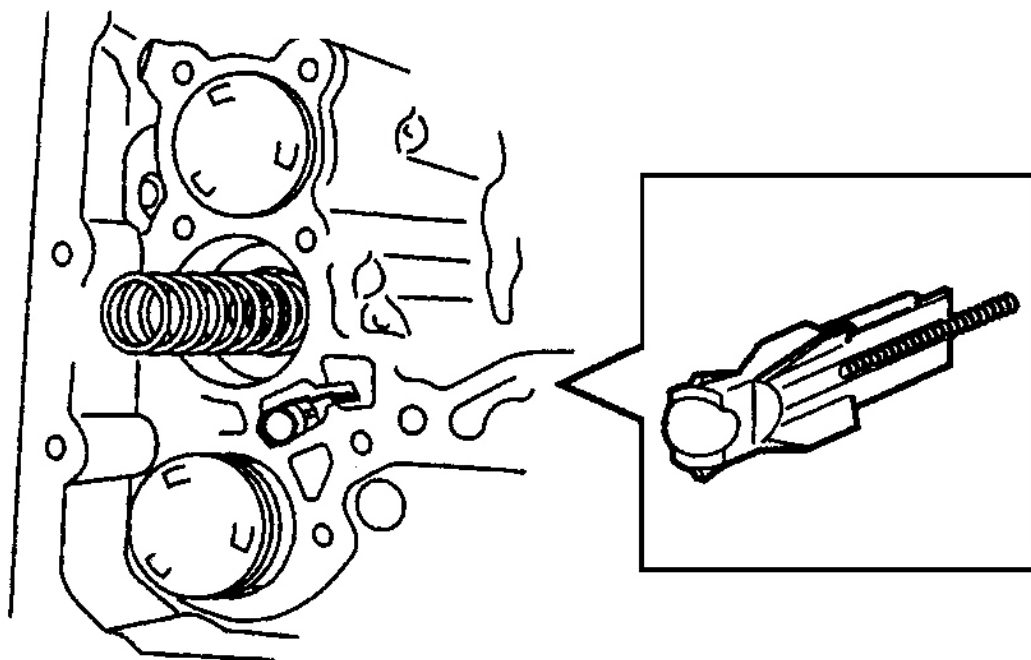


Push the valve body against the accumulator piston spring and the check ball body to install it.
Tighten those bolts marked by ★ in the illustration first temporarily because they are positioning bolts.

Bolt A: 0.984" (25 mm)
Bolt B: 1.614" (41 mm)
Bolt C: 1.771" (45 mm)

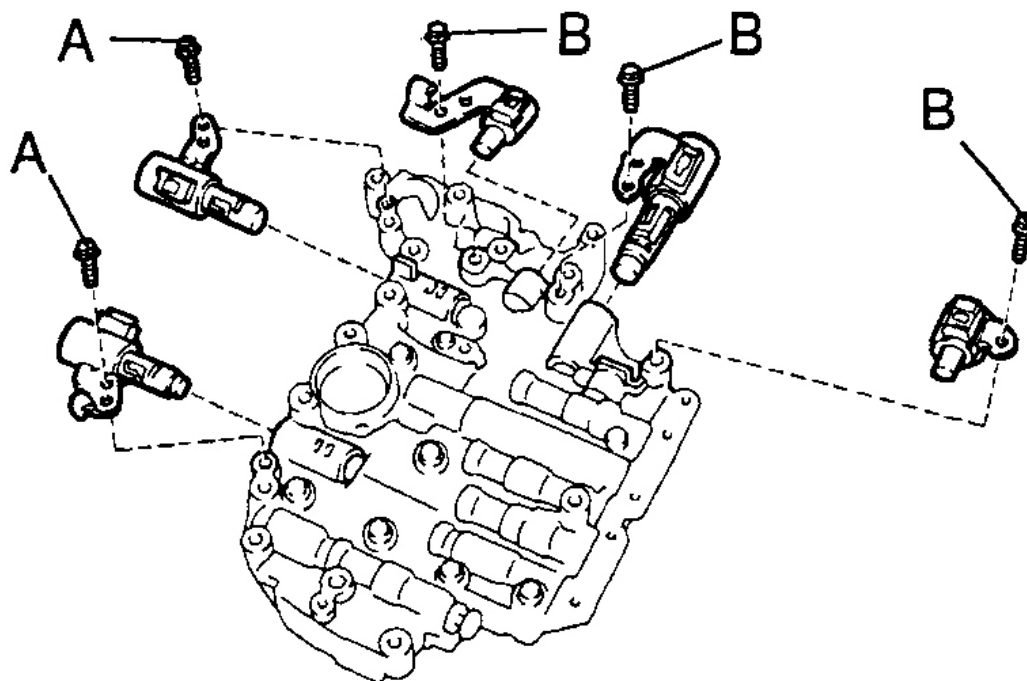
G00134907

Fig. 101: Removing & Installing Valve Body Bolts (U-140E & U-240E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132034

Fig. 102: Removing & Installing Check Ball Body & Spring (U-140E & U-240E)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



Torque - A: 58 INCH Lbs. (6.6 N.m)
 B: 96 INCH Lbs. (10.8 N.m)
 Length - A: 0.47" (12 mm)
 B: 1.77" (45 mm)

G00134908

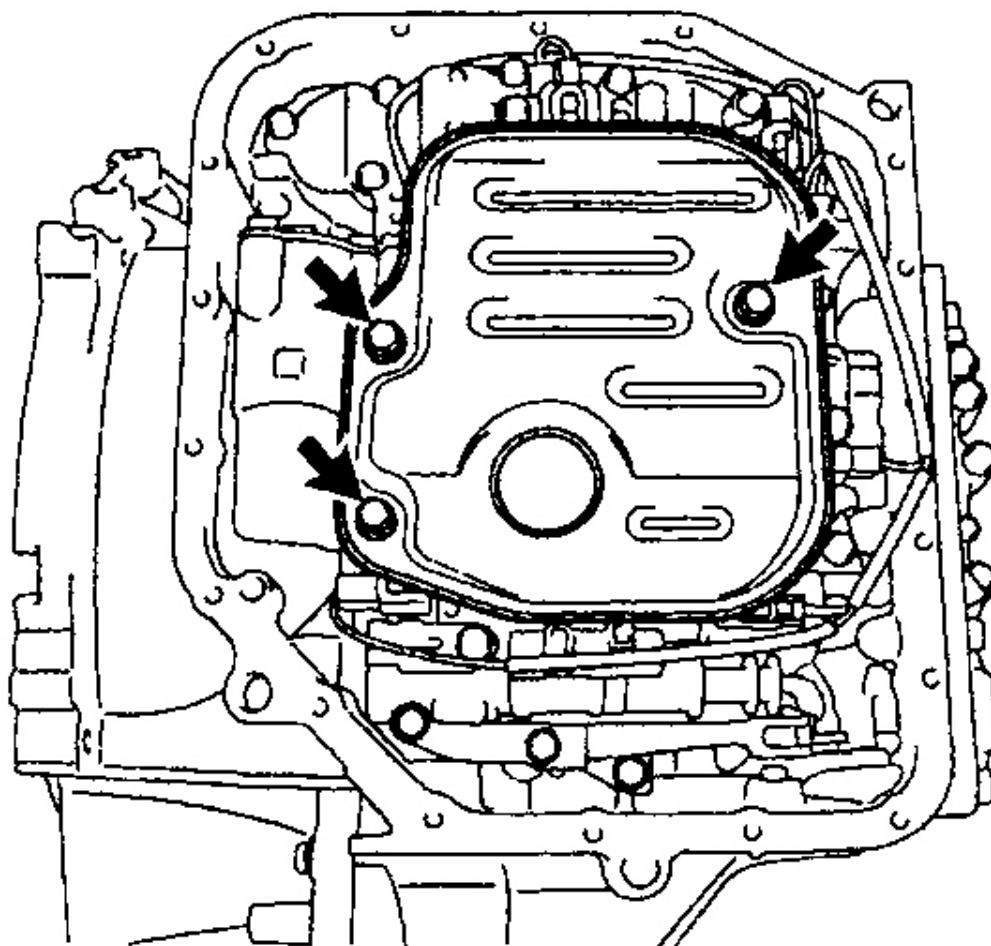
Fig. 103: Removing & Installing Shift Solenoid Valves (U-140E & U-240E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Celica & ECHO U-340E & U-341E)

1. Raise and support the vehicle. Remove left side engine undercover. Remove drain plug and drain ATF. Remove oil pan and gasket. See **DRAINING & REFILLING** under LUBRICATION. Remove the 3 bolts and fluid filter. See **Fig. 104** . Remove the "O" ring. Disconnect the 5 shift solenoid valve connectors. See **Fig. 105** . Remove the bolt and lock plate, and remove fluid temperature sensor. Go to next step.
2. Remove the 3 bolts, cover and detent spring. Remove the 12 bolts and valve body. Remove check ball body and spring. See **Fig. 106** . Remove 2 apply gaskets. See **Fig. 107** . Go to next step.
3. Remove the 5 bolts and 5 shift solenoid valves. See **Fig. 108** or **Fig. 109** . Go to next step.
4. For assembly, install the 5 shift solenoid valves with the 5 bolts. See **Fig. 108** or **Fig. 109** . Tighten to specification. See **TORQUE SPECIFICATIONS** . Coat 2 NEW apply gaskets with ATF. Install the

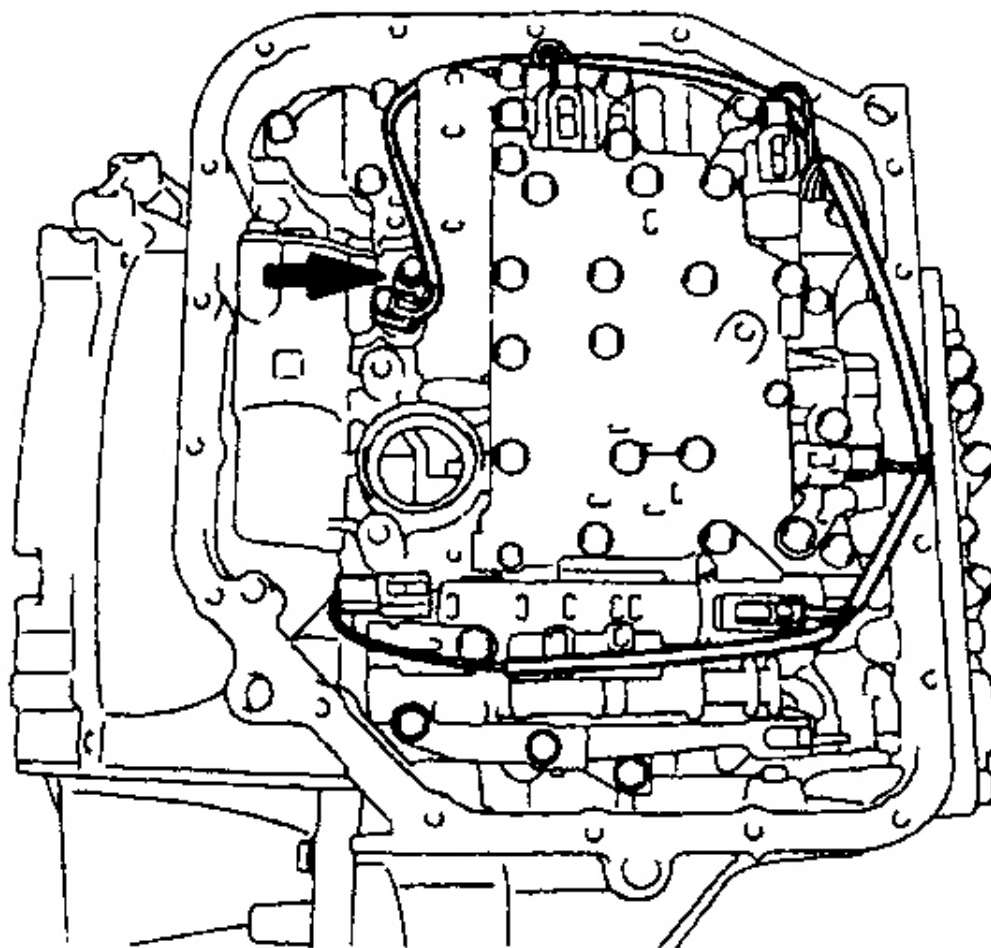
gaskets to transaxle case. Install check ball body and spring. See **Fig. 106** . Go to next step.

5. Install the groove of manual valve with the pin of manual valve lever. Temporarily install valve body with 12 bolts. See **Fig. 110** . Temporarily install the detent spring and cover with the 3 bolts. Go to next step.
6. Check that the manual valve lever contacts the center of the roller at the tip of detent spring. Tighten the 15 bolts to specification. See **TORQUE SPECIFICATIONS** . Install fluid temperature sensor with lock plate and bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** . Coat a NEW "O" ring with ATF. Install "O" ring on the fluid filter. Go to next step.
7. Install fluid filter with the 3 bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install the 2 magnets in oil pan. Install oil pan with a NEW gasket with the 19 bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Install left side engine undercover. Add proper fluid and check fluid level. See **LUBRICATION** .



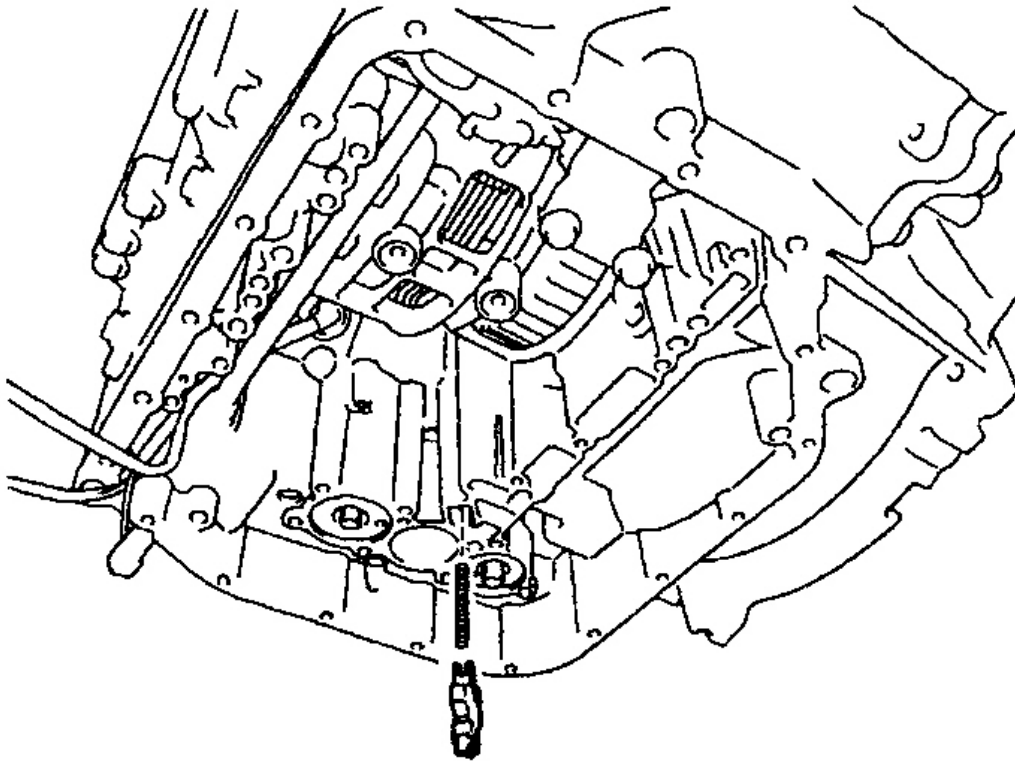
G00134910

Fig. 104: Removing & Installing Fluid Filter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



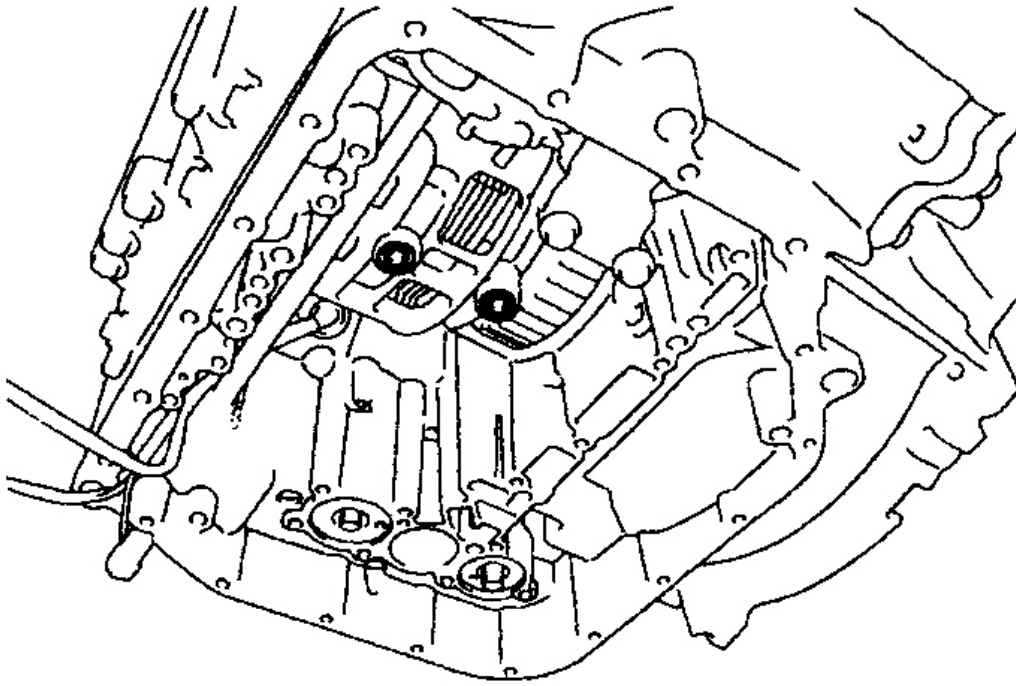
G00134911

Fig. 105: Removing & Installing Fluid Temperature Sensor Harness
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



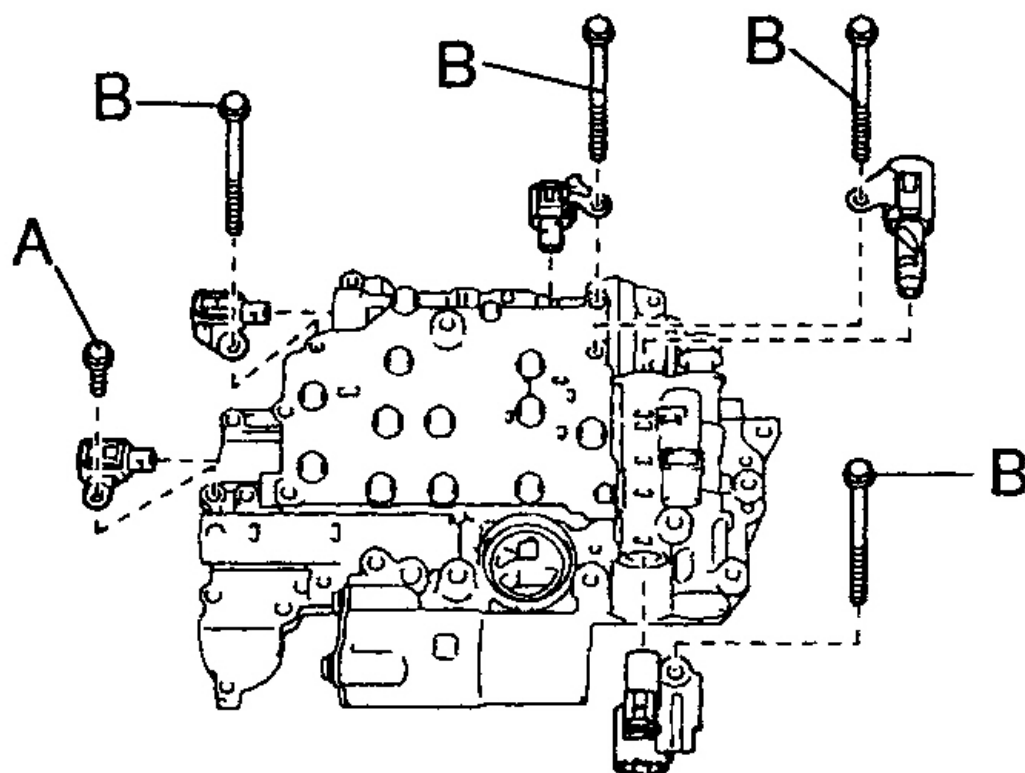
G00134912

Fig. 106: Removing & Installing Check Ball Body & Spring
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00134913

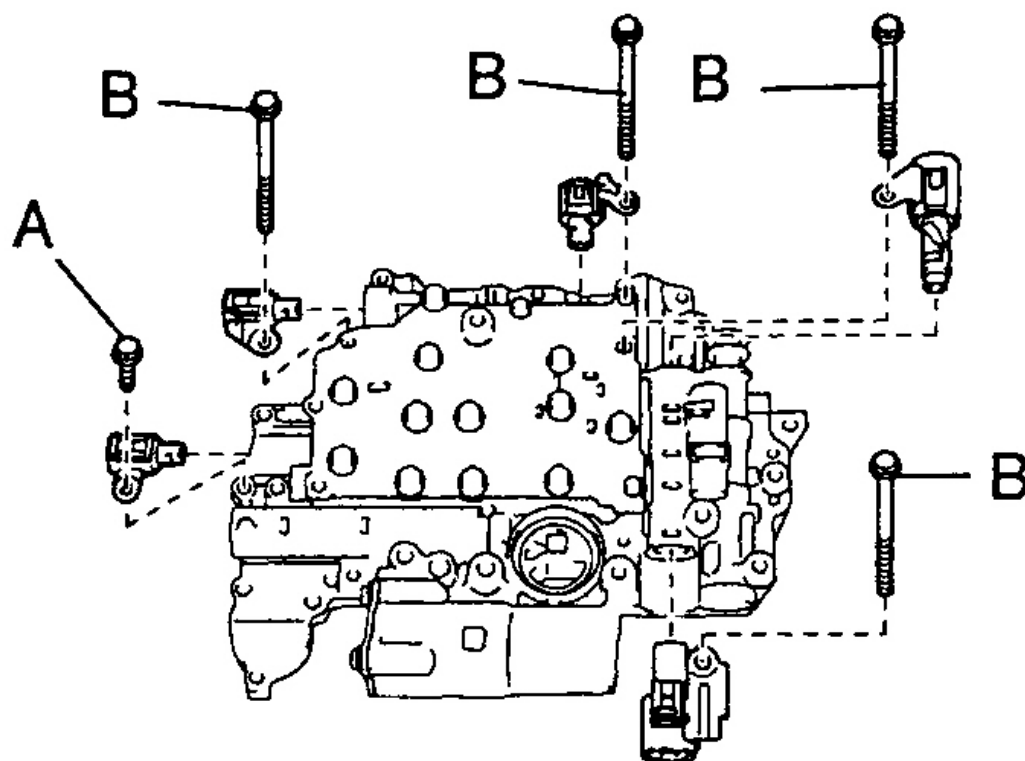
Fig. 107: Removing & Installing Apply Gaskets
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



Torque - A: 58 INCH Lbs. (6.6 N.m)
 B: 97 INCH Lbs. (11 N.m)
Length - A: 0.55" (14 mm)
 B: 2.17" (55 mm)

G00134914

Fig. 108: Removing & Installing Shift Solenoid Valves (ECHO)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



Torque - A: 97 INCH Lbs. (11 N.m)

B: 97 INCH Lbs. (11 N.m)

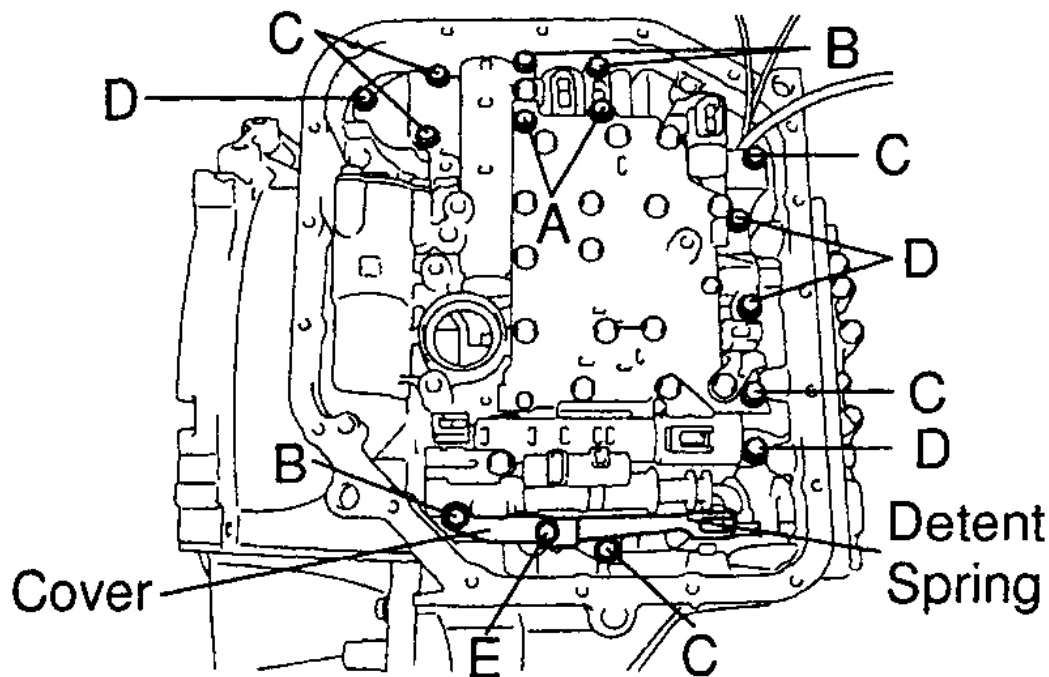
Length - A: 0.47" (12 mm)

B: 1.77" (45 mm)

G00134916

Fig. 109: Removing & Installing Shift Solenoid Valves (Celica)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



A: 2.17" (55 mm)

B: 1.77" (45 mm)

C: 1.26" (32 mm)

D: 0.87" (22 mm)

E: 0.55" (14 mm)

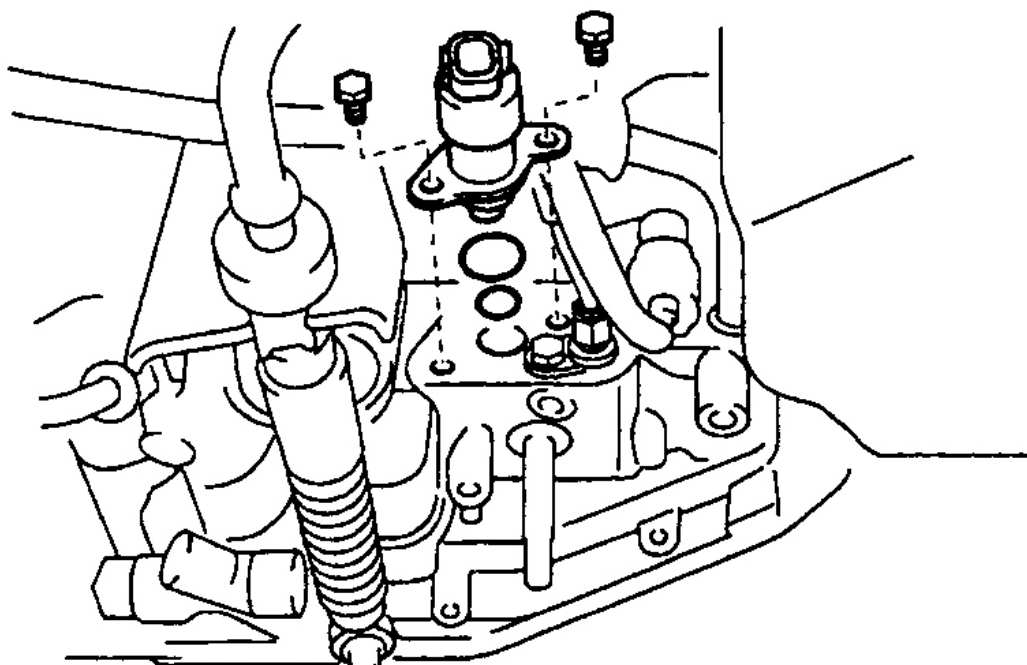
G00134915

Fig. 110: Removing & Installing Valve Body Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SHIFT SOLENOID SL

Removal & Installation (2001 Camry & Solara A-140E)

1. Remove PNP switch. See **PARK/NEUTRAL POSITION SWITCH** . Disconnect shift solenoid valve SL connector. Remove the 2 bolts and shift solenoid valve SL. Remove the 2 "O" rings from shift solenoid valve SL. See **Fig. 111** .
2. To install, replace the 2 "O" rings on shift solenoid valve SL and coat the "O" rings with ATF. Install shift solenoid valve SL, using the 2 bolts. Tighten to specification. See **TORQUE SPECIFICATIONS** . Connect wiring harness connector to shift solenoid valve SL. Install PNP switch. See **PARK/NEUTRAL POSITION SWITCH** .



G00132079

Fig. 111: Removing & Installing Shift Solenoid Valve SL (A-140E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THROTTLE VALVE CABLE (AVALON)

Removal

1. Remove battery. Remove the 3 bolts and cruise control actuator. Disconnect the connector. Disconnect the cable from the throttle linkage. See **Fig. 112** . Remove the PNP switch. See **PARK/NEUTRAL POSITION SWITCH** . Go to next step.
2. Raise and support the vehicle. Remove left side engine undercover. Remove drain plug and drain ATF. Remove oil pan and gasket. See **DRAINING & REFILLING** under LUBRICATION. Remove valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Remove the bolt and retaining plate. Pull out the cable from the transaxle case.

Installation

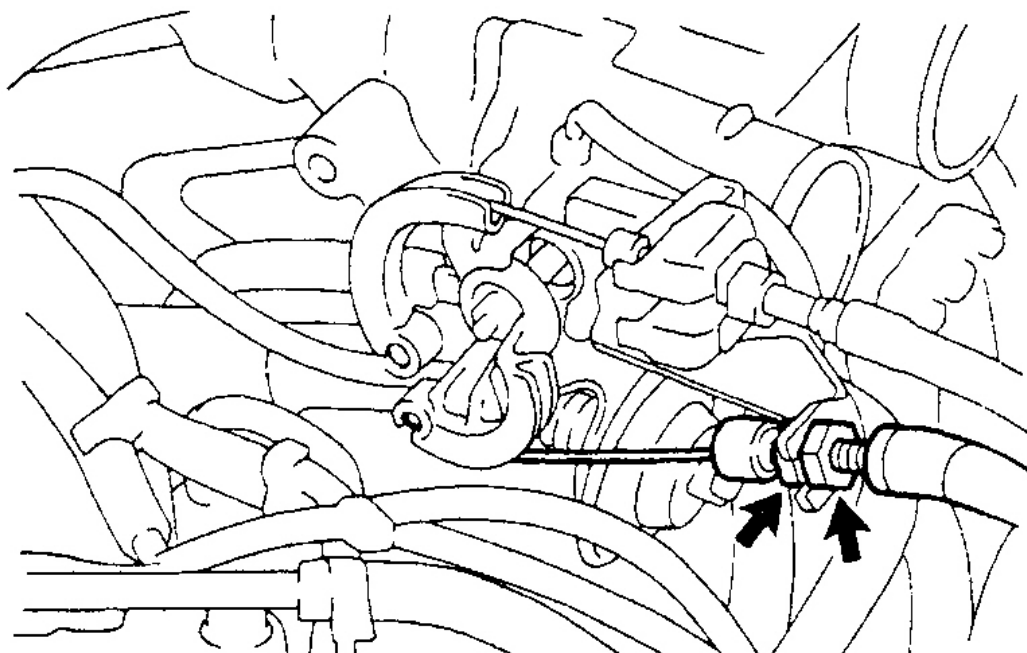
1. If original cable is used, begin at step D . If throttle valve cable is NEW, perform operations A -C first:
 - A. Bend cable so that there is a radius of about 7.87" (200 mm).
 - B. Pull inner cable lightly until resistance is slightly felt, and hold it there.

C. Stake the stopper, 0.031-0.059" (.8-1.5 mm) from the end of the outer cable.

D. Install a NEW "O" ring to throttle valve cable. See **Fig. 113** .

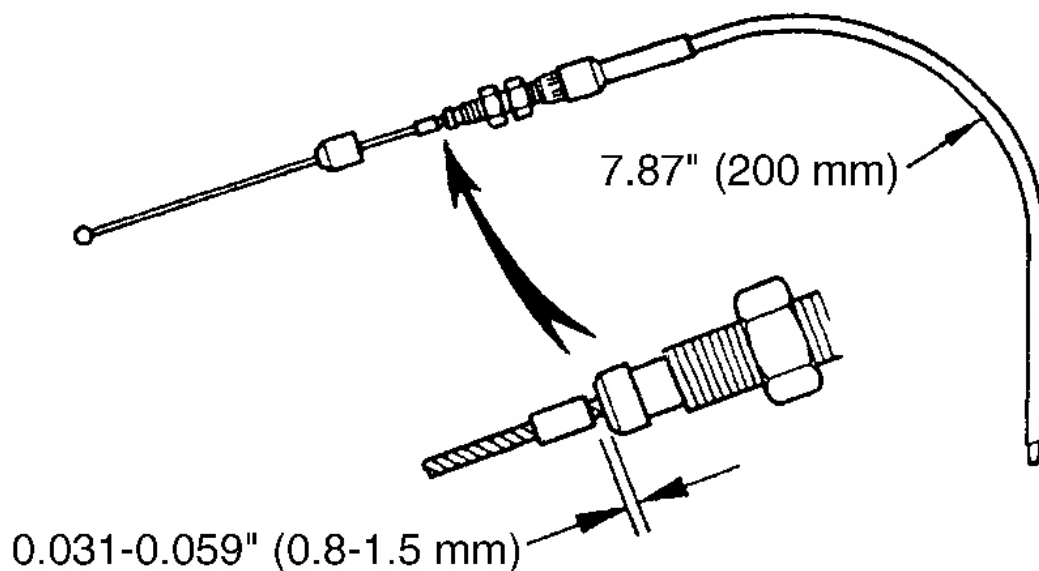
E. Push in the throttle valve cable all the way and install retaining bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .

2. Install valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Install PNP switch. See **PARK/NEUTRAL POSITION SWITCH** .
3. Install cruise control actuator and tighten bolts to specification. See **TORQUE SPECIFICATIONS** .
Install battery and test drive vehicle.



G00134920

Fig. 112: Removing & Installing Throttle Valve Cable (Avalon)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132057

Fig. 113: Staking Throttle Valve Cable (Avalon)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THROTTLE VALVE CABLE (COROLLA A-131L)

Removal

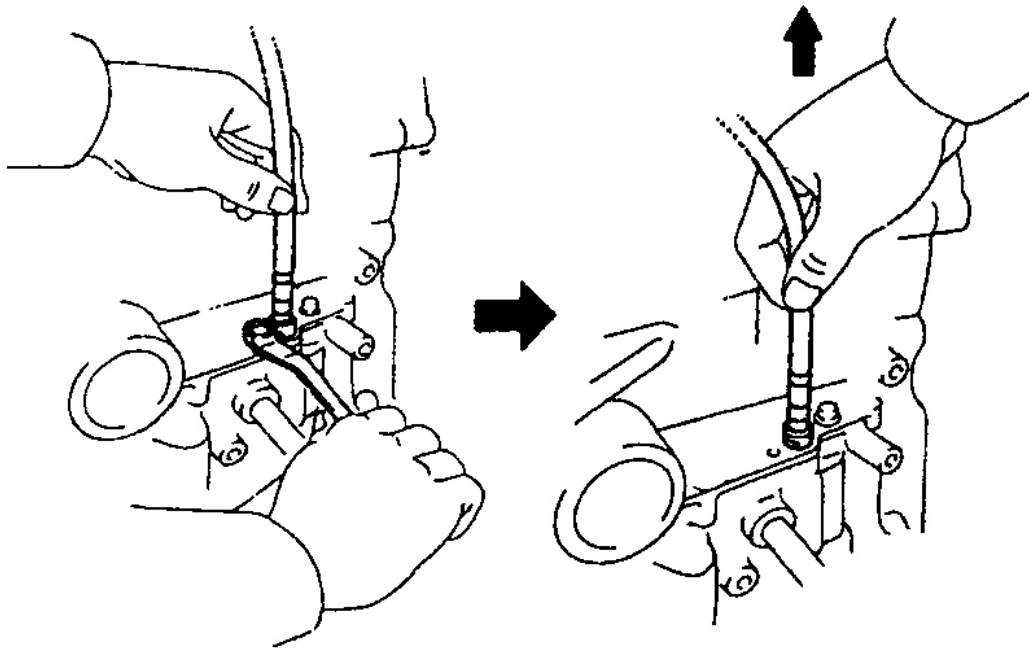
1. Disconnect throttle valve cable from throttle body. See **Fig. 114** . Remove PNP switch. See **PARK/NEUTRAL POSITION SWITCH** . Remove valve body. See **SHIFT SOLENOIDS & VALVE BODY** .
2. Remove retaining bolt and plate. Pull out cable from transaxle.

Installation

1. If original cable is used, begin at step D . If throttle valve cable is NEW, perform operations A -C first:
 - A. Bend cable so that there is a radius of about 7.87" (200 mm).
 - B. Pull inner cable lightly until resistance is slightly felt, and hold it there.
 - C. Stake the stopper, 0.031-0.059" (.8-1.5 mm) from the end of the outer cable.
 - D. Install a NEW "O" ring to throttle valve cable.
 - E. Pull in throttle valve cable and install retaining bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .
2. Install valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Install PNP switch. See

PARK/NEUTRAL POSITION SWITCH . Go to next step.

3. Connect throttle valve cable to throttle body. Install drain plug. Add proper fluid and check fluid level. See **LUBRICATION** .



G00132056

Fig. 114: Removing & Installing Throttle Valve Cable (Corolla A-131L)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

THROTTLE VALVE CABLE (2001 CAMRY & SOLARA)

Removal

1. Disconnect the throttle valve cable from throttle linkage. Disconnect the cable from the cable clamps in the engine compartment.
2. Remove PNP switch. See **PARK/NEUTRAL POSITION SWITCH** . Remove valve body. See **SHIFT SOLENOIDS & VALVE BODY** .
3. Remove the retaining bolt and plate. Pull out cable from transaxle case.

Installation

1. If original cable is used, begin at step D . If throttle valve cable is NEW, perform operations A -C first:
A. Bend cable so that there is a radius of about 7.87" (200 mm).

- B. Pull inner cable lightly until resistance is slightly felt, and hold it there.
 - C. Stake the stopper, 0.031-0.059" (.8-1.5 mm) from the end of the outer cable.
 - D. Install a NEW "O" ring to throttle valve cable.
 - E. Pull in the throttle valve cable and install retaining bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .
2. Install valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Install PNP switch. See **PARK/NEUTRAL POSITION SWITCH** .
 3. Connect throttle valve cable to throttle body. Install drain plug. Add proper fluid and check fluid level. See **LUBRICATION** .

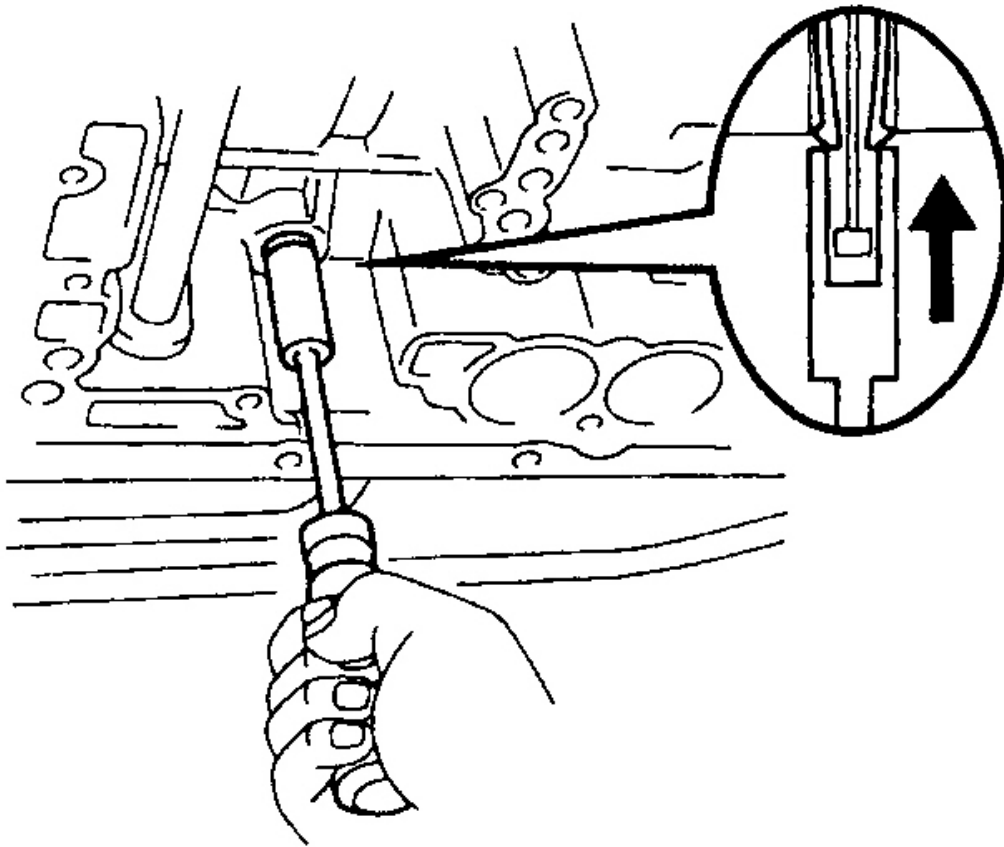
THROTTLE VALVE CABLE (TACOMA A-44D)

Removal

1. Disconnect throttle valve cable from throttle body. Remove PNP switch. See **PARK/NEUTRAL POSITION SWITCH** . Remove valve body. See **SHIFT SOLENOIDS & VALVE BODY** .
2. Using a 10 mm socket driver, push throttle valve cable end to remove it. See **Fig. 115** . Remove the "O" ring.

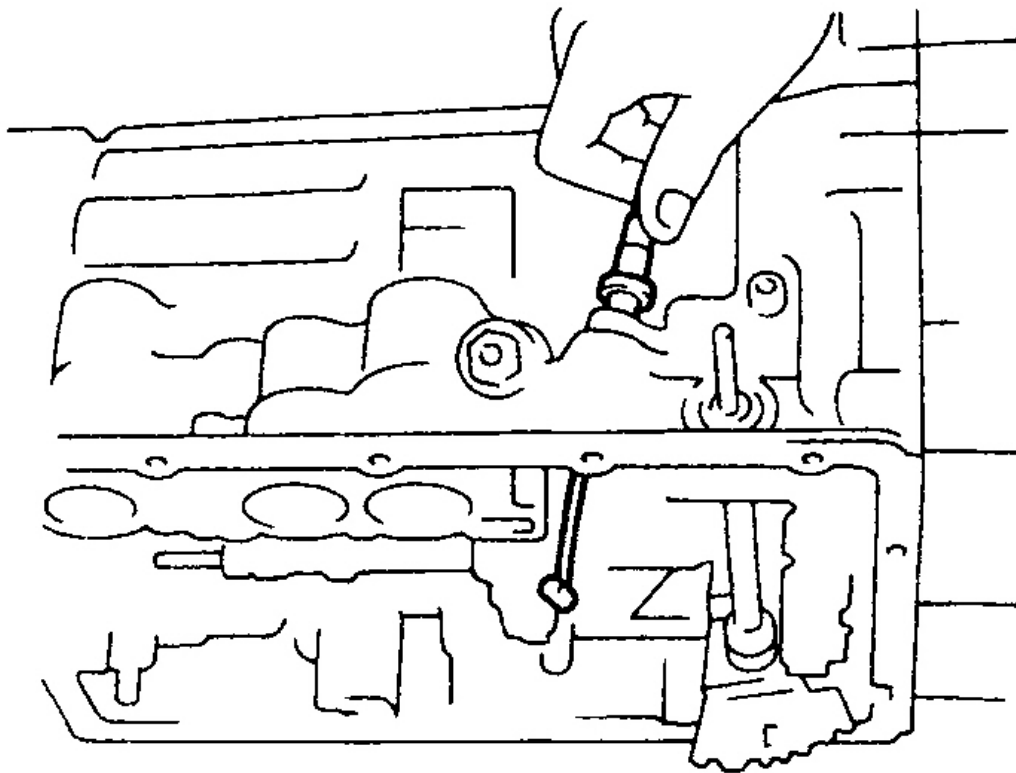
Installation

1. If original cable is used, begin at step D . If throttle valve cable is NEW, perform operations A -C first:
 - A. Bend cable so that there is a radius of about 7.87" (200 mm).
 - B. Pull inner cable lightly until resistance is slightly felt, and hold it there.
 - C. Stake the stopper, 0.031-0.059" (.8-1.5 mm) from the end of the outer cable.
 - D. Install a NEW "O" ring to throttle valve cable.
 - E. Pull in throttle valve cable and install retaining bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .
2. Install valve body. See **SHIFT SOLENOIDS & VALVE BODY** . Install PNP switch. See **PARK/NEUTRAL POSITION SWITCH** .
3. Connect throttle valve cable to throttle body. See **Fig. 116** . Install drain plug. Tighten to specification. See **TORQUE SPECIFICATIONS** . Add proper fluid and check fluid level. See **LUBRICATION** .



G00132061

Fig. 115: Removing Throttle Valve Cable From Transmission (Tacoma A-44D)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132069

Fig. 116: Installing Throttle Valve Cable Into Transmission (Tacoma A-44D)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

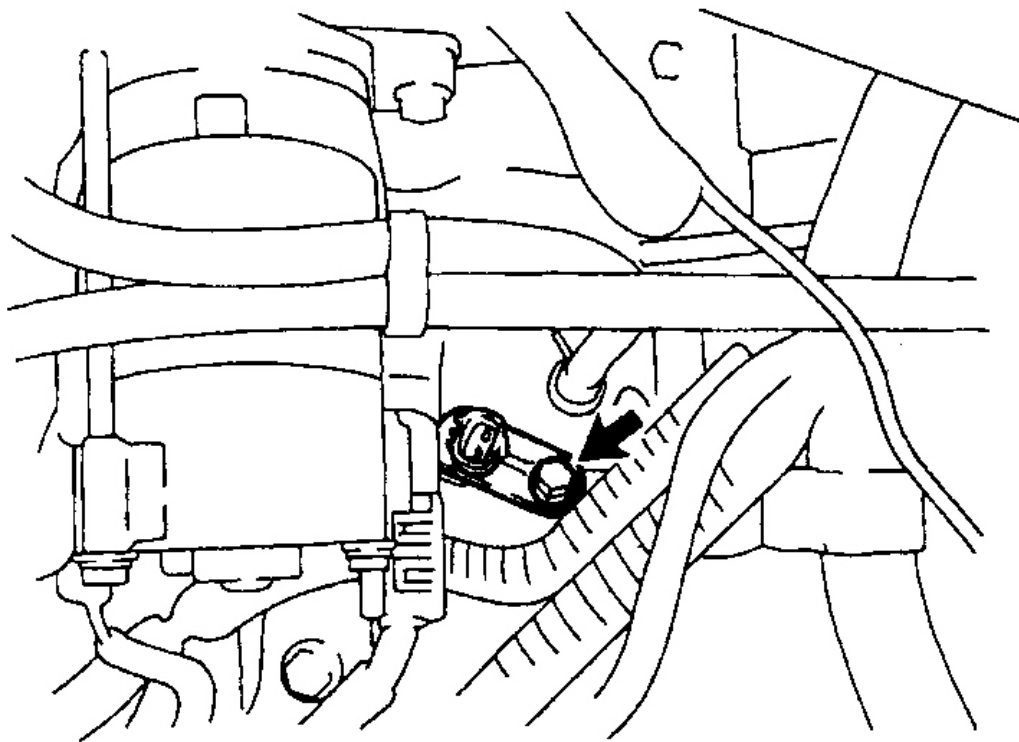
NC SPEED SENSOR

NOTE: On some models, it may be necessary to access sensor by removing air cleaner, air cleaner hose, battery and/or bracket.

Highlander

Disconnect the wiring harness connector at the NC vehicle speed sensor. Remove the bolt and vehicle speed sensor. See **Fig. 117** . Remove the "O" ring and discard.

Coat a NEW "O" ring with ATF and install on the NC vehicle speed sensor. Install sensor into transmission with bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00134931

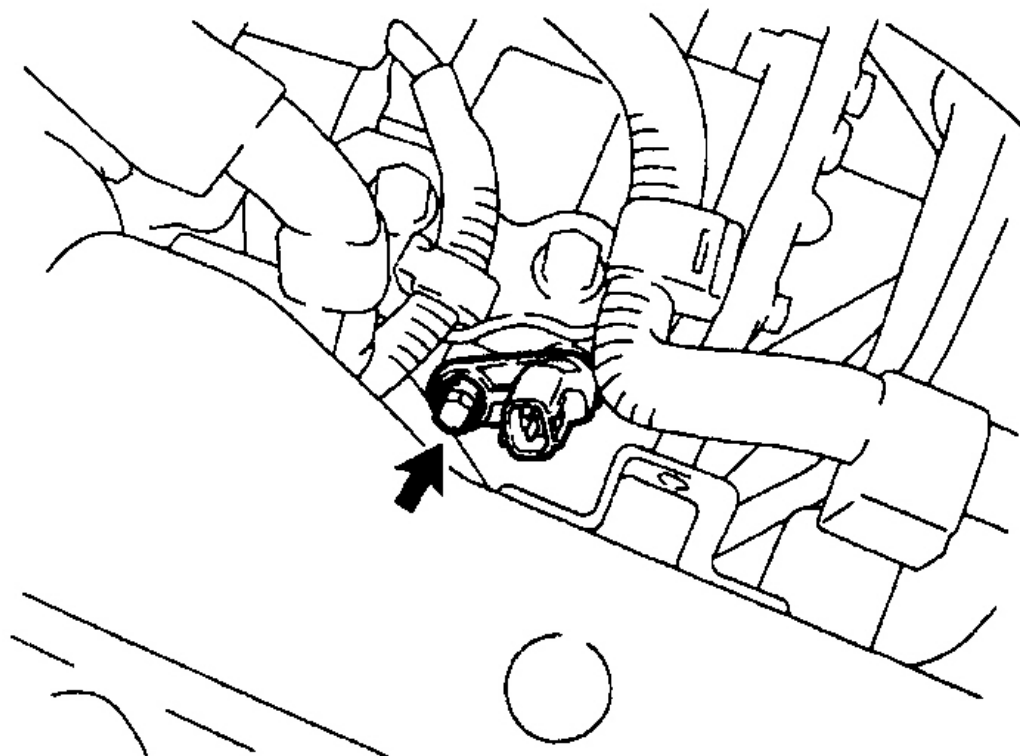
Fig. 117: Locating NC Speed Sensor (Highlander)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NT SPEED SENSOR

NOTE: On some models, it may be necessary to access sensor by removing air cleaner, air cleaner hose, battery and/or bracket.

Removal & Installation (Highlander)

Disconnect the wiring harness connector at the (NT) vehicle speed sensor. Remove the bolt and vehicle speed sensor. See **Fig. 118** . Remove the "O" ring and discard. Coat a NEW "O" ring with ATF and install on the (NT) vehicle speed sensor. Install sensor into transmission with bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00134930

Fig. 118: Locating NT Speed Sensor (Highlander)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

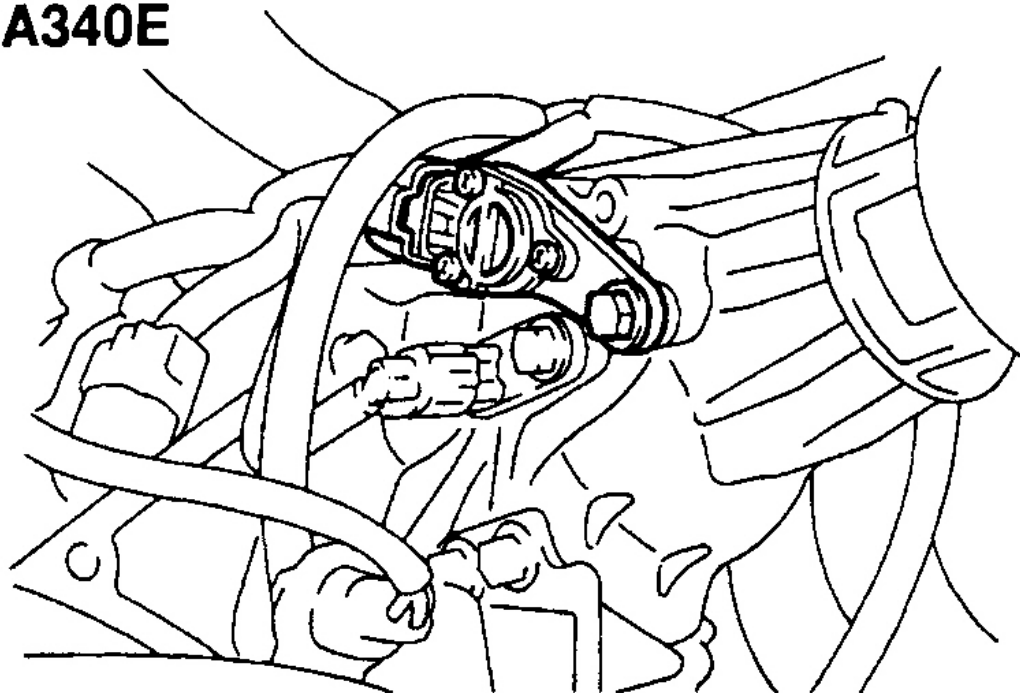
NO. 1 VEHICLE SPEED SENSOR (SEQUOIA, TACOMA, TUNDRA & 4RUNNER)

NOTE: On some models, it may be necessary to access sensor by removing air cleaner, battery and/or ECM and bracket.

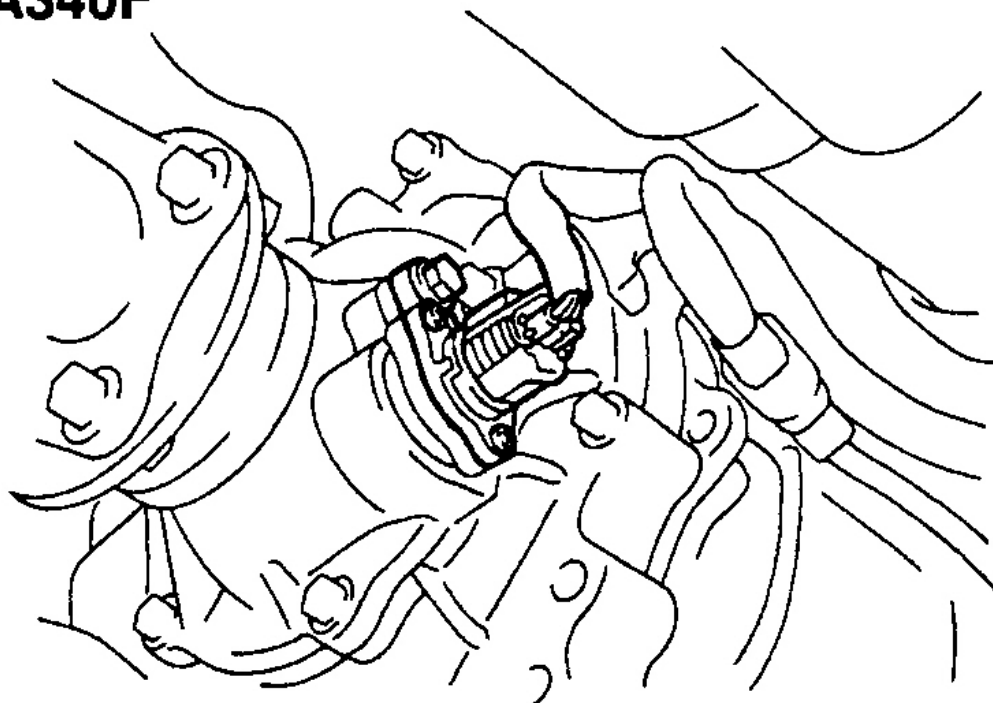
Removal & Installation (A-340E & A-340F)

1. Disconnect the No. 1 speed sensor wiring harness connector. Remove the bolt and vehicle speed sensor. See **Fig. 119** .
2. Remove the "O" ring from speedometer driven gear assembly. Remove the clip and speedometer driven gear sleeve. See **Fig. 120** .
3. To install, install the speedometer driven gear and clip on the sleeve assembly. Coat a NEW "O" ring with ATF. Install the "O" ring on the speedometer driven gear.
4. Install No. 1 speed sensor and the bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .

A340E



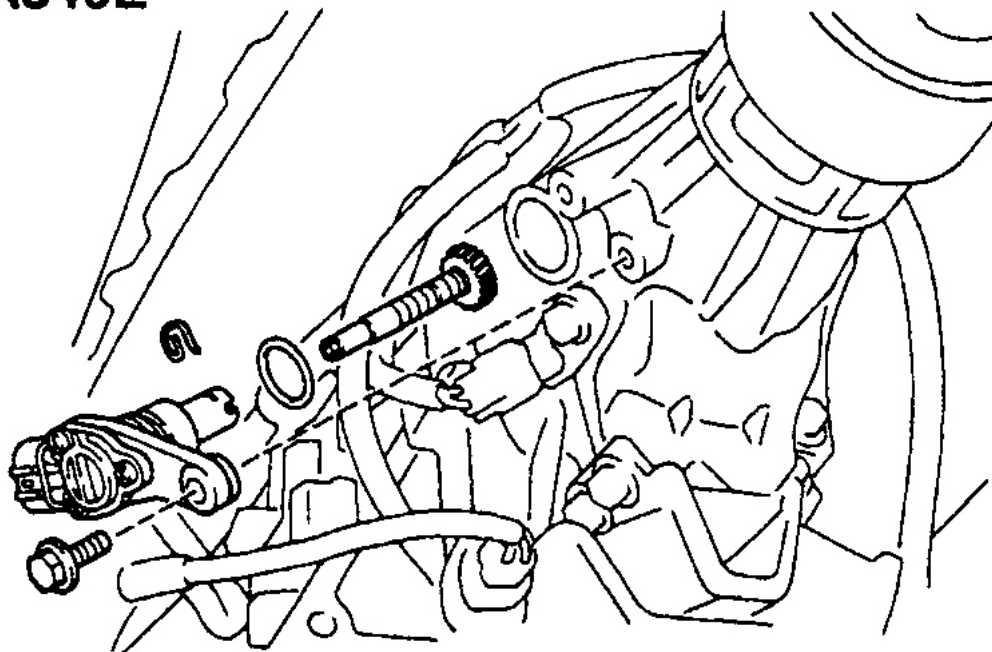
A340F



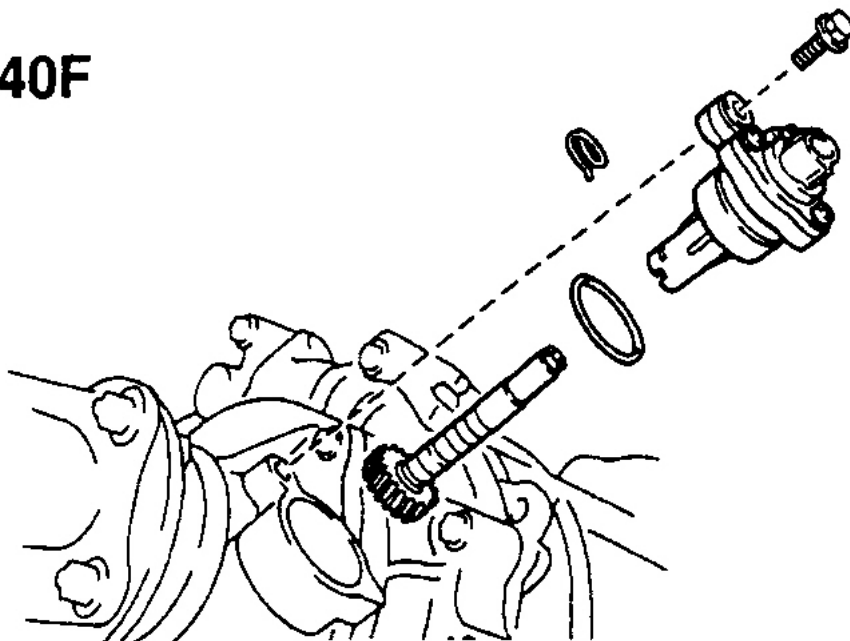
G00132083

Fig. 119: Identifying No. 1 Speed Sensor Assembly (A-340E & A-340F)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A340E



A340F



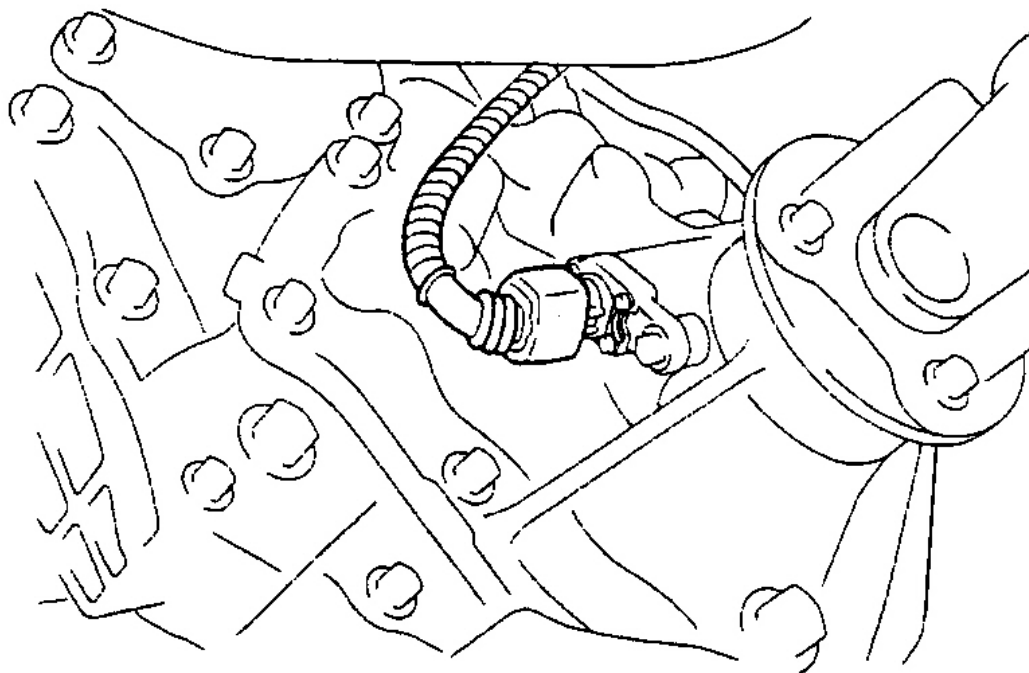
G00132084

Fig. 120: Removing & Installing No. 1 Speed Sensor Assembly (A-340E & A-340F)

NO. 1 VEHICLE SPEED SENSOR (LAND CRUISER)

A-343F

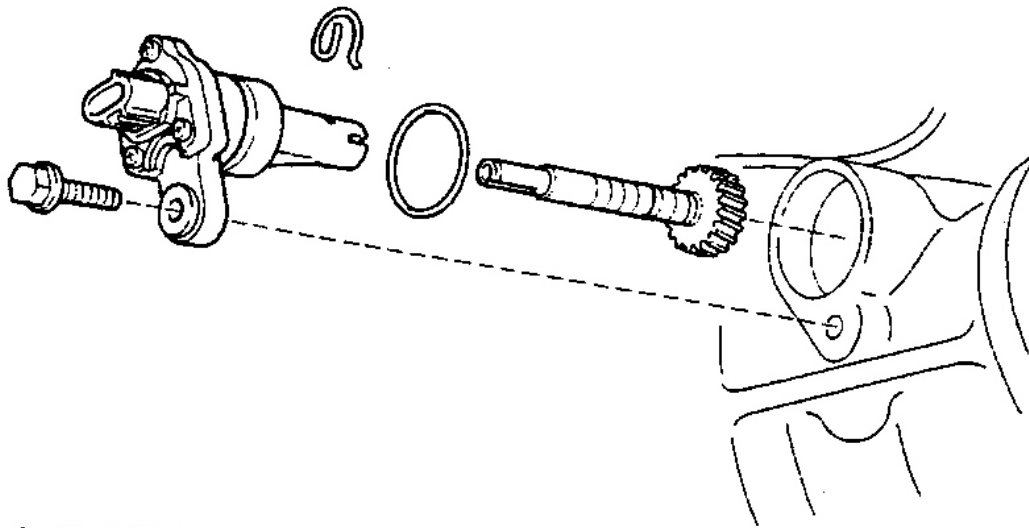
1. Disconnect No. 1 vehicle speed sensor connector. See **Fig. 121** . Remove the bolt and the No. 1 vehicle speed sensor. Remove the "O" ring from the driven gear assembly. Remove the clip and speedometer driven gear from the speedometer gear sleeve. See **Fig. 122** .
2. Install the speedometer driven gear into the speedometer driven gear sleeve. Coat a NEW "O" ring with ATF and install on the driven gear assembly. Install the No. 1 vehicle speed sensor into the transmission with the bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00132018

Fig. 121: Locating No. 1 VSS Connector

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



G00132019

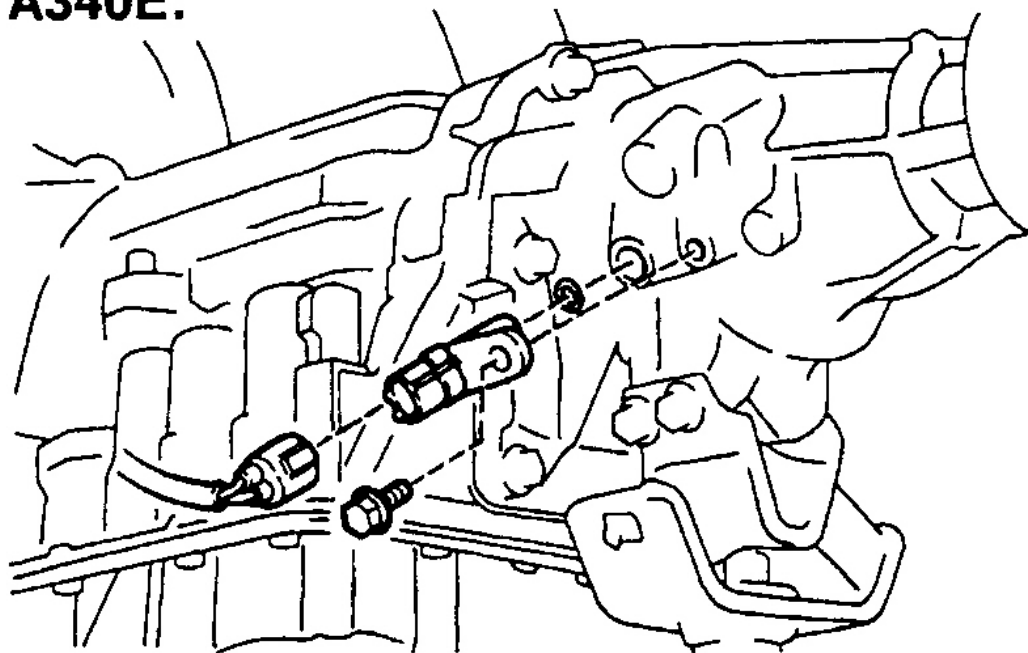
Fig. 122: Removing & Installing No. 1 VSS (Land Cruiser)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NO. 2 VEHICLE SPEED SENSOR (SEQUOIA, TACOMA, TUNDRA & 4RUNNER)

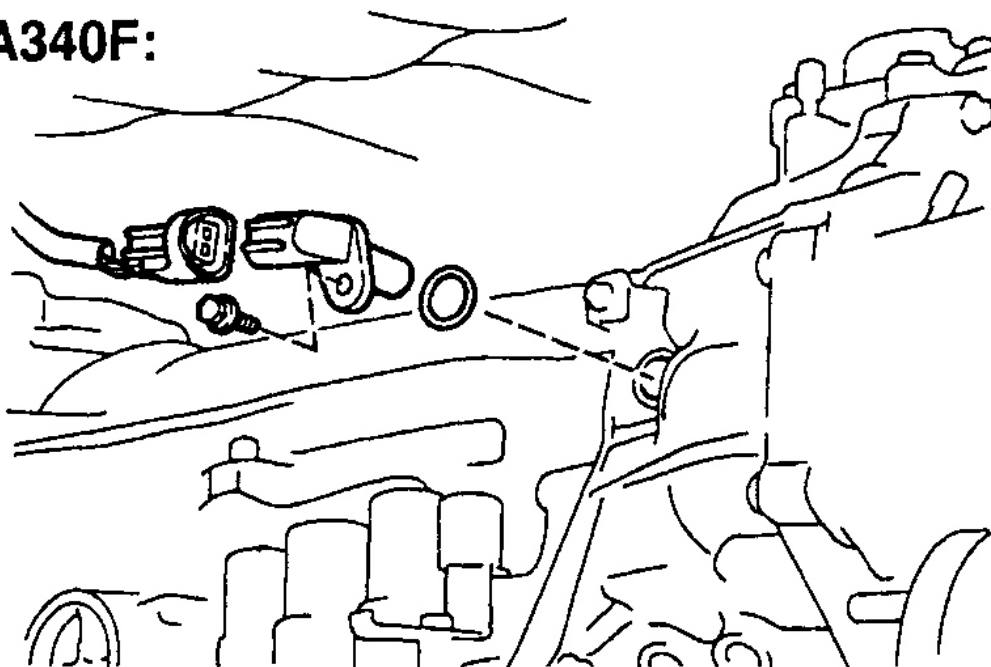
Removal & Installation (A-340E & A-340F)

Disconnect the No. 2 vehicle speed sensor connector. Remove the bolt and the No. 2 vehicle speed sensor. Remove the "O" ring from vehicle speed sensor. See **Fig. 123** . Coat a NEW "O" ring with ATF. Install "O" ring on vehicle speed sensor and install it into transmission. Install and tighten the bolt to specification. See **TORQUE SPECIFICATIONS** .

A340E:



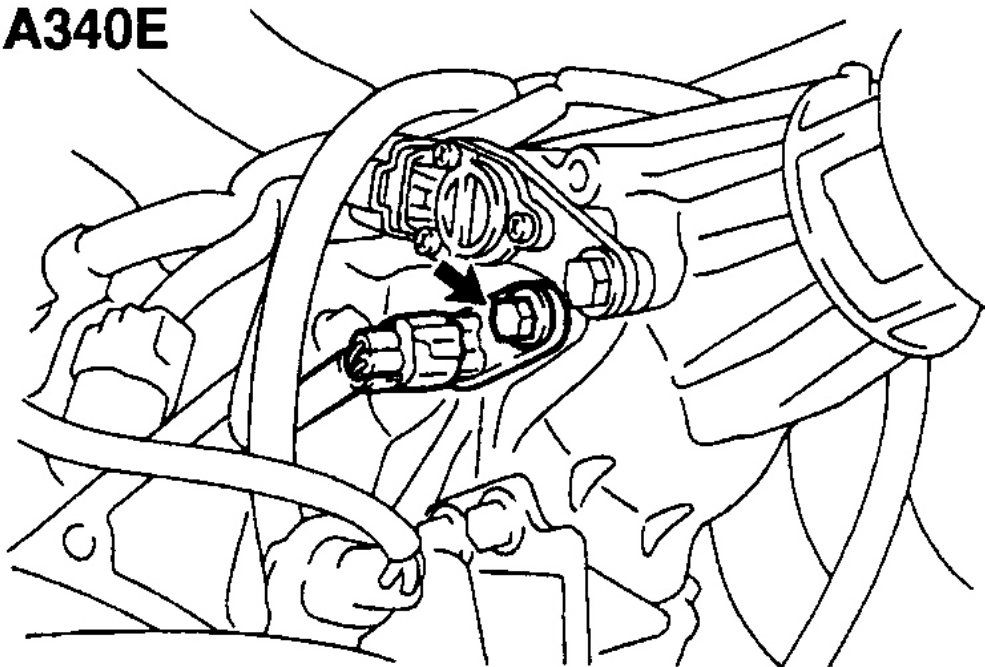
A340F:



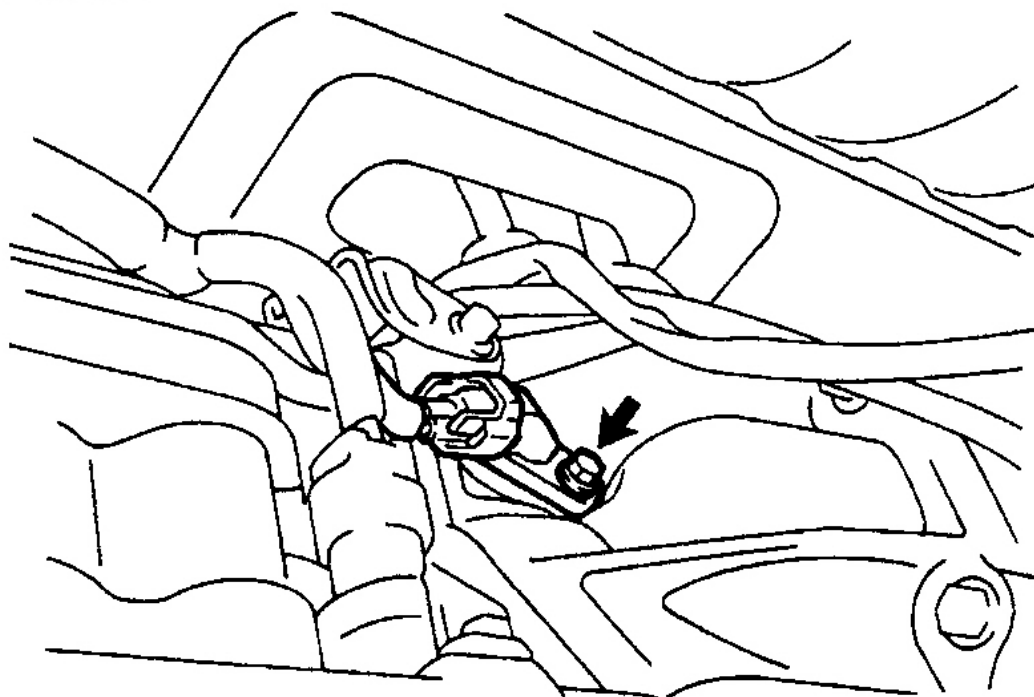
G00134928

Fig. 123: Removing & Installing No. 2 Vehicle Sensor (4Runner)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A340E



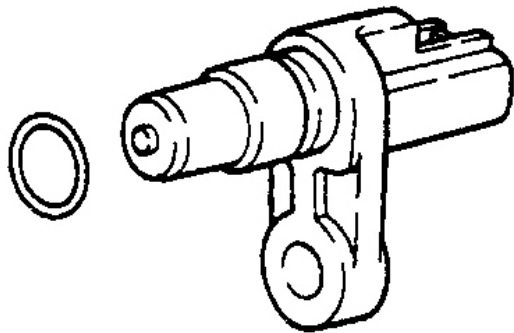
A340F



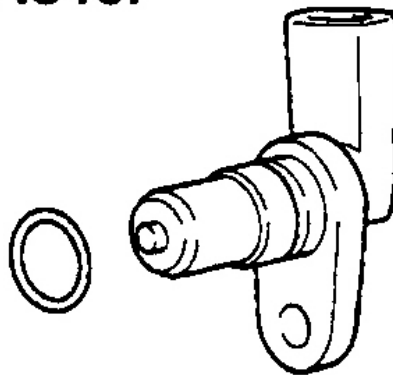
G00132085

Fig. 124: Locating No. 2 Speed Sensor Assembly (Sequoia, Tacoma & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

A340E



A340F



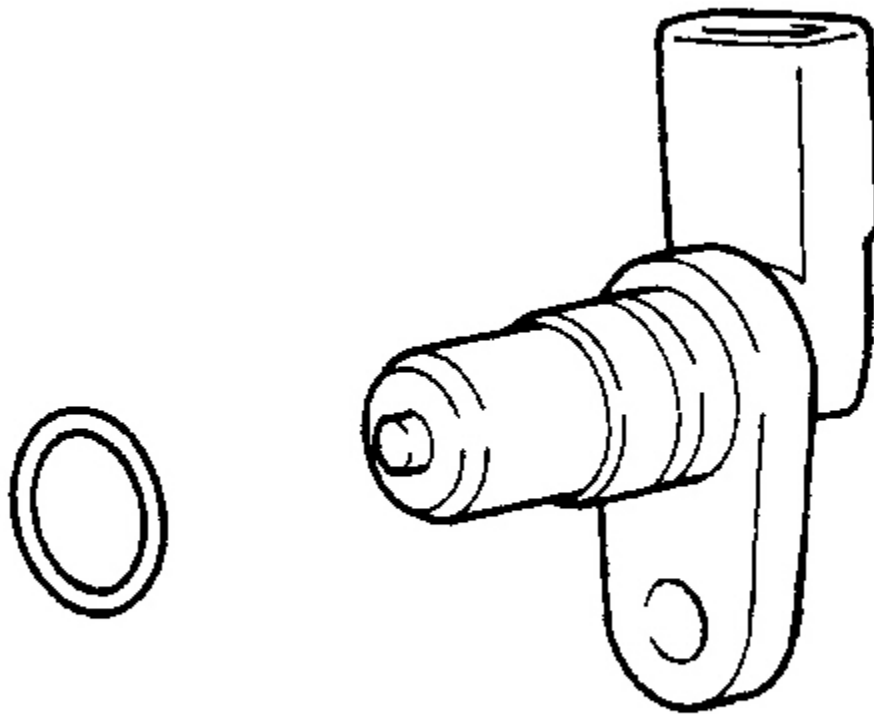
G00134884

Fig. 125: Identifying No. 2 Speed Sensor (Sequoia, Tacoma & Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NO. 2 VEHICLE SPEED SENSOR (LAND CRUISER)

Removal & Installation (A-343F)

Disconnect No. 2 vehicle speed sensor connector. Remove the bolt and No. 2 vehicle speed sensor. See **Fig. 126** . Remove the "O" ring from the vehicle speed sensor. Coat a NEW "O" ring with ATF and install onto the vehicle speed sensor. Install the No. 2 vehicle speed sensor into the transmission with the bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00132020

Fig. 126: Removing & Installing No. 2 VSS (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

VEHICLE SPEED SENSOR (GEAR DRIVEN)

NOTE: For transaxle application, see GEAR DRIVEN SPEED SENSOR APPLICATION table.

GEAR DRIVEN SPEED SENSOR APPLICATION

Application	Trans. Model
Camry	A-140E, U-241E & A-541E
Celica	U-240E & U-341E
Corolla	A-131L & A-245E
ECHO	U-340E
RAV4	U-341E

Solara	A-140E & A-541E
Tacoma	A-44D

Camry, Celica, Corolla, ECHO, RAV4 & Solara

Disconnect Vehicle Speed Sensor (VSS) wiring harness connector. Remove the bolt and VSS assembly. Remove the clip and speedometer driven gear from the speed sensor. See **Fig. 127** . Remove the "O" ring from VSS.

To install, coat a NEW "O" ring with ATF and install it onto VSS. Install speedometer driven gear into VSS and the clip. Install VSS assembly and tighten bolt to specification. See **TORQUE SPECIFICATIONS** .

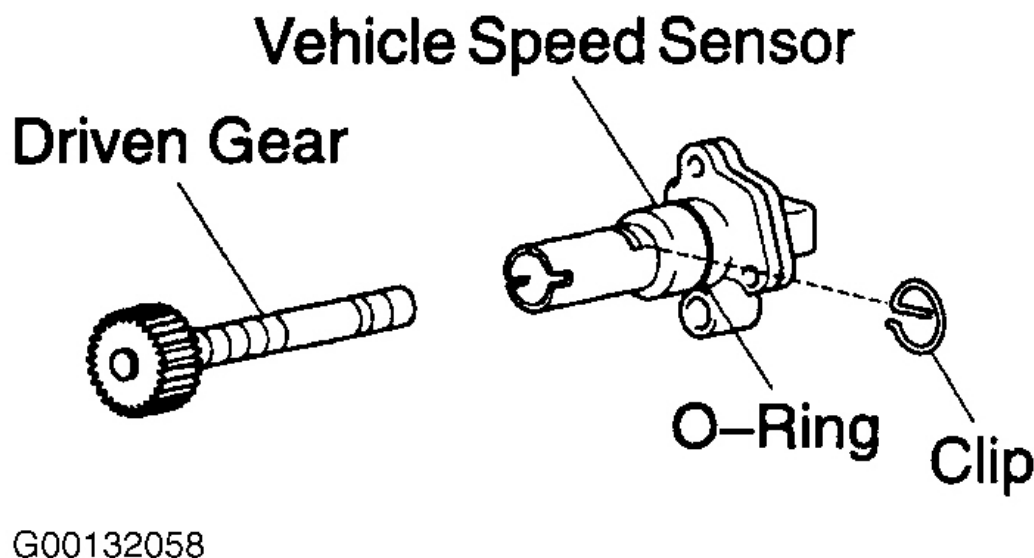
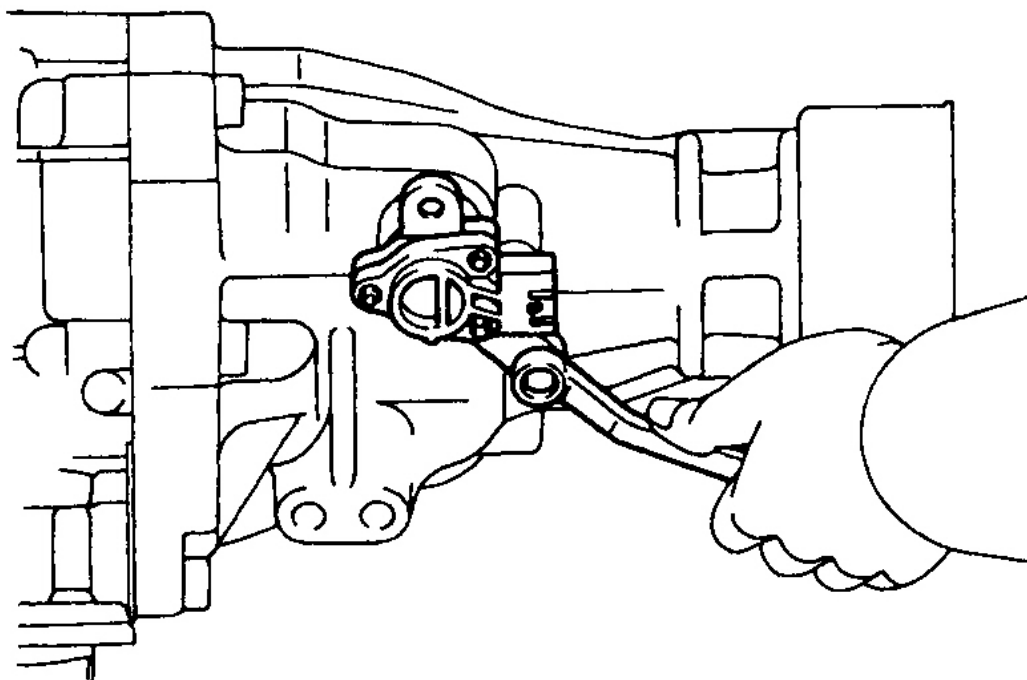


Fig. 127: Removing & Installing VSS Assembly (Except Tacoma)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Tacoma A44D)

1. Remove the bolt and the vehicle speed sensor assembly. See **Fig. 128** . Remove the clip and the driven gear from the vehicle speed sensor. Remove the "O" ring from the vehicle speed sensor.
2. Coat a NEW "O" ring with ATF and install it on vehicle speed sensor. Install the driven gear and the clip on vehicle speed sensor. Install vehicle speed sensor assembly with the bolt. Tighten to specification. See **TORQUE SPECIFICATIONS** .



G00132048

Fig. 128: Removing & Installing Vehicle Speed Sensor (Tacoma A-44D)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS (CARS)

Application	Ft. Lbs. (N.m)
Air Cleaner Bracket (ECHO)	14 (19)
Transaxle/Transmission Oil Cooler Pipe Bolt	
Avalon, Camry, Celica ECHO & Solara	20 (27)
Transaxle/Transmission Oil Cooler Pipe Elbow Bolt	
Avalon, Camry, Celica, ECHO & Solara	20 (27)
Transaxle/Transmission Oil Pan Drain Plug	
Avalon, Camry, Celica, Corolla, ECHO, Solara & Prius	36 (49)
Vehicle Speed Sensor Bolt (Celica U-240E)	13 (17)
	INCH Lbs. (N.m)
Counter Gear Speed Sensor Bolt (Camry, Celica, & Solara)	100 (11.3)
Cruise Control Actuator	115 (13)
Direct Clutch Speed Sensor Bolt (Avalon Camry, ECHO & Solara)	100 (11.3)

Fill Plug (U-140E, U-140F & U-240E)	65 (7.4)
Input Turbine Speed Sensor Bolt (Celica U-240E & Solara U-241E)	100 (11.3)
Manual Detent Spring Bolt (Corolla A-245E)	89 (10)
Manual Valve Body Bolt	
Avalon	97 (11)
Corolla	89 (10)
Solara (U-541E)	97 (11)
Manual Valve Detent Spring Bolt	
Avalon	97 (11)
Corolla	89 (10)
Solara (U-541E)	97 (11)
Oil Pipe Bracket Bolt	
Avalon	58 (6.6)
Camry, Celica, Corolla, ECHO, Solara	89 (10)
Park/Neutral Position Switch Retaining Bolt	
Avalon, Camry, Celica, ECHO & Solara	48 (5.4)
Corolla	115 (13)
Park/Neutral Position Switch Retaining Nut	
Corolla	35 (3.9)
Avalon, Camry, Celica, Corolla, ECHO & Solara	61 (6.9)
Shift Solenoid Valve Bolt	
Avalon (SL, No. 1 & No. 2)	58 (6.6)
Camry	
Bolt "A" 0.47" (12 mm) ⁽¹⁾	58 (6.6)
Bolt "B" 1.77" (45 mm) ⁽¹⁾	96 (10.8)
Celica	
Bolt "A" 0.47" (12 mm) ⁽¹⁾	58 (6.6)
Bolt "B" 1.77" (45 mm) ⁽¹⁾	96 (10.8)
ECHO	
Bolt "A" 0.55" (14 mm)	58 (6.6)
Bolt "B" 2.17 (55 mm)	97 (11)
Solara	
A-140E (No. 1 & No. 2)	48 (5.4)
A-541E	58 (6.6)
U-241E	
Bolt "A" 0.47" (12 mm)	58 (6.6)
Bolt "B" 1.77 (45 mm)	96 (10.8)
Shift Solenoid Valve Wiring Bolt	48 (5.4)
Throttle Cable Bolt (At Transaxle/Transmission)	
Avalon	48 (5.4)

Camry & Solara	
A-140E	89 (10)
A-541E	48 (5.4)
Corolla	89 (10)
Transaxle/Transmission Fluid Filter Bolt	
Avalon	
A-541E	
Bolt "A" 0.866" (22 mm) ⁽²⁾	89 (10)
Bolt "B" 2.087" (53 mm) ⁽²⁾	97 (11)
Camry	
A-140E	97 (11)
A-541E	
Bolt "A" 0.866" (22 mm) ⁽²⁾	89 (10)
Bolt "B" 2.087" (53 mm) ⁽²⁾	97 (11)
U-241E	96 (10.8)
Celica	97 (11)
ECHO	97 (11)
Solara	
A-140E	89 (10)
A-541E	
Bolt "A" 0.866" (22 mm) ⁽²⁾	89 (10)
Bolt "B" 2.087" (53 mm) ⁽²⁾	97 (11)
U-241E	96 (10.8)
Corolla	89 (10)
Transaxle/Transmission Oil Pan Bolt	
Avalon	69 (7.8)
Camry	
A-140E	43 (4.9)
A-541E	67 (7.6)
U-241E	69 (7.8)
Celica	69 (7.8)
Corolla	
A-131L	43 (4.9)
A-245E	47 (5.3)
ECHO	69 (7.8)
Solara (A-140E)	43 (4.9)
Solara (A-541E) & (U-241E)	69 (7.8)
Valve Body-To-Case Bolt	
Avalon	97 (11)

Camry	96 (10.8)
Solara	
A-140E	89 (10)
A-541E	97 (11)
U-241E	96 (10.8)
Celica (U-240E & U-341E)	97 (11)
Corolla	
A-131L	89 (10)
A-245E	57 (6.4)
ECHO	97 (11)
Vehicle Speed Sensor (Gear Driven)	
Celica	49 (5.5)
ECHO	62 (7)
Solara (A-541E)	43 (4.9)
Solara (U-241E)	49 (5.5)
(1) See Fig. 103 to identify Bolts.	
(2) See Fig. 91 to identify Bolts.	

TORQUE SPECIFICATIONS (TRUCKS & VANS)

Application	Ft. Lbs. (N.m)
Transmission Fluid Temperature Sensor Bolt	21 (29)
Transaxle/Transmission Oil Cooler Pipe Bolt	
Highlander, RAV4 & Sienna	20 (27)
Land Cruiser, Sequoia, Tundra & 4Runner	21 (29)
Tacoma (A-340E & A-340F)	21 (29)
Transaxle/Transmission Oil Cooler Pipe Elbow Bolt	
Highlander, RAV4 & Sienna	20 (27)
Land Cruiser, Sequoia, Tundra & 4 Runner	21 (29)
Tacoma (A-340E & A-340F)	21 (29)
Transaxle/Transmission Oil Pan Drain Plug	
Highlander, RAV4 & Sienna	36 (49)
Land Cruiser, Sequoia, Tacoma, Tundra & 4Runner	15 (20)
No. 1 Vehicle Speed Sensor Bolt	
Sequoia & Tacoma (A-340E & A-340F) Tundra & 4Runner	12 (16)
Tacoma (A-44D)	13 (17)
	INCH Lbs. (N.m)
Counter Gear Speed Sensor Bolt RAV4	100 (11.3)
Direct Clutch Speed Sensor Bolt	
Sequoia & Tundra	48 (5.4)
Sienna	97 (11)

Input Turbine Speed Sensor Bolt (RAV4)	100 (11.3)
Manual Valve Body Bolt Sienna	97 (11)
Manual Valve Detent Spring Bolt Sienna	97 (11)
Oil Cooler Assembly	
Land Cruiser	
Oil Cooler Bolt	102 (11.5)
Oil Cooler Bracket Bolt	43 (4.9)
Sequoia & Tundra	
Oil Cooler Bolt	97 (11)
Oil Cooler Bracket Bolt	43 (4.9)
Oil Cooler Tube Bolt	44 (5)
Oil Pipe Bracket Bolt	89 (10)
Park/Neutral Position Switch Retaining Bolt	
Highlander & RAV4	48 (5.4)
Land Cruiser	61 (6.9)
Sequoia, Sienna, Tacoma, Tundra & 4Runner	115 (13)
Tacoma	
A-44D	48 (5.4)
A-340E & A-340F	115 (13)
Park/Neutral Position Switch Retaining Nut	
Highlander, RAV4 & Sienna	61 (6.9)
Land Cruiser	115 (13)
Sequoia, Tacoma, Tundra & 4Runner	35 (3.9)
Shift Solenoid Valve Bolt	
Highlander	
Bolt "A" 0.47" (12 mm) ⁽¹⁾	58 (6.6)
Bolt "B" 1.77" (45 mm) ⁽¹⁾	96 (10.8)
RAV4	
Bolt "A" 0.47" (12 mm) ⁽¹⁾	58 (6.6)
Bolt "B" 1.77" (45 mm) ⁽¹⁾	96 (10.8)
Sequoia	97 (11)
Sienna (SL & SLN)	58 (6.6)
Tacoma	89 (10)
Tundra	89 (10)
4Runner	89 (10)
Shift Solenoid Wiring Bolt Sienna	49 (5.5)
Throttle Cable Bolt (At Transmission)	
Sienna	133 (15)
Sequoia, Tacoma, Tundra & 4Runner	89 (10)
Transaxle/Transmission Fluid Filter Bolt	

Highlander	96 (10.8)
Land Cruiser, Sequoia & Tacoma (A-340E & A-340F) Tundra & 4Runner	89 (10)
RAV4	97 (11)
Sienna	97 (11)
Tacoma (A-44D)	48 (5.4)
Transaxle/Transmission Oil Pan Bolt	
Highlander, RAV4 (U-140F) & Sienna (A-541E)	43 (4.9)
RAV4 (U-241E)	67 (7.6)
Land Cruiser, Sequoia & Tacoma (A-340E & A-340F) Tundra & 4Runner	115 (13)
Tacoma (A-44D)	39 (4.4)
Valve Body Bolt	
Highlander	97 (11)
Land Cruiser	97 (11)
RAV4 (U-140F & U-241E)	96 (10.8)
Sienna	97 (11)
Sequoia (A-340E & A-340F)	89 (10)
Tundra (A-340E & A-340F)	89 (10)
4Runner (A-340E & A-340F)	97 (11)
Vehicle Speed Sensor Bolt (Gear Driven)	
RAV4	49 (5.5)
No. 2 Vehicle Speed Sensor Bolt	
Sequoia, Tacoma, Tundra, 4Runner	48 (5.4)
(1) See Fig. 103 to identify Bolts.	