

2002-03 AUTOMATIC TRANSMISSIONS

Removal & Installation - RAV4

APPLICATION

TRANSAXLE APPLICATION

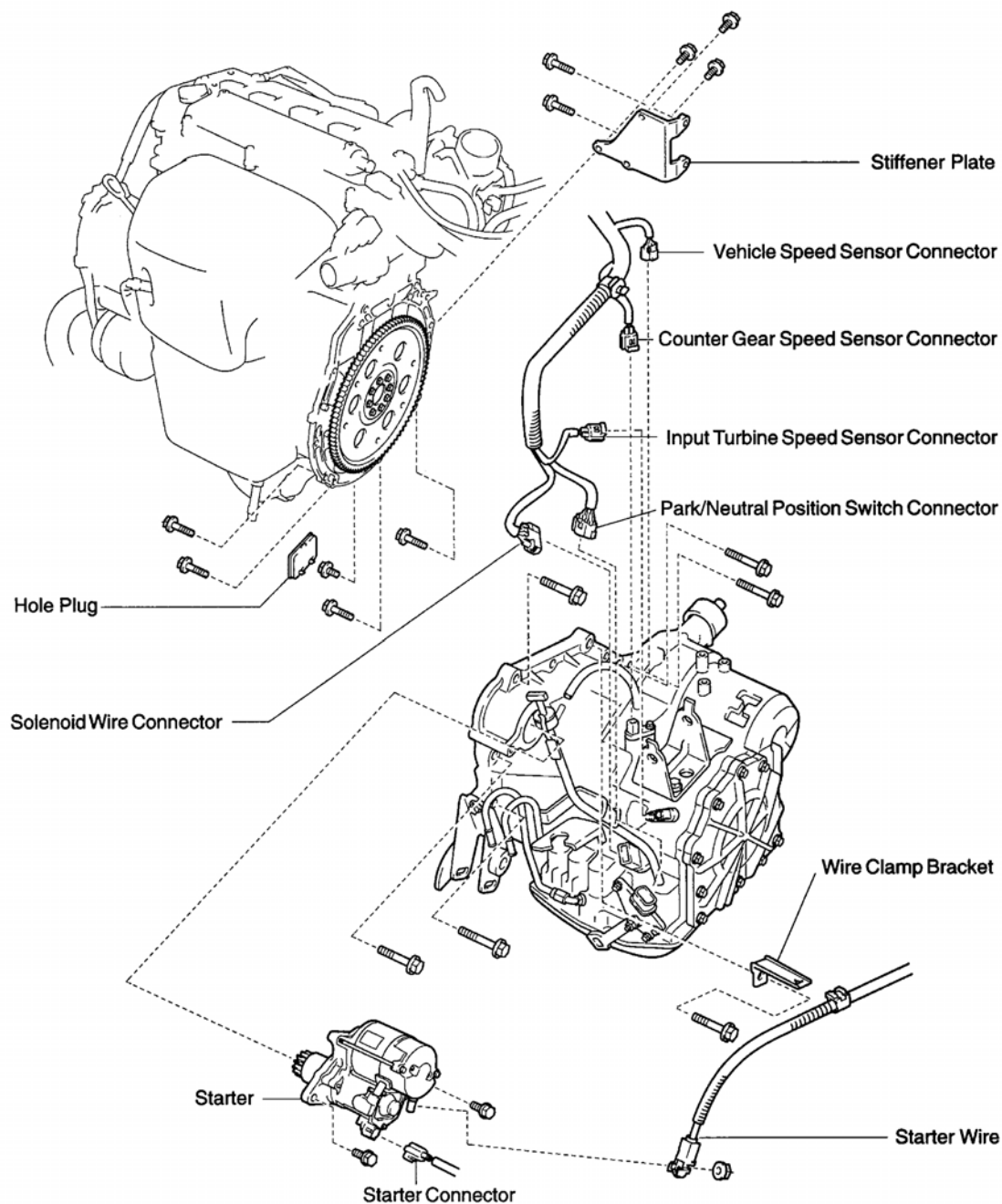
Application	Transaxle Model
RAV4	
FWD	U241E
AWD	U140F

REMOVAL & INSTALLATION

U140F

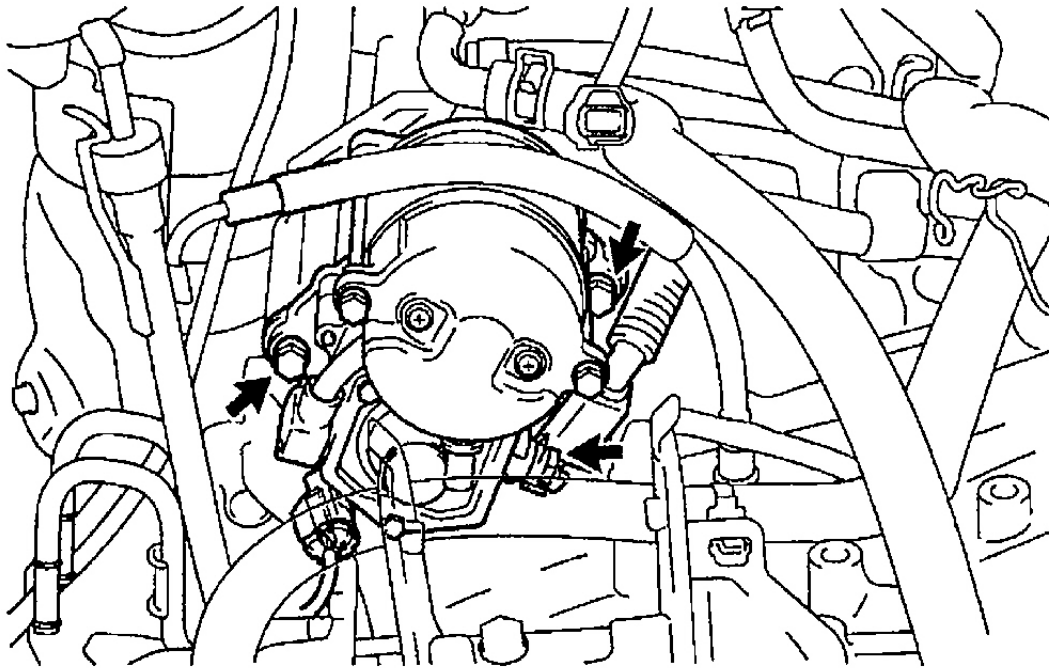
Removal

1. Remove transaxle with engine. See appropriate MECHANICAL article in ENGINES.
2. Remove starter. See **Fig. 1** and **Fig. 2** . Disconnect the hose from the fluid level gauge guide. Disconnect the connector. Remove the 2 bolts, and pull out the starter. Remove the nut, and disconnect the starter wire. Remove the starter.
3. Remove 5 bolts and stiffener plate. See **Fig. 3** .
4. Remove hole plug. Turn crankshaft, and remove 6 bolts holding crankshaft pulley bolt with wrench. See **Fig. 4** .
5. Remove 4 transaxle lower side mounting bolts. See **Fig. 5** .
6. Disconnect all electrical connectors and wires. Disconnect the park/neutral position switch connector (a). See **Fig. 6** . Disconnect the solenoid wire connector (b). Disconnect the input turbine speed sensor connector (c). Disconnect the counter gear speed sensor connector (d). Disconnect the vehicle speed sensor connector (e). Disconnect the wire harness clamp from the bracket (f). Disconnect the wire harness clamp from the engine mounting bracket (g).
7. Remove 6 transaxle upper side mounting bolts and wire clamp bracket. See **Fig. 7** . Remove transaxle.



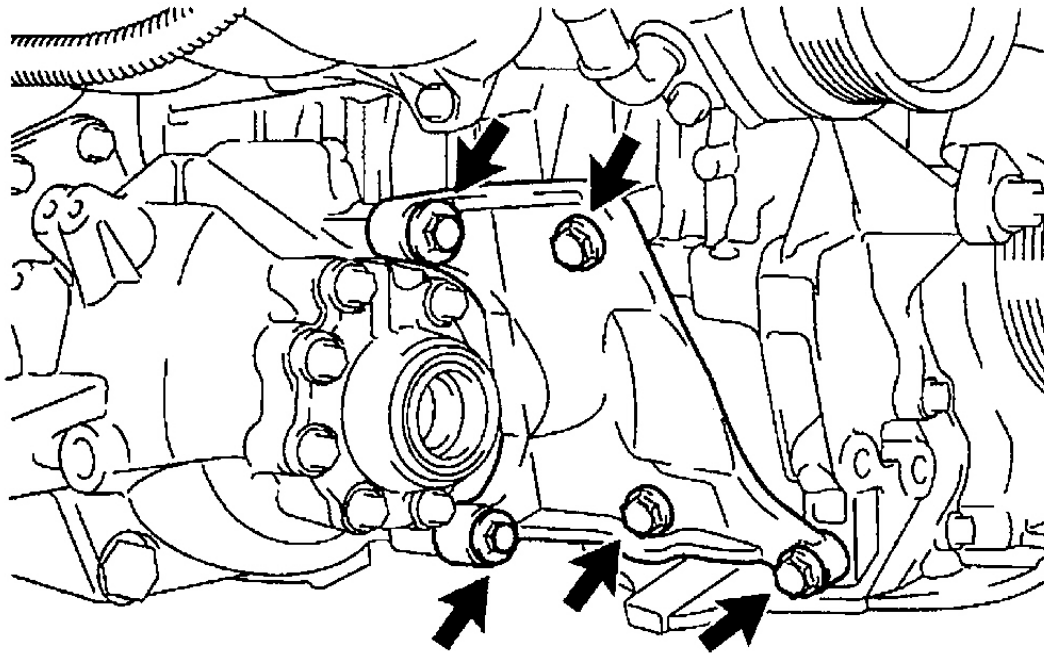
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Fig. 1: Exploded View Of Transaxle Assembly (U140F)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



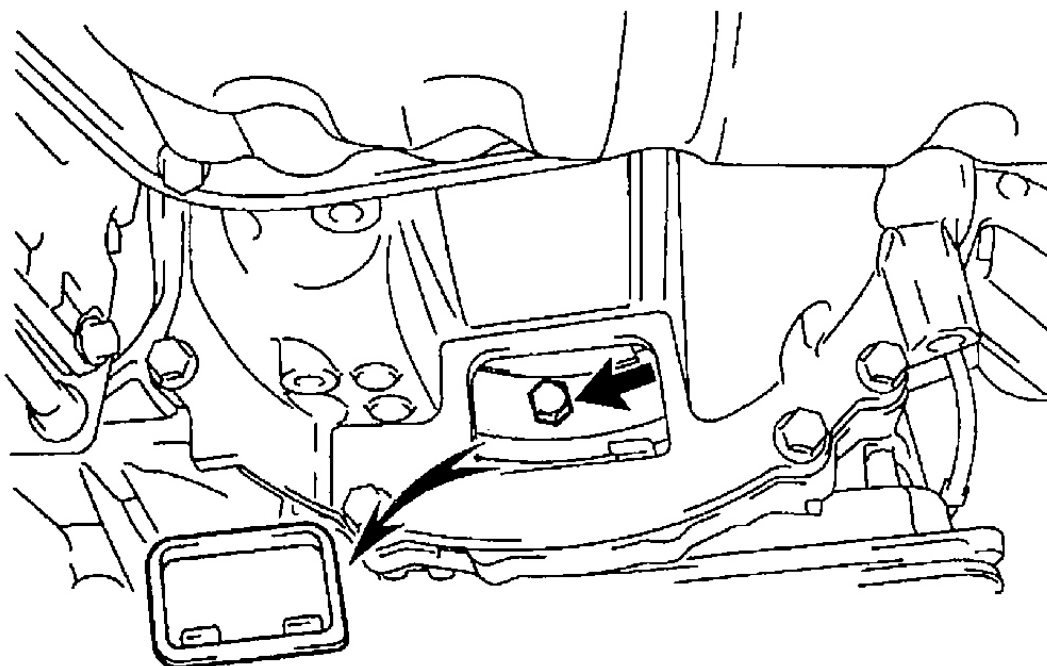
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Fig. 2: Removing/Installing Starter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



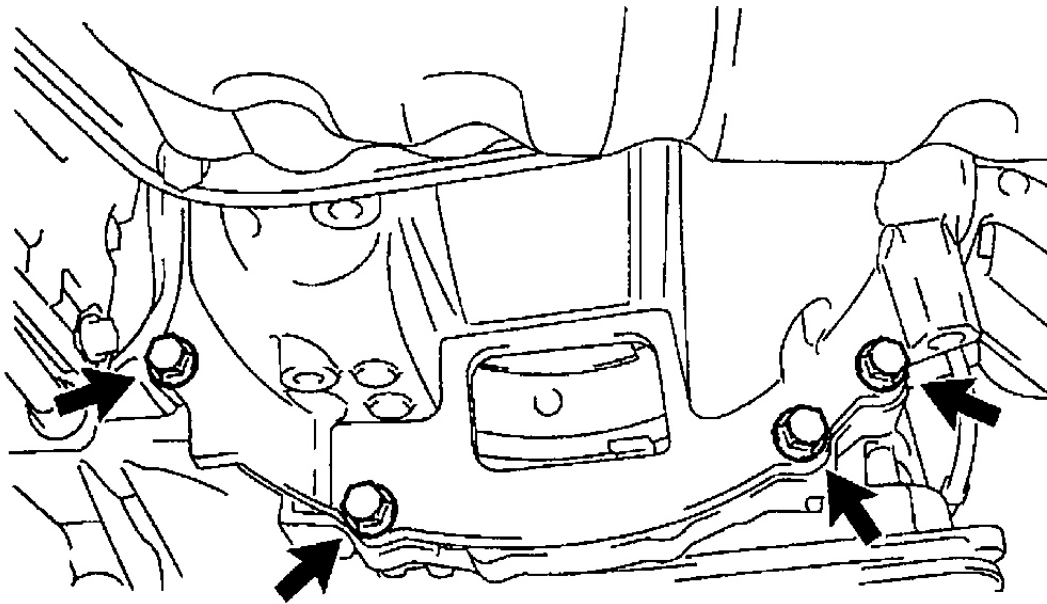
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Fig. 3: Identifying Stiffener Plate Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



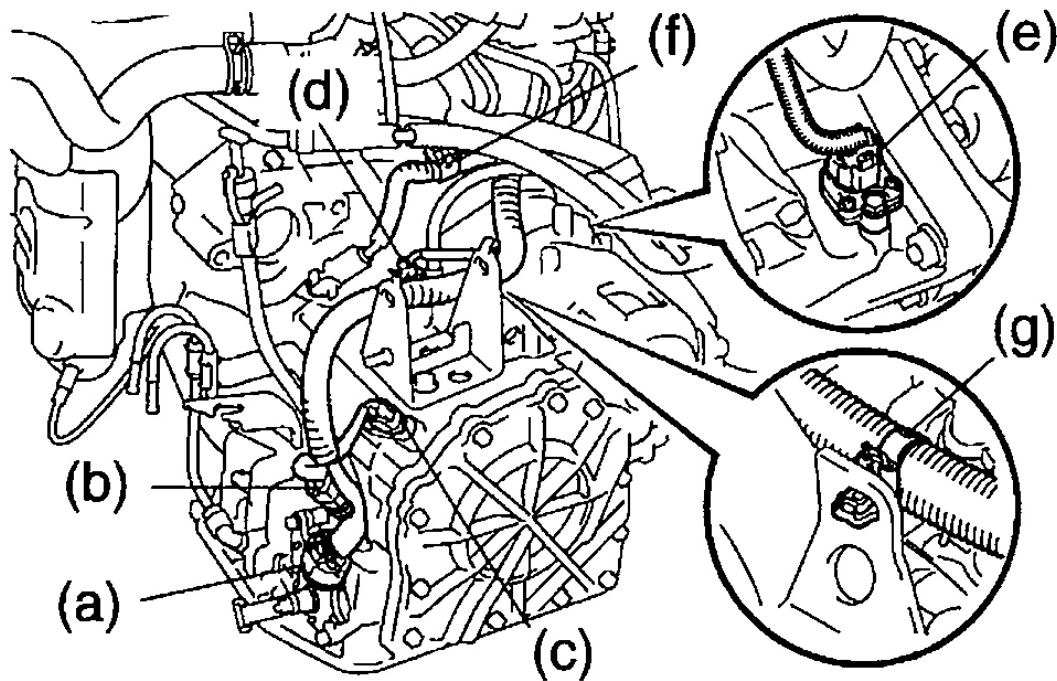
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Fig. 4: Locating Torque Converter Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



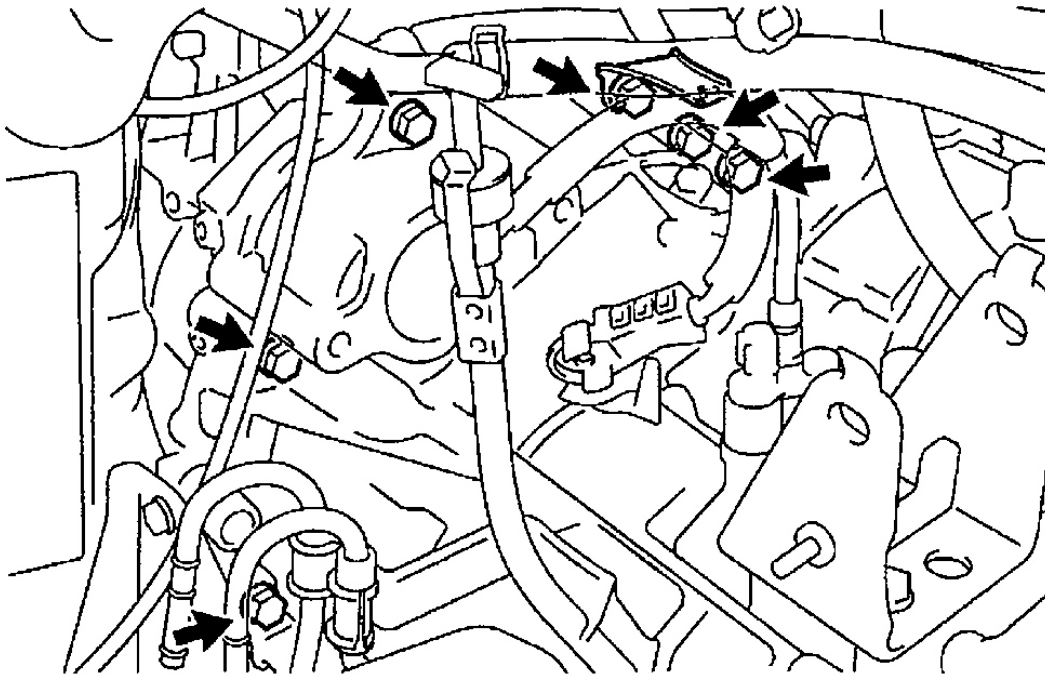
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Fig. 5: Identifying Lower Transaxle-To-Engine Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 6: Disconnecting Wiring Harness Connectors & Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

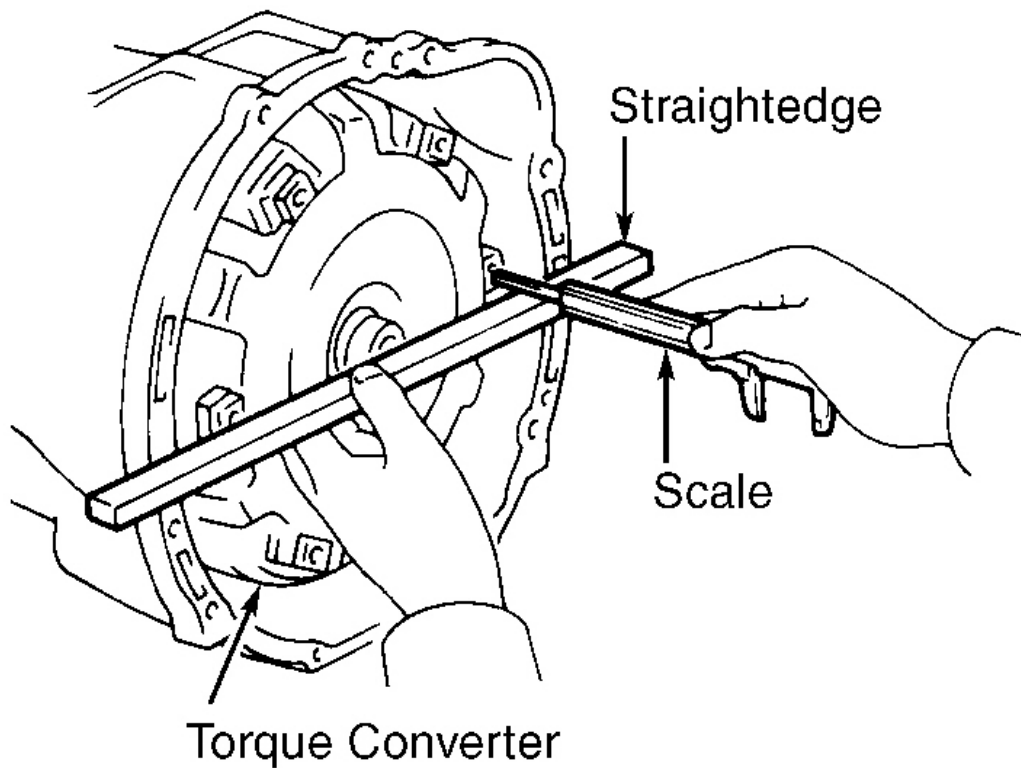


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Fig. 7: Identifying Upper Transaxle-To-Engine Bolts
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

1. Before installing transaxle, use dial indicator to check drive plate runout. Drive plate runout should be checked near starter ring gear on the drive plate. Replace drive plate if runout exceeds .0079" (12.95 mm).
2. Install torque converter on transaxle. To ensure torque converter is fully seated, torque converter depth should be checked. Using straightedge and caliper, measure torque converter depth from torque converter bolt lug on torque converter to the surface on transaxle. See **Fig. 8** .
3. Torque converter depth should be more than .5098" (.020 mm). If torque converter depth is less than specified, check for improperly seated torque converter.
4. To install, reverse removal procedure. Tighten all fasteners to specification. See **TORQUE SPECIFICATIONS** .
5. Adjust all cables and fill transaxle with ATF fluid. See appropriate SERVICING article.

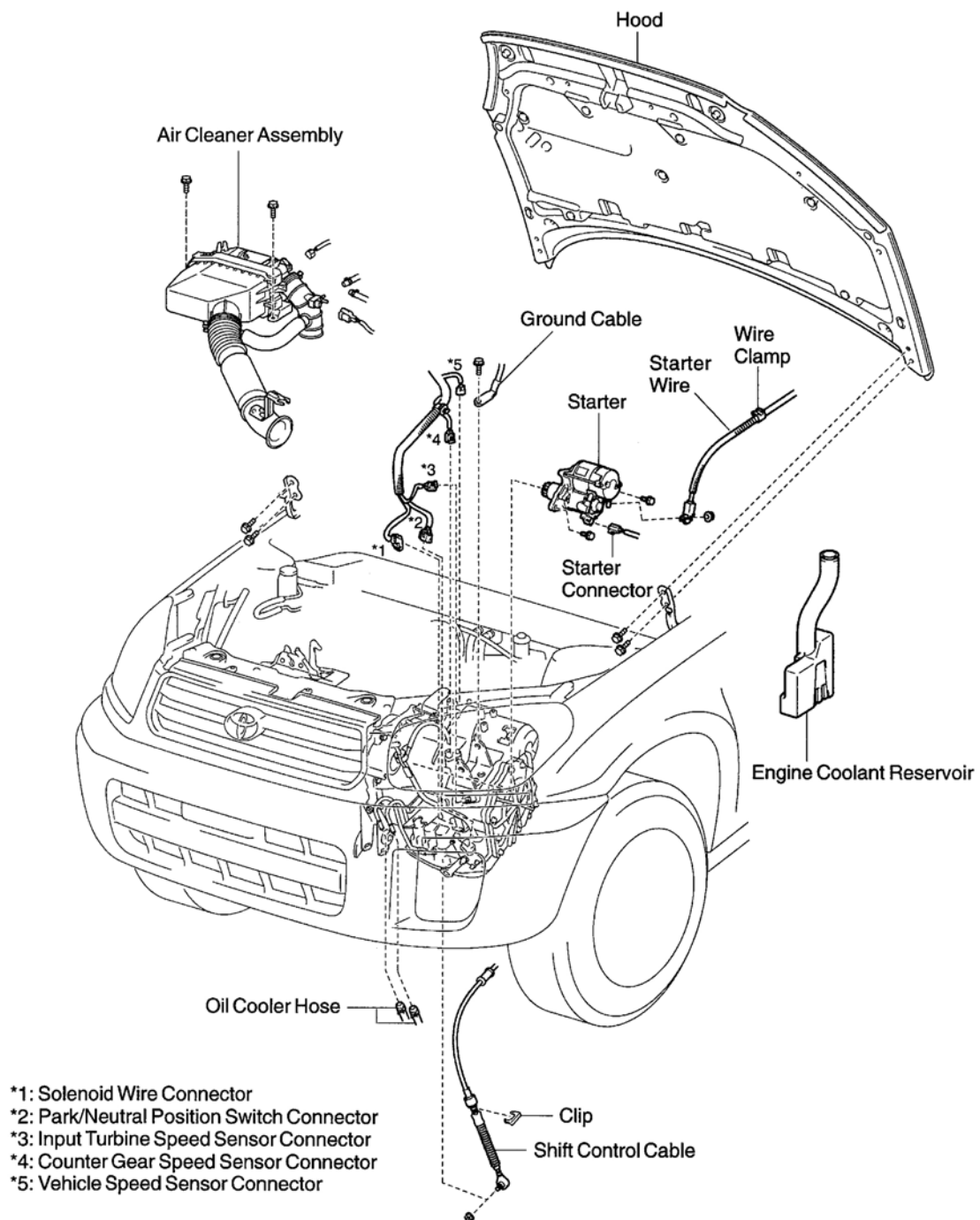


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Fig. 8: Measuring Torque Converter Depth
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

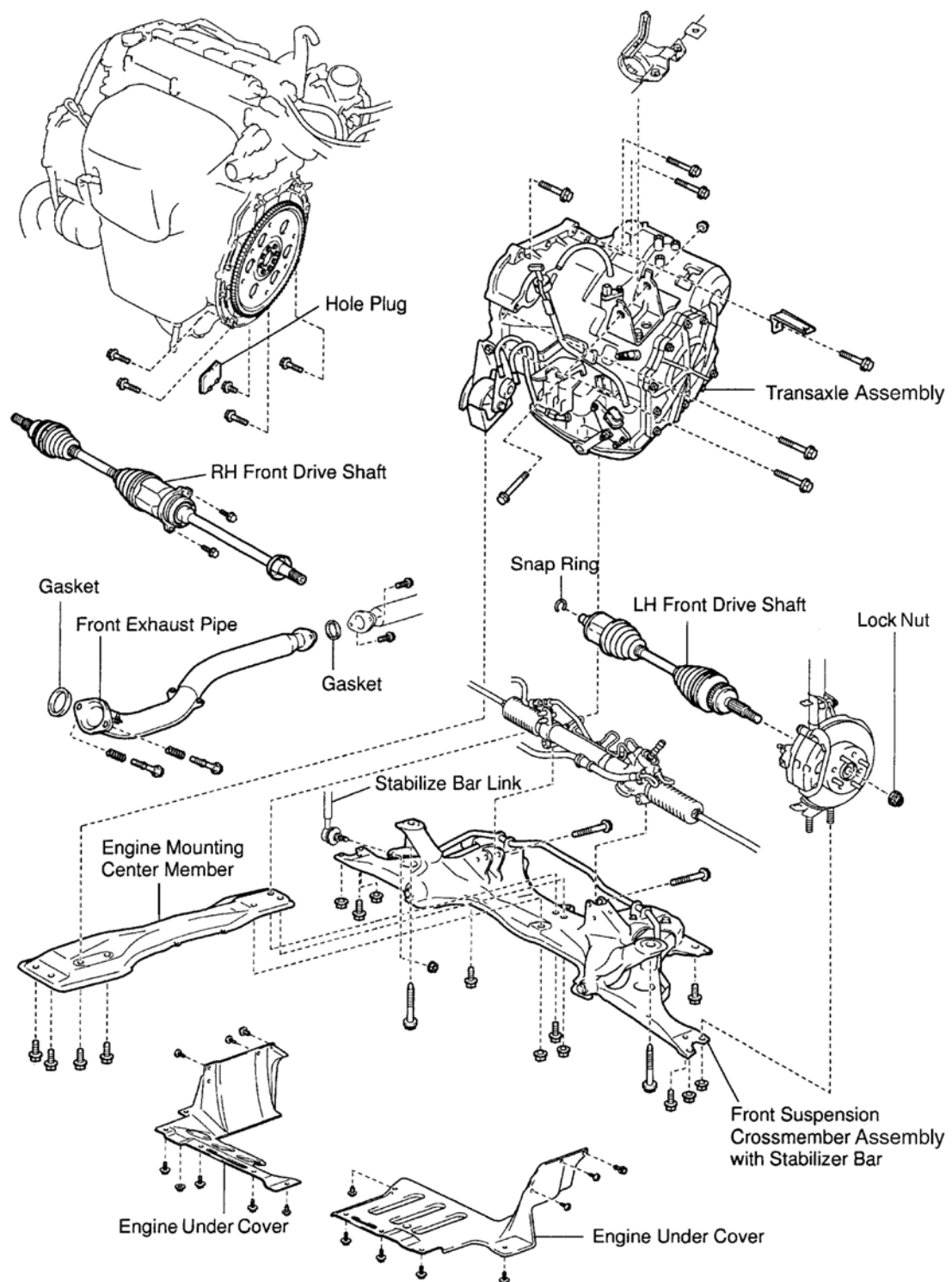
U241E

NOTE: To assist in removal and installation of transaxle, see Fig. 9 .



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Fig. 9: Exploded View Of Underhood Transaxle Components (U241E)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

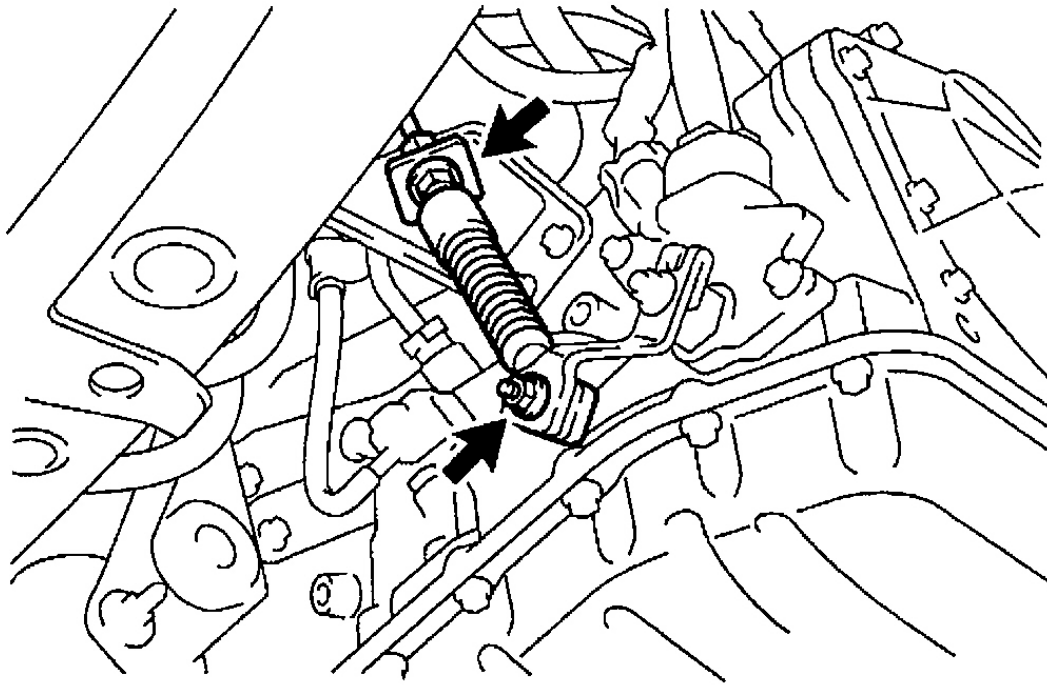


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Fig. 10: Exploded View Of Automatic Transmission Mounting Components (U241E)

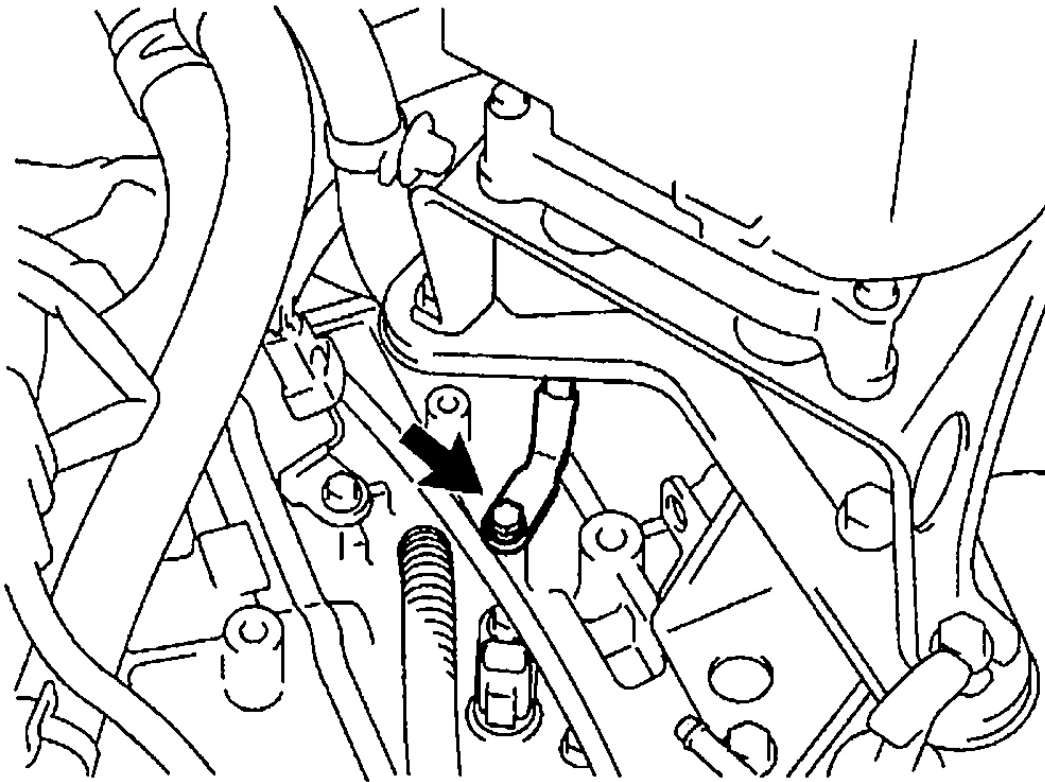
Removal

1. Remove hood. Remove air cleaner assembly. Remove engine coolant reservoir. Remove engine under covers.
2. Disconnect shift control cable. Remove the nut from the control shaft lever. Remove the clip, and disconnect the control cable from the bracket. Disconnect the control cable from the cable clamp on the transaxle. See **Fig. 11** .
3. Disconnect hose from ATF level gauge guide.
4. Disconnect starter connector. Disconnect wire clamp on starter wire from bracket. Remove 2 bolts, and pull out starter. Remove nut, and disconnect starter wire. Remove starter. See **Fig. 2** . Disconnect ground cable. See **Fig. 12** .
5. Disconnect all wires and electrical connectors. Disconnect the park/neutral position switch connector (a). See **Fig. 13** . Disconnect the solenoid wire connector (b). Disconnect the input turbine speed sensor connector (c). Disconnect the counter gear speed sensor connector (d). Disconnect the vehicle speed sensor connector (e). Disconnect the wire harness clamp from the engine mounting bracket (f).
6. Remove 3 upper side transaxle mounting bolts and wire clamp bracket. See **Fig. 14** .
7. Install engine support fixture. See **Fig. 15** .
8. Remove engine left mounting bolt and nut. See **Fig. 16** . Drain ATF fluid from differential case.
9. Remove left and right axle shafts. See appropriate AXLE SHAFTS article in DRIVELINE/AXLES.
10. Remove front exhaust pipe. Remove the 4 bolts, 2 springs, front exhaust pipe and 2 gaskets.
11. Disconnect 2 oil cooler hoses from transaxle. See **Fig. 17** .
12. Remove power steering gear mounting bolts. See **Fig. 18** . Remove front suspension crossmember assembly with stabilizer bar. Remove the 2 nut, and disconnect the 2 stabilizer bar links from the stabilizer. Remove the 3 bolts, 2 nuts and front suspension crossmember assembly with stabilizer bar. See **Fig. 19** .
13. Remove torque converter clutch mounting bolt. Remove the hole plug. Turn the crankshaft to gain access to each bolt, remove the holding the crankshaft pulley bolt with a wrench. See **Fig. 4** .
14. Remove 4 transaxle lower side mounting bolts. See **Fig. 5** . Remove front side transaxle mounting bolt, 2 rear side transaxle mounting bolts and transaxle. See **Fig. 20** .



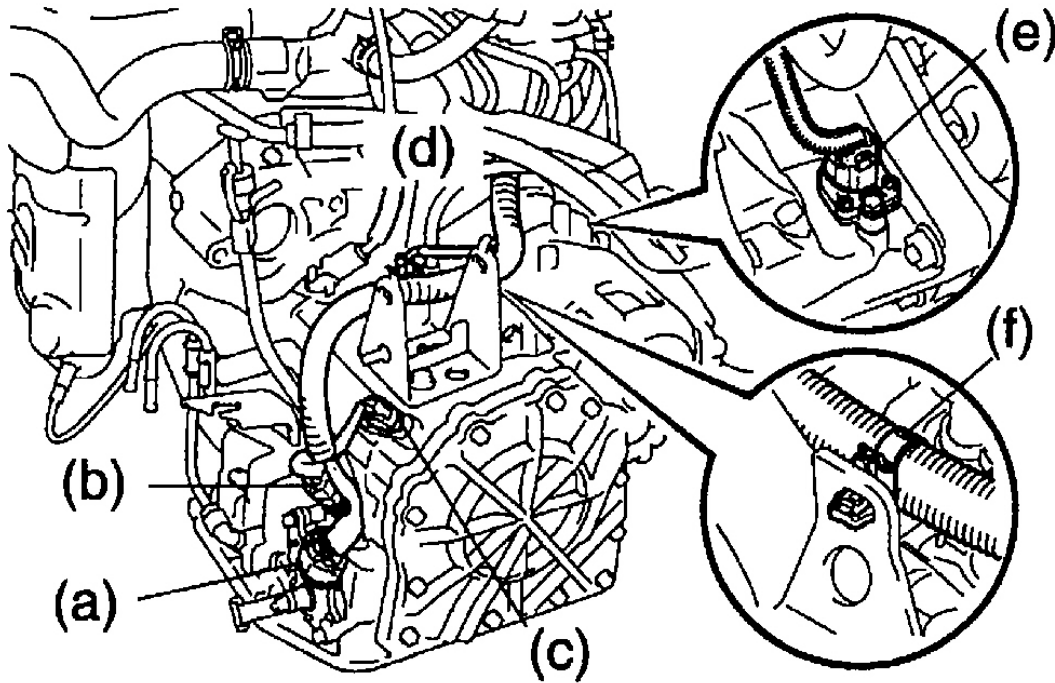
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Fig. 11: Disconnecting Shift Control Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



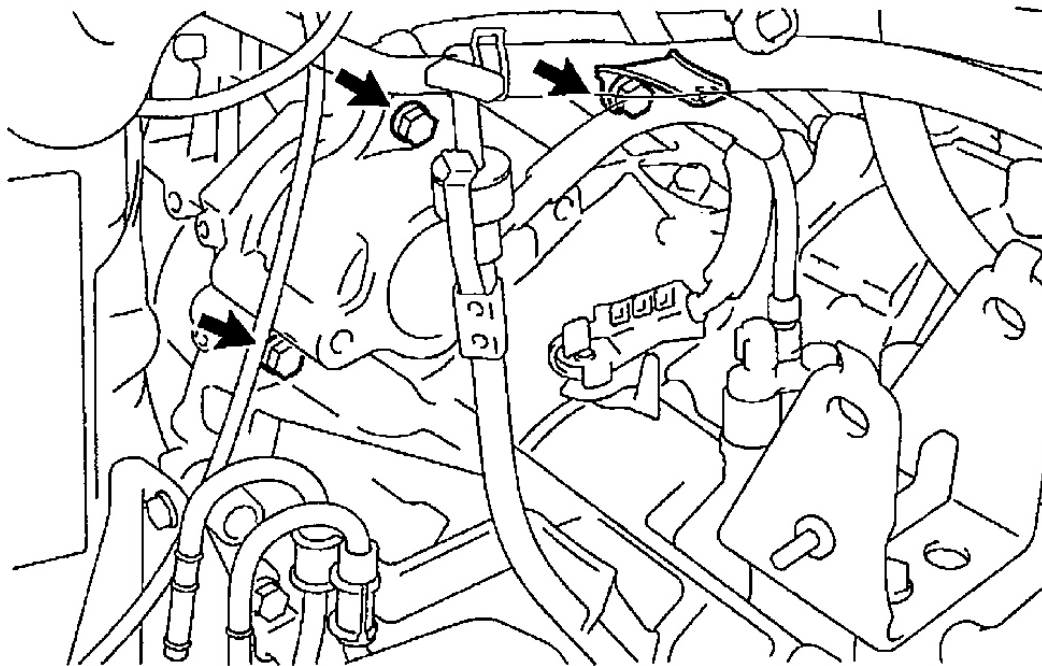
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Fig. 12: Locating Ground Cable
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



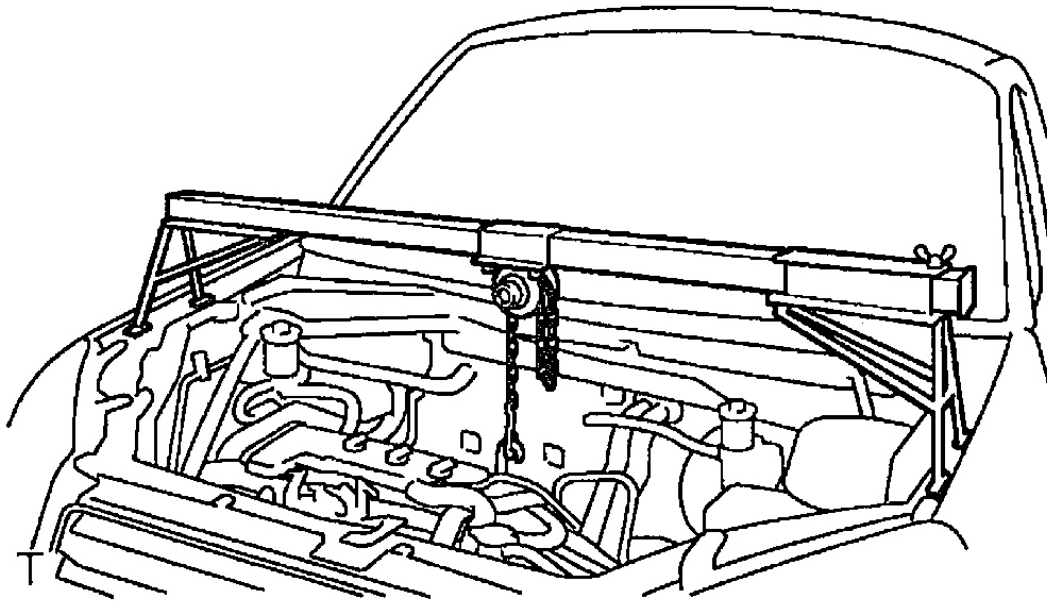
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Fig. 13: Locating Wiring Harness Connectors & Clamps
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



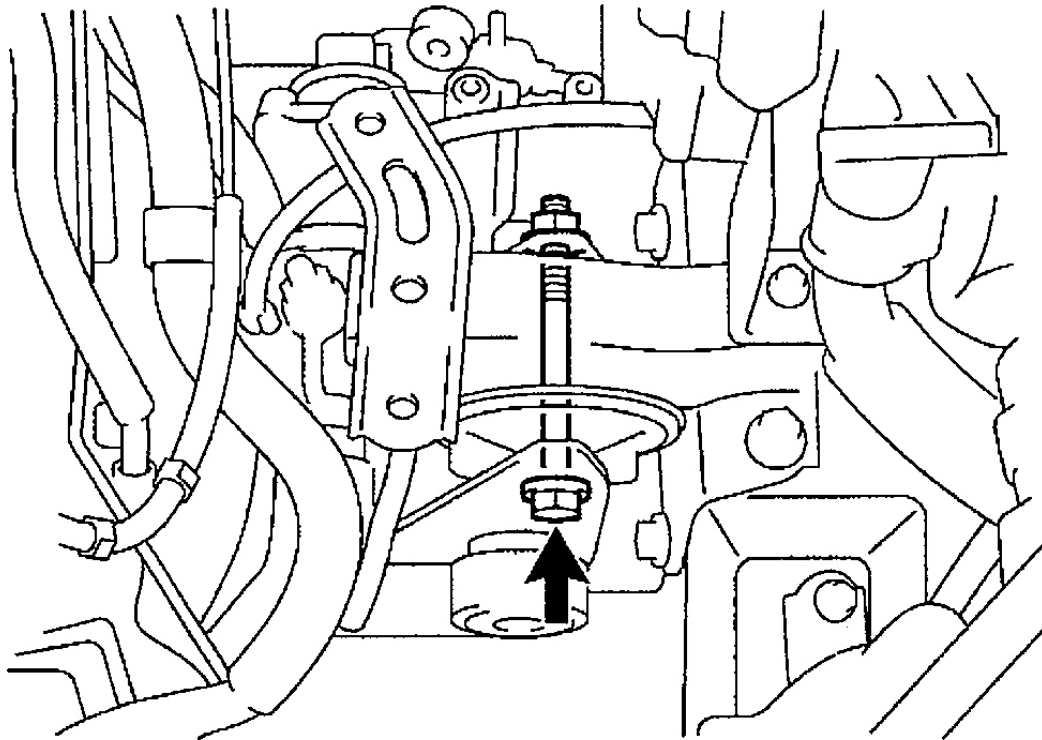
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Fig. 14: Identifying Upper Transaxle-To-Engine Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



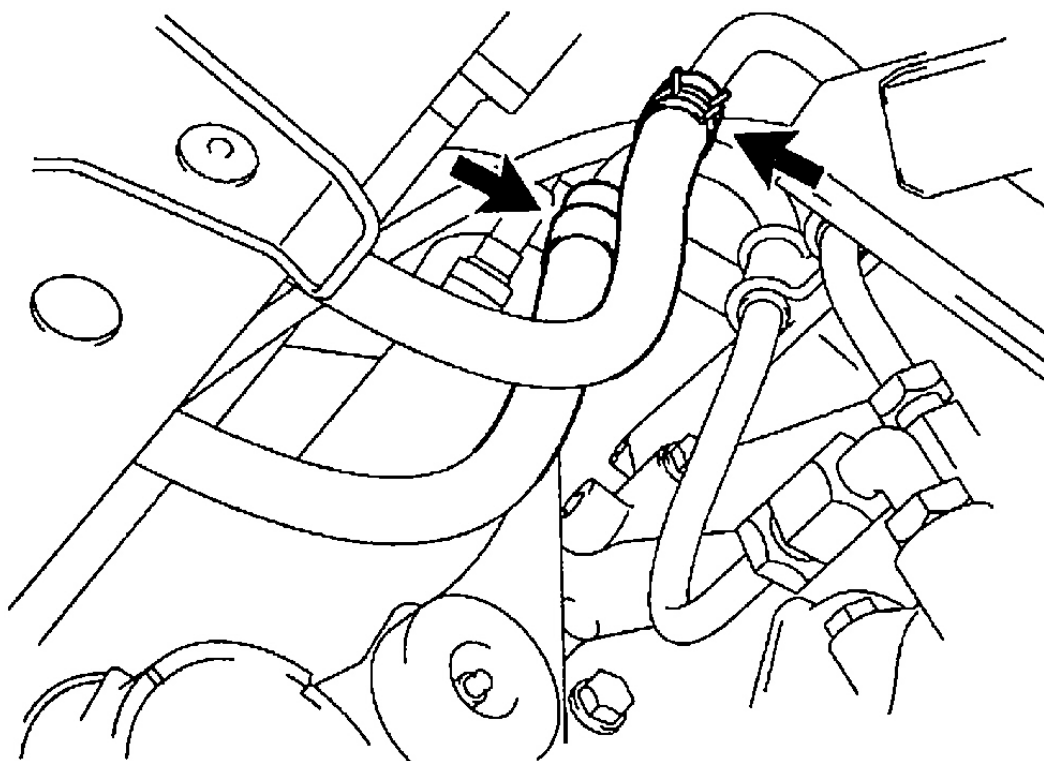
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Fig. 15: Identifying Installation Of Engine Support Fixture
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



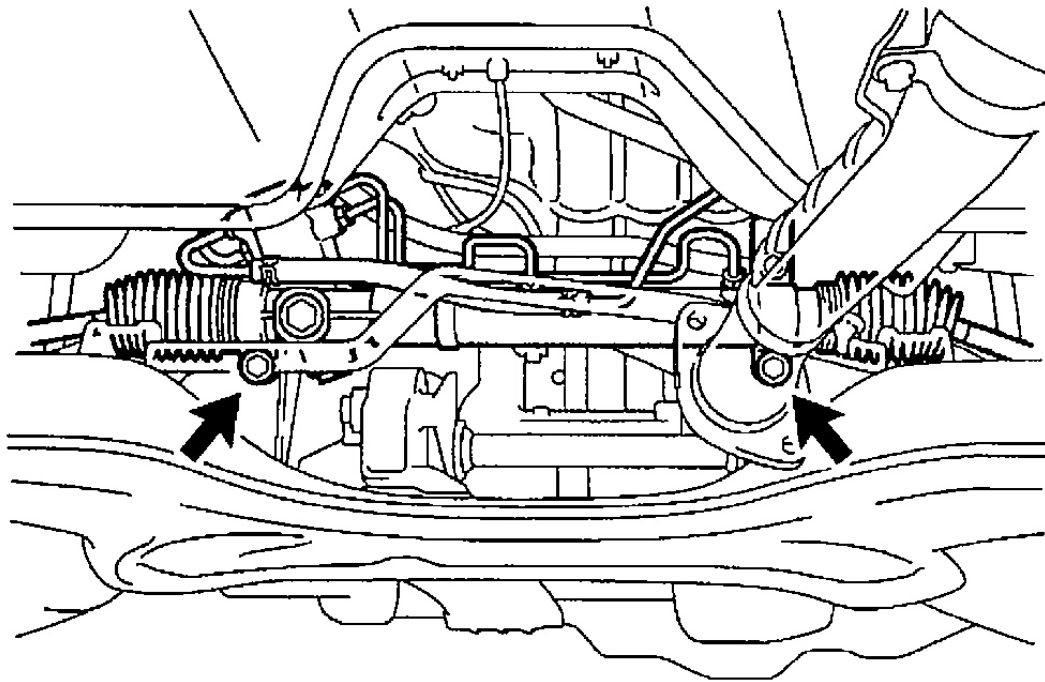
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Fig. 16: Locating Engine Left Mounting Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



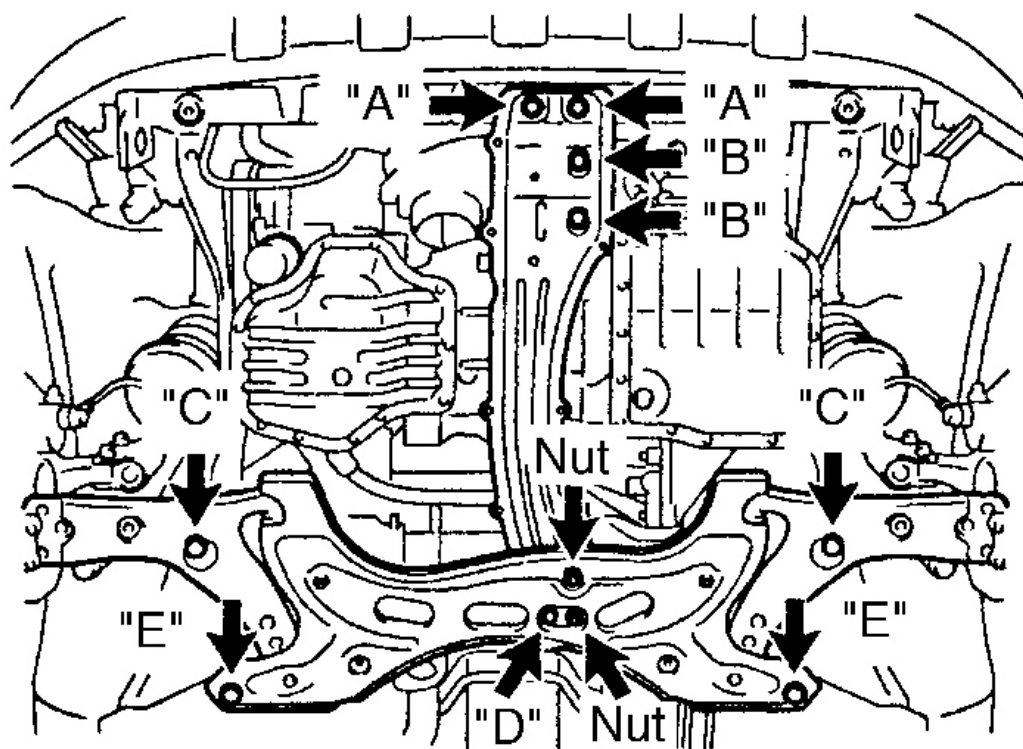
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Fig. 17: Disconnecting Oil Cooler Hoses
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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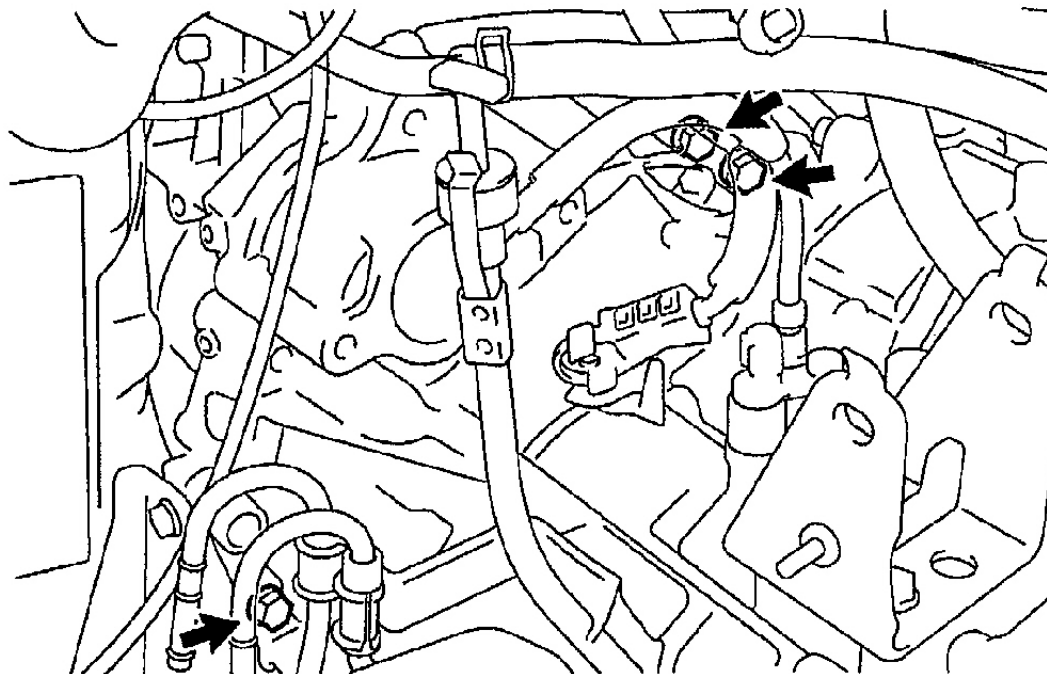
Fig. 18: Locating Steering Gear Mounts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



Bolt A - 28 Ft. Lbs. (38 N.m)
Bolt B - 59 Ft. Lbs. (80 N.m)
Bolt C - 80 Ft. Lbs. (108 N.m)
Bolt D - 85 Ft. Lbs. (115 N.m)
Bolt E - 115 Ft. Lbs. (156 N.m)
Nut - 85 Ft. Lbs. (115 N.m)

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Fig. 19: Identifying Front Suspension Crossmember Assembly Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



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Fig. 20: Locating Rear Side Transaxle Mounting Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Installation

1. Before installing transaxle, use dial indicator to check drive plate runout. Drive plate runout should be checked near starter ring gear on the drive plate. Replace drive plate if runout exceeds .0079" (.201 mm).
2. Install torque converter on transaxle. To ensure torque converter is fully seated. Torque converter depth should be checked. Using straightedge and caliper. Measure torque converter depth from torque converter bolt lug on torque converter to the surface on transaxle. See **Fig. 8** .
3. Torque converter depth should be more than .510" (12.95 mm). If torque converter depth is less than specified. Check for improperly seated torque converter.
4. To install, reverse removal procedure. Tighten all fasteners to specification. See **TORQUE SPECIFICATIONS** . Tighten front suspension crossmember bolts in sequence.
5. Adjust all cables and fill transaxle with ATF fluid. See appropriate **SERVICING** article.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Control Shaft Lever (U241E)	11 (15)

Engine Left Mounting Bolt (U241E)	11 (15)
Front Suspension Crossmember Bolts/Nuts (U241E) ⁽¹⁾	
"A"	28 (38)
"B"	59 (80)
"C"	80 (108)
"D"	85 (115)
"E"	115 (156)
Nut	85 (115)
Starter Bolt	27 (37)
Steering Gear Mounting Bolts (U241E)	101 (137)
Stiffener Plate Bolt	25 (34)
Torque Converter Bolt	30 (41)
Transaxle Mounting Bolts	
Front & Rear Side (U241E)	34 (46)
Lower Side	32 (44)
Upper Side (U140F)	
"A"	47 (64)
"B"	34 (46)
(1) Tighten bolts in sequence. See Fig. 19 .	