

1998-99 TRANSMISSION SERVICING

Transmission Removal & Installation - Cars - Except Metro & Prizm

APPLICATION & IDENTIFICATION

BODY CODE IDENTIFICATION

Body Code	Model
"C"	Park Avenue
"E"	Eldorado
"F"	Camaro & Firebird
"G"	Aurora & Riviera
"H"	Bonneville, Eighty Eight, LeSabre, LSS & Regency
"J"	Cavalier & Sunfire
"K"	Concours, DeVille & Seville
"N"	Achieva, Alero, Cutlass, Grand Am, Malibu & Skylark
"V"	Catera
"W"	Century, Cutlass Supreme, Grand Prix, Intrigue, Lumina, Monte Carlo & Regal
"Y"	Corvette
"Z"	Saturn

AUTOMATIC TRANSMISSION & TRANSAXLE IDENTIFICATION

Vehicle Application	Trans. Model (RPO Code)
Buick	
Century	4T60E (M13)
LeSabre	4T65E (MN3 Or M15)
Park Avenue	4T65E (MN3 Or MN7)
Regal	4T65E (M15 Or MN7)
Riviera	4T65E (MN7)
Skylark	4T60E (MN13)
Cadillac	
Catera	4L30E (ML4)
DeVille	4T80E (MH1)
Eldorado	4T80E (MH1)
Seville	4T80E (MH1)
Chevrolet	
Camaro	4L60E (M30)
Cavalier	3T40 (MD9) Or 4T40E (MN4)
Corvette	4L60E (M30)
Lumina	
3.1L	4T60E (M13)

3.8L	4T65E (M15)
Malibu	4T40E (MN4)
Monte Carlo	
3.1L	4T60E (M13)
3.8L	4T65E (M15)
Oldsmobile	
Achieva	4T40E (MN4) Or 4T60E (M13)
Alero	
2.4L	4T40E (MN4)
3.4L	4T45E (MN5)
Aurora	4T80E (MH1)
Cutlass	4T40E (MN4)
Eighty-Eight	4T65E (M15 Or MN3)
Intrigue	
3.5L	4T65E (MN3)
3.8L	4T65E (M15)
LSS	4T65E (MN7 Or MN3)
Regency	4T65E (M15)
Pontiac	
Bonneville	4T65E (MN3, MN7 Or M15)
Firebird	4L60E (M30)
Grand Am	
2.4L	4T40E (MN4) Or 4T60E (M13)
3.1L	4T60E (M13)
3.4L	4T45E (MN5)
Grand Prix	
3.1L	4T60E (M13)
3.8L	4T65E (MN7 Or M15)
Sunfire	
2.2L	3T40 (MD9) Or 4T40E (MN4)
2.4L	4T40E (MN4)
Saturn	MP6 & MP7

MANUAL

NOTE: For manual transmission/transaxle replacement procedures, see appropriate article in CLUTCHES.

AUTOMATIC

WARNING: 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. See **COMPUTER RELEARN PROCEDURES** article in **GENERAL INFORMATION** before disconnecting battery.

MP6 & MP7 TRANSAXLE (SATURN)

Removal & Installation

1. To disable air bag system, turn ignition off. Remove SIR fuse from fuse block. Remove Connector Position Assurance (CPA) clip from Yellow SIR connector at base of steering column. Disconnect Yellow connector. Wait 15 minutes before working on vehicle.

WARNING: DERM maintains back-up voltage for about 15 minutes after disabling air bag system. Wait at least 15 minutes after disabling air bag system before servicing, as accidental deployment may result in personal injury.

2. Disconnect negative battery cable. Remove inlet air duct fasteners and remove inlet air duct assembly. Remove air box fasteners and remove air box.
3. Remove transaxle strut-to-cradle mounting bolt. Loosen transaxle strut-to-transaxle mounting bolt and flip strut over onto transaxle. Remove positive battery cable, hold down, shield and battery. Remove 4 battery tray retaining bolts and battery tray.
4. Disconnect all electrical connectors from transaxle. Remove top 2 converter housing-to-engine bolts. Remove Distributorless Ignition System (DIS) coil pack, and discard retaining bolts.
5. Wire radiator to upper radiator support prior to removing cradle. Install Engine Support Bar Assembly (SA9105E). Raise and support vehicle. Drain transaxle. Remove front wheels. Remove left and right splash shields. Remove front splash shield and fascia braces (if equipped).
6. Remove engine strut cradle bracket-to-cradle bolts below front pulley. Remove transaxle lower rear mount-to-cradle nut. Disconnect front exhaust header pipe at exhaust manifold and catalytic converter.
7. Remove front exhaust pipe. Remove engine-to-transaxle brackets. Support steering gear with wire and remove steering gear-to-cradle bolts. Disengage brake line from rear of cradle.

CAUTION: DO NOT damage ABS sensor ring while disengaging ball joints.

8. Remove torque converter cover. Remove torque converter-to-flexplate bolts. Separate lower ball joints from steering knuckles.
9. Support powertrain on powertrain support dolly. Using a pry bar, separate left and right drive axles from transaxle or intermediate shaft. On DOHC models, remove intake manifold-to-intermediate shaft bracket. Remove intermediate shaft bracket bolts and intermediate shaft.
10. Disconnect transaxle cooler lines and cap to prevent contamination. Support transaxle with suitable jack. Remove 4 cradle-to-body bolts, and lower cradle and powertrain assembly using powertrain support dolly.

11. Remove 2 lower converter housing-to-engine bolts and separate transaxle from engine enough to reach shifter cable. Disconnect shifter cable from transaxle. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Use NEW retaining bolts for DIS coil pack.
12. To activate air bag system, turn ignition off. Connect Yellow SIR connector and CPA clip at base of steering column. Install AIR BAG fuse. Turn ignition switch to RUN position. Observe AIR BAG indicator light. If light does not flash 7 times, and then go out, system is faulty.

3T40 TRANSAXLE

Removal & Installation ("J" Body)

1. Disconnect negative battery cable. Drain cooling system. Disconnect heater hoses from heater core. Remove air intake duct. Remove throttle valve cable. Remove fluid fill tube. Support engine from top using Engine Support Fixture (J-28467-A).
2. Disconnect electrical connectors as necessary. Disconnect shift cable from transaxle. Remove 2 top transaxle-to-engine bolts. Remove upper left transaxle mount and bracket assembly. Remove rubber hose from transaxle-to-vent pipe. Remove remaining upper engine-to-transaxle bolts. Raise and support vehicle.
3. Remove front wheels. Drain transaxle. Separate ball joints from steering knuckles. Install Drive Axle Boot Protectors (J-34753). Remove drive axles. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove transaxle-to-engine brace. Remove transaxle mounting strut.
4. Remove pin bolt from left stabilizer shaft link. Remove clamp nuts from left stabilizer shaft frame bushing. Remove left suspension support assembly. Disconnect exhaust pipe from manifold.
5. Remove starter. Remove torque converter cover. Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts.
6. Disconnect fluid cooler lines from transaxle. Remove transaxle-to-engine support bracket. Support transaxle with jack. Remove remaining engine-to-transaxle bolts. Lower transaxle.
7. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Apply a thin film of chassis grease to torque converter pilot hub. Adjust throttle valve cable and shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article.

4L30-E TRANSAXLE

Removal & Installation ("V" Body)

1. Disconnect negative battery cable. Raise and support vehicle. Remove shift lever rod. Remove drive shaft coupling bolts. Using screwdriver, pry drive shaft coupling from drive flange.
2. Remove access plugs from bellhousing and oil pan area. Remove flex plate-to-torque converter bolts. Make reference marks on flex plate and torque converter for reassembly. Disconnect oil cooler lines from center pipes. Remove oxygen sensor harness connector.
3. Remove catalytic converters. Remove transmission crossmember. Support transmission with transmission jack. Support engine. Remove bellhousing-to-engine bolts. Lower transmission to access upper bellhousing-to-engine bolts. Remove bolts.

4. Remove ventilation hose from transmission. Disconnect harness connectors to transmission control selector switch, adapter case, main, case and speed sensor. Lower transmission and remove from vehicle.
5. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article.

4T40-E & 4T45-E TRANSAXLE

Removal ("J" & "N" Body)

1. Disconnect negative battery cable. Remove air cleaner assembly. Disconnect shift linkage from transaxle. Disconnect all wiring connectors. Install engine support.
2. Remove upper transaxle-to-engine bolts. Raise and support vehicle. Remove front wheels. Remove left and right splash shields. Remove wheel speed sensor harness from left suspension support and both front wheel speed sensors.
3. Separate tie rod ends and lower ball joints from steering knuckles. Remove front suspension support brace. Remove engine strut mount. Place lift support under suspension support assembly and remove bolts. Lower suspension support assembly enough to disconnect power steering hoses and steering coupler.
4. Remove drive axles from transaxle. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove transaxle-to-engine brace. Remove shift cable bracket. Remove starter. Remove torque converter cover. Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts.
5. Disconnect transaxle cooler hoses. Remove brake hose bracket from body. Remove transaxle mount pipe expansion bolt and transaxle mount body bolts. Lower vehicle.
6. Lower engine/transaxle assembly with engine support enough to remove transaxle. Raise vehicle and support transaxle. Remove remaining engine-to-transaxle bolts. Lower transaxle.

Installation

1. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Apply a thin film of chassis grease to torque converter pilot hub. Adjust throttle valve cable and shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article.
2. When connecting neutral safety switch connector, ensure "T" latch on connector is secure. This will prevent intermittent operation of switch due to poor connections. Refill transaxle to proper fluid level.

4T60-E & 4T65-E TRANSAXLE

Removal ("C", "H" & "K" Bodies)

1. Disconnect negative battery cable. Remove cross brace from strut towers. Reinstall inboard strut nuts. Remove air intake duct. Disconnect cruise control cable from throttle body and cruise control servo. Disconnect shift cable from transaxle.
2. Disconnect vacuum hoses and electrical connectors as necessary. Remove fuel line retainers. Remove 3

top transaxle-to-engine bolts. Support engine from top using Engine Support Fixture (J-28467-A). Slightly lift engine/transaxle assembly just enough to take pressure off of mounts. Turn steering wheel to full left position.

3. Raise and support vehicle. Remove front wheels. Separate both lower ball joints from steering knuckles. Remove right drive axle from transaxle. DO NOT remove axle from hub/knuckle assembly. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES.
4. Remove left drive axle from transaxle and hub/knuckle assembly. Support transaxle. Remove left front transaxle mount. Remove torque strut bracket from transaxle, if equipped.
5. Remove left rear transaxle mount-to-transaxle bolts. Remove transaxle brace from engine bracket. Remove stabilizer bar from control arm. Remove flexplate cover. Mark torque converter in relation to flexplate for alignment during installation. Remove flexplate-to-converter bolts. Remove bolts attaching rear frame-to-front frame member. Remove left frame-to-body bolts.
6. Remove right front frame member bolts. Swing frame assembly down and aside, then support with jack stand. Disconnect fluid cooler lines from transaxle. Remove remaining transaxle-to-engine bolts. Ensure all wiring harness connectors and hoses are disconnected. Lower transaxle from vehicle.

NOTE: One transaxle-to-engine bolt is installed from engine side. It may be necessary to use access hole located in right fenderwell and a 3-foot extension to reach bolt for removal.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See **ADJUSTMENTS** in appropriate **AUTOMATIC TRANSMISSION** article. Refill transaxle to proper fluid level.

Removal & Installation ("G" Body)

1. Disconnect negative battery cable. Remove air intake duct. Disconnect cruise control cable from throttle body and cruise control servo. Disconnect shift cable from transaxle and shift lever at manual shaft.
2. Disconnect vacuum hoses and electrical connectors as necessary. Remove exhaust manifold crossover pipe bolts. Remove fuel line retainers. Support engine from top using Engine Support Fixture (J-28467-A). Slightly lift engine/transaxle assembly just enough to take pressure off of mounts. Remove 3 top transaxle-to-engine bolts.
3. Raise and support vehicle. Remove front wheels. Remove left steering rack retaining bolt. Remove left front splash shield. Separate both lower ball joints from steering knuckles.
4. Remove air deflector. Remove power steering hose retaining brackets from frame. Remove right steering rack retaining bolt. Support cradle assembly and remove transaxle mount through bolts. Remove cradle assembly.
5. Remove torque converter cover. Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts. Remove starter.
6. Remove left and right axle shaft from transaxle. DO NOT remove axle from hub/knuckle assembly. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Support transaxle. Remove rear transaxle mount. Remove rear spark plug wires from spark plugs.

7. Remove transaxle dipstick tube from transaxle. Remove right exhaust manifold. Remove remaining transaxle-to-engine bolts. Disconnect transaxle cooler hoses from transaxle. Remove rear transaxle mount bracket. Lower transaxle from vehicle.
8. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

Removal & Installation ("N" Body - 4-Cylinder)

1. Disconnect negative battery cable. Remove air intake duct. Remove control cable cover. Disconnect throttle cable and shift cable from transaxle. Disconnect shift cable bracket. Disconnect all necessary electrical and vacuum connectors.
2. Remove power steering pump, and position it out of way. Remove transaxle filler tube. Support engine from top using Engine Support Fixture (J-28467-360). Remove upper transaxle-to-engine bolts. Raise and support vehicle on hoist.
3. Remove front wheels. Remove splash shields. Remove both front ABS wheel speed sensors and harness from left side suspension support. Disconnect both lower ball joints from control arms. Disconnect stabilizer bar links. Remove front air deflector.
4. Disconnect left suspension support assembly. Install Drive Axle Boot Protector (J-34754) on both boots. Remove drive axles. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove left suspension support and attaching bolts. Remove starter.
5. Disconnect vehicle speed sensor connector from transaxle. Remove torque converter cover. Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts.
6. Disconnect oil cooler lines from transaxle. Remove transaxle shift cable from lower cable bracket. Remove transaxle-to-engine brace bolts at transaxle. Support transaxle with jack. Remove remaining engine-to-transaxle bolts. Lower transaxle.
7. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

Removal & Installation ("N" Body - V6)

1. Disconnect negative battery cable. Remove air intake duct. Disconnect shift linkage from transaxle. Disconnect necessary vacuum lines and electrical connectors from transaxle.
2. Support engine from top using Engine Support Fixture (J-28467-360). Remove 2 top transaxle-to-engine bolts and remaining upper transaxle-to-engine bolts. Disconnect rubber hose from transaxle-to-vent pipe. Raise and support vehicle on hoist.
3. Remove front wheels. Remove splash shields. Remove both front ABS wheel speed sensors and harness from left side suspension support. Disconnect both ball joints from control arms. Disconnect left stabilizer shaft frame bushing clamp nuts and left stabilizer shaft frame bushing clamp.
4. Disconnect left suspension support assembly. Install Drive Axle Boot Protector (J-34754) on both boots. Remove drive axles. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove engine-to-transaxle brace. Remove left suspension support and attaching bolts. Remove starter.

5. Remove torque converter cover. Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts. Disconnect heater core hose/pipe brace from transaxle.
6. Disconnect oil cooler lines from transaxle. Remove filler tube. Remove vehicle speed sensor and vacuum reservoir mounting bolts. Support transaxle with jack. Remove transaxle-to-engine brace bolts at transaxle. Remove remaining engine-to-transaxle bolts. Lower transaxle.
7. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

Removal & Installation ("W" Body)

1. Disconnect negative battery cable. Remove hood panel assembly. Remove transaxle fluid level indicator assembly. Remove engine mount strut brackets. Remove electric engine cooling fan assemblies. Support engine from top using Engine Support Fixture (J-28467-A).
2. Remove air intake duct. Disconnect transaxle modulator pipe assembly. Disconnect electrical connectors from transaxle. Disconnect transaxle range selector assembly from transaxle. Remove upper transaxle-to-engine bolts and screws.
3. Raise and support vehicle. Remove front wheels. Remove left splash shield. Remove exhaust crossover pipe. Remove steering gear heat shield assembly and steering gear bolts and screws. Disconnect front lower control arm assemblies from front suspension strut assemblies.
4. Remove power steering fluid cooling pipe assembly. Support drivetrain and front suspension frame assembly with jack stands. Remove transaxle mount side bracket nuts and engine mount frame side nuts. Remove transaxle brace. Remove drivetrain and front suspension frame bolts. Remove drivetrain and front suspension frame assembly.
5. Disconnect electrical connector from vehicle speed sensor. Remove drive axles from transaxle. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove transaxle converter cover. Remove starter. Remove torque converter-to-flexplate bolts.
6. Remove transaxle oil cooler upper and lower pipe assembly. Install transaxle jack. Remove transaxle mount assembly from engine assembly. Remove transaxle fluid filler tube assembly. Remove transaxle-to-engine bolts. Remove transaxle.
7. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Fill transaxle to proper fluid level.

4T80-E TRANSAXLE

Removal & Installation ("E" Body)

1. Disconnect negative battery cable. Remove upper headlight filler panel and diagonal brace. Remove air cleaner assembly. Disconnect shift control cable and bracket at transaxle. Disconnect manual shaft lever and transaxle range switch. Remove torque braces. Install Engine Support Fixture (J-28467-360). Raise left side of engine about one inch.
2. Disconnect transaxle cooler lines at radiator and trans. Remove upper transaxle to engine mounting bolts. Raise and support vehicle on hoist. Remove front wheels. Remove front splash shields. Disconnect

vacuum hoses and electrical connectors as necessary. Disconnect power steering lines at cooler. Install plugs into steering gear and pressure line to prevent fluid leakage or contamination.

3. Rotate steering intermediate shaft allowing steering gear stub shaft clamp bolt access from left wheel opening. Remove clamp bolt and steering intermediate shaft from steering gear.

NOTE: **Failure to disconnect intermediate shaft from rack and pinion stub shaft can result in damage to steering gear and/or intermediate shaft and personal injury.**

CAUTION: DO NOT rotate steering wheel or move position of steering gear once intermediate shaft is disconnected. This will reposition inflatable restraint coil in steering column. If inflatable restraint coil becomes off centered, it may be damaged during vehicle operation.

4. Disconnect front suspension position sensors from lower control arms and position out of way. Disconnect stabilizer links from lower control arms. Remove tie rod cotter pins and nuts. Separate tie rods from steering knuckles.
5. Remove drive axle nuts, and separate drive axles from hubs. Remove drive axles from transaxle. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove A/C splash shield from frame. Disconnect ABS modulator from bracket and support. Remove engine oil pan-to-transaxle bracket.
6. Remove torque converter cover. Remove flexplate-to-converter bolts. Remove left and right transaxle mount nuts and right engine mount nuts at frame. Support frame.
7. Remove 6 frame mount bolts. Lower frame and/or raise vehicle with steering gear attached. Remove left transaxle mount and bracket from transaxle. Remove engine-to-transaxle bracket. Install Transaxle Support Fixture (J-28664). Remove engine-to-transaxle bolts. Lower and remove transaxle.
8. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

Removal & Installation ("G" Body)

1. Disconnect negative battery cable. Disconnect shift cable and bracket at transaxle. Disconnect manual shaft lever and transaxle range switch. Install Engine Support Fixture (J-28467-360). Drain cooling system. Disconnect brake booster vacuum hose. Disconnect transaxle vent hose. Disconnect electrical connectors as necessary.
2. Disconnect upper transaxle cooler line at radiator and lower transaxle cooler line at transaxle. Remove retaining bracket nut at transaxle. Disconnect coolant by-pass pipe at thermostat housing and set aside. Remove left and right transaxle mount bolts. Raise and support vehicle.
3. Remove left front wheel. Remove left splash shield. Remove tie rod end cotter pins and nuts. Separate tie rod ends from steering knuckles. Remove lower ball joint cotter pins and nuts. Separate ball joints from steering knuckles. Remove left axle shaft nut. Remove axle from hub assembly. Remove drive axles. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES.
4. Remove engine oil pan-to-transaxle bracket. Remove torque converter cover. Remove flexplate-to-converter bolts. Mark position of flexplate in relation to torque converter for installation reference.

- Remove complete exhaust system. Remove exhaust manifold rear pipe. Remove steering rack-to-right transaxle mount bolts. Remove bolt from right transaxle mount.
5. Remove frame-to-right transaxle mount bolt and remove mount. Remove power steering line retaining clamp from frame. Remove through bolt from right side of steering rack and support steering rack assembly. Remove support frame. Remove knock sensor shield.
 6. Remove engine-to-transaxle brace. Remove transaxle mount-to-bracket retaining nuts. Remove rear transaxle mount bracket from transaxle and body. Disconnect neutral safety switch electrical connector. Remove right and left lower transaxle-to-engine bolt. Remove frame bolts and frame. Remove engine-to-transaxle bolts. Lower transaxle.
 7. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

Removal & Installation ("K" Body)

1. Disconnect negative battery cable. Drain cooling system. Remove upper headlight filler panel and diagonal brace. Remove air cleaner upper plenum and intake tube. Remove surge tank inlet and outlet pipes. Disconnect shift control cable and bracket at transaxle. Disconnect manual shaft lever and transaxle range switch. Remove torque braces. Install Engine Support Fixture (J-28467-360). Raise left side of engine about one inch.
2. Disconnect transaxle cooler lines at radiator and trans. Remove upper transaxle to engine mounting bolts. Raise and support vehicle on hoist. Remove front wheels. Remove front splash shields. Disconnect vacuum hoses and electrical connectors as necessary. Disconnect power steering lines at cooler. Install plugs into steering gear and pressure line to prevent fluid leakage or contamination.
3. Disconnect front suspension position sensors from lower control arms and position out of way. Disconnect stabilizer links from lower control arms. Remove tie rod cotter pins and nuts. Separate tie rods from steering knuckles.
4. Remove drive axle nuts, and separate drive axles from hubs. Remove drive axles from transaxle. See appropriate FWD AXLE SHAFTS article in DRIVE AXLES. Remove A/C splash shield from frame. Disconnect Brake Pressure Modulator Valve (BPMV) from bracket and support.
5. Remove rear transaxle bracket. Remove left and right transaxle mount nuts and right engine mount nuts at frame. Support frame. Remove steering rack bolts from engine sub-frame. Remove brake line and power steering line brackets from sub-frame. Remove oxygen sensor heat shield and disconnect sensor harness connector.
6. Disconnect one center exhaust hanger and remove catalytic converter brace. Remove sub-frame mount bolts. Install Transaxle Support Fixture (J-28664). Lower frame and/or raise vehicle with steering gear attached.
7. Remove steering rack from vehicle. Remove right transaxle mount and bracket from transaxle. Remove engine-to-transaxle bracket. Remove torque converter cover brace and cover. Mark torque converter-to-flex plate for reassembly reference. Remove torque converter bolts.
8. Disconnect any remaining lines and electrical harness connectors. Support transaxle with a hydraulic transmission jack. Remove remaining transaxle mounting bolts. Lower and remove transaxle.
9. To install, reverse removal procedure. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS** . Adjust shift cable. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article. Refill transaxle to proper fluid level.

4L60-E TRANSMISSION

Removal ("F" Body)

1. Disconnect negative battery cable. Remove air cleaner, if necessary. Remove transmission dipstick tube. Raise and support vehicle.
2. Remove torque arm from rear suspension (requires removing rear coil springs). Mark drive shaft for installation reference. Remove drive shaft. Disconnect shift linkage from transmission. Disconnect electrical connectors as necessary. Remove starter.
3. Remove torque converter cover. Mark position of flexplate in relation to torque converter for installation reference. Remove torque converter bolts. Remove catalytic converter support bracket (raise transmission slightly, if necessary). Remove transmission mount nut.
4. Remove transmission-to-mount bolts. Remove transmission crossmember-to-frame bolts. Support transmission. Slide transmission crossmember rearward. Partially lower transmission to gain access to fluid line fittings.
5. Disconnect fluid lines from transmission. Support engine. Remove torque converter housing bolts. Move transmission rearward far enough to install Torque Converter Holder (J-21366). Remove transmission.

Installation

1. To install, reverse removal procedure. Align index marks made during removal. Tighten torque converter-to-flexplate bolts finger tight, then tighten to specification. Tighten other nuts and bolts to specification. See **TORQUE SPECIFICATIONS**.
2. Rotate torque converter by hand to ensure it rotates freely. Adjust shift linkage. See ADJUSTMENTS in appropriate AUTOMATIC TRANSMISSION article.

Removal ("Y" Body)

1. Disconnect negative battery cable. Drain transmission fluid. Remove fluid fill tube. Raise and support vehicle.
2. Remove upper and lower underbody braces, if equipped. Remove complete exhaust system. Support transmission on stand. Remove drive shaft support beam. Mark drive shaft for installation reference. Remove drive shaft. Disconnect electrical connectors as necessary. Disconnect shift control cable from transmission.
3. Remove flexplate cover. Mark position of flexplate in relation to torque converter for installation reference. Remove flexplate-to-torque converter bolts. Disconnect fluid lines from transmission. Support engine. Remove torque converter housing bolts. Pull transmission back far enough to install Torque Converter Holder (J-21366). Lower transmission from vehicle.

Installation

1. To install, reverse removal procedure. Align index marks made during removal. Tighten torque converter-to-flexplate bolts finger tight, then tighten to specification. Tighten nuts and bolts to specification. See **TORQUE SPECIFICATIONS**.
2. Rotate torque converter by hand to ensure it rotates freely. Adjust shift cable. See ADJUSTMENTS in

appropriate AUTOMATIC TRANSMISSION article. Refill transmission to proper fluid level.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
"C", "H" & "K" Bodies (4T60-E & 4T65-E Transaxle)	
Flexplate-To-Converter Bolt	46 (62)
Frame-To-Body Bolt	83 (113)
Shift Control Cable Bracket-To-Transaxle Bolt	18 (24)
Starter Mounting Bolt	32 (43)
Transaxle Brace-To-Engine Assembly Bolt	37 (50)
Transaxle Mount Bolt	38 (52)
Transaxle-To-Engine Bolt	55 (75)
Wheel Lug Nuts	100 (136)
"E" & "K" Bodies (4T80-E Transaxle)	
Flexplate-To-Converter Bolt	35 (47)
Flexplate-To-Cover Bolt	1
Frame-To-Body Bolt	74 (100)
Shift Control Cable Bracket-To-Transaxle Bolt	18 (24)
Starter Mounting Bolt	32 (43)
Transaxle Brace-To-Engine Assembly Bolt	35 (47)
Transaxle Mount Bolt	35 (47)
Transaxle-To-Engine Bolt	35 (47)
Wheel Lug Nuts	100 (136)
"F" & "Y" Bodies (4L60-E)	
Drive Shaft Hub Clamp	98 (133)
Flexplate-To-Converter Bolt	46 (62)
Transmission Crossmember-To-Frame Bolt	66 (89)
Transmission Mount-To-Transmission Crossmember Nut	37 (50)
Transmission-To-Engine Bolt (V6)	70 (95)
Transmission-To-Engine Bolt (V8)	35 (47)
"G" Body (4T60-E Transaxle)	
Cooler Pipes	24-33 (33-45)
Flexplate-To-Converter Bolt	46 (62)
Transaxle Brace Bolt	46 (62)
Transaxle-To-Engine Bolt	71 (96)
"G" Body (4T80-E Transaxle)	
Cooler Pipes	24-33 (33-45)
Engine-To-Transaxle Brace	35 (47)

Flexplate-To-Converter Bolt	44 (60)
Frame Assembly & Mounting Bolt	142 (193)
Left Transaxle Mount-To-Engine Bolt	43 (58)
Left Transaxle Mount-To-Frame Bolt	63 (85)
Rear Transaxle Bracket Bolt	43 (58)
Right Transaxle Mount-To-Engine Bolt	81 (110)
Right Transaxle Mount-To-Frame Bolt	54 (73)
Transaxle-To-Engine Bolt	55 (75)
"J" Body (3T40-E & 4T40-E)	
Cooler Pipes-To-Radiator	16 (22)
Flexplate-To-Converter Bolt	46 (62)
Transaxle Brace Bolt	37 (50)
Transaxle-To-Engine Bolt (3T40)	71 (96)
Transaxle-To-Engine Bolt (4T40-E)	66 (89)
"N" Body (4T40-E, 4T45-E & 4T60-E)	
Cooler Pipes	16 (22)
Flexplate-To-Converter Bolt	46 (62)
Starter Bolt (4-Cylinder)	66 (89)
Starter Bolt (V6)	32 (43)
Transaxle-To-Engine Bolt	66 (89)
Wheel Lug Nuts	100 (136)
"V" Body (4L30-E)	
Crossmember-To-Body Bolt	33 (45)
Drive Shaft Flange Bolt	70 (95)
Flexplate-To-Converter Bolt	22 (30)
Transmission-To-Engine Bolt	44 (60)
Transmission-To-Oil Pan Bolt	15 (20)
"W" Body (4T60-E & 4T65-E)	
Cooler Pipes	17 (23)
Flexplate-To-Converter Bolt	44 (60)
Frame-To-Body Bolt	133 (180)
Transaxle-To-Engine Bolt	55 (75)
Saturn (MP6 & MP7)	
Converter Housing-To-Engine (Lower) Bolts	103 (140)
Converter Housing-To-Engine (Upper) Bolts	74 (100)
Cradle-To-Body Bolts	155 (210)
Engine-To-Transaxle Brackets	35 (47)
Exhaust Pipe-To-Catalytic Converter Bolts	33 (45)
Exhaust Pipe-To-Manifold Nuts	23 (31)
Lower Ball Joint Nut	55 (75)
Steering Gear-To-Cradle Nuts	37 (50)

Tie Rod End Nut	33 (45)
Torque Converter-To-Flexplate Bolts	52 (71)
Transaxle Drain Plug	22 (30)
Transaxle Lower Rear Mount-To-Cradle Nut	40 (54)
Transaxle Strut-To-Cradle Bracket Bolts	52 (71)
Transaxle Strut-To-Cradle Bracket Nuts	52 (71)
Wheel Lug Nuts	103 (140)