

TRANSMISSION REMOVAL & INSTALLATION - A/T

Article Text

1995 Cadillac Concours
For Ace Mechanics 123 Main Street San Diego Ca 92126
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ARTICLE BEGINNING

AUTOMATIC TRANSMISSION REMOVAL General Motors Passenger Cars

Buick; Century, LeSabre, Park Avenue, Regal, Riviera,
Roadmaster, Skylark
Cadillac; Concours, DeVille, Eldorado, Fleetwood, Seville
Chevrolet; Beretta, Camaro, Caprice, Cavalier, Corsica,
Corvette, Impala SS, Lumina, Monte Carlo
Geo; Metro, Prizm
Oldsmobile; Achieva, Aurora, Cutlass Ciera, Cutlass Cruiser,
Cutlass Supreme, Eighty Eight, Ninety Eight
Pontiac; Bonneville, Firebird, Grand Am, Grand Prix, Sunfire
Saturn

APPLICATION

MODEL IDENTIFICATION TABLE

AA	
Body Type	Model
"A" Body	Century, Cutlass Ciera, Cutlass Cruiser
"B" Body	Caprice, Impala SS, Roadmaster
"C" Body	Ninety Eight, Park Avenue
"D" Body	Fleetwood
"E" Body	Eldorado
"F" Body	Camaro, Firebird
"G" Body	Aurora, Riviera
"H" Body	Bonneville, Eighty Eight, LeSabre
"J" Body	Cavalier, Sunfire
"K" Body	Concours, Deville, Seville
"L" Body	Beretta, Corsica
"M" Body	Metro
"N" Body	Achieva, Grand Am, Skylark
"S" Body	Prizm
"W" Body	Cutlass Supreme, Grand Prix, Lumina, Monte Carlo, Regal
"Y" Body	Corvette
AA	

REMOVAL & INSTALLATION

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 the GENERAL

INFORMATION section before disconnecting battery.

3T40 TRANSAXLE

Removal ("A" Body)

1) Disconnect and shield negative battery cable. Remove air cleaner. Remove bolt securing transaxle throttle valve cable to transaxle. Remove shift cable and bracket from transaxle. Disconnect electrical connectors as necessary.

2) Disconnect oil cooler lines from transaxle. Plug ends of lines. Remove all transaxle-to-engine bolts except bolt nearest starter motor (leave this bolt loosely installed). Support engine from top. Raise and support vehicle on hoist. Remove left front wheel. Remove left engine splash shield. Remove pinch bolt from left ball joint. Disconnect ball joint from left control arm.

CAUTION: If steering intermediate shaft is not disconnected from steering gear stub shaft as described in next step, these components could be damaged, possibly resulting in loss of steering control.

3) Remove pinch bolt securing steering intermediate shaft to steering gear stub shaft. Remove stabilizer bar. Center-punch the 2 spot welds securing left crossmember to rear crossmember. Left crossmember is the 90-degree frame piece that acts as left frame and front crossmember. Drill out spot welds using 7/16" drill bit.

4) Remove bolt securing left end of steering rack to rear crossmember. Remove 4 bolts securing left crossmember to right frame. Using jack stand, support left crossmember from bottom. Remove 2 bolts securing left crossmember to body.

5) Remove 2 nuts securing left transaxle mount to left crossmember. Remove left crossmember and jack stand. Remove starter and torque converter covers. Remove 3 flexplate-to-converter bolts. Remove 2 transaxle extension bolts from engine-to-transaxle bracket.

6) Remove rear transaxle mount bracket assembly (it may be necessary to raise transaxle). Using transaxle jack, support transaxle from bottom. Remove 2 braces from right end of transaxle. Remove left drive axle. See appropriate AXLE SHAFTS article in AXLE SHAFTS & TRANSFER CASES.

7) Remove remaining transaxle-to-engine bolt near starter. Remove transaxle and right drive axle as an assembly.

Installation

To install, reverse removal procedure. Adjust throttle valve cable and shift cable after installation. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper level with fluid.

TRANSMISSION R

Removal ("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 DRIVE AXLE article in DRIVE AXLE section. 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. On 2.2L engines, disconnect exhaust pipe from manifold. On 3.1L engines, remove front exhaust manifold and pipe.

5) On all vehicles, 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.

Installation

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 appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section.

Removal ("L" Body)

1) Disconnect negative battery cable. Remove air intake duct. Remove throttle valve cable. Remove fluid fill tube. Remove bolt securing wiring harness to transaxle. Disconnect electrical connectors from torque converter clutch and neutral safety switch.

2) Remove upper shift control cable bracket. Disconnect shift cable from shift lever at transaxle. Remove transaxle-to-vent pipe rubber hose.

3) Support engine from top using Engine Support Fixture (J-28467-A). Remove 2 top transaxle-to-engine bolts and remaining upper transaxle-to-engine bolts. Raise and support vehicle.

4) Remove front wheels. Remove left splash shield. Remove transaxle boot. **TRANSMISSION REMOVAL & INSTALLATION - A/T Article Text (p. 3)** 1995 Cadillac Concours For Ace I

34754) on both boots. Remove drive axles. See appropriate DRIVE AXLE article in DRIVE AXLE section. Remove left and right stabilizer links. Remove left stabilizer bar clamp nuts. Remove left suspension support and attaching bolts.

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. Remove starter.

6) Disconnect fluid 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.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section.

Removal ("N" Body)

1) Disconnect negative battery cable. Drain cooling system. Disconnect heater hoses from heater core. Remove air intake duct. Remove control cable cover. Remove shift cable and throttle valve cable. Disconnect vacuum hoses and electrical connectors as necessary.

2) Remove power steering pump with hoses attached and set aside. Remove fluid fill tube. Support engine from top using Engine Support Fixture (J-28467-A). Remove 4 top transaxle-to-engine bolts. Raise and support vehicle. Remove front wheels. Remove left splash shield. Disconnect both front Anti-Lock Brake System (ABS) wheel speed sensors and harness from left suspension support.

3) Separate ball joints from steering knuckles. Remove left and right stabilizer links. Remove front air deflector and left suspension support. Install Drive Axle Boot Protectors (J-37292-B). Remove drive axles. See appropriate DRIVE AXLE article in DRIVE AXLE section. Remove transaxle-to-engine brace. Remove torque converter cover.

4) Mark torque converter in relation to flexplate for alignment during installation. Remove torque converter-to-flexplate bolts. Disconnect fluid cooler lines from transaxle. Remove exhaust brace.

5) Remove bolts from engine and transaxle mounts. Remove transaxle mount-to-body bolts. Support transaxle with jack. 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 transaxle

TRANSMISSION

throttle valve cable and shift cable. See appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section.

2) When connecting neutral safety switch connector, ensure "T" latch on connector is secure to prevent intermittent operation of switch due to poor connections. Fill transaxle to proper fluid level.

4T40-E TRANSAXLE

Removal ("J" 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 DRIVE AXLE article in the DRIVE AXLE section. 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 TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section.

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 TRANSAXLE

Removal ("A" Body)

1) Disconnect and shield negative battery cable. Remove air cleaner. Disconnect electrical connectors as necessary. Remove shift cable and bracket from transaxle. Disconnect vacuum modulator hose from modulator. Remove 3 upper transaxle-to-engine bolts.

CAUTION: If steering intermediate shaft is not disconnected from steering gear stub shaft as described in next step, these components could be damaged, possibly resulting in loss of steering control.

2) Remove pinch bolt securing steering intermediate shaft to steering gear stub shaft. Support engine from top. Raise and support vehicle on hoist. Remove front wheels. Remove engine splash shields. Remove pinch bolts from ball joints. Disconnect ball joints from control arms.

3) Remove stabilizer bar. Center-punch the 2 spot welds securing left crossmember to rear crossmember. Left crossmember is the 90-degree frame piece that acts as left frame and front crossmember. Drill out spot welds using 7/16" drill bit.

4) Remove nuts from front and rear transaxle mounts. Remove bolts from power steering cooler line bracket. Remove bolts securing left crossmember to right frame. Using jack stand, support left crossmember from bottom. Loosen 2 right frame mounts and discard bolts.

5) Remove 2 left crossmember-to-body bolts. Remove left crossmember. Remove torque converter covers. Remove flexplate-to-converter bolts. Remove drive axles. See appropriate DRIVE AXLE article in the DRIVE AXLE section.

6) Remove transaxle support bracket bolts from transaxle. Disconnect transaxle cooler lines from transaxle. Using transaxle jack, support transaxle from bottom. Remove rear transaxle bolts from engine. Remove remaining transaxle-to-engine bolts. Remove transaxle.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust throttle valve cable and shift linkage. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Adjust front wheel toe-in, if necessary. Fill transaxle to proper fluid level.

CAUTION: Before installing pinch bolt in hole at steering gear stub shaft, ensure shaft is seated. If shaft is not seated, components may separate, causing loss of steering control.

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 DRIVE AXLE article in the DRIVE AXLE section.

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 TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

Removal ("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

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 DRIVE AXLE article in the DRIVE AXLE section. 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.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

Removal ("L" & "N" Bodies)

1) Disconnect negative battery cable. Remove air intake duct. Disconnect shift linkage from transaxle. Disconnect vacuum modulator vacuum line at modulator. Disconnect electrical connectors from torque converter clutch, neutral safety switch and shift solenoid connector.

2) Support engine from top using Engine Support Fixture (J-28467-A). 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 DRIVE AXLE article in the DRIVE AXLE section. Remove left and right stabilizer links. 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 TRANSMISSI

flexplate for alignment during installation. Remove torque converter-to-flexplate bolts.

6) Disconnect fluid 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.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

Removal ("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 DRIVE AXLE article in the DRIVE AXLE section. 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.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper TRANSMISSI

fluid level.

4T80-E TRANSAXLE

Removal ("E" & "K" Bodies)

1) Disconnect negative battery cable. Remove air cleaner assembly. Remove torque struts. Disconnect range control cable and bracket at transaxle. Disconnect manual shaft lever and transaxle range switch. Install Engine Support Fixture (J-28467-A).

2) Raise and support vehicle on hoist. Remove front wheels. Remove front splash shields. Disconnect vacuum hoses and electrical connectors as necessary. Disconnect power steering pressure hose at steering gear. Install plugs into steering gear and pressure line to prevent fluid leakage or contamination.

3) Disconnect power steering return hose at auxiliary cooler. Install plugs into cooler and return hose to prevent fluid leakage or contamination. 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 DRIVE AXLE article in the DRIVE AXLE section. 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. Disconnect transaxle cooler pipes from transaxle. 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.

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Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

Removal ("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-A). 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 DRIVE AXLE article in the DRIVE AXLE section.

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.

Installation

To install, reverse removal procedure. Tighten nuts and bolts to specification. See TORQUE SPECIFICATIONS. Adjust shift cable. See ADJUSTMENTS in appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

4L60-E TRANSMISSION

Removal ("B", "D" & "F" Bodies)

1) Disconnect negative battery cable. Remove air cleaner, if necessary. On "B" and "D" bodies, remove transmission dipstick. On "F" body, remove transmission dipstick tube. Raise and support vehicle.

2) On "F" body, remove torque arm from rear suspension (requires removing rear coil springs). On all vehicles, 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) On "B" and "D" bodies, remove transmission filler tube. On all vehicles, 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 TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section.

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

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 TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANSMISSION SERVICING section. Refill transaxle to proper fluid level.

GEO VEHICLES

Removal ("M" Body - Metro)

1) Disconnect negative battery cable. Disconnect throttle valve cable adjustment cover and cable from accelerator cable at top of transaxle. Loosen shift cable adjustment nut from end of shift cable. Remove shift cable from manual cable joint. Remove retaining clip and shift cable from bracket at top of transaxle.

2) Remove accelerator cable from bracket at top of transaxle. Remove 2 bolts and engine harness bracket from rear of transaxle case. Disconnect electrical connections and speedometer cable. Remove 2 clamps and fluid cooler hoses from cooler pipes. Plug hoses to prevent fluid leaks. Disconnect connector at starter. Remove starter.

3) Remove upper rear transaxle mount-to-bulkhead bolt. Remove through bolt and nut from rear transaxle mount. Remove 2 upper transaxle-to-engine bolts. Install Engine Support Fixture (J-28467-A) to engine. Remove negative battery cable from transaxle case. Raise and support vehicle. Drain transaxle fluid.

4) Remove left and right splash shields. Remove lower ball joint nuts and bolts from steering knuckles. Install Drive Axle Boot Protector (J-28712) on both boots. Remove drive axles. See appropriate DRIVE AXLE article in the DRIVE AXLE section. Remove 3 bolts and rear engine torque rod from transaxle case. Remove lower cover from torque converter housing. Remove flexplate-to-torque converter bolts. Flexplate can be held by engaging a screwdriver into flexplate ring gear through notch provided at underside of transaxle case.

5) Remove exhaust hanger from rear engine mount bracket. Remove one lower rear engine mount-to-bulkhead bolt and rear engine mount from vehicle. Remove rear engine mount bracket. Lower vehicle. Lower engine slightly. Support transaxle with a jack. Disconnect transaxle mounts. Remove transaxle-to-engine bolts. Remove transaxle assembly.

Installation

1) To install, reverse removal procedure. Apply grease around cup at center of torque converter. Ensure torque converter is correctly installed. Distance from torque converter drive lugs to engine mating surface of transaxle housing should be at least .85" (21.4 mm). Reverse removal procedure.

2) When installing transaxle, guide right axle into differential side gear as transaxle is being raised. After inserting inner CV joints of right and left axles into differential side gears, push inner joints into side gears until snap rings on axle shafts engage with side gears.

3) Tighten all fasteners to specification. See TORQUE SPECIFICATIONS. Adjust all control cables. Fill and check fluid levels.

Removal ("S" Body - Prizm)

1) Support engine from above with Engine Support Fixture (J-28467-A). Disconnect battery cables. Remove battery and tray. Remove air cleaner assembly.

2) Disconnect throttle valve cable at throttle body. Disconnect ground cable at transaxle. Disconnect electrical connections, speedometer cable and control cables and brackets from transaxle.

3) Disconnect and plug oil cooler lines from transaxle. On left side of engine compartment, remove brace that connects upper part of transaxle to transaxle mount. Remove transaxle-to-mount through bolt. Remove 2 upper transaxle-to-engine bolts.

4) Raise and support vehicle. Drain transaxle fluid. Remove starter. Remove wheels. Remove lower splash shields. Remove nut and washer from ends of both axle shafts at hub assemblies.

5) Remove tie rod nuts from steering knuckles. Separate tie rods from steering knuckles. Remove lower ball joint-to-steering knuckle bolts. Separate ball joints from steering knuckles.

6) Remove brake caliper and rotor from steering knuckle. Using brass hammer, tap on axle shaft until it is free of hub assembly. Using slide hammer and Shaft Puller (J-35762), pull axle shafts from transaxle.

7) Remove 2 center crossmember-to-radiator support bolts. Remove transaxle mount bolts. Remove center crossmember-to-main crossmember bolts.

8) Remove exhaust hanger bracket. Supporting main crossmember with jack, remove all bolts securing main crossmember and lower A-frame brackets to body. Slowly lower main crossmember, being careful to support center crossmember.

9) Remove torque converter-to-flexplate bolts. Support transaxle with jack. Remove remaining transaxle-to-engine bolts. Remove remaining transaxle mounts and lower transaxle from vehicle. It may be necessary to lower engine slightly so transaxle can clear body.

Installation

- 1) To install, reverse removal procedure. Before installing, apply grease around cup at center of torque converter.
- 2) Ensure torque converter is correctly installed. Distance from torque converter drive lugs to engine mating surface of transaxle housing should be at least .9" (23 mm).
- 3) Tighten all fasteners to specification. See TORQUE SPECIFICATIONS. Adjust all control cables. Fill and check fluid levels.

SATURN VEHICLES

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.

- 8) Remove torque converter cover. Remove torque converter-to-flexplate bolts. Separate lower ball joints from steering knuckles.

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

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.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

AA

Application	Ft. Lbs. (N.m)
"A" Body	
Flexplate-To-Converter Bolt	46 (62)
Frame Mount Bolt	40 (54)
Intermediate Shaft-To-Steering Gear Shaft Bolt	40 (54)
Shift Control Cable Bracket-To-Transaxle Bolt	18 (24)
Transaxle-To-Engine Bolt	55 (75)
Wheel Lug Nuts	100 (136)
"B", "D", "F" & "Y" Bodies	
Flexplate-To-Converter Bolt	46 (62)
Torque Arm-To Rear Differential Nut	98 (133)
Transmission Crossmember-To-Frame Bolt	25 (34)
Transmission-To-Engine Bolt	35 (47)
Transmission Mount-To-Engine Bolt	35 (47)
Transmission Mount-To-Transmission Crossmember Nut ...	30 (41)
"C", "H" & "K" Bodies (4T60-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-To-Engine Bolt	55 (75)
Transaxle Mount Bolt	38 (52)
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)
"G" Body (4T60-E Transaxle)	
Cooler Pipes	24-33 (33-45)
Flexplate-To-Converter Bolt	46 (62)
Transaxle-To-Engine Bolt	71 (96)
Transaxle Brace Bolt	46 (62)
"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	
Cooler Pipes	16 (22)
Flexplate-To-Converter Bolt	46 (62)
Transaxle-To-Engine Bolt (3T40)	71 (96)
Transaxle-To-Engine Bolt (4T40-E)	66 (89)
Transaxle Brace Bolt	37 (50)
"L" Body	
Cooler Pipes	16 (22)
Flexplate-To-Converter Bolt	46 (62)
Frame-To-Body Bolt	37 (50)
Transaxle-To-Engine Bolt	55 (75)
"M" Body (Metro)	
Axle Shaft Nut	129 (175)
Ball Joint Bolt	44 (60)
Torque Converter Bolt	14 (19)
Transaxle-To-Engine Bolt	40 (54)
Wheel Lug Nut	44 (60)
"N" Body	
Cooler Pipes	16 (22)

Flexplate-To-Converter Bolt	46 (62)
Starter Bolt	32 (43)
Transaxle-To-Engine Bolt	55 (75)
"S" Body (Prizm)	
Axle Shaft Nut	159 (216)
Ball Joint-To-Lower Control Arm Bolt	105 (142)
Brake Caliper Bolt	65 (88)
Center Crossmember-To-Radiator Support Bolt	45 (61)
Center Mount-To-Transaxle Bolt	45 (61)
Front Transaxle Mount Bolt	47 (64)
Left Transaxle Mounting Bracket Bolt	35 (47)
Main Crossmember-To-Body Bolt	152 (206)
Tie Rod Nut	40 (54)
Torque Converter Bolt	14 (19)
Transaxle Mount Bolt	45 (61)
Transaxle-To-Engine Bolt	47 (64)
Rear Transaxle Mount Nut	42 (57)
Wheel Lug Nut	76 (103)
"W" Body	
Cooler Pipes	16 (22)
Flexplate-To-Converter Bolt	44 (60)
Frame-To-Body Bolt	103 (140)
Transaxle-To-Engine Bolt	55 (75)
Saturn Vehicles	
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)
AA	

END OF ARTICLE