

Engine Removal

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

Remove cooler line bracket. Disconnect left exhaust pipe from manifold. Remove upper mount heat shield.

5) On left side, remove through bolt and bracket securing final drive to engine. Raise vehicle on hoist. Remove splash shield. Remove flywheel shield. Remove right exhaust pipe at manifold. Disconnect starter wiring and remove starter.

6) Remove converter-to-flywheel bolts. Partially lower vehicle. Remove right front wheel. Remove right exhaust manifold. Disconnect oil cooler lines at filter base and remove oil filter base. Again raise vehicle.

7) Remove 2 bolts securing right output shaft support brackets. Scribe around washers for reassembly alignment reference. Remove lower right transmission-to-engine bolts. Attach final drive support chain. Lower vehicle. Attach lifting chain to engine.

8) Move engine oil cooler pipes rearward. Remove radiator. Remove water control valve. Remove remaining transmission-to-engine bolts. Lower transmission using a floor jack. Remove engine from engine compartment.

OLDSMOBILE TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)	Application	Ft. Lbs. (N·m)
4-Cyl. Engines		Starter-to-Engine	35 (47)
1.8L (112") & 2.0L (122")		Transmission-to-Engine	35 (47)
Front Motor Mount-to-Engine	25-35 (34-47)	Flywheel-to-Torque Converter	25-35 (34-47)
Lower Motor Mount-to-Engine	15-20 (20-27)	4.3L (262") Diesel	
Motor Mounts-to-Frame	35-45 (47-61)	Motor Mount-to-Engine	37 (50)
Starter-to-Engine	26-37 (35-50)	Motor Mount-to-Frame	38 (52)
Transmission-to-Engine	48-63 (65-85)	Motor Mount Through Bolt	55 (75)
Flywheel-to-Torque Converter	35 (47)	Starter-to-Engine	29 (40)
2.5L (151")		Transmission-to-Engine	48-63 (65-85)
Motor Mount-to-Frame	41 (56)	Flywheel-to-Torque Converter	35 (47)
Motor Mount-to-Engine	47 (64)	V8 Engines	
Starter-to-Engine	26-37 (35-50)	4.3L (260") & 5.0L (307")	
Transmission-to-Engine	48-63 (65-85)	Motor Mount-to-Engine	75 (102)
Flywheel-to-Torque Converter	31 (42)	Motor Mount-to-Frame	35 (47)
6-Cyl. Engines		Motor Mount Through Bolt	55 (75)
2.8L (173")		Starter-to-Engine	35 (47)
Motor Mount Bracket-to-Engine	70-92 (95-125)	Transmission-to-Engine	35 (47)
Motor Mount Torque Strut Bracket	30-40 (41-54)	Flywheel-to-Torque Converter	35 (47)
Starter-to-Engine	26-37 (35-50)	5.7L (350") Diesel	
Transmission-to-Engine	48-63 (65-85)	Motor Mount-to-Engine	75 (102)
Flywheel-to-Torque Converter	25-35 (34-47)	Motor Mount-to-Frame	50 (68)
3.0L (181")		Motor Mount Through Bolt	55 (75)
Motor Mount Bracket-to-Engine	59-81 (80-110)	Starter-to-Engine	35 (47)
Motor Mount Bracket-to-Mount	30-41 (41-56)	Transmission-to-Engine	35 (47)
		Flywheel-to-Torque Converter	40 (54)

PONTIAC

4-CYLINDER MODELS

1.6L (98") - 1) Mark hood and hinges for reassembly reference. Remove hood. Disconnect battery cables at battery. Remove battery cable clips from right frame rail. Drain cooling system. Disconnect radiator hoses from engine. Remove heater hoses from heater.

2) Disconnect engine wiring harness at bulkhead connector. Remove upper radiator support. Remove radiator and fan assembly. Disconnect fuel line at rubber hose along left frame rail. Remove automatic transmission throttle valve linkage. Remove accelerator cable.

3) If equipped, remove A/C compressor from engine, with hoses attached, and position aside. Raise vehicle on hoist. Disconnect exhaust pipe at manifold. Remove flywheel inspection cover. If equipped, remove flywheel-to-torque converter bolts.

4) Remove transmission-to-engine bolts. Support transmission with floor jack. Remove safety straps from front motor mounts. Remove mount nuts. Install an engine lifting device to engine. Remove engine from engine compartment.

1.8L (111") Diesel - 1) Disconnect battery cables at battery. Drain cooling system. Disconnect radiator hoses from radiator. Disconnect automatic transmission cooler lines from radiator. Remove radiator. Disconnect accelerator cable. Disconnect all fuel hoses from engine.

2) Disconnect T.V. cable. Disconnect heater hose at thermostat housing. If equipped, remove power steering pump, with hoses and brackets attached, and position aside. Disconnect vacuum hose to master cylinder. Remove engine mount nuts.

3) Raise vehicle on hoist. Remove engine shock-type strut. Remove exhaust pipe at manifold. Remove right side engine-to-

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

transmission support bolts. Remove converter inspection cover. Remove flywheel-to-converter bolts.

4) Remove transmission rear crossmember-to-body bolts. Remove transmission-to-engine bolts. Reinstall crossmember bolts. Lower vehicle. Remove oil filter. Attach lifting fixture to engine. Remove engine from engine compartment.

1.8L (112") & 2.0L (122") - 1) Disconnect battery cable at battery. Drain cooling system. Remove air cleaner. If equipped, remove power steering pump. Remove window washer bottle. If equipped with A/C, remove relay bracket from bulkhead connector. Remove bulkhead connector.

2) If equipped, remove cruise control servo bracket. Disconnect all vacuum hoses and wiring to engine. Remove bolts attaching vacuum booster to master cylinder. Lay vacuum booster aside. Remove heater hose at hot water pipe. Remove fan assembly. Remove horn. Remove carburetor linkage.

3) Raise vehicle on hoist. Remove heater hose and fuel line at intake manifold. If equipped, remove A/C compressor brace. Remove exhaust shield. Remove starter. Remove exhaust pipe at manifold. Remove front tires.

4) Remove stabilizer at lower control arms. Remove ball joints from steering knuckle. Remove drive axles at transaxle. Remove transaxle strut. If equipped with A/C, remove inner fender shield, drive belt and compressor.

5) Remove front motor mount nuts. If equipped with manual transaxle, remove clutch cable at transaxle. If equipped with automatic transaxle, remove detent cable at transaxle. On all models, install engine lifting device. Remove transaxle mount and bracket. Remove engine from engine compartment.

2.5L (151") Man. Trans. Exc. Firebird - 1) Disconnect battery cables at battery. Raise vehicle on hoist. Remove front engine mount-to-cradle nuts. Remove forward exhaust pipe. Remove starter motor, with wiring attached, and position aside.

2) Remove flywheel housing inspection cover. Lower vehicle. Remove air cleaner. Remove all bell housing-to-engine bolts. Remove forward torque reaction rod from engine and radiator core support. If equipped, remove A/C compressor and position aside, leaving refrigerant lines connected.

3) Remove vacuum hoses at canister. If equipped, remove power steering hose. Remove all vacuum hoses and electrical connectors at solenoid. Remove heater blower motor. Disconnect accelerator cable at carburetor. Drain cooling system.

4) Disconnect heater hose at engine. Disconnect upper and lower heater hoses. Disconnect engine wiring harness at bulkhead connector. Install engine lifting device. Lift engine slightly. Remove heater hose and fuel line from intake manifold. Remove engine from vehicle.

2.5L (151") Auto. Trans. Exc. Firebird - 1) Disconnect battery cables at battery. Drain cooling system. Remove air cleaner and heat tube. Disconnect engine wiring harness connector. Disconnect all vacuum lines. Remove throttle and transmission linkage at EFI assembly.

2) Remove upper radiator hose. If equipped, remove A/C compressor from brackets, with hoses connected, and position aside. Remove front engine strut assembly. Disconnect heater hose at intake manifold. Remove transaxle-to-engine bolts, leaving top 2 bolts in place.

3) Remove front mount-to-cradle nuts. Remove forward exhaust pipe. Remove flywheel inspection cover. Remove starter. Remove flywheel-to-torque converter bolts. Remove power steering pump and position aside. Remove remaining heater hose. Remove lower radiator hose.

4) Remove rear transaxle support bracket bolts. Remove fuel supply line at fuel filter. With floor jack and a block of wood under transaxle, raise engine until front mount studs clear cradle. Attach engine lifting equipment to engine. Remove 2 remaining transaxle-to-engine bolts. Remove engine from engine compartment.

2.5L (151") Firebird - 1) Remove negative battery cable from engine. Mark hood and hinges for reassembly reference. Remove hood. Drain cooling system. Remove A/C compressor from engine, with hoses connected, and position aside.

2) Remove upper and lower radiator hoses from engine. Remove fan assembly. If equipped with manual transmission, remove upper half of fan shroud. If equipped with automatic transmission, remove fan shroud and radiator.

3) Remove power steering hoses from pump. Disconnect bulkhead connector. Disconnect all fuel lines to engine. Disconnect all vacuum hoses to engine. From inside vehicle, remove right hand hush panel. Disconnect wiring harness from ECM harness connector.

4) Remove right hand splash shield from right fender and feed ECM harness out from inside vehicle. Disconnect heater hoses from heater core. Disconnect throttle cable from EFI assembly. Raise vehicle on hoist. Remove flywheel inspection cover.

5) Remove flywheel-to-torque converter bolts. Remove transmission-to-engine bolts. Remove exhaust pipe at manifold. Remove exhaust pipe support at bell housing. Disconnect catalytic converter at tailpipe joint. Remove converter and exhaust pipe assembly.

6) Remove starter. Remove clutch fork return spring. Remove motor mount through bolts. Lower vehicle. Install lifting equipment to engine. Support transmission with floor jack and block of wood. Remove engine from engine compartment.

V6 MODELS

2.8L (173") Man. Trans. Exc. Firebird - 1) Disconnect battery cables at battery. Remove air cleaner. Drain cooling system. Disconnect all vacuum hoses connected to engine. Disconnect accelerator linkage from carburetor. Disconnect engine harness connector.

2) Disconnect radiator hoses from radiator. Disconnect heater hoses from engine. If equipped, remove power steering pump and bracket assembly from engine. Disconnect clutch cable at transaxle. Disconnect shift linkage from shift levers. Remove cables from transaxle bosses.

Engine Removal

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

3) Disconnect speedometer cable from transaxle. Install engine support fixture. Raise engine until weight is relieved from mount assemblies. Remove exhaust crossover pipe. Remove all but 1 transaxle-to-engine bolt.

4) Remove side and crossmember assembly. Disconnect exhaust pipe. Remove all powertrain mount-to-cradle attachments. Remove both drive axles from transaxle assembly. Lower left side of engine using engine support fixture. Place suitable jack under transaxle.

5) Remove last transaxle-to-engine bolt. Separate transaxle from engine. Install engine lifting fixture. If equipped, remove A/C compressor from engine, leaving refrigerant hoses connected. Disconnect forward strut bracket from radiator support and swing aside. Remove engine from engine compartment.

2.8L (173") Auto. Trans. Exc. Firebird – 1) Disconnect battery cables at battery. Remove air cleaner. Drain cooling system. Disconnect all vacuum lines to engine. Disconnect detent cable at carburetor.

2) Disconnect accelerator linkage at carburetor. Disconnect engine wiring harness connector. Disconnect ground strap from engine (at engine forward strut). Disconnect radiator hoses from radiator. Remove heater hoses from engine.

3) If equipped, remove power steering pump and bracket from engine. Raise vehicle on hoist. Remove exhaust pipe. Disconnect fuel line at rubber hose connection at right side of engine. Remove right front engine mount-to-cradle nuts.

4) Disconnect battery cables at starter and transaxle housing. Remove converter housing inspection cover. Remove converter-to-flex plate bolts. Remove transaxle case-to-engine block support bracket bolts. Lower vehicle. Position support stand under transaxle rear extension.

5) Remove engine strut bracket from radiator support and swing rearward. Remove transaxle-to-engine bolts, noting location of ground stud bolt. If equipped, remove A/C compressor from mounting bracket and position aside, leaving refrigerant lines connected. Install engine lifting device. Remove engine from engine compartment.

2.8L (173") Firebird – 1) Disconnect battery cables at battery. Remove air cleaner. Mark hood and hinges for reassembly reference. Remove hood. Drain cooling system. Remove lower radiator hose. Remove upper fan shroud. Remove upper radiator hose and coolant recovery hose.

2) Remove transmission cooler lines at radiator. Remove radiator. Remove fan assembly. Remove heater hoses. Disconnect throttle, cruise control and detent linkages from carburetor. Disconnect all vacuum lines to engine. Remove distributor cap. Remove all wiring to engine.

3) Remove power steering pump from engine, with hoses connected, and position aside. Raise vehicle on hoist. Remove exhaust pipes at manifolds. Remove converter inspection cover. Remove flywheel-to-torque converter bolts. Disconnect starter wires.

4) Remove transmission-to-engine bolts. Remove motor mount

through bolts. Disconnect fuel lines at fuel pump. Lower vehicle. Remove AIR/Converter pipes bracket. Support transmission with suitable jack. Attach lifting device to engine. Remove engine from engine compartment.

3.8L (231") & 4.1L (252") – 1) Mark hinges for reinstallation and remove hood. Disconnect battery and drain cooling system. Remove air cleaner. If equipped, remove A/C compressor from mounting bracket and position aside, leaving refrigerant lines connected. Remove fan, pulleys and belts.

2) Disconnect radiator and heater hoses at engine. Remove fan shroud assembly. If equipped, remove power steering pump and position aside, leaving hoses connected. Disconnect and plug fuel pump hoses at pump. Disconnect battery ground cable from engine.

3) Disconnect all electrical wiring and vacuum lines at engine. Disconnect accelerator cable at carburetor. Remove alternator and disconnect engine-to-body ground strap(s) at engine. Raise vehicle and support with safety stands.

4) If equipped, disconnect cable shield from engine. Disconnect exhaust pipes at manifolds. On automatic transmission, remove converter housing inspection cover. Remove converter-to-flex plate bolts. Remove engine-to-transmission attaching bolts.

5) On manual transmission, transmission is removed with engine. Remove drive shaft, shift linkage, clutch equalizer shaft and transmission mount. On all models, remove motor mount through bolts and cruise control bracket (if equipped). Lower vehicle.

6) On automatic transmission, support transmission. On all models, install lifting device to engine. Raise engine and transmission alternately until engine clears motor mounts and can be disengaged from transmission, then remove engine from vehicle.

4.3L (262") Diesel Front Wheel Drive – 1) Drain cooling system. Remove all fan belts. Remove air cleaner. Cover air intake hole in intake manifold. Disconnect negative battery cables at batteries. Disconnect engine ground strap (from right cylinder head to cowl).

2) Raise vehicle on hoist. Remove flywheel cover. Remove flywheel-to-torque converter bolts. Disconnect exhaust pipe from rear exhaust manifold. Remove engine-to-transaxle brace. Remove engine mount-to-cradle retaining nuts.

3) Disconnect all wiring from engine. Disconnect lower oil cooler line. Remove power steering pump and bracket assembly and position out of way, leaving hoses connected. Remove heater water return pipe. If equipped, remove A/C compressor and position aside with hoses connected.

4) Disconnect all fuel and vacuum lines from engine. Plug all fuel lines. Disconnect throttle and T.V. cables at injection pump and cable bracket. Position cables aside. Remove upper oil cooler line and plug openings. Remove exhaust crossover pipe heat shield.

5) Disconnect transaxle filler tube and position aside. Remove exhaust crossover pipe. Remove engine mounting strut and strut brackets. Install suitable engine lifting device. Support transaxle rear extension with suitable jack. Remove transaxle-to-engine bolts. Remove engine from engine compartment.

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

4.3L (262") Diesel Rear Wheel Drive - 1) Drain cooling system. Remove air cleaner. Cover air intake hole in intake manifold. Mark hood and hinges for reassembly reference. Remove hood. Disconnect negative battery cables at batteries. Disconnect engine ground strap (from right cylinder head to cowl).

2) Remove radiator hoses. Remove engine oil and transmission oil cooler lines. Disconnect all vacuum hoses to engine. Remove power steering hoses. If equipped, remove A/C compressor from engine, with hoses and brackets attached, and position aside. Disconnect all fuel lines from fuel pump and injection pump.

3) Disconnect all wiring attached to engine, except at starter. Disconnect throttle cable from injection pump. Disconnect dent cable from injection pump and engine brackets. Remove upper radiator support. Remove radiator.

4) Raise vehicle on hoist. Disconnect exhaust pipes at manifolds. Remove torque converter cover. Remove torque converter-to-flywheel bolts. Remove starter. Remove motor mount through bolts. Remove 3 transmission-to-engine bolts on right side.

5) Lower vehicle. Install suitable engine lifting device to engine. Place a board on top of a jack and slightly raise transmission. Remove 3 transmission-to-engine bolts on left side. Remove engine from engine compartment.

V8 MODELS

5.7L (350") Diesel - 1) Drain cooling system. Remove air cleaner. Cover air intake hole in intake manifold. Mark hood and hinges for reassembly reference. Remove hood. Disconnect negative battery cables at batteries. Disconnect engine ground strap (from right cylinder head to cowl).

2) Remove radiator hoses. Remove engine oil and transmission oil cooler lines. Remove heater hoses. Disconnect power steering hoses from steering gear. Remove A/C compressor from engine, with hoses and brackets attached, and position aside.

3) Disconnect fuel line from fuel pump. Disconnect all wiring to engine. Remove hairpin clip at bellcrank. Remove throttle and T.V. cables from intake manifold and position aside. Remove upper radiator support. Remove radiator.

4) Raise vehicle on hoist. Disconnect exhaust pipes at manifolds. Remove torque converter cover. Remove bolts attaching converter to flywheel. Remove motor mount bolts or nuts. Remove 3 bolts attaching transmission to engine on right side.

5) Disconnect wires from starter and remove starter. Lower vehicle. Secure chain lift to engine. Place a board on top of a jack and raise transmission slightly. Remove 3 bolts attaching transmission to engine on left side. Remove engine from engine compartment.

PONTIAC TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)	Application	Ft. Lbs. (N·m)
4-Cyl. Engines		Flywheel-to-Torque Converter	31 (42)
1.6L (98") & 1.8L (111") Diesel		3.8L (231") & 4.1L (252")	
Flywheel-to-Torque Converter	25 (35)	Motor Mount-to-Engine	59 (80)
Transmission-to-Engine	35 (47)	Motor Mount-to-Frame	29 (39)
1.8L (112") & 2.0L (122")		Motor Mount Through Bolt	29 (39)
Front Motor Mount-to-Engine	25-35 (34-47)	Starter-to-Engine	35 (47)
Lower Motor Mount-to-Engine	15-20 (20-27)	Transmission-to-Engine	35 (47)
Motor Mount-to-Frame	35-45 (47-61)	Flywheel-to-Torque Converter	35 (47)
Starter-to-Engine	26-37 (35-50)	4.3L (262") Diesel	
Transaxle-to-Engine	48-63 (65-85)	Motor Mount-to-Engine	37 (50)
Flywheel-to-Torque Converter	35 (47)	Motor Mount-to-Frame	38 (52)
2.5L (151")		Motor Mount Through Bolt	55 (75)
Motor Mount-to-Frame	41 (56)	Starter-to-Engine	29 (39)
Motor Mount-to-Engine	47 (64)	Transaxle-to-Engine	48-63 (65-85)
Starter-to-Engine	26-37 (35-50)	Flywheel-to-Torque Converter	35 (47)
Transmission-to-Engine	48-63 (65-85)	V8 Engines	
Flywheel-to-Torque Converter	31 (42)	5.7L (350") Diesel	
6-Cyl. Engines		Motor Mount-to-Engine	75 (102)
2.8L (173")		Motor Mount-to-Frame	50 (68)
Motor Mount Bracket-to-Engine	70-92 (95-125)	Motor Mount Through Bolt	55 (75)
Motor Mount Torque Strut Bracket	30-40 (41-54)	Starter-to-Engine	35 (47)
Starter-to-Engine	26-37 (35-50)	Transmission-to-Engine	35 (47)
Transmission-to-Engine	48-63 (65-85)	Flywheel-to-Torque Converter	40 (54)