

Engine Removal

GENERAL MOTORS (Cont.)

OLDSMOBILE

4 CYLINDER MODELS

1) Remove hood and mark hinges for installation. Disconnect battery, drain cooling system and disconnect all cooling and heater hoses from engine. Disconnect all emission hoses and remove radiator shroud. Remove radiator and fan assembly. Remove air cleaner assembly. Disconnect all electrical leads, automatic transmission throttle linkage at manifold bellcrank, fuel line, all vacuum lines and accelerator cable at manifold bellcrank.

2) On models with air conditioning, disconnect compressor from mount, remove drive belt and move compressor forward to allow front of compressor to rest on frame forward brace. **CAUTION** — Do not crimp or bend A/C hoses. Secure rear of compressor to engine compartment so compressor will not interfere with engine removal. On models with power steering, disconnect power steering pump and position it out of way.

3) Raise vehicle and disconnect exhaust pipe at manifold. Remove flywheel dust cover and, on automatic transmission equipped vehicles, remove converter-to-flywheel retaining bolts and nuts and install converter safety strap. Remove transmission-to-engine bolts and loosen engine front mount bolts. Lower vehicle and support transmission. Install engine lifting adapter and raise engine slightly and remove front motor mount bolts. Pull engine forward to clear transmission while slowly lifting engine. Check that all disconnects are made and to ensure that clearance with surrounding parts is maintained and remove engine from vehicle.

6 CYLINDER MODELS

1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove radiator shroud and disconnect all electrical leads at engine. Disconnect accelerator linkage at bellcrank and exhaust pipe at manifold flange.

2) Disconnect fuel inlet line at fuel pump and power brake (if equipped) vacuum line at manifold. Remove power steering pump (if equipped), without disconnecting lines, and position off to side. Remove all radiator and heater hoses. Remove upper radiator support and remove radiator.

3) Raise vehicle and position safety stands. If equipped with manual transmission, disconnect clutch equalizer. Remove bolts securing transmission to clutch housing. Lower vehicle and place a jack and wood block under transmission. With vehicle lowered, slightly raise jack under transmission. Remove front motor mount through bolts. Attach a suitable hoist to engine and remove engine assembly.

V6 & V8 MODELS

All Models, Exc. Toronado — 1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Disconnect all electrical leads at engine. Disconnect engine-to-body ground strap. Remove air conditioning compressor and/or power steering pump, without disconnecting lines, and position off to side.

2) Disconnect accelerator linkage at carburetor. Disconnect all radiator and heater hoses at engine. Remove fan shroud, fan and pulley. Disconnect all vacuum lines at engine. On models equipped with 260", 350" (except Omega) and 455" V8 engines, remove upper radiator support and remove radiator.

3) Raise vehicle and position on safety stands. Disconnect fuel inlet line at fuel pump. Disconnect exhaust pipes at manifolds. Remove flywheel or converter housing cover. Scribe mark aligning converter to flex plate and remove converter-to-flex plate bolts.

NOTE — The remainder of the engine removal procedure will vary depending on model and engine as follows:

All Models W/231" V6 & Omega W/350" V8 — 4) Remove starter cable and cable shield from engine. If equipped with automatic transmission, remove transmission to engine bolts. **NOTE** — Manual transmission is removed with engine. On manual transmission models, remove drive shaft, shift linkage, clutch equalizer shaft and transmission mount. On all models remove motor mount fasteners, lower vehicle and support automatic transmission.

5) Attach a suitable hoist to engine and raise enough to take weight off front engine mounts. Remove front mount through bolts. Raise engine and transmission support until engine and automatic transmission can be separated and remove engine. Remove engine and manual transmission assembly (if equipped).

All Models W/260", 350", Exc. Omega & 455" V8 — 4) Remove motor mount bolts. Remove three bolts on right side securing engine to transmission. Remove starter with wires attached and secure starter to frame out of way.

5) Lower vehicle and support transmission with a jack and a wood block. Remove three bolts on left side securing engine to transmission. Attach a suitable hoist to engine and remove engine.

Toronado — 1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Disconnect radiator venturi shroud strap (if equipped), remove seal clips and slide seal towards radiator to gain clearance. Disconnect engine ground strap and upper and lower radiator hoses at engine. Disconnect transmission cooler lines at radiator.

2) Disconnect heater hoses, upper radiator baffle and radiator. Remove radiator fan shroud and venturi components (if equipped). Remove power steering pump and mount and/or air conditioning compressor and mount from engine, without disconnecting lines and position out of way.

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

Disconnect fuel lines at fuel pump. Disconnect accelerator linkage, all vacuum hoses and electrical connections at engine. Disconnect left exhaust pipe at manifold.

3) Raise vehicle and position on safety stands. Loosen but DO NOT remove upper left bolt securing converter cover. Disconnect right exhaust pipe at manifold. Disconnect starter cable and remove starter. Remove remaining converter cover bolts and pivot cover out of slot at upper left bolt. Scribe mark aligning converter to flex plate and remove converter bolts. Remove front engine mount nuts.

4) Scribe a mark around washers at right output shaft support bracket and remove bracket. Remove through bolt on left side securing final drive to engine. Remove lower right transmission-to-engine bolt. Attach a suitable support (BT-6322) to final drive. Lower vehicle and attach a suitable hoist to engine. Remove remaining transmission-to-engine bolts. Remove engine from compartment. It may be necessary to raise or lower transmission with a jack and wood block to separate engine and transmission.

OLDSMOBILE TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Crossmember-to-Frame	
Starfire	31
All Others	37
Transmission-to-Mount	
Starfire	31
All Others	45
Mount-to-Crossmember	
Toronado.....	60
All Others	45
Flywheel Housing-to-Engine	
Starfire.....	35
Toronado.....	30
All Others	40
Converter-to-Flywheel.....	40
Motor Mount-to-Frame	50
Motor Mount-to-Engine	
Starfire.....	55
All Others	75

PONTIAC

4 CYLINDER MODELS

1) Disconnect battery cables, all water, vacuum and emission control hoses. Disconnect all wires at sending units, switches and solenoids. Remove radiator panel or shroud, radiator, fan and spacer. Position power steering pump and/or air conditioning compressor (if equipped) out of way without disconnecting hoses.

2) Raise vehicle and disconnect exhaust pipe at manifold. Remove flywheel inspection cover or converter underpan. If equipped with automatic transmission, remove converter-to-flex plate bolts and install converter safety strap. Remove converter housing or clutch housing bolts. Loosen engine front mounts at frame.

3) Lower vehicle and position jack under transmission for support. Using a suitable hoist, raise engine enough to take weight off of engine. Remove front engine mount bolts. Pull engine forward to separate from transmission and remove engine.

6 CYLINDER MODELS

1) Remove hood and mark hinges for installation. Disconnect battery and drain cooling system. Disconnect all electrical and vacuum connections at engine. Remove air cleaner and upper radiator shield assembly. Disconnect radiator and heater hoses from engine. Remove fan assembly and disconnect accelerator linkage. If vehicle is equipped with power steering and/or air conditioning, remove power steering pump and/or A/C compressor without disconnecting hoses and position units out of way.

2) Raise and support vehicle, drain crankcase. Disconnect fuel line at fuel pump. Disconnect exhaust pipe from manifold and remove starter motor. If vehicle is equipped with automatic transmission, remove converter cover, converter retaining bolts and slide converter to rear. If equipped with manual transmission, disconnect clutch linkage and remove clutch cross shaft. Remove four lower flywheel housing bolts.

3) Disconnect transmission filler tube support and starter wire harness shield from cylinder head. Remove front motor mount-to-frame bracket bolts and lower vehicle. Support transmission and attach suitable hoist to engine. Support engine with hoist and remove two remaining flywheel housing bolts. Raise transmission slightly, pull engine forward and remove engine by tilting front of engine upward.

V6 & V8 MODELS

1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove air conditioning compressor (if equipped) from mount without disconnecting lines and position out of way. Remove fan pulleys and drive belts. Disconnect radiator hoses and remove fan shroud.

2) On models equipped with 260" V8, remove radiator. Remove power steering pump (if equipped) from mount without disconnecting lines and position out of way. Disconnect all electrical and vacuum connections at engine. Disconnect accelerator linkage or cable at carburetor.

3) Raise vehicle and position on safety stands. Disconnect exhaust pipes at exhaust manifolds. Remove flywheel or converter housing cover. Scribe mark aligning converter to flex

Engine Removal

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

plate for installation. Remove converter-to-flex plate bolts.
NOTE — This is not necessary on vehicles with manual transmissions. Remove manual transmission with engine.

NOTE — The remainder of the engine removal procedure will vary depending on model and engine as follows:

All Models W/231" V6 - 4) On automatic transmission equipped vehicles, remove engine-to-transmission bolts. On manual transmission equipped vehicles, disconnect propeller shaft, shift linkage, clutch equalizer shaft and transmission mount. Remove motor mount bolts, lower vehicle and support automatic transmission. Attach suitable lifting device to engine and raise so the mounting through-bolts may be removed. Alternately raise engine and transmission support until engine may be disengaged from automatic transmission. Remove engine or engine and transmission combination from vehicle.

All Models W/260" V8 - 4) Remove motor mount bolts. Remove three bolts on right side securing engine to transmission. Remove starter with wires attached and secure starter to frame, out of way.

5) Lower vehicle and support transmission with a jack and wood block. Remove three bolts on left side securing engine to transmission. Attach a suitable hoist and remove engine.

Ventura W/350" V8 - 4) Remove starter cable and cable shield from engine. If equipped with automatic transmission, remove transmission-to-engine bolts. **NOTE** — Manual transmission is removed with engine. On manual transmission models, remove drive shaft, shift linkage, clutch equalizer shaft and rear transmission mount. On all models remove motor mount fasteners, lower vehicle and support automatic transmission.

5) Attach a suitable hoist to engine and raise enough to take weight off front engine mounts. Remove front mount through bolts. Raise engine and transmission support until engine and automatic can be separated and remove engine. Remove engine and manual transmission assembly (if equipped).

All Models W /350" (Exc. Ventura), 400" & 455" V8 - 4) Disconnect starter cable at starter. Remove four lower transmission-to-engine bolts (two on each side). Disconnect transmission filler tube support and starter cable shield from cylinder head. Remove two front motor mount bolts.

5) Lower vehicle and support transmission with a jack and a wood block. Remove remaining transmission-to-engine bolts and raise transmission slightly with a jack. Attach a suitable hoist to engine and remove engine.

PONTIAC TIGHTENING SPECIFICATIONS

4 CYLINDER MODELS

Application	Ft. Lbs.
Clutch Housing-to-Engine	25
Automatic Transmission-to-Engine	35
Crossmember-to-Frame Bolts	28
Crossmember-to-Mount Bolts	26
Rear Mount-to-Transmission	26

6 CYLINDER MODELS

Application	Ft. Lbs.
Motor Mount-to-Engine.....	33
Motor Mount-to-Bracket	45
Flywheel Housing-to-Block	35

V6 MODELS

Applicaton	Ft. Lbs.
Motor Mount-to-Engine.....	55
Flywheel Housing-to-Block	15
Motor Mount Through-Bolt	40-55
Motor Mount-to-Frame	25-35

V8 MODELS

Application	Ft. Lbs.
All Models W/260" V8	
Motor Mount Bracket-to-Frame	35
Motor Mount-to-Engine	65
Motor Mount Through Bolt	35
Rear Mount-to-Trans	45
Rear Mount-to-Crossmember	60

Application	Ft. Lbs.
Ventura W/350" V8	
Motor Mount Bracket-to-Frame	
All (Exc. Crossmember Through Bolt)	25-35
Crossmember Through Bolt	70-90
Motor Mount-to-Engine	50-75
Motor Mount Through Bolt	40-55

All Remaining Models	
Motor Mount Bracket-to-Frame	50-65
Motor Mount-to-Frame	
Catalina, Bonneville, Grand Ville, Grand Safari ..	50-65
All Others	25-35
Motor Mount Through Bolt	40-50
Rear Mount-to-Transmission	35-45
Rear Mount-to-Crossmember	
Firdbird	45-60
All Others	30-45