

GENERAL MOTORS

BUICK

6 CYLINDER MODELS

NOTE — Engine and transmission are removed as an assembly.

1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove fan shroud, radiator, fan and pulley. Disconnect electrical leads at starter, alternator, temperature switch, oil pressure switch and coil.

2) Disconnect accelerator linkage at bellcrank and exhaust pipe at manifold. Disconnect fuel inlet line at fuel pump and power brake line at manifold (if equipped). Remove power steering pump and/or air conditioning compressor (if equipped), without disconnecting lines and position out of way.

3) Raise vehicle and position safety stands. Remove drive shaft and plug end of transmission. Disconnect shift linkage and speedometer cable at transmission. Disconnect cooler lines if equipped with automatic transmission. If equipped with manual transmission, disconnect clutch linkage at cross-shaft and remove cross-shaft.

4) Connect a suitable hoist to engine and raise enough to take weight off front engine mounts. Remove front mount through bolts. Remove bolts securing rear mount to crossmember and remove engine and transmission assembly.

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 cable or linkage 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 plate for installation. 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, 350" & 455" 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 with a jack and a wood block.

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" 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.

BUICK TIGHTENING SPECIFICATIONS 6 CYLINDER MODELS

Application	Ft. Lbs.
Motor Mount Bracket-to-Engine	30-40
Motor Mount-to-Frame	25-35
Motor Mount Through Bolt	35-45
Clutch Housing or Auto. Trans.-to-Engine	30

V6 & V8 MODELS

Application	Ft. Lbs.
All Models W/231" V6	
Motor Mount Bracket-to-Frame	25-35
Motor Mount-to-Engine	50-65
Motor Mount Through Bolt	40-55
Clutch Housing or Auto. Trans.-to-Engine	35
All Models W/260" V8	
Motor Mount Bracket-to-Frame	35
Support Assembly-to-Engine	80
Motor Mount-to-Support Assembly	60
Motor Mount Through Bolt	35
Rear Mount-to-Trans	60
Rear Mount-to-Crossmember	60

All Models W/350" & 455" V8	
Motor Mount Bracket-to-Frame.....	25-35
Motor Mount-to-Engine	50-65
Motor Mount Through Bolt	40-55
Clutch Housing or Auto. Trans.-to-Engine	35

Engine Removal

GENERAL MOTORS (Cont.)

CADILLAC

ALL MODELS, EXC. ELDORADO

- 1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and inlet resonator assembly, and drain cooling system. Remove retaining screws for each wheel housing strut-to-radiator cover and position struts to side. Remove radiator hoses, radiator cover and fan.
- 2) Disconnect wiring harness and all electrical connections to engine. Disconnect Cruise Control servo from left cylinder head and brake hose from brake pipe. Disconnect carburetor linkage and vapor canister hose. Disconnect power steering pump and air conditioning compressor without disconnecting hoses and position to one side.
- 3) Disconnect spark plug wires from right side of engine. Disconnect vacuum lines, heater hoses at right cylinder head. Loosen tie struts and swing to one side. Remove two upper transmission-to-engine bolts.
- 4) Raise vehicle and position on safety stands. Remove nuts securing front engine mounts to frame. Remove starter, converter inspection cover and bolts securing converter to flex plate. Remove remaining bolts securing engine to transmission. Disconnect exhaust pipes at exhaust manifolds.
- 5) Disconnect fuel line and vapor return line (if equipped with air conditioning) from fuel pump. Lower vehicle and support transmission with a jack. Attach a suitable hoist to engine, pull engine forward to separate engine and transmission and remove engine.

ELDORADO

- 1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and inlet resonator assembly, and drain cooling system. Remove upper radiator hose, radiator cover and fan assembly. Disconnect alternator wires, right side spark plug wires and heater turn-on switch. Disconnect water control valve hose and starter motor wiring harness.
- 2) Remove power steering pump without disconnecting hoses and position to side. Remove air conditioning compressor mounts, disconnect electrical lead and move compressor to top of battery.
- 3) Disconnect accelerator linkage, wiring harness on left side of engine and vacuum lines. Remove left exhaust manifold

flange nuts, transmission cooler line bracket screw and filler pipe nut from exhaust manifold. Position right engine lift hook over number one intake port. Remove upper screw securing steering gear flex coupling shroud to frame.

- 4) Raise vehicle and position on safety stands. Remove steering gear shroud. Remove bolt securing final drive to mount and disconnect fuel pump lines. Remove front engine mount nuts, lower radiator hose, right exhaust manifold flange nuts, and starter motor without disconnecting wiring. Remove converter inspection cover and bolts securing converter to flex plate.
- 5) Remove two lower transmission-to-engine bolts and right output shaft screws. Remove two output shaft bracket-to-engine screws and one screw securing bracket to final drive. Loosen right shock absorber lower mount nut and slide shock out on stud. Move drive axle as far rearward as possible and remove output shaft.
- 6) Lower car and support transmission. Remove bolts securing transmission to engine. Install a suitable hoist to engine, pull engine forward to separate engine and transmission and remove engine.

CADILLAC TIGHTENING SPECIFICATIONS ALL MODELS, EXC. ELDORADO

Application	Ft. Lbs.
Front Support Mount-to-Engine Nut	21
Front Support Mount Stud-to-Frame Nut	52
Rear Support Mount-to-Crossmember Bolt	50
Rear Support Crossmember-to-Frame Bolt	20
Rear Support Mount-to-Transmission Bolt	50
Transmission-to-Engine Bolts	35

ELDORADO

Application	Ft. Lbs.
Front Mount Support Bracket-to-Engine Nut	21
Front Support Cushion-to-Frame Nut	35
Front Support Cushion-to-Engine	
Mounting Bracket Nut	57
Rear Support Bracket-to-Transmission Bolt	50
Rear Support Assembly-to-Bracket	46
Rear Support Assembly-to-Frame	52
Transmission-to-Engine Bolts	35

CHEVROLET

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.

GENERAL MOTORS (Cont.)

CHEVROLET (Cont.)

6 CYLINDER MODELS

NOTE — Engine and transmission are removed as an assembly.

1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove fan shroud, radiator, fan and pulley. Disconnect all electrical wires, water and vacuum hoses, and fuel inlet line at fuel pump.

2) Disconnect accelerator linkage at bell crank and exhaust pipe at manifold. Remove power steering pump and bracket (if equipped) without disconnecting hoses and position out of way.

3) Raise vehicle and position on safety stands, drain crankcase. Remove drive shaft and plug end of shaft. Disconnect transmission cooler lines (if equipped), shift linkage at transmission, speedometer cable, and TCS switch (if equipped) at transmission.

4) On manual transmissions, disconnect clutch linkage at cross-shaft and remove cross-shaft. Lower vehicle and connect a suitable hoist to engine. Raise engine enough to take weight off front engine mount bolts and remove bolts. Remove rear mount bolt at crossmember and remove engine and transmission assembly.

V8 MODELS

NOTE — Engine and transmission are removed as an assembly.

All Models, Exc. Corvette W/Auto. Trans. & Monza — 1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove fan shroud, fan and pulley, and radiator. Disconnect all electrical leads, vacuum and water hoses. Disconnect accelerator linkage at pedal lever and fuel inlet line at fuel pump.

2) Disconnect exhaust pipes at exhaust manifolds. Disconnect air conditioning compressor and/or power steering pump (if equipped) without disconnecting lines and position out of way. Disconnect shift linkage, cooler lines, speedometer cable and TCS switch at transmission. On manual transmission vehicles, disconnect clutch linkage at cross-shaft and remove cross-shaft. Remove drive shaft on all models.

3) Attach a suitable hoist to lift brackets on engine. Raise engine enough to take weight off front engine mount bolts. Remove front mount through bolts and rear mount-to-crossmember bolts. Remove engine and transmission assembly from vehicle.

Corvette W/Auto. Trans. — 1) Engine is removed using same basic procedure as previously outlined, except that transmission remains in vehicle. Consequently all procedures applying to disconnecting or removing components at transmission are disregarded, also radiator does not need to be removed.

2) Remove bolts securing converter to flex plate. Remove bolts securing transmission to engine and support transmission with a jack. Attach a suitable hoist to engine, pull engine forward to separate from transmission and remove engine. Converter must be supported as engine is being removed.

Monza — 1) Raise hood to fully open position. Disconnect both battery cables, remove air cleaner and drain cooling system and crankcase. Raise vehicle and position on safety stands. Disconnect exhaust pipes at exhaust manifolds. Remove flywheel dust cover or converter underpan.

2) If equipped with automatic transmission, remove converter-to-flex plate bolts. and install a suitable converter support. Remove all accessible bolts retaining converter housing or clutch housing to engine. Disconnect cooler lines from clip at bottom of engine. Remove front engine mount bolts at frame.

3) Lower vehicle and remove radiator panel or shroud, and remove radiator or fan. Disconnect heater hoses, and all electrical leads at engine. Remove electrical harness from clips on rocker cover and position out of way. Disconnect automatic transmission vacuum modulator and air conditioning vacuum lines at intake manifold.

4) Disconnect fuel line at rear of engine, vacuum hose at canister, accelerator cable at carburetor and bracket and air conditioning blower delay lead at rear of engine. Remove air conditioning compressor and/or power steering pump, without disconnecting lines, and position out of way. Install a suitable jack under transmission for support.

5) Attach a suitable hoist to engine and raise enough to take weight off front motor mounts. Remove front motor mount through bolts. Remove remaining bolts attaching transmission to engine. Raise hoist while pulling forward on engine and remove engine.

CHEVROLET 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 & V8 MODELS	
Application	Ft. Lbs.
Clutch Housing-to-Engine	30
Automatic Transmission-to-Engine	35
Crossmember-to-Frame	25
Crossmember-to-Mount	40
Mount-to-Transmission	35

Engine Removal

GENERAL MOTORS (Cont.)

OLDSMOBILE

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.

All Models W/400" 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 jack. 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. 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.

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

OLDSMOBILE TIGHTENING SPECIFICATIONS			
6 CYLINDER MODELS		V6 & V8 MODELS (Cont.)	
Application	Ft. Lbs.	Application	Ft. Lbs.
Motor Mount Bracket-to-Engine	40	Cutlass	
Motor Mount-to-Frame	25	Motor Mount Bracket-to-Frame	35
Motor Mount Through Bolt	45	Motor Mount-to-Engine	75
Clutch Housing or Auto. Trans.-to-Engine	30	Motor Mount Through Bolt	50
		Rear Mount-to-Trans.	45
		Rear Mount-to-Crossmember	60
		Crossmember-to-Frame	37
		88 & 98	
		Motor Mount Bracket-to-Frame.....	25
		Motor Mount-to-Engine	75
		Motor Mount Through Bolt	50
		Rear Mount-to-Trans.	45
		Rear Mount-to-Crossmember	60
		Crossmember-to-Frame	37
		Toronado	
		Front Support-to-Frame	35
		Side Mount-to-Bracket	60
		Side Mount-to-Engine	60
		Output Shaft Support-to-Engine	55

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.

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 plate for installation. 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/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

Engine Removal

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

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

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

V8 MODELS (Cont.)

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