

Engine Removal

GENERAL MOTORS (Cont.)

CHEVROLET (Cont.)

4 CYLINDER MODELS (CHEVETTE)

1) Remove hood, disconnect both battery cables and remove battery cable clips along right frame rail. Drain cooling system and disconnect radiator hoses at engine and heater hoses at heater. Disconnect engine wiring harness at bulkhead connector. Remove radiator and fan assembly. Remove air cleaner assembly and disconnect fuel line along left frame rail, automatic transmission throttle valve linkage (if equipped) and accelerator cable. On vehicles with air conditioning, remove compressor and lay aside. Raise vehicle and disconnect exhaust pipe at manifold.

2) Remove flywheel dust cover or converter underpan. On automatic transmission vehicles, remove converter-to-flywheel bolts. Remove transmission-to-engine bolts and lower vehicle. Support transmission, remove safety straps and front motor mount bolts. Install suitable lifting device, pull engine forward to clear transmission while slowly lifting engine. Check to make sure all disconnects are made and to ensure that clearance with surrounding components is maintained.

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

1) Remove hood and mark hinges for installation. Disconnect battery, remove air cleaner and drain cooling system. Remove fan shroud, fan, pulley and radiator. Disconnect all electrical leads, vacuum and water hoses. Disconnect accelerator linkage at inlet manifold, and fuel hose at fuel pump. Disconnect fuel vapor storage canister hose (if equipped).

2) Disconnect vacuum line to power brake unit at manifold. Remove power steering pump (if equipped) and set aside. Raise vehicle and disconnect exhaust pipes at manifolds. Disconnect (if equipped) converter bracket at transmission rear mount. Remove starter, and as applicable, flywheel splash shield or converter housing cover.

3) On vehicles with automatic transmission, remove converter to flywheel attaching bolt. Remove mount through bolts. Remove bell housing bolts. Lower vehicle and raise transmission using a floor jack. Attach engine lifting device and raise engine. Remove motor mount to engine brackets and remove engine assembly.

CHEVROLET TIGHTENING SPECIFICATIONS MONZA, VEGA & CHEVETTE

Application	Ft. Lbs.
Converter-to-Flywheel.....	35
Flywheel Housing-to-Engine	
All Exc. THM 250	25
THM 250.....	35
Crossmember-to-Frame.....	40
Crossmember-to-Transmission	
Center Nut.....	33
End Nut	21

ALL OTHER MODELS

Application	Ft. Lbs.
Converter-to-Flywheel.....	35
Flywheel Housing-to-Engine	
All Exc. THM 200	35
THM 200.....	25
Crossmember-to-Frame.....	25
Crossmember-to-Mount	40
Mount-to-Transmission.....	35

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

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

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.

V6 MODELS

NOTE — *Manual transmission and engine are removed as an assembly.*

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, without disconnecting lines, and position off to side.

2) Remove fan blade, pulleys and belts. Disconnect radiator and heater hoses from engine. Remove fan shroud assembly. Remove power steering pump, without disconnecting lines, and position off to side. Remove fuel pump hose and all vacuum lines at engine.

3) Disconnect throttle cable and downshift cable at carburetor. Raise vehicle and disconnect starter cables and cable shield from engine. Disconnect exhaust pipes from manifolds. Remove lower flywheel cover or converter cover.

4) Scribe a mark on the converter and flywheel for reassembly alignment. Remove flywheel to converter attaching bolts. If equipped with automatic transmission, remove transmission to engine bolts. On manual transmission models, remove drive shaft, shift linkage, clutch equalizer shaft and transmission mount.

5) On all models, remove motor mount fasteners. Lower vehicle and support automatic transmission. Attach a suitable hoist to engine and raise enough to take weight off front engine mounts. Remove front mount through bolts. Separate automatic transmission from engine, and remove engine. Remove engine and manual transmission as an assembly.

305" & 350" (VIN L)

1) Remove hood and mark hinges for installation. Disconnect battery cables at battery. Remove air cleaner and drain cooling system. Disconnect radiator and heater hoses. Remove radiator and fan shroud. Disconnect all electrical wires from engine. Disconnect accelerator linkage at intake manifold.

2) Disconnect fuel line from fuel pump. Disconnect all vacuum lines. Remove air conditioning compressor and/or power steering pump, without disconnecting lines, and position out of way. Raise vehicle and disconnect exhaust pipe at manifold, and (if equipped), converter bracket at rear transmission mount.

3) Remove starter. Remove flywheel splash shield or converter housing cover as applicable. On automatic transmission

models, remove converter to flywheel bolt. On all models, remove mount through bolts. Lower vehicle and raise transmission using a floor jack. Remove motor mount to engine brackets and remove engine.

260", 350" (VIN R) & 403" (Exc. Toronado)

1) Drain cooling system. Remove air cleaner and hot air pipe. Remove hood and mark hinges for installation. Disconnect negative battery cable at battery, and ground wire at inner fender panel. Disconnect engine ground strap.

2) Disconnect radiator hoses, automatic transmission cooler lines, heater hoses, vacuum hoses, fuel hose from fuel line, wiring and throttle cable. Remove power steering pump and/or air conditioning compressor, without disconnecting lines, and position off to side.

3) Remove upper radiator support and radiator. Raise vehicle and disconnect exhaust pipes at manifolds. Remove torque converter cover and three bolts holding converter to flywheel. Remove engine mount bolts or nuts.

4) Remove three (right side) bolts securing engine to transmission. Remove starter with wires attached and secure to frame. Lower vehicle and attach lifting device to engine. Raise transmission and remove three (left side) engine to transmission bolts. Remove engine assembly.

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.

Engine Removal

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

OLDSMOBILE TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Crossmember-to-Frame	37
Transmission-to-Mount	45
Mount-to-Crossmember	
Tornado	60
All Others	45
Flywheel Housing-to-Engine	35
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.

V6 MODELS

NOTE — Manual transmission and engine are removed as an assembly.

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

2) Remove fan shroud assembly. Remove power steering pump (if equipped) without disconnecting lines, and position out of way. Disconnect fuel pump hoses and battery ground cable from engine. Disconnect all vacuum and electrical connections at engine. Disconnect throttle control cable at carburetor.

3) Remove alternator and disconnect engine to body ground strap(s) at engine. Raise vehicle and disconnect starter cables, and cable shield from engine (if equipped). Disconnect exhaust pipes from manifolds. Remove lower flywheel or converter housing.

4) Remove flywheel to converter bolts. Scribe a chalk mark on flywheel and converter for reassembly alignment.

NOTE — This is not necessary for manual transmissions, remove manual transmission with engine.

On automatic transmissions remove transmission to engine attaching bolts. On manual transmissions disconnect propeller shaft, shift linkage, clutch equalizer shaft, and transmission mount.

5) On all models remove motor mount through bolts and (if equipped) cruise control bracket. On automatic transmissions, lower vehicle and support transmission. On all models attach a lifting device to engine. Disengage automatic transmission from engine and remove engine.

V8 MODELS

305" & 350" (VIN L)

1) Remove hood and mark hinges for installation. Disconnect battery cables at battery. Remove air cleaner and drain cooling system. Disconnect radiator and heater hoses, and remove fan shroud and radiator. Disconnect all electrical wires and vacuum connections at engine.

2) Disconnect fuel line at fuel pump and accelerator linkage at intake manifold. Remove air conditioning compressor, and/or power steering pump, without disconnecting lines, and position off to side. Raise vehicle and disconnect exhaust pipe at manifold and (if equipped), converter bracket at rear transmission mount. Remove starter. Remove flywheel splash shield or converter housing cover as applicable.

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

3) On automatic transmissions, remove converter to flywheel attaching bolts. On all models, remove mount through bolts and bell housing bolts. Lower vehicle and raise transmission using a floor jack. Attach a lifting device to engine, and raise engine enough to remove motor mount to engine brackets. Remove engine.

3) On manual transmissions, disconnect clutch linkage, remove clutch cross shaft, starter and lower flywheel cover. Remove four lower bell housing bolts (two on each side). Disconnect transmission filler tube support (automatic transmission). Remove two front motor mount bolts. Lower vehicle and support transmission using a floor jack. Remove two remaining bell housing bolts and raise transmission slightly. Using suitable lifting device, remove engine.

350" (VIN R) & 403"

1) Drain cooling system. Remove air cleaner and hot air pipe. Remove hood and mark hinges for installation. Disconnect negative battery cable at battery and ground wire at inner fender panel. Disconnect engine ground strap. Disconnect radiator and heater hoses. Disconnect all electrical and vacuum connections at engine.

2) Disconnect power steering hose bracket from engine and fuel hose from fuel line. Disconnect air conditioning compressor, with hoses attached, and position out of way. Disconnect throttle cable. Remove upper radiator support and radiator.

3) Raise vehicle and disconnect exhaust pipes at manifolds. Remove torque converter cover and three bolts holding converter to flywheel. Remove engine mount bolts or nuts. Remove three (right side) engine to transmission bolts. Remove starter with wires attached. Lower vehicle and attach lifting device to engine. Raise transmission slightly, and remove three (left side) engine to transmission bolts. Remove engine.

301", 350" (VIN P) & 400"

1) Disconnect battery cables at battery. Drain cooling system. Scribe alignment marks around hood hinges and remove hood. Disconnect engine wire harness and engine to body ground straps. Remove air cleaner, and disconnect radiator and heater hoses at engine. Remove power steering pump and/or air conditioning compressor, with hoses attached, and position out of way.

2) Remove engine fan and pulley. Disconnect accelerator control linkage. Disconnect all electrical and vacuum connections at engine. Raise vehicle and disconnect exhaust pipes from manifolds. Disconnect starter wires. On automatic transmissions, remove converter cover, three retaining bolts and slide converter to rear.

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

V6 MODELS

Application	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.
Exhaust Pipe-to-Manifold	30
Rear Mount-to-Transmission	35
Frame-to-Crossmember	30
Engine Mount-to-Frame	50
Engine Mount-to-Block	75
Rear Mount-to-Crossmember	40
Transmission Case-to-Engine	35
Motor Mount Through-Bolt	45
Rear Mount-to-Transmission	40