

GENERAL MOTORS

BUICK

6 CYLINDER MODELS

1) Disconnect battery cable and remove upper radiator mounting panel or side mount bolts. Position a piece of heavy cardboard between radiator and fan. Disconnect fuel line at fuel pump. Raise vehicle and position on safety stands. Drain crankcase and remove starter. Remove flywheel or converter housing underpan.

2) Disconnect steering rod at idler lever and position out of way to gain access to oil pan bolts. Rotate crankshaft until timing mark on harmonic balancer is at 6 o'clock position. Disconnect brake line from front crossmember and position brake line out of way. Remove front motor mount through bolts and all oil pan bolts. Remove motor mount and frame bracket from left side. Drop oil pan and roll out opening created by removing motor mount and bracket, and tilt front of pan upward and pull down to rear to remove.

V6 MODELS

Raise vehicle and drain crankcase. Remove flywheel inspection cover and exhaust crossover pipe. Remove oil pan retaining screws and remove oil pan.

V8 MODELS

All Models W/260" — Remove distributor cap and rotate engine until rotor is at number one firing position. Disconnect battery cable and remove dipstick. Raise vehicle, position on safety stands and drain crankcase. Remove starter and disconnect exhaust crossover pipe. Disconnect front motor mounts and raise engine as far as possible using a suitable hoist. Remove oil pan attaching bolts and remove oil pan.

All Models W/350" & 455" — 1) Disconnect battery and remove tie bar between radiator and fan shroud. Remove air cleaner and disconnect throttle linkage. Raise vehicle and position on safety stands. Drain crankcase and remove flywheel housing lower cover. Remove shift linkage bolt and position out of way. Disconnect exhaust crossover pipe at manifold flanges.

2) Remove front motor mount bolts. On Apollo models, disconnect idler arm bracket at frame and position linkage out of way. On all models except Apollo, raise engine by jacking up under harmonic balancer. On Apollo models, raise engine using a suitable hoist (it may be necessary to remove hood). If vehicle is equipped with air conditioning, place a support under right side of transmission while raising engine. This will prevent engine and transmission from cocking to right when raised. Remove oil pan bolts and remove oil pan. It may be necessary to rotate crankshaft to gain clearance between crankshaft counterweights and oil pan.

All Models W/400" — 1) Disconnect battery cable. Remove power steering pump adjusting bolt and position pump upward. Remove fan shroud bolts and position shroud so that it will move up with engine. Remove fan and check all electrical and hose connections to make sure that binding will not occur when engine is raised. Remove thermal feed switch at rear of left cylinder head.

2) Raise vehicle, position on safety stands and drain crankcase. Disconnect exhaust pipes at manifold flanges and remove starter and position off to side with out disconnecting wires. Remove front motor mount bolts and raise engine with a suitable hoist. Remove oil pan bolts and remove oil pan.

BUICK	
TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Oil Pan Bolts	
6 Cylinder Models	
Oil Pan-to-Cylinder Block	7
Oil Pan-to-Front Engine Cover	4
V6 Models	15
V8 Models	
260"	10
350" & 455"	14
400"	
Front Bolts	12
Rear Bolts (Through Reinforcement Straps)	18

CADILLAC

ALL MODELS (EXC. ELDORADO)

Disconnect battery cable and drain crankcase. Remove starter and disconnect exhaust pipes from manifold flanges. Remove idler arm support mounting bolts from frame side member and lower support. Disconnect pitman arm at center link and lower steering linkage. Remove transmission lower inspection cover. Remove oil pan retaining bolts and remove oil pan.

ELDORADO

Engine must be removed before oil pan can be removed. See *appropriate article in ENGINE REMOVAL Section.*

CADILLAC	
TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Oil Pan Bolts	10

Oil Pan Removal

GENERAL MOTORS (Cont.)

CHEVROLET

4 CYLINDER MODELS

1) Raise vehicle, position on safety stands and drain crankcase. Support front of engine so that weight is off front mounts. Remove front crossmember and both front crossmember braces. Disconnect steering idler arm at frame side rails. **NOTE** — *If equipped with air conditioning, disconnect idler arm at relay rod.* Mark position of pitman arm on steering gear shaft, and remove pitman arm. **CAUTION** — *Do not turn steering gear shaft with pitman arm removed, as wheel alignment will change.*

2) Remove flywheel cover or converter underpan. Remove oil pan screws and remove oil pan. Remove pickup screen bolt. Remove pickup screen to baffle support bolts and remove baffle support. Remove bolt securing oil drainback to baffle and remove baffle.

6 CYLINDER MODELS

1) Disconnect battery cable, fuel line at fuel pump, and remove radiator upper mounting panel or side support bolts. Position a piece of heavy cardboard between radiator and fan. Raise vehicle, position on safety stands and drain crankcase. Remove starter, flywheel or converter housing cover and splash shield. On Nova models, disconnect steering rod at idler and position linkage to one side.

2) Rotate crankshaft until timing mark on harmonic balancer is at 6 o'clock position. Remove bolt attaching brake line to front crossmember and move line away from crossmember. Remove front mount through bolts and oil pan bolts. Remove left engine mount and bracket on Nova models. Remove oil pan by lowering slightly and rolling into opening created by removal of bracket. Tilt front of pan up and remove by pulling pan down and towards rear of vehicle. On Camaro models, raise engine enough to insert 2x4" wood blocks under engine mounts and lower engine onto blocks. Lower oil pan and remove.

V8 MODELS

Corvette — Disconnect battery cables and remove dipstick and tube. Raise vehicle, position on safety stands and drain crankcase. Disconnect steering linkage idler at frame and position out of way. Remove oil pan retaining bolts and remove oil pan.

Monza 2+2 — Disconnect battery ground cable. Raise vehicle, position on safety stands and drain crankcase. Disconnect

exhaust crossover pipe at manifold flanges. Remove converter housing under pan and splash shield. Scribe marks for crossmember braces at frame. Support weight of engine at front and remove crossmember and braces. Disconnect steering idler at frame and starter brace at starter. Disconnect electrical leads at starter and remove starter. Remove oil pan retaining bolts and remove oil pan.

All Remaining Models — 1) Disconnect battery ground cable and remove distributor cap to prevent damage when engine is raised. Remove fan shroud retaining bolts. On models equipped with 454", place a heavy piece of cardboard between fan and radiator. Disconnect exhaust or crossover pipes at manifold flanges. On Chevelle models with 454" engine and manual transmission, remove flywheel shield and starter. On all Nova models, disconnect steering idler lever at frame and swing linkage down out of way. Rotate crankshaft until timing mark on damper is at 6 o'clock position.

2) On all 400" engines and 454" engines with manual transmission (except Chevelle), disconnect starter brace at starter. Remove inner starter bolt and loosen starter outer bolt. Starter can now be swung out to gain additional clearance for oil pan removal. Remove front motor mount through bolts. Raise engine until 2" thick wood blocks (Chevrolet and Nova) or 3" wood blocks (Chevelle and Monte Carlo) can be inserted under engine mounts. Lower engine on blocks. On Chevelle models with 454" engine and manual transmission, remove rear transmission mount-to-crossmember nut and raise rear of transmission. Remove oil pan retaining bolts and remove oil pan.

CHEVROLET TIGHTENING SPECIFICATIONS

Application	In. Lbs.
Oil Pan Bolts	
4 Cyl. Models	15 Ft. Lbs.
6 Cyl. Models	
Oil Pan-to-Block	80
Oil Pan-to-Front Cover	50
V8 Models	
1/4" Bolts	80
5/16" Bolts	256
Oil Pan-to-Front Cover (454" Only)	55

OLDSMOBILE

6 CYLINDER MODELS

1) Disconnect negative battery cable, fuel line at fuel pump and electrical leads at starter. Remove upper radiator support and bracket to upper hose. Remove front motor mount bracket to engine bolts. Raise vehicle, position on safety stands and drain crankcase. Disconnect shift linkage on automatic transmission equipped vehicles. Disconnect exhaust pipe at manifold flange. Remove flywheel or converter housing cover and starter.

2) Rotate engine until timing mark on harmonic balancer is at 6 o'clock position. Raise engine by using a suitable lifting tool (BT-7317 and BT-6501) positioned under harmonic balancer. Remove right engine mount and bracket from frame to gain additional clearance for removal of oil pan. Remove oil pan retaining bolts and raise engine just high enough to remove oil pan. **CAUTION** — *Avoid lifting engine too high as damage to components mounted on cowl may occur.*

GENERAL MOTORS (Cont.)

OLDSMOBILE (Cont.)

V6 MODELS

Raise vehicle, position on safety stands and drain crankcase. Remove flywheel inspection cover and exhaust crossover pipe. Remove oil pan retaining screws and remove oil pan.

V8 MODELS

Omega W/350" - 1) Disconnect battery ground cable. Remove tie bars between radiator and shroud. Remove air cleaner and disconnect downshift linkage at manifold. Raise vehicle, position on safety stands and drain crankcase. Remove shift linkage bolt and swing linkage out of way. Disconnect exhaust crossover pipe at manifold flanges. Remove front mount through bolts.

2) Disconnect idler arm from frame and pull steering linkage down out of way. Raise engine by using a suitable lifting tool (BT-6501) positioned under harmonic balancer. Remove oil pan bolts and remove oil pan. It may be necessary to rotate crankshaft to gain clearance between crankshaft counterweights and oil pan.

All Remaining Models W/260", 350" & 455" (Exc. Toronado) - 1) - Remove distributor cap and turn engine over until rotor is at number one firing position. Disconnect battery cable and remove dipstick. Remove upper radiator support and shroud bolts. Raise vehicle, position on safety stands and drain crankcase.

2) Remove flywheel or converter housing cover and starter. Disconnect exhaust or crossover pipes at manifold flanges. Disconnect front engine mounts and raise engine using a suitable lifting tool (BT-6501) positioned under harmonic balancer. Remove oil pan retaining bolts and remove oil pan.

Toronado - Engine must be removed before oil pan can be removed. See *appropriate article in ENGINE REMOVAL Section*.

All Models W/400" - 1) Disconnect battery cable. Remove power steering pump adjusting bolt and position pump upward. Remove fan shroud bolts and position shroud so that it will move up with engine. Remove fan and check all electrical and hose connections to make sure that binding will not occur when engine is raised. Remove thermal feed switch at rear of left cylinder head.

2) Raise vehicle, position on safety stands and drain crankcase. Disconnect exhaust pipes at manifold flanges and remove starter and position off to side without disconnecting wires. Remove front motor mount bolts and raise engine using a suitable lifting tool (BT-6501 or J-23515-2) attached to front engine cover. Remove oil pan bolts and remove oil pan.

OLDSMOBILE TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Oil Pan Bolts	
6 Cylinder Models	
Oil Pan-to-Cylinder Block	7
Oil Pan-to-Front Cover	4
V6 Models	15
V8 Models	
350" Omega	14
260", 350" & 455"	10
400"	
Front Bolts	12
Rear Bolts (Through Reinforcement Straps)	18

PONTIAC

4 CYLINDER MODELS

1) Raise vehicle, position on safety stands and drain crankcase. Support front of engine so that weight is off front mounts. Remove front crossmember and both front crossmember braces. Disconnect steering idler arm at frame side rails. *NOTE - If equipped with air conditioning, disconnect idler arm at relay rod.* Mark position of pitman arm on steering gear shaft, and remove pitman arm. *CAUTION - Do not turn steering gear shaft with pitman arm removed, as wheel alignment will change.*

2) Remove flywheel or converter housing cover. Remove oil pan screws and remove oil pan. Remove pickup screen bolt. Remove pickup screen to baffle support bolts and remove baffle support. Remove bolt securing oil drainback to baffle and remove baffle.

6 CYLINDER MODELS

1) Disconnect battery cable and remove upper radiator shield assembly. Raise vehicle, position of safety stands and drain crankcase. Disconnect exhaust pipe at manifold flange. Remove starter without disconnecting electrical leads and position off to one side. Remove flywheel or converter housing inspection cover.

2) Install a suitable lifting tool and adapter (J-23515-1) to frame and front of engine. Raise engine enough to take weight off front motor mounts. Remove both front motor mount through bolts. *NOTE - On Ventura models it may be necessary to add washers between tool adapter and harmonic balancer to gain enough clearance between adapter and frame.* Remove right front engine mount and bracket from frame. Remove oil pan bolts and raise engine just enough to remove oil pan.

V8 MODELS

All Models W/260" - 1) Remove distributor cap and turn engine over until rotor is at number one firing position. Disconnect battery cable and remove dipstick. Remove upper radiator support and remove fan shroud bolts. Raise vehicle, position on safety stands and drain crankcase.

2) Remove flywheel or converter housing cover and starter. Disconnect exhaust crossover pipe at manifold flanges. Disconnect front engine mounts and raise engine using a suitable lifting tool (BT-6501) positioned under harmonic balancer. Remove oil pan retaining bolts and remove oil pan.

Oil Pan Removal

GENERAL MOTORS (Cont.)

PONTIAC (Cont.)

Ventura W/350" - 1) Disconnect battery cable. If equipped with air conditioning, loosen compressor bolts and tilt compressor inward as far as possible. Remove fan. Raise vehicle, position on safety stands and drain crankcase. Disconnect exhaust pipe crossover at exhaust manifold flanges and hanger at transmission.

2) Remove front motor mount through bolts. Attach a suitable lifting tool (J-23515) to engine and crossmember and raise engine approximately 2" to 3". Remove flywheel or converter housing cover. Remove oil pan retaining bolts and remove oil pan.

All Models W/350" (Exc. Ventura), 400" & 455" - 1) Disconnect battery cable. If equipped with power steering, remove pump adjusting bolt, remove belt and tilt pump upward. Remove fan shroud bolts and place shroud so that it will move up with engine. Remove fan and check all electrical and hose connections to make sure than binding will not occur when engine is raised. Remove thermal feed switch at rear of left cylinder head.

2) Raise vehicle, position on safety stands and drain crankcase. Disconnect exhaust pipes at manifold flanges.

Remove starter without disconnecting electrical leads and position starter off to side. On all LeMans and Grand Am models, remove bolts attaching stabilizer bar to frame. With a suitable lifting tool installed (J-23515-2), remove front motor mount through bolts and oil pan bolts. Raise engine enough to remove oil pan.

PONTIAC TIGHTENING SPECIFICATIONS	
Application	Ft. Lbs.
Oil Pan Bolts	
4 Cyl. Models	15
6 Cyl. Models	80 INCH Lbs.
V8 Models	
260"	10
350" (Ventura Only)	14
350" (Exc. Ventura), 400" & 455"	
Front Bolts	12
Rear Bolts (Through Reinforcement Straps)	18