

## FORD MOTOR CO.

### 4 CYLINDER MODELS

1) Disconnect negative battery cable. Remove fan shroud. Raise vehicle and position on safety stands. Drain crankcase, remove engine mount bolts. Raise engine, place wooden blocks between engine mounts and mount brackets, remove jack. On Mustang and Capri remove shake brace.

2) Remove sway bar bolts and lower sway bar. On Pinto and Bobcat remove starter. Remove steering gear bolts and lower gear. Remove oil pan bolts, allowing oil pan to drop to crossmember and remove.

**NOTE** — Number 4 piston must be up so rear of oil pan clears crankshaft throw.

### 6 CYLINDER MODELS

1) Disconnect oil cooler lines (if equipped) and top radiator support bolts. Remove dipstick and raise vehicle. Drain crankcase. Disconnect sway bar-to-chassis bolts and allow bar to hang down. Remove "K" brace and lower front steering rack and pinion (except Granada and Monarch). Remove starter.

2) Remove engine mount bolts and loosen rear insulator-to-crossmember bolts. Raise engine and place 1 1/4" spacer between engine support insulator and chassis bracket.

3) Position jack under transmission and raise slightly. Remove oil pan attaching bolts and lower pan to crossmember. (Granada and Monarch models equipped with manual transmission, remove rear crankshaft main bearing cap). Clear cooler lines and remove oil pan, rotating crankshaft as required.

### V8 MODELS

**NOTE** — Vehicles equipped with dual sump oil pans require removal of both drain plugs to drain crankcase.

**Capri, Mustang, Fairmont, Zephyr, Thunderbird & Cougar** — Disconnect positive battery cable and remove fan shroud bolts, positioning shroud back over fan. Remove dipstick and tube assembly. Raise vehicle and drain crankcase. Disconnect steering flex coupling. Remove steering gear-to-main crossmember bolts and let steering gear rest on frame away from oil pan. Remove engine mount bolts and disconnect transmission oil cooler lines. Raise engine and place two wood blocks (2" x 4") between engine mounts and frame. Remove converter inspection cover and rear "K" braces. Remove oil pan bolts and lower pan to frame. Remove oil pump bolts and lower pump into pan. Remove oil pan, rotating crankshaft as necessary to clear counterweights.

**Granada & Monarch** — Raise vehicle and drain crankcase. Remove stabilizer bar and engine front support through bolts. If equipped, remove nut and bolt holding power steering lines

to rear side of lower arm. Remove idler arm bracket and pull linkage down out of way. Remove oil pan bolts and remove pan.

**Versailles** — Disconnect battery and remove shroud screws. Raise vehicle and drain crankcase. Remove stabilizer bar and front mount through bolts. Loosen transmission cooler lines and move aside. Raise engine and support with 2" x 4" wood blocks between engine mounts and frame. Remove oil pan bolts and pan, rotating crankshaft so rear throw is horizontal to clear rear oil pan flange.

**Ford, Mercury, Lincoln Continental & Mark VI** — 1) Remove air cleaner. Disconnect accelerator and kickdown rods at carburetor. Remove accelerator mounting bracket. Remove fan shroud bolts and position shroud over fan.

2) Disconnect wiper motor wire at wiring harness and remove wiper motor and cover. Disconnect windshield washer hose. Remove dipstick and retaining bolt. If ECC equipped, remove thermactor air dump tube retaining clamp and crossover tube.

3) Raise vehicle and drain crankcase. If ECC equipped, remove filler tube from oil pan and drain transmission. Remove starter. Disconnect fuel line from fuel pump. Disconnect inlet pipes from exhaust manifold. If ECC equipped, remove exhaust gas oxygen sensor at exhaust manifold. Remove thermactor secondary air tube-to-torque converter housing clamps. Disconnect exhaust pipes-to-catalytic converter outlet. Remove catalytic converter secondary air tube and inlet pipes-to-exhaust manifold.

4) Remove dipstick tube. Loosen rear engine mount attaching nuts. Remove engine mount through bolts. Remove transmission shift crossover bolts and disconnect kickdown rod. Remove torque converter inspection cover.

5) Remove brake line retainer at front crossmember. Raise engine with jack and insert wood blocks between engine mounts and brackets. Remove jack. Remove oil pan bolts and lower oil pan. Remove oil pump pickup tube and screen assembly and lower into pan. Remove oil pan.

## FORD MOTOR CO.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
4 Cylinder	
6 mm Bolts .....	6-8
8 mm Bolts .....	8-10
6 Cylinder .....	7-9
V8 Models .....	9-11

## GENERAL MOTORS

### BUICK

### 4 CYLINDER MODELS

Raise vehicle and drain crankcase. Remove front engine mount cradle nuts. Disconnect exhaust pipe at manifold and rear axle mount. Disconnect starter and remove flywheel housing inspection cover. Remove upper alternator bracket. Raise engine with

suitable hoist (J-22825-40). Remove lower alternator bracket and engine support bracket. Remove oil pan bolts and oil pan.

**NOTE** — Upon reinstallation of oil pan, timing gear cover bolts should be installed last. Cover bolts are installed at an angle and holes align after other pan bolts are snugged.

# Oil Pan Removal

## GENERAL MOTORS (Cont.)

### BUICK (Cont.)

#### V6 MODELS

**All Except Skylark and Riviera** — Raise vehicle and drain crankcase. Remove flywheel cover and crossover pipe. Remove oil pan bolts and oil pan.

**Skylark** — Disconnect negative battery cable. Raise vehicle and drain crankcase. Remove crossover pipe. Remove transaxle converter-starter shield or clutch housing cover, as required. Remove starter. If equipped with manual transaxle, remove engine mount nuts and raise engine  $\frac{3}{4}$ ". Remove front cover retaining bolts and oil pan bolts. Remove oil pan.

**Riviera** — Remove oil pan bolts and remove oil pan.

#### V8 MODELS (Except Diesel)

**All Models (265" & 301")** — Disconnect battery and remove fan and distributor cap. If necessary, remove air conditioning compressor for clearance. Raise vehicle, drain crankcase and disconnect exhaust pipes from manifolds. Remove starter and flywheel inspection cover. Position No. 1 cylinder at bottom dead center. Loosen fuel pump-to-timing cover bolts for clearance. Install engine lifting tool (J-23515-2) to engine with adapter (J-23515-16) bolted to lifting tool. Tighten tool to timing chain cover and raise engine. Remove engine mount through bolts. Remove oil pan bolts and, *allowing tool to swing freely*, raise engine until pan can be removed. Support engine with wood blocks and remove oil pan.

**All Models (305")** — Disconnect battery, remove air cleaner and upper fan shroud. Remove oil dipstick and tube. Raise vehicle and drain crankcase. Remove crossover pipe, torque converter and starter (manual transmission). Remove engine mount through bolts, raise engine, remove oil pan bolts and lower pan. Replace through bolts to hold engine and remove oil pan, rotating crankshaft to clear counterweights.

**All Models (350" VIN X)** — Disconnect battery, remove radiator tie bar screws and fan shroud. Remove air cleaner and disconnect accelerator linkage. Raise vehicle, support on safety stands and drain crankcase. Disconnect exhaust crossover pipe and remove lower flywheel housing cover. Remove shift linkage attaching bolt and swing out of way. Remove engine front mounting bolts. Raise engine with jack under vibration damper and remove oil pan bolts. Remove oil pan, rotating crankshaft to clear No. 1 and 2 crank pins and counterweights.

**NOTE** — On A/C equipped vehicles, place support under right side of transmission prior to raising engine to prevent engine/transmission assembly from cocking to right.

**All Except Riviera (350" VIN R)** — Remove distributor cap and align rotor to No. 1 firing position. Disconnect battery. Remove dipstick, upper radiator support and fan shroud

screws. Raise vehicle and drain crankcase. Remove flywheel cover and disconnect exhaust and crossover pipes. Remove starter. Remove engine mounts from block and raise engine with suitable lifting tool. Remove oil pan bolts and oil pan.

**Riviera (350" VIN R)** — Engine must be removed before oil pan can be removed. See *appropriate article in ENGINE REMOVAL Section*.

#### V8 DIESEL MODELS

**All Except Riviera** — Remove oil pump drive. If equipped with air conditioning, remove drive and vacuum pump. Disconnect battery and remove dipstick. Remove upper radiator support and fan shroud screws. Raise vehicle and drain crankcase. Remove flywheel cover. Disconnect exhaust and crossover pipes. Remove oil cooler lines at filter and remove starter. Place suitable support under front of engine. Remove motor mount bolts and lift front of engine, ensuring engine does not tip to either side. Remove oil pan bolts and oil pan.

**NOTE** — Reinstall mount bolts and lower engine to frame for doing extended work on engine.

**Riviera** — Disconnect negative battery cable. Remove top final drive-to-transmission bolts. Raise and support vehicle and disconnect frame braces. Disconnect idler arm and pitman arm from relay rod. Disconnect drive axles from output shaft support and disconnect support from engine. Remove final drive-to-transmission bolts. Install transmission jack and remove final drive. Clean mating surfaces and remove splash shield. Remove starter and drain crankcase. Remove oil pan bolts and oil pan.

### BUICK

#### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
<b>4 Cylinder</b>	
Oil Pan Bolts .....	6
Timing Cover-to-Oil Pan Bolts .....	7
<b>V6 Engines</b>	
173"	
6 mm Bolts .....	6-9
8 mm Bolts .....	14-22
231" & 252" .....	14
<b>V8 Engines</b>	
265", 301" & 305" .....	12
350"	
VIN R & Diesel .....	10
VIN X .....	14

### CADILLAC

#### V6 MODELS

Raise and support vehicle on safety stands; drain crankcase. Remove flywheel cover and crossover pipe. Remove oil pan.

#### V8 MODELS (Except Diesel)

**All Models (368")** — Disconnect negative battery cable. Remove radiator cover, support rods and shroud. Loosen fan

belts and remove pulleys. Raise vehicle and drain crankcase. Remove exhaust pipe at manifold and catalytic converter. Remove engine mount through bolts. Remove starter and transmission lower cover. Using block of wood under crankshaft hub, raise engine with suitable jack. Remove oil pan bolts and oil pan.