

## FORD MOTOR CO.

### 6 CYLINDER ENGINES

**NOTE** — Procedures are for engine removal without transmission attached.

#### 300" "E" MODELS

- 1) Open hood and door, remove engine cover. Drain coolant, remove air cleaner and disconnect battery. Remove front bumper, then remove grille and lower gravel deflector as an assembly. Disconnect radiator hoses at engine and remove A/C compressor.
- 2) Remove alternator splash shield, disconnect transmission oil cooler lines at radiator (if equipped), remove radiator and shroud. Disconnect heater hoses and alternator wiring at alternator. Remove power steering pump drive belt, then remove power steering pump (with support) from engine. Disconnect and plug fuel line at fuel pump.
- 3) Disconnect distributor wiring, brake booster hose, and accelerator cable and bracket from engine. Disconnect automatic transmission kickdown (if equipped) at bell crank. Remove exhaust manifold heat deflector and inlet pipe-to-manifold nuts. Disconnect both ends of transmission vacuum line at intake manifold and junction.
- 4) Remove upper transmission-to-engine bolts. If so equipped, remove automatic transmission dipstick tube support at intake manifold. Raise vehicle on hoist, drain crankcase and remove oil filter. Disconnect and remove starter and flywheel inspection cover. Remove four converter nuts (if automatic transmission), then remove front engine support nuts. Remove remainder of transmission-to-engine bolts. Lower vehicle, install suitable lift chain and remove engine from vehicle.

#### 300" "F" MODELS

- 1) Drain cooling system and crankcase. Remove hood and mark hinge positions for reassembly. Disconnect battery cables, radiator and heater hoses and fuel line from fuel pump. Remove radiator, fan and water pump pulley. Disconnect accelerator cable at carburetor and remove retracting spring. Disconnect engine wiring, transmission kickdown rod at bellcrank assembly (automatic transmissions only). Disconnect engine ground strap and exhaust pipes at manifolds. On vehicles with power brakes, disconnect vacuum line at intake manifold.
- 2) Remove alternator mounting bolts and position alternator to one side leaving wires attached. If equipped with power steering, remove pump from mounting brackets and place to one side leaving lines attached.
- 3) Raise vehicle on hoist. Remove starter, automatic transmission fluid filler tube bracket and engine rear plate upper right bolt. On vehicles with manual transmission, remove flywheel housing lower retaining bolts and disconnect clutch retracting spring.
- 4) On vehicles with automatic transmission, remove converter housing access cover, flywheel to converter nuts and then secure converter assembly in housing. Remove transmission oil cooler lines from clip at engine and converter housing to engine lower retaining bolts.
- 5) Remove insulator-to-intermediate support bracket nut from each front engine mount. Lower vehicle and support transmission with a floor jack. Remove remaining flywheel or converter-to-engine bolts. Attach a suitable lifting device to engine, raise engine slightly and pull from transmission, then remove engine from vehicle.

### V8 ENGINES

#### 302" "F" MODELS

- 1) Drain cooling system and crankcase. Disconnect radiator hoses, transmission oil cooler lines (if equipped), then remove fan shroud, radiator, fan, spacer and pulley. Disconnect battery and alternator ground wires at cylinder block. Remove air cleaner and intake duct assembly. Remove alternator attaching bolts and position to one side. Disconnect fuel line at fuel tank line, vacuum lines, heater hoses, electrical wiring and ground straps to cylinder block. Remove A/C compressor and vent hose from crankcase and carbon canister hose.
- 2) Disconnect accelerator rod and transmission shift rod from carburetor, then remove retracting spring (if equipped). Remove flywheel housing-to-engine upper bolts. Remove starter, then disconnect exhaust pipes from manifolds. Disconnect motor mounts from brackets at frame and remove remaining flywheel housing-to-engine bolts. If equipped with automatic transmission, remove converter inspection plate and converter-to-flywheel attaching bolts.
- 3) Lower vehicle and support transmission with suitable floor jack. Install suitable lifting brackets on front of left cylinder head and rear of right cylinder head. Attach lifting sling and carefully raise engine and pull it from transmission. Lift engine from vehicle taking care that rear cover plate is not bent or other components damaged.

#### 302" & 351" W "E" Models

- 1) Remove engine cover, open hood and disconnect battery. Drain cooling system, remove grille assembly and upper grille support bracket. Remove hood lock support and condenser upper mounting brackets. Remove condenser and disconnect lines at air conditioning compressor. Disconnect heater hoses, radiator hoses, and oil cooler lines (if equipped).
- 2) Remove radiator, fan shroud and fan assembly. Disconnect alternator lead wires at alternator, loosen adjusting bolt and pivot alternator toward engine. Remove air cleaner assembly, duct and valve assembly, and exhaust manifold shroud. Disconnect throttle and transmission linkage at carburetor, then remove accelerator cable bracket from engine.
- 3) Disconnect fuel, choke, and vacuum lines to carburetor, then remove carburetor. Raise vehicle on hoist. Drain crankcase and remove oil filter. Disconnect exhaust pipes at exhaust manifolds. Disconnect automatic transmission fill tube at cylinder head. Remove engine mount attaching bolts and starter. Remove clutch housing-to-engine bolts on manual transmission models.
- 4) On models with automatic transmission, remove converter inspection cover and remove converter-to-flex plate attaching nuts. Remove adapter plate-to-converter housing bolts and converter housing-to-engine lower bolts.
- 5) Remove ground cable-to-cylinder block. Lower vehicle and support transmission using a floor jack. Loosen power steering pump bracket and remove front bracket bolts. Disconnect vacuum line at rear of intake manifold, and engine wire loom. Remove speed control servo and accelerator cable bracket from intake manifold and position to one side.
- 6) Disconnect air conditioning compressor wire. Install lifting brackets to intake manifold and connect a lifting hoist. Remove upper engine-to-transmission attaching bolts. Raise engine slightly, pull from transmission, and then remove engine from vehicle.

## FORD MOTOR CO. (Cont.)

### 351" M & 400" "F" MODELS

1) Drain cooling system and crankcase. Disconnect all ground straps and cables from cylinder block. Remove air cleaner and duct assembly. Remove crankcase ventilation and carbon canister hoses. Disconnect upper and lower radiator hoses and transmission cooler lines (if equipped).

2) Remove fan shroud bolts and position shroud back over fan. Remove radiator, fan shroud, fan, spacer and belts. Disconnect wires at alternator, loosen adjusting bolt and allow alternator to swing down out of the way. Disconnect wire at oil pressure sending unit.

3) Disconnect flexible fuel line at line from fuel tank. Plug fuel tank line. Disconnect accelerator linkage and transmission downshift linkage (automatic transmission only) at carburetor. Remove return spring. Disconnect heater hoses at engine. Disconnect wire from water temperature sending unit.

4) Remove upper flywheel housing-to-engine bolts. Disconnect wire at coil. Pull engine wiring harness out of clips at left rocker arm and position out of way. Disconnect cylinder block ground strap. Raise front of vehicle and remove starter.

5) Disconnect exhaust pipes at manifolds. Disconnect engine support insulators from brackets on frame. If equipped with automatic transmission, remove converter inspection plate. Remove bolts securing torque converter to flex plate. Remove remaining flywheel housing-to-engine bolts.

6) Lower vehicle and support transmission with a floor jack. Attach a suitable lifting sling to lifting eyes. Slightly raise engine and carefully separate engine and transmission. Care must be taken as engine is removed from vehicle to avoid damaging flex plate.

### 460" "F" MODELS

1) Drain cooling system and crankcase. Disconnect battery cables, radiator hoses and transmission oil cooler lines. Remove hood, air cleaner and intake duct assembly. Remove fan shroud, fan, radiator upper support and radiator. Disconnect fuel line at fuel pump, ground cable at block and heater hoses. Remove drive belts and water pump pulley. Remove alternator with mounting bracket and wire attached, then position to one side.

2) If equipped with air conditioning, discharge refrigerant from system, remove clamp bolt at muffler support (if equipped), and position refrigerant lines to one side. Disconnect compressor clutch wire and remove air conditioning compressor from vehicle. Remove compressor mounting bracket and idler pulley.

3) Remove power steering pump (if equipped) and position to one side. Remove transmission filler tube attaching bolt from rocker arm cover and position tube to one side. Disconnect vacuum lines at rear of intake manifold, speed control cable at carburetor and bracket, and accelerator rod and transmission rod at bell crank. Disconnect engine wiring harness at multi-connector on dash.

4) Raise vehicle on hoist and disconnect exhaust pipes at manifolds. Disconnect starter cable, remove starter attaching bolts and starter from vehicle. Remove converter housing cover, converter-to-flywheel attaching nuts and converter-to-engine lower rear cover plate bolts. Remove engine front mount-to-bracket through bolts. Hold transmission in position using a suitable support tool.

5) Lower vehicle on hoist. Remove converter housing-to-block upper attaching bolts. Disconnect coil wire and remove coil with bracket from manifold. Attach a suitable sling (75-T-6000-A) and hoist to lifting brackets at exhaust manifolds. Carefully remove engine from vehicle.

### 460" "E" MODELS

1) Remove engine cover, open hood and disconnect battery. Drain cooling system, remove grille assembly, upper grille support bracket, hood lock support and condenser upper mounting bracket. Discharge air conditioning system (if equipped). Disconnect air conditioner lines at compressor, remove accelerator cable bracket.

2) Disconnect upper and lower radiator hoses, disconnect oil cooler lines at radiator (if equipped), and remove radiator. Remove fan shroud and fan assembly. Disconnect alternator lead wires and pivot alternator inward. Remove air cleaner assembly, and duct and valve assembly. Disconnect throttle and transmission linkage at carburetor. Remove accelerator cable bracket from engine.

3) Disconnect fuel, choke and vacuum lines, then remove carburetor. Raise vehicle on hoist, drain crankcase and remove oil filter. Disconnect muffler inlet pipe at exhaust manifolds. Disconnect transmission filler tube bracket from cylinder head. Remove engine mount attaching bolts and remove starter.

4) Remove adapter plate-to-converter housing bolts. Remove converter inspection cover, converter-to-flex plate bolts, and lower converter housing-to-engine bolts. Remove bolt securing ground cable to engine block. Lower vehicle on hoist. Remove power steering front face bracket bolts. Disconnect engine wire loom and position to one side.

5) Remove speed control servo and accelerator cable bracket from intake manifold and position to one side. Disconnect A/C compressor wire. Install lifting sling (75-T6000-A) to intake manifold. Position floor jack under transmission for support. Remove upper engine-to-transmission attaching bolts. Raise engine slightly, pull from transmission, and then remove engine from vehicle.

### TIGHTENING SPECIFICATIONS

| Application                                | Ft. Lbs. |
|--|----------|
| Front Mount-to-Engine                      |          |
| 6 Cyl. (Except "E" Models) .....           | 45-55    |
| 6 Cyl. "E" Models .....                    | 50-70    |
| V8 .....                                   | 45-55    |
| Rear Mount-to-Engine                       |          |
| 6 Cyl. (Except "E" Models) .....           | 40-60    |
| 6 Cyl. "E" Models .....                    | 55-65    |
| V8 .....                                   | 55-65    |
| Converter Housing-to-Engine                |          |
| C-4 Transmission .....                     | 28-40    |
| C-6 Transmission .....                     | 40-50    |
| Converter-to-Flywheel .....                | 20-30    |
| Flywheel Housing-to-Engine                 |          |
| New Process 435 4-Speed Transmission ..... | 33-45    |
| Ford 3.03 3-Speed & Warner T-18            |          |
| 4-Speed Transmission.....                  | 40-50    |