

# Engine Removal

## FORD MOTOR CO. ENGINE REMOVAL

### ISOLATING AIR CONDITIONING COMPRESSOR

Turn both service valves fully clockwise (front seated), and loosen cap on high pressure valve gauge port so gas will escape until compressor is relieved of refrigerant pressure, then disconnect hoses from both service valves. Cap all ports immediately. **NOTE** — On 1972 and later models equipped with six cylinder compressors, entire system must be discharged.

### FOUR CYLINDER ENGINES

#### PINTO 1600 cc

Remove hood, disconnect battery cable and ground wire. Drain cooling system, remove radiator and all hoses. Disconnect hot air pipe at air cleaner and exhaust manifold, remove pipe and air cleaner. Disconnect oil pressure gauge, temperature gauge, alternator wires from sending unit and alternator. Disconnect throttle linkage and fuel intake line from fuel pump. Disconnect all ignition wires from distributor, coil, spark plugs and remove distributor cap. Remove starter and clutch housing lower bolts and remove cover. Remove the clutch housing to engine bolts. Install suitable lifting brackets to engine and support engine with tackle. Disconnect engine mountings from front crossmember and support transmission. Pull engine forward off the main drive gear and lift the engine from vehicle.

#### PINTO 2000 cc

Drain the crankcase and cooling system. Disconnect all electrical wiring, vacuum and water hoses. Remove radiator and fan. Remove A/C compressor from mounting bracket and lay aside with refrigerant lines attached. Disconnect flexible fuel line from tank line and remove starter. Raise vehicle and remove flywheel or converter housing upper bolts. Disconnect exhaust pipe at manifold and right and left engine mounts at underbody brackets. Remove flywheel or converter housing cover. With manual transmission, remove the flywheel housing lower bolts. With automatic transmission, disconnect the converter from the flywheel and remove the converter housing lower bolts. Lower the vehicle and support transmission and flywheel or converter housing on a jack. Attach suitable lifting tackle to engine lifting brackets and remove engine.

### TIGHTENING SPECIFICATIONS

#### PINTO 4 CYL.

Application	Ft. Lbs.
Front Engine Support Bracket .....	12-24
Front Engine Mount Insulator .....	20-30
Rear Mount Crossmember .....	20-30
Rear Mount Bracket to Trans. ....	40-60
Rear Mount Bracket to Insulator .....	20-30
Rear Mount Bracket to Crossmember .....	20-30

### SIX CYLINDER ENGINES

#### 1965-67 170", 200"

To remove engine only, proceed as follows:

1) Remove hood, air cleaner, and disconnect battery ground cable. Remove radiator, drive belt, fan and pulley. Disconnect all lines, hoses, wires, and linkages from engine.

2) Remove fuel pump bowl, starter, and dust seal. Disconnect clutch retracting spring and remove equalizer shaft and arm bracket from underbody rail.

3) Disconnect exhaust pipe from manifold; disconnect engine mounts, and remove flywheel or converter housing cover. Remove flywheel housing, disconnect converter from flywheel, and remove converter housing bolts. **NOTE** — Some converter housing bolts are only accessible through holes in underbody.

4) Support transmission and flywheel or converter, and remove engine.

**INSTALLATION NOTE** — For installation of cantilever spring rear mount, see "Comet & Falcon Engine Rear Mounts".

#### 1965-72 FORD 240"

1) Drain cooling system and crankcase, remove hood and air cleaner.

2) Disconnect battery positive cable; heater hoses from water pump and coolant outlet housing, and flex line from fuel tank line.

3) Disconnect upper radiator hose at coolant outlet housing and lower radiator hose from water pump. On auto. trans. equipped vehicles, disconnect oil cooler lines from radiator.

4) Remove radiator, fan, spacer, water pump pulley and fan drive belt.

5) Disconnect accelerator cable at carburetor, remove cable retracting spring, cable housing bracket from cylinder head and position cable and bracket assembly out of the way. If equipped with power brakes, disconnect vacuum line at intake manifold. On auto. trans. equipped vehicles, disconnect kickdown rod at bellcrank assembly. If equipped with air conditioning, isolate compressor (see above) and remove compressor from mounting bracket, position compressor out of the way, **do not disconnect refrigerant lines.**

6) Disconnect exhaust manifold from muffler inlet pipe and disconnect body ground strap and battery ground cable at engine. Disconnect engine wiring harness at ignition coil; coolant temperature sending unit and oil pressure sending unit, and position harness out of the way.

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

7) Remove alternator mounting bolts and place alternator out of the way (leaving wires attached). On a vehicle with power steering, remove pump and mounting bracket and place aside (leaving wires attached).

8) Raise vehicle, remove starter and automatic transmission fluid filler tube bracket. Remove engine rear plate upper right bolt. On synchro-mesh equipped vehicles, remove all flywheel housing lower attaching bolts. On auto. trans. equipped vehicles, remove converter housing access cover assembly and flywheel to converter nuts; then secure converter assembly in housing, remove oil cooler lines from retaining clip at engine, and remove converter housing to engine lower attaching bolts.

9) Remove insulator to intermediate support bracket nut from each engine front support. Lower vehicle, support transmission and remove remaining flywheel or converter housing to engine bolts.

10) Attach lifting hook, remove two bolts attaching the right side engine support insulator to engine, remove insulator, raise engine slightly and carefully pull engine from transmission. Lift engine out of chassis.

### 1968-73 170", 200", 250"

1) Mark location of hood hinges on hood panel, remove hood and drain cooling system and crankcase.

2) Disconnect closed crankcase ventilation hose, remove air cleaner, disconnect battery ground cable (at cylinder head and at battery), disconnect upper radiator hose (at water outlet housing) and lower radiator hose (at water pump).

3) On automatic transmission vehicles, disconnect oil cooler lines from radiator. Remove radiator, fan, spacer, belt and pulley.

4) Disconnect all hoses, cables, wires and linkages. If equipped with air conditioning, remove compressor from mounting bracket, and position out of way, **do not disconnect refrigerant lines.**

5) Disconnect flex fuel line at fuel tank line and plug fuel tank line. Disconnect coil primary wire (at coil), oil pressure and water temperature sending unit wires (at sending units), remove starter and dust seal.

6) On synchro-mesh vehicles, disconnect clutch retracting spring. Disconnect clutch equalizer shaft and arm bracket at underbody rail and remove arm bracket and equalizer shaft.

7) Raise vehicle, remove flywheel or converter housing upper retaining bolts through access holes in underbody.

8) Disconnect muffler inlet pipe at exhaust manifold. Loosen inlet pipe clamp, slide it off the support bracket on the engine. Disconnect right and left engine mounts at underbody bracket. Remove flywheel or converter housing cover.

9) On synchro-mesh vehicles, remove flywheel housing lower retaining bolts. On automatic transmission vehicles, disconnect converter from flywheel and remove converter housing lower retaining bolts.

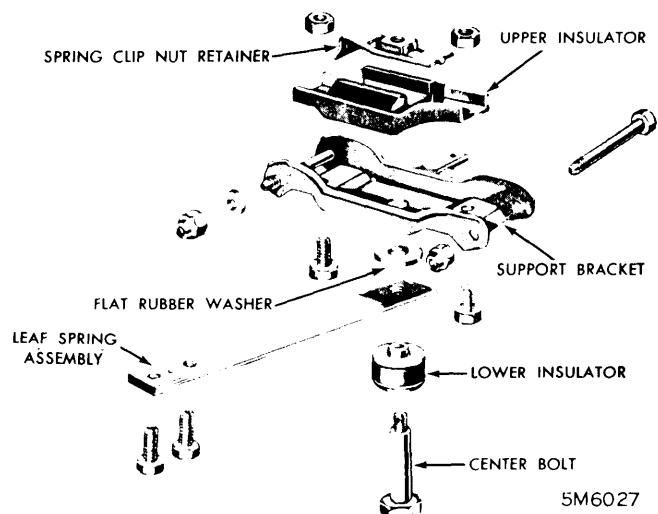
10) Lower vehicle and support transmission and flywheel or converter housing with a jack. Attach lifting hook and remove engine.

## COMET & FALCON

### ENGINE REAR MOUNT (CANTILEVER SPRING TYPE)

Consists of a leaf type spring mounted on rear support and extending to front of car. Spring is bolted to transmission extension. Spring is insulated from support by two rubber insulators and a rubber flat washer. Spring-to-support attaching bolt is a shoulder type bolt.

**Installation - CAUTION - To prevent high frequency high speed vibration caused by transmission extension contact with rear mount,  $\frac{1}{4}$ " minimum clearance must be maintained between rear mount upper insulator and transmission extension. Tighten spring-to-support attaching shoulder bolt until bolt bottoms (22-32 ft. lbs. torque). CAUTION - Do not add washers between lower insulator and spring as noise and vibration would result.**



COMET & FALCON ENGINE REAR SUPPORT  
(LEAF SPRING TYPE)

# Engine Removal

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

### 6 CYLINDER TIGHTENING SPECIFICATIONS

#### 1965-67

##### COMET, FALCON, FAIRLANE

Application	Ft. Lbs.
Front Support Insulator to Engine .....	18-24
Front Support Insulator to Bracket .....	20-35
Rear Support Bracket to Crossmember.....	15-20
Rear Support to Cantilever Spring.....	28-32
Cantilever Spring to Trans. ....	25-28

##### MUSTANG

Application	Ft. Lbs.
Insulator to Engine .....	18-24
Insulator to Support Bracket .....	25-35
Support Bracket to Body .....	20-30
Insulator to Rear Support .....	25-35
Insulator to Extension .....	20-30
Rear Support Ext. to Trans. ....	20-30
Rear Support to Body (Auto. Trans.) .....	15-20
(Synchro-mesh) .....	10-20
Insulator to Trans. ....	20-30

##### FORD, METEOR

Application	Ft. Lbs.
Front Bracket to Insulator .....	35-45
Front Bracket to Engine .....	35-50
Front Insulator to Frame .....	45-60
Rear Support Retainer to Extension Housing.....	40-50
Rear Support to Frame .....	20-30

#### 1968-69

##### COMET, FALCON

Application	Ft. Lbs.
Front Support Insulator Bracket to Insulator.....	18-25
Front Insulator to Support Bracket .....	24-34
Support Bracket to Crossmember.....	20-30
Insulator Assy. to Trans. (Synchro-mesh).....	30-60
(Auto. Trans.).....	30-60
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	50-70

##### FAIRLANE (TORINO), MONTEGO

Application	Ft. Lbs.
Front Support Insulator Bracket to Insulator.....	18-25
Front Insulator to Support Bracket .....	24-34
Support Bracket to Crossmember .....	20-30
Insulator Assy. to Trans. ....	30-60
Insulator to Crossmember .....	25-53
Crossmember to Frame .....	50-70

#### 1968-69 (Cont.)

##### MUSTANG, COUGAR

Application	Ft. Lbs.
Front Support Insulator Bracket to Engine .....	18-24
Front Insulator to Mounting Bracket .....	25-35
Mounting Bracket to Frame .....	20-30
Crossmember Assy. to Frame .....	45-60
Insulator Assy. to Trans. (Synchro-mesh) .....	20-30
(Auto. Trans.) .....	30-42
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	10-20

##### FORD, METEOR (EXC. 240")

Application	Ft. Lbs.
Front Support Insulator Bracket to Insulator.....	18-25
Front Insulator to Support Bracket .....	24-34
Support Bracket to Crossmember .....	20-30
Insulator Assy. to Trans. ....	30-60
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	50-70

##### FORD, METEOR 240"

Application	Ft. Lbs.
Front Insulator to Engine .....	35-50
Front Insulator to Support Bracket .....	45-60
Support Bracket to Frame .....	20-30
Rear Support Assy. to Trans. ....	40-50
Rear Support Assy. to Crossmember .....	20-30
Crossmember to Frame .....	30-50

#### 1970-73

##### ALL MODELS (EXC. 240")

Application	Ft. Lbs.
Front Insulator Bracket to Engine .....	17-32
Front Insulator Bracket to Insulator .....	20-32
Front Insulator to Support Bracket .....	30-50
Rear Insulator to Trans. ....	
(Synchro-mesh) .....	40-60
(Auto. Trans.) .....	40-60
(Floor Shift Synchro-mesh) .....	17-32

##### ALL MODELS 240" (1970-72)

Application	Ft. Lbs.
Front Insulator to Engine .....	35-60
Front Insulator Bracket to Engine .....	35-50
Front Insulator to Support Bracket .....	45-60
Rear Support to Transmission .....	40-60

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

### V8 ENGINES

#### (EXC. T-BIRD, LINCOLN CONTINENTAL & CONTINENTAL MARK III & IV)

##### 1965-67 COMET, FALCON, FAIRLANE

Engine (without transmission) may be removed from above in the usual manner. Observe the following: Remove hood, radiator, fan, pulley, and starter. Disconnect power steering pump from engine and tie out of way (unnecessary to disconnect hoses or drain system). Isolate air conditioning compressor, then disconnect from engine and tie out of way. Support transmission and converter, and tie or secure converter in housing.

*INSTALLATION NOTE* – For installation of cantilever spring rear mount, see "Comet & Falcon Engine Rear Mounts".

##### 1965-67 FORD, MERCURY, METEOR

Drain crankcase and cooling system. Remove hood and air cleaner. Disconnect all wires, hoses, cables, lines (exc. A.C. and power steering) and brackets from engine. Remove dipstick. Disconnect accelerator and throttle linkage from carburetor and engine. Remove power steering pump from engine and position to prevent loss of fluid. Isolate air conditioning compressor, remove coil, remove compressor from bracket and secure out of way (leaving refrigerant lines attached). Remove flywheel or converter housing to engine upper bolts. Remove starter, dust seal, and automatic transmission filler tube bracket. Disconnect exhaust pipes from manifolds and engine supports from frame. Remove flywheel housing lower cover, disconnect clutch linkage (remove bracket from engine), disconnect converter from flywheel (secure converter in housing), and remove remaining flywheel or converter to engine bolts. Support transmission, attach lifting hooks, and remove engine.

##### 1965-67 MUSTANG, COUGAR

Refer to six cylinder engine removal and note the following: Remove oil filter and battery and lower alternator out of way.

##### 1968-71 390", 427", 428"

1) Drain cooling system and crankcase. Remove hood and air cleaner, disconnect battery positive cable.

2) Disconnect radiator upper hose at engine and lower hose at water pump. On auto. trans. vehicles, disconnect oil cooler lines at radiator. Remove fan, spacer (or far drive clutch), and power steering pump drive belt (if equipped). Remove radiator and oil dipstick.

3) Disconnect oil pressure sending unit wire at sending unit and flexible fuel line at fuel tank. Disconnect accelerator cable at carburetor and remove retracting spring. Remove accelerator cable bracket from intake manifold, and position cable and body ground strap out of the way.

On auto. trans. vehicles, disconnect kickdown rod at carburetor, remove retracting spring and disconnect transmission vacuum line at the engine. On vehicles with

power steering, remove pump from mounting bracket and hose bracket bolt. Position pump out of the way (do not let oil drain out). Remove pump bracket, coil bracket and compressor assembly (if equipped with air conditioning). Remove coil, position compressor out of the way (with lines attached). If equipped with power brakes, disconnect brake vacuum hose at pipe and position hose out of the way.

4) Disconnect heater hoses at water pump and intake manifold and remove heater hose from automatic choke bracket. Disconnect coolant temperature sending unit at unit. Remove wire loom from clips on left rocker arm cover and position out of the way.

On vehicles equipped with air conditioning, remove compressor from the mounting bracket and position out of the way (leaving refrigerant lines attached). See "Isolating Air Conditioning Compressor" above.

5) Remove battery ground cable and alternator ground cable bolt at engine. Remove alternator mounting bolts and spacer, position alternator out of the way.

6) Disconnect fuel inlet line at pump. Raise front of vehicle and remove starter. Disconnect muffler inlet pipes from exhaust manifolds.

7) Remove engine support insulator to intermediate support bracket nuts and loosen right side support insulator to engine bolts.

On auto. trans. vehicles, remove flywheel housing cover, remove oil cooler lines retaining clip from engine block. Disconnect converter from flywheel and secure converter assembly in housing. Remove remaining flywheel housing to engine bolts and remove transmission fluid filler tube bracket.

On synchro-mesh vehicles, remove flywheel housing inspection cover and clutch pedal retracting spring. Disconnect clutch release bracket at equalizer rod and remove bracket from engine. Remove remaining flywheel housing to engine bolts.

8) Lower vehicle, support transmission, install left lifting bracket on front of left cylinder head, and install right lifting bracket at rear of right cylinder head, then attach lifting sling.

9) Remove flywheel or converter housing to engine upper bolts, raise engine slightly and carefully pull it from transmission and out of engine compartment.

##### 1968-73 289", 302", 351" W & C, 400"

1) Drain cooling system and crankcase, remove oil filter. Remove hood and disconnect battery ground cable at cylinder block.

2) Disconnect automatic choke heat chamber air inlet hose at inlet tube near right valve rocker arm cover. Disconnect closed crankcase ventilation hose. Remove air cleaner and intake duct as an assembly.

3) Disconnect radiator upper hose at coolant outlet housing, and lower hose at water pump. On auto. trans. vehicles, disconnect oil cooler lines at radiator.

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

4) Remove radiator, fan, spacer (or fan drive clutch), belt and pulley. Disconnect wires at alternator, loosen alternator adjusting bolts to allow alternator to swing down and out of the way.

5) Disconnect oil pressure sending unit wire at sending unit, and flexible fuel line at fuel tank line. Plug fuel tank line.

6) Disconnect accelerator rod. On auto. trans. vehicles, disconnect the throttle valve vacuum line at intake manifold, disconnect manual shift rod and remove retracting spring, disconnect transmission filler tube bracket at cylinder block. On a vehicle with air conditioning, isolate compressor (see above) and remove compressor, then place it out of the way (with refrigerant lines attached). If equipped with power steering, disconnect power steering pump bracket from cylinder head, remove drive belt and position pump out of the way in such a manner that oil will not drain out. If equipped with power brakes, disconnect brake vacuum line at intake manifold.

7) Remove heater hose from automatic choke housing, disconnect heater hoses at water pump and intake manifold. Disconnect water temperature unit at sending unit.

8) Remove flywheel or converter housing to engine upper bolts. Disconnect primary wire at ignition coil and place wire out of the way.

9) Raise front of vehicle and disconnect starter cable at starter, remove starter and dust seal. Remove wire harness from left rocker arm cover and position out of the way.

10) Disconnect muffler inlet pipes from exhaust manifolds. Disconnect engine support insulators at brackets on frame underbody. On synchro-mesh vehicles, remove remaining flywheel housing to engine bolts. On auto. trans. vehicles, remove converter housing inspection cover, disconnect flywheel from converter, secure converter assembly in housing and remove remaining converter housing to engine bolts.

11) Lower vehicle, install left engine lifting bracket (at front of left cylinder head), install right engine lifting bracket (at rear of right cylinder head) and attach engine lifting sling.

12) Remove battery, remove air cleaner duct stud from exhaust manifold. Raise engine slightly and carefully pull it from transmission and lift from engine compartment.

### 1969-73 429", 460"

1) Remove hood, drain cooling system. Disconnect ground cable from battery. Remove air cleaner and intake duct assembly, cover air horn.

2) Disconnect radiator hoses at engine. On auto. trans. equipped vehicles, disconnect oil cooler lines at radiator.

3) Remove fan to water pump hub attaching bolts, remove fan and shroud. Remove radiator upper support and radiator. If equipped with air conditioning, isolate compressor (see above) and disconnect service valves and hoses at compressor. Remove clamp bolt at air conditioner muffler support if so equipped and position refrigerant lines out of the way. Loosen compressor drive belt idler pulley and remove drive belt. Remove compressor bracket to water pump bolt. Remove compressor to mounting bracket bolts. Remove power steering reservoir or pump and place aside. Disconnect compressor clutch wire and remove compressor. Remove compressor mounting bracket and idler pulley.

4) With a drain pan under power steering pump, disconnect oil return line at pump and drain pump.

5) Disconnect fuel inlet line at fuel pump, plug or cap line (to prevent oil loss).

6) Loosen alternator adjusting arm and mounting bolts, remove drive belts and water pump pulley. Remove alternator and mounting brackets, position out of the way (leaving wires attached).

7) Disconnect ground cable at cylinder block. Disconnect heater hoses. Remove transmission fluid filler tube attaching bolt from right valve rocker arm cover, position tube out of the way.

8) Disconnect all vacuum lines at rear of intake manifold. Disconnect speed control cable at carburetor, if equipped. Disconnect accelerator rod and transmission rod at bellcrank, secure out of the way.

9) Disconnect wiring harness at multi-connector on dash. Raise vehicle and disconnect inlet pipes at exhaust manifolds. Disconnect idler arm bracket from underbody, pull idler arm assembly down.

10) Disconnect starter cable from solenoid or starter. Remove starter. On auto. trans. equipped vehicles, remove cylinder block to converter housing supports. Remove access cover from converter housing. Remove flywheel to converter attaching nuts, revolving flywheel as necessary. Remove converter to engine lower rear cover plate attaching bolts. On synchro-mesh equipped vehicles, remove transmission to flywheel housing attaching bolts and disconnect clutch linkage.

11) Remove nuts attaching front support insulators to underbody crossmember. Hold transmission in position with a support tool.

12) Lower vehicle, remove converter upper housing to cylinder block attaching bolts (left side). Disconnect coil wire, remove coil and bracket assembly from intake manifold. Attach lifting sling and hoist to lifting brackets at exhaust manifolds, carefully remove engine.

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

### V8 TIGHTENING SPECIFICATIONS (EXC. T-BIRD, LINCOLN CONTINENTAL & CONTINENTAL MARK III & IV)

#### 1965-67

##### FORD, MERCURY, METEOR

Application	Ft. Lbs.
Front Insulator to Engine .....	35-50
Front Insulator to Frame .....	① 45-60
Front Support Bracket to Crossmember.....	45-60
Rear Support Retainer to Trans. Extension .....	40-50
Rear Support to Frame .....	20-30

① — 35-50 Ft. Lbs. on 289".

##### COMET, FALCON, FAIRLANE

Application	Ft. Lbs.
Support Bracket to Crossmember .....	20-30
Insulator Assy. to Trans. (Synchro-mesh).....	30-60
(Auto. Trans.).....	30-60
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	50-70

##### MUSTANG, COUGAR

Application	Ft. Lbs.
Insulator to Engine .....	25-40
Insulator to Support Bracket .....	25-40
Support Bracket to Body .....	20-30
(289" Hi Perf.) .....	20-28
Support Bracket to Intermediate Support Bracket.....	20-30
(289" Hi Perf.) .....	26-35
Insulator Bracket to Engine (289" Hi Perf.) .....	35-50
Insulator to Insulator Bracket & Support Bracket.....	35-50
Insulator to Rear Support .....	25-35
Rear Support to Body (Synchro-mesh) .....	20-30
(Auto. Trans.) .....	30-42
(289" Hi Perf.) .....	10-20
Insulator to Trans. .....	30-42
(289" Hi Perf.) .....	20-30

#### 1968-69

##### FORD, MERCURY, METEOR

Application	Ft. Lbs.
Front Insulator to Engine .....	35-50
Front Insulator to Support Bracket.....	45-60
Support Bracket to Frame .....	20-30
Rear Support Assy. to Trans. .....	40-50
Rear Support Assy. to Crossmember .....	20-30
Crossmember to Frame .....	35-50

#### 1968-69 (Cont.)

##### COMET, FALCON, FAIRLANE (TORINO), MONTEGO

Application	Ft. Lbs.
Front Insulator to Engine .....	35-50
Front Insulator to Support Bracket .....	45-60
Support Bracket to Mounting Bracket .....	45-60
Support Bracket to Crossmember .....	20-30
Insulator Assy. to Trans. .....	30-60
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	50-70

##### MUSTANG, COUGAR

Application	Ft. Lbs.
Front Insulator to Engine .....	25-40
Front Support Insulator Bracket to Engine .....	35-50
Front Support Insulator Bracket to Insulator .....	45-60
Front Insulator to Support Bracket .....	35-50
Support Bracket to Mounting Bracket .....	20-30
Mounting Bracket to Frame .....	20-30
Rear Support Assy. to Trans. .....	30-42
Insulator Assy. to Trans. (Synchro-mesh) .....	20-30
(Auto. Trans.) .....	30-42
Insulator to Crossmember .....	25-35
Crossmember to Frame .....	10-20

#### 1970-71

##### ALL MODELS

Application	Ft. Lbs.
Front	
Insulator to Engine .....	35-55
Mounting Bracket to Frame .....	20-30
Insulator to Support Bracket .....	25-40
Crossmember to Frame .....	45-60
Insulator Through Bolt .....	15-30
Rear	
Insulator to Transmission (Manual) .....	20-30
(Automatic) .....	35-45
Insulator to Crossmember .....	25-45
Crossmember to Frame (Mustang, Cougar) .....	10-20
(Torino, Montego) .....	50-70
(All Others) .....	70-100

#### 1972-73

##### ALL MODELS

Application	Ft. Lbs.
Front	
Insulator to Engine .....	35-60
Insulator to Support Bracket .....	25-45
Mounting Bracket to Frame .....	20-35
Rear	
Insulator to Transmission .....	40-60
Manual Trans. Floor Shift .....	17-32
Insulator to Crossmember .....	25-45
Crossmember to Frame (Mustang, Cougar) .....	10-20
(Maverick, Comet) .....	14-24
(All Others) .....	70-100

# Engine Removal

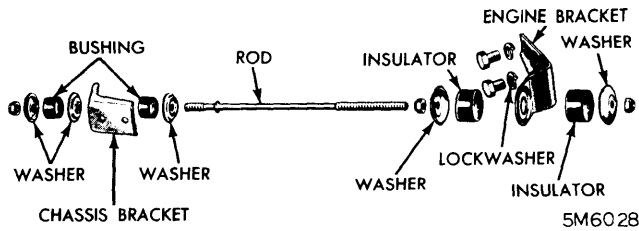
## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

### V8 ENGINES

#### THUNDERBIRD & CONTINENTAL MARK III & IV

##### 1965-68 THUNDERBIRD

See "1965-67 Ford, Mercury, Meteor" V8 engine removal.



THUNDERBIRD ENGINE STEADY REST

##### 1969-73 THUNDERBIRD & CONTINENTAL MARK III & IV

- 1) Remove hood, drain cooling system at radiator and cylinder block, drain crankcase.
- 2) Disconnect ground cable from battery, remove air cleaner and intake duct assembly, cover air horn with a clean cloth.
- 3) Disconnect radiator hoses at engine and transmission oil cooler lines at radiator. Remove fan to water pump hub retaining bolts, remove radiator shroud retaining screws, and remove fan assembly and shroud. Remove radiator upper support and radiator.  
  
If equipped with air conditioning, isolate compressor (see above) and disconnect service valves and hoses at compressor. Remove clamp bolt at compressor muffler support and place refrigerant lines out of the way. Loosen compressor drive belt idler pulley and remove drive belt. Remove compressor support bracket to water pump bolt. Remove compressor to mounting bracket bolts. Remove power steering reservoir and position it to one side. Disconnect compressor clutch wire and remove compressor. Remove compressor mounting bracket and idler pulley.
- 4) Disconnect oil return line at power steering pump and drain pump. Disconnect return line at power steering reservoir and remove reservoir.
- 5) Disconnect fuel inlet line at fuel pump, plug or cap line to prevent fuel loss.
- 6) Loosen alternator adjusting arm and mounting bolts, remove drive belts and water pump pulley. Remove alternator and mounting brackets, position out of the way (with wires attached).
- 7) Disconnect ground cable (at cylinder block), disconnect heater hoses and remove transmission oil filler tube retaining bolt from right rocker arm cover, position tube out of the way.
- 8) Disconnect all vacuum lines at rear of intake manifold. Disconnect wiper motor pressure line and return line, and remove bracket from cylinder head. Position wiper hydraulic lines out of the way.

9) Disconnect speed control cable at carburetor and bracket (if equipped). Disconnect accelerator rod and transmission rod at bellcrank, secure rods out of the way.

10) Disconnect wiring harness at multi-connector on dash. Raise vehicle and disconnect resonator inlet pipes at exhaust manifolds. Disconnect idler arm bracket from underbody, pull idler arm assembly down.

11) Disconnect starter cable from solenoid, remove starter retaining bolts and remove starter by moving starter toward front of engine, rotating it to position solenoid outward, and removing it toward rear of vehicle.

12) Remove cylinder block to converter housing bolts, remove access cover from converter housing and remove flywheel to converter retaining nuts, revolving flywheel as necessary. Remove lower converter to engine rear cover plate retaining bolts.

13) Remove nuts retaining front insulators to underbody crossmember. Support transmission and lower vehicle. Remove converter housing to cylinder block retaining bolts (left side). Disconnect coil wire, remove coil and bracket assembly from intake manifold.

14) Attach lifting sling and hoist to lifting brackets at exhaust manifolds, and carefully remove engine from vehicle.

### V8 TIGHTENING SPECIFICATIONS T-BIRD & CONTINENTAL MARK III & IV

#### 1965-68 THUNDERBIRD

See "Ford, Mercury, Meteor" tightening specifications.

#### 1969-72 ALL MODELS

Application	Ft. Lbs.
<b>Front</b>	
Support Insulator to Engine .....	35-50
Support Insulator to Underbody Crossmember..	20-30
Insulator Through Bolt .....	25-40
<b>Rear</b>	
Support Insulator to Transmission .....	40-60
Support to Crossmember .....	12-20
Support Retainer to Ext. Housing .....	40-60
Crossmember to Side Rail .....	70-100

#### 1973 ALL MODELS

Application	Ft. Lbs.
<b>Front</b>	
Support Bracket to Engine .....	35-60
Insulator Through Bolt Nut .....	35-50
Support Bracket to Insulator .....	30-50
<b>Rear</b>	
Insulator to Transmission .....	20-30
Support to Crossmember .....	30-50
Center Tie Bolt .....	20-35
Crossmember to Side Rail .....	70-100

## FORD MOTOR CO. ENGINE REMOVAL (Cont.)

### V8 ENGINES LINCOLN CONTINENTAL

#### 1965-66 ENGINE LATERAL RESTRICTOR

Consists of rubber bushed rods and spacers mounted on brackets from converter housing to underbody side rail to restrict engine side movement.

**Removal** – Remove outer bracket from underbody side rail. Remove inner bracket from converter housing. Remove lateral restrictor assembly.

**Installation** – Position unit on car with outer bracket resting on underbody side rail. Insert inner bracket dowel pin into converter housing, install inner bracket retaining bolt and torque to 40-50 ft. lbs. Torque outer bracket retaining bolts to 13-18 ft. lbs.

#### 1965-67

**NOTE** – Following procedure is for removal of engine only. Remove hood. Drain cooling system and crankcase. Remove air cleaner and air intake duct assembly. Remove speed control unit. Remove battery. Disconnect all wires, lines, hoses, cables, and brackets from engine (disconnect and plug transmission oil cooler line at radiator). Remove transmission filler tube slotted bracket (from right exhaust manifold), and horn and bracket assembly. Remove transmission fluid filter. Remove fuel pump heat shield and fan shield. Remove fan drive clutch, fan, and pulley as an assembly. Remove radiator. Isolate air conditioning compressor (see above) and disconnect hoses. Remove compressor and mounting bracket. Disconnect accelerator and throttle linkage from carburetor and engine (tie linkage to dash for clearance). Remove converter housing access cover and underbody splash shield from lower front of transmission. Disconnect exhaust pipes from exhaust manifolds. Disconnect power steering pump outlet line from pump. Remove oil filter. Disconnect engine front mounts from engine. Remove starter and dust seal, and generator splash shield. Disconnect converter from flywheel, engine lateral restrictor from converter housing, and remove converter housing lower retaining bolts. Support transmission and remove converter housing to engine upper bolts. Secure converter in housing. Install lifting eyes in each cylinder head lower front mounting bolt hole, and in rear of each exhaust manifold. With suitable lifting chains and hooks, remove engine from car.

#### 1968-73

1) Remove hood and drain cooling system and crankcase. Disconnect ground cable from battery and remove air cleaner and intake duct assembly, cover air horn.

2) Disconnect radiator hoses at engine, and transmission oil cooler lines at radiator. Remove fan to water pump hub attaching bolts, radiator shroud retaining screws and remove fan assembly and shroud. Remove upper radiator support and radiator.

3) If equipped with air conditioning, isolate compressor (see above) and disconnect service valves and hoses at compressor. Remove clamp bolt at compressor muffler support and position refrigerant lines out of the way. Loosen drive belt idler pulley, remove drive belt. Remove compressor to mounting bracket bolts, remove power steering reservoir and position it to one side. Disconnect compressor clutch wire and remove compressor. Remove compressor mounting bracket and idler pulley.

4) Disconnect oil return line at power steering pump, drain pump, disconnect return line at power steering reservoir and remove reservoir.

5) Loosen alternator adjusting arm and mounting bolts, remove drive belts and water pump pulley. Remove alternator and mounting brackets, position out of the way (with lines attached).

6) Disconnect ground cable at right front corner of cylinder block, disconnect heater hoses, remove transmission oil filler tube retaining bolt from right valve rocker arm cover, and place oil filler tube out of the way.

7) Disconnect all vacuum lines at rear of intake manifold. Disconnect wiper motor pressure line and return line, remove bracket from cylinder head. Position hydraulic wiper lines out of the way.

8) Disconnect speed control cable at carburetor and bracket (if equipped). Disconnect accelerator rod and transmission rod at bellcrank, secure out of the way.

9) Disconnect wiring harness at multi-connector on dash. Raise vehicle and disconnect resonator inlet pipes at exhaust manifolds. Disconnect idler arm bracket from underbody, pull idler arm assembly down.

10) Disconnect starter cable from solenoid. Remove starter retaining bolts, and starter (by pulling forward and rotating it, then pulling it toward rear of vehicle).

11) Remove cylinder block to converter housing supports, remove access cover from converter housing. Remove flywheel to converter retaining nuts (revolve flywheel as necessary). Remove lower converter to engine rear cover plate retaining bolts.

12) Remove nuts retaining front support insulators to underbody crossmember.

13) Support transmission, lower vehicle and remove upper converter housing to cylinder block retaining bolts (left side). Disconnect coil wire, remove coil and bracket assembly from intake manifold. Attach sling and carefully remove engine.

### V8 TIGHTENING SPECIFICATIONS LINCOLN CONTINENTAL

#### 1965-69

Application	Ft. Lbs.
<b>Front</b>	
Support Insulator to Engine .....	45-65
Support to Crossmember .....	45-60
<b>Rear</b>	
Support Insulator to Transmission .....	20-30
Support & Retainers to Support Bracket	
1965-67 .....	10-18
1968-69 .....	30-45
Insulator Assy. to Support .....	30-45
Support Bracket to Body	
1965-67 .....	20-30
1968-69 .....	10-18

#### 1970-73

Application	Ft. Lbs.
<b>Front</b>	
Support Bracket to Engine .....	35-50
Insulator Through Bolt (1970-71) .....	15-25
(1972-73) .....	20-40
<b>Rear</b>	
Insulator to Transmission .....	20-30
Support to Crossmember .....	30-45
Crossmember to Side Rail .....	70-100