

FORD MOTOR CO.

4 CYLINDER ENGINES

1965-71 220", 242" & 254" "P" MODELS

1) Drain cooling system and crankcase. Remove driver's seat from vehicle and engine access covers. Open transmission access door, remove brake pedal pad, floor pan from steering column area and floor pan covering flywheel housing. Disconnect headlamp dimmer switch from wiring harness connector and battery positive cable.

2) Disconnect all transmission linkage and lines. Support transmission with suitable floor jack, remove housing-to-engine bolts, disconnect drive shaft and remove transmission from vehicle. Disconnect battery and solenoid switch leads from starter, flexible fuel line from fuel pump and injector leak-off line at rear of engine block.

3) Disconnect stop control cable from fuel injection pump and position to one side. Disconnect clutch pedal return spring, remove clutch slave cylinder and position to one side. Disconnect exhaust pipe from manifold and remove air cleaner duct. Disconnect upper radiator hose from outlet elbow, lower radiator hose from water pump, heater hose from engine, electrical wiring and ground straps.

4) Secure suitable lifting chain to engine lifting brackets and rear of exhaust manifold, then raise hoist to remove slack from chain. Remove engine front support nuts and bolts. Slightly raise engine and remove rear support attaching bolts. Carefully lift engine upward and remove from vehicle.

6 CYLINDER ENGINES

1965-67 170", 200" & 240" Econoline

1) Disconnect battery cables, then drain cooling system and crankcase. Disconnect electrical wiring, ground straps, radiator and heater hoses and fuel line at fuel pump. Disconnect choke and accelerator cables or rod at carburetor and remove accelerator cable bracket from engine. Remove fan, spacer and water pump pulley. If equipped with Thermactor system, loosen air supply pump adjusting arm and mounting bracket bolts. Position pump against manifold and tighten adjusting arm bolt.

2) On 240" engines, remove alternator bracket bolts and position alternator to one side. Remove air deflector from below radiator and loosen radiator lower retaining bolts. Remove coil support bracket and upper half of radiator shroud. On all engines, disconnect exhaust pipe from manifold and remove exhaust system from vehicle. Disconnect speedometer cable from transmission.

3) On 170" and 200" engines, raise vehicle on hoist and disconnect rear "U" joint from drive pinion flange at rear axle. Pull drive shaft to rear until "U" joint clears transmission extension housing and output shaft. On all engines with manual transmission, disconnect clutch retracting spring and gear shift rods at transmission. Disconnect clutch rod-to-equalizer and remove equalizer assembly from vehicle. On engines with automatic transmission, disconnect shift linkage, vacuum line and wiring harness at transmission.

4) On 240" engines, disconnect drive shaft from flange at transmission and secure front end of drive shaft to one side. Disconnect parking brake cable and pull it forward through crossmember. On all vehicles, position suitable engine support bar between engine and body side rail. Adjust support bar to relieve engine weight on front supports.

5) Remove right front motor mount from engine and crossmember. Remove left motor mount-to-crossmember support bracket nut and washer. Remove crossmember-to-body side rail retaining bolts and remove crossmember from vehicle. Remove engine rear mount to transmission extension housing nuts.

6) Position suitable lifting cradle on a floor jack and position under vehicle with jack almost to its maximum height. Lower vehicle until engine engages lifting cradle, then raise jack as required to install one bolt from right front corner of lifting cradle to cylinder block. Raise jack to support engine and transmission assembly. Remove rear mount to transmission bolts.

7) Move engine support bar forward to permit removal of engine. **CAUTION** — Do not turn any adjusting screws on engine support bar. Slowly lower floor jack to its minimum height and raise vehicle. Carefully pull floor jack with engine and transmission assembly from under vehicle.

1968-74 170", 240" & 300" ECONOLINE (EXC. 1969-71 240" & 300" ECONOLINE)

1) Remove engine compartment cover and passenger seat. Drain cooling system and crankcase. On 1972-74 models, remove hood lock support bracket, headlight doors and grille. Disconnect battery cables, engine wiring, ground straps, fuel line at fuel pump, accelerator and choke cables from carburetor. Disconnect radiator and heater hoses, transmission oil cooler lines (if equipped) and remove radiator from vehicle.

2) Remove fan, spacer and pulley from water pump hub and disconnect exhaust pipe from manifold. Remove oil dipstick tube and oil filler tube from engine, then remove air cleaner and brackets as an assembly. Remove alternator from mounting brackets and position to one side. If equipped with Thermactor system, loosen air supply pump adjusting arm and mounting bracket bolts, then position pump against engine manifolds and tighten adjusting arm bolt.

3) Raise vehicle on hoist and disconnect transmission shift rods, speedometer cable and driveshaft at transmission. On 170" engines, remove mid-shaft bearing support from chassis and position drive shaft out of the way. On vehicles with manual transmission, disconnect clutch retracting spring, clutch rod to equalizer shaft and remove equalizer shaft assembly from engine (position to one side).

4) On vehicles with automatic transmission, remove converter housing cover, dipstick tube from transmission, then drain transmission. Disconnect oil cooler lines, vacuum lines and remove converter to flywheel attaching nuts. On all vehicles, position suitable engine support bar between engine and body side rail. Adjust support bar to relieve engine weight on front supports.

5) Position suitable jack at transmission and raise slightly. Remove rear mount to crossmember bolts and crossmember mounting bolts, then remove crossmember from vehicle. Remove converter or flywheel housing to engine bolts and remove transmission from vehicle. Remove front motor mount retaining nuts, bellcrank from engine, and lower vehicle. Attach suitable lifting device to engine, raise engine and remove from vehicle.

1965-68 170" "P" MODELS

1) Drain cooling system and crankcase. Remove driver's seat, master cylinder inspection cover and steering column cover

Engine Removal

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plates. Disconnect wires from headlight beam selector switch and accelerator pedal, then remove center floor plate. Disconnect carburetor linkage and remove carburetor. Disconnect exhaust pipe from manifold and loosen hanger clamp to allow pipe to lower slightly.

2) Disconnect all engine wiring, radiator hoses at engine, fuel line and ground cables to engine. Remove starter, fan blade and bracket as an assembly, and radiator. Remove front motor mount to frame bracket bolts. Disconnect clutch retracting spring and remove equalizer shaft and arm bracket. Remove flywheel housing inspection cover and flywheel housing bolts.

3) Loosen engine right and left rear support bolts, then position suitable floor jack under transmission and raise the transmission. Attach suitable engine lifting tool to engine, swing rear of engine toward the right about 30° and lift rear of engine to clear engine compartment. Remove engine through the right door.

1966-72 170" BRONCO

1) Drain cooling system and crankcase. Disconnect battery cables at battery and radiator hoses at engine. Remove radiator and disconnect heater hoses. Remove all ground wires from cylinder block, starter and alternator (position to one side). Disconnect exhaust pipe from manifold. Remove fan, spacer and pulley from water pump.

2) Disconnect all engine wiring, vacuum hoses and carburetor linkage. Disconnect flex line from fuel pump and raise vehicle on hoist. Remove equalizer shaft bracket from cylinder block and clutch housing. Remove attaching nut from both motor mounts and clutch cover to housing screws. Lower vehicle and support transmission using suitable floor jack. Remove clutch housing-to-cylinder block attaching screws. Using suitable engine lifting tool, remove engine from vehicle.

1965-74 240" & 300" "F" & "P" MODELS 1969-71 240" & 300" ECONOLINE

1) Drain cooling system and crankcase. Remove hood or engine compartment cover 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 and choke cable at carburetor and remove cable retracting spring. Disconnect engine wiring, transmission kickdown rod at bellcrank assembly (automatic transmissions only), engine ground straps, vacuum line at intake manifold (vehicles with power brakes) and exhaust pipe from manifold.

2) Remove alternator mounting bolts and position alternator to one side (with wires attached). If equipped with Thermactor system, loosen air supply pump adjusting arm and mounting bracket bolts. Position pump against engine manifolds and tighten adjusting arm bolt. If equipped with power steering, remove pump from mounting brackets and position to one side with lines attached. If equipped with an air compressor, bleed air system and disconnect air pressure lines at compressor.

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) On F-100 and F-250 models, remove motor mount to intermediate support bracket nut from both front mounts. On all other vehicles, remove front motor mount to engine bolt. Lower vehicle and support transmission with suitable floor jack. Remove remaining flywheel or converter housing to engine bolts. Attach suitable lifting tool to engine, raise engine slightly and pull engine from transmission. Lift engine from vehicle.

V8 ENGINES

1966-74 289" & 302" BRONCO & "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.

2) Disconnect accelerator rod and choke cable from carburetor, then disconnect transmission shift rod and remove retracting spring (if equipped). If equipped with Thermactor system, remove air pump air filter if it is not connected to engine. Remove flywheel housing to engine upper bolts. Remove starter and dust seal, then disconnect exhaust pipes from manifolds. Disconnect motor mounts from brackets at frame and remove remaining flywheel housing to engine bolts. On vehicles with automatic transmission, remove converter inspection plate and torque 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.

1969-74 302" ECONOLINE

1) Remove engine compartment cover and passenger seat. Drain cooling system and crankcase. Remove air cleaner and crankcase ventilation hoses. Disconnect radiator and heater hoses, automatic transmission cooler lines (if equipped), and remove radiator, fan, spacer and pulley. Disconnect battery and alternator ground cables at cylinder block. Remove oil filler tube at dash panel and disconnect at rocker arm cover.

2) Disconnect accelerator linkage at shaft assembly, choke cable from carburetor and brackets, automatic transmission kickdown rod at carburetor and vacuum line at intake manifold (if equipped). Disconnect engine wire harness from left rocker arm cover and position to one side. Remove upper nut attaching right hand exhaust manifolds to exhaust pipe. Raise vehicle on hoist.

3) Remove oil filter and starter. Disconnect fuel line at fuel pump and oil dipstick tube bracket from exhaust manifold and oil pan. On vehicles with manual transmission, disconnect

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clutch linkage and spring, remove equalizer arm attaching bolts and remove bracket. Disconnect drive shaft at rear axle and remove drive shaft. Install plug in transmission end.

4) On vehicles with automatic transmission, disconnect drive shaft at companion flange, remove front cover from converter housing and transmission dipstick tube. Drain transmission and install plastic plug in oil pan. Disconnect oil cooler and vacuum lines at transmission, then remove converter to flywheel attaching nuts.

5) Disconnect speedometer cable and transmission linkage at transmission. Position suitable transmission jack under transmission, raise transmission and remove crossmember to chassis bolts. Lower transmission slightly and remove rear engine support to crossmember bolt, then remove crossmember. Remove bolts attaching clutch housing or transmission to engine and remove transmission from vehicle.

6) Position suitable engine support bar between engine and chassis. Disconnect exhaust pipes from manifolds and remove nuts attaching motor mounts. Remove bellcrank attaching bolt and position bellcrank assembly to one side. Lower vehicle. Remove alternator attaching bolts and position alternator to one side. Install suitable engine lifting hooks and chain, then remove engine through side door of vehicle.

1965-67 352" ALL MODELS

1) Remove hood, marking hinge positions for reassembly. Drain cooling system and crankcase. Disconnect battery cables, windshield washer at "T" fitting (if necessary), radiator and heater hoses, electrical wiring and transmission oil cooler lines (if equipped). Remove air cleaner, radiator, fan, spacer and oil level dipstick. Disconnect fuel line at fuel pump and remove wire loom from clips on left rocker arm cover (position loom to one side).

2) Disconnect accelerator cable at carburetor and remove bracket from intake manifold. Disconnect kickdown rod at carburetor, remove retracting spring and disconnect transmission vacuum line at engine. Remove coil bracket and coil. Disconnect power brake vacuum hose (if equipped) and position to one side. Remove alternator ground cable bolt, mounting bolts and spacer, then position alternator to one side.

3) Raise front of truck and remove starter. Disconnect exhaust pipes from manifolds and body-to-engine ground strap from engine. Remove front motor mounts to support bracket nuts. On vehicles with automatic transmission, remove flywheel housing cover, disconnect converter from flywheel and secure converter assembly in housing. Remove lower flywheel housing to engine bolts and remove fluid filler tube bracket.

4) On vehicles with manual transmission, remove flywheel housing cover and clutch pedal retracting spring. Disconnect clutch release bracket at equalizer rod and remove bracket from engine. Remove lower flywheel housing to engine bolts.

5) Lower vehicle and support transmission using suitable floor jack. Install left lifting bracket on front of left cylinder head and right lifting bracket at rear of right cylinder head. Attach lifting sling to engine. Remove flywheel or converter housing to engine upper bolts. Raise engine slightly and carefully pull it from transmission. Remove engine from engine compartment.

1968-74 360" & 390" "F" MODELS

1) Remove hood, marking hinge positions for reassembly. Drain cooling system and crankcase. Disconnect battery cables, radiator and heater hoses, electrical wiring and transmission oil cooler lines (if equipped). Remove air cleaner and vent hose from carburetor, radiator and fan. Drain air system and disconnect air line at compressor (if equipped).

2) Disconnect exhaust pipes from manifolds, accelerator linkage at dash, choke cable and throttle cable from carburetor, tachometer cable from distributor and fuel line from fuel pump. Remove coil with bracket and starter motor from engine. Disconnect body-to-engine ground strap, treadle valve air line and wiring harness. Disconnect drive shaft center bearing retainer from crossmember.

3) Position suitable floor jack under transmission to support it. Remove clutch housing cover and housing-to-engine lower bolts. Secure suitable lifting brackets to cylinder heads and remove nuts securing engine front support to upper insulator. Remove remaining housing to engine bolts. Secure lifting sling to brackets and raise engine high enough to remove bolts attaching front support bracket to upper insulator. Carefully lift engine away from transmission and out of chassis.

1973-74 460" "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 and bracket assembly from manifold. Attach a suitable sling (T53L-300-A) and hoist to lifting brackets at exhaust manifolds. Carefully remove engine from vehicle.

Engine Removal

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TIGHTENING SPECIFICATIONS

ECONOLINE (1965-67)

Application	Ft. Lbs.
Front Mount-to-Engine	
170" Engine.....	23-28
240" Engine.....	50-55
Front Mount-to-Frame.....	33-41
Rear Mount-to-Frame.....	23-28

ECONOLINE (1968-74)

Application	Ft. Lbs.
Converter-to-Flywheel.....	23-28
Clutch Housing-to-Engine.....	40-50
Engine-to-Transmission Housing.....	28-33
Front Mount-to-Crossmember	
6 Cyl. Engine.....	40-60
V8 Engine.....	60-80
Rear Mount-to-Crossmember	
6 Cyl. Engine.....	45-55
V8 Engine.....	18-24
Rear Crossmember-to-Frame.....	25-35
Transmission Housing-to-Engine.....	40-50

BRONCO (1966-74)

Application	Ft. Lbs.
Converter-to-Flywheel.....	23-28
Clutch Housing-to-Engine.....	40-50
Front Mount-to-Bracket (V8 Engine).....	60-80
Front Mount-to-Engine (6 Cyl. Engine).....	20-30
Engine-to-Transmission.....	23-33

"P" MODELS EXC. 4 CYL. ENGINES (1965-74)

Application	Ft. Lbs.
Converter-to-Flywheel.....	23-28
Clutch Housing-to-Engine.....	40-50
Front Mount-to-Frame (6 Cyl. Engine)	
1965-67.....	35-45
1968-74.....	70-90
Front Mount-to-Engine (6 Cyl. Engine)	
1965-67.....	25-29
1968-71.....	45-55
1972-74.....	50-70

TIGHTENING SPECIFICATIONS

(Cont.)

Application	Ft. Lbs.
Front Mount-to-Bracket (V8 Engine).....	70-90
Rear Mount-to-Frame (170" Engine)	
1965.....	70-90
1966-68.....	90-110
Transmission Housing-to-Engine.....	40-50

"F" MODELS (1965-74)

Application	Ft. Lbs.
Flywheel Housing-to-Engine.....	① 40-50
Converter-to-Flywheel	
C6 Transmission.....	20-30
Cruise-O-Matic Transmission.....	20-30
All Other Transmission	
1965-67.....	20-30
1968-74.....	23-28
Transmission Housing-to-Engine	
Cruise-O-Matic Transmission	
6 Cyl. Engine.....	25-35
V8 Engine.....	40-50
All Other Transmissions.....	40-50
Engine-to-Transmission	
C4 Transmission.....	23-33
Front Mount-to-Bracket	
240" & 300" Engine	
1965-67.....	45-55
1968-74.....	40-60
289" & 302" Engine	
1966-71.....	40-60
1972-74.....	60-80
352" Engine	
1965.....	45-55
1966-67.....	33-45
360" & 390" Engine	
1968-74.....	40-60
460" Engine	
1973-74.....	50-65
Front Mount-to-Engine	
240" & 300" Engine (F350 Only).....	45-55

① — 1971-72 3 speed transmission with overdrive and 4 speed transmission tighten 33-45 ft. lbs.