

## GENERAL MOTORS

### 6 CYLINDER ENGINES

#### "C", "K", & "P" MODELS

1) Disconnect battery cables and drain cooling system, then remove air cleaner. Remove hood and engine compartment cover ("P" models only). Disconnect radiator hoses, transmission cooler lines (if equipped) and remove radiator and shroud from vehicle. Remove battery from vehicle on "P" models.

2) Disconnect electrical wiring at engine, accelerator linkage at manifold bellcrank, fuel line (from tank) at fuel pump, heater hoses at engine and vacuum lines at engine. Disconnect oil pressure gauge line (if equipped), emission system lines at carburetor, ground straps and power steering pump at engine bracket (position to one side).

3) Disconnect exhaust pipe at manifold and remove clutch cross-shaft (if equipped). Remove rocker arm cover, fan and pulley. Attach suitable lifting adapter to cylinder head, secure lifting device and raise slightly to remove engine weight from motor mounts. On all except "C" models, support transmission and disconnect transmission from engine, then remove motor mount attaching bolts.

4) On "C" models, remove drive shaft and plug opening in transmission. Disconnect switches, speedometer linkage, shift linkage, oil cooler lines (if equipped) and clutch linkage (if equipped) from transmission. Remove motor mount attaching bolts.

5) To remove engine on "K" models, raise engine and pull forward until disconnected from transmission. Raise engine and remove from vehicle. To remove engine on "P" models, raise engine and push forward to clear crossmember and disconnect from transmission. Remove engine from vehicle. On "C" models with automatic or four speed transmission, remove rear mount crossmember. Raise engine and transmission assembly and pull forward until removed from vehicle.

#### "G" MODELS

1) Remove both headlamp bezels, grille attaching screws, body and radiator support, then remove grille from vehicle. Drain cooling system. Disconnect heater hoses, radiator hoses, transmission oil cooler lines and remove fan guard and radiator. Position headlamp wiring to one side, then remove radiator upper tie bar and center support.

2) Disconnect battery cables at battery and radiator support baffle. Disconnect wiring harness at fuse panel and cowl attachments, and oil pressure gauge (if equipped). Raise vehicle on hoist. Disconnect fuel line from tank at fuel pump, ground straps, speedometer at transmission and transmission at crossmember. Disconnect exhaust pipe at manifold and remove exhaust system from vehicle.

3) Disconnect clutch linkage and/or transmission linkage and remove cross shaft. Remove driveshaft and install plug in transmission extension. Remove engine mount through bolts. Remove crossmember to engine mount bracket (right side only) attaching bolts. Lower vehicle on hoist until approximately 12" from floor.

4) Remove engine compartment cover and air cleaner assembly. Disconnect carburetor linkage and fuel line, then remove carburetor from manifold. Disconnect power brake

vacuum line at inlet manifold, spark plug wires from plugs, then remove ignition coil and engine rear lifting bracket. Position suitable tool (J-24680-2) to engine and attach lifting device. Raise engine slightly and remove right mount frame bracket and mount. Slowly raise engine while moving engine assembly forward and out of vehicle.

### V8 ENGINES

#### "C", "K", & "P" MODELS

1) Disconnect battery cables, drain cooling system and remove air cleaner. Remove hood, disconnect radiator hoses and remove radiator and shroud. Disconnect electrical wiring, accelerator linkage at manifold bellcrank, fuel line (from tank) at fuel pump, heater hoses, oil pressure gauge line (if equipped), vacuum lines and ground straps from engine.

2) Disconnect power steering pump with hoses attached (if equipped) and position to one side. Disconnect exhaust pipe at manifold and TCS switch (if equipped) at transmission. Remove fan, pulley, and clutch cross shaft. Attach suitable lifting device to engine lift brackets and raise slightly to remove weight from engine mounts.

3) On "C" models, remove drive shaft and install plug in transmission extension housing. Disconnect speedometer cable, shift linkage and clutch linkage (as required). Remove engine mount bolts. On vehicles with automatic or four speed transmissions, remove rear mount crossmember. Raise engine and transmission assembly, then pull forward until removed from vehicle.

4) On "P" models remove engine from vehicle as follows: Using suitable crane-type hoist through body front end opening, attach lifting sling to engine. Disconnect transmission from engine assembly, transmission controls, carburetor controls and remove engine cover, front bumper and sheet metal to provide clearance for engine removal. Raise engine and move forward to clear crossmembers and disengage from transmission. Remove engine assembly through front of vehicle.

5) On "K" models, disconnect transmission from engine and transmission to engine controls. Raise engine and pull forward until disconnected from transmission. Raise engine and remove from vehicle.

#### "G" MODELS

1) Remove both headlamp bezels, grille attaching screws, body and radiator support, then remove grille from vehicle. Drain cooling system. Disconnect heater hoses, radiator hoses, transmission oil cooler lines and remove fan guard and radiator. Position headlamp wiring to one side, then remove radiator upper tie bar and center support.

2) Disconnect battery cables at battery and radiator support baffle. Disconnect wiring harness at fuse panel and cowl attachments, and oil pressure gauge (if equipped). Raise vehicle on hoist and disconnect fuel line (from tank) at fuel pump, ground straps, speedometer at transmission, and transmission at crossmember. Disconnect exhaust pipe at manifolds.

# Engine Removal

## GENERAL MOTORS (Cont.)

3) Disconnect clutch linkage and/or transmission linkage and remove cross shaft. Remove drive shaft and install plug in transmission extension. Remove engine mount-to-crossmember bracket attaching bolts. Remove engine mount through bolts, then raise engine and remove bracket and mount as an assembly. Position blocks between engine and crossmember, then lower engine onto blocks. Lower vehicle on hoist until approximately 12" from floor.

4) Remove engine compartment cover and air cleaner assembly. Disconnect carburetor linkage and fuel line, then remove carburetor from manifold. Disconnect power brake vacuum line at inlet manifold. Remove the two forward center inlet manifold bolts and position suitable tool (J-24680) to engine. Attach a lifting device, raise engine while moving the engine assembly forward and out of the vehicle.

### GMC MOTOR HOME

Engine assembly may be removed with or without transmission and final drive attached. Recommended procedure is to remove transmission and final drive from vehicle before removing engine. Proceed as follows:

1) Disconnect battery ground cables from both the automotive and living area batteries. Remove engine compartment cover and air cleaner. Disconnect coil bracket and position suitable engine removal tool (J-24603) to engine. Adjust tool so all slack is removed from cable, and drain radiator.

2) Raise motor home on a twin post hoist. **CAUTION** — Size and weight of vehicle necessitates use of a twin post hoist **ONLY**. Disconnect starter solenoid wires and remove starter. Loosen upper left hand bolt of flywheel cover and remove remaining three attaching bolts. Remove flywheel cover.

3) Disconnect transmission shift linkage, speedometer cable and transmission oil cooler lines. Disconnect detent solenoid wire and modulator tube from transmission. Remove right hand drive axle cotter pin, nut and washer. Remove inner constant velocity joint attaching bolts and push inner joint outward enough to disengage from final drive output shaft. Move drive axle rearward.

4) Remove lower right hand venturi ring (shroud-to-engine ring) bracket. Remove output shaft bracket from engine and right hand output shaft assembly from final drive. Disconnect left hand drive axle from flange at final drive and position axle forward and clear of flange. Remove three bolts attaching bracket on left hand side of engine to final drive.

5) Remove three bolts securing converter to flywheel and three transmission-to-support bracket bolts. Remove support bracket-to-crossmember bolts and position suitable transmission jack under transmission. Remove transmission housing-to-engine attaching bolts and slide transmission rearward. Carefully remove transmission and final drive.

6) Lower vehicle and remove engine oil dipstick. Disconnect vacuum line from front of carburetor to carbon canister and vacuum lines from intake manifold to brake booster and heater controls. Disconnect throttle linkage, coil bracket from engine (position on top of intake manifold), negative coil terminal wire, heater hoses and engine harness.

7) Disconnect brake combination valve wire, upper radiator hose from engine, air conditioning compressor from bracket (position to one side with refrigerant lines connected). Remove oil filler upper tube, oil dipstick tube, alternator and both upper venturi ring brackets. Raise vehicle on twin post hoist.

8) Disconnect exhaust pipes from manifolds, engine oil cooler tubes from tube to hose union and fuel line from fuel pump. Remove fan and clutch assembly. Remove lower left hand venturi ring bracket, venturi ring retainer strap, venturi ring and radiator shroud. Disconnect lower radiator hose, and power steering hoses from power steering pump. Remove engine front mounting bolts.

9) Remove left hand drive axle cotter pin, nut and washer. Tap lightly on outboard end of left hand axle until splines are free and remove drive assembly. Raise engine assembly using engine removal tool previously attached to engine. Remove engine by alternately raising, tilting, and lowering engine assembly. **CAUTION** — Take care not to damage oil pan.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Flywheel Housing-to-Engine .....	30
Rear Mount Crossmember-to-Frame .....	25
Rear Mount-to-Crossmember .....	35-45
Transmission Housing-to-Engine .....	30-35
Converter-to-Flywheel .....	30-35
Drive Axle Nut (Motor Home) .....	110
Final Drive-to-Support Bracket .....	105
Final Drive Bracket-to-Engine .....	50
Inner Constant Velocity Joint .....	65
Output Shaft Bracket-to-Engine .....	55
Support Bracket-to-Crossmember .....	50
Support Bracket-to-Transmission .....	35
Venturi Ring-to-Bracket .....	20