

# Engine Cooling Systems

## FORD MOTOR CO. (Cont.)

**Installation** — Clean all gasket surfaces, install new hoses (as required) and gaskets. Reverse removal procedure, tighten bolts, adjust drive belt tension and refill cooling system.

### 351" M & 400" V8 E, F & Bronco Models

**Removal** — 1) Drain cooling system and disconnect battery ground cable. Remove fan shroud bolts and position back over engine. Remove fan and spacer from pump. Remove air conditioning drive belt if equipped. Also remove compressor mount to water pump.

2) Loosen alternator and remove drive belt. Loosen power steering pump and remove drive belt. Remove water pump pulley. Remove alternator and bracket without disconnecting wires and position out of way.

**Installation** — Clean all gasket surfaces, install new hoses (if required) and gasket. Reverse removal procedure, tighten bolts, adjust drive belt tension and refill cooling system.

### 460" V8 E Models

**Removal** — 1) Drain cooling system and remove fan shroud bolts. Remove fan assembly from water pump and remove shroud. Loosen power steering pump bolts. If equipped with air conditioning, loosen compressor top bracket bolts and remove bracket. Remove air conditioning idler arm and bracket assembly. Remove compressor and power steering drive belts.

2) If equipped with air pump, remove pump pulley and belt. Disconnect by-pass hose and remove pump pivot bolt. Loosen adjustment arm and remove air pump. Loosen alternator pivot bolt and remove attaching bolts and spacer. Remove adjustment arm bolt and remove alternator and bracket as an assembly.

3) Remove power steering pump and lay aside. Disconnect radiator lower hose and heater hose from water pump. Loosen by-pass hose clamp at pump and remove attaching bolts and remove water pump.

**Installation** — Clean all gasket surfaces, install new hoses (as required) and gaskets. Reverse removal procedure, tighten bolts, adjust drive belt tension and refill cooling system.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Water Pump Attaching Bolts	
All Models	
300", 302", 351" M & W & 400" .....	12-18
460" .....	15-21
Fan-to-Hub Bolts .....	12-18

## GENERAL MOTORS

### COOLING SYSTEM CAPACITY

Application <sup>①</sup>	Quarts
250"	
C10 & K10 Man. & Auto. Trans. ....	②15
G10/30 .....	17
292"	
C20 Auto. & Man. Trans. ....	②15
C30 & K30 Auto. & Man. Trans. ....	②14.5
P10/30 .....	13.5
305"	
C10/30 & K10/30 Auto. & Man. Trans. ....	17.5
G10 .....	④19
350" Gas	
C10/30 & K10/30 Auto. & Man. Trans. ....	②17.5
G10/30 Auto. & Man. Trans. ....	20
P20 .....	③16.5
350" Diesel .....	18
400"	
K20 Auto. Trans. ....	⑤⑥18
G20/30 Auto. Trans .....	⑤20

Application <sup>①</sup>	Quarts
454"	
P30 Auto. Trans. ....	④23.5
C20/30 Auto. Trans. ....	⑦24

① — When General Motors is referred to within this manual (rather than Chevrolet or GMC), the numerical vehicle series designations will be abbreviated for common reference to both Chevrolet and GMC. Chevrolet will use numerical series designation as listed. GMC models will be identified as follows: 10 = 1500; 20 = 2500; 30 = 3500.

- ② — Add 1/2 qt. with Air Conditioning.
- ③ — Add 1/2 qt. with Heavy Duty Cooling.
- ④ — Add 1 qt. with Air Conditioning.
- ⑤ — Add 1 qt. with Heavy Duty Cooling.
- ⑥ — Add 2 qt. with Air Conditioning.
- ⑦ — Add 1/2 qt. with Trans. Oil Cooler.

### PRESSURE CAP

Application	PSI
All Models .....	15

### THERMOSTAT

Application	① Rating °F
All .....	195
① — Thermostat should be full open at 25°F above stamped rating and fully closed at 10°F below stamped rating.	

## GENERAL MOTORS (Cont.)

### WATER PUMP

**Removal** — 1) Disconnect battery cable and drain cooling system. Remove accessory drive belts and disconnect water hoses from water pump. Remove fan (or fan clutch) to water pump hub attaching bolts and remove fan and pulley.

**NOTE** — On some vehicles, it may be necessary to loosen or remove alternator and (if equipped) air conditioning, power steering brackets to prevent removal interference.

2) Remove pump-to-block attaching bolts and remove water pump.

**Installation** — 1) Clean mating surfaces of pump and block. Place a 1/8" bead of suitable sealer along sealing edge of pump.

**NOTE** — 6 Cylinder and 350" Diesel engines use gaskets.

2) Position pump on block and retain with attaching bolts. Replace brackets (if removed) and reverse removal procedures to complete installation.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Water Pump Attaching Bolts	
6 Cyl. Engines .....	15
V8 Engines .....	30
V8 Diesel Engines .....	13

## INTERNATIONAL HARVESTER

### COOLING SYSTEM CAPACITY

Application	Quarts
4 Cyl. Engine .....	12
6 Cyl. Diesel Engine .....	12.5
V8 Engines .....	20

### THERMOSTAT

Application	Ⓢ Initial Open	Ⓢ Full Open
4 Cyl Engine .....	167-174	192
6 Cyl. Diesel .....	160	185
V8 Engines .....	167-174	192

Ⓢ — Specifications are in °F.

### WATER PUMP

**NOTE** — Water pump removal information for International Harvester models was not available from manufacturer.

## JEEP

### COOLING SYSTEM CAPACITY

Application	Quarts
All Models	
151" Engines .....	7.8
258" Engines .....	10.5
304" Engines .....	13
360" Engines .....	14

### THERMOSTAT

Application	Ⓢ Initial Open	Ⓢ Full Open
All Models .....	192-198	218

Ⓢ — Specifications are in °F.

### WATER PUMP

#### ALL 4 CYLINDER MODELS

**Removal** — Drain coolant. Remove drive belts and fan. Disconnect radiator hoses from water pump. Remove water pump attaching bolts, and remove pump.

**Installation** — Clean gasket surfaces, install new hoses (as required) and gaskets. Reverse removal procedure, tighten bolts, adjust drive belt tension, refill system and check for leaks.

### PRESSURE CAP

Application	PSI
4 Cylinder Engines .....	14
6 & 8 Cylinder Engines .....	15

## JEEP (Cont.)

### ALL 6 CYLINDER MODELS

**Removal** – 1) Drain cooling system and disconnect all hoses at water pump. Remove drive belts and separate fan shroud (if equipped) from radiator.

2) Remove fan and hub assembly and remove fan shroud. Remove water pump and gasket.

**NOTE** – On some models, fan removal may be easier if shroud is rotated ½ turn.

**Installation** – Clean gasket surfaces, install new hoses (as required) and gaskets. Reverse removal procedure, tighten bolts, adjust drive belt tension and refill cooling system.

### ALL V8 MODELS

**Removal** – 1) Drain cooling system and disconnect negative battery cable. Disconnect upper radiator hose at radiator. Loosen all drive belts. Separate fan shroud (if equipped) from radiator and position rearward on engine.

2) Remove fan and hub from water pump. Remove fan and shroud assembly (if equipped) from engine compartment.

3) If equipped with air conditioning, install a double nut on compressor bracket-to-water pump stud and remove stud. This eliminates having to remove the mounting bracket. Remove alternator and mounting bracket assembly (position to one side with wires attached). If equipped with power steering, remove nuts attaching pump to rear half of mounting bracket. Remove bolts attaching front half of bracket to rear half.

4) Remove remaining upper bolt from inner air pump support brace, loosen lower bolt and drop brace away from power steering front bracket. Remove front half of power steering bracket from water pump mounting stud. Disconnect heater hose, by-pass hose and lower hose at water pump. Remove water pump attaching bolts and water pump assembly.

**Installation** – Clean all gasket surfaces, install new hoses (as required) and gaskets. Reverse removal procedure, tighten nuts and bolts, adjust drive belt tension and refill cooling system.

**CAUTION** – Check to be sure wire coil is installed in lower radiator hose. Failure to install this coil will result in the hose collapsing at high engine RPM.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Water Pump-to-Block	
151" Engines .....	22-28
258" Engines .....	9-18
All V8 Engines .....	18-33
Water Pump-to-Timing Cover	
V8 Engines Only .....	3-5
Fan Blade-to-Hub	
All Models .....	12-25
Thermostat Housing	
151" Engines .....	20
All Others .....	10-18