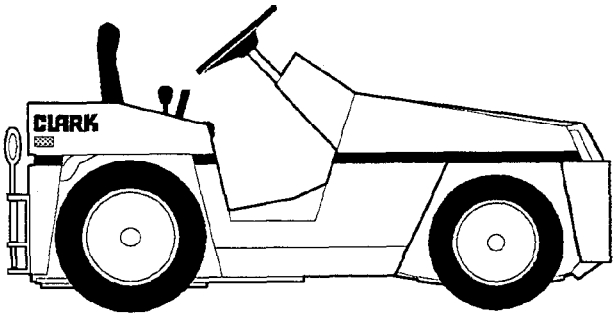
Service Manual

SM 607G



GT 30E-50E-60E

Gas

Towing

Tractors

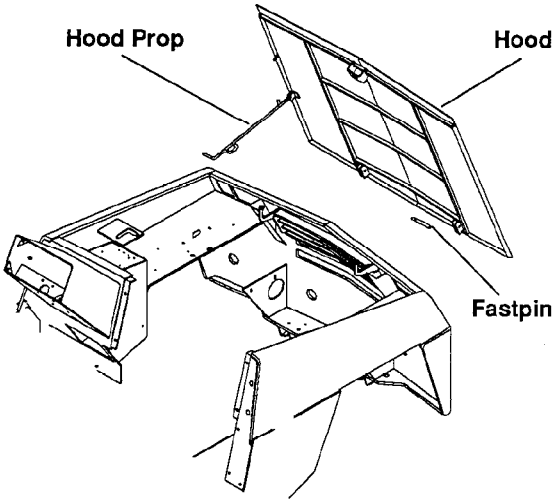
CLARK
Technical
Publications
Lexington, KY
40507-1640

Alphabetical Index

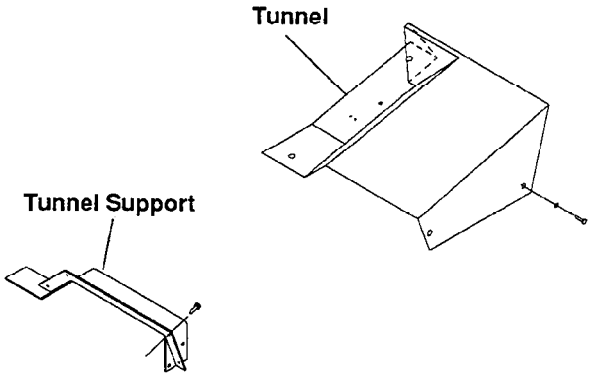
Section 1.

Engine & Transmission Removal-Gas & LPG

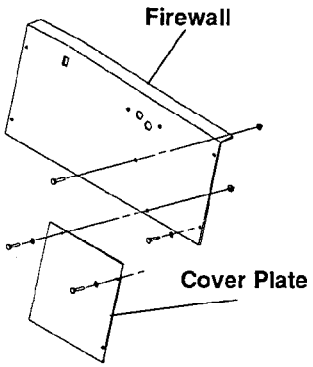
With the exception of the seat deck, the tow tractor sheet metal is not particularly heavy. It is however, cumbersome. One person should not try to remove it alone. This is a two person job. Also, the drive line removal and reinstallation requires two people. The engine must be lifted with the fan end at an up angle and then moved forward to get the parking brake on the transmission past the seat support structure of the frame. One person trying to do this alone can result in damage to the truck or drive line components.



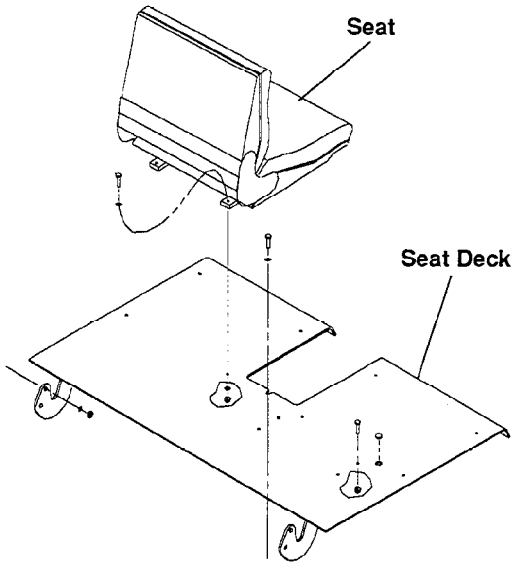
1. Lift hood onto prop. Pull the fastpins and lift hood from truck.



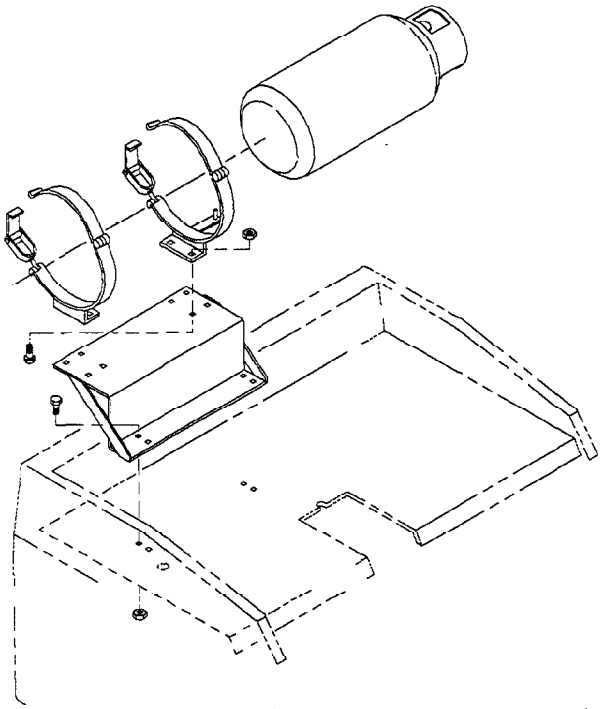
2. Unbolt and remove the tunnel and tunnel support.



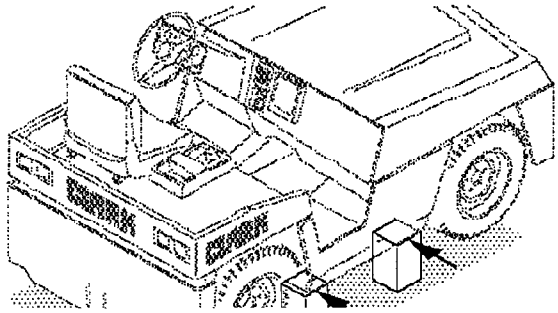
3. Unbolt and remove firewall and cover plate.



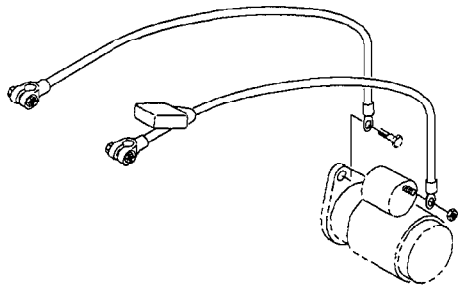
4. Remove seat and seat deck. These can be removed as a unit but the seat deck is easier to remove if the seat is taken off first.



5. On the LPG truck it is also necessary to remove the LPG tank and tank guard.

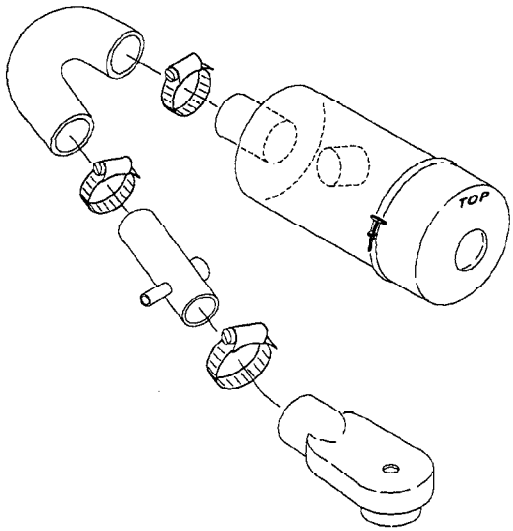


6. Raise and block front of truck and remove the steer wheels. Refer to Group SA, Section 2 on Jacking and Blocking of truck.

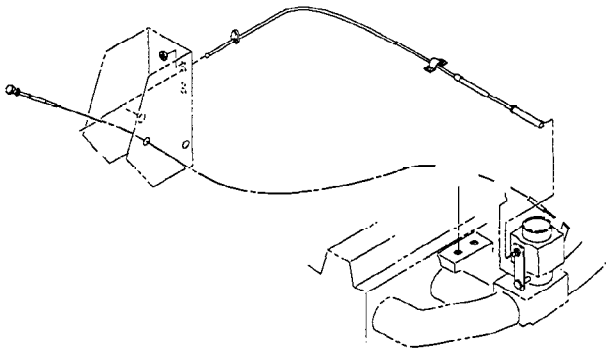


7. Disconnect and remove battery cables.

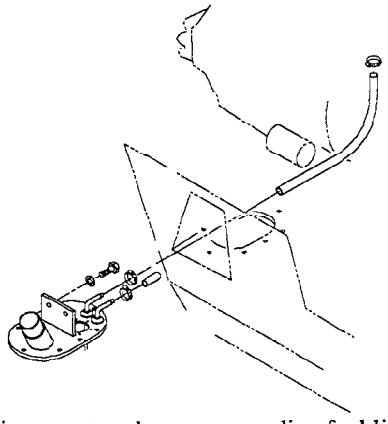
8. Disconnect and tag for reinstallation, all electrical wiring to drive line components. The main wiring harness will remain in the truck when the drive line is removed.



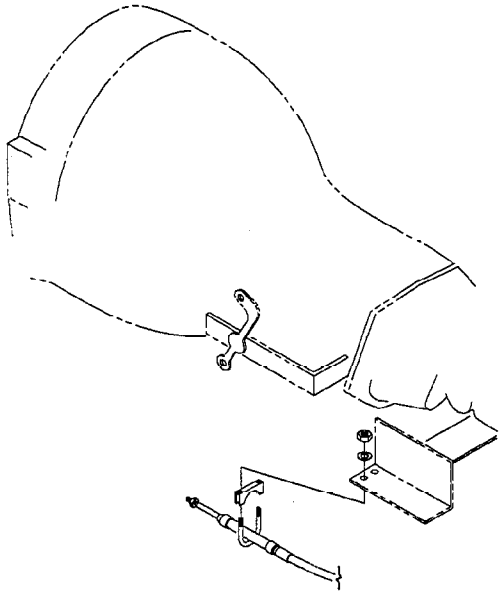
9. Disconnect and remove the air cleaner hoses and tube. The air cleaner can be left in place.



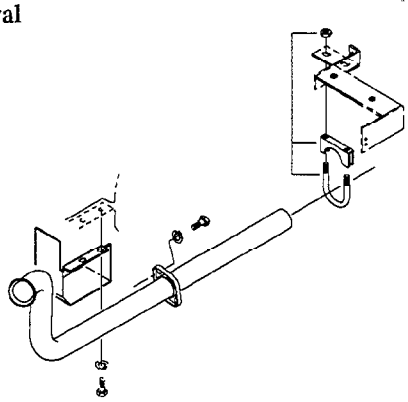
10. Disconnect the accelerator and choke cables at the carburtetor. Lay the cables back where they will be out of the way of drive line removal.



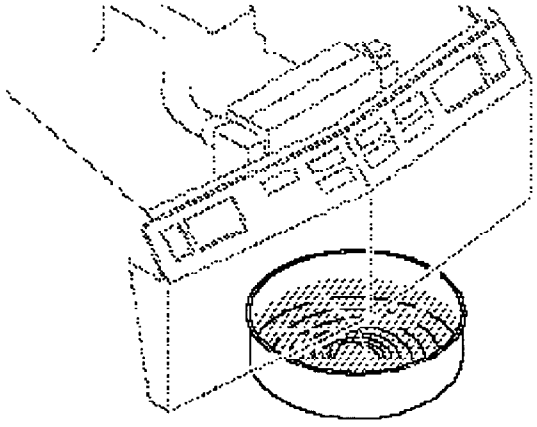
11. Disconnect and remove gasoline fuel line or LPG hose.



12. Disconnect the transmission control cable and lay it back where it will not be in the way of drive line removal



13. Remove exhaust pipe.

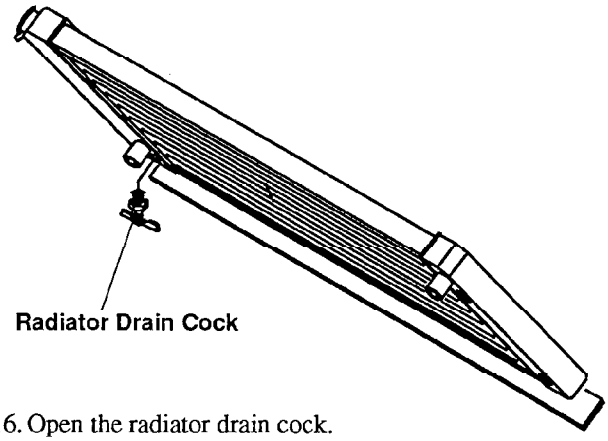


14. Place a large drain pan which has a minimum capacity of 11 quarts (10.4 L) under the radiator and engine.

15. Remove the radiator cap.

⚠ WARNING
STEAM

Do not remove the radiator cap when the radiator is hot. Steam from the radiator will cause severe burns.



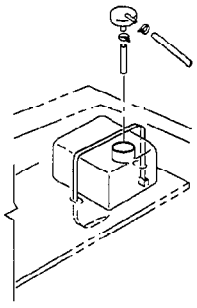
16. Open the radiator drain cock.

17. Remove the coolant drain plug from the engine.

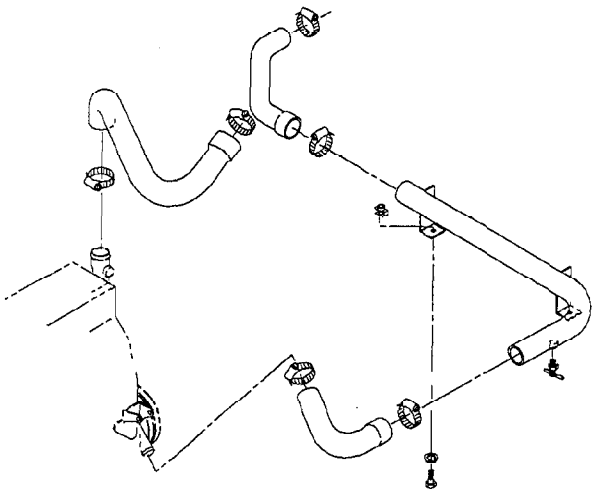
18. After all coolant has been removed, replace the plug and drain cock.

NOTE

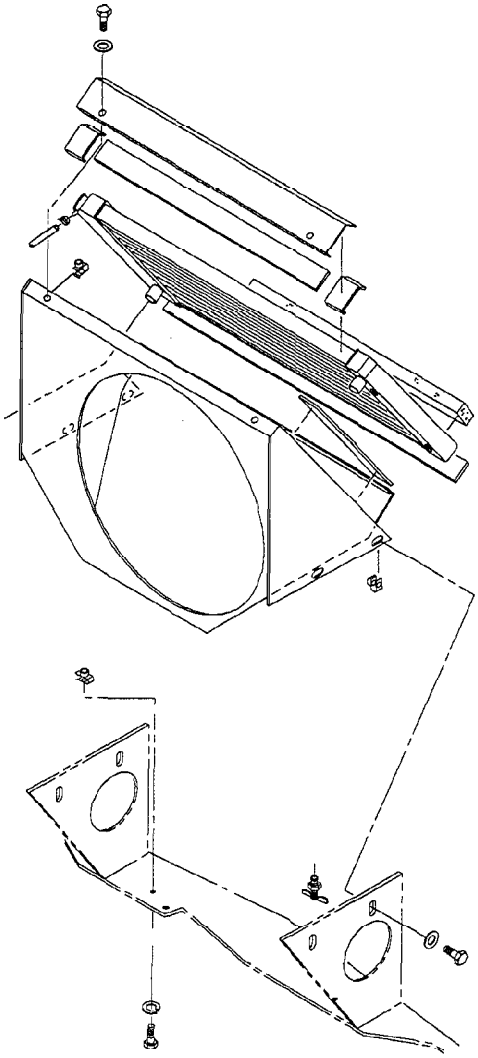
If the coolant is in good condition and has not been contaminated in removal, it can be saved for reuse. Otherwise dispose of it in the correct manner.



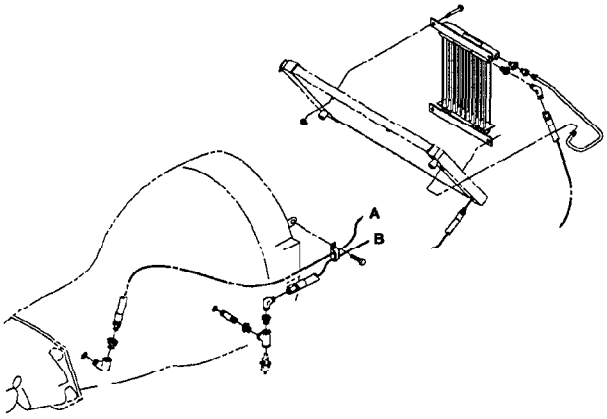
19. Remove coolant overflow hose.



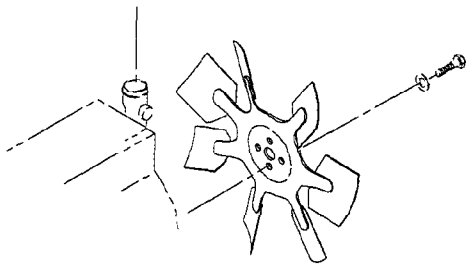
20. Remove radiator hoses.



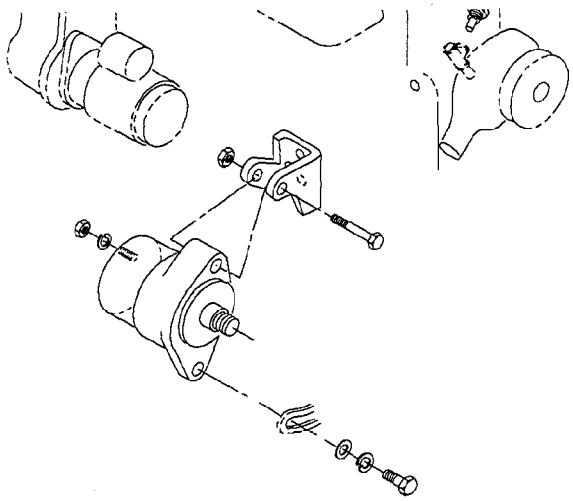
22. Remove the radiator, transmission cooler and radiator shrouds.



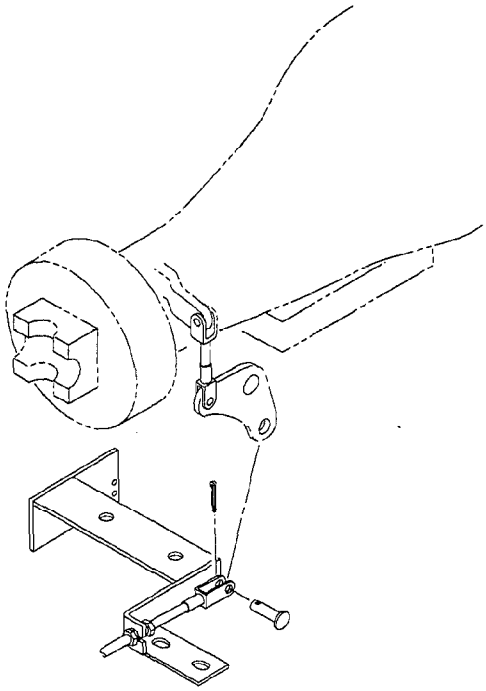
21. Remove the transmission cooling lines. Some fluid will be lost. Have a drain pan available. Do not reuse this fluid. Dispose of it in the prescribed manner.



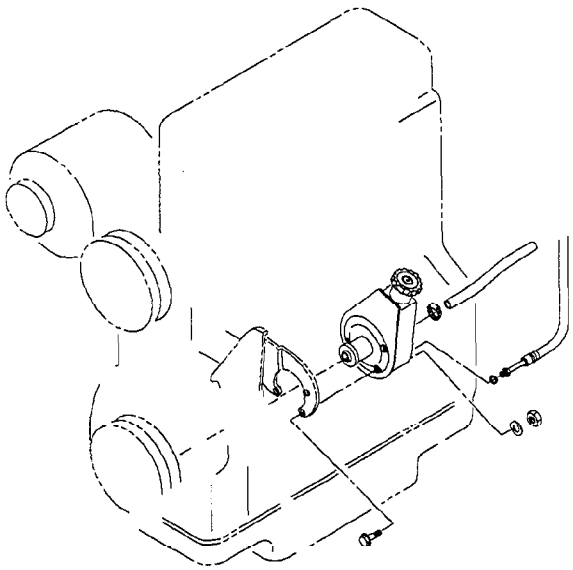
23. Remove the engine fan.



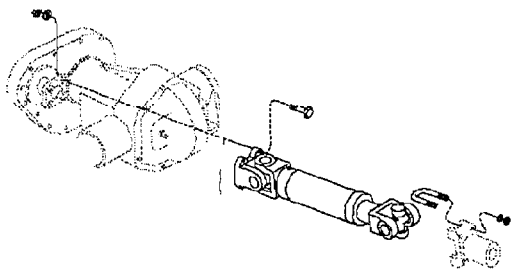
24. Remove the alternator from the engine.



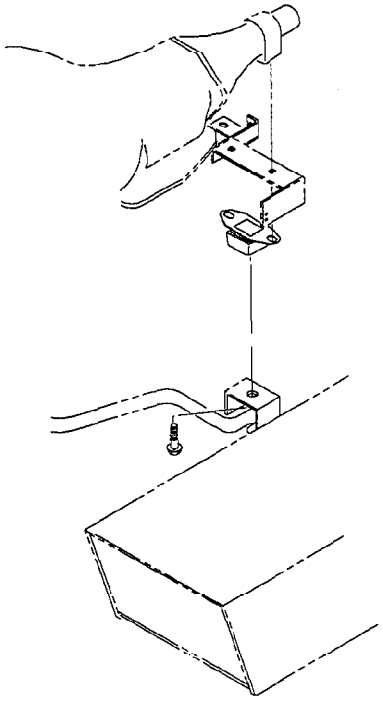
26. Remove the parking brake cable at the transmission. Lay it back where if will be out of the way of drive line removal.



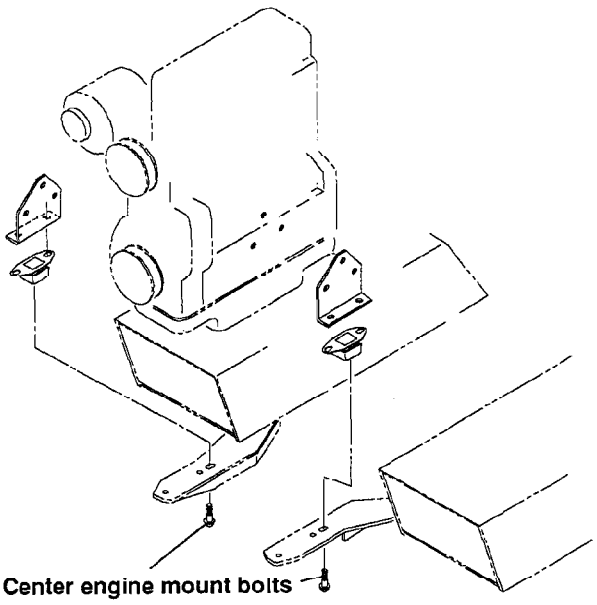
25. Remove the power steering/brake pump mounting bolts. Then lay pump with drive pulley and hoses attached and lay back on engine where it will be out of the way of engine removal.



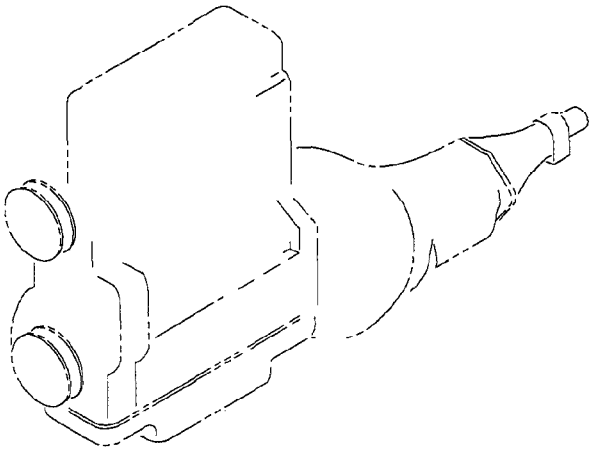
27. Unbolt the U-Joint at both ends and remove it.



28. Remove the center bolt from the engine mount at the transmission.



29. Remove the center bolts from the front engine mounts.



30. The engine and transmission are now ready to come out. No lifting eyes are provided on the Ford gasoline engine so it is necessary to rig a sling of nylon web lifting straps. Rig so that the front of the engine is on an up angle. Carefully work engine forward to extract parking brake assembly from truck frame.

31. Place engine and transmission assembly in an approved engine stand. Refer to Group 06 Section 1 for information on how to separate transmission from engine.

32. Reinstall engine and transmission in reverse order. Be sure to refer to "Critical fastener torques" in Group 40 Section 2.

TROUBLESHOOTING CHART

The following troubleshooting chart lists most of the usual complaints or troubles encountered in routine operation of all gasoline engines, with probable cause and troubleshooting procedure.

TROUBLESHOOTING (GAS and DIESEL):

Engine Will Not Start

Fuel System Trouble

- Foreign material in fuel
- Wrong Fuel
- Bad fuel pump
- Fuel shut off at tank
- A restriction in air filter system
- Bad injection nozzles
- A restriction in fuel filter
- Carburetor problem
- A restriction in choke linkage

Electrical System Trouble

- Dirty or loose battery connections
- Bad or loose wiring
- Weak battery
- Bad key switch
- Bad safety start switches
- Bad ignition system

Engine Does Not Run Evenly

Primary Engine Problem

- Wrong valve clearance
- A leak in cylinder head gasket
- Valves burned
- Worn or broken piston rings
- Low compression
- Wrong timing
- Coolant temperature below normal
- Engine temperature above normal

Fuel System Problem

- Low fuel supply
- A restriction in fuel lines or filters
- Bad fuel pump
- Bad injection pump
- Bad injection nozzles
- Exhaust system restriction Carburetor adjusted wrong
- Leaks in carburetor or intake manifold gaskets

Engine Does Not Run Evenly

Primary Engine Problem

- Worn camshaft lobes
- Weak valve springs
- Wrong valve clearance
- Burned valves
- Low compression
- Wrong timing
- Engine temperature above normal
- Bad governor

Fuel System Problem

- Air in fuel
- Bad injection nozzles
- Bad injection pump
- Water in fuel
- Wrong fuel mixture
- Bad fuel pump
- Bad carburetor

Electrical System Problem

- Wrong spark plugs
- Leaks in wiring
- Bad ignition system

A Loss of Power

Primary Engine Problem

- Broken cylinder head gasket
- Worn camshaft lobes
- Wrong valve clearance
- Burned valves
- Weak valve springs
- Wrong timing
- Low compression
- Wrong oil viscosity
- Coolant temperature wrong
- Engine temperature above normal
- Wrong throttle linkage
- Governor not adjusted correctly

Fuel System Problem

- A restriction in fuel filters
- Wrong fuel
- Bad injection pump
- Bad injection nozzles
- Bad fuel pump
- A restriction in air cleaner
- A restriction in exhaust system
- Low pressure in intake manifold
- A restriction in fuel line
- Bad carburetor

Engine Temperature Above Normal

Primary Engine Problem

- Bad head gasket
- Wrong timing
- Crankcase oil level low
- Low coolant level
- Radiator dirty/Air flow restricted
- Loose or broken fan belt
- Bad thermostat
- Restriction in cooling system
- Bad radiator pressure cap
- Bad water pump

Service Problem

- Overload put on engine
- Crankcase oil level low
- Wrong fuel

Fuel System Problem

- Fuel pressure above normal
- Bad carburetor

Oil Consumption Above Normal

Primary Engine Problem

- A restriction in oil passage from valve cover
- Worn valve guides or valve stems
- Oil control rings worn or broken
- Worn liners or pistons
- Too much wear in piston rings
- Ring restriction in grooves of piston
- Restriction in piston oil return slots
- Not enough piston ring tension
- Piston ring gaps not at the correct spacing
- Worn crankshaft thrust bearing
- Too much clearance in main or connecting rod bearing
- Front or rear crankshaft oil seal bad
- Crankcase oil has a low viscosity
- Oil pressure above normal
- Oil level above normal

Service Problem

- Crankcase oil has a low viscosity
- Oil level above normal

Fuel System Problem

- Restriction in air intake