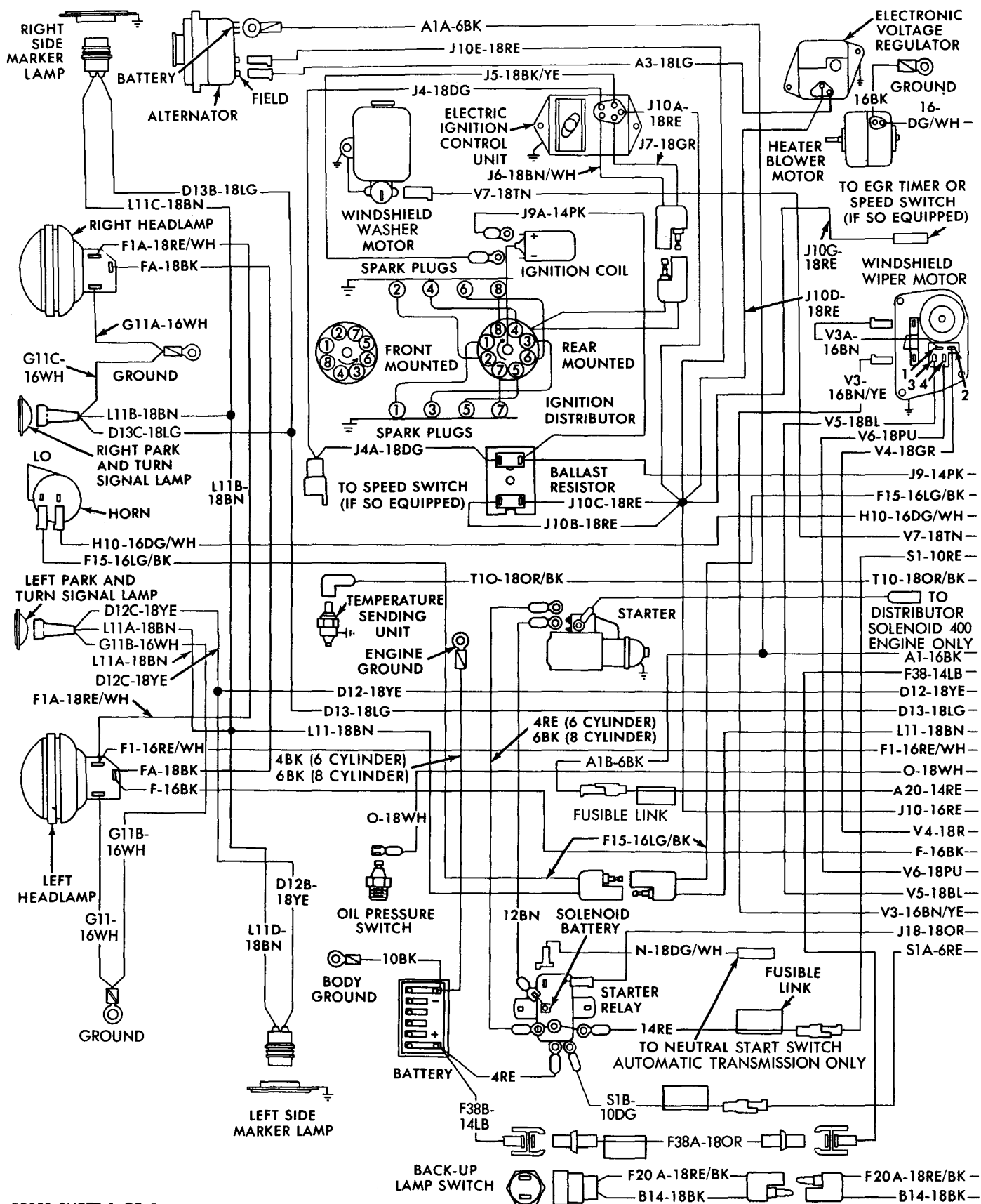
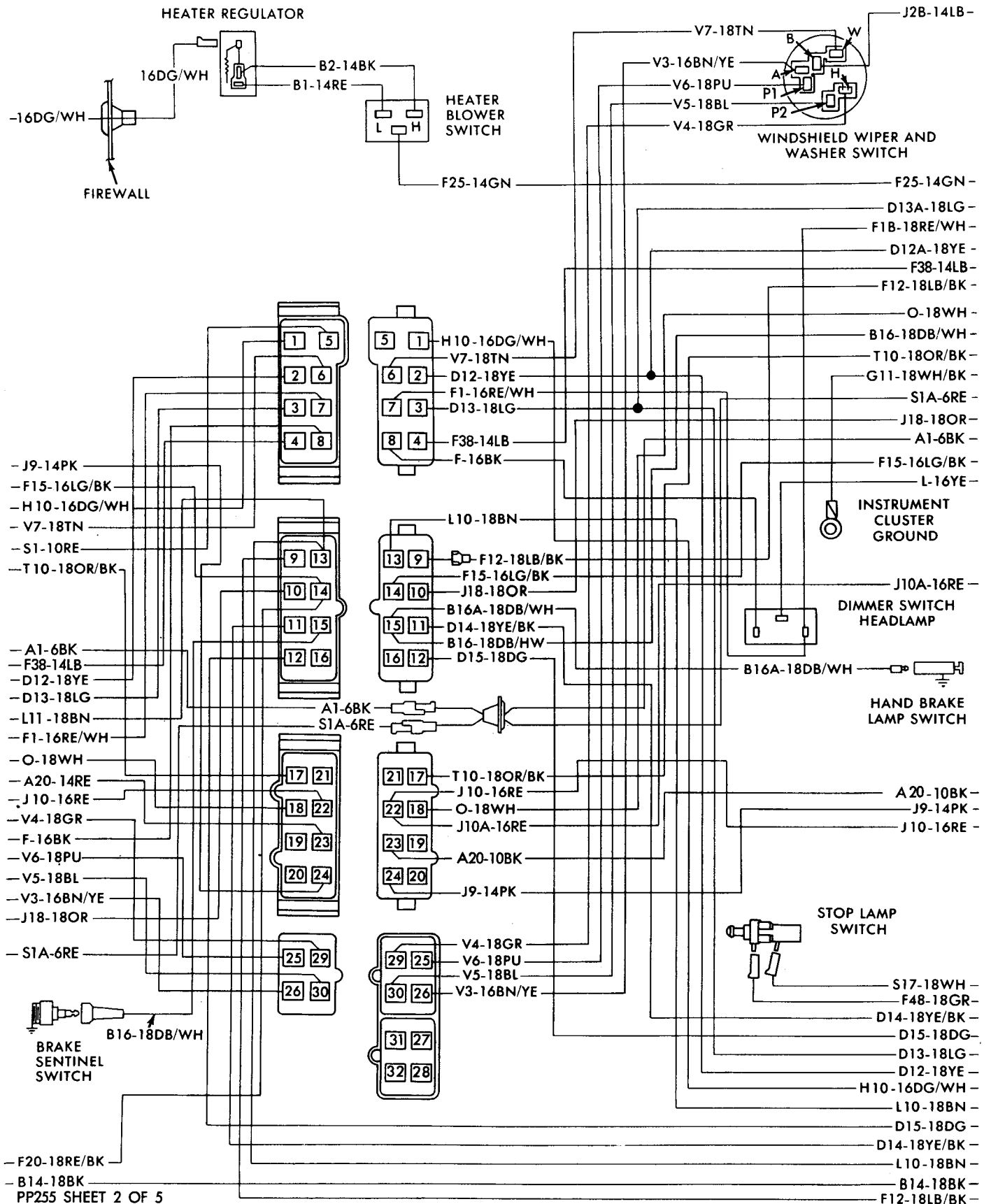
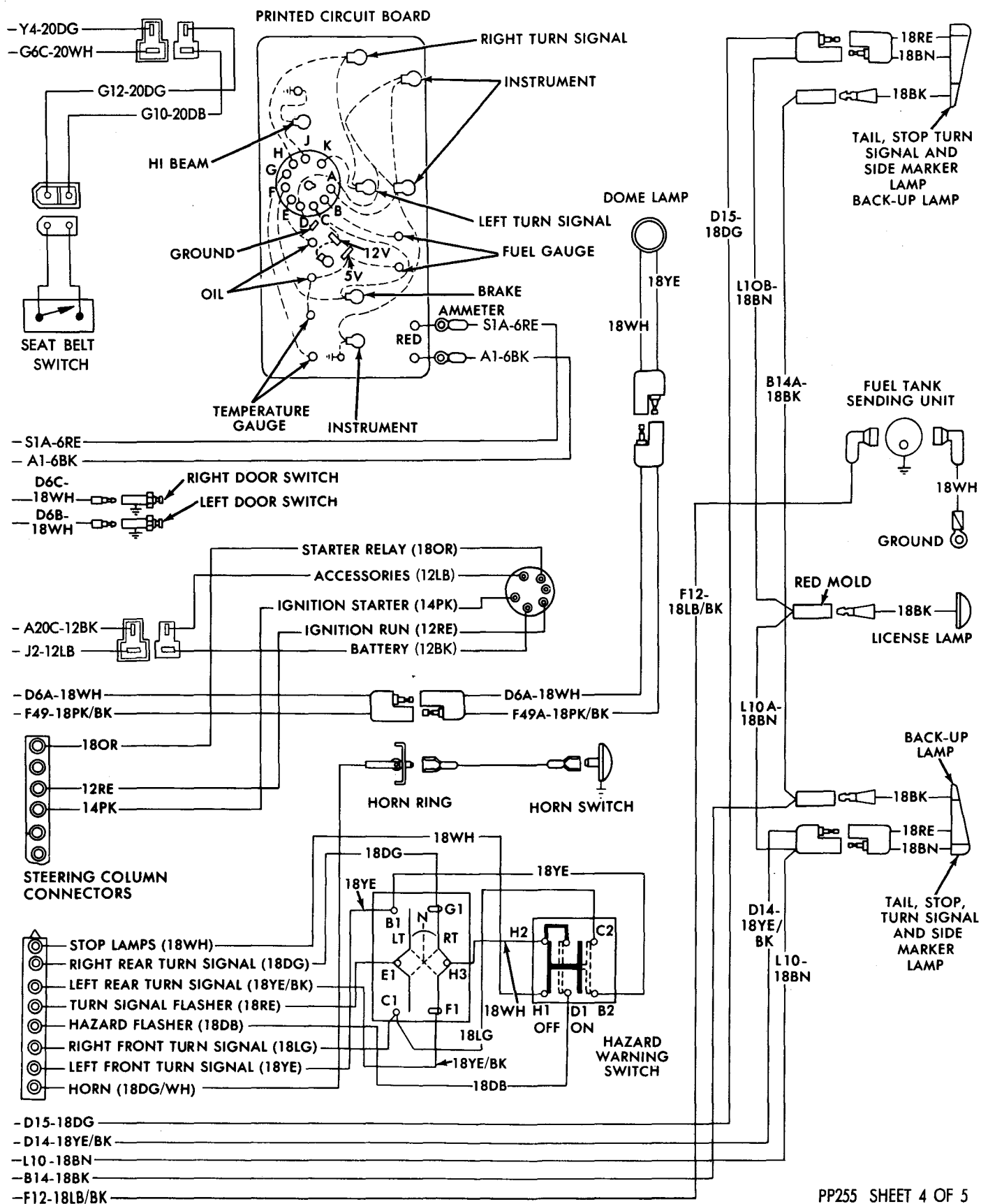


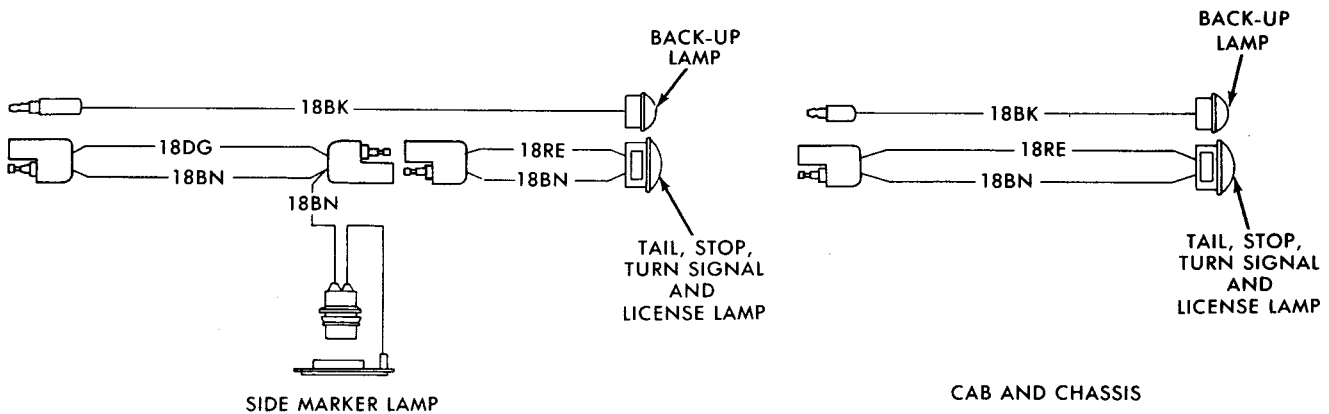
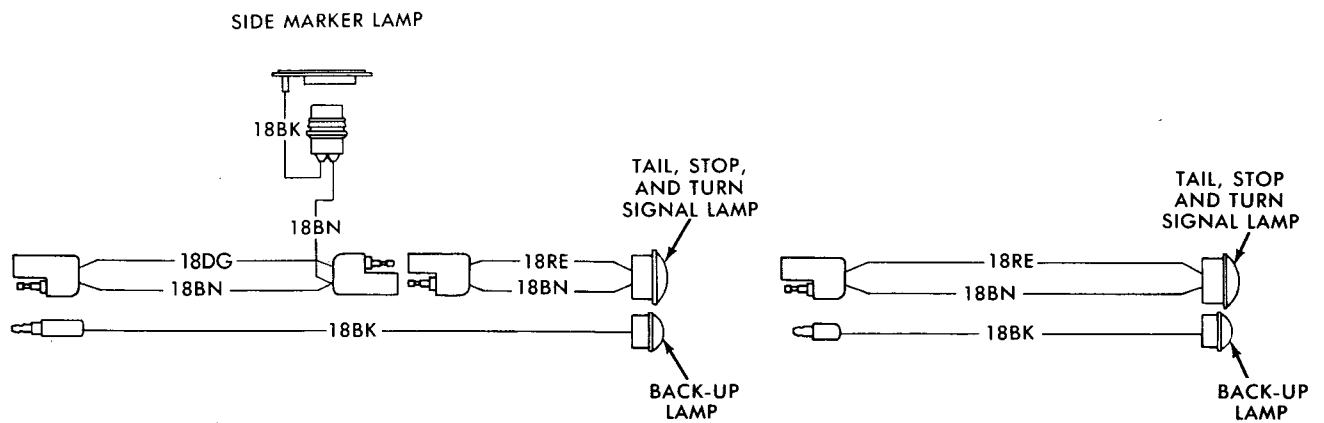




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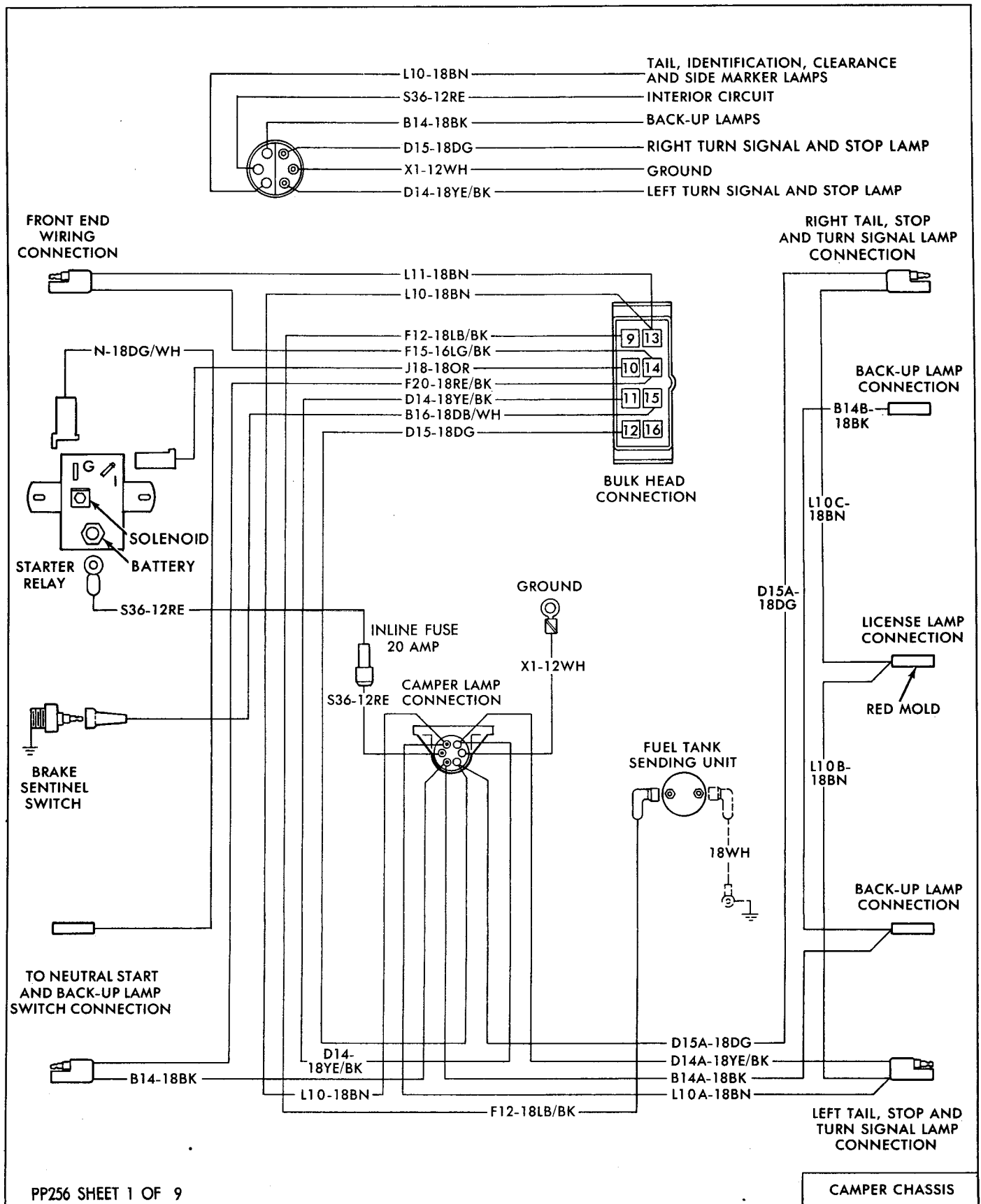


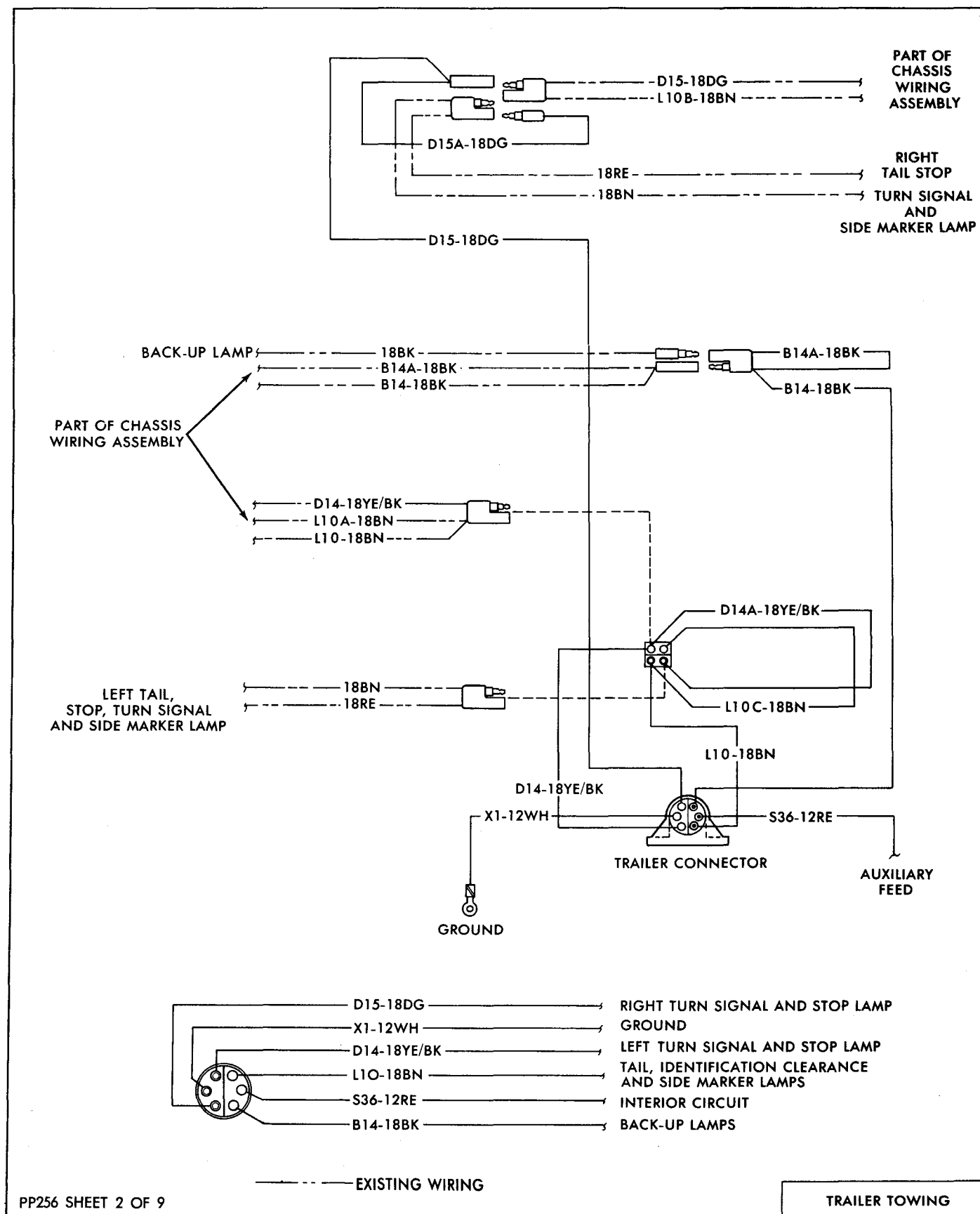


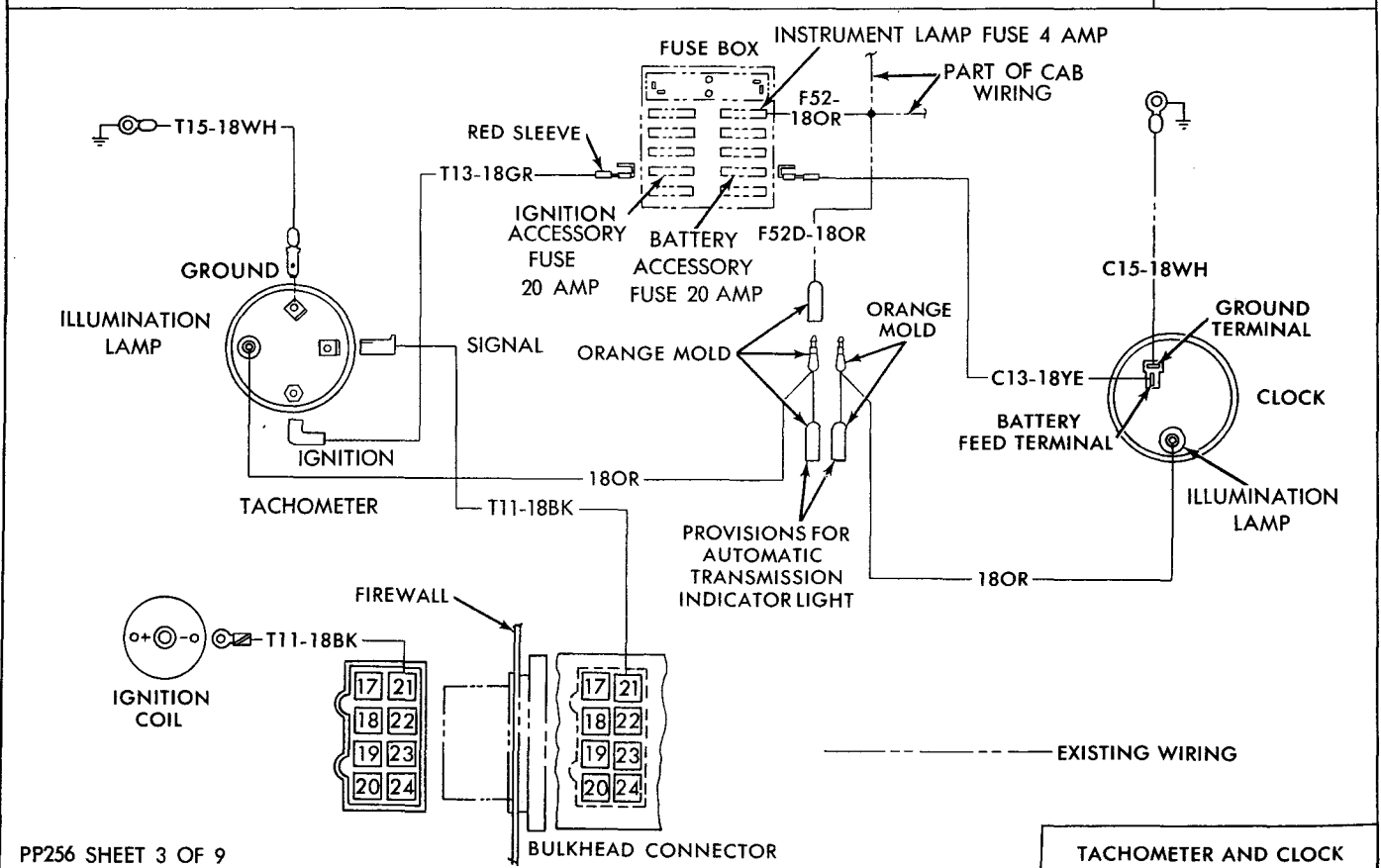
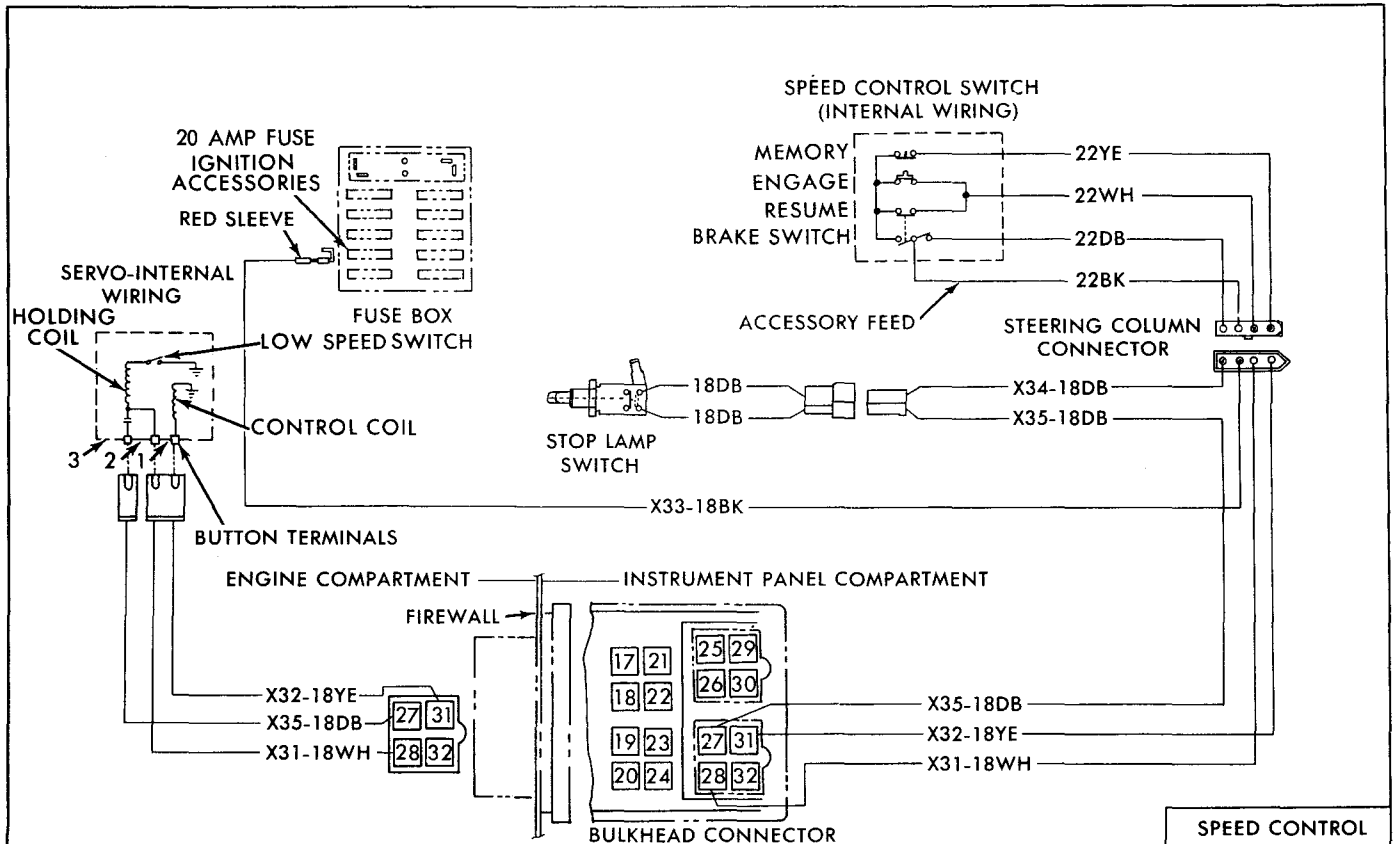


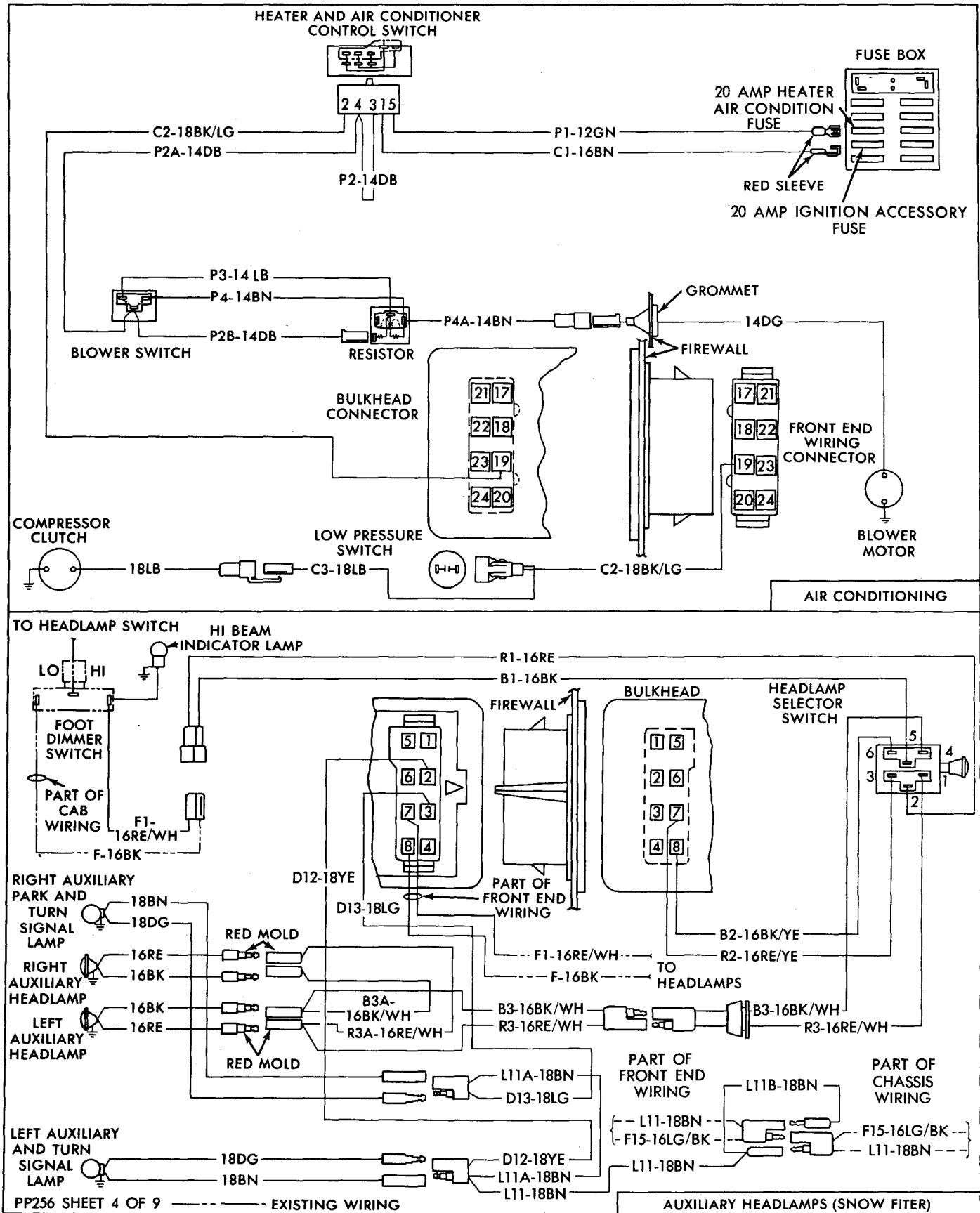
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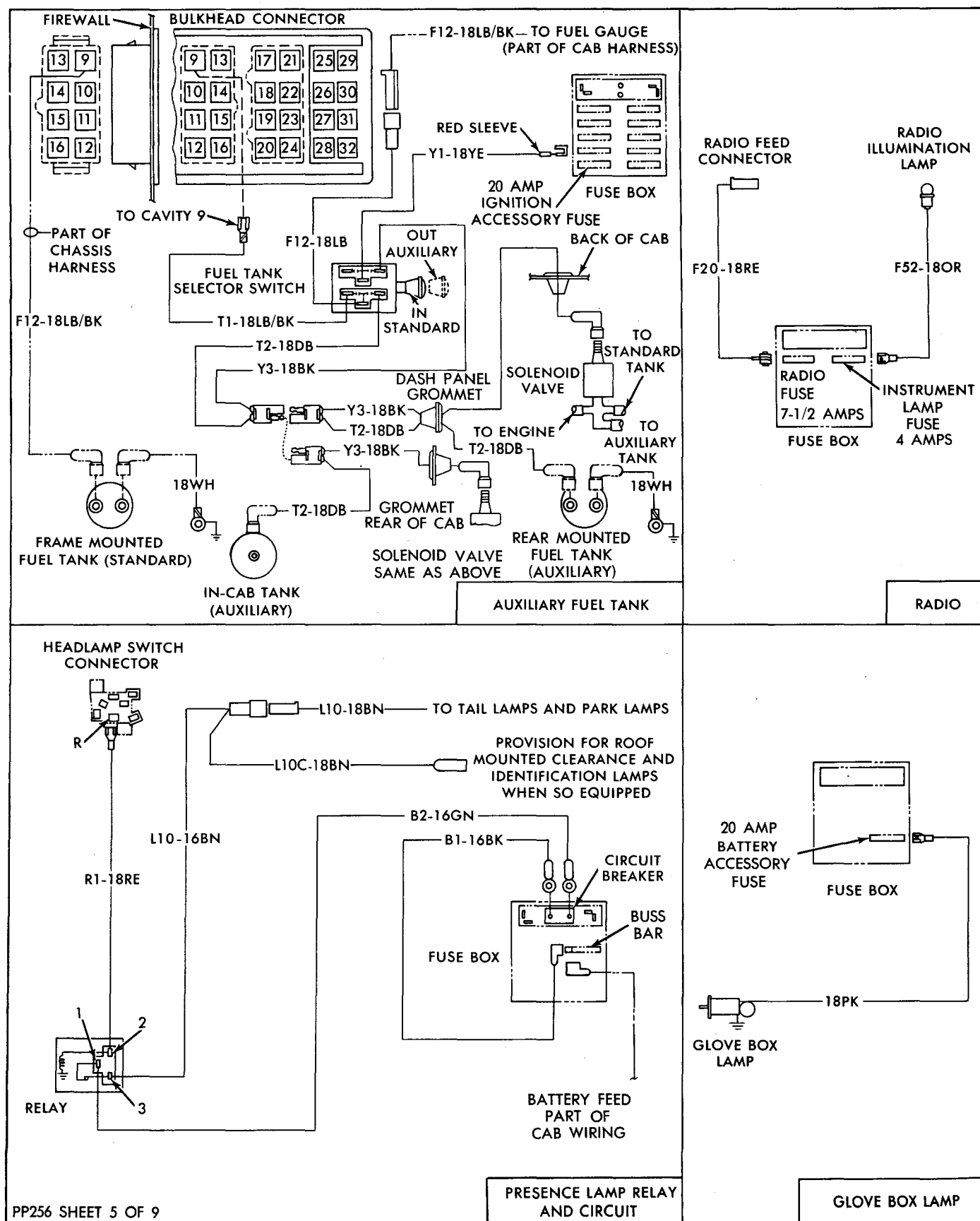
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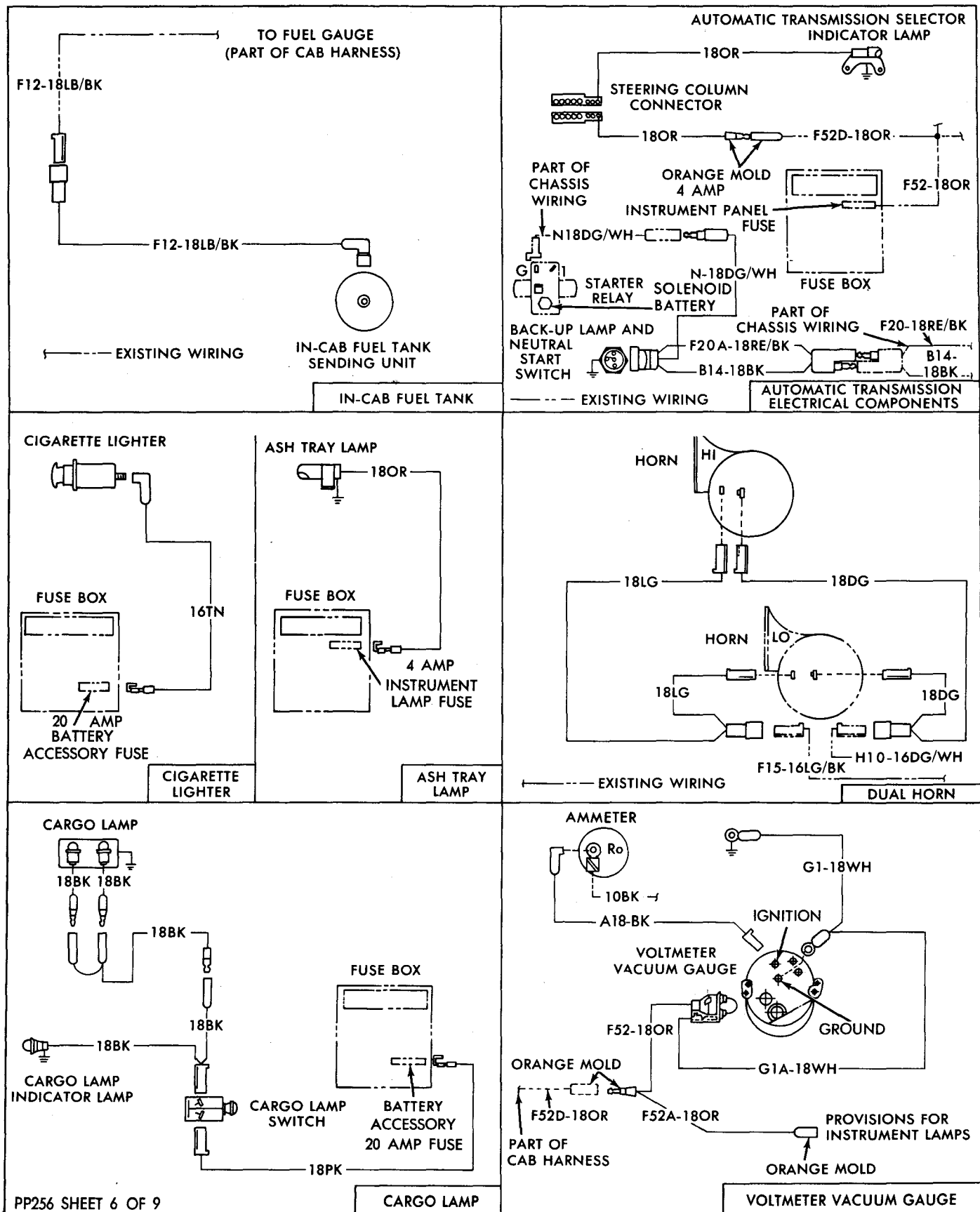




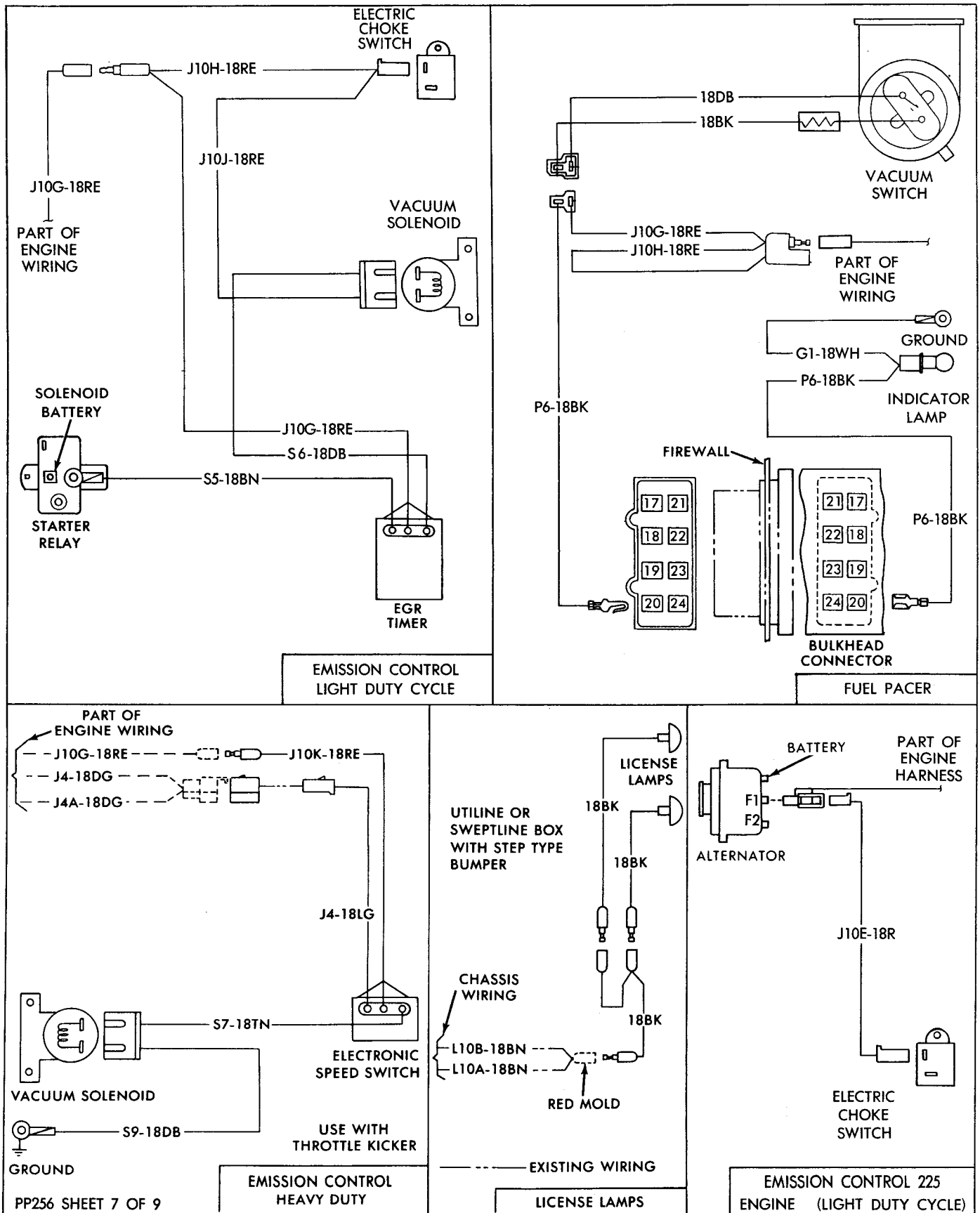




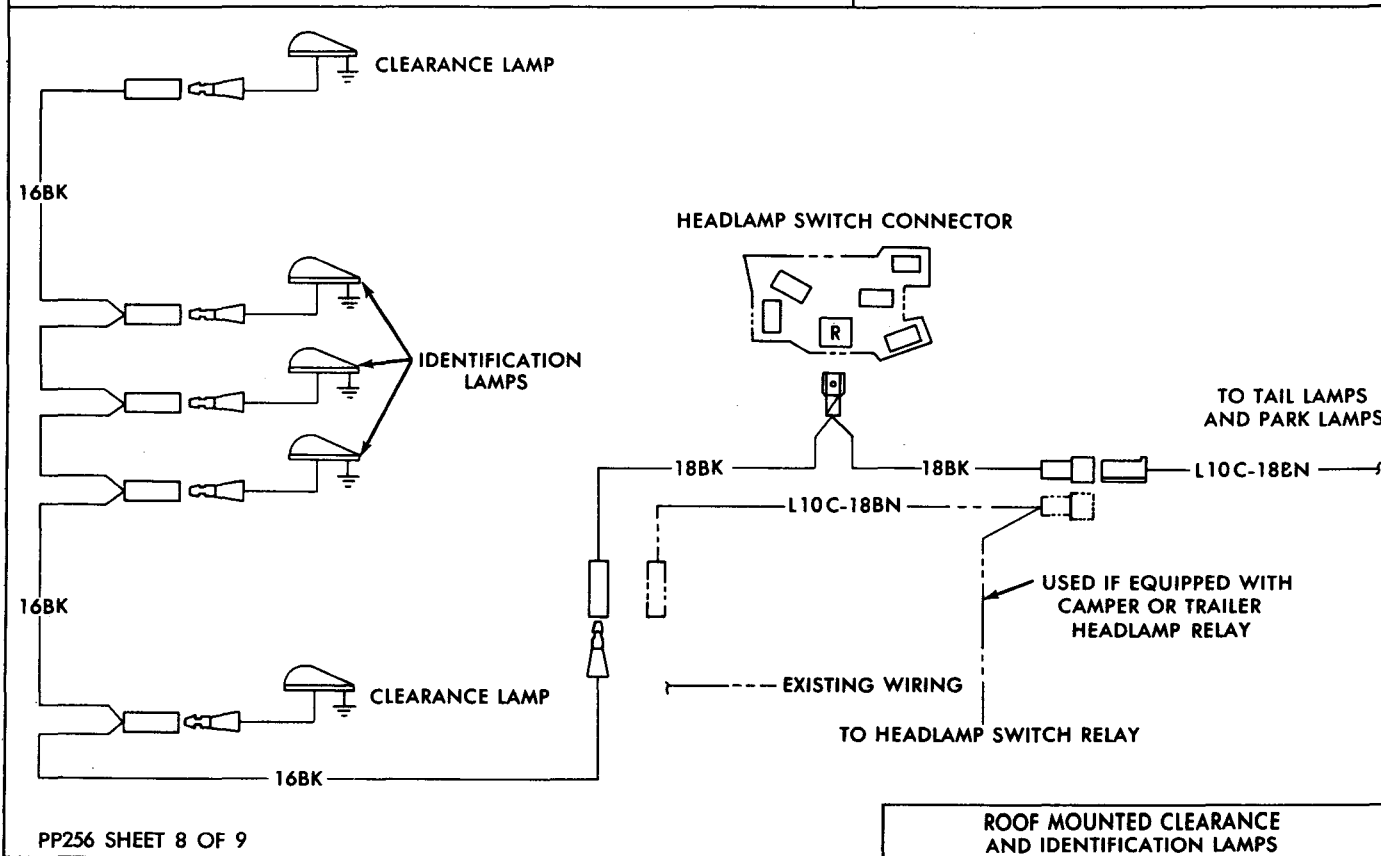
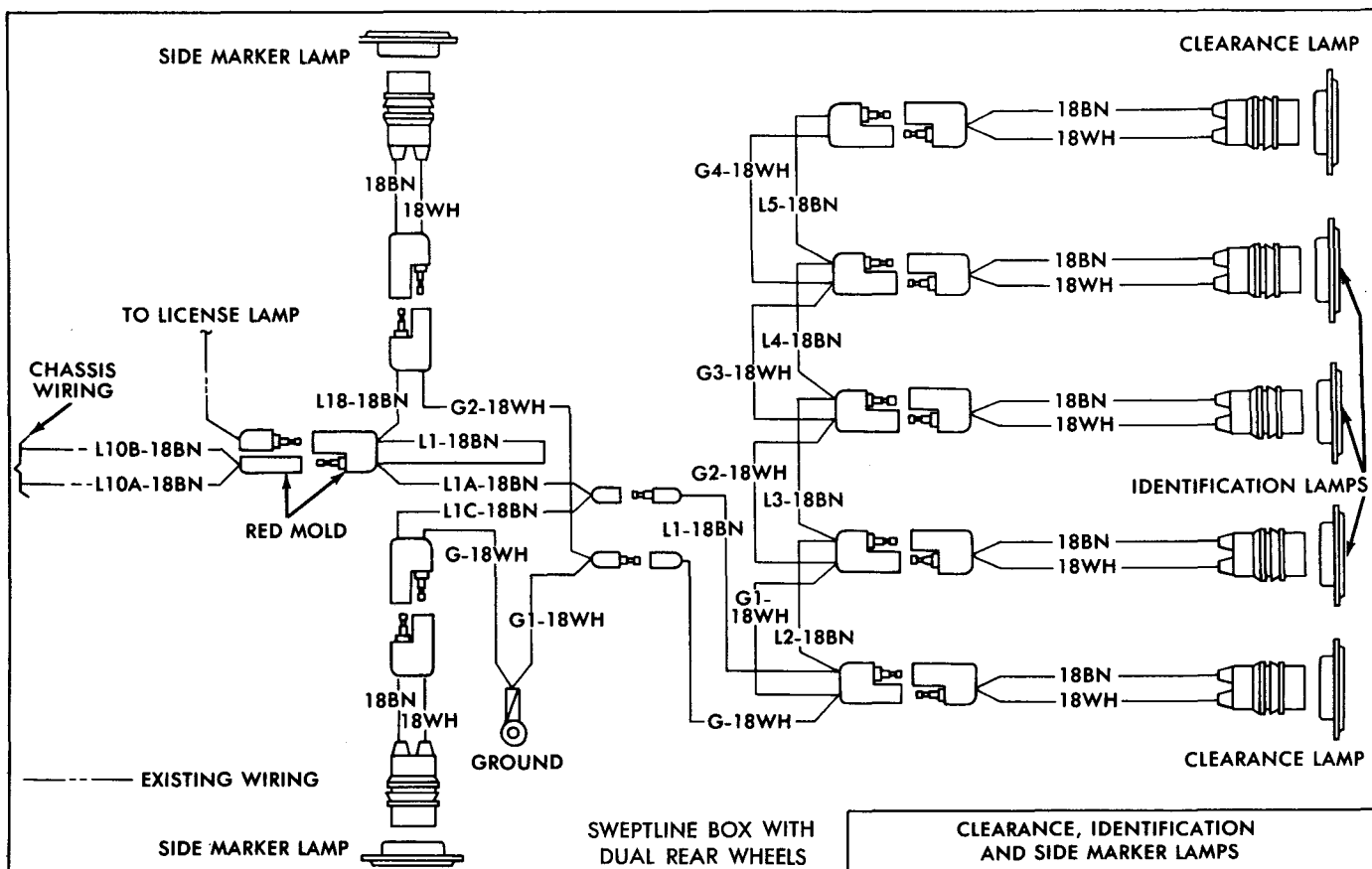


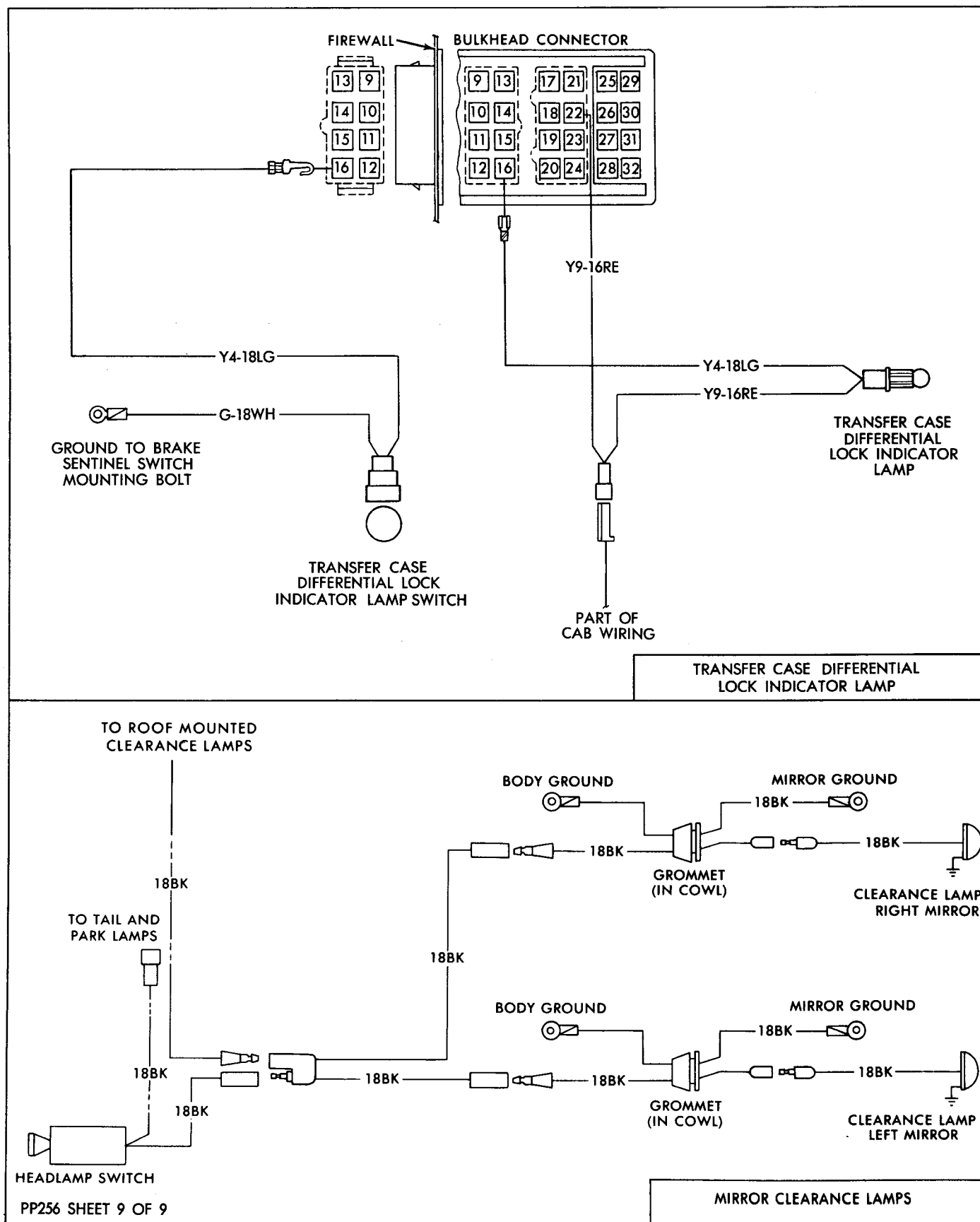


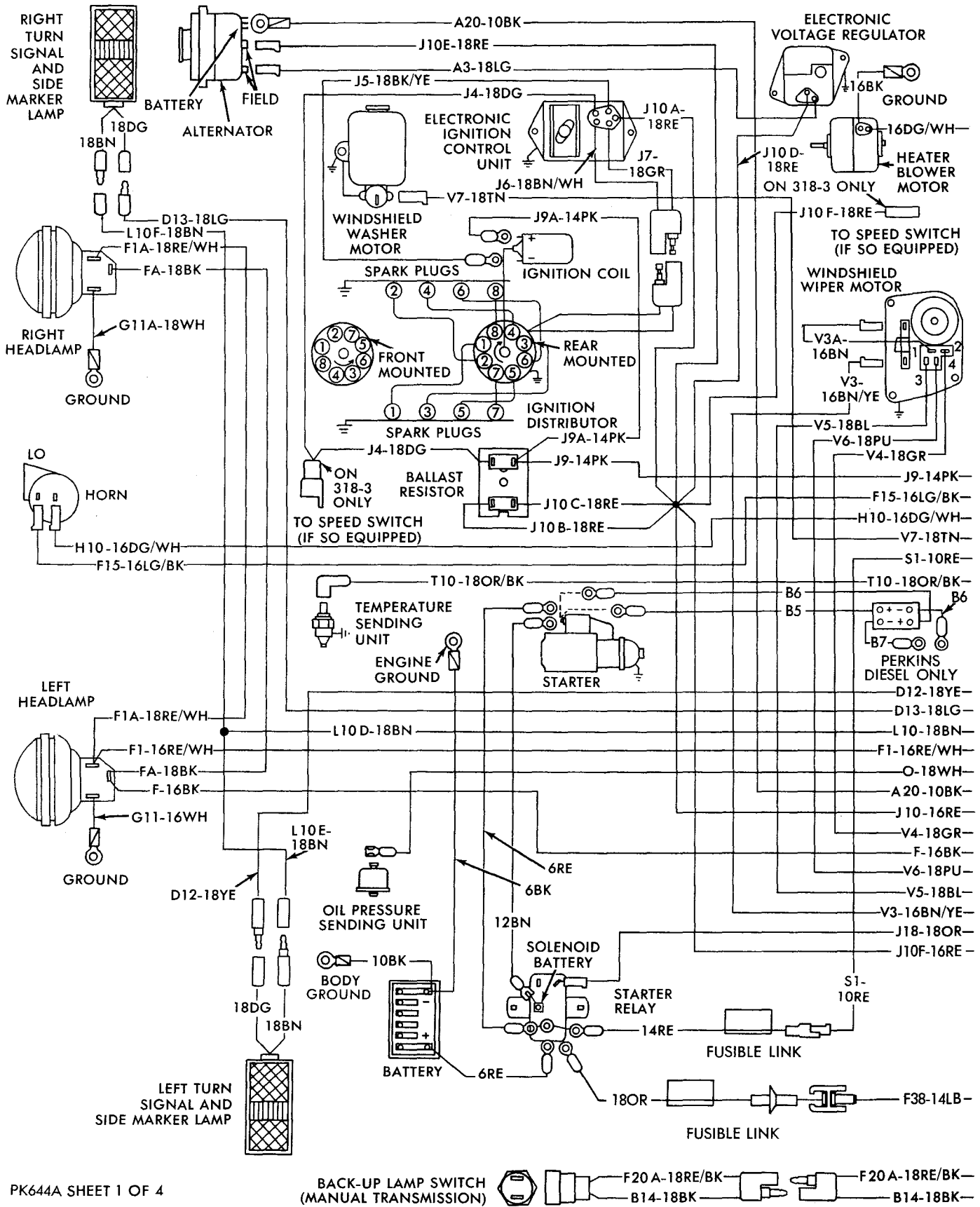
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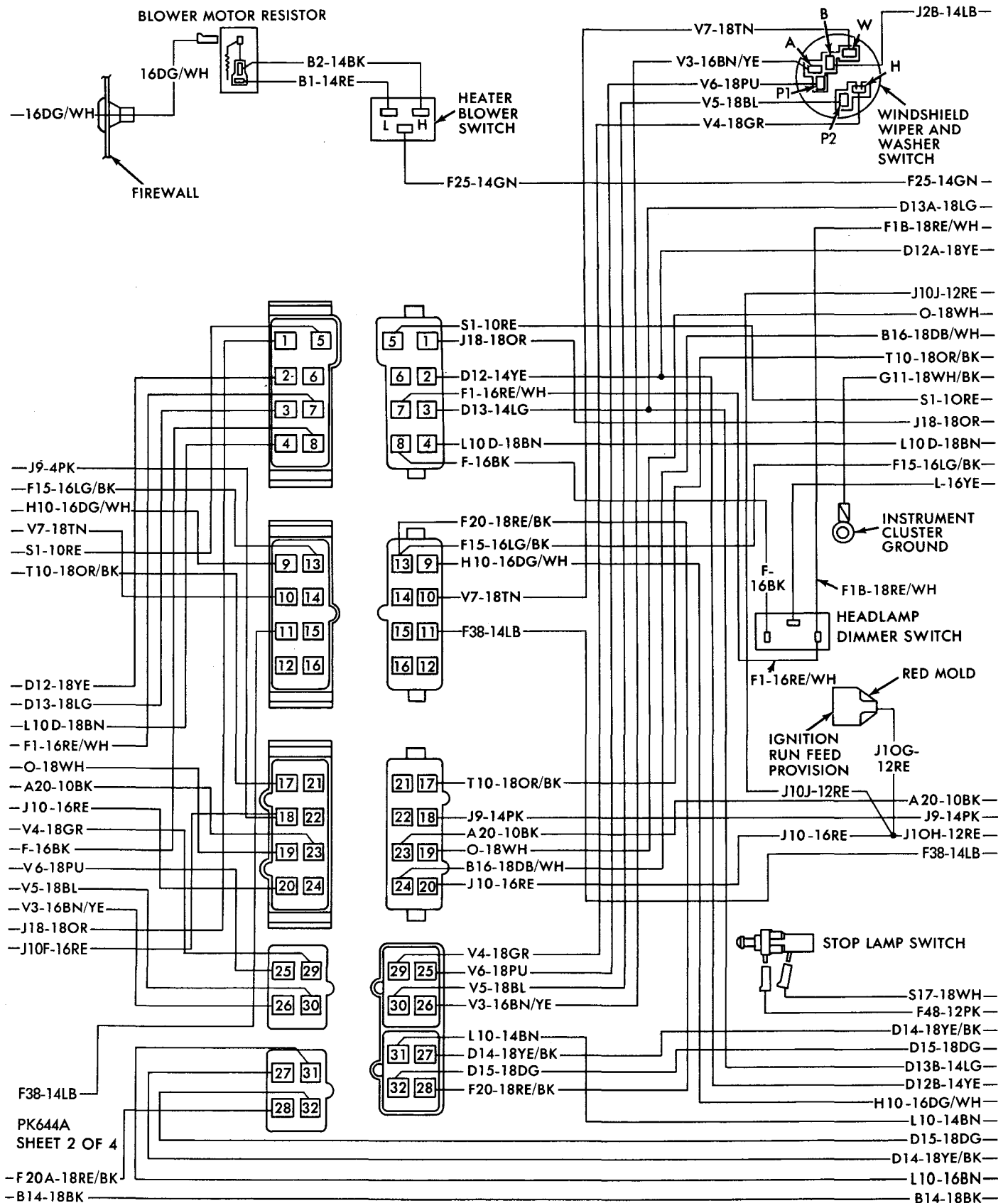


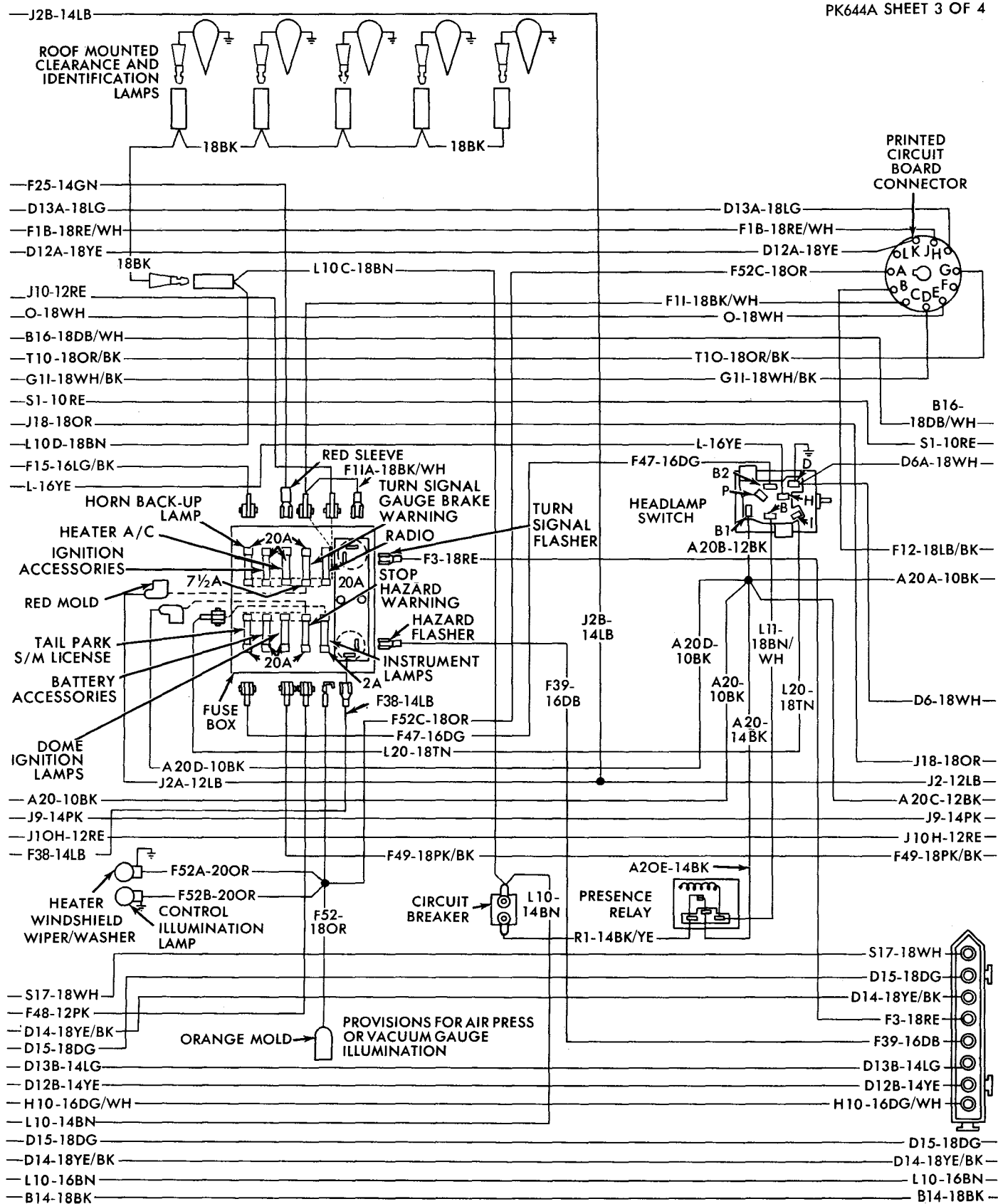
D and W 100-200-300 Auxiliary Wiring Diagrams

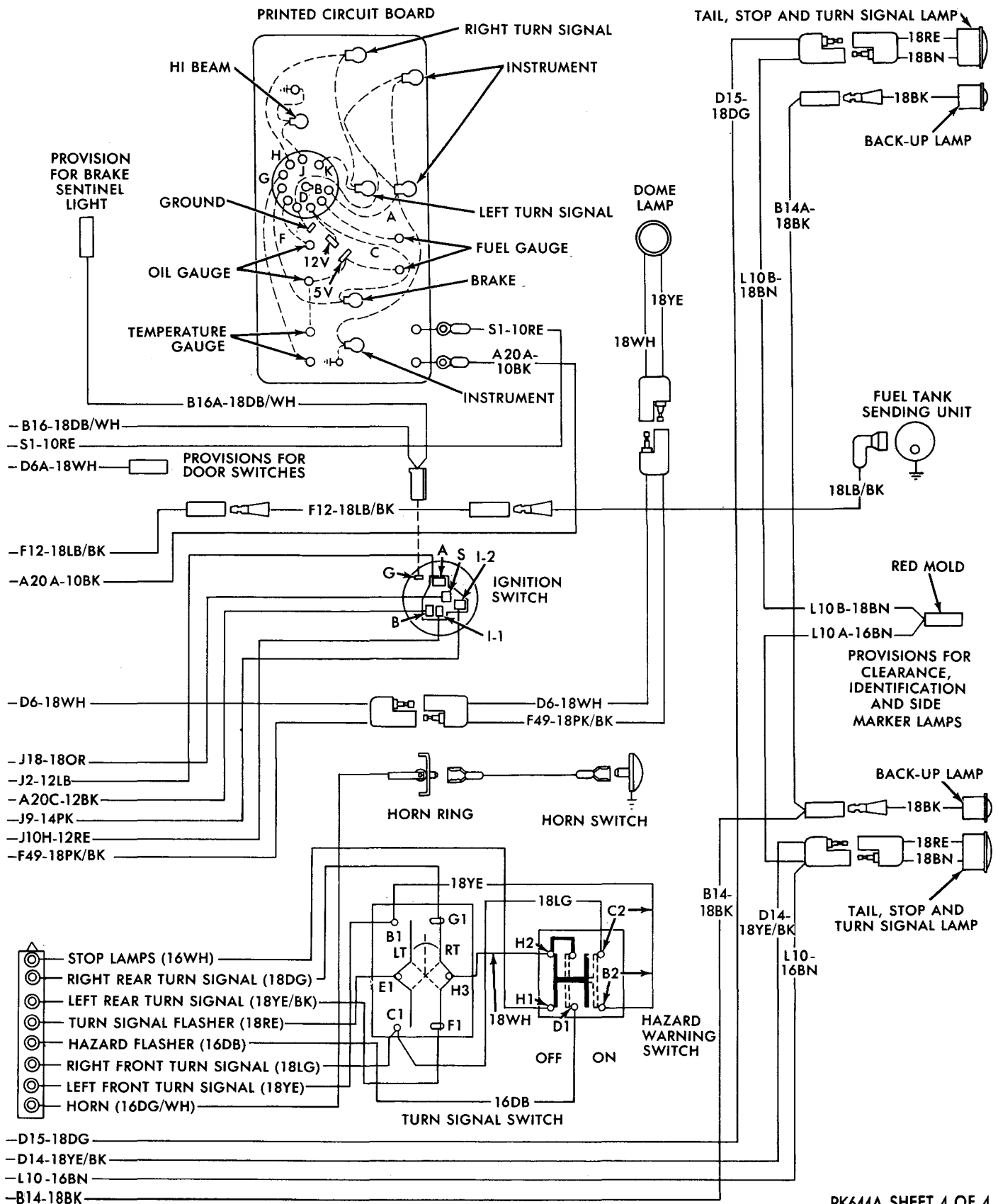




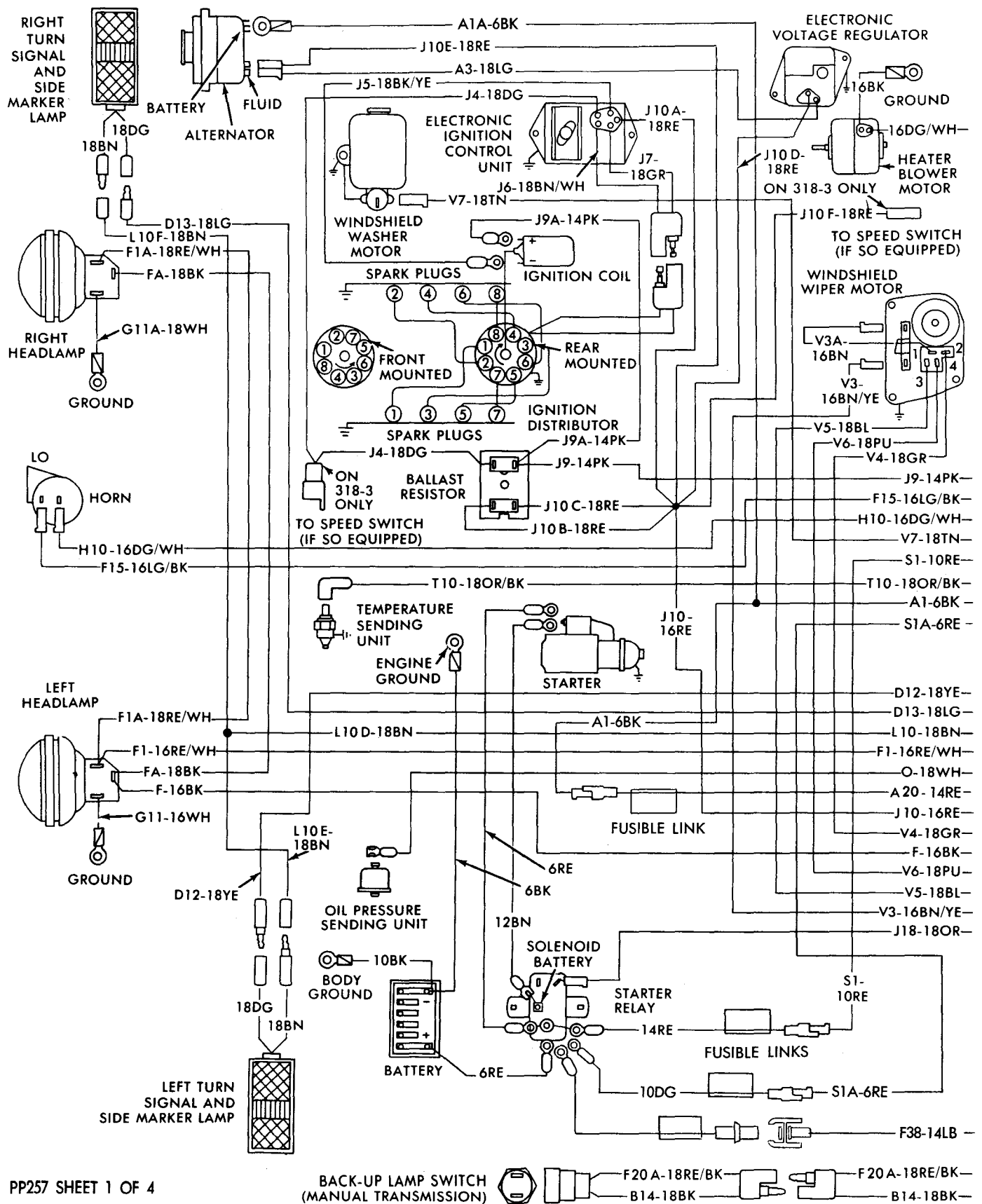


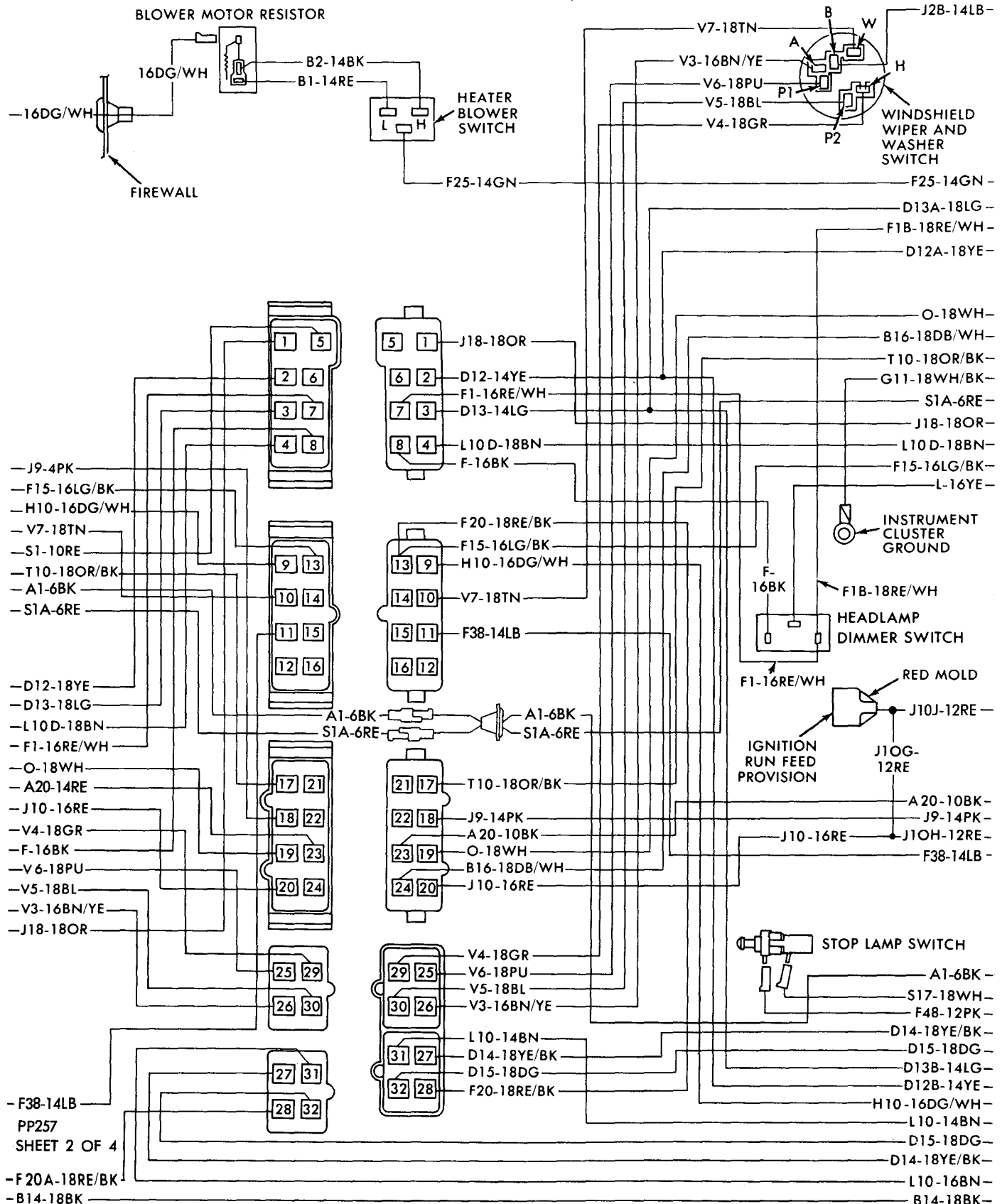


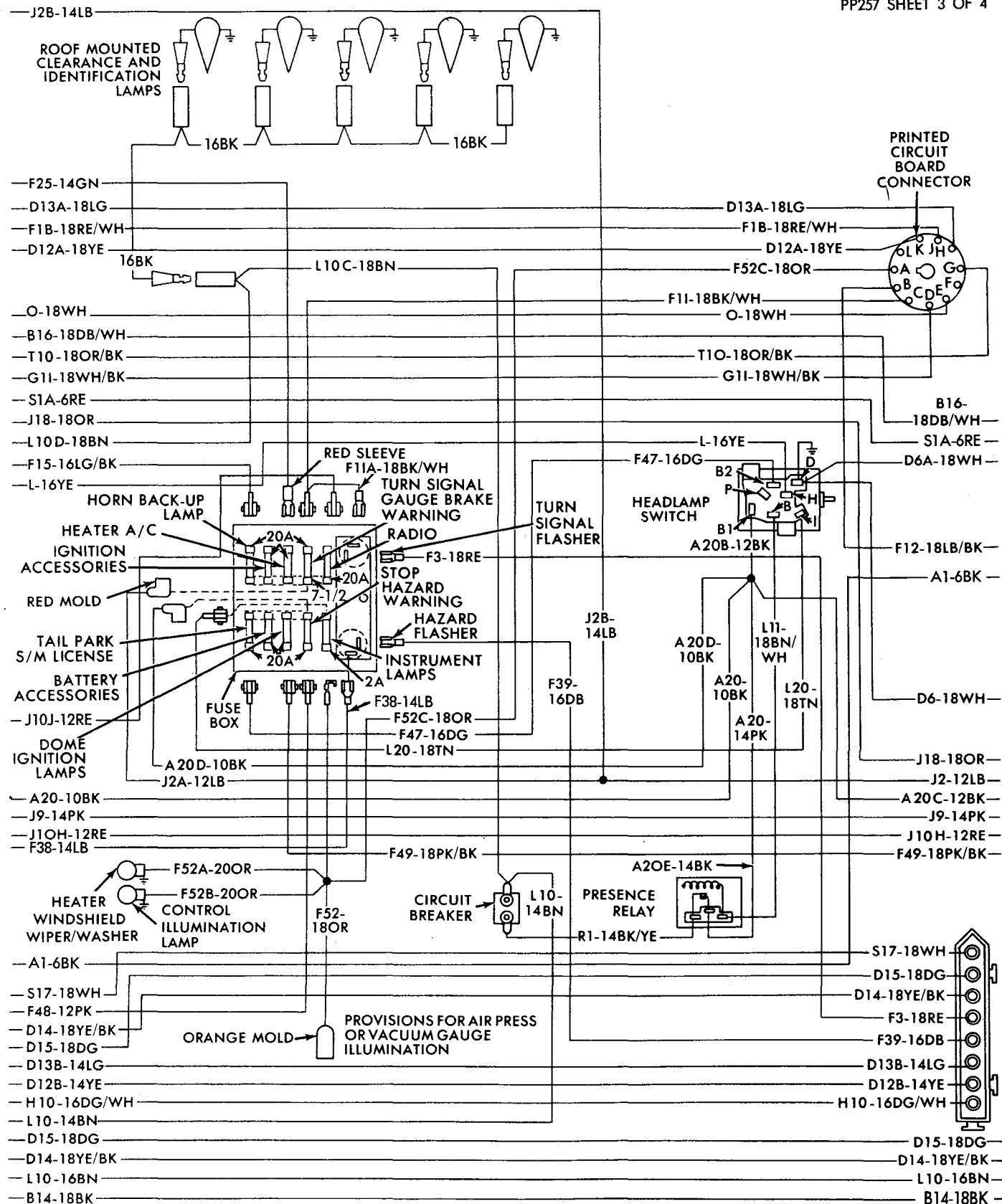


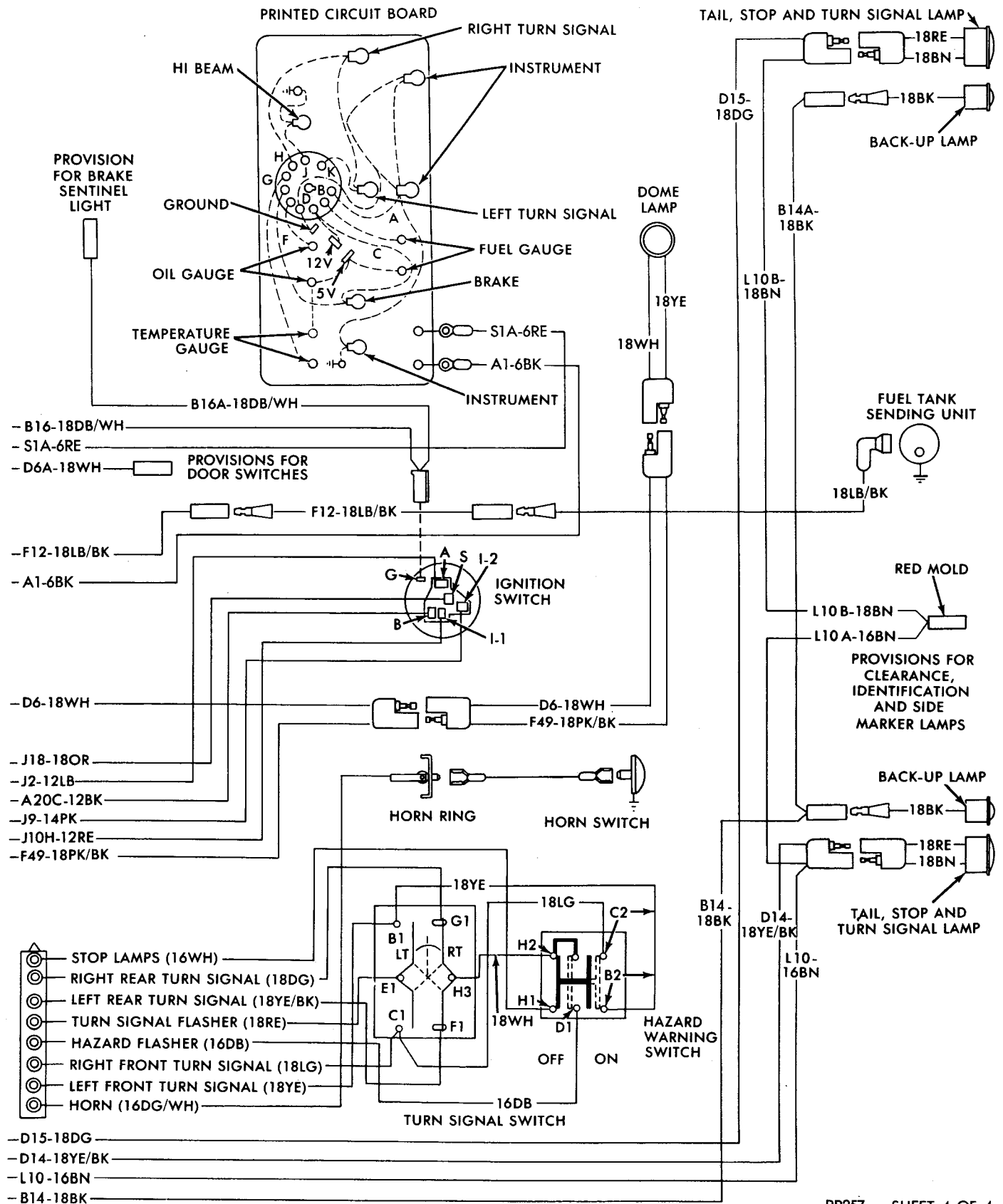


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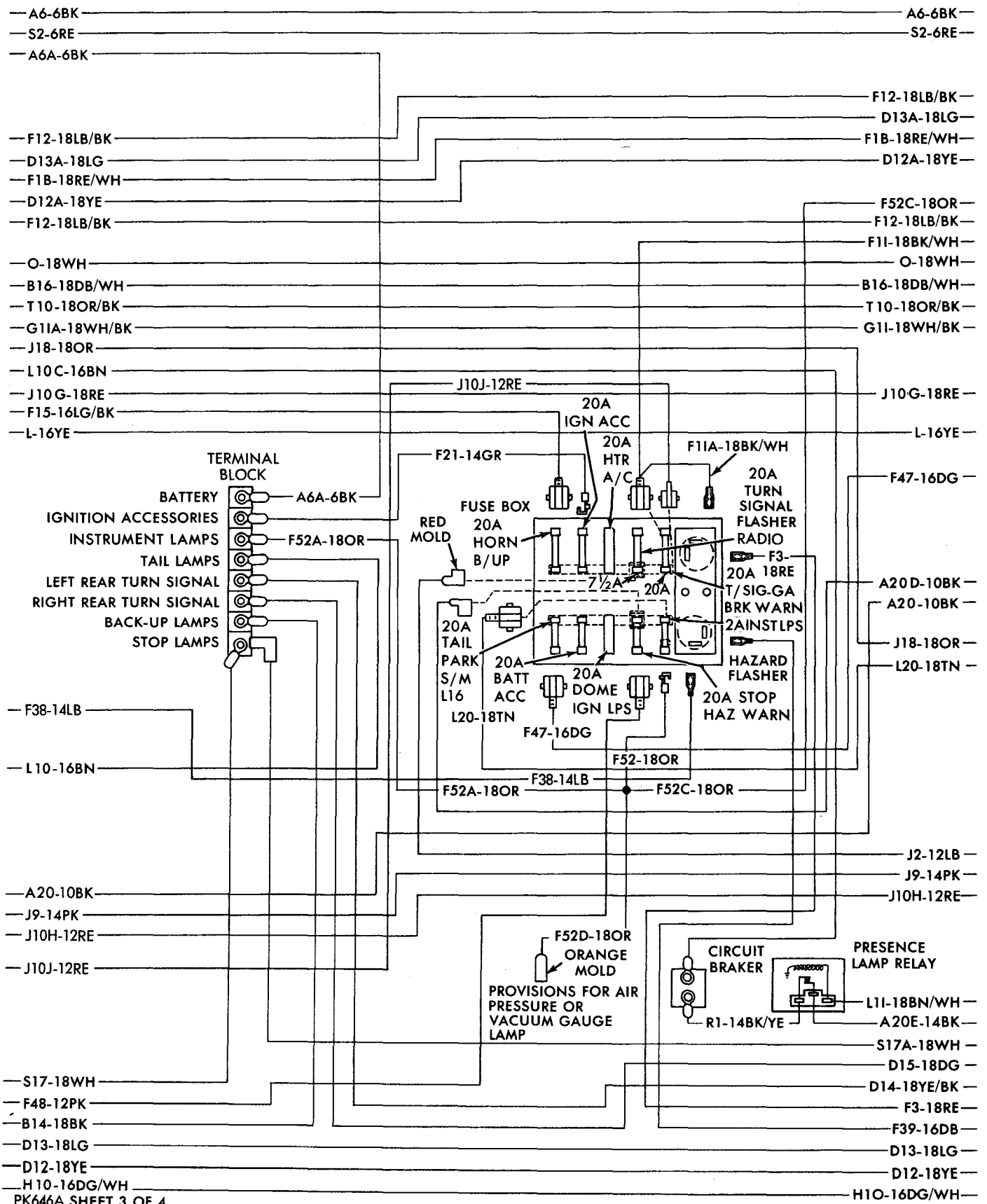


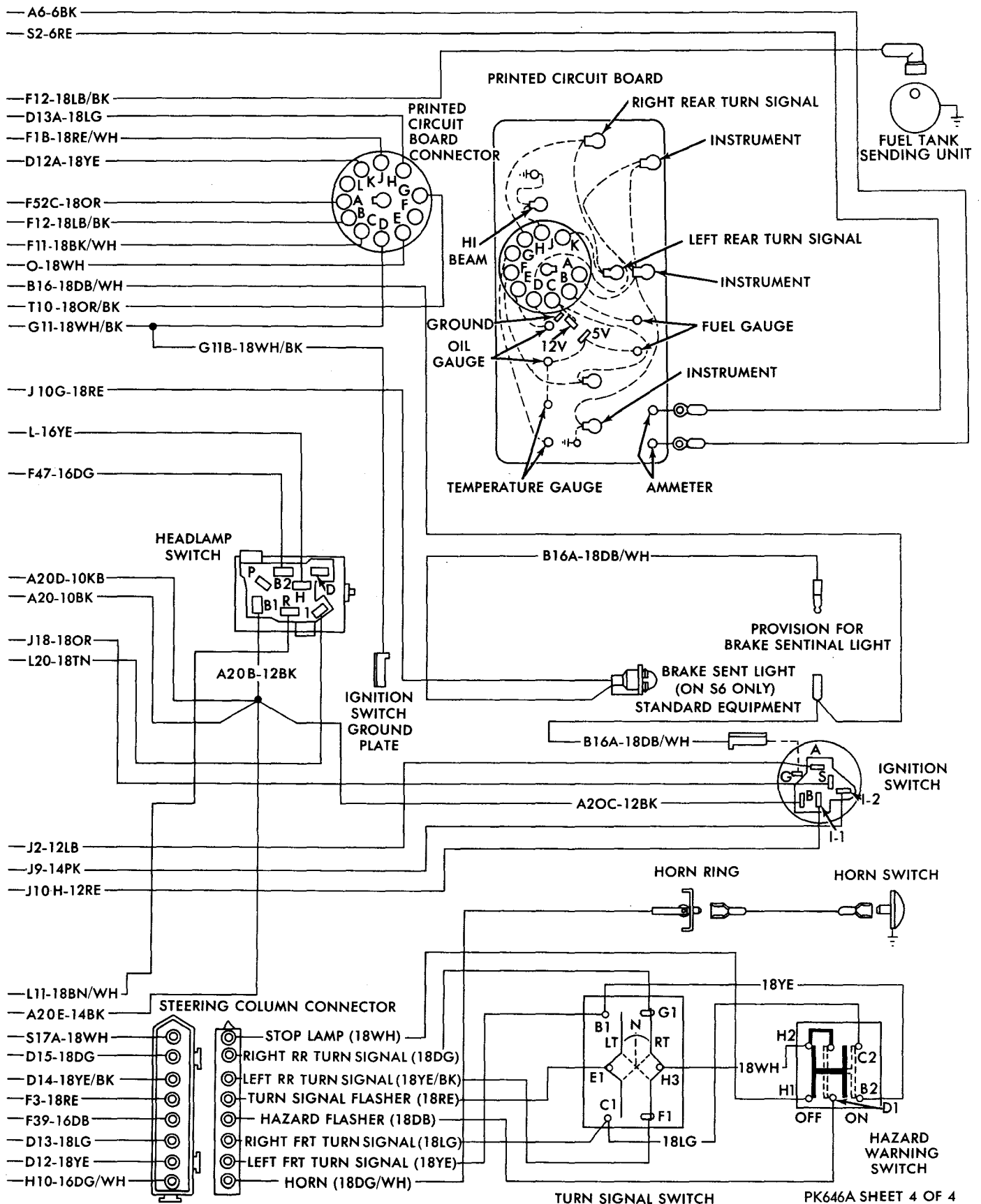




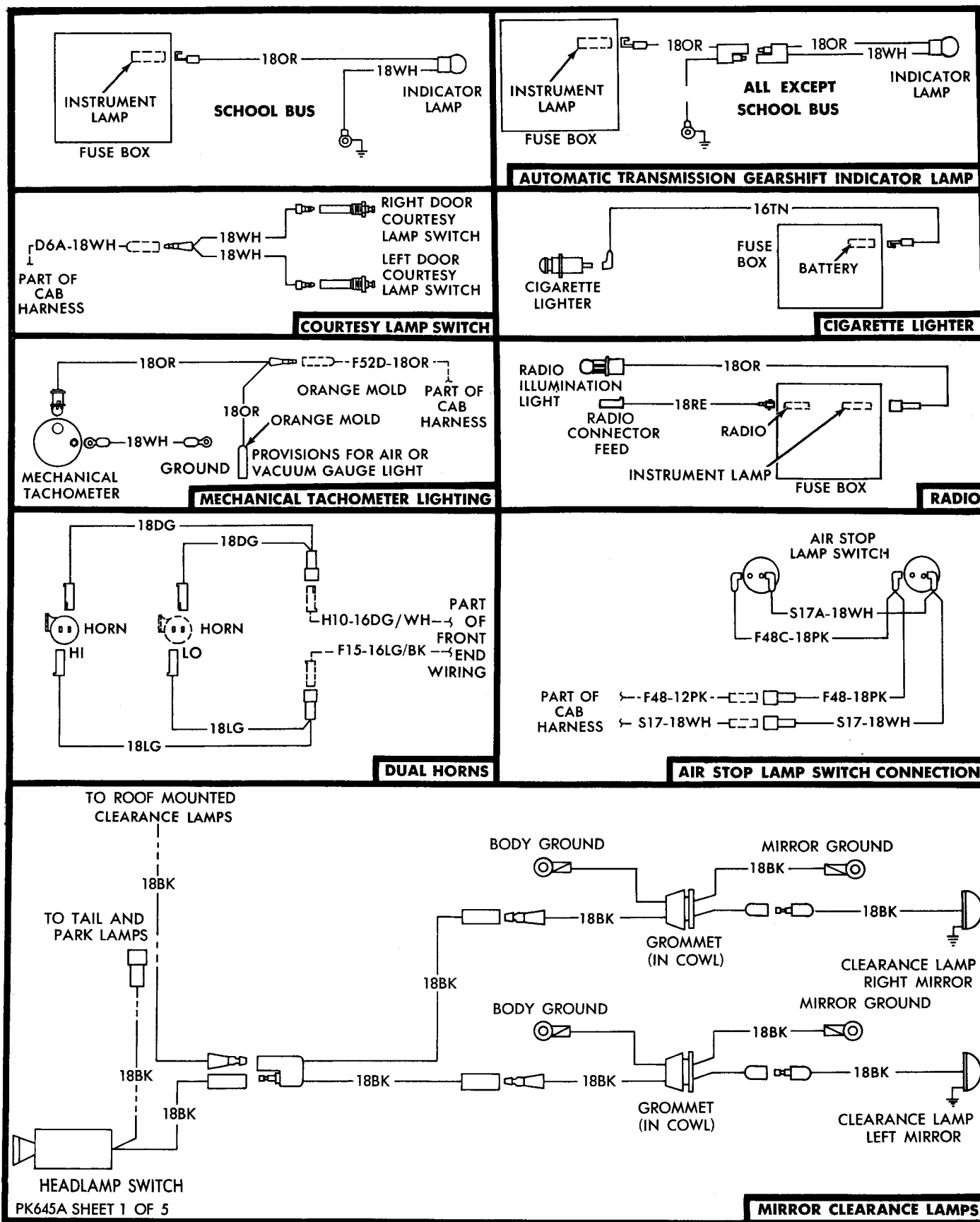


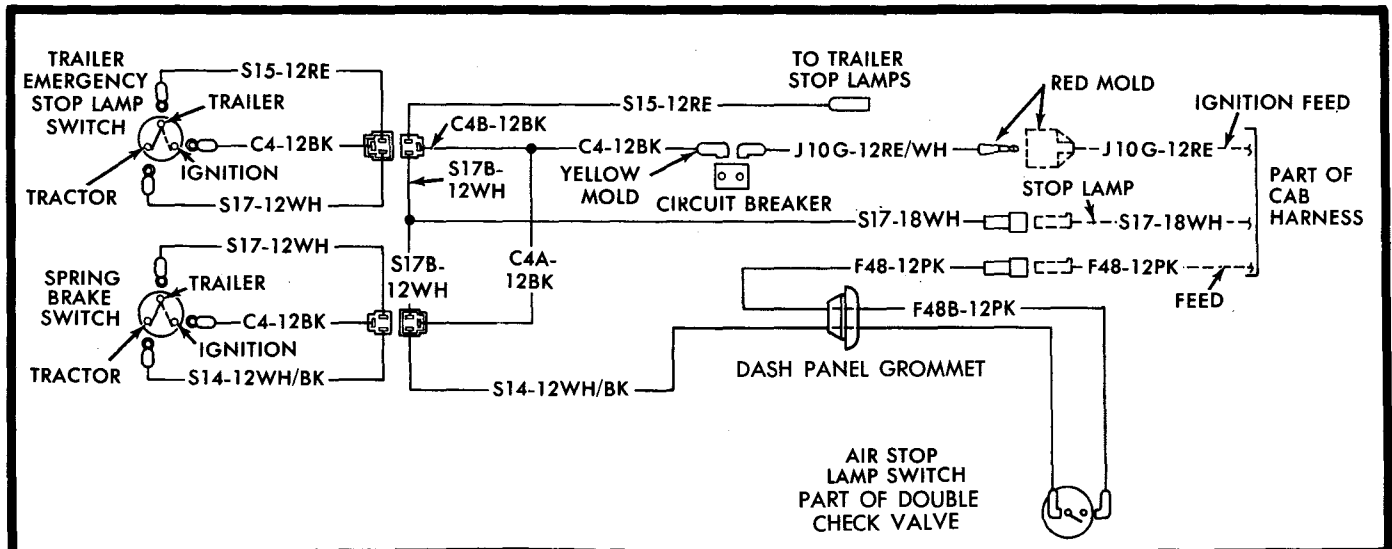
8-152 WIRING DIAGRAMS



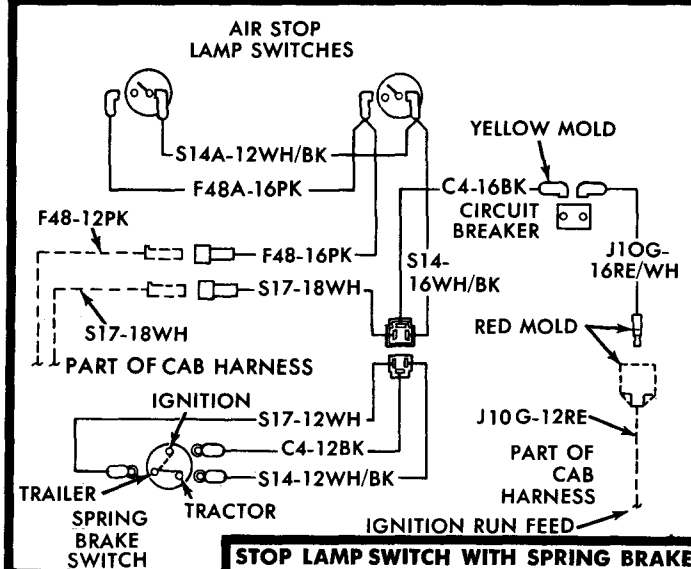


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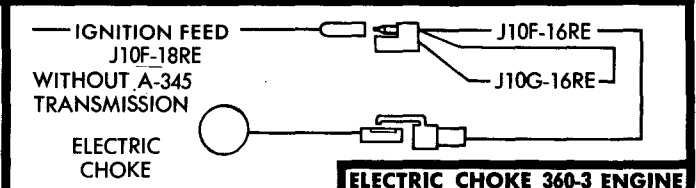




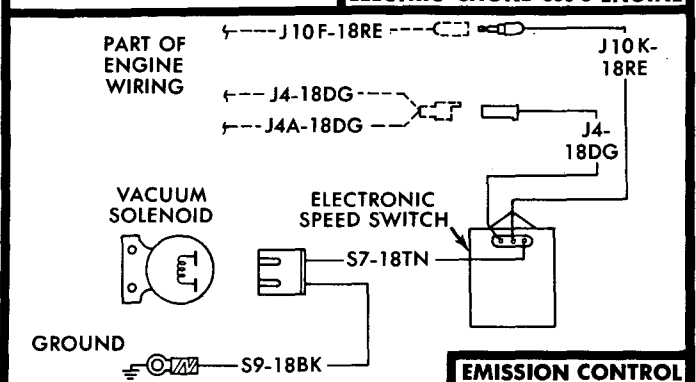
TRACTOR TRAILER WITH SPRING BRAKE SWITCH AND TRAILER EMERGENCY STOP LAMP SWITCH



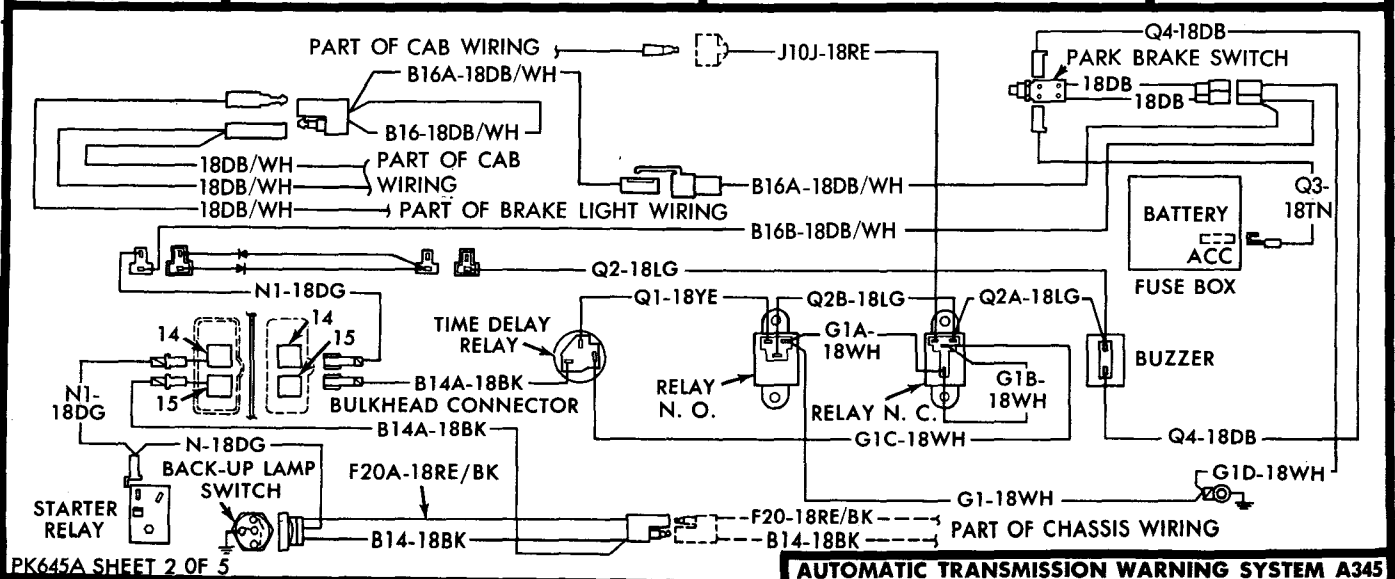
STOP LAMP SWITCH WITH SPRING BRAKE



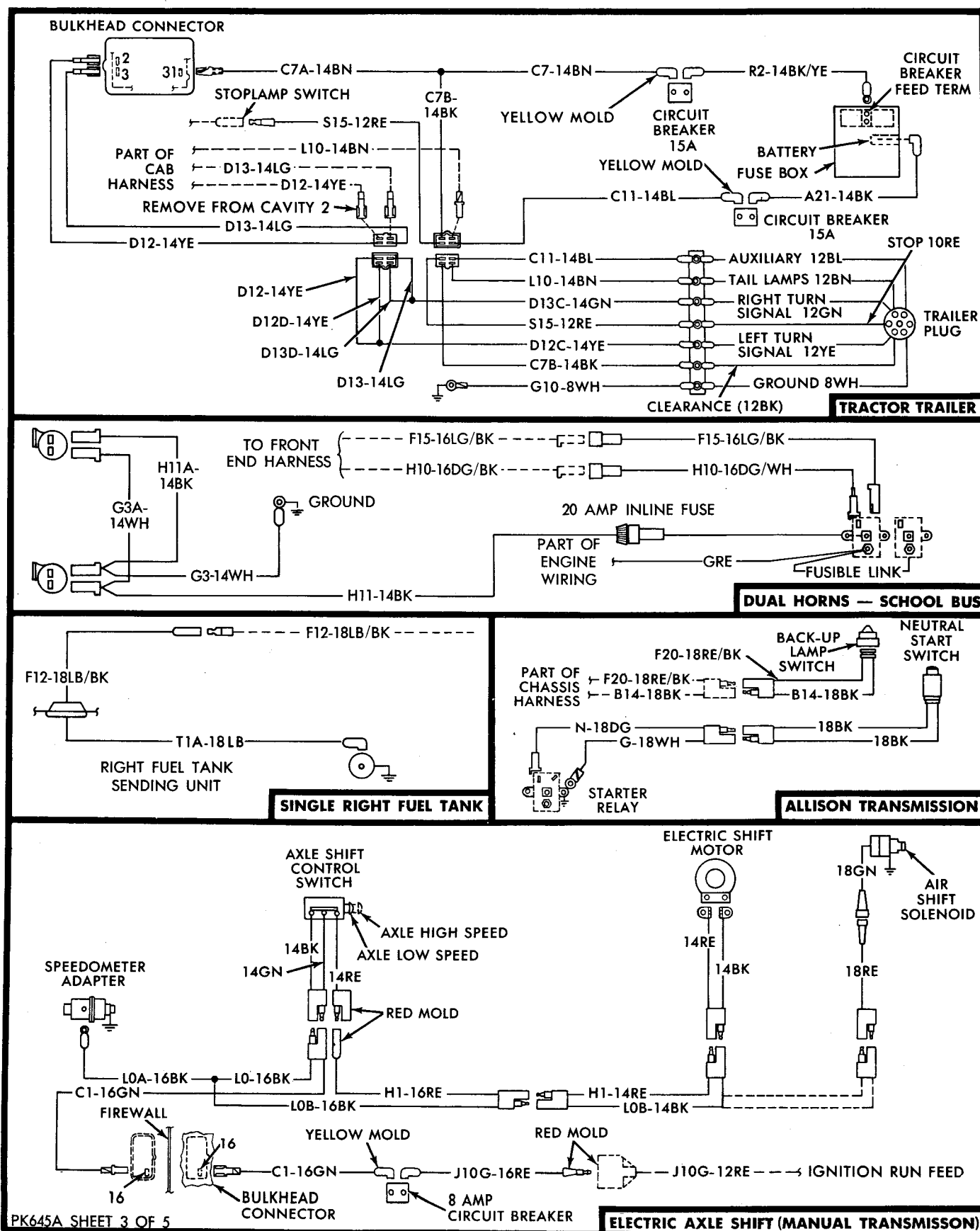
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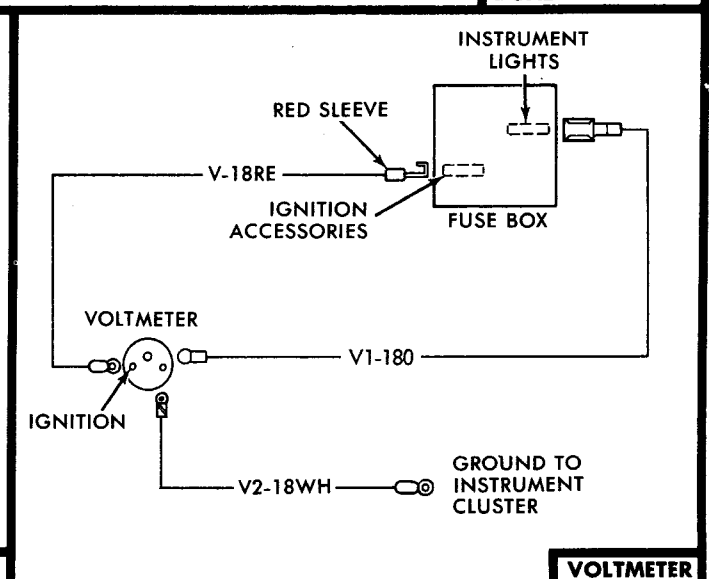
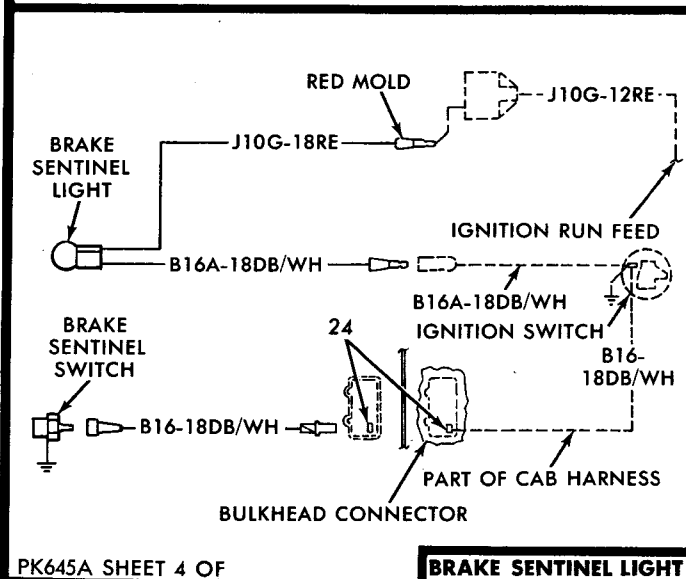
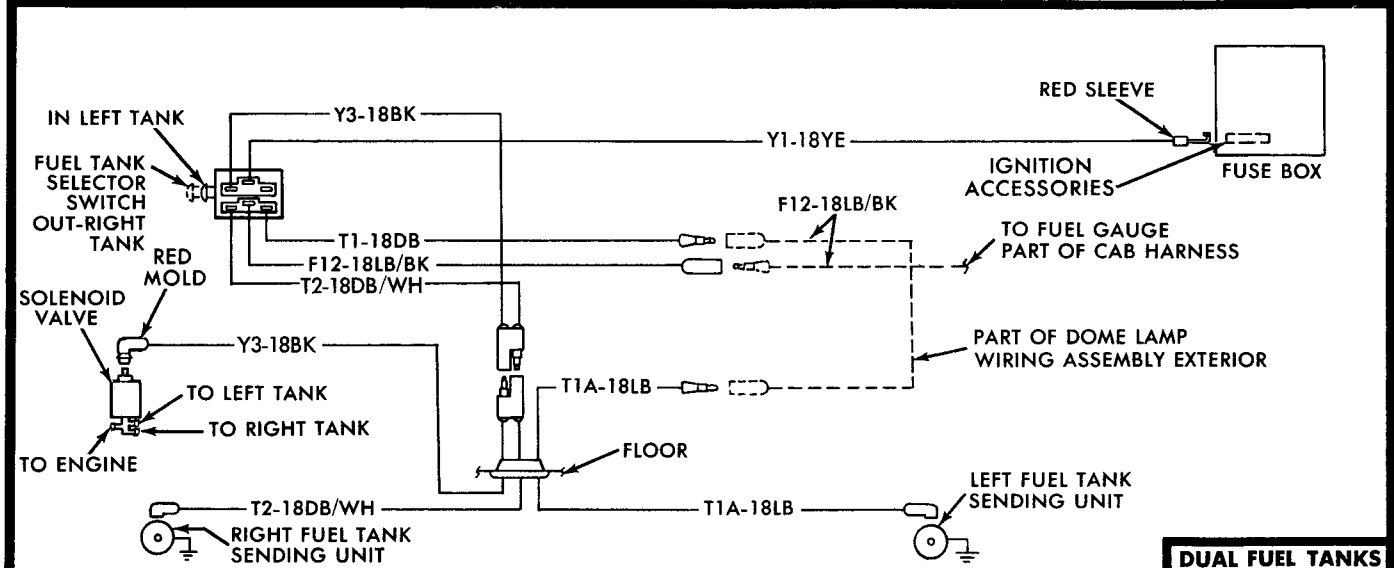
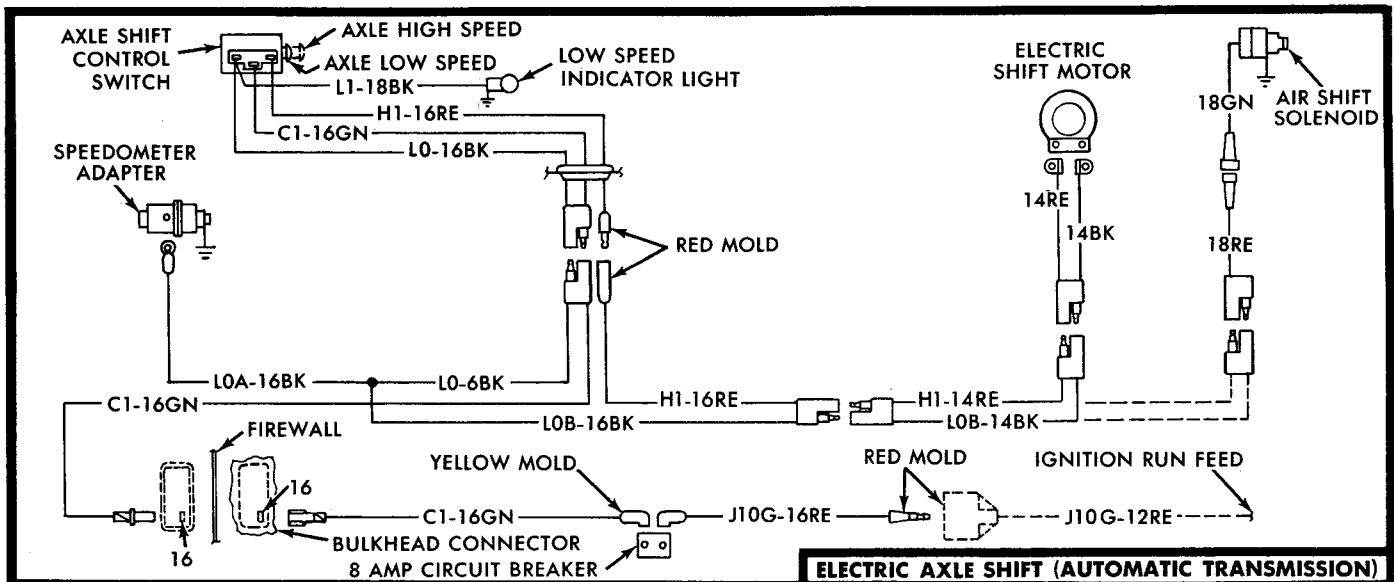


EMISSION CONTROL



AUTOMATIC TRANSMISSION WARNING SYSTEM A345



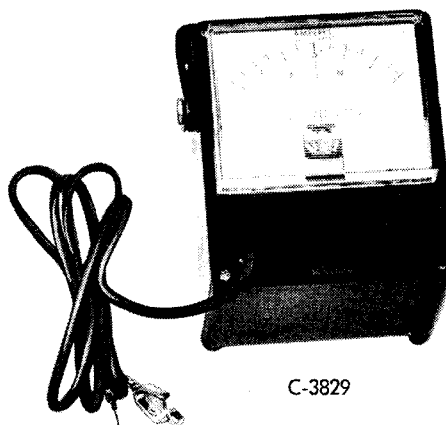




SPECIAL SERVICE TOOLS



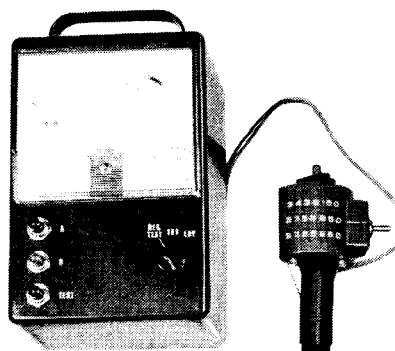
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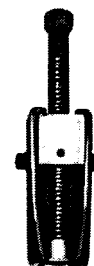


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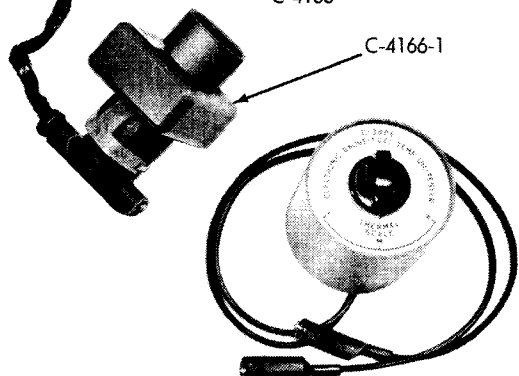


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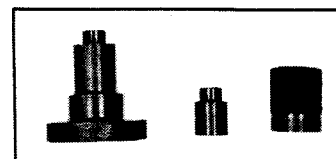
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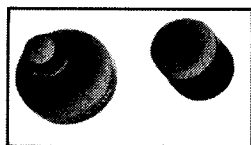
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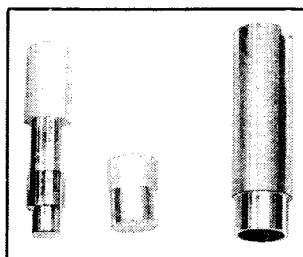
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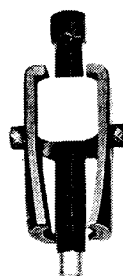
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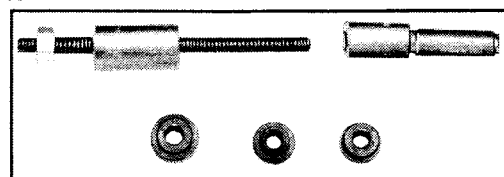
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ENGINE

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ENGINE DESIGNATION

C.I.D.	No. Cylinders	Compression Ratio	Carburetor Description	Model Application
225-L.D.	6	8.4 To 1	Single-Barrel	D100 W100
225-1-H.D.	6	8.4 To 1	Two-Barrel	D100 D200 D300 W100 W200 W300
318-L.D.	8	8.6 To 1	Two-Barrel	D100 W100
318-1-H.D.	8	8.5 To 1	Two-Barrel	D100 D200 D300 W100 W200 W300***
318-3-H.D.	8	7.8 To 1	Two-Barrel	D500 D600 S600
360-L.D.	8	8.4 To 1	Two-Barrel	D100 W100*
360-1-H.D.	8	8.4 To 1	Two-Barrel	D100 D200 D300 W100 W200 W300*
360-3-H.D.	8	7.9 To 1	Two-Barrel	D500 D600 D700 W600 S600 S700
361-4-H.D.	8	7.5 To 1	Two-Barrel	D600 D700 D800 S600 S700
400-L.D.	8	8.2 To 1	Two-Barrel	D100****
400-1-H.D.	8	8.2 To 1	Two-Barrel	D100 D200 D300 W100 W200 W300
413-3-H.D.	8	7.5 To 1	Four-Barrel	D700 D800 S700*
440-1-H.D.	8	8.2 To 1	Four-Barrel	D100 D200 D300 W100 W200 W300**

*N/A California

**Above 6000#GVW

***N/A Above 7000#GVW California

****Canada Only

GENERAL INFORMATION

Six and 8 Cylinder Engine

The six-cylinder and V-8 engines now used in all 100 through 800 models of Dodge Trucks are equipped with the Electronic Ignition System which has no breaker points or condenser. The ignition timing is checked and set with an ordinary timing light in the normal manner, per the Emission Control Information Label located in the engine compartment.

Note: A dwell meter cannot be used to test or adjust the Electronic Ignition System; a tachometer, however, can be used in the normal manner to measure engine RPM connected to the ignition coil negative (-) terminal and ground.

Refer to the Ignition Section of the Electrical Group for complete servicing and trouble-shooting procedures.

Six Cylinder Engine

The 6-cylinder engine is inclined toward the right at the angle of 30 degrees from the vertical in the engine compartment. This design permits a lower hood line and allows space in the engine compartment for the long intake manifold branches. The engine has in-line overhead valves, wedge-shaped combustion chambers on 8.4:1 nominal compression ratio for the

225 cubic inch engine. Spark plugs with tapered seats (Fig. 1).

2 BARREL 225 CUBIC INCH ENGINE

A 2-barrel 225 cubic inch engine has been added to the 1977 engine lineup. The 1977 model will incorporate many other innovative changes, other than the 2-barrel carburetor and 2-barrel intake manifold.

The emission control system for this engine, al-

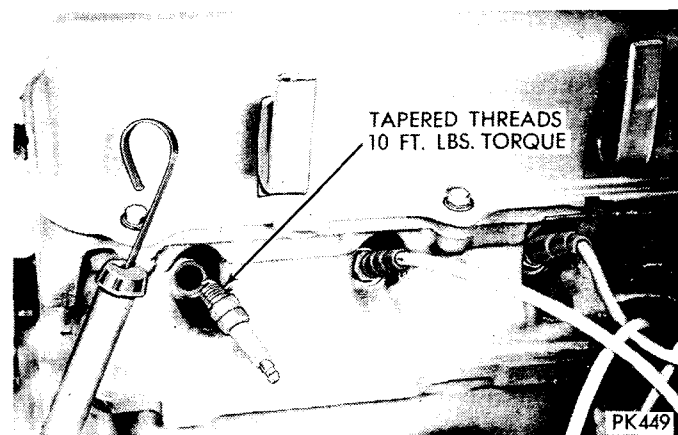


Fig. 1—Tapered Seat Spark Plug

though incorporating many 1977 emission changes, remains the same as the 225 1-barrel engine.

The exhaust manifold and pipe are made larger to permit more airflow through the 2-barrel engine than the 1-barrel engine. The 225-2 pipe measures 2.25 inches in diameter, where the 225-1 pipe measures 1.88 inches in diameter.

The throttle bores on the 2-barrel version will be located on the manifold so that the centerline of the throttle shaft will be perpendicular to the length of the cylinder head.

6 CYLINDER CAST IRON CRANKSHAFT

There are two type crankshafts used in the 225 cubic inch engine.

1—The forged steel type crankshaft as used in the previous models.

2—A new cast iron crankshaft that will replace the forged steel crankshaft.

Since the crankshaft material is changed from steel to cast iron, some other changes resulted.

The connecting rod and main bearing journals have been narrowed to increase the strength of the journal diameters. Since the journal width was reduced, the crankshaft counter-weights were increased in width; also adding strength to the crankshaft. Parts are not interchangeable with the Forged Crankshaft 225 cubic inch engine. The letter "E" stamped on the identification pad will indicate a cast crankshaft.

The connecting rod lubrication hole on the large end on the rod has been moved, see (Fig. 33) of the 225 engine group. Both rod bearing shells will have holes in the center of the shells. Either bearing half can be used on the connecting rod, and the lubrication hole is operational. The bearing half used on the rod cap will have the hole in it, but the hole is nonfunctional.

The main bearing material, used with the "cast crank", is upgraded from steel-backed babbitt to a steel-backed aluminum alloy. No significant change in bearing life is expected due to the introduction of the cast iron crankshaft.

When replacing a 225 short engine assembly with the "cast crank", the manual transmission applications will have to use a special vibration damper that has 2 grooves in it. The automatic versions use 1 groove damper that can be changed from the old crankshaft to the new one.

For engine specifications, consult the appropriate section of the Service Manual.

ENGINE PERFORMANCE 6 AND 8 CYLINDER ENGINES

The following tune-up and inspection operations are provided as a guide to help maintain peak engine performance. This tune-up procedure should be performed frequently.

Minor Engine Tune-up

(1) Check battery specific gravity. Add water if necessary.

(2) Clean and reset spark plug gaps to specifications. (New spark plug gaps should be checked before installation.)

(3) Test compression of cylinders. (If compression is less than 100 pounds or variance is greater than 40 psi between cylinders, further engine tune-up is of little value.) A low reading between adjacent cylinders may indicate a blown head gasket. Low compression readings usually indicate that valves, pistons or piston rings need servicing.

Before an engine is disassembled for low compression, make a five mile run at normal highway speeds and recheck compression. Quite often the problem is dirt on a valve.

(4) Carefully check distributor cap for corrosion and cracks. Inspect all wiring for poor insulation, loose connections and breakage.

(5) Check timing with power timing light. With vacuum advance line disconnected, and engine up to normal operating temperatures, adjust to specifications.

(6) Clean carburetor air cleaner and oil filler pipe air cleaner.

(7) Refill carburetor air cleaner with oil of proper viscosity to recommended level, if so equipped.

(8) Check closed crankcase vent operation, replace valve if necessary.

(9) Clean fuel filter and bowl, if so equipped. Install new filter bowl gasket. In-line fuel filters should be replaced per owners manual.

(10) Set carburetor idle mixture to specifications using a combustion analyzer.

(11) Adjust throttle top screw to specification. (Refer to Fuel Section of this manual).

(12) Set accelerator pump linkage according to operating conditions as follows:

Hot weather—short stroke hole.

Normal summer weather—center hole.

Cold weather—long stroke hole.

(13) Check manifold heat control valve for free operation. Apply Manifold Heat Control Valve Solvent, Part number 3419129 (or equivalent) to bushing and shaft if necessary.

Major Engine Tune-up

The following procedures are recommended to accomplish a Major Engine Tune-up on engines:

(1) Inspect battery for damaged or cracked case. Test specific gravity.

(2) Test starter cable resistance and starter amperage draw (these tests are made first to assure good starting conditions and to obtain proper results on compression tests).

(3) If battery water was low and if there were signs

of excessive gassing, the voltage regulator should be tested for high setting at this time.

(4) Remove all spark plugs and test compression of cylinders. When making this test have throttle open full. (If compression is less than 100 lbs. or variance is greater than specifications between readings, further engine tune-up is of little value.) A low reading between adjacent cylinders may indicate a leaking head gasket. Low compression readings usually indicate that valves, pistons or piston rings need servicing. **Before an engine is disassembled for low compression, make a five mile run at normal highway speeds and recheck compression. Quite often the problem is dirt on a valve.**

(5) Tighten manifold and carburetor bolts as recommended in Tightening References. (A loose manifold or carburetor can result in a lean mixture causing short valve life and rough idling.)

(6) Check manifold heat control valve for free operation. Apply manifold heat control valve solvent, Part number 3419129 or equivalent to bushing and shaft.

(7) Clean spark plugs and check to determine if proper plugs are being used. (Vehicle may be working under abnormal conditions necessitating the use of a hotter or colder plug.) Set gaps to specifications (Refer to Electrical Group).

For the Electronic Ignition System refer to the Ignition section of the Electrical Group for complete servicing and trouble-shooting procedures.

Fuel

(1) If the fuel volume is suspected of being inadequate, test fuel pump output volume. Refer to Fuel System Group.

(2) Remove carburetor and air cleaner. Disassemble carburetor and clean. (Refer to Carburetor

Group of this manual.) On reassembly always check float level with specifications.

(3) Clean air cleaner and replace proper viscosity oil to recommended level. If so equipped.

(4) Adjust idle speed to specifications.

CRANKCASE VENTILATION SYSTEM

(1) A fully closed crankcase ventilation system is installed on all engines. The system operates on air drawn in from the air cleaner and through the crankcase inlet air cleaner by means of a hose (Fig. 2).

Air is circulated through the engine and drawn out of the cylinder head cover, through the PCV valve, and into the combustion chamber by engine vacuum. There it is burned and dispelled with the exhaust gases.

The function of the PCV valve in this system is to regulate the amount of flow through the engine. Too much air flow will lean out the fuel air mixture, too little will allow pressurization of the crankcase. It is important therefore to keep the valve clean and operating.

The valve and hose are subject to fouling with sludge and carbon formation due to the nature of the material carried by the ventilation system. The valve will operate effectively as long as normal maintenance is applied.

A plugged vent system may in turn cause excessive engine crankcase sludge formation and may also cause rough or erratic engine idle or excessive oil leakage. The ventilation system should be cleaned every six months and valve replaced every year in average service and more frequently if the vehicle is used extensively for short trips—driving less than 10 miles—with frequent idling, such as city traffic.

See the "Lubrication" section, Group 0 of this manual for proper service procedures.

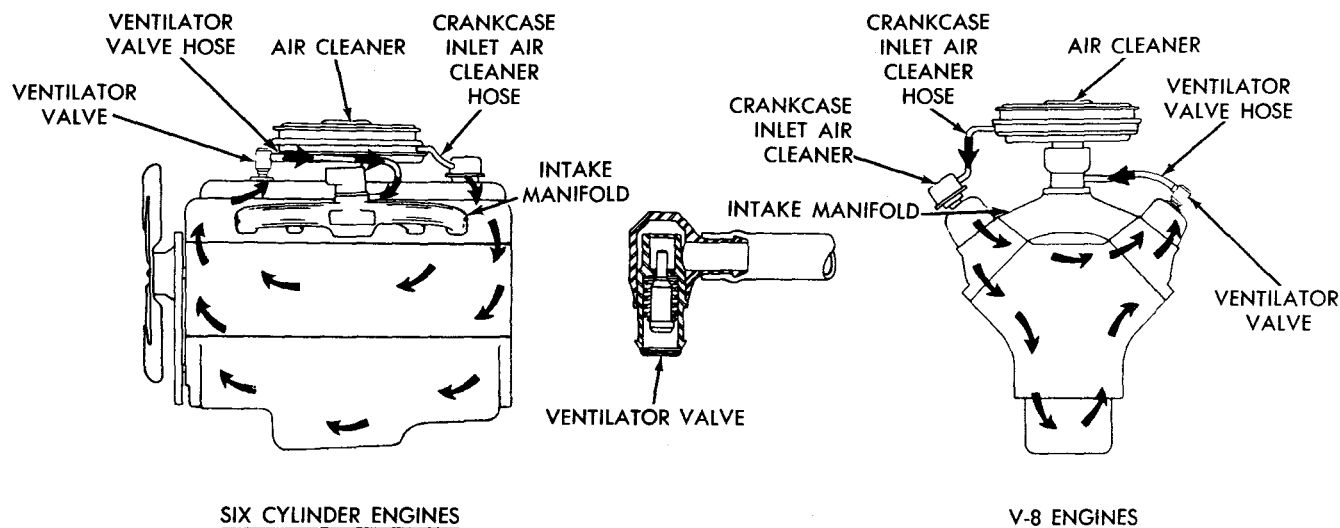


Fig. 2—Ventilation System (225-318-360-400-440 Cubic Inch Engines)

SERVICE DIAGNOSIS

Condition	Possible Cause	Correction
ENGINE WILL NOT START	(a) Weak battery.	(a) Test the battery specific gravity and recharge or replace as necessary.
	(b) Corroded or loose battery connections.	(b) Clean and tighten the battery connections. Apply a coat of petrolatum to the terminals.
	(c) Faulty coil or Control Unit.	(c) Test and replace if necessary.*
	(d) Faulty pickup coil.	(d) Test and replace if necessary.*
	(e) Moisture on ignition wires and distributor cap.	(e) Wipe wires and cap clean and dry.
	(f) Incorrect spark plug gap.	(f) Set the gap at .035".
	(g) Incorrect ignition timing.	(g) Refer to "Ignition Timing."*
	(h) Faulty ignition cables.	(h) Replace any cracked or shorted cables.
	(i) Dirt or water in fuel line or carburetor.	(i) Clean the lines and carburetor.**
	(j) Carburetor flooded.	(j) Adjust the float level—check seats.**
	(k) Faulty fuel pump.	(k) Install a new fuel pump.**
	(l) Carburetor percolating. No fuel in the carburetor.	(l) Measure the float level. Adjust the bowl vent.** Inspect the operation of the manifold control valve.
	(m) Faulty starting motor.	(m) Refer to "Starting Motor."*
ENGINE STALLS	(a) Idle speed set too low.	(a) Adjust carburetor.**
	(b) Idle mixture too lean or too rich.	(b) Adjust carburetor.**
	(c) Incorrect carburetor float setting.	(c) Adjust float setting.**
	(d) Incorrect choke adjustment.	(d) Adjust choke.
	(e) Leak in intake manifold.	(e) Inspect intake manifold and gasket. Replace as necessary.
	(f) Worn or burnt distributor rotor.	(f) Install a new rotor.
	(g) Incorrect ignition wiring.	(g) Install the correct wiring.
	(h) Faulty coil.	(h) Test and replace if necessary.*
ENGINE LOSS OF POWER	(a) Incorrect ignition timing.	(a) Refer to "Ignition Timing."*
	(b) Worn or burned distributor rotor.	(b) Install a new rotor.
	(c) Leaking vacuum diaphragm.	(c) Install a new vacuum advance unit.
	(d) Worn distributor shaft.	(d) Remove and repair distributor.*
	(e) Dirty or incorrectly gapped spark plugs.	(e) Clean plugs and set gap at .035".
	(f) Dirt or water in fuel line or carburetor.	(f) Clean lines and carburetor.**
	(g) Incorrect carburetor float setting.	(g) Adjust float level.**
	(h) Faulty fuel pump.	(h) Install a new pump.
	(i) Incorrect valve timing.	(i) Refer to "Checking Valve Timing."***
	(j) Blown cylinder head gasket.	(j) Install a new head gasket.***
	(k) Low compression.	(k) Test the compression of each cylinder.***
	(l) Burned, warped, pitted valves.	(l) Install new valves.***
	(m) Plugged or restricted exhaust system.	(m) Install new parts as necessary.
	(n) Faulty ignition cables.	(n) Replace any cracked or shorted cables.
	(o) Faulty coil.	(o) Test and replace as necessary.*
ENGINE MISSES ON ACCELERATION	(a) Dirty, or gap too wide in spark plugs.	(a) Clean the spark plugs and set gap at .035".
	(b) Incorrect ignition timing.	(b) Refer to "Ignition Timing."*
	(c) Dirt in carburetor.	(c) Clean the carburetor.**
	(d) Acceleration pump in carburetor.	(d) Install a new pump.**
	(e) Burned, warped or pitted valves.	(e) Install new valves.***
	(f) Faulty coil.	(f) Test and replace if necessary.*

Condition	Possible Cause	Correction
NOISY VALVES	(a) High or low oil level in crankcase. (b) Low oil pressure. (c) Dirt in tappets (8 cylinder) (d) Bent push rods. (e) Worn rocker arms. (f) Worn tappets. (g) Worn valve guides. (h) Excessive run-out of valve seats or valve faces. (i) Incorrect tappet lash.	(a) Check for correct oil level.*** (b) Check the engine oil level.*** (c) Clean the tappets.*** (8 cylinder) (d) Install new push rods.*** (e) Inspect the oil supply to rockers.*** (f) Install new tappets.*** (g) Replace guides if removable or ream and install new valves. (h) Grind the valve seats and valves.*** (i) Adjust to specifications.
CONNECTING ROD NOISE	(a) Insufficient oil supply. (b) Low oil pressure. (c) Thin or diluted oil. (d) Excessive bearing clearance. (e) Connecting rod journals out-of-round. (f) Misaligned connecting rods.	(a) Check engine oil level. (b) Check the engine oil level.*** (c) Change oil to correct viscosity. (d) Measure the bearings for correct clearances or failures.*** (e) Remove the crankshaft and regrind journals.*** (f) Remove the bent connecting rods.***
MAIN BEARING NOISE	(a) Insufficient oil supply. (b) Low oil pressure. (c) Thin or diluted oil. (d) Excessive bearing clearance. (e) Excessive end play. (f) Crankshaft journals out-of-round or worn. (g) Loose flywheel or torque converter.	(a) Check the engine oil level.*** (b) Check the engine oil level. Inspect the oil pump relief valve, damper and spring.*** (c) Change the oil to correct viscosity. (d) Check the bearings for correct clearances or failures.*** (e) Check No. 3 main bearing for wear on flanges.*** (f) Remove the crankshaft and regrind journals.*** (g) Tighten to the correct torque.
OIL PUMPING AT RINGS	(a) Worn, scuffed, or broken rings. (b) Carbon in oil ring slots. (c) Rings fitted too tight in grooves.	(a) Hone cylinder bores and install new rings.*** (b) Install new rings.*** (c) Remove the rings. Check the grooves. If groove is not proper width, replace the pistons.***
OIL PRESSURE DROP	(a) Low oil level. (b) Faulty oil pressure sending unit. (c) Thin or diluted oil. (d) Oil pump relief valve stuck. (e) Oil pump suction tube loose, bent or cracked. (f) Clogged oil filter. (g) Excessive bearing clearance.	(a) Check the engine oil level. (b) Install a new sending unit. (c) Change the oil to correct viscosity. (d) Remove the valve and inspect. (e) Remove the oil pan and install a new tube if necessary. (f) Install a new oil filter. (g) Check the bearings.***
ENGINE MISSES AT HIGH SPEED	(a) Dirt or water in fuel line or carburetor. (b) Dirty jets in carburetor. (c) Dirty or gap too wide in spark plugs. (d) Worn distributor shaft. (e) Worn or burned distributor rotor. (f) Faulty coil. (g) Incorrect ignition timing.	(a) Clean the lines and the carburetor.** (b) Clean the jets.** (c) Clean the spark plugs and set gap at .035". (d) Remove and repair the distributor.* (e) Install a new rotor. (f) Test and replace as necessary.* (g) Refer to "Ignition Timing."*

*Refer to the "Electrical and Instruments" Group 8 for service procedures.

**Refer to the "Fuel System" Group 14 for service procedures.

***Refer to the "Engine" Group 9.

225 CUBIC INCH ENGINE

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SERVICE PROCEDURES

Checking Operation of Exhaust Valve Rotators

Before an engine is disassembled for valve grinding or major work, the performance of the exhaust valve positive rotators should be checked if so equipped.

(1) With the engine in vehicle, remove the cylinder head cover.

(2) Observe the exhaust valve rotation with the engine running at 1000 and 3000 rpm. The valves should rotate at uniform and constant speeds. There is generally a large difference in rotation speeds between 1000 and 3000 rpm.

(3) Rotators which do not appear to function properly should be replaced.

ENGINE ASSEMBLY**Removal**

(1) Drain coolant from radiator and cylinder block.

(2) Disconnect battery cables and remove battery.

(3) Scribe hood hinge outlines on hood and remove hood.

(4) If equipped with air conditioning, discharge the system. Disconnect compressor lines. Cap all openings as soon as they are disconnected to keep moisture or dirt out of the system.

(5) Disconnect electrical connections at alternator, ignition coil, temperature and oil pressure sending units (oil gauge line if so equipped) starter relay-to-solenoid wires and engine to body ground.

(6) Remove air cleaner and carburetor. Install engine lifting fixture to cylinder head.

(7) Remove distributor cap, rotor and spark plug wires.

(8) Disconnect flexible fuel line to fuel pump and cap line.

(9) Disconnect radiator and heater hoses (oil cooler lines if so equipped). Remove fan and radiator.

(10) Raise vehicle on a hoist and install engine support fixture tool C-3487A to support rear of engine.

(11) Disconnect exhaust pipe from manifold, propeller shaft, wires, linkage, cable and oil cooler lines at the transmission if so equipped.

(12) Remove engine rear support crossmember and remove transmission from vehicle.

(13) Lower vehicle and attach a chain hoist or hydro-crane to fixture eyebolt.

(14) Remove front motor mount insulator top stud nuts and washers. Raise engine with lifting equipment and work engine out of chassis.

(15) Place engine in repair stand Tool C-3167 and adapter C-3662 for disassembly, using transmission bolts.

Installation

(1) Install engine lifting fixture to cylinder head.

(2) Attach a chain hoist or hydro-crane to fixture eyebolt.

(3) Remove engine from repair stand and lower engine carefully until engine is positioned in chassis with front motor mount studs in place (Figs. 1, 2).

(4) Install engine support fixture Tool C-3487A (if removed from chassis) to support rear of engine. Remove hydro-crane.

(5) Remove vehicle on hoist.

(6) Install transmission and engine rear support crossmember (Fig. 3). Remove engine support fixture Tool C-3487A.

(7) Connect propeller shaft, wires, linkage, cable, exhaust pipe to manifold, (oil cooler lines and transmission filler tube if so equipped).

(8) Lower vehicle, install compressor if equipped with air conditioner.

(9) Install radiator, fan shroud, hoses and oil cooler lines.

(10) Install rotor, distributor cap and spark plug wires. Connect electrical connections at ignition coil, alternator, temperature and oil pressure sending units (oil gauge line if so equipped) starter relay-to-solenoid and engine to body ground.

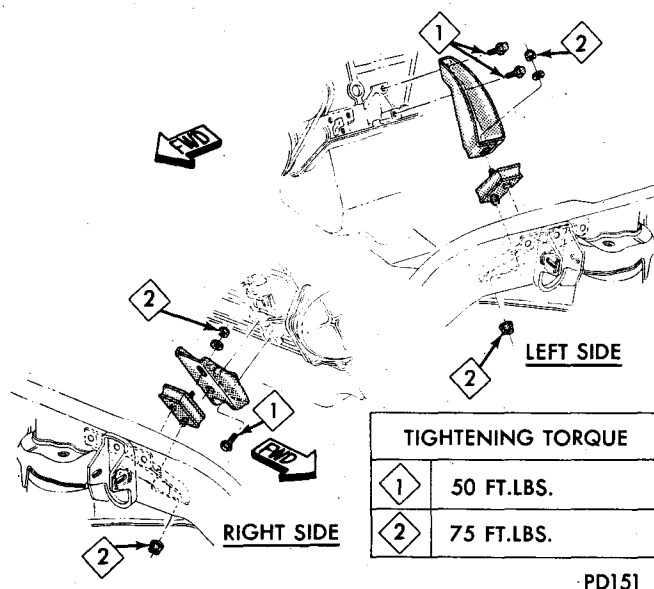


Fig. 1—Engine Mounts—Front—225 Cubic Inch Engine Models D100-200-300

(11) Remove engine lifting fixture from cylinder head. Uncap flexible fuel line and install to fuel pump.

(12) Install battery, close all drain cocks and fill cooling system.

(13) Fill engine crankcase and transmission as necessary. Refer to "Lubrication" Group 0, for quantities and lubricants. Inspect the entire system for leaks and correct as necessary.

Whenever an engine has been rebuilt and/or a new camshaft and/or new tappets have been installed, add one pint of Chrysler Crankcase Conditioner Part Number 3419130 or equivalent to engine oil to aid in break-in. The oil mixture should be left in en-

gine for a minimum of 500 miles, and drained at the next normal oil change.

(14) Start engine and run until normal operating temperature is reached.

(15) Inspect ignition timing (with vacuum advance line removed) and adjust carburetor as necessary.

(16) Refer to "Air Conditioning" Group 24 on proper procedure for charging the system if so equipped.

(17) Adjust accelerator and transmission linkages. Road test vehicle.

Engine Removal Without Removing Automatic Transmission

(1) Scribe hood hinge outlines on hood and remove hood.

(2) Drain cooling system and remove battery and carburetor air cleaner.

(3) Remove radiator and heater hoses and remove radiator. Set fan shroud aside.

(4) Discharge air conditioning, refer to Group 24 Air Conditioning for service procedures if so equipped.

(5) Remove vacuum lines, distributor cap and wiring.

(6) Remove carburetor, linkage, starter wires and oil pressure wire.

(7) Remove air conditioning hoses and power steering hoses if so equipped.

(8) Remove starter motor, alternator, charcoal canister and horns.

(9) Remove exhaust pipe at manifold.

(10) Remove bell housing bolts and inspection plate. Attach "C" clamp on front bottom of transmission torque converter housing to prevent torque converter from coming out.

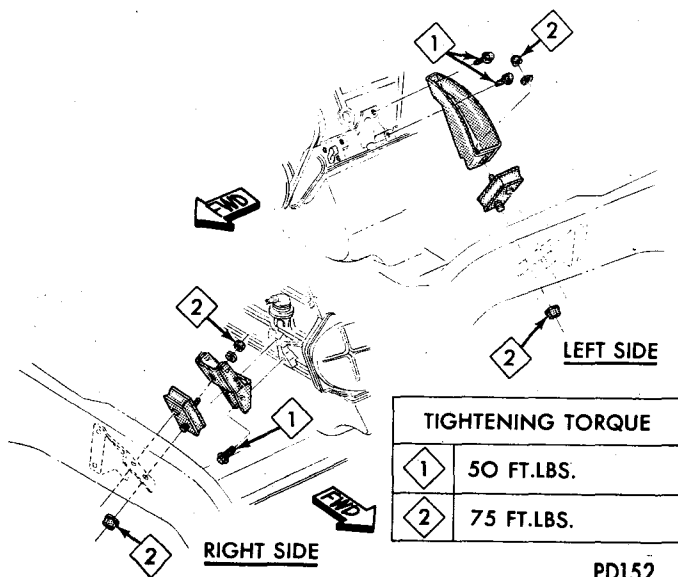


Fig. 2—Engine Mounts—Front—225 Cubic Inch Engine Models W100-200-300

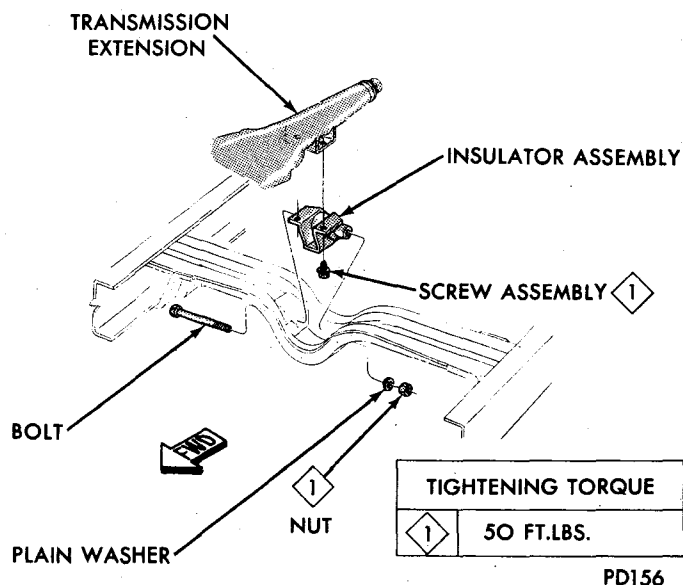


Fig. 3—Engine Mounts—Rear—Models D100-200-300 and W100-200-300

(11) Remove torque converter drive plate bolts from torque converter drive plate. Mark converter and drive plate to aid in reassembly.

(12) Support transmission with transmission stand tool number C-3201-A in its normal position relative to the vehicle. This will assure that the torque converter will remain in proper position in the transmission housing.

(13) Disconnect the engine from the torque converter drive plate.

(14) Install engine lifting fixture. Attach a chain hoist to fixture eyebolt.

(15) Remove engine front mount bolts.

(16) Remove engine from engine compartment and install in engine repair stand.

Installation

(1) Remove engine from repair stand and install in engine compartment.

(2) Install torque converter drive plate bolts and front end mounts.

(3) Install bell housing bolts. Remove "C" clamp and install inspection plate. Remove stand from transmission.

(4) Remove engine lifting fixture and install carburetor and lines.

(5) Install starter motor, alternator, charcoal canister and lines.

(6) Install vacuum lines, distributor caps and wiring.

(7) Install exhaust pipe.

(8) Connect carburetor linkage and wiring to engine.

(9) Install radiator, radiator hoses and heater hoses.

(10) Set fan shroud in position. Fill cooling system full.

(11) Install battery and carburetor air cleaner. Connect vacuum hose, power steering hoses, if so equipped.

(12) Install air conditioning equipment and charge air conditioning. Refer to Group 24 Air Conditioning for service.

(13) Warm engine and adjust.

(14) Install hood and line up.

(15) Road test vehicle.

ROCKER ARM AND SHAFT ASSEMBLY

Stamped steel rocker arms are arranged on a single rocker arm shaft. Hardened steel spacers are used between the pairs of rocker arms. The rocker shaft is held in place by bolts and stamped steel retainers attached to the seven integral brackets on the cylinder head.

Removal

- (1) Remove crankcase vent valve with tube.
- (2) Remove cylinder head cover and gasket.

- (3) Remove rocker shaft bolts and retainers.
- (4) Remove rocker arms and shaft assembly.

Installation

(1) The rocker arms and fool proof shaft assembly must be installed (Fig. 4) so the flat end of the rocker shaft is on top and points toward front of engine. This is necessary to provide proper lubrication to the rocker assemblies.

(2) Be sure to install long retainer in center position only. Install rocker shaft retainers between rocker arms so they seat on rocker shaft and not on extended bushing of rocker arms.

(3) Install rocker shaft bolts. Tighten to 25 foot-pounds. Install special bolt at rear of engine. Tighten to 200 in. lbs.

(4) Adjust tappets hot; intake .010 inches, exhaust .020 inches. With engine running.

(5) Inspect cylinder head cover for distortion. Straighten if necessary.

(6) Place new cylinder head cover gasket in position and install the cylinder head cover. Tighten nuts to 40 inch-pounds.

(7) Install closed ventilation system and evaporation control system.

CYLINDER HEAD

The chrome alloy cast iron cylinder head, (Fig. 5), is held in place by 14 bolts. The spark plugs are located on the wide edge of the combustion chambers.

Removal

- (1) Drain cooling system.
- (2) Remove carburetor air cleaner and fuel line.
- (3) Disconnect accelerator linkage.
- (4) Remove vacuum control tube at carburetor and distributor.
- (5) Disconnect spark plug wires by pulling the boot straight out in line with plug.

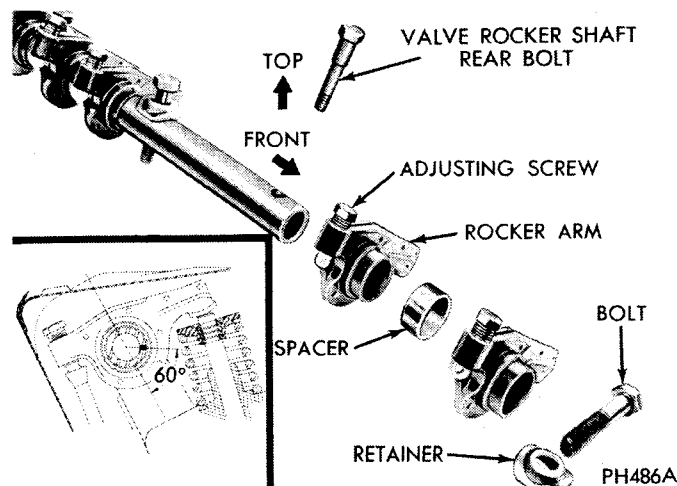


Fig. 4—Rocker Arms and Shaft Assembly

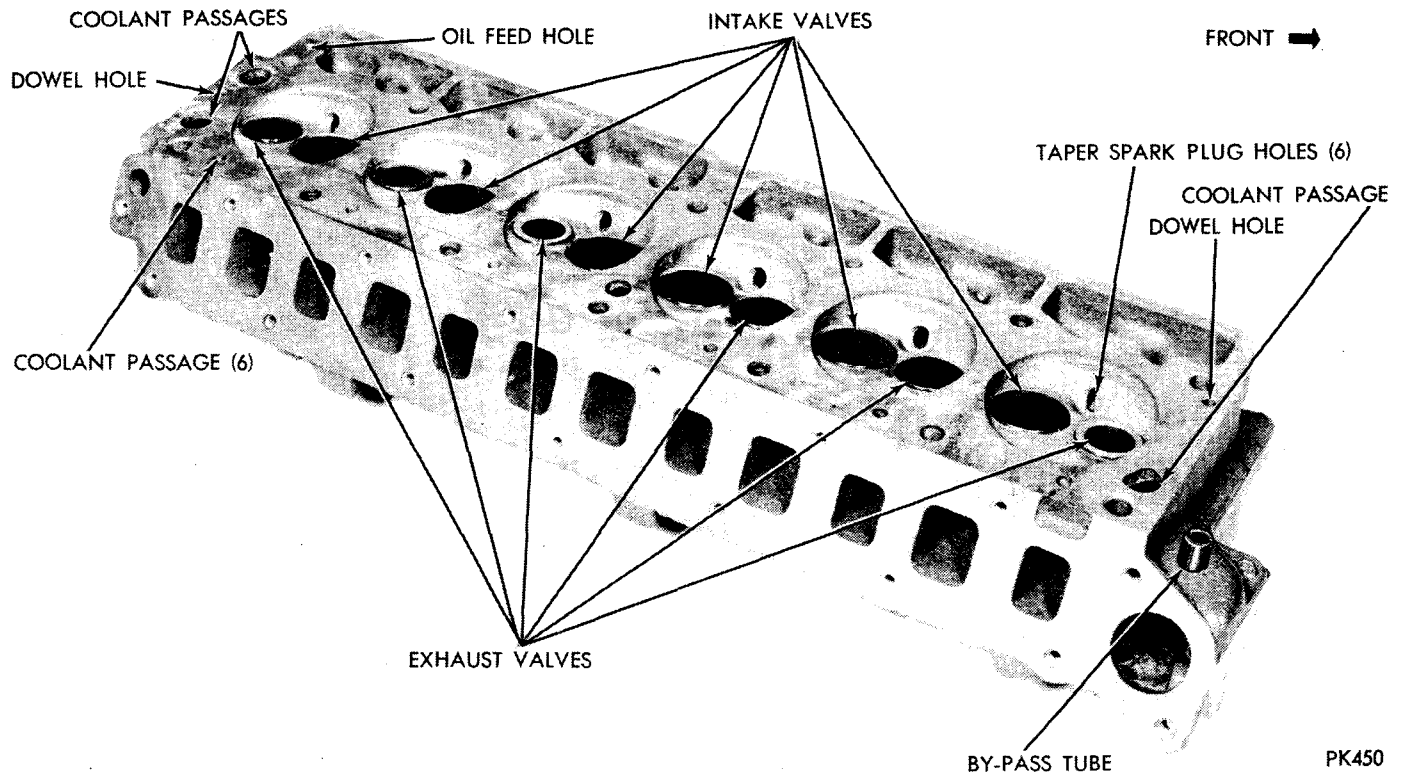


Fig. 5—Cylinder Head

(6) Disconnect heater hose and clamp holding bypass hose.

(7) Disconnect heat indicator sending unit wire.

(8) Disconnect exhaust pipe at exhaust manifold flange.

(9) Disconnect diverter valve vacuum line from intake manifold and remove air tube assembly from cylinder head, if so equipped.

(10) Remove intake and exhaust manifold and carburetor as an assembly.

(11) Remove crankcase vent valve with tube and cylinder head cover.

(12) Remove rocker arms and shaft assembly.

(13) Remove push rods and **identify to insure installation in original location.**

(14) Remove 14 head bolts and remove cylinder head.

(15) Place cylinder head in holding fixture Tool C-3626 and remove spark plugs and tubes.

Installation

(1) Clean all gasket surfaces of cylinder block, cylinder head and remove all burrs.

(2) Inspect all surfaces with a straightedge if there is any reason to suspect leakage. If out of flatness exceeds .00075 times the span length in any direction; either replace head or lightly machine the head gasket surface. As an example, if a 12 inch span is .004 inch out of flat, allowable is $12 \times .00075 = .009$ inch. Head is OK.

The cylinder head surface finish should be 70-180 micro-inch.

(3) Install spark plugs, tighten to 10-foot-pounds.

(4) Coat new gasket lightly with Chrysler Sealer, Part Number 3419115 or equivalent. Install gasket and cylinder head.

(5) Install cylinder head bolts. Starting at top center, tighten all cylinder head bolts to 50 foot-pounds in sequence (Fig. 6). Repeat the procedure, retightening all cylinder head bolts to 65 foot-pounds. **Do not tighten cylinder head bolts after the engine has been operated when embossed steel head gaskets are used.**

(6) Install rocker arms and fool proof shaft assembly with oil hole positioned as shown in (Fig. 4) to provide proper lubrication to rocker assemblies. **Install rocker shaft retainers between rocker arms to the seat on rocker shaft and not on extended bushing on rocker arm.** Be sure to install long retainer in center position only. Install rocker shaft bolts and tighten to 25 foot-pounds. (5/16 screw at rear of engine tighten to 200 in. lbs.)

(7) Loosen the 3 bolts holding intake manifold to exhaust manifold. This is required to maintain proper alignment.

When installing the manifolds on the six-cylinder engine, to prevent exhaust leaks and possible damage to the manifolds themselves, these installation procedures must be closely followed:

(1) Check gasket surfaces or manifold for flatness

with a straight-edge. Surfaces must be flat within .008 inch per foot of manifold length.

(2) Inspect manifolds for cracks or distortion.

(3) Install a new gasket between the exhaust and intake manifolds; install the two long outboard screws and inboard stud and nut holding the manifolds together.

CAUTION: Do not tighten these two screws and nut at this time. When installing the manifolds on the cylinder head of the engine, it is very important that the exhaust manifold be permitted to expand and contract with the heating and cooling cycles of normal engine operation; otherwise, manifold breakage will result.

(4) Install new manifold-to-cylinder head gasket; coat both sides with gasket sealer, Chrysler Part No. 3419115, or equivalent. Install manifold, then washers in their proper locations. (Fig. 7). Washers spanning intake and exhaust flanges must be flat. Replace those distorted by previous overtightening.

(5) Install steel conical washer with cup side facing nut. Install brass washers as indicated in (Fig. 7), with flat side facing manifold. Install nuts with cone side facing the washers.

(6) Carefully snug intake-to-exhaust manifold screws and nut, and manifold-to-cylinder head nuts.

CAUTION: Snug all nuts and screws to approximately 10 inch-pounds. **DO NOT TIGHTEN.**

(7) Tighten inboard intake-to-exhaust manifold stud nut to 20 foot-pounds.

(8) Tighten outboard intake-to-exhaust manifold screws to 20 foot-pounds.

(9) Repeat tightening procedures (7) and (8) until all three are at these specified torques.

(10) Tighten manifold-to-cylinder head nuts to 120 inch-pounds, in the tightening sequence shown in (Fig. 7). **DO NOT OVERTIGHTEN.**

(11) Connect heater hose and by-pass hose clamp.

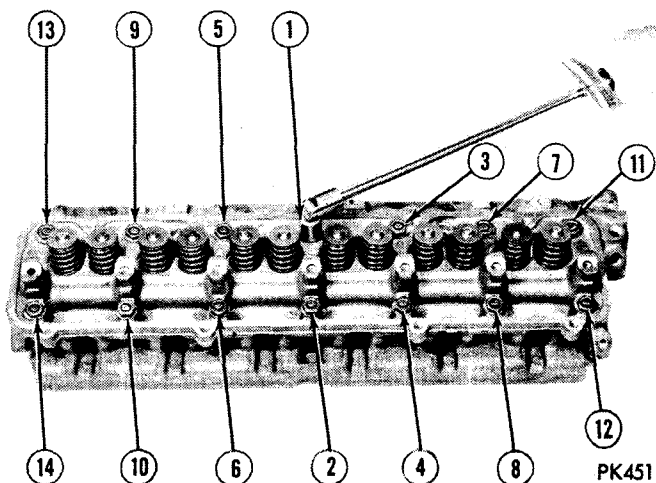


Fig. 6—Cylinder Head Tightening Sequence

(12) Connect heat indicator sending unit wire, the accelerator linkage and spark plug wires.

(13) Install vacuum control tube from carburetor to distributor.

(14) Install air tube assembly with a new gasket to cylinder head. Tighten to 100 inch-pounds. Install diverter valve vacuum line, if so equipped.

(15) Connect exhaust pipe to exhaust manifold flange.

(16) Install fuel line and carburetor air cleaner.

(17) Fill the cooling system:

(a) Operate engine until normal operating temperature (approximately 185 degrees F. water temperature) has been reached.

(b) Allow engine to idle at approximately 550 rpm at this 185 degree F. temperature for five minutes.

(c) Adjust intake valves to have .010 inches clearance and exhaust valves to have .020 inches clearance. With engine running.

(18) Place a new cylinder head cover gasket in position and install the cylinder head cover. Tighten nuts to 40 inch-pounds.

(19) Install closed ventilation system and evaporation control system.

VALVE AND VALVE SPRINGS

Valves are arranged in line in the cylinder head and operate in guides that are integral with the cylinder heads. Stellite faced, solid stems exhaust valves with positive rotators are used on 225-2 engines.

Removal

(1) With cylinder head removed, compress valve springs using Tool C-3422A (Fig. 8).

(2) Remove valve retaining locks, valve spring retainers, valve springs and valve stem cup seals.

(3) Before removing valves, remove any burrs from valve stem lock grooves to prevent damage to

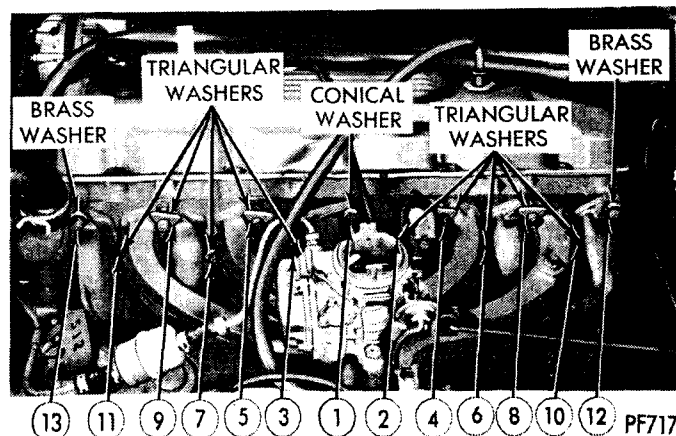


Fig. 7—Manifold Washer Locations and Tightening Sequence