MODEL 134-172 4-CYLINDER GASOLINE AND DIESEL ENGINES

SECTION 3 - FORD ENGINE SERVICE MANUAL

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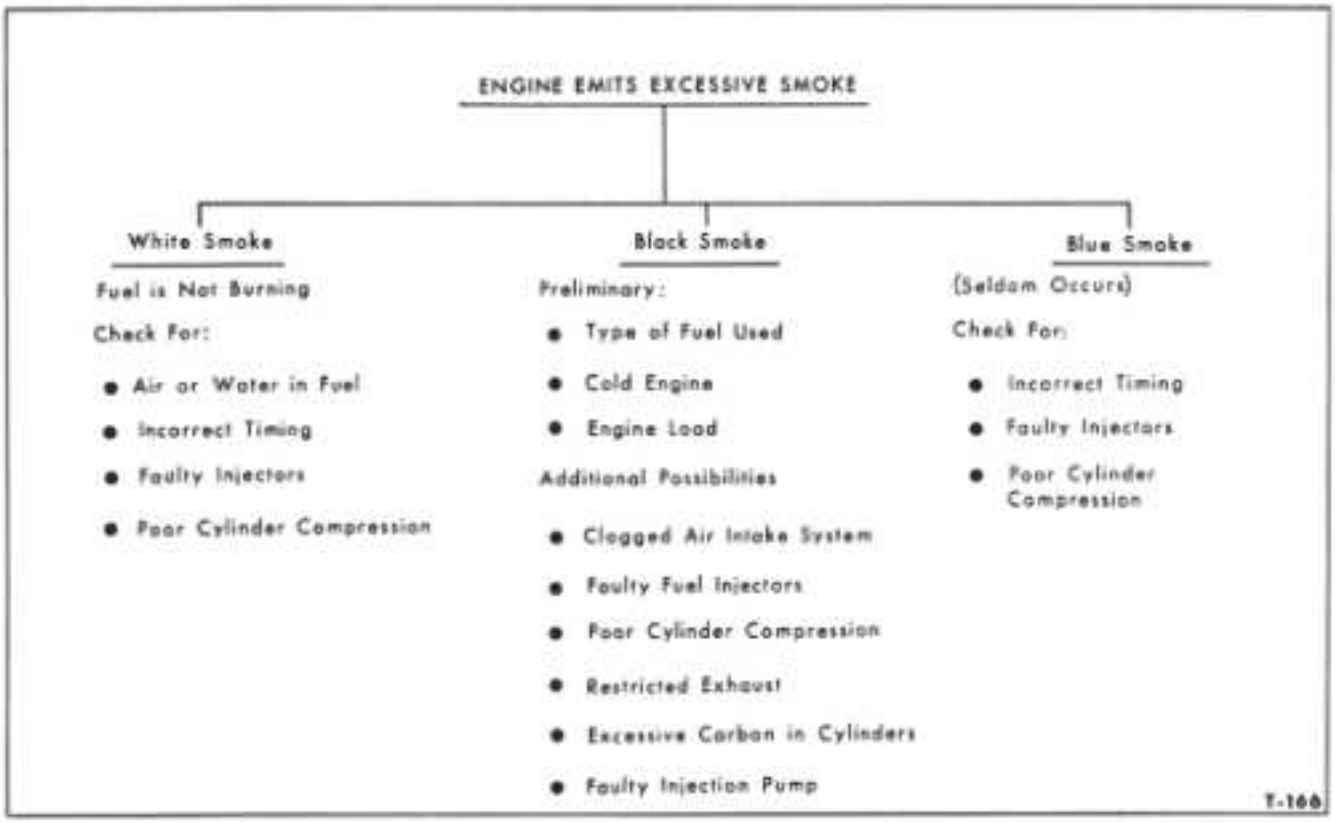


Figure 78—Engine Emits Excessive Smoke

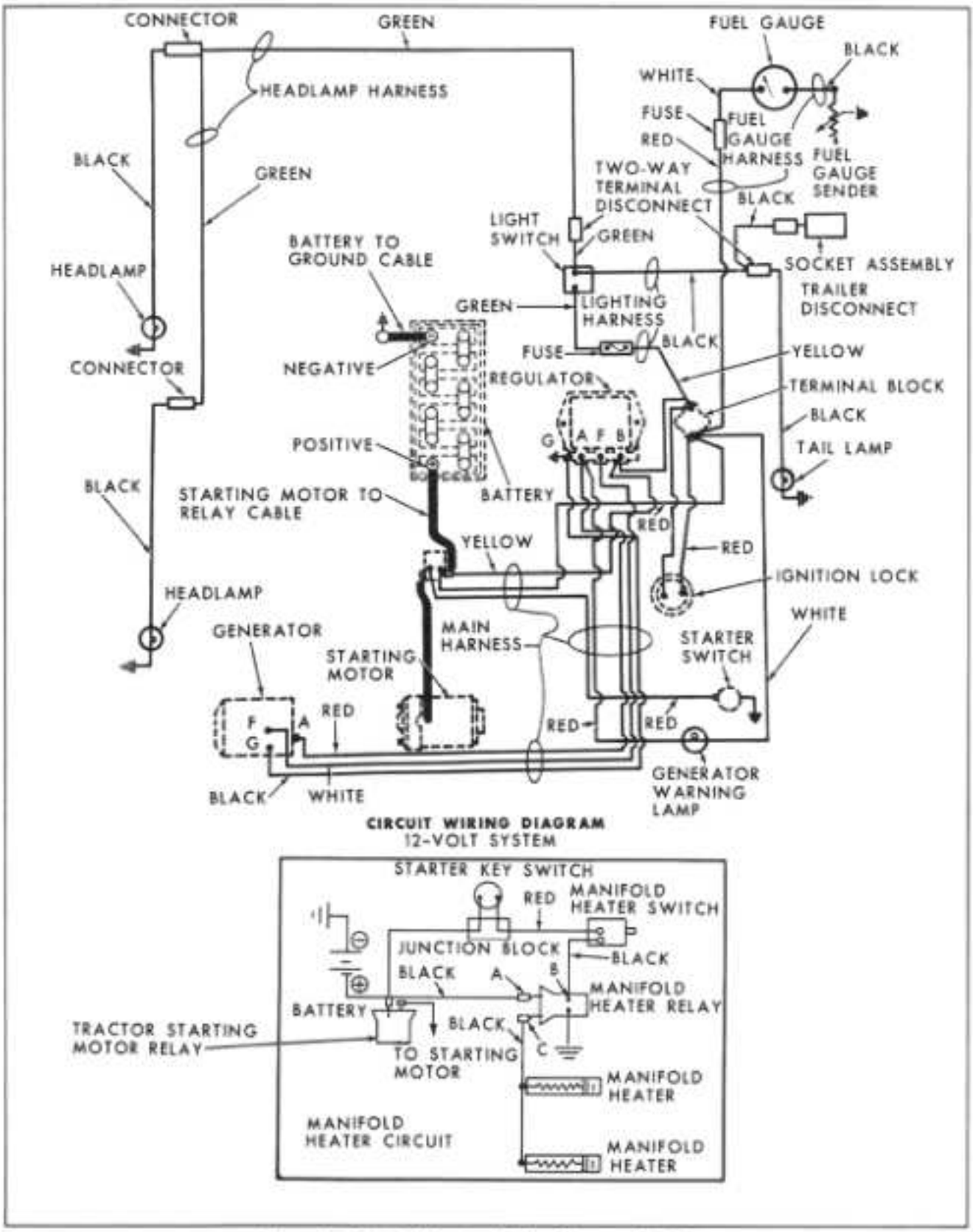
SPECIFICATIONS

There are four different engines used in Ford Tractors, 134 cu. in. gas, 172 cu. in. gas, 144 cu. in. diesel, and 172 cu. in. diesel. The gasoline and LP-Gas engines are basically the same with the exception of carburetion, therefore all specifications listed under gasoline engines, will also apply for the LP-Gas engines. When reference is made to engine models, it will be 134 and 172 cu. in. gasoline or 144 and 172 cu. in. diesel.

Engine No. of Cylinders	134 Cu. In. Gasoline 4	172 Cu. In. Gasoline 4	144 Cu. In. Diesel 4	172 Cu. In. Diesel 4
Valve Arrangement	Overhead	Overhead	Overhead	Overhead
*Horsepower (brake)	48.4 @ 2200 rpm	62.6 @ 2200 rpm	42.7 @ 2200 rpm	56.3 @ 2200 rpm
Bore	3.44	3.90	3.56	3.90
Stroke	3.60	3.60	3.60	3.60
Displacement	134 Cu. In.	172 Cu. In.	144 Cu. In.	172 Cu. In.
Compression at Sea Level	205 PSI @ 1000 rpm	205 PSI @ 1000 rpm	483 PSI @ 1000 rpm	554 PSI @ 1000 rpm
Firing Order	1-2-4-3	1-2-4-3	1-2-4-3	1-2-4-3
Oil Capacity Refill Initial	 4 qts. 5 qts.	 4 qts. 5 qts.	 4 qts. 5 qts.	 4 qts. 5 qts.
Compression Ratio	7.5:1	7.5:1	16.8:1	16.8:1
*Torque ft. lbs. at rpm	1268 @ 1600 rpm	166 @ 1600 rpm	111.3 @ 1400 rpm	140.4 @ 1400 rpm

*Less air cleaner, fan and muffler.

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CIRCUIT WIRING DIAGRAM
12-VOLT SYSTEM

Figure 2—Electrical System Wiring Diagram 12—Volt

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Trouble shooting or diagnosis is required before actual repairs are made in the electrical system. Even where an obvious fault makes the replacement of a unit necessary, the cause of the unit failure must be determined. The trouble shooting procedures given here will aid you in making a correct diagnosis. When the trouble is diagnosed correctly, unnecessary repairs are prevented, the time the tractor is out of service will be decreased, and the repairs that are made will be effective.

GENERATING SYSTEM

All the various causes of troubles in the generating system, can be attributed to three conditions. The conditions or symptoms may not be described correctly to you by the owner of the tractor, so you must first determine the correct symptom by testing or by analizing the indications given to you by the owner. Once you have confirmed the symptom, you can immediately begin to isolate the cause by following the road map that illustrates the procedure in outline form.

Table I lists the three symptoms and the various causes of trouble. The order of the number in each symptom column indicates either the most probable cause of the symptom or the cause which is easiest to eliminate by testing.

The trouble shooting table gives more detailed information on the various causes of the symptom than the road map, Figure 36. The road map of the particular symptom groups several of those details into a single test, however, the results of the test indicate which particular trouble is the one causing the symptoms.

The symptoms are used as headings for the procedure and have been arranged in the following order: "A. Battery Low in Charge," "B. Generator Output Low," and "C. High Charging Rate."

CAUSES	SYMPTOMS (1) Battery Low In Charge See Page 76	(2) Generator Out-Put Low See Page 78	(3) High Charging Rate See Page 78
Excessive Resistance in Battery to Ground Circuit	19	1	
Dirty Commutator	3	2	
Open Circuit Field	4	3	
Short Circuit Field	5	4	
Open Circuit Armature	6	5	
Short Circuit Armature	7	6	
Shorted Brush Holder	8	9	
Worn Generator Brushes	9	7	
Brushes Stuck in Holder	10	8	
Regulator Contacts Stuck	12		1
Loose or Worn Generator Belt	1		
Battery Worn Out	2		
Burned or Corroded Regulator Contacts	11		
Cut-In Voltage High	13		
Cut-In Voltage Low	14		
Voltage Regulation High			2
Voltage Regulation Low	15		
Regulator Not Grounded	16		
Burned or Corroded Cut-Out Contacts	17		
Excessive Resistance in Armature-to-Battery Circuit	18		

Table 1—Generating System—Causes of Trouble

A. Battery Low in Charge

Slow cranking, hard starting, and headlights dim at engine idle speed indicate the battery may be low in charge. This could be caused by the generator belt being worn or loose and slipping over the generator pulley. The battery may be in such poor condition it will not hold or take a charge. The generator may not be producing its rated output. Regulator units may be out of adjustment. Excessive resistance may exist in the generator-to-battery circuit or in the battery-to-ground circuit.

Before starting the following procedure to confirm the symptom, check the state of charge of the battery. Also check the generator belt adjustment and wiring. If the belt is too loose, this might be the only trouble.

1. Recharge the battery to make a high rate discharge test. Replace the battery if the high rate discharge test indicates it is worn out or under capacity. If the battery is worn out, it may have been the cause of the "Battery Low" symptom. If the battery tests OK, proceed as follows:

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