Tractor 1215

Supplement to
1120, 1220 Tractor
Service – #42112020

SERVICE MANUAL

NEW HOLLAND

40121510 6/95

Reprint

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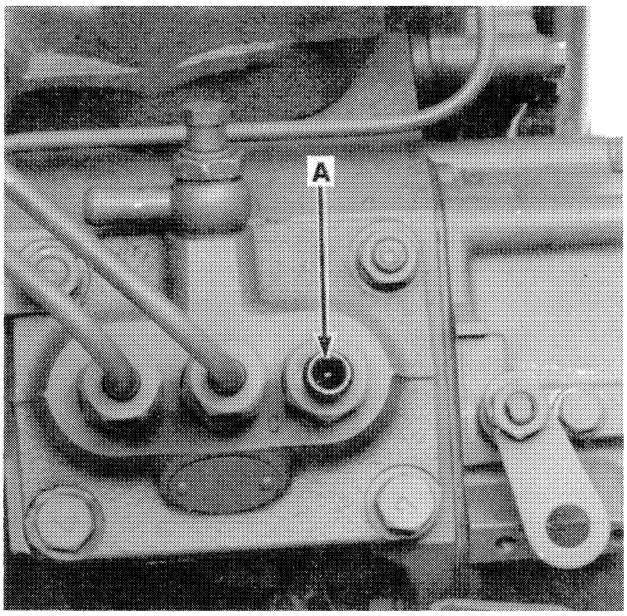


Figure 15
No. 1 Injection Pump Port
A. No. 1 Port

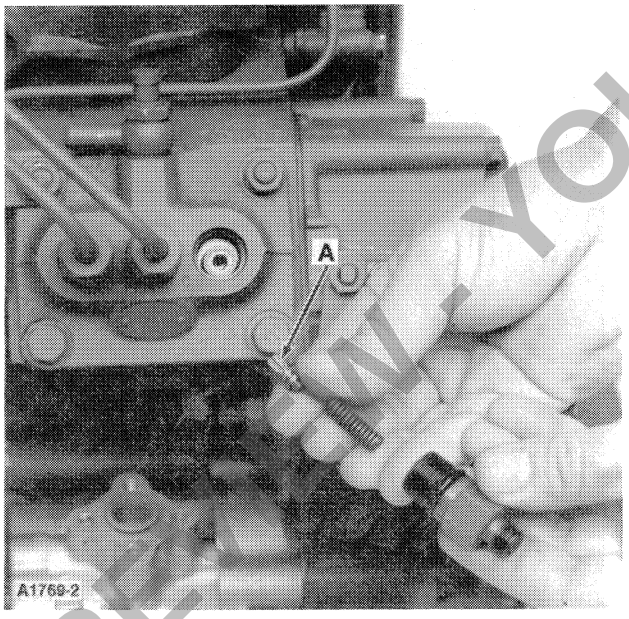


Figure 16
Delivery Valve Piston
A. Piston

8. Reinstall the valve spring, keepers, rocker arm assembly, housing, and valve cover.
9. Shut off the fuel supply to the injection pump at the fuel filter.
10. Remove the No. 1 injection line, Figure 15.
11. Remove the delivery valve piston (A), Figure 16, from No. 1 delivery valve.
12. Refer to Figure 17 for parts identification.
13. Reinstall the spring (A) and holder (B), Figure 18, into the injection pump and tighten the holder securely.

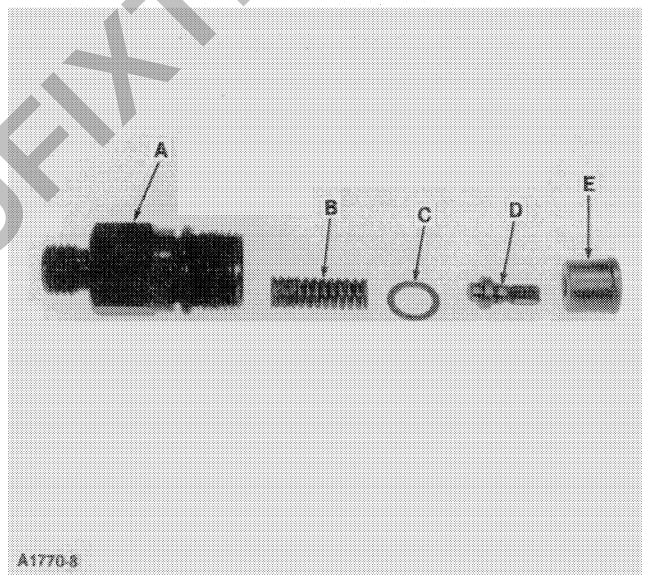


Figure 17
Delivery Valve Parts Identification
A. Holder
B. Spring
C. Washer
D. Piston
E. Delivery Valve Seat

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TRANSMISSION ASSEMBLY - DISASSEMBLY

1. Remove the bolt (2), Figure 17, and withdraw the input shaft from the rear of the clutch case.
2. Remove the idler gear (6) and shaft (1) from the front of the transmission, Figure 18.
3. Remove the snap ring (8) and remove the countershaft gear (7), Figure 18.

Main Shaft Removal

4. Remove the retainer plate (1) from the front of the transmission case, Figure 19.
5. Remove the snap ring (2) from the rear groove of the main shaft, Figure 20.
6. Remove the snap ring (2), Figure 19.
7. Release the snap rings (9 & 10) from the grooves on the main shaft, Figure 20.

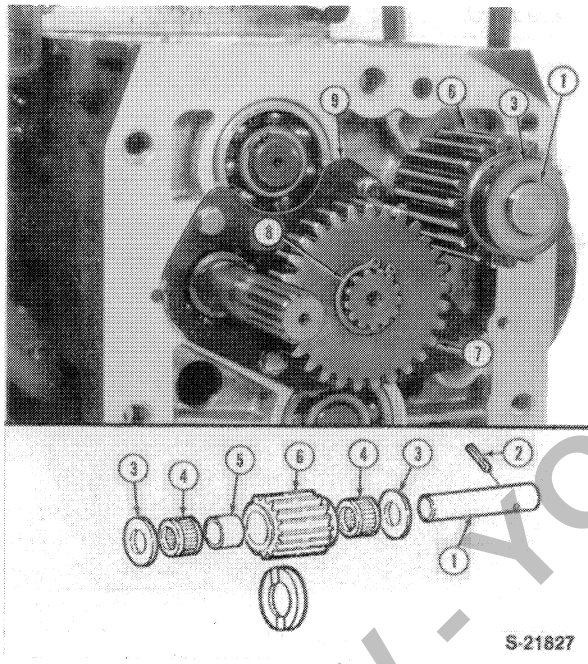


Figure 18
Input Shaft Idler Gear Removal

1. Shaft
2. Roll Pin
3. Thrust Washer
4. Needle Bearing
5. Spacer Collar
6. Idler Gear
7. Countershaft Gear
8. Snap Ring
9. Retainer Plate

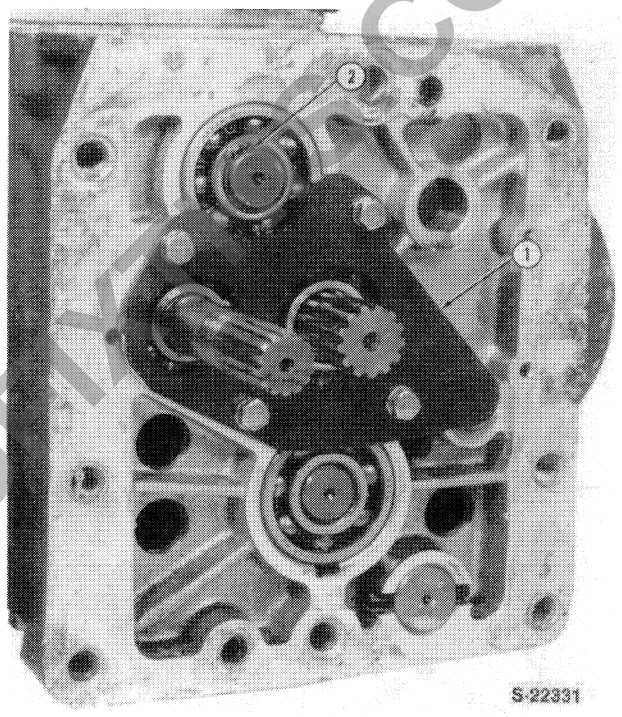


Figure 19
Front Retainer Plate Removal

1. Retainer Plate
2. Snap Ring

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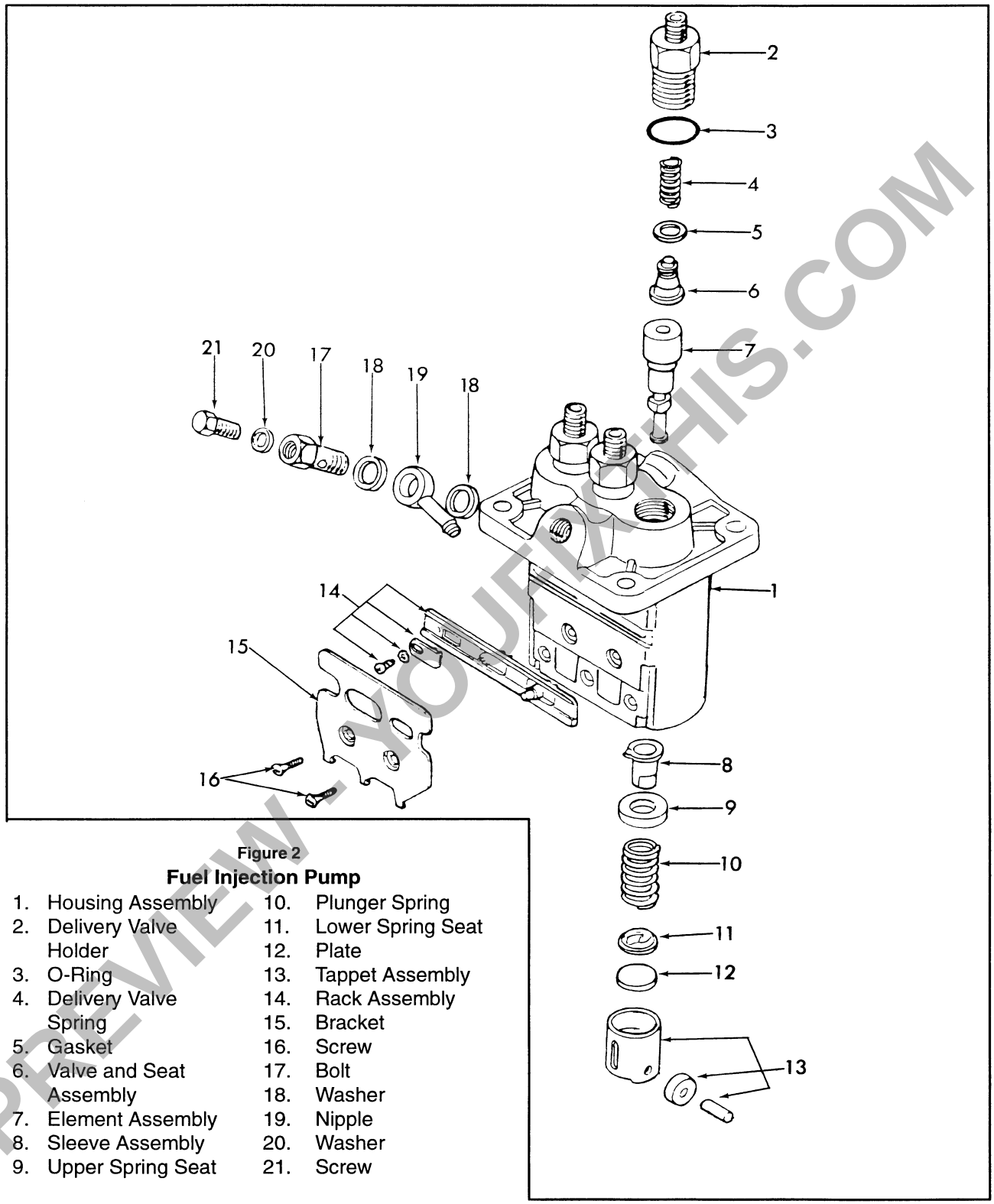


Figure 2

Fuel Injection Pump

1. Housing Assembly
2. Delivery Valve Holder
3. O-Ring
4. Delivery Valve Spring
5. Gasket
6. Valve and Seat Assembly
7. Element Assembly
8. Sleeve Assembly
9. Upper Spring Seat
10. Plunger Spring
11. Lower Spring Seat
12. Plate
13. Tappet Assembly
14. Rack Assembly
15. Bracket
16. Screw
17. Bolt
18. Washer
19. Nipple
20. Washer
21. Screw

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B. ENGINE - OVERHAUL

CRANKSHAFT

ASSEMBLY AND INSTALLATION

Before installing the crankshaft in the engine block:

1. Measure the inside bearing diameter of the front main bearing, Figure 3, and crankshaft front journal diameter.
2. Subtract the diameter of the front journal from the inside bearing diameter of the front main bearing.
   - If the clearance is more than 0.0079 in. (0.2 mm), replace the main bearing or re-grind the journal with undersize main bearing.

In addition, check the main bearing clearance of each of the three center main bearings as follows:

1. Position a piece of plasti-gauge of the correct size across the full width of each bearing liner at approximately 1/4 in. off center, Figure 4.
2. Install the bearing holder and tighten the bolts to the specified torque, Figure 5.

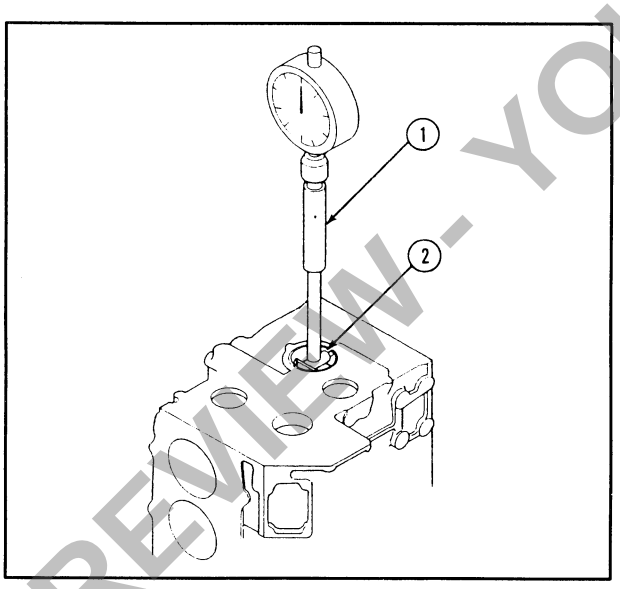


Figure 3
Front and Rear Bearing Wear Check
1. Bore Gauge
2. Front Bearing Bore

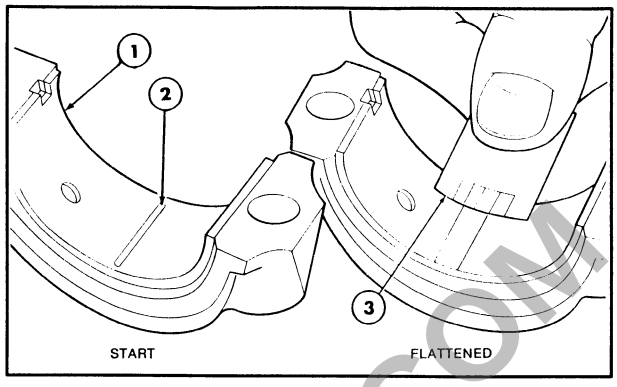


Figure 4
Main Bearing Liner Clearance Check
1. Bearing Liner
2. Plasti-gauge
3. Scale

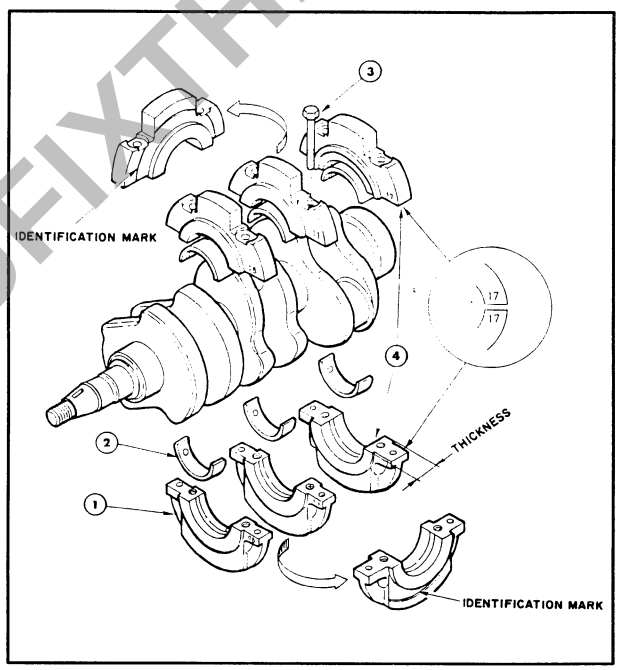


Figure 5
Main Bearing Holder Installation
1. Bearing Holder (made of cast iron)
2. Bearing Liner
3. Holder Bolts
4. Rear Bearing Holder (made of aluminum die cast)

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TROUBLESHOOTING
(Continued)

CONDITION	POSSIBLE CAUSE
Poor Engine Idling	1. Improper injection timing 2. Air in injection pump 3. Improper governor adjustment
Engine Knocks	1. Diluted or thin oil 2. Insufficient oil supply 3. Low oil pressure 4. Worn crankshaft thrust bearing 5. Excessive flywheel runout 6. Excessive connecting rod or main bearing clearance 7. Seized bearing 8. Clogged oil passages 9. Bent or twisted connecting rod 10. Crankshaft journals out-of-round 11. Excessive piston-to-cylinder bore clearance 12. Excessive piston ring side clearance 13. Broken or damaged rings 14. Excessive piston pin clearance 15. Seized piston 16. Piston pin retainer loose or missing 17. Improper valve lash adjustment 18. Worn valve lifter 19. Excessive timing gear backlash

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SPECIFICATIONS
(Continued)

CYLINDER HEAD

Head Warp	
Standard	0.002 in. less than (0.05 mm)
Maximum	0.005 in. (0.12 mm)
Valve Seat Width	
Standard	.067-0.083 (1.7-2.1 mm)
Maximum	.098 in. (2.5 mm)
Valve Seat Sink	
Standard	.0334-.0453 in. (0.85-1.15 mm)
Maximum	.0708 in. (1.8 mm)
Valve Angle	45°
Piston to Valve Clearance	.039 in. (1.0 mm) at Piston TDC (minimum clearance .031 in. [0.8 mm])

CYLINDER BLOCK

Bore	
Standard	2.8342-2.8348 in. (71.990-72.005 mm)
Maximum	2.8425 in. (72.2 mm)
Head Surface Warp	
Standard	.002 in. (.05 mm)
Maximum	.005 in. (.12 mm)
Re-Bore Size	
.020 oversize in. (0.5 mm)	2.8539-2.8545 in. (72.490-72.505 mm)
.040 oversize in. (1.0 mm)	2.8736-2.8742 in. (72.990-73.005 mm)

If bore size exceeds 2.88 in. (73.2 mm), replace the block.

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RELAY CONNECTOR TO KEY START SWITCH - WIRE TEST
Reference - Figure 18

1. Disconnect the wire (1) from the relay connector.
2. Connect the ohmmeter lead to the wiring harness terminal (black/red wire) at (1).
3. Connect the other ohmmeter lead to the terminal marked "50" on the starter switch (2), Figure 18. Observe the ohmmeter.

Test Results
(Relay Connector to Key Start Switch - Wire Test)

- A low resistance reading means the wire is good.
- A high resistance reading indicates the wire needs to be repaired or replaced.

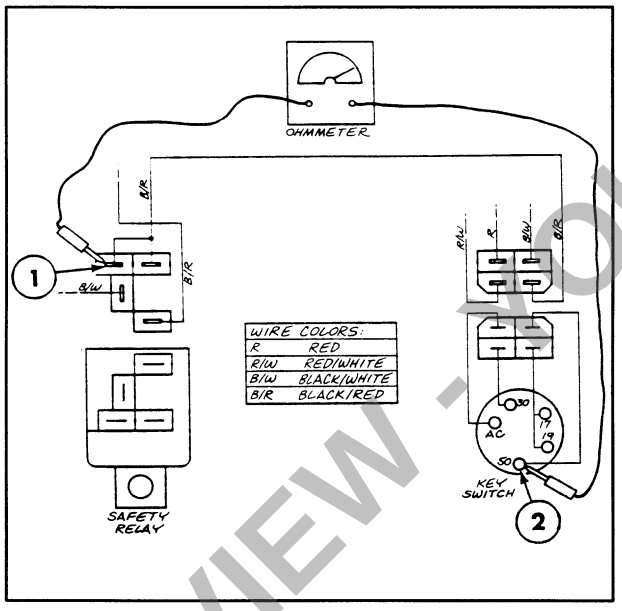


Figure 18
Relay Connector to Start Switch Wire Test

1. Relay Connector to Key Switch Connector
2. Key Start Switch-Terminal #50

SAFETY START CIRCUIT CONTINUITY TEST
Reference - Figure 19

1. Using a voltmeter, connect the voltmeter negative lead to a clean ground.
2. Disconnect the solenoid wire (black/white) from the starter and "S" terminal, and then connect the positive voltmeter lead to the wire terminal.
3. Hold the start key in the "START" position with the PTO controls in the "OFF" position.
4. Depress the clutch pedal and observe the voltmeter (see "Test Results" below to interpret the voltmeter reading).

Test Results
(Safety Start Circuit Continuity Test)

- A voltmeter reading of more than 10 volts means the safety start switch is good.
- A voltmeter reading of less than 9.9 volts can indicate a faulty safety relay, a faulty safety start circuit, or a faulty key switch.

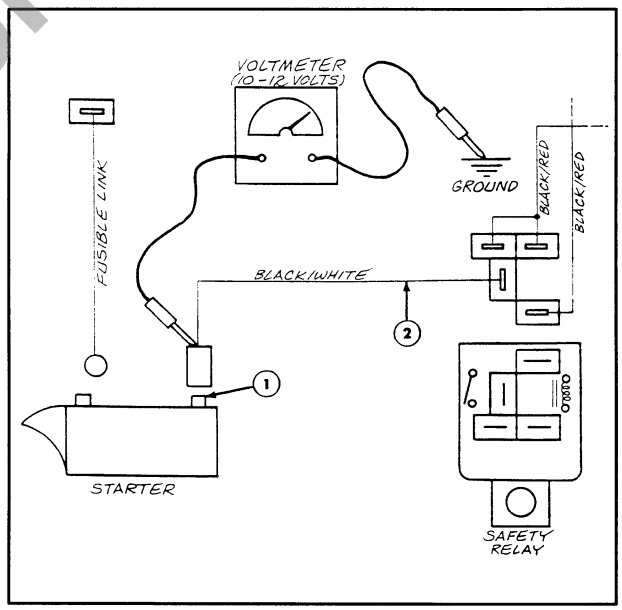


Figure 19
Safety Start Circuit Continuity Test

1. Starter Solenoid "S" Terminal
2. Starter Solenoid Wire from Safety Relay (Black/White Wire)

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PART 1
ENGINE SYSTEMS

CHAPTER 1
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A. DESCRIPTION AND OPERATION

The Model 1215 tractor is equipped with a three cylinder in-line, liquid cooled, four cycle overhead valve engine, Figure 1. The engine model is identified by a code number cast into the side of the engine block as shown in the following chart.

ENGINE CODE	TRACTOR MODEL	HORSEPOWER
S723	F1215	15

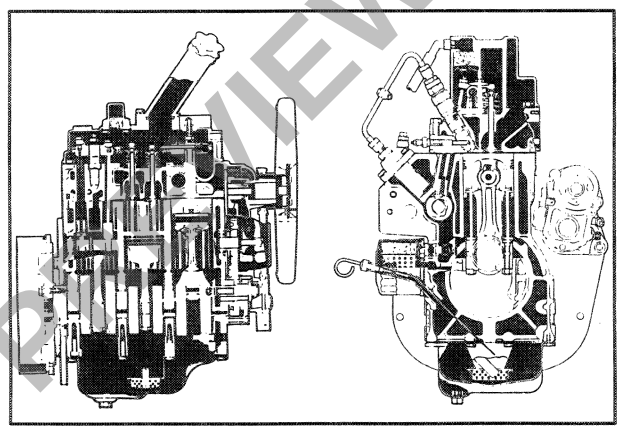


Figure 1
Three Cylinder - Model 1215

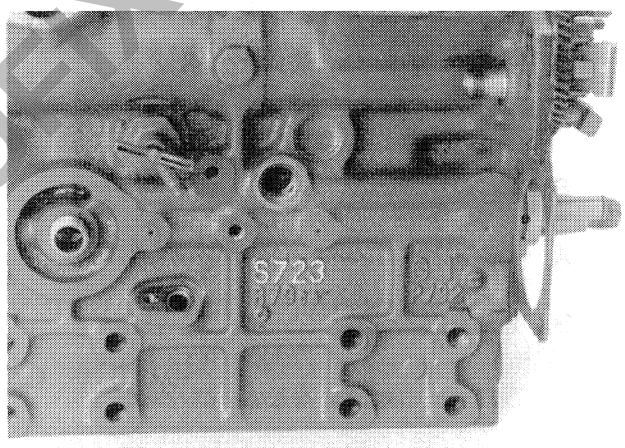


Figure 2
Block I.D.

CYLINDER HEAD AND VALVE TRAIN COMPONENTS

The cylinder head incorporates the valve assemblies, rocker shaft, rocker arm components, and pre-combustion chambers.

The intake manifold is incorporated into the left-hand side of the valve cover assembly.

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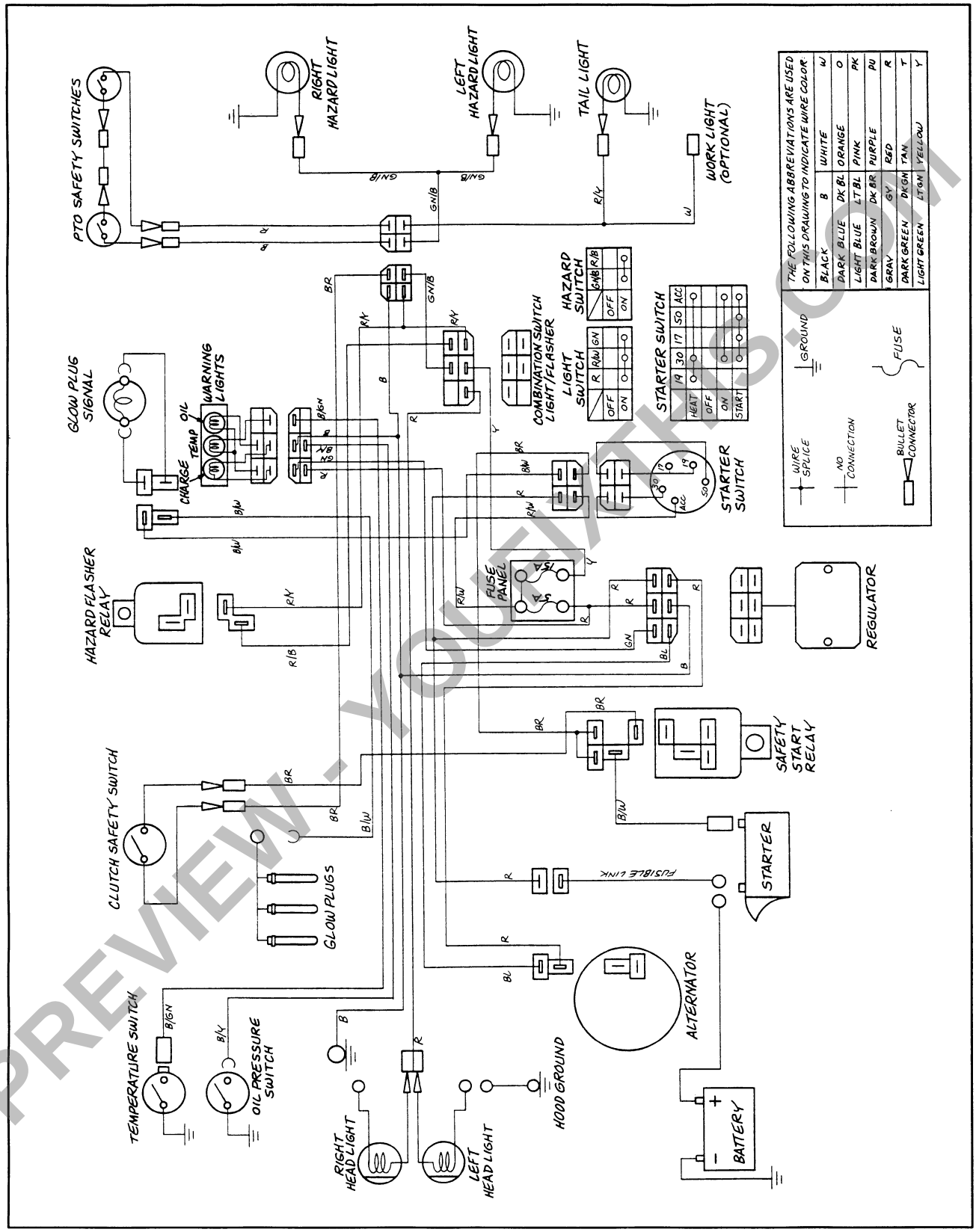


Figure 2
Wiring Diagram

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PART 6
POWER TAKE-OFF

CHAPTER 1
STANDARD POWER TAKE-OFF

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A. DESCRIPTION AND OPERATION

The standard 540 rear power take-off is available on the Model 1215 tractors equipped with either the 6 x 2 mechanical gear transmission or the hydrostatic transmission.

On the 6 x 2 mechanical gear transmission, the PTO drive is taken from the flywheel clutch and input shaft to the transmission PTO countershaft via a set of reduction gears located at the front of the transmission assembly, Figure 1.

A one-way clutch is used on the PTO output shaft on the 6 x 2 gear transmission model tractor. The one-way clutch transmits power in one direction only and is free wheeling in the other.

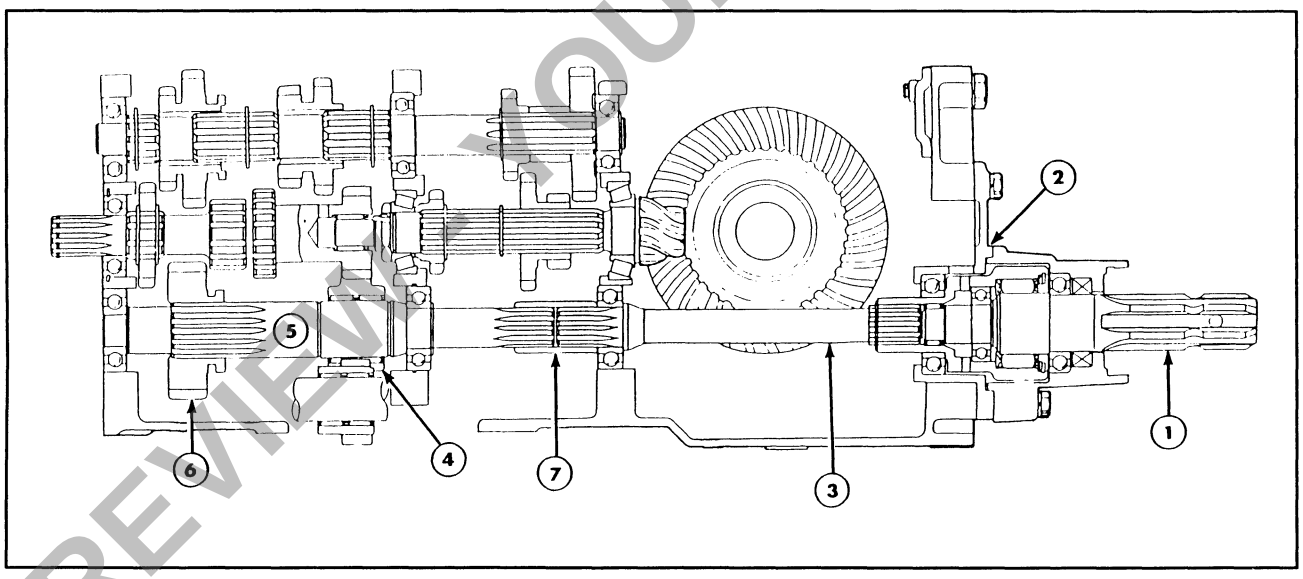


Figure 1
Standard 6 x 2 Gearbox Power Take-Off

1. Rear PTO-Output Shaft
2. One-Way Clutch Assembly
3. PTO Countershaft-Rear
4. Idler Gear-Mid-Mount PTO
5. PTO Countershaft-Front
6. PTO Sliding Gear
7. PTO Coupling

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