850, 900HC, 950 and 1050 Tractors

JOHN DEERE

TECHNICAL MANUAL

850, 900HC, 950 and 1050 Tractors

TM1192 (01AUG86) English

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John Deere
Lawn & Grounds Care Division
TM1192 (01AUG86)

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850, 900HC, 950 AND 1050 TRACTORS
Technical Manual
TM-1192 (Aug-86)

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Group 00
SPECIFICATIONS AND SPECIAL TOOLS
GENERAL TRACTOR SPECIFICATIONS (850-950)

	850 TRACTOR	950 TRACTOR
HORSEPOWER (Official PTO horsepower)	16.61 kW (22.27 hp) at 2600 rpm	20.40 kW (27.36 hp) at 2400 rpm
ENGINE:		
Type	3-cylinder, in-line, valve-in-head, diesel	3-cylinder, in-line, in-line, valve-in-head, diesel
Slow idle speed	800 rpm	800 rpm
Working speed range	1900 to 2600 rpm	1700 to 2400 rpm
Bore and stroke	80 x 85 mm (3.15 x 3.35 in.)	90 x 90 mm (3.54 x 3.54 in.)
Displacement	1.3 L (78 cu-in)	1.7 L (105 cu-in)
Compression ratio	21 to 1	20 to 1
Firing order (No. 1 in rear)	1-3-2	1-3-2
Valve clearance		
Intake	0.20 mm (0.008 in.)	0.15 mm (0.006 in.)
Exhaust	0.20 mm (0.008 in.)	0.15 mm (0.006 in.)

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Lubrication—Continued

Replace transmission-hydraulic oil filter
- 850, 900HC and 950 (if equipped) ..... After first 100 hours then Every 200 hours
- 1050 (all) ..... After first 100 hours then Every 200 hours

Check lubricant level in front axle housing* ..... Every 50 hours
Change lubricant in front axle housing* ..... After first 100 hours then Every 600 hours
Clean and repack front wheel bearings ..... Every 500 hours
Lubricate grease fittings
- Front axle pivot pin ..... Every 10 hours
- All others ..... Every 50 hours

*Front-wheel drive 950 and 1050 tractors only

Separation

ITEM	SPECIFICATIONS
Fan belt deflection (at 89 N [20 lbs.] push)	10 to 15 mm (3/8 to 5/8 in.)
ROLL-GARD Cap Screws	
Top	100 N·m (75 ft-lbs)
Lower	245 N·m (180 ft-lbs)
Engine Fender-to-Axle housing	90 N·m (65 ft-lbs)
Fender-to-step	30 N·m (22 ft-lbs)
Step-to-transmission case	50 N·m (36 ft-lbs)
Axle housing-to-transmission case	50 N·m (36 ft-lbs)
Drag Link-to-Pitman Arm	50 N·m (36 ft-lbs)
Clutch housing-to-transmission case	
850 and 950 without front wheel drive	120 to 150 N·m (87 to 108 ft-lbs)
950 with front wheel drive and all 1050	170 to 200 N·m (123 to 145 ft-lbs)
Clutch housing-to-engine	90 N·m (65 ft-lbs)
Side frames-to-engine	90 N·m (65 ft-lbs)
Hydraulic lines-to-pump	8 N·m (5.8 ft-lbs)
Hood mounting bracket cap screws	50 N·m (36 ft-lbs)

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Separation

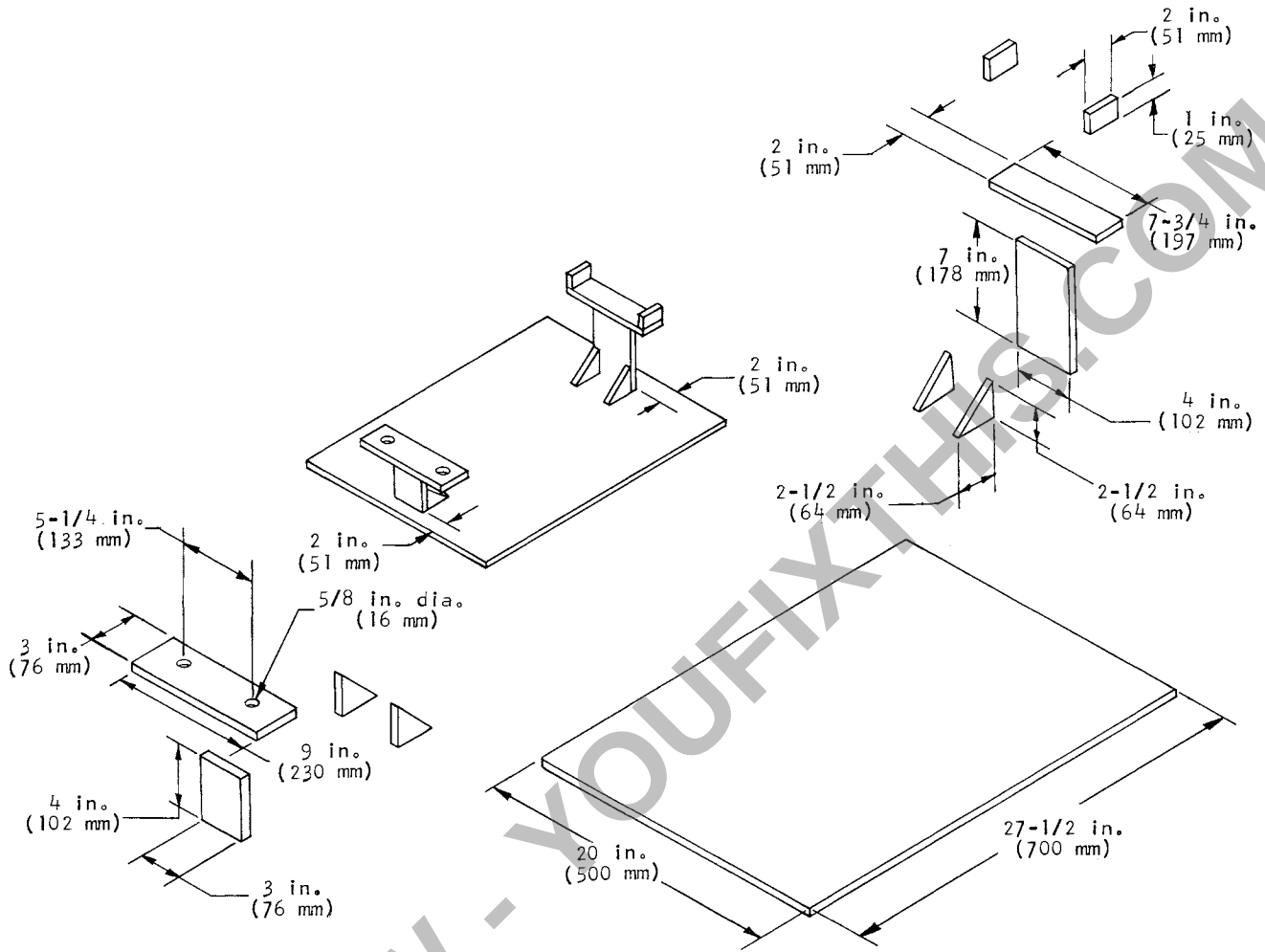


Fig. 5-Transmission Stand

NOTE: Make from 5/16 in. steel and weld all joints.

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Group 05
PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES 850 AND 950 TRACTORS

IMPORTANT: The 850 and 950 Tractors require set-up and assembly per instructions in shipping crates. Perform these operations prior to predelivery which follows.

The John Deere Delivery Receipt, when properly filled out and signed by the dealer and customer verifies that the predelivery and delivery services were satisfactorily performed. When delivering this machine give the customer his copy of the delivery receipt and the operator's manual. Explain their purpose to him.

Because of the shipping factors involved, plus extra finishing touches that are necessary to promote customer satisfaction, proper predelivery service is of prime importance to the dealer.

Instructions pointing out factory-recommended procedure for tractor setup and a tag pointing out factory-recommended procedure for predelivery are attached to the tractor.

After completing the factory-recommended dealer checks and services listed on the set up instructions and the predelivery tag, remove the tag and file it with the shop order for the job. The tag will certify that the tractor has received the proper predelivery service when that portion of the customer's John Deere Delivery Receipt is completed.

BEFORE STARTING TRACTOR

Before starting tractor, make a few quick checks to be sure it is in good operating condition. Check for any missing parts or damage.

Checking Engine Oil Level

Remove engine oil dipstick (Fig. 1) and wipe it off. Re-insert dipstick, but do not screw it down. Remove dipstick and check oil level. If necessary, add enough oil to bring oil level to top of cross hatch marks on dipstick. Use JOHN DEERE TORQUE-GARD SUPREME SAE 10W-20 or its equivalent.

NOTE: Tractor should be on a level surface when oil level is checked. If it is not, check only to make sure the crankcase is not dry. Recheck oil level later, when tractor is on level ground.

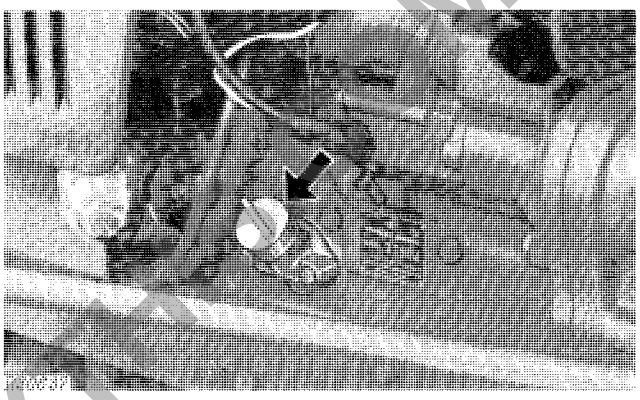
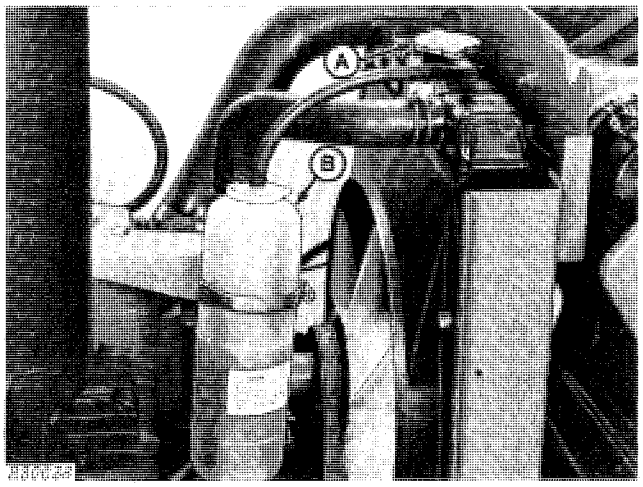


Fig. 1-Engine Oil Dipstick

Checking Coolant Level



A—Radiator Cap **B—Expansion Tank**

Fig. 2-Coolant Level Checks

Remove the radiator cap (A, Fig. 2) and check the radiator coolant level. The radiator should be full of coolant. The expansion tank (B) should have coolant up to the full mark on the expansion tank.

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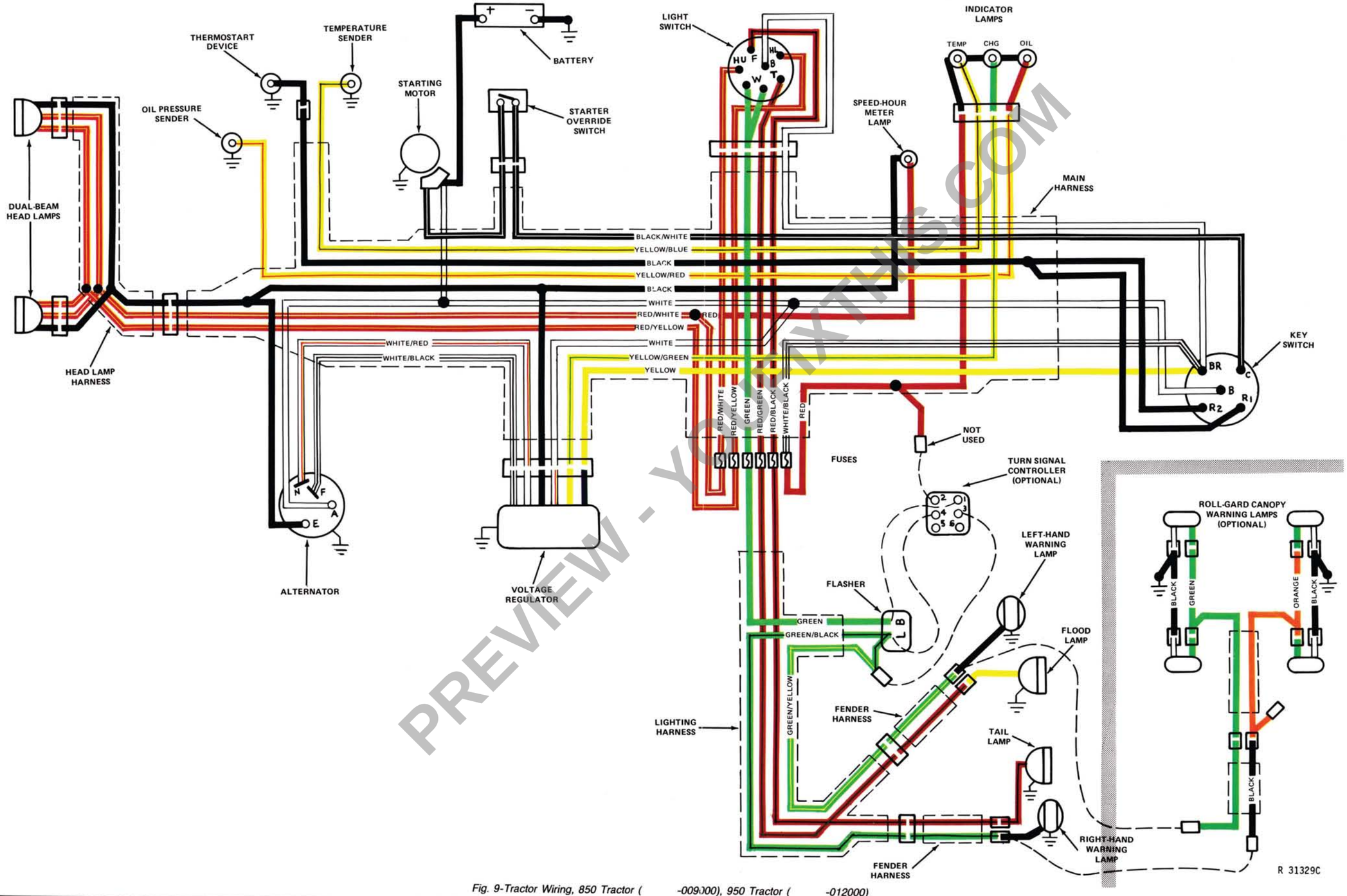


Fig. 9-Tractor Wiring, 850 Tractor (-009000), 950 Tractor (-012000)

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DIAGNOSING MALFUNCTIONS — CLUTCH

SYMPTOM/COMPLAINT	PROBLEM	SOLUTION
Clutch Slips	Oil or grease on facing	Clean or replace disk (See 50-5-3)
	Worn or glazed facing	Replace disk (See 50-5-1)
	Warped disk	Replace (See 50-5-3)
	Warped pressure plate	Replace (See 50-5-3)
	Warped flywheel	Replace (See 50-5-3)
	No pedal free play	Increase pedal free play (See 50-5-7)
	Operating levers binding or sticking	Clean or replace clutch (See 50-5-1)
	Pressure plate binding on operating bolts	Clean or replace as necessary (See 50-5-1)
	Operator riding clutch pedal	Instruct operator (See Operator's Manual)
Clutch Drags	Warped disk	Replace disk (See 50-5-1)
	Warped pressure plate	Replace (See 50-5-3)
	Warped flywheel	Replace (See 50-5-3)
	Excessive clearance between release lever plate and bearing	Decrease pedal free play (See 50-5-7)
	Disk binding on shaft splines	Replace as required (See 50-5-1)
	Pilot bushing binding on shaft	Replace as necessary (See 50-5-3)
	Release sleeve assembly sticking	Replace as necessary (See 50-5-2)
	Disk or facing broken	Replace (See 50-5-1)
	Clutch assembly rusty or dirty	Clean or replace (See 50-5-1)
	Engine idling too fast	Adjust (See Section 30)
Clutch Does Not Engage	Disk facings scored, worn or burned	Replace (See 50-5-3)
	Disk hub damaged	Replace (See 50-5-3)
	No clearance between release lever plate and bearing	Increase free play (See 50-5-7)
	Release bearing sleeve seized	Replace (See 50-5-1)
Clutch Grabs	Oil or grease on facing	Clean or replace disk (See 50-5-3)
	Facing worn or glazed	Replace disk (See 50-5-1)
	Disk hub sticking on shaft	Repair as necessary (See 50-5-1)
	Operating levers binding	Clean or replace (See 50-5-1)
	Pressure plate binding on operating bolts	Clean or replace as necessary (See 50-5-3)
	Pedal armshaft or linkage sticking	Repair as necessary (See 50-5-3)
	Clutch dirty	Clean (See 50-5-3)
	Excessive transmission backlash	Repair as necessary (See 50-10-3)
Clutch Squeak	Pilot bushing needs lubrication	Lubricate (See 50-5-3)
	Release bearing assembly needs lubrication	Lubricate (See 50-5-2)
	Failed release bearing	Replace (See 50-5-2)
Clutch Does Not Release	Clutch sticking to flywheel	Free and clean surfaces (when storing tractor for a long time, use a block to keep pedal in the disengaged position)

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A—Diverter Block
B—Flow Regulator
C—To Rockshaft
(or SCV if equipped)
D—To Steering Valve
E—Steering Relief Valve
F—Relief To Sump Line
G—To Sump
H—Inlet Port
I —Return Port
J —To Rod End
of Cylinder
K—From Piston End
of Cylinder
L —Steering Valve Housing
M—Steering Valve
N—Flow Divider Block
O—From Hydraulic Pump
P—To Rockshaft
High Pressure Oil
Return or Pressure
Free Oil

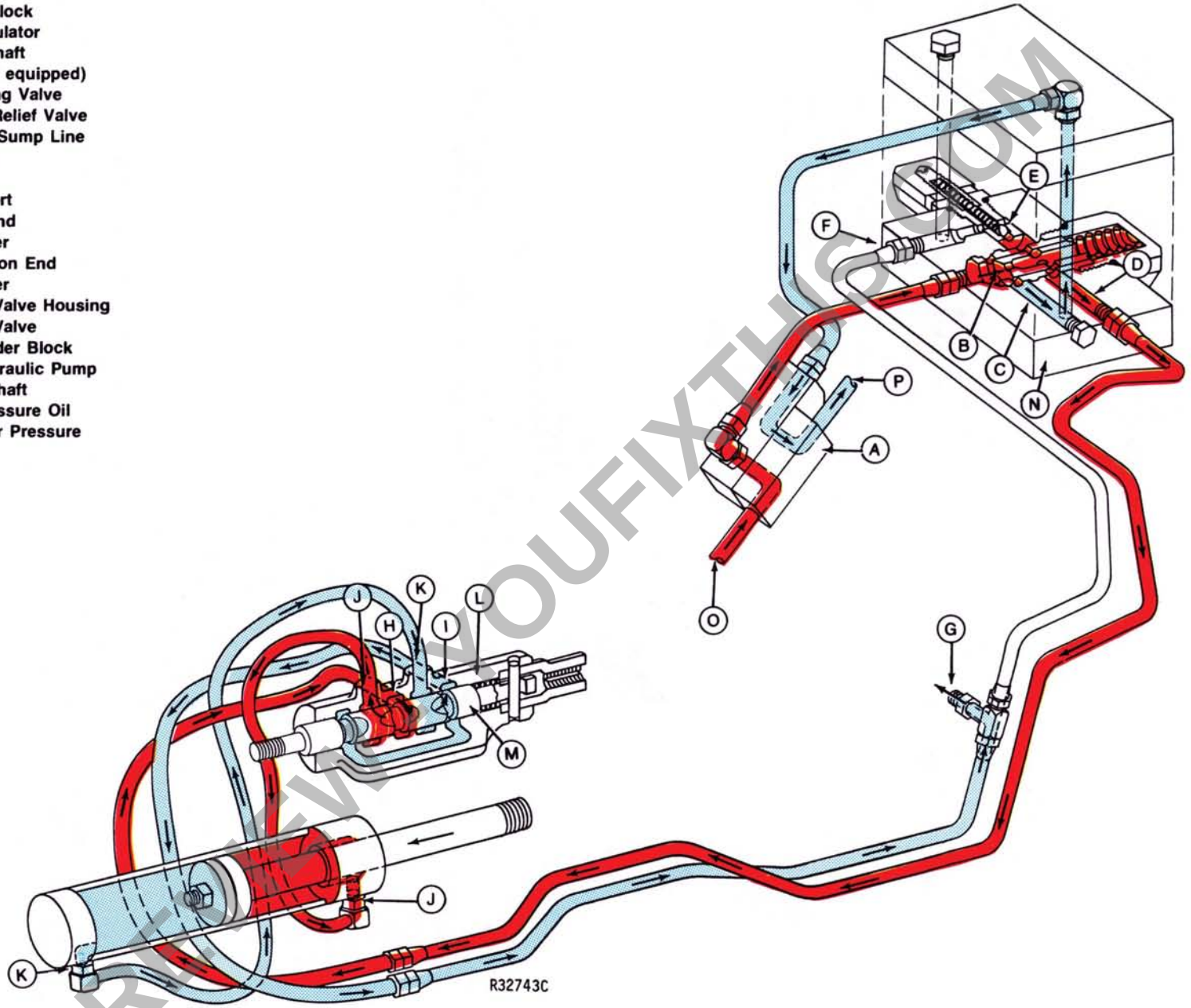


Fig. 2-Right Turn - Power

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- Group 30 - Selective Control Valve

**850 (-009000), 950 (-012000)*
***850 (009001-), 950 (012001-)*



This tractor is of metric design. All hardware is therefore metric. Make sure you use the specified metric hardware when replacement becomes necessary. For your convenience most specifications are given in customary U.S. measurement with metric measurement following.
Some specifications cannot be converted. Those appear in metric only.

All information, illustrations and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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GENERAL INFORMATION

Carefully written and illustrated instructions are included in the tractor operator's manual. Remind your customer to follow the recommendations in these instructions.

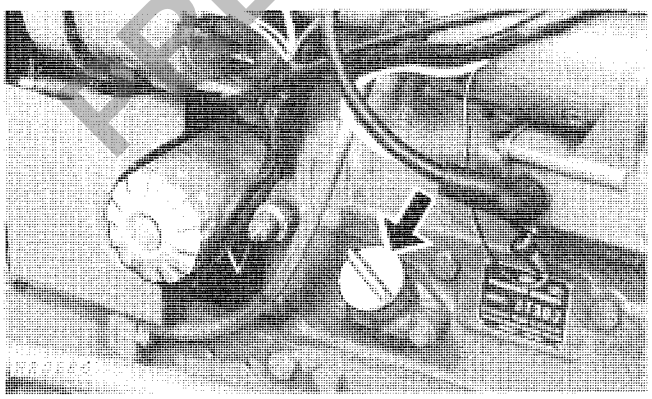
For your convenience when servicing the tractor, the following chart shows capacities and types of lubricants for the various components.

Component	Capacity	Type of Lubricant	Interval of Service
Engine Crankcase		See "Engine Lubricating Oils" on page 1.	10 Hours—Check level
850	4.5 L (5 U.S. quarts)		100 Hours—Change oil
950	6.6 L (7 U.S. quarts)		200 Hours—Replace filter
1050	6.6 L (7 U.S. quarts)		600 Hours—Clean vent tube
Transmission and Hydraulic System		JOHN DEERE HY-GARD Transmission and Hydraulic Oil	50 Hours—Check level 200 Hours—Change oil 200 Hours—Clean filter screen
850 (-16000) and 950 (-20000)	18 L (19 U.S. quarts)		
850 (16001-) and 950 (20001-)	22L (23 U.S. quarts)		200 Hours—Replace filter* 600 Hours—Replace filter screen as necessary
1050 (all)	26 L (27.5 U.S. quarts)	JOHN DEERE HY-GARD Transmission and Hydraulic Oil	200 Hours—Replace filter 600 Hours—clean filter screen 1200 Hours—Replace filter screen
Front Axle Housing			
850 Tractors	6.5 L (6.9 U.S. quarts)	John Deere GL-5 Gear Lubricant	50 Hours—Check level
950 and 1050 Tractors	8.5 L (8.9 U.S. quarts)		600 Hours—Change lubricant
Front Wheel Bearings	.....	Wheel Bearing Grease	600 Hours—Repack bearings
Grease Fittings	.....	John Deere Multipurpose Lubricant	See pages 5 and 6

**Hydraulic oil filter is optional on 850 and 950 Tractors.*

ENGINE CRANKCASE

Checking Oil Level



R30586

Fig. 1—Crankcase Dipstick

Remove engine oil dipstick (Fig. 1) and wipe it off. Re-insert dipstick, but do not screw it down. Remove dipstick and check oil level. If necessary, add enough oil to bring oil level to top of cross hatch marks on dipstick. Use JOHN DEERE TORQUE-GARD SUPREME SAE 10W-20 or its equavalent.

SERVICE INTERVAL: At predeliver and after every 10 hours.

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CAMSHAFT LOBE SPECIFICATIONS 850 TRACTOR

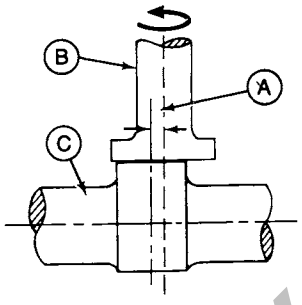
	New Part	Wear Limit
Intake-		
Exhaust Valve	44.50 mm (1.752 in.)	44.00 mm (1.732 in.)
Fuel Pump	45.00 mm (1.772 in.)	44.90 mm (1.768 in.)

CAMSHAFT LOBE SPECIFICATIONS 950 TRACTOR

	New Part	Wear Limit
Intake-		
Exhaust Valve	38.60 mm (1.521 in.)	38.10 mm (1.501 in.)
Fuel Pump	39.00 mm (1.535 in.)	38.9 mm (1.374 in.)

Camshaft Followers

1. Remove camshaft followers from block.



A—Offset **B—Cam Follower** **C—Camshaft**

Fig. 42-Follower Movement

Follower centers are out of alignment with the camshaft lobe centers. This causes the follower to rotate (Fig. 42), preventing uneven wear.

Inspect the follower wear surface for uneven wear, and replace if excessive.

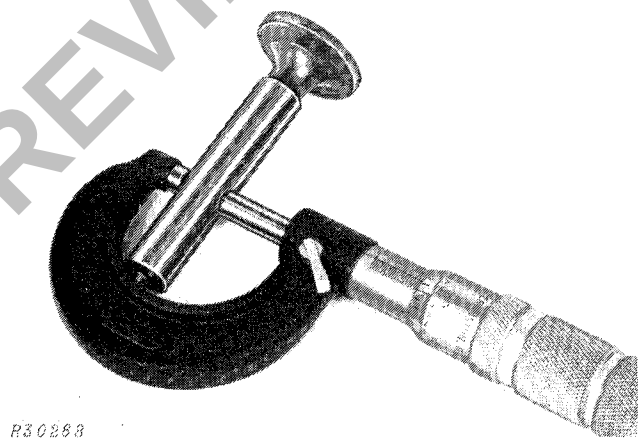


Fig. 43-Measuring Followers

2. Measure followers (Fig. 43) and follower bore in block and compare measurements taken with the following specifications:

CAMSHAFT FOLLOWER SPECIFICATIONS

	New Part	Wear Tolerance
O.D. of Follower	11.00 mm (0.433 in.)	10.95 mm (0.431 in.)
Oil Clearance	0.01 to 0.03 mm (0.0002 to 0.001 in.)	0.10 mm (0.004 in.)

Push Rods

Lay the push rods on a flat surface. Use a feeler gauge to check for bent push rods. Compare measurement taken with the following specifications:

PUSH ROD BEND SPECIFICATIONS

New Part	Maximum Acceptable
0.03 mm (0.0012 in.)	0.3 mm (0.012 in.)

Inspect the push rod for wear on each end. Measure the push rod length and compare to the following specifications:

PUSH ROD LENGTH SPECIFICATIONS

	New Part	Minimum Acceptable
850	163.5 mm (6.44 in.)	161.5 mm (6.36 in.)
950	196.0 mm (7.72 in.)	194.0 mm (7.64 in.)

Assembly

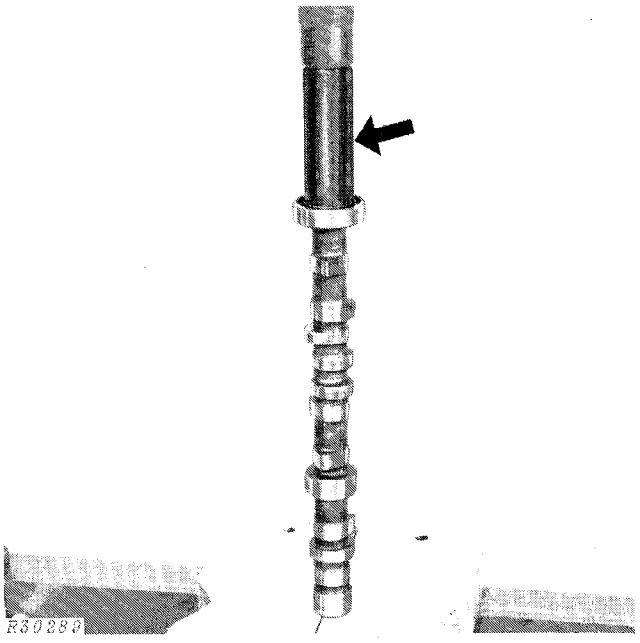


Fig. 44-Installing Bearing

1. Support camshaft in a press, and press on bearing with JDE-121 Installation Tool (Fig. 44). Bearing should be pressed on until it bottoms on shoulder of camshaft.

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Inspection and Service—Continued

Service the filter element whenever a tune-up or overhaul is to be performed on the engine. See the tractor operator's manual for filter element service instructions.

Installation

Slip mounting bracket on air cleaner body, and fasten bracket to radiator support.

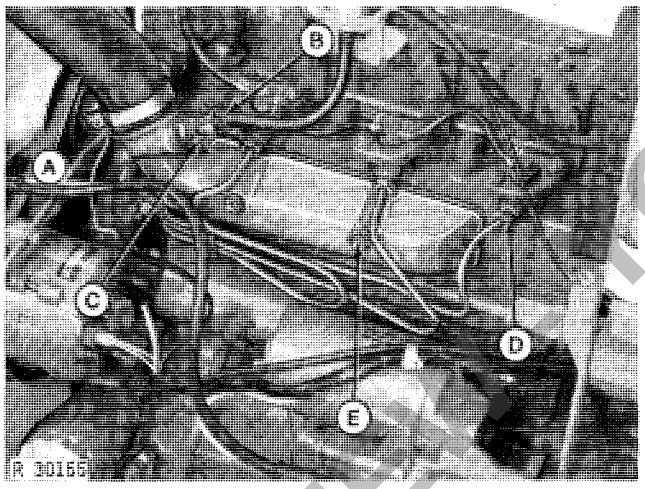
Install air intake hose. Securely tighten hose clamps.

With the air cleaner body correctly positioned, tighten the mounting bracket clamp screw lock nuts.

Install filter element, dust cup, and hood.

INTAKE MANIFOLD

Removal



A—Intake Hose
B—Supply Hose
C—Wiring Lead
D—Fuel Pipes
E—Stud Nuts

Fig. 3-Intake Manifold Removal

Thoroughly clean area around intake manifold before removing parts.

Disconnect the air intake hose (A, Fig. 3), thermostart fuel supply hose (B), and wiring lead (C).

Remove fuel pipes (D). (See Group 10, this section.)

Remove three nuts (E) which secure manifold to cylinder head, and carefully remove manifold.

Repair

Inspect the intake manifold to see that it is not cracked, or has any other defects which would permit unfiltered air to enter the combustion chamber.

Replace the intake manifold, should it be defective.

Installation

If gasket is not in good condition, remove all the old gasket material from cylinder head and intake manifold, and replace with a new one.

Install manifold using a new gasket. Torque stud nuts to 25 N·m (18 ft-lbs).

Install fuel pipes and air intake hose.

Connect thermostart hose and wiring lead.

Bleed the fuel system (Group 10, Section 230).

Start engine and check operation.

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NOTE: Do not conduct the no-load test unless the armaure turns freely.

4. Connect a 12-volt battery (A) to starter battery terminal (B) and starter frame (C) as shown. Use heavy duty cables.

5. Connect a remote start switch (D) between switch terminal (E) and battery terminal (B).

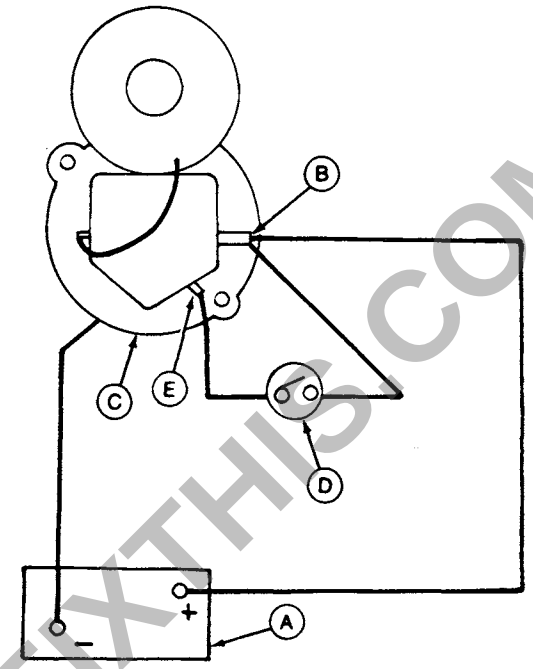
NOTE: On late model tractors, a short piece of wire with a small alligator clip on the end will allow a more positive hookup at the switch terminal.

6. When switch is activated, starter should engage and run.

7. If solenoid only chatters, hold-in winding is open-circuited. If nothing happens, either the pull-in winding is open-circuited or mechanical parts are sticking. To check for sticking, remove solenoid end cover and push plunger by hand.

8. If solenoid engages properly, but motor does not run, check main contact points, bearings, brushes, reduction gears, armature, and field windings.

NOTE: The solenoid cannot be repaired although mechanical parts may be replaced. Disassemble solenoid to determine cause of problem.



A—12-Volt Battery
B—Battery Terminal
C—Starter Frame
D—Remote Start Switch
E—Switch Terminal

A21;RW2159 U07;040015B 280684

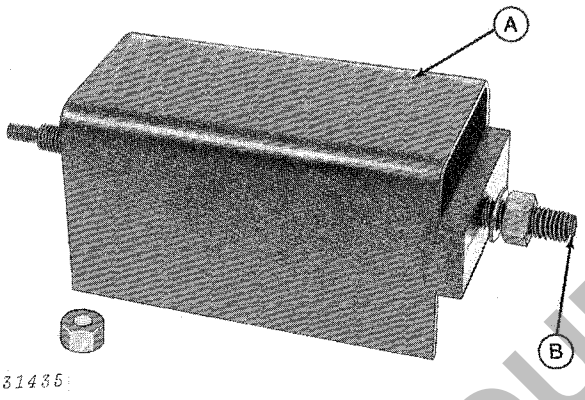
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TOOL	NUMBER	USE
Straightedge and Feeler Gauge		**Used to measure flywheel, pressure plate and clutch disk flatness.**
Vernier Caliper		**Used to measure clutch disk thickness.**
Depth Gauge		**Used to measure clutch release plate height.**

Sliding Gear Transmission (850 and 950 Tractors)

	A—JDT-40 **B—JDE-114-1**	**Used with spacer tools to remove transmission drive shaft.**



A—Puller Body **B—Forcing Screw**

Fig. 6-Transmission Drive Shaft Removal Tool

	JDT-39	**Used to separate forward two gear sets on transmission drive shaft when the shaft is removed. This tool must be used with the following spacer tool to prevent gears binding on one another and damage during removal.**

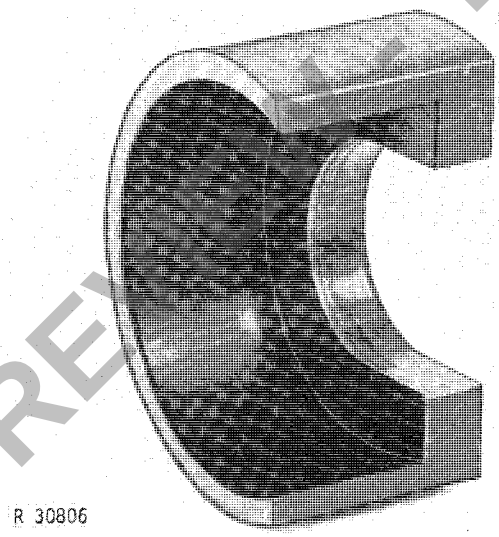


Fig. 7-Transmission Gear Spacer

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Change and Reverse Shifter Shafts and Forks—Continued

5. Use a small magnetic pickup tool to remove detent balls (B) from detent bores.

6. Remove reverse shift stop plate (C).

NOTE: Remove shifters from left to right as shown in Fig. 2. Removing the reverse shifter last is the easiest sequence of removal.

7. Bend a piece of light wire to fit through the bottom of spring pin (D) and use a spring pin punch to drive the "3-4" fork spring pin down through the shaft. Catch the spring pin using the wire.

8. Drive shaft (H) from the rear of the transmission case wall using a brass drift. Use care not to damage shaft bore in case wall.

NOTE: It may be necessary to use a pliers to remove shaft through fork since the fork fits tightly on the shaft. If this is necessary, cut a one inch (25 mm) length of rubber hose lengthways to fit over shaft and protecting the shaft with the hose, remove the shaft.

9. Remove the shifter fork.

10. Repeat steps 8 through 11 for the remaining two shifters. Note that the reverse shifter assembly has two spring pins (D) which must be removed.

11. To remove the two shaft interlock pins, remove pipe plug (I) using a metric allen wrench and use a small magnetic pickup tool to remove interlock pins through plug bore.

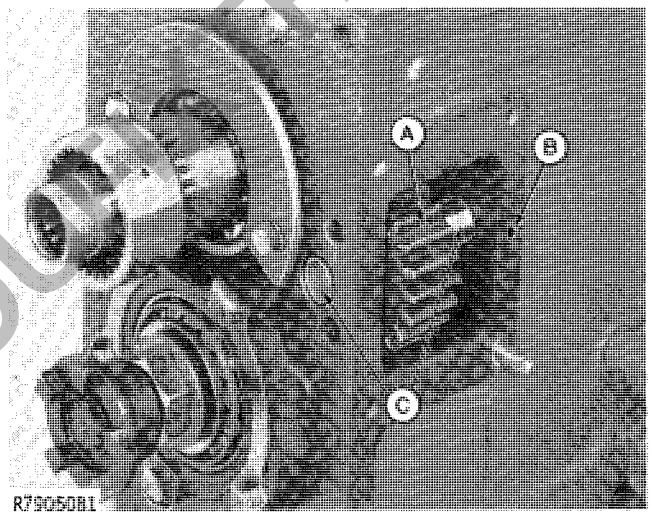
Reverse Countershaft and Gear

IMPORTANT: Remove reverse countershaft and gear only if it is necessary to replace shaft O-ring, shaft, gear or bushings. Excessive shaft removal can damage the shaft.

1. Remove transmission drain plug from the oil filter housing at the bottom of the transmission case, and drain oil.

2. Remove transmission case side cover from the left-hand side of the transmission case.

3. Separate the tractor between the transmission case and the clutch housing as instructed in Section 10, Group 20.



A—Reverse Idler Gear
B—Spring Pin Holes
C—Reverse Countershaft

Fig. 3-Reverse Idler Gear and Countershaft

4. Place change shift lever in speed "4" and drive countershaft retaining spring pin through hole in side of transmission case and shaft (B, Fig. 3). Catch spring pin using a piece of light wire bent to fit through inner end of spring pin.

5. Slide reverse gear (A) forward against case.

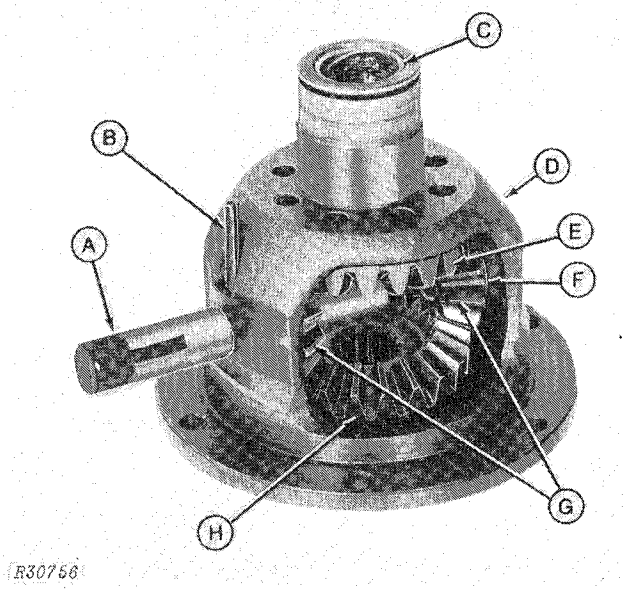
6. Use a pliers with brass or rubber around the shaft to push shaft forward through front of transmission case. Avoid damaging the finish on the gear area of the shaft.

7. Remove reverse gear from case.

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INSPECTION AND REPAIR—Continued

Disassembly—Continued



A—Bevel Pinion Shaft
B—Spring Pin
C—Bushing
D—Differential Housing
E—Bevel Lock Gear
F—Thrust Washer
G—Bevel Pinion
H—Bevel Gear

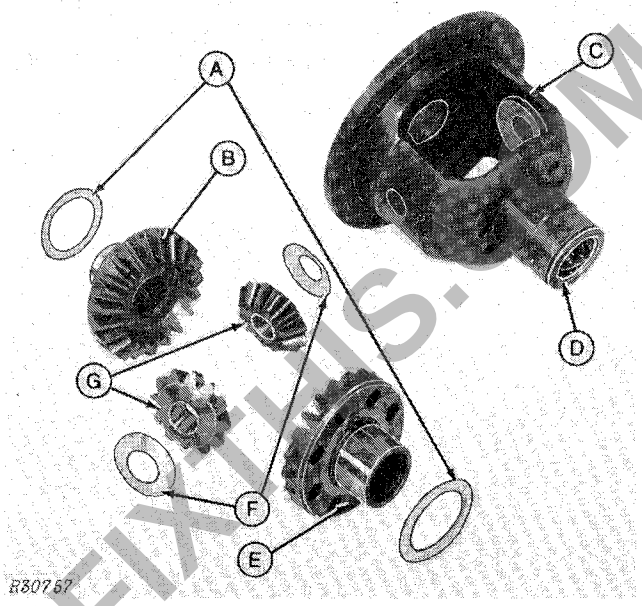
Fig. 6-Removing Pinion Shaft

5. Drive spring pin (B, Fig. 6) from differential housing and pinion shaft (A) using a spring pin punch.

6. Remove pinion shaft (A) from housing.

7. Remove gears and pinions by walking pinions (G) around gears. Remove thrust washers (F).

Assembly



A—Gear Thrust Washer
B—Bevel Gear
C—Differential Housing
D—Bushing
E—Bevel Lock Gear
F—Pinion Thrust Washer
G—Bevel Pinions

Fig. 7-Gear and Pinion Assembly

1. Inspect bushing (D, Fig. 7) and replace if worn excessively.

TRACTOR	BUSHING I.D.	BUSHING O.D.
850	1.1835-1.1847 in. (30.06-30.09 mm)	1.3012-1.3020 in. (33.05-33.07 mm)
950	1.2992-1.3022 in. (33.00-33.08 mm)	1.4587-1.4600 in. (37.05-37.09 mm)

2. Inspect housing (C) for damage or wear. I.D. for pinion shaft is 0.7874 to 0.7882 in. (20.00-20.02 mm).

3. Inspect pinion shaft. O.D. is 0.7858 to 0.7866 in. (19.96-19.98 mm).

4. Inspect differential pinions (G). I.D. of pinion is 0.7890-0.7898 in. (20.04-20.06 mm).

5. Maximum clearance between pinion and pinion shaft is 0.016 in. (0.4 mm).

6. Inspect thrust washers (A and F). New thickness is 0.037-0.041 in. (0.95-1.05 mm). Replace if washer is damaged or grooved or if they are less than 0.024 in. (0.6 mm) thick.

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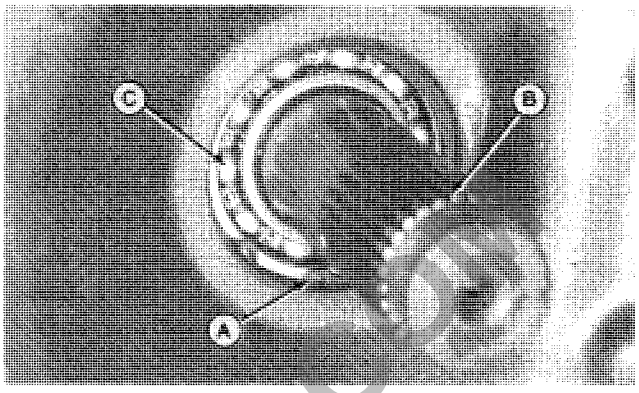
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ASSEMBLE DROP HOUSING

1. Install a new oil seal and sleeve, packing, and spacer into drop housing, the same order as removed.

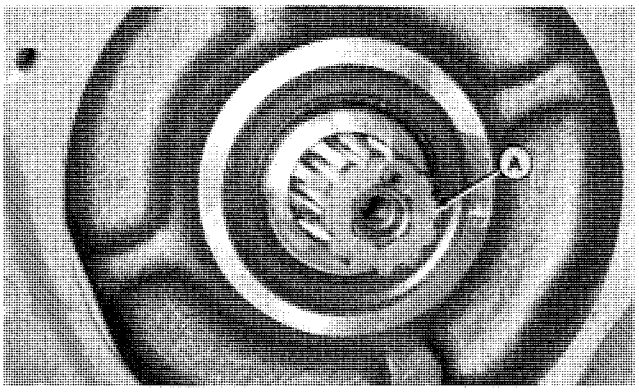
2. Lubricate I.D. of oil seal with grease and install axle shaft (B), into drop housing.

3. Install bearing (C) over axle shaft. Be sure bearing starts squarely into housing bore. Drive bearing until seated in housing bore and install snap ring (A).



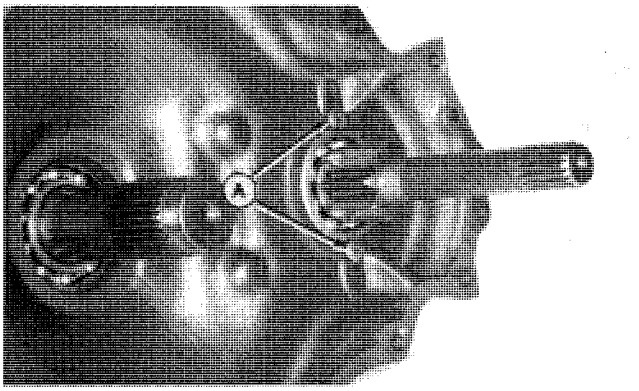
6AF;M55193 M21;;5027 26 180786

4. Coat I.D. of seal with grease and install pinion shaft assembly (A) in housing bore. Bearing should seat against shoulder in housing.



6AF;M55195 M21;;5027 27 200886

5. Coat threads of bearing retaining screws (A) with Loctite. Install and tighten screws to 15 N·m (11 lb-ft).



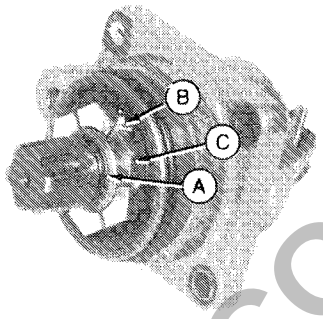
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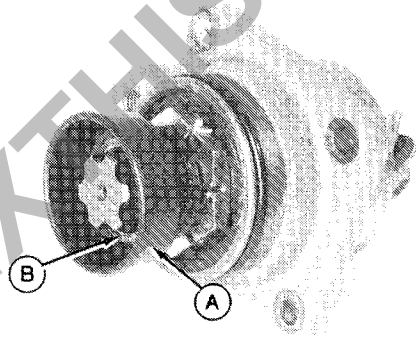
5. Reinstall nut (C) and recheck starting drag torque. If correct, install cotter pin (B).

6. Coat O-ring (A) with oil and install.



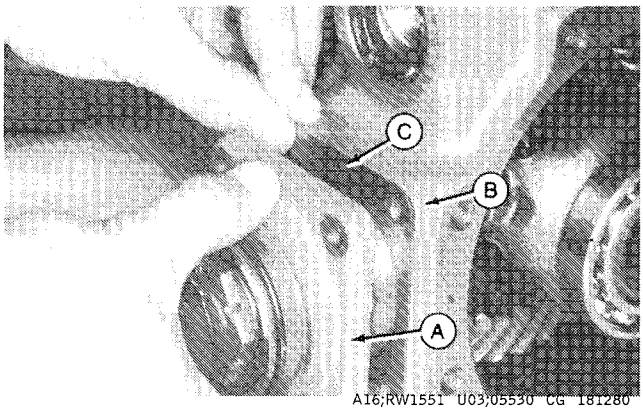
A16;RW1575 U03;05530 CE 181280

7. Install sleeve (B) and rubber boot (A).



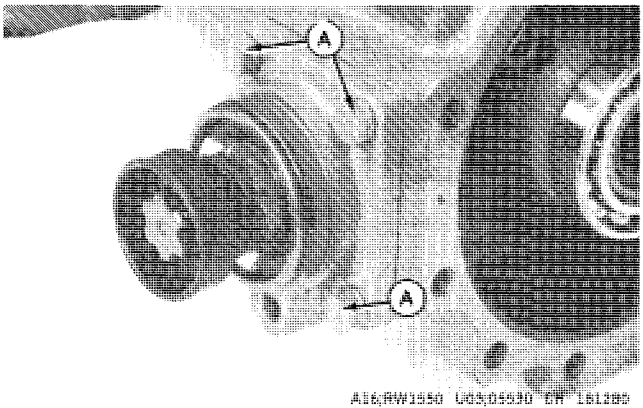
A16;RW1552 U03;05530 CF 181280

8. Install differential drive shaft housing (A) into axle housing (B). If original differential drive shaft and ring gear are installed, install the same thickness of shims (C) as were removed. If new parts are used, check differential drive shaft cone point and backlash.



A16;RW1551 U03;05530 CG 181280

9. Install cap screws (A) and torque to 27 N·m (20 ft-lbs).

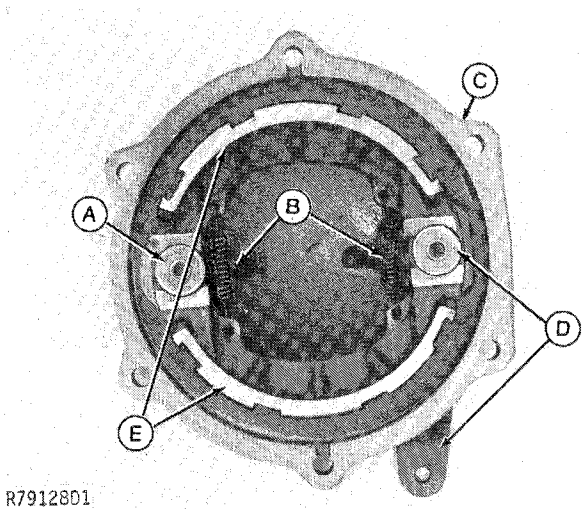


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Disassembly



A—Anchor Pin
B—Shoe Return Springs
C—Cover
D—Operating Arm with Cam Pin
E—Brake Shoes

Fig. 10-Brake Shoe Disassembly

1. Remove return springs (B, Fig. 10) and remove shoes (E).

2. Remove operating arm with pin (D).

3. Remove nut from outside of cover and remove anchor pin (A).

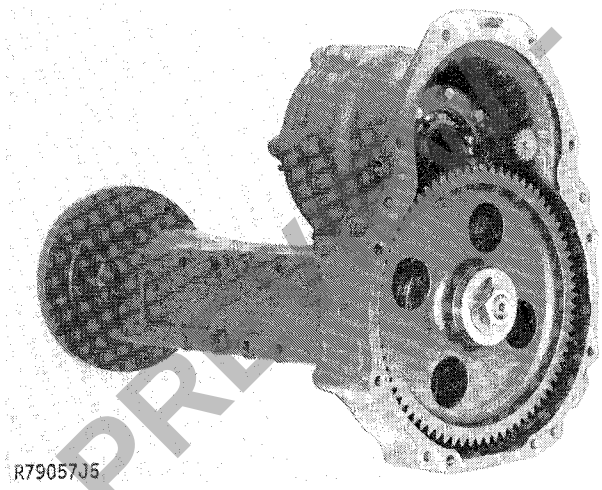
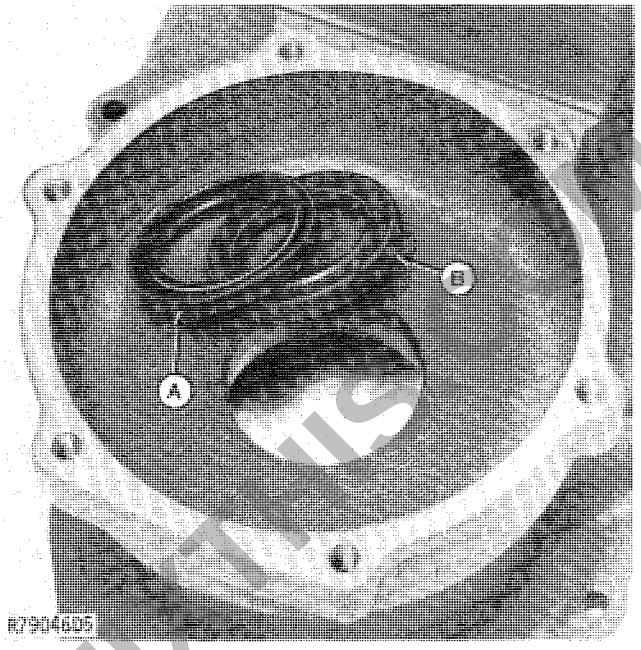


Fig. 11-Final Drive Housing Removed

4. If oil contamination is present in the brake housing or on the shoes, pinion shaft seals must be replaced.

NOTE: See section 50, group 25 for final drive and piston shaft removal.

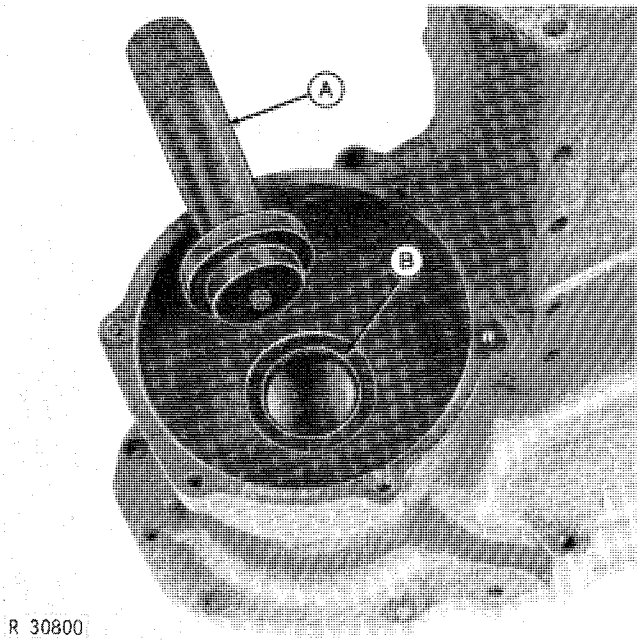
Repair, Assembly and Installation



A—Outer Seal **B—Inner Seal**

Fig. 12-Seal Installation (1050)

1. If pinion shaft was removed, replace seals (Fig. 12). Seals in 1050 should be installed back-to-back so sealing lips face away from each other.

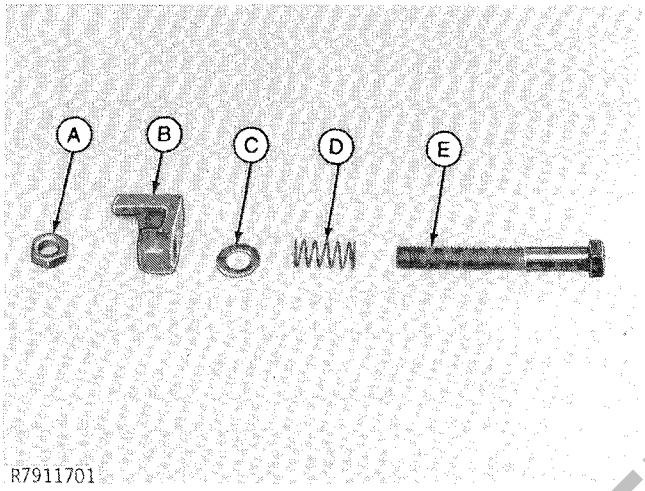


A—Seal Driver **B—Pinion Seal**

Fig. 13-Installing Final Drive Pinion Shaft Seal (850 and 950)

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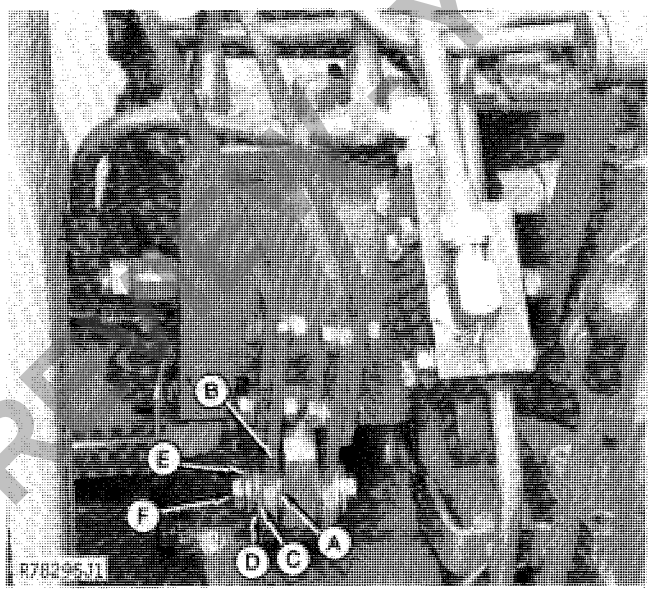
1. Inspect lever arms (C, Fig. 30) for damage or wear. Straighten or replace as necessary.
2. Inspect pivot bushings (B) for wear. Be sure larger O.D. of bushings face one-another when assembled. Coat bushings with a thin layer of grease.
3. Replace cotter pins and assemble as shown.



A—Jam Nut
B—Lockout Lever
C—Washer
D—Spring
E—Screw

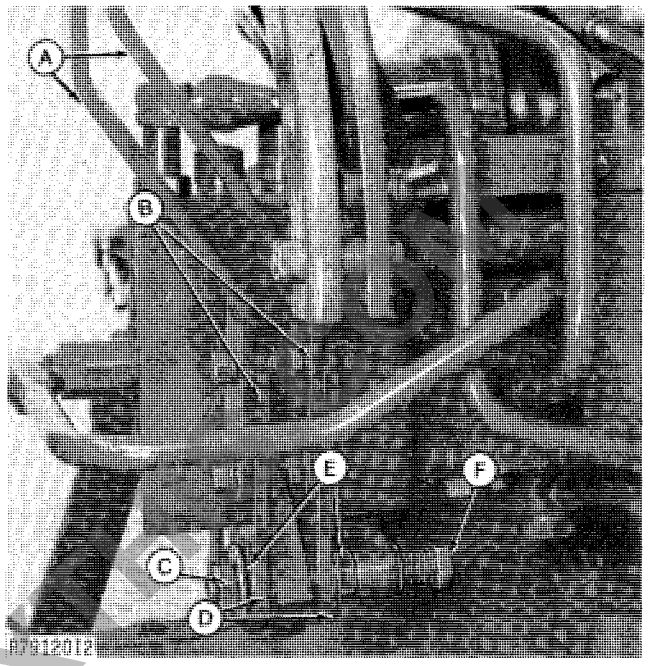
Fig. 31-1050 Float Lockout Lever Assembly

4. Inspect float lockout lever parts (Fig. 31) and assemble as shown.



A—Washer
B—Bell Crank
C—Washer
D—Spring Washer
E—Flat Washer
F—Cap Screw

Fig. 32-850/950 Operating Lever Assembly



A—Operating Levers
B—Lever Arms
C—Retaining Nut
D—Flat Washer
E—Spring Washer
F—Lockout Adjusting Screw

Fig. 33-Installing 1050 Operating Linkage (Tractor Shown Without Power Steering)

5. Assemble operating arms to mounting bracket using adjusting screw (F, Fig. 33) as its pivot. Install a flat washer and a spring washer (D and E) as shown.

6. Install nut (C) and tighten so lever arms rotate with a slight drag.

7. Straighten or replace levers (A) as required and assemble securely to arms as shown.

8. With float lockout lever contacting link at SCV spool valve, tighten adjusting screw (F) so lever can be moved to float position (Fig. 35) by hand.

9. Tighten jam nut and retaining nut (C) after float position has been adjusted and levers operate properly.

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BLEEDING FUEL SYSTEM

CAUTION: Diesel fuel escaping under pressure can have enough force to penetrate the skin. Before disconnecting lines, relieve all pressure. Before applying pressure to system, be sure all lines, pipes and hoses are in good condition. Fuel escaping under pressure from small holes can be nearly invisible. Use a piece of cardboard or wood. NOT YOUR HANDS, to check for suspected leaks.

If injured by escaping fuel, see a doctor at once. Serious infection will develop if not properly and immediately cared for.

Whenever the fuel system has been opened up for service (lines disconnected of filter removed), it will be necessary to bleed the air from system.

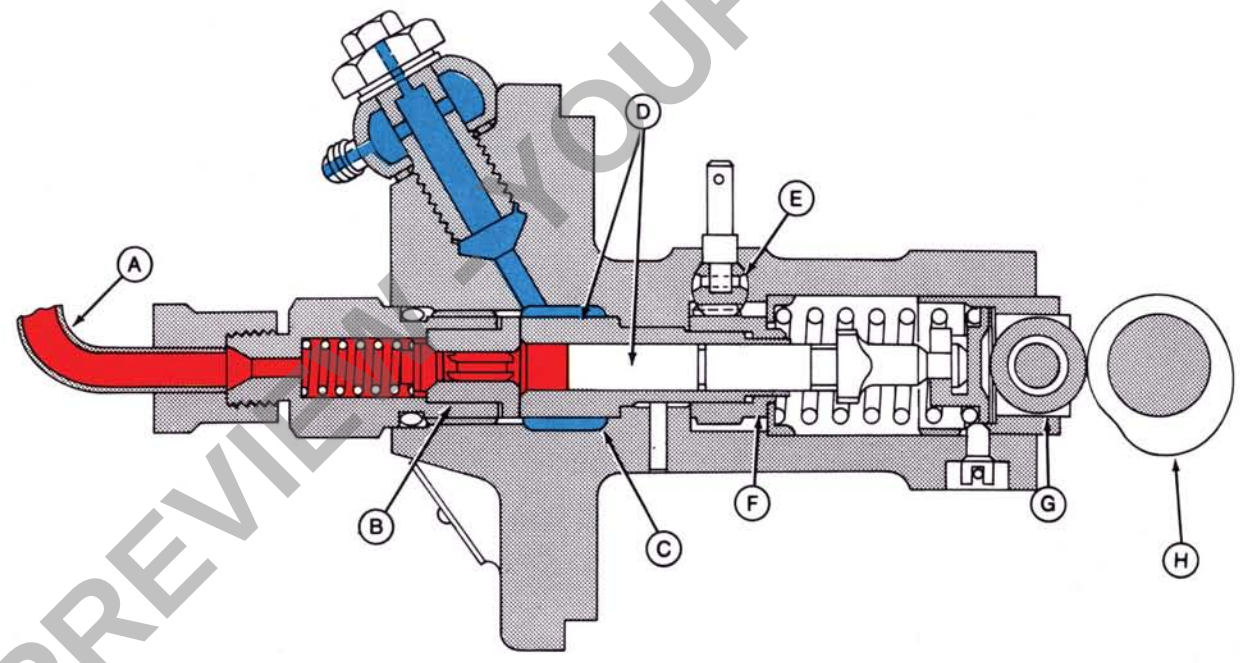
To bleed air from the filter or pump, loosen bleed screws (Fig. 4) until fuel without air flows from around screws. Tighten screws.

If the engine will not start, it may be necessary to bleed air from the fuel pipes at the injection nozzles. Loosen the fuel pipe connectors at the injection nozzles. On 850 (-9000) and 950 (-12000), pull the decompression handle out and crank the engine with the starter until fuel (without air) comes out around connectors. Tighten connectors, push decompression handle fully in, and start engine.

FUEL INJECTION PUMP

General Information

The Yanmar PFR3K injection pump (Fig. 5) is a multi-plunger, in-line type pump. It differs from most in-line type pumps however, in that it does not have its own camshaft and governor.



R30612

A—Fuel Delivery Pipe
B—Delivery Valve
C—Fuel Gallery
D—Barrel and Plunger
E—Control Rack
F—Control Sleeve
G—Roller Tappet
H—Engine Camshaft
Injection Pressure
Gravity Pressure

Fig.5 - Sectional View of Yanmar PFR3K Injection Pump

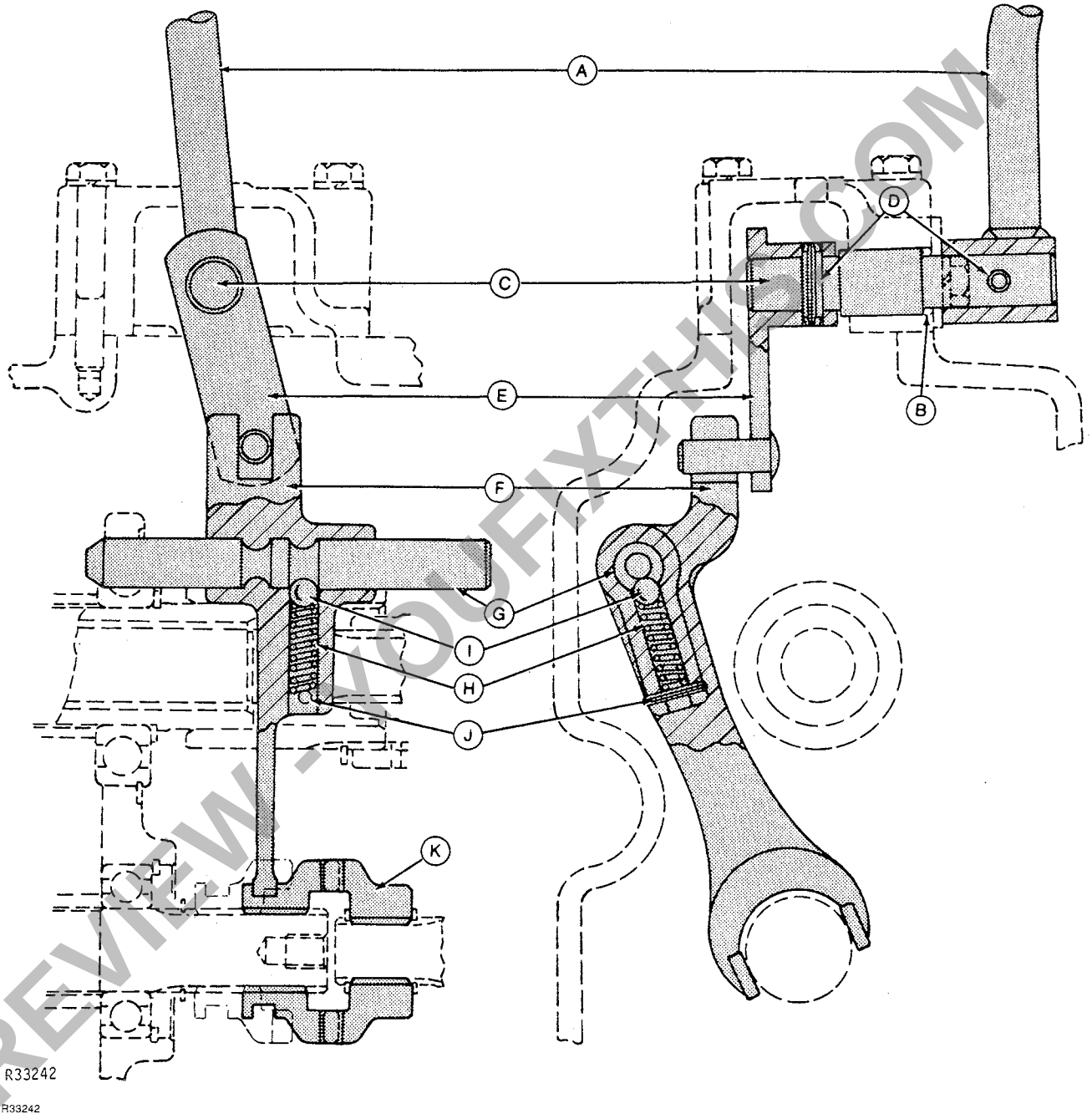
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SHIFTER ASSEMBLY



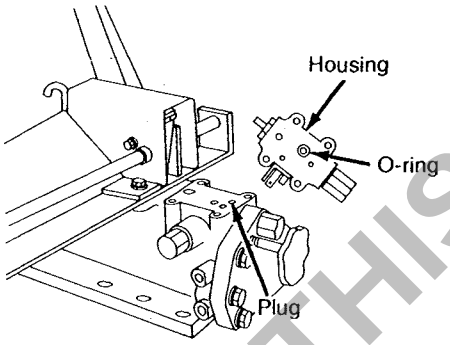
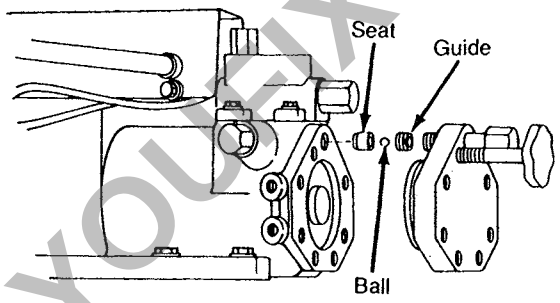
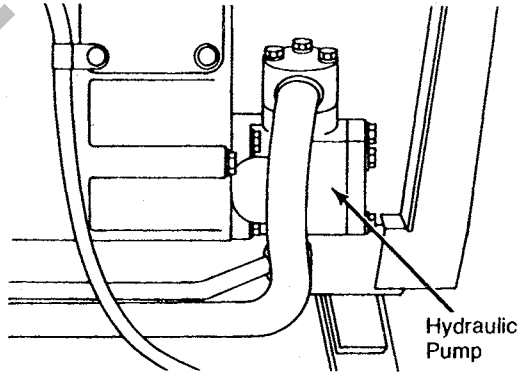
A—Shifter Lever
B—O-Ring
C—Shaft
D—Roll Pins
E—Arm
F—Shifter Fork
G—Shifter Shaft
H—Detent Spring
I—Detent Ball
J—Roll Pin
K—Coupler

Fig. 3—Front-Wheel Drive Shifter

The mechanical front-wheel drive shifter assembly is located in the rear of the clutch housing. Moving the mechanical front-wheel drive lever (A, Fig. 3) to the "On" position engages a coupler on the top front-wheel drive shaft with a coupler (K) at the front of the differential drive shaft. A detent spring (H) and ball (I) within the shifter fork (F) holds the shifter in either the "On" or "Off" position.

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STEP	SEQUENCE	RESULT
20 Remove rockshaft control valve housing for inspection of O-ring. NOTE: Be sure plug is tight, replace valve housing gasket.		Satisfactory — GO TO STEP 21 Unsatisfactory. Replace O-ring. — GO TO STEP 11
21 Remove rockshaft piston cover, then remove relief valve guide and valve seat. Inspect seat, ball, and O-ring for damage, replace as necessary.		Satisfactory. — GO TO STEP 22 Unsatisfactory. Replace, then . . . — GO TO STEP 11
22 Replace hydraulic pump. (See page 70-10-1)		GO TO STEP 11

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