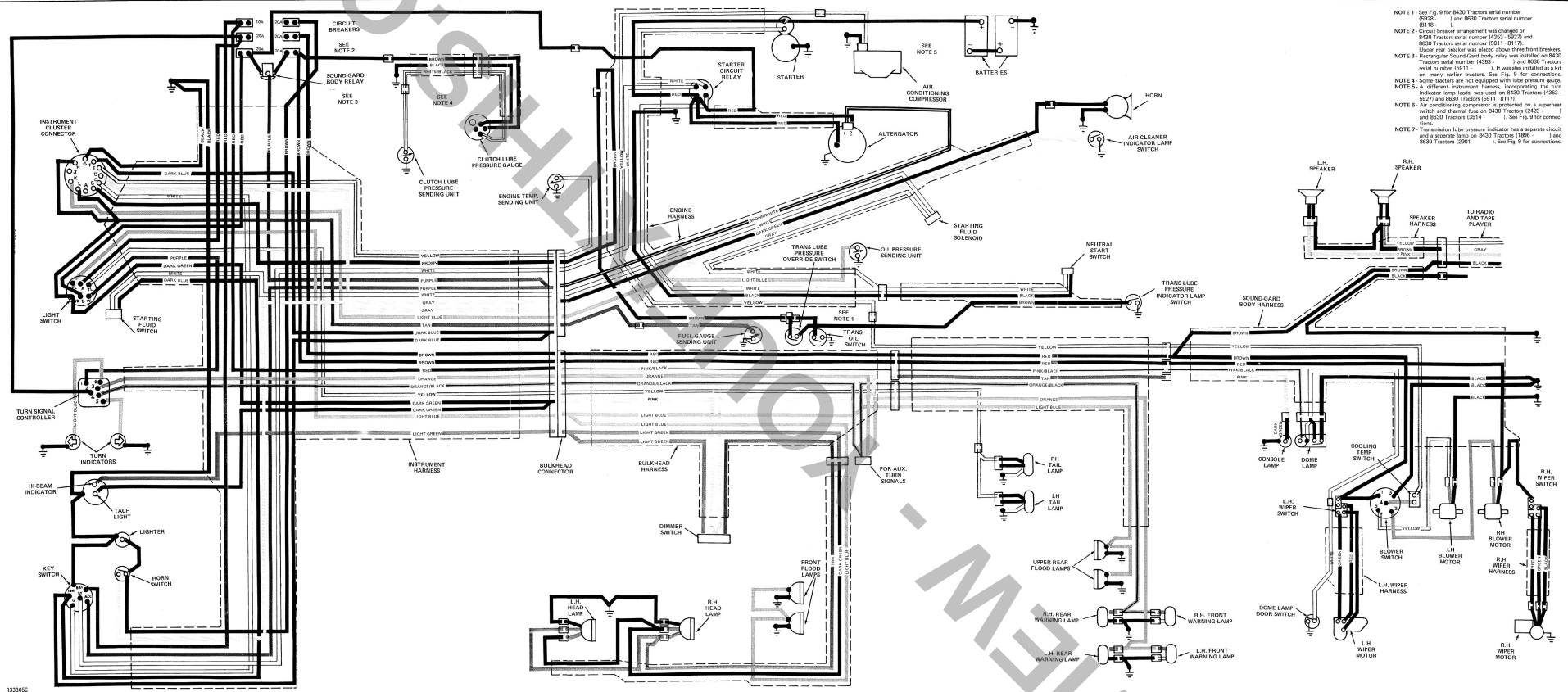


NOTE 1 - See Fig. 9 for 8430 Tractors serial number (5928 -) and 8630 Tractors serial number (8118 -).

NOTE 2 - Circuit breaker arrangement was changed on 8430 Tractors serial number (4353 - 5927) and 8630 Tractors serial number (5911 - 8117). Upper rear breaker was placed above three front breakers.

NOTE 3 - Rectangular Sound-Gard body relay was installed on 8430 Tractors serial number (4353 -) and 8630 Tractors serial number (5911 -). It was also installed as a kit on many earlier tractors. See Fig. 9 for connections.

NOTE 4 - Some tractors are not equipped with lube pressure gauge.

NOTE 5 - A different instrument harness, incorporating the turn indicator temp tests, was used on 8430 Tractors (4353 - 5927) and 8630 Tractors (5911 - 8117).

NOTE 6 - Air conditioning compressor is protected by a superheat switch and thermal fuse on 8430 Tractors (2423 -) and 8630 Tractors (3514 -). See Fig. 9 for connections.

NOTE 7 - Transmission lube pressure indicator has a separate circuit and a seperate lamp on 8430 Tractors (1896 -) and 8630 Tractors (2901 -). See Fig. 9 for connections.

Fig. 8-Wiring for 8430 Tractors (-5927) and 8630 Tractors (-8117)

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1 - Main Hydraulic Pump
2 - Hydraulic Oil Cooler
3 - Steering Valve
4 - Steering Metering Pump
5 - Brake Valve
6 - Brake Accumulator
7 - Pressure Regulating Valve Housing
8 - L.H. Steering Cylinder
9 - Steering Feedback Cylinder
10 - R.H. Steering Cylinder
11 - Oil Transfer Pump
12 - Clutch Oil Pump
13 - Oil Filter Relief Valve Housing
14 - Return Oil Filter Relief Valve Housing
15 - Load Sensing Cylinder
16 - Rockshaft Assist Cylinder**
17 - "Double" Selective Control Valve
18 - "Triple" Selective Control Valve
19 - "Single" Selective Control Valve
20 - Rockshaft
21 - R.H. Brake Assembly
22 - L.H. Brake Assembly
23 - Hydraulic Attenuator
24 - To Clutch Operating Valves
25 - To Top of Clutch Housing
26 - To Top of Transmission Case
27 - Pressure Control Valve
28 - Directional Valve*
29 - Differential Lock Valve
30 - To Differential Lock

*8430 - (T1741-)
8630 - (T2453-)

**8630 Only

(A) PRESSURE OIL
(B) LOW PRESSURE OIL
(C) RETURN OR PRESSURE FREE OIL
(D) TRAPPED OIL

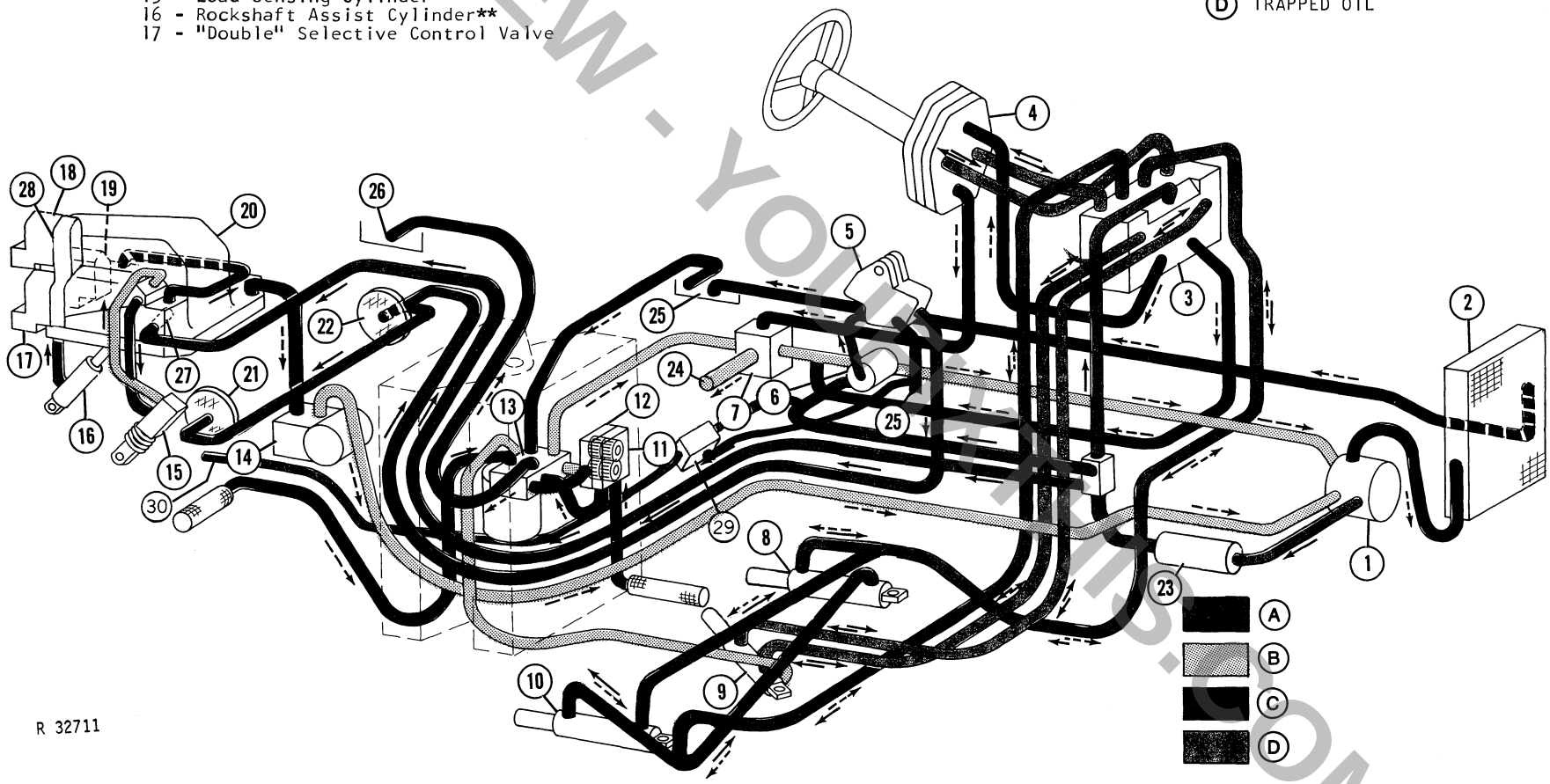
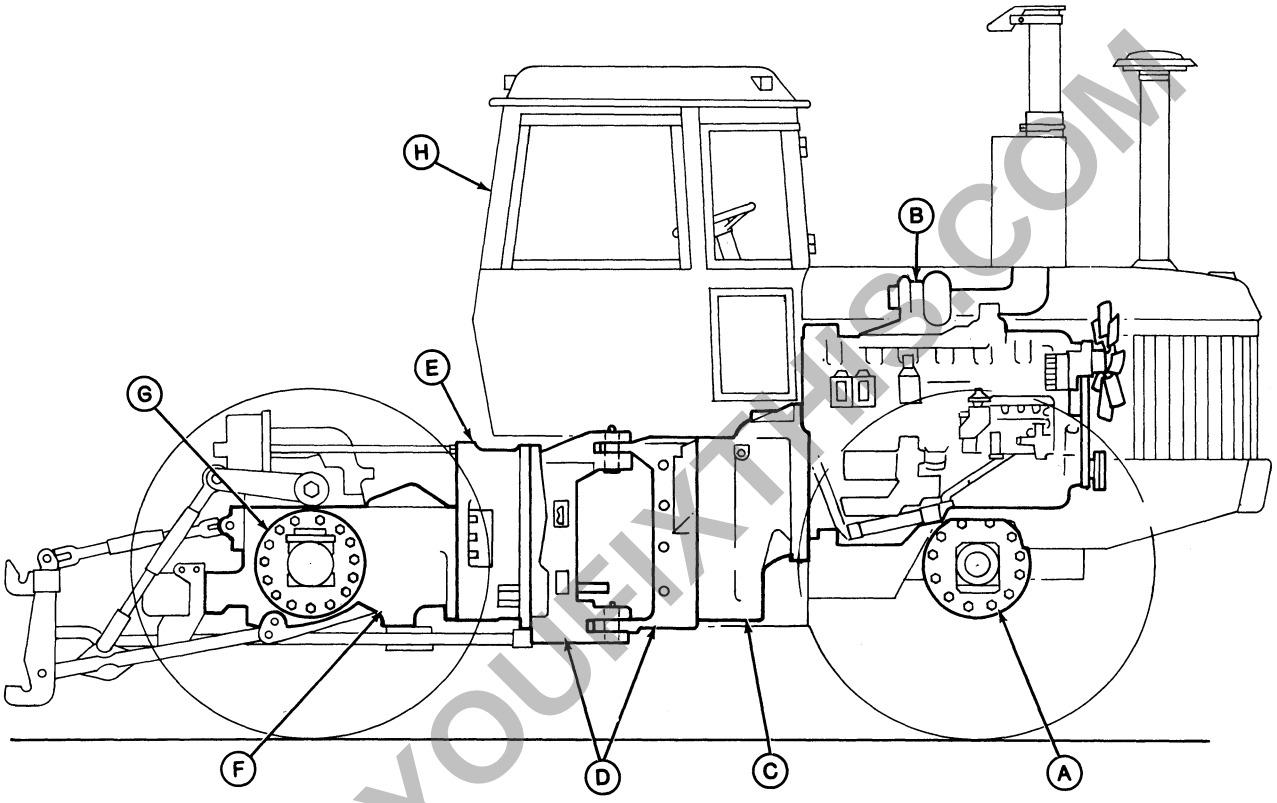


Fig. 1-Circuit Flow Diagram

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Group 25
SEPARATION



R 25270N

A—Front Drive
B—Engine
C—Clutch Housing
D—Hinge
E—Torque Divider
F—Transmission
G—Final Drive
H—Sound Gard Body

Fig. 1-Basic Separation Components

GENERAL INFORMATION

Separation of the tractor may be subdivided into the following components (Fig. 1): Front drive (A), engine (B), front end, clutch housing (C), front hinge, hinge pin, rear hinge, torque divider (E), transmission (F), final drive (G) and Sound-Gard body (H). Basic separation of these components will be explained within this group, except for the Sound-Gard body covered in Section 80, and final drive covered in Section 50.

⚠ CAUTION: Always use the hinge lock bars, provided with the tractor, whenever front or rear of tractor is raised. See operator's manual for installation of lock bars.

It is important to determine beforehand, which component has to be removed and the best method to use in removing the component, in order to perform the required service in the shortest possible time. For example, it is possible to gain access to the engine clutch two different ways: (1) Removing engine and tractor front end from clutch housing, (2) Removing tractor front end, then removing engine from clutch housing. The method selected will be determined by the total service requirements for any particular job, and on personal choice.

Once a basic component has been removed from the tractor, refer to the appropriate section of this manual for detailed service information.

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Inspection Procedure—Continued

Service	Specification	Reference
HYDRAULIC SYSTEM		
Check rockshaft and remote cylinder operation		Section 70, Group 30 and 35
Check entire tractor for leaks. Inspect drive shafts, hydraulic system pipes and hoses, and check tractor cab controls for proper operation		Operator's manual
NUTS AND CAP SCREWS		
Tighten accessible nuts and cap screws that seem to require adjustment		

TORQUE CHART

Diameter	B-Grade*		D-Grade*		F-Grade*		G-Grade*	
	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm	lb-ft	Nm
1/4 inch	6	(8.1)	10	(13.6)	14	(19)	15	(20.3)
5/16 inch	13	(17.6)	20	(27.1)	30	(40.7)	32	(42.4)
3/8 inch	23	(31.2)	35	(47.5)	50	(67.8)	56	(75.9)
7/16 inch	35	(47.5)	55	(74.6)	80	(108.5)	92	(124.7)
1/2 inch	55	(74.6)	85	(115.3)	120	(162.7)	140	(189.8)
9/16 inch	75	(101.7)	130	(176.3)	175	(237.3)	200	(271.2)
5/8 inch	105	(142.4)	170	(230.5)	240	(325.4)	280	(379.7)
3/4 inch	185	(250.9)	300	(406.8)	425	(576.3)	497	(673.9)
7/8 inch	160	(217)	445	(603.4)	685	(928.9)	800	(1084.8)
1 inch	250	(339)	670	(908.5)	1030	(1396.7)	1200	(1627.2)

**The types of bolts and cap screws are identified by head markings as follows:*

Plain Head: regular machine bolts and cap screws.

3-Dash Head: tempered steel high-strength bolts and cap screws.

6-Dash Head: tempered steel extra high-strength bolts and cap screws.

12 9 or 12.9: tempered steel extremely high-strength bolts and cap screws.

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Group 10
PREDELIVERY, DELIVERY AND AFTER-SALE SERVICE

PREDELIVERY SERVICE

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.

A tag pointing out the factory-recommended procedure for predelivery service is attached to each new tractor before it leaves the factory.

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

NOTE: A Caplug is placed in the muffler outlet to prevent turbocharger rotation during transit. Remove Caplug before unloading tractor. Reinstall Caplug before transporting the tractor to the customer.

Temporary Tractor Storage

Service	Specification	Reference
Check radiator for coolant loss and antifreeze protection	1-1/2 in. (38 mm) above baffle in radiator top tank.	
Reduce shipping pressure of tires		Operator's manual
Cover tractor and tires for protection and cleanliness		

Before Delivering Tractor

ELECTRICAL SYSTEM

Charge batteries		FOS - 20 Manual
Install light switch knob		
Clean terminals and connect battery cables		Section 40, Group 5
Check alternator belt adjustment	85-94 ft-lb (378 to 423 N)	Operator's manual

COOLING SYSTEM

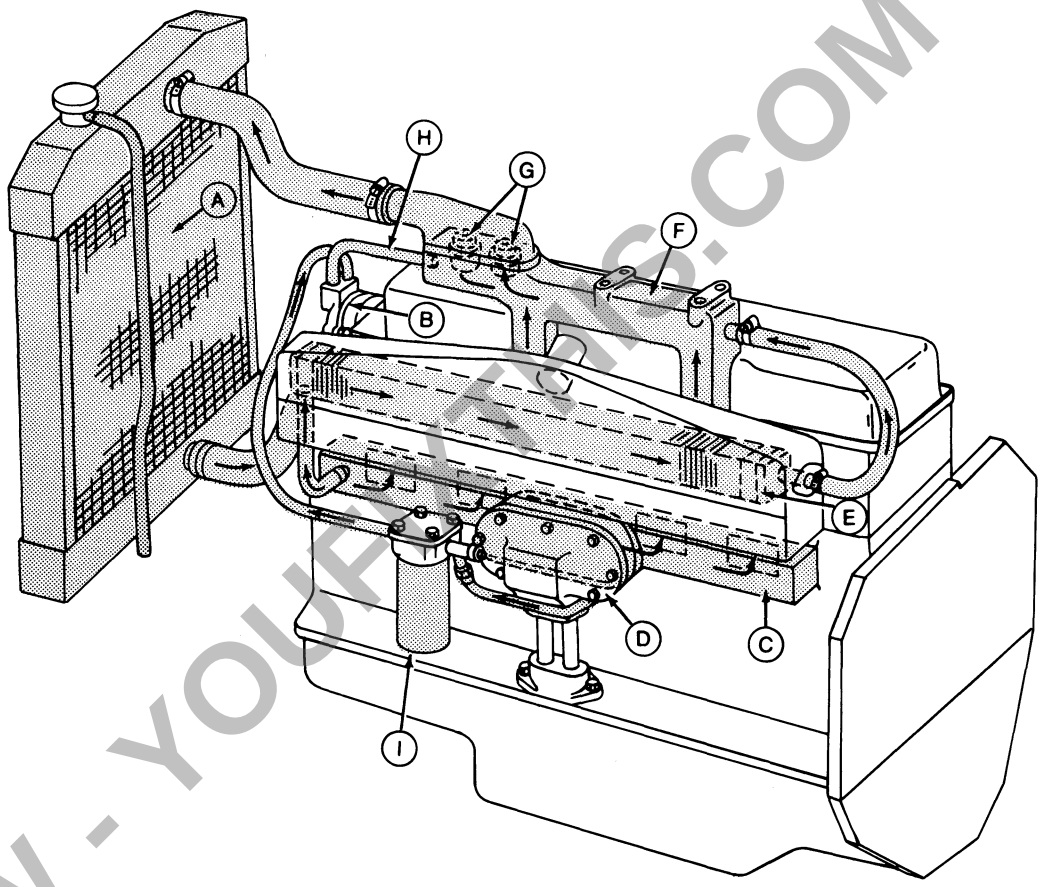
Inspect radiator for coolant loss	1-1/2 in. (38 mm) above baffle in radiator top tank.	
Check antifreeze protection		
Tighten radiator hose clamps		
Tighten hose connections		

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Group 30
COOLING SYSTEM

GENERAL INFORMATION



R32355C

A—Radiator
B—Water Pump
C—Cylinder Block Main Cooling Gallery
D—Engine Oil Cooler
E—Intercooler
F—Water Manifold
G—Thermostats
H—Water Bypass Pipe
I —Coolant Conditioner Filter

Fig. 1-Engine Cooling System

The cooling system consists of a conventional type radiator (A, Fig. 1), water pump (B), two thermostats (G), and water manifold (F).

The pump draws coolant from the bottom of the radiator and discharges it into the main coolant gallery (C) on the left-hand side of the engine. Coolant from the gallery circulates through the block to cool block and cylinder liners, then flows into the cylinder head. From the cylinder head, the coolant passes into the water manifold (F) and thermostat housing.

If the thermostats are closed (as during warm-up periods) coolant is directed back to the pump through the bypass pipe (H) to be recirculated. This provides a faster and more uniform warm-up.

If the thermostats are open (engine at normal operating temperature) coolant flows back through the thermostats to the top of the radiator.

Coolant is also taken from the main gallery into the intercooler (E) to cool intake air. It circulates through the intercooler and out to the water manifold.

The engine oil cooler (D), located in the main gallery, receives its cooling capacities from the coolant flow around it.

Additionally, coolant is drawn off the main gallery to the coolant conditioner filter (I). Here an anticorrosive chemical is added to the coolant while any debris that may be present in the cooling system is removed. The coolant returns to the system at the inlet side of the water pump.

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Group 5
GENERAL INFORMATION AND DIAGNOSIS

GENERAL INFORMATION

This is a turbo-charged, liquid cooled, 6-cylinder, diesel fueled, valve-in-head, vertical in-line four-cycle engine.



For basic theory on engine operation see FOS Manual 30—ENGINES.

DIAGNOSING ENGINE MALFUNCTIONS

Review diagnostic procedures provided in FOS Manual 30—ENGINES, Chapter 12 "Diagnosis and Testing".

Will Not Start

Fuel System Malfunction—See Section 30
- Foreign matter in fuel
- Improper fuel
- Faulty fuel pump
- Fuel shut off at tank
- Restricted air intake system
- Faulty injection nozzles
- Plugged fuel filter

Electrical System Malfunction—See Section 40
- Corroded or loose battery
- Weak battery

Uneven Running or Frequent Stalling

Basic Engine Problem—See This Section
- Coolant temperature below normal
- Engine overheating
- Improper valve clearance
- Cylinder head gasket leaking
- Valves sticking or burned
- Worn or broken compression rings
- Low compression
- Incorrect timing

Service Problem—See Section 10
- Low fuel supply

Fuel System Malfunction—See Section 30
- Restricted fuel lines or filters
- Faulty fuel pump
- Faulty injection pump
- Faulty injection nozzles
- Exhaust system restricted

Engine Misses

Basic Engine Problem—See This Section
- Incorrect timing
- Engine overheating
- Weak valve springs
- Incorrect valve clearance
- Burned, warped, pitted, or sticking valves
- Low compression
- Worn camshaft lobes (could be caused by faulty damper)

Fuel System Malfunction—See Section 30
- Water in fuel
- Mixture of gasoline and diesel fuels
- Air in fuel
- Faulty injection nozzles
- Faulty injection pump

Lack of Power

Basic Engine Problem—See This Section
- Incorrect timing
- Wrong viscosity crankcase oil
- Engine overheating
- Blown cylinder head gasket
- Worn camshaft lobes
- Incorrect valve clearance
- Incorrect valve timing
- Burned, warped, pitted or sticking valves
- Weak valve springs
- Low compression

Service Problem—See Section 10
- Dirty or obstructed air cleaners
- Improper fuel
- Wrong oil viscosity

Fuel System Malfunction—See Section 30
- Incorrect throttle linkage
- Plugged fuel tank vent
- Plugged fuel filters
- Faulty injection pump
- Faulty injection nozzles
- Faulty fuel pump
- Restricted exhaust system
- Low intake manifold pressure

Power Train Malfunction—See Section 50
- Clutch slipping

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GENERAL

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Group 5
GENERAL TRACTOR SPECIFICATIONS

Horsepower:*
- Maximum observed at PTO
  - 8430 ..... 175 (130 kW)
  - 8630 ..... 225 (168 kW)

Engine:
- Type ..... 6-cylinder, in-line, valve-in-head, diesel, turbocharged, and intercooled
- Engine Speeds:
  - Slow idle ..... 800 rpm
  - Working range ..... 1500 to 2100 rpm
  - Maximum transport speed ..... 2300 rpm
- Bore and stroke
  - 8430 ..... 4.56 x 4.75 in. (11.6 x 12.1 cm)
  - 8630 ..... 5.12 x 5 in. (13.0 x 12.7 cm)
- Displacement
  - 8430 ..... 466 cu. in. (7636 cm^3)
  - 8630 ..... 619 cu. in. (10 143 cm^3)
- Compression ratio
  - 8430 ..... 15.5 to 1
  - 8630 ..... 15.4 to1
- Firing order 1-5-3-6-2-4
- Valve clearance ..... 8430....see 20-10-5
  8630....see 25-10-5
- Injection pump timing ..... TDC

Lubrication System ..... Force-feed pressurized with full-flow oil filter and by-pass

Fuel System:
- Type ..... Direct injection
- Injection pump type ..... Multiple plunger, in-line
- Air cleaner ..... Dry type with safety element

Cooling System:
- Type ..... Pressurized with centrifugal pump
- Temperature controlled by heavy-duty thermostats
  - 8430 ..... 2 thermostats
  - 8630 ..... 3 thermostats

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Capacities:

Fuel tank ..... 78 U.S. gals. (295 l) each tank
Crankcase (with filter change)
8430 ..... 22 U.S. qts. (21 l)
8630 ..... 26 U.S. qts. (25 l)
Transmission-hydraulic system ..... 34 U.S. gals. (129 l)
Cooling system
8430 ..... 40 U.S. qts. (38 l)
8630 ..... 44 U.S. qts. (42 l)
Front differential ..... 7 U.S. gals. (26 l)

Quad-Range Transmission:

Type ..... 2 speed, Power Shift planetary and 8 speed, syncro-range transmission with constant mesh gears
Perma-Clutch .... Hydraulically operated multiple-disk wet clutch
Gear selections ..... 16 forward and 4 reverse
Shifting
Range selector lever ... Collar shifted between ranges
Speed selector lever
Forward-rearward lever movement ... Mechanical synchronized forward speed shifting of syncro-range transmission
Sideways lever movement ..... Power Shift planetary transmission speeds

Ground speeds at 2100 engine rpm, 18.4-34 tires

Range	Speed	mph	(km/h)
A	1	2.1	(3.3)
	2	2.6	(4.2)
	3	3.7	(6.0)
	4	4.8	(7.7)
	1R	3.8	(6.2)
	2R	5.0	(8.0)
B	1	4.6	(7.3)
	2	5.9	(9.5)
	3	8.2	(13.2)
	4	10.6	(17.1)
	1R	8.5	(13.8)
	2R	11.1	(17.9)
C	1	5.3	(8.6)
	2	6.9	(11.1)
	3	9.6	(15.5)
	4	12.5	(20.1)
D	1	8.6	(13.9)
	2	11.2	(18.0)
	3	15.6	(25.1)
	4	20.3	(32.6)

Electrical System:

Type ..... 12-volt, negative grounded
Batteries
8430 ..... Two, 6-volt, connected in series. 5D type; 800 amps cold cranking at 0°F (-17.8°C); 340 minutes reserve capacity at 25 amps
8630 ..... Two, 6-volt, connected in series; 4 type, 880 or 975** amps cold cranking at 0°F (−17.8C); 420 minutes reverse capacity at 25 amps
Alternator ..... 12-volt, with transistorized regulator; 72 amp

Power Take-Off:

Type ..... Independent PTO with rear power take-off controlled by hand-operated clutch lever
Clutch ..... Multiple disk, wet clutch, hydraulically actuated
Speed (2100 engine rpm) ..... 1000 rpm

Hydraulic System:

Type ..... Closed center, constant pressure. Includes power steeing, power brakes, implement control, and transmission and differential lubrication
Standby pressure ..... 2300 psi (15.8 MPa)

Brakes ..... Hydraulically power-actuated disk-type operating in oil

Tires (standard)* ..... 18.4-34, 6-ply rating

Wheel Tread: ..... See operator's manual

Dimensions:

Wheel base ..... 125 in. (3.175 m)
Over-all length ..... 223.5 in. (5.677 m)
Over-all height to top of muffler ..... 134.5 in. (3.416 m)
Over-all width-reg. axle ..... 95.8 in. (2.434 m)
-long axle ..... 118.4 in. (3.008 m)
Turning radius (80-in. [2.03 m] tread) ..... 223 in. (5.67 m)

Shipping Weight (With equipment for average field service, less fuel and ballast)
8430 ..... 22,010 lbs. (9 984 kg)
8630 ..... 24,150 lbs. (10 954 kg)

**Additional tires sizes available*
***Later models*

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Group 20
LUBRICATION

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 showing capacities and type of lubricant for the various components has been included. Additional lubrication information is on page 20-2.

Component	Capacity	Type of Lubricant	Interval of Service
Engine Crankcase	22 U.S. quarts (21 L) with filter change (8430) 26 U.S. quarts (25 L) with filter change (8630)	See "Engine Lubricating Oils" in this group	10 Hours - Check level 100 Hours - Change oil 200 Hours - Replace filter and change oil
Transmission and Hydraulic system	34 U.S. gallons (129 L) (dry system) 26 U.S. gallons (98 L) (refill)	John Deere Hy-GARD Transmission and Hydraulic Oil	200 Hours - Check level 600 Hours - Replace filter 1200 Hours - Change oil and filter
Front differential	7 U.S. gallons (26 L)	SAE 90 gear lubricant	1200 Hours - Change oil
Grease Fittings	.....	John Deere Multipurpose Lubricant	See Operator's Manual

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Group 35
SPECIFICATIONS AND SPECIAL TOOLS
SPECIFICATIONS

Item	New Part Specification	Wear Tolerance
Cylinder Head, Valves, and Camshaft		
Valve clearance		
Intake valve	0.018 in. (0.46 mm)	----
Exhaust valve	0.028 in. (0.71 mm)	----
Valve lift at specified clearance		
Intake valve	0.4125 to 0.4425 in. (10.478 to 11.240 mm)	----
Exhaust valve	0.4135 to 0.4435 in. (10.503 to 11.265 mm)	----
Valve springs - compressed		
valve closed	1.81 in. at 54 to 62 lbs. (45.9 mm at 240.2 to 275.8 N)	
Valve open	1.36 in. at 133 to 153 lbs. (34.5 mm to 591.6 to 680.5 N)	----
Valve face angle	29.5°	----
Valve face O.D.	1.710 to 1.720 in. (43.43 to 43.69 mm)	----
Valve stem O.D.	0.3715 to 0.3725 in. (9.436 to 0.461 mm)	----
Valve guide I.D.	0.3745 to 0.3755 in. (9.512 to 9.537 mm)	----
Valve stem-to-guide clearance	0.0020 to 0.0040 in. (0.051 to 0.102 mm)	0.0060 to 0.0080 in. (0.152 to 0.203 mm)
Valve seat width	0.0830 to 0.0930 in. (2.108 to 2.362 mm)	----
Valve seat concentricity with guide	0.0020 in. (0.051 mm)	----
Valve seat angle	30°	
Valve face above head	0.0240 to 0.0380 in. (0.620 to 0.965 mm)	0.0060 in. (1.524 mm) recessed
Camshaft end play	0.0025 to 0.0085 in. (0.064 to 0.216 mm)	0.0150 in. (0.381 mm)
Camshaft thrust place thickness	0.1860 to 0.1890 in. (4.724 to 4.801 mm)	0.1820 in. (4.623 mm)
Camshaft bushing journal O.D.	2.3745 to 2.3755 in. (60.312 to 60.337 mm)	----
Camshaft bushing I.D.	2.3775 to 2.3795 in. (60.388 to 60.439 mm)	----
Camshaft bushing-to-journal clearance		0.0060 in. (0.152 mm)
Torques		
Cylinder head-to-block - Initial	105 ft-lbs (142 Nm)	----
Second	110 to 120 ft-lbs (149 to 163 Nm)* 117 to 143 ft-lbs (158 to 193 Nm)**	----
Final	125 to 135 ft-lbs (169 to 183 Nm)* 135 to 165 ft-lbs (183 to 224 Nm)**	----
Rocker arm shaft clamps	45 to 65 ft-lbs (61 to 88 Nm)	----
Intake manifold to cylinder head	35 ft-lbs (47 Nm)	----
Intake cover-to-intake manifold	20 ft-lbs (27 Nm)	----
Camshaft thrust plate	20 ft-lbs (27 Nm)	----
Camshaft gear	85 ft-lbs (115 Nm)	----
Damper pulley	150 ft-lbs (203 Nm)	----
Timing gear cover	30 ft-lbs (41 Nm)	----
Oil pan - 1/2" cap screws	85 ft-lbs (115 Nm)	----
3/8" cap screws	35 ft-lbs (47 Nm)	----

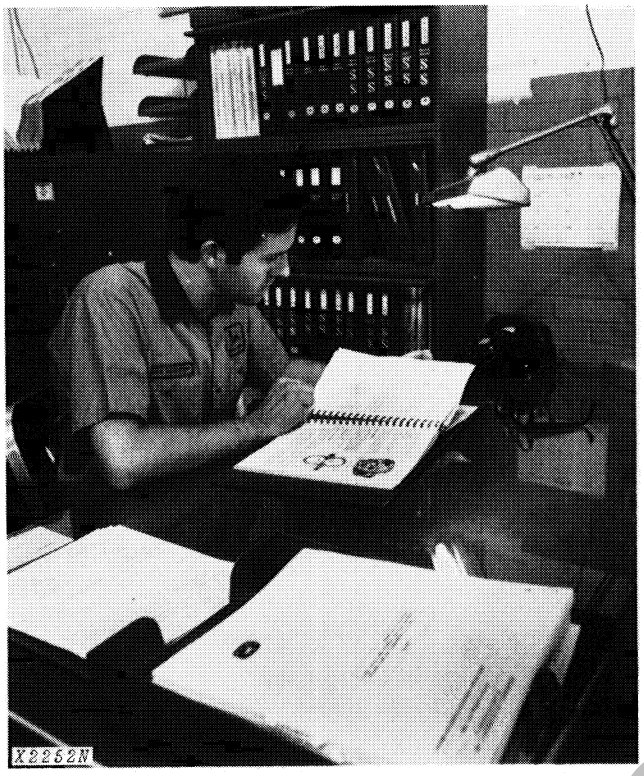
*"F" grade cap screws
**"G" grade cap screws

Cylinder Block, Liners, Pistons, and Rods		
Cylinder liner height above block	0.002 to 0.005 in. (0.051 to 0.102 mm)	
Cylinder liner height above used block	0.000 to 0.004 in. (0.000 to 0.102 mm)	
Piston oil control ring clearance	0.0024 to 0.0040 in. (0.061 to 0.102 mm)	0.0065 in. (0.165 mm)

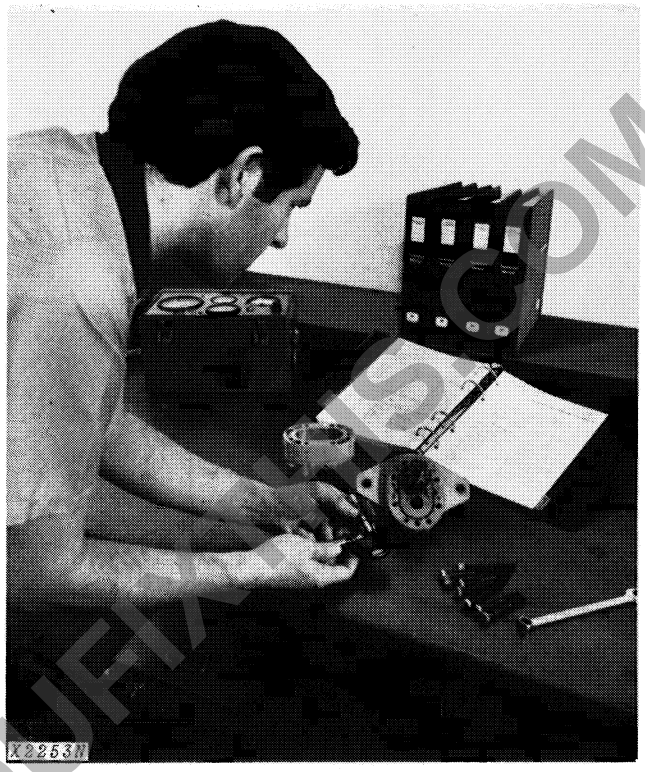
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INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

This technical manual is part of a twin concept of service:

- **FOS Manuals—for reference**
- **Technical Manuals—for actual service**

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

Fundamentals of Service (FOS) Manuals cover *basic* theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise service guides for a *specific* machine. Technical Manuals are on-the-job guides containing only the vital information needed by an experienced technician.



When a service person should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

Some features of this technical manual:

- *Table of contents at front of manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

This technical manual was planned and written for you—an experienced technician. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

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8430 AND 8630 TRACTORS
TECHNICAL MANUAL
TM-1143 (Feb-79)

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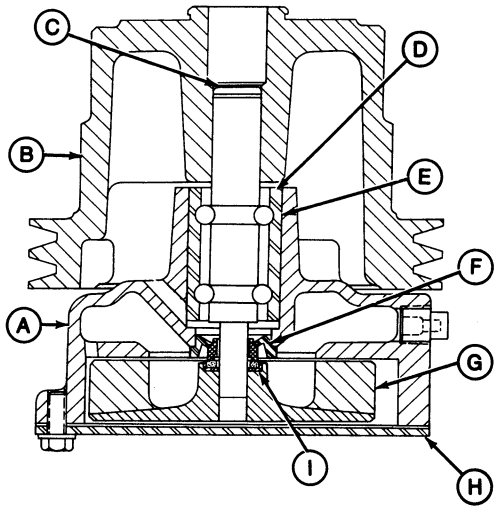
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ASSEMBLY—Continued



R 24941N

A—Housing
B—Pulley
C—Recess Flush with Shaft End
D—Bearing Flush to 0.02 in. (0.05 mm) above Housing
E—Bearing Shaft
F—Seal
G—Impeller
H—Cover
I—Cup and Insert

Fig. 7-Assembled Water Pump

Before installing pump cover, support shaft through impeller and press fan pulley until the shoulder in the pulley shaft bore is flush with the end of the shaft. (See Fig. 7.)

Install pump cover. Rotate pulley to be sure that pulley does not strike pump housing or impeller does not strike pump cover.

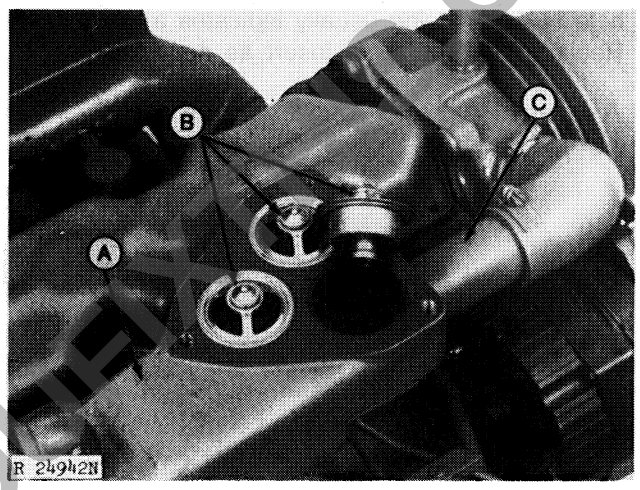
Install water pump on engine using new gaskets.

Install fan and pipes to water pump. Tighten fan to pulley cap screws to 35 ft-lbs (47 Nm).

Install alternator.

Fill radiator with clean soft water and John Deere Summer Engine Coolant Conditioner or antifreeze solution.

WATER MANIFOLD AND THERMOSTATS



A—Water Manifold
B—Thermostats
C—Bypass Pipe

Fig. 8-Water Manifold

Inspect water manifold, thermostat housing and water hoses for cracks or damage.

Remove thermostat housing cover and check thermostats. Test thermostats for opening temperatures. Thermostats should open at 177° to 182°F (80 to 83°C).

Install manifold and thermostats using new gaskets.

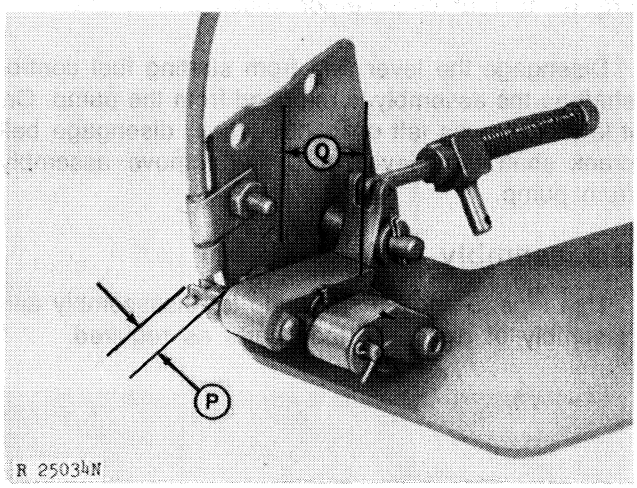
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Disassembly and Assembly—Continued

Assemble spacer (C, Fig. 7) and bell crank (D) on front pivot pin. Retain with washer (E) and spring pin (F).

Attach cable clamp (ball-end) to under side of bracket (A) and insert cable in slot of bell crank pin. Secure with cotter pin.



P—5/8-in. (15.88 mm) **Q—15/16-in. (23.8 mm)**

Fig. 8-Bell Crank Dimensions

Before proceeding with the assembly, check the dimension from top of pin (slotted end) to top of bell crank (P, Fig. 8). This dimension must be 5/8-in. (15.88 mm). If not, carefully press pin in or out to obtain the correct dimension.

Also, check the dimension from the underneath side of bracket to bottom of bell crank (Q). This dimension must be 15/16-in. (23.8 mm). Add or subtract washers as required to obtain the correct dimension.

Install latch (I) with control rod (L), and spacer (H) assembly to rear pivot pin. Retain with washer (J) and spring pin (K). Slip front collar (M), swivel (N), spring (O), and rear collar (M) on control rod. Tighten set screw on rear collar.

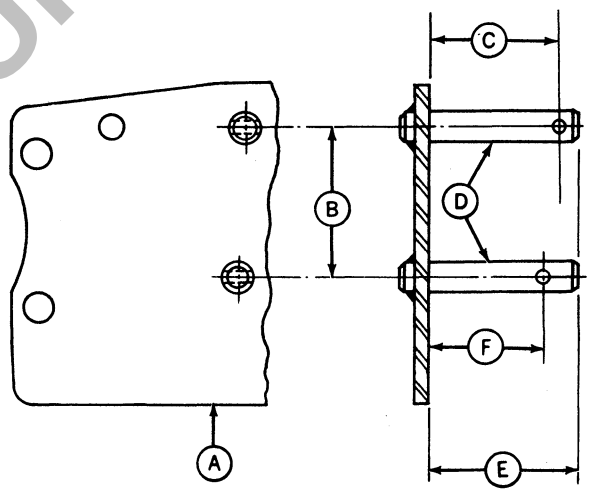
If lever arm (G) was removed from the starting fuel control shaft, install on bell crank pin, and retain with washer and cotter pin.

Installation

Install bell crank bracket over the aneroid studs, and at the same time install the lever arm on the starting fuel control shaft, or engage bell crank pin in lever arm and secure with washer and cotter pin.

Rotate the fuel shut-off lever to the shut-off position to permit the starting fuel control shaft to move to its outermost position (aneroid engaged).

Fasten bell crank bracket on housing. Check bell crank and latch engagement for binding. If binding occurs, loosen bracket slightly, and retighten. Also try moving lever arm on fuel control shaft in or out slightly to free-up movement. Should binding persist, it may be necessary to remove the bracket (A, Fig. 9) and check the alignment of the pivot pins (D). Pins should have a center-to-center spacing of 1.22 in. (31 mm) and be at right-angles to the bracket (B). Realign pins, if required, and reinstall bracket on housing, again checking bell crank for binding.



A—Bracket
B—1.22 in. (31 mm)
C—1.02 in. (26 mm)
D—Pivot Pins
E—1.18 in. (30 mm)
F—0.96 in. (24.5 mm)

Fig. 9-Bell Crank Bracket Pivot Pins

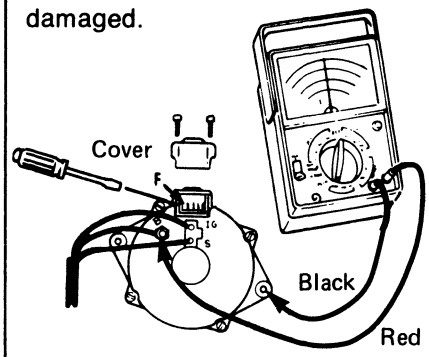
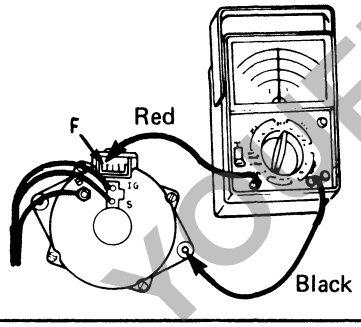
Insert swivel in governor lever and retain with a washer and cotter pin.

Install control cable in fuel shut-off lever, and secure with collar. Connect the fuel shut-off cable to the shut-off lever. Adjust cable according to the instructions given on page 20-7.

Complete installation by checking all connections to make sure they are properly secured. On 8430 Tractor, reinstall oil filter body on engine (see Group 15).

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Step	Sequence		Result
C10 Remove cover from voltage regulator. Reinstall one screw in voltage regulator. Connect voltmeter as shown. Key switch "ON". Engine at 1500 rpm.	Ground LH regulator terminal "F". Observe voltmeter reading. CAUTION: DO NOT GROUND "G" terminal or alternator will be damaged. 	Spec. (Min.) 15 volts Note: Do not allow voltage to go above 16.5 volts.	Above 15 volts: Replace voltage regulator. Then... **GO TO C8** Below 15 volts: Continue testing... **GO TO C11**
C11 **FIELD CURRENT DRAW TEST:** Connect ammeter as shown: Key switch "OFF". Engine "STOPPED".	Observe ammeter reading. 	Spec. 3.2-3.8 amps	In Spec. **GO TO C13** Below Spec. **GO TO C12** Above Spec: Replace rotor. Then... **GO TO C1**
C12 If field current draw was below spec., one or more of the following causes exists: 1. Rotor slip rings dirty. 2. brushes worn or broken (or) 3. rotor field winding "OPEN".			Repair alternator. Then... **GO TO C1**
C13 One or more of the following causes exists: 1. loose diode plate 2. rectifier diode "SHORTED" or "OPEN" 3. resistor open. 4. diode duo "SHORTED" or "OPEN". 5. stator "SHORTED" or "GROUNDED".			Repair alternator. Then... **GO TO C1**

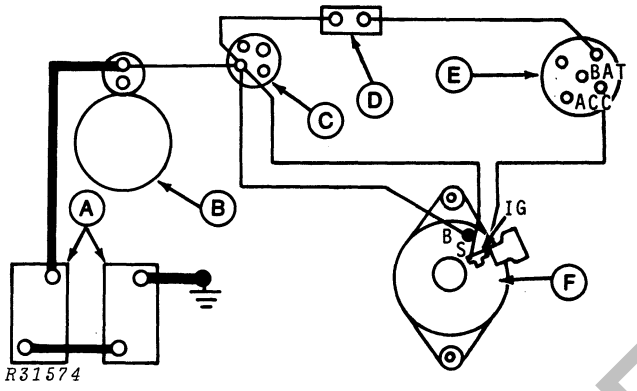
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Group 20
JOHN DEERE CHARGING CIRCUIT

GENERAL INFORMATION

NOTE: See Group 15 for Delcotron Charging Circuit.



A—Batteries
B—Starter
C—Starter Circuit Relay
D—10-Amp Circuit Breaker
E—Key Switch
F—Alternator

Fig. 1-Charging Circuit

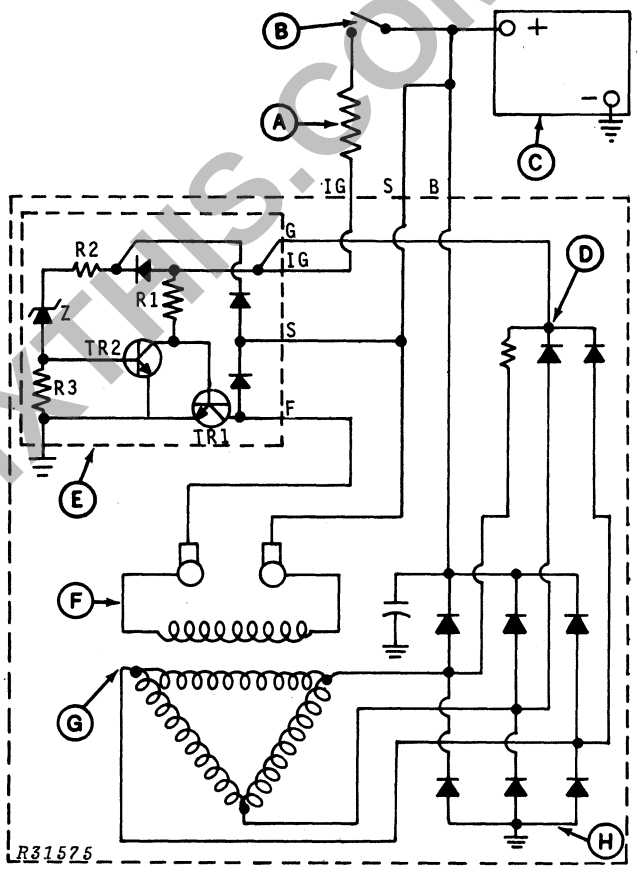
Fig. 1 shows components of charging circuit. Wiring is contained in engine and instrument harnesses.

Alternator output rating is 90 amps.

Regulator is mounted on alternator. It is solid state, sealed, and non-adjustable.

Alternator does not require any periodic maintenance or lubrication.

HOW THE SYSTEM WORKS



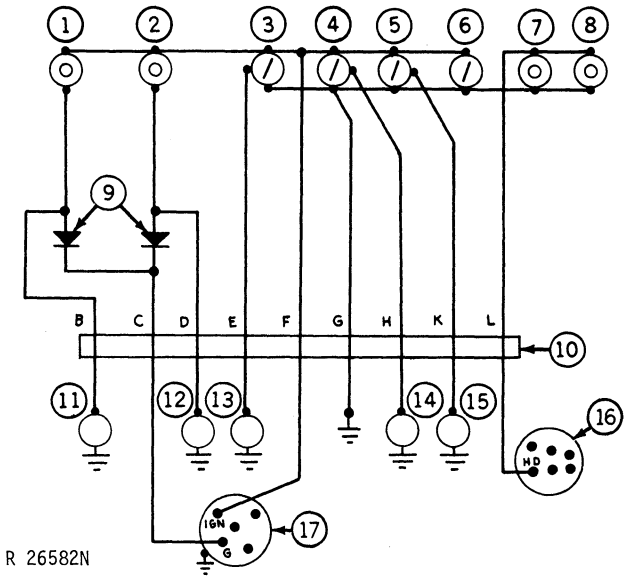
A—Resistance Wire
B—Switch
C—Battery
D—Diode/Resistor Trio
E—Regulator
F—Rotor (Field)
G—Stator
H—Rectifier Bridge

Fig. 2-Schematic Diagram of John Deere Alternator

Fig. 2 illustrates circuitry of alternator. Schematic of regulator is simplied somewhat. Regulator actually contains more components than shown, but performs the same function.

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Testing



R 26582N

1—Transmission Oil Indicator
2—Air Cleaner Indicator
3—Engine Temperature Gauge
4—Fuel Gauge
5—Engine Oil Pressure Gauge
6—Voltmeter
7—Instrument Lamp
8—Instrument Lamp
9—Diodes
10—Multiple Connector
11—Transmission Oil Sender
12—Air Cleaner Sender
13—Engine Temperature Sender
14—Fuel Sender
15—Engine Oil Pressure Sender
16—Light Switch
17—Key Switch

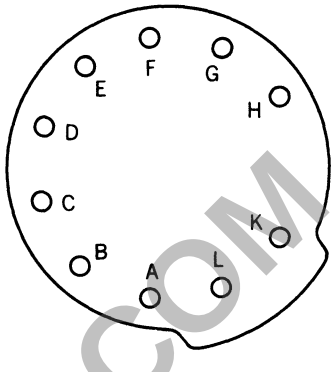
Fig. 4-Schematic Diagram of Instrument Cluster

Gauges

If **all four gauges** malfunction, either power in or ground circuit is probably defective.

1. Instrument cluster is protected by 10-amp circuit breaker. If it trips, you will also lose power to starter and Sound-Gard Body circuits.

2. If breaker is not tripped, remove left cowl and disconnect multiple connector from instrument cluster.



R 26583N

A—Not Used
B—To Transmission Oil Sender
C—To Terminal G of Key Switch
D—To Air Cleaner Sender
E—To Engine Temperature Sender
F—To IGN Terminal of Key Switch
G—To Ground
H—To Fuel Sender
K—To Engine Oil Pressure Sender
L—To HD Terminal of Light Switch

Fig. 5-Multiple Connector Terminal Usage

3. Turn key switch on. Use voltage detector, voltmeter, or test lamp to test for battery voltage at terminal F of multiple connector. If terminal does not have voltage, check for poor connection at key switch or circuit breaker or for a defective key switch.

4. Use voltage detector, ohmmeter, or test lamp to make sure terminal G of multiple connector provides a good ground. If not, check for a poor connection at ground screw near circuit breakers or at ground wire at front left-hand Sound-Gard Body mount.

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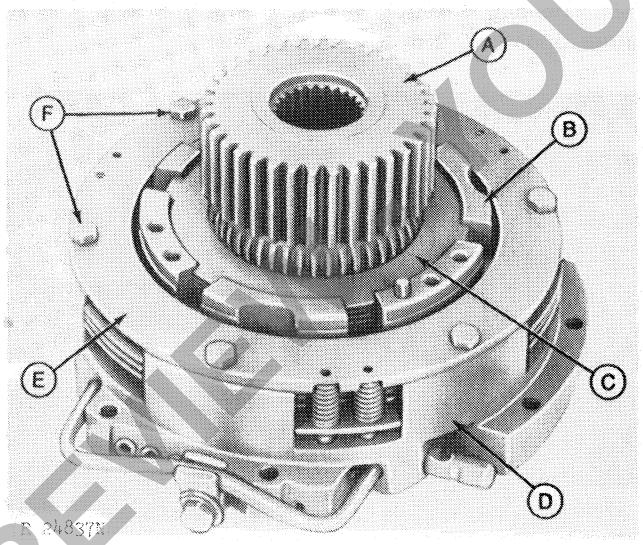
NOTE: When using JDT-29 Wrench with a 35 to 45 in. (889-1143 mm) long torque wrench, set the torque wrench at 184 ft-lbs (250 Nm) (25 kgm) to obtain the proper torque specification. Torque wrench length is distance from center of handle to the center of the wrench drive. Be sure to keep the torque wrench parallel with the JDT-29 Wrench.

If the torque wrench is not 35 to 45 in. (889-1143 mm) long, use the formula given in Group 40 to derive the proper torque wrench setting when using the JDT-29 Wrench.

The output yoke bearing quill assembly must NOT have any preload. Check to assure end play exists in the shaft. Grasp bearing quill by outer rim and rotate while pulling upward on quill. Set a dial indicator (as shown in Fig. 22) on end of shaft. Grasp quill by outer rim and rotate slightly while pressing down on quill.

The end play on the shaft should be 0.001 to 0.007 inch (0.025 to 0.178 mm). If the measurement does not come within specification, the bearing cone, bearing cup, and spacer assembly or the bearing quill will have to be replaced.

After adjustment is completed, stake nut in two places.

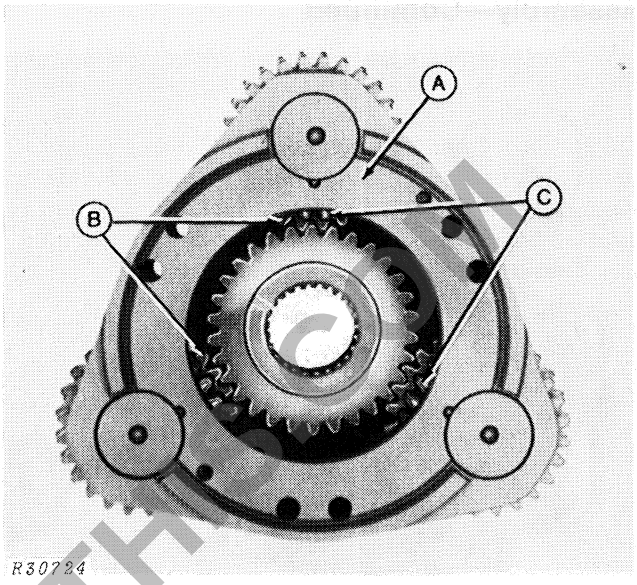


A—Clutch Hub
B—Clutch Drum
C—Clutch Plates and Disks
D—Brake Housing
E—Backing Plate
F—Cap Screws

Fig. 23-Brake Assembly

Install brake backing plate (E, Fig. 23) and torque backing plate-to-brake housing cap screws (F) to 21 ft-lbs (28 Nm) (2.8 kgm).

IMPORTANT: Planetary unit must be timed carefully to prevent early failure of the assembly.



A—Carrier
B—Planet Pinion
C—Timing Marks

Fig. 24-Timing Planetary

The planetary planet pinions (B, Fig. 24) have timing marks (C) on two of the smaller gear's teeth (11). When installing the sun pinion, position the gap between the marks to point toward the center of the carrier (centered over retaining balls). Place the thrust washer between the pinion and the carrier. Install sun pinion. Check timing after installing sun pinion.

NOTE: Later planetary carriers may have a "V" mark on the outer face of the carrier adjacent to each pinion shaft bore. If the carrier has these marks, position each planet pinion so the marks on the pinion (//) are centered over the "V" mark. Install sun pinion and recheck timing.

Coat the ends of the planet pinion shafts and carrier with heavy grease to prevent the shafts from falling from carrier during installation.

While holding the rear sun pinion against the carrier, install the carrier assembly on the clutch and brake assembly. Be sure dowel pins and screw holes on clutch drum are aligned with holes in carrier.

Lubricate the six long rubber-sleeved planetary-to-clutch drum cap screw threads and rubber shanks and install in carrier. Torque the cap screws to 20.7 to 25.3 ft-lbs (28.0-34.3 Nm) (2.80-3.43 kgm).

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DRIVE SHAFTS

GENERAL INFORMATION

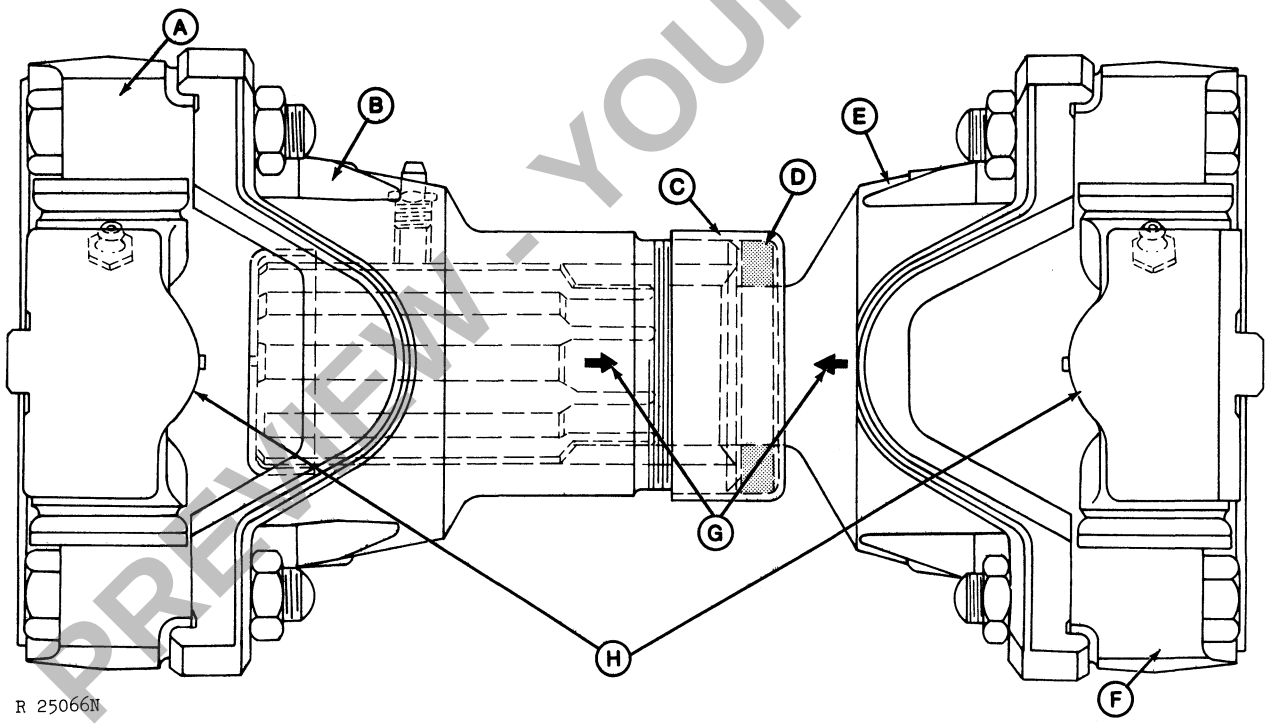
The U-joints and shafts provide a means to route the engine power to their respective destinations.

Since a hinge area separates the engine from the torque divider and transmission, U-joint drive shafts are used to transmit power from the engine across the hinge area. A U-joint shaft also routes the power from the transmission to the front differential drive shaft.

There are three U-joint shafts in the hinge area. The upper U-joint transmits power from the engine to the torque divider and the transmission. The middle U-joint (with independent PTO) transmits the power from the engine and the Independent PTO clutch to the torque divider and the PTO shaft. The lower U-joint transmits power that has been delivered to the transmission to the front differential drive shaft and the front drive.

There are three different designs used in the U-joint assemblies. One design (Mechanics, Fig. 32) attaches the spider assembly to the U-joint shaft by cap screws that are threaded into the bearing cup. The second design (Rockwell, Fig. 30) attaches the spider bearing cup to the U-joint shaft by a cap screw and nut with cap screw threads installed toward center of shaft. The third design (Dana, Fig. 31) has larger yokes on the drive shaft ends. The spider bearing cup is pressed or driven into the yoke and over the spider mating surface and a snap ring is installed in yoke to retain cup.

The front axle drive shaft to the front differential is attached to the lower U-joint at the hinge area and is positioned to pass through the front hinge and the lower part of the clutch housing. A self-aligning bearing assembly is located in the lower part of the clutch housing and pilots the front drive shaft to the differential.



A—Bearing Cup
B—Rear Yoke
C—Front Yoke
D—Washer
E—Dust Cap
F—Special Washers
G—Timing Marks
H—Spider Assembly

Fig. 30-Telescoping U-Joint (Rockwell)
(Transmission Clutch-to-Torque Divider)

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ROCKSHAFT

Removal

Relieve hydraulic pressure and disconnect hydraulic pressure and return lines.

Disconnect center link, lift links and rockshaft assist cylinder at the rockshaft.

Remove shields and control cables from rockshaft and selective control valves. Remove rockshaft tie rods and remove rockshaft assembly from transmission case.

Disassembly and Inspection

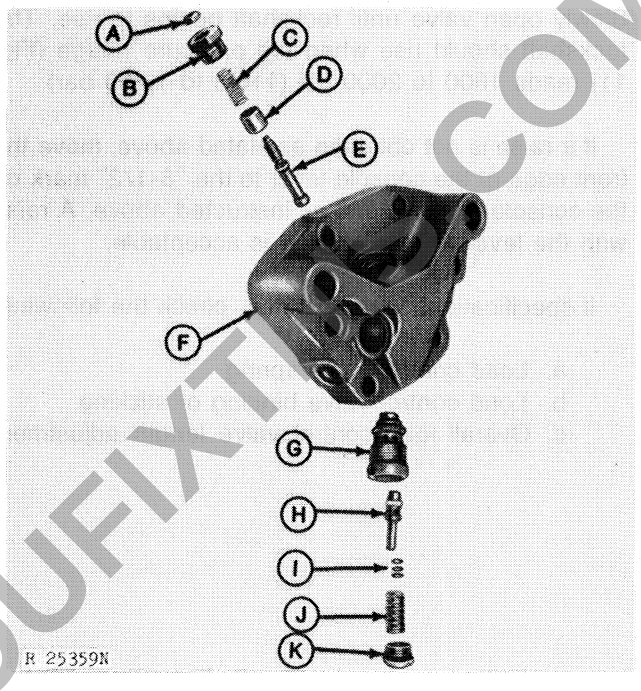
Remove selective control valves and rockshaft control valve housing.

Remove piston cover (Fig. 15). Disassemble throttle valve and surge relief valve.

Check throttle valve parts for damage. Check spring for compression rate of 0.75 inch at 0.5 to 0.7 lbs. (19 mm at 2.2 to 3.1 N). Check throttle valve shaft and valve to be sure that both move freely in the bore. Check O-ring and backup ring for damage.

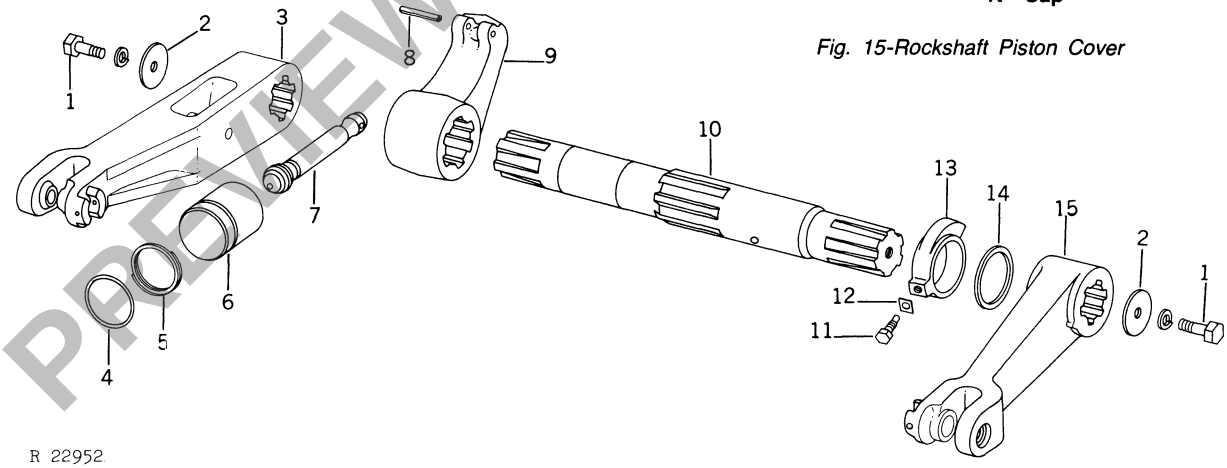
Examine surge relief valve poppet, body and spring for damage, burrs or contaminents. Spring should compress to 1.114 inches at 130 to 150 lbs. (28.29 mm at 578 to 667 N).

NOTE: Both throttle valve and surge relief valve can be examined and adjusted with the rockshaft on the tractor. Adjust throttle valve to desired rate-of-drop by loosening lock nut and turning throttle valve shaft screw. Adjust surge relief valve by adding or subtracting shims.



A—Jam Nut
B—Special Bushing
C—Spring
D—Throttle Valve
E—Throttle Valve Shaft
F—Piston Cover
G—Body
H—Relief Poppet
I—Shims
J—Spring
K—Cap

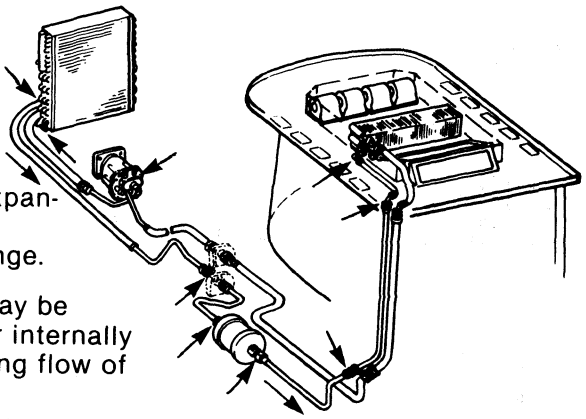
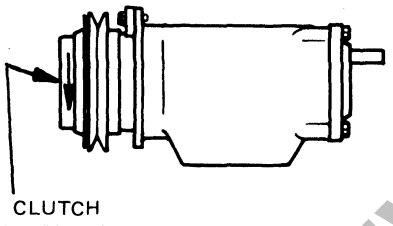
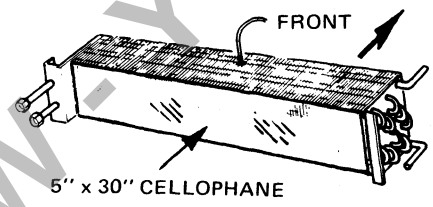
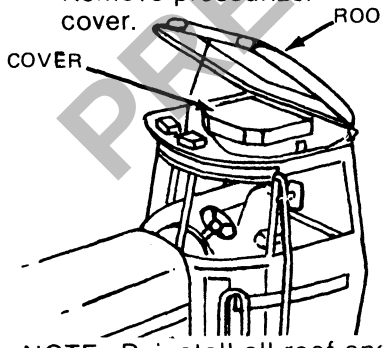
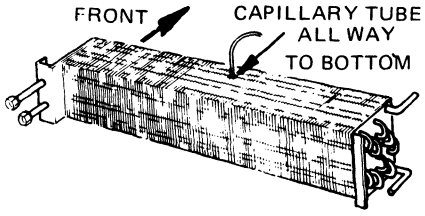
Fig. 15-Rockshaft Piston Cover



1—Cap Screw (2 used)
2—Washer (2 used)
3—L.H. Lift Arm
4—O-Ring*
5—Backup Ring*
6—Piston
7—Rod
8—Spring Pin
9—Arm
10—Rockshaft
11—Cap Screw
12—Lock Plate
13—Servo Cam
14—Spacer (2 used)
15—R.H. Lift Arm
***Out of Use, replaced by packing and sealing ring**

Fig. 16-Rockshaft Assembly

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Step	Sequence	Result
(43) Compressor "OPERATING." Engine at 2000 RPM. Feel along entire length of high side from compressor to expansion valve for a temperature change. NOTE: Tubing may be dented, kinked or internally blocked, restricting flow of R-12.	 CAUTION: High side line is normally "HOT".	No Temp. Change: No Restriction. **GO TO 44** Temp. Change: Repair* Restriction. Then... **GO TO 16** *Discharging, Evacuating and Charging may be necessary. See pages 80-10-30, 32 and 33.
(44) **CLUTCH CYCLE CHECK:** SGB door and windows "CLOSED". Blower switch at "HIGH". Compressor "OPERATING". Engine at 2000 RPM. Observe compressor clutch for cycling within 10 minutes of operation.  CLUTCH	NOTE: The compressor clutch may not cycle above 75°F (24°C) ambient temperature. Remove recirculating filter. Place a piece of cellophane across rear of evaporator. Clutch should cycle in 45 seconds below 90°F (32°C) or 60 seconds at 90°F (32°C) and above.  Remove cellophane after testing.	Clutch Cycles: **GO TO 47** Clutch Cycle Time Out of Spec.: **GO TO 45**
(45) Raise SGB roof. Remove pressurizer cover.  NOTE: Reinstall all roof and cover screws after testing or repair.	Place capillary tube vertical 15" from LH side between 1st and 2nd refrigerant tubes of evaporator.  NOTE: If tube is vertical, GO TO 46. IMPORTANT: Pressurizer cover must be secured at each corner for all checks.	Clutch Cycles: **GO TO 47** Clutch Does Not Cycle: **GO TO 46**

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