Group 20
SEPARATION

FRONT END

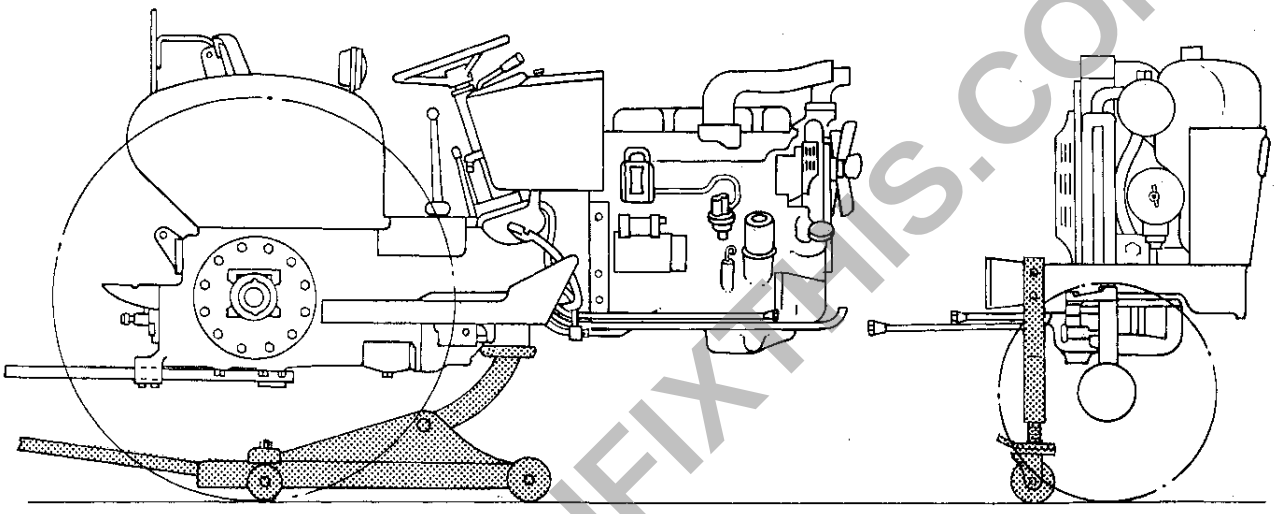


Fig. 1-Removing Front End

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Removal

1. (Not Illustrated). Disconnect battery ground cable.
2. (Not Illustrated). Drain cooling system.

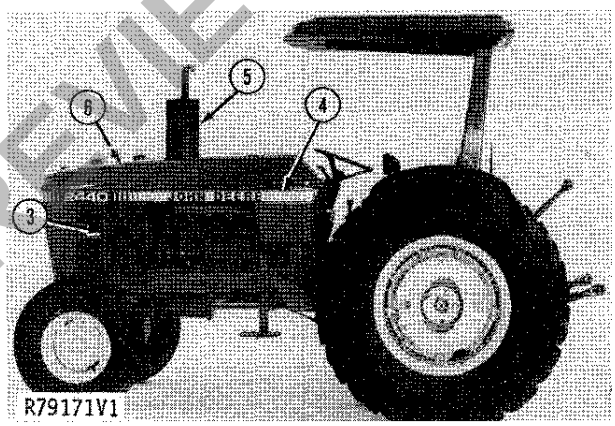


Fig. 2-Removing Muffler, Screens and Hood

3. Remove left- and right-hand grill screens.
4. Hinge left and right-hand cowls rearward.
5. Remove muffler.
6. Remove hood.
7. (Not Illustrated). Remove Quik-Tatch front weights (if equipped).

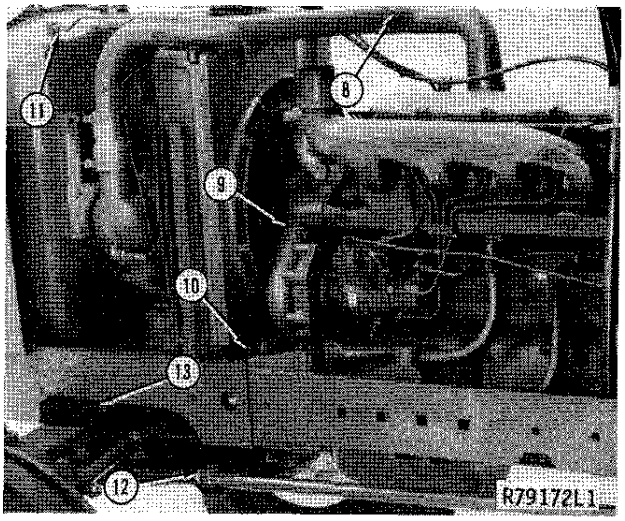
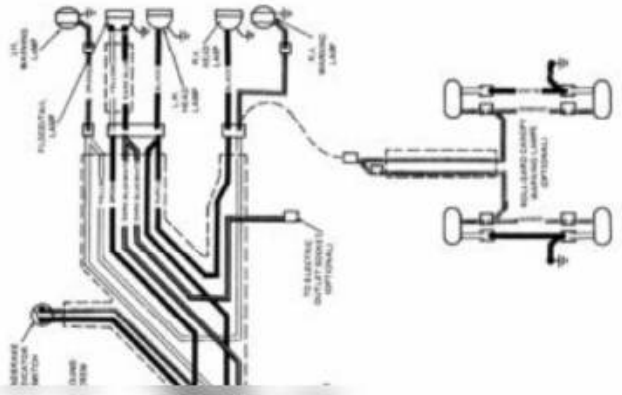


Fig. 3-Left Side Removal Steps

8. Disconnect air intake pipe at elbow.

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CONTENTS - REPAIR SECTIONS

SECTION 10 - GENERAL
- Group 00 - Specifications and Special Tools
- Group 05 - Predelivery, Delivery and After-Sale Services
- Group 10 - Tune-Up
- Group 15 - Lubrication
- Group 20 - Separation

SECTION 20 - ENGINE REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Cylinder Head, Valves, Camshaft, and Timing Gear Train
- Group 10 - Cylinder Block, Liners, Pistons and Rods
- Group 15 - Crankshaft, Main Bearings and Flywheel
- Group 20 - Lubrication System
- Group 25 - Cooling System

SECTION 30 - FUEL AND AIR REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Air Intake System
- Group 10 - Diesel Fuel System
- Group 15 - Control Linkage

SECTION 40 - ELECTRICAL REPAIR
- Group 00 - Specifications and Special Tools
- Group 10 - Charging Circuit
- Group 15 - Starting Circuit
- Group 20 - Lighting and Accessory Circuits
- Group 25 - Instrument Circuits

SECTION 50 - POWER TRAIN REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Clutches
- Group 10 - HI-LO Shift Unit
- Group 15 - Reverser
- Group 20 - Collar Shift Transmission
- Group 25 - Differential
- Group 30 - Final Drives
- Group 35 - PTO

SECTION 60 - STEERING/BRAKES REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Steering
- Group 10 - Brakes
- Group 15 - Auxiliary Brake

SECTION 70 - HYDRAULIC REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Miscellaneous Hydraulic Components
- Group 10 - Hydraulic Pumps
- Group 15 - Rockshaft and Implement Hitches
- Group 20 - Selective Control Valve, Breakaway Coupler and Remote Cylinder

SECTION 80 - MISCELLANEOUS REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Front Axles
- Group 10 - Wheels

SECTION 90 - OPERATOR STATION REPAIR
- Group 00 - Specifications and Special Tools
- Group 05 - Seat
- Group 10 - ROLL-GARD®
- Group 15 - Miscellaneous Repair

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CONTENTS - OPERATION AND TEST SECTIONS

SECTION 220 - ENGINE OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - System Operation
- Group 10 - System Tests and Diagnosis

SECTION 230 - FUEL/AIR OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - Air Intake System
- Group 10 - Diesel Fuel System
- Group 15 - Control Linkage

SECTION 240 - ELECTRICAL OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - General Information and Diagrams
- Group 10 - Charging Circuit Diagnosis
- Group 15 - Starting Circuit Diagnosis
- Group 20 - Lighting and Accessory Circuits
- Group 25 - Instrument Circuits
- Group 30 - Outlet Socket Diagnosis

SECTION 250 - POWER TRAIN OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - Clutch and Transmission Operation
- Group 10 - HI-LO Shift Unit Operation
- Group 15 - Reverser Operation
- Group 20 - Differential and Final Drive Operation
- Group 25 - PTO Operation

SECTION 260 - STEERING/BRAKES OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - Power Steering
- Group 10 - Hydraulic Brakes
- Group 15 - Auxiliary Brake

SECTION 270 - HYDRAULIC OPERATION AND TESTS
- Group 00 - Specifications and Special Tools
- Group 05 - Hydraulic System Operation
- Group 10 - Hydraulic System Tests
- Group 15 - Hydraulic Pumps
- Group 20 - Rockshaft and Implement Hitches
- Group 25 - Selective Control Valve, Breakaway Couplers and Remote Cylinders

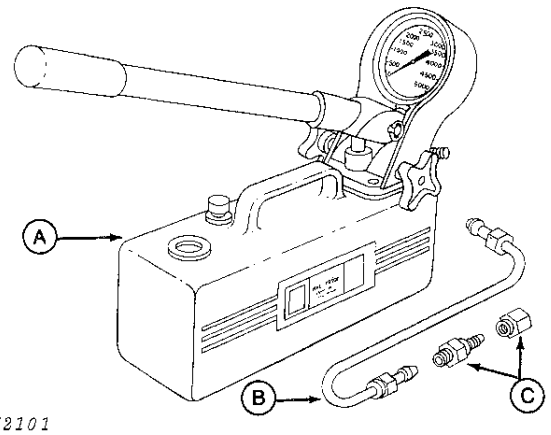
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Diesel Fuel System—Continued

TOOL NUMBER	USE
A—D-01109AA Portable Nozzle Tester*	Test nozzle operational performance
B—Y-900-2 Fuel Line*	Connect adapters to tester
C—Y-900-3, Y-900-5 and Y-900-9 Adapters*	Connect fuel line to nozzle

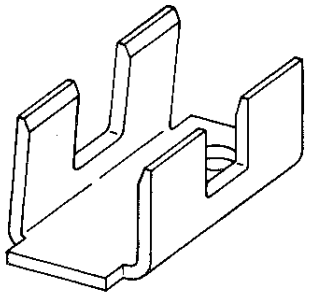
NOTE: Adapters are part of D-01100AA Universal Accessory Kit*



RG2101

Fig. 7-Nozzle Testing Equipment

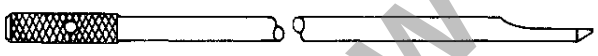
No. 16475 or 17787 Nozzle Holding Fixture*	Hold nozzle during repair and adjustment



RG2102

Fig. 8-Nozzle Holding Fixture

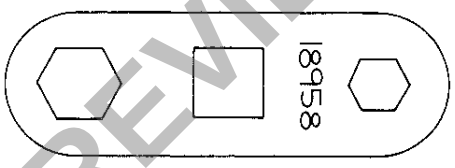
No. 16482 or 17712 Tip Seat Scraper*	Clean valve seating area



RG2103

Fig. 9-Tip Seat Scraper

No. 16478 or 18958 Torque Wrench Adapter*	Tighten adjusting screw lock nuts



RG2104

Fig. 10-Torque Wrench Adapter (No. 18958 shown)

Not Shown - D-05303ST Cleaning Solvent*

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3. Remove commutator end frame. Pry with screwdriver if necessary.

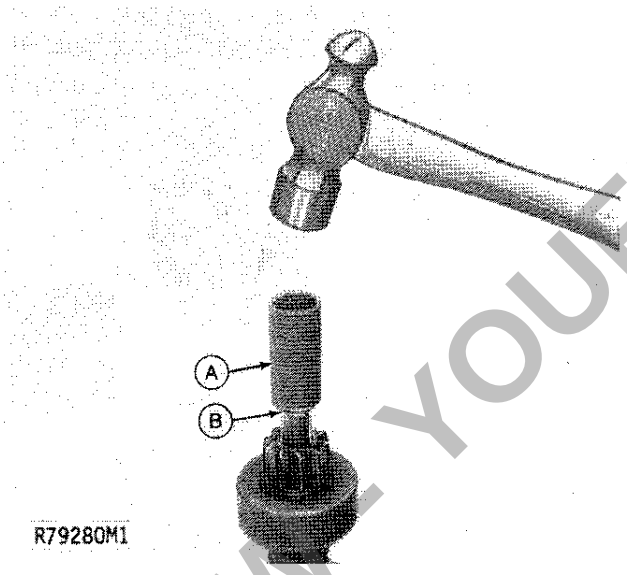
4. Disconnect field connector.

5. Carefully remove main frame.

6. Remove two solenoid assembly mounting bolts. Slide solenoid away from plunger and spring.

7. Remove shift lever pivot screw and two center bearing retaining screws.

8. Remove armature, shift lever and solenoid plunger from drive end housing.



A—Pipe Coupling **B—Pinion Stop**

Fig. 19-Removing Pinion Stop

9. Remove pinion stop. Use a pipe coupling or other metal cylinder to drive pinion stop toward pinion as shown in Fig. 19. Remove retaining ring and slide pinion stop off shaft.

10. Slide overrunning clutch drive off shaft.

11. Remove brake washer and center bearing from armature shaft.

IMPORTANT: Do not clean armature with solvent. Solvent could damage insulation on windings. Use only mineral spirits and a brush.

12. Give armature a close visual inspection. Look for signs of dragging against pole shoes. Look for scoring under bushings or overrunning clutch drive.

13. Carefully check commutator. Look for roughness, burned commutator bars, or any material which might cause short circuits between bars.

14. Clean and touch up commutator if necessary with 00 sandpaper. Never use emery cloth. Clean all dust from armature when finished.

15. If commutator is out of round, badly burned, or rough, it can be turned down slightly on a lathe. Remove only enough metal to eliminate problem. Do not undercut commutator after turning as this will cause shorts between commutator bars.

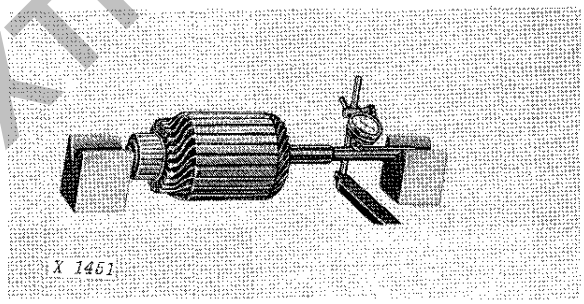


Fig. 20-Checking Armature for Bent Shaft

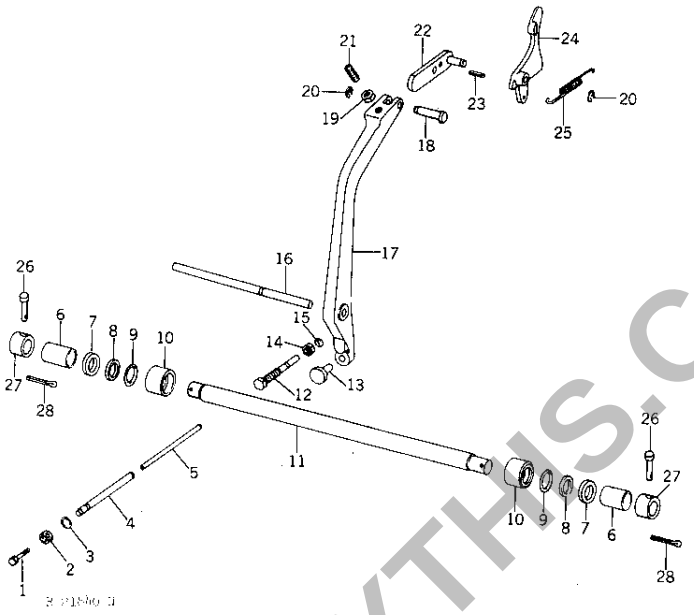
Place armature in V-blocks and check for a bent shaft as shown in Fig. 20. Replace armature if shaft is bent.

If no-load test indicates possibility of grounded, short circuited, or open circuited windings, check armature for these defects. Windings are large, and defect might be easy to spot.

Grounded Windings

Symptoms—starting motor cranks engine slowly or not at all. On no-load test, motor has low armature speed and high current draw or fails to operate and has high current draw.

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1—Cap Screw*
2—Jam Nut*
3—O-Ring*
4—Rear Rod*
5—Front Rod*
6—Bushing (2 used)
7—Thrust Washers (use as required)
8—Sealing Ring (2 used)
9—O-Ring (2 used)
10—Bushing (2 used)
11—Load Control Shaft
12—Special Screw**
13—Special Pin
14—Jam Nut**
15—O-Ring**
16—Control Arm Shaft
17—Load Control Arm
18—Pin
19—Jam Nut
20—Retaining Ring (2 used)
21—Adjusting Screw
22—Load Control Arm Extension
23—Spring Pin
24—Cam Follower
25—Spring
26—Pin
27—Retainer
28—Cotter Pin

***With independent PTO**
****Without Independent PTO**

Fig. 11-Load Control Assembly

Inspection and Repair

1. Inspect load control arm (17, Fig. 11) for wear or damage. Check fit between load control arm and pivot shaft.

2. Check special pin (13) for rough spots or wear in area where load control shaft makes contact.

3. Examine load control arm extention (22) for damage or wear. Check fit between connecting pins and holes.

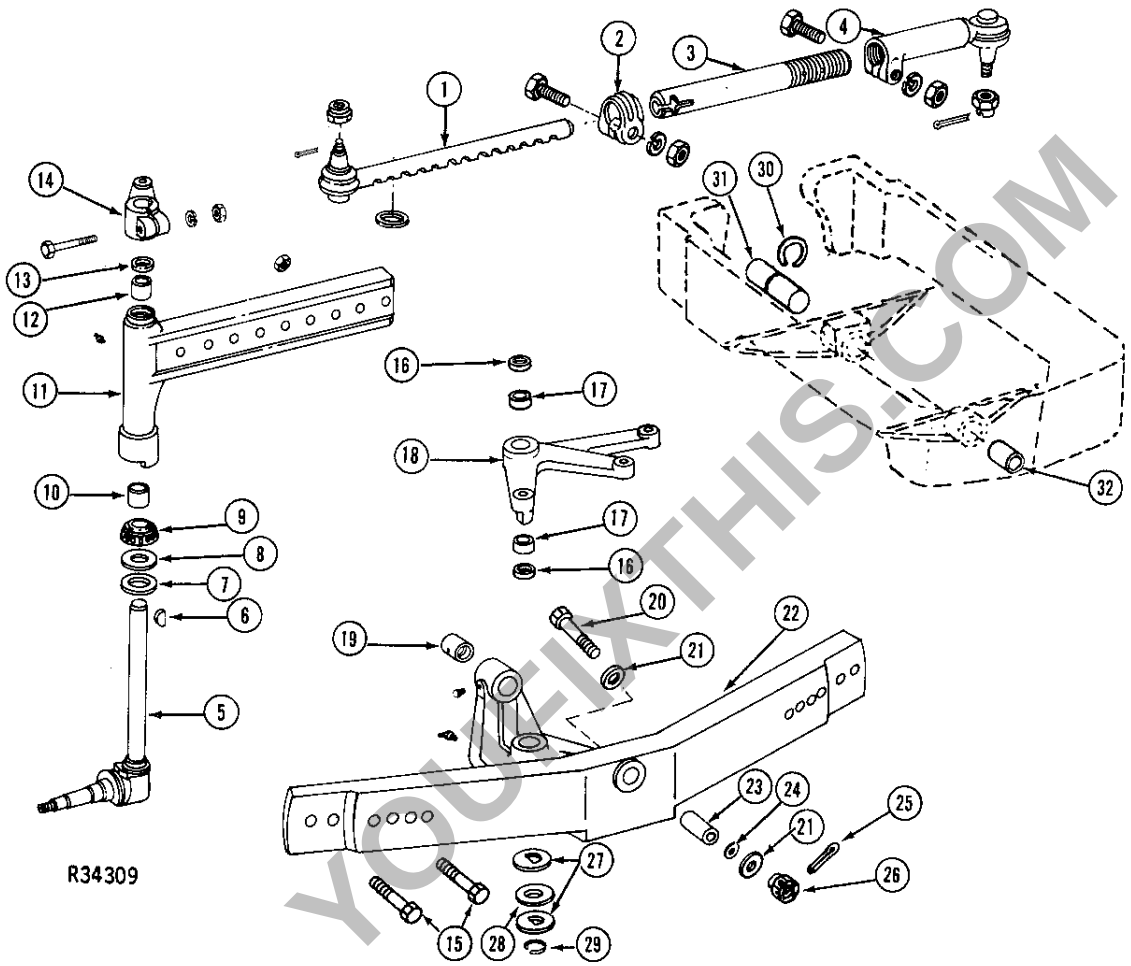
4. Examine load control shaft (11) for damage. Check for wear at pivot points and for any bends in shaft.

5. Inspect negative stop screw (1 or 12) for wear on ends contacting load control arm. Replace O-rings before installation.

6. Inspect bushing (6), sealing rings (4) and O-rings (5) for wear, leakage or damage. DO NOT REPLACE BUSHINGS UNLESS NECESSARY. Frequent replacement can enlarge bushing bore and cause leakage.

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1—Outer Tie Rod End Socket
2—Clamp
3—Tie Rod Tube
4—Inner Tie Rod End Socket
5—Knuckle with Spindle
6—Woodruff Key
7—Lower Seal
8—Washer
9—Thrust Bearing
10—Bushing
11—Front Axle Knee
12—Knee Bushing
13—Upper Seal
14—Steering Arm
15—Knee-to-Axle Mounting Bolt
16—Wiper Seal
17—Needle Bearing
18—Steering Bell Crank
19—Bushing
20—Special Cap Screw
21—Special Washer
22—Swept Back Axle
23—Front Axle Pivot Pin
24—Shim
25—Cotter Pin
26—Slotted Nut
27—Shim
28—Shim
29—Snap Ring
30—Snap Ring
31—Rear Pivot Pin
32—Front Pivot Pin Bushing

Fig. 13-Swept-Back Front Axle

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TOOL	NUMBER	USE
JDF-21-1 Speed Advance Gauge*		To check and adjust automatic speed advance on injection pump.

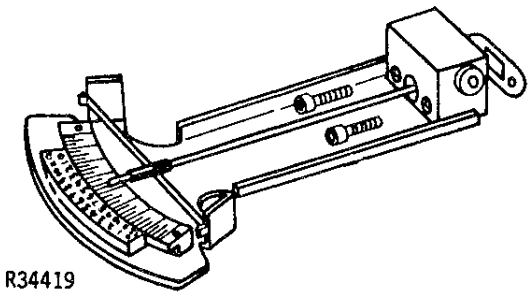


Fig. 2-Speed Advance Gauge

Hand Tachometer*		To obtain engine speeds for adjustment of automatic speed advance and speed control linkage.

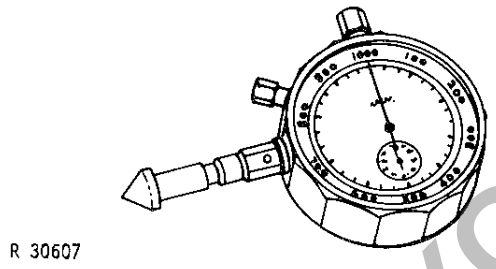


Fig. 3-Hand Tachometer

JD-281 Engine Rotation Tool*		To turn engine flywheel to TDC to check and adjust injection pump timing.

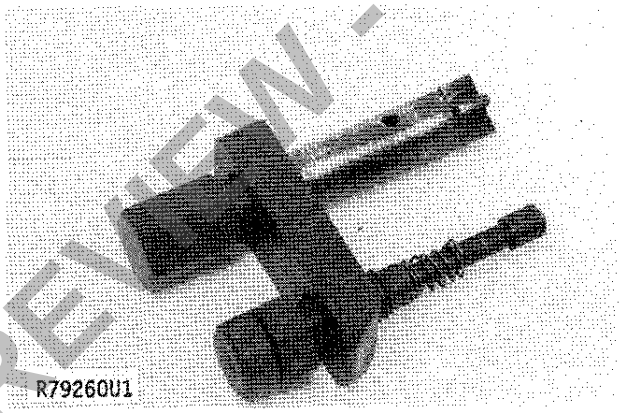


Fig. 4-Engine Rotation Tool

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SPECIAL TOOLS

General Information

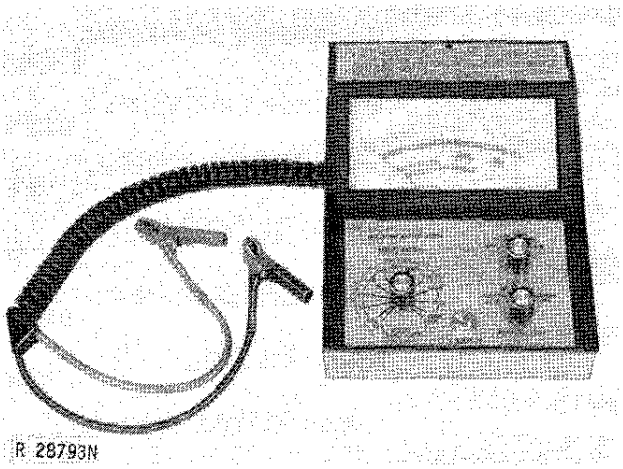
TOOL	NUMBER	USE
	D-24001MO Battery Tester	Test Batteries

Fig. 3-D-24001MO Battery Tester

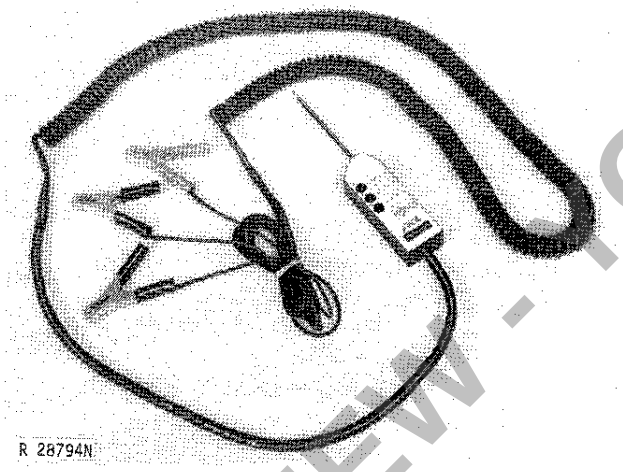
	D-05136ST Voltage Detector	Test wiring circuits for opens, shorts, or grounds

Fig. 4-D-05136ST Voltage Detector

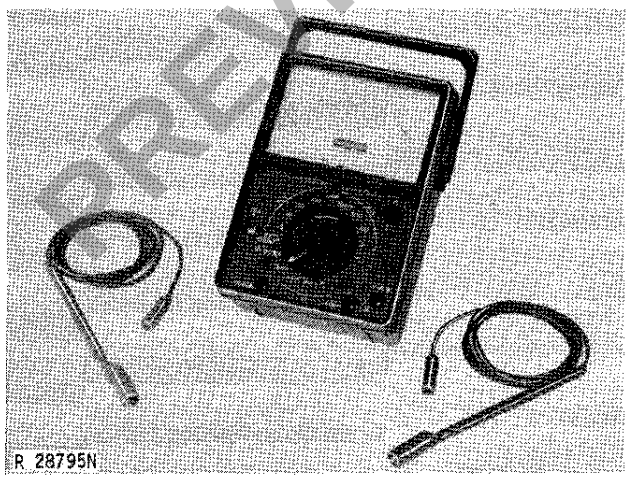
	D-19001TT Volt-Ohm-Amp Meter	Test any electrical components for voltage, resistance, or current draw

Fig. 5-D-19001TT Volt-Ohm-Amp Meter

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Warning Lamps

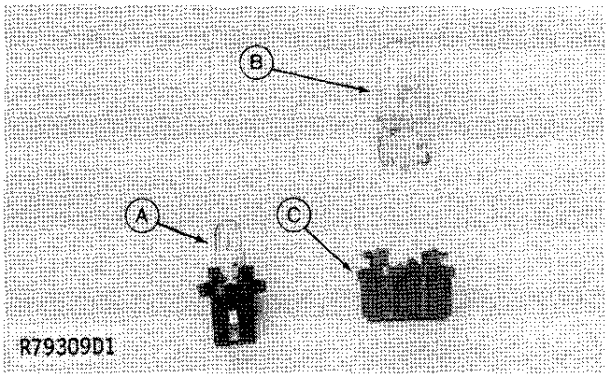


Fig. 13-Removing Warning Lamp Bulb

1. Remove lens by removing screws.

2. Remove bulb by pressing it slightly inward and turning counterclockwise.

3. Press new bulb in, turn clockwise, and replace lens.

Tail Lamp

1. Remove flood lamp bulb from bezel.

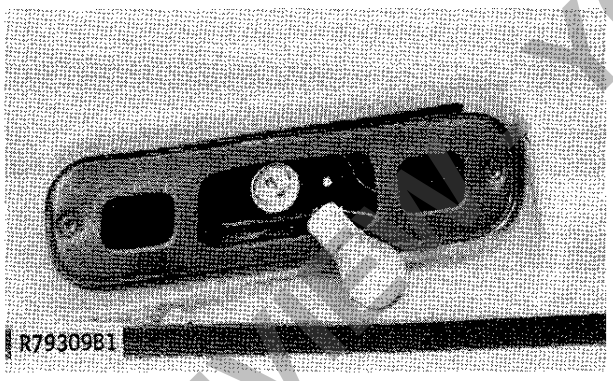


Fig. 14-Tail Lamp Bulb

2. Remove tail lamp bulb from socket attached to rear of flood lamp bulb.

3. Replace flood/tail lamp unit in bezel. Check position of lamp.

Instrument Cluster Lamps

1. Open right-hand cowl.

2. Remove clamp and rubber boot from back of instrument cluster.

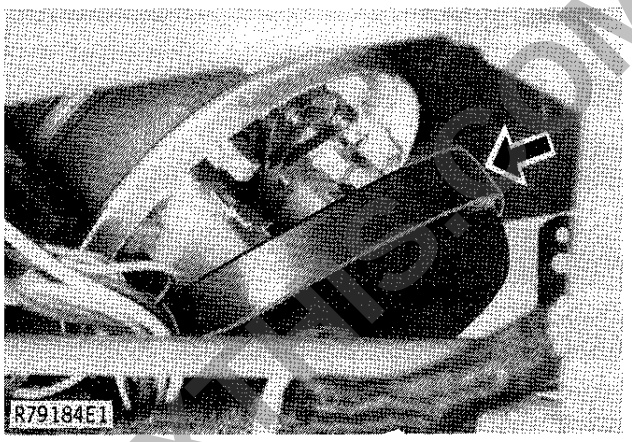
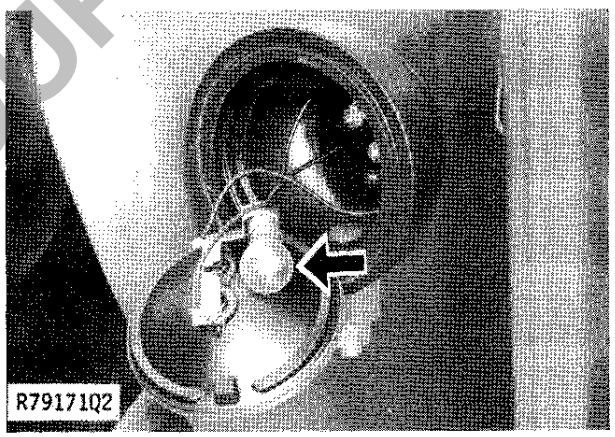


Fig. 15-Removing Instrument Cover Boot

3. Twist bulb base to remove from cluster.



A—Indicator Lamp Bulb **C—Indicator Lamp Socket**
B—Attention Lamp Bulb

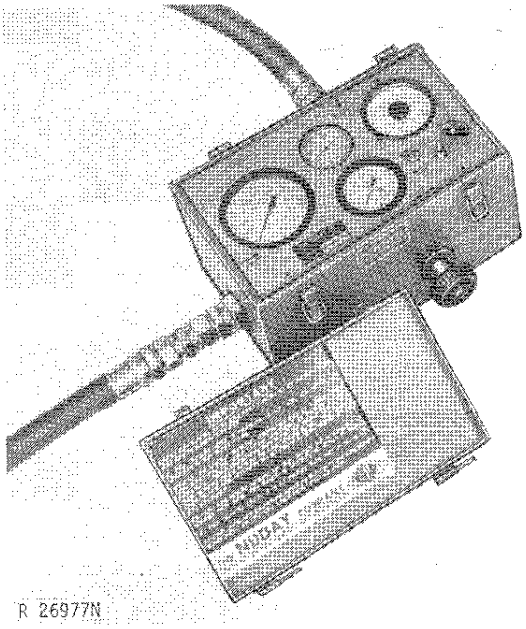
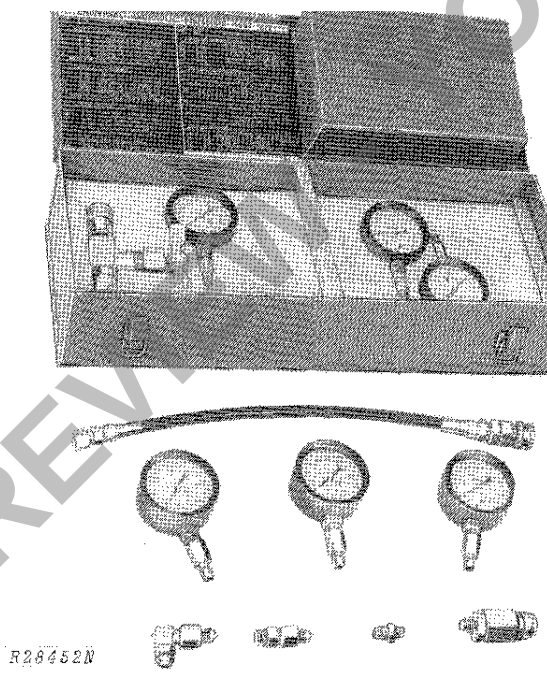
Fig. 16-Instrument Cluster Lamp Bulbs

4. Regular indicator lamp sockets and bulbs must be replaced as a unit. Attention indicator bulb may be removed from socket.

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SPECIAL TOOLS

TOOL	NUMBER	USE
	**D-15017NU* Hydraulic Flow Meter**	**To check hydraulic flow and pressure**
	(NOTE: D-1074AA Hydraulic Flow Meter may also be used)	
	**D-15027NU* Pressure Test Kit**	**To check hydraulic pressures.**

R 26977N

Fig. 1-Hydraulic Flow Meters

R28452N

Fig. 2-Universal Pressure Test Kit

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Cylinder Block, Liners, Pistons and Rods—Continued

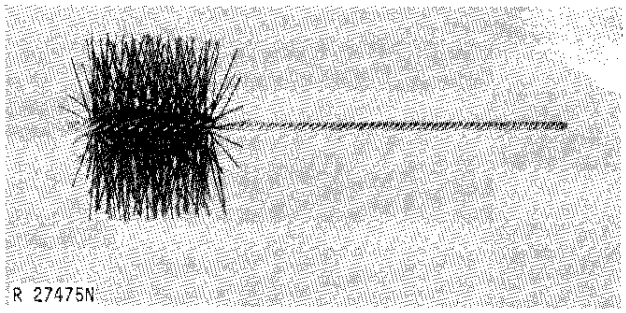
TOOL	NUMBER	USE
 R 27475N	D-17015BR O-Ring Bore Cleaning Brush*	To clean O-ring bore in cylinder block.

Fig. 11-O-Ring Bore Cleaning Brush

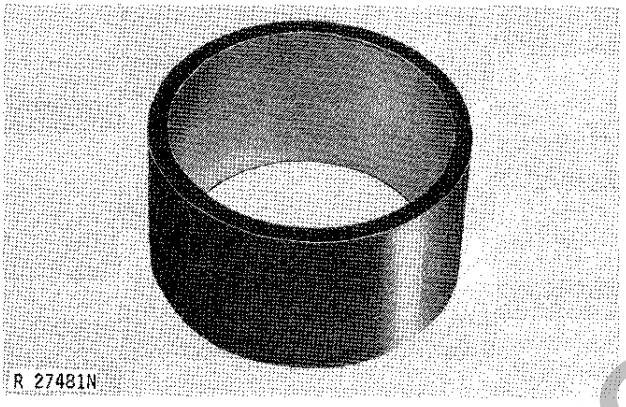
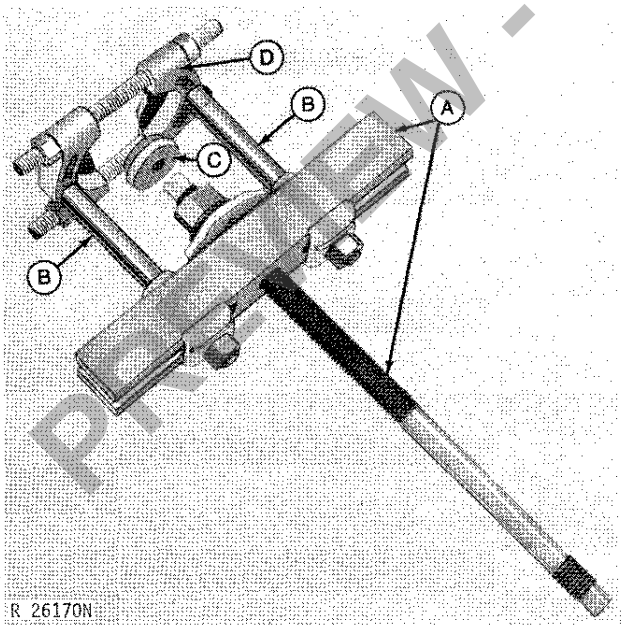
 R 27481N	JD-271 Ring Compressor*	To compress rings when installing pistons in 2440 Tractors.
	(not illustrated) JD-84 Ring Compressor*	To compress rings when installing pistons in 2640 Tractors.

Fig. 12-Ring Compressor

Crankshaft, Main Bearings, and Flywheel

 R 26170N	A—D-01219AA Puller* B—D01222AA Pulling Legs*	To remove crankshaft gear.
	C—No. 630-4 Step Plate*	
	D—D-01218AA Knife Edge Puller*	

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Instrument and Accessory Circuits

TOOL	NUMBER	USE
	JDST-33 Universal Gauge Tester	Test fuel gauge, water temperature gauge, engine oil pressure gauge, and their senders.

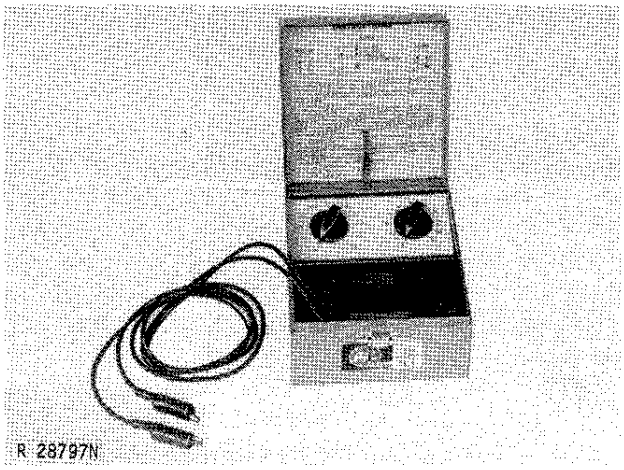


Fig. 8-JDST-33 Universal Gauge Tester

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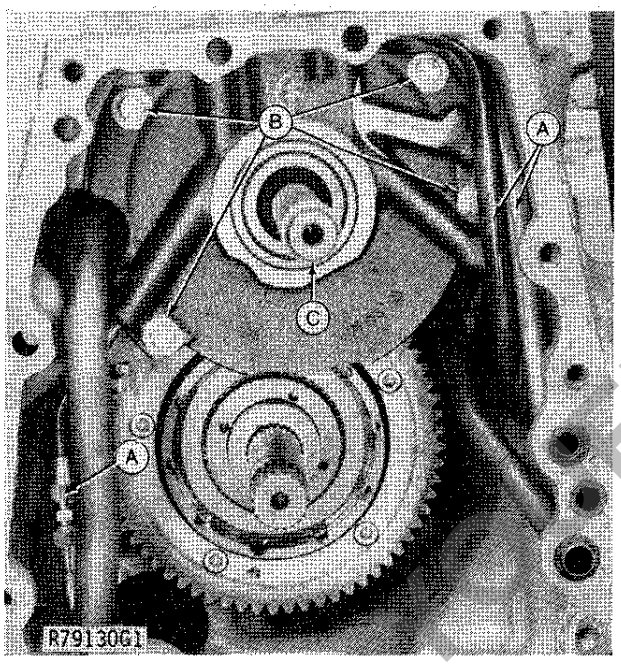
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Group 10
HI-LO SHIFT UNIT

REMOVAL

1. Separate the transmission from the clutch housing as instructed in Section 10, Group 20.



A—Oil Lines
B—Cap Screws
C—Input Shaft

Fig. 1-Removing Hi-Lo

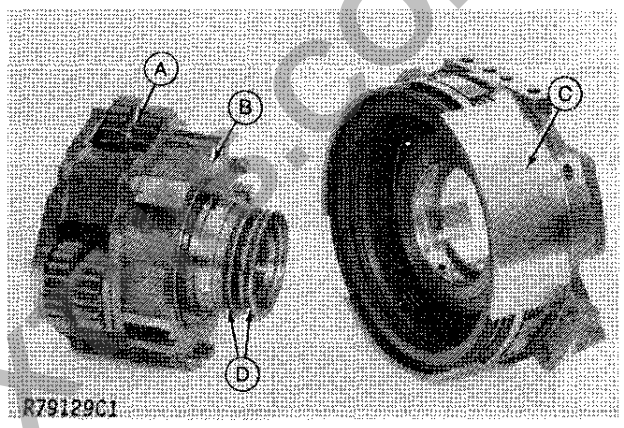
2. Remove oil lines (A, Fig. 1) from hi-lo and clutch housing.

3. Remove input shaft (C) from hi-lo.

4. Remove the four hi-lo to clutch housing cap screws and remove hi-lo assembly.

"LO" BRAKE

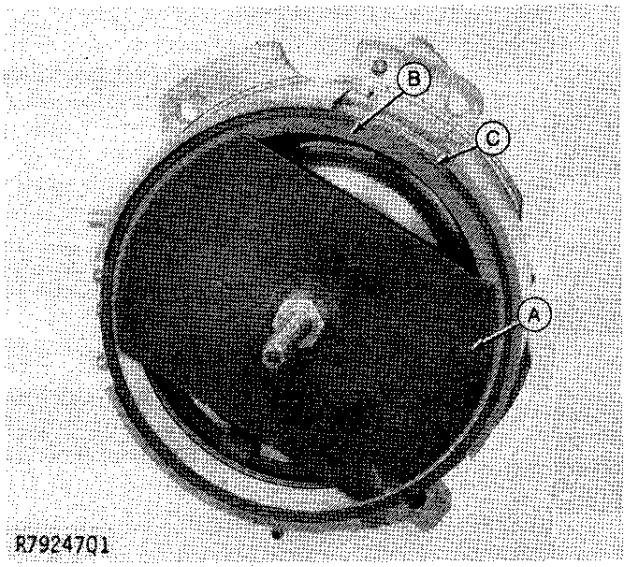
Disassembly



A—Planetary
B—Clutch Assembly
C—Brake Unit
D—Sealing Rings

Fig. 2-Hi-Lo Assembly

1. Carefully remove the planetary (A, Fig. 2) and clutch assembly (B) from the "lo" brake unit (C). Be careful not to damage sealing rings (D).



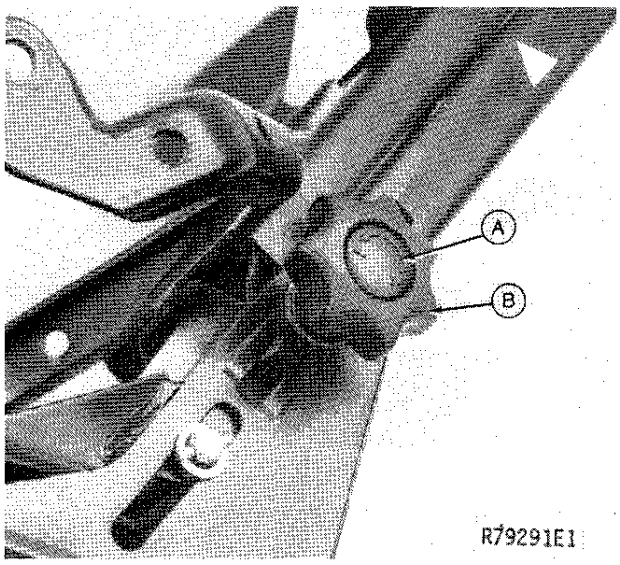
A—JDT-24-2 Adapter
B—Spring Washer
C—Retaining Ring

Fig. 3-Compressing Spring Washer

2. Use JDT-24A Spring Compressor with JDT-24-2 Adapter (A, Fig. 3) to compress spring washers (B) and remove snap ring (C).

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Assembly and Adjustment—Continued



A—Screws **B—Plate**

Fig. 4-Plate Adjustment

3. To adjust, loosen screws (A, Fig. 4) in plate (B), and move plate inward to increase latch engagement, or out to decrease.

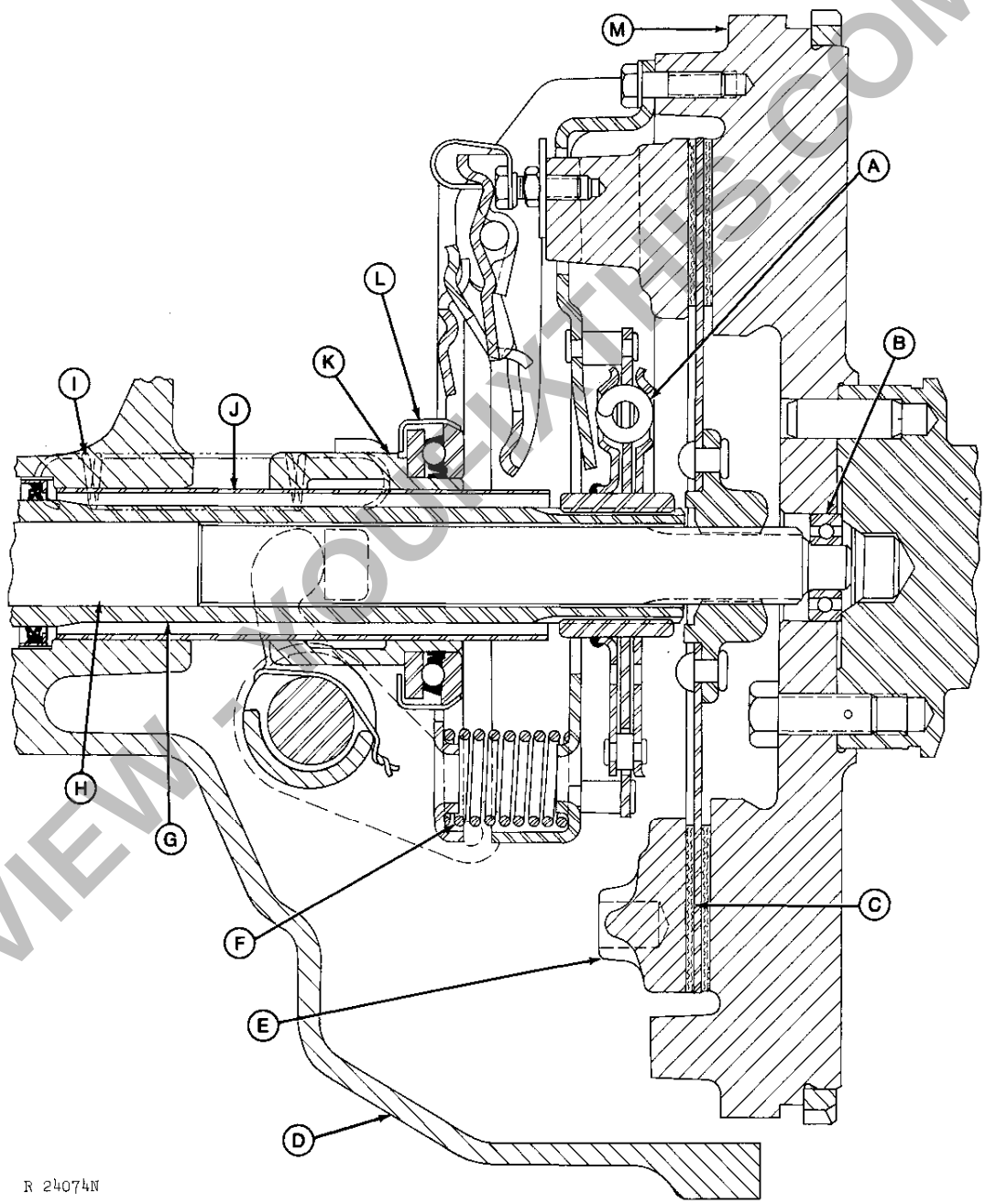
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Group 05
CLUTCH AND TRANSMISSION OPERATION

SINGLE-STAGE CLUTCH

ANGLE-LINK DESIGN

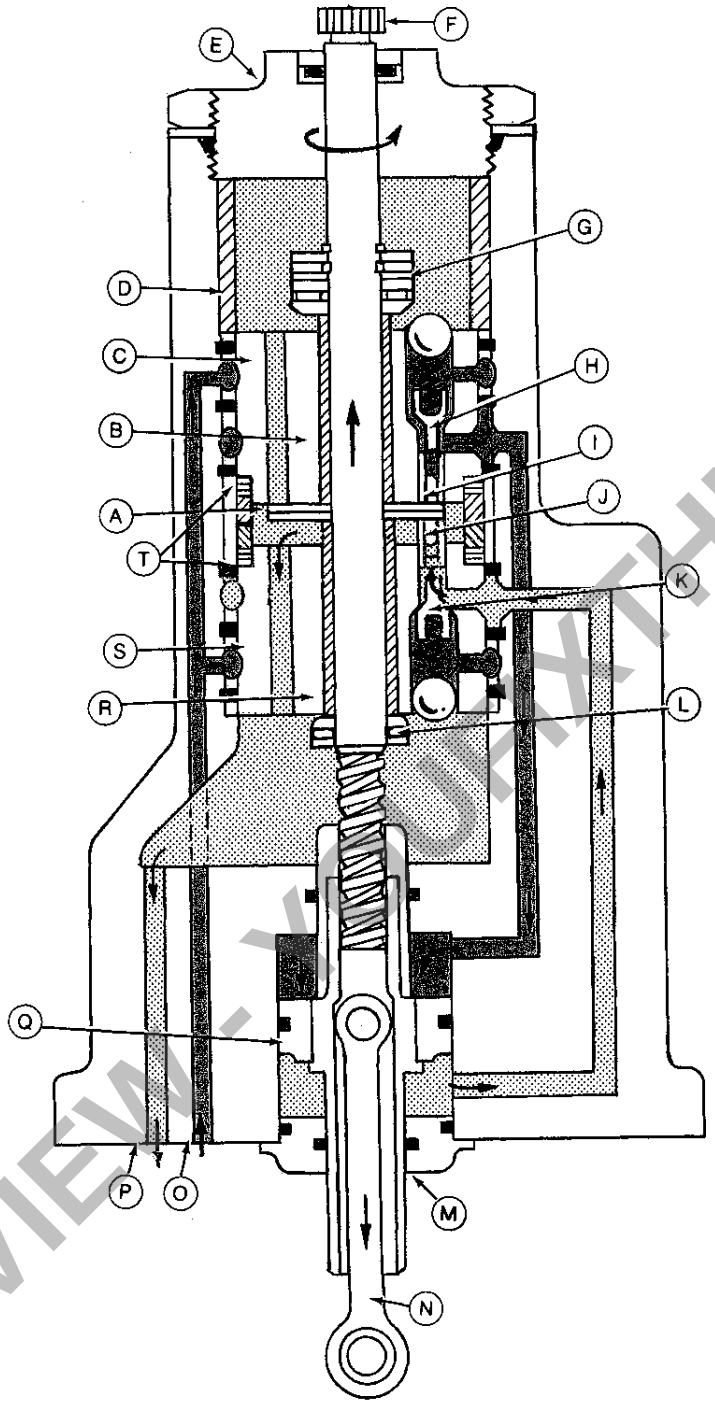


A—Dampener Assembly
B—Pilot Bearing
C—Clutch Disk
D—Clutch Housing
E—Pressure Plate
F—Pressure Spring
G—Power Shaft
H—Clutch Shaft
I —Return Spring
J —Carrier Sleeve
K—Bearing Carrier
L —Throw-Out Bearing
M—Flywheel

Fig. 1-Single-Stage Clutch Assembly (Tractors with Independent PTO, No Reverser)

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A—Special Washers
B—Upper Sleeve
C—Upper Valve Body
D—Sleeve
E—Adjuster Nut
F—Steering Shaft
G—Upper Needle Bearing Assembly
H—Upper Operating Valve
I —Upper Operating Pin
J—Lower Operating Pin
K—Lower Operating Valve
L—Lower Needle Bearing Assembly
M—Piston Guide
N—Connecting Rod
O—From Hydraulic Pump
P—To Reservoir
Q—Piston
R—Lower Sleeve
S—Lower Valve Body
T—Valve Spacers and Shim Packs
High-Pressure Oil
Pressure-Free Oil

Fig. 3-Left-Hand Turn - Power

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