840, 940, 1040 and 1140 Tractors

JOHN DEERE

TECHNICAL MANUAL

840, 940, 1040 and 1140
Tractors

TM4353 (01JUN82) English

PREVIEW - YOUFIXTHIS.COM

John Deere Werke Mannheim
John Deere Ibérica S.A. Getafe
TM4353 (01JUN82)

LITHO IN U.S.A. (REVISED)
ENGLISH

Download full manual at youfixthis.com

840, 940, 1040 and 1140 Tractors
Technical Manual
TM-4353

CONTENTS

SECTION 10 — GENERAL
- Group 00 — Specifications and special tools
- Group 05 — Pre-delivery, delivery and after-sale inspections
- Group 10 — Lubrication and periodic service
- Group 15 — Engine and tractor tune-up
- Group 20 — Tractor separation

SECTION 20 — ENGINE
- Group 00 — Specifications and special tools
- Group 05 — Description, diagnosing malfunctions
- Group 10 — Cylinder head, valves and camshaft
- Group 15 — Cylinder block, liners, pistons and connecting rods
- Group 20 — Crankshaft, main bearings and flywheel
- Group 25 — Timing gear train
- Group 30 — Lubrication system
- Group 35 — Cooling system

SECTION 30 — FUEL AND AIR INTAKE SYSTEM
- Group 00 — Specifications and special tools
- Group 05 — General information, diagnosing malfunctions
- Group 10 — Fuel tank, water trap, fuel transfer pumps and fuel filter
- Group 15 — Roto Diesel fuel injection pump
- Group 20 — Fuel injection nozzles
- Group 25 — Cold weather starting aids
- Group 30 — Speed control linkage
- Group 35 — Air cleaner

SECTION 40 — ELECTRICAL SYSTEM
- Group 00 — Specifications and special tools
- Group 05 — Description and diagnosing malfunctions
- Group 10 — Wiring harnesses
- Group 15 — Controls and instruments
- Group 20 — Lighting systems
- Group 25 — Wiring diagrams
- Group 30 — Starting motor
- Group 35 — Alternator

SECTION 50 — POWER TRAIN
- Group 00 — Specifications and special tools
- Group 05 — Description, operation and lubricating system
- Group 10 — Clutch operating linkage
- Group 15 — Engine clutches
- Group 20 — Hi-Lo shift unit
- Group 25 — Creeper transmission
- Group 30 — Transmission shift linkage
- Group 35 — Synchronized transmission and transmission oil pump
- Group 40 — Collar shift transmission and transmission oil pump
- Group 45 — Differential
- Group 50 — Final drives
- Group 55 — Independent PTO
- Group 60 — Continuous-running PTO
- Group 65 — Mechanical front wheel drive

Copyright © by
DEERE & COMPANY
European Office
D 68 Mannheim
All rights reserved

TM-4353 (June-82) Printed in Germany (F 2)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Group 00
Specifications and Special Tools

Specifications

Serial Numbers

The engine serial number is stamped into the plate located on the lower front right-hand side of the cylinder block.

NOTE: When ordering engine parts, quote all digits of serial number stamped on the plate.

The plate showing the tractor serial number is located on the right-hand side of the front axle carrier.

NOTE: When ordering tractor spare parts (excluding engine parts), quote all digits of serial number stamped on the plate.

A plate showing the tractor type, transmission serial number, cone point measurement etched into pinion face of differential drive shaft as well as reduction of differential is located on the right-hand side of the transmission case.

Model Numbers

The fuel injection pump, fuel injection nozzles, alternator, starting motor, and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

Engine

Number of cylinders		3
Cylinder liner bore		106.5 mm (4.19 in.)
Stroke		110 mm (4.33 in.)
Displacement		2940 cm^3 (179 cu.in.)
Compression ratio		16.8 : 1
Maximum torque		
840 at 1300 rpm	135 Nm	100 ft-lb
940 at 1300 rpm	150 Nm	110 ft-lb
1040 at 1400 rpm	165 Nm	122 ft-lb
1140 at 1400 rpm	185 Nm	136 ft-lb
Firing order		1 - 2 - 3
Valve clearance (engine hot or cold)		
Intake valve	0.35 mm	0.014 in.
Exhaust valve	0.45 mm	0.018 in.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hydraulic System

Type	Closed center, constant pressure system		
Standby pressure*	19000 kPa	190 bar	2760 psi
Operating pressure**	17000 kPa	170 bar	2470 psi
Hydraulic pump	4 or 8-piston pump with variable displacement		

Capacities

Fuel tank		
Plastic tank	78 liters	20.6 U.S.gals.
Metal tank	62.5 liters	16.5 U.S.gals.
Cooling system		
Without operator's cab	10.5 liters	1.8 U.S.gals.
With operator's cab	15.5 liters	4.1 U.S.gals.
Engine crankcase		
Without filter change	6.5 liters	1.7 U.S.gals.
With filter change	7 liters	1.8 U.S.gals.
Transmission - Hydraulic system (including oil reservoir and oil cooler on 940, 1040 and 1140 tractors)		
Synchronized transmission		
Initial filling – 840	53 liters	14 U.S.gals.
– 940, 1040, 1140	59 liters	15.6 U.S.gals.
Oil change – 840	45 liters	11.9 U.S.gals.
– 940, 1040, 1140	51 liters	13.5 U.S.gals.
Collar shift transmission (without mid PTO)		
Initial filling – 840	41 liters	10.8 U.S.gals.
– 940, 1040, 1140	47 liters	12.4 U.S.gals.
Oil change – 840	33 liters	8.7 U.S.gals.
– 940, 1040, 1140	39 liters	10.3 U.S.gals.
Collar shift transmission (with mid PTO)		
Initail filling – 840	36 liters	9.5 U.S.gals.
– 940	42 liters	11.1 U.S.gals.
Oil change – 840	28 liters	7.4 U.S.gals.
– 940	34 liters	9.0 U.S.gals.
Oil reservoir	4 liters	1.1 U.S.gals.
Oil cooler	2 liters	0.5 U.S.gals.
Mechanical front wheel drive		
Front axle housing	5.3 liters	1.4 U.S.gals.
Wheel hub housing, each	0.75 liter	0.2 U.S.gals.
Belt pulley	1 liter	0.3 U.S.gals.

On tractors for Canada only:
* 15500 kPa 155 bar 2250 psi
** 14000 kPa 140 bar 2050 psi

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Lubrication and Service

CAPACITIES

Engine crankcase		
Without filter change	65 liters	1.7 U.S.gals.
With filter change	7.0 liters	1.8 U.S.gals.
Transmission - Hydraulic system (including oil reservoir and oil cooler on 940, 1040 and 1140 tractors)		
Synchronized transmission		
Initial filling – 840	53 liters	14 U.S.gals.
– 940, 1040, 1140	59 liters	15.6 U.S.gals.
Oil change – 840	45 liters	11.9 U.S.gals.
– 940, 1040, 1140	51 liters	13.5 U.S.gals.
Collar shift transmission (without mid PTO)		
Initial filling – 840	41 liters	10.8 U.S.gal.s
– 940, 1040, 1140	47 liters	12.4 U.S.gals.
Oil change – 840	33 liters	8.7 U.S.gals.
– 940, 1040, 1140	39 liters	10.3 U.S.gals.
Collar shift transmission (with mid PTO)		
Initial filling – 840	36 liters	9.5 U.S.gals.
– 940	42 liters	11.1 U.S.gals.
Oil change – 840	28 liters	7.4 U.S.gals.
– 940	34 liters	9.0 U.S.gals.
Oil reservoir	4 liters	1.1 U.S.gals.
Oil cooler	2 liters	0.5 U.S.gals.
Mechanical front wheel drive		
Front axle housing	5.3 liters	1.4 U.S.gals.
Wheel hub housing, each	0.75 liters	0.2 U.S.gals.
Belt pulley	1 liter	0.3 U.S.gals.

SERVICE INTERVALS

Checking crankcase oil level	every	10 hours
Changing engine oil	every	100 hours
Changing engine oil filter	every	200 hours
Checking transmission/hydraulic system oil level	every	50 hours
Changing transmission/hydraulic system oil filter	every	500 hours
Changing transmission/hydraulic oil	every	1000 hours
Cleaning hydraulic pump strainer	every	1000 hours
Checking MFWD oil level	every	50 hours
MFWD oil change	every	1000 hours
Cleaning and packing front wheel bearings	every	1000 hours
Lubricating grease fittings		
Front axle and front axle bearings	every	50 hours
Rear axle bearings	every	500 hours
in wet and muddy conditions	every	10 hours
Three-point hitch	every	200 hours

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TORQUES FOR HARDWARE (Contd.)

Operator's Cab

Cab to rubber mounting block, slotted nuts*	10 to 20 Nm	7 to 14 ft-lb
Rubber bearing block to mounting and pivot brackets, cap screws	50 Nm	35 ft-lb
Mounting pivot bracket to final drive housing, cap screws	100 Nm	70 ft-lb
Mounting bracket to battery box, cap screws	50 Nm	35 ft-lb
Battery box to flywheel housing, upper cap screw	200 Nm	145 ft-lb
lower cap screws	100 Nm	70 ft-lb

* *NOTE: Insert cotter pin within specified torque.*

Standard Torques

Recommended torques in Nm and ft-lb for UNC and UNF cap screws				
Head marking (Identifying strength)	  or 10.9*		  or 12.9**	
Thread-O.D. (in.)	Nm	ft-lb	Nm	ft-lb
1/4	15	10	20	15
5/16	30	20	40	30
3/8	50	35	70	50
7/16	80	55	110	80
1/2	120	85	170	120
9/16	180	130	240	175
5/8	230	170	320	240
3/4	400	300	580	425
7/8	600	445	930	685
1	910	670	1400	1030
1-1/8	1240	910	1980	1460
1-1/4	1700	1250	2800	2060

NOTE: A variation of ± 10 % is permissible for all torques indicated in this chart.

Torque figures indicated above and in the Specification sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* Tempered steel high strength bolts and cap screws
** Tempered steel extra high strength bolts and cap screws

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Group 05
Predelivery, Delivery and After-Sales Inspections

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.

To promote complete customer satisfaction, a predelivery inspection including mending of possible shipping damage and giving the finishing touches to the tractor, is of prime importance to the dealer.

After the first 100 operating hours another inspection should be performed by the dealer to make sure that the tractor is in proper operating condition.

The predelivery and after-sale inspection check lists in the operator's manual will be completed by the dealer when the inspections are being performed. He will then forward them to the sales branch service department.

Tractor Storage

When storing a new tractor, proceed as follows:

Short Term (Under 30 Days)

1. Fill fuel tank. This prevents condensation of moisture in tank.
2. Check engine oil level, transmission-hydraulic oil level, and coolant level. Add oil or coolant if necessary. During cold weather, be sure coolant contains sufficient anti-freeze.
3. Check electrolyte level in batteries. If electrolyte does not cover plates, add distilled water. Make sure batteries are fully charged.
4. Store tractor in a dry, protected place. If necessary to store tractor outside, cover it with a protective material. Protect tires from heat, sunlight, and petroleum products.

Long Term (Over 30 Days)

To protect engine, fuel system, transmission and hydraulic system, use the AR 41785 rust inhibitor. The above part no. includes one can of rust inhibitor, masking tape and protective caps to cover all engine openings.

Protect as follows:

1. Add 220 cm^3 (7.5 oz.) of rust inhibitor to the engine oil.
2. Add 185 cm^3 (6.5 oz.) of rust inhibitor to the oil in the transmission/hydraulic system with collar shift transmission and 230 cm^3 (8 oz.) in the transmission/hydraulic system with synchronized transmission.
3. Drain fuel tank, pour 150 cm^3 (5 oz.) of rust inhibitor into the empty tank and add approx. 10 liters (2.6 U.S. gals.) of fuel. Start engine and run at fast idle for 15 to 20 minutes to distribute the mixture through the whole fuel system. While the engine is running, operate the complete hydraulic system several times. Shut off engine in time to leave some fuel in the tank. Then allow the engine to cool down for 15 to 20 minutes.
4. Prepare 15 c.c. (0.5 oz.) of rust inhibitor for each cylinder. Remove plug of intake manifold or connecting pipe of starting fluid adapter at

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Diagnosing Malfunctions

ENGINE WILL NOT CRANK

Empty batteries

Bad battery connections

Defective main switch or start safety switch

Starter solenoid defective

Starter defective

ENGINE HARD TO START OR WILL NOT START

Loose or corroded battery connections

Low battery output

Excessive resistance in starter circuit

Too high viscosity crankcase oil

Water, dirt or air in fuel system

Fuel filter restricted

Stuck shut-off knob

Dirty or faulty fuel injection nozzles

Defective fuel injection pump

Defective fuel transfer pump

Fuel injection pump incorrectly timed

ENGINE RUNS IRREGULARLY OR STALLS FREQUENTLY

Coolant temperature too low

Insufficient fuel supply

Fuel injection nozzles defective or leaking

Fuel filter or fuel lines restricted

Defective fuel transfer pump

Fuel injection pump incorrectly timed

Improper valve clearance

Cylinder head gasket leaking

Worn or broken compression rings

Valves stuck or burnt

Exhaust system restricted

Engine compression too low

Engine overheated

Defective fuel injection pump

ENGINE MISSES

Water in fuel

Mixture of petrol and diesel fuel

Air in fuel system

Defective fuel injection nozzles

Defective fuel injection pump

Fuel injection nozzles improperly installed

Leaking fuel injection nozzle seals

Engine overheated

Lobes of camshaft worn

Weak valve springs

Worn or defective fuel transfer pump

Pre-ignition

Fuel injection pump incorrectly timed

Engine compression too low

Improper valve clearance

Burnt, damaged or stuck valves

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Group 30
Engine Lubrication System

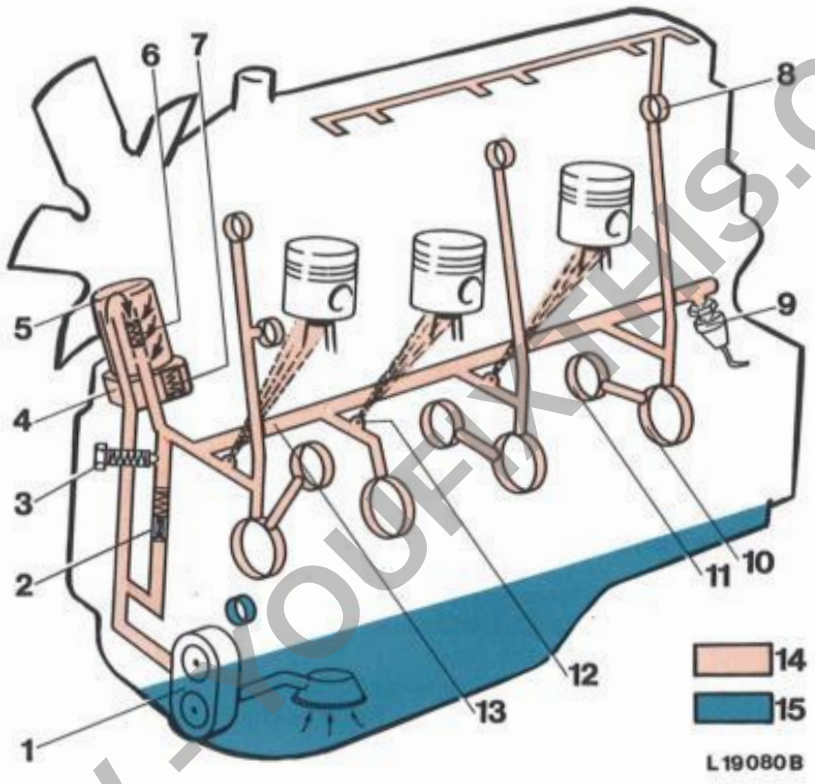


Fig. 1 – Engine Lubrication System

1 Oil pump
2 Oil by-pass valve
3 Oil pressure regulating valve
4 Oil cooler (1040 and 1140)
5 Oil filter
6 Oil filter relief valve
7 Oil cooler by-pass valve
8 Camshaft bearings
9 Oil pressure warning switch
10 Main bearings
11 Connecting rod bearings
12 Spray jet (3 used)
13 Main oil gallery
14 Engine lubricating oil
15 Pressure-free oil

General Information

LUBRICATION SYSTEM

The engine has a pressure lubrication system. In the main it consists of the gear pump 1 (fig. 1), filter strainer in the suction pipe, full flow oil filter 5, oil cooler 4 (only on tractors 1040 and 1140), adjustable oil pressure regulating valve 3, oil by-pass valve 2* and an electrical pressure warning switch 9 in the flywheel housing.

The pump draws lubricating oil from the crankcase through a strainer and suction line and pumps it through an oil line via oil cooler 4 (only on tractors 1040 and 1140) to the oil filter 5 and to the main oil gallery 13 of the cylinder block.

From here oil is forwarded under pressure to the main bearings 10 and spray jets 12 to cool the pistons. Drilled cross passages in the crankshaft distribute oil from the main bearings to connecting rod bearings 11.

In the oil grooves of main bearings one, three and four are also bores to lubricate the camshaft bearings 8.

An oil passage in cylinder block supplies oil to lubricate the upper idler gear, the lower idler gear being lubricated by splash oil.

A drilled passage from the rear camshaft bearing through the cylinder block and cylinder head supplies lubricating oil to the rocker arm shaft.

* From engine serial no. 465 253 CD

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Group 25
Wiring Diagrams

Wiring Diagram ("Bilux" System) on Tractors without Operator's Cab

The individual components of the electrical system are identified by the following numbers:

1 Headlights
2 Wire distributor
3 Wire distributor (headlights with parking light only)
4 Turn-signal lights
5 Wire distributor
6 Horn
7 Fuel gauge sending unit
8 Alternator
9 Regulator
10 Burner of Thermostart aid
11 Starting motor
12 Engine oil pressure indicator switch
13 Air cleaner restriction warning switch
14 Coolant temperature gauge sending unit
15 Magnetic sender for engine and tractor speed meter
16 Batteries
17 Plug
18 Fuse box
19 Switch for turn-signal lights and horn
20 Flasher
21 Toggle switch for MFWD*
22 Toggle switch for fog lamp**
23 Start switch
24 Main switch
25 Instrument cluster
26 Hazard warning light switch
27 Plug
28 Relay for handbrake control light**
29 Socket for handlamp
30 Toggle switch for full beam and dimmed headlights
31 Button for Ether starting aid
32 Acoustical handbrake warning signal**
33 Time delay switch for transmission oil pressure
34 Plug
35 Sending unit for PTO control light – 540 rpm
36 Sending unit for PTO control light – 1000 rpm
37 Sending unit for handbrake control light**
38 Turn signal and clearance lights
39 Stop light switch
40 Solenoid for MFWD*
41 Start safety switch
42 Transmission oil pressure warning switch
43 Stop, turn-signal and tail lights
44 Fog lamp**
45 7-terminal socket
46 Worklight
47 Plug
48 Plug

* On tractors with MFWD only
** When equipped

Cables and wires have different colors to facilitate identification. Each component and wire in the wiring diagram is identified by a number. From these numbers which are indicated below and on the following pages it is possible to establish the color, size and purpose of each wire or cable.

No.	Cables and Wires mm²	Color	Component	from No.	Terminal No.	Component	to No.	Terminal No.
1	Ground strap		L.H. battery	16	–			Ground
2	Ground strap		R.H. battery	16	–			Ground
3	1	blue/white	Wire distributor	5		R.H. turn-signal light	4	
4	1	black/white	Wire distributor	5		L.H. turn-signal light	4	
5	1	brown	Headlight, r.h.	1				Ground
6	1	brown	Headlight, l.h.	1				Ground
7	1	light blue/ black	Fuel gauge sending unit	7		Plug (fuel gauge)	27	9

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

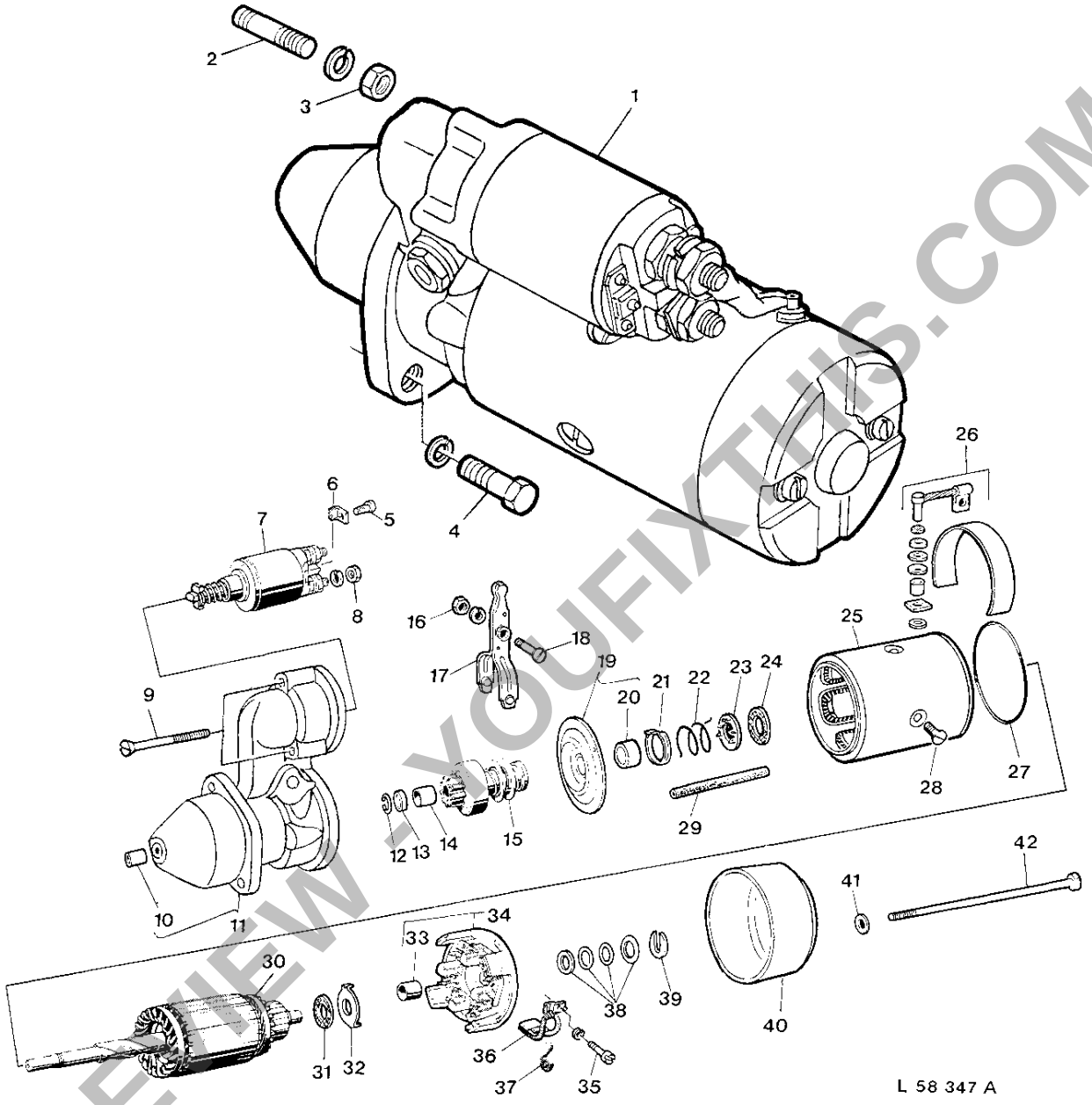


Fig. 5 – Starting Motor, Exploded View

1 Starting motor assembly
2 Stud
3 Hex. nut
4 Cap screw
5 Cheese-head screw
6 Clamping bracket
7 Solenoid switch
8 Hex. nut (4 used)
9 Countersunk screw (3 used)
10 Bushing
11 Drive end frame assembly
12 Snap ring
13 Stop ring
14 Bushing
15 Drive with pinion
16 Hex. nut
17 Engaging lever
18 Pivot screw
19 Center bearing
20 Bushing
21 Spring seat
22 Spring
23 Brake seat
24 Brake washer
25 Field frame
26 Motor terminal
27 O-ring
28 Countersunk screw (4 used)
29 Insulating tube (2 used)
30 Armature
31 Brake washer
32 Special washer
33 Bushing
34 Commutator end frame
35 Cheese head screw (4 used)
36 Carbon brush (4 used)
37 Carbon brush spring (4 used)
38 Shims
39 Fixing washer
40 End frame cover
41 Washer (2 used)
42 Cheese-head screw (2 used)

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Group 05
Description, Diagnosing Malfunctions and Tests

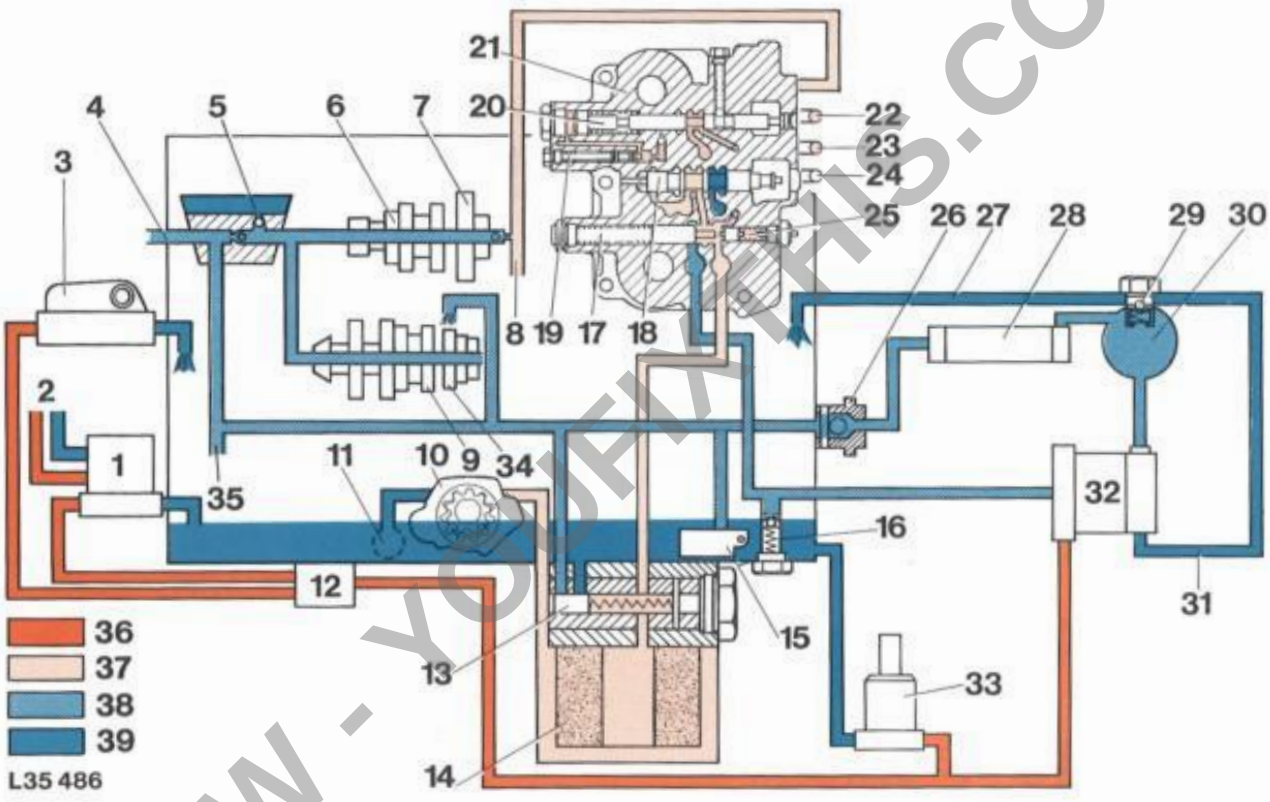


Fig. 1 — Complete Hydraulic System on Tractors with Synchronized Transmission, (Tractor with Hi-Lo Shift Unit, Mechanical Front Wheel Drive, Independent PTO and Power Steering)

1 Selective control valves
2 To quick couplers
3 Rockshaft
4 Lube oil for final drives
5 Oil manifold with transmission oil cup
6 Countershaft
7 Hi-Lo shift unit
8 To solenoid spool of mechanical front wheel drive
9 Differential drive shaft
10 Transmission oil pump
11 Intake screen
12 Pressure control valve of power steering
13 By-pass valve of transmission oil filter
14 Transmission oil filter
15 Brake valve
16 Surge relief valve
17 Pressure regulating valve
18 PTO control valve
19 Automatic shift valve
20 Hi-Lo control valve
21 Transmission shift cover
22 To-Hi-Lo disk clutch
23 To PTO clutch
24 To PTO brake
25 Transmission oil pressure warning switch
26 Priority lube check valve
27 Bleed and leak-off line
28 Oil cooler
29 Check valve
30 Hydraulic oil auxiliary reservoir
31 Leak-off line
32 Hydraulic pump
33 Power steering
34 Range shaft
35 To PTO lubrication
36 High pressure oil
37 Low pressure oil
38 Oil to hydraulic pump or lubricating oil
39 Pressure-free oil

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CONTENTS (Contd.)

SECTION 60 – STEERING SYSTEM AND BRAKES
Group 00 – Specifications and special tools
Group 05 – Power steering
Group 10 – Manual steering
Group 15 – Brakes

SECTION 70 – HYDRAULIC SYSTEM
Group 00 – Specifications and special tools
Group 05 – Description, diagnosing malfunctions and pressure tests
Group 10 – Oil reservoir, filter, valves and oil cooler
Group 15 – Hydraulic pumps
Group 20 – Rockshaft
Group 25 – Selective control valves (spool type)
Group 30 – Selective control valves (poppet valve type)
Group 35 – Hose couplers
Group 40 – Remote cylinder

SECTION 80 – MISCELLANEOUS
Group 00 – Specifications and special tools
Group 05 – Front axle
Group 10 – Belt pulley
Group 15 – Front and rear wheels
Group 20 – Axla trailer hitch

SECTION 90 – OPERATOR'S CAB
Group 00 – Specifications and special tools
Group 05 – Cab ventilation and heating
Group 10 – Operator's seats
Group 15 – Operator's cab
Group 20 – Roll guard

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

14. Install hood and radiator side grilles.

15. If necessary, connect turn-signal light cables at plug.

16. Refill transmission case with specified oil (see group 10). Fill cooling system with coolant (see section 20, group 35).

ON Tractors with Mechanical Front Wheel Drive

17. When equipped, position front and rear anti-wrapping guards on shaft.

18. Slide release jaws on clutch shaft and secure connecting flange to drive hub of shaft.

19. Tighten flange-to-front differential drive hub hex. nuts 3 (fig. 4) to 35 Nm (25 ft-lb) torque.

20. Secure rear anti-wrapping guard with both wing nuts.

21. Secure front anti-wrapping guard to front axle, using three cap screws of differential unit.

NOTE: On tractors equipped with universal jointed shaft anti-wrapping guards, check oil level in axle bridge housing. Top up with specified oil when necessary.

On all Tractors

22. Connect ground straps to batteries.

IMPORTANT! Always connect ground straps to negative (–) pole of batteries.

23. Start engine and check fuel lines, hydraulic lines and water hoses for leaks.

Removal and Installation of Engine

NOTE: For most engine service operations the engine need not be removed. However, if the crankshaft has to be removed or in case of a major overhaul, remove engine.

REMOVAL

1. For safety, disconnect ground straps from batteries.

2. Separate tractor front end from engine, as explained previously.

On Tractors without Operator's Cab:

1. Disconnect engine wiring harness 1 (fig. 5).

2. Disconnect all cables at starting motor.

3. Remove both batteries.

4. Remove cap screws 2 (figs. 5 and 6) securing dash to clutch housing.

5. *On tractors with Ether starting fluid aid:* Disconnect starting fluid line at air intake support.

6. Disconnect speed control rod 1 (fig. 6) and shut-off cable 5 at fuel injection pump.

On Tractors with Operator's Cab

Remove cab (see "Removal of Operator's Cab").

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

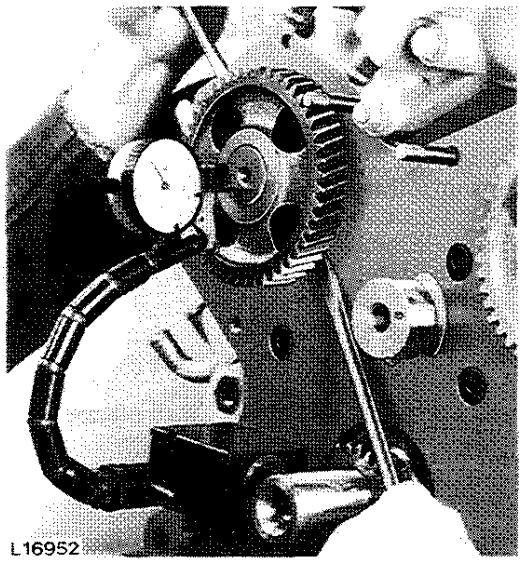


Fig. 21 — Measuring Camshaft End Play

NOTE: If end play exceeds specifications then check thickness of thrust plate as this determines end play.

Thickness of new thrust plate . . . . . 3.96 to 4.01 mm
0.156 to 0.158 in.

Maximum permissible wear . . . . . .0.13 mm
0.005 in.

Removal

1. Remove cylinder head.
2. Remove all push rods and mark them so they can be reinstalled in their original bores.
3. Remove fuel transfer pump.
4. Remove thrust plate located behind camshaft gear (see fig. 23).
5. Remove camshaft.

NOTE: When removing camshaft, be careful that lobes do not damage the bearing surfaces in bores.

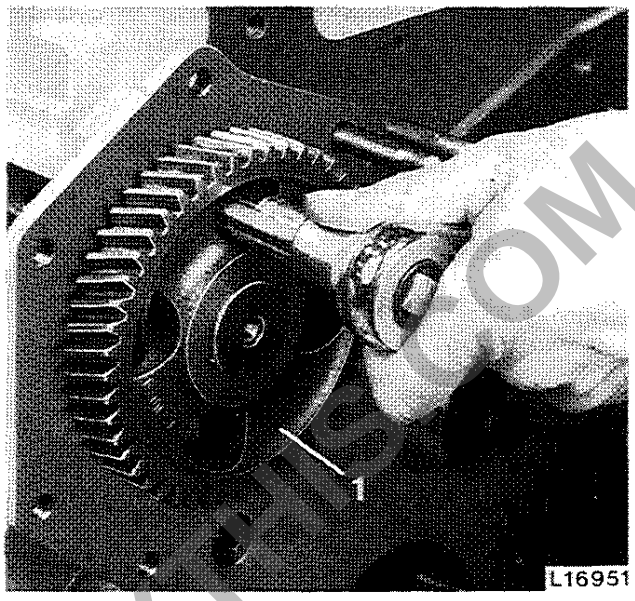


Fig. 22 — Removing Camshaft Thrust Plate

1 Camshaft gear

Repair

1. Check camshaft journals and lobes for excessive wear. If necessary, replace camshaft and gear.
2. Measure each of the four journals of the camshaft as well as the corresponding bores in two opposing planes.

O.D. of journals on
new camshaft . . . . . .55.87 to 55.90 mm
2.200 to 2.201 in.

Dia. of camshaft journal
bores in engine block . . . . . .55.98 to 56.01 mm
2.204 to 2.205 in.

Clearance . . . . . 0.10 to 0.15 mm
0.004 to 0.006 in.

3. Measure thickness of thrust plate since this plate determines camshaft end play.
4. If necessary, replace camshaft with gear.

NOTE: Always replace can followers when installing a new camshaft.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Speed Control Linkage

Slow idle speed . . . . . 750 rpm
Fast idle speed
Tractors 840 and 940 . . . . . 2560 rpm
Tractors 1040 and 1140 . . . . . 2660 rpm

Air Cleaner

TORQUES FOR HARDWARE

Intake support to cylinder block, cap screws	50 Nm	35 ft-lb
Air cleaner restriction warning switch	10 Nm	7 ft-lb

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

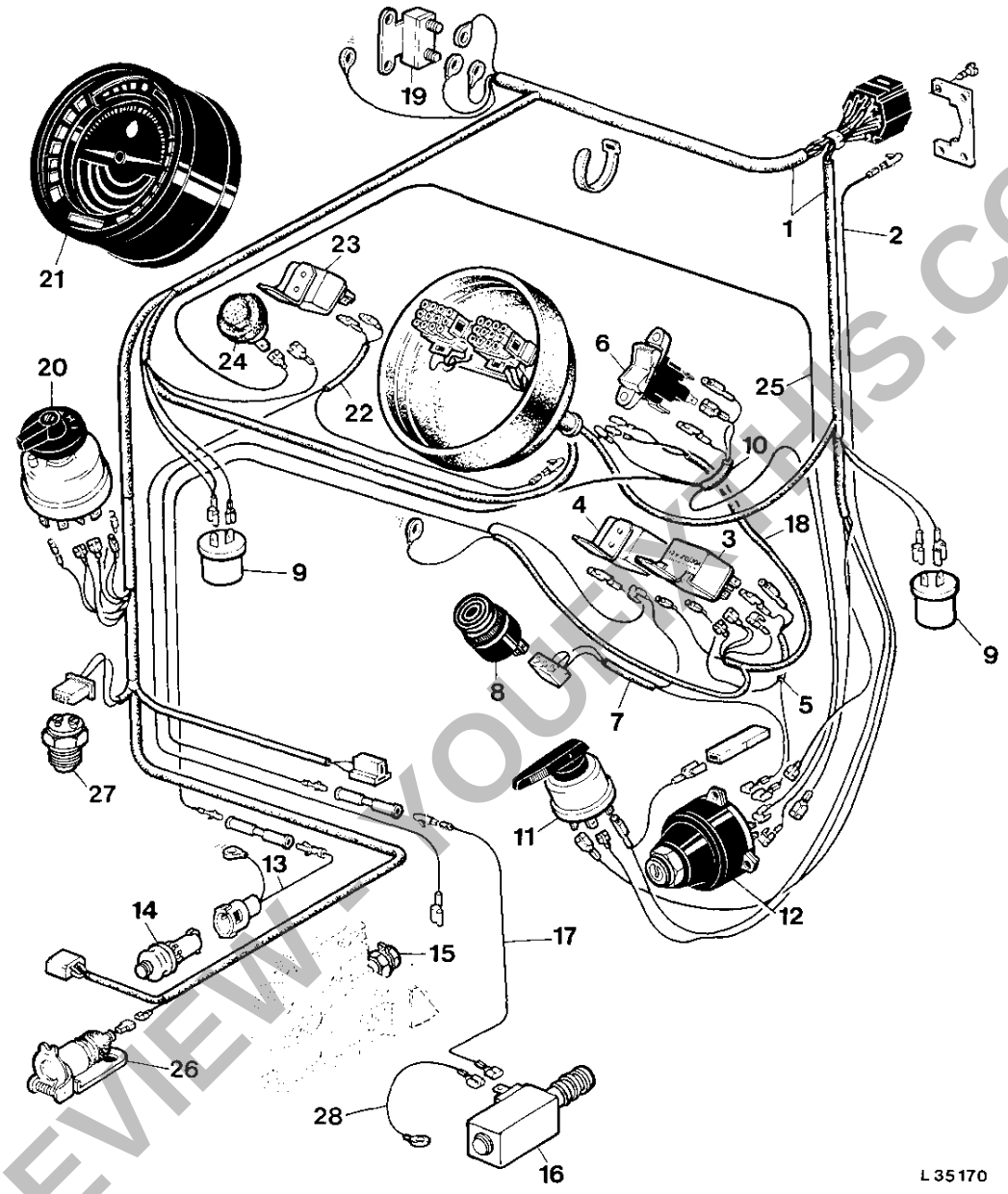


Fig. 4 – Dash Wiring Harness ("Sealed Beam" System)

1 Dash wiring harness
2 Cable
3 Relay for handbrake control light*
4 Relay for handbrake control light
5 Wiring harness
6 Toggle switch for MFWD (when equipped)
7 Wiring harness
8 Acoustical handbrake warning signal
9 Flasher
10 Wiring harness
11 Start switch**
12 Main switch
13 Wiring harness
14 Sending unit for handbrake control light
15 Transmission oil pressure warning switch
16 Solenoid for MFWD (when equipped)
17 Cable
18 Wiring harness
19 Cable
20 Light switch
21 Instrument cluster
22 Wiring harness
23 Time delay switch for transmission oil pressure
24 Horn button
25 Cable
26 Socket for handlamp
27 Start safety switch
28 Ground cable

* On tractors not equipped with thermostart starting aid only
** On tractors equipped with thermostart starting aid only

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Lubrication of Starting Motor (before and during Assembly)

Where	Lubricating Instruction
Bushings	Soak them for at least 1/2 hour before installation.
Armature shaft	Coat drive and commutator end journals of shaft, splines and bearing surfaces of clutch drive with a light film of grease.
Shift lever	Lubricate bearing surfaces and pivot bolt liberally with grease.
Armature brake	Pack area around brake washers with grease. Coat spring with a light film of grease.
Thrust washers on drive and commutator ends	Coat with a light film of grease.
Solenoid switch	Coat inside of yoke and bolt threads with a light film of grease.

KEEP CONTACTS FREE OF GREASE

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

DRIVE SHAFTS AND CLUTCH HOUSING

On Tractors not Equipped with Mid PTO

1. Carefully pull out and remove drive shaft to the front so that the oil seal between hollow drive shaft and drive shaft is not damaged.

2. In order to remove the hollow drive shaft, it is necessary to separate tractor between clutch housing and transmission and to remove the Hi-Lo shift unit (when equipped) or creeper transmission (when equipped).

3. Access to oil seals between carrier with sleeve and hollow drive shaft and between hollow drive shaft and drive shaft is also from the transmission side only (removal, see section 50, group 35, under removal of transmission oil pump).

On Tractors Equipped with Mid PTO

NOTE: If there is oil in the clutch compartment of the clutch housing which is not due to oil leakage through the rear crankshaft seal, inspect oil seal located between clutch housing and hollow drive shaft.

1. If necessary, separate tractor between transmission and clutch housing.

2. If it is necessary to replace oil seal located in clutch housing, remove both drive shafts and complete transmission oil pump.

3. Now remove needle bearing and unserviceable oil seal.

4. Coat lips of new oil seal with multipurpose grease. Press oil seal into bore of clutch housing with sealing lip facing driver until face of seal is 33 mm (1.3 in.) from clutch housing face.

5. Check needle bearing for excessive wear, roughness or damage. Press new needle bearing into clutch housing bore until flush with bottom of chamfer at end of bore.

6. Check hollow drive shaft for excessive wear, scores or damage and replace, when necessary.

7. Check oil seal and pilot ring of hollow drive shaft and replace, when necessary.

8. Press in new pilot ring until it bottoms in bore.

9. Drive in new oil seal with sealing lip facing driver until seal bottoms in bore.

10. Check drive shaft for excessive wear, scores or damage. Check drive shaft for distortion. Check seat of pilot bearing. Replace shaft if necessary.

Installation

When installing clutch linkage, reverse removal procedure and observe the following points:

1. Coat sliding face of sleeve, bore and both faces of release bearing which contact clutch fork, using MOLYKOTE BR 2 grease.

2. Fill grease compartment of bearing carrier with multi-purpose grease.

3. *On tractors with single-stage clutch:*

   Coat both attaching screws of clutch fork with Loctite and tighten to 50 Nm (35 ft-lb) torque.

4. *On tractors with dual-stage clutch:*

   Drive in the two spring pins 18 (fig. 1) flush with clutch fork and secure with wire.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

COUNTERSHAFT

1. Check gears, transmission drive shaft and transmission hollow drive shaft for wear or damage.
2. Check synchronizer rings for wear; replace rings if gap between ring and gear clutch body is less than 0.10 mm (0.004 in.).
3. Check parts of both synchronizer assemblies for wear and springs for fatigue; replace synchronizer assemblies, if necessary.
4. Check bearing cones and cups and replace as necessary.
5. Check needle bearing in transmission hollow drive shaft and replace, if necessary.
6. Check snap rings, O-ring, thrust washer, spacer, hex. nut and shims for serviceability.

TRANSMISSION LUBRICATION SYSTEM

1. Check lube oil lines for good condition.
2. Replace O-rings of transmission oil cup and of connectors, if necessary.
3. Remove sludge from bottom of transmission case.

TRANSMISSION CASE

1. Carefully clean transmission case and examine for cracks or other damage.
2. Check dowel pins and sleeves for good condition and proper fit.

Assembly

TRANSMISSION BEARING QUILL

1. Slide reverse gear 2 (fig. 11) together with bearing pair 3 onto shaft 1.
2. Insert preassembled shaft into bore of bearing quill 4.
3. Screw cap screw 6 into shaft 1 and tighten to 55 Nm (40 ft-lb) torque.
4. Install range shaft bearing cup 31 (fig. 13).

On Tractors without MFWD

5. Install one snap ring 8 (fig. 11) into bearing quill groove, insert needle bearing 9 and then install second snap ring 8.
6. Insert connecting sleeve 11 from the outside of bearing quill into needle bearing, install snap ring 7 into sleeve groove.

On Tractors with MFWD

7. Insert snap rings 14 (fig. 11) in bearing quill.
8. Install bearing cups 13 and 19.
9. Heat bearing cone 13 and install on intermediate shaft 12.
10. Slide thrust ring 15 on intermediate shaft (chamfered side facing forward).

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

INDEPENDENT 540 AND 1000 RPM PTO WITH INTERCHANGEABLE STUB SHAFT (Tractors with Synchronized Transmission)

1. Check connecting sleeve 2 (fig. 10) and needle bearing 5 for wear.
2. Check PTO shaft bushing 9 in transmission case.
3. Check ball bearings 8 and 17 as well as roller bearing 12 for serviceability and replace, if necessary.
4. Check countershaft gears and PTO shaft gear for wear or damage.
5. Replace oil seal 23 and gasket 24.
6. Check countershaft 28 for scores or wear.
7. Check needle roller bearings 30 for wear or damage. Always replace a complete set (24) if some needles have to be replaced.
8. Assemble, reversing disassembly procedure and using fig. 10 as a guide.

INDEPENDENT 540 AND 1000 RPM PTO WITH INTERCHANGEABLE STUB SHAFT (Tractors with Collar Shift Transmission)

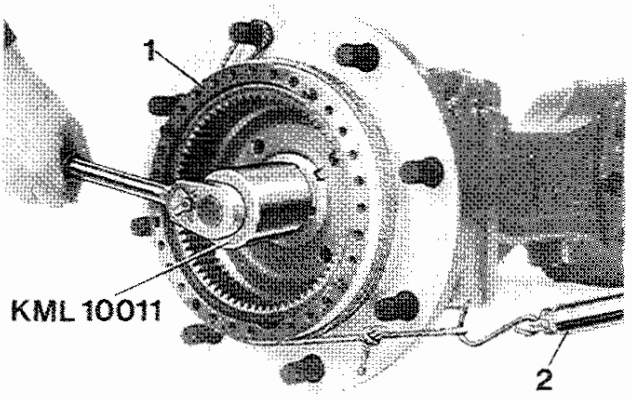
1. Check connecting sleeve 2 (fig. 11) for wear.
2. Check ball bearings 5 and 13 as well as roller bearing 8 for serviceability and replace, if necessary.
3. Check countershaft gears and PTO shaft gear for wear or damage.
4. Replace oil seal 19 and gasket 20.
5. Check countershaft 24 for scores or wear.
6. Check needle roller bearings 26 for wear or damage. Always replace a complete set (24) if some needles have to be replaced.
7. Assemble, reversing disassembly procedure and using fig. 11 as a guide.

INDEPENDENT 540 AND 1000 RPM HAND-SHIFT PTO

1. Check needle bearing 5 (fig. 13) and connecting sleeve 2 for wear.
2. Check PTO shaft bushing 9 in transmission case.
3. Check ball bearings 8 and 21 as well as needle bearing 11 for serviceability and replace, if necessary.
4. Check countershaft gears and PTO shaft gear for wear or damage.
5. Replace oil seal 23 and gasket 24.
6. Check PTO shift mechanism parts for wear and replace, if necessary (see fig. 12).
7. Replace O-ring 35 (fig. 12) of shifter shaft 49.
8. Check PTO indicator light sending unit 22 for serviceability and replace, if necessary.
9. Check all other parts of PTO shift linkage for wear or damage and replace as necessary.
10. When assembling parts, apply Loctite 242 to shifter knob 8.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



L 35242

Fig. 56 – Checking Rolling Drag Torque of Hub Bearings

1 Wheel hub
2 Spring scale

10. Use special socket spanner KML-10011 to tighten first slotted nut 19 (fig. 55) until a rolling drag torque of 4 to 7 Nm (3 to 5 ft-lb) has been obtained. This value equals a pull on spring scales of 35 to 65 N (8 to 15 lb) measured at circumference of wheel hub (see fig. 56).

11. Install lock plate 20 (fig. 55) and tighten second slotted nut 19.

12. Secure both slotted nuts with lock plate.

13. Install sun gear 18 on drive shaft 16 and snap ring 17.

14. Using two suitable levers, check radial and axial play of drive shaft with knuckle housings turned as during steering (see fig. 57).

NOTE: The drive shaft must be free to move axially and radially when knuckle housings are turned as during steering.

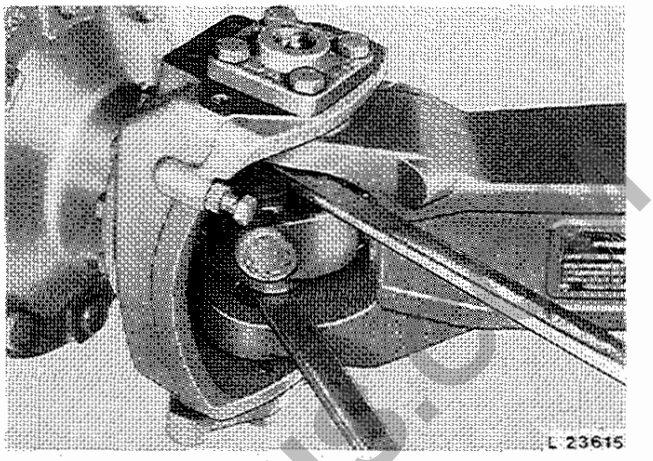


Fig. 57 – Checking Radial Play of Drive Shaft

NOTE: When radial free play can be felt when lifting or lowering the universal joint of shaft, this indicates correct adjustment.

15. If there is no noticeable radial play, then either upper or lower king pin 2 (fig. 52) must be tightened or loosened.

IMPORTANT! However the previously determined rolling drag torque (see fig. 51) must remain unaltered.

16. Secure left-hand steering arm 4 (fig. 52) to axle knuckle housing, tightening cap screws to 230 Nm (170 ft-lb) torque.

NOTE: To determine axial play of drive shaft 16 (fig. 55), preassemble wheel hub 30 and planetary carrier 2 as far as possible.

17. Turn axle knuckle housing up to stop and make sure that drive shaft turns freely.

18. In this position measure and note distance between hub face to axle shaft end face using a depth gauge (see fig. 58).

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PRESSURE CONTROL VALVE OF POWER STEERING

			Dimensions of New Parts
Adjusting pressure of valve	11600 to 12300 kPa	116 to 123 bar	1700 to 1800 psi
One shim changes pressure by	250 to 280 kPa	2.5 to 2.8 bar	35 to 40 psi

ROCKSHAFT

Complete lift cycle at 2100 rpm engine speed	1.8 to 2.3 seconds		
Flow control valve			
Flow at 2500 rpm and a pressure of 12000 kPa (120 bar; 1750 psi)	18 to 22 liters/min.		4.75 to 5.75 gpm

REMOTE CYLINDER

Period for extending or retracting cylinder at 2100 rpm engine speed	2 seconds		

Oil Reservoir, Filter, Valves and Oil Cooler

BY-PASS VALVE OF TRANSMISSION OIL FILTER

Dia. of valve sleeve bore for valve body	12.68 to 12.71 mm		0.499 to 0.501 in.
Dia. of valve body	12.63 to 12.65 mm		0.497 to 0.498 in.
Valve opens at a pressure differential of:			
1st stage —	500 kPa	5 bar	70 psi
2nd stage —	640 kPa	6.4 bar	90 psi
Spring of by-pass valve			
Free length	approx. 68 mm		2.68 in.
Spring tension at a length of 38 mm (1.5 in.)	80 to 95 N		18 to 21 lb.
49 mm (1.93 in.)	50 to 60 N		11 to 13 lb.

SURGE RELIEF VALVE IN CLUTCH HOUSING

Spring of surge relief valve			
Free length	approx. 48 mm		1.88 in.
Spring tension at a length of 28.5 mm (1.12 in.)	140 to 170 N		30 to 37 lb.

PRESSURE CONTROL VALVE OF POWER STEERING

Dia. of valve spool			
Front	19.04 to 19.05 mm		0.749 to 0.750 in.
Rear	18.43 to 18.47 mm		0.725 to 0.726 in.
Spring of pressure control valve			
Free length	approx. 117 mm		4.62 in.
Spring tension at a length of 89 mm (3.5 in.)	200 to 250 N		45 to 55 lb.

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Surge Relief Valve in Clutch Housing

GENERAL INFORMATION

The relief valve located in the right-hand side of clutch housing (see fig. 3) serves as a safety valve. It opens and diverts oil to the main oil reservoir (transmission case), whenever pressure in clutch housing oil passage leading to main hydraulic pump inlet line exceeds a pressure of 700 kPa (7 bar; 100 psi).

REPAIR

1. Screw plug 4 (fig. 3) out of clutch housing and remove washer 3, spring 2 and ball 1.
2. If relief valve seat pressed into housing bore is damaged and must be replaced, remove old valve seat and press in new seat with chamfered end first.
3. Examine valve pin of plug for damage or wear and replace if required. Bottom new valve pin in plug bore.
4. Check surge relief valve spring for sufficient tension.

Surge Relief Valve Spring		
Free length	48 mm	1.88 in.
Spring tension at a length of 28,5 mm (1.12 in.)	140 to 170 N	30 to 37 lb

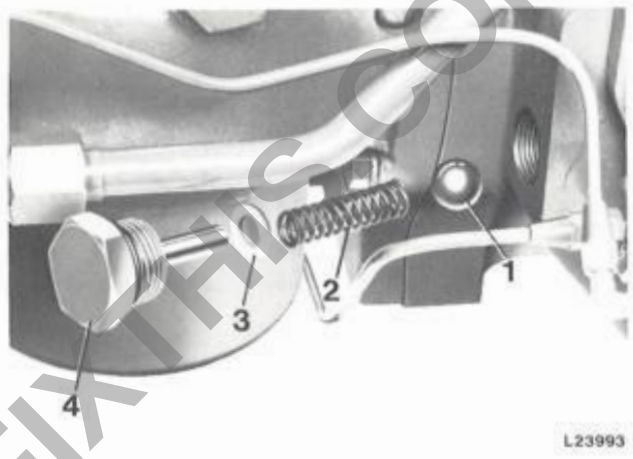


Fig. 3 – Surge Relief Valve in Clutch Housing

1 Ball
2 Spring
3 Washer
4 Plug with pin

5. Use a new O-ring when installing plug.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Group 35
Hose Couplers

Breakaway Coupler

General Information

The tractor may be equipped with breakaway couplers.

A remote cylinder can be connected or disconnected to a breakaway coupler under pressure.

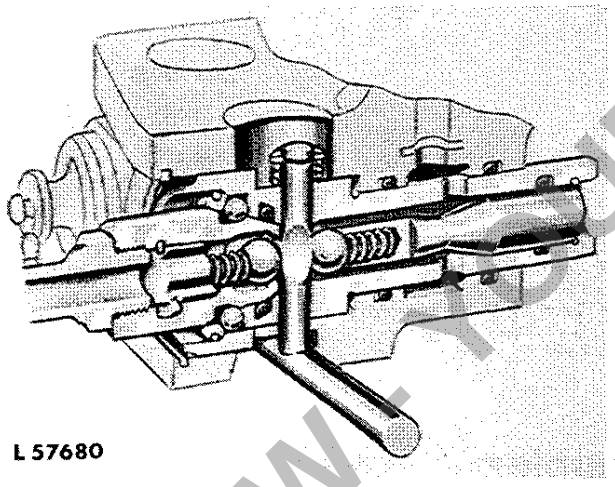


Fig. 1 — Breakaway Coupler

Repair

1. Relieve pressure in the system and remove breakaway coupler assembly from tractor.
2. Remove plugs 18 (fig. 2) and then remove snap rings 17, springs 16 and valve operating levers 25.
3. Using a brass drift, drive coupler assembly out of housing. Remove steel balls 5 and snap ring 2 from coupler 8.
4. Reverse coupler in housing and press down on pin 13 until snap ring 14 can be removed. Use a brass drift to drive pin 13, spring 12 and ball 11 out of coupler.
5. Check all parts for serviceability and replace, if necessary.
6. Replace all O-rings, oil seals and back-up washers. Install ball 11, spring 12 and pin 13 in coupler and snap ring 14. Install snap ring 2 and balls 5.
7. Install oil seals 23 (fig. 2) in housing, using special tool JDG-120.

NOTE: Make sure that sealing lips of both oil seals 23 face each other.

8. Install coupler assembly in housing.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 25 of 774 pages

The full manual includes:

- All 774 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

John Deere 840, 940, 1040, 1140 Technical Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual