# SECTION 00 – GENERAL INFORMATION

**CONTENTS**


| Section | Description | Page |
|---|---|---|
| | Introduction | 00-2 |
| | About Improvements | 00-2 |
| | Company Policy | 00-3 |
| | Parts and Accessories | 00-3 |
| | Model Codes | 00-3 |
| | Precautionary Statements | 00-4 |
| | Safety Precaution Information | 00-5 |
| | General Safety Information | 00-7 |
| | Machine Model and Serial Number Location | 00-9 |
| | Engine Model and Serial Number Location | 00-9 |
| | Hardware Torque Specifications | 00-10 |
| | Installation of Adjustable Fittings in Straight Thread O Ring Bosses | 00-12 |
| | Standard Torque Data for Hydraulic Tubes and Fittings | 00-12 |
| | Pipe Thread Fitting Torque | 00-13 |
| | Lubricants and Coolants | 00-13 |
| | Sealants | 00-13 |
| | Properly Support a Raised Machine | 00-14 |
| | Properly Support Boom on Boom Lock Pins | 00-14 |
| | Raising Boom Without Hydraulic Oil Flow | 00-14 |
| | Raising Boom Without Battery Voltage (12V) | 00-16 |
| | Reattaching Cylinders After Repair with Boom Resting on Boom Lock Pins | 00-17 |
| | Major Unit Overhaul | 00-18 |
| | Cab and Boom Tilt Procedure | 00-19 |
| | Craning the Skid Steer | 00-25 |
| | Special Tools | 00-28 |
| | Specifications | 00-29 |
| | Dimensions | 00-35 |

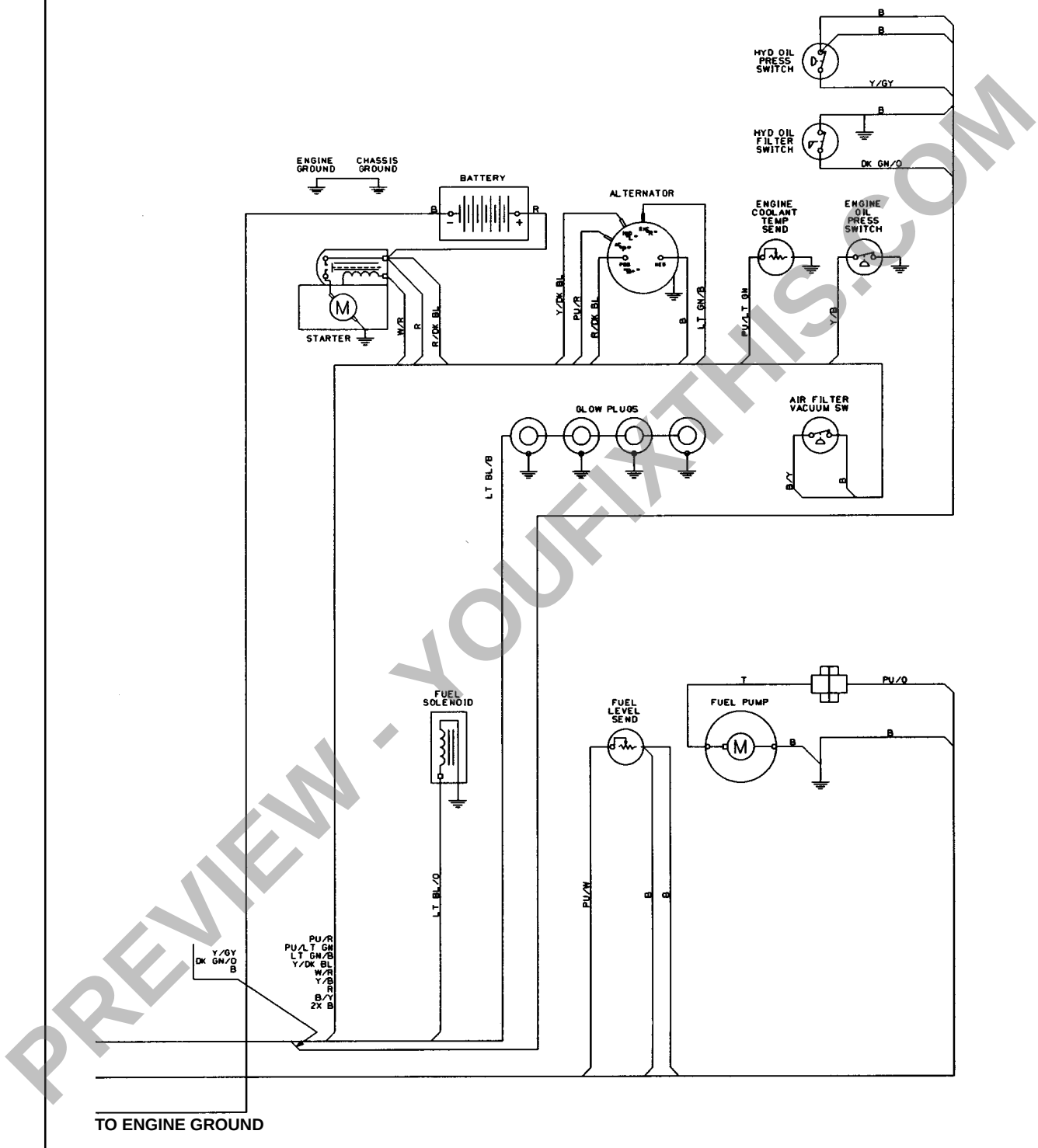

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## ENGINE COMPONENTS ELECTRICAL DIAGRAM




19992596

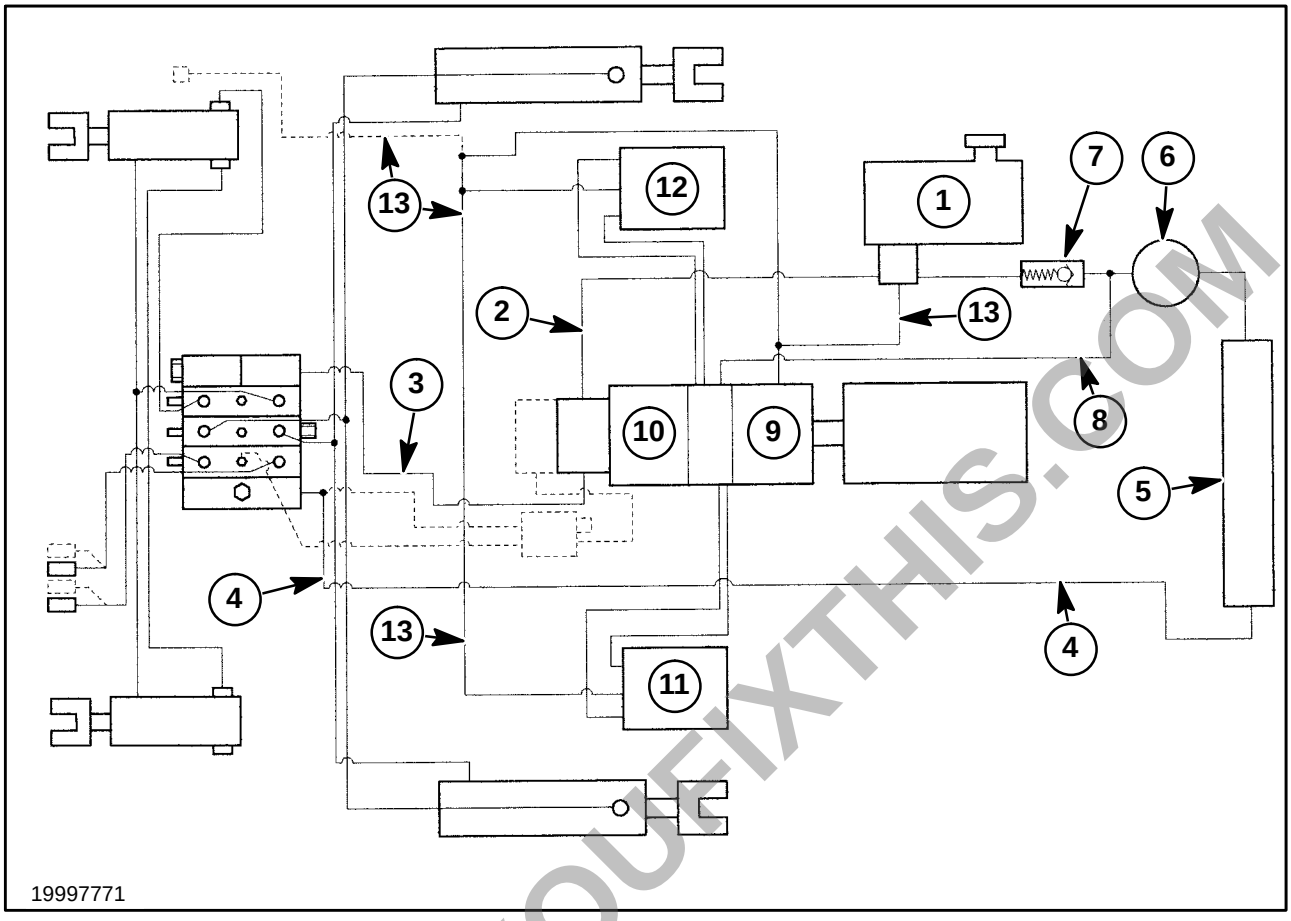
PREVIEW - YOUFIXTHIS.COM



YouFixThis.com



Download full manual at youfixthis.com




2

The hydrostatic system consists of the following components:

1. Hydraulic reservoir - Right front of engine compartment
2. Suction line - From reservoir to the gear pump under the operator's seat.
3. Pressure line - From the gear pump to the control valve under the operator's seat.
4. Return line - From control valve to oil cooler.
5. Oil cooler - Engine side of radiator in engine compartment.
6. Oil filter - After the oil cooler engine compartment rear door.
7. Charge check valve - In return line between oil filter and reservoir.
8. Hydrostatic transmission charge line - From the charge check valve to the hydrostatic pumps under the operator's seat.
9. Hydrostatic pump for left drive - Under operator's seat.
10. Hydrostatic pump for right drive - Under operator's seat.
11. Hydrostatic motor for left drive - Under operator's seat.
12. Hydrostatic motor for right drive - Under operator's seat.
13. Hydrostatic system case drain line - From pumps and motors to the hydraulic reservoir.

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

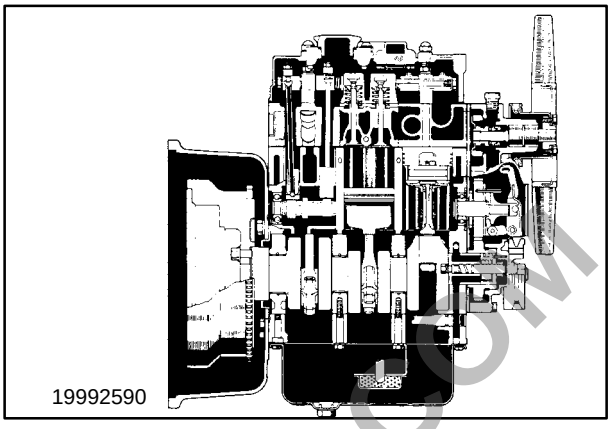
**Op. 10 000**

## GENERAL ENGINE INFORMATION

New Holland engines, N844 used in the model LS160 skid steer and N844T turbocharger engine used in the model LS170 skid steer.

## GENERAL DESCRIPTION

The N844, N844T Series are four-cylinder stroke, liquid-cooled, compression ignition engines, designed for durability, low weight and compactness. The engines are IDI (In Direct Injection). The linerless cylinder block, three-piece helical gear train, and flange-mounted fuel injection pump on the engine cam, reduce frictional power loss and engine weight. The special direct-injection or swirl chamber, along with the small bore multi-cylinder design, offers good fuel consumption, low noise, and excellent start-ability.

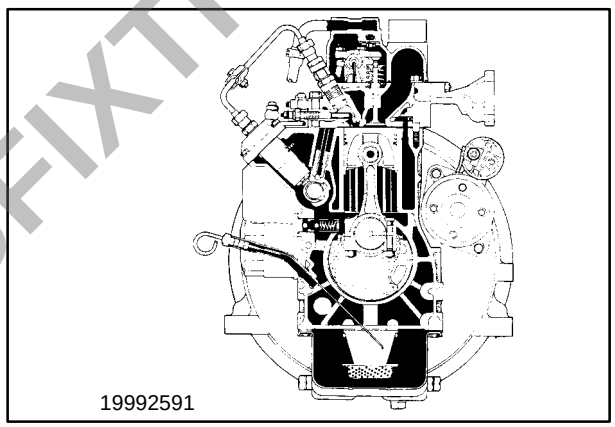



1

## ENGINE COMPONENT DESCRIPTIONS

### CYLINDER BLOCK

The cylinder block is made from high-grade cast iron with copper and chrome additives and is integral with the crankcase. The crankcase features five main bearings of the tunnel block design, with crankcase walls extending well below the crankshaft centerline for strength and rigidity. The cylinder's bores are plateau honed for oil retention and extended ring life. The non-machined surfaces are sealed to ensure cleanliness.




2

### CRANKSHAFT

The crankshaft is a chrome-molybdenum steel forging, fully machined, static, and dynamically balanced with integral counterweights. All bearing surfaces are induction hardened. The axial location is by thrust washers at the number five main bearing. The five main journals run in replaceable steel-backed cast copper/lead alloy bearings. The front of the crankshaft is keyed.

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

# MINIMUM HARDWARE TIGHTENING TORQUES

## IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

## INCH HARDWARE AND LOCKNUTS

| NOMINAL SIZE | SAE GRADE 2 | | SAE GRADE 5 | | SAE GRADE 8 | | LOCKNUTS | | NOMINAL SIZE |
|---|---|---|---|---|---|---|---|---|---|
| | UNPLATED or PLATED SILVER | PLATED W/ZnCr GOLD | UNPLATED or PLATED SILVER | PLATED W/ZnCr GOLD | UNPLATED or PLATED SILVER | PLATED W/ZnCr GOLD | GR.B w/GR5 BOLT | GR.C w/GR8 BOLT | |
| 1/4 | 55* (6.2) | 72* (8.1) | 86* (9.7) | 112* (13) | 121* (14) | 157* (18) | 61* (6.9) | 86* (9.8) | 1/4 |
| 5/16 | 115* (13) | 149* (17) | 178* (20) | 229* (26) | 250* (28) | 324* (37) | 125* (14) | 176* (20) | 5/16 |
| 3/8 | 17 (23) | 22 (30) | 26 (35) | 34 (46) | 37 (50) | 48 (65) | 19 (26) | 26 (35) | 3/8 |
| 7/16 | 27 (37) | 35 (47) | 42 (57) | 54 (73) | 59 (80) | 77 (104) | 30 (41) | 42 (57) | 7/16 |
| 1/2 | 42 (57) | 54 (73) | 64 (87) | 83 (113) | 91 (123) | 117 (159) | 45 (61) | 64 (88) | 1/2 |
| 9/16 | 60 (81) | 77 (104) | 92 (125) | 120 (163) | 130 (176) | 169 (229) | 65 (88) | 92 (125) | 9/16 |
| 5/8 | 83 (112) | 107 (145) | 128 (174) | 165 (224) | 180 (244) | 233 (316) | 90 (122) | 127 (172) | 5/8 |
| 3/4 | 146 (198) | 189 (256) | 226 (306) | 293 (397) | 319 (432) | 413 (560) | 160 (217) | 226 (306) | 3/4 |
| 7/8 | 142 (193) | 183 (248) | 365 (495) | 473 (641) | 515 (698) | 667 (904) | 258 (350) | 364 (494) | 7/8 |
| 1 | 213 (289) | 275 (373) | 547 (742) | 708 (960) | 773 (1048) | 1000 (1356) | 386 (523) | 545 (739) | 1 |

**NOTE: Torque values shown with * are inch pounds.**

## IDENTIFICATION
## CAP SCREWS AND CARRIAGE BOLTS



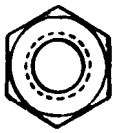
SAE GRADE 2



SAE GRADE 5



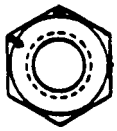
SAE GRADE 8



REGULAR NUTS



SAE GRADE 5 HEX NUTS



SAE GRADE 8 HEX NUTS

## LOCKNUTS



GRADE IDENTIFICATION

GRADE A NO NOTCHES

GRADE B ONE CIRCUMFERENTIAL NOTCH

GRADE C TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION

GRADE A NO MARKS

GRADE B THREE MARKS

GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS




GRADE A NO MARKS
GRADE B LETTER B
GRADE C LETTER C

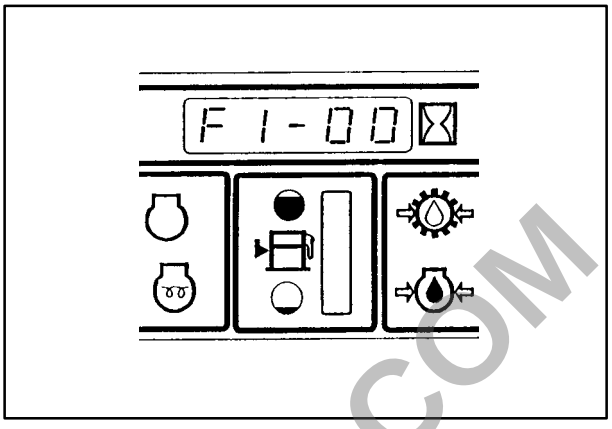
GRADE IDENTIFICATION

PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

Pressing and releasing the “ARROW” switch again will forward to the next fault “F1-00” and pressing and releasing the “OPEN BOOK” switch again will display the hour of the last occurrence if any fault occurrences were shown. Use this procedure to go through all the fault codes:




43

| FAULT CODES | FAULT | SYMBOL LIGHT |
|---|---|---|
| F0-00 | Hydraulic oil filter | Oil filter |
| F1-00 | Engine air cleaner | Air cleaner |
| F2-00 | Not used | Blank |
| F3-00 | Engine preheat | Preheat |
| F4-00 | Fuel solenoid | Fuel level bar lights |
| F5-00 | Engine coolant temperature | Engine coolant |
| F6-00 | Hydrostatic transmission charge pressure | Charge pressure |
| F7-00 | Transmission/Hydraulic oil temperature | Oil temperature |
| F8-00 | Battery voltage | Battery |
| F9-00 | Engine oil pressure | Oil pressure |
| FA-00 | Hydraulic boom/bucket solenoid | Seat belt |

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## TROUBLESHOOTING

### ENGINE WILL CRANK BUT DOES NOT START

| CAUSE | CORRECTION |
|---|---|
| Faulty key switch | Correct the connection and/or replace switch |
| Blown 5-amp electronic ignition fuse (cab fuse panel) | Replace fuse |
| Fuel solenoid not operating | Check solenoid for battery voltage and correct |
| Insufficient charging or complete discharging of the battery | Charge or replace battery |
| Lack of fuel | Fill fuel tank |
| Air mixed in the fuel system | Bleed the air |
| Clogged fuel filter | Replace |
| Irregular and faulty fuel supply (electric fuel pump) | Check power supply; check fuse in fuse panel; check for corroded internal components (replace pump and in-line filter if corroded) |
| Irregular and faulty fuel supply (injection pump trouble) | Repair in an authorized service shop |
| Glow plug not heating | Failure of the glow plug; replace |
| Improper viscosity of the lubricating oil | Inspect and replace |
| Clogged air cleaner | Clean or replace |
| No compression | Repair in a service shop |

### ENGINE WILL NOT CRANK OR START

| CAUSE | CORRECTION |
|---|---|
| Seat belt not fastened | Buckle seat belt |
| Faulty key switch | Correct the connection and/or replace switch |
| Insufficient charging or complete discharging of the battery | Charge or replace battery |
| Blown 5-amp electronic battery fuse (engine fuse panel) | Replace fuse |
| Blown 15-amp key main fuse (engine fuse panel) | Replace fuse |
| Open in W/O (white-orange) wire between the seat/seat belt connector and start interlock relay | Check and repair as required |
| Faulty start interlock relay | Check and repair as required |

### IRREGULAR RUNNING OF THE ENGINE

| CAUSE | CORRECTION |
|---|---|
| Air mixed in the fuel system | Bleed the air from the system |
| Uneven fuel injection (faulty fuel injection pump) | Repair at authorized shop |
| Clogged fuel filter | Replace |
| Defective governor | Check and correct |
| Engine itself defective | Repair in a service shop |

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## SPECIFICATIONS

| MODEL | LS160 |
|---|---|
| ENGINE MANUFACTURER | NEW HOLLAND |
| MODEL | N844 Diesel |
| CYLINDERS | 4 |
| ASPIRATION | NATURAL |
| CYCLE | 4 STROKE |
| BORE AND STROKE | 84 × 90 mm (3.31″ × 3.54″) |
| DISPLACEMENT | 1995 cu. cm (121.7 cu. in.) |
| COMPRESSION RATIO | 22 to 1 |
| SPEEDS | |
| -FAST (no load) | 3130 to 3180 RPM |
| -IDLE (no load) | 900 to 1000 RPM |
| HORSEPOWER | |
| (SAE GROSS) | 42.5 @2900 RPM |
| (SAE NET) | 40.0 @2900 RPM |
| TORQUE - (mfg. rating) Gross | 126 N·m (93 ft. lbs.) |
| VALVE CLEARANCE | |
| -Intake (cold) | 0.2 mm (0.008 in.) |
| -Exhaust (cold). | 0.2 mm (0.008 in.) |
| FIRING ORDER | 1-3-4-2 |
| FUEL CONSUMPTION (approximate at continuous full load) | 9.5 LPH (2.5 GPH) |
| IGNITION TYPE | Compression |
| GRADEABILITY (Intermittent duty) | 30 Degrees All Directions |
| AIR CLEANER - Dry type dual element | |
| Primary element | NH #86504145 |
| Safety element | NH #86504143 |
| FUEL SYSTEM | |
| Type of fuel | Diesel |
| Injection type | Indirect |
| Cleaning system | Inline filter replaceable NH#9611973<br>Inline water trap NH#86504140 |
| CAPACITIES | |
| Cooling system | 10.3 L (10.8 qt.) |
| Cooling system pressure | Radiator cap 48.3 kPa (7 psi) |
| Fuel tank | 52.9 L (14 gal.) |
| Hydraulic reservoir | 14.8 L (3.9 gal.) |
| Chain case (final drive - per side) | 6.8 L (1.8 gal.) |
| Gearbox (per box) | 0.95 L (1 qt.) |

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## LS170 - EXCESSIVE OIL CONSUMPTION

The maximum allowable oil consumption for the turbocharged diesel engine is 0.8%, as measured using a log of fuel consumption to oil consumption.

If a customer complains about excessive engine oil consumption on the Model LS160 or LS170 skid steer, the following steps must be taken. If a cause is found, stop and correct the problem. If a cause is not found, continue to the next step.

1. Examine engine for signs of external oil leaks.
   - Check gaskets: oil pan, timing gear case, head, head cover, injection pump, oil gallery, and dipstick.
   - Oil seals: crankshaft, front and rear.
   - Steel tubing and fittings that supply oil to the turbocharger and upper engine.
   - Tubing, hose, and fittings for turbocharger oil drain to block.
   - Damage to oil pan and drain plug.
   - Crankcase breather hose (open and not kinked) preventing proper crankcase breathing.
2. Examine turbocharger area.
   - Remove the hose between the turbocharger inlet and the air cleaner. Examine for signs of dirt in the hose and inlet to the turbocharger blower.

   If carbon, oil, and dust are found, check:

   - Air cleaner assembly for tightness of filter elements.
   - Hose between air cleaner and turbocharger for damage or looseness of clamps.

   If oil residue is evident on the clean air turbine, it might not be due to failed turbocharger bearings.

***NOTE:*** *A film of oil on the clean air side of the turbocharger to the intake manifold is normal for skid steer operation.*

   Check the air filter and air intake hose for signs of oil residue.

   Check the exhaust area for leaks:

   - Exhaust manifold gasket and hardware.
   - Turbocharger gasket and hardware, if equipped.
   - Muffler gasket and hardware.
   - Muffler failure (cracks, misalignment).

   Remove the hose between the turbocharger outlet and the intake manifold. Check for dirt in the hose, turbocharger outlet, and the air intake manifold.

   If there is no dirt at the turbocharger inlet but there is a deposit at the turbocharger blower outlet (which is not due to signs of dirt in the hose and inlet to the turbocharger blower), it may be leakage from the turbocharger seals.

   Check turbocharger shaft specifications:

   Axial movement: maximum 0.09 mm (0.0035″)
   Radial movement: maximum 0.17 mm (0.0067″)

3. Check the blowby hose (valve cover vent hose) for signs of blockage. If the hose is kinked or the end is blocked by debris, correct by cutting off the end of the hose so it is just below the bottom of the engine oil filter.
4. If there is no problem found in the 1, 2, and 3 checking points, then go to the next step to log oil consumption.
5. The customer must log oil consumption using the following procedure:
   - Change the engine oil and filter. Use the oil specified in the loader operator's manual.
   - Run the engine for two minutes.
   - Check the dipstick and add oil, if required, so the level is at the full mark.
   - Fill the fuel tank with fuel.
   - Record fuel consumption (in gallons), oil added (in quarts), and hour reading. Record fuel and oil use for 100 hours of operation, which is the recommended oil change interval. Check the dipstick before running the engine each day.

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com

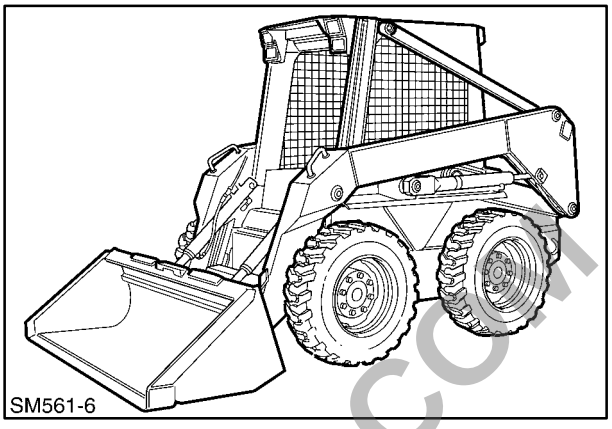


Download full manual at youfixthis.com

## CAB AND BOOM TILT PROCEDURE

The cab and boom assembly can be tilted forward for easier access to the major skid steer hydrostatic transmission or engine components. To tilt the cab, the proper cab tilting tool must be used to ensure safety and to prevent damage to the skid steer frame, cab, and boom structure. Contact your New Holland dealer for major service or repairs of the skid steer. Using the proper cab tilting tool and following these steps, the cab and boom can be tilted forward.

1. Remove any attachment, bucket, etc. from the boom quick-attach plate.




17

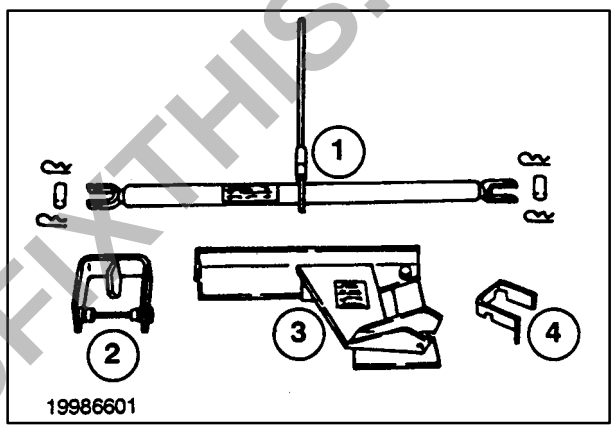
**Cab tilting jack and support brackets:**

1 Jack and screw assembly

2 Lower support

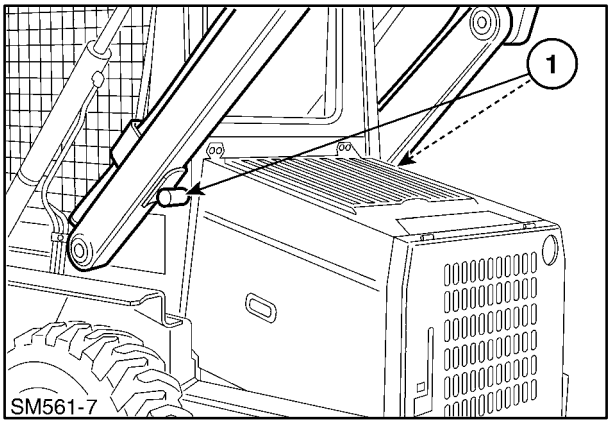
3 Upper support

4 Spacer top link




18

2. Raise the boom and lower onto boom lock pins, 1.
   - Raise boom above boom lock pins.
   - Engage boom lock pins.
   - Stop engine, ignition key off position.
   - Turn ignition key to the on position.
   - Lower boom onto boom lock pins.
   - Turn the ignition key to the “OFF” position.




19

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## PRECAUTIONARY STATEMENTS

### PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**CAUTION**", "**WARNING**", and "**DANGER**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

**⚠ CAUTION ⚠**

**The word "CAUTION" is used where a safe behavioral practice according to operating and maintenance instructions and common safety practices will protect the operator and others from accident involvement.**

**⚠ WARNING ⚠**

**The word "WARNING" denotes a potential or hidden hazard which has a potential for serious injury. It is used to warn operators and others to exercise every appropriate means to avoid a surprise involvement with machinery.**

**⚠ DANGER ⚠**

**The word "DANGER" denotes a forbidden practice in connection with a serious hazard.**

Failure to follow the "**CAUTION**", "**WARNING**", and "**DANGER**" instructions may result in serious bodily injury or death.

### MACHINE SAFETY

Additional precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

***IMPORTANT:*** *The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

The maximum allowable oil consumption is 0.8%. The following table give examples.

| Fuel Consumption, Gallons | Oil Consumption, Quarts |
|---|---|
| 50 | 1.6 |
| 100 | 3.2 |
| 200 | 6.4 |

A log example is shown in the following table. The hour level is the EIC (Electronic Instrumentation Cluster) reading when fuel is added. Dealer must file oil consumption log with customer file.

| Fuel | Oil | Hour Level |
|---|---|---|
| Full | Full | 100 |
| XX Gallons | X Quart | 150 |
| XX Gallons | X Quart | 200 |

6. If the oil consumption is greater than 0.8% of the fuel consumption, oil usage is excessive. A sample calculation for oil consumption follows:

   $$\% \text{ Consumption} = \frac{(\text{quarts oil}/4) \times 100}{\text{gallons fuel}}$$

   Assume one quart oil is added for 50 gallons fuel.

   $$\% \text{ Consumption} = \frac{(1/4) \times 100}{50} = 0.5\%$$

7. The New Holland dealer must check compression on all four cylinders and record.

   The compression specifications are as follows:

| Standard Value | To Be Repaired |
|---|---|
| More than 429 PSI (29.5 bar) at 200 - 250 engine cranking RPM | Less than 356 PSI (24.5 bar) |

Compression testing can be performed using a special adaptor (see “Special Tools” in the Additional Information Section) through the glow plug ports. Remove all glow plugs and test each cylinder.

This should be a “dry” compression check (do not put any oil in the cylinder).

If compression is low, recheck the air intake system for signs of dirt ingestion.

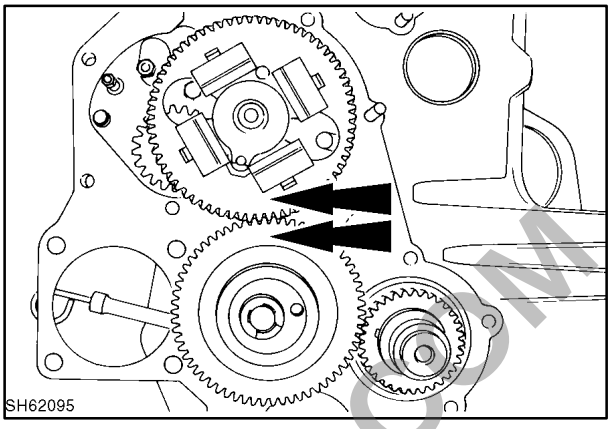
PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

Align set marks on the idler gear, crankshaft gear, and camshaft gear, and assemble on the idler gear shaft.



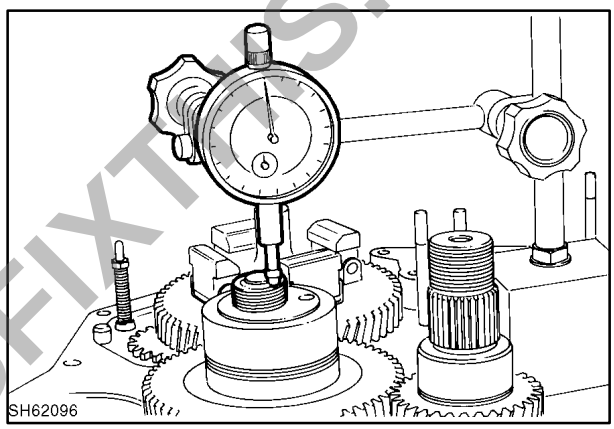

102

Install the rotor.

Install the oil pump cover, shim, spring, and collar. Fix them with the retaining ring.

Adjust with shim 0.1, 0.15, 0.2, 0.5 mm so the axial clearance of the oil pump, rotor, and vane is in the range of 0.004″ - 0.006″ (0.1 mm to 0.15 mm). The allowable limit is 0.008″ (0.2 mm) .

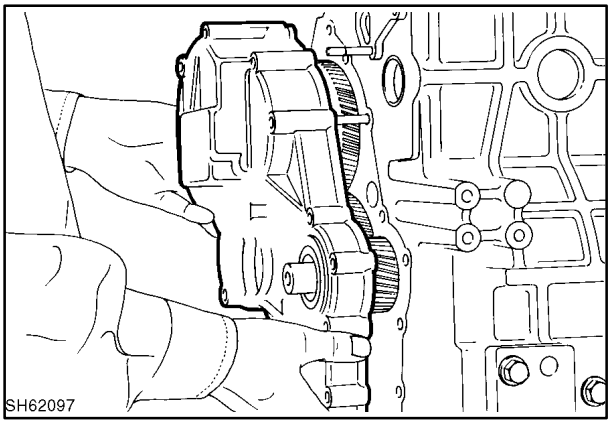
***NOTE:*** *Coat both faces of the rotor and vane with grease for assembly.*




103

***NOTE:*** *NEVER TURN the crankshaft until the timing gear case is fitted.*

By turning the oil pump cover to either direction, set the spring pin insert hole to the middle position and fit the gear case.




104

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

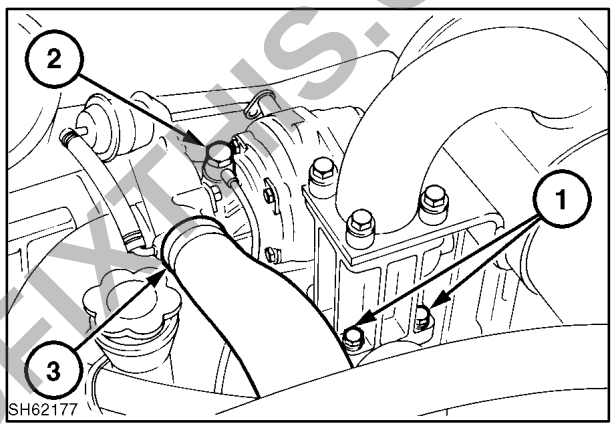
**Turbocharger Lubrication System**
Oil the lubricated parts by pouring clean engine oil into the oil inlet and by rotating the turbine shaft by hand. This will wet the journal, floating bearings, thrust bearing, and other surfaces.

Thoroughly clean the oil inlet pipe and outlet pipe by flushing, making sure the pipes are absolutely free of foreign particles. Be sure the pipes have no restrictions due to denting or bending.

When installing the pipes between the turbocharger and engine, be sure to make each connection leak free.

**Intake air system**
Clean the parts conveying the intake air, making sure each part is absolutely free of foreign particles.

When connecting the turbocharger to the air cleaner and air duct tube, be sure that each joint is leak free.



204

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

The following pump relief valves protect the direction of motor (tire) rotation forward or reverse.

Front pump controls right motor:

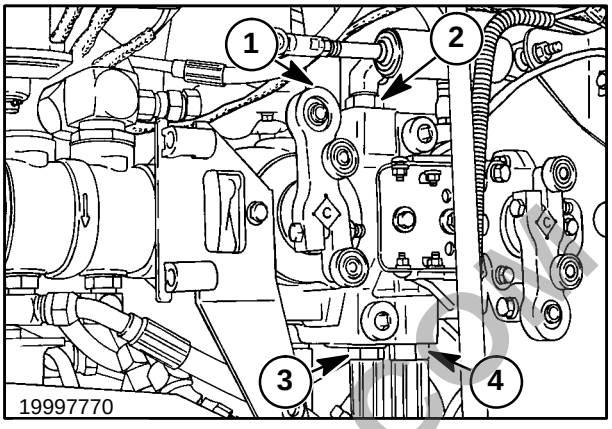
1 - Forward (bottom)

2 - Reverse (top)

Rear pump controls left motor:

3 - Forward (bottom)

4 - Reverse (top)




20

8. Start the engine and run it at full throttle (3070 - 3150 RPM).
9. Stroke the hydrostatic control lever on the side being tested and in the direction being tested and take a pressure reading, the pressure should be 238 bar (3500 PSI). If the pressure is not at specification, 238 bar (3500 PSI), replace the suspect relief valve.

***NOTE:*** *All four directional relief valves can be tested in this manner.*

If the pressure is within specification, refer to the pump/motor case drain test for further testing to locate the problem.

**⚠ CAUTION ⚠**

**Always stay clear of moving parts during testing or serious injury could occur.**

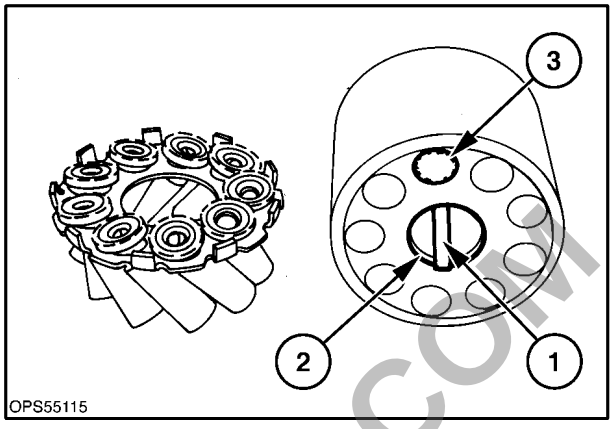
PREVIEW - YOUFIXTHIS.COM



Download full manual at youfixthis.com

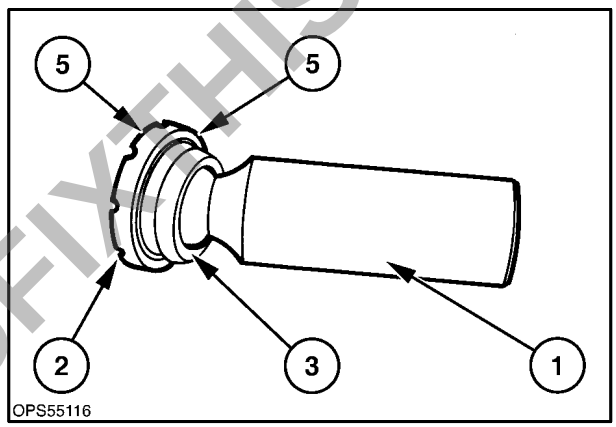
4. Inspect the piston block for any wear in the key or shaft area, 1.
5. The hollow pistons with slippers must be installed into the piston block holes on the side of the block with the tapered shaft opening, 2. Examine the holes in the block for scoring and wear. If the pistons' skirts show scoring, the corresponding holes in the block will be worn.
6. The pistons should be free to move in the block bore. Check each individual piston in a block hole to be sure it moves freely when well lubricated. If it does not move freely, check the piston for scoring or block bore for wear or contamination.

***NOTE:*** *There is a burr around each hole at 3; be careful not to damage the burr.*



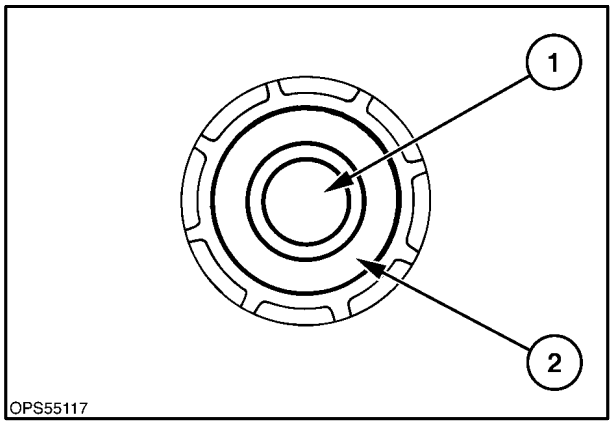

143

7. The outside of the pistons, 1, should not show any deep scratches or wear. It is normal to see minor scratches, such as brush marks, that cannot be felt with a fingernail. The piston shoes, 2, should fit snugly on the ball end, 3, of the piston. There should not be any wear to the outside edge of the shoe at 5, which can be noted by a rolled edge. If necessary, replace the piston assemblies.




144

8. Check the internal opening in each piston to be sure it is open for oil flow, 1. The flat surface of the piston shoe should be smooth and not show any scratches, 2.




145

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



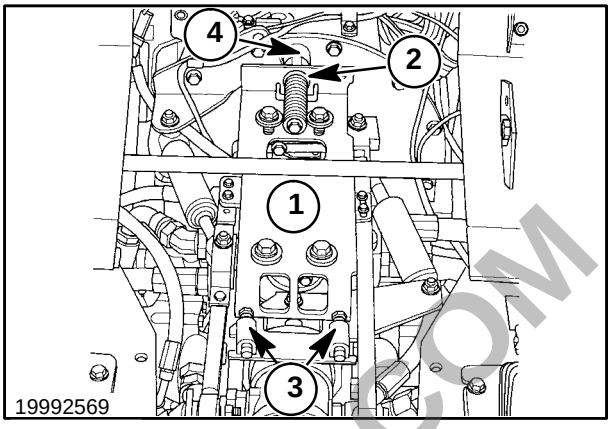
Download full manual at youfixthis.com

**Op. 29 130 06**

## NEUTRAL ADJUSTMENT

Before making any adjustments, make sure there is no binding in the control linkage, shock absorbers or neutralizer plate. The neutralizer plate, 1, should be free to move on the spring retaining bolt at the engine bell housing, 2, and on the front slides, 3. The neutralizer plate should be against the stop on the engine bell housing at 4.

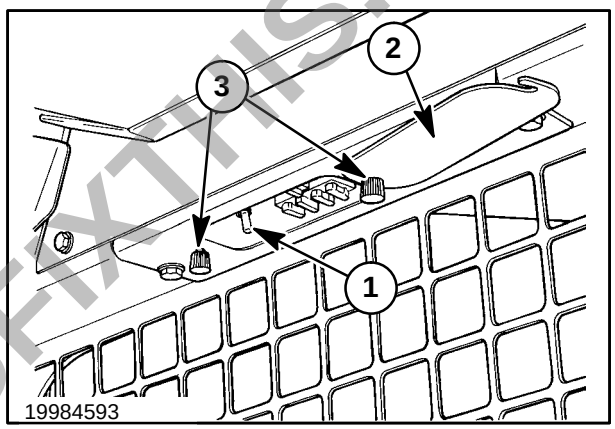
The skid steer must be raised and supported with the tires off the ground. Use adequate blocking or jack stands to securely support the skid steer.




275

The engine must be started and running to make neutral adjustments. Place the “Service/Run” Switch, 1, in the “SERVICE” position to allow the engine to be started and to prevent movement of the boom and bucket.

To access the “Service/Run” switch located under the fuse panel cover, 2, loosen the two thumbscrews, 3, and rotate the cover to the side.



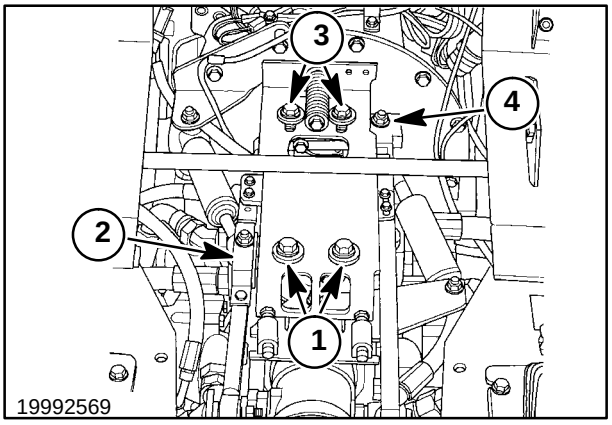

276

To adjust the right side, loosen the block retaining bolts, 1, slightly and move the control arm, 2, to stop wheel rotation. Now move the block so it contacts both cams on arm, 2, and tighten the retaining bolts, 1.

To adjust the left side, loosen the block retaining bolts, 3, slightly and move the control arm, 4, to stop wheel rotation. Now move the block so it contacts the cams on arm, 4, and tighten the retaining bolts, 3.

Stop the engine after adjustments are made and recheck hardware torque.

***NOTE:*** *The blocks must be set square and firmly contact both cams on the arms. If the block is not square against both cams on the arms, the unit may creep after neutral adjustments are made.*



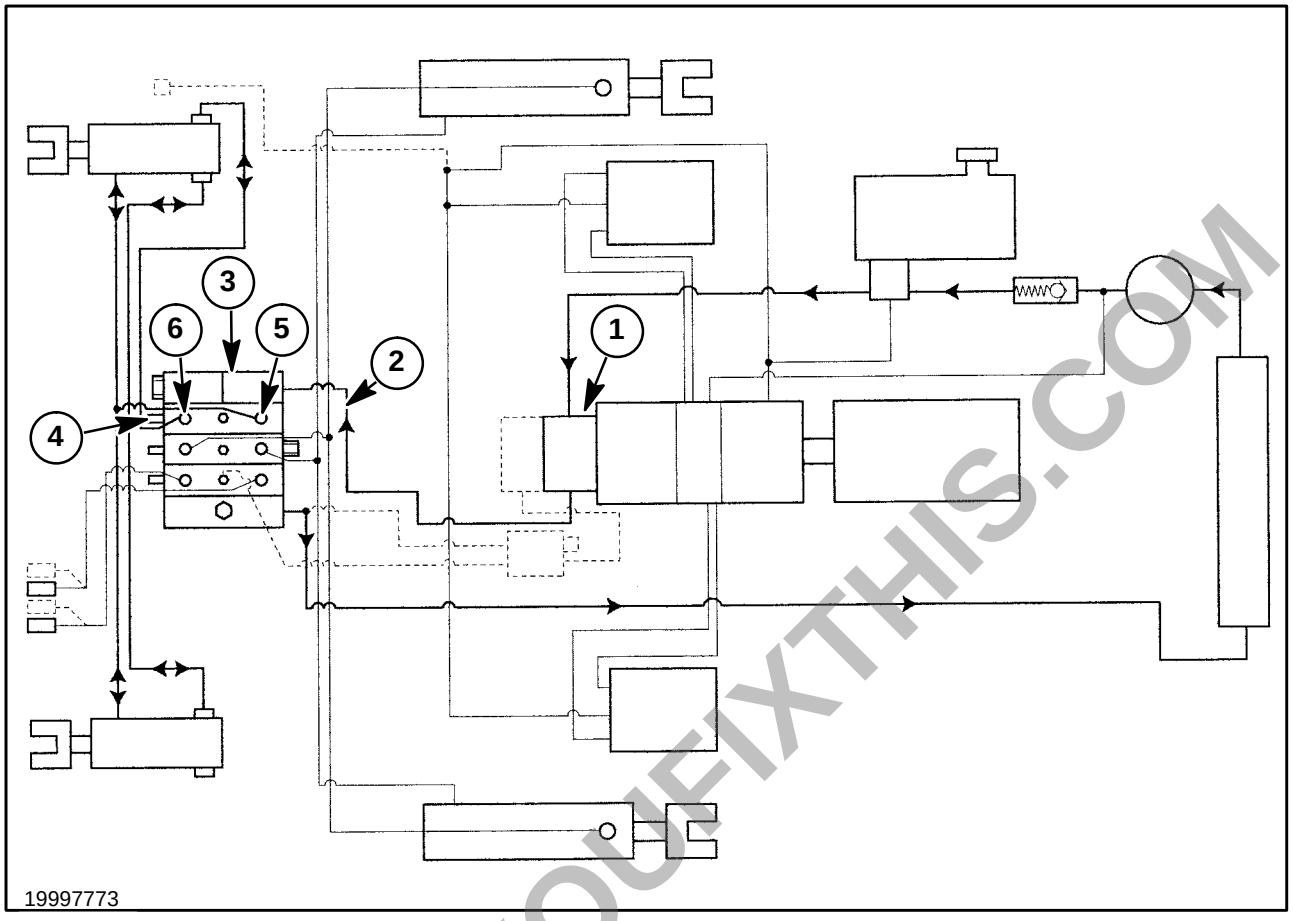

277

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com




9

## CONTROL VALVE - BUCKET SPOOL SHIFTED

### Bucket Control Operation

### Foot Controls

When the toe of the control pedal is pushed down, it will shift the control valve spool in, dumping the bucket. When the heel of the control pedal is pushed down, it will shift the control valve spool out curling the bucket back.

### Hand Controls

When the right control handle is pivoted up it will shift the control valve spool in, dumping the bucket. When the right control handle is pivoted down it will shift the control valve spool out, curling the bucket back.

1. Oil flows from the gear pump, 1, through pressure line, 2, to control valve, 3.
2. When the bucket valve spool, 4, is pulled out, the oil flows from the rear work port, 5, to the shaft side of the bucket cylinder to curl the bucket back.
3. When the bucket valve spool, 4, is pushed in, the oil flows from the front work port, 6, to the base (piston) end of bucket cylinder to dump the bucket.
4. When the bucket circuit is operated to maximum pressure or cylinders are bottomed, the main system relief valve will relieve the high pressure oil into the return oil galley in the control valve, returning the oil to the reservoir.
5. The return oil from the opposite side of the cylinder being pressured will return through the control valve to the reservoir.

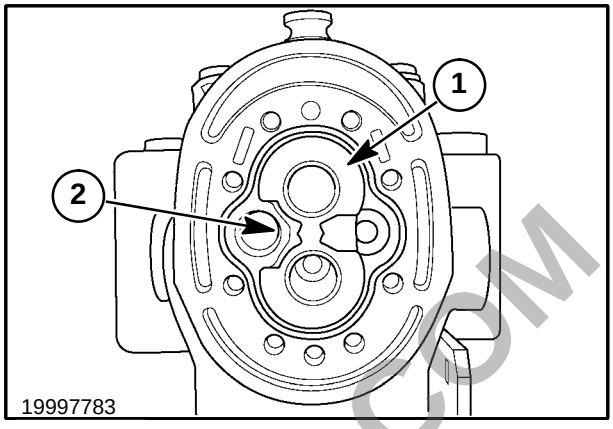
PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

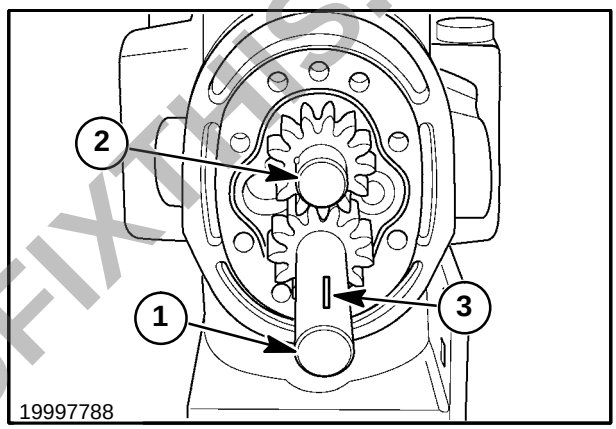
Install the wear plate assembly, 1, with the gasket/seal side towards the pump mounting plate with the mid section cut away on the suction side, 2, of the pump.




123

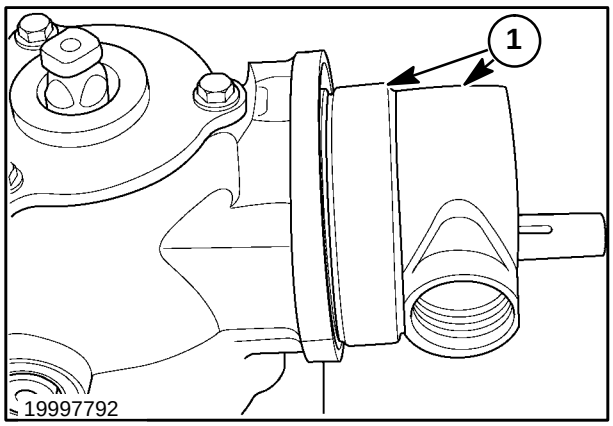
5. Install the drive shaft, 1, making sure to engage the splines inside the hydrostatic pump. Install the idler gear assembly, 2, into the bushing. Rotate the gears to help slide the idler gear into place.

***NOTE:*** *The drive shaft and gear, 1, must tbe properly seated on the hydrostatic pump drive shaft splines with the end of gear teeth against the wear plate. Position the keyway, 3, up.*




124

6. Install the pump body and back plate together, 1, over the gear shafts, taking care not to disturb the seals between the pump body and backplate.




125

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

## LABOR GUIDE

The following labor amounts are listed as a guide only. Working conditions and experience will vary the time it actually takes to complete each job.

| Job Description | Hours |
|---|---|
| Remove and replace ROPS frame (Includes seat, boom lock linkage, boom removal, inner shell) | 18.5 hrs. |

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



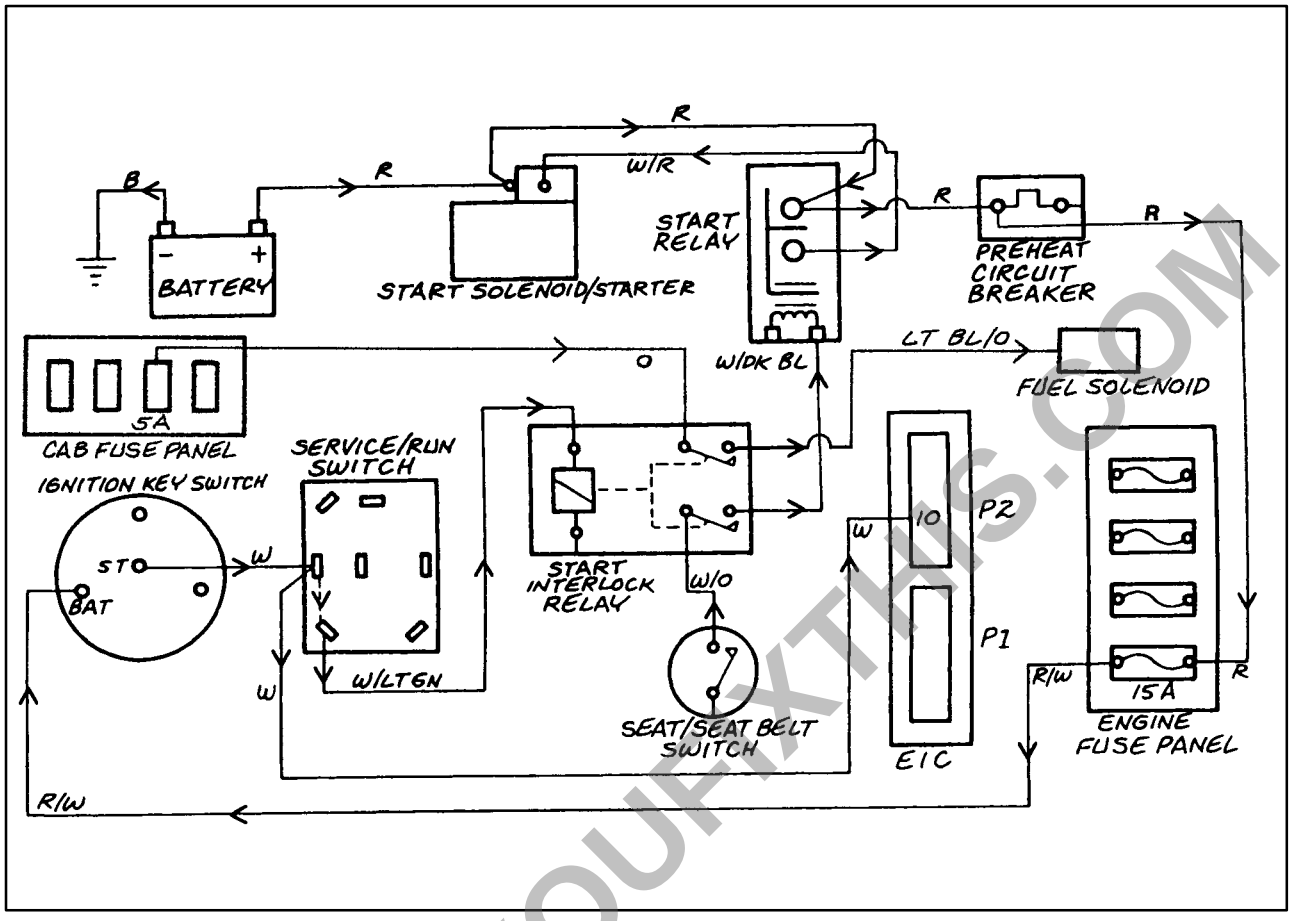
Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com




67

**“SERVICE/RUN” SWITCH IN THE “RUN” POSITION**

The power originates at the battery and flows through the (R) positive battery cable to the starter solenoid. From here the power flows through the (R) wire to the battery side of the start relay.

The power then flows through the (R) wire to the preheat circuit breaker and to the engine fuse panel to the 15A key main fuse.

The power then flows through the (R/W) wire to the battery terminal on the ignition key switch.

With the key switch in the “START” position, current flows through the (W) wire to the service/run switch. Power also flows through the (W) wire to connector P2 terminal 10-key start at the EIC board.

Power then flows from the service/run switch through the (W/LTGN) wire to the start interlock relay coil terminal.

With the interlock energized, the power from the seat/seat belt circuit (W/O) wire flows through the (W/DKBL) wire to the start relay to activate the relay.

Power also flows from the start interlock relay through the LTBL/O wire to the fuel solenoid to open the solenoid, allowing fuel flow to the injection pump.

When the start relay is activated, power goes through the (W/R) wire to the starter solenoid, which connects battery power to the starter motor.

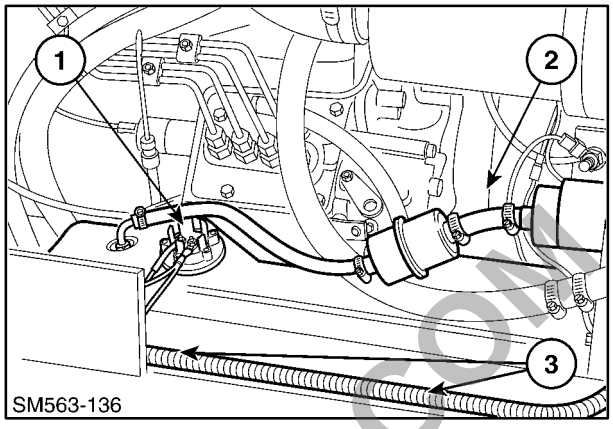
PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

18. Remove harness from left rear of engine area after disconnecting wires from fuel sender, 1, and fuel pump, 2. Remove tubing from the harness that is located in fuel tank groove, 3.

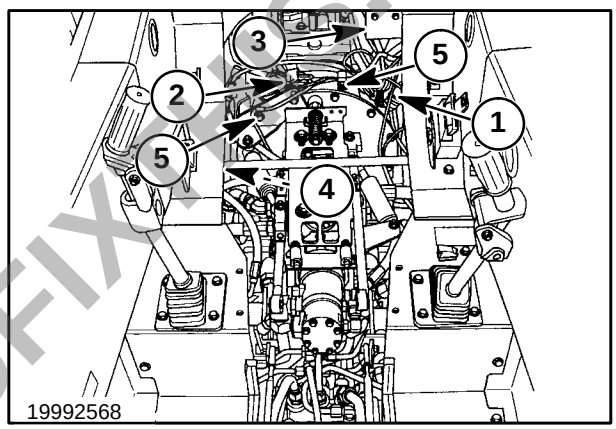



151

19. Thoroughly clean the connector between the main and engine harness. Make sure the connector is dry.

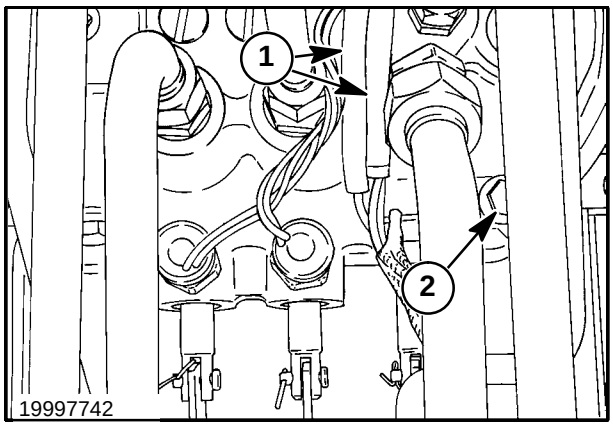
20. Unplug the main wire harness from the engine wire harness, 1, and remove the ground wires from the engine bellhousing ground stud, 2. Remove wires from the engine fuse and relay panel, 3.

21. Remove the hydraulic oil temperature sender wires, 4, and remove the harness from the clamps on the face of bellhousing, 5. Remove the remaining bellhousing clamps.




152

22. Disconnect the control valve connectors, 1, remove the harness from the J clamp, 2, on the valve and pull the harness out through the left fender area.




153

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com

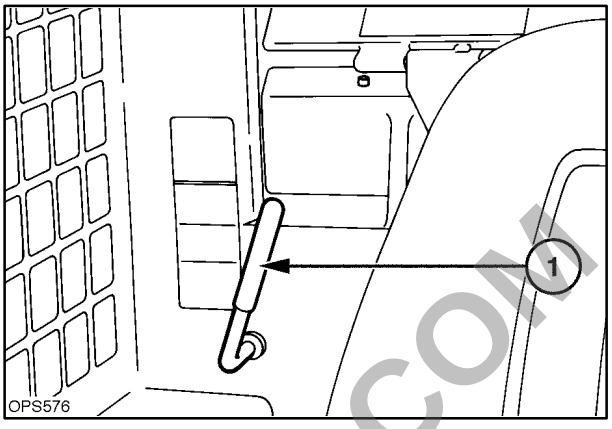


Download full manual at youfixthis.com

**Op. 82 100 77**

## BOOM LOCK PINS AND LINKAGE

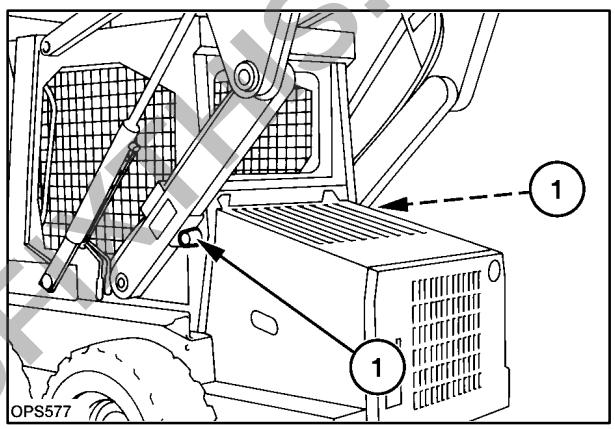
The operator can engage the boom lock pins from the operator's seat. The control is located to the right rear of the operator's seat at 1. Pivoting the handle towards the outside of the cab extends and engages the lock pins. Pivoting the handle in will retract the lock pins.




2

To engage the boom lock pins:

1. Raise the boom above the boom lock pins and engage the pins.
2. Turn the ignition key to the "OFF" position to stop the engine.
3. Turn the ignition key to the "ON" position and operate the boom and bucket hydraulic controls to lower the boom until it rests on the lock pins, 1, and relieves pressure in the boom and bucket hydraulic circuits.
4. Turn the ignition key to the "OFF" position.




3

**⚠ CAUTION ⚠**

**Never work under a raised boom unless the boom is resting on the boom lock pins, 1.**

**Never work under a raised boom with an attachment, always remove any attachment from the loader boom mounting plate.**

## BOOM

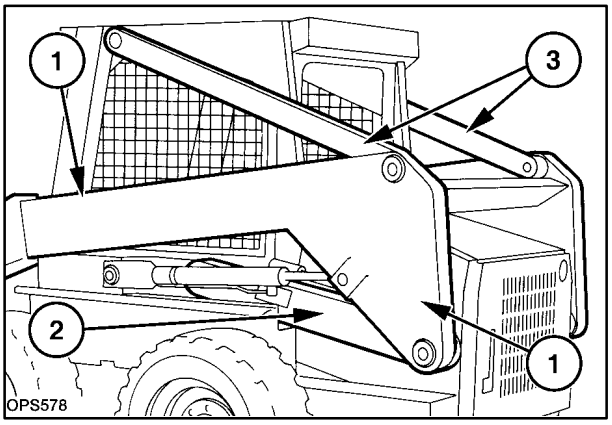
The boom assembly consists of:

**Op. 82 100 50**
1 Main boom frame

**Op. 82 100 52**
2 Lower link, right and left

**Op. 82 100 53**
3 Upper link, right and left

The boom and links are supported on the ROPS main frame with tapered pivot pins at all pivot locations.




4

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

**Op. 10 300**

## BLOCK HEATER (ENGINE)

The engine block heater, 1, may be required in colder climate areas to assist in starting of the diesel engine.

The block heater is a 115-volt, 400-watt immersion type.

**⚠ WARNING ⚠**

**The block heater must be installed and operated per the instructions provided with the kit or damage to the engine, heater element, and/or personal injury could occur.**

Position the heater into the engine block so that the element is pointing to the 7 o'clock position for proper heater operation.

**⚠ WARNING ⚠**

**Before connecting the heater to the power source, be sure that the element is immersed in coolant. Never energize the heater in air. If so energized, the element sheath could burst and cause personal injury.**

Do not operate the heater until the engine cooling system is filled with a 50/50 mixture of a permanent-type antifreeze and water.

Operate the engine and check for any coolant leaks and purge the air from the cooling system; repair accordingly.

***IMPORTANT:*** *Failure to fill the cooling system and purging the air will cause premature failure of the block heater.*

**⚠ CAUTION ⚠**

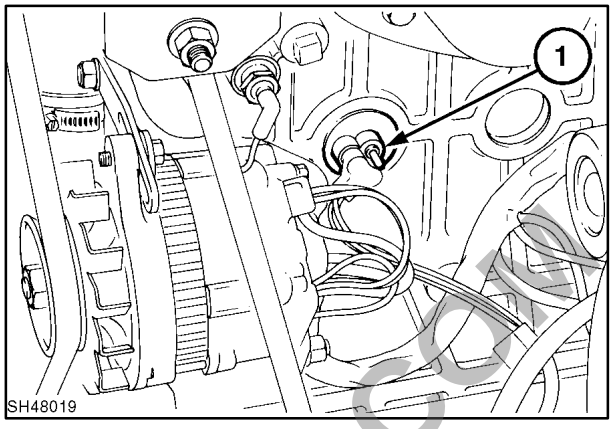
**This is a 115-volt heater. Use caution when installing and using the heater. Properly grounded electrical outlets and properly sized extension cords are essential for the use of the heater.**

**To insure continued protection against shock hazard, connect to properly grounded electrical outlets only.**

First connect a grounded extension cord of the proper rating for the length used to the heater plug. Then connect the extension cord to the grounded electrical outlet.

**⚠ CAUTION ⚠**

**Disconnect the extension cord from the grounded electrical outlet first and then from the heater before starting the loader. Inspect the heater wires periodically for broken or frayed wires and/or wire coverings. If wires and/or coverings are broken or frayed, do not use the heater.**




16

PREVIEW - YOUFIXTHIS.COM

YouFixThis.com



Download full manual at youfixthis.com

# PREVIEW ONLY

You're viewing 25 of 741 pages

## The full manual includes:

- All 741 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

**GET FULL MANUAL NOW**

**New Holland LS160, LS170, N844 Diesel Service Manual**

**Scan or click anywhere**
**youfixthis.com**

*Click anywhere on this page to get the full manual*