SERVICE MANUAL

LS180, LS190
SKID-STEER

NEW HOLLAND
CONSTRUCTION

87036989

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LS180, LS190 REPAIR MANUAL COMPLETE CONTENTS

SECTION 00 - GENERAL INFORMATION 2
SECTION 10 - ENGINE 3
SECTION 27 - REAR DRIVE AXLE (GEARBOXES) 7
SECTION 29 - HYDROSTATIC TRANSMISSION 8
SECTION 33 - BRAKES AND CONTROLS 11
SECTION 35 - HYDRAULIC SYSTEM 12
SECTION 37 - TOWING HOOKS AND BALLASTING 14
SECTION 39 - FRAMES 14
SECTION 44 - AXLES AND WHEELS 15
SECTION 50 - CAB CLIMATE CONTROL 15
SECTION 55 - ELECTRICAL SYSTEM 16
SECTION 82 - FRONT LOADER (BOOM AND MOUNTING PLATE) 21
SECTION 88 - ACCESSORIES 22
SECTION 90 - PLATFORMS, CAB, BODYWORK, AND DECALS 23

The following pages are the collation of the contents pages from each section and chapter of the LS180, LS190 Repair manual. Complete Repair part # 87036989.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the LS180, LS190 Skid Steer.

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87036994 7/03

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SECTION 00 - GENERAL INFORMATION

BOOK 1 - 87036990

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)	00-15
	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 (Model LS180)	00-29
	Dimensions (Model LS180)	00-32
	Specifications (Model LS190)	00-34
	Dimensions (Model LS190)	00-37

MidWestTech | New Holland LS180, LS190 Skid Steer Service Manual | Publication 87036... Order the manual at mid-west-tech.com >

SECTION 10 - ENGINE

BOOK 1 - 87036990

Chapter 1 - LS180 - 332T/JF

CONTENTS

Section	Description	Page
10 000	Introduction	10-3
	Safety Precautions	10-3
	LS 180 Engine Services	10-4
	Engine Model and Serial Number Location	10-4
	General Engine Information	10-4
	General Engine Specifications	10-8
	Troubleshooting	10-10
	Specifications Service Standards	10-19
	Hardware Torque Chart	10-26
	Torque Specifications	10-27
	Turbocharger Torque Specifications	10-28
	Engine Electrical Components - LS180	10-29
10 001 10	Engine Removal By Tilting Cab and Boom Forward	10-30
10 001 20	Mounting the Engine for Maintenance	10-35
10 001 53	Engine Disassembly Sequence	10-35
	Engine Component Maintenance	10-36
	Cylinder Block, Pistons, Rings, Rods and Bearings	10-45
	Crankshaft, Main Bearings, and Flywheel	10-53
	Camshaft and Timing Gear Train	10-59
	Timing Gear	10-62
	Engine Timing	10-66
10 400	Cooling System	10-70
10 402 30	Thermostat Removal	10-71
10 402 10	Water Pump Removal	10-72
10 304	Lubrication System	10-77
10 102 10	Oil Pan Removal	10-77
10 304 34	Oil Pump Removal	10-78
10 304 06	Oil Level Dipstick	10-81
	Fuel System	10-82
10 210 21	Electric Lift Pump	10-82
10 218 34	Injectors	10-90
10 218 34	Fuel Injector Overhaul	10-92

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Op. 10 001 20

MOUNTING THE ENGINE FOR MAINTENANCE - LS190

The approximate weight of the engine is 1000 lbs. (450 kg). Use an engine repair stand with a minimum capacity of 1000 lbs. (450 kg).

The engine repair stand should be used only by qualified service technicians familiar with the equipment.

To maintain shear strength specifications, alloy steel SAE Grade 8 or higher bolts must be used to mount the engine.

For full thread engagement, check that tapped mounting holes in the engine blocks are clean and not damaged. A thread engagement equal to 1 - 1/2 screw diameters minimum is required to maintain strength requirements.

To avoid structural or personal injury, do not exceed the maximum capacity rating of the engine stand.

To avoid an unsafe off-balance load condition, the center of balance of an engine must be located near the engine stand rotating shaft. The engine center of balance is generally located a few millimeters above the crankshaft. Adjust engine mounting to avoid an off-balance condition.

To prevent possible personal injury due to engine slippage, recheck to make sure the engine is solidly mounted while releasing support from the engine lifting device.

Never permit any part of the body to be positioned under an engine or component being lifted or suspended. Accidental slippage may result in personal injury.

Op. 10 001 53

ENGINE DISASSEMBLY SEQUENCE - LS190

The following preliminary disassembly procedure is suggested to remove external components when complete disassembly for overhaul is required. Refer to the appropriate section when removing individual engine components.

1. Drain all coolant and engine oil. Check engine oil for metal contaminates.
2. Remove fan, fan belts, and alternator.
3. Remove exhaust manifold.
4. Remove rocker arm cover with vent tube.
5. Remove coolant outlet connection with thermostats and gasket.
6. Remove oil filter, engine oil cooler, and hoses.
7. Remove fuel filter, fuel supply pump, and fuel line.
8. Remove water pump.
9. Remove starting motor.
10. Remove transmission housing and flywheel. (See Section 27)
11. Remove oil pan.
12. Remove crankshaft pulley.

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TROUBLESHOOTING

When performing a test on the hydraulic system, use the proper test procedures and test equipment.

Before testing, lower the attachment to the ground or remove the attachment from the skid steer.

If testing is to be performed with a raised boom, make sure the boom is raised above and resting on the boom lock pins.

Before opening the hydraulic system, clean the area thoroughly to prevent contaminating the system.

Before opening the hydraulic system, relieve all pressure from the system.

Before testing the hydraulic system, check the hydraulic oil level.

Before testing the hydraulic system, the oil must be at normal operating temperature.

If testing requires the skid steer to be raised, use adequate blocking and/or jack stands to securely support the skid steer.

⚠ CAUTION ⚠

When connecting test equipment to the hydraulic system, relieve the pressure in the system. Stop the engine, turn the ignition switch to the "on" position and operate all hydraulic control valve circuits to relieve pressure. Turn the ignition switch to the "off" position.

⚠ WARNING ⚠

Gauges, gauge fittings, and hoses must have operating pressure ratings of at least 25% higher than the highest pressures of the system.

Never adjust or replace the relief valves to get higher pressures than those specified by the equipment manufacturer.

Fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Always protect the skin and eyes from escaping fluid under pressure.

Before disconnecting lines or fittings, be sure to turn off the skid steer engine and relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes, and hoses are not damaged.

If injured by escaping fluid, obtain medical assistance at once. Serious infection or reaction can develop if medical treatment is not administered immediately.

Rmove any attachment from the mounting plate before loosening or disconnecting any hydraulic lines.

⚠ CAUTION ⚠

Use adequate blocking and/or jack stands to make sure that the skid steer is safely supported with all four wheels off the ground.

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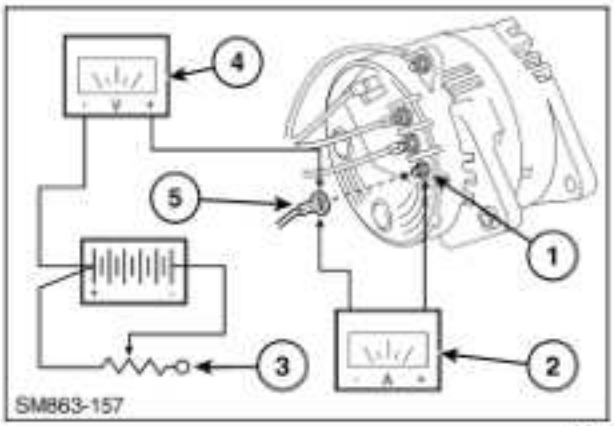
Charging Circuit Voltage Drop Tests

Insulated Side Voltage Drop Tests

1. With the key start switch in the "off" position, disconnect the battery negative cable and the B+, 5, cable from the alternator.
2. Connect a voltmeter, 4, with a low-voltage scale between the battery positive terminal and the free end of the B+ cable. The voltmeter positive lead connects to the B+ cable while the negative lead connects to the battery positive terminal.
3. Connect an ammeter, 2, of 60-amp minimum capacity between the B+ post of the alternator, 1, and the B+ cable, 5, (ammeter positive lead to alternator).
4. Reconnect the battery negative cable. Connect a variable discharge rate (carbon pile) load tester, 3, across the battery terminals. Adjust the tester for minimum draw (maximum resistance) before connection.
5. Start the engine and increase speed to 2000 RPM. Slowly increase the current draw until the ammeter reads 45 amps.
6. At that point, the voltmeter should not read more than 0.4 volts.

   If the ammeter reading exceeds 0.4 volts, there is a high resistance fault in the insulated side of the circuit.

   If maximum output is less than 45 amps and the voltmeter reading is less than 0.4 volts, proceed to the Ground Side Voltage Drop Test.
7. Stop the engine.



186

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NEW HOLLAND CONSTRUCTION

LS180
LS190

REPAIR MANUAL



Section 35 -
Hydraulic System

Section 37 -
Towing Hooks and Ballasting

Section 39 -
Frames

Section 44 -
Axles and Wheels

Section 50 -
Cab Climate Control

87036992 7/03

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LS180
LS190

REPAIR MANUAL



Section 27 -
Rear Drive Axle (Gearboxes)

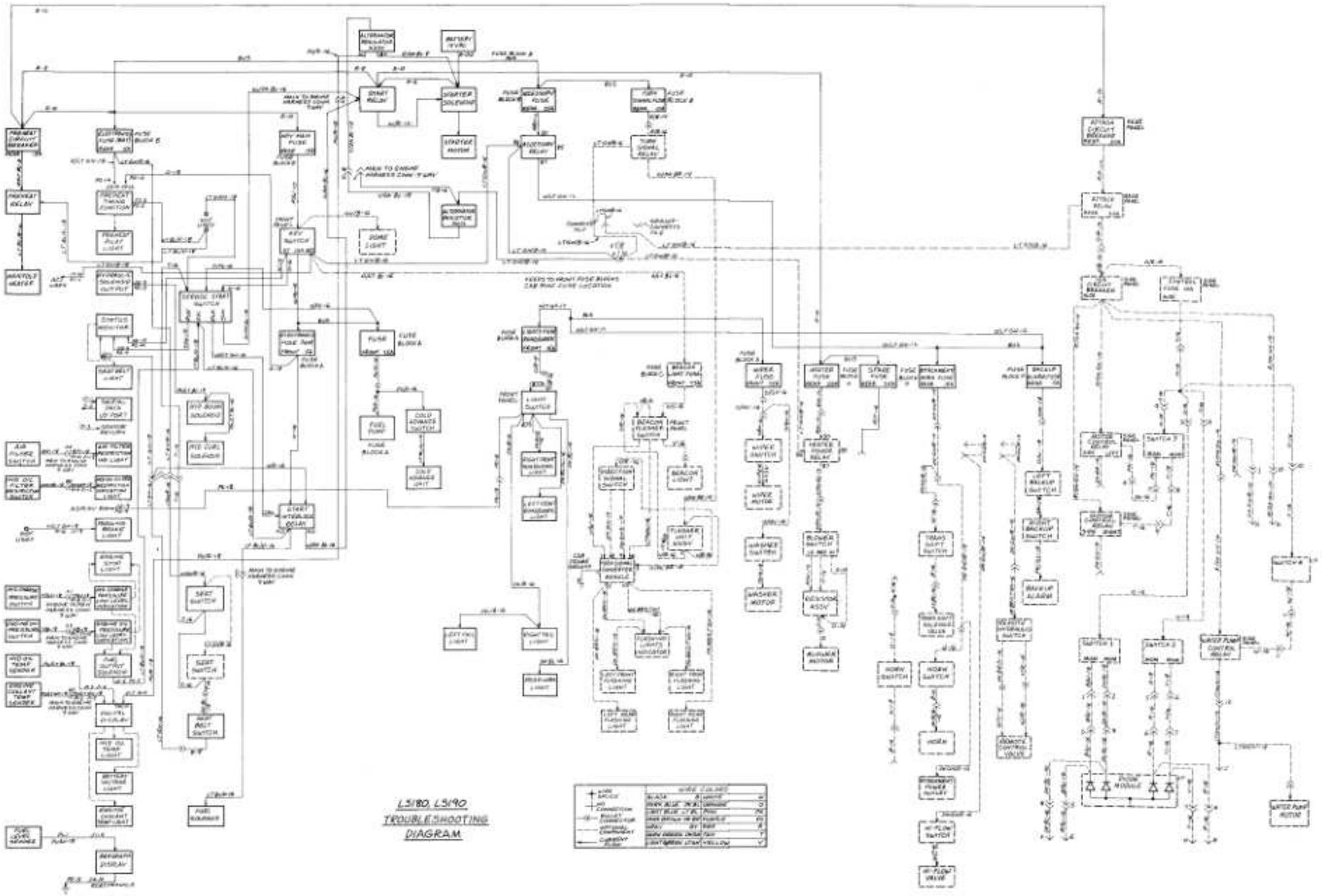
Section 29 -
Hydrostatic Transmission

Section 33 -
Brakes and Controls

87036991 7/03

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LS180, LS190
TROUBLESHOOTING
DIAGRAM

8

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