Manual Description

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications and Information
- Identification Numbers
- Tools and Materials
- Component Location
- Schematics and Harnesses
- Theory of Operation
- Operation and Diagnostics
- Diagnostics
- Tests and Adjustments
- Repair
- Other

NOTE: Depending on the particular section or system being covered, not all of the above groups may be used.

The bleed tabs for the pages of each section will align with the sections listed on this page. Page numbering is consecutive from the beginning of the Safety section through the last section.

We appreciate your input on this manual. If you find any errors or want to comment on the layout of the manual please contact us.

All information, illustrations and specifications in this manual are based on the latest information at the time of publication. The right is reserved to make changes at any time without notice.

COPYRIGHT© 2002
Deere & Co.
John Deere Worldwide Commercial and Consumer Equipment Division
All rights reserved
Previous Editions
COPYRIGHT©

Safety
Specifications and Information
Gas Engine
Diesel Engine (3TNE74 / 3TNE78)
Diesel Engine (3TNE88)
Electrical
Power Train - Hydro
Power Train (2 Speed) - Hydro
Steering
Brakes
Hydraulics
Attachments
Miscellaneous

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Recognize Safety Information



MIF

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

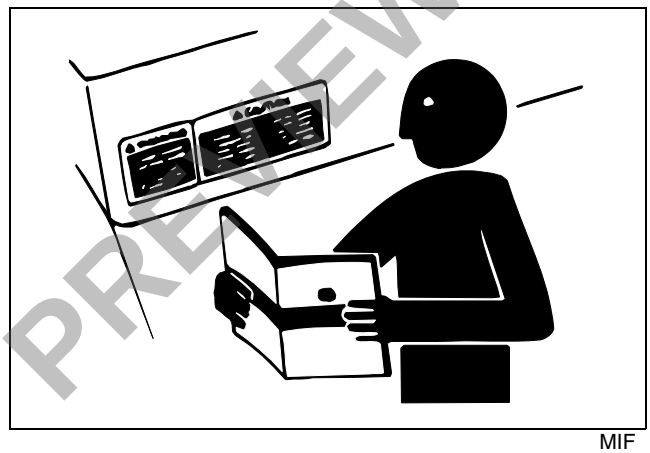
Follow recommended precautions and safe servicing practices.

Understand Signal Words

A signal word - DANGER, WARNING, or CAUTIon - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTIon safety signs. CAUTIon also calls attention to safety messages in this manual.

Replace Safety Signs

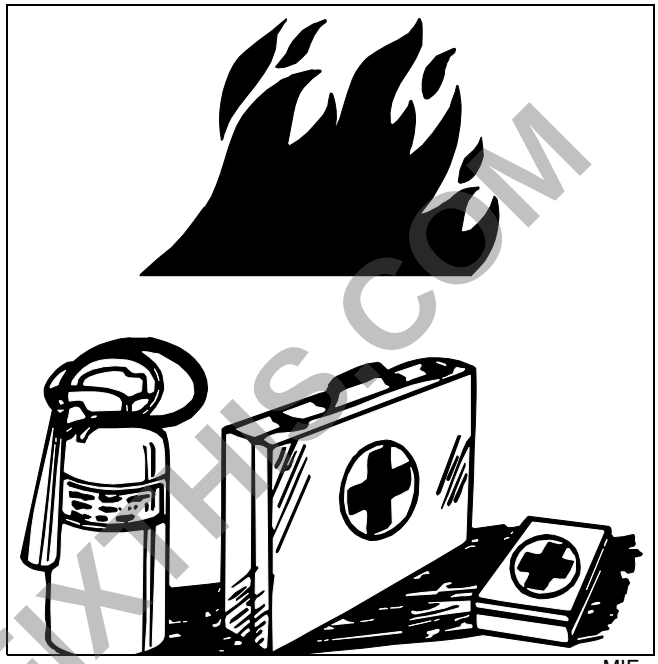


MIF

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely - Avoid Fires

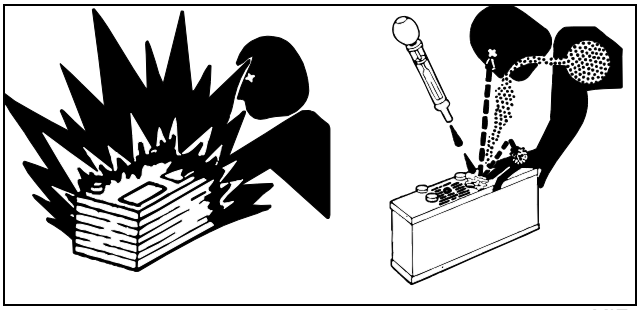
Be Prepared For Emergencies



MIF

- When you work around fuel, do not smoke or work near heaters or other fire hazards.
- Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.
- Make sure machine is clean of trash, grease, and debris.
- Do not store oily rags; they can ignite and burn spontaneously.
- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Use Care In Handling and Servicing Batteries

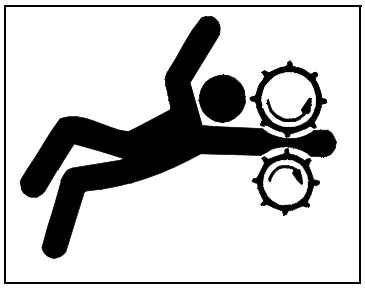


MIF

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Service Machines Safely



MIF

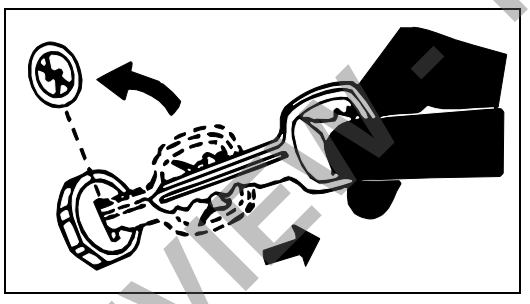
Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards. Use power tools only to loosen threaded parts and fasteners. For loosening and tightening hardware, use the correct size tools. Do not use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches. Use only service parts meeting John Deere specifications.

Park Machine Safely

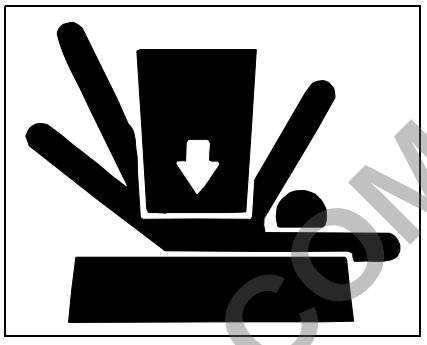


MIF

Before working on the machine:

1. Lower all equipment to the ground.
2. Stop the engine and remove the key.
3. Disconnect the battery ground strap.
4. Hang a “Do Not Operate” tag in operator station.

Support Machine Properly and Use Proper Lifting Equipment



MIF

If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

Lifting heavy components incorrectly can cause severe injury or machine damage. Follow recommended procedure for removal and installation of components in the manual.

Work In Clean Area

Before starting a job:

1. Clean work area and machine.
2. Make sure you have all necessary tools to do your job.
3. Have the right parts on hand.
4. Read all instructions thoroughly; do not attempt shortcuts.

Using High Pressure Washers

Directing pressurized water at electronic/electrical components or connectors, bearings, hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure and spray at a 45 to 90 degree angle.

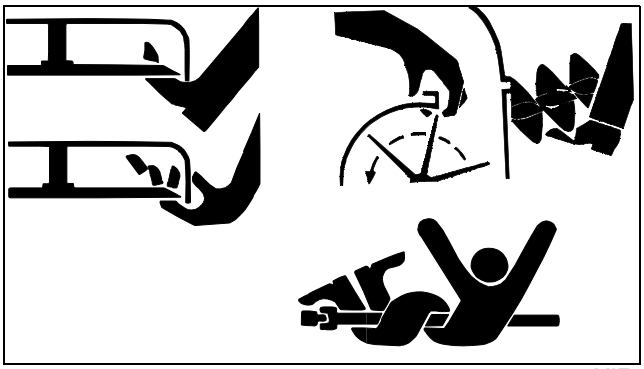
Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

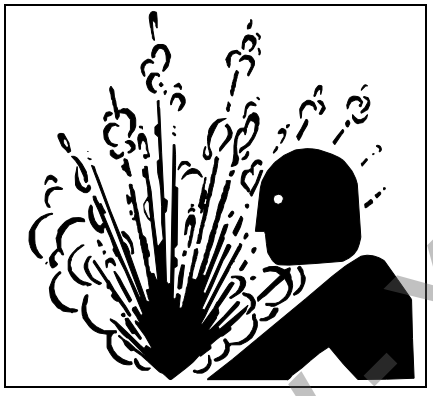
Avoid Injury From Rotating Blades, Augers and PTO Shafts



MIF

Keep hands and feet away while machine is running. Shut off power to service, lubricate or remove mower blades, augers or PTO shafts.

Service Cooling System Safely



MIF

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off machine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

Handle Chemical Products Safely



MIF

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

Dispose Of Waste Properly

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries. Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Do not pour waste onto the ground, down a drain, or into any water source. Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

Live With Safety



MIF

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

General Specifications 9
Metric Fastener Torque Values 9
Metric Fastener Torque Values - Grade 7 10
Inch Fastener Torque Values 11
O-Ring Seal Service Recommendations 12
Face Seal Fittings
with Inch Stud Ends Torque 12
Face Seal Fittings with Metric Stud Ends
Torque 13
O-Ring Face Seal Fittings 14
O-Ring Boss Fittings 14
Seal Tight Connector Fittings.....15
Service Recommendations
for STC Fittings 15
Fuel Specifications 16
Gasoline Specifications 16
Gasoline Storage.....17
Diesel Fuel Specifications 17
Diesel Fuel Lubricity 17
Diesel Fuel Storage.....17
Oil and Lubricant Specifications.....18
Engine Oil.....18
Hydrostatic Transaxle Oil 18
4WD Rear Axle Oil 19
Anti-Corrosion Grease.....19
Chassis Water Resistant Grease 20
Mower Spindle Grease.....20
Coolant Specifications 21
Engine Coolant.....21
Engine Coolant Drain Interval 21
Serial Number Locations 22
Machine Identification Number.....22
Gasoline Engine Serial Number 22
Diesel Engine Serial Number 22
Interlock System 23
Interlock System.....23

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Bleeding Fuel System
Diesel Engine (1435/1445/1545) 125
Diesel Engine (1565) 241
Bleeding Procedure
Hydraulic System 728
Bore, Cylinder
Diesel Engine (1435/1445/1545) 166
Diesel Engine (1565) 259
Gas Engine 86
Brake Switch Test 473
Brake System
Adjustments
Brake Switch, Adjustment 689
Turn Brake, Adjustment 688
Diagnosis
Brake Will Not Engage or Will Not Hold Machine 686
Excessive Brake Wear 687
Machine Pulls to One Side 687
Machine Will Not Move 686
Operation 685
Repair
Brake Linkage, Removal/Installation 690
Master Brake Pedal, Removal/Installation . . . 694
Park Brake, Lock Lever, Removal/Installation 696
Turn Brake Pedals, Removal/Installation 692
Specifications
Repair Specifications 683
Buzzer Circuit, Coolant Temperature Light and
Diagnosis
Diesel Engine 416
Gas Engine 413
Operation 410

C

Cable, Choke
Adjustment, Gas Engine 36
Assembly Removal/Installation, Gas Engine 53
Cable, Throttle
Adjustment, Diesel Engine (1435/1445/1545) . . . 126
Adjustment, Diesel Engine (1565) 229
Adjustment, Gas Engine 35
Assembly Removal/Installation
Diesel Engine (1435/1445/1545) 134
Assembly Removal/Installation, Gas Engine 53
California Proposition 65 Warning 4
Camshaft
End Play Check
Diesel Engine (1435/1445/1545) 177
Diesel Engine (1565) 235
End Play Check, Gas Engine 72
Follower Removal/Inspection/Installation, Diesel Engine (1435) 179
Follower Removal/Inspection/Installation, Diesel Engine (1445/1545) 180
Follower Removal/Inspection/Installation, Diesel Engine (1565) 267
Fuel Injection Pump, Removal/Inspection/Installation, Diesel Engine (1435) 197
Gear Removal/Installation
Diesel Engine (1435/1445/1545) 178
Repair
Diesel Engine (1435/1445/1545) 174
Diesel Engine (1565) 264
Repair, Gas Engine 73
Cap, Radiator Pressure Test, Gas Engine 43
Carburetor
Inspection, Gas Engine 46
Removal and Replacement, Gas Engine 45
Case, Gear
4WD, Removal/Installation 557
Caster Wheels, Yoke and Bearings Repair 790
Charge Battery 468
Charge Pressure Relief Valve Test 728
Charge Pump
Disassembly/Inspection/Assembly 522
Disassembly/Inspection/Assembly (2-Speed) 594
Flow Test 731
Charging Circuit
Diagnosis
Diesel Engine 370
Gas Engine 367
Operation
Diesel Engine 365
Checks, Tests and Adjustments
Hydraulic
Charge Pressure Relief Valve Test 728
Charge Pump Flow Test 731
Hydraulic Pump Flow Test 733
Implement Relief Valve Test 737
Oil Warm-Up Procedure 728
PTO Relief Valve Test 736
PTO Solenoid Valve Check 735
System Bleeding Procedure 728
Choke
Cable Adjustment, Gas Engine 36
Cable Assembly Removal/Installation, Gas Engine .53
Circuit Operation and Diagnosis
Charging Circuit Diagnosis
Diesel Engine 370
Gas Engine 367
Charging Circuit Operation
Diesel Engine 365
Cranking Circuit Diagnosis
Diesel Engine 362
Gas Engine 359
Cruise Control Circuit Diagnosis
Diesel Engine 462
Gas Engine 458
Engine Ignition Circuit Diagnosis
Gas Engine 431
Engine Ignition Circuit Operation

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

ENGINE - GAS TABLE OF CONTENTS

Table of Contents

Specifications 27
General Specifications 27
Test and Adjustment Specifications 27
Repair Specifications.....28
Torque Specifications.....30
Special or Required Tools 31
Other Materials.....31
Available Kits.....31
Diagnostics 32
Engine Troubleshooting Guide.....32
Starting Motor Troubleshooting Guide 34
Tests and Adjustments 35
Alternator Belt Tension Check and Adjustment 35
Throttle Cable and Governor Adjustment.....35
Choke Cable Adjustment.....36
Slow Idle Speed Adjustment 36
Fast Idle Speed Adjustment 37
Throttle Start Position Screw Adjustment.....38
Valve Clearance Adjustment 39
Cooling System Pressure Test.....40
Fuel Pump Pressure Test.....40
Fuel Pump Flow Test 41
Oil Pressure Test.....42
Cylinder Compression Test 43
Radiator Cap Pressure Test.....43
Thermostat Opening Test.....44
Radiator Bubble Test.....45
Repair.....45
Carburetor Removal and Replacement.....45
Carburetor Inspection.....46
High Altitude Jet Installation 48
Radiator Removal, Installation and Inspection.....48
Thermostat Removal and Installation.....50
Water Pump Removal and Installation (Thermostat Included) 51
Fuel Filter Removal and Installation 52
Throttle Cable Assembly Removal and Installation 53
Choke Cable Assembly Removal and Installation 53
Fuel Pump Removal and Installation.....54
Engine Removal and Installation 55
Flywheel Removal and Installation 58
Rocker Arm Cover Removal and Installation..... 59
Rocker Arm and Push Rods 60
Cylinder Head Removal and Installation..... 62
Exhaust Manifold Removal and Installation. 63
Intake Manifold Removal and Installation 63
Cylinder Head Recondition 64
Oil Pan and Strainer 68
Oil Pressure Regulating Valve..... 69
Oil Pump 69
Timing Gear Cover Removal and Installation..... 70
Timing Gear Backlash Check 71
Camshaft End Play Check..... 72
Camshaft 73
Governor Removal, Inspection and Installation..... 76
Piston and Connecting Rod Removal and Installation..... 79
Connecting Rod Bearing Clearance Check . 80
Connecting Rod Side Play Check..... 81
Cylinder Bore 86
Crankshaft and Main Bearings 88
Crankshaft Rear Oil Seal 91

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Differential Assembly
Hydrostatic Assembly (2-Speed) Separation/Installation 592
Hydrostatic Assembly Separation/Installation 521
Diode Test 477
Dispose of Waste Properly 5
Drive Shaft, Engine, Removal and Installation 518
Drive Shaft, Engine, Removal and Installation (2-Speed) . 588
Dual Temp Coolant Switch
Removal/Installation
Diesel Engine (1435/1445/1545) 142
Dual Temperature Coolant Switch Test 475

E

Electrical 478
Common Circuit Tests 282
Conductors for 12 Volt Circuits 283
Diagnostic Information 282
Theory of Operation Information 282
Wire Color Abbreviation Chart 282
Electrical Specifications
Test and Adjustment Specifications 284
End Play
Camshaft, Gas Engine 72
Engine Coolant Specifications 21
Engine Cover
Latch Removal/Installation 805
Engine Ignition Circuit
Diagnosis, Gas Engine 431
Operation, Gas Engine 428
Engine Oil Pressure Light and Buzzer Circuit
Diagnosis
Diesel Engine 407
Gas Engine 404
Engine Oil Pressure Switch Test 474
Engine Oil Specifications 18
Engine, Cover
Cover, Removal/Installation 804
Engine, Diesel
Drive Shaft Removal and Installation 518
(2-Speed) 588
Engine, Diesel (1435)
Camshaft Follower Removal/Inspection/
Installation 179
Crankshaft Front Oil Seal 169
Fuel Control & Governor Linkage Removal/
Installation 199
Fuel Injection
Nozzle Removal/Inspection/Installation 201
Nozzle Test 127
Pump Camshaft Removal/Inspection/
Installation 197
Pump Removal/Installation 193
Idler Gear Removal/Installation 183
Intake Manifold Removal/Installation 140
Oil Pan and Strainer 186
Oil Pressure Regulating Valve Removal/
Installation 190
Oil Pump Repair 187
Rocker Arm Disassembly/Assembly 147
Rocker Arm Removal/Installation 146
Specifications, General 95
Specifications, Repair 97
Specifications, Test and Adjustment 96
Thermostat Removal and Installation 190
Timing Gear Cover Removal/Installation 181
Timing Gear Housing Removal/Installation 185
Water Pump Removal/Installation 190
Engine, Diesel (1435/1445)
Fuel Tank Removal/Installation 811
Radiator Removal/Installation 135
Engine, Diesel (1435/1445/1545)
Air Cleaner Assembly Removal/Installation 138
Air Filter Restriction Indicator Removal/Installation 137
Air Intake System Leakage Test 123
Alternator Drive Belt Removal/Installation 133
Alternator Drive Belt Tension Check and
Adjustment 119
Camshaft End Play Check 177
Camshaft Gear Removal 178
Camshaft Repair 174
Connecting Rod Bearing Clearance Check 165
Connecting Rod Side Play Check 164
Cooling System Pressure Test 130
Crankshaft Rear Oil Seal 168
Crankshaft and Main Bearings 170
Cylinder Bore 166
Cylinder Compression Test 121
Cylinder Head Recondition 152
Cylinder Head Removal/Installation 150
Cylinder Head-to-Piston Clearance 157
Cylinder Leakdown Test 131
Diagnosis, Air Intake System Check 114
Diagnosis, Cooling System Check 115
Diagnosis, Engine Exterior Inspection 116
Diagnosis, Engine Oil/Lubrication System Check .116
Diagnosis, Engine Performance Check 117
Diagnosis, Fuel System Check 118
Dual Temperature Coolant Switch Removal/
Installation 142
Engine Removal/Installation 143
Exhaust Manifold Removal/Installation 140
Exhaust Pipe Removal/Installation 139
Flywheel Removal/Installation 173
Fuel Filter Removal/Installation 192
Fuel Injection Pump Timing Adjustment 130
Fuel Injection System Test 126
Fuel Pump Pressure Test 124
Fuel Pump Removal/Installation 207
Fuel Shutoff Solenoid Removal/Installation 207
Fuel System Bleeding Procedure 125

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

Table of Contents

Specifications 95
General Specifications 95
Test and Adjustment Specifications 96
Repair Specifications.....97
Special or Required Tools 105
Other Material.....106
Diagnostics 107
Engine Troubleshooting 108
Air Intake System Check 114
Cooling System Check 115
Engine Exterior Inspection 116
Engine Oil and Lubrication System Check .116
Engine Performance Check 117
Fuel System Check 118
Tests and Adjustments 119
Alternator Drive Belt Tension Check and Adjustment 119
Valve Clearance Adjustment 119
Valve Lift Check 121
Cylinder Compression Test 121
Engine Oil Pressure Test 122
Air Intake System Leakage Test 123
Fuel Pump Pressure Test.....124
Fuel System Leakage Test.....124
Fuel System Bleeding Procedure 125
Slow Idle Speed Adjustment 125
Throttle Cable Adjustment.....126
Fuel Injection System Test 126
Fuel Injection Nozzle Test - 1435 127
Fuel Injection Nozzle Test - 1445 and 1545 129
Injection Pump Timing Adjustment.....130
Cooling System Pressure Test.....130
Cylinder Leakdown Test.....131
Radiator Cap Pressure Test.....132
Thermostat Opening Test.....132
Repair.....133
Alternator Drive Belt Removal and Installation 133
Throttle Cable Assembly Removal and Installation 134
Radiator Removal, Installation and Inspection 135
Radiator Removal, Installation and Inspection 136
Air Preheater Removal and Installation 137
Air Filter Restriction Indicator Removal and Installation..... 137
Air Cleaner Assembly Removal and Installation..... 138
Muffler Removal and Installation 138
Exhaust Pipe Removal and Installation 139
Exhaust Manifold Removal and Installation..... 140
Intake Manifold Removal and Installation - 1435..... 140
Intake Manifold Removal and Installation - 1445 and 1545..... 140
Thermostat Removal and Installation 141
Dual Temperature Coolant Switch Removal and Installation..... 142
Engine Removal and Installation 143
Rocker Arm Cover Removal and Installation..... 145
Rocker Arm Assembly Removal and Installation - 1435 146
Rocker Arm Assembly Removal and Installation - 1445 and 1545 146
Rocker Arm Disassembly and Assembly - 1435..... 147
Rocker Arm Disassembly and Assembly - 1445 and 1545..... 149
Cylinder Head Removal and Installation.... 150
Cylinder Head Recondition 152
Piston-to-Cylinder Head Clearance Measurement..... 157
Piston and Connecting Rod Removal and Installation..... 158
Connecting Rod Side Play Check..... 164
Connecting Rod Bearing Clearance Check 165
Cylinder Bore 166
Crankshaft Rear Oil Seal 168
Crankshaft Front Oil Seal - 1435 169
Crankshaft Front Oil Seal - 1445 and 1545 170
Crankshaft and Main Bearings 170
Flywheel Removal and Installation 173
Camshaft 174
Camshaft Follower Removal, Inspection and Installation - 1435 179
Camshaft Follower Removal, Inspection and Installation - 1445 and 1545 180
Timing Gear Cover Removal and Installation -

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

ENGINE - DIESEL (3TNE88) TABLE OF CONTENTS

Table of Contents

Specifications 211
General Specifications 211
Tests and Adjustment Specifications 211
Operational Tests.....212
Repair Specifications.....212
Torque Values, Non-Standard Fasteners...216
Special Tools.....216
Other Materials.....216
Theory of Operation 217
Fuel and Air System Operation 217
Cooling System Operation 218
Lubrication System Operation 219
Diagnostics 220
Engine Troubleshooting 220
Diagnostic Table.....226
Tests and Adjustments 228
Fan and Alternator Drive Belt Adjustment ..228
Cylinder Compression Test 228
Slow Idle Adjustment.....229
Throttle Cable Adjustment.....229
Injection Pump Timing Adjustment.....230
Valve Clearance Adjustment 230
Connecting Rod Side Play Check 232
Connecting Rod Bearing Clearance Check232
Crankshaft End Play Check 233
Crankshaft Main Bearing Clearance Check 234
Valve Lift Check 235
Camshaft End Play Check 235
Timing Gear Backlash Check.....235
Fuel Injection Nozzle Test 236
Thermostat Opening Test.....237
Radiator Bubble Test.....238
Cooling System Pressure Test.....238
Radiator Pressure Cap Test.....239
Oil Pressure Test.....239
Fuel Transfer Pump Tests.....240
Fuel System Leakage Test.....241
Bleed Fuel System 241
Repair.....241
Engine Removal 241
Engine Installation 243
Rocker Arm Cover Removal and Installation 244
Rocker Arm Assembly 245
Cylinder Head and Valves Removal and Installation..... 247
Cylinder Head and Valves Disassembly and Assembly 248
Valve Seats..... 249
Valve Recession 250
Valve Guides 250
Valve Springs..... 251
Exhaust Manifold 251
Intake Manifold 251
Grind Valve Seats..... 252
Lap Valves 252
Measure Piston-To-Cylinder Head Clearance 253
Piston and Connecting Rod..... 253
Piston Inspection 256
Cylinder Bore..... 259
Crankshaft Rear Oil Seal..... 260
Crankshaft Front Oil Seal 261
Crankshaft and Main Bearings 261
Flywheel and Flex Plate..... 263
Camshaft 264
Camshaft Followers..... 267
Timing Gear Cover 268
Idler Gear..... 269
Timing Gear Cover Mounting Plate 269
Oil Pan and Strainer 270
Oil Pump..... 270
Thermostat and Water Pump..... 271
Radiator Removal, Installation and Inspection 272
Fuel Filter Assembly 273
Fuel Injection Pump..... 274
Fuel Injection Nozzles..... 276

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

ELECTRICAL TABLE OF CONTENTS

Table of Contents

General Information.....281
Reading Electrical Schematics.....281
Theory of Operation Information 282
Diagnostic Information.....282
Wire Color Abbreviation Chart.....282
Common Circuit Tests.....282
Conductors for 12 Volt Circuits.....283
Tools and Materials 283
Kit Numbers.....283
Specifications 284
Test and Adjustment Specifications 284
Component Location.....285
Gas Engine Electrical Components.....285
Diesel Engine Electrical Components 287
Schematics and Harnesses 289
Schematic and Wiring Harness Legend - Gas Engine.....289
Schematic and Wiring Harness Legend - Diesel Engine 291
Schematic (1400 Gas Series S/N -20000) .293
Wiring Harness (1400 Gas Series S/N -20000).....299
Schematic (1400 Gas Series S/N 20001-) .304
Wiring Harness (1400 Gas Series S/N 20001-).....310
Schematic (1400 Diesel Series S/N -20000).....315
Wiring Harness (1400 Diesel Series S/N -20000).....321
Schematic (1400 Diesel Series S/N 20001- ; 1500 Series S/N 10001- ; 1545 All).....327
Wiring Harness (1400 Diesel Series S/N 20001- ; 1500 Diesel Series S/N 10001- ; 1545 All).....333
Pulser Wiring Harness - Gas Engine.....339
Coil Pack Wiring Harness - Gas Engine.....340
Operation and Diagnostics.....341
Unswitched Power Circuit Operation - Gas Engine 341
Switched Power Circuit Operation - Gas Engine 341
Power Circuit Schematic - Gas Engine 343
Unswitched Power Circuit - Diesel Engine .344
Switched Power Circuit Operation - Diesel Engine.....344
Power Circuit Schematic - Diesel Engine .. 346
Power Circuit Diagnosis - Gas Engine..... 347
Power Circuit Diagnosis - Diesel Engine ... 352
Cranking Circuit Operation 357
Cranking Circuit Schematic 358
Cranking Circuit Diagnosis - Gas Engine .. 359
Cranking Circuit Diagnosis - Diesel Engine362
Charging Circuit Operation - Gas Engine .. 365
Charging Circuit Operation - Diesel Engine..... 365
Charging Circuit Diagnosis - Gas Engine .. 367
Charging Circuit Diagnosis - Diesel Engine..... 370
Operator Presence and PTO Interlock Circuit Operation - Gas Engine 372
Operator Presence and PTO Interlock Circuit Schematics - Gas Engine 374
Operator Presence and PTO Interlock Circuit Operation - Diesel Engine..... 376
Operator Presence and PTO Interlock Circuit Schematic - Diesel Engine..... 378
Operator Presence and PTO Interlock Circuit Diagnosis - Gas Engine 380
Operator Presence and PTO Interlock Circuit Diagnosis - Diesel Engine..... 387
Operator Presence and PTO Interlock Circuit Diagnosis - Diesel Engine..... 394
Engine Oil Pressure Light and Buzzer Circuit Operation 401
Engine Oil Pressure Light and Buzzer Circuit Schematic 402
Engine Oil Pressure Light and Buzzer Circuit Diagnosis - Gas Engine 404
Engine Oil Pressure Light and Buzzer Circuit Diagnosis - Diesel Engine..... 407
Coolant Temperature Light and Buzzer Circuit Operation 410
Coolant Temperature Light and Buzzer Circuit Schematic 411
Coolant Temperature Light and Buzzer Circuit Diagnosis - Gas Engine 413
Coolant Temperature Light and Buzzer Circuit Diagnosis - Diesel Engine..... 416
Air Preheater Circuit Operation - Diesel Engine..... 419
Air Preheater Circuit Schematic - Diesel Engine..... 420

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Air Preheater/Glow Plug Circuit Diagnosis - Diesel Engine 421
Hour Meter Circuit Operation 425
Hour Meter Circuit Schematic 426
Hour Meter Circuit Diagnosis 427
Engine Ignition and Fuel Transfer Pump Circuit Operation - Gas Engine 428
Engine Ignition and Fuel Transfer Pump Circuit Schematic - Gas Engine 429
Engine Ignition and Fuel Transfer Pump Circuit Diagnosis - Gas Engine 431
Fuel Shutoff Solenoid Circuit Operation - Gas Engine.....437
Fuel Shutoff Solenoid Circuit Schematic - Gas Engine.....438
Fuel Shutoff Solenoid Circuit Operation - Diesel Engine 439
Fuel Shutoff Solenoid Circuit Schematic - Diesel Engine 440
Fuel Shutoff Solenoid Circuit Diagnosis - Gas Engine.....441
Fuel Shutoff Solenoid Circuit Diagnosis - Diesel Engine 443
Cooling Fan Circuit Operation 446
Cooling Fan Circuit Schematic 447
Cooling Fan Circuit Diagnosis - Gas Engine 449
Cooling Fan Circuit Diagnosis - Diesel Engine 452
Cruise Control Circuit Operation 455
Cruise Control Circuit Schematic - Gas Engine 456
Cruise Control Circuit Schematic - Diesel Engine 457
Cruise Control Circuit Diagnosis - Gas Engine 458
Cruise Control Circuit Diagnosis - Diesel Engine 462
Tests and Adjustments 466
Ground Circuit Test 466
Battery Test.....467
Charge Battery 468
Battery Load Test.....468
Unregulated Amperage Test 469
Regulated Voltage Output Test 470
Starting Motor Loaded Amperage Draw Test 470
Starting Motor No-Load Amperage Draw and RPM Test..... 471
Air Preheater Test..... 472
Relay Test..... 472
Key Switch Test..... 473
Brake Switch Test..... 473
Seat Switch Test..... 474
Engine Oil Pressure Switch Test 474
Dual Temperature Coolant Switch Test..... 475
Glow Plug Test 476
Diode Test 477
PTO Switch Test..... 477
Light Switch Test 478
Cruise Control Switch Test 478
Cruise Control Magnet Test..... 479
Fuel Shutoff Solenoid Test 479
Repair..... 480
Battery Removal and Installation 480
Alternator Removal and Installation - 1420 and 1435..... 480
Alternator Removal and Installation - 1445/ 1545/1565..... 481
Alternator Repair..... 482
Starting Motor Removal and Installation.... 485
Starting Motor Removal and Installation - 1565..... 486
Cab 493
Schematic and Wiring Harness Legend - Gas Engine 493
Main Electrical Schematic..... 494
Cab Road Lights Schematics 497
W2 Front Road Lights Wiring Harness 499
W4 and W5 Front Position/Turn Lights Harness (LH and RH) 499
W3 Rear Road Lights Wiring Harness..... 500
W6 and W7 Rear Position/Turn Lights Harness (LH and RH) 501
W8 License Plate Light Wiring Harness 501
W9 Trailer Wiring Harness..... 502

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 505
Test and Adjustment Specifications 505
Repair Specifications.....505
Fabricated Tools.....506
Component Location.....507
Transaxle Component Location (Single Speed Range) 507
Hydrostatic Pedal and Neutral Safety Linkage Component Location.....508
4WD Component Location 509
Diagnostics 510
Differential Will Not Lock Up when Differential Lock Pedal Is Depressed 510
Machine Moves with Travel Pedals in Neutral Position 510
Machine Will Not Move when Travel Pedals Are Engaged 511
Machine Will Not Reach Full Speed.....512
PTO Shaft Turns with PTO Switch OFF 513
PTO Shaft Will Not Turn with PTO Switch ON 513
Rear Wheels Do Not Drive 514
Tests and Adjustments 515
Transaxle Neutral Creep Test and Adjustment 515
F-N-R Linkage Adjustment 516
Differential Lock Adjustment.....517
4WD Axle Pivot Pin Clearance Adjustment 517
Repair.....518
Engine Drive Shaft Removal and Installation 518
Transaxle Removal and Installation 519
Hydrostatic Assembly-to-Differential Assembly Separation and Installation 521
Charge Pump Disassembly, Inspection, and Assembly.....522
Hydrostatic Assembly - Disassembly, Inspection, and Assembly 525
Differential Disassembly, Inspection, and Assembly.....536
PTO Disassembly, Inspection, and Assembly.....546
4WD Drive Shaft Removal and Installation 556
4WD Gear Case Removal and Installation.557
4WD Gear Case Disassembly, Inspection, and Assembly 557
4WD Axle Removal and Installation 563
4WD Axle Disassembly, Inspection, and Assembly 564

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 579
Test and Adjustment Specifications 579
Repair Specifications.....579
Fabricated Tools.....580
Component Location.....581
Transaxle Component Location (1545 and 1565 2-Speed Range) 581
Hydrostatic Pedal and Neutral Safety Linkage Component Location.....582
Diagnostics 583
Travel Symptom Diagnosis 583
PTO Symptom Diagnosis 584
MFWD Symptom Flow 585
Tests and Adjustments 585
Transaxle Neutral Creep Test and Adjustment 585
F-N-R Linkage Adjustment 586
Differential Lock Adjustment.....587
4WD Axle Pivot Pin Clearance Adjustment 588
Repair.....588
Engine Drive Shaft Removal and Installation 588
Transaxle Removal and Installation 589
Hydrostatic Assembly-to-Differential Assembly Separation and Installation 592
Hydraulic Pump Removal, Disassembly, Inspection, and Assembly 594
Charge Pump Disassembly, Inspection, and Assembly.....598
Two Speed Range Transaxle - Removal, Inspection, and Installation.....600
Four Wheel Drive Output Unit - Removal, Inspection, and Assembly 610
Hydrostatic Assembly - Disassembly, Inspection, and Assembly 613
Differential Disassembly, Inspection, and Assembly.....624
PTO Disassembly, Inspection, and Assembly.....636
4WD Drive Shaft Removal and Installation 645
4WD Axle Removal and Installation 646
4WD Axle Disassembly, Inspection, and Assembly.....648

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 663
Test and Adjustment Specifications 663
Repair Specifications.....663
Special or Required Tools 663
Component Location.....664
Steering System Component Location.....664
Theory of Operation 664
Steering System Operation - Neutral 664
Steering System Operation - Power Turn ..665
Steering System Operation - Manual Turn.666
Diagnostics 667
High Steering Effort in Both Directions.....667
Hydraulic Oil Foams 668
Lost Motion at Steering Wheel 669
Machine Continues to Turn after Steering Wheel Has Returned to Center Position 669
Sluggish Steering Response 670
Steering Not Driving Straight.....671
Steering Operation Reversed.....673
Steering Wheel Vibration.....673
Tests and Adjustments 674
Steering Toe-in Check and Adjustment.....674
Steering System Leakage Test 674
Steering Valve Leakage Test 675
Repair.....676
Steering Console Cover Removal and Installation (1400 Series, S/N -20000) 676
Steering Console Cover Removal and Installation (1400 Series, S/N 20001-; 1500 Series, S/N 10001-).....677
Steering Valve Removal and Installation (1400 Series, S/N -20000).....678
Steering Valve Removal and Installation (1400 Series, S/N 20001-; 1500 Series, S/N 10001-).....679
Steering Cylinder Removal and Installation 680

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 683
Repair Specifications.....683
Component Location.....684
Brake System Component Location.....684
Theory of Operation 685
Brake System Operation 685
Diagnostics 686
Machine Will Not Move.....686
Brake Will Not Engage or Hold Machine....686
Excessive Brake Wear 687
Machine Pulls to One Side 687
Tests and Adjustments 688
Turn Brake Adjustment.....688
Brake Switch Adjustment 689
Repair.....690
Brake Linkage Removal and Installation....690
Turn Brake Pedals Removal and Installation 692
Master Brake Pedal Removal and Installation 694
Park Brake Lock Lever Assembly Removal and Installation 696

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 701
Test and Adjustment Specifications 701
Repair Specifications.....701
Component Location.....702
Hydraulic System Component Location 702
Auxiliary Hydraulic Kit Component Location.....703
Steering System Hydraulic Hose Routing ..704
Weight Transfer System Component Location.....705
Lift System Hydraulic Hose Routing.....706
Schematics and Harnesses 707
Main Hydraulic Schematic Without Optional Auxiliary Valve (1400 Series) 707
Main Hydraulic Schematic Without Optional Auxiliary Valve (1500 Series) 710
Main Hydraulic Schematic With Optional Auxiliary Valve (1400 Series) 713
Main Hydraulic Schematic With Optional Auxiliary Valve (1500 Series) 716
Single Spool Auxiliary Hydraulic Kit Schematic.....719
Double Spool Auxiliary Hydraulic Kit Schematic.....720
Operation and Diagnostics 721
Hydraulic System Operation.....721
Lift Circuit Operation.....721
Auxiliary Hydraulic Operation.....722
Lift System Diagnosis.....723
Auxiliary Hydraulic Diagnosis 725
Weight Transfer System Diagnosis 726
Tests and Adjustments 728
Hydraulic Oil Warm-Up Procedure 728
Hydraulic System Bleeding Procedure.....728
Charge Pressure Relief Valve Test 1400 Series 728
Charge Pressure Relief Valve Test 1500 Series 730
Charge Pump Flow Test (1400 Series Only) 731
Hydraulic Pump Flow and Implement Relief Valve Test (1500 Series Only) 733
PTO Solenoid Valve Check.....735
PTO Relief Valve Test.....736
Implement Relief Valve Test (1400 Series Only)..... 737
Repair..... 738
Oil Cooler Removal and Installation 738
Oil Cooler Inspection 739
Lift Lever Removal and Installation..... 739
Implement Lift Valve Removal and Installation..... 739
Implement Lift Valve Repair..... 740
Lift Cylinder Removal and Installation 741
Auxiliary Hydraulic Valve Repair..... 742
Steering Cylinder 743
Hydraulic Pump 744

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 751
Test and Adjustment Specifications 751
60-Inch Heavy Duty Snowblower 752
Repair Specifications.....753
Diagnostics 754
60, 62 and 72-Inch Mower Deck Diagnosis754
7-Iron V-Flex Deck 758
60 Heavy Duty Snowblower 762
Tests and Adjustments 763
Mower Deck Level Check and Adjustment.763
Checking V-Flex Deck Level 765
60, 62 and 72-inch Mower Drive Belt Tension Check and Adjustment 765
Adjusting V-Flex Deck Drive Belt Tension..766
Repair.....766
Rotate Mower Deck for Service.....766
Mower Deck Belt Shield Removal and Installation 768
Cleaning Grass and Debris From Machine 768
Rotating the V-Flex Mower Deck for Service 768
60, 62 and 72-Inch Mower Deck Drive Belt Removal 769
60, 62 and 72-Inch Mower Deck Drive Belt Installation 770
Removing and Installing V-Flex Mower Deck Drive Belts 771
Aligning Vertical Belt Drive 773
Mower Deck Blade Removal and Installation 775
Mower Deck Blade - Sharpen 775
Mower Deck Blade - Balance 776
Mower Deck Spindle Removal and Installation 776
Mower Deck Spindle Disassembly and Inspection 778
Mower Deck Drive Shaft Removal and Installation 784
Mower Deck Drive Shaft Repair 786
Mower Deck Gearbox Removal and Installation 787
Mower Deck Gearbox Repair 789
Caster Wheels, Yoke and Bearings 790
60 Snowblower Gear Case Inspection 792
Snowblower Gear Assembly..... 793
Snowblower Main Case Inspection..... 795
Snowblower Main Case Assembly 796
Installing Snowblower Rotor and Fan 798
Replacing Fan or Coupler..... 799
Installing Rotor Assembly 800
Replacing Rotor Bearing..... 800

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Table of Contents

Specifications 803
Repair Specifications.....803
Repair.....804
Engine Cover Removal and Installation 804
Engine Cover Latch Removal and Installation 805
Operator's Seat Platform Removal and Installation 807
Front Wheel Removal and Installation 808
Rear Wheel Removal and Installation 809
Fuel Tank Removal and Installation 811
Fuel Tank Removal and Installation - 1500 Series 812

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

INDEX

Numerics

2WD, Wheel, Rear, Removal/Installation 809
4WD
  Axle Disassembly/Inspection/Assembly 564
  Rear Wheel, Removal/Installation 809
4WD (2-Speed), Axle Disassembly/Inspection/Assembly . 648
4WD, Axle Disassembly/Inspection/Assembly 564

A

Adjusting Drive Belt Tension 766
Air Cleaner Removal/Installation
  Diesel Engine (1435/1445/1545) 138
  Gas Engine 45
Air Filter
  Restriction Indicator Removal/Installation
    Diesel Engine (1435/1445/1545) 137
Air Intake System
  Leakage Test
    Diesel Engine (1435/1445/1545) 123
Air Preheater
  Removal/Installation, Diesel Engine (1445/1545) . 137
Air Preheater Circuit
  Diagnosis, Diesel Engine 421
  Operation, Diesel Engine 419
Air Preheater Test 472
Alternator
  Belt Tension Check and Adjustment 35
  Diesel Engine (1435/1445/1545)
    Drive Belt Tension Check and Adjustment . . . 119
  Diesel Engine (1565)
    Drive Belt Tension Check and Adjustment . . . 228
  Drive Belt Removal/Installation
    Diesel Engine (1435/1445/1545) 133
  Regulated Voltage Output Test 470
  Removal/Installation
    Diesel Engine (1445/1545/1565) 481
    Gas Engine (1420)/Diesel Engine (1435) 480
  Repair 482
  Unregulated Amperage Test 469
Amperage Draw
  Starting Motor, Loaded, Test 470
  Starting Motor, No-Load, Test 471
Arm, Rocker
  Cover Removal/Installation, Gas Engine 59
  Disassembly/Assembly, Diesel Engine (1435) . . . 147
  Disassembly/Assembly, Diesel Engine
    (1445/1545) 149
  Removal/Inspection/Installation, Gas Engine 60
  Removal/Installation, Diesel Engine (1435) 146
  Removal/Installation, Diesel Engine (1445/1545) . 146
  Removal/Installation, Diesel Engine (1565) 245
Attachments
  60, 62-Inch Mower Deck Spindle
    Disassembly/Inspection 778
    Removal/Installation 776
  72-Inch Mower Deck Spindle
    Disassembly/Inspection 778
    Removal/Installation 776
  Caster Wheels, Yoke and Bearings Repair 790
  Mower Deck Belt Shield Removal/Installation 768
  Mower Deck Blade Balance 776
  Mower Deck Blade Removal/Installation 775
  Mower Deck Blade Sharpen 775
  Mower Deck Diagnosis 754
  Mower Deck Drive Belt Installation 770
  Mower Deck Drive Belt Removal 769
  Mower Deck Drive Shaft Removal/Installation 784
  Mower Deck Drive Shaft Repair 786
  Mower Deck Gearbox Removal/Installation 787
  Mower Deck Gearbox Repair 789
  Mower Deck Level Check and Adjustment 763
  Mower Drive Belt Tension Check and Adjustment .765
  Repair Specifications 753
  Rotate Mower Deck for Service 766
  Test and Adjustment Specifications 751
Auxiliary Hydraulic Operation 722
Auxiliary Hydraulic Valve Repair 742
Avoid Harmful Asbestos Dust 4
Avoid Injury
  Rotating Blades, Augers and PTO Shafts 5
Axle Shaft Housing Disassembly/Assembly 536
Axle (2-Speed)
  Shaft Housing Disassembly/Assembly 624
Axle (2-Speed), 4WD
  Pivot Pin Clearance Adjustment 588
Axle, 4WD
  Pivot Pin Clearance Adjustment 517
  Removal/Installation 563
Axle, 4WD (2-Speed)
  Removal/Installation 646

B

Backlash Timing Gear, Gas Engine 71
Battery
  Charge 468
  Load Test 468
  Removal and Installation 480
  Test 467
Bearing
  Connecting Rod Clearance Check, Gas Engine . . .80
  Crankshaft Main Bearing, Gas Engine 88
Belt Tension, Adjusting 766
Belt, Alternator Drive
  Diesel Engine (1435/1445/1545)
    Tension Check and Adjustment 119
  Diesel Engine (1565)
    Tension Check and Adjustment 228
  Removal/Installation
    Diesel Engine (1435/1445/1545) 133
  Tension Check and Adjustment 35
Belt, Deck, Remove & Install 771

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Diesel Engine (1565) 260
Rear Oil Seal, Gas Engine 91
Removal/Inspection/Installation
Diesel Engine (1435/1445/1545) 170
Diesel Engine (1565) 261
Removal/Inspection/Installation, Gas Engine 88
Creep, Transaxle Neutral (2-Speed)
Test and Adjustment 585
Creep, Transaxle Neutral, Test and Adjustment 515
Cruise Control Circuit
Diagnosis
Diesel Engine 462
Gas Engine 458
Operation 455
Cruise Control Magnet Test 479
Cruise Control Switch Test 478
Cylinder
Bore, Gas Engine 86
Compression Test, Gas Engine 43
Steering, Removal/Installation 680
Cylinder Bore
Diesel Engine (1435/1445/1545) 166
Diesel Engine (1565) 259
Cylinder Compression Test
Diesel Engine (1435/1445/1545) 121
Diesel Engine (156) 228
Cylinder Head
Clearance, to Piston
Diesel Engine (1435/1445/1545) 157
Diesel Engine (1565) 253
Recondition
Diesel Engine (1435/1445/1545) 152
Recondition, Gas Engine 64
Removal/Installation
Diesel Engine (1435/1445/1545) 150
Removal/Installation, Gas Engine 62
Cylinder Head and Valves
Disassembly/Assembly
Diesel Engine (1565) 248
Removal/Installation
Diesel Engine (1565) 247
Cylinder Leakdown Test
Diesel Engine (1435/1445/1545) 131

D

Diagnosis
Attachments
Mower Deck 754
Brake System
Brake Will Not Engage or Will Not Hold Machine 686
Excessive Brake Wear 687
Machine Pulls to One Side 687
Machine Will Not Move 686
Diesel Engine (1435/1445/1545)
Air Intake System Check 114
Cooling System Check 115
Exterior Inspection 116
Fuel System Check 118
Oil/Lubrication System Check 116
Performance Check 117
Diesel Engine (1565) 226
Differential (2-Speed)
Differential Will Not Lock Up when Differential Lock Pedal Is Depressed 583
Differential, Differential Will Not Lock Up when Differential Lock Pedal Is Depressed 510
4WD, Rear Wheels Do Not Drive 514
Hydraulic
Auxiliary Hydraulic 725
Lift System 723
Weight Transfer System 726
PTO
Shaft Turns with PTO Switch OFF 513
Shaft Will Not Turn with PTO Switch ON 513
Steering
High Steering Effort 667
Hydraulic Oil Foams 668
Lost Motion at Steering Wheel 669
Machine Continues to Turn 669
Operation Reversed 673
Sluggish Response 670
Steering Not Driving Straight 671
Steering Wheel Vibration 673
Transaxle
Machine Moves with Travel Pedals in Neutral Position 510
Machine Will Not Move when Travel Pedals Are Engaged 511
Machine Will Not Reach Full Speed 512
Transaxle (2-Speed)
Machine Moves with Travel Pedals in Neutral Position 583
Machine Will Not Move when Travel Pedals Are Engaged 583
Diagnosis Tests
4WD, Rear Wheels Do Not Drive 585
PTO
Shaft Turns with PTO Switch OFF 584
Diesel Fuel Lubricity 17
Diesel Fuel Specifications 17
Diesel Fuel Storage 17
Differential
Diagnosis, Differential Will Not Lock Up when Differential Lock Pedal Is Depressed 510
Disassembly/Inspection/Assembly 536
Lock Lever Disassembly/Assembly 536
Differential (2-Speed)
Diagnosis, Differential Will Not Lock Up when Differential Lock Pedal Is Depressed 583
Disassembly/Inspection/Assembly 624
Lock Lever Disassembly/Assembly 624

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Valve Clearance Adjustment 230
Valve Guides 250
Valve Lift Check 235
Valve Recession 250
Valve Seats 249
Valve Springs 251
Water Pump Removal/Installation 271
Engine, Gas
Air Cleaner Removal/Installation 45
Alternator Belt Tension Check and Adjustment . . . 35
Available Kits 31
Camshaft End Play Check 72
Camshaft Repair 73
Carburetor Inspection 46
Carburetor Removal and Replacement 45
Choke Cable Adjustment 36
Choke Cable Assembly Removal/Installation 53
Connecting Rod Bearing Clearance Check 80
Connecting Rod Side Play Check 81
Cooling System Pressure Test 40
Crankshaft Rear Oil Seal 91
Crankshaft and Main Bearings 88
Cylinder Bore 86
Cylinder Compression Test 43
Cylinder Head Recondition 64
Cylinder Head Removal/Installation 62
Drive Shaft Removal and Installation 518
(2-Speed) 588
Exhaust Manifold Removal/Installation 63
Fast Idle Speed Adjustment 37
Flywheel Removal/Installation 58
Fuel Filter Removal/Installation 52
Fuel Pump Flow Test 41
Fuel Pump Pressure Test 40
Fuel Pump Removal/Installation 54
General Specifications 27
Governor Adjustment 35
Governor Removal/Inspection/Installation 76
High Altitude Jet Installation 48
Intake Manifold Removal/Installation 63
Oil Pan and Strainer 68
Oil Pressure Regulating Valve Removal/Installation 69
Oil Pressure Test 42
Oil Pump Repair 69
Other Materials 31
Piston and Connecting Rod Removal/Installation . . 79
Push Rod Inspection 60
Radiator Bubble Test 45
Radiator Cap Pressure Test 43
Radiator Removal/Installation/Inspection 48
Removal/Installation 55
Repair Specifications 28
Rocker Arm Cover Removal/Installation 59
Rocker Arm Removal/Inspection/Installation 60
Slow Idle Speed Adjustment 36
Special or Required Tools 31
Starting Motor Troubleshooting Guide 34
Test and Adjustment Specifications 27
Thermostat Opening Test 44
Thermostat Removal/Installation 50
Throttle Cable Adjustment 35
Throttle Cable Assembly Removal/Installation 53
Throttle Start Position Screw Adjustment 38
Timing Gear Backlash 71
Timing Gear Cover Removal/Installation 70
Torque Specifications 30
Troubleshooting Guide 32
Valve Clearance Adjustment 39
Water Pump Removal/Installation 51
Exhaust Manifold
Removal/Installation
Diesel Engine (1435/1445/1545) 140
Diesel Engine (1565) 251
Removal/Installation, Gas Engine 63
Exhaust Pipe Removal/Installation
Diesel Engine (1435/1445/1545) 139
Extension, Crankcase, Diesel Engine (1445/1545) . . .186

F

FNR Linkage Adjustment 516
FNR Linkage Adjustment (2-Speed) 586
Fabricated Tools
Power Train 506
Power Train (2-Speed) 580
Fan, Cooling Circuit
Diagnosis
Diesel Engine 452
Gas Engine 449
Operation 446
Fast Idle Adjustment, Gas Engine 37
Filter, Fuel
Removal/Installation
Diesel Engine (1435/1445/1545) 192
Diesel Engine (1565) 273
Removal/Installation, Gas Engine 52
Final Drive (2-Speed)
Disassembly/Assembly 648
Flywheel
Removal/Installation
Diesel Engine (1435/1445/1545) 173
Diesel Engine (1565) 263
Removal/Installation, Gas Engine 58
Follower, Camshaft
Removal/Inspection/Installation, Diesel Engine (1435) 179
Removal/Inspection/Installation, Diesel Engine (1445/1545) 180
Removal/Inspection/Installation, Diesel Engine (1565) 267
4WD
Axle Removal/Installation 563
Clutch Disassembly/Inspection/Assembly 557

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

Level, Checking Mower Deck 765
Lift Circuit Operation 721
Lift Cylinder Removal/Installation 741
Lift Lever Removal/Installation 739
Lift System Hydraulic Hose Routing 706
Light Switch Test 478
Linkage
Brake, Removal/Installation 690
FNR, Adjustment 516
FNR, Adjustment (2-Speed) 586
Governor, Diesel Engine (1435) 199
Live With Safety 5
Load Test Battery 468
Lock Lever, Park Brake Removal/Installation 696

M

Manifold, Exhaust
Removal/Installation
Diesel Engine (1435/1445/1545) 140
Diesel Engine (1565) 251
Removal/Installation, Gas Engine 63
Manifold, Intake
Removal/Installation, Diesel Engine (1435) 140
Removal/Installation, Diesel Engine (1445/1545) . 140
Removal/Installation, Diesel Engine (1565) 251
Removal/Installation, Gas Engine 63
Miscellaneous
Engine Cover Latch Removal/Installation 805
Repair Specifications 803
Mounting Plate, Timing Gear Cover, Diesel Engine (1445/1545) 186
Mounting Plate, Timing Gear Cover, Diesel Engine (1565) 269
Mower Deck Belt Shield Removal/Installation 768
Mower Deck Blade Balance 776
Mower Deck Blade Removal/Installation 775
Mower Deck Blade Sharpen 775
Mower Deck Diagnosis 754
Mower Deck Drive Belt Installation 770
Mower Deck Drive Belt Removal 769
Mower Deck Drive Shaft Removal/Installation 784
Mower Deck Drive Shaft Repair 786
Mower Deck Gearbox Removal/Installation 787
Mower Deck Gearbox Repair 789
Mower Deck Level Check and Adjustment 763
Mower Deck Level, Checking 765
Mower Deck, Rotating for Service 768
Mower Drive Belt Tension Check and Adjustment . . . 765
Muffler Removal/Installation Diesel Engine (1435/1445/1545) 138

N

Neutral Creep Test and Adjustment 515
Neutral Creep Test and Adjustment, 2 Speed 585
Nozzle, Fuel Injection
Removal/Inspection/Installation, Diesel Engine (1435) 201
Removal/Inspection/Installation, Diesel Engine (1445/1545) 204
Removal/Inspection/Installation, Diesel Engine (1565) 276
Test, Diesel Engine (1435) 127
Test, Diesel Engine (1445/1545) 129
Test, Diesel Engine (1565) 236

O

O-Ring Boss Fittings 14
O-Ring Face Seal Fittings 14
Oil Cooler Inspection 739
Oil Cooler Removal/Installation 738
Oil Pressure Regulating Valve
Removal/Installation, Diesel Engine (1435) 190
Removal/Installation, Gas Engine 69
Oil Pump
Repair, Diesel Engine (1435) 187
Repair, Diesel Engine (1445/1545) 188
Repair, Diesel Engine (1565) 270
Repair, Gas Engine 69
Oil, Engine Pressure Test
Diesel Engine (1435/1445/1545) 122
Gas Engine 42
Operator Presence and PTO Interlock Circuit
Diagnosis
Diesel Engine 394
Gas Engine 380, 387
Operation
Diesel Engine 376
Gas Engine 372
Operator's Seat Platform, Removal/Installation 807

P

PTO
Diagnosis
PTO Shaft Turns with PTO Switch OFF 513
PTO Shaft Will Not Turn with PTO Switch ON .513
DiagnosisTests
PTO Shaft Turns with PTO Switch OFF 584
Disassembly/Inspection/Assembly 546
Disassembly/Inspection/Assembly, 2 Speed 636
PTO Interlock and Operator Presence Circuit
Diagnosis
Diesel Engine 394
Gas Engine 380, 387
Operation
Diesel Engine 376
Gas Engine 372
PTO Relief Valve Test 736
PTO Switch Test 477
Pan, Oil
Diesel Engine (1435) 186
Diesel Engine (1445/1545) 186
Diesel Engine (1565) 270

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

INDEX

Specifications
- 4WD Rear Axle Oil 19
- Anti-Corrosion Grease 19
- Chassis Water Resistant Grease 20
- Diesel Engine (1435)
  - General, ... 95
  - Repair 97
  - Test and Adjustment 96
- Diesel Engine (1435/1445/1545)
  - Other Materials 106
  - Special or Required Tools 105
- Diesel Engine (1445/1545)
  - General 95
  - Repair 101
  - Test and Adjustment 96
- Diesel Engine (1565)
  - General 211
  - Operational Tests 212
  - Other Materials 216
  - Repair 212
  - Special or Required Tools 216
  - Test and Adjustment 211
  - Torque 216
- Diesel Fuel 17
- Diesel Fuel Lubricity 17
- Diesel Fuel Storage 17
- Engine Coolant 21
- Engine Oil 18
- Gas Engine
  - Available Kits 31
  - General 27
  - Other Materials 31
  - Repair 28
  - Special or Required Tools 31
  - Test and Adjustment 27
  - Torque 30
- Gasoline 16
- Gasoline Storage 17
- Hydraulic
  - Repair 701
  - Test and Adjustment 701
- Hydrostatic Transaxle Oil 18
- Miscellaneous
  - Repair 803
- Mower Spindle Grease 20
- Repair Specifications
  - Attachments 753
  - Brake System 683
- Steering System
  - Repair 663
  - Test and Adjustment 663
- Test and Adjustment Specifications
  - Attachments 751

Starting Motor
- Disassembly/Assembly
  - Diesel Engine (1565) 487
- Engine, Gas
  - Troubleshooting Guide 34
- Gear Train Disassembly/Assembly
  - Diesel Engine (1565) 489
- Inspection and Test
  - Diesel Engine (1565) 488
- Loaded Amperage Draw Test 470
- No-Load Amperage Draw and RPM Test 471
- Removal/Installation 485
- Removal/Installation, Diesel Engine (1565) 486
- Solenoid Disassembly/Assembly
  - Diesel Engine (1565) 491

Steering Toe-In Check and Adjustment 674

Steering Cylinder Removal/Installation 743

Steering System
- Component Location 664
- Console Cover Removal/Installation (1400 Series, S/N -20000) 676
- Console Cover Removal/Installation (1400 Series, S/N 20001-), (1500 Series, S/N 10001-) 677
- Cylinder Removal/Installation 680
- Diagnosis
  - High Steering Effort 667
  - Hydraulic Oil Foams 668
  - Lost Motion at Steering Wheel 669
  - Machine Continues to Turn 669
  - Operation Reversed 673
  - Sluggish Response 670
  - Steering Not Driving Straight 671
  - Steering Wheel Vibration Diagnosis 673
- Leakage Test 674
- Operation
  - Manual Turn 666
  - Neutral 664
  - Power Turn 665
- Specifications
  - Repair 663
  - Test and Adjustment 663
- Valve
  - Leakage Test 675
  - Removal/Installation (1400 Series, S/N -20000) 678
  - Removal/Installation (1400 Series, S/N 20001-), (1500 Series, S/N 10001-) 679

Steering System Hose Routing, Hydraulics 704

Strainer, Oil
- Diesel Engine (1435) 186
- Diesel Engine (1445/1545) 186
- Diesel Engine (1565) 270
- Gas Engine 68

Support Machine Properly 3

Switch
- Brake, Adjustment 689
- Brake, Test 473
- Dual Temperature Coolant, Test 475
- Engine Oil Pressure, Test 474

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 25 of 834 pages

The full manual includes:

- All 834 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

John Deere 1420, 1435, 1445, 1545, 1565 Technical Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual