

F435521

660D Skidder

Workshop Manual

Serial Number 10EC1211 and up

ENG

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manual**

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0010 How To Use This Book.

1. Serial Numbers

This Manual covers the following range of 660 Skidder serial numbers:

10EC1079 and up

2. Component Numbers

The manual is divided into Chapters. Chapter 1, for example, details the engine system and includes the engine mounting, cooling system, coupling, exhaust and air intake systems. Each chapter starts with a Table of Contents giving details and page references.

Each Chapter is further divided into smaller sections. Each section is identified with a unique number that relates to the warranty system. For example, all parts used in the engine air intake system are found under section 1700.

3. Page Layout

At the top of each page are two sets of numbers.

The 'page' number, at the outside corner, consists of the four digit section number followed by the page number in that section. Each section is numbered sequentially from one. For example, 1800 - 3, would be the third page of Section 1800, Exhaust System.

The 'Issue' number also comprises two sets of numbers separated by a hyphen. The first numbers identify the issue date of that section of the manual. The numbers following the hyphen are the issue number of the section and are used to control updating in the field. For example, 06/2000 - 02, would indicate Revision 2, released June, 2000.

At the bottom of each page is a model identification and the type of manual.

The model identification may identify a unique product or a range of products (660 for example).

3. Page Layout

| Timberjack | Issue | Page |
|------------|----------|--------|
| | 01/99-01 | 280Q+1 |

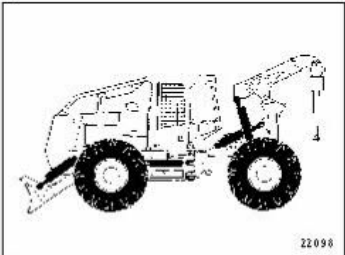
2800 Cylinders

1. Description and Operation

1.1 Cylinder Arrangements


With the exception of the cylinder used on the single arch, all the cylinders used for the decking blade, steering and boom / arch functions have the same general arrangement. The same service procedures can be used for all the cylinders.

The cylinders vary in dimensions and specifications and their component parts are not interchangeable.



22098

The internal arrangement of the cylinder used for the single arch function is different from the other cylinders. In this type of cylinder the piston is retained by a bolt and washer instead of a nut threaded onto the piston rod. All other service procedures are the same.



360/460 Workshop

4. Abbreviations

The abbreviations in the following list are used throughout Timberjack publications. While we have endeavored to use 'industry standard' abbreviations wherever possible, common practice mandates that historical usage be maintained.

| | | | |
|--------|---------------------|-------|-----------------|
| ADJ | adjust; adjuster | F | Fahrenheit |
| ADPTR | adapter | FD | front drive |
| ALT | alternator | FH | flat head |
| ANG | angle | FLT | flat foot |
| ASSY | assembly | FT | feet |
| AUX | auxiliary | FTG | fitting |
| AWG | American Wire Gage | FWD | forward |
| BATT | battery | GP | group |
| BLK | black; block | GR | grapple |
| BLU | blue | GRN | green |
| BRG | bearing | HARN | harness |
| BRK | brake | HD | heavy duty |
| BS | bar saw | HDLNR | headliner |
| BU | backup | HH | hex head |
| BUSH | bushing | HP | high pressure |
| C | Celsius; Centigrade | HSG | housing |
| CARR | carrier | HYD | hydraulic |
| CBL | cable | ID | inside diameter |
| CF | carrier frame | IN | inch; inches |
| CHK | check | INCL | includes |
| CM | centimeter | INSTR | instrument |
| CMPRSR | compressor | INT | internal |
| CONV | converter | JS | joystick |
| CRDL | cradle | LF | left front |
| CS | capscrew | LG | long |
| CTR | circle saw center | LH | left hand |
| CUM | Cummins | LK | lock |
| CYL | cylinder | LP | low pressure |
| D | diameter | LR | left rear |
| DEG | degree(s) | LWR | lower |
| DL | delimber | | |
| EL | elbow | | |
| EMGCY | emergency | | |
| ENG | engine | | |
| EXT | extension | | |

4. Abbreviations

| | | | |
|---------|------------------------|-------|----------------------|
| MACH | machine | SEC | section |
| MECH | mechanism | SH | socket head |
| MM | millimeter | SHT | sheet |
| MT | mount | SKT | socket |
| MTG | mounting; mating | SLTD | slotted |
| MTR | motor | SN | serial number |
| | | SPCL | special |
| OBS | obsolete | SPD | speed |
| OD | outside diameter | SPI | single pump isolated |
| OPR | operator | SPRSN | suppression |
| OPT | optional | SQ | square |
| ORN | orange | STD | standard |
| | | | |
| PC | piece | TEMP | temperature |
| PF | power frame | TJ | Timberjack |
| PHIL | Phillips | TS | topping saw |
| PIN | pinion | TYP | typical |
| PKG | package | | |
| PLCS | places | UPR | upper |
| PNL | panel | | |
| PO | part of... | VIO | violet |
| PRESS | pressure | VLV | valve |
| PSI | pounds/square inch | | |
| | | W/ | with |
| REF | reference | W/G | with guard |
| REINF | reinforce; reinforcing | W/O | without |
| REINFMT | reinforcement | WHT | white |
| REV | reverse | WLDMT | weldment |
| RF | right front | WS | windshield |
| RH | right hand | WSHR | washer |
| RLF | relief | | |
| RND | round | 5P | five port |
| RR | right rear | 8P | eight port |
| | | 9P | nine port |
| | | 10P | ten port |

0020 Chapters and Sections Contents

Chapters:

0000 .. General
1000 .. Power Unit
2000 .. Hydraulics
3000 .. Electrical
4000 .. Power Train
5000 .. Cab
6000 .. Frames
7000 .. Crane/Tree Handling
8000 .. not used in this manual
9000 .. Indexes

1. Chapters and Sections Contents

0000 General

0010 How to Use This Book

1. Serial Numbers
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0020 Chapters and Sections

0030 Foreword and Warranty

1. Foreword
2. Emissions Control Warranty Statement
3. Customer Feedback
4. Modifications or Repairs to Roll-over Protective Structures (ROPS)
5. Non-approved Field Product Changes
6. Sound Information
7. Registered Trademarks
8. Warranty

0040 Safety Information

1. General
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3. Understanding Signal Words
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5. General Safety Precautions
6. Operating Safety Precautions
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8. Transporting on Public Roads
9. Fire Prevention
10. What to Do if the Machine Catches Fire
11. 660D Skidder Safety Decals

0060 Component Locators

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1. Towing Over a Short Distance
2. Releasing the Brakes
3. Towing Procedure
4. Transporting the Skidder
5. Driving the Skidder on the Road
- 0080 Repairs
1. Troubleshooting Techniques
2. Welding
3. Hydraulics
4. Storage
 4.1 Preparing the Machine for Storage
 4.2 Monthly Storage Procedure
5. Periodic Maintenance Checklist

1. Chapters and Sections Contents

1000 Power Unit

1100

Engine

1. Description and Operation
 - 1.1 General
 - 1.2 Lubrication System
 - 1.3 Cooling System
 - 1.4 Air Intake and Exhaust System
 - 1.5 Turbocharger
 - 1.6 Fuel System
 - 1.7 Start Aid
 - 1.8 Engine Option Codes
 - 1.9 Other technical Documents
2. Engine Specifications
3. Engine Operation
 - 3.1 Pre-Start Checks
 - 3.2 Before Starting the Engine
 - 3.3 Starting the Engine
 - 3.4 Stopping the Engine
 - 3.5 Reducing Engine Load
4. Engine Break-In Period
5. Engine Oil
 - 5.1 Checking Engine Oil
 - 5.2 Changing Engine Oil and Filter
6. Inspecting Alternator Belt
7. Checking and Replacing Hub Vibrational Damper
8. Checking Engine Valve Lash Clearance
9. Replacing Start Aid Can
10. Engine Tune-Up
 - 10.1 Preliminary Engine Testing Before Tune-Up
 - 10.2 General Tune-Up Recommendations
11. Engine Troubleshooting

1300

Engine Mounting

1. Engine/Transmission Removal and Installation
 - 1.1 General
 - 1.2 Access to Engine/Transmission
 - 1.3 Wiring Harnesses
 - 1.4 Engine Hoses
 - 1.5 Engine Mechanical Connections
 - 1.6 Transmission Hoses
 - 1.7 Transmission Mechanical Connections
 - 1.8 Engine and Transmission Mounts
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1. Chapters and Sections Contents

- 1400 Fuel System
1. Description and Operation
 - 1.1 General
 - 1.2 Primary Filter (Fuel/water Separator)
 - 1.3 Final Fuel Filter
 - 1.4 Fuel Supply Pump
 - 1.5 Fuel Injection System
 - 1.6 Fuel Shut-off Solenoid
 2. Checking the Fuel level
 3. Draining Water from Fuel Tank
 4. Filters
 - 4.1 Checking the Primary Filter (Fuel/water Separator)
 - 4.2 Replacing the Primary Filter (Fuel/water Separator)
 - 4.3 Replacing the Final Fuel Filter
 - 4.4 Replacing the Final Fuel Filter Check Valve
 5. Bleeding the Fuel System
 6. Fuel Tank Removal and Instalation
 - 6.1 Fuel Tank Removal
 - 6.2 Fuel Tank Installation
-
- 1500 Cooling System
1. Description and Operation
 2. Cooling System Components
 3. Checking the Engine Coolant Level
 4. Checking the Engine Coolant Condition
 5. Replacing the Engine Coolant
 6. Flushing the Cooling System
 7. Cleaning the Oil Cooler and Radiator
 8. Radiator Removal and Installation
 - 8.1 Radiator Removal
 - 8.2 Radiator Installation
 9. Testing and Maintaining the Engine Coolant
 - 9.1 General
 - 9.2 Recommended Fluids
 - 9.3 Solder Bloom
 - 9.4 Cooling System Cleaners
 - 9.5 Maintenance Records
 10. Optional Sand Grill
 11. Cooling System Troubleshooting
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1. Chapters and Sections Contents

- 1600 Coupling
1. Description and Operation
2. Engine Removal and Installation
 2.1 Removal of Engine from Transmission
 2.2 Installation of Engine on Transmission
- 1700 Air Intake System
1. Description and Operation
 1.1 Air Cleaner
2. Air Intake Assembly
 2.1 Air Intake Components
 2.2 Assembly
3. Precleaner
4. Air Filter Replacement
5. Extending Turbocharger Life
- 1800 Exhaust System
1. Description and Operation
2. Exhaust System Assembly
 2.1 Exhaust System Installation
 2.2 Seal Clamp Installation

1. Chapters and Sections Contents

2000 Hydraulics

2000 Hydraulics Systems

1. Machine Hydraulics
2. Main Hydraulic System
 - 2.1 Description and Operation
 - 2.2 Checking the Hydraulic Fluid Level
 - 2.3 Draining the Hydraulic System
 - 2.4 Filling the Hydraulic System
 - 2.5 De-aerating the Main Hydraulic System
3. Hydraulic System Cleaning
4. Transmission Charge System
 - 4.1 Description and Operation
5. Hydraulic Testing
 - 5.1 Hydraulic Test Tools
 - 5.2 Hydraulic Circuit Testing
 - 5.3 Controls
 - 5.4 Compensators and Pressure Relief Valves
6. Schematics
 - 6.1 Line Sizing and Routing
 - 5.2 Reservoir Locations
 - 6.3 Hydraulic Schematic - Cable Skidder
 - 6.4 Hydraulic Schematic - Grapple Skidder
 - 6.5 Transmission Schematic
7. Hydraulic Schematic Symbols
 - 7.1 Miscellaneous Units
 - 7.2 Pumps and Motors
 - 7.3 Cylinders
 - 7.4 Methods of Operation
8. Hydraulic System Troubleshooting

1. Chapters and Sections Contents

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 - 1.1 General
 - 2. Work Pump Components
 - 3. Theory of Operation
 - 3.1 Variable Pumps
 - 3.2 Pressure Compensator
 - 3.3 Pump Unloading Solenoid
 - 4. Work Pump Specifications
 - 5. Work Pump Removal
 - 6. Work Pump Installation
 - 7. Work Pump Disassembly
 - 7.1 General
 - 7.2 Control Group
 - 7.3 Control Unit
 - 7.4 Control Unit Disassembly
 - 7.5 Control Unit Assembly
 - 7.6 Valve Plate Group
 - 7.7 Rotating Group
 - 7.8 Driveshaft Group
 - 7.9 Swashplate Group
 - 8. Work Pump Assembly
 - 8.1 Swashblock Group
 - 8.2 Driveshaft Group
 - 8.3 Rotating Group
 - 8.4 Valve Plate Group
 - 8.5 Control Group
 - 8.6 Shaft Torque Test
 - 9. Pump Delivery Tests
 - 9.1 General
 - 9.2 Pump Case Drain Flow Test
 - 9.3 Case Drain Flow Test Procedure
 - 10. Work Pump Troubleshooting
- 2120 Transfer Pump
- 1. Description and Operation
 - 2. Transfer Pump Troubleshooting
- 2400 Valves
- 1. Valves Locator
 - 2. Control Valves
 - 3. Auxilliary Valves
 - 4. Joystick Valve
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