

**John Deere  
JD850  
Crawler Bulldozer**



**TECHNICAL MANUAL**

**John Deere Dubuque Works  
TM-1164 (Mar-86)**



Litho in U.S.A.



## JD850 Crawler Bulldozer

Technical Manual  
TM-1164 (Mar-86)

### SECTIONAL CONTENTS OF THIS MANUAL

Section I - General Information	1
Section 1 - Wheels (Tracks)	1
Section 2 - Axles and Suspension System	2
Section 3 - Transmission	3
Section 4 - Engine	4
Section 5 - Engine Auxiliary Systems	5
Section 6 - Torque Converter	NOT USED 6
Section 7 - Traction (Engine) Clutch	NOT USED 7
Section 8 - Transfer Drive	8
Section 9 - Steering Systems	NOT USED 9
Section 10 - Service Brakes	NOT USED 10
Section 11 - Parking - Emergency Brakes	11
Section 13 - Miscellaneous Vehicle	NOT USED 13
Section 15 - Equipment Attaching	15

Continued on page 3



**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
manual**

**JustClickHere** 

**NOTE:**

**If there is no response to click on the link above,  
please download the PDF document first, and then  
click on it.**

**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto:admin@servicemanualperfect.com)**

**SECTIONAL CONTENTS—Continued**

Section 16 - Electrical Systems _____		<b>16</b>
Section 17 - Frame, Chassis or Supporting Structure _____		<b>17</b>
Section 18 - Operator's Station _____		<b>18</b>
Section 19 - Sheet Metal and Styling _____		<b>19</b>
Section 20 - Safety, Convenience and Miscellaneous _____		<b>20</b>
Section 21 - Main Hydraulic System _____	<b>NOT USED</b>	<b>21</b>
Section 22 - Pneumatic Systems _____	<b>NOT USED</b>	<b>22</b>
Section 30 - Winch _____	<b>NOT USED</b>	<b>30</b>
Section 31 - Loader _____	<b>NOT USED</b>	<b>31</b>
Section 32 - Bulldozer _____		<b>32</b>
Section 33 - Backhoe and Excavator _____	<b>NOT USED</b>	<b>33</b>
Section 34 - Grading Device _____	<b>NOT USED</b>	<b>34</b>
Section 35 - Scraper and Haulage Device _____	<b>NOT USED</b>	<b>35</b>
Section 36 - Conveyor and Elevating Device _____	<b>NOT USED</b>	<b>36</b>
Section 37 - Arch or Boom, or Cranes _____	<b>NOT USED</b>	<b>37</b>
Section 38 - Grapple _____	<b>NOT USED</b>	<b>38</b>
Section 39 - Shear _____	<b>NOT USED</b>	<b>39</b>

*Continued on page 5*



**SECTIONAL CONTENTS—Continued**

Section 40 - PTO or Winch Drive _____	<b>40</b>
Section 41 - Misc. Function Mechanical Drive _____	<b>NOT USED 41</b>
Section 42 - Ground Conditioning Tool _____	<b>42</b>
Section 43 - Swing, Rotation or Pivoting System _____	<b>NOT USED 43</b>
Section 44 - Cutting Mechanism _____	<b>NOT USED 44</b>
Section 45 - Forklifts _____	<b>NOT USED 45</b>
Section 46 - Automatic Control _____	<b>NOT USED 46</b>
Section 90 - System Testing _____	<b>90</b>

*The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and ICED standards.*





## SECTION AND GROUP CONTENTS OF THIS MANUAL

### SECTION I - GENERAL INFORMATION

- Group I - Contents, Index and Page List
- Group II - Introduction and Safety Information
- Group III - General Specifications
- Group IV - Predelivery, Delivery and After-Sale Services
- Group V - Lubrication

### SECTION 1 - TRACKS

- Group 0130 - Track Systems
- Group 0199 - Specifications and Special Tools

### SECTION 2 - AXLES AND SUSPENSION SYSTEMS

- Group 0201 - Drive Axle Housing and Support
- Group 0250 - Axle Shaft, Bearings and Reduction Gears
- Group 0299 - Specifications and Special Tools

### SECTION 3 - TRANSMISSION

- Group 0315 - Controls
- Group 0325 - Input Drive Shafts and U-Joints
- Group 0360 - Hydraulic System
- Group 0370 - Clutch Disconnect and Controls
- Group 0399 - Specifications and Special Tools

### SECTION 4 - ENGINE

- Group 0400 - Engine Removal and Installation
- Group 0401 - Crankshaft and Main Bearings
- Group 0402 - Camshaft and Valve Actuating Means
- Group 0403 - Connecting Rods and Pistons
- Group 0404 - Cylinder Block
- Group 0407 - Oiling System
- Group 0408 - Ventilating System
- Group 0409 - Cylinder Head and Valves
- Group 0410 - Exhaust Manifold
- Group 0413 - Fuel Injection System
- Group 0414 - Intake Manifold
- Group 0416 - Turbocharger
- Group 0417 - Water Pump
- Group 0418 - Thermostats, Housings and Piping
- Group 0419 - Oil Cooler
- Group 0420 - Fuel Filter
- Group 0421 - Fuel Transfer Pump
- Group 0422 - Starting Motor and Fastenings
- Group 0423 - Alternator and Generator Mounting
- Group 0429 - Fan Drive
- Group 0433 - Flywheel, Housing and Fasteners
- Group 0499 - Specifications and Special Tools

### SECTION 5 - ENGINE AUXILIARY SYSTEMS

- Group 0505 - Cold Weather Starting Aids
- Group 0510 - Cooling System
- Group 0515 - Speed Controls
- Group 0520 - Intake System
- Group 0530 - External Exhaust System
- Group 0540 - Mounting Frame
- Group 0560 - External Fuel Supply System
- Group 0599 - Specifications and Special Tools

### SECTION 8 - TRANSFER DRIVE

- Group 0841 - Housing and Covers
- Group 0851 - Gears, Shafts, Bearings
- Group 0899 - Specifications and Special Tools

### SECTION 11 - PARKING-EMERGENCY BRAKE

- Group 1111 - Active Elements
- Group 1115 - Controls Linkage
- Group 1160 - Hydraulic System
- Group 1199 - Specifications and Special Tools

### SECTION 15 - EQUIPMENT ATTACHING

- Group 1511 - Drawbar
- Group 1512 - Towbar

### SECTION 16 - ELECTRICAL SYSTEM

- Group 1671 - Batteries, Supports and Cables
- Group 1672 - Alternator, Regulator and Charging System Wiring
- Group 1673 - Lighting System
- Group 1674 - Wiring Harness and Switches
- Group 1675 - System Controls
- Group 1676 - Instruments and Indicators
- Group 1699 - Specifications and Special Tools

### SECTION 17 - FRAME, CHASSIS OR SUPPORTING STRUCTURE

- Group 1740 - Frame Installation
- Group 1746 - Frame Bottom Guards

### SECTION 18 - OPERATOR'S STATION

- Group 1810 - Operator Enclosure
- Group 1821 - Seat
- Group 1830 - Heating and Air Conditioning
- Group 1899 - Specifications and Special Tools

**SECTION AND GROUP CONTENTS OF THIS MANUAL—Continued**

**SECTION 19 - SHEET METAL AND STYLING**

- Group 1910 - Hood or Engine Enclosure
- Group 1921 - Grille and Grille Housing
- Group 1927 - Fenders

**SECTION 20 - SAFETY, CONVENIENCE  
AND MISCELLANEOUS**

- Group 2003 - Fire Extinguisher
- Group 2004 - Horn and Warning Devices
- Group 2006 - Cigar Lighter

**SECTION 32 - BULLDOZER**

- Group 3201 - Blade
- Group 3215 - Controls Linkage
- Group 3240 - Frames
- Group 3260 - Hydraulic System
- Group 3299 - Specifications and Special Tools

**SECTION 40 - PTO OR WINCH DRIVE**

- Group 4041 - Housing and Covers

**SECTION 42 - GROUND CONDITIONING TOOL**

- Group 4215 - Controls Linkage
- Group 4260 - Hydraulic System

**SECTION 90 - SYSTEM TESTING**

- Group 9005 - General Information - Seven Basic Steps of Diagnosis and Testing and Operational Checkout Procedure

Group 9010 - Engine

Group 9015 - Electrical System

Group 9020 - Power Train

Group 9025 - Hydraulic System (Flow Meter)

Group 9025A - Hydraulic System (Analyzer)

Group 9026 - Hydrostatic System

Group 9030 - Miscellaneous Components

Group 9031 - Heating and Air Conditioning

Group 9035 - Specifications and Special Tools

## ALPHABETICAL INDEX

### A

After-sale inspection	I-IV-18 - I-IV-32
Air cleaner	I-IV-22
Air intake hose	I-IV-22
Alternator-fan compressor belt tension	I-IV-22
Batteries	I-IV-28
Cab air filter	I-IV-28
Charging system	I-IV-31
Engine coolant conditioner filter	I-IV-24
Engine crankcase oil and filter element	I-IV-19
Final drive housing oil level	I-IV-21
Fluid leakage	I-IV-32
Fuel tank sump	I-IV-24 - I-IV-25
Hydraulic brake (park brake)	I-IV-31
Hydraulic oil level	I-IV-20
Hydrostatic transmission oil level	I-IV-20
Indicator lights and gauges	I-IV-29 - I-IV-30
Lubrication	I-IV-27 - I-IV-28
Radiator coolant level	I-IV-24
Splitter gearbox oil level	I-IV-21
Track shoe cap screws	I-IV-27
Track tension adjustment	I-IV-25 - I-IV-26
Air conditioning relay	1674-4
Air conditioning system	1830-5 - 1830-30
Blower motor	1830-29
Components	1830-30
Compressor	1830-5 - 1830-20
Compressor relief valve	1830-26
Condenser	1830-21 - 1830-22
Evaporator	1830-24
Expansion valve	1830-25
High temperature switch	1830-28
Receiver - dryer	1830-23
Superheat shut-off switch	1830-27
Thermal fuse	1830-27
Thermostatic temperature control switch	1830-25 - 1830-26
Air conditioning system testing	9031-2 - 9031-19
Component location	9031-2 - 9031-3
Diagnosing malfunctions	9031-8
Diagnosis flow chart	9031-10
Operational diagnostic chart	9031-9
Safety precautions	9031-11
Schematic	9031-11

### Air conditioning system testing—Continued

System service	9031-12 - 9031-19
Adding refrigerant - 12 to system	9031-18
Charging system	9031-16 - 9031-17
Discharging system	9031-14
Electrical testing	9031-14
Evacuating system	9031-15
Flushing system components	9031-19
Inspecting refrigerant hoses and tubing	9031-20
Leak testing	9031-19
Operational test	9031-14
Purging the system	9031-20
Pressure gauges	9031-12 - 9031-13
Visual operating checks	9031-7
Visual preliminary checks	9031-7
Air intake system, engine	0520-1 - 0520-2
Air restriction indicator	1676-2
Alarm, reverse warning	2004-2
Alternator and generator mounting	0423-1
Alternator, 16 amp	1672-2 - 1672-13
Components	1672-4
Test after assembly	1672-13
Alternator, 50 amp	1672-14 - 1672-26
Components	1672-16
Automatic control valve shut- off valve control	0315-15 - 0315-16
Automatic control valve variable orifice linkage	0315-12 - 0315-13
Auxiliary control linkage	4215-3 - 4215-6
Axle shaft, bearings, and reduction gears	0250-1 - 0250-18
Components	0250-1
Final drive housing cover with gears and shafts	0250-12 - 0250-18
Planet housing with pinions and shafts	0250-2 - 0250-11
Axles and suspension systems: Axle shaft, bearings and reduc- tion gears	0250-1 - 0250-18
Drive axle housing and support	0201-3 - 0201-6

### B

Batteries, support and cables	1671-3 - 1671-7
Charging battery	1671-7
Inspection	1671-4 - 1671-5
Testing	1671-5 - 1671-6
Battery disconnect switch	1674-2
Blades, bulldozer	3201-3 - 3201-5

Block, cylinder ..... 0404-1 - 0404-6  
Blower motor ..... 1830-29  
Brake valve ..... 1160-1 - 1160-4  
Brakes, parking-emergency:  
  Active elements ..... 1111-3 - 1111-5  
  Controls linkage ..... 1115-1 - 1115-2  
  Hydraulic system ..... 1160-1 - 1160-4  
Brush shields ..... 1910-6  
Bulldozer:  
  Blades ..... 3201-3 - 3201-5  
  Controls linkage ..... 3215-1 - 3215-2  
  Frames ..... 3240-1 - 3240-5  
  Hydraulic system ..... 3260-1 - 3260-21  
    Control valve ..... 3260-7 - 3260-12  
    Components ..... 3260-9 - 3260-10  
    Cylinders ..... 3260-13 - 3260-21  
    Dozer pump ..... 3260-1 - 3260-4  
    Reservoir and filters ..... 3260-5 - 3260-6  
  Bypass valve, transmission ..... 0360-38 - 0360-39

C

Cab ..... 1810-3 - 1810-6  
Cab relay ..... 1674-4  
Camshaft and valve actuating  
  means ..... 0402-1 - 0402-4  
Carrier rollers ..... 0130-4 - 0130-6  
Center frame ..... 1740-5  
Chain, track ..... 0130-14 - 0130-23  
Cigar lighter ..... 2006-1  
Circuit breakers ..... 1674-5  
Charge pump ..... 0360-31 - 0360-32  
Clutch disconnect and controls ..... 0370-1 - 0370-6  
  Clutch elements ..... 0370-3 - 0370-6  
  Controls ..... 0370-1 - 0370-2  
Cold weather starting aids ..... 0505-3 - 0505-5  
  Engine coolant heater ..... 0505-5  
  Starting aid adapter, line  
    and nozzle ..... 0505-4  
  Starting aid solenoid ..... 0505-3 - 0505-4  
  Starting aid switch ..... 0505-4  
Component location:  
  Air conditioning system ..... 9031-2 - 9031-3  
  Electrical system ..... 9015-2 - 9015-5  
  Engine system ..... 9010-2 - 9010-4  
  Heating system ..... 9031-2 - 9031-3  
  Hydraulic system (flow meter) ..... 9025-3  
  Power train system ..... 9020-2 - 9020-3  
Compressor ..... 1830-5 - 1830-20  
Compressor relief valve ..... 1830-26  
Condenser ..... 1830-21 - 1830-22  
Connecting rods and pistons ..... 0403-1 - 0403-6  
Control valve, bulldozer ..... 3260-7 - 3260-12  
Controls linkage, bulldozer ..... 3215-1 - 3215-2  
Coolant filter/conditioner ..... 0510-1 - 0510-3

Cooling systems, engine ..... 0510-1 - 0510-3  
Cover, PTO ..... 4041-3  
Cowl ..... 1910-4  
Crankshaft and main bearings ..... 0401-1 - 0401-7  
Crossbar and support ..... 0130-11 - 0130-12  
Cylinder block ..... 0404-1 - 0404-6  
Cylinder, bulldozer ..... 3260-13 - 3260-21  
Cylinder head and valves ..... 0409-1 - 0409-6  
Cylinder, track adjuster ..... 0130-30 - 0130-32

D

Delco-Remy starting motor ..... 0422-1 - 0422-10  
Delivery service ..... I-IV-18  
Diagnosing malfunctions:  
  Air conditioning system ..... 9031-8  
  Electrical system ..... 9015-8 - 9015-10  
  Engine system ..... 9010-5 - 9010-7  
  Heating system ..... 9031-1  
  Hydraulic system (flow meter) ..... 9025-19 - 9025-21  
  Power train system ..... 9020-10 - 9020-11  
  Track ..... 9030-1  
Double selector valve ..... 4260-1 - 4260-2  
Dozer - see bulldozer  
Dozer pump ..... 3260-1 - 3260-4  
Drawbar ..... 1511-3  
Drive axle housing and support ..... 0201-3 - 0201-6

E

Electrical sensing gauges and  
  indicators ..... 1676-4 - 1676-6  
Electrical system testing ..... 9015-1 - 9015-32  
  Block diagram ..... 9015-6  
  Component location ..... 9015-2 - 9015-5  
  Diagnosing malfunctions ..... 9015-8 - 9015-10  
  Precautions ..... 9015-11 - 9015-12  
  Schematic ..... 9015-7, 9015-31  
  Testing and adjustments ..... 9015-13 - 9015-30  
  Visual inspection ..... 9015-12  
  Wiring diagram ..... 9015-7, 9015-32  
Electrical systems:  
  Alternator, regulator and  
    charging system wiring ..... 1672-1 - 1672-26  
  Batteries, support and cables ..... 1671-3 - 1671-7  
  Instruments and indicators ..... 1676-1 - 1676-6  
  Lighting system ..... 1673-1 - 1673-2  
  Wiring harness and switches ..... 1674-1 - 1674-6  
Engine:  
  Alternator and generator  
    mounting ..... 0423-1  
  Camshaft and valve actuating  
    means ..... 0402-1 - 0402-5  
  Connecting rods and pistons ..... 0403-1 - 0403-7  
  Crankshaft and main bearings ..... 0401-1 - 0401-7  
  Cylinder block ..... 0404-1 - 0404-7

Engine—Continued

Cylinder head and valves	0409-1 - 0409-6
Exhaust manifold	0410-1- 0410-2
Fan drive	0429-1
Flywheel, housing and fastenings	0433-1 - 0433-2
Fuel filter	0420-1- 0420-2
Fuel injection system	0413-1 - 0413-11
Fuel transfer pump	0421-1 - 0421-4
Intake manifold	0414-1
Oil cooler	0419-1 - 0419-2
Oiling system	0407-1 - 0407-4
Removal and installation	0400-5- 0400-9
Starting motor and fastenings	0422-1 - 0422-10
Thermostats, housing and water piping	0418-1- 0418-2
Turbocharger	0416-1 - 0416-8
Ventilating system	0408-1
Water pump	0417-1- 0417-6
Engine auxiliary systems:	
Cold weather starting aids	0505-3 - 0505-5
Cooling systems	0510-1- 0510-3
External exhaust systems	0530-1
External fuel supply systems	0560-1 - 0560-2
Intake system	0520-1- 0520-2
Mounting frame	0540-1
Speed controls	0515-1 - 0515-6
Engine coolant temperature gauge	1676-2
Engine oil pressure gauge	1676-3
Engine side shields	1910-5
Engine system testing	9010-1- 9010-14
Component location	9010-2 - 9010-4
Diagnosing malfunctions	9010-5 - 9010-7
Testing and adjustments	9010-10- 9010-14
Theory of operation	9010-1
Visual inspection	9010-8 - 9010-9
Evaporator	1830-24
Exhaust manifold	0410-1 - 0410-2
Exhaust systems, engine	0530-1
Expansion valve	1830-25
External exhaust system	0530-1
Extinguisher, fire	2003-3 - 2003-4

**F**

Fan drive	0429-1
Fenders	1927-1
Filter, fuel	0420-1 - 0402-2
Filters, transmission	0360-109
Fire extinguisher	2003-3 - 2003-4
Flywheel, housing and fastenings	0433-1 - 0433-2
Forward and reverse speed control	0315-8 - 0315-11
Frame bottom guards	1746-1 - 1746-2
Frame, center	1740-5
Frame, engine mounting	0540-1

Frame, main	1740-3 - 1740-4
Frame, track	0130-34- 0130-39
Frames, bulldozer	3240-1 - 3240-5
Front crossbar and support	0130-11 - 0130-12
Front idler	0130-24- 0130-29
Fuel filter	0420-1 - 0420-2
Fuel injection system	0413-1 - 0413-11
Fuel injection nozzles	0413-8- 0413-11
Fuel injection pump	0413-1 - 0413-7
Repair	0413-13 - 0413-19
Fuel tank, engine	0560-1- 0560-2
Fuel transfer pump	0421-1 - 0421-4
Fuses	1674-6

**G**

Gauge, engine coolant temperature	1676-2
Gauge, engine oil pressure	1676-3
Gauge, transmission oil pressure	1676-1
Gauge, transmission oil temperature	1676-2
Greases	I-V-2
Grille and grille housing	1921-1 - 1921-2
Guard, frame bottom	1746-1- 1746-2

**H**

Heating system	1830-1- 1830-3
Heating system testing	9031-1 - 9031-3
High temperature switch	1830-28
Hood	1910-3
Horn	2004-1
Hour meter	1676-4
Hydraulic system (analyzer)	
testing	9025A-1 - 9025A-12
Hydraulic system pretest check sheet	9025A-4
Operational checks	9025A-3
Pretest inspection	9025A-3
Symptom index	9025A-5
Tests	9025A-6 - 9025A-12
Hydraulic system (flow meter)	
testing	9025-1 - 9025-28
Component location	9025-3
Diagnosing malfunctions	9025-19 - 9025-21
Testing and adjustment	9025-23 - 9025-28
Theory of operation	9025-5 - 9025-18
Visual inspection	9025-22
Hydraulic system, ground conditioning tool	4260-1 - 4260-4
Hydraulic system, hydrostatic transmission	0360-1 - 0369-110
Hydraulic system, parking-emergency brakes	1160-1 - 1160-4

Hydrostatic system testing . . . . .	9026-2 - 9026-155
Adjustment procedures . . . . .	9026-111 - 9026-155
Automatic control valve P4 pressure adjustment . . . . .	9026-133 - 9026-134
Automatic control valve vari- able orifice installation adjustment . . . . .	9026-125 - 9026-126
Automatic control valve vari- able orifice pressure adjustment . . . . .	9026-127 - 9026-128
Bleeding of the transmission control circuit . . . . .	9026-138 - 9026-140
Brake valve cable adjustment . . . . .	9026-114
Engine speed adjustment . . . . .	9026-153
Engine speed and transmission control valve synchroniza- tion . . . . .	9026-117 - 9026-120
FNR speed control lever linkage neutral adjustment . . . . .	9026-115 - 9026-116
Initial start-up of crawler after transmission repair . . . . .	9026-113
Pump displacement control valve neutral adjust- ment . . . . .	9026-154 - 9026-155
Return-to-neutral cable adjustment . . . . .	9026-148 - 9026-149
Steering linkage adjust- ment . . . . .	9026-143 - 9026-144
Steering neutral stop adjustment . . . . .	9026-145 - 9026-149
Steering valve stop adjust- ment on the transmission control valve . . . . .	9026-141 - 9026-142
Transmission automatic con- trol valve shutoff valve cable adjustment . . . . .	9026-152
Transmission control valve P1 overpressure relief valve adjustment . . . . .	9026-123
Transmission control valve P2 pressure regulating valve adjustment . . . . .	9026-124
Transmission control valve P3 speed control valve adjustment . . . . .	9026-129 - 9026-132
Transmission fluid heat-up procedure . . . . .	9026-121
Transmission full speed ad- justment . . . . .	9026-135 - 9026-137
Component location . . . . .	9026-36 - 9026-42

Hydrostatic system testing—Continued	
Diagnosing malfunctions . . . . .	9026-43 - 9026-107
Diagnostic equipment . . . . .	9026-44
Diagnostic procedures . . . . .	9026-45 - 9026-72
Automatic control valve accumulator (P9 check) 9026-70 - 9026-72	
Automatic control valve operational check . . . . .	9026-66 - 9026-69
Engine horsepower check 9026-49 - 9026-50	
Transmission charge pres- sure loss isolation . . . . .	9026-57 - 9026-58
Transmission control sys- tem tracking check . . . . .	9026-59 - 9026-65
Transmission pressures test . . . . .	9026-55 - 9026-56
Transmission volumetric ef- ficiency test . . . . .	9026-51 - 9026-54
Diagnostic symptoms . . . . .	9026-73 - 9026-108
Symptoms index . . . . .	9026-74
General Information . . . . .	9026-2 - 9026-34
Brake valve . . . . .	9026-32
Hydrostatic transmission . . . . .	9026-2 - 9026-17
Oil cooler bypass valve . . . . .	9026-33
Transmission control valve . . . . .	9026-18 - 9026-32
Visual inspection . . . . .	9026-34
Hydrostatic transmission . . . . .	0360-1 - 0360-110
Bypass valve . . . . .	0360-38 - 0369-39
Charge pump . . . . .	0360-31 - 0360-32
Cleanliness . . . . .	0360-2
Components . . . . .	0360-1
Hydrostatic transmission sump . . . . .	0360-108
Installation . . . . .	0360-4
Manifold valve assembly . . . . .	0360-64 - 0360-67
Motor displacement control valve . . . . .	0360-61 - 0360-63
Oil cooler . . . . .	0360-103
Oil cooler bypass valve . . . . .	0360-104 - 0360-105
Pump displacement control valve . . . . .	0360-33 - 0360-37
Start-up procedure . . . . .	0360-5
Transmission control valve . . . . .	0360-68 - 0360-102
Assembly . . . . .	0360-86 - 0360-101
Automatic control valve . . . . .	0360-88 - 0360-90
Automatic control valve shutoff valve . . . . .	0360-87
Automatic control valve variable orifice . . . . .	0360-92 - 0360-94
FNR valve . . . . .	0360-99 - 0360-100
P1 over pressure relief valve . . . . .	0360-86
P2 pressure regulator valve . . . . .	0360-86
Port plate and cover assembly . . . . .	0360-101

Hydrostatic transmission—Continued

Assembly—Continued

- Speed control valve . . . . . 0360-97 - 0360-98
- Steering valve . . . . . 0360-95 - 0360-96
- Steering valve orifices . . . . . 0360-91
- Disassembly . . . . . 0360-70 - 0360-84
- Automatic control valve . . . . . 0360-73 - 0360-75
- Automatic control valve shutoff valve . . . . . 0360-73
- Automatic control valve variable orifice . . . . . 0360-76 - 0360-77
- FNR valve . . . . . 0360-82 - 0360-83
- P1 over pressure relief valve . . . . . 0360-72
- P2 pressure regulator valve . . . . . 0360-72
- Speed control valve . . . . . 0360-84
- Steering valve . . . . . 0360-79 - 0360-81
- Steering valve orifices . . . . . 0360-75
- Transmission control valve assembly . . . . . 0360-78
- Transmission filters . . . . . 0360-109
- Transmission motor . . . . . 0360-40 - 0360-60
- Transmission operating pressure valve . . . . . 0360-106 - 0360-107
- Transmission pump . . . . . 0360-6 - 0360-30

Hydrostatic transmission sump . . . . . 0360-108

**I**

- Idler, track . . . . . 0130-24 - 0130-29
- Input drive shafts and U-joints . . . . . 0325-1 - 0325-2
- Instrument panel . . . . . 1676-1
- Instruments and indicators . . . . . 1676-1 - 1676-6
- Electrical sensing gauges and indicators . . . . . 1676-4 - 1676-6
- Mechanical sensing gauges and indicators . . . . . 1676-1 - 1676-3
- Intake manifold . . . . . 0414-1
- Intake system, engine . . . . . 0520-1 - 0520-2

**K**

- Key switch . . . . . 1674-3

**L**

- Light switch . . . . . 1673-2
- Lighter, cigar . . . . . 2006-1
- Lights . . . . . 1673-1
- Lubrication . . . . . I-V-1 - I-V-2

**M**

- Main bearings and crankshaft . . . . . 0401-1 - 0401-7
- Main frame . . . . . 1740-3 - 1740-4

Malfunctions, diagnosing:

- Air conditioning system . . . . . 9031-8
- Electrical system . . . . . 9015-8 - 9015-10
- Engine system . . . . . 9010-5 - 9010-7
- Heating system . . . . . 9031-1
- Hydraulic system (flow meter) . . . . . 9025-19 - 9025-21
- Power train system . . . . . 9020-10 - 9020-11
- Track . . . . . 9030-1
- Manifold, exhaust . . . . . 0410-1 - 0410-2
- Manifold, intake . . . . . 0414-1
- Manifold valve assembly . . . . . 0360-64 - 0360-67
- Mechanical sensing gauges and indicators . . . . . 1676-1 - 1676-3
- Motor, Delco-Remy starting . . . . . 0422-1 - 0422-10
- Motor displacement control valve . . . . . 0360-61 - 0360-63
- Motor, transmission . . . . . 0360-40 - 0360-60
- Mounting frame, engine . . . . . 0540-1
- Muffler . . . . . 0530-1

**N**

- Nozzle, fuel injection . . . . . 0413-8 - 0413-11

**O**

- Oil cooler bypass valve . . . . . 0360-104 - 0360-105
- Oil cooler, engine . . . . . 0419-1 - 0419-2
- Oil cooler, transmission . . . . . 0360-103
- Oiling system, engine . . . . . 0407-1 - 0407-4
- Oil pump . . . . . 0407-1 - 0407-3
- Components . . . . . 0407-2
- Oils . . . . . I-V-2

**P**

Parking-emergency brakes:

- Active elements . . . . . 1111-3 - 1111-5
- Controls linkage . . . . . 1115-1 - 1115-2
- Hydraulic system . . . . . 1160-1 - 1160-4

Pistons and connecting rods . . . . . 0403-1 - 0403-6

Power train system testing . . . . . 9020-1 - 9020-12

- Block diagram . . . . . 9020-9
- Component location . . . . . 9020-2 - 9020-3
- Diagnosing malfunctions . . . . . 9020-10 - 9020-11
- Parking brake and final drive cross section . . . . . 9020-8
- Theory of operation . . . . . 9020-5 - 9020-7
- Visual inspection . . . . . 9020-11

Predelivery service . . . . . I-IV-1 - I-IV-17

- Air cleaner . . . . . I-IV-1
- Air intake hose . . . . . I-IV-2
- Alternator - fan compressor belt tension . . . . . I-IV-6 - I-IV-7
- Batteries . . . . . I-IV-2
- Crankcase oil level . . . . . I-IV-3
- Engine speeds . . . . . I-IV-7 - I-IV-10
- Final check . . . . . I-IV-17



Predelivery service—Continued

Final drive housing oil level	I-IV-4
Fuel filters	I-IV-2
Fuel tank	I-IV-2
Fuel tank sump	I-IV-3
Hardware torque valves	I-IV-17
Hydraulic brake (park brake)	I-IV-14
Hydraulic oil level	I-IV-5
Hydrostatic transmission oil level	I-IV-5
Indicator lights and gauges	I-IV-12 - I-IV-13
Lights	I-IV-14
Lubrication	I-IV-15 - I-IV-16
Neutral lock lever operation	I-IV-16
Radiator	I-IV-3
Seat operation	I-IV-12
Splitter gearbox oil level	I-IV-4
Steering	I-IV-15
Track rollers, upper idlers and front idler oil levels	I-IV-3
Track tension adjustment	I-IV-10 - I-IV-11
Transmission shifting	I-IV-14
PTO cover	4041-3
Pump displacement control valve	0360-33 - 0360-37
Pump, dozer	3260-1 - 3260-4
Pump, engine oil	0407-1 - 0407-3
Pump, engine water	0417-1 - 0417-6
Pump, fuel injection	0413-1 - 0413-7
Pump, fuel transfer	0421-1 - 0421-4
Pump, transmission	0360-6 - 0360-30
Pump, transmission charge	0360-31 - 0360-32

R

Radiator	0510-1 - 0510-3
Receiver-dryer	1830-23
Recoil spring	0130-32 - 0130-34
Relays	1674-4
Reservoir and filters, bulldozer	3260-5 - 3260-6
Reverse warning alarm	2004-2
Rock guards and track guides	0130-3
Rocker arm assembly	0402-2, 0402-3, 0409-2
Roller, track	0130-7 - 0130-10
ROPS, with cab	1810-7
ROPS, without cab	1810-8

S

Safety information	I-II-1 - I-II-7
Seat	1821-1 - 1821-5
Service, delivery	I-IV-18
Shield, brush	1910-6
Shield, engine side	1910-5
Shoe track	0130-13
Side shields, engine	1910-5

Special tools:

Air conditioning system	1899-3
Alternator, regulator and charging system wiring	1699-8 - 1699-9
Batteries, support and cables	1699-7
Bulldozer hydraulic system	3299-5
Camshaft and valve actuating means	0499-28 - 0499-29
Clutch disconnect and controls	0399-21
Connecting rods and pistons	0499-30
Crankshaft and main bearings	0499-27
Cylinder block	0499-31
Cylinder head and valves	0499-32 - 0499-33
Drive axle housing and support	0299-5 - 0299-6
Electrical system testing	9035-11
Engine removal and installation	0499-26
Engine system testing	9035-3 - 9035-5
Fuel injection system	0499-34 - 0499-36
Heating and air conditioning system testing	9035-20
Hydraulic system	0399-15 - 0399-20
Hydraulic system testing	9035-15
Hydrostatic system testing	9035-18
Starting motor and fastenings	0499-39 - 0499-40
Track systems	0199-6 - 0199-8
Transfer drive gears, shafts, bearings	0899-2
Turbocharger	0499-37
Water pump	0499-38
Specifications and torque values	
Air conditioning system	1899-1 - 1899-2
Alternator and generator mounting	0499-24
Alternator, regulator and charging system wiring	1699-1 - 1699-5
Axle shaft, bearings and reduction gears	0299-2 - 0299-5
Batteries, support and cables	1699-1
Bulldozer frames	3299-1
Bulldozer hydraulic system	3299-2 - 3299-4
Camshaft and valve actuating means	0499-5 - 0499-6
Center frame	1799-1
Clutch disconnect and controls	0399-14
Connecting rods and pistons	0499-7 - 0499-8
Controls	0399-1
Cooling systems, engine	0599-1
Crankshaft and main bearings	0499-3 - 0499-4
Cylinder block	0499-9 - 0499-10
Cylinder head and valves	0499-12 - 0499-15
Drive axle housing and support	0299-1
Electrical system testing	9035-6 - 9035-9
Engine break-in	0499-1
Engine removal and installation	0499-2
Engine system testing	9035-1 - 9035-2

Specifications and torque values—Continued

Exhaust manifold	0499-15
External exhaust system	0599-11
External fuel supply system, engine	0599-1
Fan drive	0499-25
Flywheel, housing and fastenings	0499-25
Fuel filter	0499-20
Fuel injection system	0499-16 - 0499-17
Fuel transfer pump	0499-21
General	I-III-1 - I-III-4
Angle dozer dimensions	I-III-4
Blade	I-III-2
Brakes	I-III-1
Bulldozer dimensions	I-III-3
Capacities	I-III-2
Drawbar pull	I-III-1
Engine	I-III-1
Hydraulic cylinders	I-III-2
Hydraulic system	I-III-2
Power	I-III-1
Special equipment	I-III-2
Standard equipment	I-III-2
Steering	I-III-1
Tracks	I-III-2
Transmission	I-III-1
Heating and air conditioning sys- tem testing	9035-19
Hydraulic system	0399-3 - 0399-13
Hydraulic system (analyzer) testing	9035-14
Hydraulic system (flow meter) testing	9035-13
Hydrostatic system testing	9035-16 - 9035-17
Input drive shafts and U-joints	0399-2
Instruments and indicators	1699-6
Intake manifold	0499-17
Lighting system	1699-5
Miscellaneous components system testing	9035-21 - 9035-22
Mounting frame, engine	0599-1
Oil cooler	0499-21
Oiling system	0499-11 - 0499-12
Parking-emergency brakes active elements	1199-1
Parking-emergency brakes hydraulic system	1199-2
Power train system testing	9035-12
Speed controls, engine	0599-1
Starting motor and fastenings	0499-22 - 0499-24
Thermostats, housings and water piping	0499-20
Track systems	0199-1 - 0199-5
Transfer drive gears, shafts, bearings	0899-1 - 0899-2

Specifications and torque values—Continued

Turbocharger	0499-27 - 0499-20
Water pump	0499-19 - 0499-20
Wiring harness and switches	1699-6
Speed control, forward and reverse	0315-8 - 0315-10
Speed control support	0315-14
Speed controls, engine	0515-1 - 0515-6
Splitter housing:	
Gears, shafts, bearings	0851-1 - 0851-7
Housings and covers	0841-3 - 0841-4
Sprocket	0130-39 - 0130-40
Start-up procedure, transmission	0360-5
Starter switch	1674-3
Starting aids, cold weather	0505-3 - 0505-5
Starting circuit relay	1674-4
Starting motor and fastenings	0422-1 - 0422-10
Assembly	0422-9 - 0422-10
Components	0422-5 - 0422-6
Installation	0422-10
Operational theory	0422-1 - 0422-2
Repair	0422-5 - 0422-9
Testing solenoid	0422-3 - 0422-4
Steering linkage	0315-4 - 0315-7
Storage of crawler	I-IV-1
Sump, hydrostatic transmission	0360-108
Superheat shut-off switch	1830-27
Switch, battery disconnect	1674-2
Switch, high temperature	1830-28
Switch, key	1674-3
Switch, light	1673-2
Switch, starter	1674-3
Switch, starting aid	0505-4
Switch, superheat shut-off	1830-27
Switch, thermostatic temperature control	1830-25 - 1830-26
Switch, wiper	1674-3

T

Tests and adjustments:

Air conditioning system	9031-12 - 9031-19
Adding Refrigerant-12 to system	9031-18
Charging system	9031-16 - 9031-17
Discharging system	9031-14
Electrical testing	9031-14
Evacuating system	9031-15
Flushing system components	9031-19
Inspecting refrigerant hoses and tubing	9031-19
Leak testing	9031-19
Operational test	9031-14
Pressure gauges	9031-12 - 9031-13

Tests and adjustments—Continued

Battery	1671-5 - 1671-6
High-rate discharge test	1671-6
Specific gravity cell comparison test	1671-5
Compressor leak testing	1830-18 - 1830-19
Discharge to suction side leak test	1830-19
Shaft seal leak test	1830-18
Electrical system	9015-13 - 9015-30
Accessory circuits	9015-25 - 9015-30
Batteries	9015-13
Charging circuit - 16 amp alternator	9015-20 - 9015-22
Charging circuit - 50 amp alternator	9015-23 - 9015-25
Starting circuit	9015-14 - 9015-19
System short test	9015-13
Engine system	9010-10 - 9010-14
Air restriction indicator test	9010-14
Alternator and fan belt adjustments	9010-12
Aneroid adjustments	9010-14
Compression pressure test	9010-10
Engine oil pressure check	9010-10
Engine output check	9010-10 - 9010-11
Fuel transfer pump pressure test	9010-12
Intake manifold pressure test	9010-14
Radiator leakage check	9010-11
Speed control adjustment	9010-13
Heating system	9031-1 - 9031-3
Hydraulic system (analyzer)	9025A-6 - 9025A-12
Cylinder leakage test	9025A-10 - 9025A-11
Function leakage test	9025A-9 - 9025A-10
Hydraulic pump test	9025A-7 - 9025A-9
Parts list for tests	9025A-12
System relief valve test	9025A-6 - 9025A-7
Hydraulic system (flow meter)	9025-23 - 9025-28
Cycle time check	9025-25
Dozer circuit leakage check	9025-23
Flow meter tests	9025-26
Hydraulic circuit tests	9025-28
Hydraulic sump check	9025-25
Lift control valve lift check test	9025-23
Lift cylinder leakage check	9025-25
Oil lines and hoses check	9025-23
Pump flow tests	9025-26 - 9025-27
System relief pressure setting check	9025-25
Test diagnosis	9025-28

Tilt control valve lift check test	9025-24
Tilt cylinder leakage check	9025-24
Power train	9020-12
Track adjustment	9030-2 - 9030-3
Turbocharger	0416-2
Thermal fuse	1830-27
Thermostatic temperature control switch	1830-25 - 1830-26
Thermostats, housing and water piping	0418-1 - 0418-2
Towbar	1512-1
Track systems	0130-3 - 0130-40
Carrier rollers	0130-4 - 0130-6
Front idler	0130-24 - 0130-29
Front crossbar and support	0130-11 - 0130-12
Recoil spring	0130-32 - 0130-34
Rock guards and track guides	0130-3
Sprocket	0130-39 - 0130-40
Track adjuster cylinder	0130-30 - 0130-32
Track chain assembly	0130-14 - 0130-23
Track frame and pivot shaft	0130-34 - 0130-39
Track rollers	0130-7 - 0130-10
Track shoes	0130-13
Track testing	9030-1 - 9030-3
Adjustment	9030-2 - 9030-3
Diagnosing malfunctions	9030-1
Transfer drive:	
Gears, shafts, bearings	0851-1 - 0851-7
Housings and covers	0841-3 - 0841-4
Transmission control valve	0360-68 - 0360-102
Assembly	0360-86 - 0360-101
Automatic control valve	0360-88 - 0360-90
Automatic control valve shutoff valve	0360-87
Automatic control valve variable orifice	0360-92 - 0360-94
FNR valve	0360-99 - 0360-100
P1 over pressure relief valve	0360-86
P2 pressure regulator valve	0360-86
Port plate and cover assembly	0360-101
Speed control valve	0360-97 - 0360-98
Steering valve	0360-95 - 0360-96
Steering valve orifices	0360-91
Disassembly	0360-70 - 0360-84
Automatic control valve	0360-73 - 0360-75
Automatic control valve shutoff valve	0360-73
Automatic control valve variable orifice	0360-76 - 0360-77
FNR valve	0360-82 - 0360-83

Transmission control valve—Continued  
 Assembly—Continued  
 P1 over pressure relief valve . . . . . 0360-72  
 P2 pressure regulator valve . . . . . 0360-72  
 Speed control valve . . . . . 0360-84  
 Steering valve . . . . . 0360-79 - 0360-81  
 Steering valve orifices . . . . . 0360-75  
 Transmission control valve  
 assembly . . . . . 0360-78  
 Transmission controls . . . . . 0315-3 - 0315-16  
 Automatic control valve shut-  
 off valve control . . . . . 0315-15 - 0315-16  
 Automatic control valve variable  
 orifice linkage . . . . . 0315-12 - 0315-13  
 Components . . . . . 0315-3  
 Forward and reverse speed  
 control . . . . . 0315-3 - 0315-10  
 Speed control support . . . . . 0315-14  
 Steering linkage . . . . . 0315-4 - 0315-7  
 Transmission filters . . . . . 0360-109  
 Transmission motor . . . . . 0360-40 - 0360-60  
 Transmission oil filter indicator . . . . . 1676-5  
 Transmission oil pressure gauge . . . . . 1676-1  
 Transmission oil temperature gauge . . . . . 1676-2  
 Transmission operating pressure  
 valve . . . . . 0360-106 - 0360-107  
 Transmission pump . . . . . 0360-6 - 0360-30  
 Turbocharger . . . . . 0416-1 - 0416-8  
 Repair . . . . . 0416-3 - 0416-6  
 Testing . . . . . 0416-2

**V**

Vacuum relief valve . . . . . 0360-110  
 Valve, brake . . . . . 1160-1 - 1160-4  
 Valve, compressor relief . . . . . 1830-26  
 Valve, double selector . . . . . 4260-1 - 4260-2  
 Valve, expansion . . . . . 1830-24  
 Valve, manifold transmission . . . . . 0360-64 - 0360-67  
 Valve, motor displacement  
 control . . . . . 0360-61 - 0360-63  
 Valve, oil cooler bypass . . . . . 0360-104 - 0360-105  
 Valve, pump displacement control  
 valve . . . . . 0360-33 - 0360-37  
 Valve, transmission bypass . . . . . 0360-38 - 0360-39

Valve, transmission control . . . . . 0360-68 - 0360-102  
 Assembly . . . . . 0360-86 - 0360-101  
 Automatic control valve . . . . . 0360-88 - 0360-90  
 Automatic control valve  
 shutoff valve . . . . . 0360-87  
 Automatic control valve  
 variable orifice . . . . . 0360-92 - 0360-94  
 FNR valve . . . . . 0360-99 - 0360-100  
 P1 over pressure relief valve . . . . . 0360-86  
 P2 pressure regulator valve . . . . . 0360-86  
 Port plate and cover assembly . . . . . 0360-101  
 Speed control valve . . . . . 0360-97 - 0360-98  
 Steering valve . . . . . 0360-95 - 0360-96  
 Steering valve orifices . . . . . 0360-91  
 Disassembly . . . . . 0360-70 - 0360-84  
 Automatic control valve . . . . . 0360-73 - 0360-75  
 Automatic control valve  
 shutoff valve . . . . . 0360-73  
 Automatic control valve  
 variable orifice . . . . . 0360-76 - 0360-77  
 FNR valve . . . . . 0360-82 - 0360-83  
 P1 over pressure relief valve . . . . . 0360-72  
 P2 pressure regulator valve . . . . . 0360-72  
 Speed control valve . . . . . 0360-84  
 Steering valve . . . . . 0360-79 - 0360-81  
 Steering valve orifices . . . . . 0360-75  
 Transmission control valve  
 assembly . . . . . 0360-78  
 Valve, transmission operating  
 pressure . . . . . 0360-106 - 0360-107  
 Valve, vacuum relief . . . . . 0360-110  
 Valves and cylinder head, engine . . . . . 0409-1 - 0409-6  
 Ventilating system, engine . . . . . 0408-1  
 Vibration damper . . . . . 0415-1 - 0415-2

**W**

Water manifold . . . . . 0418-1 - 0418-2  
 Water pump, engine . . . . . 0417-1 - 0417-6  
 Windshield, ROPS without cab . . . . . 1810-7  
 Windshield washer . . . . . 1810-10 - 1810-11  
 Windshield wiper, front . . . . . 1810-9  
 Windshield wiper, rear . . . . . 1810-10  
 Wiper switch . . . . . 1674-3  
 Wiring harness . . . . . 1674-1