

JOHN DEERE

COMPONENT TECHNICAL MANUAL

PowerTech® 2.9 L

Diesel Engines

CTM125 14JUN01 (English)




Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

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

Use this component technical manual in conjunction with the machine technical manual. An application listing in the introduction identifies product-model/component type-model relationship. See the machine technical manual for information on component removal and installation, and gaining access to the components.

This manual is divided in three parts: repair, operation and tests, tools and specifications. Repair sections contain necessary instructions to repair the component. Operation and tests sections help you

identify the majority of routine failures quickly. Tools and specifications sections are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values

Information is organized in groups for the various components requiring service instruction.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

Read each block of material completely before performing service to check for differences in procedures or specifications. Follow only the procedures that apply to the engine model number you are working on. If only one procedure is given, that procedure applies to all the engines in the manual.

CALIFORNIA PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

CD03523,00000DB -19-03JAN01-1/1

John Deere Dealers

The changes listed below make your CTM obsolete. **Discard CTM 125 dated 26JUN98 and replace with this new manual.** Also, copy these pages and route through your Service Department.

INTRODUCTION

- Updated engine application charts.

GROUP 01

- Updated engine model designation.
- Updated engine oil and coolant application guidelines.

GROUP 02

- Updated engine lifting and cleaning procedures.

GROUP 03

- Updated sealant application guidelines.
- Updated engine break-in procedure.

GROUP 05

- Revised procedure for installation of rocker arm shaft.

GROUP 10

- Added general information on connecting rods to include new Precision Joint™ connecting rod.
- Revised procedures for removal, inspection and installation of connecting rods, bearings and caps.
- Updated information for cap and plug installation in cylinder block.

GROUP 15

- Added procedure to remove crankshaft pulley with bolt-in weights.

GROUP 20

- Added procedure to remove crankshaft front oil seal.
- Added procedure to remove timing gear cover.

GROUP 25

- Revised torque specification for oil drain plug.

GROUP 30

- Updated information to install coolant heater.
- Added exploded view showing radiator installed by John Deere.

GROUP 35

- Updated turbocharger boost pressure specifications.
- Added exploded view showing air filters installed by John Deere.

GROUP 40

- Updated injection pump specifications including dynamic timing and power rate.
- Added procedure to replace throttle lever on STANADYNE pump.
- Added procedure to adjust aneroid on STANADYNE pump.
- Added procedure to remove and install DELPHI/LUCAS fuel injection pump.
- Added information on Rate Shaping Nozzle (RSN).

GROUP 110

- Added procedure to test cooling system and radiator cap.

GROUP 120

- Added information for DELPHI/LUCAS fuel injection pump operation.
- Added procedure to test shut-off solenoid on DELPHI/LUCAS pump.
- Added information on cold start advance operation and test.

Introduction

- Added information on light load advance operation and test.
- Added information on Rate Shaping Nozzle (RSN).

GROUP 200

- All essential tools listed throughout this manual are consolidated in this group for ease of reference.

GROUP 205

- All service equipment and recommended tools listed throughout this manual are consolidated in this group for ease of reference.

GROUP 210

- All dealer fabricated tools listed throughout this manual are consolidated in this group for ease of reference.

GROUP 300

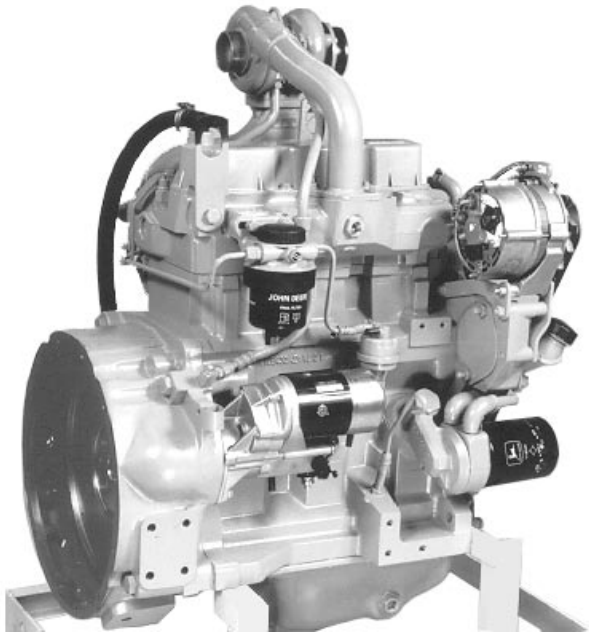
- All repair specifications listed throughout this manual are consolidated in this group for ease of reference.

GROUP 305

- All test and diagnostic specifications listed throughout this manual are consolidated in this group for ease of reference.

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POWERTECH[®] 2.9 L Engines



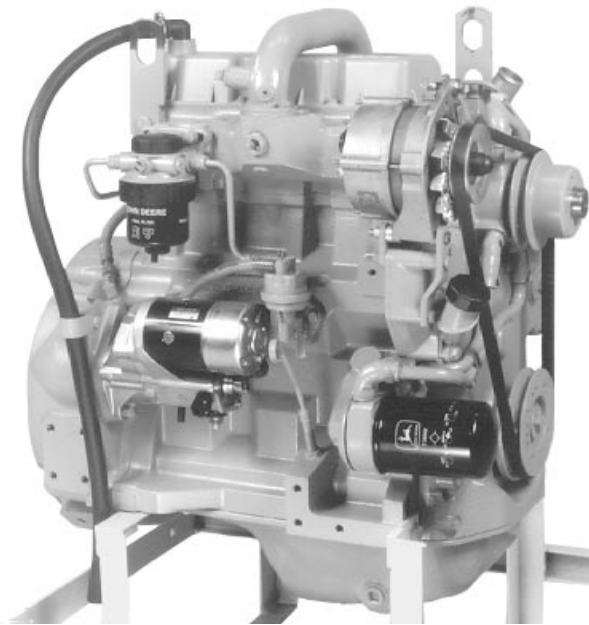
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3/4 Right Rear View



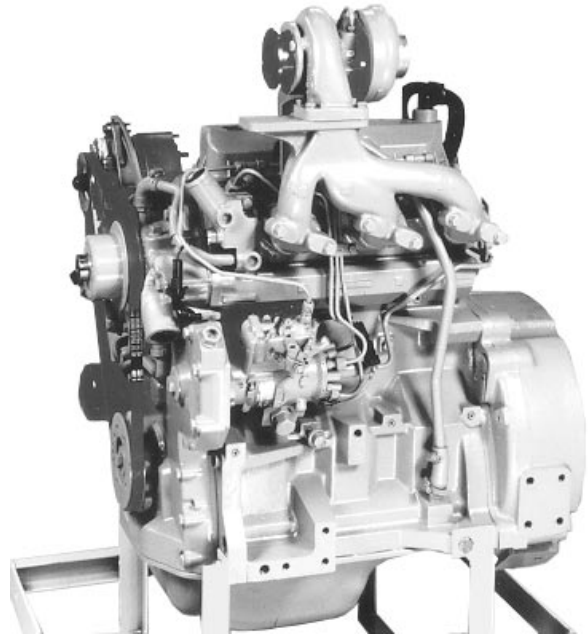
CD30518A -UN-22FEB01

3/4 Left Rear View



CD30519A -UN-23FEB01

3/4 Right front View



CD30520A -UN-23FEB01

3/4 Left front View

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DPSG,OUOE003,33 -19-28DEC98-1/1

Engine application chart

This component technical manual (CTM125) covers repair of *POWERTECH*® 2.9 L engines produced by John Deere SARAN “CD” (France) and by John Deere TORREON “PE” (Mexico). Refer to the chart below to know which applications is covered by this manual.

NOTE: Information on how to remove and reinstall the engine in the vehicle is contained in the relevant Technical Manual.

5000-SERIES TRACTORS

(Agritalia-built)

	ENGINE MODEL	OBSERVATIONS
5300/5300N	CD3029DAT01	Non-Certified
5400/5400N	CD3029TAT02	Non-Certified

5010-SERIES TRACTORS

(Agritalia-built)

	ENGINE MODEL	OBSERVATIONS
5310/5310N	CD3029DAT50	Certified
5410/5410N	CD3029TAT50	Certified

5010-SERIES TRACTORS

(Augusta-built)

	ENGINE MODEL	OBSERVATIONS
5105	PE3029DLV51	Certified
5205	PE3029DLV52	Certified
5210	CD3029DLV50	Certified
5210	PE3029DLV50	Certified
5210	PE3029DLV53	Certified
5210	PE3029DLV54	Certified
5310/5310N	CD3029TLV50	Certified
5310/5310N	PE3029TLV50	Certified
5310/5310N	PE3029TLV52	Certified

5020-SERIES TRACTORS

(Augusta-built)

	ENGINE MODEL	OBSERVATIONS
5220	PE3029DLV53	Certified
5320/5320N	PE3029TLV52	Certified

ENGINES FOR GOLDONI TRACTORS

Engine model

	Observations
CD3029DFG21	Non-Certified
CD3029DFG22	Non-Certified
CD3029TFG21	Non-Certified
CD3029DFG51	Certified
CD3029TFG51	Certified

Introduction

OEM Engines (Non-Certified)

Engine Model	Observations	Engine Model	Observations
CD3029DF120		CD3029TF120	
CD3029DF121		CD3029TF121	
CD3029DF122		CD3029TF123	
CD3029DF123		CD3029TF160	Auxiliary drive
CD3029DF124		CD3029TF161	Auxiliary drive
CD3029DF128	Power Unit	CD3029TF162	Auxiliary drive
CD3029DF160	Auxiliary drive	CD3029TF163	Auxiliary drive
CD3029DF161	Auxiliary drive	PE3029TF120	
CD3029DF162	Auxiliary drive	PE3029TF160	Auxiliary drive
CD3029DF163	Auxiliary drive		
CD3029DF164	Auxiliary drive		
CD3029DF165	Auxiliary drive		
PE3029DF120			
PE3029DF160	Auxiliary drive		

OEM Engines (Certified)

Engine Model	Observations	Engine Model	Observations
CD3029DF150		CD3029TF150	
CD3029DF151		CD3029TF151	
CD3029DF152		CD3029TF152	
CD3029DF180		CD3029TF180	Auxiliary drive
PE3029DF150		PE3029TF150	
PE3029DF180	Auxiliary drive	PE3029TF180	Auxiliary drive

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Information relative to emissions regulations

Depending on the final destination, engines can meet the emissions regulations according to the US Environmental Protection Agency (EPA), California Air Resources Board (CARB) and for Europe, the Directive 97/68/EC relating the measures against the emissions of particles and gaseous pollutant from internal combustion engines. Such engines are called "CERTIFIED" and receive an emission label stuck on the engine.

The regulations prohibit tampering with the emission-related components listed below which would render that component inoperative or to make any adjustment on the engine beyond published specifications. It is also illegal to install a part or

component where the principal effect of that component is to bypass, defeat, or render inoperative any engine component or device which would affect the engine's conformance to the emission regulations.

To summarize, it is illegal to do anything except return the engine to its original published specifications.

List of emission-related components:

- Fuel injection system
- Intake manifold
- Turbocharger
- Charge air cooling system
- Piston

Contents

INDX

- Group 00—Safety
- Group 01—General Information
- Group 02—Engine Mounting
- Group 03—Engine Rebuilt Guide
- Group 05—Cylinder Head and Valves
- Group 10—Cylinder Block, Liners, Pistons and Rods
- Group 15—Crankshaft, Main Bearings and Flywheel
- Group 20—Camshaft and Timing Gear Train
- Group 25—Lubrication System
- Group 30—Cooling System
- Group 35—Air Intake and Exhaust System
- Group 40—Fuel System
- Group 100—Engine Tune-Up
- Group 105—Engine System - Operation
- Group 110—Engine System - Diagnosis and Tests
- Group 115—Air Intake System - Operation and Tests
- Group 120—Fuel System - Operation and Tests
- Group 200—Essential Tools
- Group 205—Service Equipment & Recommended Tools
- Group 210—Self-manufactured tools
- Group 300—Repair Specifications
- Group 305—Diagnostic and Test Specifications

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

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Contents

	Page		Page
Group 00—Safety	00-1	Knurl Valve Guides	05-8
Group 01—General Information		Clean and Inspect Valve Seats	05-9
Engine Identification	01-1	Lapping Valve Seats	05-9
OEM Engine Option Code Label	01-2	Check Valve Recess	05-10
Emission Certified Engine Label	01-2	Remove Valve Seat Inserts	05-10
Engine References	01-3	Valve Seat Insert Installation	05-12
Basic Engine Specifications	01-4	Check Valves	05-13
Longitudinal Cut-Away	01-5	Grind Valves	05-13
Transversal Cut-Away	01-6	Check Valve Spring Compression	05-14
General Engine Description	01-7	Inspect Valve Rotators	05-14
Diesel Fuel	01-8	Install Valves	05-14
Handling and Storing Diesel Fuel	01-8	Install Cylinder Head	05-16
Diesel Engine Oil	01-9	Torque Turn Tightening Method	05-17
Lubricant Storage	01-10	Disassembling and Checking Rocker Arm Shaft	05-18
Mixing of Lubricants	01-10	Reassembling Rocker Arm Shaft	05-19
Diesel Engine Coolant	01-11	Install Rocker Arm Assembly	05-20
Operating in Warm Temperature Climates	01-12	Valve Clearance	05-20
Metric Bolt and Cap Screw Torque Values	01-13	Valve Adjustment Sequence	05-21
Unified Inch Bolt and Cap Screw Torque Values	01-14	Install Rocker Arm Cover	05-22
Group 02—Engine Mounting		Final Work	05-23
Clean Engine	02-1	Group 10—Cylinder Block, Liners, Pistons and Rods	
Engine Lifting Procedure	02-1	Exploded View	10-1
Engine Repair Stand	02-2	Connecting Rods - General Information	10-2
Mounting Engine on Repair Stand	02-3	Remove Pistons and Connecting Rods	10-3
Group 03—Engine Rebuilt Guide		Measure Cylinder Liner Bore	10-4
Engine Disassembly Sequence	03-1	Remove Cylinder Liners	10-4
Sealant Application Guidelines	03-2	Cylinder Liner Deglazing	10-5
Engine Re-Assembly Sequence	03-3	Cylinder Block Cleaning	10-5
Engine break-in guidelines	03-4	Check Piston Cooling Jets	10-6
Perform engine break-in	03-4	Cam Follower Bore Measure	10-6
Diesel Engine Break-In Oil	03-5	Measure Camshaft Bore	10-6
Group 05—Cylinder Head and Valves		Remove Camshaft Bushing	10-7
Cylinder Head - Exploded View	05-1	Install Camshaft Bushing	10-8
Check Valve Lift	05-2	Measure Crankshaft Bore	10-8
Remove Cylinder Head	05-3	Replace Crankshaft Bearing Caps	10-9
Clean Injection Nozzle Bores	05-5	Cylinder Block Top Deck Flatness	10-9
Valve Actuating Parts	05-5	Measure Cylinder Liner Protrusion	10-10
Remove Valves and Valve Springs	05-6	Liner Packing Installation	10-11
Checking Cylinder Head Flatness	05-6	Liner O-Ring Installation	10-11
Clean Valve Guides	05-6	Install Cylinder Liners	10-12
Measure Valve Guides	05-7	Measure Connecting Rod Bearing	10-13

Continued on next page

	Page		Page
Rod Bearing Clearance	10-14	Measure Camshaft Journal	20-4
Measure Connecting Rod Bushing	10-14	Measure Height of Cam Lobe	20-5
Replace Connecting Rod Bushing (3029D)	10-15	Replace Camshaft Gear	20-5
Replace Connecting Rod Bushing (3029T)	10-15	Tachometer Pick-Up Pin Removal	20-5
Measure Piston Pin	10-17	Install Camshaft	20-6
Clean and Inspect Pistons	10-17	Check Cam Follower	20-7
Measure Piston Pin Bore	10-18	Idle Gear End Play Measure	20-7
Piston Top Ring Groove	10-18	Remove Front Plate	20-8
Second and Third Piston Ring Grooves	10-18	Idle Gear Bushing and Shaft Measure	20-9
Piston Head and Skirt Checking	10-19	Idle Gear Bushing Replacement	20-10
Install Piston Rings	10-20	Remove Idle Shaft	20-10
Piston Rings Staggering	10-20	Install Idle Shaft Spring Pin	20-11
Piston/Liner Set Information	10-21	Install Idle Shafts	20-12
Assemble Piston and Connecting Rod	10-22	Front Plate Gasket	20-13
Install Piston and Connecting Rod	10-22	Install Front Plate	20-14
Measure Piston Protrusion	10-25	Install Upper Timing Gear Train	20-15
Complete Final Assembly	10-26	Install Lower Timing Gear Train	20-16
		Install Oil Deflector	20-17
		Timing Gear Cover Identification	20-17
		Install Timing Gear Cover	20-18
		Install Crankshaft Front Oil Seal	20-19
		Install Wear Ring	20-19
		Install Auxiliary Equipment	20-20
Group 15—Crankshaft, Main Bearings and Flywheel		Group 25—Lubrication System	
Remove Crankshaft Pulley	15-1	Oil Cooler Identification	25-1
Install Crankshaft Pulley	15-1	Remove Oil Cooler	25-1
Check Pulley Wobble (Engine With Front PTO)	15-2	Replace Oil Cooler Nipple	25-2
Remove PTO Pulley	15-2	Install Oil Cooler on Standard Engine	25-2
Install PTO Pulley	15-3	Replace Oil Cooler/Filter Bracket on Engine with Auxiliary Drive	25-3
Flywheel Removal	15-4	Replace Oil Filter Adapter on Engine with Remote Oil Filter	25-4
Flywheel Ring Gear Replacement	15-5	Remove Oil Pressure Regulating Valve	25-4
Install Ball Bearing	15-5	Replace Oil Pressure Regulating Valve Seat	25-5
Install Flywheel	15-6	Install Oil Pressure Regulating Valve	25-5
Remove Crankshaft Rear Oil Seal	15-6	Replace Oil Dipstick Guide	25-6
Flywheel Housing Replacement	15-9	Replace Oil By-Pass Valve	25-6
Install Oil Seal/Wear Sleeve	15-9	Replace Oil Pump Strainer	25-7
Crankshaft End Play Measure	15-11	Remove Oil Pump	25-7
Remove Crankshaft	15-11	Oil Pump Gear Axial Clearance	25-7
Crankshaft Inspection	15-12	Oil Pump Gear Radial Clearance	25-8
Check Crankshaft Journal Diameter	15-13	Oil Pump Specifications	25-8
Determine Crankshaft Main Bearing Clearance Using PLASTIGAGE®	15-14	Oil Pump Installation	25-9
Regrind Crankshaft	15-14	Install Oil Pan	25-11
Crankshaft Regrinding Guidelines	15-15		
Micro-Finishing Specifications	15-16	Group 30—Cooling System	
Replace Crankshaft Gear	15-16	Water Pump — Exploded View	30-1
Install Main Bearing Inserts	15-17	Remove Water Pump	30-1
Install 2-Piece Thrust Bearing	15-17	Disassemble Water Pump	30-2
Install 6-Piece Thrust Bearing	15-18	Assemble Water Pump	30-3
Crankshaft Installation	15-19		
Group 20—Camshaft and Timing Gear Train			
Remove Crankshaft Front Oil Seal	20-1		
Remove Timing Gear Cover	20-1		
Measure Timing Gear Backlash	20-2		
Camshaft End Play Measure	20-3		
Remove Camshaft	20-4		

Continued on next page

	Page		Page
Install Water Pump	30-5	Bleed Fuel System	40-32
Inspect Thermostat	30-6	Check Engine Speed	40-34
Cold Start Advance Switch	30-6		
Cooling System Deaeration	30-7	Group 100—Engine Tune-Up	
Check Fan/Alternator Belt Tension	30-8	Preliminary Engine Testing	100-1
Install Fan	30-9	General Tune-Up Recommendations	100-1
Coolant Heater	30-10		
Radiator Exploded view (CD3209DF128)	30-12	Group 105—Engine System - Operation	
		Lubrication System	105-1
Group 35—Air Intake and Exhaust System		Cooling System	105-4
Check Air Inlet Pipe	35-1		
Exhaust Manifold Inspection	35-2	Group 110—Engine System - Diagnosis and Tests	
Remove Turbocharger	35-3	Diagnose Engine Malfunctions	110-1
Turbocharger Cut-Away View (SCHWITZER)	35-4	Checking Engine Compression	110-4
Check Radial Clearance	35-5	Check Engine Oil Pressure	110-5
Check Axial Clearance	35-6	Measure Engine Blow-By	110-5
Repair Turbocharger	35-6	Using Stanadyne "TIME-TRAC" as	
Prelube Turbocharger	35-6	Tachometer	110-6
Install Turbocharger	35-7	Inspect Thermostat and Test Opening	
Turbocharger Break-In	35-9	Temperature	110-7
Recommendations for Turbocharger Use	35-9	Pressure Test Cooling System and	
Air Filter Exploded View	35-10	Radiator Cap	110-8
Group 40—Fuel System		Group 115—Air Intake System - Operation and Tests	
Replace Fuel Filter Element	40-1	Turbocharger Operation	115-1
Replace Fuel Filter Assembly	40-2	Check Turbocharger Boost Pressure	115-1
Replace Fuel Supply Pump	40-3	Diagnosing Turbocharger Malfunctions	115-2
Remove STANADYNE DB2 or DB4 Fuel			
Injection Pump	40-3	Group 120—Fuel System - Operation and Tests	
Repairs to STANADYNE Fuel Injection Pump	40-5	General Operation	120-1
Replace Throttle Lever (STANADYNE)	40-6	Fuel Supply Pump Operation	120-2
Aneroid Replacement (STANADYNE)	40-6	Measure Fuel Supply Pump Pressure	120-2
Aneroid Field Adjustment (STANADYNE)	40-7	Fuel Filter Operation	120-3
Aneroid Workshop Adjustment (STANADYNE)	40-8	STANADYNE Fuel Injection Pump (DB2/DB4)	
Install STANADYNE DB2 or DB4 Fuel		- Operation	120-4
Injection Pump	40-9	DELPHI/LUCAS Fuel Injection Pump	
Remove DELPHI/LUCAS Fuel Injection Pump	40-11	(DP200 shown) - Operation	120-6
Repairs to DELPHI/LUCAS Fuel Injection		Test Shut-Off Solenoid on DELPHI/LUCAS	
Pump	40-12	Injection Pump	120-8
Install DELPHI/LUCAS Fuel Injection Pump	40-13	Cold Start Advance System Operation	120-9
Dynamic Timing	40-15	Check Cold Start Advance System	
Install Timing Sensor	40-16	Operation	120-12
Install Magnetic Probe	40-17	Check Cold Start Switch Operation	120-14
Timing Sensor and Magnetic Probe		Light Load Advance Operation	120-14
Connection	40-18	Check Light Load Advance Operation	120-15
Check Fuel Injection Pump Timing	40-18	Fuel Injection Nozzles - General Information	120-16
Fuel Injection Nozzle Identification	40-22	Diagnosing Fuel System Malfunctions	120-18
Remove Fuel Injection Nozzle	40-23	Testing Fuel Injection Nozzles on a	
Clean Fuel Injection Nozzle	40-24	Running Engine	120-19
Fuel Injection Nozzle Test	40-25		
Fuel Injection Nozzle Disassembly	40-28		
Adjust Fuel Injection Nozzle	40-29		
Install Fuel Injection Nozzle	40-30		

Continued on next page

Page

Group 200—Essential Tools

Essential Tools 200-1

Group 205—Service Equipment & Recommended Tools

Service Equipment & Recommended Tools 205-1

Group 210—Self-manufactured tools

Template for front plate replacement. 210-1

Group 300—Repair Specifications

Cylinder Head and Valves Specifications 300-1

Cylinder Block, Liners, Pistons and Rods Specifications. 300-4

Crankshaft, Main Bearings and Flywheel Specifications. 300-7

Camshaft and Timing Gear Train Specifications. 300-9

Lubrication System Specifications 300-13

Oil Dipstick Guide Height Specifications 300-15

Cooling System Specifications 300-19

Distance from Pulley or Hub to Water Pump Housing Sealing Surface Specifications. 300-20

Air Intake and Exhaust System Specifications. 300-23

Fuel System Specifications 300-26

Group 305—Diagnostic and Test Specifications

Diagnostic and Test Specifications 305-1

Handle Fluids Safely—Avoid Fires

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.



TS227 -UN-23AUG88

DX,FLAME -19-29SEP98-1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



TS204 -UN-23AUG88

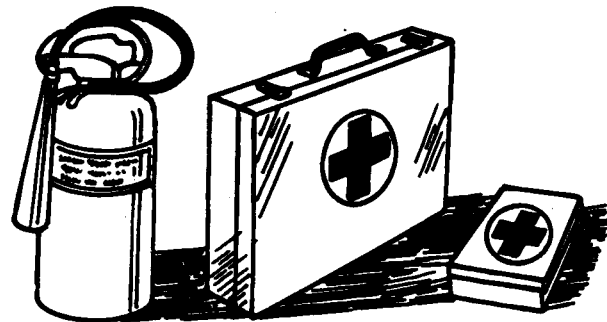
DX,SPARKS -19-03MAR93-1/1

Prepare for Emergencies

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.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93-1/1

Prevent Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

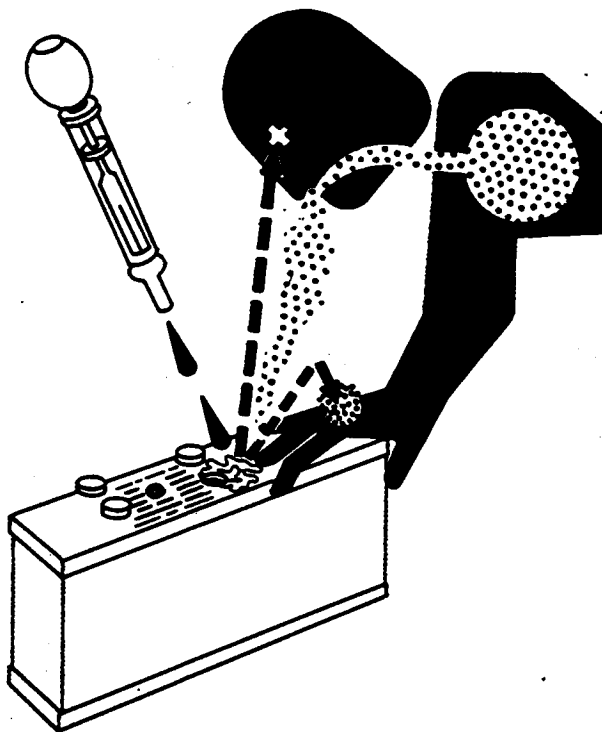
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 -UN-23AUG88

DX,POISON -19-21APR93-1/1

**Thank you very much for
your reading. Please Click
Here. Then Get COMPLETE
MANUAL. NO WAITING**



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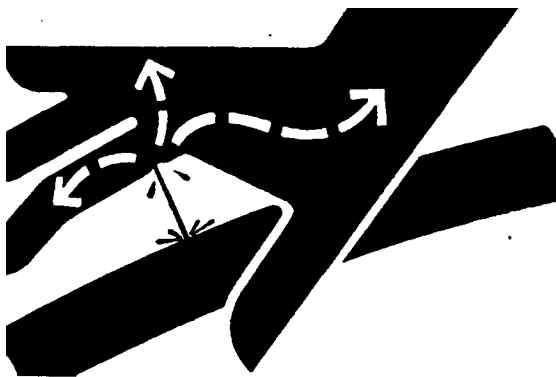
Avoid High-Pressure Fluids

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 -UN-23AUG88

DX,FLUID -19-03MAR93-1/1

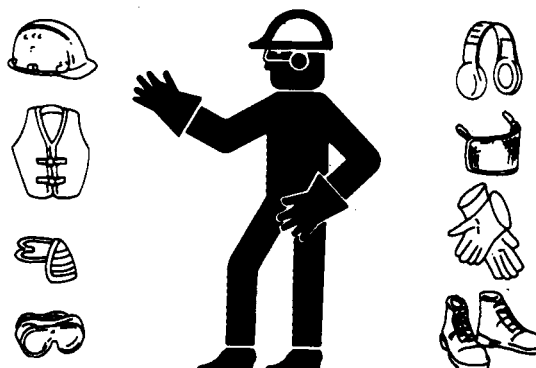
Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



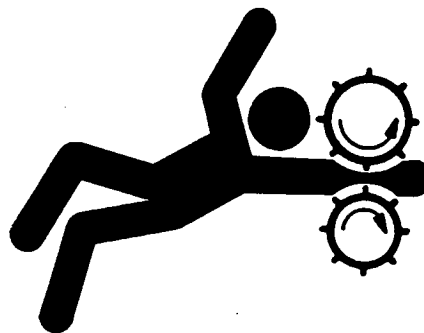
TS206 -UN-23AUG88

DX,WEAR -19-10SEP90-1/1

Service Machines Safely

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.



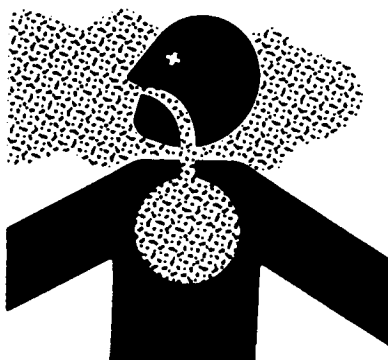
TS228 -UN-23AUG88

DX,LOOSE -19-04JUN90-1/1

Work In Ventilated Area

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area



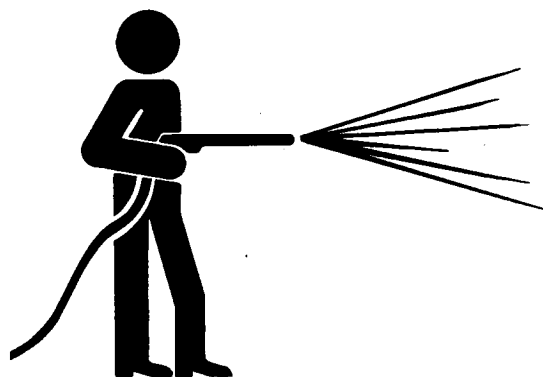
TS220 -UN-23AUG88

DX,AIR -19-17FEB99-1/1

Work in Clean Area

Before starting a job:

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



T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90-1/1

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



TS220 -JUN-23AUG88

DX,PAINT -19-03MAR93-1/1

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

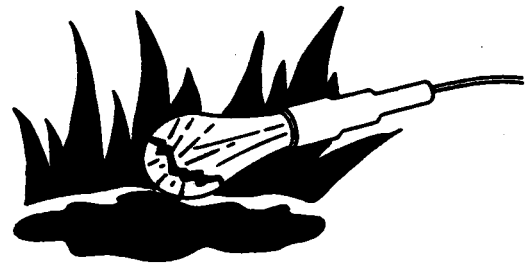


TS953 -JUN-15MAY90

DX,TORCH -19-03MAR93-1/1

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.



TS223 -JUN-23AUG88

DX,LIGHT -19-04JUN90-1/1