2700, 2800 and 2900 Tractors

JOHN DEERE

TECHNICAL MANUAL

2700, 2800 and 2900
Tractors

TM1564 (08FEB95) English

JDI GmbH-ISB
TM1564 (08FEB95)

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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.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group 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.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

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.

TM1563,IFC -19-11MAY94

Contents

SECTION 05—Safety
Group 05—Safety Precautions

SECTION 10—General Information
Group 05—Specifications
Group 10—Fuels, Lubricants and Coolant

SECTION 15—Component Removal/Installation
Group 05—Special Tools and Specifications
Group 10—Separate Transmission from Engine
Group 15—Clutch/PTO Housing
Group 20—Transmission
Group 25—Engine

SECTION 20—Engine Repair
Group 05—Special Tools and Specifications
Group 10—Clutch
Group 15—Engine Mounting
Group 20—Cylinder Head and Valves
Group 25—Pistons, Rods and Liners
Group 30—Crankshaft and Bearings
Group 35—Camshaft, Balancer Shafts and Timing Gear Train
Group 40—Cooling System
Group 45—Air Intake and Exhaust System
Group 50—Fuel System
Group 55—Oil Pump
Group 60—Air Compressor

SECTION 40—Electrical Repair
Group 05—General Information
Group 10—System Diagrams and Schematics
Group 15—Battery
Group 20—Harness Repair
Group 25—Alternator
Group 30—Starting Motor
Group 35—Lights
Group 40—Instruments and Switches
Group 45—Sensors

SECTION 50—MECHANICAL SHIFT TRANSMISSION
Group 05—Special Tools
Group 10—Clutch/PTO Housing
Group 15—Transmission Cover
Group 20—Gears and Shafts

SECTION 55—POWER TRAIN (FINAL DRIVE)
Group 05—Special Tools
Group 10—Reduction Gears
Group 15—PTO Assembly
Group 20—Rear Half Axle
Group 25—Differential

SECTION 60—Brakes and Steering
Group 05—Special Tools
Group 10—Hydrostatic Steering Operation
Group 15—2WD Front Axle
Group 20—Hydrostatic Steering Motor
Group 25—Hydrostatic Steering Cylinder
Group 30—Steering Pump
Group 35—Brakes
Group 40—Trailer Air Brake System (Optional)

SECTION 70—Hydraulics
Group 00—Special Tools and Specifications
Group 05—Testing Hydraulic System
Group 10—Hydraulic System Operation
Group 15—Main Hydraulic Pumps
Group 20—Servicing Transmission/Hydraulic System
Group 25—Rockshaft
Group 30—Hydraulic Pump Control and Drive Unit

SECTION 80—MISCELLANEOUS
Group 05—Wheels and Tires
Group 10—Ballast

SECTION 90—OPERATOR'S STATION
Group 05—Seat
Group 10—Open Station Platform

Index

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.

TM1564-19-08FEB95

05

10

15

20

40

50

55

60

70

80

Section 05
Safety

Contents

Page

Group 05—Safety Precautions 05-05-1

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 -19-04JUN90

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

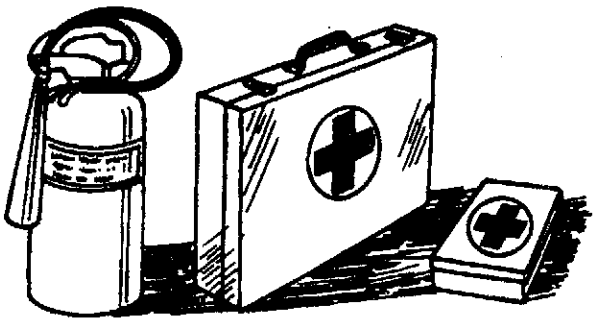
DX,SPARKS -19-03MAR93

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.



TS231 -UN-23AUG88

DX,FIRE2 -19-03MAR93

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

HANDLE CHEMICAL PRODUCTS SAFELY

TS1132 -UN-26NOV90

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.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)

DX,MSDS,NA -19-03MAR93

AVOID HIGH-PRESSURE FLUIDS

X9811 -UN-23AUG88

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.

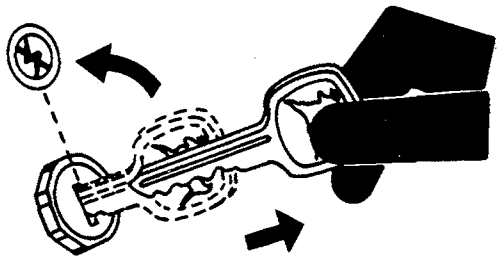
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical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

DX,FLUID -19-03MAR93

05
05
4

PARK MACHINE SAFELY

Before working on the machine:
- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



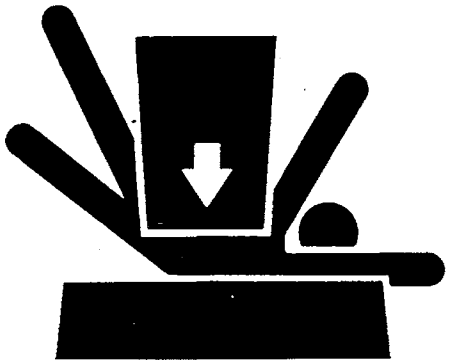
TS230 -UN-24MAY89

DX,PARK -19-04JUN90

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. 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.



TS229 -UN-23AUG88

DX,LOWER -19-04JUN90

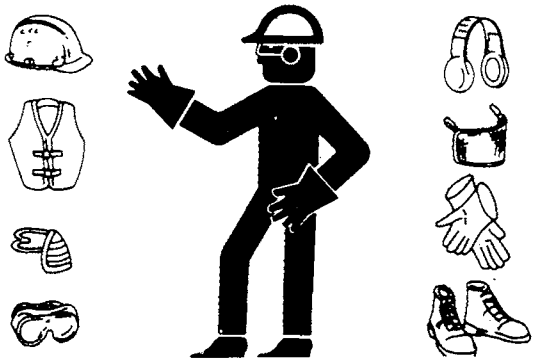
WEAR PROTECTIVE CLOTHING

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.

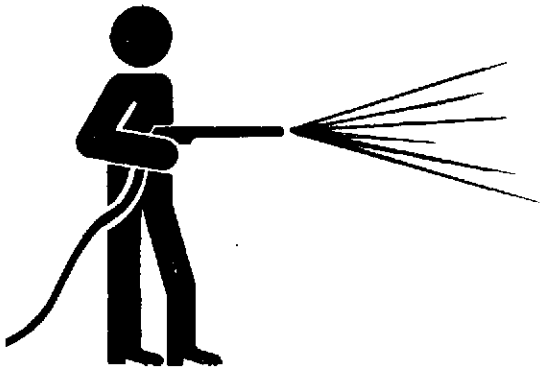


TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

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.



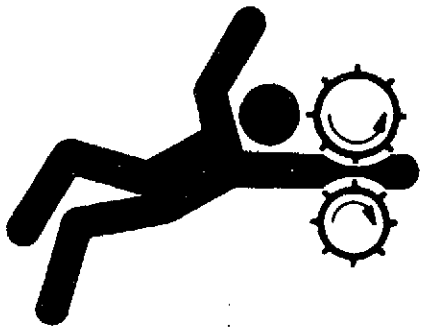
T6642EJ -UN-18OCT88

DX,CLEAN -19-04JUN90

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.



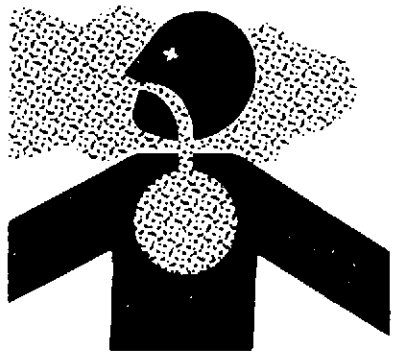
TS226 -UN-23AUG88

DX,LOOSE -19-04JUN90

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 -19-04JUN90

ILLUMINATE WORK AREA SAFELY

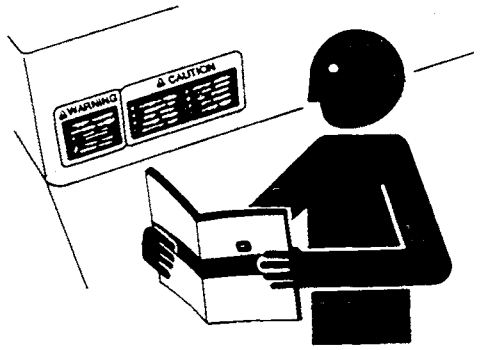
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

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



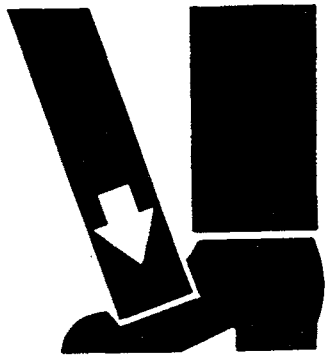
TS201 -UN-23AUG88

DX,SIGNS1 -19-04JUN90

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



TS226 -UN-23AUG88

DX,LIFT -19-04JUN90

SERVICE TIRES SAFELY

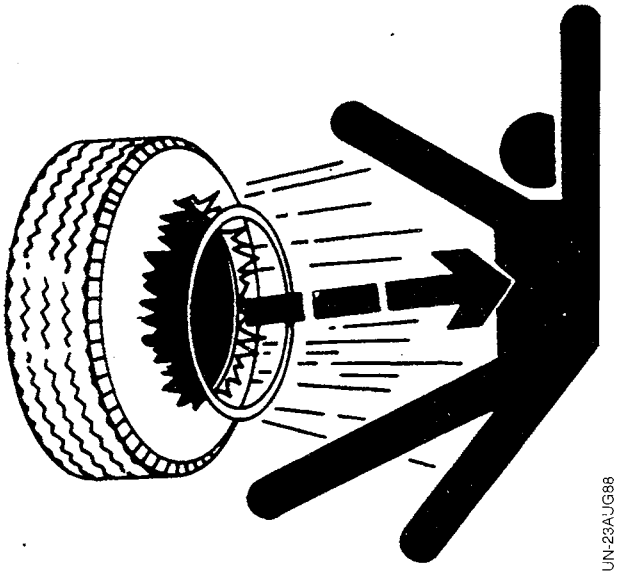
Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

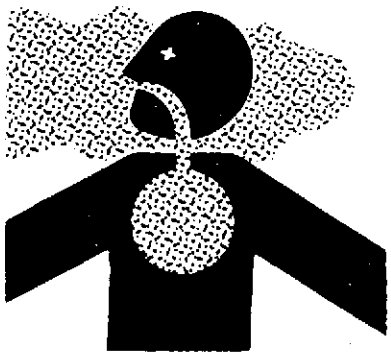
Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



TS211 -UN-23AUG88

DX,RIM -19-24AUG90

AVOID HARMFUL ASBESTOS DUST



TS220 -UN-23AUG88

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.

Keep bystanders away from the area.

DX,DUST -19-15MAR91

AVOID HEATING NEAR PRESSURIZED FLUID LINES

TS953 -UN-15MAY90

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.

DX,TORCH -19-03MAR93

05
05
8

REMOVE PAINT BEFORE WELDING OR HEATING

TS220 -UN-23AUG88

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.

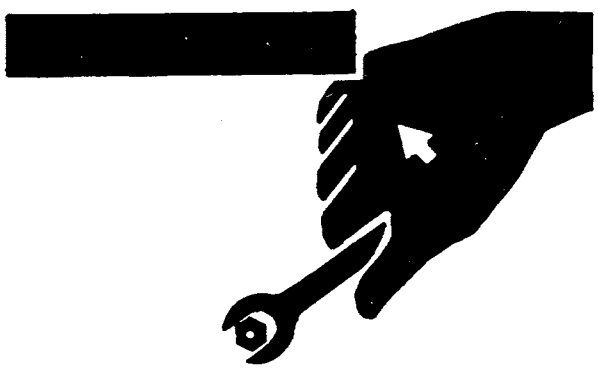
Remove paint before welding or heating:

- 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.

DX,PAINT -19-03MAR93

USE PROPER TOOLS



TS779 -UN-08NOV89

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

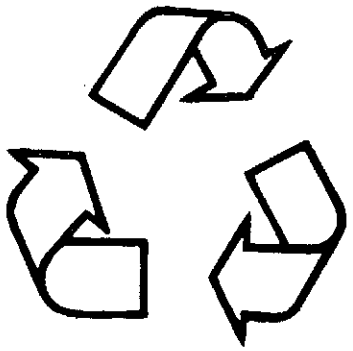
Use power tools only to loosen threaded parts and fasteners.

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.

DX,REPAIR -19-04JUN90

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.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.

DX,DRAIN -19-03MAR93

05
05
9

TS-183 -UN-26NOV90

LIVE WITH SAFETY

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

DX,LIVE -19-25SEP92

TS231 -19-07OCT88

Section 10
General Information

Contents

Page

Group 05—Specifications

Engine 10-05-1
Electrical 10-05-1
Capacities 10-05-2
Sound Level 10-05-2
2WD Tractor Dimensions 10-05-2
4WD Tractor Dimensions 10-05-3
Tractor Speeds 10-05-4
Metric Torque Values 10-05-12

Group 10—Fuels, Lubricants and Coolant

Fuel 10-10-1
Fuel Storage 10-10-2
Fill Fuel Tank 10-10-3
Diesel Engine Oil 10-10-4
Oil Filter 10-10-5
Engine Coolant 10-10-5
Flushing and Servicing Cooling System . . 10-10-6
Transmission and Hydraulic Oil 10-10-7
Front Wheel Axle and Final Drive Oil 10-10-8
Hydraulic Transmission Filter Element . . . 10-10-8
Grease 10-10-9
Alternative and Synthetic Lubricants 10-10-9
Lubricant Storage 10-10-9

ENGINE

Engine Types	
2700	Z1201T
2800	Z1001T
2900	Z1301A
SAE Engine Power (Flywheel)	
2700	89 hp @ 2200 rpm
2800	100 hp @ 2200 rpm
2900	106 hp @ 2200 rpm
SAE PTO Power*	
2700	75 hp @ 2200 rpm
2800	86 hp @ 2200 rpm
2900	91 hp @ 2200 rpm

NOTE: Net engine power is at rated engine speed (2200 rpm) in accordance with SAE J1995.

** Net PTO power at rated speed of 2200 rpm, measured in accordance with SAE J708.*

Rated engine speed (All)	2200 rpm
Slow idle (All)	700 rpm
Fast idle (All)	2640 rpm
Number of cylinders (All)	4
Firing Order	1-3-4-2
Bore (All)	105 mm (4.133 in.)
Stroke (All)	120 mm (4.724 in.)
Displacement (All)	4.2 L
Air Intake (All)	Turbocharged
Injection Pump Type	
2700	PP4M10K1F 3163
2800	PP4M10K1F 3150
2900	Not Available at Printing
Valve Clearance (All)	
Intake	0.25 ± 0.05 mm (0.012 ± 0.002 in.)
Exhaust	0.25 ± 0.05 mm (0.012 ± 0.002 in.)

ZT,1564,A -19-08FEB95

ELECTRICAL

Battery (All)	12V, 180 Ah
Alternator (All)	14V, 55 Amp
Starter (All)	12V, 3.5 Kw
Battery Terminal Type	Negative Ground

ZT,1564,B -19-08FEB95

CAPACITIES

Fuel Tank (All)	105L (27.7 gal)
Cooling System (All)	
With Cab and Heater	17.5L (4.6 gal)
Without Heater	19.0L (5.0 gal)
Engine Crankcase (All)	10L (10.5 qts)
Transmission and Rear Axle (All)	38.9L (42 qts)
Front Drive Axle (All)	3.1L (3.3 qts)
Front Final Drive (All) (One Wheel)	95L (1.0 qt)
Hydrostatic Steering (All)	4.5L (4.8 qt)
Brake Fluid	0.5L (0.53 qt)

ZT,1564,C -19-08FEB95

SOUND LEVEL

Maximum sound level at operator's ear with muffler and cab closed is 84 dba.

Maximum sound level at operator's ear without muffler and cab closed is 86 dba.

Maximum external sound level with muffler at 7 meters (23 ft.) is 85 dba.

Maximum external sound level without muffler at 7 meters (23 ft.) is 89 dba.

NOTE: Measurement method in accordance with Directive OECD Test.

TM1564,1005,A -19-08FEB95

2WD TRACTOR DIMENSIONS

Wheel Base	
2700, 2800 and 2900	2376 mm (93.5 in.)
Overall Length (Without Weights)	
2700, 2800 and 2900	4209 mm (165.7 in.)
Overall Width* (Narrow Track with 16.9 - 38 Rear Tires)	
2700, 2800 and 2900	1763 mm (69.4 in.)
Overall Width* (Wide Track with 16.9 - 38 Rear Tires)	
2700, 2800 and 2900	1929 mm (75.9 in.)

** There are six different track positions between narrow and wide track settings.*

TM1564,1005,B -19-08FEB95

Overall Height (Top of Exhaust with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 2787 mm (109.7 in.)

Overall Height (Top edge of Cab with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 2622 mm (105.2 in.)

Turning Radius (With Brake)
2700, 2800 and 2900 . . . . . 7450 + 500 mm (293.3 + 20 in.)

Average Shipping Weight (With Cab)
2700 . . . . . 3323 Kg (7327.2 lbs.)
2800 . . . . . 3456 Kg (7620.5 lbs.)
2900 . . . . . 3456 Kg (7620.5 lbs.)

Average Shipping Weight (Without Cab)
2700 . . . . . 3068 Kg (6764.9 lbs.)
2800 . . . . . 3201 Kg (7058.2 lbs.)
2900 . . . . . 3201 Kg (7058.2 lbs.)

TM1564,1005,C -19-08FEB95

10
05
3

4WD TRACTOR DIMENSIONS

Wheel Base
2700, 2800 and 2900 . . . . . 2376 mm (93.5 in.)

Overall Length (Without Weights)
2700, 2800 and 2900 . . . . . 4209 mm (165.7 in.)

Overall Width* (Narrow Track with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 1763 mm (69.4 in.)

Overall Width* (Wide Track with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 1929 mm (75.9 in.)

** There are six different track positions between narrow and wide track settings.*

TM1564,1005,D -19-08FEB95

Overall Height (Top of Exhaust with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 2787 mm (109.7 in.)

Overall Height (Top edge of Cab with 16.9 - 38 Rear Tires)
2700, 2800 and 2900 . . . . . 2672 mm (105.2 in.)

Turning Radius (With Brake)
2700, 2800 and 2900 . . . . . 9050 + 500 mm (356.3 + 20 in.)

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4

Average Shipping Weight (With Cab)
2700 . . . . . 3717 Kg (8195.9 lbs.)
2800 . . . . . 3822 Kg (8427.5 lbs.)
2900 . . . . . 3822 Kg (8427.5 lbs.)

Average Shipping Weight (Without Cab)
2700 . . . . . 3462 Kg (7633.7 lbs.)
2800 . . . . . 3569 Kg (7865.2 lbs.)
2900 . . . . . 3567 Kg (7865.2 lbs.)

TM1564,1005,E -19-08FEB95

TRACTOR SPEEDS

Tractor forward speeds are Kph (mph) at rated engine speed of 2200 rpm without ballast and with listed transmission, transmission options and tire radius.

MEDIUM TRANSMISSION SPEED (CODE 2500) WITH REVERSER AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE FORWARD	LOW RANGE REVERSE
1	8.73 (5.41)	8.86 (5.49)	2.24 (1.39)	2.27 (1.41)
2	12.90 (8.00)	13.10 (8.12)	3.30 (2.05)	3.36 (2.08)
3	20.30 (12.59)	20.61 (12.78)	5.21 (3.23)	5.29 (3.28)
4	29.22 (18.11)	29.68 (18.40)	7.49 (4.64)	7.61 (4.72)

ZT,1564,D -19-08FEB95

LOW SPEED TRANSMISSION (CODE 2520) WITH REVERSER AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	7.75 (4.81)	1.99 (1.23)	7.87 (4.88)	2.02 (1.25)
2	11.46 (7.11)	2.94 (1.82)	11.64 (7.22)	2.98 (1.85)
3	18.03 (11.18)	4.62 (2.86)	18.31 (11.35)	4.70 (2.91)
4	25.95 (16.09)	6.66 (4.13)	26.36 (16.34)	6.76 (4.19)

ZT2,OT,CB -19-16DEC93

HIGH SPEED TRANSMISSION (CODE 2525) WITH REVERSER AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	9.69 (6.01)	2.49 (1.54)	9.84 (6.10)	2.52 (1.56)
2	14.32 (8.88)	3.67 (2.28)	14.55 (9.02)	3.73 (2.31)
3	22.54 (13.97)	5.78 (3.58)	22.89 (14.19)	5.87 (3.64)
4	32.44 (20.11)	8.32 (5.16)	32.95 (20.43)	8.45 (5.24)

ZT2,OT,CC -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2500) WITH REVERSER AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	8.94 (5.54)	2.29 (1.42)	9.08 (5.63)	2.33 (1.44)
2	13.22 (8.20)	3.39 (2.10)	13.42 (8.32)	3.44 (2.13)
3	20.08 (12.45)	5.33 (3.30)	21.12 (13.09)	5.42 (3.36)
4	29.94 (18.56)	7.68 (4.76)	30.39 (18.84)	7.79 (4.83)

ZT2,OT,CD -19-16DEC93

LOW SPEED TRANSMISSION (CODE 2520) WITH REVERSER AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	7.95 (4.93)	2.04 (1.26)	8.08 (5.01)	2.07 (1.28)
2	11.75 (7.29)	3.01 (1.87)	11.94 (7.40)	3.06 (1.90)
3	18.50 (11.47)	4.75 (2.95)	18.79 (11.65)	4.81 (2.98)
4	26.63 (16.51)	6.83 (4.23)	27.04 (16.76)	6.93 (4.30)

ZT2,OT,CE -19-16DEC93

HIGH SPEED TRANSMISSION (CODE 2525) WITH REVERSER AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	9.94 (6.16)	2.54 (1.57)	10.10 (6.26)	2.58 (1.60)
2	14.69 (9.11)	3.77 (2.34)	14.92 (9.25)	3.82 (2.37)
3	23.12 (14.33)	5.93 (3.68)	23.48 (14.56)	6.02 (3.73)
4	33.28 (20.63)	8.53 (5.29)	33.80 (20.96)	8.67 (5.38)

ZT2,OT,CF -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2500) WITH REVERSER AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	9.25 (5.74)	2.37 (1.47)	9.39 (5.82)	2.41 (1.49)
2	13.67 (8.48)	3.50 (2.17)	13.88 (8.61)	3.56 (2.21)
3	21.51 (13.34)	5.52 (3.42)	21.84 (13.54)	5.60 (3.47)
4	30.95 (19.19)	7.94 (4.92)	31.44 (19.49)	8.06 (5.00

ZT2,OT,CG -19-16DEC93

LOW SPEED TRANSMISSION (CODE 2520) WITH REVERSER AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	8.21 (5.09)	2.11 (1.31)	8.34 (5.17)	2.14 (1.33)
2	12.14 (7.53)	3.11 (1.93)	12.33 (7.64)	3.16 (1.96)
3	19.10 (11.84)	4.90 (3.04)	19.40 (12.03)	4.98 (3.09)
4	27.50 (17.05)	7.05 (4.37)	27.93 (17.32)	7.16 (4.44)

ZT2,OT,CH -19-16DEC93

HIGH SPEED TRANSMISSION (CODE 2525) WITH REVERSER AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE FORWARD	LOW RANGE FORWARD	HIGH RANGE REVERSE	LOW RANGE REVERSE
1	10.27 (6.37)	2.63 (1.63)	10.43 (6.47)	2.67 (1.66)
2	15.18 (9.41)	3.89 (2.41)	15.41 (9.55)	3.95 (2.45)
3	23.88 (14.81)	6.12 (3.79)	24.25 (15.04)	6.22 (3.86)
4	34.37 (21.31)	8.81 (5.46)	34.91 (21.64)	8.95 (5.55)

ZT2,OT,CI -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2500) WITH POWER HI/LO AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	8.73 (5.41)	2.24 (1.39)	6.72 (4.17)	1.73 (1.07)
2	12.90 (8.00)	3.30 (2.05)	9.93 (6.16)	2.55 (1.58)
3	20.30 (12.59)	5.21 (3.23)	16.63 (10.31)	4.01 (2.49)
4	29.22 (18.12)	7.49 (4.64)	22.50 (13.95)	5.77 (3.58)
R	15.38 (9.54)	3.95 (2.45)	11.85 (7.35)	3.04 (1.88)

ZT2,OT,CJ -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2520) WITH POWER HI/LO AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	7.75 (4.81)	1.99 (1.23)	5.97 (3.70)	1.53 (0.95)
2	11.46 (7.11)	2.94 (1.82)	8.82 (5.47)	2.26 (1.40)
3	18.03 (11.18)	4.62 (2.86)	13.89 (8.61)	3.56 (2.21)
4	25.95 (16.09)	6.66 (4.13)	19.99 (12.39)	5.13 (3.18)
R	13.66 (8.47)	3.50 (2.17)	20.52 (6.52)	2.70 (1.67)

ZT2,OT,CK -19-16DEC93

HIGH SPEED TRANSMISSION (CODE 2525) WITH POWER HI/LO AND 16.9—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	9.69 (6.01)	2.49 (1.54)	7.46 (4.63)	1.91 (1.18)
2	14.32 (8.88)	3.67 (2.28)	11.03 (6.84)	2.83 (1.75)
3	22.54 (13.97)	5.78 (3.58)	17.36 (10.76)	4.45 (2.76)
4	32.44 (20.11)	8.32 (5.16)	24.99 (15.49)	6.41 (3.97)
R	17.08 (10.59)	4.38 (2.72)	13.15 (8.15)	3.37 (2.09)

ZT2,OT,CL -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2500) WITH POWER HI/LO AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	8.94 (5.54)	2.29 (1.42)	6.89 (4.27)	1.77 (1.10)
2	13.22 (8.20)	3.39 (2.10)	10.18 (6.31)	2.61 (1.62)
3	20.08 (12.45)	5.33 (3.30)	16.02 (9.93)	4.11 (2.55)
4	29.94 (18.56)	7.68 (4.76)	23.06 (14.30)	5.91 (3.66)
R	15.76 (9.77)	4.04 (2.50)	12.14 (7.53)	3.11 (1.93)

ZT2,OT,CM -19-16DEC93

LOW SPEED TRANSMISSION (CODE 2520) WITH POWER HI/LO AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	7.95 (4.93)	2.04 (1.26)	6.13 (3.80)	1.57 (0.97)
2	11.75 (7.29)	3.01 (1.87)	9.05 (5.61)	2.32 (1.44)
3	18.50 (11.47)	4.75 (2.95)	14.25 (8.84)	3.65 (2.26)
4	28.63 (17.75)	6.83 (4.23)	20.50 (12.71)	5.26 (3.26)
R	14.01 (8.69)	3.59 (2.23)	10.79 (6.69)	2.77 (1.72)

ZT2,OT,CN -19-16DEC93

HIGH SPEED TRANSMISSION (CODE 2525) WITH POWER HI/LO AND 18.4—34 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	9.94 (6.16)	2.54 (1.57)	7.66 (4.75)	1.96 (1.22)
2	14.69 (9.11)	3.77 (2.34)	11.31 (7.01)	2.90 (1.80)
3	23.12 (14.33)	5.93 (3.68)	17.81 (11.04)	4.57 (2.83)
4	33.28 (20.63)	8.53 (5.29)	25.63 (15.89)	6.57 (4.07)
R	17.51 (10.86)	4.49 (2.78)	13.49 (8.36)	3.46 (2.15)

ZT2,OT,CO -19-16DEC93

MEDIUM SPEED TRANSMISSION (CODE 2500) WITH POWER HI/LO AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	9.25 (5.74)	2.37 (1.47)	7.12 (4.41)	1.83 (1.13)
2	13.67 (8.48)	3.50 (2.17)	10.52 (6.52)	2.70 (1.67)
3	21.51 (13.34)	5.52 (3.42)	16.56 (10.27)	4.25 (2.64)
4	30.95 (19.19)	7.94 (4.92)	23.84 (14.78)	6.11 (3.79)
R	16.29 (10.10)	14.18 (8.79)	12.55 (7.78)	3.22 (2.00)

ZT2,OT,CP -19-16DEC93

LOW SPEED TRANSMISSION (CODE 2520) WITH POWER HI/LO AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	8.21 (5.09)	2.11 (1.31)	6.33 (3.92)	1.62 (1.00)
2	12.14 (7.53)	3.11 (1.93)	9.35 (5.80)	2.40 (1.49)
3	19.10 (11.84)	4.90 (3.04)	14.71 (9.12)	3.77 (2.34)
4	27.50 (17.05)	7.05 (4.37)	21.18 (13.13)	5.43 (3.37)
R	14.47 (8.97)	3.71 (2.30)	11.15 (6.91)	2.86 (1.77)

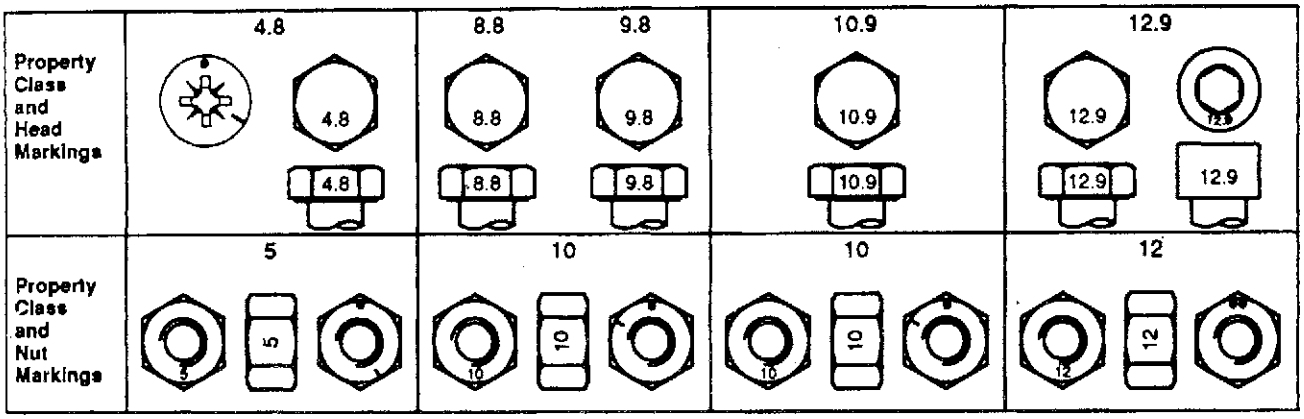
ZT2,OT,CQ -19-16DEC93

TRANSMISSION WITH POWER HI/LO AND 16.9—38 TIRES KPH (MPH)

GEAR	HIGH RANGE RABBIT	LOW RANGE RABBIT	HIGH RANGE TURTLE	LOW RANGE TURTLE
1	10.27 (6.37)	2.63 (1.63)	7.91 (4.90)	2.03 (1.26)
2	15.18 (9.41)	3.89 (2.41)	11.68 (7.24)	3.00 (1.86)
3	23.88 (14.81)	6.12 (3.79)	18.39 (11.40)	4.72 (2.93)
4	34.37 (21.31)	8.81 (5.46)	26.47 (16.41)	6.79 (4.21)
R	18.09 (11.22)	4.64 (2.88)	13.93 (8.64)	3.57 (2.21)

ZT2,OT,CR -19-16DEC93

METRIC BOLT AND CAP SCREW TORQUE VALUES



TS1163 -19-04MAR91

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

[a] *"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.*

DX,TORQ2 -19-20JUL94

FUEL

CAUTION: Never fill tank when engine is running. During filling of tank, smoking is strictly prohibited!

The quality and cleanliness of the fuel is an important factor in obtaining dependable performance and satisfactory engine life. Use commercial diesel fuel with low sulfur content.

Engine oil and oil filter change interval must be reduced by 50% if diesel fuel with a sulfur content greater than 0.5% is used. Bio Diesel (Rape Methyl Ester — RME) may also be used as an alternative to mineral oil-based diesel fuel.

Fill the fuel tank at the end of each day's operation to prevent condensation and freezing during cold weather.

In winter use special winter fuel or add an anti-gelling compound to the fuel to maintain its proper viscosity.

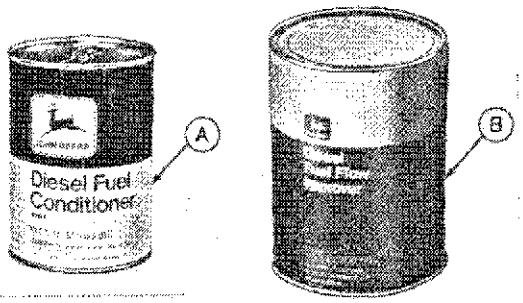
IMPORTANT: The fuel tank is vented through filler cap. If new filler cap is required, always replace it with an original vented cap.

FX,FUEL -19-06NOV91

FUEL STORAGE

IMPORTANT: Buy good quality, clean fuel from a reputable supplier.

Proper fuel storage is critically important. Use clean storage and transfer tanks. Periodically drain water and sediment from bottom of tank. Store fuel in a convenient place away from buildings.



RG5309 -UN-15DEC88

Avoid storing fuel over long periods of time. If there is a very slow turnover of fuel in the fuel or storage tank, it may be necessary to add John Deere Diesel Fuel Conditioner (A), or equivalent. This conditioner may be poured directly into fuel tank or bulk storage tank.

John Deere Diesel Fuel Conditioner:

- Improves engine performance
- Keeps injectors and nozzles clean
- Reduces maintenance cost
- Gives better combustion
- Helps eliminate sludge and gum
- Retards rust and corrosion
- Keeps fuel system clean
- Provides more power and faster starts
- Prolongs filter life
- Improves storage stability

NOTE: To reduce fuel gelling and control wax separation during cold weather, John Deere Fuel Flow Improver (B), or equivalent, may be added to fuel or bulk storage tank.

Consult your John Deere dealer for availability. Follow directions on label.

RX,OMFL,E -19-30MAY91

FILL FUEL TANK

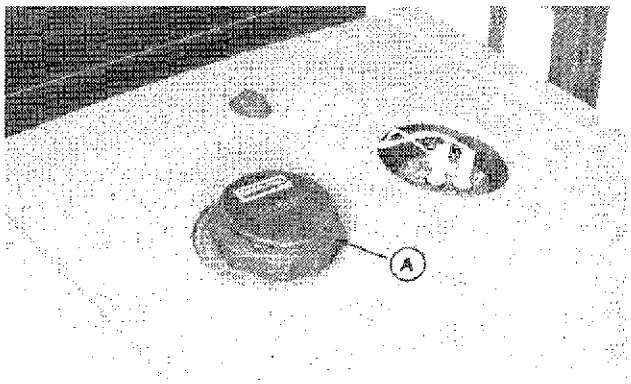
CAUTION: Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease and debris. Always clean up spilled fuel.

-UN-23AUG88
TS202

Fill fuel tank (A) located at top rear of hood at end of each day's operation. This prevents condensation in tank as moist air cools.



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ZT0361

ZT,1564,E -19-08FEB95

DIESEL ENGINE OIL

Use oil viscosity based on the expected air temperature range during the period between oil changes.

John Deere TORQ-GARD SUPREME PLUS-50™ engine oil is recommended. This oil is specially formulated to provide superior protection against high temperature thickening and wear as well as exceptional cold weather starting performance; these properties allow an extended drain interval and may result in longer engine life.

NOTE: When John Deere TORQ-GARD SUPREME PLUS-50 engine oil and a John Deere oil filter are used, the change interval may be extended by 50 hours.

John Deere TORQ-GARD SUPREME® engine oil is also recommended but standard oil change interval must be maintained. Other oils may be used if they meet one or more of the following:

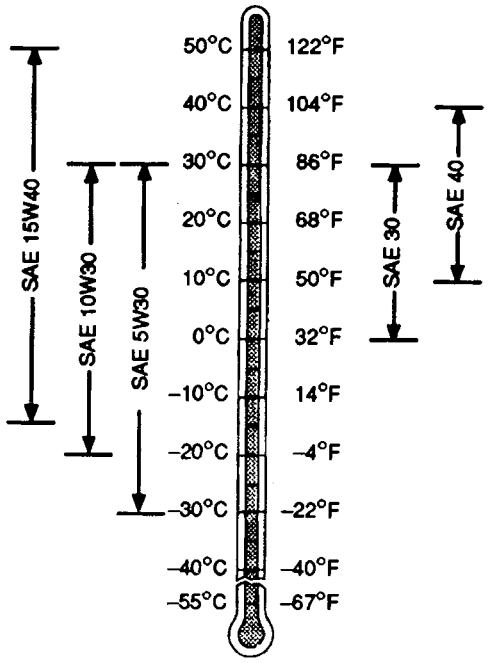
- API Service Classification CE or CD
- Military Specification MIL-L-2104E, MIL-L-2104D or MIL-L-2104C

SAE 5W20, SAE 5W30, and arctic oil viscosity grades meeting API Service Classification CC may be used, but oil and filter must be changed at one-half the normal interval.

Oils meeting Military Specification MIL-L-46167B may be used as arctic oils.

NOTE: Some increase in oil consumption may be expected when low viscosity oils are used. Check oil levels more frequently.

If air temperature is below 10°C (14°F), use an engine coolant heater.



TS1411 -UN-31JAN94

ZT,1564,F -19-08FEB95

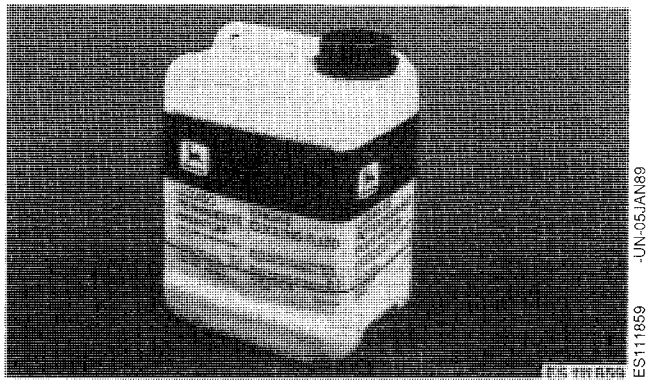
OIL FILTERS

Filtration of oils is critical to proper lubrication. Always change filters regularly as specified in this manual.

Use filters meeting John Deere performance specifications.

DX,FILT -19-01FEB94

ENGINE COOLANT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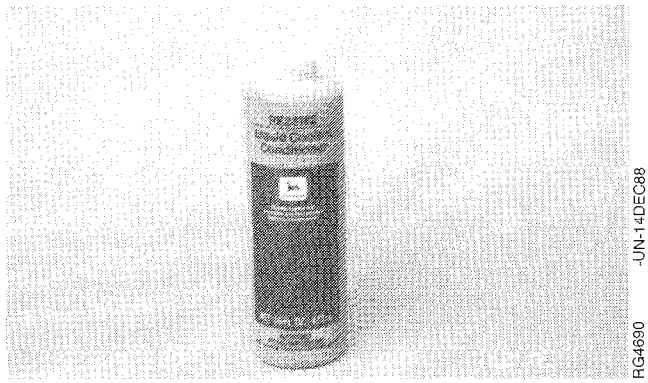

RG4690 -UN-14DEC88

John Deere COOL-GARD is filled into the cooling system at the factory. It protects against corrosion and against frost down to —37°C (—34°F).

IMPORTANT: Use only John Deere COOL-GARD in the cooling system, independent of the season. Drain system and refill with fresh coolant every 2 years.

If no John Deere COOL-GARD is available, use independent of the season a mixture of 50% ethylene-glycol antifreeze/corrosion inhibitor and 50% clear, soft water. This mixture also provides protection against corrosion and against frost down to —37°C (—34°F).

Never use any cooling system sealing additives.

Operating in Tropical Conditions

If no John Deere COOL-GARD or antifreeze is available, use the following mixture when refilling the cooling system: Use clean soft water and add 3% John Deere ENGINE COOLANT CONDITIONER TY16004 (30 ml per liter of water).

IMPORTANT: Drain system and refill with fresh coolant mixture every year. This coolant mixture protects the system against corrosion, but not against frost.

FX,COOLG -19-29SEP94

FLUSHING AND SERVICING COOLING SYSTEM

TS281 -UN-23AUG88

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

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

IMPORTANT: Air must be expelled from cooling system when system is refilled. Follow procedure given in Service sections.

Engine coolant MUST BE drained and replaced at a maximum of 1200 hours or 2 years of engine operating time, whichever comes first.

The ethylene glycol base (antifreeze) can become depleted of SCA's allowing various acids to form that will damage engine components. In addition, heavy metals, such as lead, copper and zinc, accumulate in the ethylene glycol base. The heavy metals come from corrosion that occurs to some degree within a cooling system. When a coolant is saturated to the point where it can no longer hold heavy metals and other dissolved solids, they settle out and act as abrasives on engine parts.

At 1200 hours/2-year service interval, flush cooling system and replace thermostats as described in Service/2 Year section. Clean cooling system with a heavy duty cooling system cleaner. Follow the instructions provided with the cleaner. Refill cooling system with the appropriate coolant solution. See ENGINE COOLANT SPECIFICATIONS, earlier in this section.

IMPORTANT: NEVER overfill the system. A pressurized system needs space for heat expansion without overflowing at the top of the radiator. Coolant level should be approximately 19 mm (3/4 in.) below bottom of radiator filler neck.

After adding new coolant solution, run engine until it reaches operating temperature. This mixes the coolant solution uniformly and circulates it through the entire system. After running engine, check coolant level and entire cooling system for leaks.

Contact your John Deere dealer, if there are further questions.

ZT,1564,G -19-08FEB95

TRANSMISSION AND HYDRAULIC OIL

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere HY-GARD®
- John Deere Low Viscosity HY-GARD®

The following oil is also recommended:

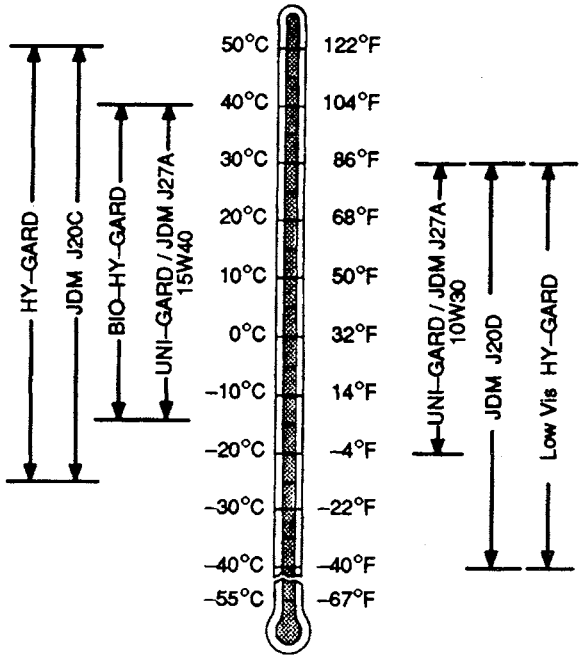
- John Deere UNI-GARD™

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D
- John Deere Standard JDM J27A

IMPORTANT: Do not use engine oil for this application.

Oils meeting Military Specifications MIL-L-46167B may be used as arctic oils.



ZT,1564,H -19-08FEB95

FRONT WHEEL AXLE AND FINAL DRIVE OIL

The following oils are preferred:

- John Deere 80W90 oil.

10 10 8 Other oils may be used if they meet one of the following:

- John Deere Standard JD1180
- John Deere Standard JD1190
- Society of Automotive Engineers (SAE) J300
- American Petroleum Institute (API) GL-5
- Military Specification MIL-L-2105B

IMPORTANT: Do not use hydraulic or engine oil for this application.

ZT2,FLC,E -19-16DEC93

USE CORRECT HYDRAULIC-TRANSMISSION FILTER ELEMENT

To protect systems, replace transmission-hydraulic oil filter with a John Deere service filter element. Replacement element must be an equivalent 10-micron filter. Minimum and maximum performance specifications are printed on John Deere filters. Use of alternate filters that do not have their performance specified is not recommended.

ZT,1564,I -19-08FEB95

GREASE

Use grease based on the expected air temperature range during the service interval.

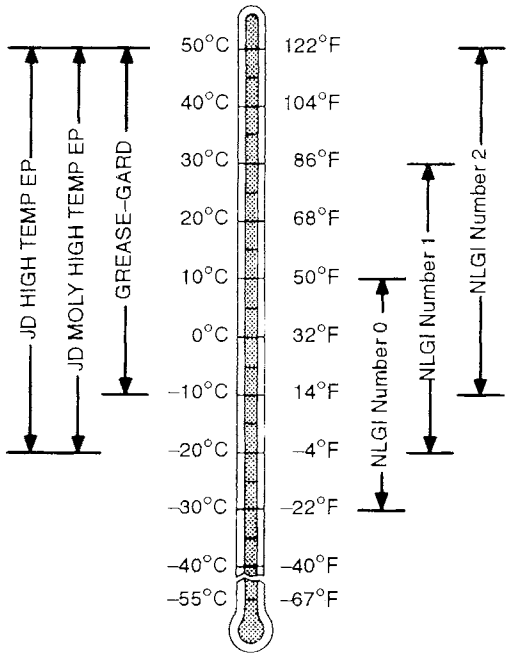
The following greases are preferred:

- John Deere MOLY HIGH TEMPERATURE EP GREASE
- John Deere HIGH TEMPERATURE EP GREASE
- John Deere GREASE-GARD™

Other greases may be used if they meet one of the following:

- SAE Multipurpose EP Grease with a maximum of 5% molybdenum disulfide
- SAE Multipurpose EP Grease

Greases meeting Military Specification MIL-G-10924F may be used as arctic grease.



DX,GREA1 -19-02NOV94

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ALTERNATIVE AND SYNTHETIC LUBRICANTS

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere lubricants may not be available in your location. Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements listed in this manual.

DX,ALTER -19-01FEB94

LUBRICANT STORAGE

Your equipment can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

DX,LUBST -19-01FEB94

Section 15
Component Removal/Installation

Contents

Page

Group 05—Special Tools and Specifications
Special or Essential Tools 15-05-1
Other Material 15-05-1
Specifications 15-05-2

Group 10—Separate Transmission from Engine
Separate Transmission from Engine 15-10-1
Connecting Transmission Assembly to Engine 15-10-5

Group 15—Clutch/PTO Housing
Remove Clutch/PTO Housing from Transmission 15-15-1
Install Clutch/PTO Housing to Transmission 15-15-3

Group 20—Transmission
Separate Transmission from Final Drive . . 15-20-1
Install Transmission to Final Drive 15-20-3

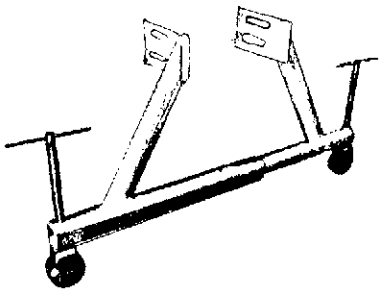
Group 25—Engine
Remove Engine 15-25-1
Install Engine 15-25-25

SPECIAL OR ESSENTIAL TOOLS

NOTE: Order tools according to information given in the U.S. SERVICE-GARD™ Catalog or in the European Microfiche Tool Catalog (MTC).

DX,TOOLS -19-05JUN91

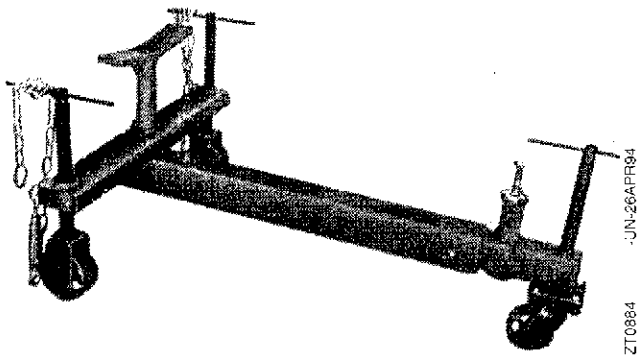
Front Tractor Splitting Stand to Separate Tractor DO5006ST



ZT0883 -UN-26APR94

TM1563,HX,A -19-11MAY94

Rear Tractor Splitting Stand to Separate Tractor DO5007ST



ZT0884 -UN-26APR94

TM1563,HX,B -19-11MAY94

OTHER MATERIAL

Number	Name	Use
TY3514	Plastic Gasket	Seal Joints
TY3512	Thread Lock and Sealer (medium strength)	Transmission Bolts

TM1563,HX,C -19-11MAY94

SPECIFICATIONS

Capacities

Transmission/Hydraulic System	40 L (10.57 gal.)
Hydrostatic Steering Reservoir	4.5 L (1.19 gal.)
Fuel Tank	105 L (27.7 gal.)
Engine Oil	10 L (2.6 gal.)
Front Wheel Drive Axle	3.1 L (3.28 qts.)
Front Wheel Drive Reduction Gear Reservoir per Wheel	1.0 L (1.05 qts.)

TM1564,1505,A -19-08FEB95

SEPARATE TRANSMISSION FROM ENGINE

1. If tractor is equipped with cab, remove cab from platform.

NOTE: Cab removal information not available at time of printing.

2. If tractor is equipped with front wheel drive, remove drive shaft from front axle and gear box.

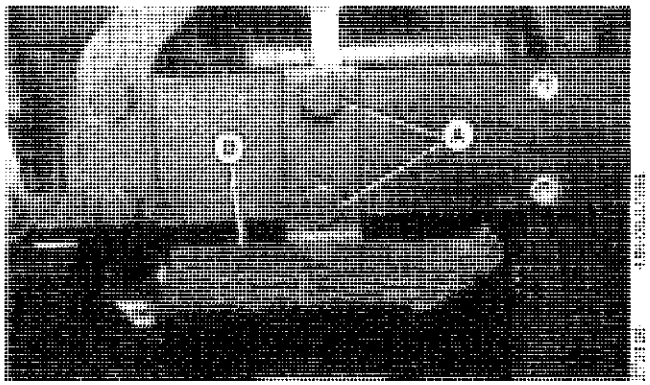
NOTE: Front wheel drive information not available at time of printing.

TM1564,1510,A -19-08FEB95

3. Remove platform (See **Platform Removal**, Section 90, Group 10).

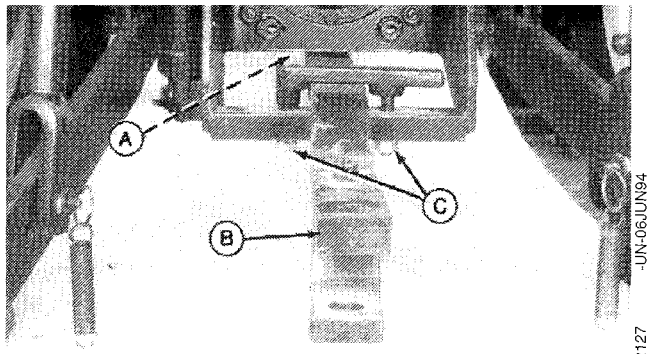
TM1564,1510,B -19-08FEB95

4. Remove two bolts and lock washers (A) from right rear tractor engine frame and remove step (B).



TM1564,1510,C -19-08FEB95

5. Remove drawbar ring pin (A) from front of drawbar (B). Loosen two nuts (C) on drawbar bridge and remove drawbar (B) from tractor.



TM1564,1510,D -19-08FEB95

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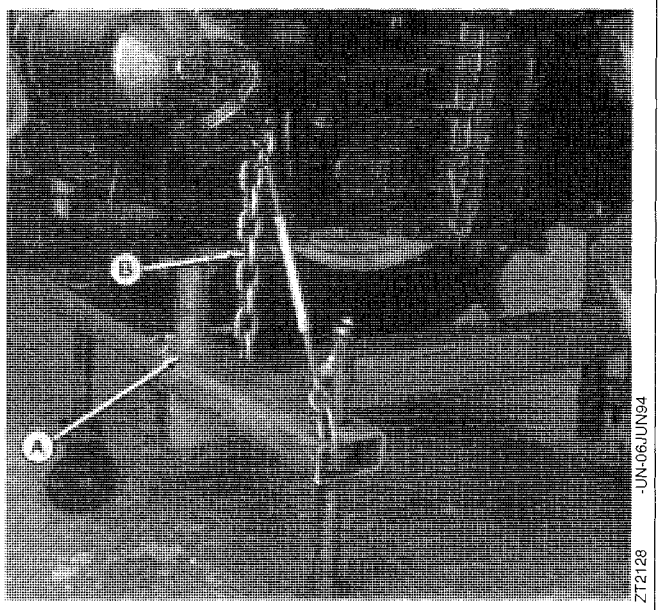
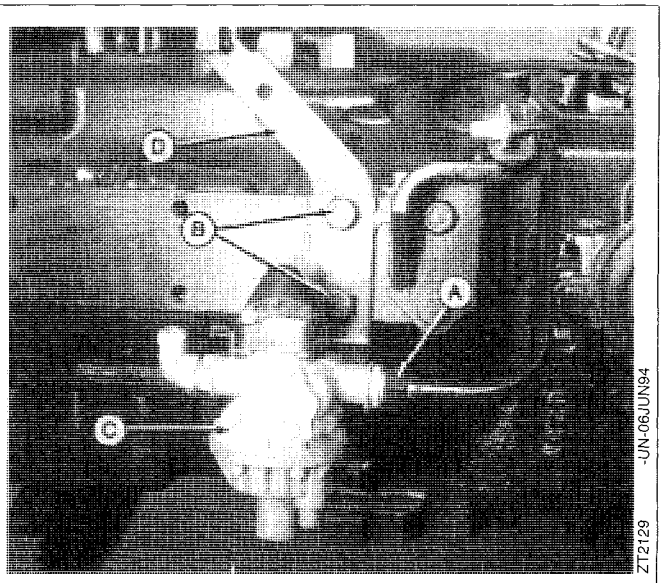
6. Position D05007ST rear tractor splitting stand (A) under tractor transmission. Adjust stand height to transmission at front and rear of stand. Install hold down chain (B) to stand and around transmission.



TM1564,1510,E -19-08FEB95

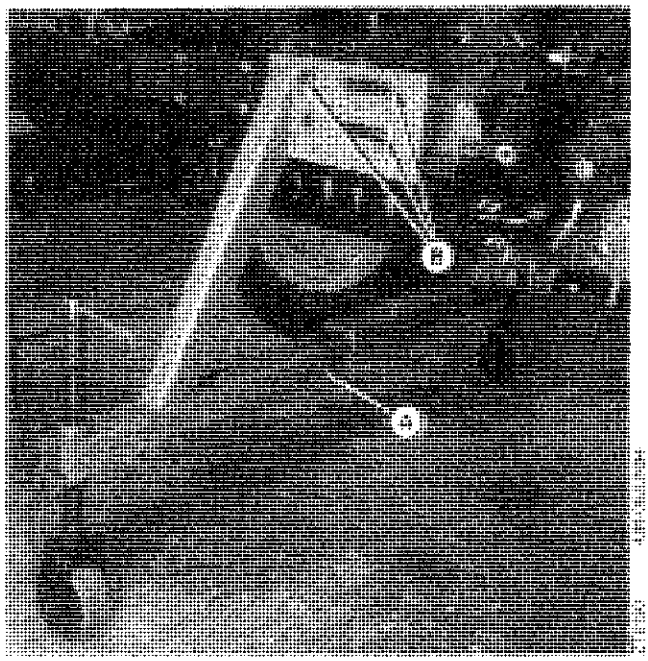
7. Remove nut (A) from air regulator located at left rear engine frame. Remove two bolts and lock washers (B) from frame. Remove regulator (C), spacer and left rear side engine cover bracket (D) from tractor.

A—Nut
B—Bolts
C—Regulator
D—Cover Bracket



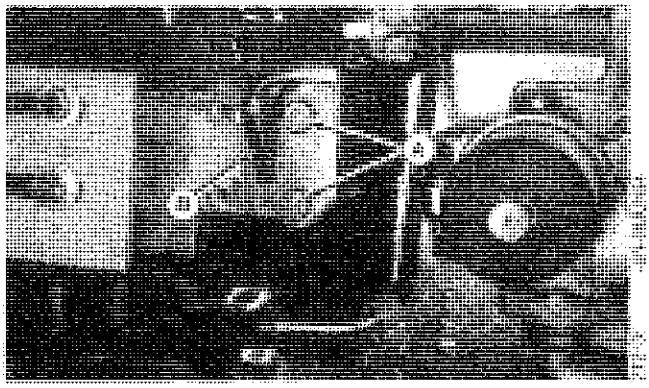
TM1564,1510,F -19-08FEB95

8. Position D05006ST front splitting stand (A) to rear of left and right-hand engine frame. Adjust height of stand and secure both sides of stand to tractor frame using three M15 x 50 bolts and flat washers (B) on each side of the frame.



TM1564,1510,G -19-08FEB95

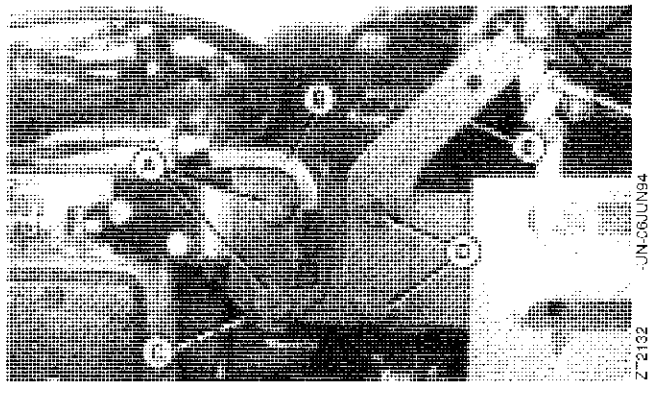
9. Remove two bolts and lock washers (A) and remove platform mounting bracket (B) from left side of clutch housing.



TM1564,1510,H -19-08FEB95

10. Remove two bolts and lock washers (A) from front right-hand platform mounting bracket (B) and remove bracket with spacer (C). Remove two bolts and lock washers (D) from right rear side cover bracket (E) and remove bracket from tractor.

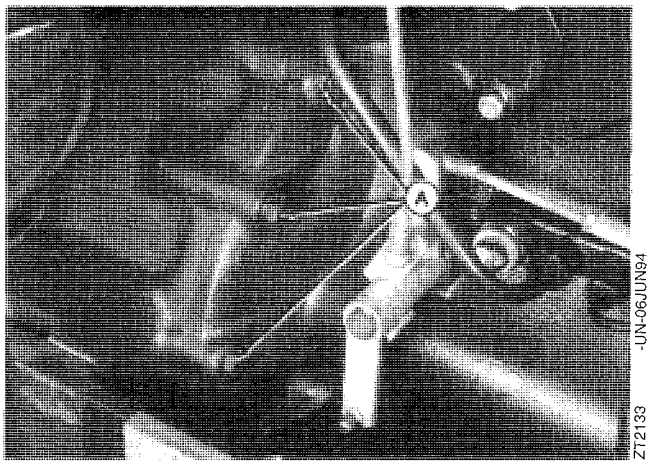
A—Bolts
B—Platform Bracket
C—Spacer
D—Bolts
E—Cover Bracket



TM1564,1510,I -19-08FEB95

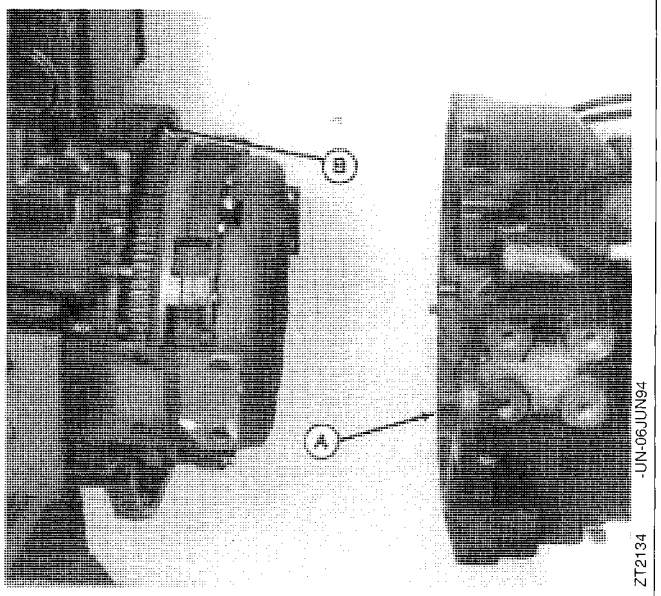
11. Remove thirteen cap screws and lock washers (A) from around clutch housing to engine.

NOTE: Three cap screws illustrated.



TM1564,1510,J -19-08FEB95

12. Separate transmission and rear of tractor (A) from engine and front of tractor (B) by blocking rear wheels of tractor and pushing front half of tractor forward.



TM1564,1510,K -19-08FEB95