

**TeamMate™ |  
1200, 1400, 1600,  
and 1800 Series  
Inboard Planetary  
Axles**

**John Deere Waterloo Works  
CTM18 (08JUL95)**

LITHO IN U.S.A.  
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. See the machine technical manual for information on component removal and installation, and gaining access to the components.

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.

This component technical manual covers the recommended repair procedure for the TEAMMATE™ I 1200, 1400, 1600, and 1800 Series Inboard Planetary Axles.

Some components from these axles, such as axle housings, brakes, and input quills, may be serviced without removing the complete axle assembly from the machine. You may have to determine this procedure yourself for a safe removal of such components. See information to remove and install the complete axle assembly, found in your vehicle technical manual.

Clean differential and axle assemblies before servicing. Always work in a clean work area.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

## FOS MANUALS—REFERENCE

## TECHNICAL MANUALS—MACHINE SERVICE

## COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

## MANUAL ORGANIZATION

Group 05 - SAFETY  
Group 10 - GENERAL  
Group 15 - OSCILLATING SUPPORTS  
Group 20 - STANDARD INPUT QUILL  
(1200 AND 1400)  
Group 21 - INPUT HOUSING/COVER  
(1600 AGRICULTURAL)  
Group 22 - INPUT HOUSING/COVER  
(1600 INDUSTRIAL AND OEM)  
Group 23 - INPUT QUILL (1800)  
Group 25 - AXLE DISCONNECT/INPUT HOUSING  
Group 30 - DIFFERENTIAL (1200 AND 1400)  
Group 31 - DIFFERENTIAL (1600)  
Group 32 - DIFFERENTIAL, No-SPIN™  
(1200 AND 1400)  
Group 33 - DIFFERENTIAL, No-SPIN™  
(1600)

Group 35 - FINAL DRIVE AXLE HOUSINGS  
AND SHAFTS  
Group 40 - SERVICE BRAKE  
Group 45 - PARK BRAKE—DRUM-EXPANDING SHOE  
Group 46 - PARK BRAKE—SAHR BRAKE  
Group 100 - TROUBLESHOOTING  
Group 105 - BRAKE INSPECTION, ADJUSTMENTS,  
TEST, AND BLEEDING  
Group 110 - OPERATIONAL CHECKS  
Group 115 - DIFFERENTIAL AND AXLE  
ASSEMBLY TESTS  
Group 120 - THEORY OF OPERATION  
Group 499 - DEALER FABRICATED TOOLS

## NOTICE TO THE DEALER

This Component Technical Manual should be used for the repair of John Deere TEAMMATE™ I 1200, 1400, 1600, and 1800 Series Inboard Planetary Axles.

**IMPORTANT:** Before beginning repair or making adjustments, become familiar with *Axle Identification* and the *Axle Serial Number Plate*. (See *General—Group 10*.)

Discard CTM18 dated Aug 89

## 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.



DX,FLAME -19-04JUN90

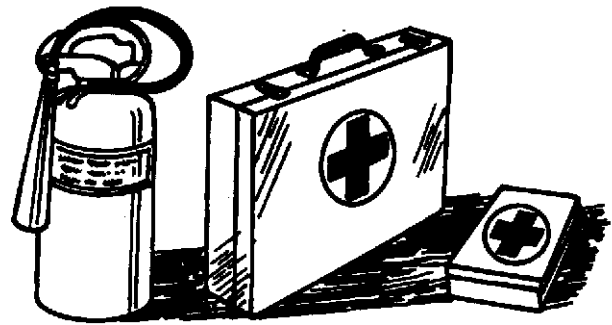
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TS227

## 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.



DX,FIRE2 -19-03MAR93

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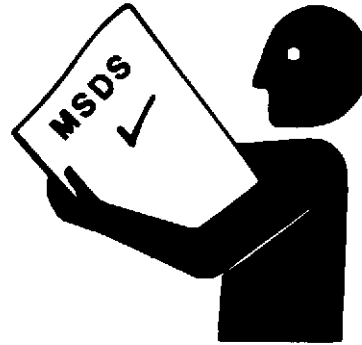
## HANDLE CHEMICAL PRODUCTS SAFELY

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.)



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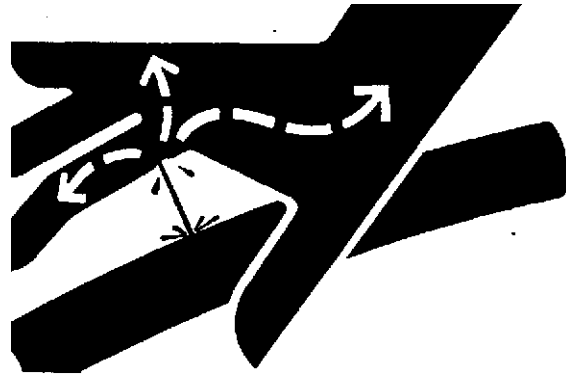
## AVOID HIGH-PRESSURE FLUIDS

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.



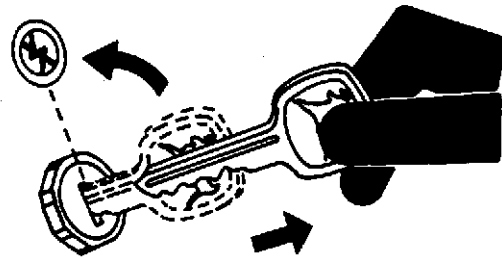
DX,FLUID -19-03MAR93

X9811 -JUN-23AUG88

### 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.



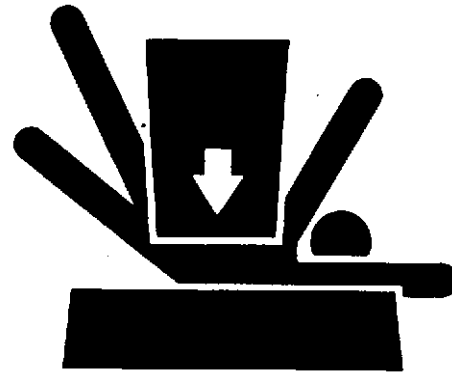
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### SUPPORT MACHINE PROPERLY

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.



DX,LOWER -19-04JUN90

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TS229

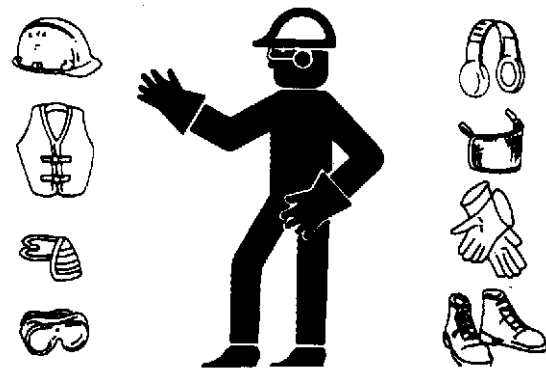
### WEAR PROTECTIVE CLOTHING

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.



DX,WEAR -19-10SEP90

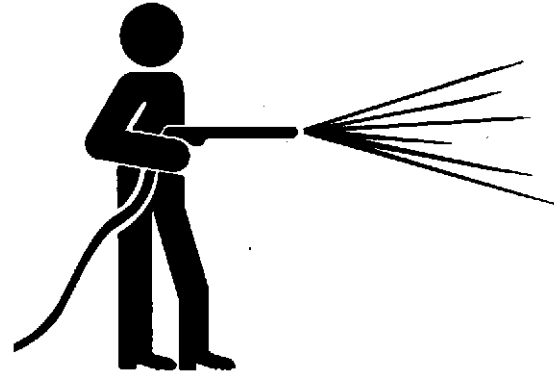
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### WORK IN CLEAN AREA

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.



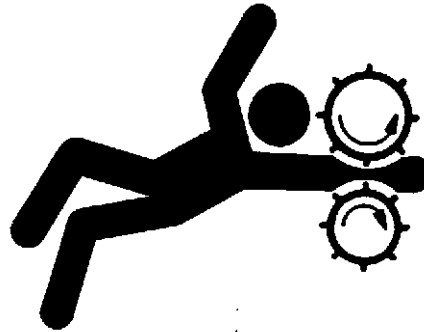
DX,CLEAN -19-04JUN90

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### 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.

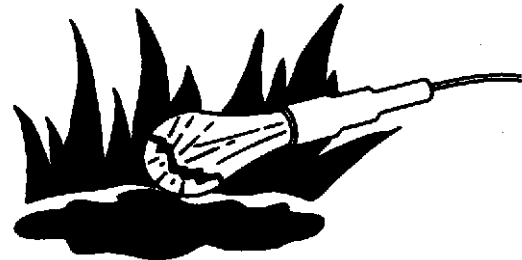


DX,LOOSE -19-04JUN90

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### 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.



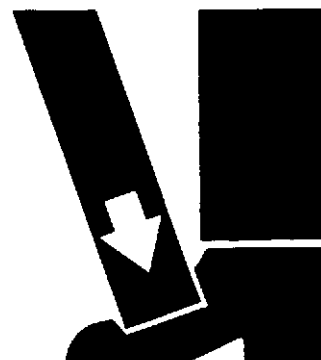
DX,LIGHT -19-04JUN90

TS223 -JUN-23AUG88

### 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.



DX,LIFT -19-04JUN90

TS226 -JUN-23AUG88

## 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.



DX,TORCH -19-03MAR93

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## REMOVE PAINT BEFORE WELDING OR HEATING

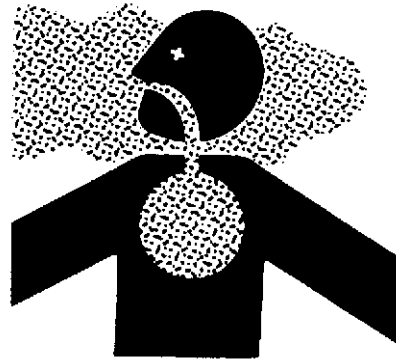
Avoid potentially toxic fumes and dust.

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.



DX,PAINT -19-03MAR93

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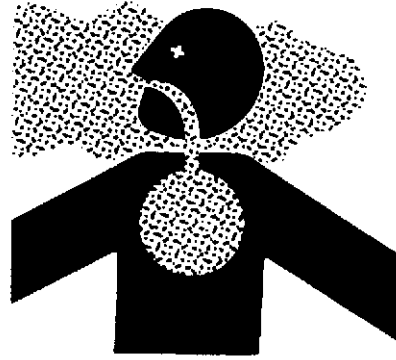
## AVOID HARMFUL ASBESTOS DUST

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.



TS220 -JUN-23AUG88

DX,DUST -19-15MAR91

## PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.



TS218 -JUN-23AUG88

DX,SERV -19-03MAR93

## USE PROPER TOOLS

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

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. **DO NOT** use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



DX,REPAIR -19-04JUN90

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## DISPOSE OF WASTE PROPERLY

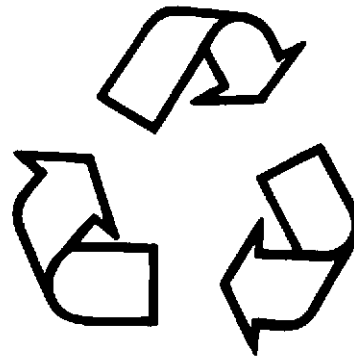
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

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

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**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

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**TEAMMATE I INBOARD PLANETARY AXLES APPLICATION CHART**

**JOHN DEERE AGRICULTURAL TRACTORS:**

| Machine                   | Axle Series |
|---------------------------|-------------|
| 8560 .....                | 1600        |
| 8760 .....                | 1600        |
| 8960 .....                | 1600 *      |
| 8570-8770-8870-8970 ..... | 1600 *      |

**JOHN DEERE INDUSTRIAL EQUIPMENT:**

**Backhoes**

|            |      |
|------------|------|
| 710C ..... | 1200 |
|------------|------|

**Scrapers**

|                                 |      |
|---------------------------------|------|
| 5010-I .....                    | 1400 |
| 760 and 760A .....              | 1400 |
| 762 and 762A .....              | 1400 |
| 762B (xxxxxx— ) .....           | 1400 |
| 860, 860A, 860B, and 862B ..... | 1400 |

**Skidders**

|                                       |      |
|---------------------------------------|------|
| 340D .....                            | 1200 |
| 440, 440A, 440B, 440C, and 440D ..... | 1200 |
| 44AD .....                            | 1200 |
| 540, 540A, 540B, and 540D .....       | 1200 |
| 540E:                                 |      |
| Front .....                           | 1200 |
| Rear .....                            | 1400 |
| 548D and 548E .....                   | 1200 |
| 640, 640D, and 640E .....             | 1200 |
| 648D and 648E .....                   | 1200 |
| 740, 740A, 740E, and 740G .....       | 1400 |
| 748E .....                            | 1400 |

**Loaders**

|                                       |      |
|---------------------------------------|------|
| LX100 .....                           | 1200 |
| LX120:                                |      |
| Front .....                           | 1400 |
| Rear .....                            | 1200 |
| LX150 .....                           | 1400 |
| 444, 444C and 444D .....              | 1200 |
| 444E (xxxxxx—001151) .....            | 1200 |
| 544, 544A, 544B, 544C, and 544D ..... | 1200 |
| 624E:                                 |      |
| Front .....                           | 1400 |
| Rear .....                            | 1200 |
| 644, 644A, 644B, 644C, and 644D ..... | 1400 |
| 646 and 646C .....                    | 1400 |
| 744E .....                            | 1600 |
| 844 .....                             | 1800 |

\* High Capacity

**BASIC INBOARD PLANETARY AXLE SPECIFICATIONS**

| Description                          | 1200                                     | 1400                                     | 1600                                                                                      | 1800                |
|--------------------------------------|------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------|---------------------|
| Input Yokes:                         | 5C,6C,58WB,155T                          | 7C,16T,155T                              | 8C                                                                                        | 8C,9C               |
| Input Housing:                       |                                          |                                          |                                                                                           |                     |
| Centerline Pivot                     | Yes                                      | Yes                                      | Yes                                                                                       | Yes                 |
| Optional Oscillating Hardware        | Yes                                      | Yes                                      | Yes                                                                                       | Yes                 |
| Input Pinion and Ring Gear Ratio:    | 4.333:1<br>4.778:1<br>5.571:1            | 4.364:1<br>4.778:1<br>5.143:1            | 4.364:1<br>4.909:1<br>5.273:1<br>5.818:1<br>5.636:1 <sup>a</sup><br>6.444:1 <sup>b</sup>  | 4.444:1             |
| Inboard Wet Disk Brakes:             | Yes                                      | Yes                                      | Yes                                                                                       | Yes                 |
| Inboard Planetary Final Drive Ratio: | 3.714:1<br>4.800:1<br>5.500:1<br>6.000:1 | 3.714:1<br>4.800:1<br>6.000:1<br>6.400:1 | 5.143:1<br>6.429:1 <sup>c</sup>                                                           | 5.000:1             |
| <b>Dimensions:</b>                   |                                          |                                          |                                                                                           |                     |
| Length (Axle Flange-to-Flange):      |                                          |                                          |                                                                                           |                     |
| Narrow                               | 1300 mm (51.2 in.)                       | 1953 mm (76.9 in.)                       | —                                                                                         | 2062 mm (81.2 in.)  |
| Standard                             | 1700 mm (66.9 in.)                       | 2063 mm (81.2 in.)                       | 1994 mm (78.5 in.)                                                                        | 2266 mm (89.2 in.)  |
| Wide                                 | 1953 mm (76.9 in.)                       | —                                        | 2198 mm (86.5 in.)                                                                        | 2466 mm (97.1 in.)  |
| Height                               | 452 mm (17.8 in.)                        | 498 mm (19.6 in.)                        | 621 mm (24.5 in.)                                                                         | 608.5 mm (22.9 in.) |
| Approximate Weight                   | 783 kg (1725 lb)                         | 932 kg (2050 lb)                         | 1361 kg (3000 lb)                                                                         | 1451 kg (3200 lb)   |
| Oil Capacity                         | 16 L (17 qt)                             | 19.4 L (20.5 qt)                         | 45.5 L (48 qt) <sup>d</sup><br>24.6 L (26 qt) <sup>a</sup><br>28.4 L (30 qt) <sup>b</sup> | 28 L (30 qt)        |

<sup>a</sup> 8560-8760 Agricultural 4WD tractors

<sup>b</sup> 8960-8570-8770-8870-8970 Agricultural 4WD tractors

<sup>c</sup> 8560-8760-8960-8570-8770-8870-8970 Agricultural 4WD tractors

<sup>d</sup> Industrial and OEM applications

## AXLE IDENTIFICATION

Each TeamMate I Axle has a serial number plate located on the input side of the differential case. Major design changes may be noted within this Component Technical Manual (CTM) and will refer to the information on the serial number plate.

This CTM is used for TeamMate I Axles with the following information on the SECOND line, first five positions (reading left to right) of the Serial Number Plate:

|                             |                             |
|-----------------------------|-----------------------------|
| <b>1200 Series</b><br>2501R | <b>1400 Series</b><br>2511R |
| <b>1600 Series</b><br>2521R | <b>1800 Series</b><br>2531R |

Each John Deere inboard planetary axle assembly has a 13-digit alpha-numeric Serial Number plate. The top line of the plate identifies the producing factory, component type identification, and six position sequential serial number.

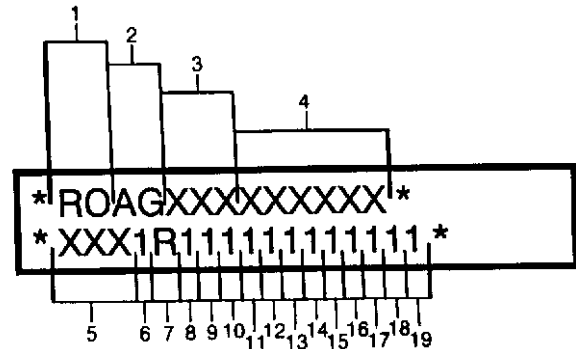
The alpha-numeric code on the second line identifies the axle configuration.

**IMPORTANT: Serial Number plates must be masked when painting axles to prevent the information from becoming illegible. This information is used for service and warranty purposes.**

*NOTE: Some serial number plates include the addition of bar-coding.*

RX,CTM1810,3A -19-30JUN95

## SERIAL NUMBER PLATES—JOHN DEERE APPLICATIONS



- 1—Manufacturing Unit  
RO = Waterloo Works
- 2—Component Identification  
AG = Inboard Planetary
- 3—Axle Series  
250 = 1200 Series  
251 = 1400 Series  
252 = 1600 Series  
253 = 1800 Series

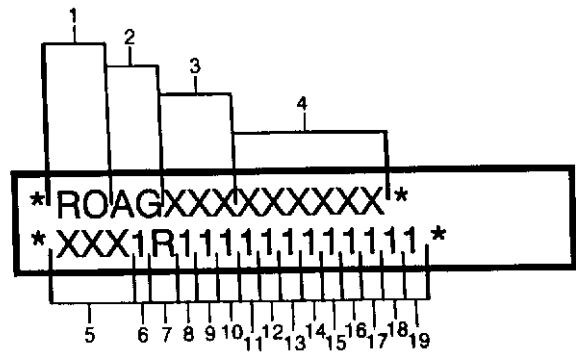
- 4—Six Position Serial Number
- 5—Axle Series  
250 = 1200 Series  
251 = 1400 Series  
252 = 1600 Series  
253 = 1800 Series

- 6—Design Version  
0 = Transitional  
1 = TEAMMATE™ I  
2 = Not Used  
3 = TEAMMATE™ II

- 7—19—Top Assembly Number

RX,CTM1810,4A -19-08JUL95

**SERIAL NUMBER PLATE—OEM APPLICATIONS (1200 SERIES AXLES)**



-JUN30NOV94  
RW25330

-JUN15NOV94  
RW25329

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1—Manufacturing Unit</b><br/>RO = Waterloo Works</p> <p><b>2—Component Identification</b><br/>AG = Inboard Planetary</p> <p><b>3—Axle Series</b><br/>250 = 1200 Series</p> <p><b>4—Six-Position Serial Number</b></p> <p><b>5—Axle Series</b><br/>250 = 1200 Series</p> <p><b>6—Design Version</b><br/>0 = Transitional<br/>1 = TEAMMATE™ I<br/>2 = Not Used<br/>3 = TEAMMATE™ II</p> <p><b>7—Manufacturing Unit</b><br/>R = Waterloo Works</p> <p><b>8—Input Rotation</b><br/>1 = Clockwise<br/>(Toward Input)<br/>2 = Clockwise<br/>(Away from Input)<br/>3 = Counterclockwise<br/>(Toward Input)<br/>4 = Counterclockwise<br/>(Away from Input)</p> <p><b>9—Spiral Bevel Reduction</b><br/>1 = 4.331:1<br/>2 = 4.778:1<br/>3 = 5.571:1<br/>A = 4.333:1<br/>Special Disconnect</p> | <p><b>10—Yoke/Size and Style</b><br/>1 = 5C<br/>2 = 6C<br/>3 = 58WB<br/>4 = 155T With Flange<br/>5 = 58WB With Br. Disk<br/>6 = 155T<br/>A = Special Disconnect Yoke</p> <p><b>11—Flange-to-Flange Dimension and Wheel Mounting</b><br/>1 = None<br/>2 = 1300 mm (51.2 in.)<br/>4 = 1700 mm (66.9 in.)<br/>6 = 1953 mm (76.9 in.)<br/>A = Special<br/>B = Offset Left<br/>1627 mm (64 in.)<br/>C = Offset Right<br/>1627 mm (64 in.)<br/>D = Offset Left<br/>1500 mm (59 in.)<br/>E = Offset Right<br/>1500 mm (59 in.)</p> | <p><b>12—Input Housing and Auxiliary Brake</b><br/>1 = Standard, No Brake<br/>A = Special Disconnect<br/>B = Special With Brake</p> <p><b>13—Mounting Type</b><br/>1 = Fixed Mount<br/>2 = Center Pivot Front Bracket Oscillation<br/>3 = Center Pivot With Rear Pivot Kit Oscillation<br/>A = Special Offset Support<br/>Mounting</p> <p><b>14—Brake Type</b><br/>1 = No Brakes<br/>2 = Independent Brakes Standard Capacity<br/>3 = Dual Brakes Standard Capacity<br/>4 = Independent Brakes High Capacity<br/>5 = Dual Brakes High Capacity</p> | <p><b>15—Differential Type</b><br/>1 = Standard<br/>2 = No-SPIN™<br/>3 = Capture DIFF-LOK</p> <p><b>16—Differential Case</b><br/>1 = Standard<br/>B = Special Low-Profile</p> <p><b>17—Final Drive Reduction</b><br/>1 = Without Final Drives<br/>2 = 3.714:1<br/>3 = 4.800:1<br/>4 = 5.500:1<br/>5 = 6.000:1</p> <p><b>18—Trim</b><br/>1 = No Trim<br/>2 = VCI Bag<br/>3 = Paint<br/>5 = Paint and Covers</p> <p><b>19—Miscellaneous Parts</b><br/>1 = ID Tag and SN Plate<br/>2 = ID Tag, SN Plate, and Breather</p> |
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