# PTO Drive Attachments:

**48, 50, 54, 60, 72, 76, 160, 172, 261 & 272 Rotary Mowers**
**47, 59 & 359 Snowblowers**
**46, 49 & 50 Snowthrowers**
**3, 31, 31A & 31B Post Hole Diggers**
**48, 450, 550 & 660 Rotary Tillers**
**51 & 246 Rotary Brooms**
**2000 & 540 RPM PTO**

# TECHNICAL MANUAL

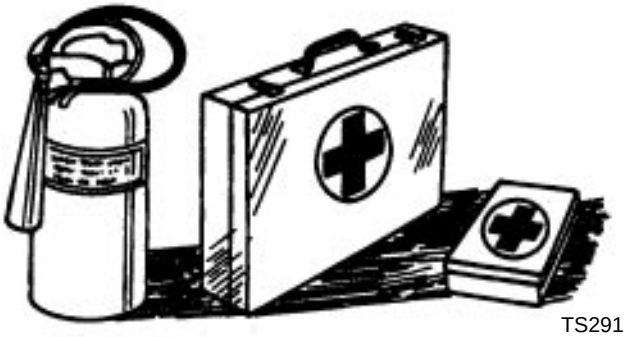
**John Deere**
**Lawn & Grounds Care Division**

**TM1594 (31OCT95)**
**Replaces TM1096, TM1236, TM1251, TM1260, TM1273 & TM1429**

**Litho in U.S.A**

## HANDLE FLUIDS SAFELY-AVOID FIRES

- **BE PREPARED FOR EMERGENCIES**



TS291

TS227

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.

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.

## HANDLE CHEMICAL PRODUCTS SAFELY


TS1132

1133

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.

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

## USE CARE AROUND HIGH-PRESSURE FLUID LINES

- **AVOID HIGH-PRESSURE FLUIDS**

X9811

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.

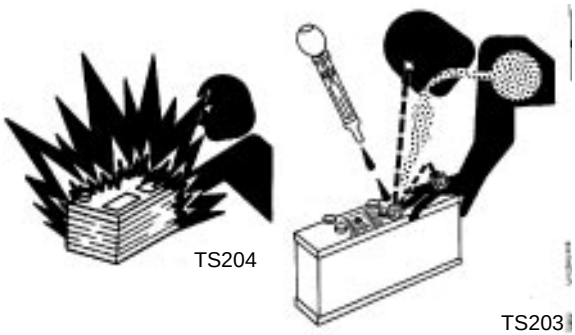
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical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

- **AVOID HEATING NEAR PRESSURIZED FLUID LINES**

TS953

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.

## USE CARE IN HANDLING AND SERVICING BATTERIES



TS204

TS203

- **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).

- **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 acid burns 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 10_15 minutes.
  4. Get medical attention immediately.

- **If acid is swallowed:**
  1. Drink large amounts of water or milk.
  2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
  3. Get medical attention immediately.

# USE SAFE SERVICE PROCEDURES

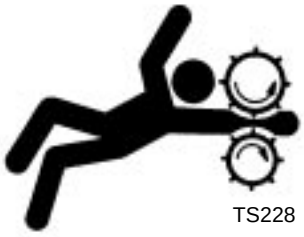
- **WEAR PROTECTIVE CLOTHING**

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



TS228

- **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.

- **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.

- **PARK MACHINE SAFELY**

TS230

- **Before working on the machine:**
  1. Lower all equipment to the ground.
  2. Stop the engine and remove the key.
  3. Disconnect the battery ground strap.
  4. Hang a “DO NOT OPERATE” tag in operator station.

- **SUPPORT MACHINE PROPERLY AND USE PROPER LIFTING EQUIPMENT**

TS229

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.

Lifting heavy components incorrectly can cause severe injury or machine damage. Follow recommended procedure for removal and installation of components in the manual.

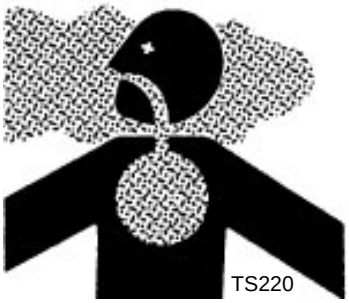
- **WORK IN CLEAN AREA**

- **Before starting a job**
  1. Clean work area and machine:
  2. Make sure you have all necessary tools to do your job.
  3. Have the right parts on hand.
  4. Read all instructions thoroughly; do not attempt shortcuts.

**• 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.

**• WORK IN VENTILATED AREA**


TS220

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.

**• 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.

**• 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.

**• SERVICE TIRES SAFELY**


TS952

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.**

## REPLACE SAFETY SIGNS

TS201

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

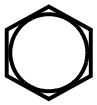
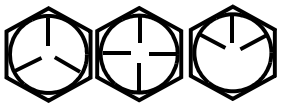
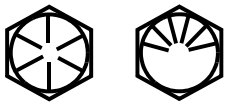
## LIVE WITH SAFETY

TS231


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

# CONTENTS

# UNIFIED INCH TORQUE VALUES

| | | | |
|---|---|---|---|
| **SAE Grade and Head Markings** | **No Marks**  **1 or 2[b]** |  **5 5.1 5.2** |  **8 8.2** |
| **SAE Grade and Nut Markings** | **No Marks**  **2** |  **5** |  **8** |

TS1162

| Size | Grade 1 | | | | Grade 2[b] | | | | Grade 5, 5.1 or 5.2 | | | | Grade 8 or 8.2 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lubricated[a] | | Dry[a] | | Lubricated[a] | | Dry[a] | | Lubricated[a] | | Dry[a] | | Lubricated[a] | | Dry[a] | |
| | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft |
| **1/4** | 3.8 | 2.8 | 4.7 | 3.5 | 6 | 4.4 | 7.5 | 5.5 | 9.5 | 7 | 12 | 9 | 13.5 | 10 | 17 | 12.5 |
| **5/16** | 7.7 | 5.7 | 9.8 | 7.2 | 12 | 9 | 15.5 | 11.5 | 19.5 | 14.5 | 25 | 18.5 | 28 | 20.5 | 35 | 26 |
| **3/8** | 13.5 | 10 | 17.5 | 13 | 22 | 16 | 27.5 | 20 | 35 | 26 | 44 | 32.5 | 49 | 36 | 63 | 46 |
| **7/16** | 22 | 16 | 28 | 20.5 | 35 | 26 | 44 | 32.5 | 56 | 41 | 70 | 52 | 80 | 59 | 100 | 74 |
| **1/2** | 34 | 25 | 42 | 31 | 53 | 39 | 67 | 49 | 85 | 63 | 110 | 80 | 120 | 88 | 155 | 115 |
| **9/16** | 48 | 35.5 | 60 | 45 | 76 | 56 | 95 | 70 | 125 | 92 | 155 | 115 | 175 | 130 | 220 | 165 |
| **5/8** | 67 | 49 | 85 | 63 | 105 | 77 | 135 | 100 | 170 | 125 | 215 | 160 | 240 | 175 | 305 | 225 |
| **3/4** | 120 | 88 | 150 | 110 | 190 | 140 | 240 | 175 | 300 | 220 | 380 | 280 | 425 | 315 | 540 | 400 |
| **7/8** | 190 | 140 | 240 | 175 | 190 | 140 | 240 | 175 | 490 | 360 | 615 | 455 | 690 | 510 | 870 | 640 |
| **1** | 285 | 210 | 360 | 265 | 285 | 210 | 360 | 265 | 730 | 540 | 920 | 680 | 1030 | 760 | 1300 | 960 |
| **1-1/8** | 400 | 300 | 510 | 375 | 400 | 300 | 510 | 375 | 910 | 670 | 1150 | 850 | 1450 | 1075 | 1850 | 1350 |
| **1-1/4** | 570 | 420 | 725 | 535 | 570 | 420 | 725 | 535 | 1280 | 945 | 1630 | 1200 | 2050 | 1500 | 2600 | 1920 |
| **1-3/8** | 750 | 550 | 950 | 700 | 750 | 550 | 950 | 700 | 1700 | 1250 | 2140 | 1580 | 2700 | 2000 | 3400 | 2500 |
| **1-1/2** | 990 | 730 | 1250 | 930 | 990 | 730 | 1250 | 930 | 2250 | 1650 | 2850 | 2100 | 3600 | 2650 | 4550 | 3350 |

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 grade.

Fasteners should be replaced with the same or higher grade. If higher grade 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.

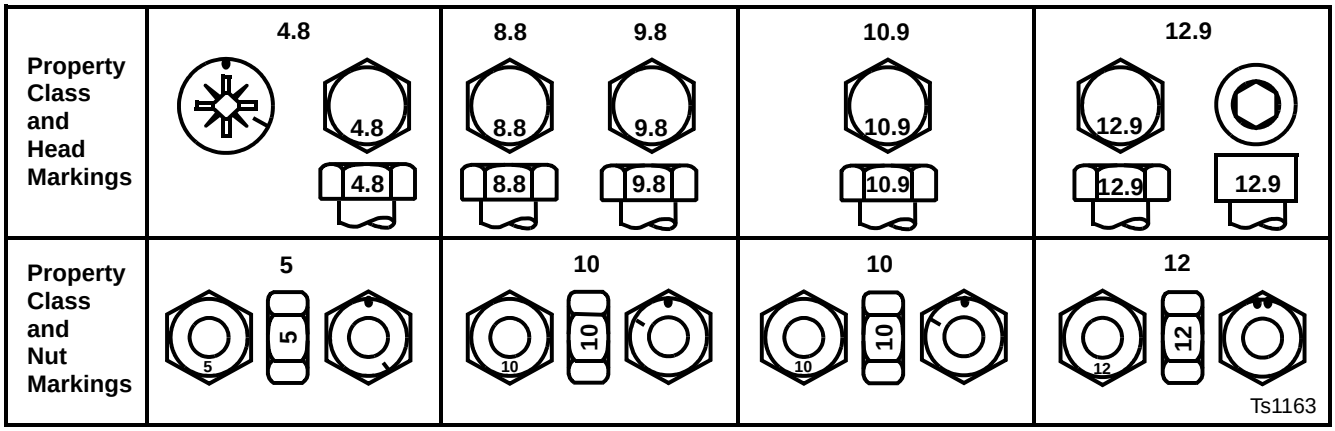
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head.

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.*

*[b] Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6 in.) long. Grade 1 applies for hex cap screws over 152 mm (6 in.) long, and for all other types of bolts and screws of any length.*

# METRIC TORQUE VALUES




| 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] | |
| | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft | Nm | lb-ft |
| **M6** | 4.7 | 3.5 | 6 | 4.4 | 9 | 6.6 | 11.5 | 8.5 | 13 | 9.5 | 16.5 | 12.5 | 15.5 | 11.5 | 19.5 | 14.5 |
| **M8** | 11.5 | 8.5 | 14.5 | 10.7 | 22 | 16 | 28 | 20.5 | 32 | 23.5 | 40 | 29.5 | 37 | 27.5 | 47 | 35 |
| **M10** | 23 | 17 | 29 | 21 | 43 | 32 | 55 | 40 | 63 | 46 | 80 | 59 | 75 | 55 | 95 | 70 |
| **M12** | 40 | 29.5 | 50 | 37 | 75 | 55 | 95 | 70 | 110 | 80 | 140 | 105 | 130 | 95 | 165 | 120 |
| **M14** | 63 | 46 | 80 | 59 | 120 | 88 | 150 | 110 | 175 | 130 | 220 | 165 | 205 | 150 | 260 | 190 |
| **M16** | 100 | 74 | 125 | 92 | 190 | 140 | 240 | 175 | 275 | 200 | 350 | 225 | 320 | 235 | 400 | 300 |
| **M18** | 135 | 100 | 175 | 125 | 265 | 195 | 330 | 245 | 375 | 275 | 475 | 350 | 440 | 325 | 560 | 410 |
| **M20** | 190 | 140 | 245 | 180 | 375 | 275 | 475 | 350 | 530 | 390 | 675 | 500 | 625 | 460 | 790 | 580 |
| **M22** | 265 | 195 | 330 | 245 | 510 | 375 | 650 | 480 | 725 | 535 | 920 | 680 | 850 | 625 | 1080 | 800 |
| **M24** | 330 | 245 | 425 | 315 | 650 | 480 | 820 | 600 | 920 | 680 | 1150 | 850 | 1080 | 800 | 1350 | 1000 |
| **M27** | 490 | 360 | 625 | 460 | 950 | 700 | 1200 | 885 | 1350 | 1000 | 1700 | 1250 | 1580 | 1160 | 2000 | 1475 |
| **M30** | 660 | 490 | 850 | 625 | 1290 | 950 | 1630 | 1200 | 1850 | 1350 | 2300 | 1700 | 2140 | 1700 | 2700 | 2000 |
| **M33** | 900 | 665 | 1150 | 850 | 1750 | 1300 | 2200 | 1625 | 2500 | 1850 | 3150 | 2325 | 2900 | 2150 | 3700 | 2730 |
| **M36** | 1150 | 850 | 1450 | 1075 | 2250 | 1650 | 2850 | 2100 | 3200 | 2350 | 4050 | 3000 | 3750 | 2770 | 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.*

# GEAR CASE OIL

## NORTH AMERICA—

**IMPORTANT: ONLY use a quality oil in this gear case. DO NOT mix any other oils in this gear case. DO NOT use BIO–HY–GARD® in this gear case.**

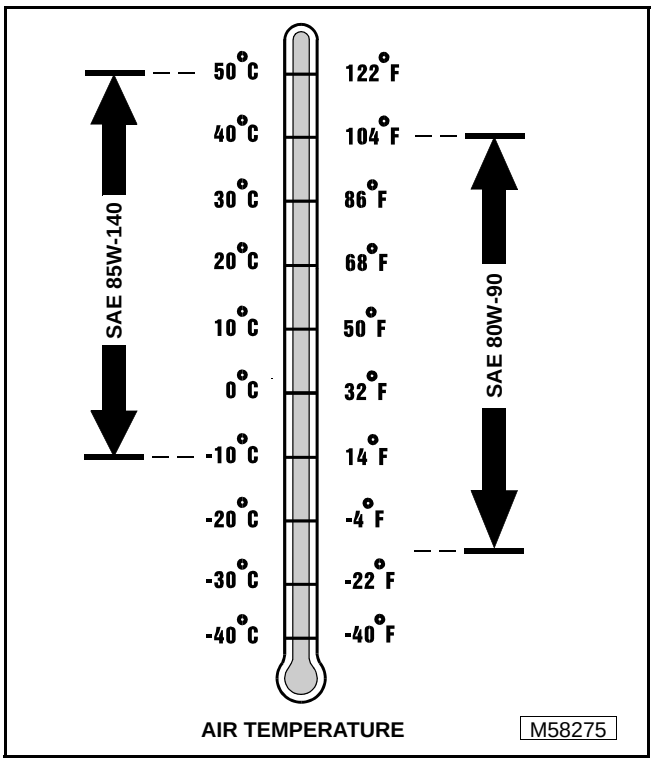
The following John Deere gear case oil is **PREFERRED**:

- **GL-5 GEAR LUBRICANT®—SAE 85W-140;**
- **GL-5 GEAR LUBRICANT®—SAE 80W-90.**

Other gear case oils may be used if above recommended John Deere gear case oils are not available, provided they meet the following specification:

- **API Service Classification GL–5.**

**IMPORTANT: If minimum air temperature should fall below -25°C (-13°F), the gear case oil must be heated to at least five degrees above the lower limit before start-up or gear case may be damaged. For prolonged operation under heavy load in air temperatures above 50°C (122°F) reduce service interval by 50%. Remind the customer/operator to check the gear case oil level more often when using multi-viscosity grade oil in warm air temperatures.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper oil for your customers:

- **Module DX,GEOIL in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide;**
- **Lubrication Sales Manual PI7032.**

# GEAR CASE OIL

## EUROPE—

**IMPORTANT: ONLY use a quality oil in this gear case. DO NOT mix any other oils in this gear case. DO NOT use BIO–HY–GARD® in this gear case.**

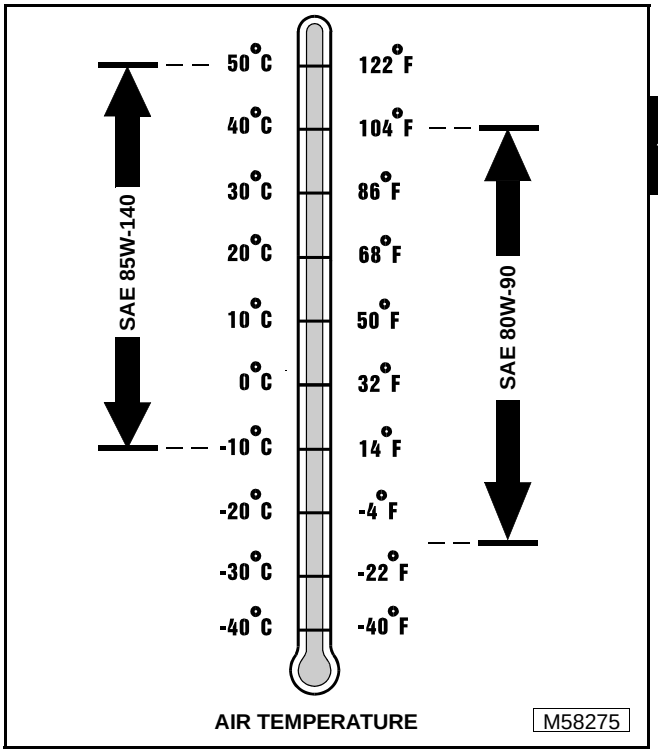
The following John Deere gear case oil is **PREFERRED**:

- **EXTREME–GARD™—SAE 85W-140;**
- **EXTREME–GARD™—SAE 80W-90.**

Other gear case oils may be used if above recommended John Deere gear case oils are not available, provided they meet the following specification:

- **API Service Classification GL–5.**

**IMPORTANT: If minimum air temperature should fall below -25°C (-13°F), the gear case oil must be heated to at least five degrees above the lower limit before start-up or gear case may be damaged. For prolonged operation under heavy load in air temperatures above 50°C (122°F) reduce service interval by 50%. Remind the customer/operator to check the gear case oil level more often when using multi-viscosity grade oil in warm air temperatures.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper oil for your customers:

- **Module DX,GEOIL in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide.**

# GEAR CASE GREASE

## For 3/31/31A/31B Post Hole Diggers

## NORTH AMERICA—

**IMPORTANT: ONLY use this specified grease in this gear case. DO NOT mix any other greases in this gear case. DO NOT use any BIO–GREASE in this gear case.**

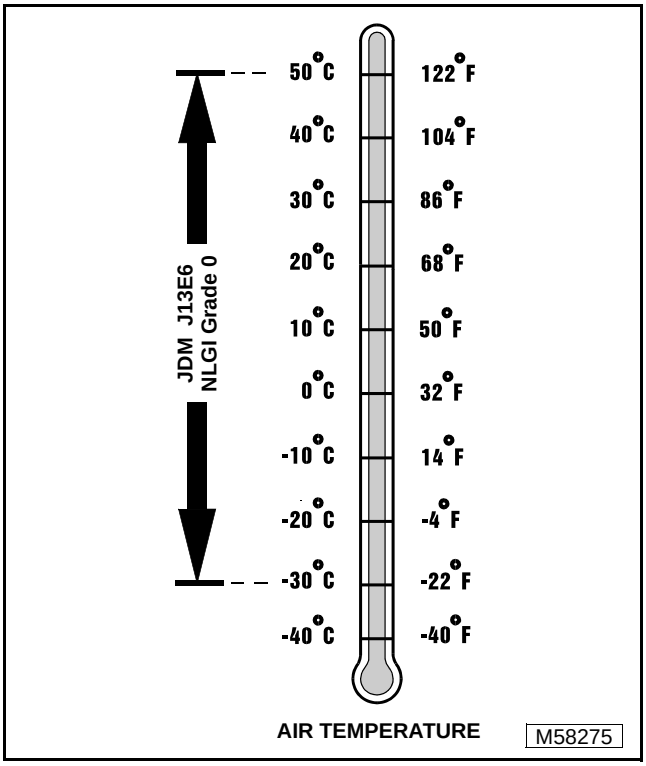
The following John Deere gear case grease is **PREFERRED**:

- **CORN HEAD LUBRICANT®—JDM J13E6, NLGI Grade 0.**

Other gear case greases may be used if above preferred John Deere grease is not available, provided they meet the following specifications:

- **John Deere Standard JDM J13E6, NLGI Grade 0.**

**IMPORTANT: If minimum air temperature should fall below -30°C (-22°F), the gear case grease must be heated to at least five degrees above the lower limit before start-up or gear case may be damaged.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper grease for your customers:

- **Module DX,GREA1 in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide;**
- **the Lubrication Sales Manual PI7032.**

# GEAR CASE GREASE

## For 3/31/31A/31B Post Hole Diggers

## EUROPE—

**IMPORTANT: ONLY use this specified greases in this application. DO NOT mix any other greases in this application. DO NOT use any BIO–GREASE in this application.**

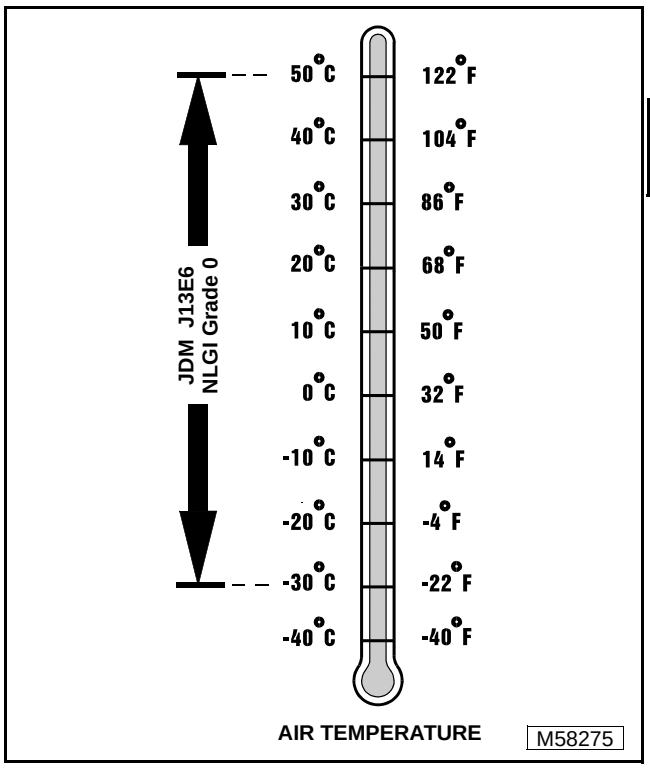
The following John Deere grease is **PREFERRED**:

- **GREASE–GARD®—JDM J13E6, NLGI Grade 0.**

Other greases may be used if above preferred John Deere grease is not available, provided they meet the following specifications:

- **John Deere Standard JDM J13E6, NLGI Grade 0.**

**IMPORTANT: If minimum air temperature should fall below -30°C (-22°F), the grease must be heated to at least five degrees above the lower limit before start-up or components may be damaged.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper grease for your customers:

- **Module DX,GREA1 in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide.**

# TRANSMISSION/HYDRAULIC OIL

## 540 RPM PTO

## NORTH AMERICA—

**IMPORTANT: DO NOT use engine oil or "Type F" (Red) Automatic Transmission Fluid in this transmission. DO NOT mix any other oils in this transmission. DO NOT use BIO–HY–GARD® in this transmission.**

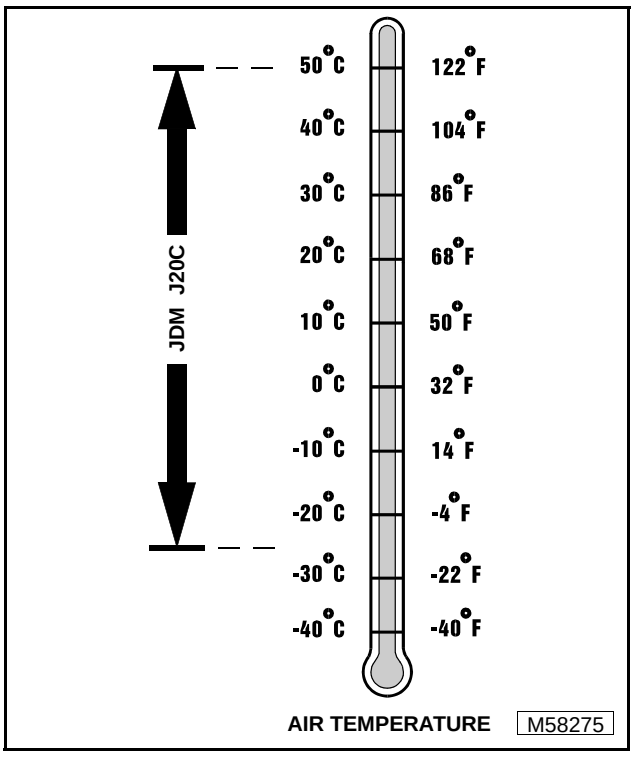
The following John Deere transmission and hydraulic oil is **PREFERRED**:

- **HY–GARD®—JDM J20C.**

Other oils may be used if above recommended John Deere oil is not available, provided they meet the following specification:

- **John Deere Standard JDM J20C.**

**IMPORTANT: If minimum air temperature should fall below -25°C (-13°F), the transmission oil must be heated to at least five degrees above the lower limit before start-up or transmission may be damaged. For prolonged operation under heavy load in air temperatures above 50°C (122°F) reduce service interval by 50%.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper oil for your customers:

- **Module DX,ANTI in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide;**
- **Lubrication Sales Manual PI7032.**

*NOTE: Disregard the John Deere All Weather Hydrostatic Fluid (JDM J21A) listing—it has been eliminated from the specification.*

# TRANSMISSION/HYDRAULIC OIL

## 540 RPM PTO

## EUROPE—

**IMPORTANT: DO NOT use engine oil or "Type F" (Red) Automatic Transmission Fluid in this transmission. DO NOT mix any other oils in this transmission. DO NOT use BIO–HY–GARD® in this transmission.**

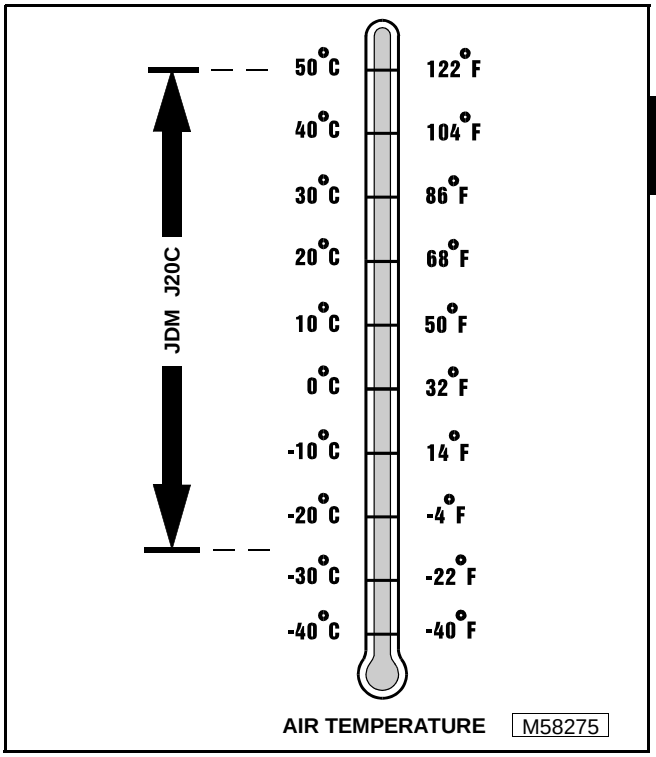
The following John Deere transmission and hydraulic oil is **PREFERRED**:

- **HY–GARD®—JDM J20C.**

Other oils may be used if above recommended John Deere oil is not available, provided they meet the following specification:

- **John Deere Standard JDM J20C.**

**IMPORTANT: If minimum air temperature should fall below -25°C (-13°F), the transmission oil must be heated to at least five degrees above the lower limit before start-up or transmission may be damaged. For prolonged operation under heavy load in air temperatures above 50°C (122°F) reduce service interval by 50%.**




**John Deere Dealers:** You may want to cross-reference the following publications to recommend the proper oil for your customers:

- **Module DX,ANTI in JDS–G135;**
- **Section 530, Lubricants & Hydraulics, of the John Deere Merchandise Sales Guide.**

*NOTE: Disregard the John Deere All Weather Hydrostatic Fluid (JDM J21A) listing—it has been eliminated from the specification.*

# ALTERNATIVE LUBRICANTS

Conditions in certain geographical areas outside the United States and Canada may require different lubricant recommendations than these printed in this manual or the operator's manual. Consult with your John Deere Dealer, or Sales Branch to obtain the alternative lubricant recommendations.

# SYNTHETIC LUBRICANTS

Synthetic lubricants may be used in John Deere equipment if they meet the applicable performance requirements (industry classification and/or military specification) as shown in this group.

The recommended temperature limits and service or oil change intervals should be maintained as shown in the operator’s manual.

Avoid mixing different brands, grades, or types of oil. Oil manufacturers blend additive in their oils to meet certain specifications and performance requirements. Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

# LUBRICANT STORAGE

These attachments can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination. Store drums on their sides and safely away from open flames, sparks, or space heaters.

# ROTARY MOWERS
# FRONT MOUNT (SIDE & REAR DISCHARGE)

**48-INCH (F710)**
**54-INCH (F725)**
**60-INCH REAR DISCHARGE (F910, F911, F912, F915, F930, F932 & F935)**
**76-INCH SWEPT SPINDLE SIDE DISCHARGE (F930, F932 & F935)**

| | |
|---|---|
| Gear Case Housing Cap Screw Torque | 20 - 25 N•m (15-18 lbs-ft) |
| Pipe Plug (1/4 in. diameter) | 14 - 25 N•m (10-18 lbs-ft) |
| Breather (1/8 in. diameter pipe plugs) | 7 - 10 N•m (60-90 lbs-in) |
| Driveshaft Nut | no actual torque |
| Backlash | minimum without gear interference |
| Endplay | zero |
| Capacity and Gear Oil | 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90 |

**60-INCH REAR DISCHARGE (F1145 SN -130052)**
**72-INCH SIDE DISCHARGE (F1145 SN -030236) (EXPORT SN -030233)**

| | |
|---|---|
| Gear Case Housing Cap Screw Torque | 20 - 25 N•m (15-18 lbs-ft) |
| Pipe Plug (1/4 in. diameter) | 14 - 25 N•m (10-18 lbs-ft) |
| Breather (1/8 in. diameter pipe plugs) | 7 - 10 N•m (60-90 lbs-in) |
| Driveshaft Nut | no actual torque |
| Backlash | minimum without gear interference |
| Endplay | zero |
| Capacity and Gear Oil | 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90 |

**60-INCH SIDE DISCHARGE (F910, F912, F915, F930, F932 & F935 SN 131777- ) (LATE MODEL SN 010001-131776)**
**60-INCH REAR DISCHARGE (F1145 SN 130053- ) (F910, F911, F912, F915, F930, F932 & F935)**
**72-INCH SIDE DISCHARGE (F930, F932 & F935 SN 131777- ) (F1145 SN 030237- ) (EXPORT SN 030234- ) (LATE MODEL SN 010001-131776) (LATE MODEL SN -030236 EXPORT SN -030233)**

| | |
|---|---|
| Gear Case Housing Cap Screw Torque | 20 - 25 N•m (15-18 lbs-ft) |
| Pipe Plug | 14 - 25 N•m (10-18 lbs-ft) |
| Backlash | 0.15 - 0.25 mm (0.0059 - 0.0098 in) |
| Endplay | 0.0 - 0.06 mm (0.0 - 0.0024 in) input shaft<br>0.0 - 0.03 mm (0.0 - 0.0012 in) output shaft |
| Capacity and Gear Oil | 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90 |

**50-INCH SIDE DISCHARGE (F910, F912 & F915)**
**60-INCH SIDE DISCHARGE (F910, F912, F915, F930, F932 & F935) (SN -999000 & SN 010001-131776)**
**72-INCH SIDE DISCHARGE (F930, F932 & F935) (SN 505001-999000 & SN 010001-131776)**
**76-INCH REAR DISCHARGE (F930, F932, & F935)**

| | |
|---|---|
| Gear Case Housing Cap Screw Torque | 20 - 25 N•m (15-18 lbs-ft) |
| Pipe Plug (1/4 in. diameter) | 14 - 25 N•m (10-18 lbs-ft) |
| Breather (1/8 in. diameter pipe plugs) | 7 - 10 N•m (60-90 lbs-in) |
| Driveshaft Nut | no actual torque |
| Backlash | minimum without gear interference |
| Endplay | zero |
| Capacity and Gear Oil | 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90 |

# ROTARY MOWERS (CONTINUED)
# MID-MOUNT (SIDE DISCHARGE)

**50-INCH (314, 316, 317, 318, 322, 330, 332, 420, 430 & 655)**
**60-INCH (670 & 770 COMPACT UTILITY TRACTORS)**
**72-INCH (870, 970 & 1070 COMPACT UTILITY TRACTORS)**

Gear Case Housing Cap Screw Torque . . . . . 20 - 25 N•m (15-18 lbs-ft)
Pipe Plug (1/4 in. diameter) . . . . . 14 - 25 N•m (10-18 lbs-ft)
Breather (1/8 in. diameter pipe plugs) . . . . . 7 - 10 N•m (60-90 lbs-in)
Driveshaft Nut . . . . . no actual torque
Backlash. . . . . minimum without gear interference
Endplay . . . . . zero
Capacity and Gear Oil . . . . . 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90

**48-INCH**
**54-INCH**
**60-INCH**

Gear Case Housing Cap Screw Torque . . . . . 20 - 25 N•m (15-18 lbs-ft)
Pipe Plug . . . . . 14 - 25 N•m (10-18 lbs-ft)
Backlash. . . . . 0.1 - 0.2 mm (0.0039 - 0.0079 in)
Endplay . . . . . 0.0 - 0.04 mm (0.0 - 0.0016 in) input shaft
. . . . . 0.0 - 0.08 mm (0.0 - 0.003 in) output shaft
Capacity and Gear Oil . . . . . 0.135 L (4.5 oz) John Deere GL-5® Gear Oil-SAE 80W-90

**60 & 160 (SN -505035)**

Gear Case Housing Cap Screw Torque . . . . . 27 N•m (20 lbs-ft)
Pipe Plug . . . . . 18 N•m (13.3 lbs-ft)
Breather . . . . . 7 - 10 N•m (60-90lbs-in)
Adapter. . . . . 20 - 24 N•m (15 -18 lbs-ft)
Backlash. . . . . maximum 0.51 mm (0.020 in)
Endplay . . . . . zero
Capacity and Gear Oil . . . . . 240 ml (8 oz) John Deere GL-5® Gear Oil-SAE 80W-90

**160 (SN -525001 TECUMSEH 1100-002A)**
**160 (SN 505036- INCLUDES PEERLESS 1100-002)**

Gear Case Housing Cap Screw Torque . . . . . 20 - 24 N•m (15 -18 lbs-ft)
Pipe Plug (1/4 in. diameter) . . . . . 14 - 25 N•m (10-18 lbs-ft)
Breather (1/8 in. diameter pipe plugs) . . . . . 7 - 10 N•m (60-90 lbs-in)
Adapter. . . . . 20 - 24 N•m (15 -18 lbs-ft)
Driveshaft Nut . . . . . no actual torque
Backlash. . . . . minimum without gear interference
Endplay . . . . . zero
Capacity and Gear Oil . . . . . 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90

**72-INCH &172**

Gear Case Housing Cap Screw Torque . . . . . 30.8 N•m (22 lbs-ft)
Pipe Plug . . . . . 18 N•m (13.3 lbs-ft)
Adapter (Pipe Bushing) . . . . . 20 - 24 N•m (15 -18 lbs-ft)
Breather . . . . . 7 - 10 N•m (60-90 lbs-in)
Driveshaft Nut . . . . . no actual torque
Backlash. . . . . 0.10 - 0.26 mm (0.004 - 0.010 in)
Endplay . . . . . zero
Capacity and Gear Oil . . . . . 0.5 L (1pt) John Deere GL-5® Gear Oil-SAE 80W-90