JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

Buck Utility ATV
500, 500EX and 500EXT

TM2153 MAY 2004

TECHNICAL MANUAL

JOHN DEERE

North American Version
Litho in U.S.A.

INTRODUCTION

Manual Description

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications and Information
- Identification Numbers
- Tools and Materials
- Component Location
- Schematics and Harnesses
- Theory of Operation
- Operation and Diagnostics
- Diagnostics
- Tests and Adjustments
- Repair
- Other

NOTE: Depending on the particular section or system being covered, not all of the above groups may be used.

The bleed tabs for the pages of each section will align with the sections listed on this page. Page numbering is consecutive from the beginning of the Safety section through the last section.

We appreciate your input on this manual. If you find any errors or want to comment on the layout of the manual please contact us.

Safety

Technical Data

Engine

Electrical

Drive Train

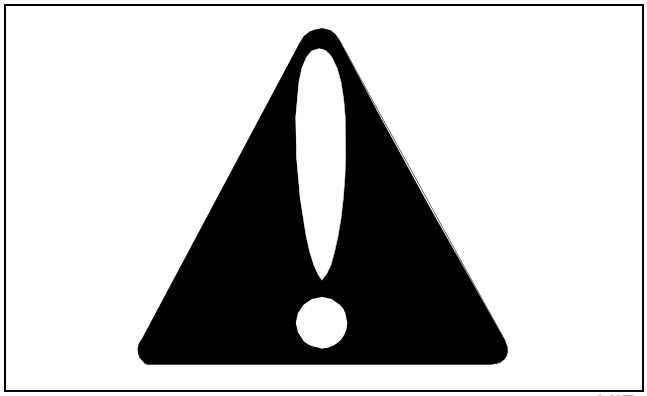
Steering

Suspension

Brakes

Body / Frame

Recognize Safety Information



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

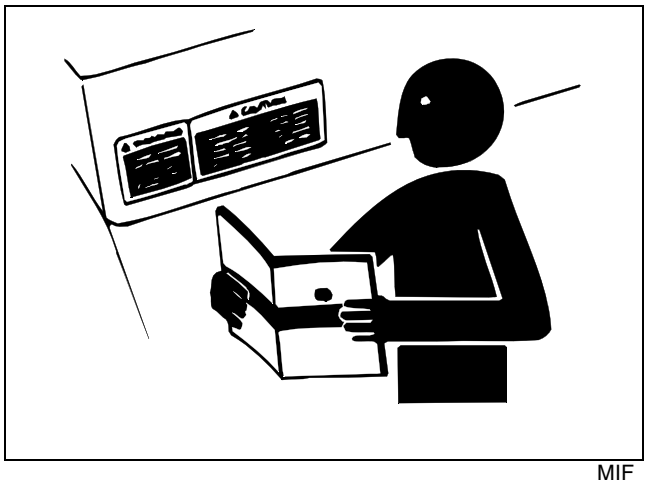
Follow recommended precautions and safe servicing practices.

Understand Signal Words

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

Replace Safety Signs



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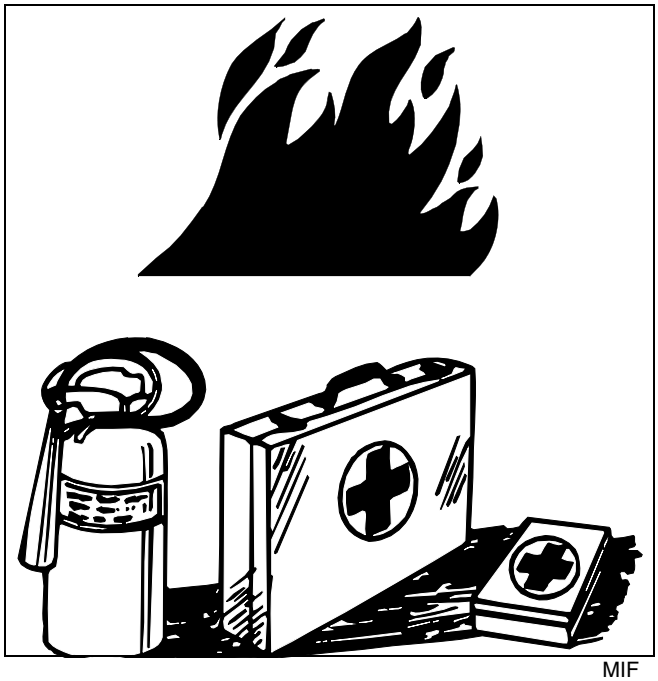
Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely - Avoid Fires

Be Prepared For Emergencies



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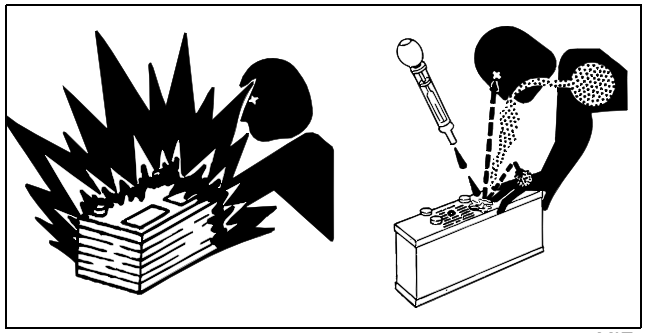
- When you work around fuel, do not smoke or work near heaters or other fire hazards.
- Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.
- Make sure machine is clean of trash, grease, and debris.
- Do not store oily rags; they can ignite and burn spontaneously.
- 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.

Use Care In Handling and Servicing Batteries



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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.

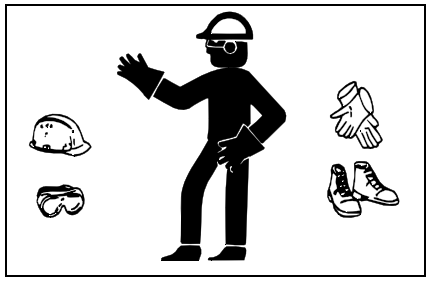
If you spill acid on yourself:

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.

Wear Protective Clothing



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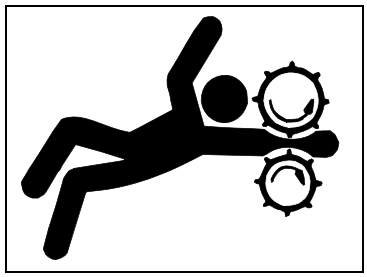
Wear close fitting clothing and safety equipment appropriate to the job.

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.

Service Machines Safely



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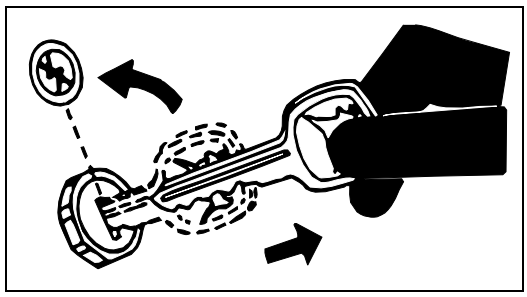
Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

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



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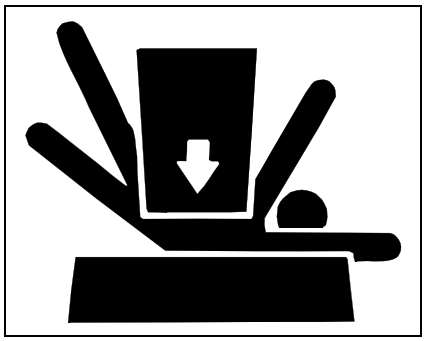
Before working on the machine:

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



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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.

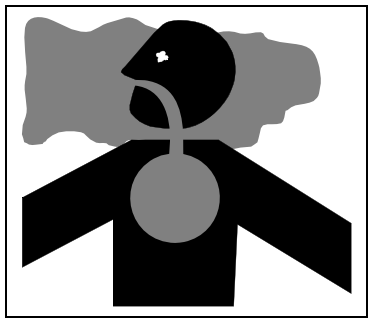
Using High Pressure Washers

Directing pressurized water at electronic/electrical components or connectors, bearings, hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure and spray at a 45 to 90 degree angle.

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



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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.

Warning: California Proposition 65 Warning

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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

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.

Service Tires Safely

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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.

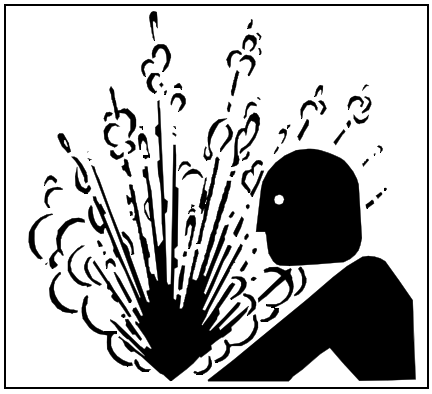
Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can

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.

Service Cooling System Safely



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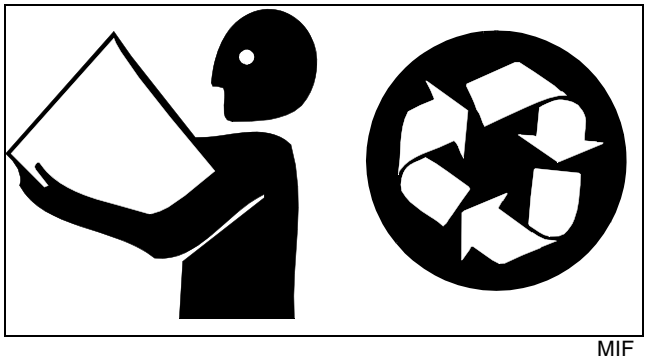
Explosive release of fluids from pressurized cooling system can cause serious burns.

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

Handle Chemical Products Safely



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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.

Live With Safety

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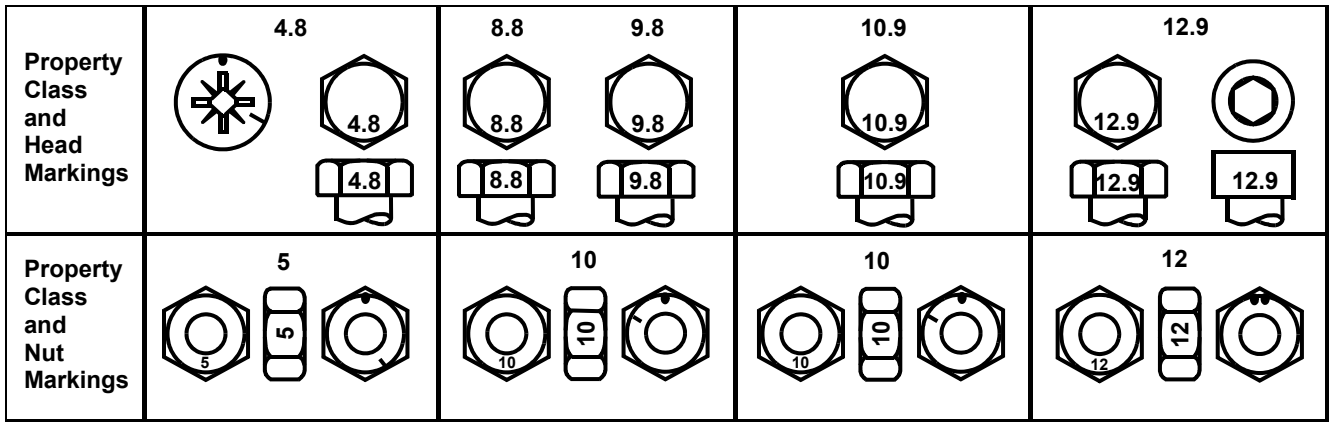
Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

Table of Contents

Fastener Torques

Metric Fastener Torque Values



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	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	
SIZE	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	109
M16	100	73	125	92	190	140	240	175	275	200	350	225	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 hand torque values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only and include a ±10% variance factor. Check tightness of fasteners periodically. DO NOT use air powered wrenches.

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

Fasteners should be replaced with the same grade. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

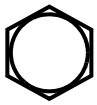
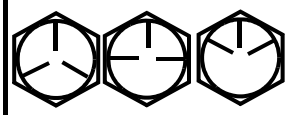
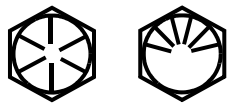
When bolt and nut combination fasteners are used, torque values should be applied to the NUT instead of the bolt head.

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 (yellow dichromate - Specification JDS117) without any lubrication*.

Reference: JDS - G200.

Inch Fastener Torque Values

SAE Grade and Head Markings	**No Marks** 		
SAE Grade and Nut Markings	**No Marks** 		

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	Grade 1				Grade 2b				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	
SIZE	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
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	215	160	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	470	300	510	375	470	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these hand torque values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only and include a ±10% variance factor. Check tightness of fasteners periodically. DO NOT use air powered wrenches.

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

Fasteners should be replaced with the same grade. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

When bolt and nut combination fasteners are used, torque values should be applied to the NUT instead of 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 (yellow dichromate - Specification JDS117) 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.*

Reference: JDS - G200

General Information

Gasoline

4 - Cycle Engines

CAUTION: Avoid Injury! Gasoline is HIGHLY FLAMMABLE, handle it with care. DO NOT refuel machine while: indoors, always fill gas tank outdoors; machine is near an open flame or sparks; engine is running, STOP engine; engine is hot, allow it to cool sufficiently first; smoking. Help prevent fires: fill gas tank to bottom of filler neck only; be sure fill cap is tight after fueling; clean up any gas spills IMMEDIATELY; keep machine clean and in good repair - free of excess grease, oil, debris, and faulty or damaged parts; any storage of machines with gas left in tank should be in an area that is well ventilated to prevent possible igniting of fumes by an open flame or spark, this includes any appliance with a pilot light. To prevent fire or explosion caused by STATIC ELECTRIC DISCHARGE during fueling:•ONLY use a clean, approved POLYETHYLENE PLASTIC fuel container and funnel WITHOUT any metal screen or filter.

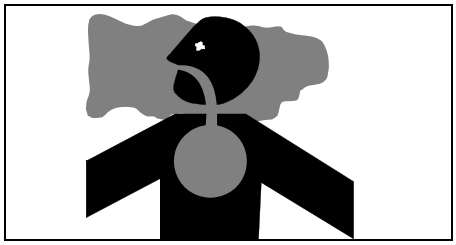
To avoid engine damage:

- DO NOT mix oil with gasoline;
- **ONLY use clean, fresh unleaded gasoline with an octane rating (anti-knock index) of 87 or higher**;
- fill gas tank at the end of each day's operation to help prevent condensation from forming inside a partially filled tank;
- keep up with specified service intervals.

Use of alternative oxygenated, gasohol blended, unleaded gasoline is acceptable as long as:

- the ethyl or grain alcohol blends DO NOT exceed 10% by volume or
- methyl tertiary butyl ether (MTBE) blends DO NOT exceed 15% by volume

RFG (reformulated) gasoline is acceptable for all machines designed for use of regular unleaded fuel. Older machines (that were designed for leaded fuel) may see some accelerated valve and seat wear.



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IMPORTANT: Avoid damage! California Proposition 65 Warning: Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Gasoline Storage

IMPORTANT: Avoid damage! Keep all dirt, scale, water or other foreign material out of gasoline.

Keep gasoline stored in a safe, protected area. Storage of gasoline in a clean, properly marked (“UNLEADED GASOLINE”) POLYETHYLENE PLASTIC container WITHOUT any metal screen or filter is recommended. DO NOT use de-icers to attempt to remove water from gasoline or depend on fuel filters to remove water from gasoline. Use a water separator installed in the storage tank outlet. BE SURE to properly discard unstable or contaminated gasoline. When storing the machine or gasoline, it is recommended that you add **John Deere Gasoline Conditioner and Stabilizer (TY15977)** or an equivalent to the gasoline. BE SURE to follow directions on container and to properly discard empty container.

4 - Cycle Gasoline Engine Oil

Use the appropriate oil viscosity based on the expected air temperature range during the period between recommended oil changes. Operating outside of these recommended oil air temperature ranges may cause premature engine failure.

The following John Deere oils are PREFERRED:

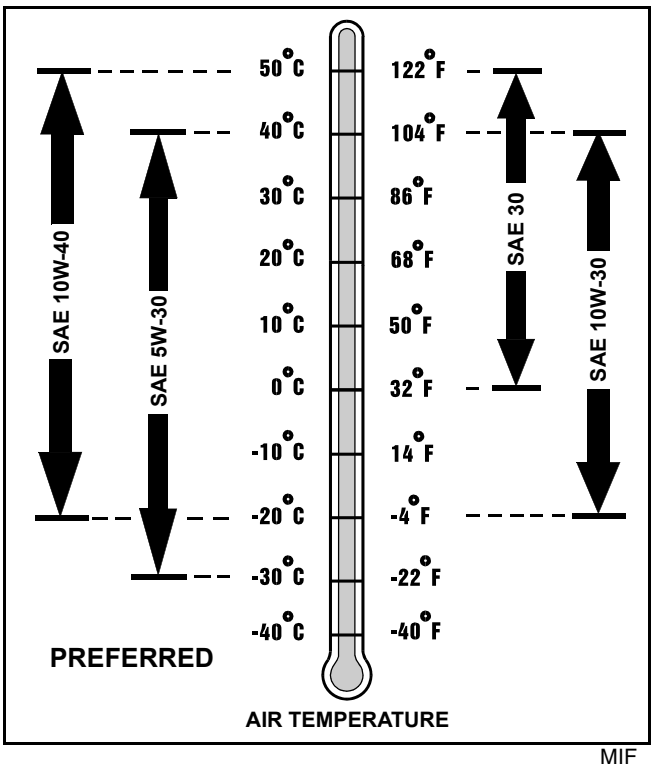
- **PLUS - 4® - SAE 10W-40**;
- **TORQ - GARD SUPREME® - SAE 5W-30**.

The following John Deere oils are **also recommended**, based on their specified temperature range:

- **TURF - GARD® - SAE 10W-30;**
- **PLUS - 4® - SAE 10W-30;**
- **TORQ - GARD SUPREME® - SAE 30.**

Other oils may be used if above John Deere oils are not available, provided they meet one of the following specifications:

- SAE 10W-40 - API Service Classifications SG or higher;
- SAE 5W-30 - API Service Classification SG or higher;
- SAE 10W-30 - API Service Classifications SG or higher;
- SAE 30 - API Service Classification SC or higher.



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Break-In Engine Oil - 4-Cycle Gasoline

IMPORTANT: Avoid damage! ONLY use a quality break-in oil in rebuilt or remanufactured engines for the first 5 hours (maximum) of operation. DO NOT use oils with heavier viscosity weights than SAE 5W-30 or oils meeting specifications API SG or SH, these oils will not allow rebuilt or remanufactured engines to break-in properly.

The following John Deere oil is PREFERRED:

- **BREAK - IN ENGINE OIL**.

John Deere BREAK - IN ENGINE OIL is formulated with special additives for aluminum and cast iron type engines to allow the power cylinder components (pistons, rings, and liners as well) to “wear-in” while protecting other engine components, valve train and gears, from abnormal wear. Engine rebuild instructions should be followed closely to determine if special requirements are necessary.

John Deere BREAK - IN ENGINE OIL is also recommended for non-John Deere engines, both aluminum and cast iron types.

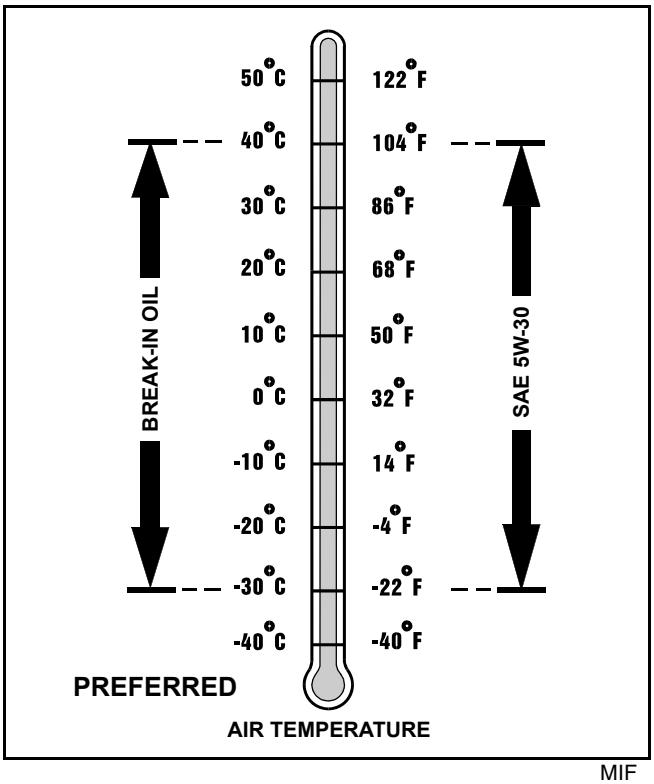
The following John Deere oil is **also recommended**:

- **TORQ - GARD SUPREME® - SAE 5W-30.**

If the above recommended John Deere oils are not available, use a break-in engine oil meeting the following specification during the first **5 hours (maximum)** of operation:

- SAE 5W-30 - API Service Classification SE or higher.

IMPORTANT: Avoid damage! After the break-in period, use the John Deere oil that is recommended for this engine.



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Gear Case Oil

Use the appropriate oil viscosity based on the air temperature ranges. Operating outside of these recommended oil air temperature ranges may cause premature gear case failure.

IMPORTANT: Avoid damage! 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:

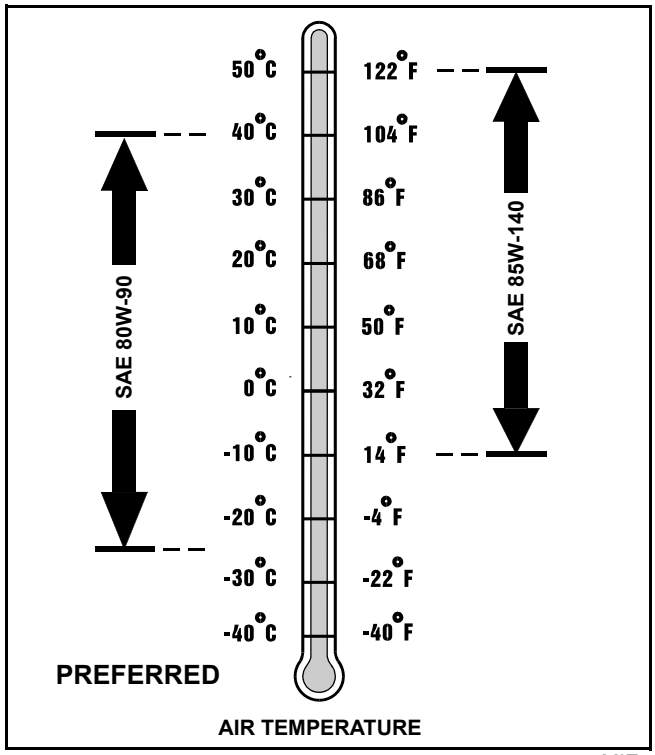
- **GL-5 GEAR LUBRICANT® - SAE 80W-90.**

The following John Deere gear case oil is also recommended if above preferred oil is not available:

- **GL-5 GEAR LUBRICANT® - SAE 85W-140.**

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.



MIF

Gear Transmission Grease

Use the following gear grease based on the air temperature range. Operating outside of the recommended grease air temperature range may cause premature gear transmission failure.

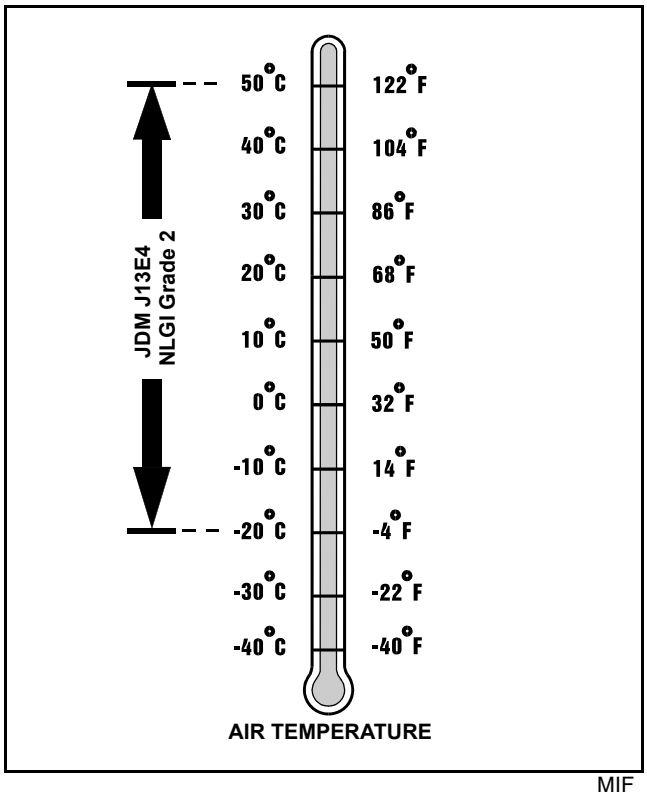
IMPORTANT: Avoid damage! ONLY use a quality gear grease in this transmission. DO NOT mix any other greases in this transmission. DO NOT use any BIO - GREASE in this transmission.

The following John Deere gear grease is PREFERRED:

- **NON-CLAY HIGH-TEMPERATURE EP GREASE®** - JDM J13E4, NLGI Grade 2.

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

- John Deere Standard JDM J13E4, NLGI Grade 2.



MIF

Alternative Lubricants

Use of alternative lubricants could cause reduced life of the component.

If alternative lubricants are to be used, it is recommended that the factory fill be thoroughly removed before switching to any alternative lubricant.

Lubricant Storage

All machines operate at top efficiency only when clean lubricants are used. Use clean storage containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination. Store drums on their sides. Make sure all containers are properly marked as to their contents. Dispose of all old, used containers and their contents properly.

Mixing of Lubricants

In general, avoid mixing different brands or types of lubricants. Manufacturers blend additives in their lubricants to meet certain specifications and performance requirements. Mixing different lubricants can interfere with the proper functioning of these additives and lubricant properties which will downgrade their intended specified performance.

Oil Filters

IMPORTANT: Avoid damage! Filtration of oils is critical to proper lubrication performance. Always change filters regularly.

The following John Deere oil filters are PREFERRED:

- AUTOMOTIVE AND LIGHT TRUCK ENGINE OIL FILTERS.

Most John Deere filters contain pressure relief and anti-drainback valves for better engine protection.

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

- ASTB Tested In Accordance With SAE J806.

Coolant Specifications

Gasoline Engine Coolant

The engine cooling system when filled with a proper dilution mixture of anti-freeze and deionized or distilled water provides year-round protection against corrosion, cylinder or liner pitting, and winter freeze protection down to **-37°C (-34°F)**.

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

- **COOL-GARD® PRE-DILUTED SUMMER COOLANT (TY16036)**.

This coolant satisfies specifications for “Automobile and Light Duty Engine Service” and is safe for use in John Deere Lawn and Grounds Care/Golf and Turf Division equipment, including aluminum block gasoline engines and cooling systems.

The above preferred pre-diluted anti-freeze provides:

- adequate heat transfer
- corrosion-resistant chemicals for the cooling system
- compatibility with cooling system hose and seal material
- protection during extreme cold and extreme hot weather operations
- chemically pure water for better service life
- compliance with ASTM D4656 (JDM H24C2) specifications

If above preferred pre-diluted coolant is not available, the following John Deere concentrate is recommended:

- **COOL-GARD® CONCENTRATED SUMMER COOLANT CONCENTRATE™ (TY16034).**

If either of above recommended engine coolants are available use any Automobile and Light Duty Engine Service ethylene glycol base coolant, meeting the following specification:

- ASTM D4985 (JDM H24A2).

Read container label completely before using and follow instructions as stated.

IMPORTANT: Avoid damage! To prevent engine damage, DO NOT use pure anti-freeze or less than a 50% anti-freeze mixture in the cooling system. DO NOT mix or add any additives/ conditioners to the cooling system in Lawn and Grounds Care/Golf and Turf Division equipment. Water used to dilute engine coolant concentrate must be of high quality - clean, clear, potable water (low in chloride and hardness - Table 1) is generally acceptable. DO NOT use salt water. Deionized or distilled water is ideal to use. Coolant that is not mixed to these specified levels and water purity can cause excessive scale, sludge deposits, and increased corrosion potential.

Property	Requirements
Total Solids, Maximum	340 ppm (20 grns/gal)
Total Hardness, Maximum	170 ppm (10 grns/gal)
Chloride (as Cl), Maximum	40 ppm (2.5 grns/gal)
Sulfate (as SO4), Maximum	100 ppm (5.8 grns/gal)

Mix 50 percent anti-freeze concentrate with 50 percent distilled or deionized water. This mixture and the pre-diluted mixture (TY16036) will protect the cooling system down to **-37°C (-34°F)** and up to **108°C (226°F)**.

Certain geographical areas may require lower air temperature protection. See the label on your anti-freeze container or consult your John Deere dealer to obtain the latest information and recommendations.

Gasoline Engine Coolant Drain Interval

When using John Deere Pre-Diluted (TY16036) Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every 36 months or 3,000 hours of operation, whichever comes first.

When using John Deere Concentrate (TY16034) Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every 24 months or 2,000 hours of operation, whichever comes first.

If above John Deere Automobile and Light Duty Engine Service coolants are not being used; drain, flush, and refill the cooling system according to instructions found on product container or in equipment operator’s manual or technical manual.

Specifications - Buck UATV

Engine Specifications - 500

General Specifications

Vehicle Model Number	Buck
Make	Rotax 4-TEC, 4 stroke Over Head Camshaft (OHC), Liquid cooled
Horsepower @ 6250 rpm	20.1 kW (27 hp)
Starting System	Electric with Optional Recoil
Number of Cylinder(s)	1
Number of Valves	2 valves with hydraulic lifters (no adjustment)
Decompressor Type	Automatic
Bore (Standard)	89 mm (3.5 in.)
Stroke	80 mm (3.15 in.)
Displacement	498 cc (30.4 cu in.)
Compression Ratio	10.5:1
Maximum HP RPM	6000 ± 100 rpm
Lubrication	Wet sump with replaceable oil filter (lubrication of engine and transmission simultaneously)
Oil Filter	Full flow
Air Filter Type	2 stage foam filter
Exhaust System Type	Nelson, stainless steel
Exhaust System Spark Arrester	USDA approved

Valves

Intake Valve Opening	10.0° BTDC
Intake Valve Closing	55.0° ABDC
Exhaust Valve Opening	50.0° BBDC
Exhaust Valve Closing	5.0° ATDC
Intake Valve Stem Diameter (New minimum)	5.961 mm (0.2347 in.)
Intake Valve Stem Diameter (New maximum)	5.975 mm (0.2352 in.)
Intake Valve Stem Diameter (Wear limit)	5.930 mm (0.2330 in.)
Exhaust Valve Stem Diameter (New minimum)	5.946 mm (0.2341 in.)
Exhaust Valve Stem Diameter (New maximum)	5.960 mm (0.2346 in.)
Exhaust Valve Stem Diameter (Wear limit)	5.930 mm (0.2330 in.)
Valve Guide Diameter (Wear limit)	6.060 mm (0.2386 in.)
Valve Spring Free Length (New)	45.45 mm (1.789 in.)
Valve Spring Free Length (Wear limit)	43.00 mm (1.693 in.)
Intake Valve Seat Contact Width (New)	1.10 to 1.30 mm (0.043 to 0.051 in.)
Intake Valve Seat Contact Width (Wear limit)	1.8 mm (0.07 in.)
Exhaust Valve Seat Contact Width (New)	1.25 to 1.55 mm (0.049 to 0.061 in.)
Exhaust Valve Seat Contact Width (Wear limit)	2.0 mm (0.078 in.)

Pistons

Piston Measurement (New)	99.951 to 99.969 mm (3.935 to 3.936 in.)
Piston Measurement (Wear limit)	99.80 mm (3.929 in.)
Piston/Cylinder Clearance (New)	0.031 to 0.059 mm (0.001 to 0.002 in.)
Piston/Cylinder Clearance (Wear limit)	0.090 mm (0.004 in.)
Piston Ring Type 1st	Rectangular

Piston Ring Type 2nd	Taper-face
Piston Ring Type 3rd	Oil Scraper Ring
Piston Ring End Gap Rectangular (New minimum)	0.15 mm (0.006 in.)
Piston Ring End Gap Taper-face (New minimum)	0.15 mm (0.006 in.)
Piston Ring End Gap Oil Scraper Ring (New minimum)	0.15 mm (0.006 in.)
Piston Ring End Gap Rectangular (New maximum)	0.35 mm (0.014 in.)
Piston Ring End Gap Taper-face (New maximum)	0.35 mm (0.014 in.)
Piston Ring End Gap Oil Scraper Ring (New maximum)	0.30 mm (0.012 in.)
Piston Ring End Gap All (Wear limit)	1.5 mm (0.06 in.)
Piston/Ring Groove Clearance Rectangular (New minimum)	0.025 mm (0.001 in.)
Piston/Ring Groove Clearance Taper-face (New minimum)	0.015 mm (0.0006 in.)
Piston/Ring Groove Clearance Oil Scraper Ring (New minimum)	0.020 mm (0.0008 in.)
Piston/Ring Groove Clearance Rectangular (New maximum)	0.070 mm (0.0028 in.)
Piston/Ring Groove Clearance Taper-face (New maximum)	0.060 mm (0.0024 in.)
Piston/Ring Groove Clearance Oil Scraper Ring (New maximum)	0.055 mm (0.0021 in.)

Rocker Arm

Rocker Arm Bore Diameter (New minimum)	20.007 mm (0.7877 in.)
Rocker Arm Bore Diameter (New maximum)	20.020 mm (0.7881 in.)
Rocker Arm Bore Diameter (Wear limit)	20.035 mm (0.7887 in.)
Rocker Arm Shaft Diameter (New minimum)	19.980 mm (0.7866 in.)
Rocker Arm Shaft Diameter (New maximum)	20.007 mm (0.7877 in.)
Rocker Arm Shaft Diameter (Wear limit)	19.965 mm (0.7860 in.)

Cylinder

Cylinder Screw M11 (Service limit)	216.5 mm (8.524 in.)
Cylinder Bore (New)	100.00 mm (3.94 in.)
Cylinder Taper (New maximum)	0.038 mm (0.0015 in.)
Cylinder Taper (Wear limit)	0.090 mm (0.004 in.)
Cylinder Out of Round (New maximum)	0.01 mm (0.0004 in.)
Cylinder Out of Round (Wear limit)	0.02 mm (0.0008 in.)

Camshaft and Cam

Camshaft Bearing Journal PTO Side (New minimum)	24.967 mm (0.9829 in.)
Camshaft Bearing Journal PTO Side (New maximum)	24.980 mm (0.9835 in.)
Camshaft Bearing Journal PTO Side (Wear limit)	24.960 mm (0.9827 in.)
Camshaft Bearing Journal Magneto Side (New minimum)	39.927 mm (1.5719 in.)
Camshaft Bearing Journal Magneto Side (New maximum)	39.935 mm (1.5722 in.)
Camshaft Bearing Journal Magneto Side (Wear limit)	39.920 mm (1.5716 in.)
Camshaft Bore PTO Side (New minimum)	24.987 mm (0.9837 in.)
Camshaft Bore PTO Side (New maximum)	25.000 mm (0.9842 in.)
Camshaft Bore PTO Side (Wear limit)	25.020 mm (0.9850 in.)
Camshaft Bore Magneto Side (New minimum)	39.984 mm (1.5742 in.)
Camshaft Bore Magneto Side (New maximum)	40.000 mm (1.5748 in.)
Camshaft Bore Magneto Side (Wear limit)	40.020 mm (1.5756 in.)
Cam Lobe Intake (New minimum)	31.369 mm (1.235 in.)
Cam Lobe Intake (New maximum)	31.569 mm (1.243 in.)
Cam Lobe Intake (Wear limit)	31.300 mm (1.232 in.)
Cam Lobe Exhaust (New minimum)	31.147 mm (1.226 in.)

Cam Lobe Exhaust (New maximum)	**31.347 mm (1.234 in.)**
Cam Lobe Exhaust (Wear limit)	**31.100 mm (1.224 in.)**

Crankshaft

Crankshaft Axial Clearance (New minimum)	**0.2 mm (0.0078 in.)**
Crankshaft Axial Clearance (New maximum)	**0.5 mm (0.0196 in.)**
Crankshaft Pin Diameter (New minimum)	**45.017 mm (1.7723 in.)**
Crankshaft Pin Diameter (New maximum)	**45.033 mm (1.7729 in.)**
Crankshaft Pin Diameter (Wear limit)	**44.990 mm (1.7710 in.)**
Crankshaft Journal Diameter MAG Side (New minimum)	**54.976 mm (2.1644 in.)**
Crankshaft Journal Diameter MAG Side (New maximum)	**54.995 mm (2.1651 in.)**
Crankshaft Journal Diameter MAG Side (Wear limit)	**54.950 mm (2.1634 in.)**
Crankshaft Journal Diameter PTO Side (New minimum)	**45.974 mm (1.8099 in.)**
Crankshaft Journal Diameter PTO Side (New maximum)	**45.990 mm (1.8102 in.)**
Crankshaft Journal Diameter PTO Side (Wear limit)	**45.940 mm (1.8086 in.)**
Crankshaft Radial Clearance MAG Side (Service limit)	**0.07 mm (0.0028 in.)**
Crankshaft Radial Clearance PTO Side (Service limit)	**0.07 mm (0.0028 in.)**

Connecting Rod

Connecting Rod Big End Diameter (Service limit)	**45.080 mm (1.774 in.)**
Connecting Rod Big End Clearance (Service limit)	**0.09 mm (0.0035 in.)**
Connecting Rod Big End Axial Play (New minimum)	**0.150 mm (0.06 in.)**
Connecting Rod Big End Axial Play (New maximum)	**0.302 mm (0.01 in.)**
Connecting Rod Big End Axial Play (Wear limit)	**0.5 mm (0.02 in.)**
Connecting Rod Small End Diameter (New minimum)	**23.01 mm (0.9059 in.)**
Connecting Rod Small End Diameter (New maximum)	**23.02 mm (0.9063 in.)**
Connecting Rod Small End Diameter (Wear limit)	**23.07 mm (0.9080 in.)**

Piston Pin

Piston Pin Diameter (New minimum)	**22.996 mm (0.9053 in.)**
Piston Pin Diameter (New maximum)	**23.000 mm (0.9055 in.)**
Piston Pin Diameter (Wear limit)	**22.990 mm (0.9051 in.)**
Piston Pin Bore Clearance (Wear limit)	**0.080 mm (0.0035 in.)**

Drive Belt (New nominal)	**32.00 mm (1.260 in.)**
Drive Belt (Service limit)	**30.00 mm (1.181 in.)**

Governor Cup Roller Diameter (New minimum)	**13.70 mm (0.539 in.)**
Governor Cup Roller Diameter (New maximum)	**13.90 mm (0.547 in.)**
Governor Cup Roller Diameter (New minimum)	**13.20 mm (0.519 in.)**

Centrifugal Lever

Centrifugal Lever Pivot Bolt Diameter (New minimum)	**6.078 mm (0.239 in.)**
Centrifugal Lever Pivot Bolt Diameter (New maximum)	**6.100 mm (0.240 in.)**
Centrifugal Lever Pivot Bolt Diameter (Service limit)	**6.000 mm (0.236 in.)**
Centrifugal Lever Bore Diameter (Service limit)	**6.200 mm (0.244 in.)**
Centrifugal Lever Pivot Bolt Bore Diameter (New minimum)	**6.113 mm (0.241 in.)**
Centrifugal Lever Pivot Bolt Bore Diameter (New maximum)	**6.171 mm (0.243 in.)**
Centrifugal Lever Pivot Bolt Bore Diameter (Service limit)	**6.300 mm (0.248 in.)**

Drive Pulleys

Drive Pulley Sliding Half Large Bushing (New minimum)	55.000 mm (2.165 in.)
Drive Pulley Sliding Half Large Bushing (New maximum)	55.002 mm (2.166 in.)
Drive Pulley Sliding Half Large Bushing (Service limit)	55.200 mm (2.173 in.)
Drive Pulley Sliding Half Small Bushing (New minimum)	30.000 mm (1.181 in.)
Drive Pulley Sliding Half Small Bushing (New maximum)	30.002 mm (1.182 in.)
Drive Pulley Sliding Half Small Bushing (Service limit)	30.200 mm (1.189 in.)
One-Way Clutch Bushing Diameter (New minimum)	39.990 mm (1.574 in.)
One-Way Clutch Bushing Diameter (New maximum)	40.085 mm (1.578 in.)
One-Way Clutch Bushing Diameter (Service limit)	40.100 mm (1.579 in.)
Driven Pulley Sliding Half Bushing Diameter (New minimum)	30.000 mm (1.181 in.)
Driven Pulley Sliding Half Bushing Diameter (New maximum)	30.002 mm (1.182 in.)
Driven Pulley Sliding Half Bushing Diameter (Service limit)	30.200 mm (1.189 in.)
Driven Pulley Fixed Half Bushing Diameter (New minimum)	30.000 mm (1.181 in.)
Driven Pulley Fixed Half Bushing Diameter (New maximum)	30.002 mm (1.182 in.)
Driven Pulley Fixed Half Bushing Diameter (Service limit)	30.200 mm (1.189 in.)
Torque Gear On Driven Pulley (Service limit)	7.500 mm (.295 in.)
Main Shaft MAG Side	17.990 mm (0.708 in.)
Main Shaft PTO Side	24.950 mm (0.982 in.)
Bevel Gear Shaft PTO Side	24.990 mm (0.984 in.)

Electrical Specifications

Magneto/Generator	400 W @ 6000 rpm
Ignition system Type	I.D.I. (Induction Discharge Ignition)
Ignition timing	Not Adjustable
Spark Plug Quantity	2
Spark Plug Make and Type	NKG DCPR8E
Spark Plug Gap	0.6 - 0.7 mm (0.024 - 0.027 in.)
Spark Plug Torque	22 N•m (195 lb-in.)
Trigger Coil	190 - 300 ohms
Battery Charging Coil	0.4 ± 0.01 ohms
Ignition Coil Primary	0.85 to 1.15 ohms @ 20° C (68° F)
Ignition Coil Secondary	11.3 to 11.7 ohms @ 20° C (68° F)
Engine RPM Limiter	7400

Battery

Type	Electrolyte Battery Type
Voltage	12 volts
Nominal Rating	19 A•h
Power Starter Output	1.2 kW

Lights

Headlight	2 x 35 W
Taillight	5/25 W
Pilot Lamp Cluster	LEDS, 0.7 V approximately (each)

Fuses

Location no. 1 (ignition) . . . . . 15 A
Location no. 2 (accessories) . . . . . 15 A (power outlet and auxiliary supply)
Location no. 3 (solenoids) . . . . . 15 A
Location no. 4 (fan) . . . . . 15 A
Location no. 5 (main) . . . . . 20 A
Location no. 6 (charging system) . . . . . 30 A

Carburation Specifications

Carburetor Type . . . . . Mikuni constant depression type with manual choke and ECS (Enrichner Coasting System)
Carburetor Model BSR42
Fuel Pump Type . . . . . Mikuni
Fuel Pump Model . . . . . External (vacuum operated)
Engine Idle Speed . . . . . 1100 ± 100 rpm
Main Jet 152.5
Pilot Jet 35
Needle Jet 0-6
Jet Needle 6DGY16-53
Clip Position Number 3
Choke Plunger Position . . . . . Variable Choke

Adjustment

Throttle Cable . . . . . 0.5 mm (.02 in.)
Preliminary Pilot Screw Turn 2
Float Level . . . . . 10.0 ± 0.5 mm (0.390 ± 0.020 in.)

Fuel

Fuel Type . . . . . Regular Unleaded Gasoline
Octane No. . . . . 87 (Ron + Mon)/2

Cooling Specifications

CoolantEthyl Glycol/water mix (50% coolant, 50% water), Use coolant specifically designed for aluminum engines)
Fan . . . . . Thermostatic
Fan Thermostat Switch ON . . . . . 95° C (203° F)
Fan Thermostat Switch OFF . . . . . 90° C (194° F)
Engine Thermostat Opening Temperature . . . . . 75° C (167° F)
Engine Thermostat Closing Temperature . . . . . 85° C (185° F)
Radiator Cap Opening Pressure . . . . . 110 kPa (16 psi)

Drive Train Specifications

Transmission Type . . . . . 5-Speed Gear
Front Differential . . . . . Shaft Driven/Single Auto-Lock Differential (pump driven)
Front Differential Ratio 3.6:1
Rear Axle . . . . . Shaft Driven/Solid Axle
Rear Axle Ratio 3.6:1

Steering Control Specifications

Turning Radius 2-Wheel Drive	2130 mm (84 in.)
Turning Radius 4-Wheel Drive	2100 mm (83 in.)
Total Toe (vehicle on ground) Each Side	8 ± 4 mm (0.315 ± 0.0157 in.)
Camber Angle	0°
Tie-Rod Maximum Length Unengaged	20 ± 5 mm (0.787 ± 0.197 in.)

Suspension Specifications

Front

Suspension type	Independent Suspension - Double A-Arm
Suspension Travel	178 mm (7 in.)
Shock Absorber Quantity	2
Shock Absorber Type	Oil
Spring Free Length	270 mm (11 in.)
Spring Color Code	Orange/Black/Black
Front Preload Adjustment	N.A.

Rear

Suspension type	Rigid Swing Arm
Suspension Travel	190.5 mm (7.5 in.)
Shock Absorber Quantity	2
Shock Absorber Type	Oil
Spring Free Length	160 mm (6.3 in.)
Spring Color Code	White/Red/Black
Front Preload Adjustment	3 Settings

Brakes Specifications

Front Brake Quantity	2 discs
Front Brake Type	Hydraulic
Rear Brake Quantity	1 disc
Rear Brake Type	Mechanical Cable/Hydraulic
Parking Brake	Transmission Brake and Brake Lever Lock on LH Brake Lever
Caliper	Floating
Lining Material	Semi Metallic
Minimum Pad Thickness	1 mm (0.04 in.)
Minimum Brake Disc Thickness	4.5 mm (0.18 in.)
Maximum Brake Disk Warpage	0.2 mm (0.01 in.)

Tires and Wheels Specifications

Wheels

Size Front	12 x 6.5
Size Rear	12 x 8

Dimension Specifications

Overall Length	2071 mm (81.5 in.)
Overall Width	1194 mm (47 in.)
Overall Height	1143 mm (45 in.)
Dry Weight 2-Wheel Drive	320 kg (705 lb)
Dry Weight 4-Wheel Drive	338 kg (745 lb)
Wheel Base	1296 mm (51 in.)
Wheel Track Front	992 mm (39 in.)
Wheel Track Rear	940 mm (37 in.)
Front and Under Engine Ground Clearance	244 mm (9.6 in.)
Rear Rigid Axle Ground Clearance	188 mm (7.4 in.)

Capacities Specifications

Liquid

Fuel Tank	21.8 L (5.8 U.S. gal)
Fuel Tank Reserve	4 L (1.1 U.S. gal)
Engine/Transmission Oil Capacity	3 L (3.17 qt)
Engine/Transmission Oil Type	SAE 10W40, 4-stroke mineral based oil SG, SH or SJ or synthetic oil
Differential Oil Capacity (Front)	610 ml (21 U.S. oz)
Differential Oil Capacity (Rear) 75W90 or 80W90	200 ml (7 U.S. oz)
Differential Oil Type	Synthetic Polyolester Oil 75W90 (API GL5)
CV Joint Grease	TEXACO, HTBJ Grease (M3014), ONLY
Propeller Shaft Grease	SHELL, Alvania EP-2, ONLY
Hydraulic Brakes Capacity	250 ml (8.5 U.S. oz)
Hydraulic Brakes Type	Brake Fluid DOT 4, ONLY
Cooling System	2.5 L (2.65 qt)

Body and Frame

Weight Distribution Front/Rear	49/51%
Front Storage Tray	10 kg (22 lb)
Rack Front (including front storage tray)	40 kg (90 lb)
Rack Rear (including tongue weight)	80 kg (175 lb)
Total Vehicle Load Allowed (including driver, all other loads and added accessories)	220 kg (485 lb)
Gross Vehicle Weight Rating	540 kg (1200 lb)
Towing	500 kg (1100 lb)
Tongue (included with rear rack weight)	14 kg (30 lb)

Torque Specifications

Engine Torque Specifications

Engine Support	24 N•m (17 lb-ft)
Engine Mount	48 N•m (35 lb-ft)
Spark Plug Torque	22 N•m (195 lb-in.)
Oil Filter Screw	9 N•m (80 lb-in.)
Dipstick Tube Screw	9 N•m (80 lb-in.)
Magneto Cover Bolts	9 N•m (80 lb-in.)
Starter Bolts	9 N•m (80 lb-in.)
Vehicle Speed Sensor	9 N•m (80 lb-in.)
Starter RED (+) Cable[1]	6 N•m (53 lb-in.)
Rotor Nut	150 N•m (111 lb-ft)
Stator Bolt[2]	9 N•m (80 lb-in.)
Trigger Coil Bolt[2]	9 N•m (80 lb-in.)

Cooling Torque Specifications

Radiator Mount Screw/Nut	9 N•m (80 lb-in.)
Thermostat Housing	9 N•m (80 lb-in.)
Thermostat Bleeding Screw	9 N•m (80 lb-in.)
Temperature Sensor	17 N•m (151 lb-in.)
Water Pump Housing	9 N•m (80 lb-in.)
Fan Mount Screw/Nut[2]	4.5 N•m (40 lb-in.)
Temperature Sender On Radiator	11 N•m (97 lb-in.)

Exhaust Torque Specifications

Exhaust Nut	11 N•m (97 lb-in.)
Heat Shield Screws	10 N•m (89 lb-in.)

Lubrication Torque Specifications

Engine Drain Plug	39 N•m (29 lb-ft)
Engine Oil Strainer Cover	9 N•m (80 lb-in.)
Oil Pump Housing	9 N•m (80 lb-in.)
Oil Pressure Regulator Pump	11 N•m (97 lb-in.)
Oil Pressure Switch[2]	9 N•m (80 lb-in.)

Cylinder and Head Torque Specifications

Breather[2]	6 N•m (53 lb-in.)
Valve Cover	9 N•m (80 lb-in.)
Rocker Arm Shaft Screw	20 N•m (15 lb-ft) +90° rotation
Cylinder Head Screw M6	17 N•m (150 lb-in.)
Cylinder Head Screw M11	50 N•m (37 lb-ft) +90° rotation
Intake Adaptor	21 N•m (16 lb-ft)
Camshaft Timing Gear[2]	9 N•m (80 lb-in.)
Chain Guide[2]	9 N•m (80 lb-in.)
Chain Tensioner Housing[2]	9 N•m (80 lb-in.)

1. Dielectric Grease

2. Loctite 243

Chain Tensioner Plug	**5 N•m (44 lb-in.)**

Crankshaft Torque Specifications

Crankcase Housing Screw	**9 N•m (80 lb-in.)**
Connecting Rod	**45 N•m (33 lb-ft) +90° rotation**
Crankshaft Locking Access Screw	**21 N•m (16 lb-ft)**

Gearbox Torque Specifications

Air Guide[3]	**9 N•m (80 lb-in.)**
Bearing Screw[3]	**9 N•m (80 lb-in.)**
Bearing Cover[3]	**21 N•m (16 lb-ft)**
Bevel Gear Access Screw	**21 N•m (16 lb-ft)**
Index Lever	**9 N•m (80 lb-in.)**
Starter Drive Pinion Cover	**9 N•m (80 lb-in.)**
Shifting Indicator Switch[3]	**4 N•m (35 lb-in.)**

CVT Torque Specifications

CVT Cover	**9 N•m (80 lb-in.)**
Centrifugal Lever Bolt	**9 N•m (80 lb-in.)**
Drive Pulley (refer to CVT section for proper procedure)	**100 N•m (74 lb-ft)**
Driven Pulley	**60 N•m (44 lb-ft)**

Fuel Torque Specifications

Carburetor Mounting Clamp	**0.6 N•m (5.4 lb-in.)**

Drive Train Torque Specifications

Front Wheel Hub Nut (minimum)	**140 N•m (103 lb-ft)**
Rear Wheel Hub Nut (minimum)	**140 N•m (103 lb-ft)**
Front Differential (Front)	**67 N•m (49 lb-ft)**
Front Differential (Rear)	**75 N•m (55 lb-ft)**
Rear Differential Socket Screws	**48 N•m (35 lb-ft)**
Propeller Shaft Screw (Engine Side)	**34 N•m (26 lb-ft)**
Propeller Shaft Screw (Differential Side)	**42 N•m (31 lb-ft)**
Rear Differential Torx Screw	**75 N•m (55 lb-ft)**
Rear Differential Protector (Torx Screw)	**75 N•m (55 lb-ft)**
Rear Differential Protector (Hexagonal Screw)	**25 N•m (18 lb-ft)**
Trailer Hitch Hexagonal Screw	**48 N•m (35 lb-ft)**
Differential Oil Drain Plug	**13 N•m (115 lb-in.)**
Front Differential Mounting Bolt	**67 N•m (49 lb-ft)**

Wheel Torque Specifications

Wheel Nuts[4]	**75 N•m (55 lb-ft)**

Steering Control Torque Specifications

Upper/Lower A-Arm	**56 N•m (41 lb-ft)**
Tie Rod Ends	**75 N•m (55 lb-ft)**
Steering Arm (castellated nut)	**75 N•m (55 lb-ft)**

3. Loctite 243

4. Anti-seize

Ball Joint End	**63 N•m (46 lb-ft)**
Handlebar Screws	**24 N•m (17 lb-ft)**
Steering Column Half Housing Bolts	**24 N•m (17 lb-ft)**
Flanged Bearing Bolts[5]	**19 N•m (168 lb-in.)**
Handle Grip Screw	**4 N•m (35 lb-in.)**

Suspension Torque Specifications

Shock Absorber Bolt	**48 N•m (35 lb-ft)**
Rear Swing Arm RH Pivot	**147 N•m (108 lb-ft)**
Rear Swing Arm LH Pivot	**11 N•m (97 lb-in.)**
Rear Swing Arm LH Nut	**147 N•m (108 lb-ft)**

Brake Torque Specifications

Caliper Brake Screws	**24 N•m (17 lb-ft)**
Brake Disk Screws	**34 N•m (25 lb-ft)**
Rear Master Cylinder Bolts	**10 N•m (89 lb-in.)**
Rear Master Cylinder Banjo Bolt	**24 N•m (17 lb-ft)**
Front Master Cylinder Banjo Bolt	**24 N•m (17 lb-ft)**
Caliper Banjo Bolt	**24 N•m (17 lb-ft)**
Caliper Bleed Valve	**14 N•m (124 lb-in.)**
Rear Master Cylinder Rod Nut	**5 N•m (44 lb-in.)**
Rear Cable Bracket	**10 N•m (89 lb-in.)**
Hydraulic Brake Light Switch[6]	**24 N•m (17 lb-ft)**

Body/Frame Torque Specifications

Front Bumper	**24 N•m (17 lb-ft)**
Front Rack M6	**2.5 N•m (22 lb-in.)**
Front Rack M8	**15 N•m (133 lb-in.)**
Rear Rack M8	**15 N•m (133 lb-in.)**
Rear Extension Frame	**48 N•m (35 lb-ft)**
Front Differential Support	**24 N•m (17 lb-ft)**
Seat Pivot Bar	**24 N•m (17 lb-ft)**
Winch Plate Support	**24 N•m (17 lb-ft)**
Seat Latch Stud	**29 N•m (21 lb-ft)**
Seat Latch Base	**4 N•m (35 lb-in.)**
Inner Fender	**5 N•m (44 lb-in.)**
A-Arm Protector	**2.5 N•m (22 lb-in.)**
Footrest	**24 N•m (17 lb-ft)**
Footpeg	**4.5 N•m (39 lb-in.)**
Removable Brace	**24 N•m (17 lb-ft)**
Engine Skid Plate M8	**15 N•m (133 lb-in.)**
Engine Skid Plate M6	**7 N•m (62 lb-in.)**
Headlight Housing	**0.6 N•m (5.4 lb-in.)**

5. Loctite 243

6. Pipe sealant

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