



# 9RX Tractors (Serial No. 825001-) North American Edition H3



JOHN DEERE



## OPERATOR'S MANUAL

### 9RX Tractors (Serial No. 825001-) North American Edition

OMTR131412 ISSUE H3 (ENGLISH)

CALIFORNIA  
 Proposition 65 Warning

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

If this product contains a gasoline engine:

**⚠ WARNING**

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

The State of California requires the above two warnings.

**John Deere Waterloo Works**  
 North American Edition  
 PRINTED IN U.S.A.



# Introduction

## Foreword

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages (see your John Deere dealer to order).

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I. N.) in the Specification or Identification Numbers section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

SETTING FUEL DELIVERY BEYOND PUBLISHED factory specifications or otherwise overpowering will result in loss of warranty protection for this machine.

BEFORE DELIVERING THIS MACHINE, your dealer performed a predelivery inspection. After operating for an agreed upon period, schedule an after-sale inspection with your John Deere dealer to ensure best performance.

THIS TRACTOR IS DESIGNED SOLELY for use in customary agricultural or similar operations ("INTENDED USE"). Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for damage or injury resulting from this misuse, and these risks must be borne solely by the user. Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitute essential elements for the intended use.

THIS TRACTOR SHOULD BE OPERATED, serviced and repaired only by persons familiar with all its

particular characteristics and acquainted with the relevant safety rules (accident prevention). The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times. Any arbitrary modifications carried out on this tractor will relieve the manufacturer of all liability for any resulting damage or injury.

REGISTER USED PRODUCTS. If you purchased used John Deere products from an authorized John Deere dealer, the warranty registration information was updated by the dealer and requires no further information on your part.

If you purchased any used John Deere product from an auction, through a trader or from a farmer, please register it now. John Deere and John Deere dealers value their customer's safety and satisfaction. Your local John Deere dealer is best equipped and anxious to provide you superior levels of support for your machine. Please enter your product details and your address online, using the John Deere website corresponding to your country. Then select the dealer of your choice.

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## Emissions Performance and Tampering

### Operation and Maintenance

The engine, including the emissions control system, shall be operated, used, and maintained in accordance with the instructions provided in this manual to maintain the emissions performance of the engine within the requirements applicable to the engine's category/certification.

### Tampering

No deliberate tampering with or misuse of the engine emissions control system shall take place; in particular with regard to deactivating or not maintaining an exhaust gas recirculation (EGR) or a DEF dosing system. Tampering with an engine's emissions control system will void the European Union (EU) type approval and applicable emissions-related warranties.

DX,EMISSIONS,PERFORM-19-12JAN18

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## Introduction

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CommandCenter™	Trademark of Deere & Company
CommandPRO™	Trademark of Deere & Company
Cool-Gard™	Trademark of Deere & Company
DURABUILT™	Trademark of Camoplast Inc.
e18™	Trademark of Deere & Company
e23™	Trademark of Deere & Company
eAutoPowr™	Trademark of Deere & Company
Efficiency Manager™	Trademark of Deere & Company
ExactRate™	Trademark of Deere & Company
GreenStar™	Trademark of Deere & Company
Hy-Gard™	Trademark of Deere & Company
HydraCushion™	Trademark of Deere & Company
ILS™ (Independent-Link Suspension)	Trademark of Deere & Company
iTEC™	Trademark of Deere & Company
IVT™ (Infinitely Variable Transmission)	Trademark of Deere & Company
JLink™	Trademark of Deere & Company
PLUS-50™	Trademark of Deere & Company
PowerShift™	Trademark of Deere & Company
PowerTech™	Trademark of Deere & Company
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*Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.*

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# Glossary

## Glossary of Terms

ITEM	ABBREVIATION	DESCRIPTION
Agriculture Tractor	[AG]	Tractor primary application
Scraper Tractor	[Scraper]	Tractor primary application
Air Conditioning	A/C	System used for conditioning the air in the cab
Automatic PowerShift	APS	Transmission feature
Controller Area Network	CAN	A communication system linking on-board electronics
Cold Cranking Amperes	CCA	Refers to a battery's capability to perform during cold-weather operation
Chassis Control Unit	CCU	Computerized system for tractor monitoring
Diesel Exhaust Fluid	DEF	Abbreviation
Diesel Particulate Filter	DPF	Filter that prevents ash and soot from entering the atmosphere
Diagnostic Trouble Codes	DTC	Codes that inform the operator of stop, service, or information alerts
Economy Mode	ECO	Abbreviation
Engine Control Unit	ECU	Abbreviation
Engine Revolutions Per Minute	erpm	Abbreviation
Gallons per Minute	gpm	Fluid flow measured over a period of 1 minute
Global Positioning System	GPS	Abbreviation
Heavy Duty	HD	Abbreviation
High Intensity Discharge	HID	Type of Xenon working light used for front lighting
Heating Ventilating Air Conditioning	HVAC	Abbreviation
International Standards Organization	ISO	Abbreviation
John Deere Central Tire Inflation System	John Deere CTIS	Abbreviation
Left-Hand	LH	Abbreviation
Liters per Minute	L/min	Fluid flow measured over a period of 1 minute
Light Emitting Diode	LED	Abbreviation
Low Temperature Circuit	LTC	Abbreviation
Maximum Ballast Weight	MBW	Abbreviation
Mechanical Front Wheel Drive	MFWD	Powered front axle which is driven mechanically from the transmission
Product Identification Number	PIN	Serial number relating to tractor identification
PowerShift Transmission	PST	Abbreviation
EVT/eAutoPowr Transmission Control Unit	PTE	Abbreviation
IVT/AutoPowr Transmission Control Unit	PTI	Abbreviation
Power Take-Off	PTO	Abbreviation
PowerShift Transmission Control Unit	PTP	Computerized system used to control IVT transmission shift functions
Roll-Over Protective Structure	ROPS	Abbreviation
Right-Hand	RH	Abbreviation
Revolutions per Minute	rpm	Abbreviation
Society of Automotive Engineers	SAE	Engineering Standards Organization
Selective Control Valve	SCV	Device used to control remote hydraulic functions
Tire Pressure System	TPS	Abbreviation
Voltage Class-B	VC-B	Abbreviation

RX32825,000179D-19-29JUN22

# Safety

## Recognize Safety Information



T81389—UN—28JUN13

This is a 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 operating practices.

DX,ALERT-19-03OCT22

## Follow Safety Instructions



TS201—UN—15APR13

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

DX,READ-19-01AUG22

## Understand Signal Words



**▲ WARNING**

**▲ CAUTION**

TS187—19—30SEP88

**DANGER;** The signal word DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

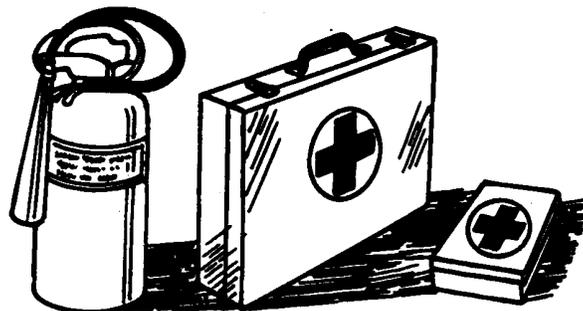
**WARNING;** The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION;** The signal word CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events which could lead to personal injury.

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.

DX,SIGNAL-19-05OCT16

## Prepare for Emergencies



TS291—UN—15APR13

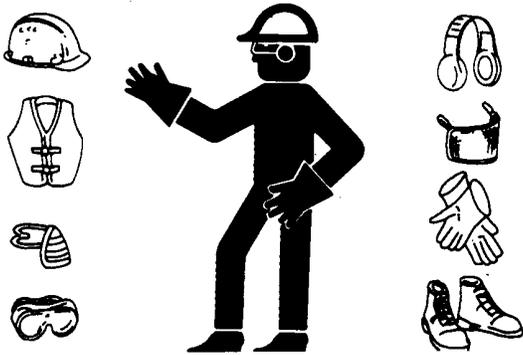
Be prepared if a fire starts.

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

## Wear Protective Clothing



TS206—UN—15APR13

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

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

DX.WEAR2-19-03MAR93

## Handle Fuel Safely—Avoid Fires



TS202—UN—23AUG88

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

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

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

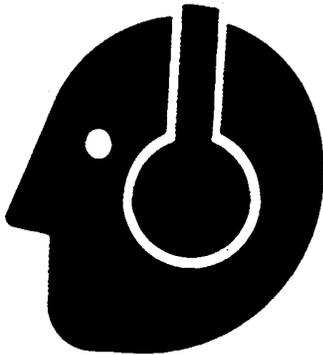
Use only an approved fuel container for transporting flammable liquids.

Never fill fuel container in pickup truck with plastic bed liner. Always place fuel container on ground before refueling. Touch fuel container with fuel dispenser nozzle before removing can lid. Keep fuel dispenser nozzle in contact with fuel container inlet when filling.

Do not store fuel container where there is an open flame, spark, or pilot light such as within a water heater or other appliance.

DX.FIRE1-19-12OCT11

## Protect Against Noise



TS207—UN—23AUG88

There are many variables that affect the sound level range, including machine configuration, condition and maintenance level of the machine, ground surface, operating environmental, duty cycles, ambient noise, and attachments.

Exposure to loud noise can cause impairment or loss of hearing.

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

DX.NOISE-19-03OCT17

## Handle Starting Fluid Safely



TS1356—UN—18MAR92

Starting fluid is highly flammable.

Keep all sparks and flame away when using it. Keep starting fluid away from batteries and cables.

To prevent accidental discharge when storing the pressurized can, keep the cap on the container, and store in a cool, protected location.

Do not incinerate or puncture a starting fluid container.

Do not use starting fluid on an engine equipped with glow plugs or an air intake heater.

DX,FIRE3-19-14MAR14

## Fire Prevention

To reduce the risk of fire, your tractor should be regularly inspected and cleaned.

- Birds and other animals may build nests or bring other flammable materials into the engine compartment or onto the exhaust system. The tractor should be inspected and cleaned prior to the first use each day.
- A build up of grass, crop material and other debris may occur during normal operation. This is especially true when operating in very dry conditions or conditions where airborne crop material or crop dust is present. Any such build up must be removed to ensure proper machine function and to reduce the risk of fire. The tractor must be inspected and cleaned periodically throughout the day.
- Regular and thorough cleaning of the tractor combined with other routine maintenance procedures listed in the Operator's Manual greatly reduce the risk of fire and the chance of costly downtime.
- Do not store fuel container where there is an open flame, spark, or pilot light such as within a water heater or other appliance.
- Check fuel lines, tank, cap, and fittings frequently for damage, cracks or leaks. Replace if necessary.

Follow all operational and safety procedures posted on the machine and the Operator's Manual. Be careful of hot engine and exhaust components during inspection and cleaning. Before carrying out any inspection or cleaning, always shut OFF the engine, place the transmission in PARK or set parking brake, and remove the key. Removal of the key will prevent others from starting the tractor during inspection and cleaning.

DX,WW,TRACTOR,FIRE,PREVENTION-19-12OCT11

## In Case of Fire



TS227—UN—15APR13

### **CAUTION: Avoid personal injury.**

Stop machine immediately at the first sign of fire. Fire may be identified by the smell of smoke or sight of flames. Because fire grows and spreads rapidly, get off the machine immediately and move safely away from the fire. Do not return to the machine! The number one priority is safety.

Call the fire department. A portable fire extinguisher can put out a small fire or contain it until the fire department arrives; but portable extinguishers have limitations. Always put the safety of the operator and bystanders first. If attempting to extinguish a fire, keep your back to the wind with an unobstructed escape path so you can move away quickly if the fire cannot be extinguished.

Read the fire extinguisher instructions and become familiar with their location, parts, and operation before a fire starts. Local fire departments or fire equipment distributors may offer fire extinguisher training and recommendations.

If your extinguisher does not have instructions, follow these general guidelines:

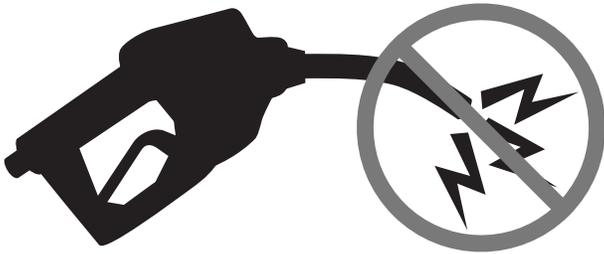
1. Pull the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.
2. Aim low. Point the extinguisher at the base of the fire.
3. Squeeze the lever slowly and evenly.
4. Sweep the nozzle from side-to-side.

DX,FIRE4-19-22AUG13

## Avoid Static Electricity Risk When Refueling



RG22142—UN—17MAR14



RG21992—UN—21AUG13

The removal of sulfur and other compounds in Ultra-Low Sulfur Diesel (ULSD) fuel decreases its conductivity and increases its ability to store a static charge.

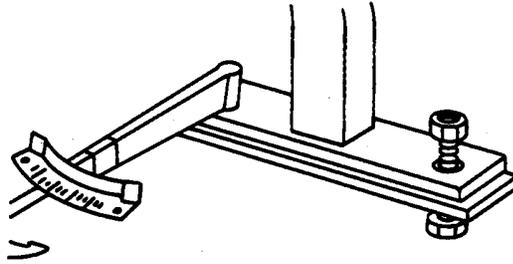
Refineries may have treated the fuel with a static dissipating additive. However, there are many factors that can reduce the effectiveness of the additive over time.

Static charges can build up in ULSD fuel while it is flowing through fuel delivery systems. Static electricity discharge when combustible vapors are present could result in a fire or explosion.

Therefore, it is important to ensure that the entire system used to refuel your machine (fuel supply tank, transfer pump, transfer hose, nozzle, and others) is properly grounded and bonded. Consult with your fuel or fuel system supplier to ensure that the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

DX,FUEL,STATIC,ELEC-19-12JUL13

## Keep ROPS Installed Properly



TS212—UN—23AUG88

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

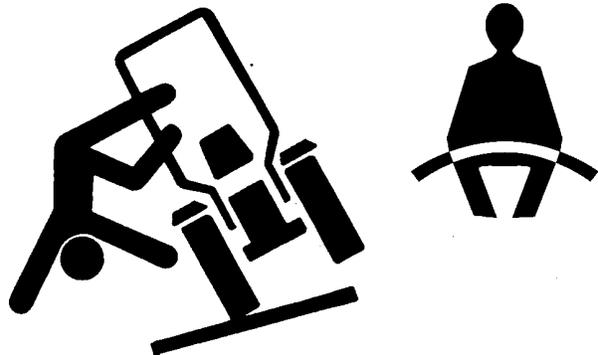
The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

The seat is part of the ROPS safety zone. Replace only with John Deere seat approved for your tractor.

Any alteration of the ROPS must be approved by the manufacturer.

DX,ROPS3-19-12OCT11

## Use Foldable ROPS and Seat Belt Properly



TS1729—UN—24MAY13

Avoid crushing injury or death during rollover.

- If this machine is equipped with a foldable rollover protective structure (ROPS), keep the ROPS in the fully extended and locked position. USE a seat belt when you operate with a ROPS in the fully extended position.
  - Hold the latch and pull the seat belt across the body.
  - Insert the latch into the buckle. Listen for a click.
  - Tug on the seat belt to make sure that the belt is securely fastened.

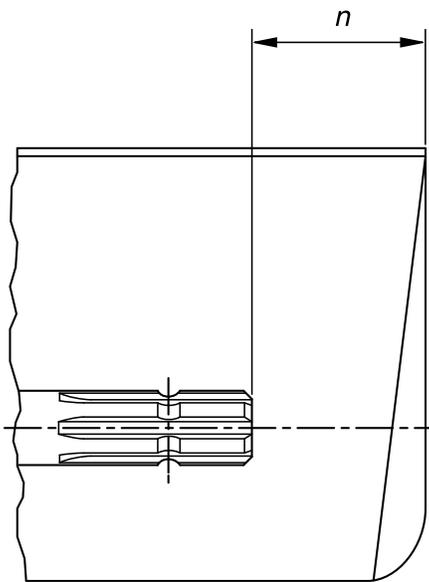
- Snug the seat belt across the hips.
- If this machine is operated with the ROPS folded (for example, to enter a low building), drive with extreme caution. **DO NOT USE** a seat belt with the ROPS folded.
- Return the ROPS to the raised, fully extended position as soon as the machine is operated under normal conditions.

DX,FOLDROPS-19-22AUG13

### Stay Clear of Rotating Drivelines



TS1644—UN—22AUG95



H96219—UN—29APR10

Entanglement in rotating driveline can cause serious injury or death.

Keep tractor master shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Only use power take-off driveshfts with adequate guards and shields.

Wear close fitting clothing. Stop the engine and be sure that PTO driveline is stopped before making

adjustments, connections, or cleaning out PTO driven equipment.

Do not install any adapter device between the tractor and the primary implement PTO driveshaft that will allow a 1000 rpm tractor shaft to power a 540 rpm implement at speeds higher than 540 rpm.

Do not install any adapter device that results in a portion of the rotating implement shaft, tractor shaft, or the adapter to be unguarded. The tractor master shield shall overlap the end of the splined shaft and the added adaptor device as outlined in the table.

The angle at which the primary implement PTO driveshaft can be inclined may be reduced depending on the shape and size of the tractor master shield and the shape and size of the guard of the primary implement PTO driveshaft.

Do not raise implements high enough to damage the tractor master shield or guard of primary implement PTO driveshaft. Detach the PTO driveline shaft if it is necessary to increase implement height. (See Attching/ Detaching PTO Driveline)

When using Type 3/4 PTO, inclination and turning angles may be reduced depending on type of PTO master shield and coupling rails.

PTO Type	Diameter	Splines	n ± 5 mm (0.20 in.)
1	35 mm (1.378 in.)	6	85 mm (3.35 in.)
2	35 mm (1.378 in.)	21	85 mm (3.35 in.)
3	45 mm (1.772 in.)	20	100 mm (4.00 in.)
4	57.5 mm (2.264 in.)	22	100 mm (4.00 in.)

DX,PTO-19-28FEB17

### Use Steps and Handholds Correctly



T133468—UN—15APR13

Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps, handholds, and handrails.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease

or oil. Never jump when exiting machine. Never mount or dismount a moving machine.

DX,WW,MOUNT-19-12OCT11

## Read Operator's Manuals for ISOBUS Controllers

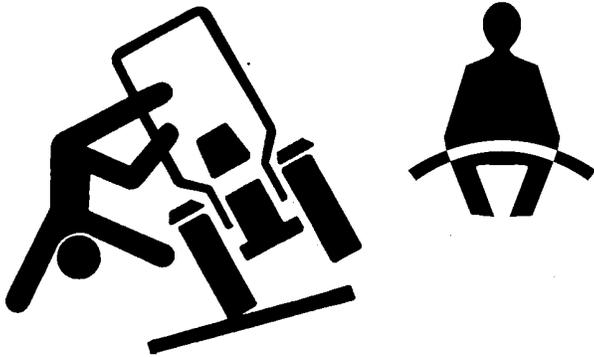
In addition to GreenStar Applications, this display can be used as a display device for any ISOBUS Controller that meets ISO 11783 standard. The display includes capability to control ISOBUS implements. When used in this manner, information and control functions placed on the display are provided by the ISOBUS Controller and are the responsibility of the ISOBUS Controller manufacturer.

Some of these functions could pose hazard to either the operator or a bystander. Read the Operator's Manual provided by the ISOBUS Controller manufacturer and observe all safety messages in manual and on ISOBUS Controller product before use.

*NOTE: ISOBUS refers to the ISO Standard 11783.*

DX,WW,ISOBUS(T)-19-04APR22

## Use Seat Belt Properly



TS1729—UN—24MAY13

Avoid crushing injury or death during rollover.

This machine is equipped with a rollover protective structure (ROPS). USE a seat belt when you operate with a ROPS.

- Hold the latch and pull the seat belt across the body.
- Insert the latch into the buckle. Listen for a click.
- Tug on the seat belt latch to make sure that the belt is securely fastened.
- Snug the seat belt across the hips.

Replace entire seat belt if mounting hardware, buckle, belt, or retractor show signs of damage.

Inspect seat belt and mounting hardware at least once a year. Look for signs of loose hardware or belt damage,

such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with replacement parts approved for your machine. See your John Deere dealer.

DX,ROPS1-19-22AUG13

## Operating the Tractor Safely

You can reduce the risk of accidents by following these simple precautions:

- Use your tractor only for jobs it was designed to perform, for example, pushing, pulling, towing, actuating, and carrying a variety of interchangeable equipment designed to conduct agricultural work.
- Operators must be mentally and physically capable of accessing the operator's station and/or controls, and operating the machine properly and safely.
- Never operate machine when distracted, fatigued, or impaired. Proper machine operation requires the operator's full attention and awareness.
- This tractor is not intended to be used as a recreational vehicle.
- Read this operator's manual before operating the tractor and follow operating and safety instructions in the manual and on the tractor.
- Follow operation and ballasting instructions found in the operator's manual for your implements/ attachments, such as front loaders.
- Follow the instructions outlined in the operator's manual of any mounted or trailed machinery or trailer. Do not operate a combination of tractor-machine or tractor-trailer unless all instructions have been followed.
- Make sure that everyone is clear of machine, attached equipment, and work area before starting engine or operation.
- Stay clear of the three-point linkage and pickup hitch (if equipped) when controlling them.
- Keep hands, feet, and clothing away from power-driven parts.

## Driving Concerns

- Never get on or off a moving tractor.
- Complete any required training prior to operating vehicle.
- Keep all children and nonessential personnel off tractors and all equipment.
- Never ride on a tractor unless seated on a John Deere approved seat with a seat belt.
- Keep all shields/guards in place.
- Use appropriate visual and audible signals when operating on public roads.
- Move to side of road before stopping.
- Reduce speed when turning, applying individual

brakes, or operating around hazards on rough ground or steep slopes.

- Stability degrades when attached implements are at high position.
- Couple brake pedals together for road travel.
- Pump brakes when stopping on slippery surfaces.
- Regularly clean fenders and fender valances (mud flaps) if installed. Remove dirt before driving on public roadways.

#### Heated and Ventilated Operator's Seat

- An overheated seat heater can cause a burn injury or damage to the seat. To reduce the risk of burns, use caution when using the seat heater for extended periods of time, especially if the operator cannot feel temperature change or pain to the skin. Do not place objects on the seat, such as a blanket, cushion, cover, or similar item, which can cause the seat heater to overheat.

#### Towing Loads

- Be careful when towing and stopping heavy loads. Stopping distance increases with speed and weight of towed loads, and on slopes. Towed loads with or without brakes that are too heavy for the tractor or are towed too fast can cause loss of control.
- Consider the total weight of the equipment and its load.
- Hitch towed loads only to approved couplings to avoid rearward upset.

#### Parking and Leaving the Tractor

- Before dismounting, shut off SCVs, disengage PTO, stop engine, lower implements/attachments to ground, place implement/attachment control devices in neutral, and securely engage park mechanism, including the park pawl and park brake. In addition, if the tractor is left unattended, remove key.
- Leaving transmission in gear with engine off will NOT prevent the tractor from moving.
- Never go near an operating PTO or an operating implement.
- Wait for all movement to stop before servicing machinery.

#### Common Accidents

Unsafe operation or misuse of the tractor can result in accidents. Be alert to hazards of tractor operation.

The most common accidents involving tractors are:

- Tractor rollover
- Collisions with motor vehicles
- Improper starting procedures
- Entanglement in PTO shafts
- Falling from tractor

- Crushing and pinching during hitching

DX,WW,TRACTOR-19-08MAY19

#### Avoid Backover Accidents



PC10857XW—UN—15APR13

Before moving machine, be sure that all persons are clear of machine path. Turn around and look directly for best visibility. Use a signal person when backing if view is obstructed or when in close quarters.

Do not rely on a camera to determine if personnel or obstacles are behind the machine. The system can be limited by many factors including maintenance practices, environmental conditions, and operating range.

DX,AVOID,BACKOVER,ACCIDENTS-19-30AUG10

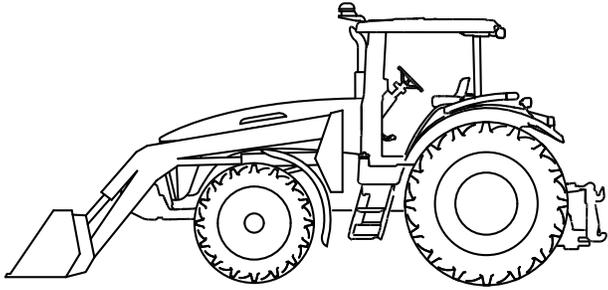
#### Limited Use in Forestry Operation

The intended use of John Deere tractors when used in forestry operations is limited to tractor-specific applications like transport, stationary work such as log splitting, propulsion, or operating implements with PTO, hydraulic, or electrical systems.

These are applications where normal operation does not present a risk of falling or penetrating objects. Any forestry applications beyond these applications, such as forwarding and loading, requires fitment of application-specific components including Falling Object Protective Structure (FOPS) and/or Operative Protective Structures (OPS). Contact John Deere dealer for special components.

DX,WW,FORESTRY-19-12OCT11

## Operating the Loader Tractor Safely



TS1692—UN—09NOV09

When operating a machine with a loader application, reduce speed as required to ensure good tractor and loader stability.

To avoid tractor rollover and damage to front tires and tractor, do not carry load with your loader at a speed over 10 km/h (6 mph).

To avoid tractor damage do not use a front loader or a sprayer tank if the tractor is equipped with a 3 Meter Front Axle.

Never allow anyone to walk or work under a raised loader.

Do not use loader as a work platform.

Do not lift or carry anyone on loader, in bucket, or on implement or attachment.

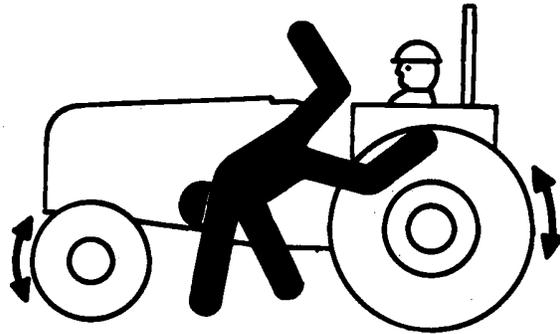
Lower loader to ground before leaving operators station.

The Rollover Protective Structure (ROPS) or cab roof, if equipped, may not provide sufficient protection from load falling onto the operators station. To prevent loads from falling onto the operators station, always use appropriate implements for specific applications (that is, manure forks, round bale forks, round bale grippers, and claspers).

Ballast tractor in accordance to Ballast Recommendations in PREPARE TRACTOR section.

DX,WW,LOADER-19-18SEP12

## Keep Riders Off Machine



TS290—UN—23AUG88

Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.

DX,RIDER-19-03MAR93

## Instructional Seat

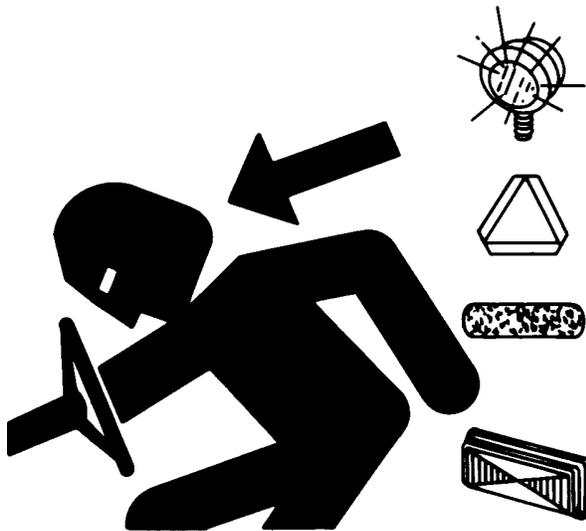


TS1730—UN—24MAY13

The instructional seat, if so equipped, has been provided only for training operators or diagnosing machine problems.

DX,SEAT,NA-19-22AUG13

## Use Safety Lights and Devices



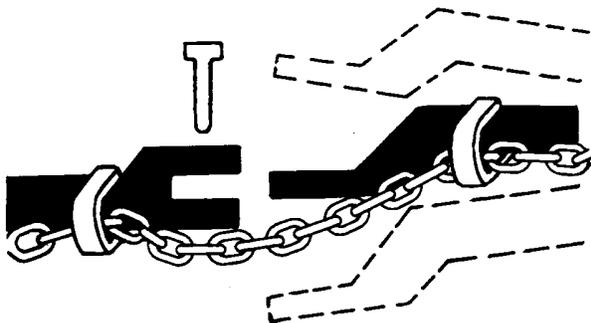
TS951—UN—12APR90

Prevent collisions between other road users, slow moving tractors with attachments or towed equipment, and self-propelled machines on public roads. Frequently check for traffic from the rear, especially in turns, and use turn signal lights.

Use headlights, flashing warning lights, and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your John Deere dealer.

DX.FLASH-19-07JUL99

## Use a Safety Chain



TS217—UN—23AUG88

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

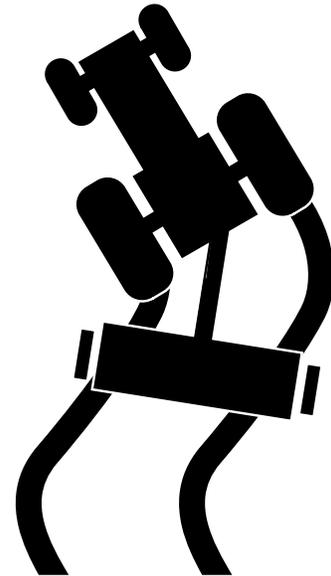
Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength

rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.

DX.CHAIN-19-03MAR93

## Transport Towed Equipment at Safe Speeds



TS1686—UN—27SEP06

Do not exceed the maximum transport speed. This towing unit may be capable of operating at transport speeds that exceed the maximum allowable transport speed for towed implements.

Before transporting a towed implement, determine from signs on the implement or information provided in the implement's operator manual the maximum transport speed. Never transport at speeds that exceed the implement's maximum transport speed. Exceeding the implement's maximum transport speed can result in:

- Loss of control of the towing unit/implement combination
- Reduced or no ability to stop during braking
- Implement tire failure
- Damage to the implement structure or its components

Implements shall be equipped with brakes if the maximum fully loaded weight is greater than 1500 kg (3307 lbs) and greater than 1.5 times the weight of the towing unit.

**Example: Implement mass is 1600 kg (3527 lbs) and towing unit mass is 1600 kg (3527 lbs), example implement is not required to have brakes.**

**Implements without brakes:** Do not transport at speeds greater than 32 km/h (20 mph).

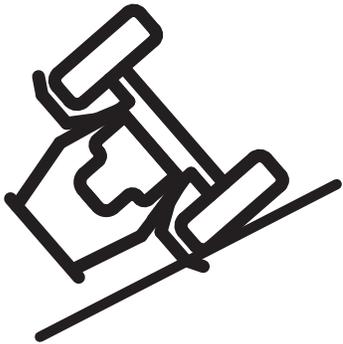
**Implements with brakes:**

- If the manufacturer does not specify a maximum transport speed, do not tow at speeds greater than 40 km/h (25 mph).
- When transporting at speeds up to 40 km/h (25 mph) the fully loaded implement must weigh less than 4.5 times the towing unit weight.
- When transporting at speeds between 40—50 km/h (25—31 mph) the fully loaded implement must weigh less than 3.0 times the towing unit weight.

When towing a trailer, become familiar with the braking characteristics and ensure the compatibility of the tractor/trailer combination in regard to the deceleration rate.

DX,TOW1-19-28FEB17

### Use Caution on Slopes, Uneven Terrain, and Rough Ground



RXA0103437—UN—01JUL09

Avoid holes, ditches, and obstructions which cause the tractor to tip, especially on slopes. Avoid sharp uphill turns.

Driving forward out of a ditch, mired condition, or up a steep slope could cause the tractor to tip over rearward. Back out of these situations if possible.

Danger of overturn increases greatly with narrow tread setting, at high speed.

Not all conditions that can cause a tractor to overturn are listed. Be alert for any situation in which stability may be compromised.

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. Operation on all slopes requires extra caution.

Uneven terrain or rough ground can cause loss-of-control and tip-over accidents, which can result in severe injury or death. Operation on uneven terrain or rough ground requires extra caution.

Never drive near the edge of a gully, drop-off, ditch, steep embankment, or a body of water. The machine could suddenly roll over if a wheel goes over the edge or the ground caves in

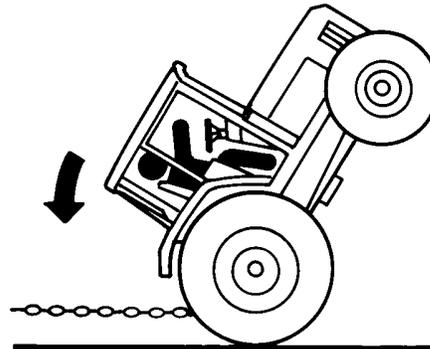
Choose a low ground speed so you will not have to stop or shift while on a slope.

Avoid starting, stopping, or turning on a slope. If the tires lose traction, disengage the PTO and proceed slowly, straight down the slope.

Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction, which could cause the machine to roll over.

DX,WW,SLOPE-19-28FEB17

### Freeing a Mired Machine



TS1645—UN—15SEP95



TS263—UN—23AUG88

Attempting to free a mired machine can involve safety hazards such as the mired tractor tipping rearward, the towing tractor overturning, and the tow chain or tow bar (a cable is not recommended) failing and recoiling from its stretched condition.

Back your tractor out if it gets mired down in mud. Unhitch any towed implements. Dig mud from behind the rear wheels. Place boards behind the wheels to provide a solid base and try to back out slowly. If necessary, dig mud from the front of all wheels and drive slowly ahead.

If necessary to tow with another unit, use a tow bar or a long chain (a cable is not recommended). Inspect the chain for flaws. Make sure all parts of towing devices are of adequate size and strong enough to handle the load.

Always hitch to the drawbar of the towing unit. Do not

hitch to the front pushbar attachment point. Before moving, clear the area of people. Apply power smoothly to take up the slack: a sudden pull could snap any towing device causing it to whip or recoil dangerously.

DX,MIRE-19-07,JUL99

## Avoid Contact with Agricultural Chemicals



TS220—UN—15APR13



TS272—UN—23AUG88

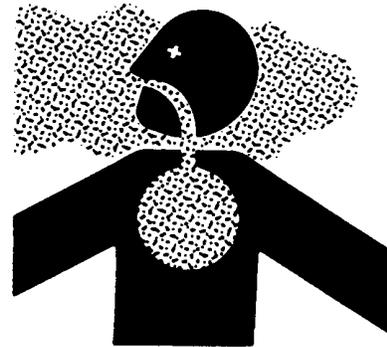
This enclosed cab does not protect against inhaling vapor, aerosol or dust. If pesticide use instructions require respiratory protection, wear an appropriate respirator inside the cab.

Before leaving the cab, wear personal protective equipment as required by the pesticide use instructions. When re-entering the cab, remove protective equipment and store either outside the cab in a closed box or some other type of sealable container or inside the cab in a pesticide resistant container, such as a plastic bag.

Clean your shoes or boots to remove soil or other contaminated particles prior to entering the cab.

DX,CABS-19-25MAR09

## Handle Agricultural Chemicals Safely



TS220—UN—15APR13



A34471

A34471—UN—11OCT88

Chemicals used in agricultural applications such as fungicides, herbicides, insecticides, pesticides, rodenticides, and fertilizers can be harmful to your health or the environment if not used carefully.

Always follow all label directions for effective, safe, and legal use of agricultural chemicals.

Reduce risk of exposure and injury:

- Wear appropriate personal protective equipment as recommended by the manufacturer. In the absence of manufacturer's instructions, follow these general guidelines:
  - Chemicals labeled **'Danger'**: Most toxic. Generally require use of goggles, respirator, gloves, and skin protection.
  - Chemicals labeled **'Warning'**: Less toxic. Generally require use of goggles, gloves, and skin protections.
  - Chemicals labeled **'Caution'**: Least toxic. Generally require use of gloves and skin protection.
- Avoid inhaling vapor, aerosol or dust.
- Always have soap, water, and towel available when working with chemicals. If chemical contacts skin, hands, or face, wash immediately with soap and water. If chemical gets into eyes, flush immediately with water.
- Wash hands and face after using chemicals and before eating, drinking, smoking, or urination.

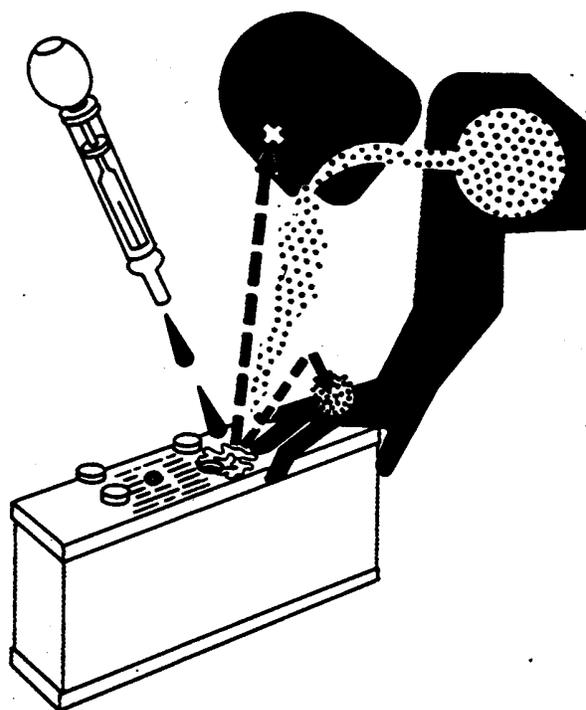
- Do not smoke or eat while applying chemicals.
- After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.
- Seek medical attention immediately if illness occurs during or shortly after use of chemicals.
- Keep chemicals in original containers. Do not transfer chemicals to unmarked containers or to containers used for food or drink.
- Store chemicals in a secure, locked area away from human or livestock food. Keep children away.
- Always dispose of containers properly. Triple rinse empty containers and puncture or crush containers and dispose of properly.

DX,WW,CHEM01-19-24AUG10

## Handling Batteries Safely



TS204—UN—15APR13



TS203—UN—23AUG88

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

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

Always remove grounded (-) battery clamp first and replace grounded clamp last.

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

### Avoid hazards by:

- Filling batteries in a well-ventilated area
- Wearing eye protection and rubber gloves
- Avoiding use of air pressure to clean batteries
- Avoiding breathing fumes when electrolyte is added
- Avoiding spilling or dripping electrolyte
- Using correct battery booster or charger procedure.

### If acid is spilled on skin or in eyes:

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

### If acid is swallowed:

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

**WARNING:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash hands after handling.**

DX,WW,BATTERIES-19-02DEC10

### Avoid Heating Near Pressurized Fluid Lines



TS953—UN—15MAY90

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

DX,TORCH-19-10DEC04

### Remove Paint Before Welding or Heating



TS220—UN—15APR13

Avoid potentially toxic fumes and dust.

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

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- 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.

Do not use a chlorinated solvent in areas where welding will take place.

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT-19-24JUL02

### Handle Electronic Components and Brackets Safely



TS249—UN—23AUG88

Falling while installing or removing electronic components mounted on equipment can cause serious injury. Use a ladder or platform to easily reach each mounting location. Use sturdy and secure footholds and handholds. Do not install or remove components in wet or icy conditions.

If installing or servicing a RTK base station on a tower or other tall structure, use a certified climber.

If installing or servicing a global positioning receiver mast used on an implement, use proper lifting techniques and wear proper protective equipment. The mast is heavy and can be awkward to handle. Two people are required when mounting locations are not accessible from the ground or from a service platform.

DX,WW,RECEIVER-19-24AUG10

## Practice Safe Maintenance



TS218—UN—23AUG88

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 away 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.

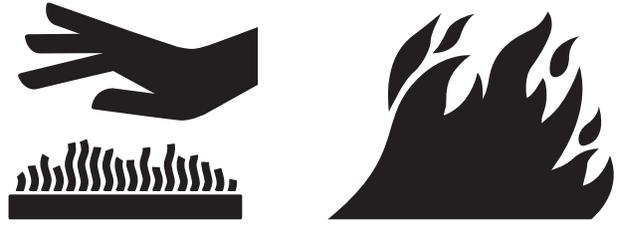
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

Falling while cleaning or working at height can cause serious injury. Use a ladder or platform to easily reach each location. Use sturdy and secure footholds and handholds.

DX,SERV-19-28FEB17

## Avoid Hot Exhaust



RG17488—UN—21AUG09

Servicing machine or attachments with engine running can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.

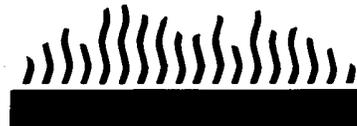
Exhaust parts and streams become very hot during operation. Exhaust gases and components reach temperatures hot enough to burn people, ignite, or melt common materials.

DX,EXHAUST-19-20AUG09

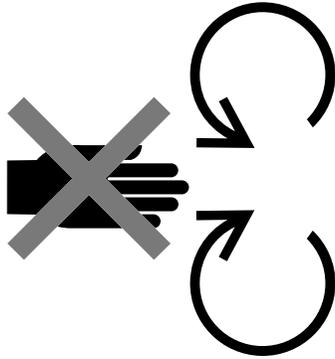
## Clean Exhaust Filter Safely



TS227—UN—15APR13



TS271—UN—23AUG88



TS1693—UN—09DEC09



TS1695—UN—07DEC09

During exhaust filter cleaning operations, the engine may run at elevated idle and hot temperatures for an extended period of time. Exhaust gases and exhaust filter components reach temperatures hot enough to burn people, or ignite or melt common materials.

Keep machine away from people, animals, or structures which may be susceptible to harm or damage from hot exhaust gases or components. Avoid potential fire or explosion hazards from flammable materials and vapors near the exhaust. Keep exhaust outlet away from people and anything that can melt, burn, or explode.

Closely monitor machine and surrounding area for smoldering debris during and after exhaust filter cleaning.

Adding fuel while an engine is running can create a fire or explosion hazard. Always stop engine before refueling machine and clean up any spilled fuel.

Always make sure that engine is stopped while hauling machine on a truck or trailer.

Contact with exhaust components while still hot can result in serious personal injury.

Avoid contact with these components until cooled to safe temperatures.

If service procedure requires engine to be running:

- Only engage power-driven parts required by service procedure
- Ensure that other people are clear of operator station and machine

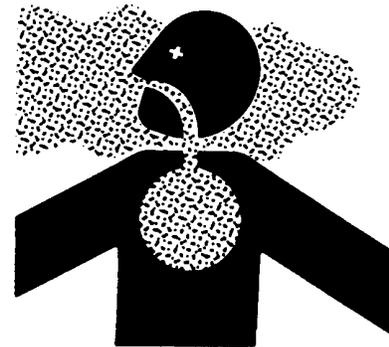
Keep hands, feet, and clothing away from power-driven parts.

Always disable movement (neutral), set the parking brake or mechanism and disconnect power to attachments or tools before leaving the operator's station.

Shut off engine and remove key (if equipped) before leaving the machine unattended.

DX,EXHAUST,FILTER-19-12JAN11

## Work In Ventilated Area



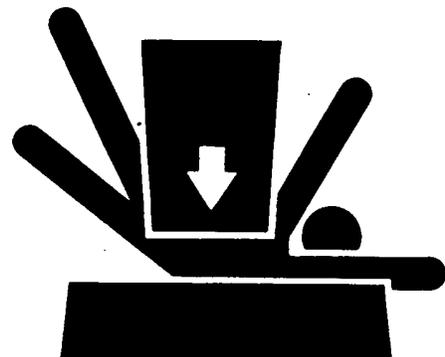
TS220—UN—15APR13

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.

DX,AIR-19-17FEB99

## Support Machine Properly



TS229—UN—23AUG88

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

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.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.

DX,LOWER-19-24FEB00

## Prevent Machine Runaway



TS177—UN—11JAN89

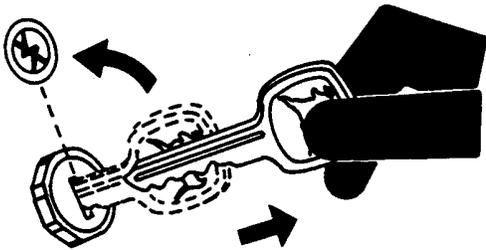
Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.

DX,BYPAS1-19-29SEP98

## Park Machine Safely



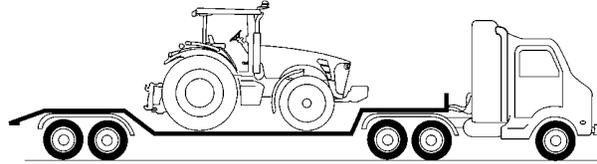
TS230—UN—24MAY89

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.

DX,PARK-19-04JUN90

## Transport Tractor Safely



RXA0103709—UN—01JUL09

A disabled tractor is best transported on a flatbed carrier. Use chains to secure the tractor to the carrier. The axles and tractor frame are suitable attachment points.

Before transporting the tractor on a low-loader truck or flatbed rail wagon, make sure that the hood is secured over the tractor engine and that doors, roof hatch (if equipped) and windows are properly closed.

Never tow a tractor at a speed greater than 10 km/h (6 mph). An operator must steer and brake the tractor under tow.

DX,WW,TRANSPORT-19-19AUG09

## Service Cooling System Safely



TS281—UN—15APR13

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

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

DX,WW,COOLING-19-19AUG09

## Service Accumulator Systems Safely



TS281—UN—15APR13

Escaping fluid or gas from systems with pressurized accumulators that are used in air conditioning, hydraulic, and air brake systems can cause serious injury. Extreme heat can cause the accumulator to burst, and pressurized lines can be accidentally cut. Do not weld or use a torch near a pressurized accumulator or pressurized line.

Relieve pressure from the pressurized system before removing accumulator.

Relieve pressure from the hydraulic system before removing accumulator. Never attempt to relieve hydraulic system or accumulator pressure by loosening a fitting.

Accumulators cannot be repaired.

DX,WW,ACCLA2-19-22AUG03

## Service Tires Safely



RXA0103438—UN—11JUN09

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.

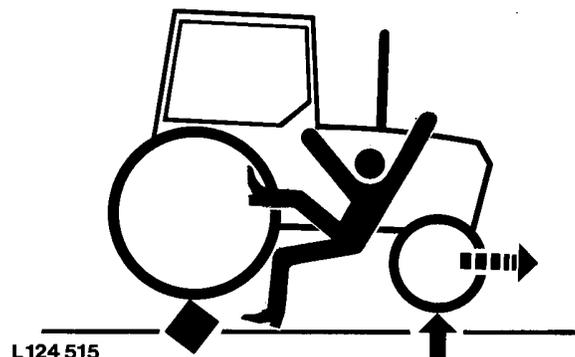
When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

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

Wheels and tires are heavy. When handling wheels and tires use a safe lifting device or get an assistant to help lift, install, or remove.

DX,WW,RIMS-19-28FEB17

## Service Front-Wheel Drive Tractor Safely



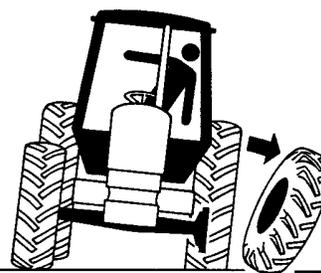
L124 515

L124515—UN—06AUG94

When servicing front-wheel drive tractor with the rear wheels supported off the ground and rotating wheels by engine power, always support front wheels in a similar manner. Loss of electrical power or transmission hydraulic system pressure will engage the front driving wheels, pulling the rear wheels off the support if front wheels are not raised. Under these conditions, front drive wheels can engage even with switch in disengaged position.

DX,WW,MFWD-19-19AUG09

## Tightening Wheel Retaining Bolts/Nuts



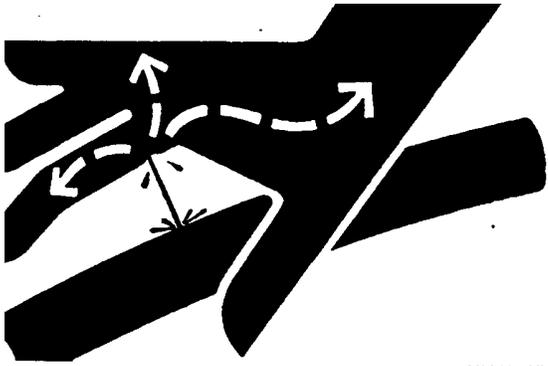
L124 516

L124516—UN—03JAN95

Torque wheel retaining bolts/nuts at the intervals specified in section Break-In Period and Service.

DX,WW,WHEEL-19-12OCT11

## Avoid High-Pressure Fluids



X9811—UN—23AUG88

Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

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 in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID-19-12OCT11

## Do Not Open High-Pressure Fuel System



TS1343—UN—18MAR92

High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt repair of fuel

lines, sensors, or any other components between the high-pressure fuel pump and nozzles on engines with High Pressure Common Rail (HPCR) fuel system.

Only technicians familiar with this type of system can perform repairs. (See your John Deere dealer.)

DX,WW,HPCR1-19-07JAN03

## Store Attachments Safely



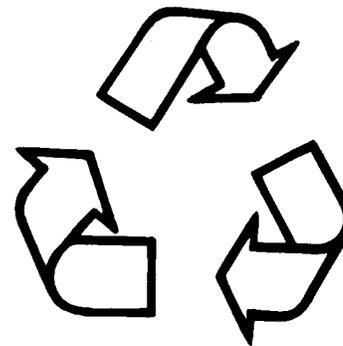
TS219—UN—23AUG88

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.

DX,STORE-19-03MAR93

## Decommissioning — Proper Recycling and Disposal of Fluids and Components



TS1133—UN—15APR13

Safety and environmental stewardship measures must be taken into account when decommissioning a machine and/or component. These measures include the following:

- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.

- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.
- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your John Deere dealer for information on the proper way to recycle or dispose of waste.

DX.DRAIN-19-01JUN15

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# Safety Signs

## Operator's Manual

**CAUTION**

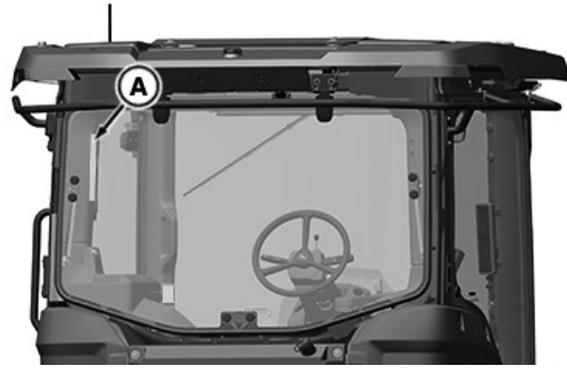
1. Before operating this tractor, read the Operator's Manual for complete operating instructions and safety information.
2. Keep all shields in place.
3. Be sure everyone is clear of tractor and attached equipment before starting engine or moving steering wheel, because tractor and equipment move as pictured.



4. Install lock-pin or lock-bars on tractor hinge before:
  - a. operating stationary PTO equipment.
  - b. performing service work near center of tractor.
  - c. lifting tractor or transporting on another vehicle.

Be sure lock-pin or lock-bars are removed from hinge area before operating tractor.
5. Keep all riders off tractor and equipment.
6. Keep hands, feet and clothing away from power-driven parts.
7. Reduce speed when turning or applying individual brakes or operating around hazards, on rough ground or steep slopes.
8. Be especially careful when using single wheels. Danger of an overturn increases greatly with narrow tread (2m [80 inches] or less) and high speed.

For hillside operation, use only dual wheels, front and rear. Avoid sharp uphill turns.
9. Use flashing warning lights on highway unless prohibited by law.
10. Before dismounting:
  - a. Shift tractor to PARK or set handbrake securely.
  - b. Lower implement to the ground.
11. Remove key or otherwise secure machine before leaving tractor unattended.
12. Wait for all movements to stop before servicing machinery.



RXA0184813—UN—27JUL21

**A—Before Operating Tractor Label (left-hand rear cab post)**

RD47322.0000345-19-08JUN23

(A)

RXA0188986—19—10AUG23

Transport, ROPS, and Seat Belt

**⚠ WARNING**



Avoid serious injury or death resulting from loss of control during transport or braking of a towed implement.

This tractor is capable of operating at transport speeds that may exceed the maximum allowable transport speed for towed implements. If implement manufacturer does not specify maximum transport speed, observe these transport speed limits:

- Implements without brakes: 32 km/h (20 mph)
- Implements with brakes: 40 km/h (25 mph)

Do not exceed the implement's maximum transport speed.

---



**AVOID CRUSHING:**

- Do not jump if machine tips.

---



**USE SEAT BELT**

- Pull belt fully from retractors and adjust for best protection.

---

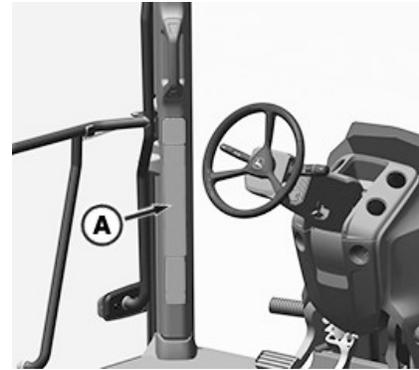
To maintain unimpaired operator protection and manufacturer's ROPS certification:

- Damaged ROPS structures must be replaced, not repaired or revised.
- Any alteration to the ROPS must be approved by the manufacturer.



(A)

RXA0186061—19—18NOV21



RXA0181009—UN—21JAN21

A—Transport, ROPS, and Seat Belt Warning Label (left-hand front cab post)

KD34109.000086F-19-10JAN22

Instructional Seat (If Equipped)

**⚠ CAUTION**

This instructional seat has been provided only for training operators or diagnosing machine problems.

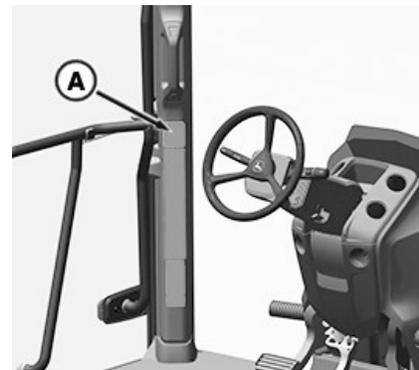


Keep all other riders off the tractor and equipment.

Always wear your seat belt.

(A)

RXA0186062—19—18NOV21



RXA0181008—UN—21JAN21

A—Instructional Seat Label (left-hand front cab post)

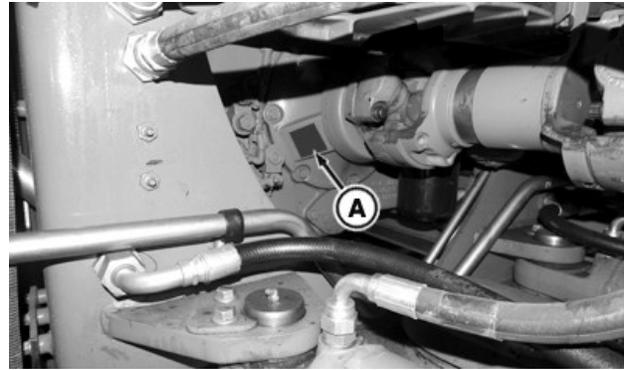
KD34109.0000870-19-10JAN22

Engine Block Heater (If Equipped)



(A)

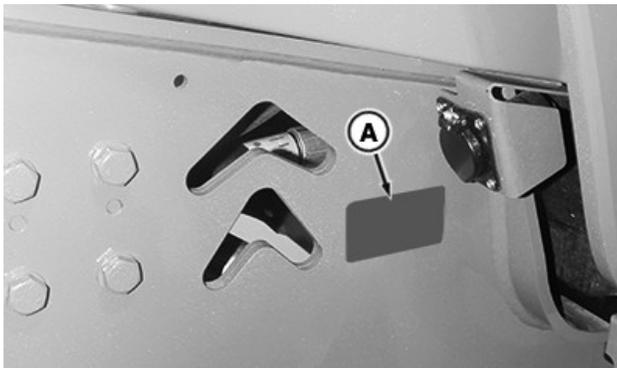
RXA0186063—19—18NOV21



RXA0186181—UN—30NOV21

A—Park Brake Label (housing near park lock)

RD47322,000034E-19-10JAN22



RXA0186174—UN—29NOV21

A—Engine Heater Label (right-hand side of tractor near heater connector)

KD34109,0001A8F-19-05MAY22

Rotating Driveline (If Equipped) [Ag]



(A)

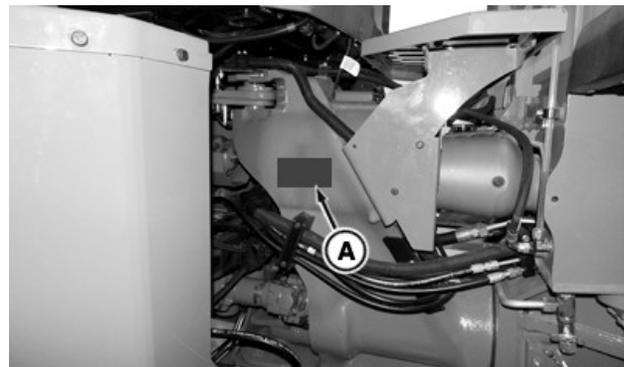
RXA0186083—19—23NOV21

Park Brake (Stored Energy)



(A)

RXA0186082—19—23NOV21

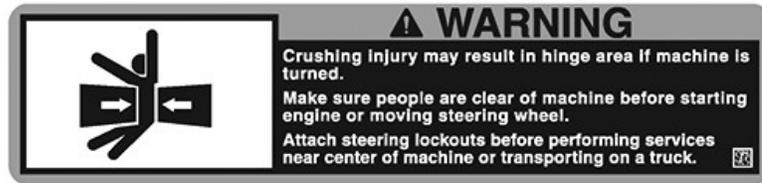


RXA0186182—UN—30NOV21

A—Rotating Driveline Label (left-hand and right-hand sides of gudgeon)

KD34109,0001A90-19-05MAY22

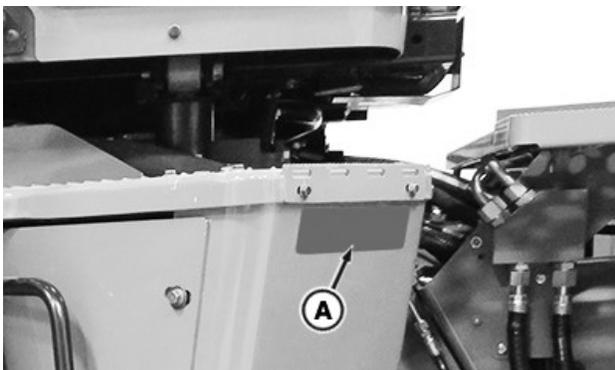
Hinge Area



RXA0186081—19—22NOV21

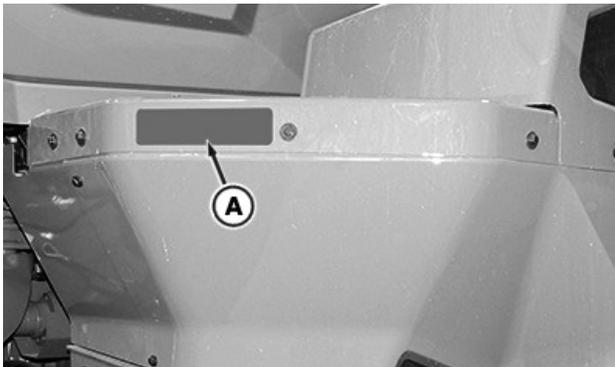
(A)

A—Hinge Area Label (left-hand side of tractor)



RXA0186180—UN—30NOV21

Left-Hand Side of Tractor



RXA0186179—UN—30NOV21

Right-Hand Side of Tractor

A—Hinge Area Label (right-hand side of tractor)

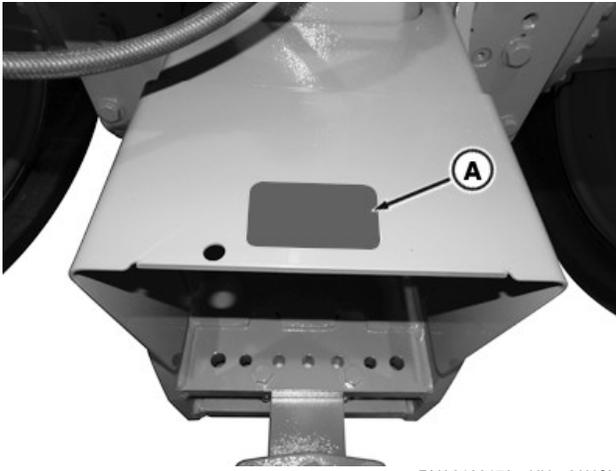
KD34109,0001A91-19-05MAY22

Rear PTO Shield (If Equipped) [Ag]



RXA0186067—19—19NOV21

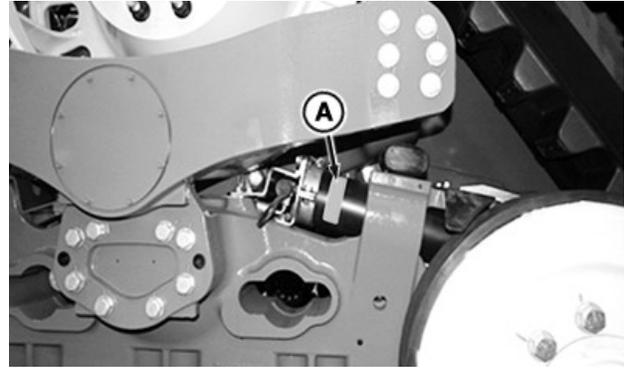
(A)



A—PTO Label (rear of tractor on PTO shield)

RXA0186176—UN—29NOV21

KD34109,0001A92-19-05MAY22



A—Accumulator Label (left-hand, right-hand, front, and rear tracks)

RXA0186205—UN—01DEC21

KD34109,0001A93-19-05MAY22

Quick-Hitch (If Equipped) [Ag]

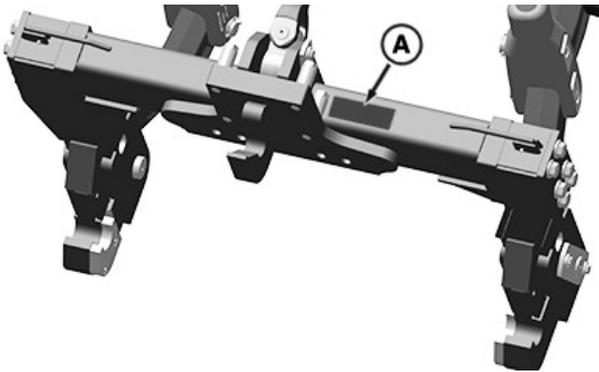
**CAUTION**

Improper action can cause the implement to be pulled over the tractor wheel and onto the operator station. Read and follow all instructions in the operator's manual before using hitch. Use control levers to fully engage both locking lugs over lower implement pins. Secure draft link attaching pins by tightening retainer bolts to 115 Nm (85.0 ft lb) torque.



RXA0186066—19—19NOV21

(A)



A—Quick-Hitch Label (rear of tractor on quick-hitch)

RXA0186178—UN—30NOV21

RD47322,000034C-19-10JAN22

Track Accumulators

**CAUTION**

Avoid injury from machine movement and exposure to fluid under pressure. See dealer for instruction on relieving pressure before servicing system.



RXA0186064—19—18NOV21

(A)

Trash Build-Up

**CAUTION**

**HELP PREVENT FIRE**

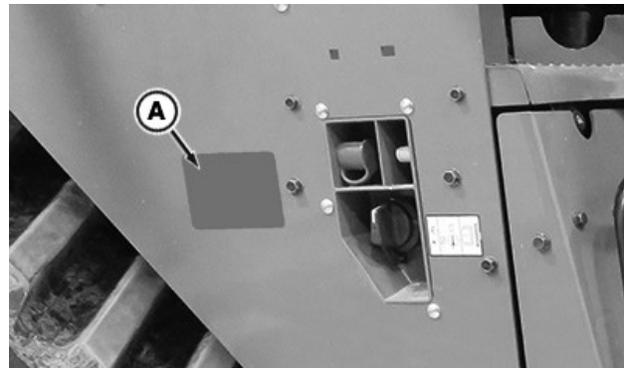
Trash build-up between tracks and tractor chassis or cab can cause fire from increased friction.

- Keep machine free of trash.
- Keep a fire extinguisher at hand.



RXA0186331—19—20DEC21

(A)



A—Trash Label (left-hand side of tractor near battery disconnect switch)

RXA0185280—UN—31AUG21

KD34109,0001A94-19-05MAY22

# Vehicle Overview

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## 9RX Series Tractor



*9RX Series Tractor (Typical)*

RXA0185294—UN—01SEP21

KD34109,00001DA-19-01SEP21

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# Engine Operation

## Engine Settings—Access

### Access Application through Display:

1.



Menu

RXA0167075—UN—20MAR19

Menu

2.



Machine Settings

RXA0167076—UN—20MAR19

Machine Settings tab

3.



Engine

RXA0175176—UN—17FEB20

Engine

### Access Application through Navigation Bar:



Engine

RXA0168449—UN—30MAY19

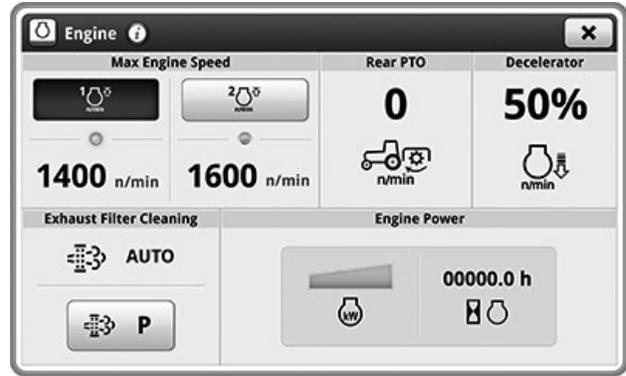
Press engine button on navigation bar below display.

KD34109,00005AC-19-03AUG23

## Engine Settings

The Engine application is used to access and adjust engine settings.

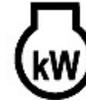
*NOTE: Some items only display if machine is equipped with the associated option.*



Engine Example

RXA0175172—UN—13FEB20

### Items Accessible on the Engine Main Page:



Engine Power

RXA0175187—UN—13FEB20

**Engine Power** — select to display the current engine power level. See Engine Settings—Engine Power in this Operator's Manual section.

00000.0 h



Engine Hours

RXA0175162—UN—17FEB20

**Engine Hours** — displays the accumulated engine hours.

### Max Engine Speed Items:



Max Engine Speed 1

RXA0175183—UN—17FEB20

**Enable Max Engine Speed 1** — select to enable the saved maximum speed.

1400 n/min

Max Engine Speed 1 Value

RXA0175194—UN—18FEB20

**Max Engine Speed 1** — select to adjust the maximum speed setting. See Engine Settings—Max Engine Speed in this Operator's Manual section.



RXA0175184—UN—17FEB20

Max Engine Speed 2

**Enable Max Engine Speed 2** — select to enable the saved maximum speed.

**1600** n/min

RXA0175195—UN—18FEB20

Max Engine Speed 2 Value

**Max Engine Speed 2** — select to adjust the maximum speed setting. See Engine Settings—Max Engine Speed in this Operator's Manual section.



RXA0175181—UN—13FEB20

Indicator

**Active Indicator** — illuminates orange when a Max Engine Speed is enabled.

**Standby Indicator** — appears gray when a Max Engine Speed is disabled.

**Rear PTO Items:**

**0**



RXA0175189—UN—02APR20

Rear PTO Speed

**Rear PTO** — displays the current PTO speed.

**Exhaust Filter Cleaning Items:**

*NOTE: Final Tier 4/Stage V engines only.*



RXA0175166—UN—17FEB20

AUTO Exhaust Filter Cleaning

**AUTO Exhaust Filter Cleaning** — select to enable/disable an automated process to perform Exhaust Filter Cleaning during normal operation. See Engine Settings—Exhaust Filter System Overview in this Operator's Manual section.



RXA0175186—UN—18FEB20

Parked Filter Cleaning

**Parked Filter Cleaning** — select to start a process to perform Exhaust Filter Cleaning while the machine is

parked. See Engine Settings—Exhaust Filter System Overview in this Operator's Manual section.



RXA0175191—UN—18FEB20

Request Exhaust Filter Cleaning

**Request Exhaust Filter Cleaning** — select to start a more intense cleaning procedure than Parked Filter Cleaning. See Engine Settings—Exhaust Filter System Overview in this Operator's Manual section.

**Decelerator Items:**

**50%**



RXA0175169—UN—13FEB20

Decelerator

**Decelerator** — select to adjust how much the engine rpm decreases when the foot decelerator is used.

**Engine Braking Items:**



RXA0167071—UN—21MAR19

Advanced Settings

**Advanced Settings** — access further adjustments and less common settings.

**Run Page Modules**

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



RXA0175178—UN—17FEB20

Engine Power

*NOTE: Different modules may be available for your application.*

**Engine Power** — quick access to the Engine Power module.

### Shortcut Keys

Add shortcut keys for this application to the shortcut bar using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



ON

RXA0175174—UN—17FEB20

*NOTE: Different shortcut keys may be available for your application.*

**Engine Brake** — quick access to turn the Engine Brake ON and OFF.

KD34109,00005AD-19-01MAR23

### Engine Settings—Engine Power

The Engine Power page displays a graph of the current Engine Power level and the number of accumulated engine hours.

**Items Accessible on Engine Power Page:**



Power Level

RXA0175180—UN—17FEB20

The green fill indicates the amount of Engine Power being used. A reading does not display until 40% of the available Engine Power is being used.

00000.0 h



Engine Hours

RXA0175162—UN—17FEB20

Accumulated engine operating hours for the machine are displayed.

KD34109,00005AE-19-03SEP21

### Engine Settings—Max Engine Speed

Limiting engine speed in light load situations can improve fuel economy. Max Engine Speed utilizes a constant speed governor curve, providing an instant response to varying loads. The setting can be adjusted 1100—2150 rpm. Two different speeds can be set,

enabling the operator to toggle quickly from one to the other.

**Procedure to Modify:**

*NOTE: The engine must be running to adjust the Max Engine Speed.*

1400 n/min

Max Engine Speed Value

RXA0175194—UN—18FEB20

1. Select Max Engine Speed value.



Adjust Speed

RXA0175163—UN—17FEB20

2. Select (+/++) to increase or (-/-) to decrease the setting. Use (++) and (- -) to increase or decrease the value at a higher rate than (+) and (-). The value is shown in the display box.



Close

RXA0167129—UN—25MAR19

3. Select to close.

**PTO Items:**

0



Rear PTO Speed

RXA0175189—UN—02APR20

**Rear PTO** — displays the current PTO speed.

**External Sources:**

**Max Engine Speed Button** — enable/disable Max Engine Speeds using the button on the CommandARM. See CommandARM Controls—Left Side in CommandARM Controls section of this Operator's Manual. The last Max Engine Speed selected in the

CommandCenter is used. A box displays on the page around the Max Engine Speed that was enabled last.

**Interaction with Transmission Modes:**

*NOTE: The transmission mode is changed on the Transmission page. For more information, see Transmission section.*

- **Full AUTO** — at full throttle, the minimum engine speed is 1500 rpm with the PTO off. The transmission downshifts and the engine speeds up to the Max Engine Speed to compensate for increasing workloads. The available engine speed range is 1500 rpm to Max Engine Speed.
- **Custom** — two minimum engine speed settings are also available, ECO ON and ECO OFF. ECO ON runs the engine as low as possible for light loads that do not change quickly. ECO OFF can handle quick load changes.
- **Manual** — the operator sets the engine speed using the hand throttle. The engine speed stays constant and is limited by the Max Engine Speed.

KD34109,00005B0-19-23JUN22

**Engine Settings—Exhaust Filter System Overview**

Final Tier 4/Stage V engines clean and filter the exhaust. Under normal machine operation and with filter cleaning in AUTO mode, minimal interaction is required.

To avoid unnecessary buildup of diesel particulates or soot in the exhaust filter system:

- Utilize the AUTO Exhaust Filter Cleaning mode.
- Avoid unnecessary idling.
- Use proper engine oil.
- Use only ultra-low sulfur fuel.

**CAUTION:** When AUTO, Parked, or Requested Filter Cleaning is in progress, the exhaust temperature can be high under no load or light load conditions at certain times during the Exhaust Filter Cleaning cycle.

**Servicing the machine or attachments during the Exhaust Filter Cleaning can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.**

**During the AUTO and manual/stationary Exhaust Filter Cleaning operations, the engine runs at elevated idle and hot temperatures for an extended period. Exhaust gases and exhaust filter components reach temperatures hot enough to cause burns to people, or to ignite or melt common materials.**

**Never perform exhaust cleaning procedures in a closed building unless suitable exhaust is provided.**

Corner post display indicators and CommandCenter prompts provide information related to the exhaust filter system activity.



*NOTE: Exhaust Filter Cleaning automatically resets back to AUTO mode after every key cycle.*

**AUTO Exhaust Filter Cleaning** — an automated process to perform Exhaust Filter Cleaning during normal operation. See Engine Settings—AUTO Exhaust Filter Cleaning in this Operator’s Manual section.



**Disable AUTO Exhaust Filter Cleaning** — use in conditions where it can be unsafe for elevated exhaust temperatures. See Engine Settings—Disable AUTO Exhaust Filter Cleaning in this Operator’s Manual section.



*NOTE: The process requires about 1 hour to complete.*

**Parked Filter Cleaning** — a process to perform Exhaust Filter Cleaning while machine is parked. See Engine Settings—Parked Filter Cleaning in this Operator’s Manual section.



*NOTE: The process requires about 2—3 hours to complete.*

**Request Exhaust Filter Cleaning** — a more intense cleaning procedure than Parked Filter Cleaning. See Engine Settings—Parked Filter Cleaning in this Operator’s Manual section.

**Exhaust Filter Cleaning Indicator** — illuminates on the corner post display when the exhaust filter system is

actively performing an Exhaust Filter Cleaning. See Corner Post Display in Corner Post Display section of this Operator's Manual.

KD34109.00005B1-19-20JUN22

## Engine Settings—AUTO Exhaust Filter Cleaning

*NOTE: Final Tier 4/Stage V engines only.*

The Exhaust Filter Cleaning page allows you to enable/disable AUTO mode. AUTO mode automatically performs Exhaust Filter Cleaning as required.

**CAUTION:** When AUTO, Parked, or Requested Filter Cleaning is in progress, the exhaust temperature can be high under no load or light load conditions at certain times during the Exhaust Filter Cleaning cycle.

Servicing the machine or attachments during the Exhaust Filter Cleaning can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.

During the AUTO and manual/stationary Exhaust Filter Cleaning operations, the engine runs at elevated idle and hot temperatures for an extended period. Exhaust gases and exhaust filter components reach temperatures hot enough to cause burns to people, or to ignite or melt common materials.

Never perform exhaust cleaning procedures in a closed building unless suitable exhaust is provided.

**IMPORTANT:** Disable AUTO Exhaust Filter Cleaning when temporarily connected to an indoor ducted exhaust system for diagnostic and repair activities, or in any elevated exhaust temperature conditions that are unsafe. See Engine Settings—Disable AUTO Exhaust Filter Cleaning in this Operator's Manual section.

Do not disable AUTO Exhaust Filter Cleaning unless absolutely necessary. Repeated disabling or ignoring prompts to perform manual or Parked Filter Cleaning procedure will cause additional engine power limitation and can eventually lead to required dealer service.

Damage to exhaust cleaning components can occur if the engine is turned off while performing Exhaust Filter Cleaning or shortly after the cleaning is complete.

**Procedure to Modify When Disabled:**



RXA0175164—UN—17FEB20  
AUTO Exhaust Filter Cleaning Disabled

1. Select to open the AUTO Exhaust Filter Cleaning page.

*NOTE: Exhaust Filter Cleaning automatically resets back to AUTO mode after every key cycle.*



ON/OFF

RXA0167628—UN—26APR19

2. Select ON to enable AUTO Exhaust Filter Cleaning.



Close

RXA0167129—UN—25MAR19

3. Select to close.

KD34109.00005B2-19-09FEB22

## Engine Settings—Disable AUTO Exhaust Filter Cleaning

*NOTE: Final Tier 4/Stage V engines only.*

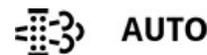
AUTO Exhaust Filter Cleaning can be disabled in certain conditions.

**IMPORTANT:** Disable the AUTO Exhaust Filter Cleaning system only when necessary.

**Modify When:**

- Indoors or under a roof, unless a high temperature externally vented exhaust system is connected.
- There is not enough time available for the machine to complete a cleaning cycle before it is shut down.
- Operating in high crop dust or chaff conditions.
- Next to a fueling area.

**Procedure to Modify:**



RXA0175166—UN—17FEB20  
AUTO Exhaust Filter Cleaning

1. Select to open the AUTO Exhaust Filter Cleaning page.

*NOTE: Exhaust Filter Cleaning automatically resets back to AUTO mode after every key cycle.*



ON/OFF

RXA0167628—UN—26APR19

2. Select OFF to disable AUTO Exhaust Filter Cleaning.



Close

RXA0167129—UN—25MAR19

3. Select to close.



AUTO Exhaust Filter Cleaning Disabled

RXA0175164—UN—17FEB20

The DISABLED icon and text will display on the main page.

KD34109.00005B3-19-18FEB20

## Engine Settings—Parked Filter Cleaning

*NOTE: Final Tier 4/Stage V engines only.*

Parked Filter Cleaning is an operator-initiated process to clean the exhaust filter.

During the process, the system controls engine speed and the machine must remain parked to complete the procedure. The time required for the Parked Filter Cleaning process is dependent upon the level of exhaust filter restriction, ambient temperatures, and the current exhaust gas temperature.

### Modify When:

- The Exhaust Filter Cleaning indicator is flashing on the corner post display.
- Constantly disabling AUTO Exhaust Filter Cleaning mode.
- Idling excessively.
- Incorrect fuel quality is used.

*NOTE: If Parked Filter Cleaning is ignored and the soot level gets too high, Request Filter Cleaning, a more intense cleaning procedure, will be forced.*

**CAUTION:** When AUTO, Parked, or Requested Exhaust Filter Cleaning is in progress, the exhaust temperature can be high under no load or light load conditions at certain times during the Exhaust Filter Cleaning cycle.

**Servicing the machine or attachments during the Exhaust Filter Cleaning can result in serious personal injury. Avoid exposure and skin contact with hot exhaust gases and components.**

**During the AUTO and manual/stationary Exhaust Filter Cleaning operations, the engine runs at elevated idle and hot temperatures for an extended period. Exhaust gases and exhaust filter components reach temperatures hot enough to cause burns to people, or to ignite or melt common materials.**

**Never perform exhaust cleaning procedures in a closed building unless suitable exhaust is provided.**

### Procedure to Modify:

1. Select appropriate procedure:



Parked Filter Cleaning

RXA0175186—UN—18FEB20

a. Parked Filter Cleaning



Request Exhaust Filter Cleaning

RXA0175191—UN—18FEB20

b. Request Exhaust Filter Cleaning

2. Verify that the machine is configured for Parked Filter Cleaning.

- Stop machine motion.
- Set the engine speed to low idle.
- Engage the park brake.
- Disengage the PTO (front and rear).



Check Mark

RXA0175167—UN—19FEB20

Once a condition has been met, a green check mark displays next to the condition.



Next

RXA0175185—UN—19FEB20

3. Once all conditions have been met, select Next.

*NOTE: The exhaust filter system controls the engine speed to increase the exhaust temperature.*



Progress Indicator

RXA0175188—UN—19FEB20

A progress indicator displays while Exhaust Filter Cleaning is running.



Complete

RXA0175168—UN—19FEB20

The system informs you when each of the two stages is complete:

- Preparation — the exhaust filter system controls engine speed to increase the exhaust temperature.
- Cleaning — diesel particulates (soot) are cleaned from the exhaust filter system. The process may exceed 40 minutes.



Close

RXA0167129—UN—25MAR19

4. Select to close.

**NOTE:** The system defaults to AUTO mode when cleaning is complete.

If you are not returning the machine to service immediately after the procedure, allow the engine enough time to return to normal operating temperature before turning off the engine.

**Cancel Procedure:**



Abort

RXA0175161—UN—19FEB20

To cancel the process, select Abort at any time during the cleaning procedure.

The process is also canceled by:

- Advancing the throttle.
- Engaging the transmission.
- Stopping the engine.
- Engaging the PTO (front or rear).

KD34109,00005B4-19-23NOV20

**Engine Settings—Decelerator**

The Decelerator page allows a percentage adjustment of the maximum engine rpm for the foot decelerator. When the decelerator is active, the full range of the throttle is affected.

When using Efficiency Manager and depressing the foot decelerator, transmission downshifts to the startup gear may occur in order to reduce wheel speed. To reduce the number of shifts, adjust the start gear.

**Procedure to Modify:**



Increase/Decrease Value

RXA0175170—UN—17FEB20

1. Select (+) to increase or (-) to decrease the percentage. The default setting is 65% and can be adjusted 50—95%. The value is shown in the display box.



Close

RXA0167129—UN—25MAR19

2. Select to close.

KD34109,00005B5-19-23JUN22

**Engine Settings—Advanced**

Advanced settings allow you to access further adjustments and less common settings.

**Items Accessible on Advanced Settings Page:**



AUTO ON/OFF

RXA0175165—UN—17FEB20

**IMPORTANT: Avoid injury and/or engine damage:**

- **The Engine Braking system assists the service brakes in slowing the vehicle down. Never use only the engine brakes to stop the vehicle.**

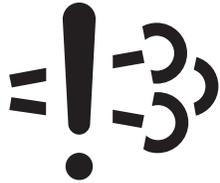
- Do not exceed the governed engine speed when operating the engine brakes.

**Automatic Engine Braking** — reduces the tractor speed using engine compression, allowing less wear on the service brakes. Use when traveling under load on level surfaces. Select ON to enable or OFF to disable.

KD34109,0000617-19-08SEP20

## Required Machine Stop Warning

### Machine Stop Mandate Occurs



RG22491—UN—21AUG13

**IMPORTANT:** In some situations, machine engine power may be reduced as described. On notification, immediately place the machine in a safe state and or move it to a safe location. A mandated machine stop can only be removed by a service technician.

Engine Emissions System Malfunction Indicator illuminates when an emission-related fault occurs.



RG22492—UN—21AUG13

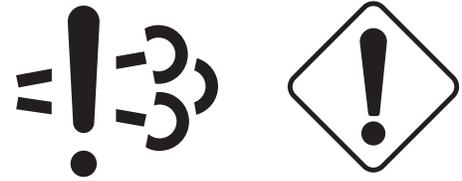
Warning Indicator illuminates when a condition exists which requires operator action.



RG22493—UN—21AUG13

Engine Stop Indicator illuminates when a condition exists which requires immediate operator action and service.

## Emission System Fault Has Occurred



RG26361—UN—04SEP14

30 minutes remaining, Engine Emissions System Malfunction and Warning Indicators are illuminated and alarm sounds to warn operator of emissions-related fault. “Less than 30 minutes to Power Restriction” displayed on machines with display.

- Engine power is normal.
- Machine operation is normal.
- Place machine in a safe state.
- Contact service provider.



RG26972—UN—26MAR15

20 minutes remaining, Engine Emissions System Malfunction and Engine Stop Indicators are illuminated and alarm sounds to warn operator of emissions-related fault. “Less than 20 minutes to Power Restriction” displayed on machines with displays.

- Engine power and torque are reduced.
- Key Off - Key On will temporarily provide full power.
- Place machine in a safe state.
- Contact service provider.



RG26972—UN—26MAR15

2 minutes or less remaining, Engine Emissions System Malfunction and Engine Stop Indicators are illuminated and alarm sounds to warn operator of emissions-related fault which has not been corrected. “Power Restriction” displayed on machines with displays.

- Engine power is idle only.
- Place machine in a safe state.
- Contact service provider.

DX.MACHSTOPWARN,AG-19-02OCT15

## Engine Fuel System and Power Rating

### Fuel System

**IMPORTANT: Modification or alteration of injection system or emission control devices will terminate warranty to purchaser.**

**Do not attempt to service injection system. Special training and special tools are required. See your John Deere dealer.**

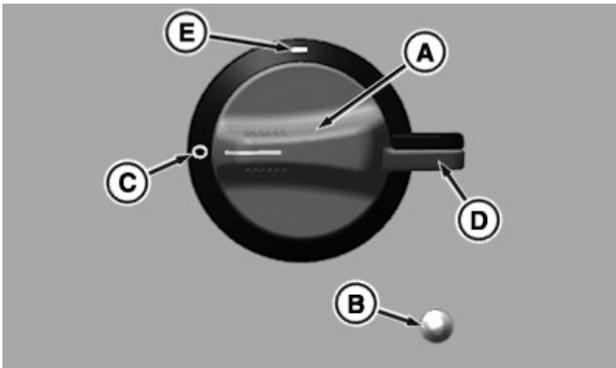
### Engine Certification/Power Rating

kW (hp) rating on engine emissions certification label specifies gross engine kW (hp), which is flywheel power without fan.

TS36762,0000174-19-18NOV16

## Battery Disconnect Switch

**CAUTION: Avoid injury or damage to the tractor systems from inadvertent contact with electrical power. Disconnect the battery when directed.**



RXA0180392—UN—06NOV20

The battery disconnect switch is located near the tractor stairs.

**IMPORTANT: Prevent damage to the tractor electrical system and emissions system. Never turn off the power using the battery disconnect switch (A) when the:**

- Engine is running.
- Battery disconnect light (B) is illuminated.

During a long storage period, always turn the battery disconnect switch to the off position. If the battery disconnect switch is left on, the battery could lose charge.

1. Before using the battery disconnect switch, ensure that the:
  - a. Tractor is stopped.
  - b. Transmission is placed into PARK.

c. Key is switched to OFF.

2. When the battery disconnect switch indicator light has gone out, turn the battery disconnect switch off (C).
3. If desired, secure the battery disconnect switch in the off position using hole (D) provided.
4. Turn the battery disconnect switch on (E) before operating tractor.

EC82310,0000F58-19-03AUG22

## Start the Engine

### Before Starting the Engine

1. Move the SCV levers to the NEUTRAL position.
2. Disengage the PTO (if equipped).
3. Move the hand throttle to the low idle position.
4. Move the transmission shift lever to the PARK position.

**CAUTION: Avoid possibility of serious injury or death. Be sure that the tractor and attached equipment are clear of people and other objects.**

5. Depress clutch and brake pedals.
6. Sound horn.

### Start the Engine



RXA0167042—UN—20MAR19

1. Turn the key switch (A) fully clockwise to the start position. The Engine Control Unit (ECU) senses the key position and sends a signal to the starter to start the engine. The key can be released.

2. If the engine fails to start after a time period determined by the ECU, based on ambient conditions, the ECU will terminate the start attempt until the cranking motor has had time to cool. Depending on conditions, the ECU can:

- Attempt to start the engine for up to 2 minutes.
- Prevent a second start attempt for up to 2 minutes.

3. The engine start attempt continues until any of the following conditions occur:

- The engine starts.
- The starting process is canceled by turning the key switch to OFF.
- Or an engine problem is detected by the ECU.
- The engine was unable to start after attempting for up to 2 minutes.

4. If the engine:

- Starts—begin desired operations.
- Does not start—attempt a second start. If the engine still does not start, go to step 5.

*NOTE: If the engine fails to start, the ECU can prevent additional cranking attempts for up to 2 minutes, allowing the cranking motor sufficient time to cool.*

5. Check the:

- Quantity and quality of the fuel.
- Electrical system.
- Ambient temperature. In cold weather (at or below -6°C [21°F]), follow the steps listed in the appropriate Cold Weather Starting topic in Cold Weather Operation section of this Operator's Manual.

6. If all factors in step 5 are acceptable, attempt to start the engine again. If the engine fails to start after three attempts, see your John Deere dealer.

KT81203,0000136-19-03NOV20

## Run the Engine

**IMPORTANT: Do not start engine with throttle pushed completely forward.**

Avoid excessive engine idling (more than 5 minutes). Prolonged idling may cause engine coolant temperature to fall below normal range. Prolonged idling causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It promotes rapid accumulation of engine sludge and unburned fuel in exhaust system.

Operate engine between 1500—2100 rpm. Do not operate engine constantly below 1500 rpm during heavy draft usage or when tractor is under full PTO [Ag] load.

### For maximum tractor performance:

- Ensure that tractor is correctly ballasted, see Performance Ballasting section of this Operator's Manual.
- For transmission information, see e18 PowerShift Transmission section of this Operator's Manual.

If engine stalls, start immediately to provide lubrication to critical engine parts.

Allow engine to idle for 20 seconds before turning key switch to OFF position.

**IMPORTANT: Contact your John Deere dealer if any symptoms that may be early signs of engine problems are detected:**

- Sudden drop in oil pressure
- Abnormal coolant temperatures
- Unusual noise or vibration
- Sudden loss of power
- Excessive fuel consumption
- Excessive oil consumption
- Fluid leaks

KT81203,00000C9-19-23JUN22

## Stop the Engine

**IMPORTANT: Before stopping an engine that has been operating at working load, idle engine at least 2 minutes at 1000—1200 rpm to cool hot engine parts. If an exhaust filter cleaning has just been performed, increase engine idle time to 4 minutes. If service work is going to be performed on exhaust filter, increase engine idle time to 10 minutes.**

**IMPORTANT: Prevent damage to tractor emissions system. Battery disconnect switch with indicator light: Tractor is equipped with an engine which uses a Selective Catalytic Reduction (SCR) system. Light is illuminated during Diesel Exhaust Fluid (DEF) purge from system. Do not turn disconnect switch off until light goes out.**

**Battery disconnect switch without indicator light: Engine not equipped with SCR system. No waiting period is required before turning off switch.**

**See Battery Disconnect Switch in Engine Operation section of this Operator's Manual.**

1. Stop tractor and pull throttle back to slow idle position.
2. Depress clutch and brake pedals.
3. Put transmission in PARK position.
4. Lower all equipment to the ground.
5. Make sure SCV levers are in NEUTRAL position.
6. [Ag] Pull rear PTO (if equipped) switch rearward to disengage PTO.

**CAUTION:** Remove key to prevent accidents.

7. Turn key switch to OFF position and remove key.

KT81203,00000D1-19-21AUG18

### Restart Engine That Has Run Out of Fuel

1. Fill fuel tank.
2. Turn key switch to RUN position to start electric fuel pump and bleed air from fuel system.

*NOTE: Steps two and three may need to be repeated as necessary if fuel tanks have been removed or drained.*

3. Allow pump to run for 30 seconds to 1 minute before attempting to restart engine.

Fuel pump will turn off after 1 minute. Key switch must be turned to OFF and back to RUN to turn pump back on.

TS36762,0000179-19-18NOV16

### Reduce Fuel Consumption

Following are guidelines to reduce fuel consumption:

- Replace air cleaner elements and fuel, engine oil, and transmission/hydraulic filter elements at specified service intervals, see Service—Record Charts section of this Operator's Manual or when indicated by CommandCenter display messages.
- Use recommended oils and lubricants only, see Fuel, Lubricants, and Coolant sections of this Operator's Manual.
- Adjust hitch function for most efficient operation, see TouchSet Depth Control Section of this Operator's Manual.
- Ballast tractor for conditions, see Performance Ballasting Section of this Operator's Manual.
- Always drive in highest possible gear with reduced engine speed. Choose a gear so engine speed drops 150-250 rpm when tractor is operating and engine is under load. See e18 PowerShift Transmission section of this Operator's Manual.

*NOTE: For light work, reduce engine speed below 2000 rpm. Select a gear so that engine speed drops 200—300 rpm when operating.*

*Using Max Engine Speed may improve fuel economy. For more information on Max Engine Speed settings, see Engine Settings in this Operator's Manual section.*

KT81203,00000D2-19-29JUN22

### Battery Booster or Charger

**CAUTION:** Gas given off by batteries is explosive. Keep sparks and flames away from batteries. Make the last connection and first disconnection at a point away from booster batteries.

**IMPORTANT:** Be sure that polarity is correct before making the connections. Reversed polarity damages the electrical system or possibly cause the battery to explode.

If two or more booster batteries are used, they must be connected in parallel ensuring booster batteries are producing 12 volt charge.

Prevent damage to the tractor emissions system. Never disconnect the battery disconnect switch while the battery disconnect light is illuminated. See Battery Disconnect Switch in this Operator's Manual section.

### Booster Battery



RXA0187645—UN—10AUG22

The battery jumper terminal posts are located near the tractor steps.

1. Remove the tractor battery terminal post caps.
2. Attach the red (positive) batter cable to the:
  - a. Remote positive starter terminal (A).
  - b. Positive terminal of the booster battery.
3. Attach the black (ground) battery cable to the:
  - a. Negative terminal of the booster battery.

- b. Remote negative starter terminal (B).
4. When the tractor has started, remove the:
  - a. Negative cable from the tractor.
  - b. Negative cable from the booster battery.
  - c. Positive cable from the battery.
  - d. Positive cable from the tractor.

### **Battery Charger**

**IMPORTANT: Set battery charger at nominal 12 volt and no more than 16 volt maximum. Consult the battery charger manufacturers Operator's Manual.**

1. Assure the battery charger is turned off.
2. Remove the tractor terminal post caps and attach the:
  - a. Positive (red) charger lead to the remote positive starter terminal.
  - b. Black (ground) negative charger lead to remote ground post.
3. Switch on the charger and charge battery according to charger manufacturers Operator's Manual.
4. Switch off the charger.
5. When the tractor has started, remove from the tractor the:
  - a. Negative charger lead.
  - b. Positive charger lead.

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EC82310,0000F59-19-10AUG22

# Cold Weather Operation

## Cold Weather Starting—With Starting Aid

**⚠ CAUTION:** Starting fluid is extremely flammable. While using this product, do not smoke and make sure to extinguish all flames. Turn off all pilot lights, stoves, heaters, electrical motors, and other sources of ignition while using this product and/or if vapors are still present.

Tractors equipped with cold weather starting aid from the factory utilize an automatic starting aid injection system. System will automatically inject starting aid as needed based on fuel and engine coolant temperatures. Manually spraying starting fluid into air intake screens is not recommended or required.

If the engine fails to start:

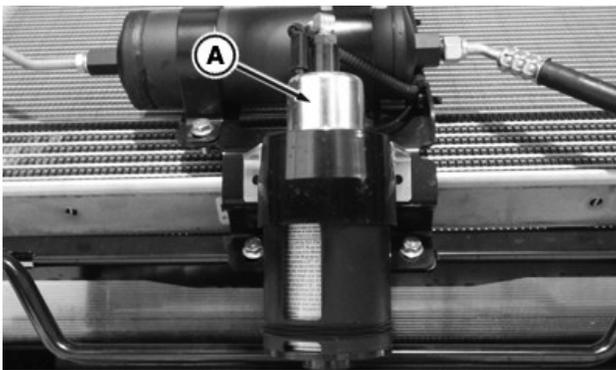
- Check quantity and quality of fuel.
- Verify that starter fluid canister has fluid.
- Check FE14 fuse and KE14 relay.
- If engine fails to start after three attempts, consult your John Deere dealer.

To replace starting aid canister, see Change Starting Fluid Canister in this section of the Operator's Manual.

GH15097,00003E1-19-09MAR20

## Change Starting Fluid Canister

**⚠ CAUTION:** Do not use starting fluid near fire, sparks or flames. Read caution information on container. Protect container against damage. Do not carry starting fluid cans inside cab.



RXA0141914—UN—05JUN14

1. Raise hood to access canister (A).
2. Remove safety cap and plastic spray nozzle from new can.
3. Loosen canister and remove old can.

**IMPORTANT:** To avoid drawing dust into engine, always keep starting fluid can in position or clean bottom of canister and install bottom side up.

4. Install new can and tighten canister.

TO84419,000039B-19-25JUL17

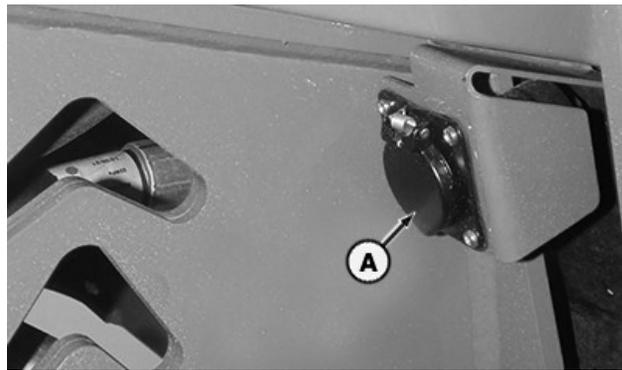
## Engine Coolant Heater Use

**⚠ CAUTION:** To avoid electrical shock or fire, use 3-wire, 14 AWG (14 gauge), heavy-duty electrical cord with 15-amp rating, suitable for outdoor use. Always plug electrical cord into 120-volt outlet protected by GFI (Ground Fault Interrupter).

Before connecting heater to power source, be sure that element is immersed in coolant. NEVER energize heater in air. Doing so can cause element sheath to burst causing personal injury.

**IMPORTANT:** Ground fault interrupter on tractor protects tractor only, not electrical wiring supplying power to tractor. Test ground fault interrupter before each use.

*NOTE: Extremely cold weather may require 1—2 hours to heat engine.*



RXA0164452—UN—05SEP18

Front Right-Hand Side of Tractor

Connect engine coolant heater plug (A), located on right-hand side of engine, to a ground fault-protected 120-volt electrical outlet.

BH38674,0000D90-19-03NOV22

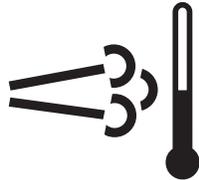
# Emissions Equipment

## Aftertreatment Indicators Overview



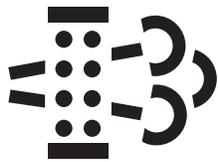
*Diesel Exhaust Fluid Indicator*

RG22487—UN—21AUG13



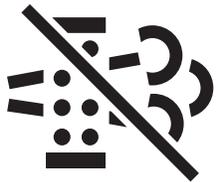
*Engine Emissions Temperature Indicator*

RG22488—UN—21AUG13



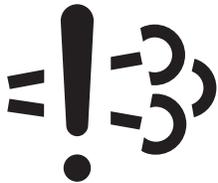
*Exhaust Filter Indicator*

RG22489—UN—21AUG13



*Auto Cleaning Disabled Indicator*

RG22490—UN—21AUG13



*Engine Emissions System Malfunction Indicator*

RG22491—UN—21AUG13



*Warning Indicator*

RG22492—UN—21AUG13



*Engine Stop Indicator*

RG22493—UN—21AUG13

**IMPORTANT: The operator will be informed by the operator warning system when the emission control system does not function correctly and/or an engine malfunction is detected by the engine control unit. Ignoring the operator warning signals will lead to an emission related derate, resulting in an effective disablement of non-road mobile machinery operation.**

It is essential to take prompt action to rectify any incorrect operation, use or maintenance of the emissions control system in accordance with the rectification measures indicated by the warnings referenced below.

The Diesel Exhaust Fluid (DEF) indicator illuminates when the DEF is low. Fill DEF tank.

When the DEF indicator is combined with the warning indicator or engine stop indicator engine performance is reduced by the Engine Control Unit (ECU) because the DEF is below a measurable level. Fill DEF tank.

When engine emissions temperature indicator illuminates exhaust gas temperature is high, elevated idle is active, or exhaust filter cleaning is in process. The machine can be operated as normal unless the operator determines the machine is not in a safe location for high exhaust temperatures and disables auto cleaning.

When engine emissions temperature indicator is combined with the warning indicator or engine stop indicator engine performance is reduced by the ECU because the exhaust gas temperature is higher than expected. Follow Diagnostic Trouble Code (DTC) procedure or see your authorized servicing dealer.

When the exhaust filter indicator illuminates the exhaust filter cleaning is in process, aftertreatment system has a fault, or the exhaust filter is in need of cleaning and the operator has disabled auto exhaust filter cleaning. If conditions are safe, the operator should enable the auto exhaust filter clean setting or perform manual service regeneration or follow DTC procedure.

When the exhaust filter indicator is combined with the warning indicator engine performance is reduced by the ECU because there is an aftertreatment system fault or the soot level of the exhaust filter is moderately high. If conditions are safe, the operator should enable the auto exhaust filter clean function. If conditions are not safe, the operator should move the machine to a safe location and engage the auto exhaust filter cleaning mode.

Perform manual service regeneration or follow DTC procedure.

When the exhaust filter indicator is combined with the engine stop indicator engine performance is further reduced by the ECU because there is an aftertreatment system fault or the soot level of the exhaust filter is extremely high. If this combination is present, see your authorized servicing dealer.

The auto cleaning disabled indicator illuminates when the operator has engaged the request to disable the auto exhaust filter cleaning function. This icon remains illuminated until the operator re-engages automatic exhaust filter cleaning from the diagnostic gauge. Disabling auto mode is not recommended for any situation unless it is safety-related or if the fuel tank

lacks the required fuel to complete the cleaning process.

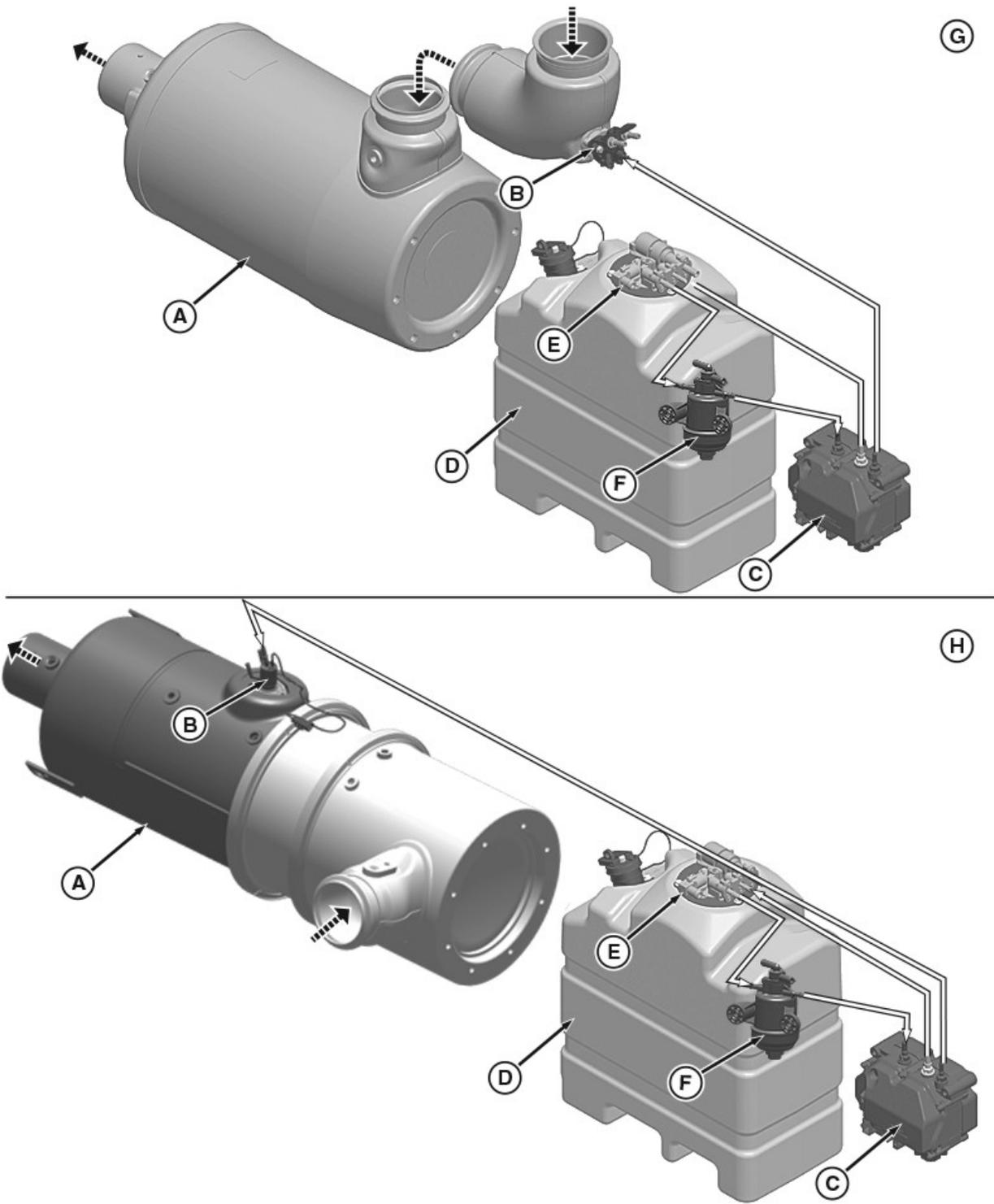
The engine emissions system malfunction indicator illuminates when engine emissions are outside of normal operating range or engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.

When the engine emissions system malfunction indicator is combined with the warning indicator engine performance is reduced by the ECU because the engine emissions are outside of normal operating range or engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.

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DX,AFTRTREAT,INDCATRS-19-12FEB18

### Selective Catalytic Reduction (SCR) System Overview



RG22427A—UN—07JAN20

SCR System

A—SCR Catalyst  
B—DEF Dosing Injector  
C—DEF Dosing Unit  
D—DEF Tank

E—DEF Tank Header Assembly  
F—Inline DEF Filter (If Equipped)  
G—Modular Canning Configuration  
H—Inline Canning Configuration

**IMPORTANT: Do not remove battery leads for at least 4 minutes after engine stops. The SCR system automatically purges itself of Diesel Exhaust Fluid (DEF) immediately after the engine is stopped. If adequate time is not allowed for lines to be purged, residual DEF can freeze and possibly damage components of the SCR system during cold-weather exposure.**

In order to comply with national and local emission requirements, this engine series contains a Selective Catalytic Reduction (SCR) system. The main components of the SCR system include the SCR catalyst (A), DEF dosing injector (B), DEF dosing unit (C), DEF tank (D), and DEF tank header assembly (E). The SCR system is effective at reducing the nitrogen oxides (NOx) emissions. NOx is a major component of smog and acid rain.

During combustion, NOx molecules are formed in the exhaust. DEF is injected into the exhaust stream before the SCR catalyst. Through a chemical reaction in the SCR, NOx is converted into nitrogen and water.

Water vapor is a normal by-product of combustion. During cold-weather operation at low exhaust temperatures, this water vapor can condense and resemble white smoke from the exhaust. This will dissipate as operating temperature increases and the water is further vaporized. This situation is considered normal.

A DEF solution begins to crystallize and freeze at -11 °C (12 °F). With climate temperatures that can range much colder than this, DEF is expected to freeze in the DEF tank. For this reason, the DEF tank contains a heating element that provides rapid thawing of DEF upon start-up. The heating element cycles to maintain fluidity during operation as needed. DEF is not dosed upon initial start-up, therefore it is not necessary to have liquid DEF at cold start-up.

If DEF quality deteriorates and it is no longer within specifications, the engine can derate. DEF should be crystal clear with a light ammonia smell. If DEF appears cloudy, has a colored tint, or has a profound ammonia smell, it is likely not within specification.

DX,SCR,OVERVIEW-19-30MAR20

## Diesel Particulate Filter (DPF) Service

**CAUTION:** Correctly dispose of an exhaust filter that has reached the end of its useful life. The exhaust filter contains DPF ash that:

- Can be classified as a hazardous waste.
- Requires disposal in accordance with all applicable federal, state, and local laws or regulations governing hazardous waste disposal.

Used exhaust filters, including the DPF, can be exchanged at any John Deere dealer or qualified service provider.

- Always allow a qualified service provider to remove ash from the DPF.
- See your John Deere dealer or other qualified service provider for assistance.

Failure to follow approved DPF ash removal methods can:

- Violate U.S. federal, state, and local hazardous waste law.
- Damage the DPF, resulting in potential denial of the emissions warranty.

**IMPORTANT: Avoid damage to the aftertreatment system. Never:**

- Use incorrect or unapproved aftertreatment components.
- Interchange aftertreatment components between Interim Tier 4/Stage III B and other vehicles equipped with other aftertreatment systems.

The exhaust filter includes a DPF. The DPF is designed to:

- Retain residual ash, which is a noncombustible result of additives used in crankcase lubrication oils and the fuel.
- Provide many hours of maintenance-free operation. However, the DPF requires professional service to remove the accumulated ash at some point. The exact number of hours of operation before professional service is required depends on:
  - The engine power category, duty cycle, operating conditions, fuel quality, and ash content of the engine oil.
  - Adhering to the recommended oil and fuel specifications to maximize the hours of operation.

The engine owner is responsible for performing the required maintenance described in this Operator's Manual. During normal equipment operation:

- DPF maintenance requirements depend on the rate at which ash accumulates in the DPF.
- As ash levels rise in the DPF, the capacity for soot storage is reduced and the backpressure of the exhaust system rises more frequently.
- The dash lamp indicator or diagnostic gauge indicates when the DPF needs servicing.

EC82310,0000FOA-19-17JUN20

# Front Console

## Front Console

*NOTE: See transmission section for left-hand reverser.*



Front Console Example

RXA0177210—UN—14APR20

KD34109,00005E2-19-13APR20

## Operate Horn



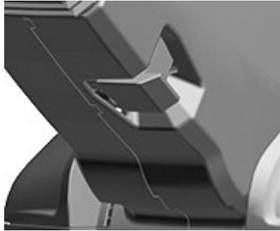
Horn Button

RXA0167455—UN—12APR19

**Horn** — push button at end of left-hand lever on steering column to sound horn.

KD34109,00004CC-19-29MAY19

## Adjust Steering Wheel and Column



Tilt/Telescope Stop Lever

RXA0167453—UN—12APR19

**Tilt/Telescope Stop Lever** — pull lever away from steering column to unlock adjustments. While unlocked, extend/retract and tilt of steering wheel can be adjusted. Push lever back toward steering column to lock into desired position.



Memory Tilt Pedal

RXA0167454—UN—12APR19

**Memory Tilt Pedal** — push pedal to tilt steering column up away from operator or down closer to operator. Release pedal to lock into position.

KD34109,00004CB-19-29MAY19

## Operate Wipers and Washers

Wiper and washer controls are on right-hand lever on steering column.

*NOTE: Some items are only available if machine is equipped with the associated option.*



Front Wiper Speed

RXA0167456—UN—12APR19

**Front Wiper Speed** — turn knob at the end of wiper/washer lever. The higher the setting, the faster the wiper operates. Bottom setting is off (circle shown). Arrow indicates current setting.



Front Washer Button

RXA0167457—UN—12APR19

**Front Wiper Washer** — push and hold button at end of wiper/washer lever. Let go of button to stop washer.



Select Right-Hand/Rear Wiper Lever

RXA0167458—UN—12APR19

**Select Right-Hand/Rear Wiper** — to select active wiper/wipers, move lever to one of the following positions:

- Left for right-hand wiper
- Center for right-hand and rear wipers
- Right for rear wiper



RXA0167459—UN—12APR19  
Right-Hand/Rear Wiper Speed/Washer Lever

**Right-Hand/Rear Wiper Speed/Washer** — move lever up from off position (circle shown) to operate active wiper/wipers. The higher the setting, the faster the wiper operates. Push and hold lever down to operate washer. Release lever to stop washer.

KD34109,00004CD-19-26AUG19

## Key Switch



RXA0168011—UN—17MAY19  
Key Switch

Key switch is on right-hand side of steering column and has three positions:



RXA0168012—UN—17MAY19  
STOP

**STOP** — turns off all engine and accessory functions.



RXA0168013—UN—17MAY19  
Run

**Run** — allows all accessories functions and engine to run once it has been started.



RXA0168014—UN—17MAY19  
Start

**Start** — starts engine and returns to run position.

KD34109,00004CE-19-30MAY19

## Operate Turn Signals



RXA0168015—UN—17MAY19  
Turn Signal Lever

The turn signal control is the left-hand lever on the steering column.

**Lane Change Turn Signal** — move the lever one position (up for right-hand signal, down for left-hand signal) to activate. The signal automatically turns off after three flashes.

**Self-Canceling Turn Signal** — move the lever two positions (up for right-hand signal, down for left-hand signal) to activate. The signal turns off when the front wheels return to the neutral position or by moving the lever one position in the same direction. If an implement is connected, there is a delay in the signal turning off after a turn.

KD34109,00004CF-19-08JUN22

## Pedals

*NOTE: Some items are only available if machine is equipped with the associated option.*



RXA0177205—UN—14APR20  
Brake Pedal

**Brake Pedal** — use to slow and stop machine. For more information on brakes, see Brakes section of this Operator's Manual.



Clutch Pedal

RXA0177207—UN—14APR20

**Clutch Pedal** — use to disengage clutch.



Speed Control Pedal

RXA0177203—UN—13APR20

**Speed Control Pedal:**

*NOTE: The tractor can be equipped with one of the speed control pedals or no pedal.*

- **Accelerator Function (Orange)** — use to control engine or ground speed depending on transmission mode.
- **Decelerator Function (Gray)** — use to lower the engine rpm based on the decelerator setting. For setting adjustments, see Engine settings in Engine Operation section of this Operator's Manual.

KD34109,00005E0-19-11AUG21

**Operate Lights**



Lights Lever

RXA0168015—UN—17MAY19

High beams and lighting presets are controlled using left-hand lever on steering column. For additional lighting controls, including field and road lights buttons, see CommandARM Climate, Radio, and Lighting Controls in CommandARM section of this Operator's Manual.

- **Low/High Beam Position** — with road lights enabled, push lever toward window and release to

toggle between low and high beam modes. Indicator on corner post display lights when in high beam mode.

- **Momentary High Beam (Flash-to-Pass)** — with road lights enabled, pull lever away from window and hold to momentarily activate high beam mode. Release to return to low beam mode. Setting also momentarily activates high beam lights in park or off modes.
- **Worklights Presets** — with worklights enabled, pull lever away from window or push lever toward window to change active preset.



Convenience Lights Button

RXA0168021—UN—17MAY19

**Convenience Lights (If Equipped)** — press convenience lights button to turn on, press again to turn off. For convenience light locations, see Light Identification in Lights section of this Operator's Manual.

Button location:

- 7R, 8RW, and 8RX: Left-hand side of machine, between steps.
- 8RT and 9RT: Left-hand side of machine, next to battery disconnect.
- 9RW and 9RX: Left-hand side of machine, next to steps.



Trailing Lights Switch

RXA0173051—UN—09DEC19

**Trailing Lights (If Equipped)** — press top of switch to turn on or bottom of switch to turn off trailing lights. Switch is located near the radio. For trailing lights location, see Trailing Lights in Lights section of this Operator's Manual.

KD34109,00004D1-19-30AUG22

## Differential Lock Switch



RXA0177202—UN—13APR20

*Differential Lock Floor Switch*

**Differential Lock Floor Switch** — to enable manual differential lock mode:

- 9RW Tractors: Press and release the floor switch. To disable, press the brake or the differential lock button on the CommandARM. For button location, see CommandARM Controls—Left Side in CommandARM Controls section of this Operator's Manual.
- 9RX Tractors: Press and hold the floor switch. To disable, release the floor switch.

For more information on differential lock, see Differential Lock in Drivetrain section of this Operator's Manual.

KD34109,00005E1-19-23JUN22

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# Corner Post Display

## Corner Post Display



RXA0188009—UN—13SEP22  
Corner Post Display

**NOTE:** Some items only display if machine is equipped with the associated option.



RXA0188030—UN—15SEP22  
Clock (no time shown)

**Clock** — displays the current time.



RXA0188037—UN—15SEP22  
Engine Hours (no hours shown)

**Engine Hours** — displays the total engine hours.



RXA0188039—UN—15SEP22  
Fuel Hours (no hours shown)

**Fuel Hours** — displays the estimated remaining operating hours based on fuel in the tank and other operation settings.



RXA0167737—UN—06MAY19  
Left-Hand Turn Indicator

**Left-Hand Turn Indicator** — flashes when the left turn signal or hazard lights are on.



RXA0167738—UN—06MAY19  
Right-Hand Turn Indicator

**Right-Hand Turn Indicator** — flashes when the right turn signal or hazard lights are on.



RXA0167739—UN—06MAY19  
High Beam Indicator

**High Beam Indicator** — illuminates when high beam lights are on.



RXA0188046—UN—15SEP22  
Parking Lights Indicator

**Parking Lights Indicator** — illuminates when parking lights are on.



RXA0188052—UN—15SEP22  
Worklights Indicator

**Worklights Indicator** — illuminates when worklights are on.



RXA0167740—UN—06MAY19  
Trailer Turn Indicator Example

**Trailer Turn Indicator** — the trailer symbol and 1 flash when the turn signal or hazard lights are on and one trailer is attached. The symbol, 1, and 2 flash when the turn signal or hazard lights are on and two trailers are attached.



RXA0167741—UN—06MAY19  
Engine Preheat Indicator

**Engine Preheat Indicator** — illuminates when the key is in the run position. The indicator turns off when the engine can be started.



RXA0188049—UN—15SEP22  
Tachometer (no signal)

**Tachometer** — displays the engine speed in revolutions per minute (rpm). If 0000 displays, no speed signal is being received.



IPM Indicator

RXA0167743—UN—06MAY19

**Intelligent Power Management (IPM) Indicator** — illuminates when IPM is active.



Max Engine Speed Indicator and Number Example

RXA0188043—UN—15SEP22

**Maximum Engine Speed Indicator and Number** — the indicator illuminates when Max Engine Speed one or two is active. The number 1 or 2 displays depending on which Max Engine or Set Speed is active. 0 displays if Max Engine and Set Speeds are not active.



Manual Engine Speed Indicator

RXA0167745—UN—06MAY19

**Manual Engine Speed Indicator** — illuminates when engine speed is in manual mode on machines equipped with CommandPRO joystick.



Minimum Engine Speed Indicator

RXA0188045—UN—15SEP22

**Minimum Engine Speed Indicator** — illuminates when Minimum Engine Speed is active.



Exhaust Filter Cleaning Indicator

RXA0167747—UN—06MAY19

**Exhaust Filter Cleaning Indicator** — illuminates when Exhaust Filter Cleaning is active.



Ground Speed (no signal)

RXA0188042—UN—15SEP22

**Ground Speed** — displays the travel speed value in either miles per hour (mph) or kilometers per hour (km/h), depending on operator-selected units (U.S. or metric). If 00.0 displays, no speed signal is being received. When the engine preheat indicator (6.8 L and 18 L engines) is activated, the engine start time displays.



Ground Set Speed Value and Number (no signal)

RXA0188041—UN—15SEP22

**Ground Set Speed Value and Number** — displays the speed value (in orange) for the active Set Speed. Displays the Maximum Set Speed if the CommandPRO joystick is equipped and a Set Speed is not active. The number 1 or 2 displays depending on which Set Speed is active. 00.0 displays if no Set Speed signal is being received.



Ground Set Speed Indicator

RXA0188032—UN—15SEP22

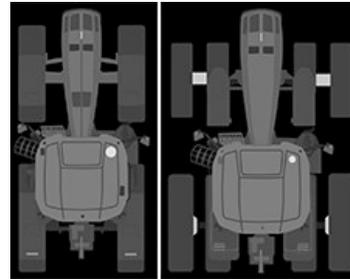
**Ground Set Speed Indicator** — illuminates when ground Set Speed one or two is active.



Maximum Set Speed Indicator

RXA0188031—UN—15SEP22

**Maximum Set Speed Indicator** — illuminates when the Maximum Set Speed is active.



Tractor Examples

RXA0188907—UN—10APR23

**Tractor** — always displays as a reference point to other indicators (example: the front PTO indicator displays in front of the tractor).



Forward Indicator

RXA0188038—UN—15SEP22

**Forward Indicator** — illuminates when the tractor is in forward.



Reverse Indicator

RXA0188048—UN—15SEP22

**Reverse Indicator** — illuminates when the tractor is in reverse.



Direction and Gear (not selected)

RXA0188036—UN—15SEP22

**Direction and Gear** — the value on the left displays the selected direction of travel. The values on the right display the selected gear:

- Single gear (top left)
- Double gear (top right)
- Triple with range (bottom)



AutoTrac Indicator

RXA0167757—UN—06MAY19

**AutoTrac Indicator** — illuminates when AutoTrac is active.



Automatic Shifting Indicator

RXA0167758—UN—06MAY19

**Automatic Shifting Indicator** — illuminates when AUTO shift is on.



Inching Mode Indicator

RXA0167759—UN—06MAY19

**Inching Mode Indicator** — illuminates when the Set Speed is reduced below 2 km/h (1 mph) or the higher Set Speed is limited to a factor of 2.5 to avoid big speed increases.



Speed Control Pedal Mode Indicator

RXA0167760—UN—06MAY19

**Speed Control Pedal Mode Indicator** — illuminates when Pedal Mode is active.



iTEC Indicator

RXA0167761—UN—30MAY19

**iTEC Indicator** — illuminates when iTEC is enabled.



Tractor Automation Indicator

RXA0167762—UN—06MAY19

**Tractor Automation Indicator** — illuminates when some tractor automation is active.



Joystick Indicator

RXA0167763—UN—06MAY19

**Joystick Indicator** — illuminates when the joystick is active.



AutoClutch Disabled Indicator

RXA0188029—UN—15SEP22

**AutoClutch Disabled Indicator** — illuminates when AutoClutch is disabled.



Differential Lock Indicator

RXA0167764—UN—06MAY19

**Differential Lock Indicator** — illuminates when differential lock is active.



MFWD Indicator

RXA0167765—UN—06MAY19

**Mechanical Front-Wheel Drive (MFWD) Indicator** — illuminates when MFWD is active.



PTO Indicators Example

RXA0188047—UN—15SEP22

**PTO Indicators** — the PTO symbol illuminates when the front and/or rear PTO is active. The rated PTO value also illuminates next to the PTO symbol.



RXA0188051—UN—15SEP22

Trailer Air Brake Pressure Gauge Example

**Trailer Air Brake Pressure Gauge** — displays the percent of air pressure for the trailer air brake. The red zone indicates brake pressures from no pressure (0%) to low pressure (66%). The green zone indicates brake pressures from just above low pressure (66.4%) to full pressure (100%). When the air pressure is low, the red zone flashes.



RXA0188034—UN—15SEP22

DEF Level Gauge Example

**NOTE:** Diesel exhaust fluid (DEF):

- Is only used on Final Tier 4/Stage V engine equipped tractors and will not display on machines equipped with other engines.
- Is not used on 18 L engine equipped tractors.

**Diesel Exhaust Fluid (DEF) Level Gauge** — displays the DEF level in the tank. When the DEF tank is full, the entire gauge is illuminated green. When the DEF level is low, an alarm signal sounds once. The DEF tank should be filled whenever the fuel tank is filled.



RXA0188033—UN—15SEP22

Coolant Temperature Gauge Example

**Coolant Temperature Gauge** — displays the engine coolant temperature between 40—120°C (104—248°F). The indicator remains at the bottom until the coolant temperature is above 40°C (104°F). The indicator is at the top when the temperature is 120°C (248°F) and above. When the temperature reaches the red zone, the red zone and icon flash.

**Alert Indicators:**

Alert indicators are accompanied by an informative message, diagnostic trouble code, and/or fault description shown on the CommandCenter. For more information on CommandCenter alerts, see STOP, Service, and Information Alerts in Troubleshooting—Diagnostic Trouble Codes (DTC) section of this Operator's Manual.



RXA0167772—UN—06MAY19

STOP Alert Indicator

**STOP Alert Indicator** — flashes and an alarm pattern sounds continuously, indicating a serious malfunction requiring immediate attention.



RXA0188040—UN—15SEP22

Fuel Level Gauge Example

**Fuel Level Gauge** — displays the fuel level in the tank. When the fuel tank is full, the entire gauge is illuminated green. When the fuel level is low, an alarm signal sounds once.



RXA0167773—UN—06MAY19

Service Alert Indicator

**Service Alert Indicator** — flashes and an alarm pattern sounds five times, indicating a performance or operational problem has been detected and must be resolved as soon as possible.



RXA0167774—UN—06MAY19

Information Alert Indicator

- Flashes when the park lock cannot engage.

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**Information Alert Indicator** — illuminates continuously, and when GSix is on the bus, an alarm pattern sounds for 2 seconds, indicating a possible fault condition.

**Warning Indicators:**

When a warning occurs:

- Park the tractor on level ground and prevent the tractor from rolling away.
- A diagnostic trouble code (DTC) will display on the CommandCenter. Follow the instructions to fix the fault.
- If the fault cannot be fixed, see your John Deere dealer.



RXA0167775—UN—06MAY19

Steering Warning Indicator

**Steering Warning Indicator** — illuminates when a serious fault has been detected in the steering system.



RXA0167776—UN—06MAY19

Yellow Brake Warning Indicator

**Yellow Brake Warning Indicator** — illuminates when an electrical fault has been detected that affects the ability to detect additional faults.



RXA0167777—UN—06MAY19

Red Brake Warning Indicator

**Red Brake Warning Indicator** — indicates the following:

*NOTE: The brake warning indicator (red) illuminates while the trailer air brakes reach operating pressure. The indicator turns off once the operating pressure is reached.*

- Illuminates when a serious fault has been detected that affects brake system performance. Stop the tractor immediately.

# CommandARM Controls

## CommandARM



RXA0188010—UN—13SEP22  
CommandARM Example

kd34109,1663074711166-19-13SEP22



RXA0168025—UN—17MAY19  
Hitch Depth Adjust Dial

*NOTE: Dial will not raise hitch above upper limit.*

**Hitch Depth Adjust Dial** — use to raise or lower hitch.



Set Button

RXA0168026—UN—17MAY19

**Set Button** — press to store a set point.



Lock Button

RXA0168027—UN—17MAY19

**Lock Button** — press to lock hitch. Press again to unlock.



Resume Button

RXA0168028—UN—17MAY19

**Resume Button** — press to move hitch to set point position.



Upper Limit Hitch Dial

RXA0168029—UN—17MAY19

**Upper Limit Hitch Dial** — use to adjust Upper Limit setting. A drop-down will display on CommandCenter to view adjustment.

## CommandARM Hitch Controls [Ag]

*NOTE: Some items are only available if machine is equipped with the associated option.*

### Front Hitch Items:



Front Hitch Lever

RXA0168023—UN—17MAY19

*NOTE: Lever will not raise hitch above upper limit.*

**Front Hitch Lever** — allows adjustment of front hitch position. See Hitch Control Lever in Rear Hitch section of this Operator's Manual.

### Rear Hitch Items:



Rear Hitch Lever

RXA0168024—UN—17MAY19

*NOTE: Lever will not raise hitch above upper limit.*

**Rear Hitch Lever** — allows adjustment of rear hitch position. See Hitch Control Lever in Rear Hitch section of this Operator's Manual.



Drop Rate Hitch Dial

RXA0168030—UN—17MAY19

**Drop Rate Hitch Dial** — use to adjust Drop Rate setting. A drop-down will display on CommandCenter to view adjustment.



Load Depth Hitch Dial

RXA0168031—UN—17MAY19

**Load Depth Hitch Dial** — use to adjust Load Depth setting. A drop-down will display on CommandCenter to view adjustment.

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## CommandARM SCV Control Levers

*NOTE: SCV control levers can be reconfigured to control tractor functions and implements. See Controls Setup in CommandCenter section of this Operator's Manual.*



SCV I Lever

RXA0168032—UN—17MAY19

SCV Control Levers allow you to adjust SCV flow. Number of levers varies by machine. See SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual.

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## CommandARM PTO Control Levers [Ag]

*NOTE: Some items are only available if machine is equipped with the associated option.*



Front PTO Lever

RXA0168033—UN—17MAY19

**Front PTO Lever** — engage/disengage front PTO. See Operate PTOs in PTO—General Information section of this Operator's Manual.



Rear PTO Lever

RXA0168034—UN—17MAY19

**Rear PTO Lever** — engage/disengage rear PTO. See Operate PTOs in PTO—General Information section of this Operator's Manual.

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## CommandARM Climate, Radio, and Lighting Controls



Volume

RXA0168035—UN—17MAY19

**Volume** — press (+) to increase or (-) to decrease volume.



Previous/Next

RXA0168036—UN—17MAY19

**Previous/Next** — press top arrow for next track/station or bottom arrow for previous track/station.



Mute

RXA0168037—UN—28JUN19

**Mute** — press to silence speaker volume, press again to unmute. Does not mute microphone during an active call. Microphone can only be muted from phone or radio faceplate.



PTT/Accept Call

RXA0178830—UN—22JUL20

**NOTE:** If equipped with non-touch screen radio, button only accepts incoming calls.

**Push-To-Talk (PTT)/Accept Call** — allows operator to perform various functions depending on radio state and length of button press. If equipped with the touch screen radio, see the global radio Operator's Manual for more information on PTT.



End Call

RXA0178829—UN—22JUL20

**End Call** — press to end call in progress or active voice recognition (VR) session.



Air Flow Mode

RXA0167638—UN—26APR19

**Air Flow Mode** — press to select mode of air flow. Each press moves to next mode.



Temperature

RXA0167640—UN—26APR19

**Temperature** — press (+) to increase or (-) to decrease temperature.



Fan Speed

RXA0167644—UN—26APR19

**Fan Speed** — press (+) to increase or (-) to decrease fan speed.



Hazard Lights

RXA0168040—UN—17MAY19

**Hazard Lights** — press to turn on hazard lights, press again to turn off. Indicator light is on when active.



Parking Lights

RXA0168041—UN—17MAY19

**Parking Lights** — press to turn on parking lights, press again to turn off. Indicator light is on when active.



Road Lights

RXA0168042—UN—17MAY19

**Road Lights** — press to turn road lights on. Press again to turn off. Indicator light is on when active. If equipped, hood/belt line lights page automatically displays when selected. Page disappears after 10 seconds of inaction. See Lights Settings in Lights section of this Operator's Manual.



Worklights

RXA0168043—UN—17MAY19

**Worklights** — press to turn on worklights, press again to turn off. Indicator light is on when active. Active preset page will automatically display. Page disappears after 10 seconds of inaction. See Lights Settings in Lights section of this Operator's Manual.



Beacon Lights

RXA0168044—UN—17MAY19

**Beacon Lights** — press to turn on beacon lights (if equipped). Press again to turn off. Indicator light is on when active.

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## CommandARM Controls—Left Side

*NOTE: Some items are only available if machine is equipped with the associated option.*



RXA0171324—UN—10OCT19

*Speed/Shift Control Example*

**Speed/Shift Control** — use to operate transmission. For more information on the control equipped on your machine, see your Transmission section of this Operator's Manual.



RXA0168423—UN—30MAY19

*AutoTrac Resume Button (AUTO)*

**AutoTrac Resume Button (AUTO)** — press to enable Tractor-Implement Automation (TIA) after preparing implement as indicated in implement Operator's Manual.



RXA0168424—UN—30MAY19

*iTEC Buttons*

**1—4 Buttons** — press to enable assigned function. For assignment information, see Controls Setup in CommandCenter section of this Operator's Manual.



RXA0168425—UN—30MAY19

*MFWD Button*

**MFWD Button** — press to enable manual mechanical

front-wheel drive (MFWD) mode. See Mechanical Front-Wheel Drive (MFWD) in Drivetrain section of this Operator's Manual.



RXA0168426—UN—30MAY19

*AUTO MFWD Button*

**AUTO MFWD Button** — press to enable AUTO mechanical front-wheel drive (MFWD) mode. See Mechanical Front-Wheel Drive (MFWD) in Drivetrain section of this Operator's Manual.



RXA0168427—UN—30MAY19

*Differential Lock Button*

**Differential Lock Button** — to enable manual differential lock mode:

- 7R, 8RW, 8RX, and 9RW Tractors: Press and release the button. To disable, press the button again or press the brake pedal/pedals.
- 9RX Tractors: Press and hold the button. To disable, release the button.

For more information on differential lock, see Differential Lock in Drivetrain section of this Operator's Manual.



RXA0168428—UN—30MAY19

*AUTO Differential Lock Button*

**AUTO Differential Lock Button** — press to enable AUTO differential lock mode. See Differential Lock in Drivetrain section of this Operator's Manual.



RXA0168429—UN—30MAY19

*SCV Lock Button*

**SCV Lock Button** — press to lock out SCV levers. Indicator on button illuminates when levers are locked. Press again to unlock.



ISB Button

RXA0168430—UN—30MAY19

**CAUTION:** Avoid injury. Verify button function in a safe and open area that is clear of bystanders.

**ISOBUS (ISB) Button** — press to signal ISOBUS to stop operations started at implement. Verify that implement is compatible with ISB button in implement Operator's Manual.



Hand Throttle

RXA0168431—UN—30MAY19

**NOTE:** Hand throttle commands engine speed only, not wheel speed.

**Hand Throttle** — use to increase or decrease engine speed.



Maximum Engine Speed Button

RXA0168432—UN—30MAY19

**Maximum Engine Speed Button** — press to enable maximum engine speed setting. Press again to disable. Indicator on button illuminates when enabled. See Engine Settings—Max Engine Speed in Engine Operation section of this Operator's Manual.



ECO Button

RXA0168433—UN—30MAY19

**ECO Button** — press to enable ECO Performance. ECO is only available in Custom Transmission mode. Press again to disable. Indicator on button illuminates when enabled. For ECO setting (if equipped)

information, see your Transmission section of this Operator's Manual.



Speed Control Pedal Lock Button

RXA0168434—UN—30MAY19

**NOTE:** The speed control pedal will not lock if the button is held for more than 1 second. If the speed control pedal decelerator function is equipped, the pedal lock/unlock button does not function.

**Speed Control Pedal Lock/Unlock Button** — press to lock speed control pedal to maintain commanded speed. Indicator on button illuminates when locked. Commanded speed will discontinue if button is pressed again, pedal is depressed after locking, brake is depressed, or machine is placed in PARK.



Engine Set Speed 1 Button

RXA0168435—UN—30MAY19

**NOTE:** Machines equipped with CommandPRO joystick only.

**Engine Set Speed 1 Button** — press to enable engine set speed 1 setting. Press again to disable. Indicator on button illuminates when enabled. See Engine Settings—Engine Set Speed in Engine Operation section of this Operator's Manual.



Engine Set Speed 2 Button

RXA0168436—UN—30MAY19

**NOTE:** Machines equipped with CommandPRO joystick only.

**Engine Set Speed 2 Button** — press to enable engine set speed 2 setting. Press again to disable. Indicator on button illuminates when enabled. See Engine Settings—Engine Set Speed in Engine Operation section of this Operator's Manual.



Engine Manual Mode Button

RXA0168437—UN—30MAY19

*NOTE: Machines equipped with CommandPRO joystick only.*

**Engine Manual Mode Button** — press to enable manual engine mode. Engine speed is determined by hand throttle. Press again to disable. Indicator on button illuminates when enabled.

KD34109,00004E4-19-14JUL22

## CommandARM Navigation Bar



RXA0171956—UN—12NOV19

*Navigation Bar Example*



RXA0168445—UN—30MAY19

*Adjustment Dial*

**Adjustment Dial** — turn clockwise to increase or counterclockwise to decrease selected input field. Button in center of adjustment wheel is used to close CommandCenter pages.



RXA0168446—UN—30MAY19

*Run Page Scroll*

**Run Page Scroll** — press to scroll through custom run pages.



RXA0168447—UN—30MAY19

*SCV*

**SCV** — press to open SCV application.



RXA0168448—UN—30MAY19

*Rear Hitch*

*NOTE: Ag machines only.*

**Rear Hitch** — press to open Rear Hitch application.



*Engine*

RXA0168449—UN—30MAY19

**Engine** — press to open Engine application.



*Transmission*

RXA0168450—UN—30MAY19

**Transmission** — press to open Transmission application.



*PTO*

RXA0168451—UN—30MAY19

*NOTE: Ag machines only.*

**PTO** — press to open PTO application.



*iTEC*

RXA0168452—UN—30MAY19

**iTEC** — press to open iTEC application.



*Lights*

RXA0168455—UN—05JUN19

**Lights** — press to open Lights application.



*HVAC*

RXA0168456—UN—30MAY19

**HVAC** — press to open HVAC application.



*Controls Setup*

RXA0168457—UN—30MAY19

**Controls Setup** — press to open Controls Setup application.



*AutoLoad*

RXA0168458—UN—30MAY19

*NOTE: Scraper machines only.*

**AutoLoad** — press to open AutoLoad application.

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## Adjust CommandARM Position



*CommandARM Adjustment*

RXA0167304—UN—02APR19

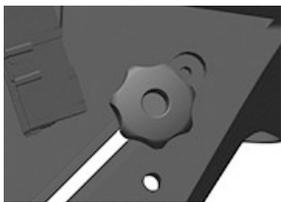
*NOTE: Both adjustment knobs must be loosened to adjust height.*



*Height Only Adjustment*

RXA0167305—UN—02APR19

**Adjustment Knob (Height Only)** — turn adjustment knob counterclockwise to loosen. Move CommandARM to desired position and tighten by turning knob clockwise.



*Height and Tilt Adjustment*

RXA0167306—UN—02APR19

**Adjustment Knob (Height and Tilt)** — turn adjustment knob counterclockwise to loosen. Move CommandARM to desired position and tighten by turning knob clockwise. If adjusting tilt but not height, only this knob is needed.

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# CommandCenter

## Use Electronic Display Properly

Electronic displays are secondary devices intended to aid the operator in performing field operations, increase comfort and provide entertainment. Displays offer a wide range of functionality, are used in many different machine system applications and can be used with other secondary devices such as handheld electronic devices.

A secondary device is any device that is not required to operate your machine for its primary use. The operator is always responsible for safe operation and control of the machine.

To prevent injury while operating the machine:

- Position the display according to the installation instructions. Ensure that the device is secured and does not obstruct the driver's view or interfere with the machine operating controls.
- Do not become distracted by the display. Stay alert. Pay attention to the machine and surrounding environment.
- Do not change settings or access any functions that require prolonged use of the display controls while machine is moving. Stop the machine in a safe location and place in park position before attempting such operations.
- Never set the volume so high that you cannot hear outside traffic and emergency vehicles.

To promote safe operation, certain functions of displays may be disabled unless the machine movement is restricted and/or has been placed in the park position. Overriding this safety feature may violate applicable law and can result in damage, serious injury, or death.

Only use available display functionality when conditions permit you to do so safely and in accordance with instructions provided. Always observe safe driving rules, state, or local laws and traffic regulations when using any secondary device.

DX,ELEC,DISPLAY-19-13JAN15

## Rear Hitch or PTO Availability

[Ag] PTO or rear hitch options are available only on an agricultural tractor.

[Scraper] For scraper tractor, ignore CommandCenter content that pertains to these options.

RX32825.0000004-19-20JUN22

## Machine Settings Overview

*NOTE: Some items only display if machine is equipped with the associated option.*



RXA0167076—UN—20MAR19

Access machine-specific applications from the Machine Settings tab. Available applications vary depending on tractor configuration.



AutoLoad

RXA0180073—UN—09OCT20

### AutoLoad

- Use AutoLoad application to adjust AutoLoad settings.
- For more information, see Scraper Information section of this Operator's Manual.



Engine

RXA0175176—UN—17FEB20

### Engine

- Use Engine application to adjust engine and exhaust filter system settings.
- For more information, see Engine Settings in Engine Operation section of this Operator's Manual.



ExactRate Tractor Tank

RXA0178628—UN—08JUL20

### ExactRate Tractor Tank

- Use ExactRate Tractor Tank application to view ExactRate fill information.
- For more information, see ExactRate Tractor Tank Settings in ExactRate Tractor Tanks section of this Operator's Manual.



Front Hitch

RXA0169132—UN—25JUN19

### Front Hitch

- Use Front Hitch application to adjust front hitch settings.
- For more information, see Front Hitch Settings in Front Hitch section of this Operator's Manual.



HVAC

RXA0167626—UN—26APR19

### HVAC

- Use HVAC application to adjust heating, ventilation, and air conditioning settings.
- For more information, see HVAC Settings in HVAC section of this Operator's Manual.



John Deere CTIS

RXA0177902—UN—14MAY20

### John Deere CTIS

- Use John Deere CTIS application to adjust John Deere CTIS settings.
- For more information, see John Deere CTIS Settings in John Deere CTIS section of this Operator's Manual.



Lights

RXA0168488—UN—05JUN19

### Lights

- Use Lights application to adjust lights settings.
- For more information, see Lights settings in Lights section of this Operator's Manual.



Maintenance and Calibrations

RXA0134981—UN—07AUG13

### Maintenance and Calibrations

- Use Maintenance and Calibrations application to add/edit service intervals and perform ground radar and slip calibrations.
- For more information, reference the G5

CommandCenter Operator's Manual and the Help Center application on the display.



PTO

RXA0167685—UN—30APR19

### PTO

- Use PTO application to adjust PTO settings.
- For more information, see PTO Settings in PTO—General Information section of this Operator's Manual.



Rear Hitch

RXA0169204—UN—26JUN19

### Rear Hitch

- Use Rear Hitch application to adjust rear hitch settings.
- For more information, see Rear Hitch Settings in Rear Hitch section of this Operator's Manual.



SCV

RXA0173516—UN—03JAN20

### SCV

- Use SCV application to adjust SCV settings.
- For more information, see SCV Settings in Selective Control Valves section of this Operator's Manual.



Steering

RXA0171926—UN—06NOV19

### Steering

- Use Steering application to adjust steering settings.
- For more information, see Steering Settings in this Operator's Manual section.



Suspension

RXA0174230—UN—28JAN20

### Suspension

- Use Suspension application to adjust suspension settings.
- For more information, see Suspension Settings in Drive Train section of this Operator's Manual.



Trailer Brake

RXA0177626—UN—28APR20

### Trailer Brake

- Use Trailer Brake application to adjust brake and pre-brake settings and/or to test trailer brakes.
- For more information, see Trailer Brake System Settings in Brakes section of this Operator's Manual.



Transmission

RXA0167077—UN—20MAR19

### Transmission

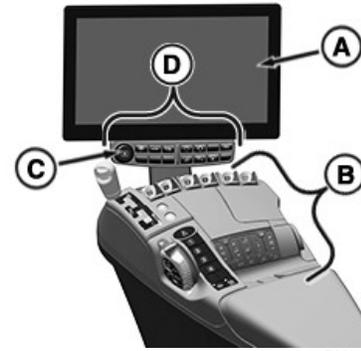
- Use Transmission application to adjust transmission settings.
- For more information, see appropriate transmission section of this Operator's Manual.

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## Navigate G5 CommandCenter

*NOTE: Images are for reference and may differ by tractor configuration or operator settings. As the operator pages through the CommandCenter, more in-depth information is presented, allowing the operator to fine-tune tractor functions.*

### Navigating CommandCenter Pages:



RXA0188124—UN—11OCT22

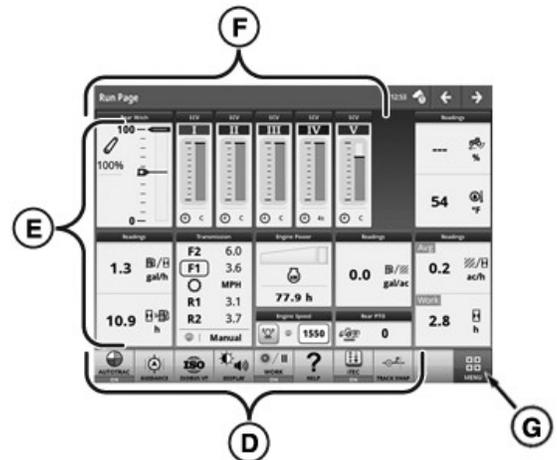
CommandCenter and CommandARM

Use touchscreen CommandCenter buttons or icons to make selections. To adjust input box values, enter the value on the keypad or select the input box and scroll the adjustment dial (C) to the desired value. A yellow highlight box appears around the selected input box and indicates that the adjustment dial is active.

**A—CommandCenter:** A touchscreen display attached to the CommandARM (B) that allows the operator to access pages required to operate the tractor. The operator can select (touch) options on the screen to move through pages and access tractor functions.

**B—CommandARM:** Made up of buttons, switches, and a joystick (if equipped) that allow the operator to manage tractor or implement functions.

**C—Adjustment Dial/Close Window Button:** Rotate the adjustment dial clockwise to raise or counterclockwise to lower input box values. Press the button one time to close a window. Press and hold the button to close all open windows.



RXA0188279—UN—11OCT22

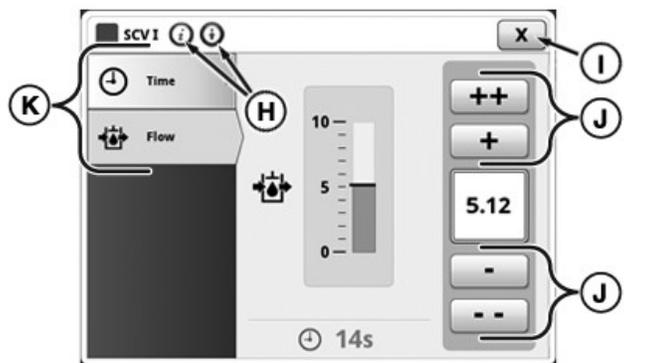
Run Page

**D—Shortcut Keys:** Allow quick access to application functions from the shortcut bar.

**E—Run Page Modules:** Allow quick access to application functions from the run pages.

**F—Title Bar:** Select to access available run pages or add a new run page.

**G—Menu:** Select to access all applications installed on the display and machine. Select left-hand tabs to view different groups of applications.



RXA0137084—UN—13DEC13

Module Functions

**H—Help/Advanced Settings Buttons:** While in an application, select the title bar to view the help pages or change additional settings for that application.

**I—Close Button:** Select to close the current page.

**J—Increase/Decrease Value Buttons:** Select to change a value within input boxes. Use (++) and (- -) buttons to make larger incremental changes when adjusting the value, rather than touching (+) or (-) buttons. For areas that require tighter adjustments, only (+) and (-) buttons are available.

**K—Tabs:** Select to change to different section topics.

kd34109,1664465900369-19-27FEB23

## Compatible Universal Displays

G5 CommandCenter may be configured to run with the following John Deere universal displays connected at the corner post.

- GreenStar 3 2630 Display
- 4640 Universal Display
- 4240 Universal Display (7R and 8R Series Tractors only)
- G5 Universal Display
- G5<sup>Plus</sup> Universal Display

kd34109,1664465919701-19-29SEP22

## Power Display On and Off

G5 CommandCenter displays turn on and off with the tractor key switch.

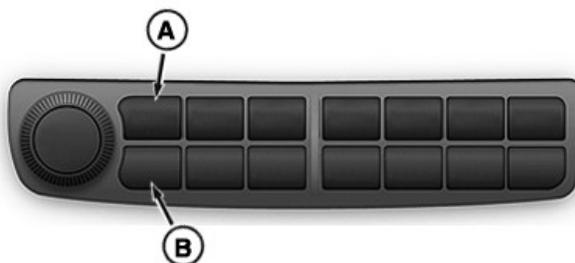
- **Warm boot** occurs when the CommandCenter display has been on within the last 24 hours. The

display rests in hibernation state during the 24-hour or less time period that it has been off. When turned back on, the display powers up quickly (approximately 10 seconds).

- **Cold boot** occurs if the display has not been operated for 24 hours or more, or if the unswitched power has been disconnected. During this period, the display shuts down completely to conserve battery power. The next power-up takes approximately 60 seconds.

*NOTE: After turning off the engine, avoid turning the key switch back on until the display screen has gone black.*

- **Hard reset** is required when the display is unresponsive for more than a few minutes under normal operating conditions.



RXA0148512—UN—25JUN15

Navigation Bar

Perform a hard reset by simultaneously pressing the left-most upper and lower buttons (A and B) on the navigation bar for 5 seconds. If the display does not reset, pull fuse nine from the load center and replace it after 5 seconds. For more information on load center fuses, see Load Center—Cab in Service—Electrical section of this Operator's Manual. If the problem persists, see your John Deere dealer.

kd34109,1664465962070-19-29SEP22

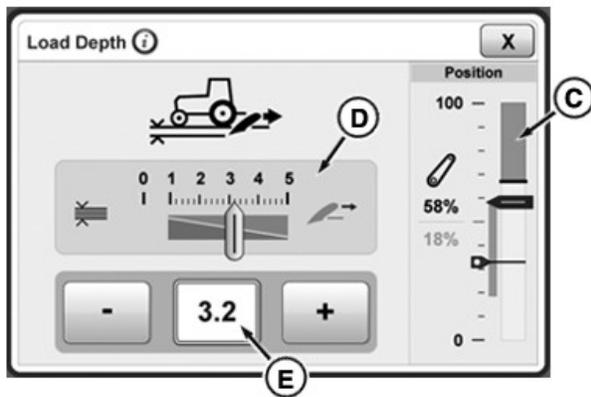
## Change Pages and Values

Various methods are provided to allow selection and modification of CommandCenter pages and values.



RXA0181011—UN—22JAN21

- **A—Section Tab:** Select to change to a different section topic.
- **B—Icons:** Select to open an application.



RXA0130123—UN—23APR13

- **C—Bar Graph:** Shows setting information using the filled portion of the bar.
- **D—Slider Bar:** Shows the setting within the minimum and maximum value range.
- **E—Input Box:** Shows the set value. Select (+) to increase or (-) to decrease the value.

*NOTE: When changing values using the adjustment dial, rotating the dial faster increases or decreases the value faster.*

If a large range of values is available, a numeric keypad appears, allowing direct input of the desired value.

KT81203.00004A7-19-20JUN22

## Factory and Service ADVISOR Installed Onscreen Help

Tractor Application Help Package with Service ADVISOR or Service ADVISOR Remote is installed at the factory for the following eight languages:

- Chinese
- English
- French
- German
- Italian
- Portuguese
- Russian
- Spanish

**G5 Operating System Help Package** is installed for all languages at factory.

For instructions on how to install and update Onscreen Help packages, see the G5 CommandCenter Operator's Manual.

kd34109,1664465994053-19-29SEP22

## Radar Calibration

**CAUTION: Avoid injury. Perform calibration in safe and open area that is clear of objects and bystanders.**

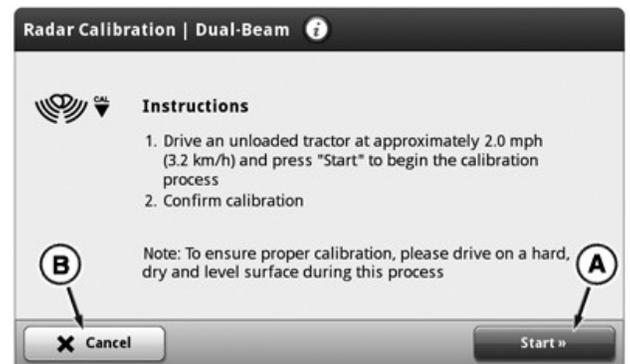
Perform radar calibration if:

- Radar speed and wheel/track speed are not equal when slip is not present.
- Radar device was installed/replaced.
- Tire size was changed.
- Ballast of tractor was changed.
- Speed source was changed.



RXA0147926—UN—13APR15

1. Select Menu.
2. Select Machine Settings tab.
3. Select Maintenance & Calibrations icon.
4. Select Calibrations tab.
5. Select Radar Calibration icon.
6. Drive unloaded tractor on hard, dry, and level surface at approximately 3.2 km/h (2.0 mph).



RXA0147580—UN—10MAR15

*NOTE: Radar calibration can be canceled by selecting Cancel (B).*

7. Select Start (A) to begin radar calibration process.



RXA0147581—UN—10MAR15

8. Select OK (C) to complete radar calibration.

If radar calibration is unsuccessful after three attempts, see your John Deere dealer.

KD34109,00004DE-19-22JUN22

## Slip Calibration

**CAUTION: Avoid injury. Perform calibration in safe and open area that is clear of objects and bystanders.**

Perform slip calibration if:

- Radar calibration has been performed.
- Slip is displayed when slip should not be present.
- Ballast of tractor was changed.
- Speed source was changed.

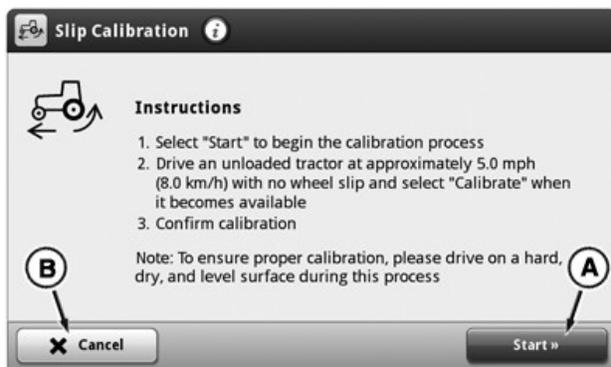


RXA0147928—UN—13APR15

1. Select Menu.
2. Select Machine Settings tab.
3. Select Maintenance & Calibrations icon.
4. Select Calibrations tab.

*NOTE: Tractor must be in motion for slip calibration icon to appear.*

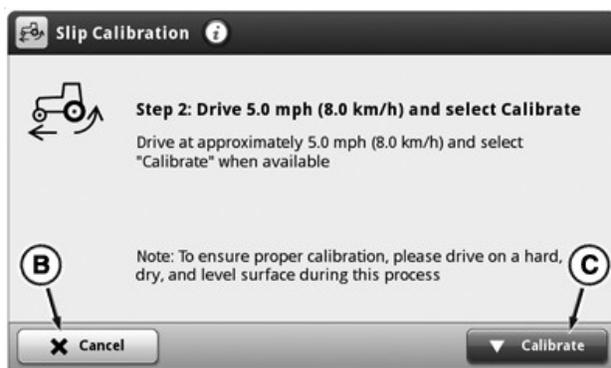
5. Select Slip Calibration icon.



RXA0147582—UN—10MAR15

*NOTE: Slip calibration can be canceled by selecting Cancel (B).*

6. Select Start (A) to begin slip calibration process.
7. Drive unloaded tractor on hard, dry, and level surface at least 8 km/h (5 mph).



RXA0147583—UN—10MAR15

8. Select Calibrate (C).



RXA0147584—UN—10MAR15

9. Select OK (D) to complete slip calibration.

If slip calibration is unsuccessful after three attempts, see your John Deere dealer.

KT81203,000020F-19-22JUN22

## Steering Settings—Access

### Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



Steering

RXA0171926—UN—06NOV19

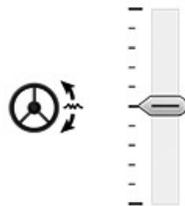
3. Steering

KD34109,0000571-19-08DEC21

## Steering Settings

Steering application is used to access and adjust steering settings.

### Items Accessible on Steering Main Page:



Resistance Status

RXA0174749—UN—05FEB20

**Steering Wheel Resistance** — select to adjust setting for force required to turn steering wheel. See Steering Settings—Steering Wheel Resistance in this Operator's Manual section.

KD34109,0000572-19-05FEB20

## Steering Settings—Steering Wheel Resistance

Steering Wheel Resistance setting allows operator to adjust setting for force required to turn steering wheel.

### Procedure to Modify:



Increase/Decrease Value

RXA0171921—UN—07NOV19

Select (+) to increase or (-) to decrease value.

- Maximum: 2
- Minimum: -2
- Increment: 0.1
- Default: 0

KD34109,0000573-19-25MAR20

## Controls Setup



PC15326—UN—08JUL13

Controls Setup configures the integrated tractor joystick, CommandARM levers, 1—4 buttons, and third-party devices to control tractor or implement functions. ISO Aux implements configure to the tractor joystick or a third-party device.

### Set up assignments:

1. Select Menu.
2. Select Applications tab.
3. Select Controls Setup application.
4. Select from the following tabs on the left-hand side of the page:

*NOTE: Unlock the tractor joystick (if equipped) to activate default and custom (manually set) assignments. See CommandARM Joystick in CommandARM Controls section of this Operator's Manual.*

- **CommandPRO Joystick:** Assign to control tractor and implement functions (example: rear hitch).

- **Integrated Tractor Joystick:** Assign to control tractor and implement functions (example: front hitch).
- **CommandARM Levers and 1—4 Buttons:** Assign to control tractor and implement functions (example: rear hitch).
- **Third-Party Devices:** Any mechanism, John Deere, or non-John Deere, attached to ISOBUS. Once attached, assign control to tractor and implement functions (example: trailer).
- **ISO Aux implements:** Assign implement (example: trailer) function to a specific button on the tractor joystick.

Functions are stored until the operator edits a corresponding assignment.

**Defaults (F):** Clears and restores any custom control assignments to factory default settings.

KT81203,00005B2-19-20JUN22

## Install Video Display Camera

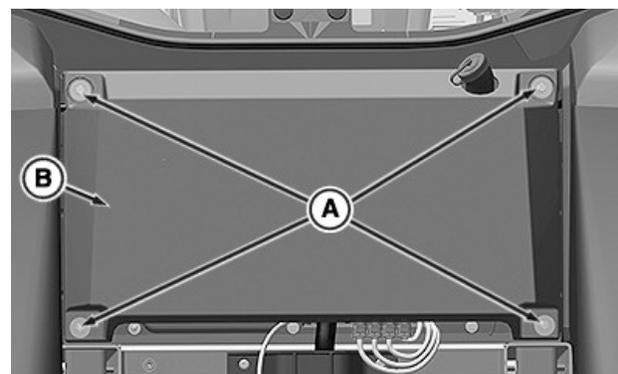
**IMPORTANT:** Avoid damage to the camera. Mount the camera securely to the equipment and in a location where the camera will not be pinched, crushed, kicked, or knocked off.

*NOTE:* Camera placement is limited to video camera cable length. Consider camera field of view when selecting the location.

5. Select reconfigurable assignment module.

Depending on the selected source, the following combinations (assignments) are possible:

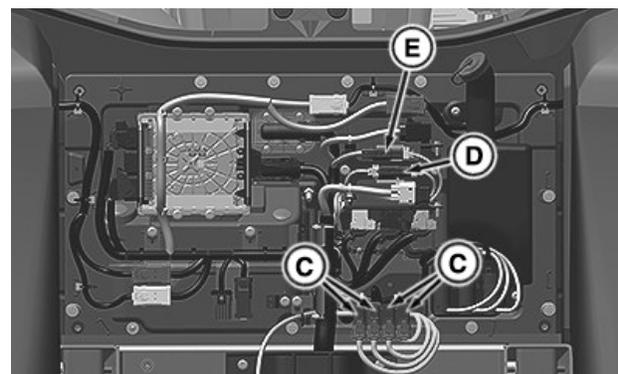
- **Integrated Tractor Joystick, CommandARM Levers, 1—4 buttons, and Third-Party Devices:** Input + Source + Function
- **ISO Aux Implements:** Function + Device + Input



RXA0188904—UN—10APR23

*NOTE:* Rear cab panel removal is not required to access the analog video connectors.

1. Remove the four cap screws (A).
2. Remove the rear cab panel (B).



RXA0188905—UN—10APR23

3. Locate the video connectors:

*NOTE:* The digital inputs will be occupied if the tractor is equipped with front and rear digital cameras.

- Analog (C)
- Rear digital (D)

### Manage Assignments:

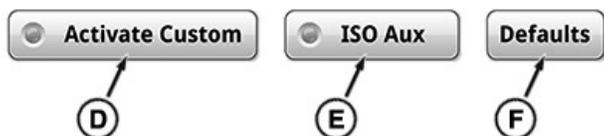


RXA0156706—UN—11JAN17

To edit assignments for the tractor joystick, CommandARM levers, or 1—4 buttons, select the desired reconfigurable assignment module. To remove an assignment, select the desired assigned module and then select Remove Assignment (A).

To edit assignments for third-party devices or ISO Aux implements, select edit (B) in the desired reconfigurable assignment module. To remove an assignment, select trash (C).

### Activate Custom, ISO Aux, and Defaults:



RXA0166821—UN—05MAR19

Select Activate Custom and ISO Aux buttons to enable custom assignments for ISO Aux implements

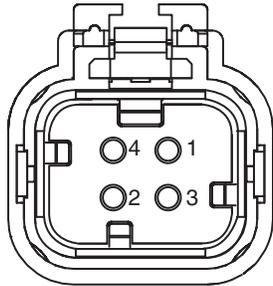
**Activate Custom (D):** Enables all customized assignments across all groups.

**ISO Aux (E):** Determines if messages from the tractor joystick are sent to the ISO Aux implement. Select to enable implement functions, select again to disable.

- Front digital (E)

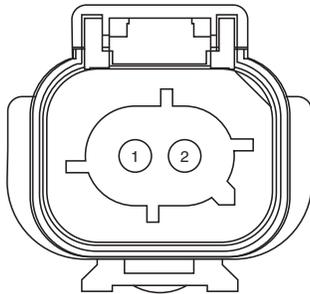
For information on how to adjust Video settings, see the G5 CommandCenter Operator's Manual.

KD34109,00004B4-19-10APR23



RXA0107925—UN—28MAY10

Analog Video Connector Pin Identification



RXA0188906—UN—10APR23

Digital Video Connector Pin Identification

Analog	
Pin Number	Function
1	Power
2	Ground
3	Signal
4	Signal—Ground

Digital	
Pin Number	Function
1	Signal +
2	Signal -

4. Connect the camera cable into the 4-pin (analog) or 2-pin (digital) connector.

*NOTE: For the camera to function after connecting it to the port, the key switch may need to be cycled.*

5. Route the camera cable.
6. Mount the camera at the desired location.
7. Replace the rear cab panel.

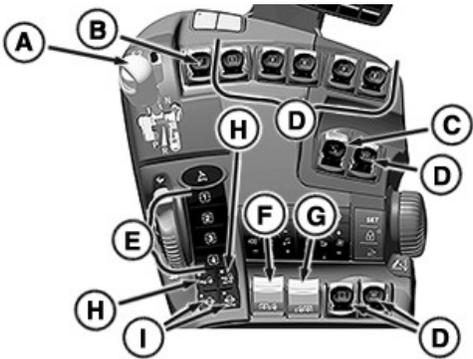
# Intelligent Total Equipment Control (iTEC)

## CommandARM Control Functions

Intelligent Total Equipment Control, iTEC, allows multiple reoccurring tasks to be performed with touch of one button, up to four sequences. Sequences remain in memory until deleted or overwritten, even if electrical current is switched off. Each sequence can include up to 20 functions.

A sequence is a course of events from start of first function to completion of last function. Sequence can be started by pressing one of the sequence (1—4) buttons.

iTEC pages are accessed through G5<sup>Plus</sup> CommandCenter. See additional information in this Operator's Manual section on how to set up and edit a sequence.



RXA0156096—UN—09DEC16

The following iTEC functionality chart describes item and function from CommandARM image.

*NOTE: Some items are only available if machine is equipped with the associated option.*

iTEC Functionality		
	Component	Functions
A	IVT -AutoPowr, EVT-eAutoPowr, and 16-Speed PowerShift	Change Set Speed Forward
	e18 and e23 Transmission	Upshift or Downshift in forward gear
B	Rear Hitch	Raise Detent, Lower Detent, and Fast Lower Detent
C	Front Hitch	Raise, Lower, Float, and Cancel
D	SCVs	Extend, Retract, Float, and Cancel
E	1—4 Buttons <sup>a</sup>	Sequence Set 1, 2, 3, or 4
F	Front PTO	On/Off
G	Rear PTO	On/Off
H	MFWD	On/Off/Auto
I	Differential Lock (7R, 8RW, 8RX, and 9RW)	On/Off/Auto
	Differential Lock (9RX)	Auto

<sup>a</sup>Buttons are reconfigurable and must be assigned to iTEC to run sequence sets.

KT81203,000093C-19-28FEB23

## iTEC Station Description (EU 1322/2014)

**CAUTION: Do not operate front loaders in conjunction with Intelligent Total Equipment Control (iTEC) to avoid sudden movements and possible accidents.**

A sequence is defined as the start of the first recorded function to completion of last recorded function. Example of two sequences would be, one sequence made up of a series of functions, operations and distances used at start of field and a second sequence used at a water way in the center of the field. Each program can include up to 20 functions. The programs remain in the memory until they are deleted or overwritten, even if the electrical current is switched off.

KT81203,00004FB-19-15JUN22

## CommandCenter Pages Descriptions and Functions

**CAUTION: Avoid unwanted movement and possible accidents. Do not operate front loaders in conjunction with Intelligent Total Equipment Control (iTEC).**

### iTEC Main Page



RXA0168452—UN—30MAY19

Use shortcut button or follow alternative path:

1.

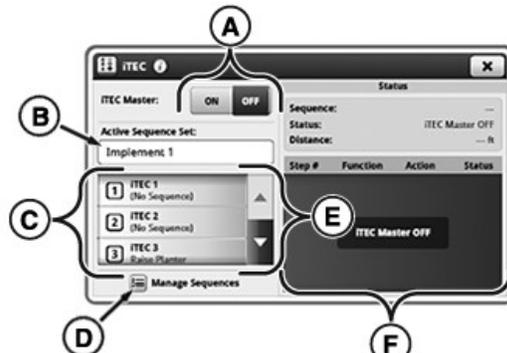


RXA0145566—UN—01OCT14

Select **Menu**.

2. Select **Machine Settings** tab.

3. Select **iTEC** icon.



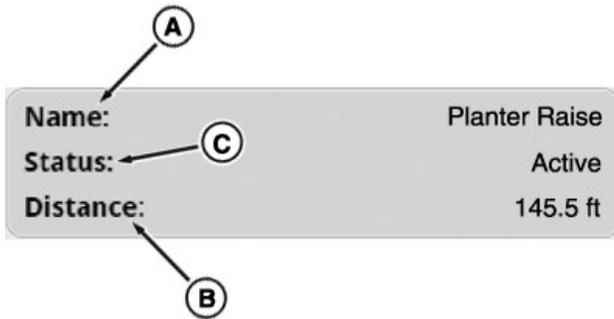
RXA0158043—UN—02MAR17

- **A** — iTEC Master Toggle: Toggle iTEC ON/OFF.

- **B — Active Assignment Set Button:** Select or create an assignment set.
- **C — Assignments List:** List of sequences that can be assigned to 1—4 buttons.
- **D — Manage Sequences Button:** Edit sequence and assign buttons.
- **E — Scroll Bar:** Scroll up or down.
- **F — Status List:** Shows status of each iTEC sequence step as sequence progresses.

KT81203,00004D7-19-11APR23

### Status Area



RXA0131243—UN—08MAR13

- **A—Name:** Name of sequence that is currently running.
- **B—Distance:** Displays accumulated distance while iTEC sequence is running.
- **C—Status:** Indicator of current iTEC status.
  - **Off** - No sequence execution possible.
  - **Ready** - Waiting for iTEC button to which a sequence is assigned to be pressed.
  - **Active** - iTEC sequence execution active.
  - **RPM Limit** - Engine speed is out of range. <sup>1</sup>
  - **Park** - Transmission indicates that park lock is engaged. <sup>2</sup>
  - **Operator Presence** - No operator presence, no iTEC execution allowed. Operator returns to seat. <sup>1</sup>
  - **Wheel Speed Low** - Wheel speed < 0.5 km/h (0.3 MPH), execution is paused.
  - **Complete** - Sequence successfully completed.
  - **Aborted** - Sequence execution aborted by operator or active abort condition.
  - **Error** - One or more sequence steps did not execute.

KT81203,00004D8-19-11APR23

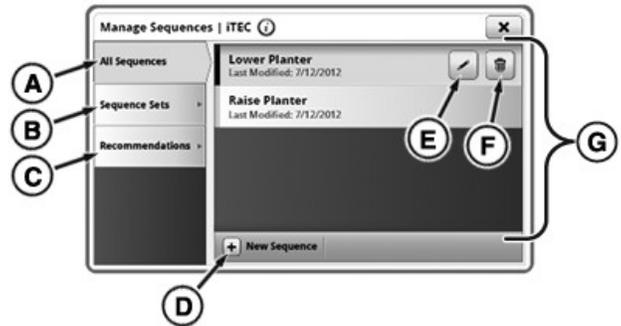
<sup>1</sup> Sequences pauses or cannot start if this condition exists. Correct condition to resume sequence.  
<sup>2</sup> Sequence pauses or cannot start if this condition exists. Correct condition to resume sequence.

### All Sequence Page



RXA0129723—UN—06MAR13

Select **Manage Sequences** button on iTEC main page.



RXA0158044—UN—02MAR17

- **A—All Sequences Tab:** View available, delete saved, edit saved, or add new sequences.
- **B—Sequence Sets Tab:** View assigned sequences or give sequence assignment.
- **C—Recommendations (AutoLearn):** View and edit learned sequences.
- **D—New Sequence Button:** Manually program new sequence.
- **E—Edit Button:** Edit saved sequence.
- **F—Trash Button:** Deleted saved sequence.
- **G—Sequence List:** List of saved sequences.

DB71512,000013B-19-22JUN22

### Add New Sequence

*NOTE: For complete list of functions available, see CommandCenter Pages Descriptions and Functions in this Operators Manual section.*

From iTEC main page, follow steps listed below:

1.



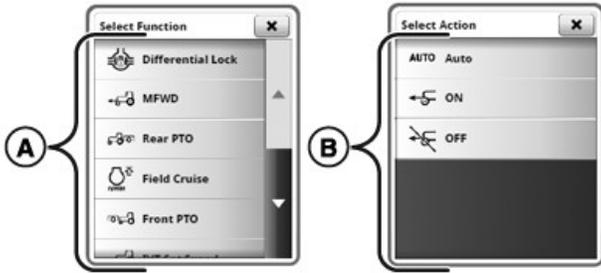
RXA0158059—UN—02MAR17

Select **Manage Sequences** button.

2. Select **All Sequences** tab.
3. Select **New Sequence** button.
4. Select **Add Step** button.

*NOTE: Select Cancel button (F) to exit editing process without saving changes.*

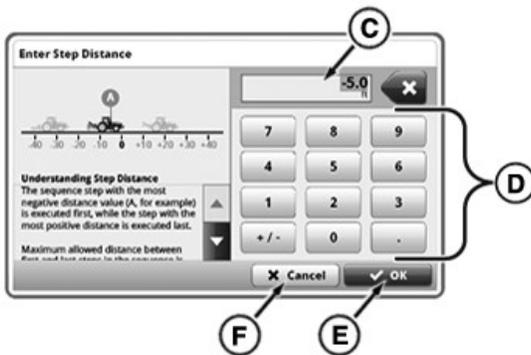
5.



RXA0158057—UN—02MAR17

Select from list of functions (A).

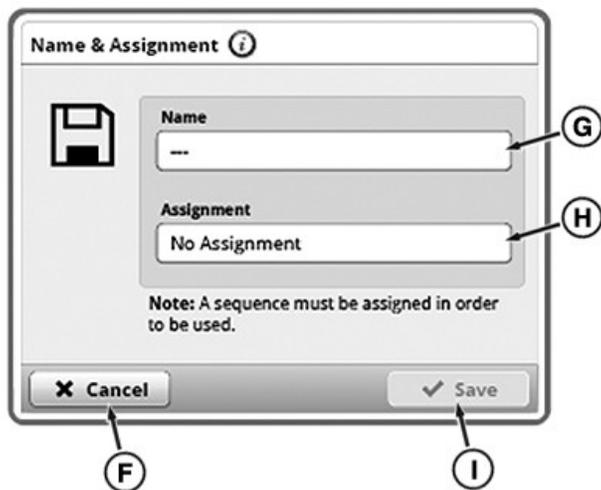
6. Select from list of actions (B).
- 7.



RXA0158047—UN—02MAR17

On Step Distance page, use keypad (D) to enter distance into step distance box (C).

8. Select OK Button (E).
9. Repeat steps 4-8 to add steps to sequence.
10. Press **Next button** to continue.
- 11.



RXA0158048—UN—02MAR17

Select Sequence Name box (G). Type name of sequence. Select **Save/OK button** when complete.

*NOTE: A sequence must be assigned in order to be used.*

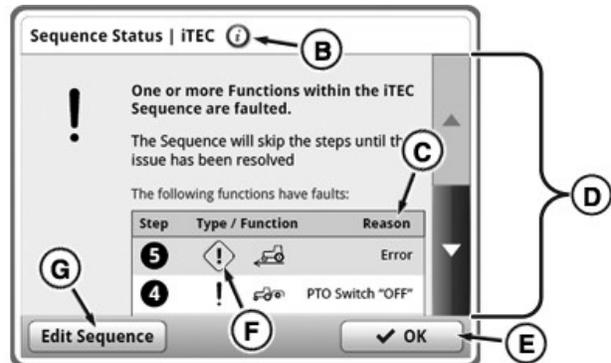
12. Select Sequence Assignment box (H). Select assignment, if desired, and select **Save/OK button** when complete.
13. Select **Save button (I)** to save sequence.

KT81203,00004D9-19-20JUN22

## Sequence Step Status



RXA0131170—UN—05MAR13



RXA0131609—UN—25JUL13

*NOTE: Press Information Button (B) on any iTEC page to access a general status page. General status page will list all functions that are part of the sequences of current selected implement.*

Whenever execution of a sequence step is not possible or is interrupted, iTEC system informs operator about new issue by displaying Information Alert (A) or Fault Alert (F) next to the sequence or sequence step. Press **Alert Symbol** next to the sequence (in assignment area or sequence assignment tab) to access the sequence status page to read steps with errors. Use scroll bars (D) to scroll up and down list. Select edit sequence button (G) if you want to edit a sequence. Press **Alert Symbol** next to a sequence step (while in EDIT) for information about the issue just for that step. Both views will show a short reason (C) for issue. Press OK button (E) to exit.

KT81203,00004DA-19-20JUN22

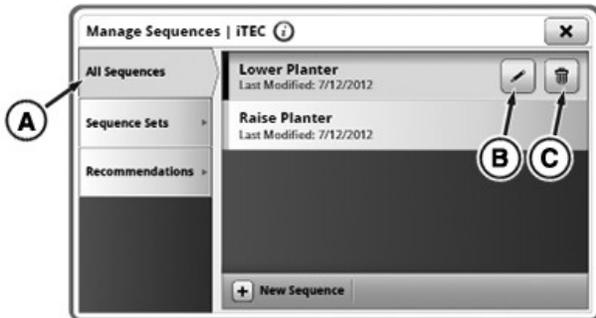
## Edit or Remove Sequence

From iTEC main page:

## Manage Sequences

RXA0129723—UN—06MAR13

1. Select **Manage Sequences** button.

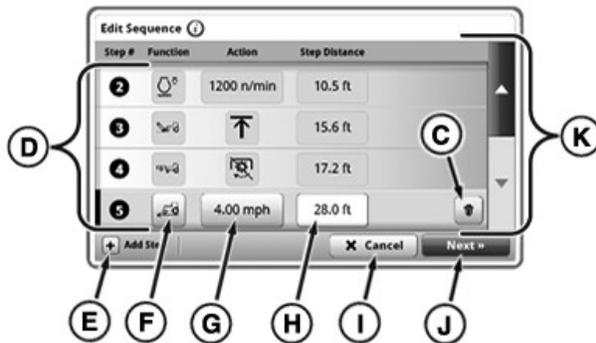


RXA0158049—UN—02MAR17

2. Select All Sequences tab (A).  
3. Select desired sequence.

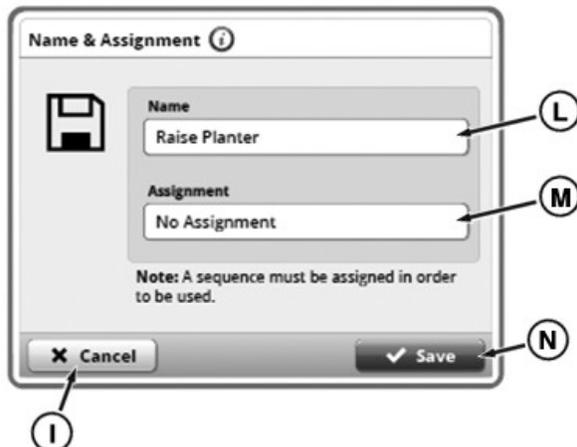
*NOTE: Trash button (C) removes sequence or step within sequence.*

4. To update sequence steps, select Edit button (B).



RXA0158050—UN—02MAR17

5. Select desired step to edit from sequence step list (D). If needed, use scroll bar (K) to locate step.



RXA0158051—UN—02MAR17

*NOTE: To exit editing process without saving changes, select Cancel button (I).*

6. To edit step, select add new step (E), function (F), or action (G) buttons or use distance input box (H).
7. Select Next button (J).
8. If needed, edit sequence name (L) or sequence assignment (M).
9. Select Save button (N).

KT81203,00004DB-19-20JUN22

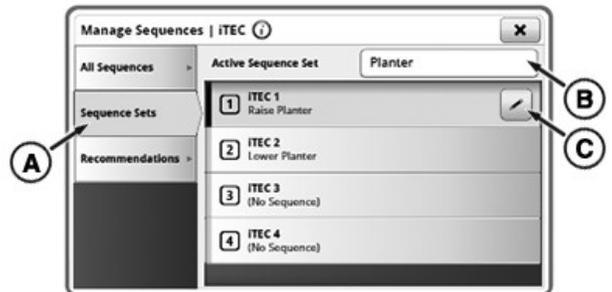
## Sequence Sets Page

From iTEC main page, use following steps:

## Manage Sequences

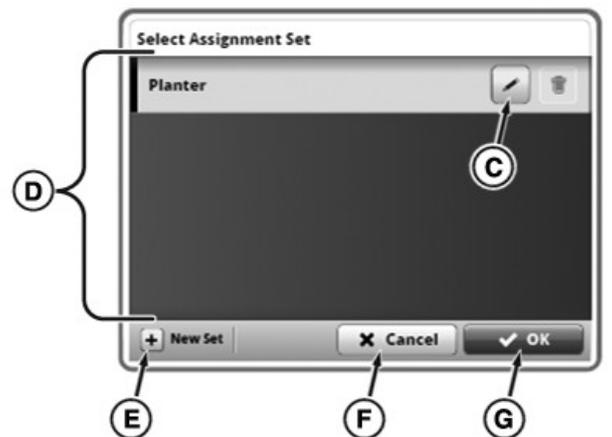
RXA0129723—UN—06MAR13

1. Select **Manage Sequences** button.

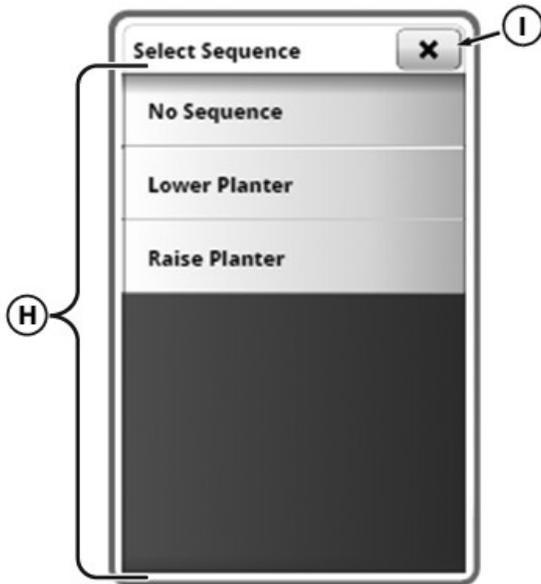


RXA0158311—UN—15MAR17

2. Select **Sequence Sets** tab (A).
3. If needed, select Active Sequence Set (B) and follow steps 4-6. If not, skip to step 7.

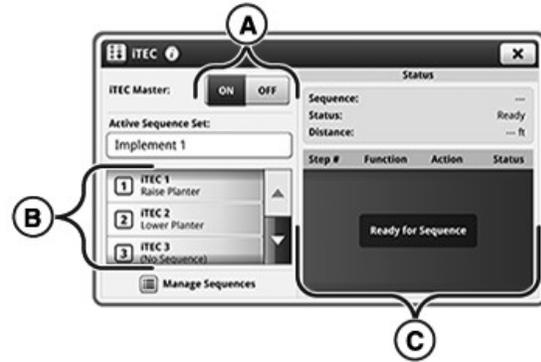


RXA0158312—UN—15MAR17



RXA0158313—UN—15MAR17

**NOTE:** To exit page without saving changes, select Cancel (F) or Close (I) button.



RXA0173766—UN—13JAN20

During sequence execution, a function can be actuated manually at any time without execution of sequence being interrupted. Functions that are actuated manually are ignored by iTEC for the rest of sequence. Relevant alert icon for this function appears in Status area (C).

1. Turn iTEC Master toggle (A) to ON position.
2. Select iTEC sequence button assigned to desired sequence (B).
3. Sequence steps appear in Status area (C) and show progression of steps.

KT81203.00004DF-19-20JUN22

4. Select sequence set from Sequence Set list (D).
5. If needed, select Edit (C) or New Set (E) button.
6. Select OK button (G).
7. Select desired iTEC button to assign.
8. Select Edit button (C).
9. Select sequence from Sequence list (H).

KT81203.00004DD-19-20JUN22

## Perform Sequence

iTEC sequence execution requires that certain tractor controls are operated in a particular way. Sequence will not execute with tractor in PARK position. Transmission shift lever must be in forward position when executing set speeds, gears, or automatic gear shift. Tractor ground speed must be at least 0.5 km/h (0.31 mph).

Before performing sequence using SCV functions, relevant SCV levers must be in neutral position.

Abort current sequence at any time by pressing same assigned iTEC sequence button used for starting sequence. Currently active commanded functions will be canceled (example: hitch (if equipped) motion or SCV flow will stop if previously initiated as part of sequence).

iTEC Indicator is illuminated when active. For indicator location, see Corner Post Display in Corner Post Display section of this Operator's Manual.

## Recommendations (AutoLearn)

When AutoLearn is ON, the system learns every action the machine completes in the background. When the same patterns, actions, or steps are recognized, AutoLearn creates a sequence. AutoLearn then recommends assignment to an iTEC button.

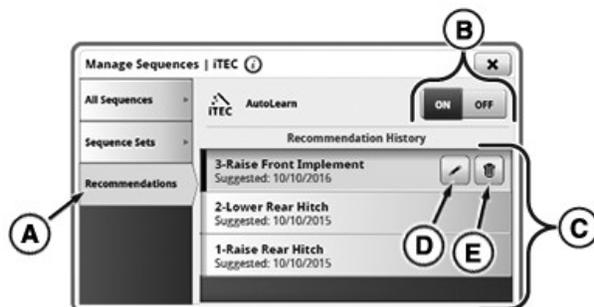
Sequences can be deleted when no longer needed. When a sequence is deleted, all button assignments clear and sequence is no longer available for use.

From iTEC main page, use following steps:



RXA0129723—UN—06MAR13

1. Select Manage Sequences.



RXA0158056—UN—02MAR17

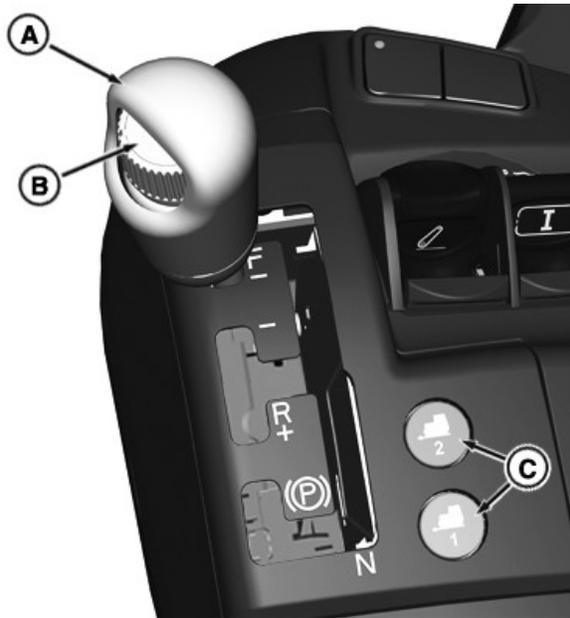
*NOTE: AutoLearn is ON by default. To turn AutoLearn OFF, use AutoLearn ON/OFF toggle (B).*

2. Select Recommendations (AutoLearn) tab (A).
3. Review Recommendation History (C).
4. To edit or assign recommended sequence, select edit (D). To remove sequence from list, select trash (E).

KT81203,00004E0-19-20JUN22

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## iTEC Functions—Efficiency Manager



RXA0139446—UN—17MAR14

**Efficiency Manager Set Speed Buttons (C):** The current forward set speed can be changed up or down with the set speed adjusting wheel (B) on shift knob (A). Transmission changes will be executed at the normal rate once the set speed has been changed.

The minimum set speed that can be saved is 0.8 km/h (0.5 mph). Changing the set speed or shifting during execution of a sequence will not cause iTEC to abort, but set speed changes will not be executed for the remainder of the sequence.

When a set speed is changed by an iTEC sequence, transmission will react as if the operator changed set speed, shifting up or down as a result.

KT81203,00004E2-19-17JUN22

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# Tractor-Implement Automation (TIA)

## TIA—General Information

**CAUTION:** Although phrases "transfer control" and "disengage control" are terms commonly used with TIA equipment, at NO time is implement in total control of an operation. Operator ALWAYS has the ability to override TIA implement. It is operator's responsibility to make sure that implement operation does not damage equipment, or pose danger of injury or death to operator or others close by.

**Do not operate TIA when driving on public roads or when other persons are close by.**

For ISO-compliant tractors, TIA-compatible implements have the ability to control certain individual tractor functions. See your implement Operator's Manual or contact your John Deere dealer with any questions regarding TIA-compatible implements.

KD34109,0000901-19-06MAY22

## Activate TIA Equipment

Response Codes, Text Descriptions, and Corrective Actions		
Common Response Codes	Text Displayed	Corrective Action
0	Code Accepted	None Required
4	Implement Not Available to Deactivate	Implement already deactivated
5	Implement Already Activated	None Required, implement should work as expected
6 and 11	Space Unavailable for Activation	Contact your dealer for assistance
17	Demonstration Activation Replaced With Permanent Activation	None Required

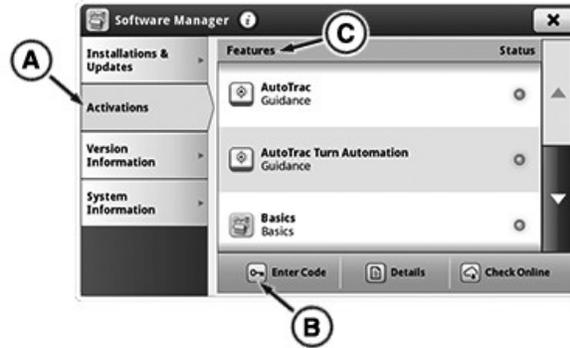
**NOTE:** To obtain tractor serial number, see *Product Identification Number in Identification Numbers section of this Operator's Manual.*

An activation code is required to allow TIA to function. Contact your John Deere dealer with tractor serial number and implement make, model, and serial number. Dealer obtains activation code through John Deere StellarSupport.



RXA0166970—UN—08MAR19

1. Select Menu.
2. Select System tab.
3. Select Software Manager icon.



RXA0166931—UN—08MAR19

4. Select Activations tab (A).
5. When Activations page displays, press Enter Code (B). Keyboard appears.

**NOTE:** Some tractor automation activation page keyboard characters are grayed out and are not used in activation codes. If provided activation code includes any characters that are grayed out on tractor automation activation page keyboard, request dealers reconfirm activation code.

6. Using keyboard, enter activation code, then select OK.
7. If activation code is entered correctly, confirmation code appears in the enter activation overlay and message is displayed. Code Accepted indicates that activation is complete.
8. If message other than Code Accepted appears, see Response Codes, Text Descriptions, and Corrective Actions table. If message not listed appears, check and reenter code. If problem persists, contact your John Deere dealer.

Up to 20 implement names can be viewed on Activations page at any given time. When a new entry shows up in Features list (C), that entry is labeled Unknown Implement.

KD34109,0000902-19-23JUN22

## Operate TIA

**IMPORTANT:** For TIA to function correctly, the tractor and implements must meet various requirements. See requirements information in this Operator's Manual section and the implement Operator's Manual sections.

1. Connect TIA equipment to tractor using ISO connection. See Right-Hand Front Corner Post in Accessories section of this Operator's Manual.
2. Select AutoTrac Resume (AUTO) button on CommandARM. For button location, see CommandARM Controls—Left Side in

CommandARM Controls section of this Operator's Manual.

3. Follow implement Operator's Manual instructions to operate implement.

KD34109,0000903-19-23JUN22

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## PTO Requirements [Ag]

Before transferring control to implement, prepare implement as indicated in implement Operator's Manual. Transfer control using AutoTrac resume button as described in implement Operator's Manual.

Following conditions must be met before transferring control to implement:

- Operator in seat.
- No PTO faults present.
- PTO remote control off.

*NOTE: Implement cannot engage PTO when tractor is stopped unless it is authorized to do so. However, implement can disengage PTO at any time including when tractor is stopped.*

While operating and depending on PTO system capabilities, implement has the ability to engage/disengage PTO or adjust PTO speed.

To disengage control, turn PTO switch off.

KD34109,000090F-19-08JUN22

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## SCV Requirements

Before transferring control to implement, prepare implement as indicated in implement Operator's Manual. Transfer control using AutoTrac resume button as described in implement Operator's Manual.

Following conditions must be met before transferring control to implement:

- Operator in seat.
- No SCV faults present.
- SCV control levers (if assigned) in neutral position.
- Unlock all assigned SCV controls.

*NOTE: Set maximum SCV flow limit which cannot be exceeded by implement.*

*NOTE: Implement cannot adjust SCV flow when tractor is stopped unless it is authorized to do so. However, implement can stop SCV flow at any time including when tractor is stopped.*

While operating, implement has ability to:

- Control SCVs during operations.

- Change SCV flow rate up to set limit.

To disengage control, perform any of the following:

- Actuate specific SCV lever.
- Lock all assigned SCV controls.
- Actuate remote control switch on fender.
- Remove inputs assigned to SCVs.

KD34109,0000905-19-23JUN22

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## PowerShift Transmission Requirements

*NOTE: These requirements also apply to the e23 transmission.*

Before transferring control to implement, prepare implement as indicated in implement Operator's Manual. Transfer control using AutoTrac resume button as presented in the implement Operator's Manual.

*NOTE: The implement cannot exceed ground speed set by the operator.*

Following conditions must be met before transferring control to implement:

- Operator in seat.
- No PowerShift transmission faults present.
- Shift lever in forward.

*NOTE: When transferring control to the implement, Efficiency Manager mode will engage.*

*Speed may always be reduced.*

*Set speed limit may be increased within 2 seconds after engaging travel speed auto mode. Current travel speed can be limited by other processes (e.g. iTEC). This limit might be observed; however, the limit will not be considered as an intervention by operator.*

To disengage control using the shift lever:

- During driving: Shift up or down manually.
- Increasing the speed will end the auto mode. The implement has all information to inform the operator that this intervention will end the travel speed auto mode. See implement Operator's Manual.

KD34109,0000908-19-23JUN22

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## AutoTrac Guidance Requirements

Before transferring control to implement, prepare implement as indicated in implement Operator's Manual. Transfer control using AutoTrac resume button as presented in implement Operator's Manual.

Following guidelines must be met before transferring control to implement.

- Operator in seat.
- Steering system functional.
- AutoTrac is off.
- Steering wheel stationary.
- Vehicle speed below maximum automated speed.
- Transmission not in PARK.

While operating, implement has ability to automatically steer tractor.

To disengage control:

- Turn steering wheel.
- Place tractor in PARK.

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KD34109,0000909-19-23JUN22

# Drivetrain

## Drivetrain Overview

Tractor drivetrain consists of:

- Transmission: e18 PowerShift
- Differential: Differential, differential lock, final drives, and axles
- Brakes: Rear or front and rear
- Mechanical, electronic, and hydraulic control systems

KD34109,000023F-19-12JUL22

## Differential Lock

Differential lock latches wheels/tracks on the same axle together to provide the most traction in slippery working conditions. When one wheel/track begins to slip, select one of two operating modes.

**IMPORTANT: Damage to differential could occur if differential lock is engaged after wheels/tracks begin to slip. Engage before slip occurs.**

*NOTE: On tractors with front and rear differential locks, front axle differential lock engages when rear differential lock engages.*

### Differential Lock Operating Modes:

**Manual Lock** — engages when differential lock button or floor switch (if equipped) is pressed. See CommandARM Controls—Left Side in CommandARM Controls section or Differential Lock Switch in Front Console section of this Operator's Manual. Indicators on the CommandARM button and corner post display are illuminated.

**AUTO Differential Lock** — engages when AUTO differential lock button is pressed. See CommandARM Controls—Left Side in CommandARM Controls section of this Operator's Manual. Indicators on the CommandARM button and corner post display are illuminated. In AUTO mode, differential lock automatically:

- Disengages when wheel/track speeds are above 23 km/h (14 mph), brake pedal is pressed, or steering angle is greater than selected value. For steering angle settings, see Transmission Advanced Settings in Transmission—General Information section of this Operator's Manual.
- Engages when wheel/track speed falls below 19 km/h (12 mph), steering angle is below selected value, and when the brake pedal is released. For steering angle settings, see Transmission Advanced Settings in Transmission—General Information section of this Operator's Manual.

**Alternate Braking** — braking mode engages when wheel/track speed is above 5 km/h (3.1 mph) and the

brake pedal is pressed. Both front and rear differential locks disengage when wheel/track speed is 5 km/h (3 mph)—45 km/h (28 mph) and steering angle is greater than the braking mode steering threshold. Rear differential lock disengages and front differential lock remains engaged if any of the following occur in braking mode:

- Wheel/track speed falls below 3 km/h (2 mph)
- Wheel/track speed exceeds 47 km/h (29 mph)
- Wheel/track speed is 5 km/h (3 mph)—45 km/h (28 mph) and steering angle is less than the braking mode steering threshold

Once the brake is released:

- If differential lock was in manual mode before pressing the brake pedal, manual mode is disengaged.
- If differential lock was in AUTO mode before pressing the brake pedal, AUTO mode resumes.

KD34109,00005E6-19-30MAY23

## Drivetrain Protection

**IMPORTANT: To extend drivetrain and track life, avoid excessive soil compaction, and reduce rolling resistance:**

- **Avoid adding excessive ballast.**
- **Never add ballast that results in operating with heavy loads and with continuous full-power below 7.1 km/h (4.4 mph).**
- **For 9RX Narrow [Ag], avoid operation with continuous full-power loads below 7.6 km/h (4.7 mph).**

Electronic engine controls provide protection from drivetrain overloading. Engine horsepower is automatically reduced to protect drivetrain components when:

- Air Filter Restriction Warning DTC is activated (CCU 000107.00). Engine performance is reduced. Service engine air filter immediately. See Engine Primary and Secondary Air Filters in Service—Change section of this Operator's Manual.
- Fuel filter(s) become plugged resulting in a loss of power due to a reduction in delivered fuel. Service engine fuel filter immediately. See Fuel Filters in Service—Change section of this Operator's Manual.

### Intelligent Power Management (IPM)

*NOTE: IPM is available as a factory- or dealer-installed option. See your John Deere dealer.*

The swashplate angle sensor determines the hydraulic

power being consumed by the implement to enable IPM.

Power increase is only provided when required by system.

Adjust transmission settings for IPM maximum efficiency. Suggested settings may increase shift occurrences, but allows engine to stay in the desired boosted power range.

1. Select transmission custom mode page. See e21 Transmission Settings—Custom in e21 PowerShift Transmission section of this Operator's Manual.
2. Select the Engine Speed Droop PTO ON module.
3. Adjust the droop percentage to 15%.
4. Select the Engine Speed Droop PTO OFF module.
5. Adjust the droop percentage to 15%.

Maximum additional engine horsepower PS (hp ISO) at 1900 rpm (rated speed) is 40 hp (29.8 kW). Not applicable to Scraper Special configurations.

KT81203,0000261-19-19APR23

# Brakes

## Trailer Brake System Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



Trailer Brake System

RXA0177626—UN—28APR20

3. Trailer Brake System

KD34109,00005EF-19-08DEC21

## Trailer Brake System Settings

The Trailer Brake System application is used to access and adjust trailer brake settings.



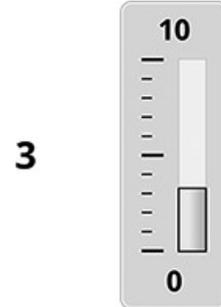
Trailer Brake System Example

RXA0177625—UN—28APR20

Items Accessible on the Trailer Brake System Main Page:

*NOTE: Some items only display if machine is equipped with the associated option. If the trailer brake adjustability settings do not display and assistance is needed to improve tractor-trailer compatibility, see your John Deere dealer.*

### Trailer Brake Gain Items:

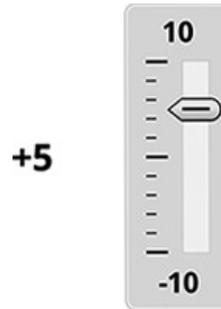


Gain Value and Status

RXA0177620—UN—28APR20

**Gain** — select to adjust the aggressiveness of the trailer brakes. See Trailer Brake System Settings—Brake Gain in this Operator's Manual section.

### Trailer Pre-Brake Items:



Pre-Brake Value and Status

RXA0177621—UN—28APR20

**Pre-Brake** — select to adjust the trailer brake initiation timing. See Trailer Brake System Settings—Pre-Brake Offset in this Operator's Manual section.

### Trailer Brake Test Controls and Settings Items:



Trailer Brake Test Controls

RXA0177627—UN—28APR20

**Trailer Brake Test Controls** — select to access the test to confirm that the park brake will hold both the tractor and the trailer. See Trailer Brake System Settings—Trailer Brake Test in this Operator's Manual section.



Advanced Settings

RXA0167071—UN—21MAR19

**Advanced Settings** — access further adjustments and less common settings. See Trailer Brake System Settings—Advanced in this Operator’s Manual section.

KD34109,00005F0-19-13MAY20

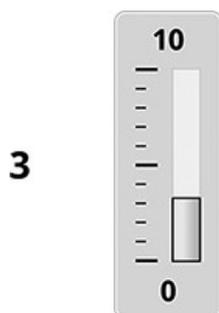
### Trailer Brake System Settings—Brake Gain

The Brake Gain adjustment allows the operator to adjust the braking aggressiveness to match the trailer requirements.

**Modify When:**

- The trailer is slow to stop.
- The trailer wheels lock up when the brakes are applied.

**Procedure to Modify:**



RXA0177620—UN—28APR20

Gain Value and Status

1. Select the Gain value.



RXA0177616—UN—28APR20

Increase/Decrease Value

2. Select (+) to increase or (-) to decrease the value. The value is shown in the display box.

- Maximum: 10
- Minimum: 0
- Increment: 1



Close

RXA0167129—UN—25MAR19

3. Select to close.

KD34109,00005F1-19-13MAY20

### Trailer Brake System Settings—Pre-Brake Offset

Pre-Brake Offset allows the operator to change the timing of the trailer brake initiation. The trailer brake initiation may need to be adjusted to prevent the trailer from pushing the tractor forward (example: when connecting the trailer to the tractor).

**Procedure to Modify:**



RXA0177621—UN—28APR20

Pre-Brake Value and Status

1. Select the Pre-Brake value.



RXA0177622—UN—28APR20

Increase/Decrease Value

2. Select (+) to increase or (-) to decrease the value. The value is shown in the display box.

- Maximum: 10
- Minimum: -10
- Increment: 1



RXA0167129—UN—25MAR19

Close

3. Select to close.

KD34109,00005F2-19-12APR22

## Trailer Brake System Settings—Trailer Brake Test

Use the Trailer Brake Test to confirm that the tractor park brake will hold both the tractor and the trailer. This condition is necessary when the tractor is parked and the trailer brakes are released. The test overrides the default park state and forces the trailer brakes to release.

*NOTE: Available on tractors equipped with dual-line hydraulic trailer brakes.*

### Test When:

- Verifying park brake performance.
- Attaching a different trailer.

The tractor must be in PARK and the trailer brakes must be engaged to perform the trailer brake test. If these conditions are not met, the Release Trailer Brakes key is grayed out. The statuses of these conditions are displayed on the page.

**Prerequisite** — one of the following statuses is displayed next to Machine must be in park:



RXA0177617—UN—28APR20

Check Mark

- The check mark indicates that the machine is in PARK.



RXA0177619—UN—28APR20

Fault

- The fault icon indicates that the machine is not in PARK.

**Brake Control** — one of the following statuses is displayed regarding the trailer brake:

- (---) is displayed when the trailer brake is not engaged.
- Brakes Engaged is displayed when the trailer brake is engaged.

- Brakes Released is displayed when the Release Trailer Brakes key is held.
- Fault Present and the fault icon are displayed when a fault is present in the brake control.

### Procedure to Modify:

1. Place the tractor in PARK.



RXA0177627—UN—28APR20

Trailer Brake Test Controls

2. Select Trailer Brake Test Controls.



RXA0177623—UN—28APR20

Release Trailer Brakes

3. Select and hold Release Trailer Brakes long enough to ensure that the tractor and trailer do not move.



RXA0177618—UN—28APR20

Done

4. Press Done to close.

KD34109,00005F3-19-12MAY20

## Trailer Brake System Settings—Advanced

Advanced settings allow you to access further adjustments and less common settings.

### Items Accessible on Advanced Settings Page:



RXA0177624—UN—28APR20

Reset

**Reset to Default** — select Reset to return the trailer brake settings to factory default values. When selected, a page displays to verify the selection. Select OK to continue or Cancel to return to the previous page without resetting the values.

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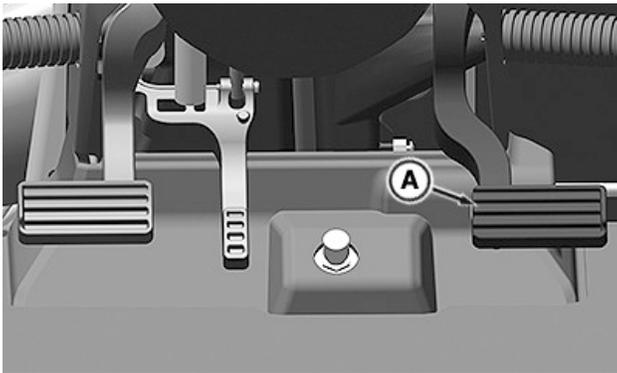
## Brake Use

**CAUTION:** Avoid possible personal injury. Reduce speed if towed load weighs more than tractor or transporting loads under adverse conditions. Avoid hard braking applications, see implement manual and Transport Section.

**IMPORTANT: Avoid unnecessary wear on brakes. DO NOT rest foot on brake pedal during tractor operation.**

*NOTE: Brake life can be extended when stopping large loads by using a combination of engine motoring and service brake torque to slow the vehicle. This can be achieved by downshifting and then using service brakes to further slow vehicle and bring engine speed to idle.*

Test brakes with engine stopped to be sure manual brake system is functioning, see Service—Check section of this Operator's Manual.



RXA0188911—UN—17APR23

Press brake pedal (A) to stop tractor while disengaging clutch.

Maintain at least 1800 engine rpm during aggressive braking events to ensure adequate cooling oil flow is directed to vehicle brakes. Do not over speed engine as it may cause damage to engine or transmission components.

TO84419,00000C9-19-14APR23

- Select same gear for both downhill and uphill driving.
- Check hydraulic trailer brake regularly for proper operation.



RXA0180505—UN—23NOV20

Remove cap from trailer brake coupler (A). Ensure that the hose coupler is clean before connecting to the trailer brake coupler.

To operate the hydraulic trailer brake, depress the brake pedal. The braking effect depends on pressure applied to the brake pedals.

TO84419,00000CA-19-23NOV20

## Hydraulic Trailer Brakes (If Equipped)

**CAUTION:** Avoid possible injury from losing control of tractor when operating on downhill slopes. Tractor wheels can lock and skid on steep or slippery downhill slopes.

**IMPORTANT:** Operating tractor with three scrapers requires tractor and all scraper pans be equipped with hydraulic trailer brakes. See in the Transport section of this Operator's Manual:

- Towed Loads.
- Transport with Ballast.

**IMPORTANT:** Recommendations to reduce brake wear:

- Make sure that the pressure hose is connected.

# Transmission—General Information

## Transmission Settings—Access Advanced

### Access Through Display:



RXA0167075—UN—20MAR19

Menu

1. Menu



RXA0167076—UN—20MAR19

Machine Settings

2. Machine Settings tab



RXA0167077—UN—20MAR19

Transmission

3. Transmission



RXA0167071—UN—21MAR19

Advanced Settings

4. Advanced Settings

### Access Through Navigation Bar:



RXA0167078—UN—20MAR19

Transmission

1. Press transmission button on navigation bar below display.



RXA0167071—UN—21MAR19

Advanced Settings

2. Select advanced settings.

KD34109,00004B5-19-19MAY20

## Transmission Settings—Advanced

Advanced Settings allows you to access further adjustments and less common settings.

*NOTE: Some items only display if machine is equipped with the associated option.*

### Items Accessible on Advanced Settings Page:



RXA0167133—UN—21MAR19

Selection Box

**True Ground Speed Input** — allows the choice of Radar or GPS as the ground speed source. Touch the selection box to display the selection list. If the speed source is changed, perform radar calibration, then slip calibration. For information on calibrations, see Radar Calibrations and Slip Calibrations in CommandCenter section of this Operator's Manual.



RXA0167134—UN—22MAR19

OFF/LOW/MED/HIGH

*NOTE: IVT and EVT without CommandPRO joystick and e23 only.*

**AutoClutch Sensitivity** — select OFF to disable or select the level of sensitivity for AutoClutch. If set to OFF and the key is cycled, the setting reverts to the last LOW, MED, or HIGH setting.

*NOTE: The OFF selection is only available when the brake pedals are not applied.*

Sensitivity levels:

- LOW - recommended for driving in extremely hilly terrain with implements (drawn or attached), particularly if driving conditions are slippery.
- MED - recommended for driving in moderately hilly terrain with implements (drawn or attached).
- HIGH - recommended for driving without an implement or with an implement in flat terrain.



RXA0167133—UN—21MAR19

Selection Box

**Start Gears** — choose which gear the Transmission starts in. Touch the selection box next to the desired setting to be adjusted. A gear list displays. Select the desired gear from the list.

Options displayed depend on the Transmission:



RXA0172259—UN—18NOV19  
Forward Start Gear

- Some transmissions have a setting for a forward start gear.



RXA0172260—UN—18NOV19  
Reverse Start Gear

- Some transmissions have a setting for a reverse start gear.



RXA0172261—UN—18NOV19  
Multiple Start Gears

- Some transmissions have settings for multiple forward start gears.



RXA0167136—UN—22MAR19  
Selection Box

**Reverse/Forward Ratio** — select the ratio for reverse and forward Set Speeds. Reverse Set Speed will automatically set to the forward Set Speed times the selected setting. For example, if Fx0.3 is selected, reverse Set Speed will be 30% of what forward Set Speed is set to. If set to Independent, reverse and forward Set Speeds function independent of each other and are set separately. Regardless of the ratio, maximum reverse speed is 20 km/h (12 mph) for IVT for 7 and 8 Series Tractors.



RXA0167187—UN—22MAR19  
ON/OFF

**Backup Alarm (If Equipped)** — select ON to enable or OFF to disable the alarm that sounds when the tractor is in reverse. See Backup Alarm in this Operator's Manual section.



RXA0167137—UN—22MAR19  
AUTO MFWD Toggle

**NOTE:** Machines configured with mechanical front-wheel drive only.

**AUTO MFWD** — MFWD disengages to enable a tighter turning radius or to reduce ground disturbance in the area of the turn. Select the desired steering angle to disengage MFWD or disable by selecting OFF. Disabling the steering angle leaves Auto MFWD with the speed dependency only. See Mechanical Front-Wheel Drive (MFWD) in Drivetrain section of this Operator's Manual.



RXA0167138—UN—22MAR19  
AUTO Diff Lock Example

**NOTE:** Machines configured with differential lock only. Options displayed depend on the machine.

**AUTO Diff Lock** — higher disengage steering angles require the operator to turn the steering wheel further before differential lock disengages. Use in high slip field conditions that require large steering corrections to maintain the desired path. Differential lock remains engaged while making steering corrections across the field but automatically disengages on headland turns. Select the desired steering angle to disengage differential lock.

- Moderate disengage steering angles are useful in loader situations. Differential lock remains engaged when entering a pile, but quickly disengages while turning.
- Lower disengage steering angles allow differential lock to disengage sooner (less movement of the steering wheel), which is useful in high-traction conditions (example: paved surface). Differential lock remains engaged during straight-line work, while minimizing tractor jerk when disengaged or re-engaged during turns.

See Differential Lock in Drivetrain section of this Operator's Manual.



RXA0167139—UN—21MAR19  
7.0 mph  
Forward Speed Limit



RXA0167140—UN—21MAR19  
3.0 mph  
Reverse Speed Limit

**NOTE:** Machines equipped with CommandPRO joystick only.

**Speed Limits** — adjust the maximum allowed speed in both forward and reverse directions. See CommandPRO Transmission Settings—Speed Limits in

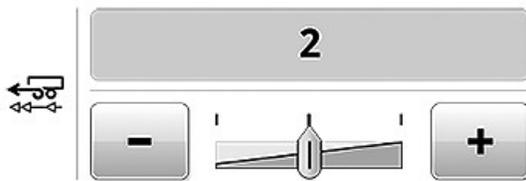
IVT-AutoPowr Transmission with CommandPRO Joystick section of this Operator's Manual.

 This tractor is equipped with Large Square Baler Ride Control.

RXA0176726—UN—07APR20

Ride Control

**Ride Control** — displays to indicate that the machine is equipped with Large Square Baler (LSB) Ride Control. For more information on LSB Ride Control, see Large Square Baler (LSB) Ride Control in Drivetrain section of this Operator's Manual.



RXA0178631—UN—10JUL20

Implement Traction Assist Aggressiveness

**Implement Traction Assist Aggressiveness** — select (+) to increase or (-) to decrease the aggressiveness. Higher aggressiveness targets less wheel slip.

*NOTE: EVT only.*

KD34109,00004AB-19-04MAY23

## Warm-Up Transmission-Hydraulic System

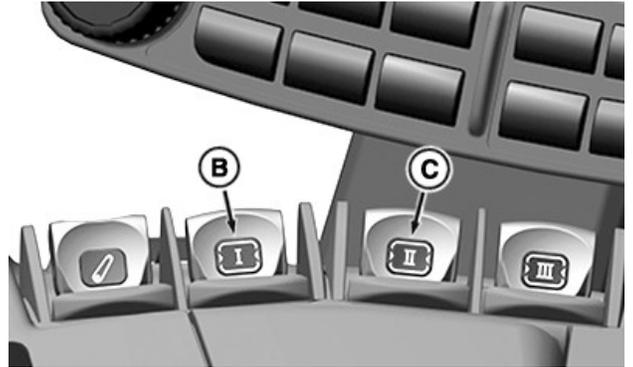
**IMPORTANT: Avoid machine damage. Do not operate tractor under load until transmission-hydraulic system has warmed up. Tractor-hydraulic warm-up procedure is recommended when temperature is at or below -5°C (23°F).**



RXA0188522—UN—06FEB23

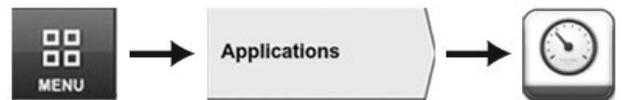
1. Install jumper hose (A) into SCV I couplers.
2. Place transmission lever in PARK position.
3. Turn key switch to start position.
4. Press SCV shortcut button on navigation bar.
5. Select SCV I module.

6. Set detent Time to C (continuous). See SCV Settings—Time in Selective Control Valves section of this Operator's Manual.
7. Set detent Flow to 8.00 or above. See SCV Settings—Flow in Selective Control Valves section of this Operator's Manual.
8. Select SCV II module and repeat steps 6 and 7.



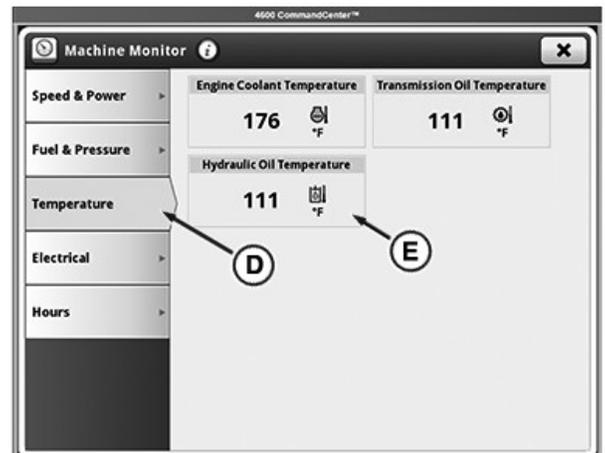
RXA0166860—UN—06MAR19

9. Pull SCV I (B) and SCV II (C) levers to extend detent. See SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual.
10. Operate engine at 1400 rpm.
11. Monitor Hydraulic Oil Temperature until it reaches 38°C (100°F).



RXA0126813—UN—12JUN12

- a. Select Menu.
- b. Select Applications tab.
- c. Select Machine Monitor icon.



RXA0181012—UN—22JAN21

- d. Select Temperature tab (D).

- e. Select Hydraulic Oil Temperature reading (E).
12. Return SCV levers I and II to neutral position.
  13. Disconnect jumper hose and return to normal operation.

KT81203,0000252-19-08FEB23

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## Backup Alarm

The backup alarm is located on rear of machine. It is standard on scraper machines and is available as a factory or field installed option on agricultural machines. Backup alarm emits an audible sound to alert anyone nearby when key switch is on and machine is in reverse gear. For information on how to enable/disable alarm, see Transmission Advanced Settings in this Operator's Manual section.

## Adjust Volume



RXA0171844—UN—31OCT19

Volume can be adjusted using switch (A) on back of alarm.

Volume settings:

- High (left-hand position)
- Low (middle position)
- Medium (right-hand position)

KD34109,000056F-19-25MAR20

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# e18 PowerShift Transmission

## Operate Transmission—e18

**CAUTION:** Avoid possible injury from losing control of tractor while operating on a downhill slope. Observe following precautions:

- Avoid depressing the clutch pedal or shifting to NEUTRAL at high speeds while the tractor is rolling downhill.
- In overspeed condition, the clutch may not re-engage when the pedal is released; use the brakes to slow down the tractor.
- Adjust Set Speed to a safe downhill operating speed.
- Do not make major speed reductions with right-hand reverser.

**IMPORTANT:** Prevent transmission or clutch damage:

- Avoid depressing the clutch pedal or shifting to NEUTRAL at high speeds while the tractor is rolling downhill.
- In overspeed condition, a diagnostic trouble code (DTC) appears and the clutch may not re-engage when the pedal is released; use the brakes to slow down the tractor. For more information on DTCs, see Troubleshooting—Diagnostic Trouble Codes (DTC) section of this Operator's Manual.
- Never attempt to start tractor by towing or pushing.
- Shift lever can be moved to PARK position at any time. However, the park brake will not engage until the ground speed is below 1.75 km/h (1.0 mph).
- Avoid excessive ballast.
- Avoid continuous operation under full throttle and full load conditions below 1800 rpm.
- Fully depress the clutch pedal to completely disengage the clutch.

*NOTE: When machine load is causing below idle speed:*

- Transmission can default to NEUTRAL to protect the power train.
- Park brake engages when the wheel speed drops below 1.75 km/h (1.0 mph).
- Diagnostic trouble code displays.

*To re-engage transmission, move lever to PARK, reduce load, and shift into desired operating gear.*

*NOTE: Operator presence sensor prevents initiation of movement with operator out of seat. See Operator Presence Sensor in Seats section of this Operator's Manual.*



RXA0171366—UN—10OCT19  
Speed Adjustment Wheel

**Speed Adjustment Wheel** — turn wheel clockwise to increase or counterclockwise to decrease speed.



RXA0171324—UN—10OCT19  
Right-Hand Reverser

*NOTE: The engine will start with the shift lever in any position. However, the tractor will not move until the lever is moved into and out of NEUTRAL or PARK.*

**Right-Hand Reverser** — lever on CommandARM used to shift transmission. For information on shifting, see Shift Transmission—e18 in this Operator's Manual section.

With right-hand reverser:

- Transmission can be shifted into forward or reverse without use of the clutch pedal.
- Clutch pedal is used when selecting forward or reverse for more precise movement (such as connecting implements).
- Gear information displays on the corner post display. See Corner Post Display in Corner Post Display section of this Operator's Manual.
- Bump lever (move and release) to increase (+) or decrease (-) forward and reverse gears.

KD34109,000055F-19-15JUL22

## Shift Transmission—e18

**IMPORTANT:** Avoid damage to park brake. Repeated engagement of park brake while machine is moving may damage the park brake. Shift lever can be moved to PARK position at any time. However, park brake will not engage until ground speed is below 1.75 km/h (1.0 mph).

**Command Gears:**

*NOTE: Optimum engine speed is 1800—2200 rpm in full load conditions. Using higher gear and lower engine speed for light load operation saves fuel and reduces wear.*

Each time transmission is placed in forward or reverse, transmission starts in commanded gear when clutch pedal is released. Commanded gear displays on corner post display. Commanded gear temporarily changes to the last gear used when shuttling between forward and reverse or shifting from gear to NEUTRAL.

Startup commanded gear defaults are 7F and 2R. To change startup gears, see Transmission Advanced Settings in Transmission—General Information section of this Operator’s Manual.

**Manually Preselect Gears:**

- Forward — depress clutch pedal, put reverser lever in forward position, and bump gear up or down until desired command gear (between F1 and F13) displays.
- Reverse — depress clutch pedal, put reverser lever in reverse position, and bump gear up or down until desired command gear (between R1 and R5) displays.

**Cold Weather Starting:**

When temperature is -10°C (14°F) or lower, it can take up to 1 minute to release the park brake and shift transmission lever in gear (with operator in the seat). Several shifts between PARK and NEUTRAL can be required to release park brake in extremely cold conditions.

When temperature is above -10°C (14°F), it can take up to 3 seconds to release park brake with operator in seat.

When reverser lever is moved to NEUTRAL, corner post display shows N for 3 seconds. If park brake does not release, N changes back to P. Move reverser lever back to PARK, then back to NEUTRAL until N displays for more than 3 seconds.

Transmission will not shift above F13 until normal operating temperature has been reached. Delayed shift, slow hydraulic operation, hard steering, and limited engine rpm can also be noticeable until operating temperature is obtained.

**Transport Shift:**

When tractor is in light load condition, transmission can shift faster by rapidly bumping lever until desired transport speed is reached. To reach transport speed quickly from a stop, depress clutch and bump lever to desired gear. When clutch pedal is released, transmission shifts directly to selected gear.

**Shuttle Shift (Direction Change):**

Move reverser lever between forward and reverse positions to modulate directly to opposite direction of travel without clutching or braking. Shuttle shift occurs between last commanded forward and reverse gears.

**Ground Speed Matching:**

**CAUTION: Avoid possible accident and injury from loss of vehicle control. Never allow machine to coast downhill.**

*NOTE: Custom and Full AUTO modes only.*

If clutch pedal is released while machine is traveling above default startup gear speed, transmission automatically shifts gears to match speed. However, if clutch pedal is released while machine is traveling below default startup gear speed, transmission will stay at startup gear, even if machine stops.

**Right-Hand Reverser Positions:**



PARK Position

RXA0171316—UN—10OCT19

**PARK** — park brake is applied when lever is placed in position next to P.



NEUTRAL Position

RXA0171315—UN—10OCT19

**NEUTRAL** — park brake releases when lever is placed anywhere in right-hand gate.



RXA0171317—UN—10OCT19

Reverse Position

**Reverse** — machine moves in reverse when placed in gate labeled with an R.



RXA0171314—UN—10OCT19

Forward Position

**Forward** — machine moves forward when placed in gate labeled with an F.

KD34109.0000560-19-20JUN22

Engine throttle should be fully forward for maximum rpm:

- To reach Set Speeds.
- In high load applications.

Shift decisions are based on load conditions, throttle command, and operator settings. However, transmission may shift gears if hand throttle or speed control pedal are adjusted.

*NOTE: Efficiency Manager Set Speeds can be programmed in iTEC application. See Intelligent Total Equipment Control (iTEC) section of this Operator's Manual.*



RXA0171325—UN—10OCT19

Set Speed 1 Button

**Set Speed 1 Button** — select to activate Set Speed one. Select again to disengage.



RXA0171326—UN—10OCT19

Set Speed 2 Button

**Set Speed 2 Button** — select to activate Set Speed two. Select again to disengage.

## e18 Set Speeds and Efficiency Manager

Efficiency Manager:

- Controls transmission gearshift and engine speed to maintain desired ground speed (Set Speed).
- Will not shift gears if clutch pedal is partially depressed.
- Selects startup gear and may reduce engine speed if clutch pedal is fully depressed and machine is stationary.
- Selects startup gear speed if clutch pedal is fully depressed and machine is moving below startup gear speed.
- Selects a gear and engine speed to match ground speed if clutch pedal is fully depressed and machine is moving above startup gear speed.
- Selects startup gear when shifting from NEUTRAL or PARK to gear.
- Is always running when in Full AUTO and Custom modes.
- Runs in Manual mode when Set Speed buttons are active.



RXA0171366—UN—10OCT19

Speed Adjustment Wheel

**Speed Adjustment Wheel** — while Set Speed is active, turn wheel clockwise to increase or counterclockwise to decrease setting.

In Full AUTO and Custom Modes:

- It is recommended that the hand throttle is placed in full forward position at all times.
- On corner post display, Set Speed value and automatic shifting indicator always display. However, Set Speed number displays only when Set Speed is active. See Corner Post Display in Corner Post Display section of this Operator's Manual.
- Bumping right-hand reverser increases Set Speed value. However, Set Speed disengages, and adjusted speed is not stored.

In Manual Mode:

- On corner post display, automatic shifting indicator and Set Speed information display only when Set Speeds are active. See Corner Post Display in Corner Post Display section of this Operator's Manual.
- Bumping right-hand reverser or drive lever disengages Set Speed.

KD34109.0000615-19-23JUN22

## e18 Transmission Settings—Access

Access Application through Display:

1.



Menu

RXA0167075—UN—20MAR19

Menu

2.



Machine Settings

RXA0167076—UN—20MAR19

Machine Settings tab

3.



Transmission

RXA0167077—UN—20MAR19

Transmission

Access Application through Navigation Bar:



Transmission

RXA0167078—UN—20MAR19

Press transmission button on navigation bar below display.

KD34109.0000562-19-29JUN22

## e18 Transmission Settings

Transmission application is used to display transmission information and adjust settings.

*NOTE: Some items only display if machine is equipped with the associated option.*



RXA0171369—UN—17OCT19

Transmission

Items Accessible on e18 Transmission Main Page:



Transmission Mode

RXA0171377—UN—14OCT19

**Mode** — select desired transmission mode. See e18 Transmission Settings—Mode in this Operator's Manual section.



Custom Settings

RXA0171389—UN—11OCT19

**Custom Settings** — adjust engine settings for PTO, hitch, and SCV. See e18 Transmission Settings—Custom in this Operator's Manual section.

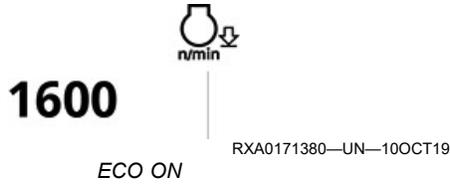


ECO

RXA0171378—UN—10OCT19

*NOTE: Only available in Custom mode.*

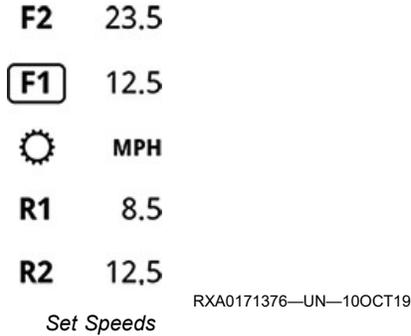
**Performance** — select ECO to enable/disable reduced fuel consumption for light loads. Indicator is illuminated orange when enabled. For ECO button information, see CommandARM Controls—Left Side in CommandARM Controls section of this Operator's Manual.



**ECO ON** — adjust Minimum Engine Speed setting when ECO is enabled. See e18 Transmission Settings—ECO in this Operator’s Manual section.



**ECO OFF** — adjust Minimum Engine Speed setting when ECO is disabled. See e18 Transmission Settings—ECO in this Operator’s Manual section.



**Set Speeds** — displays current forward and reverse Set Speeds. A box displays around active Set Speed. See e18 Set Speeds and Efficiency Manager in this Operator’s Manual section.



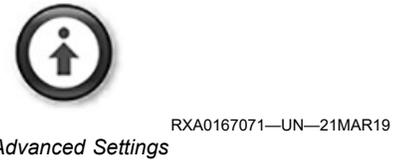
**Forward Max Speed** — adjust setting for maximum speed in forward gear. See e18 Transmission Settings—Max Speeds in this Operator’s Manual section.



**Reverse Max Speed** — adjust setting for maximum speed in reverse gear. See e18 Transmission Settings—Max Speeds in this Operator’s Manual section.



**Forward Start Gear** — toggle between selected forward start gears 1 or 2. Gears are selected in Advanced Settings.

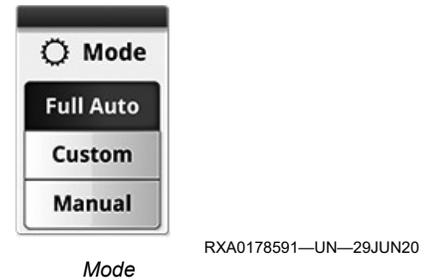


**Advanced Settings** — access further adjustments and less common settings. See Transmission Advanced Settings in Transmission—General Information section of this Operator’s Manual.

**Run Page Modules**

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



*NOTE: Different modules may be available for your application.*

**Mode** — quick access to adjust the Transmission Mode.

**Shortcut Keys**

Add shortcut keys for this application to the shortcut bar using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



*NOTE: Different shortcut keys may be available for your application.*

**Backup Alarm** — quick access to enable/disable the Backup Alarm.

KD34109.0000616-19-28FEB23

### e18 Transmission Settings—Mode



Full AUTO Mode

RXA0171357—UN—10OCT19

**Full AUTO** — adjusts Minimum Engine Speed automatically to maximize fuel economy under light loads. Load Anticipation responds to operation of rear hitch, SCVs, and PTOs. Engine speed Droop is maintained at maximum tractor power.



Custom Mode

RXA0171356—UN—10OCT19

**Custom** — customize settings for engine speed Droop, Minimum Engine Speed, and Load Anticipation reaction. See e18 Transmission Settings—Custom in this Operator's Manual section.



Manual Mode

RXA0171358—UN—10OCT19

**Manual** — all fuel economy and load control functions are manual.

KD34109.0000564-19-20JUN22

### e18 Transmission Settings—Custom

Custom Settings are only available when transmission mode is set to Custom. See e18 Transmission Settings—Mode in this Operator's Manual section. Settings allow for increased efficiency depending on current operation.

*NOTE: Some items only display if machine is equipped with the associated option.*

#### Procedure to modify:



RXA0167122—UN—25MAR19  
PTO On



RXA0167123—UN—25MAR19  
PTO Off

**Droop** — percentage of maximum engine rpm change

before transmission shifts down. See e18 Transmission Settings—Droop in this Operator's Manual section.



PTO ON/OFF

RXA0167125—UN—21MAR19

**Load Anticipation (PTO)** — when enabled and PTO is in use, engine speed increases to obtain the desired PTO speed. Select ON to enable or OFF to disable.



Hitch ON/OFF

RXA0167126—UN—21MAR19

**Load Anticipation (Hitch)** — when enabled and hitch is lowered, engine speed increases as needed to reduce ground speed fluctuations. Select ON to enable or OFF to disable.



SCV ON/OFF

RXA0167127—UN—21MAR19

**Load Anticipation (SCV)** — when enabled, engages if flow rate is 25% or greater and/or SCV is set to continuous time detent. Engine speed increases as needed to reduce ground speed fluctuations or to provide desired hydraulic flow. Select ON to enable or OFF to disable.



Close

RXA0167129—UN—25MAR19

Select to close.

KD34109.0000565-19-23JUN22

### e18 Transmission Settings—Droop

Adjust percentage of engine rpm drop before transmission downshifts. Lower percentage causes transmission downshifts earlier and to shift more. Higher percentage causes transmission downshifts later and to shift less.

*NOTE: PTO On adjustments do not affect transmission operation for machines without PTO.*

**PTO On** — use when operating PTO driven equipment to maintain a consistent rpm. Selection results in reduced rpm change before a transmission downshift.

**PTO Off** — use for implements that do not require a

consistent rpm range, such as pulling ground engaging equipment.

**Procedure to Modify:**

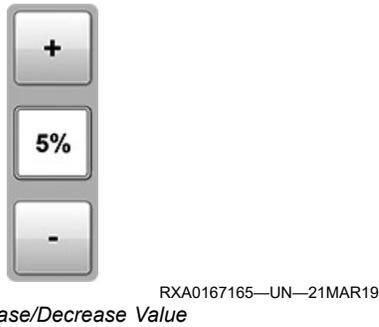
1. Select desired setting icon:



a. PTO On



b. PTO Off



2. Select (+) to increase or (-) to decrease value.



3. Select to close.

KD34109.0000566-19-20JUN22

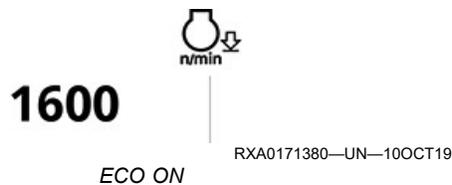
**e18 Transmission Settings—ECO**

**ECO ON** — adjust Minimum Engine Speed setting when ECO is enabled.

**ECO OFF** — adjust Minimum Engine Speed setting when ECO is disabled.

**Procedure to Modify:**

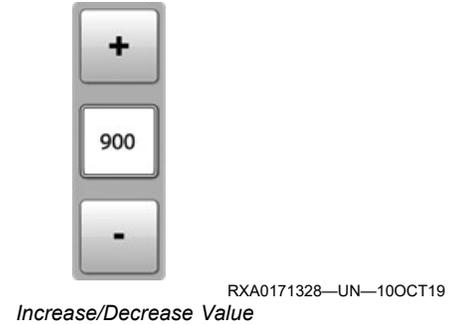
1. Select desired setting:



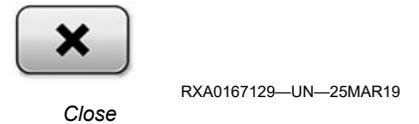
a. ECO ON



b. ECO OFF



2. Select (+) to increase or (-) to decrease value.



3. Select to close.

KD34109.0000567-19-20JUN22

**e18 Transmission Settings—Max Speeds**

Adjust settings for maximum speed in forward and reverse gears. Set Speed setting cannot exceed this setting and will automatically adjust accordingly.

**Procedure to Modify:**

1. Select desired setting icon:



a. Forward Max Speed



b. Reverse Max Speed



RXA0171354—UN—10OCT19  
*Increase/Decrease Value*

2. Select (+) to increase or (-) to decrease value.



RXA0167129—UN—25MAR19  
*Close*

3. Select to close.

KD34109.0000568-19-20JUN22

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# PTO—General Information [Ag]

## PTO Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings



PTO

RXA0167685—UN—30APR19

3. PTO

Access Application through Navigation Bar:



PTO

RXA0167686—UN—30APR19

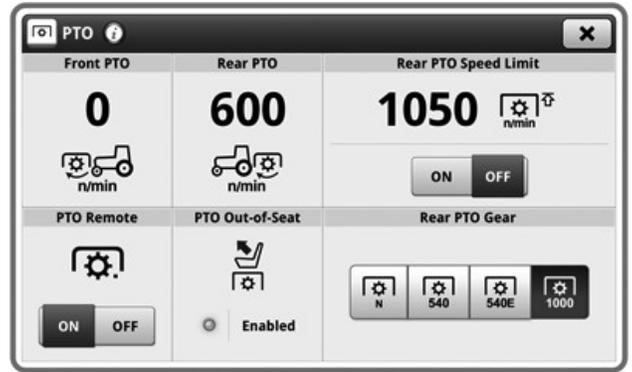
Press PTO button on navigation bar below display.

KD34109,00004BE-19-08DEC21

## PTO Settings

The PTO application is used to access and adjust PTO settings.

*NOTE: Some items only display if machine is equipped with the associated option.*



RXA0187232—UN—27JUN22

PTO Example

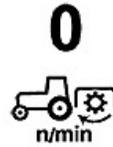
Items Accessible on PTO Main Page:



Front PTO

RXA0167687—UN—30APR19

**Front PTO (If Equipped)** — view current speed of front PTO. Operate PTO using front PTO lever and correct engine speed. See Operate PTOs in this Operator's Manual section.



Rear PTO

RXA0167688—UN—30APR19

**Rear PTO** — view current speed of rear PTO. Operate PTO using rear PTO lever and correct engine speed. See Operate PTOs in this Operator's Manual section.



Enabled

RXA0187302—UN—28JUN22

PTO Out-of-Seat - Enabled

**PTO Out-of-Seat** — indicates when the operator can be out of the seat and maintain PTO engagement. See PTO Settings—PTO Out-of-Seat in this Operator's Manual section.



**PTO Remote** — select ON to enable or OFF to disable external PTO switches (if equipped). See External PTO Switches (If Equipped) in this Operator's Manual section.

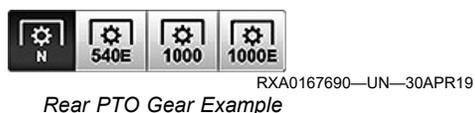


**Rear PTO Speed Limit** — adjust speed of rear PTO at maximum throttle. See PTO Settings—Rear PTO Speed Limit in this Operator's Manual section.

*NOTE: 7R Tractors with IVT: If the PTO is in use and PTO Speed Limit is ON, the tractor decelerates slower during shuttle shift to maintain the PTO speed. To avoid slower deceleration, set PTO Speed Limit to OFF.*



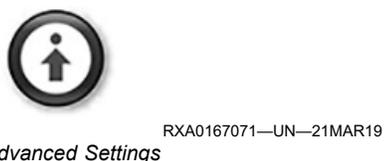
**Rear PTO Speed Limit Toggle** — select ON to enable or OFF to disable Rear PTO Speed Limit setting.



**IMPORTANT: Incorrect PTO speed could result in severe damage to implement. Before engaging PTO, make sure that selected PTO gear is correct for attached implement.**

*NOTE: Gears displayed vary by machine.*

**Rear PTO Gear** — select rear PTO gear for current operation.



**Advanced Settings** — access further adjustments and

less common settings. See PTO Settings—Advanced in this Operator's Manual section.

### Run Page Modules

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



*NOTE: Different modules may be available for your application.*

**PTO Remote** — quick access to enable/disable external PTO switches.

### Shortcut Keys

Add shortcut keys for this application to the shortcut bar using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



*NOTE: Different shortcut keys may be available for your application.*

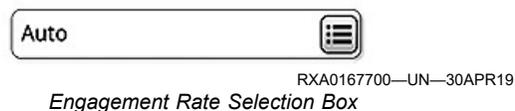
**PTO Gear** — quick access to enable/disable PTO gear.

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### PTO Settings—Advanced

Advanced settings allows you to access further adjustments and less common settings.

#### Items Accessible on Advanced Settings Page:



**PTO Engagement Rate** — select Rear or Front (if equipped) PTO Engagement Rate selection box to adjust rate at which PTO engages. See PTO Settings—Engagement Rate in this Operator's Manual section.

KD34109,00004C1-19-27AUG19

### PTO Settings—Engagement Rate

PTO Engagement Rate page allows you to adjust the rate at which the PTO engages.

**Procedure to Modify:**



RXA0167693—UN—30APR19

Engagement Rate List

Select best rate for current operation.

- Low Rate is used when gradual PTO start-up is required or if AUTO engagement is too aggressive or inconsistent.
- High Rate is used for applications where PTO clutch engagement must be aggressive.

**IMPORTANT: Avoid power train damage. If operator is experiencing problems with PTO clutch engagement in AUTO setting, change setting to High Rate.**

- AUTO is used for most implements and is factory setting in CommandCenter. This setting provides software logic to determine engagement rate for PTO clutch, based on PTO speed sensor feedback. If PTO does not turn fast enough during initial PTO clutch engagement, engagement rate is automatically increased to avoid clutch slip and PTO shutdown.



RXA0167694—UN—30APR19

OK

Select OK to exit and save changes.



RXA0167695—UN—30APR19

Cancel

Select Cancel to exit without saving changes.

KD34109,00004C0-19-20JUN22

### PTO Settings—Rear PTO Speed Limit

Rear PTO Speed Limit allows you to adjust speed of rear PTO at maximum throttle. When enabled, engine speed is also limited in relation to PTO speed. If max engine speed is also enabled, lower limit applies.

*NOTE: Only available on machines equipped with an electronic shift PTO.*

**Procedure to Modify:**



RXA0167699—UN—30APR19

Adjust Rear PTO Speed Limit

Select (+) to increase or (-) to decrease setting. Value is shown in display box.



RXA0167687—UN—30APR19

Front PTO Speed

View current front PTO speed (if equipped).



RXA0167688—UN—30APR19

Rear PTO Speed

View current rear PTO speed.



RXA0167129—UN—25MAR19

Close

Select to close.

KD34109,00004C2-19-10JUN22

### PTO Settings—PTO Out-of-Seat

PTO Out-of-Seat allows PTO engagement while out of the seat. When the operator leaves the seat, a page displays to enable out-of-seat operation (an audible warning sounds and a service alert indicator on the corner post display flashes). The page also displays when the PTO is engaged for the first time after starting the engine (with or without leaving the seat).

If the page is ignored, the PTO will automatically

disengage after 7 seconds. A page does not display if PTO Out-of-Seat is already enabled. The operator can also select PTO Remote ON/OFF to enable PTO Out-of-Seat on the PTO main page.

**Procedure to Modify:**



RXA0187235—UN—15JUN22  
Enable PTO Out-of-Seat

Select Enable PTO Out-of-Seat to maintain PTO engagement while out of the seat.



RXA0167129—UN—25MAR19  
Close

Select close to allow the PTO to disengage when the operator is out of the seat.

**Status Indicators:**



RXA0177921—UN—14MAY20  
Status Indicator

- **Green Indicator** — the indicator is illuminated green when PTO Out-of-Seat is enabled.
- **Gray Indicator** — the indicator is not illuminated and appears gray when PTO Out-of-Seat is OFF.

**Enabled**

RXA0187303—UN—27JUN22  
Enabled Indicator

**Enabled Indicator** — the indicator displays when PTO Out-of-Seat is enabled.

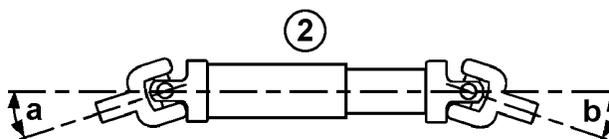
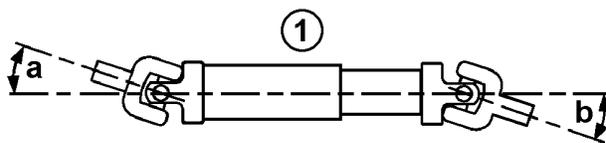
**OFF**

RXA0187301—UN—27JUN22  
OFF Indicator

**OFF Indicator** — the indicator displays when PTO Out-of-Seat is OFF.

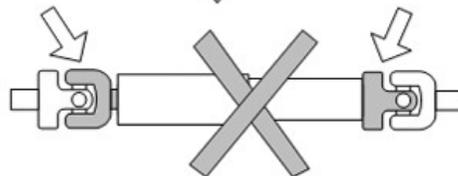
KD34109,00004C3-19-18APR23

**Operating Instructions (EU 1322/2014)**



LX1049749

LX1049749—UN—21MAY10  
Articulation on drive shaft



LX1049900

LX1049900—UN—22FEB11  
Align forks correctly

- 1—Z-shaped layout
- 2—W-shaped layout

Angles (a) and (b) at universal joints should be equal at both ends of drive shaft.

In applications where this does not occur (e.g. sharp turns with PTO engaged), it is recommended to use a continuous-velocity drive shaft.

**NOTE:** Two schematic drawings do not show any guards on drive shaft. A guard is mandatory when using drive shafts.

**IMPORTANT:** Only operating conditions described in Operator's Manuals of various implements are permitted. This applies to maximum permissible angle of articulation, to use of freewheel clutches and overload clutches, and to prescribed amount of overlap when shaped pipes are pushed together.

**IMPORTANT:** Before using a PTO-driven implement, take action to ensure that drive shaft is lubricated regularly. Comply with instructions in Operator's Manual provided by manufacturer.

**IMPORTANT:** On multi-component, telescopic drive shafts, yokes at each end must be aligned as shown. Yokes at each end must NOT be at 90° to one another (see arrows in illustration on right-hand side).

GH15097.00007F0-19-08JUN22

## Operate PTOs

PTOs are engaged using CommandARM PTO control levers. See CommandARM PTO Control Lever in CommandARM Controls section of this Operator's Manual. Once engaged for use with the machine in motion, use the correct engine speed listed in Select Correct Engine Speed in this Operator's Manual section.

**CAUTION:** Avoid personal injury. Stop engine and PTO driveline before adjustment or connections are made, or before cleaning PTO-driven equipment. Always disengage PTO when not in use.

**IMPORTANT:** Avoid PTO clutch damage. If operating PTO with excessive load, PTO automatically disengages. Wait 15 seconds before attempting to re-engage. If a problem occurs during re-engagement, try decreasing PTO speed.

If PTO disengages during start-up in cold-weather operation, wait 5 minutes before re-engaging.

*NOTE: Rear PTO automatically disengages if:*

- PTO speed is less than 100 rpm for more than 1 second.
- Engine speed drops below 500 rpm to prevent engine from stalling.

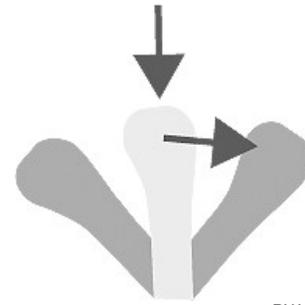
*Front PTO (if equipped) automatically disengages if:*

- 7R and 8R Tractors: Clutch slip is greater than 40% for more than 1 second.
- 8R Tractors: Clutch slip is greater than 10% for more than 45 seconds.
- 7R and 8R Tractors: Engine speed drops below 500 rpm to prevent engine from stalling.

For information on corner post display indicators, see Corner Post Display in Corner Post Display section of this Operator's Manual.

*NOTE: If the engine is stopped while the PTO is running, the PTO will not operate when the engine is restarted. The lever must be re-engaged to operate the PTO.*

## Lever Adjustments:



Engage PTO

RXA0167697—UN—30APR19

Push lever down and forward to engage PTO. Lever will return to center.



Disengage PTO

RXA0167696—UN—30APR19

Pull lever back to disengage PTO. Lever will return to center.

## Outside of Cab Operation :

To operate the PTO outside of the cab using external PTO switches (if equipped), wheel/track speed must be less than 0.5 km/h (0.3 mph). See External PTO Switches in this Operator's Manual section.

KD34109.00004C4-19-20JUN22

## External PTO Switches

External PTO switches (if equipped) allow you to operate PTOs from outside the cab. Front PTO external switches are on the front of the machine. Rear PTO external switches are on the rear of the machine.

## Procedure to Modify:



ON/OFF

RXA0187405—UN—27JUN22

1. Select ON to enable remote PTO switches on PTO main page (an audible warning sounds and hazard warning lights flash).

**NOTE:** PTO Remote will also turn ON automatically, when pressing and releasing any external PTO remote switch.

2.



RXA0167698—UN—30APR19

Remote PTO Switch

Press and hold remote PTO switch. PTO starts slowly.

**NOTE:** If equipped with front and rear PTO and only one PTO is started with the remote PTO switch, hazard warning sound/lights continue. Enabling external PTO switches enables both front and rear PTO and the system recognizes that one of the PTOs has not started.

- If held for at least 4 seconds, hazard warning sound/lights turn off and PTO continues to operate.
- If released within 4 seconds, PTO slowly stops and hazard warning sound/lights continue.

To turn off PTO, press remote PTO switch (an audible warning sounds and hazard warning lights flash) or pull back PTO control lever inside cab.

To return PTO control lever back to normal function, disable remote PTO.

KD34109,00004C5-19-28JUN22

## Select Correct Engine Speed

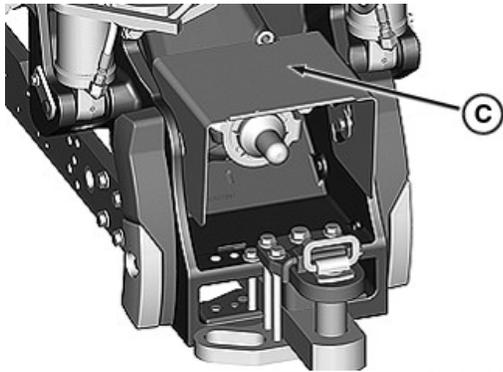
PTO			Engine Speed <sup>a</sup> rpm
Speed rpm	Shaft Diameter mm (in)	Spline	
1000	45 (1-3/4)	20	1895

<sup>a</sup>Tachometer displays current engine speed. See Corner Post Display in Corner Post Display section of this Operator's Manual.

KD34109,00005EA-19-20APR20

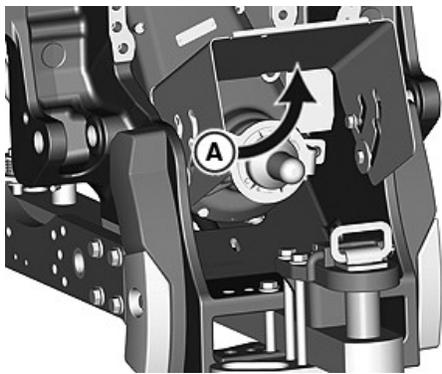
# Rear PTO [Ag]

## Use PTO Shield (If Equipped)



RXA0142441—UN—11JUN14  
PTO Shield (Standard Position)

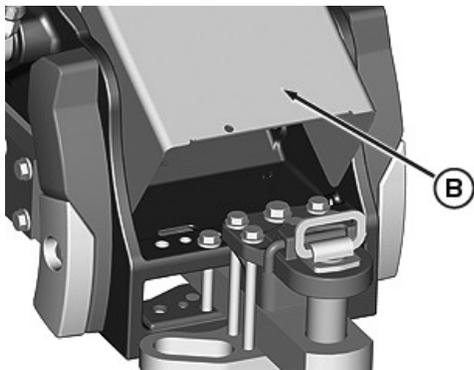
**⚠ CAUTION:** Avoid possible injury. Tractor PTO shield should be in place at all times except for special applications as directed in the implement Operator's Manual. Do not use the shield as a step.



RXA0142439—UN—11JUN14

PTO shield can be tipped up in the raised position (A) to provide clearance while connecting the PTO shaft.

**⚠ CAUTION:** Avoid possible injury. Do not operate PTO with the shield in the raised position.



RXA0142440—UN—11JUN14

PTO shield can be lowered (B) to improve the drawbar visibility when the drawbar is being used without the PTO.

GH15097,0000648-19-17AUG22

## Attach PTO-Driven Implement [Ag]

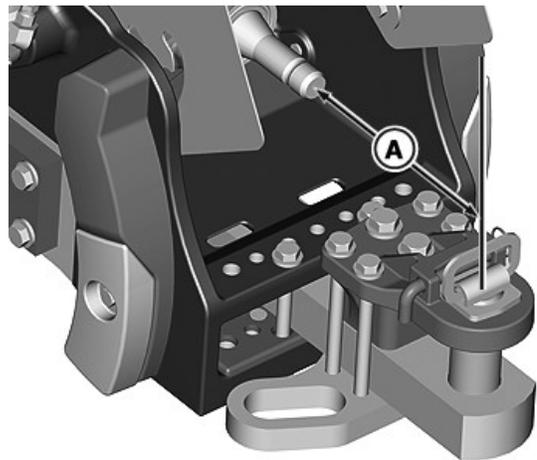


TS1644—UN—22AUG95

**⚠ CAUTION:** Entanglement in rotating driveline can cause serious injury or death.

Keep PTO shield and driveline shields in place at all times. Make sure rotating shields turn freely.

Wear close fitting clothing. STOP ENGINE and be sure that PTO driveline is stopped before making adjustments, connections, or cleaning PTO-driven equipment.



RXA0142225—UN—09JUN14

PTO Shaft	PTO Shaft End to Hitch Pin Hole Center (A) mm (in)
1000 rpm - 20 Splines <sup>a</sup>	508 (20)

<sup>a</sup>45 mm (1-3/4 in) Shaft Diameter.

1. Lock the drawbar in the center position.
2. Remove the clevis assembly.
3. Attach the implement to the drawbar before connecting the PTO driveline. If the implement will be connected to the quick-hitch, be sure that the drawbar will not interfere.
4. Connect the drive line to the PTO shaft. Turn the shaft slightly by hand to line up splines. Be sure the yoke is in the correct position and firmly locked.

5. Move the PTO shield into position for the PTO shaft size being used.

WTEFIAT,000001F-19-17AUG22

---

# Rear Hitch [Ag]

## Hitch Lift Capacities

**IMPORTANT: Avoid equipment damage. Never exceed axle load capacities.**

Rear Hitch Sustained Lift Capacity <sup>a</sup> kg (lb)					
Model		9RX			
		490	540	590	640
Hitch Category	4N/3	Optional			
Lift Cylinder Diameter mm	100	6804 (15000)			
	110	9072 (20000)			

<sup>a</sup>610 mm (24 in) behind the coupling points.

KT81203,0000840-19-14JUL22

## Rear Hitch Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



Rear Hitch

RXA0169204—UN—26JUN19

3. Rear Hitch

Access Application through Navigation Bar:



Rear Hitch

RXA0169205—UN—26JUN19

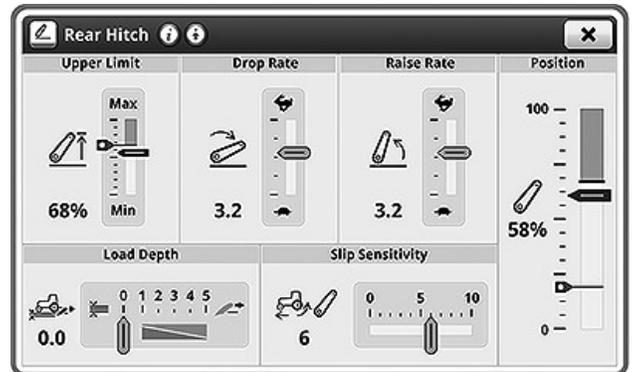
Press rear hitch button on navigation bar below display.

KD34109,00004EE-19-08DEC21

## Rear Hitch Settings

Rear Hitch application is used to access and adjust rear hitch settings.

*NOTE: Some items only display if machine is equipped with the associated option.*



Rear Hitch Example

RXA0169346—UN—27JUN19

Items Accessible on Rear Hitch Main Page:



Upper Limit

RXA0169206—UN—25JUN19

**Upper Limit** — upper set point that cannot be exceeded unless using external switches. See Rear Hitch Settings —Upper Limit in this Operator's Manual section.



Drop Rate

RXA0169207—UN—25JUN19

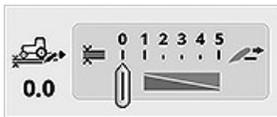
**Drop Rate** — speed at which the rear hitch is lowered. See Rear Hitch Settings—Drop Rate in this Operator’s Manual section.



Raise Rate

RXA0169208—UN—25JUN19

**Raise Rate** — speed at which the rear hitch is raised. See Rear Hitch Settings—Raise Rate in this Operator’s Manual section.



Load Depth

RXA0169209—UN—26JUN19

**Load Depth** — sensitivity to changing terrain or soil conditions. See Rear Hitch Settings—Load Depth in this Operator’s Manual section.

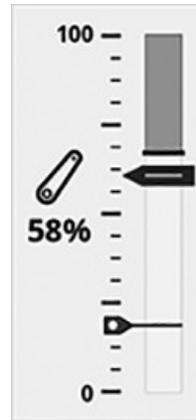


Slip Sensitivity

RXA0169210—UN—26JUN19

**NOTE:** Only available if equipped with radar and Load Depth is set to draft control mode.

**Slip Sensitivity** — how much the hitch reacts to wheel slip. See Rear Hitch Settings—Slip Sensitivity in this Operator’s Manual section.



Position

RXA0169211—UN—25JUN19

**Position** — displays information for current rear hitch settings. See Rear Hitch Settings—Position in this Operator’s Manual section. For hitch position adjustments, see Hitch Control Lever Adjustments in this Operator’s Manual section.



Advanced Settings

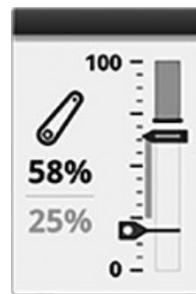
RXA0167071—UN—21MAR19

**Advanced Settings** — access further adjustments and less common settings. See Rear Hitch Settings—Advanced in this Operator’s Manual section.

**Run Page Modules**

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



Position

RXA0169212—UN—25JUN19

**NOTE:** Different modules may be available for your application.

**Position** — quick access to position module.

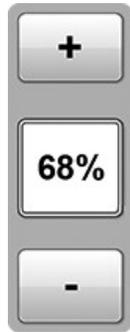
KD34109,00004EF-19-28FEB23

### Rear Hitch Settings—Upper Limit

Upper Limit page allows you to adjust Upper Limit setting and view current hitch settings. Rear hitch will only move above Upper Limit setting using external switches.

*NOTE: Fully down position is 0% and fully raised position is 100%.*

#### Procedure to Modify:



Adjust Upper Limit

RXA0169139—UN—25JUN19

Select (+) to increase or (-) to decrease Upper Limit set point. Value is shown in display box.



Position Indicator

RXA0169140—UN—25JUN19

Indicates current position of rear hitch on slider.



Upper Limit Indicator

RXA0169141—UN—25JUN19

Indicates position of Upper Limit on slider.



Close

RXA0167129—UN—25MAR19

Select to close.

#### Alternative Method to Modify:

**Upper Limit Hitch Dial (If Equipped)** — dial on CommandARM to adjust Upper Limit setting. A drop-down will display on CommandCenter to view adjustment. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.

KD34109.00004F0-19-20JUN22

### Rear Hitch Settings—Drop Rate

Drop Rate page allows you to adjust the speed at which the rear hitch is dropped and view current hitch settings.

**CAUTION: Avoid injury or machine damage. Do not lower implement too quickly. Fully lowering implement should take at least 2 seconds.**

#### Procedure to Modify:



Adjust Drop Rate

RXA0169142—UN—25JUN19

Select (+) to increase or (-) to decrease Drop Rate. Value is shown in display box.



Drop Rate Indicator

RXA0169143—UN—25JUN19

Indicates setting on slider.



Close

RXA0167129—UN—25MAR19

Select to close.

#### Alternative Method to Modify:

**Drop Rate Hitch Dial (If Equipped)** — dial on CommandARM to adjust Drop Rate setting. A drop-down will display on CommandCenter to view adjustment. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.

KD34109.00004F1-19-20JUN22

### Rear Hitch Settings—Raise Rate

Raise Rate page allows you to adjust the speed at which the rear hitch is raised and view current hitch settings.

#### Procedure to Modify:



Adjust Raise Rate

RXA0169142—UN—25JUN19

Select (+) to increase or (-) to decrease Raise Rate. Value is shown in display box.



Raise Rate Indicator

RXA0169143—UN—25JUN19

Indicates setting on slider.



Close

RXA0167129—UN—25MAR19

Select to close.

KD34109,00004F2-19-29OCT19

### Rear Hitch Settings—Load Depth

Load Depth control (draft response) allows control of movement of hitch while working. The higher the value, the larger the range of movement (more draft response). The lower the value, the smaller the range of movement (less draft response). Correct adjustment provides better control of implement depth and operating efficiency.

#### Procedure to Modify:



Adjust Load Depth

RXA0169213—UN—26JUN19

Select (+) to increase or (-) to decrease Load Depth setting. Value is shown in display box.

- For position control only, set Load Depth to 0.0. See Rear Hitch Settings—Position Control in this Operator's Manual section.
- Higher settings are used for draft control. See Rear Hitch Settings—Draft Control in this Operator's Manual section.



Load Depth Indicator

RXA0169214—UN—26JUN19

Indicates setting on slider.



Close

RXA0167129—UN—25MAR19

Select to close.

#### Alternative Method to Modify:

**Load Depth Hitch Dial (If Equipped)** — dial on CommandARM to adjust Load Depth setting. A drop-down will display on CommandCenter to view adjustment. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.

KD34109,00004F3-19-20JUN22

### Rear Hitch Settings—Slip Sensitivity

Slip Sensitivity page allows you to adjust how much the hitch reacts to wheel slip. The higher the setting, the more the hitch reacts. Slip Sensitivity setting only adjusts hitch up and takes priority over draft control setting, which adjusts hitch down. See Rear Hitch Settings—Draft Control in this Operator's Manual section. After wheel slip goes below slip setting, hitch will resume normal draft control. Appropriate setting depends on implement type, soil conditions, and tractor setup.

*NOTE: Only available if equipped with radar and Load Depth is set to draft control mode.*

#### Procedure to Modify:



Adjust Slip Sensitivity

RXA0169215—UN—26JUN19

Select (+) to increase or (-) to decrease setting. Value is shown in display box.



Slip Sensitivity Indicator

RXA0169214—UN—26JUN19

Indicates setting on slider.



Close

RXA0167129—UN—25MAR19

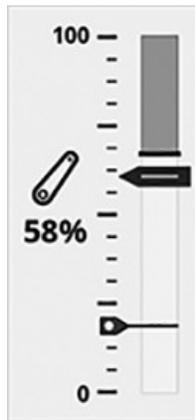
Select to close.

KD34109,00004F4-19-29OCT19

### Rear Hitch Settings—Position

Position allows you to view current rear hitch information.

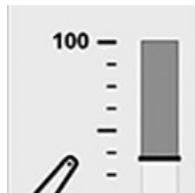
#### Items Accessible on Position Module:



Position

RXA0169211—UN—25JUN19

**Position Example** — items may change based on status.



Upper Limit Setting

RXA0169222—UN—25JUN19

**Upper Limit Setting** — line indicates position of upper limit. Shaded area at the top indicates amount out of range (above upper limit).



Hitch Depth Indicator

RXA0169223—UN—26JUN19

**Hitch Depth Indicator** — indicates stored operating depth. See Hitch Depth Set Point in this Operator's Manual section.

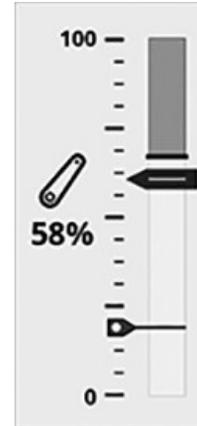


Position Indicator

RXA0169140—UN—25JUN19

**Position Indicator** — indicates current position of rear hitch on slider. Use hitch control lever or adjustment dial to adjust hitch position. See Hitch Control Lever Adjustments in this Operator's Manual section.

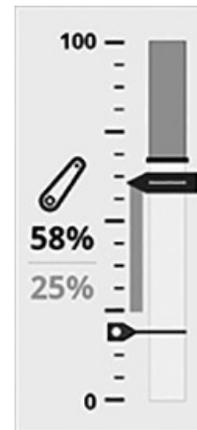
#### Rear Hitch Position Statuses:



At Rest

RXA0169224—UN—25JUN19

Hitch at rest.



Commanded to Position

RXA0169225—UN—25JUN19

Hitch commanded to 25% position. Green value is commanded position and green line indicates distance between current hitch position and commanded position.



Float

RXA0169226—UN—25JUN19

Hitch set to float position. Icon displays above current hitch position value.



Float Unavailable

RXA0169227—UN—25JUN19

Float unavailable. Icon displays above current hitch position value.



Locked

RXA0169149—UN—25JUN19

Hitch locked. Icon displays below current hitch position value. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.



Lock Damping

RXA0169228—UN—25JUN19

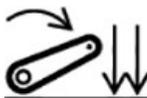
Lock damping enabled. Icon displays below current hitch position value.



Return to Lower Set Point Unavailable

RXA0169229—UN—25JUN19

Return to lower set point unavailable. Icon displays below current hitch position value.



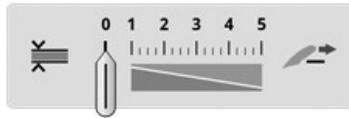
Fast Lower

RXA0169230—UN—25JUN19

Hitch set to fast lower. Icon displays below current hitch position value.

KD34109,00004F6-19-20JUN22

## Rear Hitch Settings—Position Control



RXA0163992—UN—18JUL18

Use position control to operate non-ground engaging implements and implements that fully rest on gauge wheels to control depth. Set Load Depth to 0 for position control.

KD34109,00004F7-19-29OCT19

## Rear Hitch Settings—Draft Control

Draft control helps to maintain operating depth of non-floating tillage equipment in rolling terrain. Draft control also helps if tractor altitude/pitch and rear wheel sinkage force implement deeper than desired. Higher Load Depth values respond better to rolling terrain but are more sensitive to soil density variation. Lower values stay more consistent with field soil changes but are less responsive to hills. Ideal setting depends on implement type and field conditions.

While in draft control mode, hitch can move above and below setting based on soil type and/or terrain. If setting is causing implement to go lower than desired, set to 1 and increase Slip Sensitivity.

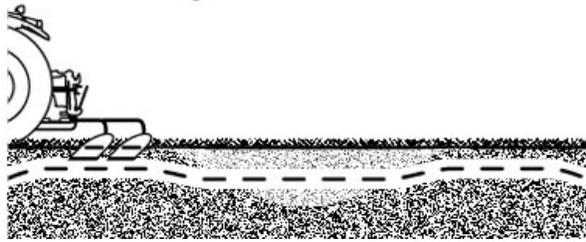
Control or change operating depth by pressing resume button or performing lower detent with control lever. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.

### Examples of Load Depth Settings:



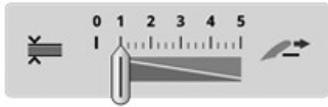
RXA0163993—UN—18JUL18

If soil varies, high value causes more depth variation.



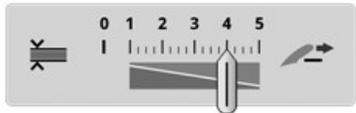
RXA0163994—UN—18JUL18

If soil varies, middle value causes less depth variation.



RXA0163995—UN—18JUL18

In rolling terrain, low value causes more depth variation.



RXA0163996—UN—18JUL18

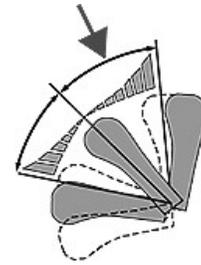
In rolling terrain, high value causes less depth variation.

KD34109,00004F8-19-20JUN22

## Hitch Control Lever Adjustments

Hitch control levers on the CommandARM allow you to adjust the hitch position. Levers will not raise hitch above upper limit.

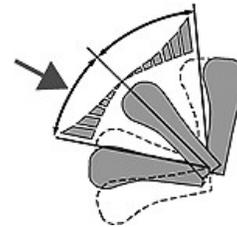
### Hitch Control Lever Adjustments:



RXA0169216—UN—26JUN19

Raise Proportionally

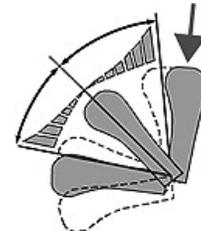
**Raise Proportionally** — moving lever within this range will raise hitch. Rate of movement depends on how far lever is from center position.



RXA0169217—UN—26JUN19

Lower Proportionally

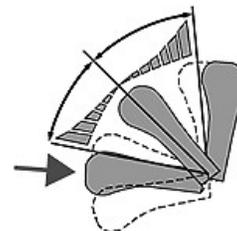
**Lower Proportionally** — moving lever within this range will lower hitch. Rate of movement depends on how far lever is from center position.



RXA0169218—UN—26JUN19

Raise Detent

**Raise Detent** — moving lever to this position and releasing will raise hitch to Upper Limit set point.

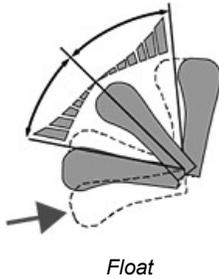


RXA0169219—UN—26JUN19

Lower Detent

**NOTE:** If machine is moving during this operation, hitch will also raise to lower set point.

**Lower Detent** — moving lever to this position and releasing will lower hitch to hitch depth set point. See Hitch Depth Set Point in this Operator's Manual section.



RXA0169220—UN—26JUN19

**Float** — moving lever to this position allows hitch to move freely and is useful when detaching implement. See Float Operation in this Operator's Manual section.

**Alternative Method to Modify:**

**Hitch Depth Adjust Dial** — dial on CommandARM to raise and lower hitch. Dial will not raise hitch above Upper Limit. See CommandARM Hitch Controls in CommandARM Controls section of this Operator's Manual.

KD34109,00004F9-19-20JUN22

**Hitch Depth Set Point**

Hitch depth set point (lower set point) is a frequently used operating depth that can be set and recalled. Controls used to adjust setting are found on CommandARM.

**Procedure to Modify:**

1. Move hitch to desired position using hitch control lever or adjustment dial. See Hitch Control Lever Adjustments in this Operator's Manual section.



SET

RXA0168026—UN—17MAY19

2. Select SET button to store set point.



Resume

RXA0168028—UN—17MAY19

**NOTE:** If hitch is below set point, resume will only engage if the tractor is moving.

3. Select resume button when wanting to return to set point position. Lower detent on control lever can also be used to recall set point.

KD34109,00004FA-19-20JUN22

**Float Operation**

Implements that fully rest on the depth gauge wheels for depth control require the hitch to float and follow the ground contour.

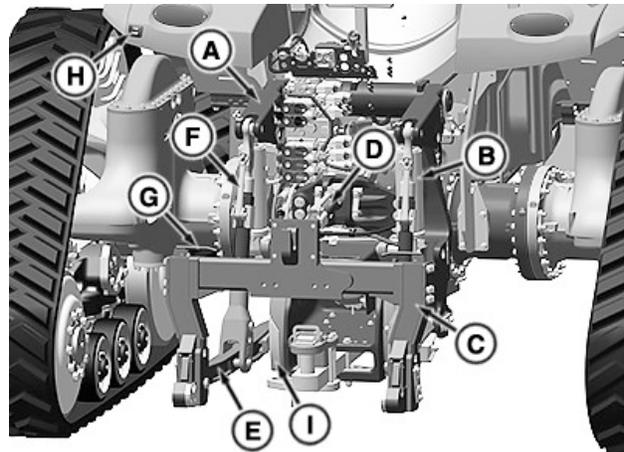
Put the hitch control lever in the float position. For more information on the hitch control lever, see CommandARM Hitch Controls in the CommandARM Controls section of this Operator's Manual. Lift links can be adjusted for the lateral float. See Adjust Lateral Float in this Operator's Manual section.

**Forced Float**

When the hitch is commanded to the lower set point but is unable to reach it, the hitch enters forced float mode. While in this mode, the hitch acts as though the control lever is in the float position. If the hitch reaches the lower set point while in forced float mode, the hitch returns to the mode that the lever is set to.

TS36762,00001DB-19-20JUN22

**Rear Hitch Components**



RXA0188515—UN—06FEB23

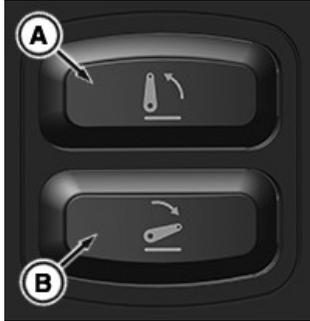
- A—Lift Arm
- B—Lift Cylinder
- C—Quick-Hitch
- D—Center Link
- E—Draft Link
- F—Lift Link
- G—Quick-Hitch Handle
- H—External Hitch Switch (if equipped) (2 used)
- I—Sway Block (if equipped)

All the components except the center link and quick-hitch are on the left-hand and the right-hand sides.

GH15097,0000927-19-02FEB23

## External Hitch Switches

**CAUTION:** Prevent injury or tractor damage. Be sure that the transmission is in the **PARK** position before using the remote raise and lower switches. Stay clear of interference points when using the remote raise and lower switches.



RXA0183164—UN—12MAY21

**NOTE:** The hitch control lever cannot be used simultaneously with the remote raise and lower switches.

External hitch switches (if equipped) allow hitch operation from outside the cab. Front external hitch switches are on the front of the machine. Rear external hitch switches are on the rear of the machine. Press and hold the remote switches to raise (A) or lower (B) the hitch. The hitch initially moves at slow speed when using the remote switches. However, the longer the switch is pressed the faster the hitch moves.

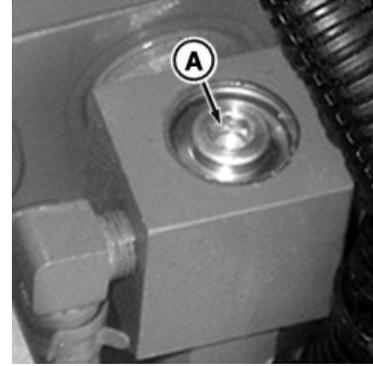
GH15097,00007EA-19-25JUN21

## Hitch Manual Lowering

**CAUTION:** Avoid injury or death. Do not disconnect any hitch sensors, solenoids, or connectors from the hitch control valve while the engine is operating or the key switch is ON. Unexpected hitch movement may occur. Stay clear of the hitch area when starting the engine or manually lowering the hitch.

**NOTE:** The hitch cannot be raised manually. Both hydraulic and electrical power are required to raise the hitch.

Hitch manual lowering is possible when hydraulic pressure and/or electrical power is not available.



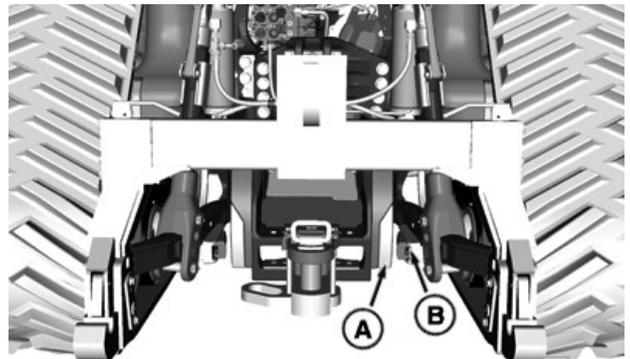
RXA0184070—UN—14JUN21

1. Remove the plug to access the manual lowering valve (A).
2. Turn the valve counterclockwise slowly to lower the hitch until the desired rate of drop is achieved.
3. Turn the valve clockwise and install the plug after the hitch has been lowered.

BH38674,0000BE4-19-28JUN21

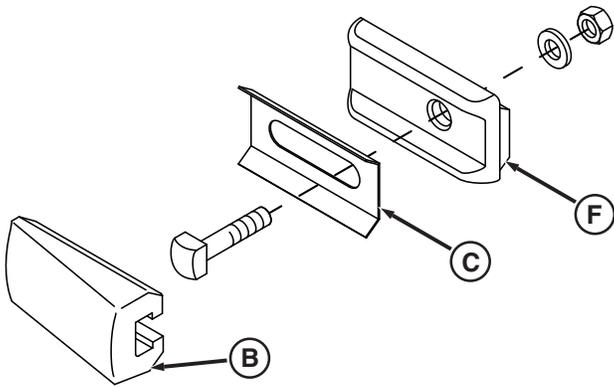
## Adjust Sway Blocks

**IMPORTANT:** Avoid equipment damage. Prevent interference of the draft links with the tracks. Be sure that the distance between the tracks is at least 1168 mm (46 in) with equal distance from the middle of the tractor. If the distance between the tracks must be less than 1168 mm (46 in), the sway is limited.



RXA0185725—UN—11OCT21

1. Install the sway blocks (A) with the thick end toward the frame to minimize the side sway of the hitch.



RXA0090041—UN—04AUG06

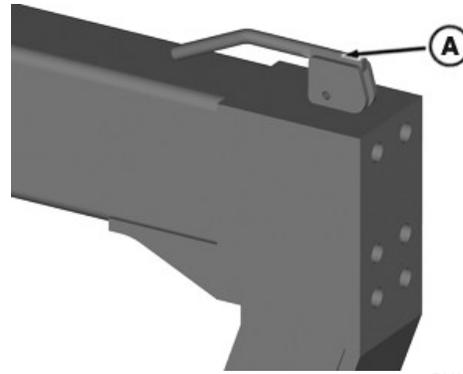
2. Adjust the bumper block (B) by loosening the lock nut and sliding forward or rearward to limit the amount of sway.
3. Tighten the attaching bolts to 230 N·m (170 lb·ft).
4. Remove sway blocks from both sides of the tractor to allow side sway when the hitch is lowered. Side sway is prevented when hitch is raised.
5. Install the sway blocks with the tapered sides outward from the frame.
6. If the hitch sway cannot be removed by adjusting the bumper block, install shims (C) as necessary between the bumper block and the spacer (F). Shims can be purchased from your John Deere dealer.
7. Install the sway blocks with the tapered sides outward from the frame.

GH15097.0000928-19-11OCT21

## Attach Implement to Quick-Hitch

**CAUTION:** Avoid injury or machine damage:

- Put the transmission in the **PARK** position and check the full range of the hitch motion for interference, binding, and PTO separation whenever an implement is attached.
- Make sure that the implement is correctly attached. Incorrect attachment can allow the implement to be pulled over the tractor wheel and onto the operator's station.
- Do not stand between the tractor and implement.



RXA0184116—UN—14JUN21

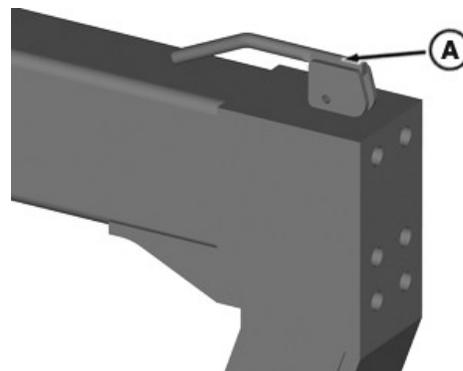
1. Pull up on the coupler latch handles (A).
2. Extend the hitch control lever until the quick-hitch hooks are lower than the implement hitch pins. For more information on the hitch control lever, see CommandARM Hitch Controls in the CommandARM Controls section of this Operator's Manual.
3. Back up the tractor to the implement.
4. Raise the hitch enough to engage the implement pins into the hooks.
5. Push the coupler latch handles down to lock the implement to the quick-hitch.
6. Connect the hydraulic hoses and the electrical connections.

**IMPORTANT: Check for implement interference. Drawbar removal may be necessary.**

7. Slowly retract the hitch control lever to raise the implement. Lower the implement to ground and adjust the upper height limit control if necessary.

TO84419.000011A-19-23JUN22

## Detach Implement from Quick-Hitch



RXA0184116—UN—14JUN21

1. Raise both latch handles (A) with the implement raised.
2. Disconnect the hydraulic hoses and the electrical connections.
3. Lower the implement to the ground. Continue

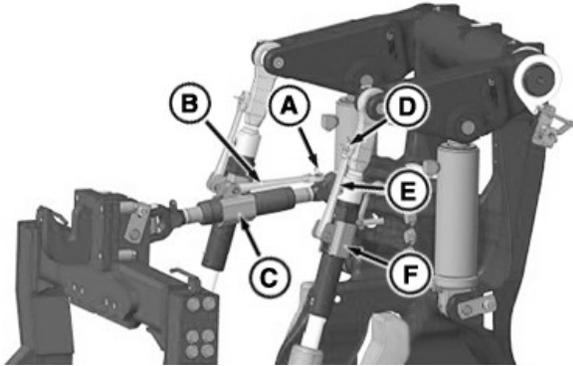
lowering the quick-hitch until the hook clears the implement hitch pins.

4. Carefully drive the tractor away from the implement.

TO84419,000011B-19-09SEP21

### Adjust Implement Level

1. Adjust the center link to level the implement front-to-rear:

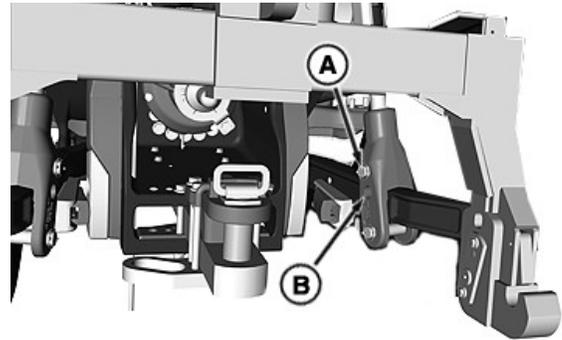


RXA0180511—UN—24NOV20

- a. Remove the lock ring (A).
  - b. Disengage the adjustment handle (B).
  - c. Slide the adjustment sleeve over the adjustment lock and use the handle to rotate the body of the center link (C) to adjust the length of the center link.
  - d. Measure between the centers of attaching pins. The adjustment range is 726.0—881.0 mm (28.6—34.7 in).
  - e. Engage the adjustment handle to lock it down.
  - f. Install the lock ring to hold the center link in position.
2. Adjust the left-hand and right-hand lift links to level the implement side-to-side:
    - a. Remove the lock ring (D).
    - b. Disengage the adjustment handle (E).
    - c. Slide the adjustment sleeve over the adjustment lock and use the handle to rotate the body of the lift link (F) to adjust the length of the lift link.
    - d. Measure between the centers of the attaching pins. The adjustment range is 1110.0—1270.0 mm (43.7—50.0 in).
    - e. Engage the adjustment handle to lock it down.
    - f. Install the lock ring to hold the center link in position.

RW29387,000061E-19-17JUN21

### Adjust Lateral Float



RXA0141373—UN—16JUN14

Place the lateral float pins in the upper holes (A) to hold the implement rigid.

Put the lateral float pins in the lower holes (B) of the draft arms for the float position. The draft links raise slightly as the implement follows the ground surface.

RW29387,000061F-19-08OCT21

### Hitch Conversion—Category 4/4N Convertible Quick-Hitch

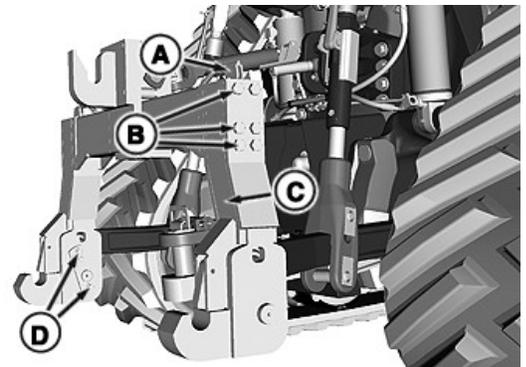
Quick-hitch is convertible to Category 4 or Category 4N. Use the Category 4 whenever possible, especially for heavy loads. Greater width gives more strength.

*NOTE: Your John Deere Dealer can supply the parts to adapt the Category 4/4N quick-hitch to the Category 3 implements.*

Use the following procedure to convert the quick-hitch:

**⚠ CAUTION: Avoid injury. Use the proper lifting device when converting the coupler.**

1. Support the center of the quick-hitch.

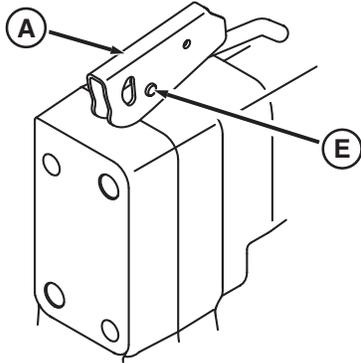


RXA0147956—UN—06MAY15

2. Remove the pin retaining bolts (D) and the pins from the draft link.
3. Remove the side member cap screws (B).
4. Switch the ends with the quick-hitch side members

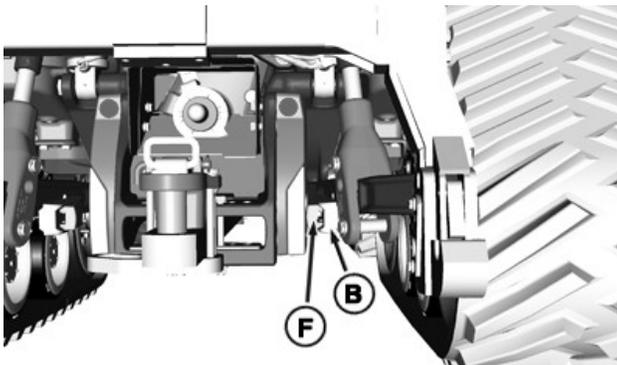
(C) (left-hand member to right-hand end and right-hand member to left-hand end). Tighten the cap screws to 425 N·m (315 lb·ft).

**IMPORTANT:** The lower coupler hook must be kept under pressure before removing the roll pin, to hold the lock rod in place.



RXA0142591—UN—16JUN14

5. Flip the latch handle around by removing the roll pin (E).
6. Turn the coupler latch handle (A) inward and reinstall the roll pin (E).
7. Flip the handle down in the lock position.



Draft Link Bumper

RXA0184144—UN—21JUN21

8. Loosen the draft link bumper retaining the cap screw (F).

**NOTE:** Position the thick ends (G) forward on the draft links for Category 4 or the thin ends back for Category 4N.

9. Adjust the bumper by sliding on the draft link on the cap screw to the desired clearance position.
10. Tighten the cap screw to 230 N·m (170 lb·ft).
11. Perform the same steps on the opposite side for equal clearance between the sway blocks and the bumpers.

12. Cycle the hitch to ensure that there is no hitch interference.

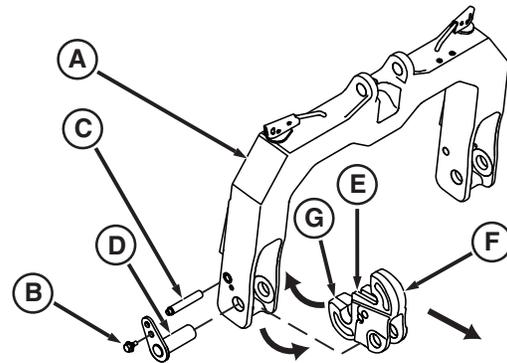
GH15097.000092D-19-05JUL22

## Convert Category 4N/3 Convertible Quick-Hitch Lower Hooks

**⚠ CAUTION:** Avoid injury. Use proper lifting device when converting the coupler. A second person is recommended to align the components during the conversion.

**IMPORTANT:** If the Category 4N lower hooks are to be used on Category 3 implements, bushings are needed over the Category 3 pins. Bushings can be purchased through your John Deere dealer.

Lower hooks are not marked for left-hand or right-hand side. Do not move the lower hooks from one side to the other.



RXA0091394—UN—07NOV06

1. Support the quick-hitch frame (A).
2. Remove the cap screw (B).
3. Remove the retainer (C), then the pin (D).

**NOTE:** Because the lower hook (E) has a Category 3 hook (F) on one end and a Category 4N hook (G) on the opposite end, it is used for both Category 3 and 4N simply by turning it end for end.

4. Remove the lower hook by rotating it down and to the rear of the coupler, then sliding it out at the front of the coupler.
5. Install the lower hook with the desired end facing rearward. Using a reverse motion of removal, rotate it up and in.
6. Install the pin, retainer, and cap screw. Tighten to 100 N·m (74 lb·ft).

BH38674.0000BEC-19-14SEP21

## Convert Category 4N/3 Convertible Quick-Hitch Upper Hook

**⚠ CAUTION:** Avoid injury. Use proper lifting device when converting the coupler. A second person is recommended to align the components during the conversion.

**IMPORTANT:** It is recommended to use Category 4 upper hook if the implement setup allows. The Category 3 upper hook may be overloaded with very high draft loads.

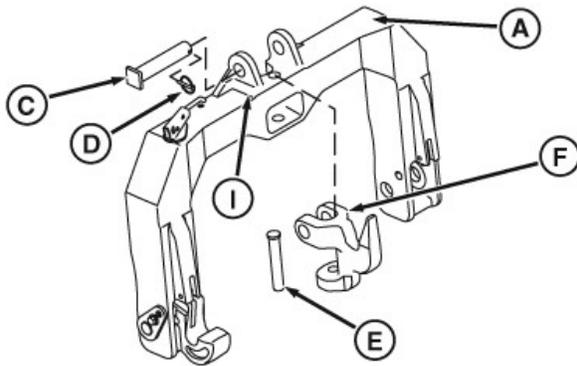
4. Remove pin (H) to remove the stored upper hook (G).

*NOTE:* Pin (C) must be installed left to right. Shoulder (I) will keep retaining the pin (B) from being installed if the pin (C) is installed incorrectly.

5. Place the upper hook (F) in the storage location.

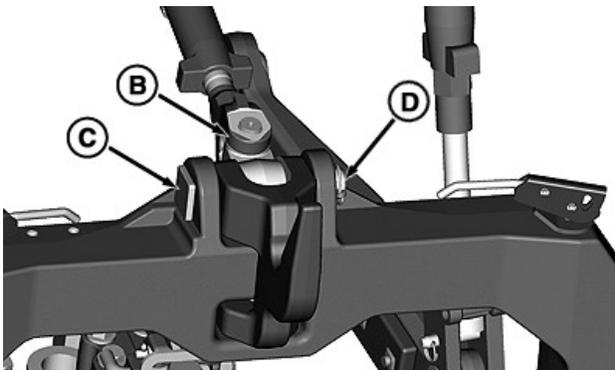
6. Install the upper hook (G) on the quick-hitch.

GH15097,000092F-19-21SEP21



RXA0142708—UN—17JUN14

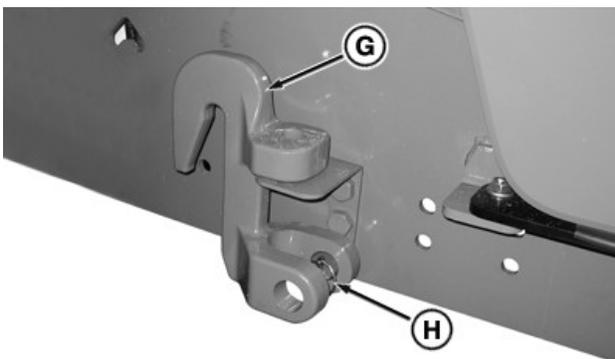
1. Support the quick-hitch frame (A).



RXA0142706—UN—17JUN14

2. Remove the quick-lock pin (D) and pin (C) to release the center link (B).

3. Remove the pin (E) and the upper hook (F).



RXA0147950—UN—29APR15

## Rear Hitch [Ag]

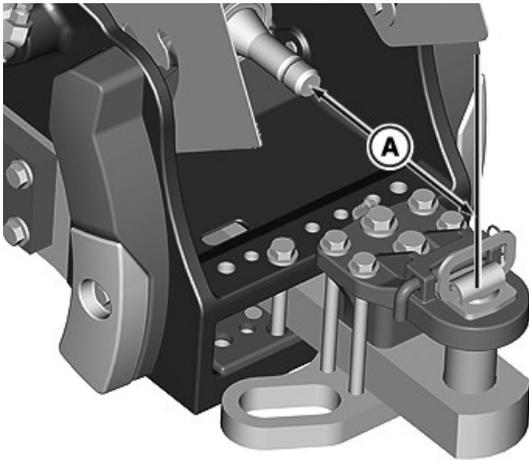
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## Drawbar Load Limitations [Ag]

**IMPORTANT:** Avoid tractor and attachments damage. Heavy implements, rough terrain, and speed can place excessive strain on the drawbar.

Never exceed the maximum static vertical load limit or the drawbar and PTO position limitations.

For information using scraper drawbars, see Scraper Applications [Ag] in this Operator's Manual section.



RXA0179941—UN—24SEP20

Drawbar Load Limits Based on Drawbar Position and Length			
Drawbar		End of PTO Shaft to Drawbar Pin Hole Distance (A) mm (in)	Maximum Vertical Static Load kg (lb)
Category	Position		
5 <sup>ab</sup>	Short	358 (14)	5440 (12000)
	Regular (PTO)	508 (20)	4080 (9000)

<sup>a</sup>70 mm (2.75 in) diameter pin.

<sup>b</sup>If equipped with Category 4 conversion pin, pin diameter is 51 mm (2 in).

EC82310,0000A24-19-20JUN23

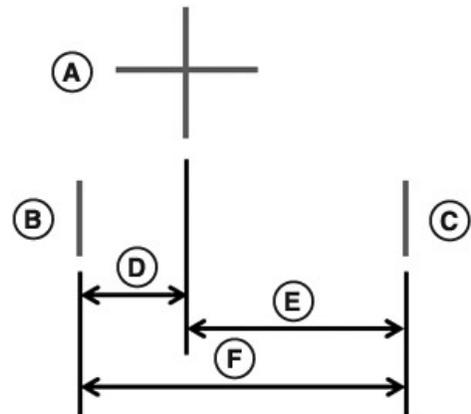
## Scraper Applications [Ag]

**IMPORTANT:** Avoid tractor damage. This tractor is designed solely for use in agricultural or similar operations. The warranty period is limited to 90 days if heavy-duty land-leveling use exceeds:

- The maximum drawbar vertical load.
- 150 hours per year.

See your John Deere dealer if the:

- Drawbar is not John Deere approved.
- Drawbar vertical load or distance behind the rear axle exceeds the following table values.



RXA0179306—UN—21AUG20

- A—Rear Axle Center Line
- B—Front Drawbar Pin Center Line
- C—Rear Drawbar Pin Center Line
- D—Front Drawbar Pin Distance in Front of Rear Axle
- E—Vertical Load Distance Behind Rear Axle
- F—Drawbar Length

Maximum Vertical Load kg (lb)	Maximum Vertical Load Distance Behind Rear Axle (E) mm (in)	Front Drawbar Pin Distance in Front of Rear Axle (D) mm (in)
8359 (18500)	1239 (48.8)	522 (20.6)

For load and distance measurement procedures, see Calculate Static Vertical Drawbar Load and Calculate Vertical Drawbar Load Distance Behind Rear Axle in this Operator's Manual section.

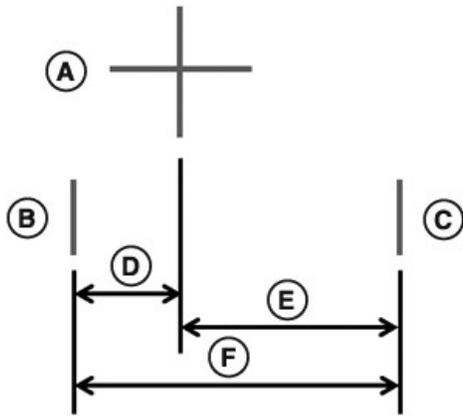
EC82310,0000F1B-19-01MAR22

### Scraper Applications [Scraper]

**IMPORTANT: Avoid tractor damage. Never exceed the maximum drawbar vertical load.**

See your John Deere dealer if the:

- Drawbar is not John Deere approved.
- Drawbar vertical load or distance behind the rear axle exceeds the following table values.



RXA0179306—UN—21AUG20

- A—Rear Axle Center Line
- B—Front Drawbar Pin Center Line
- C—Rear Drawbar Pin Center Line
- D—Front Drawbar Pin Distance in Front of Rear Axle
- E—Vertical Load Distance Behind Rear Axle
- F—Drawbar Length

Maximum Vertical Load kg (lb)	Maximum Vertical Load Distance Behind Rear Axle (E) mm (in)	Front Drawbar Pin Distance in Front of Rear Axle (D) mm (in)
12020 (26500)	741 (29.2)	522 (20.6)

For load and distance measurement procedures, see Calculate Static Vertical Drawbar Load and Calculate Vertical Drawbar Load Distance Behind Rear Axle in this Operator's Manual section.

WTEFIAT,000006D-19-18FEB22

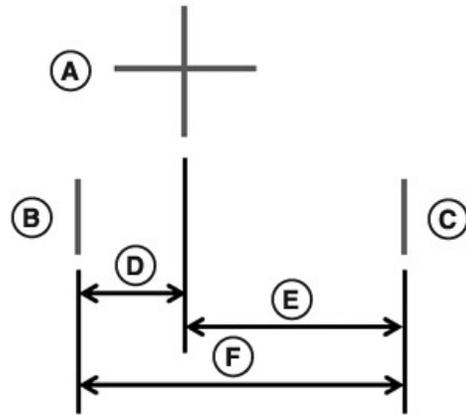
### Calculate Static Vertical Drawbar Load

For the static vertical drawbar load:

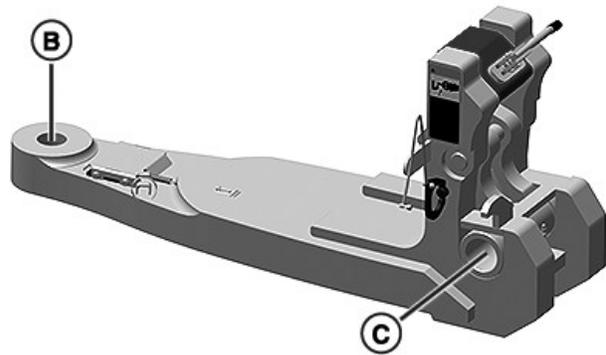
1. Measure and record the front and rear axle weights of the tractor without the implement connected.
2. Add the front and rear axle weights together for the total bare tractor weight.
3. Measure and record the front and rear axle weights of the tractor with the loaded implement connected.
4. Add the front and rear axle weights together for the total loaded tractor weight.
5. Subtract the total bare tractor weight (step 2) from the total loaded tractor weight (step 4).

KD34109,0000610-19-17NOV21

### Calculate Vertical Drawbar Load Distance Behind Rear Axle



RXA0179306—UN—21AUG20



RXA0179874—UN—23SEP20

For vertical drawbar load distance behind the rear axle (E):

1. Measure the length of the drawbar (F) from the front drawbar pin center line (B) to the rear drawbar pin center line (C).
2. Determine the rear axle center line (A). Subtract the front drawbar pin distance in front of the rear axle (D)

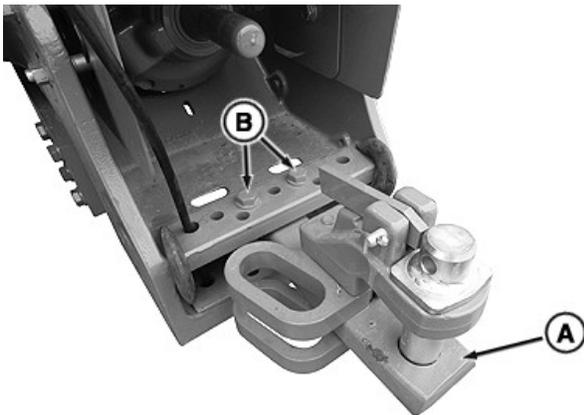
from the drawbar length (F). For the front drawbar pin distance in front of the rear axle (D), see the table in Scraper Applications [Ag] or Scraper Applications [Scraper] in this Operator's Manual section.

**NOTE:** If the front drawbar pin distance in front of the rear axle value provided is negative, subtracting a negative will provide a distance longer than the measured drawbar length.

KD34109,0000611-19-22FEB22

## Adjust Drawbar [Ag]

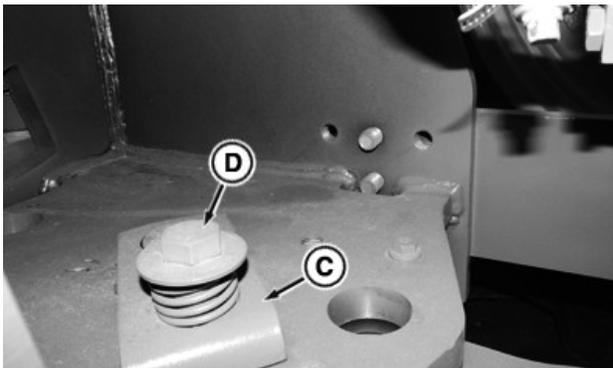
**IMPORTANT:** Drawbar must be positioned, as instructed in Attach PTO-Driven Implement in PTO, Hitch, and Drawbar section of this Operator's Manual, for PTO-driven implement.



RXA0186159—UN—29NOV21

### Adjust Drawbar Length:

1. Loosen the drawbar locking bolts (B).



RXA0186160—UN—29NOV21

2. Remove the front pivot pin retainer cap screws, washers, and spacers (D). Remove the pivot pin retainer (C).
3. Slide the drawbar (A) to the desired position.
4. Install the pivot pin retainer, spacers, washers, and cap screws. Tighten the cap screws to 435 N·m (322 lb·ft).

5. Install and tighten the drawbar locking bolts to 435 N·m (322 lb·ft).

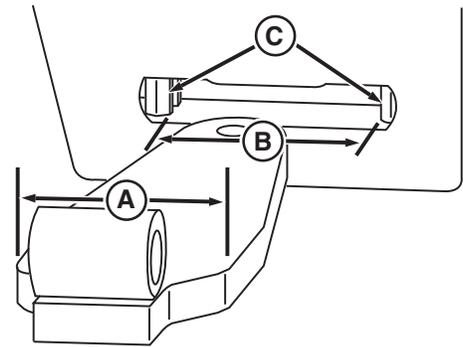
### Adjust Drawbar Side-to-Side:

1. Remove the drawbar locking bolts.
2. Slide the drawbar to the desired position.
3. Install a locking bolt against each side of the drawbar. Tighten to 435 N·m (322 lb·ft).

GH15097,0000640-19-16FEB22

## Install Drawbar or Quick-Attach in Short Drawbar Support [Scraper]

Use the scraper drawbar when the scraper tongue weight exceeds the design specifications of agricultural tractor drawbar. The scraper drawbar is shorter, which minimizes the weight transfer to the rear axle. Follow scraper recommendations for the drawbar installation.

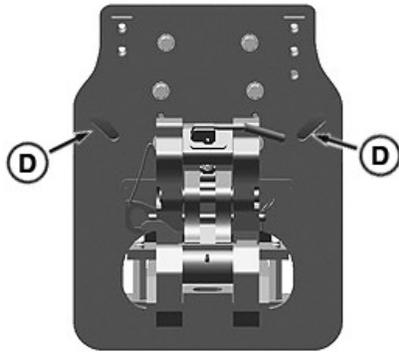


RXA0064878—UN—23JAN03

**IMPORTANT:** Adjust the hex bushings (C) when installing the scraper drawbar.

**NOTE:** All four (4) locking bolts should be kept clean to maintain maximum torque.

1. Loosen the drawbar locking bolts and bushings, underside of support.
2. Measure the width of the drawbar area (A) resting on the drawbar support.
3. Rotate the bushings so that the distance (B) between bushings is as close to the drawbar width as possible.

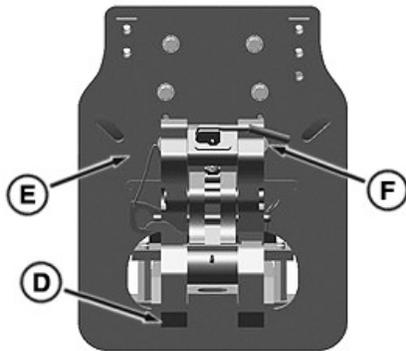


RXA0142716—UN—21JUL14

Scraper Drawbar Support

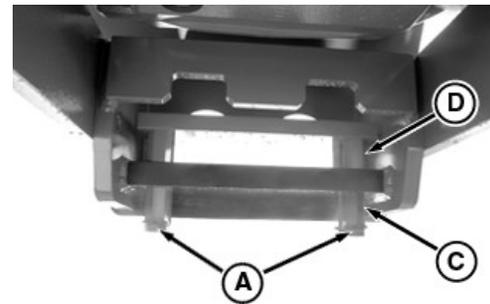


RXA0082032—UN—05JUL05



RXA0148253—UN—29MAY15

Quick-Attach Drawbar



RXA0082012—UN—05JUL05

Smaller Scraper Drawbar Support Setup

4. Slide the short drawbar or the quick-attach drawbar (D) into support.
5. Install the front drawbar pin.
6. Tighten the drawbar locking bolts to 430 N·m (320 lb·ft).
7. Remove the locking pin (E) and lift the handle (F) to operate the quick-attach drawbar.

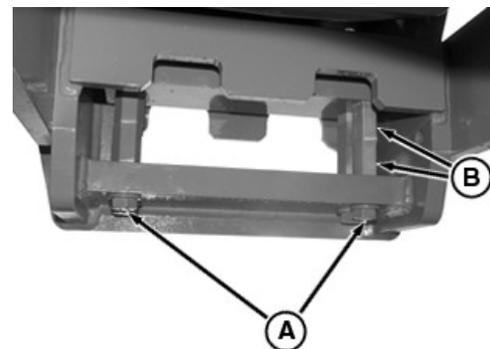
**IMPORTANT: Recheck locking bolt torque specification.**

8. Check and retighten the drawbar support bolts after the first 10, 50, and 100 hours of scraper operation.

WTEFIAT.0000040-19-16FEB22

**IMPORTANT: Adjust the hex bushings (C) when installing the scraper drawbar.**

*NOTE: All four locking bolts must be kept clean to maintain maximum torque.*



RXA0082010—UN—05JUL05

Larger Scraper Drawbar Support Setup

### Short Scraper Drawbar Conversion [Scraper]

Scraper drawbar support is designed to accept a larger drawbar and can be converted for use with a smaller scraper drawbar. Follow the scraper recommendations for the drawbar installation.

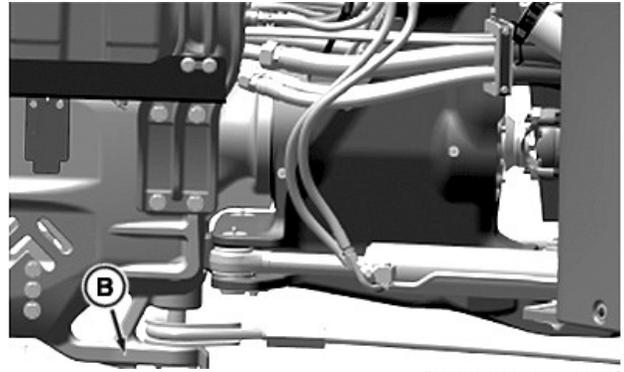
1. Loosen and remove the drawbar support cap screws (A) and bushings (B).
2. Place the lower bushings on the cap screws with lock washers.
3. Reinstall the cap screws with lower bushings and upper bushings (D) to the drawbar support.
4. Measure the width of the drawbar area with the drawbar resting on the drawbar support.

5. Rotate the bushings so the distance between bushings is as close to the drawbar width as possible.
6. Slide the drawbar into support.
7. Install the front drawbar pin.
8. Tighten the drawbar locking bolts to 430 N·m (320 lb·ft).

**IMPORTANT: Recheck locking bolt torque specification.**

9. Check and retighten the drawbar support bolts after the first 10, 50, and 100 hours of scraper operation.

WTEFIAT,000004A-19-16FEB22



RXA0185286—UN—31AUG21

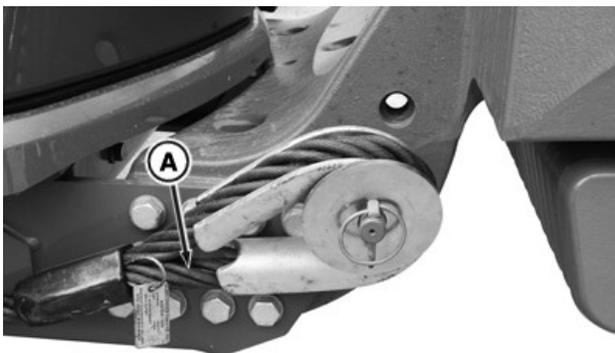
Attach the tow cable to the tow cable pin (B).

WTEFIAT,0000059-19-03JUL23

## Tow Cable

**IMPORTANT: Avoid possible tractor damage:**

- **Correctly use the tow cable by pulling from the front of the tractor in a straight forward direction.**
- **Keep the cable tight to limit cable side movement and interference with the right front wheel/track.**
- **Do not use the tow cable to hook the tractors in tandem to pull the draft load.**
- **Pulling the tractor with the loaded equipment can cause excessive strain on the drawbar support and is greatly increased by the speed and rough ground conditions.**
- **Inspect the tow cable and/or drawbar pin for wear and replace when necessary.**
- **When not in use, attach the tow cable to the storage bracket and keep tight.**

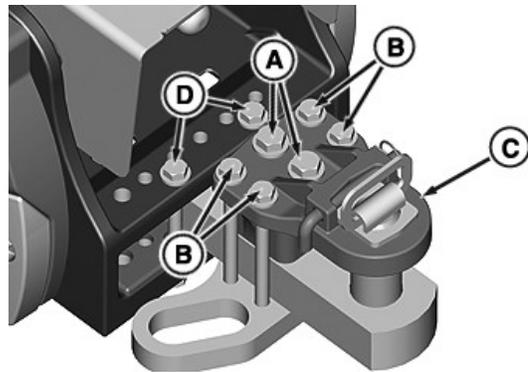


RXA0142715—UN—24JUN14

Use the tow cable (A) to pull the tractor or tractor with scraper from soft or wet soil conditions.

## Install Clevis Assembly—Category 5 Drawbar [Ag]

**IMPORTANT: Avoid equipment damage: correctly attach the clevis assembly.**



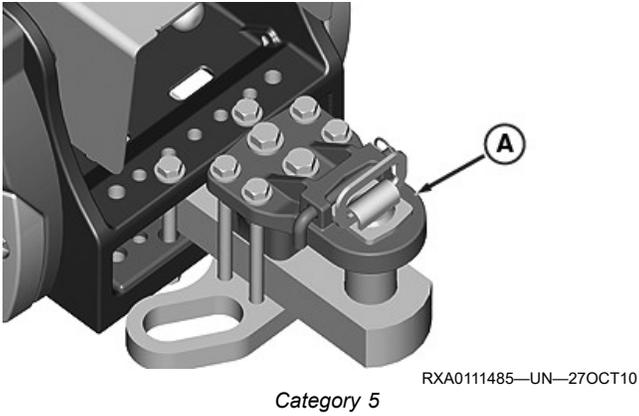
RXA0176518—UN—18MAR20

1. Attach the clevis assembly (C) to the top of the drawbar.
2. Tighten the two center M24 cap screws (A) to 750 N·m (553 lb·ft).
3. Tighten the four outer M20 cap screws (B) to 610 N·m (450 lb·ft).
4. Tighten the two M20 cap screws (D) to 610 N·m (450 lb·ft).

AK08008,00004F4-19-09MAY22

## Clevis Assembly Use [Ag]

**IMPORTANT: When the PTO shaft may cause interference, remove the clevis assembly.**



Category 5

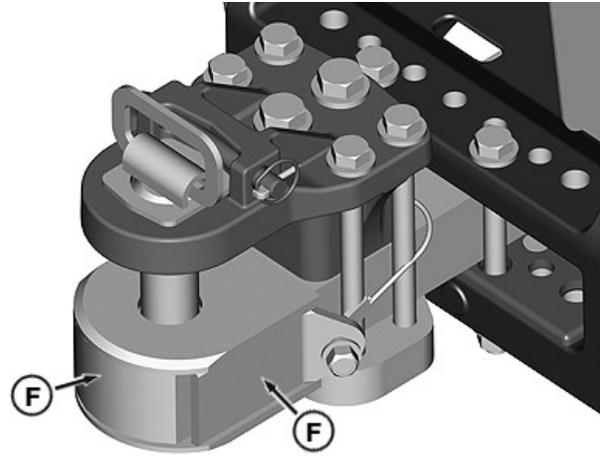
Clevis assembly (A) must be attached *only* to the top of the drawbar.

If the towed implement also has a clevis assembly, insert the pin only through the tractor drawbar. **DO NOT** insert the pin through all four members.

EC82310,0000F5C-19-01MAR22

### Use Correct Drawbar Pin—Category 5 to 4 [Ag]

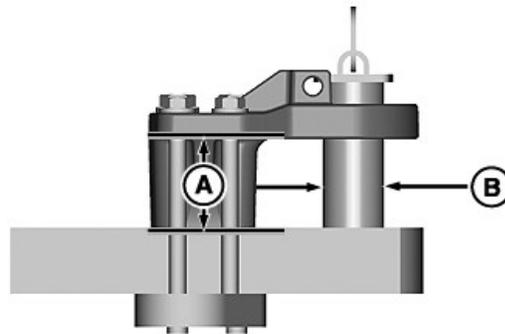
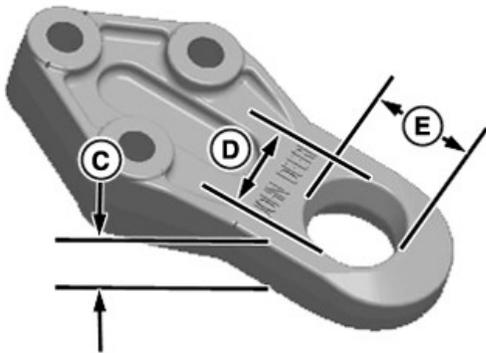
**IMPORTANT:** Use Category 5 drawbar pin for implements that produce drawbar loads requiring more than 348 kW (467 HP) engine power level rating or 300kW (400 HP) PTO power level rating for proper operation. Contact the implement manufacturer for information on how to properly convert the implement to accept Category 5 drawbar pin.



RXA0141903—UN—05JUN14

See your John Deere dealer to purchase an Adapter Kit (F) for tractors equipped with a Category 5 drawbar when attaching to implements equipped with a Category 4 hitch link, if approved by the implement manufacturer.

Use Category 5 drawbar pin furnished with the tractor to attach the implements that have a Category 5 hitch link. See the table for dimensions. Consult the implement Operator's Manual or manufacturer to determine the proper size of the drawbar pin for the implement attaching system. Operating a tractor and implements with a drawbar category combination, which is improperly sized for the implement power requirements, could result in a premature wear or failure of the hitch components.



RXA0160175—UN—10JUL17

Category	Hitch Link Dimensions mm (in)				
	Tractor Drawbar		Implement Hitch Link		
	Hitch Pin Diameter (B)	Drawbar Opening Height (A)	Slot Length (E)	Slot Width (D) (Minimum)	Link Thickness (C)
5	70 (2.76)	100 (3.94)	73 — 85 (2.87 — 3.35)	73 (2.87)	60 (2.36)

EC82310,0000F5D-19-11MAY22

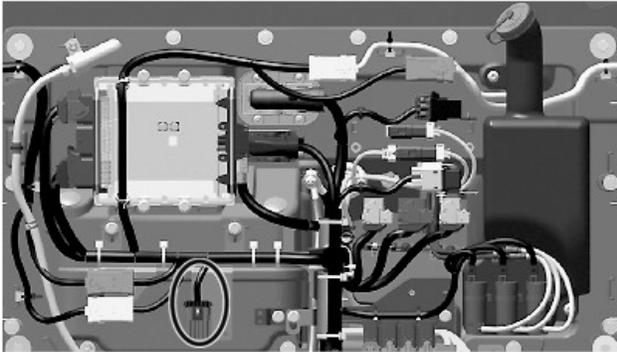
# Hydraulics—General Information

## Hydraulic System Overview

Hydraulics system provides lubrication, power and control to many tractor subsystems. Transmission, steering, brakes, and hitch [Ag] are covered in other sections of this Operator's Manual. The next several sections deal with selective control valves, including adjustment, function, and connections as well as special control systems.

TS36762,00002C7-19-23APR18

## Hydraulic Option Connector



RXA0187221—UN—08JUN22

Hydraulic option connector is located in the cab rear panel of the tractor and is required when using the SCV automation and feature mode functions. To access the hydraulic option connector, see Remove Cab Rear Panel in Service—General Information section of this Operator's Manual.

When making the initial connection to this connector or to the implement harness connection interface, the key must be in the OFF position.

Use the hydraulic option connector with John Deere applications such as:

- TouchSet Depth Control, see TouchSet Depth Control Settings and Adjustments in TouchSet Depth Control section of this Operator's Manual.
- Laser Scraper Control, see Laser Scraper—Scrapers Equipped with Scraper Control Unit in Laser Scraper section of this Operator's Manual.
- AutoLoad, see Machine Settings Overview in CommandCenter section of this Operator's Manual.

### Hydraulic Option Connector Reset Procedure:

If a Diagnostic Trouble Code (DTC) occurs or the automation feature does not function, perform the hydraulic option connector reset procedure:

1. Shut off the engine and allow the CommandCenter to shut down completely.
2. Disconnect the implement harness from the implement connector, or disconnect the hydraulic option connector.

3. Start the tractor and allow the CommandCenter to start completely.
4. Shut off the engine and allow the CommandCenter to shut down completely.
5. Reconnect the implement harness to the implement connector.
6. Start the engine and allow the CommandCenter to start completely.
7. Operate the implement. If a DTC continues to appear or the implement fails to respond to commands, see your John Deere dealer.

WTEFIAT,0000076-19-12JUL22

# Selective Control Valves

## SCV Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



SCV

RXA0173516—UN—03JAN20

3. SCV

Access Application through Navigation Bar:



SCV

RXA0173515—UN—03JAN20

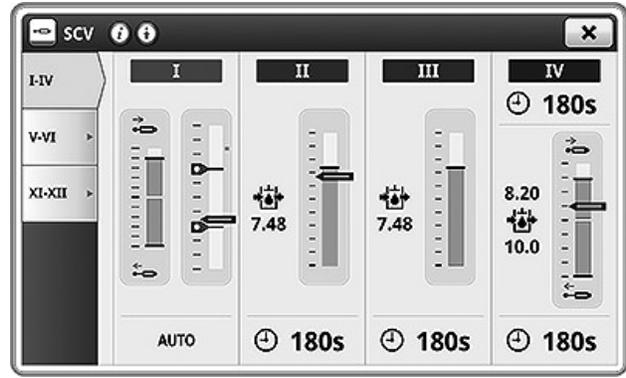
Press SCV button on navigation bar below display.

KD34109,000057C-19-08DEC21

## SCV Settings

SCV application is used to access and adjust SCV modes and settings for equipped SCVs.

*NOTE: Display will depend on current mode of SCV and number of SCVs available.*



RXA0178901—UN—23JUL20

SCV Example

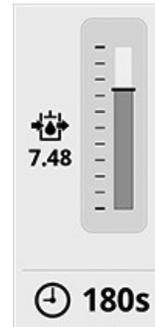
Items Accessible on SCV Main Page:



SCV Tab Example

RXA0173519—UN—06JAN20

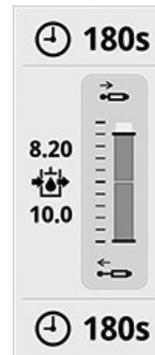
**SCV Tabs** — tabs display when there are more than four SCVs. Only available SCVs display.



RXA0173523—UN—02JAN20

Standard Mode Example

**Standard Mode** — set one detent time value and one detent flow value for both extend and retract. See SCV Settings—Standard Mode in this Operator's Manual section.

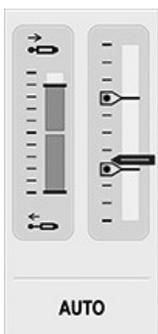


RXA0173504—UN—03JAN20

Independent Mode Example

**Independent Mode** — set different detent time and flow

values for extend and retract. See SCV Settings—Independent Mode in this Operator’s Manual section.



RXA0173490—UN—02JAN20  
Feature Mode Example

**Feature Mode** — detent time is controlled by implement. To enable, connect implement using optional connector before turning on vehicle. See SCV Settings—Feature Mode in this Operator’s Manual section.



RXA0173500—UN—03JAN20  
Hydraulic Flow Indicator

**Hydraulic Flow Indicator** — indicates current flow and displays when SCV is selected, active, and oil is flowing.



RXA0167071—UN—21MAR19  
Advanced Settings

**Advanced Settings** — access further adjustments and less common settings. See SCV Settings—Advanced in this Operator’s Manual section.

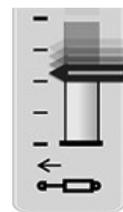
**Operate SCVs:**



RXA0173518—UN—06JAN20  
SCV I Lever

**SCV Control Lever Adjustments** — SCV levers on the CommandARM are used to adjust SCV flow. See SCV Control Lever Adjustments in this Operator’s Manual section.

**Other SCV Statuses:**



RXA0173494—UN—02JAN20  
Flow Active Example

**Flow Active** — indicator will move with flow level. Fill area between 0 point and indicator displays yellow.



RXA0173525—UN—02JAN20  
Time Active Example

**Time Active** — yellow box displays during time adjustment and when it is active.



RXA0173768—UN—13JAN20  
Float

**Float** — cylinder is free to extend or retract, letting implement follow ground contour.



RXA0173492—UN—02JAN20  
Float Disabled

**Float Disabled** — if lever is in float position at engine start-up, float function will be disabled until lever is cycled to neutral.



RXA0173506—UN—03JAN20  
Locked

**Locked** — SCV is locked.



RXA0173483—UN—02JAN20  
AUTO

**AUTO** — AUTO mode is enabled and active.



RXA0173484—UN—02JAN20  
AUTO Disabled

**AUTO Disabled** — AUTO mode is ON but not active.

**Run Page Modules**

Add modules for this application to run pages using

Layout Manager. See the G5 CommandCenter Operator's Manual.

**NOTE:** SCV assignment for module can be changed if accessing settings this way. See SCV Settings—Assignment in this Operator's Manual section.

Example:



Standard Mode

RXA0173524—UN—02JAN20

**NOTE:** Different modules may be available for your application.

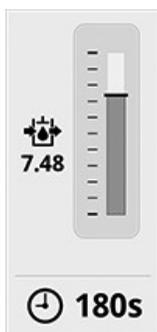
**Standard Mode** — quick access to standard mode module.

kd34109,1665684982962-19-04MAY23

### SCV Settings—Standard Mode

Set one detent time value and one detent flow value for both extend and retract.

**Items Accessible in Standard Mode:**



Standard Mode Example

RXA0173523—UN—02JAN20

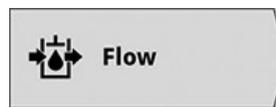
**Standard Mode Example** — items may change based on status.



Time Tab

RXA0173530—UN—02JAN20

**Time** — select to adjust detent time value for extend and retract. See SCV Settings—Time Adjustment in this Operator's Manual section.



Flow Tab

RXA0173503—UN—03JAN20

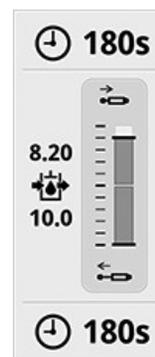
**Flow** — select to adjust detent flow value for extend and retract. See SCV Settings—Flow Adjustment in this Operator's Manual section.

KD34109,000057E-19-09JAN20

### SCV Settings—Independent Mode

Set different detent time and flow values for extend and retract. Enable independent mode in advanced settings. See SCV Settings—Advanced in this Operator's Manual section.

**Items Accessible in Independent Mode:**



Independent Mode Example

RXA0173504—UN—03JAN20

**Independent Mode Example** — items may change based on status.



Time Retract Tab

RXA0173529—UN—02JAN20

**Time Retract** — select to adjust detent time retract value. See SCV Settings—Time Adjustment in this Operator's Manual section.



Flow Retract Tab

RXA0173502—UN—03JAN20

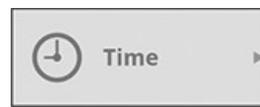
**Flow Retract** — select to adjust detent flow retract value. See SCV Settings—Flow Adjustment in this Operator's Manual section.



Flow Extend Tab

RXA0173501—UN—03JAN20

**Flow Extend** — select to adjust detent flow extend value. See SCV Settings—Flow Adjustment in this Operator’s Manual section.



Time Tab Example

RXA0173527—UN—02JAN20

**Time** — controlled by implement and will be grayed out since no adjustments can be made.



Time Extend Tab

RXA0173528—UN—02JAN20

**Time Extend** — select to adjust detent time extend value. See SCV Settings—Time Adjustment in this Operator’s Manual section.



Flow Tab Example

RXA0173503—UN—03JAN20

**Flow** — select to adjust detent flow value for extend and retract. See SCV Settings—Flow Adjustment in this Operator’s Manual section.

KD34109.000057F-19-10JAN20



Automation Tab

RXA0173485—UN—02JAN20

**Automation** — enable/disable feature mode. See SCV Settings—Automation in this Operator’s Manual section.

## SCV Settings—Feature Mode

*NOTE: If hydraulic option connector is equipped, see Hydraulic Option Connector in Hydraulics—General Information section of this Operator’s Manual.*

Feature mode allows the implement to control the application. To enable, connect a feature mode compatible implement using the hydraulic option connector before turning on the vehicle. When connected through ISOBUS or an implement connector, SCVs automatically enter feature mode and a page displays with the feature options.

### Items Accessible in Feature Mode:



Feature Mode Example

RXA0173490—UN—02JAN20

**Feature Mode Example** — items may change based on status.

*NOTE: Tab appearance and quantity will vary since feature mode is used in combination with standard and independent modes.*

KD34109.0000580-19-04MAY23

## SCV Settings—Flow Adjustment

Adjust amount of SCV flow based on demand. For information on approximate SCV flow output settings and available pump flow, see Total SCV Flow in this Operator’s Manual section.

### Procedure to Modify:

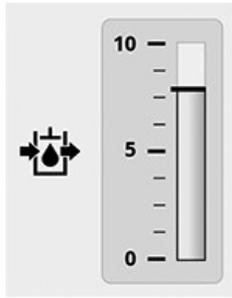


Adjust Flow

RXA0173495—UN—02JAN20

*NOTE: Flow adjustment is from 0.04 to 10. Selecting (+) increases flow in increments of 0.04 and (++) increases flow in increments of 1.00. Selecting (-) or (--) decreases flow by the same increments.*

Select (+/++) to increase or (-/--) to decrease flow. Value is shown in display box.



Flow Gauge

RXA0173499—UN—03JAN20

Flow setting also displays on flow gauge.



Close

RXA0167129—UN—25MAR19

Select to close.

**Items Accessible for TouchSet Depth Control:**



RXA0173522—UN—06JAN20  
Set Upper Point



RXA0173521—UN—06JAN20  
Set Point Indicator

**Upper Set Point** — select upper SET key to set a frequently used height that can be recalled. Set point is displayed by upper yellow indicator.



RXA0173520—UN—06JAN20  
Set Lower Point



RXA0173521—UN—06JAN20  
Set Point Indicator

**Lower Set Point** — select lower SET key to set a frequently used depth that can be recalled. Set point is displayed by lower yellow indicator.



Position Indicator

RXA0173500—UN—03JAN20

**Position Indicator** — displays current implement position.

KD34109.0000582-19-20JUN22

**SCV Settings—Time Adjustment**

Adjust amount of time operation of attached implement will run.

**Procedure to Modify:**



Adjust Time

RXA0173526—UN—02JAN20

*NOTE: Time adjustment is from 0 seconds to C for continuous flow. Time increases by 1 second increments up to 10 seconds, then in 2 second increments up to 20, then 5 second increments up to 30, then 10 second increments up to 60, then 30 second increments up to 120, then by 60 second increments up to C.*

Select (+) to increase or (-) to decrease time. Value is shown in display box.



Time Setting

RXA0173525—UN—02JAN20

Time setting also displays under flow gauge. A yellow box displays around the time while adjustment is taking place.



Close

RXA0167129—UN—25MAR19

Select to close.

KD34109.0000583-19-06FEB20

**SCV Settings—Advanced**

Advanced settings allow you to access further adjustments and less common settings.

*NOTE: Some items only display if machine is equipped with the associated options.*

**Items Accessible on Advanced Settings Page:**



RXA0173517—UN—03JAN20

SCV Independent Mode Example

**SCV Independent Mode** — turn independent mode ON or OFF for each SCV. See SCV Settings—Activating Independent Mode in this Operator’s Manual section.



RXA0173496—UN—02JAN20

Flow Adjustment Sensitivity

**Flow Adjustment Sensitivity** — select the desired flow response curve for the SCV control lever and joystick. See SCV Settings—Flow Adjustment Sensitivity in this Operator’s Manual section.



RXA0167187—UN—22MAR19

ON/OFF

**Loader Mode** — prevents unwanted loader movement by ignoring the SCV flow and time settings. Select ON to enable or OFF to disable.



RXA0167187—UN—22MAR19

ON/OFF

**Flow Sharing** — reduces flow to non-critical functions, ensuring priority flow to critical functions. Select ON to enable or OFF to disable. See Flow Sharing in this Operator’s Manual section.

KD34109,0000587-19-03FEB20

## SCV Settings—Activating Independent Mode

Allows you to set different detent time and flow values for extend and retract. Independent mode is enabled/ disabled for each SCV separately.

*NOTE: Only the SCVs that are available will display.*

### Procedure to Modify:



RXA0167187—UN—22MAR19

ON/OFF

**Independent Mode** — select ON to enable or OFF to disable.

KD34109,0000581-19-04MAY23

## SCV Settings—Automation

*NOTE: If hydraulic option connector is equipped, see Hydraulic Option Connector in Hydraulics— General Information section of this Operator’s Manual.*

Automation allows you to enable/disable the SCV adjustments in feature mode. When disabled, SCV displays adjustments for either standard mode or independent mode, whichever the SCV is set to.

### Procedure to Modify:



RXA0167187—UN—22MAR19

ON/OFF

**Auto Mode** — select ON to enable or OFF to disable.

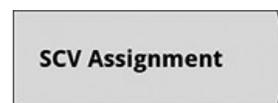
KD34109,0000584-19-04MAY23

## SCV Settings—Assignment

Reassign an SCV run page module to a different SCV.

*NOTE: Only accessible from run page module.*

### Procedure to Modify:



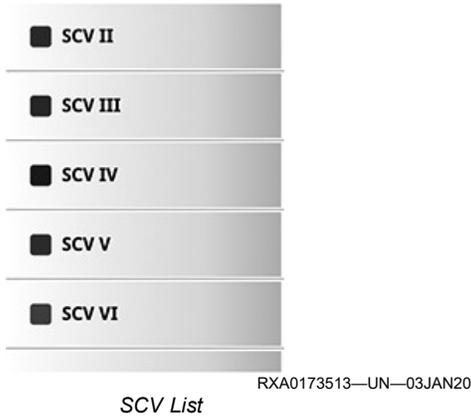
RXA0173514—UN—03JAN20

SCV Assignment Tab

1. Select SCV Assignment tab.



2. Select Assigned SCV box.



3. Select desired SCV from list.



4. Select to close.

KD34109,0000585-19-14JAN20

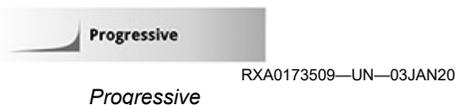
### SCV Settings—Flow Adjustment Sensitivity Procedure to Modify:



1. Select the box to set the desired response curve for the SCV control lever or the joystick.
2. Select one of the following response curves:

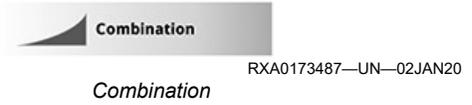


- **Linear** — the flow rate of the SCV corresponds to the distance traveled by the SCV control lever/ joystick lever.



- **Progressive** — initially, the flow rate of the SCV is

less than that traveled by the SCV control lever/ joystick lever (giving a more sensitive start to the movement).



- **Combination** — an intermediate stage between linear and progressive.



Select OK to exit and save changes.



Select Cancel to exit without saving changes.

KD34109,0000588-19-03FEB20

### SCV Settings—Flow Assist

Flow Assist automatically adjusts engine speed, while maintaining constant wheel speed in order to meet pump flow demand for all hydraulic functions. Engine speed operator limits are followed (including the throttle position as the upper limit).

Hydraulic flow demand includes (but is not limited to):

- SCV
- Hitch
- Steering
- Power Beyond

Flow Assist can be enabled/disabled in Full AUTO and Custom transmission modes.

In these modes, engine speed and transmission gear are also automatically adjusted based on:

- Load
- Commanded wheel speed

KD34109,00005DF-19-19APR21

### SCV Control Lever Adjustments

**CAUTION:** Avoid personal injury or machine damage:

- Ensure that hoses are not reversed. If hoses

are reversed, cylinder extends when it should retract.

- To prevent unintentional implement movement, shut off engine, move SCV control levers to neutral position, and press SCV lock button before attaching implement. For lock button identification, see **CommandARM Controls—Left Side in CommandARM Controls** section of this **Operator's Manual**.
- **SCV does not disengage when operator leaves seat. For more information, see Operator Presence Sensor in Seats section of this Operator's Manual.**

SCV control levers on the CommandARM allow you to make adjustments to the SCV flow. For more information on SCV levers, see **CommandARM SCV Control Levers in CommandARM Controls** section of this **Operator's Manual**.

*NOTE: SCV control levers can be reconfigured to control tractor functions and implements. See **Controls Setup in CommandCenter** section of this **Operator's Manual**.*

**SCV Control Lever Adjustments:**

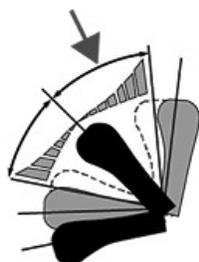


Neutral

RXA0173507—UN—03JAN20

*NOTE: SCV control lever should be in neutral position at tractor start-up.*

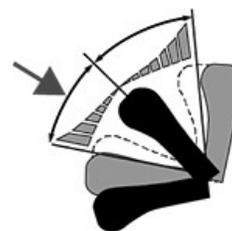
**Neutral** — flow continues until timed detent expires. If no timed detent is commanded, flow is turned off.



Extend

RXA0173488—UN—02JAN20

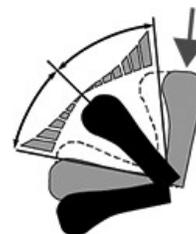
**Extend** — operator controlled variable flow to extend cylinder. Oil flows at a rate that varies depending on how far lever is moved. Slowest oil flow is when lever is closest to neutral position. Lever is returned to neutral position when released.



Retract

RXA0173510—UN—03JAN20

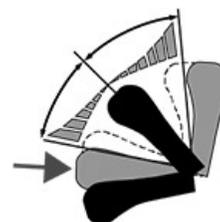
**Retract** — operator-controlled variable flow to retract cylinder. Oil flows at a rate that varies depending on how far lever is moved. Slowest oil flow is when lever is closest to neutral position. Lever is returned to neutral position when released.



Extend Detent

RXA0173489—UN—02JAN20

**Extend Detent** — timed flow to extend cylinder based on time and flow detent settings. Lever returns to neutral position, but flow continues at flow detent setting rate until detent time setting has elapsed.



Retract Detent

RXA0173511—UN—03JAN20

**Retract Detent** — timed flow to retract cylinder based on time and flow detent settings. Lever returns to neutral position, but flow continues at flow detent setting rate until detent time setting has elapsed.



Float

RXA0173491—UN—02JAN20

*NOTE: If lever is in float position at engine start-up, float function will be disabled until lever is cycled to neutral.*

To relieve hydraulic pressure in implement, move lever to float position while engine is running.

**Float** — SCV opens to allow free flow of oil from head-to-rod end of implement hydraulic cylinder, allowing implement to follow ground contour. Lever and SCV remain in float position until lever is manually returned to neutral. Cycle cylinder fully in both directions after being used in float position to ensure that cylinder is filled with oil. Float can be used to allow hydraulic cylinders to coast when shutting down implement.

KD34109,0000589-19-20JUN22

**Total SCV Flow**

1. Check flow setting for each function independently. For correct motor flow settings, refer to the implement Operator's Manual.

The following may cause pump to operate at high pressure:

- Down-pressure systems (drills, air seeders, disks) — can be considered to be zero flow demand after completion of raise or lower cycle. For more information, see implement connection examples in Hydraulic Connections section of this Operator's Manual.
- Auxiliary flow control valves (vacuum flow control) — open the implement flow control valve and adjust tractor flow rate to desired setting. For more information, see implement connection examples in Hydraulic Connections section of this Operator's Manual.
- Cylinder functions where line or orifice restrictions control flow — adjust the tractor flow control to point where function speed begins to decrease.
- Auxiliary control valves (implement stack valves, row guidance) — adjust the tractor flow control to lowest setting that results in correct operation.

2. Determine total flow demand by adding flow requirements for each SCV using settings determined in Step 1. Include hitch and power beyond flow requirements if applicable (refer to SCV flow chart for settings based on approximate flow output).

3. Determine if flow demand exceeds available pump flow (refer to SCV pump flow chart for approximate available pump flow).

If flow demand:

- Is less than available pump flow but has performance concern, see your John Deere dealer.
- Exceeds pump flow:

- Increase engine rpm if possible.

- Decrease flow setting on noncritical functions.
- Convert implement open center valves to closed center operation, if equipped.

*NOTE: Flow measurements made without steering or hitch being used.*

Pump Flow (Approximate) <sup>a</sup> L/min (gal/min)		
Engine rpm	Pump	
	85 cc	85 cc + 85 cc
1000	100.9 (27)	201.8 (53)
1500	151.4 (40)	302.8 (80)
2000	201.8 (53)	403.7 (106)
2100	211.9 (56)	423.9 (112)

<sup>a</sup>Typical flows were taken from new tractors. Component wear may cause slightly lower values. More than one SCV is needed to achieve full flow at each rpm listed.

Power Beyond Maximum Flow	
Coupler	L/min (gal/min)
1/2-Inch	132 (35)
3/4-Inch	211.9 (56)

SCV Flow (Approximate) <sup>a</sup> L/min (gal/min)		
SCV Flow Settings	Standard-Flow SCV 1/2-Inch Coupler <sup>b</sup>	High-Flow SCV 3/4-Inch Coupler <sup>c</sup>
0.04 <sup>d</sup>	—	—
1.0	1.9 (0.5) <sup>e</sup>	1.1 (0.3)
2.0	6.1 (1.6)	7.2 (1.9)
3.0	13.6 (3.6)	15.6 (4.1)
4.0	20.4 (5.4)	25.8 (6.8)
5.0	28.0 (7.4)	37.3 (9.9)
6.0	40.9 (10.8)	50.9 (13.4)
7.0	62.1 (16.4)	78.3 (20.7)
8.0	81.4 (21.5)	105.2 (27.8)
9.0	107.1 (28.3)	131.0 (34.6)
10.0	132.0 (35.0)	171.0 (45.2)

<sup>a</sup>At 2000 rpm and 454 kg (1000 lb) of load at point-of-use.

<sup>b</sup>85 cc pump.

<sup>c</sup>85 cc and 85 cc pumps.

<sup>d</sup>Minimum flow setting.

<sup>e</sup>Observed under no load.

Hitch Cylinder Diameter mm	Hitch Flow [Ag] L/min (gal/min)
90/100	71 (18.7)
120/120	88 (23.2)

KD34109,0000586-19-03JUL23

## Flow Sharing

To maintain productivity, hydraulic flow sharing reduces flow to non-critical SCV functions, ensuring priority flow to critical SCV functions. To enable or disable flow sharing, see SCV Settings—Advanced in this Operator's Manual section.

*NOTE: Continuous setting receives priority over timed detent. If all SCVs are set to C (continuous) and requested flow is exceeded, flow is equally reduced to all SCVs to ensure that all functions are still active.*

### For Maximum Performance:

- Properly connect SCVs and implement according to implement Operator's Manual.
- If implement Operator's Manual is unavailable, refer to appropriate hydraulic connection example in Hydraulic Connections section of this Operator's Manual. On agricultural tractors equipped with high-flow hydraulics, SCVs can be supplied by different pumps. For more information, see Connecting Implements to High-Flow Hydraulic SCVs [AG] in Hydraulic Connections section of this Operator's Manual.
- Make sure SCV flow settings match flow requirements for function. For more information, see Total SCV Flow in this Operator's Manual section.
- Setting detent time (recommendation in implement Operator's Manual) slightly longer than needed is preferred. However, setting time much longer than necessary or to C (continuous) could result in activation of flow sharing and excess fuel burn.

If implement functions operate slower than expected, perform flow sharing diagnostic procedure.

### Flow Sharing Diagnostic Procedure:

1. Check all connections for proper hookup. Whenever possible, connect return connections to SCV return ports or power beyond return port.
2. For every SCV set to C (continuous) flow, adjust the flow rate to be the lowest rate possible for optimal implement operation. Not all functions require continuous flow, and timed SCVs set too long can lead to flow sharing if they overlap with continuous flow SCVs.
3. Hydraulic flow is engine speed dependent. If a function is slow, increase engine rpm to increase flow.
4. Adjust flow first and then timed detent SCVs (as necessary from observation) to provide proper implement function.
5. On high-flow hydraulic system equipped tractors, try to balance hydraulic loading between the two circuits.

6. If implement functions remain slow, see your John Deere dealer.

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KD34109,000057B-19-08JUN22

# Hydraulic Connections

## Connect/Disconnect Hydraulic Hoses

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

To avoid injury, always:

- Protect the hands and body from high-pressure fluids.
- Inspect hydraulic hoses periodically for damage (at least once per year).  
Signs of wear or damage include, but are not limited to, leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, and exposed wire braid.

Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

- Tighten all connections before applying pressure.
- Ensure that all connected lines are as straight as possible.
- Search for leaks with a piece of cardboard.
- Relieve pressure from the hydraulic system before disconnecting a hydraulic line or other lines.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene can result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available in English from the Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

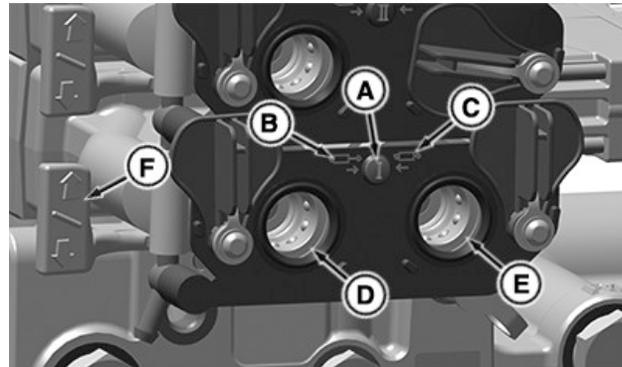
Unintentional implement movement can cause injury. To avoid injury, before attaching or detaching hydraulic hoses, always engage:

- **SCV lock button.** See **CommandARM Controls—Left Side** in the **CommandARM Controls** section of this **Operator's Manual**.
- **Joystick lock (if equipped).** See **Operate SCVs with CommandARM Joystick** in the **Selective Control Valves** section of this **Operator's Manual**.

**IMPORTANT:** Dirt, dust, or other foreign material can damage the hydraulic system. Avoid damage to the hydraulic system and thoroughly clean the hydraulic hoses, hose ends, and SCVs before connecting an implement.

Steam cleaning or using a high-pressure washer in the area around the SCV connections and electronics can damage equipment. Keep a minimum distance of 200 mm (8 in) between the pressure washer nozzle and hydraulic connections for any pressure washer exceeding 6895 kPa (69 bar) (1000 psi).

## SCV Coupler Component Identification and Location



RXA0188461—UN—25JAN23

*NOTE:* Remote cylinder couplers are designated I through VI (A), where I is the bottom coupler.

*Verify that the remote hydraulic hoses are connected to the correct SCV couplers to ensure desired system control operation.*

## Connect Hydraulic Hoses

1. Lock out the SCV controls inside the cab.
2. Before connecting the hydraulic hoses, determine:
  - a. If the symbols on the coupler identification plate indicating cylinder movement (B) or (C) match the desired cylinder travel direction.
  - b. The desired SCV connection based on whether the implement uses single-acting or double-acting cylinders:
    - For single-acting cylinders, use the extend coupler (D).
    - For double-acting cylinders, use the extend (D) and retract (E) couplers.
3. To connect the hydraulic hose to the SCV:
  - a. Clean the dust covers/caps.
  - b. Rotate up or remove the dust covers to expose the SCV couplers.
  - c. Push forward the hydraulic coupler sleeve (if equipped).
  - d. Move the SCV hose connect lever (F):
    - Push the lever to connect to the retract coupler.

- Pull the lever to connect to the extend coupler.
- e. Push the hydraulic hose firmly into the SCV coupler.
  - f. Pull the hydraulic coupler sleeve (if equipped) backward to lock the house coupler into the receptacle.

### Disconnect Hydraulic Hoses

From inside the cab:

1. Start the tractor.
2. Use the appropriate SCV lever to lower the implement to the ground.
3. Relieve the hydraulic pressure in hoses by moving the SCV control lever or joystick (if equipped) to the float position for a few seconds.
4. Lock out the SCV controls.
5. Shut off the tractor.

From outside the cab:

1. Move the SCV hose connect lever (F) slowly to relieve any pressure buildup of trapped oil:
  - Push the lever to disconnect from the retract coupler.
  - Pull the lever to disconnect from the extend coupler.
2. Remove the hoses from the SCV couplers.
3. Clean the SCV coupler area.
4. Rotate down or replace the dust covers to protect the SCV couplers.

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### Implements Requiring Large Volumes of Hydraulic Oil

**IMPORTANT:** Avoid damage to the hydraulic system:

- **Never add hydraulic oil to the reservoir with the engine running. Doing so can cause the hydraulic reservoir to overflow.**
- **Do not overfill the hydraulic reservoir.**

1. Cycle all of the implement cylinders after starting the tractor.
2. Lower the implement to the ground to return most of the oil to the reservoir.
3. Check the hydraulic oil level at the hydraulic oil sight gauge. See Hydraulic System Oil Level in the Service—Check section of this Operator's Manual.

4. Recheck the oil level when the implement is removed.
5. Add or remove hydraulic oil as necessary. If the oil must be drained, see Hydraulic System Oil and Filters in the Service—Change section of this Operator's Manual.

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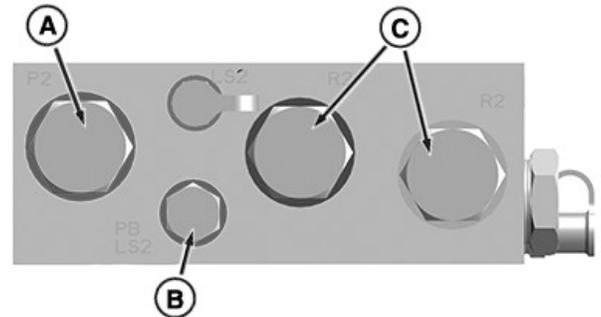
### Use Load Sense Hydraulic System—Power Beyond

Power beyond is used as a pressure/flow source for auxiliary functions equipped with independent flow control valves. Use power beyond when:

- Tractor SCV control is not needed.
- No other SCV outlet is available.

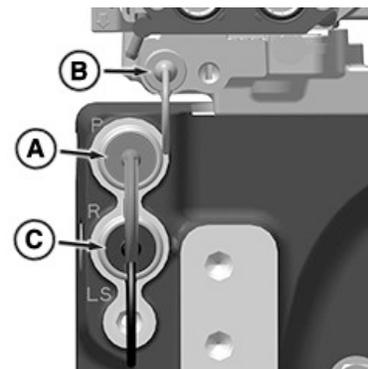
Power beyond functions require a load sense signal to regulate pump pressure; a load sense hydraulic line is used for that purpose. Certain equipment can require modification. See your John Deere dealer.

### Component Identification



RXA0188462—UN—25JAN23  
Power Beyond Ports—Mid/Upper (if equipped)

- A—Pressure Port
- B—Load Sense Port
- C—Return Port (motor return) (2 used)

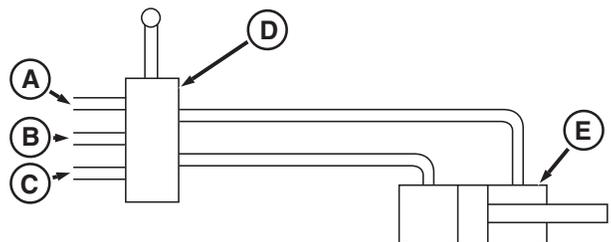


RXA0188463—UN—25JAN23  
Power Beyond Coupler—Hitch Casting

- A—Pressure Coupler
- B—Load Sense Coupler
- C—Return Coupler (motor return)

**Example 1**

NOTE: Example 1 is the preferred practice.

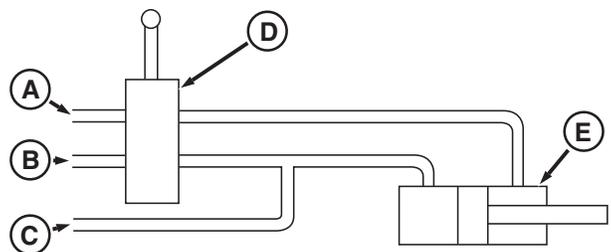


RXA0177994—UN—20MAY20

- A—Pressure Coupler
- B—Load Sense Coupler
- C—Return Coupler (motor return)
- D—Control Valve
- E—Cylinder

Control valves with load sense provide a load sense signal to the hydraulic system and can be operated manually or by solenoids.

**Example 2**



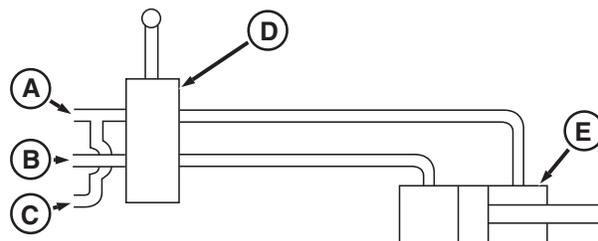
RXA0177995—UN—20MAY20

- A—Pressure Coupler
- B—Load Sense Coupler
- C—Return Coupler (motor return)
- D—Control Valve
- E—Cylinder

**IMPORTANT:** The circuit allows cylinder leak-down through the load sense line (C). If leakage is not acceptable for operation, use Example 3.

The control valve directs oil into the extend or retract circuits. Connect the load sense line to the circuit that requires pressure. An example is a trailer lift cylinder with a load that is supported by mechanical stops in the full down position. Load sense signals the pump when increased pressure is needed. Pressure remains low when the load is supported by mechanical stops.

**Example 3**



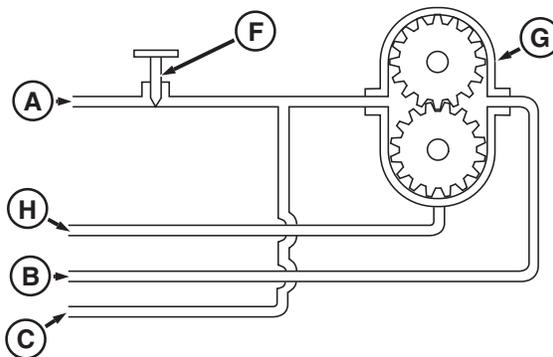
RXA0177996—UN—20MAY20

- A—Pressure Coupler
- B—Load Sense Coupler
- C—Return Coupler (motor return)
- D—Control Valve
- E—Cylinder

**IMPORTANT:** The system will maintain a maximum pressure of 20000 kPa (200 bar) (2900 psi) as long as power beyond hoses are connected.

The control valve directs oil into the extend or retract circuits (either requiring high pressure). Connect the load sense line to the pressure line before the control valve. An example is a folding implement, where pressure is needed to extend or retract the cylinders.

**Example 4**



RXA0138270—UN—17JAN14

- A—Pressure Line
- B—Return Line
- C—Load Sense Line
- F—Pressure-Compensated Flow Valve
- G—Hydraulic Motor
- H—Motor Case Drain (sump line)

NOTE: The motor speed can fluctuate when other functions cause system pressure change. Minimize fluctuations by installing a pressure-compensated flow control valve.

For Ag high flow, it is recommended that the hydraulic motor is connected to the top SCVs (85 cc high-flow pump).

High-flow scraper hydraulics is not recommended for motor application.

The pressure-compensated flow control valve is used to

regulate hydraulic motor speed. Connect the load sense line to the pressure line after the control valve.

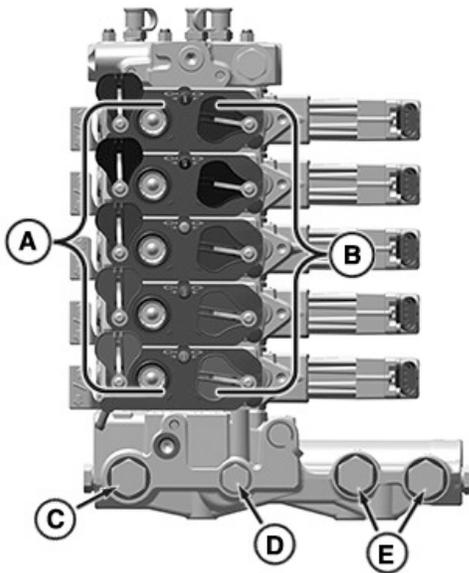
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### Component Identification and Location [Ag]

SCVs are color coded for easier identification. Hose identification kits are available through your John Deere dealer.

SCV Numbers and Corresponding Colors	
SCV	
Number	Color
I	Green
II	Blue
III	Brown
IV	Black
V	Violet
VI	Gray

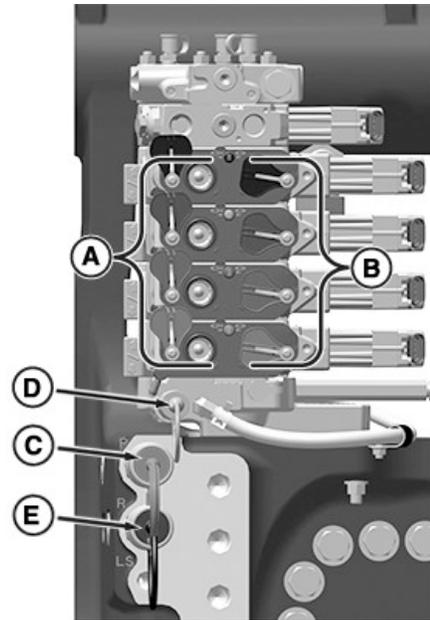
### Standard Flow Hydraulics



RXA0188464—UN—25JAN23

Standard Flow—Power Beyond in Upper Location

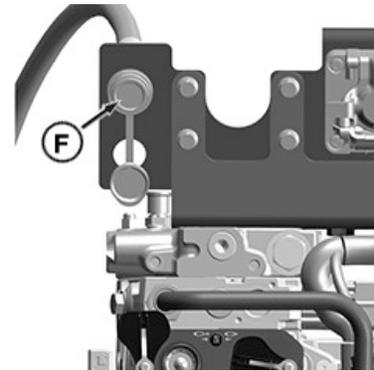
- A—Extend Coupler (5 used)
- B—Retract Coupler (5 used)
- C—Power Beyond Pressure Port
- D—Power Beyond Load Sense Port
- E—Power Beyond Return Port (motor return) (2 used)



RXA0188465—UN—25JAN23

Standard Flow—Power Beyond in Hitch Casting

- A—Extend Coupler (4 used)
- B—Retract Coupler (4 used)
- C—Power Beyond Pressure Coupler
- D—Power Beyond Load Sense Coupler
- E—Power Beyond Return Coupler (motor return)



RXA0188466—UN—25JAN23

- F—Sump Coupler (motor case drain)

### High-Flow Hydraulics

**IMPORTANT:** Avoid hydraulic and cooling system overheating. Ensure that the implement is correctly connected to the hydraulic system.

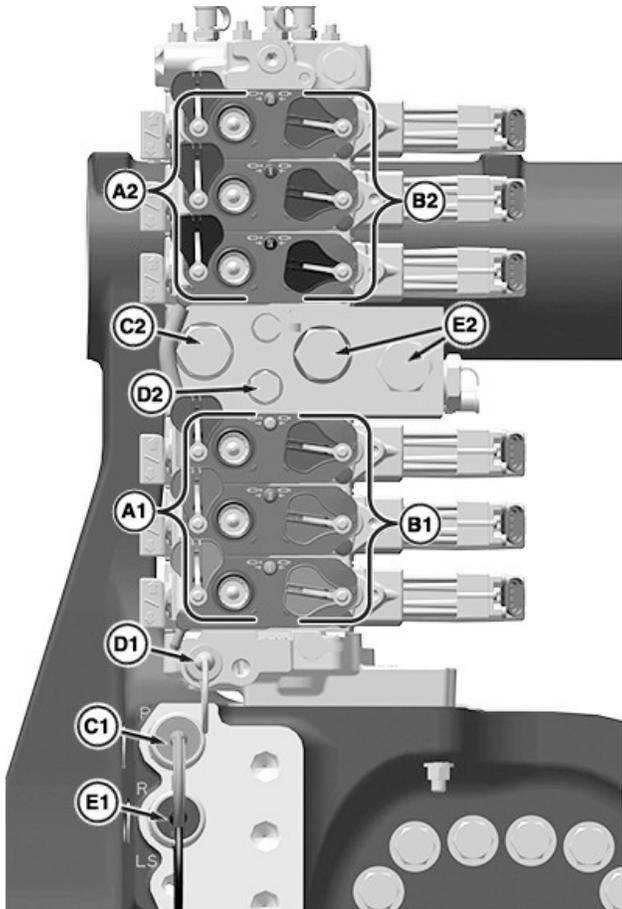
**Recommended setup for high-flow agriculture applications:**

- Connect the hydraulic motor supply to secondary pump SCVs.
- Connect the hydraulic motor return coupler to a secondary pump power beyond return coupler connection.

It is not recommended to connect scraper hydraulic systems to high-flow SCVs.

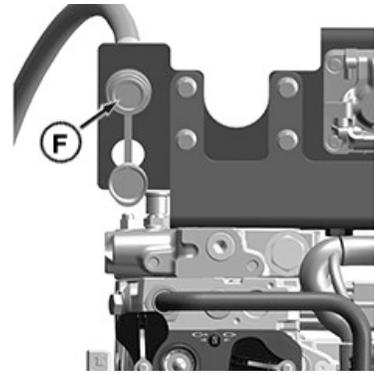
NOTE: Field installation kits are available for:

- 1/2-inch and 3/4-inch power beyond couplers.
- 1/2-inch and 3/4-inch SCV couplers/housings.



RXA0188467—UN—25JAN23

- A1—Extend Coupler (primary hydraulic pump) (3 used)
- A2—Extend Coupler (secondary hydraulic pump) (3 used)
- B1—Retract Coupler (primary hydraulic pump) (3 used)
- B2—Retract Coupler (secondary hydraulic pump) (3 used)
- C1—Power Beyond Pressure Coupler (primary hydraulic pump)
- C2—Power Beyond Pressure Port (secondary hydraulic pump)
- D1—Power Beyond Load Sense Coupler (primary hydraulic pump)
- D2—Power Beyond Load Sense Port (secondary hydraulic pump)
- E1—Power Beyond Return Coupler (motor return) (primary hydraulic pump)
- E2—Power Beyond Return Port (motor return) (secondary hydraulic pump) (2 used)



RXA0188466—UN—25JAN23

**F—Sump Coupler (motor case drain)**

For high-flow hydraulic systems with:

NOTE: All SCVs can be equipped with Intelligent Power Management (IPM). If an air seeder is connected to SCVs IV—VI, follow the guidelines found in the air seeder Operator's Manual (example: John Deere 1870 or 1895 Air Seeder). See Drivetrain Protection in the Drivetrain section of this Operator's Manual.

- Five SCVs:
  - I—III are supplied by the primary pump.
  - IV—V are supplied by the secondary pump. These SCVs are recommended for orbital motor use.
- Six SCVs:
  - I—III are supplied by the primary pump.
  - IV—VI are supplied by the secondary pump. These SCVs are recommended for orbital motor or air seeder use.

**Primary Hydraulic Pump SCVs**

The primary hydraulic pump supplies SCVs I—III. The primary pump is recommended for high-pressure and low-flow functions, such as air seeders, large cylinders, and active downforce systems.

**Secondary Hydraulic Pump SCVs**

The secondary hydraulic pump supplies SCVs IV—VI. The secondary hydraulic pump is recommended for low-pressure and high-flow functions. Most hydraulic motors use 19—26.5 L/min (5—7 gal/min) per motor and a pressure of around 9997 kPa (100 bar) (1450 psi) to operate.

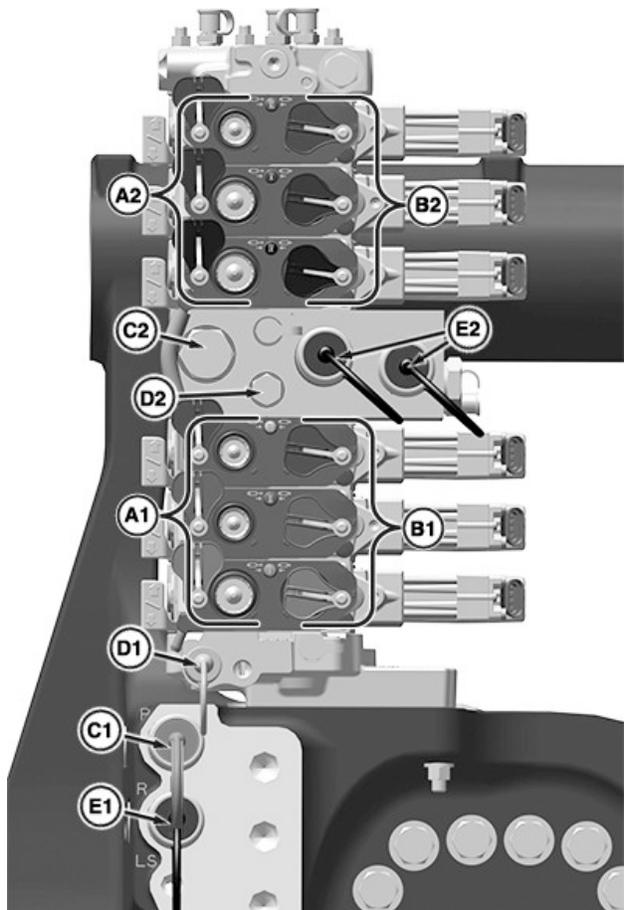
The secondary hydraulic pump can operate hydraulic motors such as air seeders, sprayers, and vacuum planters. Using the secondary hydraulic pump when operating hydraulic motors:

- Can improve fuel economy, reduce power loss, and reduce heating of hydraulic oil.
- Reduces hydraulic system interactions with features such as steering, brakes, raise, lower, and active downforce.

The secondary hydraulic pump can also provide high pressure to the same functions as the primary hydraulic pump, however:

- The benefits of the improved fuel economy and reduced power loss disappear.
- There is an increased chance of system interactions with hydraulic motors being on the same pump as other hydraulic functions. This typically means increased vacuum level or blower motor speed fluctuations.
- More heat can be generated under some conditions, which increases the load on the cooling system.

### Connecting Implements to Air Seeder Special High-Flow Hydraulics SCVs

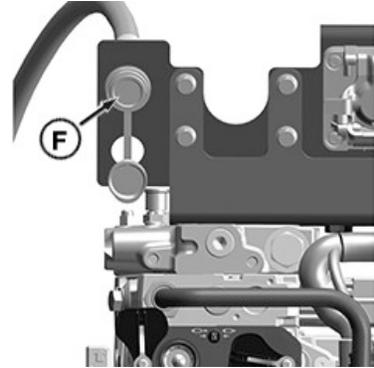


RXA0188468—UN—25JAN23

- A1—Extend Coupler (primary hydraulic pump) (3 used)
- A2—Extend Coupler (secondary hydraulic pump) (3 used)
- B1—Retract Coupler (primary hydraulic pump) (3 used)
- B2—Retract Coupler (secondary hydraulic pump) (3 used)
- C1—Power Beyond Pressure Coupler (primary hydraulic pump)
- C2—Power Beyond Pressure Port (secondary hydraulic pump)
- D1—Power Beyond Load Sense Coupler (primary hydraulic pump)
- D2—Power Beyond Load Sense Port (secondary hydraulic pump)
- E1—Power Beyond Return Coupler (motor return) (primary hydraulic pump)
- E2—Power Beyond Return Coupler (motor return) (secondary hydraulic pump) (2 used)

NOTE: SCV flow for:

- I, IV, and V is 180 L/min (48 gal/min) with 3/4-inch couplers.
- II, III, and VI is 140 L/min (37 gal/min) with 1/2-inch couplers.



RXA0188466—UN—25JAN23

F—Sump Coupler (motor case drain)

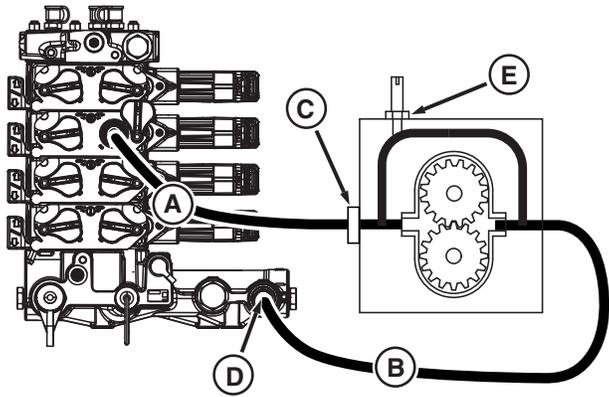
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### Use Hydraulic Spray Pumps [Ag]

**IMPORTANT:** Moving the SCV control lever to neutral will cause the motor to stop abruptly and may damage the seals. Always move the SCV lever to the float position to allow the motor to coast to a stop.

NOTE: The preferred method of connection is to connect the hydraulic motor to the high-flow pump.

1. Follow the recommendations provided by the spray pump manufacturer for pump model selection, setup, and operation.
2. Select the smallest displacement motor recommended for multiple hydraulic function operation. The smaller displacement reduces the total hydraulic flow demand and improves overall system performance.
3. Determine which SCV to use:
  - a. III, IV, or V for a standard hydraulic system.
  - b. III or IV for a high-flow hydraulic system with a hitch.
  - c. IV or V for a high-flow hydraulic system without a hitch.



RXA0188469—UN—25JAN23  
Spray Pump—Without Hitch

- A—Pressure Line
- B—Return Line
- C—Inlet Line Orifice (remove)
- D—Power Beyond Return Coupler (motor return)
- E—Needle Valve (closed)

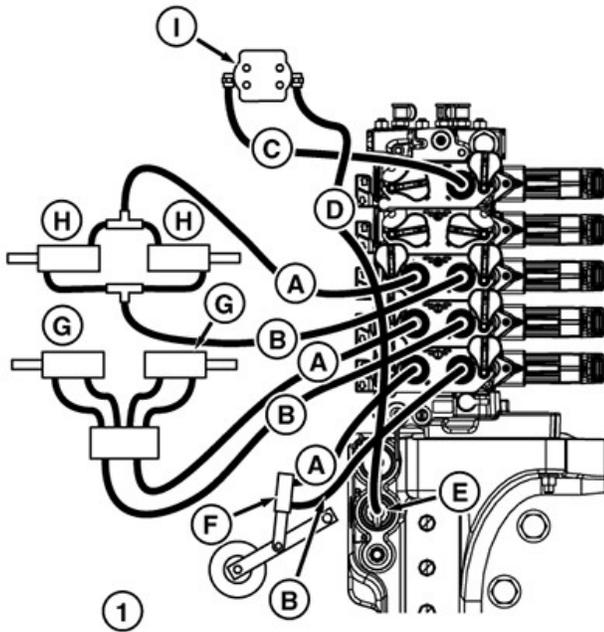
4. Connect the motor pressure line to the retract port of the SCV (right-hand side).
5. Connect the return line to the power beyond return coupler.

**IMPORTANT: Some motors are not equipped with over-speed protection. Extended operation above the recommended speed can cause motor failure.**

6. Move the SCV lever forward to the retract detent position.
7. Adjust the hydraulic flow rate to the guidelines of the pump manufacturer.
8. Shut off the spray pump by moving the SCV control lever to the float position (full forward and down).

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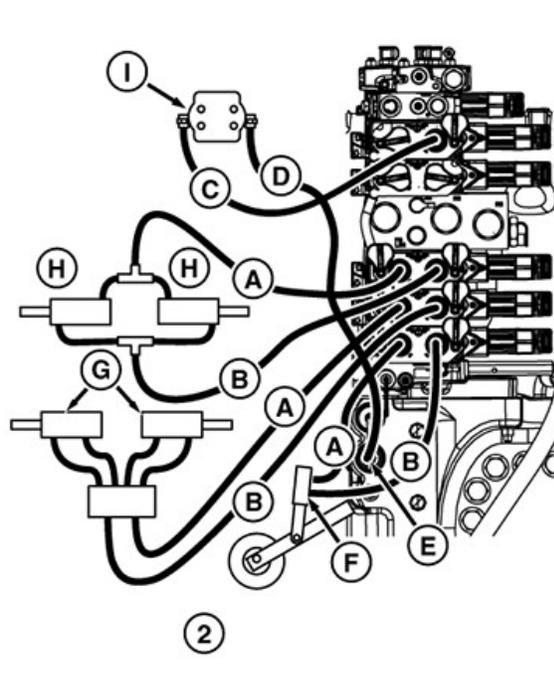
### Implement Connection Example [Ag]: Closed Center Valve and Pump at High Pressure—Less Hitch



- 1—Standard Flow
- 2—High Flow
- A—Extend Coupler Line
- B—Retract Coupler Line
- C—Pressure Line
- D—Return Line

**IMPORTANT: Avoid seal damage:**

- When motor return oil is routed to an SCV, a



- E—Power Beyond Return Coupler (motor return)
- F—Raise/Lower Cylinder
- G—Marker Cylinder (2 used)
- H—Folding Cylinder (2 used)
- I—Hydraulic Motor

RXA0188471—UN—08FEB23

special return hose tip with a check valve is required. The special hose tip prevents high-

pressure oil from moving back toward the motor and possibly damaging the seals.

- Moving the SCV control lever to neutral will cause the motor to stop abruptly and may damage the seals. Always move the SCV lever to the float position to allow the motor to coast to a stop.

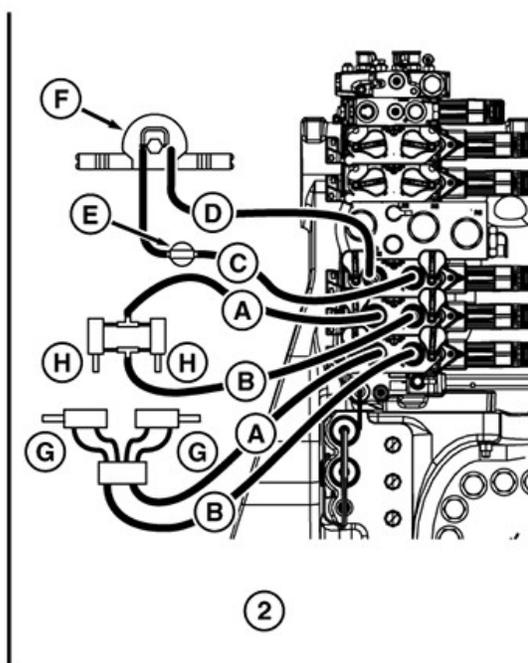
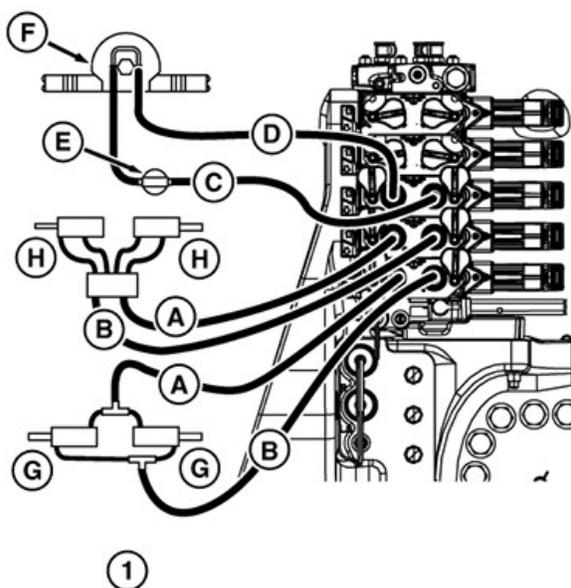
In this application:

- The hydraulic return coupler is routed to the power beyond return port.
- The hydraulic motor receives pressure oil from the SCV retract port.

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*NOTE: The preferred method of connection is to connect the hydraulic motor to the high-flow pump.*

### Implement Connection Example [Ag]: Planter with Vacuum Motor and Return Line to SCV Using Motor Return Tip



- 1—Standard Flow  
2—High Flow  
A—Extend Coupler Line  
B—Retract Coupler Line  
C—Pressure Line

- D—Return Line  
E—Flow Control Valve  
F—Vacuum Motor  
G—Marker Cylinder (2 used)  
H—Folding Cylinder (2 used)

RXA0188470—UN—08FEB23

**IMPORTANT:** If the ambient air temperature is high, hydraulic oil can overheat when the hydraulic pump operates at maximum pressure. Adjust the flow control valve as needed.

**Avoid seal damage:**

- When motor return oil is routed to an SCV, a special return hose tip with a check valve is required. The special hose tip prevents high-pressure oil from moving back toward the motor and possibly damaging the seals.
- Moving the SCV control lever to neutral will cause the motor to stop abruptly and may

**damage the seals. Always move the SCV lever to the float position to allow the motor to coast to a stop.**

*NOTE: The preferred method of connection is to connect the hydraulic motor to the high-flow pump.*

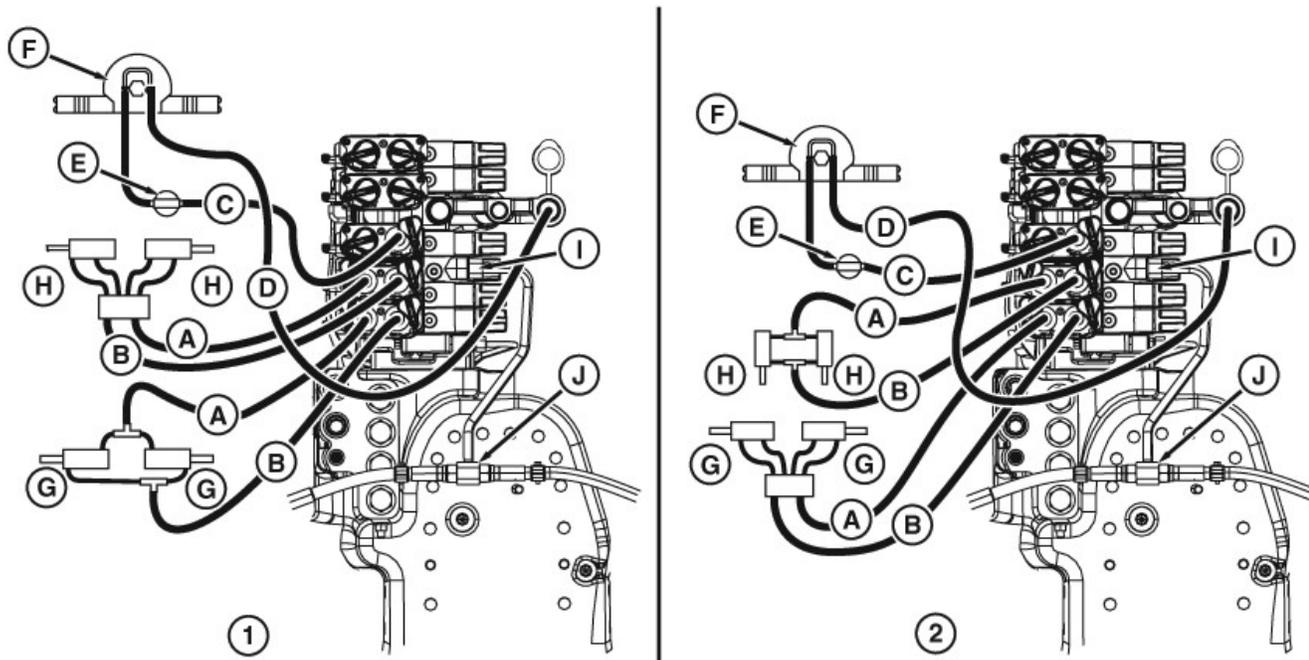
In this application:

- A vacuum motor (similar to a planter blower) receives the pressure oil from the SCV retract coupler.
- If using a SCV to control the flow to the vacuum motor, use the SCV panel for standard-flow or high-flow hydraulics. If the planter is equipped with a flow

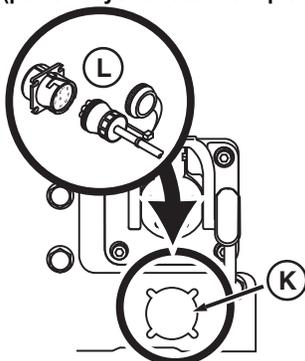
control valve on the vacuum motor, it needs to be in the wide-open position.

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### Implement Connection Example [Ag]: Planter with Vacuum Motor and Return Line to Motor Return—With Hitch and Implement Lift Assist



- 1—Standard Flow
- 2—High Flow
- A—Extend Coupler Line
- B—Retract Coupler Line
- C—Pressure Line
- D—Return Line (power beyond return coupler—motor return)



- K—9-Pin Implement Connector
- L—9-Pin Connector for TouchSet Depth Control

RXA0178005—UN—20MAY20

**IMPORTANT:** Avoid damage to the hydraulic oil. If the ambient air temperature is high, hydraulic oil can overheat when the hydraulic pump operates at the maximum pressure.

RXA0185977—UN—10NOV21

- E—Flow Control Valve
- F—Vacuum Motor
- G—Marker Cylinder (2 used)
- H—Folding Cylinder (2 used)
- I—Implement Lift Assist
- J—T-Fitting and Hydraulic Hose

- Flow control valve controls the flow with standard-flow hydraulics.
- Valve is used to control the oil flow with high-flow hydraulics.

**Avoid damage to the hydraulic system seals due to the incorrect positioning of the SCV levers after the hydraulic motor is shutoff:**

- Always move the SCV lever to the float position, which allows the motor to coast to a stop.
- Never move the SCV lever to the neutral position as this action can cause the motor to stop abruptly.

**Avoid damage to the hydraulic system seals due to high-pressure hydraulic return oil moving back toward the motor through the SCV connection. The installation of a special return hose tip with a check valve is required.**

**NOTE:** Connecting the hydraulic motor to the secondary high-flow pump is the preferred method of connection.

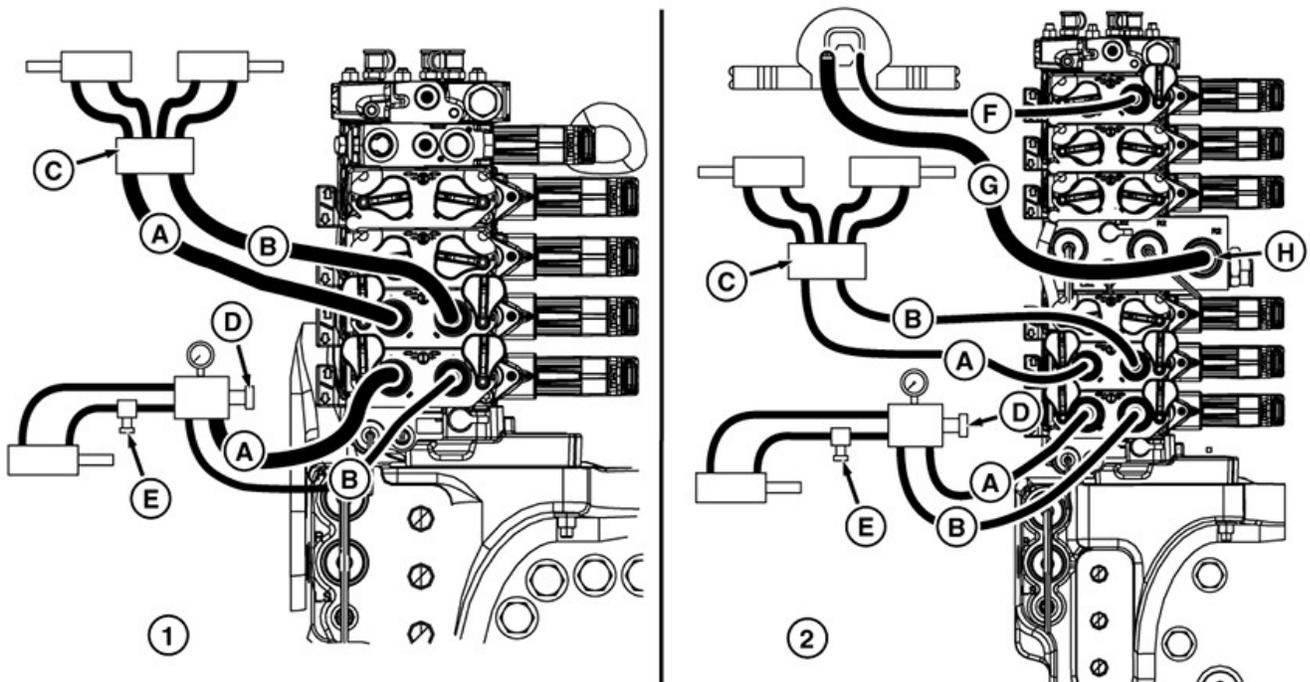
In this application, the:

- Vacuum motor receives pressure oil from the SCV retract coupler.
- Flow control valve is:
  - Set in a wide-open position.
  - Controlled by the tractor panel.
- Return oil is routed to the Power-Beyond return port.
- Return hose can be connected directly to the left-hand side of coupler three. For:
  - Standard-flow hydraulics equipped with a special return hose tip.

- High-flow hydraulics equipped with a special planter return hose tip.
- Implement lift assist cylinders are connected to the hitch-lowering valve using a T-fitting and a hydraulic hose.
  - The hitch lever controls the implement lift assist cylinders when activating the hitch valve.
  - SCV I is used to control both the hitch valve and the implement lift assist.
  - The 9-pin implement connector harness contains a loop circuit that disables the tractor hitch control unit when it is connected to the 9-pin connector for TouchSet depth control that is wired into the tractor main electrical harness.

EC82310,0000EFE-19-04NOV22

### Implement Connection Example [Ag]: Pressure Control Valve Applications—Less Hitch (Grain Drills or Air Seeders with Constant Down-Pressure System)



RXA0188472—UN—31JAN23

- 1—Standard Flow
- 2—High Flow
- A—Extend Coupler Line
- B—Retract Coupler Line
- C—Selector Valve

- D—Pressure Control Valve
- E—Transport Lock Valve
- F—Pressure Line
- G—Return Line (power beyond return coupler—motor return)
- H—Special Hose Tip

**IMPORTANT:** Using more than one implement requiring the use of active downforce can damage the hydraulic system due to overheated hydraulic oil when:

- The ambient air temperature is high.

- The hydraulic pump is set to operate at maximum pressure.

If the ambient air temperature is high, do not use more than one implement at any given time.

**Avoid seal damage:**

- When motor return oil is routed to an SCV, a

special return hose tip with a check valve is required. The special hose tip prevents high-pressure oil from moving back toward the motor and possibly damaging the seals.

- Moving the SCV control lever to neutral will cause the motor to stop abruptly and may damage the seals. Always move the SCV lever to the float position to allow the motor to coast to a stop.

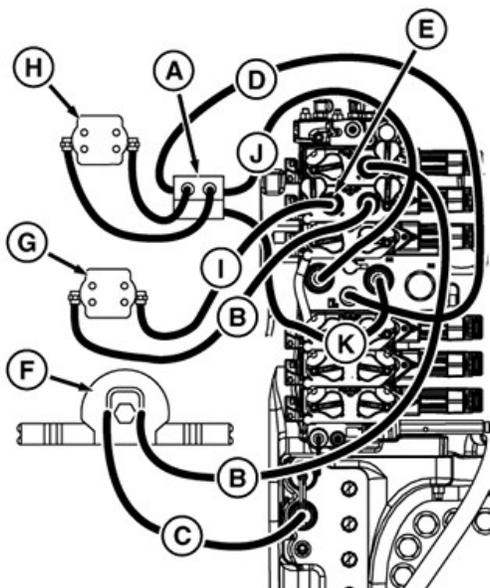
*NOTE: The preferred method of connection is to connect the hydraulic motor to the high-flow pump.*

In this application:

- The vacuum motor receives pressure oil from the retract port of the SCV.
- When using implements requiring active downforce, set the flow control to continuous and move the SCV lever to the detent position to set the hydraulic pump to operate at maximum pressure.

EC82310,0000F01-19-24MAR23

### Implement Connection Example—High-Flow Hydraulics [Ag]: Implement Control Valves—Less Hitch



RXA0188473—UN—26JAN23

- A—Variable Rate Drive (power beyond pressure coupler)
- B—Pressure Line
- C—Return Line (power beyond return coupler—motor return)
- D—Power Beyond Load Sense Line

- E—Return Hose Tip
- F—Vacuum Motor
- G—Hydraulic Motor
- H—Hydraulic Motor
- I—Return Line
- J—Power Beyond Pressure Line
- K—Power Beyond Return Line

#### IMPORTANT: Avoid seal damage:

- When motor return oil is routed to an SCV, a special return hose tip with a check valve is required. The special hose tip prevents high-pressure oil from moving back toward the motor and possibly damaging the seals.
- Moving the SCV control lever to neutral will cause the motor to stop abruptly and may damage the seals. Always move the SCV lever to the float position to allow the motor to coast to a stop.

*NOTE: The preferred method of connection is to connect the hydraulic motor to the high-flow pump.*

In this application:

- The secondary hydraulic pump operates the hydraulic and vacuum motor.
- Return oil is routed to the high-flow power beyond return port. If the return hose is equipped with a special return hose tip, it can be connected directly to the left-hand side of the coupler.
- The hydraulic motor (G) receives pressure oil from the retract port of the SCV. Since the return oil is routed to the extend port of the SCV, a special return hose tip is required.
- The hydraulic motor (H) receives pressure oil from the power beyond port. Return oil is routed to the power beyond return port.

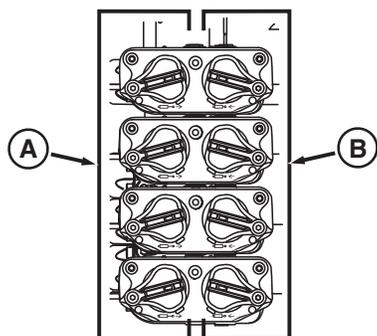
EC82310,0000F06-19-08FEB23

### Component Identification and Location [Scraper]

SCV covers are color coded for easy identification.

SCV Numbers and Corresponding Colors	
SCV	
Number	Color
I	Green
II	Blue
III	Brown
IV	Black
V	Violet
VI	Gray

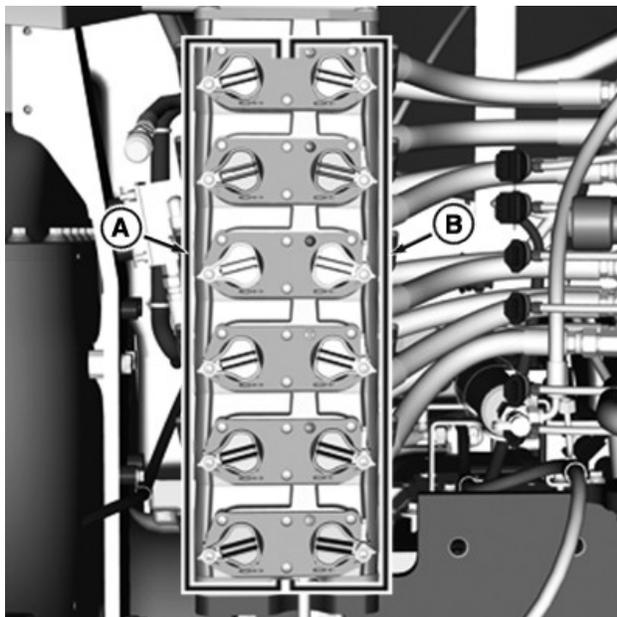
**Standard-Flow Hydraulics**



RXA0179031—UN—11AUG20

A—Extend Port (4 used)  
B—Retract Port (4 used)

**High-Flow Hydraulics (Premium)**



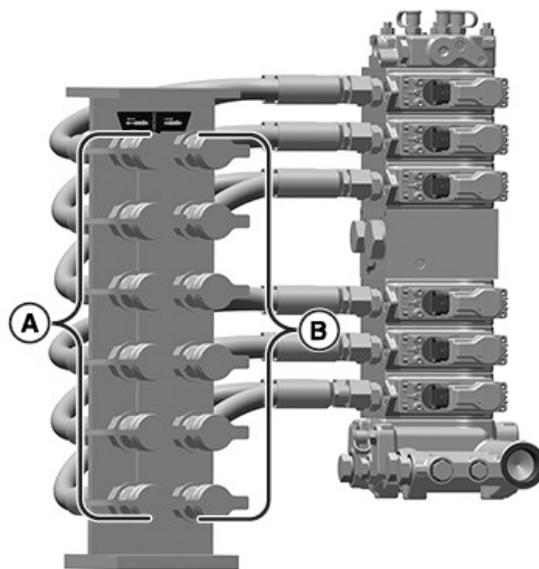
RXA0178008—UN—20MAY20

A—Extend Port (6 used)  
B—Retract Port (6 used)

Both the primary hydraulic pump and the secondary hydraulic pump supply hydraulic oil to all six SCVs.

Features	SCV Coupler Option
	Premium
3/4-Inch Connection	Yes
Float	Yes
Couple/Decouple Under Pressure	Yes
Breakaway Capability	Yes

**Select SCV Coupler**



RXA0188474—UN—26JAN23

A—Extend Port (6 used)  
B—Retract Port (6 used)

Features	SCV Coupler Option
	Select
3/4-Inch Connection	Yes
Float	Yes
Couple/Decouple Under Pressure	No
Breakaway Capability	No

EC82310,0000F07-19-20MAR23

**Scraper Hydraulic Hose Tips [Scraper]**

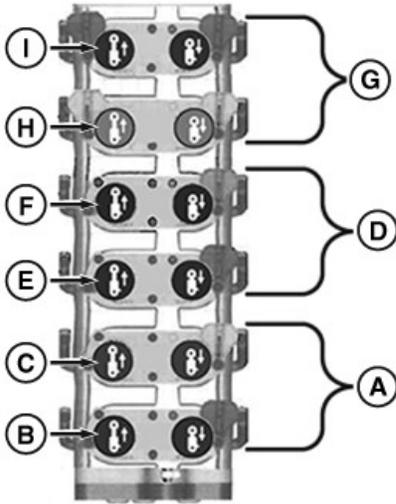
The table shows the recommended John Deere scraper hydraulic hose tips for hoses with flat face O-ring seal connectors and couplers with O-ring boss ports.

Size		Part Number		
Hydraulic Hose		SCV Coupler mm (in)	Hose Tip	Hose-to-Coupler Adapter
Dash Number	Inner Diameter mm (in)			
-8	12.5 (0.50)	12 (0.5)	AR94522 <sup>a</sup>	38H1161
-12	19 (0.75)		AN233013	
		19 (0.75)	AT117365 <sup>b</sup>	38H1163

<sup>a</sup>Standard [Ag] coupler  
<sup>b</sup>High-flow coupler

EC82310,0000F08-19-24MAR23

**Implement Connection Example [Scraper]:  
Pulling 1, 2, and 3 Scrapers**



RXA0178010—UN—20MAY20

*Pull Scraper Connection Examples*

- A—Scraper 1
- B—SCV 1 (lift cylinder) (2 used)
- C—SCV 2 (gate/dump cylinder) (2 used)
- D—Scraper 2
- E—SCV 3 (lift cylinder) (2 used)
- F—SCV 4 (gate/dump cylinder) (2 used)
- G—Scraper 3
- H—SCV 5 (lift cylinder) (2 used)
- I—SCV 6 (gate/dump cylinder) (2 used)

EC82310,0000F09-19-04NOV22

# TouchSet Depth Control

## TouchSet Depth Control Settings and Adjustments

**CAUTION:** Avoid personal injury or death. Do not attempt to install depth control sensors on implements not intended for this system. See implement Operator's Manual.

While engine is running, moving the implement control unit, sensor, connectors, or linkages can result in unexpected movement. Stay clear of implement when starting engine.

TouchSet depth control allows a frequently used height and depth to be set and easily recalled. To use TouchSet depth control, SCV I must be properly connected and set to feature mode.

For more information on:

- Proper connection, see Attach Implement and Control System in this 's Manual section.
- Feature mode, see SCV Settings—Feature Mode in Selective Control Valves section of this 's Manual.
- Height and depth settings, see SCV Settings—Flow Adjustment in Selective Control Valves section of this Operator's Manual.

SCV lever adjustments:

- To move implement to upper or lower set point, briefly hold SCV lever in extend detent or retract detent position.
- To adjust implement position up or down by a fixed amount, tap SCV lever into extend or retract position.

For more information on SCV lever positions, see SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual.

KD34109,000058D-19-20JUN22

## Connect/Disconnect the Implement Position Connector

**CAUTION:** Prevent possible personal injury. To prevent implement movement, before connecting/disconnecting implements, always:

1. Shut off the engine.
2. Move the SCV lever to the neutral position.
3. Lock out the SCV controls.

**IMPORTANT:** Always shut off the engine before connecting or disconnecting the implement position connector. Connecting or disconnecting the implement position connector with the engine running can cause:

- The implement not to respond to commands.

- Diagnostic Trouble Codes (DTC) to appear.

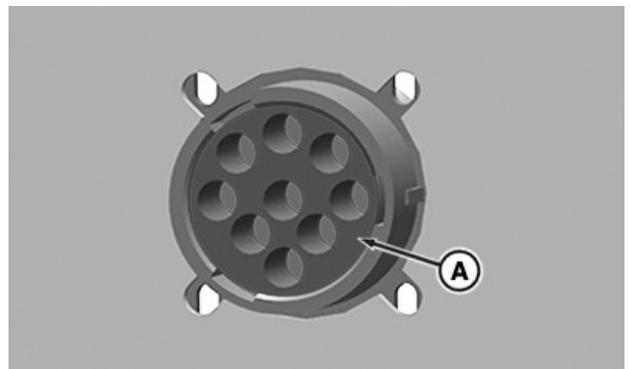
If a DTC appears or the implement fails to respond to commands, reset the implement position connector. See Reset the Implement Position Connector.

## Connect the Implement Position Connector

1. Position the rear of the tractor at the front of the implement.
2. Shut off the engine.

**CAUTION:** Prevent personal injury and equipment damage. Always set the hitch pin into the locked position.

3. Attach the implement to the drawbar.
4. Connect the implement hydraulic hoses. See Connect/Disconnect Hydraulic Hoses in the Hydraulic Connections section of this Operator's Manual.



RXA0188984—UN—01JUN23  
Tractor Wiring Harness Connector (A) is on a Bracket to the Right of the SCV Stack

5. Install the implement position connector to the tractor wiring harness connector.

## Disconnect the Implement Position Connector

1. Shut off the engine.
2. Uninstall the implement position connector from the tractor wiring harness connector.
3. Disconnect the implement hydraulic hoses.
4. Detach the implement from the drawbar.

## Reset the Implement Position Connector

To reset the implement connection:

1. Shut off the engine and allow the CommandCenter to shut down completely.
2. Disconnect the implement harness from the implement connector.
3. Start the tractor and allow the CommandCenter to start completely.

4. Shut off the engine and allow the CommandCenter to shut down completely.
5. Connect the implement harness to the implement connector.
6. Start the engine and allow the CommandCenter to start completely.
7. Operate the implement. If a DTC appears or the implement fails to respond to commands, see your John Deere dealer.

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# Laser Scraper Control [Ag]

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## Laser Scraper—Scrapers Equipped with Scraper Control Unit

**⚠ CAUTION:** Avoid personal injury or death. While engine is running, moving the scraper control unit, connectors, or linkages can result in unexpected movement. Stay clear of implement when starting engine.

*NOTE:* The system is used primarily in areas requiring an automated laser guidance system for scraper applications.

Automatic scraper control system allows raising, lowering, and setting the depth for the implement electronically without leaving the cab.

### Setup

1. Connect implement to tractor using SCV I, III, or V.
2. Set connected SCV to AUTO. See SCV Settings—Feature Mode in Selective Control Valves section of this Operator's Manual.
3. Set flow for connected SCV. See SCV Settings—Flow Adjustment in Selective Control Valves section of this Operator's Manual.

### Activation

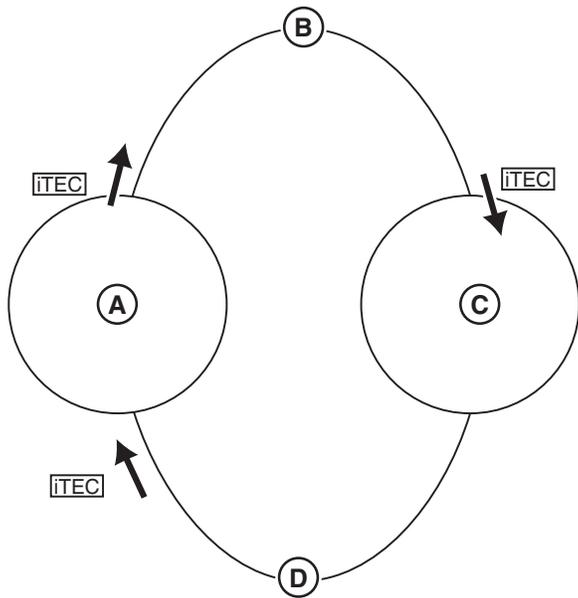
To activate automatic scraper control system, briefly move corresponding SCV lever to extend detent or retract detent position. For more information on SCV lever positions, see SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual.

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# Scraper Information [Scraper]

## Scraper Operation Cycle



RXA0187404—UN—24JUN22  
Scraper Cycle Diagram

- A—Dig Area
- B—Transport—Loaded
- C—Dump Area
- D—Transport—Unloaded

**IMPORTANT: Operating the tractor with three scrapers requires the tractor and all scraper pans be equipped with hydraulic trailer brakes. See Towed Loads and Transport with Ballast in the Transport Section of this Operator's Manual.**

Never exceed:

- Maximum tractor ballast of 28123 kg (62000 lb) with 65% on the front axle.
- 10206 kg (22500 lb) maximum scraper tongue load with short scraper drawbar.
- 8391 kg (18500 lb) maximum for scraper tractors with regular long scraper (Ag) drawbar support.

## Towed Scrapers

Scraper Tractor Application Guidelines	
Trailer Brakes	Maximum Towed Load
Without	1.5 times tractor weight <sup>a</sup>
With	4.5 times tractor weight.

<sup>a</sup>Limited to 32 km/h (20 mph) without trailer brakes

**Follow manufacturer's Scraper Operation Recommendations and instruction in attaching and using scraper:**

*NOTE: Following these operating guidelines could result in extended tractor and scraper life as well as increased production.*

- Limit depth of cut to maintain a loading speed no greater than 6.2 km/h (3.8 mph).<sup>1</sup> For maximum power performance operate in 5th forward gear.
- Maintain minimum engine rpm of 1850 or higher in the cut.
- Ballast tractor correctly to maintain optimum slip of 8-12%.
- Shallow cuts at higher speeds will extend drivetrain life and increase overall productivity.
- Use iTEC (Intelligent Total Equipment Control) to combine downshifts/upshifts, raise/lower scrapers or other functions when returning to dig area or to/from transport part of cycle. (See Intelligent Total Equipment Control (iTEC) Section.)
- Drawbar height should be set so scraper cutting edge hits the ground before the scraper bottom. See Scraper Operator's Manual.
- Load downhill and/or towards the fill area when conditions allow.
- Set scraper(s) on ground before top loading.
- Activate differential lock before loading, disengage before turning.
- Use of differential lock should be limited to tough and wet areas or during the cut.
- Do not downshift below ground speeds of 6.2 km/h (3.8 mph) when under load.<sup>1</sup>
- Reduce speed, and shift down before descending a hill.
- When possible load in 6th gear or above and target 1900-2150 rpm.
- Minimize all steering input during scraper loading.
- Avoid high speed dynamic maneuvers especially when loaded. (Sudden turns, transitions from slopes to flat surfaces, or heavy or sudden braking maneuvers.)
- Do not load in a turn.
- Do not turn tires or tracks into the tongue of the scraper.
- Maintain a smooth haul road and fill area.
- See Operator's Manual for operating/service instructions and AutoLoad setup if equipped.

## Efficiency Manager Recommendations

*NOTE: Using AutoLoad will exit Efficiency Manager.*

- Use Transmission Efficiency Manager for transport.
- Use both Efficiency Manager speed settings for transport. One speed setting at transport speed and the other at digging speed. Use the second Efficiency Manager speed setting to downshift tractor and bring

<sup>1</sup> These values vary depending upon the tractor configuration.

ground speed closer to dig speed before switching to manual mode.

Example:

- Use set speed 2 for transport, set speed 1 for approaching loading and unloading area.
- Disengage efficiency manager before entering the cut.

RD47322,00009DE-19-06JUL22

## Weight Transfer Limits

**IMPORTANT: Do not exceed 10206 kg (22500 lb) maximum scraper tongue load transfer to short scraper drawbar and 8391 kg (18500 lb) maximum scraper tongue load transfer to long scraper drawbar. Excess weight transferred to tractor may cause structural or drivetrain damage.**

When pulling a direct mounted scraper a portion of scraper and payload weight will be transferred to tractor. This additional weight on tractor can significantly improve productivity during the load cycle, especially when pulling two scrapers in tandem. After first scraper is loaded, tractor will have more pulling capability and will be able to load second bowl much faster, resulting in significantly reduced cycle times.

RD47322,00000EC-19-07JAN19

## Scraper/Tractor Attachment

**IMPORTANT: Failure to observe operating limits and follow proper operating procedures may reduce life of tractor and cause premature chassis, drivetrain and track system failures.**

Proper machine operation is important to extend life of tracks, drivetrain and undercarriage, avoid downtime, and maximize operating efficiency.

### Tongue Height

Height of scraper tongue determines angle of cutting edge relative to ground. If tongue is too low, bottom of scraper bowl will drag in cut. If tongue is too high, scraper will be difficult to control in cut. Optimum height for tongue is 46 to 53 cm (18 to 21 in) from ground. Adjust tongue up or down through assemblies of hitch and yoke. When operating in soft conditions raising tongue height may improve ground clearance during transport. Tongue of rear scraper should be set at same height as front. See scraper Operator's Manual.

### Drawbar Height

Drawbar height should be set so scraper cutting edge

hits the ground before scraper bottom. See scraper Operator's Manual.

RD47322,00000ED-19-08JUN22

## Loading Techniques

### Loading Methods

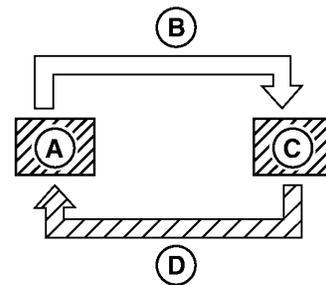
There are three common loading techniques.

- Pull Loading - tractor pulling scraper(s) is preferred loading method. Generally the most economical method for loading scrapers.
- Push Loading - uses separate vehicle to push scraper. Only push load a scraper which is designed to be push loaded (i.e. ejector models). It is critical that push vehicle speed not exceed pull tractor speed or track overrun and slippage on drive wheels can result.

**IMPORTANT: To prevent excessive shock loading into tractor through drawbar and hydraulic system during loading sequence when top loading, always lower scraper to ground before beginning loading cycle.**

- Top Loading (i.e. excavator) - uses scraper as a haul unit loaded by an excavator.

### Working Cycle Automation



RXA0119628—UN—09AUG11

Working Cycle Automation

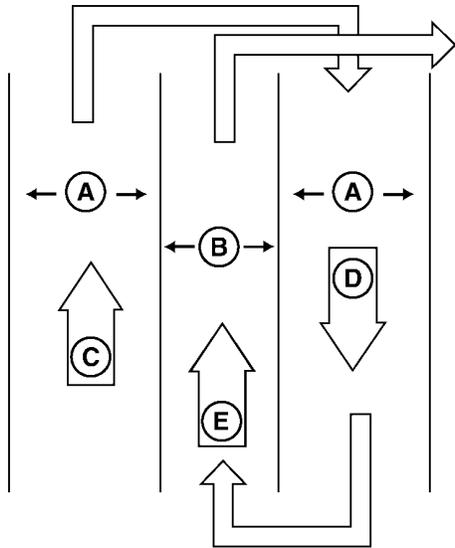
- A— Dig Area
- B— Loaded Transport
- C— Dump Area
- D— Unloaded Transport

Use iTEC (Intelligent Total Equipment Control) to combine downshifts and upshifts, raise or lower scrapers or automate other functions when returning to dig area (A) or entering loaded (B) or unloaded transport (D) parts of cycle. See Intelligent Total Equipment Control (iTEC) section of this Operator's Manual.

Use Efficiency Manager for transport portions of cycle, not during loading operations. See e18 Set Speeds and Efficiency Manager in e18 PowerShift Transmission section of this Operator's Manual.

Limit depth of cut to maintain a loading speed higher than 7.1 km/h (4.4 mph)

### Loading Sequence



RXA0119629—UN—09AUG11

- A— Scraper Width
- B— Less Than Scraper Width
- C— First Cut
- D— Second Cut
- E— Third Cut

After making first cut (C), make second cut (D) parallel to first at a distance from first cut that is less than scraper width (B). On third pass (E) pick up material between first two cuts.

When loading a direct mounted scraper in tandem with another scraper it is most efficient to load front scraper bowl first.

RD47322.00000EE-19-14APR23

### Connect AutoLoad Harness

**IMPORTANT:** Always shut off the engine before connecting or disconnecting the AutoLoad harness. Connecting or disconnecting the AutoLoad harness with the engine running can cause:

- The scraper pan to not respond to Autoload commands.
- Diagnostic Trouble Codes (DTC) to appear.

If a DTC appears or the AutoLoad harness fails to respond to commands, reset the harness. See Reset the AutoLoad Harness.

1. Shut off the engine.



RXA0179346—UN—24AUG20

AutoLoad Harness Connector Outlet is Above the SCV Stack

2. Connect the AutoLoad harness from the scraper to the tractor AutoLoad harness connector outlet (A).
3. Refer to the Scraper Operation label for proper scraper operation or Scraper Operation Cycle in this Operator's Manual section.

### Reset the AutoLoad Harness

To reset the harness connection:

1. Shut off the engine and allow the CommandCenter to shut down completely.
2. Disconnect the AutoLoad harness from the connector outlet.
3. Start the tractor and allow the CommandCenter to start completely.
4. Shut off the engine and allow the CommandCenter to shut down completely.
5. Connect the AutoLoad to the connector outlet.
6. Start the engine and allow the CommandCenter to start completely.
7. Operate the scraper pan. If a DTC appears or the AutoLoad fails to respond to commands, see your John Deere dealer.

AK08008.0000B3C-19-23JUN22

### AutoLoad Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



AutoLoad

RXA0180073—UN—09OCT20

3. AutoLoad

Access Application through Navigation Bar:



AutoLoad

RXA0168458—UN—30MAY19

Press AutoLoad button on navigation bar below display.

KD34109.000063A-19-23JUN22

**AutoLoad Settings**

The AutoLoad application is used to access and adjust AutoLoad settings. AutoLoad only functions in tractor gears 5—13.

*NOTE: If a window shade appears saying that the SCV function stalled and to increase the flow rate, verify that the tractor is in one of the required gears (5—13).*

When an AutoLoad scraper is connected to the tractor, the SCV page displays with the connected SCV (I, III, and/or V) in feature mode. For more information, see SCV Settings in Selective Control Valves section of this Operator's Manual. For the best reading accuracy, perform the drawbar sensor calibration annually. For the calibration procedure, see Drawbar Sensor Calibration in Service—Check section of this Operator's Manual.

*NOTE: Some items only display if the machine is equipped with the associated option.*



RXA0180074—UN—09OCT20

AutoLoad Example

**Items Accessible on AutoLoad Main Page:**



Status Indicator

RXA0177921—UN—14MAY20

*NOTE: A module is displayed for each attached AutoLoad compatible scraper.*

**Scraper Position Status Indicator** — view the status of the scraper position relative to the set points. See AutoLoad Settings—Scraper Status in this Operator's Manual section.



Initial Draft

RXA0180085—UN—09OCT20

*NOTE: A module is displayed for each attached AutoLoad compatible scraper.*

**Initial Draft** — view and adjust the current initial draft setting. See AutoLoad Settings—Initial Draft in this Operator's Manual section.

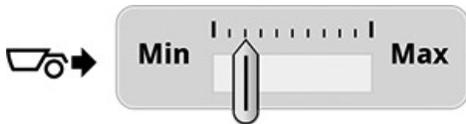


Scraper Position

RXA0180092—UN—09OCT20

**NOTE:** A module is displayed for each attached AutoLoad compatible scraper.

**Scraper Position** — view and adjust the current scraper position and set points. See AutoLoad Settings—Scraper Position in this Operator’s Manual section.



Average Draft

RXA0180075—UN—09OCT20

**Average Draft** — view and adjust the current average draft setting. See AutoLoad Settings—Average Draft in this Operator’s Manual section.



Load Count

RXA0180071—UN—09OCT20

**NOTE:** After the counter reaches the maximum value (9999 loads), the count resets to zero.

**Load Count** — view and manually adjust the number of scraper loads hauled. To enable/disable automatic load counting, see AutoLoad Settings—Advanced in this Operator’s Manual section.



Reset Load Count

RXA0180090—UN—09OCT20

**Reset Load Count** — reset the load count to zero. A page will display to verify the selection.



RXA0180094—UN—09OCT20  
SCVs Unlocked



RXA0180093—UN—09OCT20  
SCVs Locked

**Status** — view the SCVs locked or unlocked status.



Advanced Settings

RXA0167071—UN—21MAR19

**Advanced Settings** — access further adjustments and less common settings. See AutoLoad Settings—Advanced in this Operator’s Manual section.

**Run Page Modules**

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



Position

RXA0180089—UN—09OCT20

**NOTE:** Different modules may be available for your application.

**Position** — quick access to position module.

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**AutoLoad Settings—Scraper Status**

The status indicator shows the current position of the scraper relative to the set points. The color of the indicator will change depending on the current status (phase of the digging process) of the AutoLoad system.

**Status Indicators:**



Status Indicator

RXA0177921—UN—14MAY20

- **Black Indicator** — the indicator is illuminated black when the scraper is in the Transport position.
- **Gray Indicator** — the indicator is not illuminated and appears gray when a Fault is detected.
- **Green Indicator** — the indicator is illuminated green when the scraper is in the Entering the cut position.
- **Blue Indicator** — the indicator is illuminated blue when the scraper is in the Loading position.
- **Orange Indicator** — the indicator is illuminated orange when the scraper is in the Ready position.

KD34109,000063C-19-23JUN22

### AutoLoad Settings—Initial Draft

The Initial Draft setting is means by which the operator can tune the work load of the system when entering the cut. The setting affects roughly the first half of the cut.

*NOTE: A module is displayed for each attached AutoLoad compatible scraper.*

#### Procedure to Modify:



RXA0180084—UN—09OCT20  
Increase



RXA0180078—UN—09OCT20  
Decrease

Select (+/++) to increase or (-/- -) to decrease the setting. Use (++) and (- -) to increase or decrease the value at a higher rate than (+) and (-).



Value

RXA0180098—UN—09OCT20

The value is shown in the display box which is highlighted while being adjusted.



Indicator

RXA0169143—UN—25JUN19

The indicator shows the current setting. The closer to the maximum setting (250), the more aggressive (heavier) the cut will be. The closer to the minimum setting (0), the less aggressive (lighter) the cut will be.

KD34109,000063D-19-23JUN22

### AutoLoad Settings—Scraper Position

The Scraper Position page shows the current position of

the scraper and allows adjustments to the scraper set points.

*NOTE: A module is displayed for each attached AutoLoad compatible scraper.*

#### Procedure to Modify:



RXA0180095—UN—09OCT20

Set Point Indicators

**Set Point Indicators** — small yellow indicators that represent the three scraper position set points. All three positions must be set for AutoLoad to operate.

- Transport (upper)
- Ready (lower)
- Loading (ground level)



RXA0180097—UN—09OCT20

Set Upper Limit

**Transport** — the desired position for scraper transport. After the scraper is moved to the desired position, select the set upper limit key. The corresponding SCV lever can be moved to extend detent to move the scraper to the transport position. If the scraper is above the set position when the lever is moved, the scraper will not move. For more information on SCV control lever adjustments, see SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual section.



RXA0180086—UN—09OCT20

Set Lower Limit

**Ready** — the desired dumping position for the scraper. After the scraper is moved to the desired position, select the set lower limit key. The corresponding SCV lever can be moved to retract detent to move the scraper to the ready position. If the scraper is below the set position when the lever is moved, the scraper will not move. For more information on SCV control lever

adjustments, see SCV Control Lever Adjustments in Selective Control Valves section of this Operator's Manual section.



RXA0180082—UN—09OCT20  
Set Ground Level

**NOTE:** John Deere recommends that the drop center blades are lowered to penetrate the ground. Lowering drop center blades allows the outer blades to touch the ground when setting ground level loading (entering the cut) position.

**Loading** — the desired position for the scraper to enter the cut. After the scraper is moved to the desired position, select the set ground level key.



RXA0169140—UN—25JUN19  
Scraper Position Indicator

**Position Indicator** — indicates the current position of the scraper.

KD34109,000063E-19-23JUN22

### AutoLoad Settings—Average Draft

The Average Draft setting is means by which the operator can tune the work load of the system after fully entering the cut. The setting affects roughly the last half of the cut. The setting is the same for all scrapers and only set in one location.

#### Procedure to Modify:



RXA0180077—UN—09OCT20  
Decrease



RXA0180083—UN—09OCT20  
Increase

Select (+/++) to increase or (-/- -) to decrease the setting. Use (++) and (- -) to increase or decrease the value at a higher rate than (+) and (-).



RXA0180098—UN—09OCT20  
Input Box

The value is shown in the display box which is highlighted while being adjusted.



RXA0169143—UN—25JUN19  
Indicator

The indicator shows the current setting. The closer to the maximum setting (250), the more aggressive (heavier) the cut will be. The closer to the minimum setting (0), the less aggressive (lighter) the cut will be.

KD34109,000063F-19-23JUN22

### AutoLoad Settings—Advanced

Advanced Settings allows you to access further adjustments and less common settings.

#### Items Accessible on Advanced Settings Page:



RXA0180096—UN—09OCT20  
Setup Wizard

**AutoLoad Setup** — the Setup Wizard takes you through the steps to set up the AutoLoad scraper positions.



RXA0180091—UN—09OCT20  
Auto/Manual Dimensions

**Scraper Dimensions** — set dimensions using the scraper model or by entering them manually. See AutoLoad Settings—Scraper Dimensions in this Operator's Manual section.



RXA0167187—UN—22MAR19  
ON/OFF

**NOTE:** AutoLoad will increment the load count each time the automated cut is deactivated, either by manually taking over scraper control or by detenting to the upper set position. If the automated cut is stopped and restarted, the load count increments twice. The load count needs to be manually corrected, if desired. AutoLoad counts each individual scraper load, not the number of cycles.

**Load Count** — select ON to enable or OFF to disable automatic load counting.

KD34109,0000640-19-23JUN22

### AutoLoad Settings—Scraper Dimensions

Set up scraper dimensions manually or by model.

**Procedure to Modify:**

**To set up by selecting model:**



**Auto Dimensions**

Auto Dimensions

RXA0180072—UN—09OCT20

1. Select Auto Dimensions.



2112E

Model Selection Box

RXA0180076—UN—09OCT20

2. Select the model selection box.



2112E

1814E

1810E

1812C

Model List

RXA0180088—UN—09OCT20

3. Select the model from the list.

**To set up by entering dimensions:**

*NOTE: Scraper dimensions can only be entered if the tractor, drawbar, and scraper are equipped with AutoLoad components.*

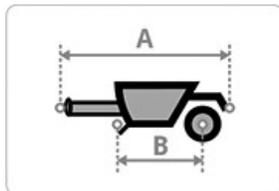


**Manual Dimensions**

Manual Dimensions

RXA0180087—UN—09OCT20

1. Select Manual Dimensions.



Dimension Reference

RXA0180081—UN—09OCT20

- Dimension A (scraper length) is the distance between the scraper front tongue pin and the rear pin connecting a tandem scraper.
- Dimension B (blade-to-axle) is the distance from the shallowest cutting blade tip to the rear axle.



A

22 ft

Dimension A

RXA0180079—UN—09OCT20

2. Select input box A to enter the scraper length dimension. A number pad will display to enter the dimension.



B

13 ft

Dimension B

RXA0180080—UN—09OCT20

3. Select input box B to enter the blade-to-axle dimension. A number pad will display to enter the dimension.

John Deere Scraper Dimension Chart		
Scraper Model	Scraper Tongue Pin to Rear Pin Length (A)	Scraper Blade to Rear Axle Length (B)
	ft	
1510C	24.3	8.3
1510DC	24.3	8.3
1512C	23.3	7.6
1810C	27.0	9.3
1810DC	27.0	9.3
1812C	24.3	8.3
1812DC	24.3	8.3
1814C	24.6	7.6
1814DC	24.6	7.6
2112C	29.2	9.6
2112DC	29.2	9.6
1512E	27.7	7.8
1612DE	27.7	7.8
1810E	29.2	9.3
2010DE	29.2	9.3
2010DE Two Tire	31.2	10.5
1814E	26.3	7.8
2014DE	26.3	7.8
2112E	31.6	9.8
2412DE	32.8	9.8
2412DE Two Tire	33.9	10.5

KD34109.0000641-19-23JUN22

# Tracks—General Information

## General Track Use Guidelines

**IMPORTANT: Avoid track and track system component damage, pre-condition tracks.**

- Before driving tractor on road for first time, pre-condition tracks, see Perform Track Systems Break-In in Service—Break-In (100 Hours or Less) section in this Operator's Manual.
- Avoid traveling at high speeds with new set of tracks and wheels, especially during the first 50-100 hours.

To extend drivetrain and track life, avoid excessive soil compaction, and reduce rolling resistance: avoid adding excessive ballast. Never add ballast that results in operating with heavy loads and with continuous full-power below 7.1 km/h (4.4 mph). For 9RX Narrow [Ag], avoid operation with continuous full-power loads below 7.6 km/h (4.7 mph).

Avoid track and drivetrain damage. For tractors equipped with 30- and 36- inch tracks and 120 inch spacing, never use:

- 3-point hitch
- Spray tanks
- Front-mounted blade
- Scraper

Trash buildup can cause fire from increased friction. Remove trash from trash buildup points between track and tractor frame.

Avoid operating track in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service.

## Maximizing Track Life

Track carcasses are designed to exceed tread wear out, so long as integrity of carcass is maintained. It is critical to keep moisture out of the steel carcass and to avoid situations where localized cable overloading could occur. Track machine owners are advised to follow these guidelines to achieve maximum track life and avoid operational problems, all of which results in lower cost per operating hour:

- **Minimize roading. Excessive roading can increase track wear up to 15 times field wear rates**
  - Minimize transport weight during road transport.
  - Reduce maximum travel speed especially during high ambient conditions.
- **Use correct operational techniques**
  - Avoid skidding and tread bar scrubbing on hard surfaces to reduce track wear.
  - Use care when crossing ditches or transitions while making turns. Diagonal crossing of ditches

causes track to become unsupported in the center and with idler hitting opposite embankment, can cause momentary loss of tension that can drop center section down and outside drive or idler wheels, making derailing a much higher risk if in a turn.

- **Maintain correct track tension**
  - Under-tension causes rapid wear on tracks and inside surface of track due to slippage and potentially cause material buildup.
  - Over-tension adds extra load and stress to undercarriage bearings, internal track cables, and track frame.
- **Keep irregular material out of tracks**

Sharp hard material inside the track is primary reason for localized track tears and subsequent entry points for moisture into track carcass.

EC82310,000060F-19-19APR23

## Tracks Service

Service information for the track system is located in Service sections of this Operator's Manual.

Service Task	See
Track Wear	Service—Check
Track Alignment	
Track Tension	
Drive, Mid-Rollers, and Idler Wheels	
Track Trash Buildup	
Idler Wheel Hub Oil Level	
Mid-Rollers Oil Level	Service—Tighten
Mid-Roller, Drive, and Idler Wheel Fasteners	
Track Tension Cylinder	Service—Lubricate

EC82310,0000525-19-20SEP21

# Seats

## Adjust Air Seat



Air Seat

RXA0167353—UN—03APR19

**NOTE:** Select, premium, or ultimate indicates the comfort and convenience package the feature is included with if not included with all.



Armrest Height Control

RXA0167320—UN—03APR19

**Left-Hand Armrest Height** — turn adjustment knob counterclockwise to loosen. Move armrest up or down to desired position and tighten by turning knob clockwise.



Armrest Inclination Control

RXA0167321—UN—03APR19

**Left-Hand Armrest Inclination** — turn adjustment knob to adjust incline angle of armrest.



Swivel Lockout Control

RXA0167322—UN—03APR19

**Seat Swivel** — place lever in up position to allow seat to swivel. Place in down position (shown) to lock out seat

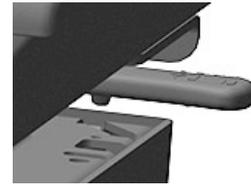
from swiveling. Seat can be locked out in several positions.



Fore/Aft Attenuation Lockout Control

RXA0167344—UN—03APR19

**Fore/Aft Attenuation** — place lever in forward position (shown) to allow movement. Place lever in rear position to lock out movement. Seat must be in center position to lock.



Left/Right Attenuation Lockout Control

RXA0167345—UN—03APR19

**Left/Right Attenuation** — place lever in forward position (shown) to allow movement. Place lever in rear position to lock out movement. Seat must be in center position to lock.



Ride Firmness Control

RXA0167343—UN—03APR19

**Ride Firmness** — move lever to one of three levels of ride firmness:

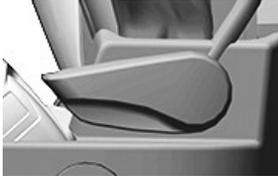
- Most firm (forward position)
- Medium firmness (center position)
- Least firm (rear position)



Seat Height Control

RXA0167326—UN—03APR19

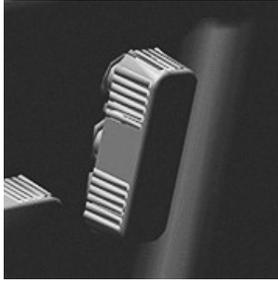
**Seat Height** — push up (up arrow shown) to raise seat or down (down arrow shown) to lower seat.



RXA0167340—UN—03APR19

*Backrest Angle Control - Select*

**Backrest Angle (Select)** — pull lever up and adjust angle. Release lever when desired angle is reached. Backrest locks into nearest detent.



RXA0167327—UN—03APR19

*Backrest Angle Control - Premium and Ultimate*

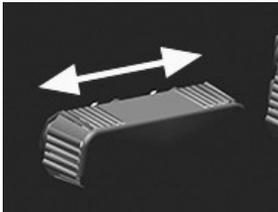
**Backrest Angle (Premium and Ultimate)** — push control in the same direction as desired for backrest to move.



RXA0167341—UN—03APR19

*Fore/Aft Position Control - Select*

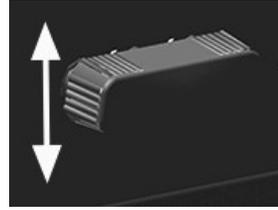
**Fore/Aft Seat Position (Select)** — pull up on bar and adjust position. Release bar when desired position is reached. Seat locks into nearest detent.



RXA0167328—UN—03APR19

*Fore/Aft Position Control - Premium and Ultimate*

**Fore/Aft Seat Position (Premium and Ultimate)** — push control in the same direction as desired for seat to move.



RXA0167329—UN—03APR19

*Cushion Tilt Control - Premium and Ultimate*

**Cushion Tilt (Premium and Ultimate)** — push front of control in the same direction as desired for front of cushion to move.



RXA0167342—UN—03APR19

*Lumbar Adjustment Control - Select*

**Lumbar Adjustment (Select)** — move lever to adjust amount of lumbar support. Continue to move lever until desired amount of support is reached.



RXA0167330—UN—03APR19

*Lumbar Height Control - Premium*

**Lumbar Height (Premium)** — push up (up arrow) to raise lumbar support or down (down arrow) to lower lumbar support.



RXA0167331—UN—03APR19

*Lumbar Height Control - Ultimate*

**Lumbar Height (Ultimate)** — push up (top control) to raise lumbar support or down (bottom control) to lower lumbar support.



RXA0167332—UN—03APR19

*Lumbar Extension Control - Premium*

**Lumbar Extension (Premium)** — push add (+) or remove (-) to adjust amount of air in lumbar support.



RXA0167333—UN—03APR19  
Lumbar Extension Control - Ultimate

**Lumbar Extension (Ultimate)** — push add (right-hand control) or remove (left-hand control) to adjust amount of air in lumbar support.



RXA0167334—UN—03APR19  
Cushion Length Control - Premium and Ultimate

**Cushion Length (Premium and Ultimate)** — push increase (top) or decrease (bottom) to adjust cushion length.



RXA0167335—UN—03APR19  
Back Bolsters Control - Ultimate

**Back Bolsters (Ultimate)** — push add (+) or remove (-) to adjust amount of air in backrest bolsters.



RXA0167337—UN—03APR19  
Massage Control - Ultimate

**Massage (Ultimate)** — push down (1) to select massage pattern one or up (2) to select massage pattern two. Press the selected pattern again to turn off massaging. Massage feature times out after 10 minutes.



RXA0173802—UN—14JAN20  
Vent/Heat Control - Ultimate

**Vent/Heat (Ultimate)** — push left (blue icon) to select vent or right (red icon) to select heat.



RXA0173801—UN—14JAN20  
Vent/Heat Intensity Control - Ultimate

**Vent/Heat Intensity (Ultimate)** — select one of three settings:

- High (top)
- Off (center)
- Low (bottom)

KD34109,00004B0-19-09DEC20

## Operator Presence Sensor

**CAUTION: Avoid injury. SCV does not automatically disengage when system senses that operator is out of seat.**

If operator leaves seat, an audible warning sounds for 5 seconds when:

- Brake and clutch pedals are not depressed, and machine is stopped in NEUTRAL or speed is zero. Machine goes into PARK after 7 seconds.
- PTO is engaged. If Auto Disengage is ignored, PTO automatically disengages after 7 seconds. For more information on Auto Disengage, see PTO Settings—Auto Disengage in PTO—General Information section of this Operator's Manual.
- SCV lever is in detent flow position.

TS36762,000023D-19-19APR21

## Adjust Instructional Seat

**CAUTION: Keep all other riders off tractor and equipment to avoid injury. Instructional seat is provided only for training operators or diagnosing machine problems. Always wear seat belt.**



RXA0167301—UN—02APR19

*Instructional Seat*



RXA0167302—UN—02APR19

*Backrest Down*

**Seat Backrest** — push backrest forward to use as a writing surface.



RXA0167303—UN—02APR19

*Cushion Up*

**Seat Cushion** — push seat cushion up to allow more room for entering and exiting cab.

KT81203,000058D-19-02APR19

# Mirrors

## Adjust Mirrors

*NOTE: Some items are only available if machine is equipped with the associated option.*



RXA0173907—UN—15JAN20  
*Mirror Example — Dual Mirror*

**Manual Mirror** — push mirror edges to adjust angle. Mirrors with one mirror and the bottom mirror on dual mirrors are adjusted manually.



RXA0167461—UN—12APR19  
*Manual Telescoping Lock Lever*

**Manual Telescoping** — pull lock lever down to allow adjustment. Slide mirror arm to desired position. Push lock lever back up to lock into desired position.



RXA0168462—UN—31MAY19  
*Electric Mirror Controls Example*

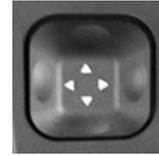
Electric mirror controls are next to radio.



RXA0167462—UN—12APR19  
*Select Left/Right Mirror*

**Select Mirror** — select left-hand arrow to allow adjustments to left-hand electric mirror. Select right-

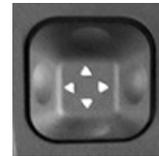
hand arrow to allow adjustments to right-hand electric mirror.



RXA0167463—UN—12APR19  
*Electric Mirror Adjustment*

*NOTE: Mirror angle controls are on right-hand side.*

**Electric Mirror** — after selecting mirror to be adjusted, select arrows to adjust mirror angle in corresponding direction. The top mirror on a dual mirror is an electric adjustment.



RXA0167463—UN—12APR19  
*Electric Telescoping Adjustment*

*NOTE: Telescoping controls are on left-hand side.*

**Electric Telescoping** — after selecting mirror to be adjusted, select left-hand arrow to extend or right-hand arrow to retract mirror arm.



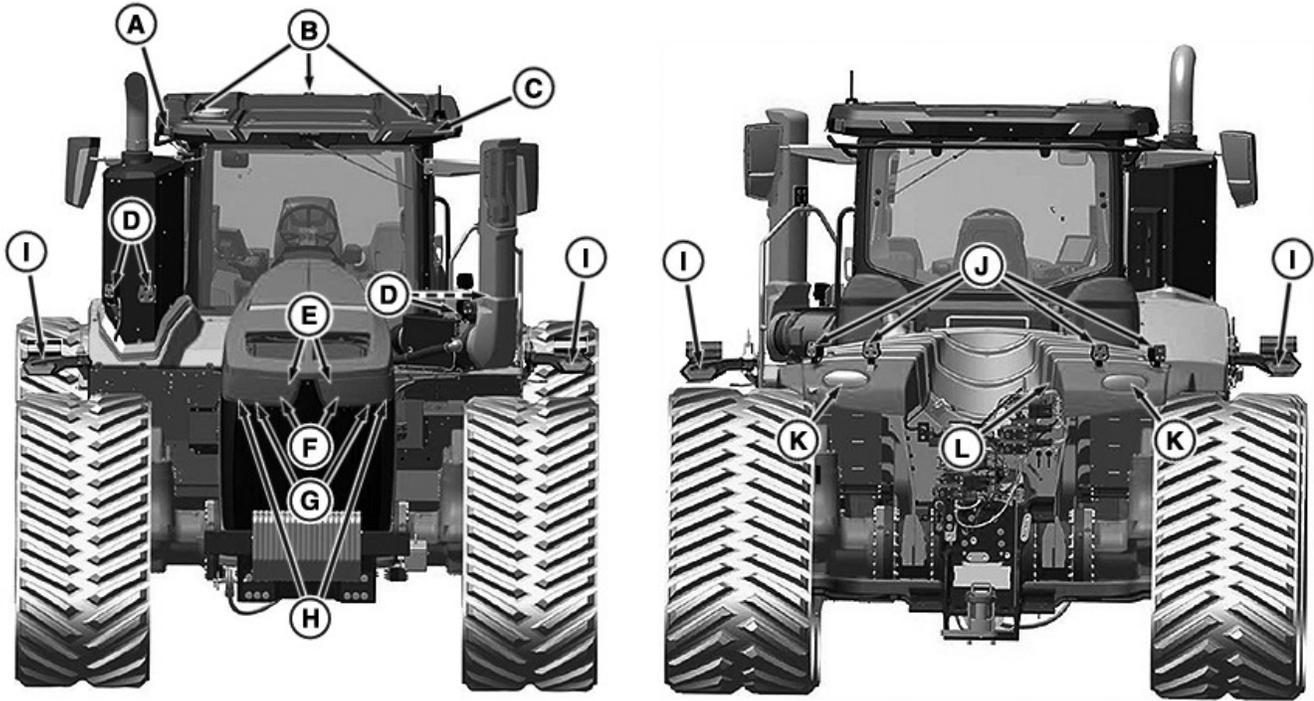
RXA0167464—UN—12APR19  
*Heat Adjustment*

**Heated Mirror** — push up to turn on or down to turn off mirror heat. Icon is illuminated when heat is on.

KD34109,00004B2-19-16JAN20

# Lights

## Light Identification



- A—Roof Worklight (8 used)
- B—Beacon Light (3 used)
- C—Hazard Warning Light (4 used)
- D—Front Mid-Body Worklight (if equipped) (2 or 4 used)
- E—Headlight Front Worklight (2 used)
- F—Headlight Low Beam—Road (2 used)

- G—Headlight High Beam—Road (2 used)
- H—Headlight Corner Worklight (2 used)
- I—Extremity Warning Light (4 used)
- J—Rear Worklight Fender (4 used)
- K—Fender Tail Light (2 used)
- L—Rear Auxiliary Worklight (if equipped)

RXA0185325—UN—03SEP21

JL41210,0000AA1-19-24JUL23

## Lights Settings—Access

Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



Lights

RXA0168488—UN—05JUN19

3. Lights

Access Application through Navigation Bar:



Lights

RXA0168455—UN—05JUN19

Press lights button on navigation bar below display.

KD34109,00004D2-19-22JUN22

## Lights Settings

Lights application allows you to access light preset configurations. To adjust settings for presets, select corresponding tab. For lights specific to your machine, see Light Identification in this Operator's Manual section. For lighting controls, see Operate Lights in Front Console section of this Operator's Manual.

*NOTE: Worklights are configurable. Road lights are not configurable.*

### Items Accessible on Lights Main Page:

*NOTE: Some items only display if machine is equipped with the associated option.*



Worklights Preset 1

RXA0168489—UN—31MAY19

**Worklights Preset 1** — easily turn on a group of frequently used lights. See Lights Settings—Worklights Presets in this Operator's Manual section.



Worklights Preset 2

RXA0168490—UN—31MAY19

**Worklights Preset 2** — easily turn on a group of frequently used lights. See Lights Settings—Worklights Presets in this Operator's Manual section.



Hood/Belt Line Lights

RXA0168491—UN—31MAY19

**Hood/Belt Line Lights** — toggle between hood and belt line lights when lights are in road mode. See Lights Settings—Hood/Belt Line Lights in this Operator's Manual section.



Highlighted Tab

RXA0168492—UN—31MAY19

**Highlighted Tab** — indicates which tab is selected.



Light with Fault

RXA0168493—UN—31MAY19

**Light with Fault** — exclamation point indicates that light is in error. Example: light bulb is burnt out.



Advanced Settings

RXA0167071—UN—21MAR19

**Advanced Settings** — access further adjustments and less common settings. See Lights Settings—Advanced in this Operator's Manual section.

### Implement Light Connection:

**7-Pin Outlet** — connect implement lights to tractor. See 7-Pin Outlet in this Operator's Manual section.

### Run Page Modules

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



Road Lights

RXA0168494—UN—31MAY19

*NOTE: Different modules may be available for your application.*

**Road Lights** — quickly toggle between hood and belt line light groups.

### Shortcut Keys

Add shortcut keys for this application to the shortcut bar using Layout Manager. See the G5 CommandCenter Operator's Manual.

Example:



Road Lights

RXA0168495—UN—31MAY19

*NOTE: Different shortcut keys may be available for your application.*

**Road Lights** — quickly toggle between hood and belt line light groups.

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### Lights Settings—Worklights Presets

Customize light presets for specific customer needs.

#### Procedure to Modify:

1. Select desired tab:



Worklights Preset 1

RXA0168489—UN—31MAY19

a. Worklights preset 1.



Worklights Preset 2

RXA0168490—UN—31MAY19

b. Worklights preset 2.



Linked

RXA0168546—UN—31MAY19

- Select Link on toggle to link paired left-hand and right-hand lights for simultaneous on and off operation on all tabs.



Unlinked

RXA0168547—UN—31MAY19

- Select Unlink on toggle to allow paired left-hand and right-hand lights individual on and off operation on all tabs.



Light

RXA0168548—UN—31MAY19



Light Pair

RXA0168549—UN—31MAY19



Trailer Light

RXA0168550—UN—31MAY19

2. Select desired light, light pair, and/or trailer light keys for lights you want illuminated.



Highlighted Key

RXA0168551—UN—31MAY19

**NOTE:** Key is highlighted when selected.

KD34109,00004D4-19-30AUG22

### Lights Settings—Hood/Belt Line Lights

Hood/belt line lights tab allows you to toggle between hood and belt line lights when lights are in road mode.

#### Procedure to Modify:



Hood Lights Enabled

RXA0168552—UN—31MAY19

Select to enable hood lights.



Belt Line Lights Enabled

RXA0168553—UN—31MAY19

Select to enable belt line lights.

KD34109,00004D5-19-22JUN22

### Lights Settings—Advanced

Advanced settings allows you to access further adjustments and less common settings.

#### Items Accessible on Advanced Settings Page:

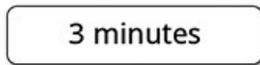


Check Box - Enabled

RXA0168554—UN—31MAY19

**Machine Entrance/Exit Lighting** — select to illuminate convenience lights upon entrance and exit of machine. Box will display with a check mark when enabled. For

convenience light locations, see Light Identification in this Operator's Manual section.



Selection Box

RXA0168555—UN—31MAY19

**Engine Off Delayed Lighting** — lighting remains on for a specified duration after engine is turned off. Select box to display a list of exit lighting durations to choose from. List also contains OFF to disable exit lighting.



ON/OFF

RXA0167628—UN—26APR19

**Daytime Running Lights** — lighting to increase visibility during the day while machine is turned on or in motion. Select ON to enable or OFF to disable.

TS36762.000024C-19-29JUN22

## Hazard and Extremity Lights

**CAUTION:** Avoid injury or death caused by a collision with another vehicle. Always:

- Use road lights, extremity lights, and turn signals when operating tractor on a road or highway at night or during the day.
- Follow local laws and regulations for all equipment lighting and marking.
- Comply with all traffic regulations.

**Extremity lights alert other vehicles of the tractor's extended width. If the tractor width changes, refer to local laws and regulations to ensure that the tractor remains in compliance.**

*NOTE: Depending on region and installed equipment, amber hazard lights can cease to operate as indicator lights when the Hazard Switch is activated.*

Push hazard lights button to activate flashing hazard and extremity lights.

- For the hazard lights button location, see CommandARM Climate, Radio, and Lighting Controls in CommandARM section of this Operator's Manual.
- For hazard and extremity lights locations, see Light Identification in this section of this Operator's Manual. Hazard and extremity indicator lights include:
  - Front and rear roof lights.
  - Rear fender lights (equipped with an amber lens).

- Belt line lights.

**IMPORTANT:** To avoid damage, extremity lights can be retracted when parking tractor in a storage building.

Extremity lights. Extremity lights are lit when these functions are active:

- Hazard flashers.
- Turn indicators.
- Position lamps.

TS36762.0000250-19-21JUN22

## Beacon Light

Three beacon lights are on the top of the cab:

- Two beacon lights at each front corner.
- One beacon light at the center rear.

For exact location, see Light Identification in this section of this Operator's Manual.

Push beacon light button to activate rotary beacon light. For beacon light button location, see CommandARM Climate, Radio, and Lighting Controls in CommandARM section of this Operator's Manual.

TS36762.0000251-19-21JUN22

## 7-Pin Outlet

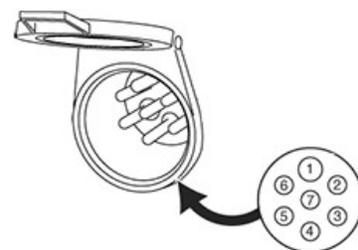
**CAUTION:** Avoid accidents. Always use auxiliary light on towed implement when tractor rear signals and other lights are obscured.

7-pin outlet allows operator to connect implement lights to the tractor.

Contact your John Deere dealer for:

- Matching 7-pin plug.
- Methods to connect tractor light switch with 7-pin connector accessory wires.

## Outlet Diagram and Terminal Functions Chart



Outlet Diagram

RXA0168557—UN—31MAY19

## Lights

---

Terminal Numbers	Function	
	Rear Connection	Front Connection
1	Ground	
2	Flood (Implement Lights)	
3	Left Turn Signal	
4	Brake Lights	Not Used
5	Right Turn Signal	
6	Tail Light	
7	Accessory	Not Used

KD34109,00004D7-19-27AUG19

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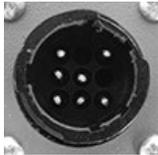
# Accessories

## Right-Hand Side Console



RXA0188748—UN—07MAR23  
Right-Hand Side Console Example

**NOTE:** Some items are only available if machine is equipped with the associated option.



RXA0169821—UN—02AUG19  
ISO 11783 Connector

**ISO 11783 Connector** — use to connect ISO 11783 compliant components.



RXA0188747—UN—07MAR23  
Implement Ethernet Connector

**Implement Ethernet Connector** — use to connect components for high-speed communication between the tractor and compatible implements.



RXA0167979—UN—17MAY19  
CommandCenter USB Input

**CommandCenter USB Input** — use to transfer data and reprogram CommandCenter. Input does not charge devices.



RXA0169780—UN—30JUL19  
12 V Accessory Outlets

**12 V Accessory Outlet** — use to connect auxiliary equipment.



RXA0167982—UN—17MAY19  
Outlet Pins

Outlet pins provide the following:

- Ground - pictured at top
- Unswitched battery power - pictured bottom left
- Switched power (key) - pictured bottom right



RXA0167983—UN—17MAY19  
Radio AUX and USB Inputs

**NOTE:** AUX and USB inputs are only available if a radio is equipped.

**Radio AUX and USB Inputs** — use to connect AUX and USB devices to radio. Provides 500 mA output current for charging USB devices.



RXA0167984—UN—17MAY19  
**Diagnostic Connector (Dealer Use Only)** — used for dealer diagnostics.

KD34109,000052C-19-03APR23

## CommandARM Storage



RXA0183536—UN—02JUN21  
CommandArm Storage Accessories



RXA0167981—UN—17MAY19  
12 V Accessory Outlet

**12 V Accessory Outlet** — use to connect auxiliary equipment.

KD34109,000052D-19-21JUN22

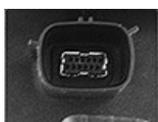
**Right-Hand Front Corner Post**



RXA0188982—UN—11JUL23

*Right-Hand Front Corner Post Example*

**NOTE:** Some items are only available if machine is equipped with the associated option.



RXA0167986—UN—17MAY19

*Display Connector*

**Display Connector** — use to connect a universal display.



RXA0167987—UN—17MAY19

*Ethernet Connector*

**Ethernet Connector** — use to connect an Ethernet cable.



RXA0167988—UN—17MAY19

*GreenStar Display Connector*

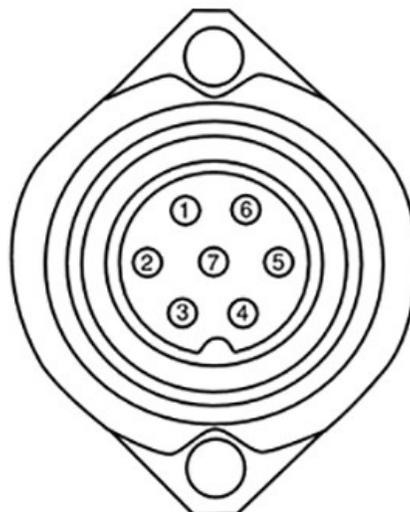
**GreenStar Display Connector** — use to connect GreenStar Display.



RXA0167989—UN—17MAY19

*ISO 11786 Connector*

**ISO 11786 Connector** — use to connect implements to receive radar or GPS speed signal.



RXA0169832—UN—05AUG19

*ISO 11786 Outlet Diagram*

Terminal Numbers	Function
1	True Ground Speed
2	Buffered Wheel Speed
3	—
4	—
5	—
6	Implement Switch
7	Ground

KD34109,000052E-19-26MAY23

**Left-Hand Rear Corner Post**



RXA0167975—UN—17MAY19

*Left-Hand Rear Corner Post Example*

*NOTE: Some items are only available if machine is equipped with the associated option.*



RXA0167981—UN—17MAY19  
12 V Accessory Outlet

**12 V Accessory Outlet** — use to connect auxiliary equipment.



RXA0167990—UN—17MAY19  
AC Outlets

**AC (Alternating Current) Outlet** — use to power devices with AC connections. One of two outlet types displayed will be equipped on machine, 120 V (pictured left) or 230 V (pictured right).

KD34109,000052F-19-09AUG19

### Right-Hand Rear Corner Post



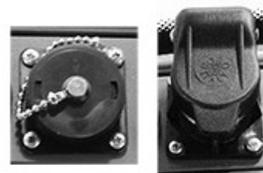
RXA0188426—UN—10JAN23  
Right-Hand Rear Corner Post Example

*NOTE: Some items are only available if machine is equipped with the associated option.*



RXA0188427—UN—10JAN23  
USB-C Charging Ports

**USB-C Charging Ports** — use to charge devices with USB-C cable. Provides charging capability of up to 3 A (18 watt) for the top port and up to 3 A (36 watt) for the bottom port.



RXA0167980—UN—17MAY19  
12 V Accessory Outlets

**12 V Accessory Outlet** — use to connect auxiliary equipment.



RXA0167982—UN—17MAY19  
Outlet Pins

Outlet pins provide the following:

- Ground - pictured at top
- Unswitched battery power - pictured bottom left
- Switched power (key) - pictured bottom right

KD34109,0000530-19-17JAN23

### Refrigerator and Cool/Storage Box



RXA0167977—UN—17MAY19  
Refrigerator and Cool/Storage Box Example

*NOTE: Some items are only available if machine is equipped with the associated option.*

#### Cool/Storage Box Items:



RXA0167991—UN—17MAY19  
Vent

**Vent** — open vent to allow storage contents to match temperature being delivered through HVAC system.

**Refrigerator Items:**



Power

RXA0167992—UN—17MAY19

**Power** — press to turn on cooling. Press again to turn off.



Power/Troubleshooting Indicator

RXA0167993—UN—17MAY19

**Power/Troubleshooting Indicator** — indicates the system status. If the indicator shows a:

- Solid green light, the refrigerator is on.
- Flashing or solid red light, the refrigerator is off, and an operational fault has occurred. See your John Deere dealer.



Cold Setting

RXA0167994—UN—17MAY19

**Cold Setting** — press button to select cold setting. Each press moves to next setting. Indicator for selected setting is illuminated. The larger the indicator, the colder the setting is.

KD34109,0000531-19-28SEP21

**Storage Compartments**



RXA0177578—UN—23APR20  
9RW and 9RX Fender Storage



RXA0167996—UN—17MAY19  
9RT Fender Storage

**Fender Storage** — storage compartment inside cab under passenger/instructional seat.



Overhead Storage

RXA0167997—UN—17MAY19

**Overhead Storage** — storage compartment on inside roof of cab.



Operator's Manual Storage

RXA0167998—UN—17MAY19

**Operator's Manual Storage** — compartment on right-hand side of passenger/instructional seat to store Operator's Manual.

KD34109,00005EB-19-04MAY20

**Sunshade**



Sunshade

RXA0169822—UN—02AUG19

Pull-down sunshade reduces glare when operating in bright sunlight. The pull-down sunshade allows operator flexibility in amount of window coverage.

KD34109,0000532-19-02AUG19

**Monitor Bracket Mounts**



Monitor Bracket Mount Example

RXA0167999—UN—17MAY19

Mount implement monitors using brackets and M10 cap screws. See your John Deere dealer for brackets.

Mounting Locations:

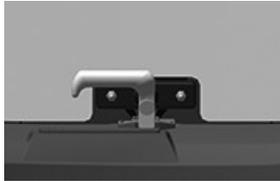
- Front right-hand corner post (two mounts)
- Rear right-hand corner post (two mounts)
- Rear left-hand corner post (one mount) if emergency hammer is not equipped

KD34109,0000534-19-30JUL19

## Emergency Exit

If cab door is blocked in an emergency situation, removable rear cab window provides large exit path.

**CAUTION: Avoid injury from broken glass.** Before using hammer, cover eyes, face, and uncovered skin. Use emergency exit only when cab door is blocked.



RXA0168000—UN—17MAY19

Rear Window Lever

**Rear Window Lever** — lift lever and push out glass to exit.



RXA0168001—UN—17MAY19

Emergency Hammer

**Emergency Hammer (If Equipped)** — use hammer to break window if exits are blocked.

KD34109,00005EC-19-23JUL20

## Install Business Band/Citizens Band (CB) Antenna and/or Radio

Custom CB or business band radio installation requires special tools and skills to tune antenna for lowest possible voltage standing wave ratio (VSWR). Qualified professional should be employed or consulted before attempting installation. Contact your John Deere dealer for recommendations. Included specifications are useful to installer.

**CAUTION: Avoid personal injury. Never mount business band radio antenna to rear of cab. Never route antenna cable near harness for electrical system controllers or operator controls. Failure to follow these precautions could expose operator to radio frequency energy levels higher than recommended by American National Standards Institute (ANSI) and/or could cause undesirable performance of electronically controlled systems.**

**Disconnect battery ground cable before any electrical repair.**

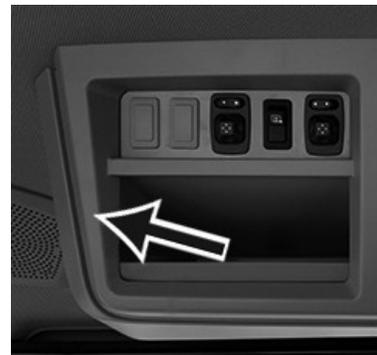
*NOTE: Do not mount microphones or accessories to bottom of radio bezel.*

Business band radios are specially licensed radios in the US and Canada that operate in the UHF/VHF frequency bands.

### Specifications for Factory Installed Radio Installation Kit:

- Roof Antenna Mount: NMO type.
- Cable Specifications: Cable length is 3.35 m (11 ft) from antenna mount to PL-259 radio connector. RG-58/U cable has 50 ohms intrinsic impedance.
- Roof Ground Plane: Grounded large antenna counterpoise foil under green cab roof allows installation of either 1/4 or 1/2 wave antenna.
- CB Antenna: Normal CB antenna can be attached to factory installed NMO antenna mount through use of an appropriate adapter. Special CB antenna already equipped with NMO base may alternatively be used.

### Procedure to Install:



RXA0168002—UN—17MAY19

Radio Bezel

1. Remove radio bezel by pulling.



RXA0169831—UN—05AUG19  
Antenna and Power Cables

2. Release antenna and power cables from bracket.

Power cable wire identification:

- A - Switched power (key) - red
- B - Ground - black
- C - Unswitched power - red



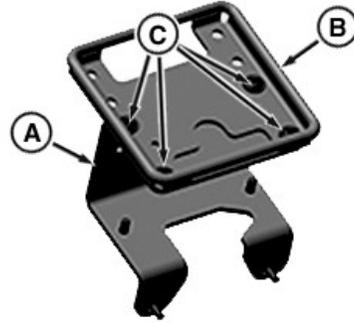
RXA0168004—UN—17MAY19  
Hole for Connectors

3. Route cables through hole in back of compartment.
4. Connect cables to radio.
5. Place radio in compartment.
6. Replace radio bezel.

KD34109.0000536-19-16DEC19

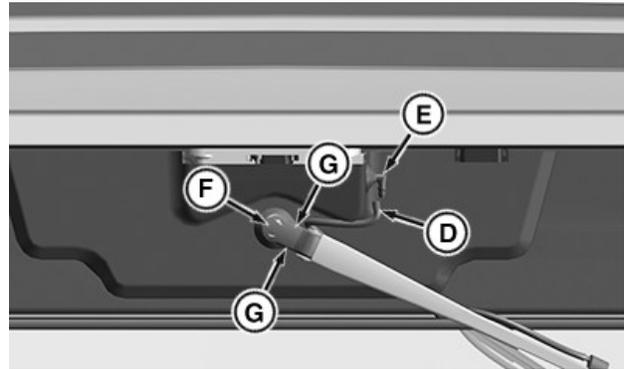
### Mount StarFire Receiver

Mount StarFire Receiver to machine using mounting kit and following procedure. To order kit, see your John Deere dealer.



RXA0167843—UN—08MAY19

1. Attach bracket (A) to bracket (B) using cap screws (C).



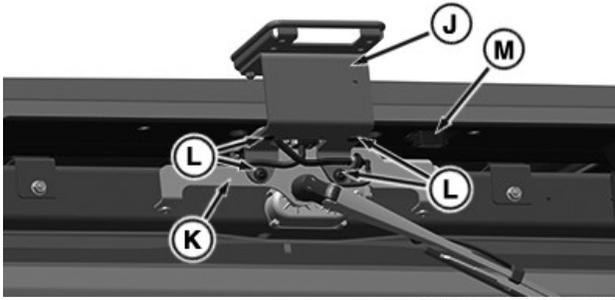
RXA0167897—UN—10MAY19

2. Disconnect front washer fluid hose (D) from fitting (E).
3. Pull tabs (G) apart to remove cover (F).
4. Remove nut from wiper motor shaft.
5. Remove wiper.



RXA0167898—UN—13MAY19

6. Remove cap screws (H).
7. Remove cover (I).



RXA0167845—UN—05AUG19

8. Attach StarFire bracket (J) to front wiper support (K) using cap screws (L).
9. Complete steps 2—7 in reverse to reassemble.
10. Mount receiver to bracket.

*NOTE: If StarFire Integrated Receiver is equipped, it does not function when external StarFire Receiver is connected.*

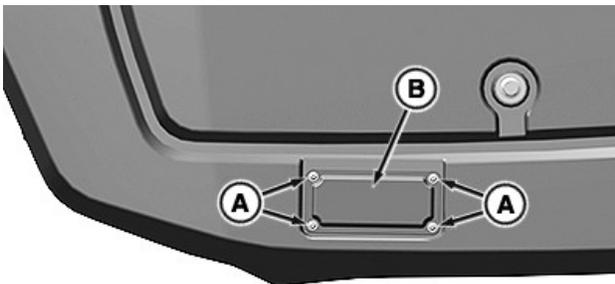
11. Connect receiver to connector (M).

KD34109,00004C8-19-21JUN22

## Mount RTK (Real-Time Kinematic) Radio

*NOTE: If machine was ordered with RTK radio, mounting bracket and radio are installed from factory. Radio must be removed from bracket to drill antenna hole. Reinstall radio and install antenna (located in cab) using information from the following procedure.*

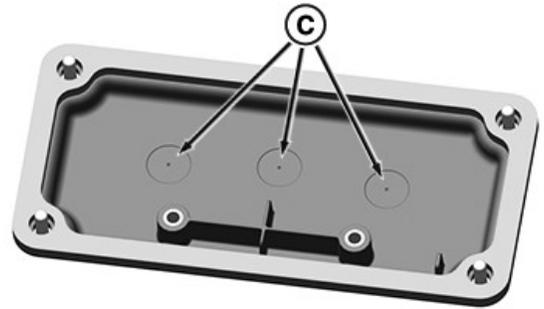
Mount RTK radio to machine using mounting kit and following procedure. To order kit, see your John Deere dealer.



RXA0167853—UN—09MAY19

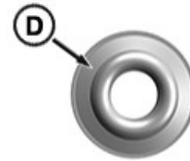
Right-Hand Side Roof

1. Remove cap screws (A) and cover (B).



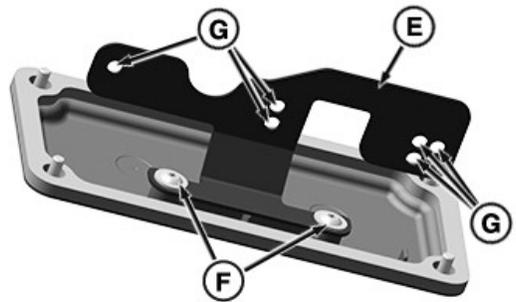
RXA0167854—UN—09MAY19

2. Drill a 31.8 mm (1.25 inch) hole at marker (C) corresponding to antenna location for your radio.



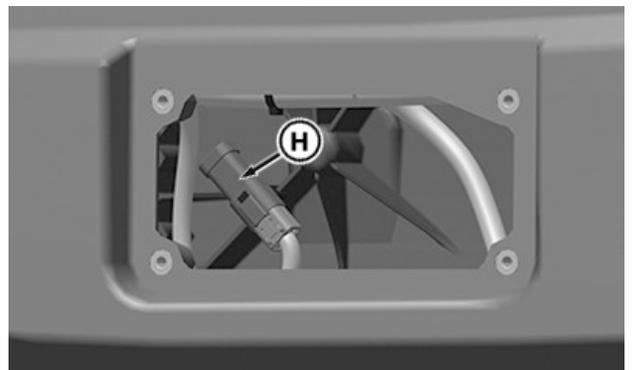
RXA0167855—UN—09MAY19

3. Attach grommet (D) to drilled hole.



RXA0167856—UN—09MAY19

4. Attach bracket (E) to cover using cap screws (F).
5. Attach radio to bracket using holes (G).

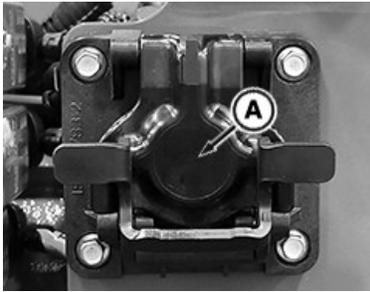


RXA0167857—UN—10MAY19

6. Connect radio to connector (H).
7. Reattach cover.
8. Attach antenna.

KD34109,00004C9-19-29APR21

## Implement Connector



RXA0169781—UN—30JUL19

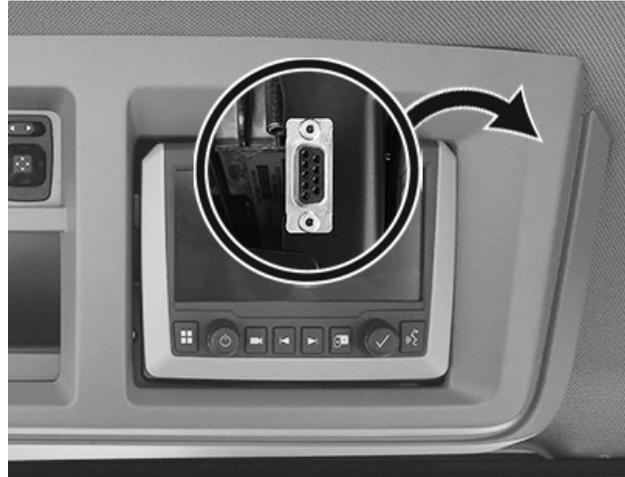
Implement connector (A) is on the rear of the tractor above the SCV stack.

KD34109,00005ED-19-29APR20

used to connect autonomous components to the tractor. The connectors are located on the bottom of the rear cab roof.

kd34109,1689015451516-19-11JUL23

## RS232 Serial Communication Connection



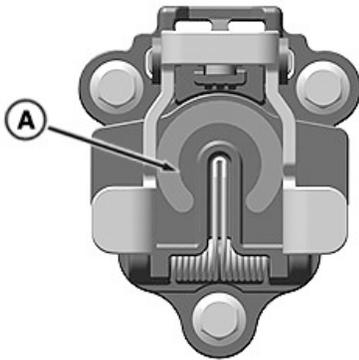
RXA0169820—UN—02AUG19

RS232 Serial Communication Connection

Connection provides NMEA0183 GPS data and is located behind upper right-hand side of radio bezel.

KD34109,0000538-19-02AUG19

## Implement Ethernet Connector

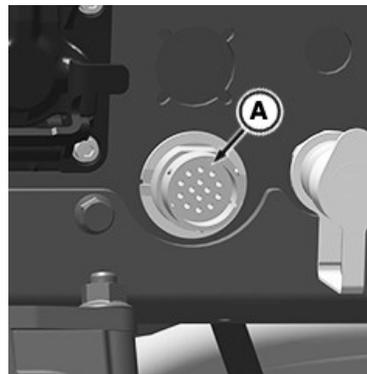


RXA0188727—UN—03MAR23

The implement Ethernet connector (A) (if equipped) enables high-speed communication between the tractor and compatible implements. The connector is located on the rear implement bracket next to the SCV stack.

kd34109,167792589673-19-11JUL23

## AutoLoad Harness Connector [Scraper]

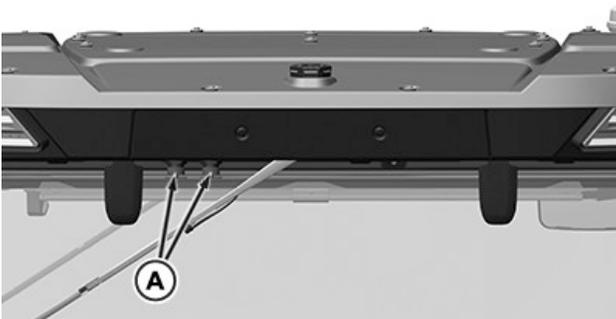


RXA0177640—UN—29APR20

AutoLoad harness connector (A) is on the rear of the tractor above the SCV stack.

KD34109,00005F5-19-23JUN22

## Autonomy System Connectors



RXA0189073—UN—10JUL23

The autonomy system connectors (A) (if equipped) are

## Chain Box



RXA0177579—UN—23APR20

*9RT Tractors*

If the tractor is not equipped with a PTO and is equipped with a category 5 drawbar, a rear chain box is also equipped.

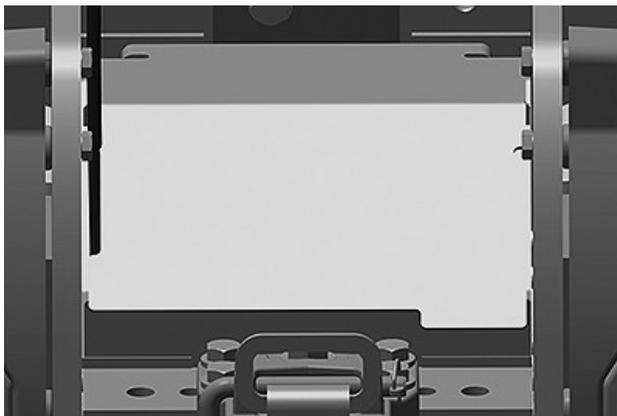
KD34109,00005EE-19-23APR20



RXA0177580—UN—23APR20

*9RW and 9RX Tractors*

A chain box is equipped on the left-hand platform of the tractor.



RXA0177581—UN—23APR20

*Rear Chain Box*

# HVAC

## HVAC Settings—Access

### Access Application through Display:



Menu

RXA0167075—UN—20MAR19

1. Menu



Machine Settings

RXA0167076—UN—20MAR19

2. Machine Settings tab



HVAC

RXA0167626—UN—26APR19

3. HVAC

### Access Application through Navigation Bar:



HVAC

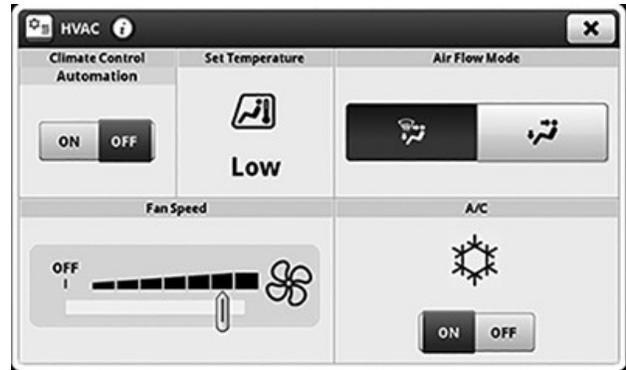
RXA0167627—UN—26APR19

Press HVAC button on navigation bar below display.

KD34109,00004B7-19-08DEC21

## HVAC Settings

HVAC application is used to adjust the temperature, fan speed, and air flow mode inside the cab.



HVAC Example

RXA0169839—UN—06AUG19

### Items Accessible on HVAC Main Page:



ON/OFF

RXA0167628—UN—26APR19

**Climate Control Automation** — enable or disable automatic control of Fan Speed, Air Flow Mode, and A/C. See HVAC Settings—Climate Control Automation in this Operator's Manual section.



75° F

Set Temperature

RXA0167629—UN—26APR19

**Set Temperature** — set desired temperature inside cab. See HVAC Settings—Set Temperature in this Operator's Manual section.



Air Flow Mode

RXA0167630—UN—26APR19

**Air Flow Mode** — adjust distribution of air flow inside cab. See HVAC Settings—Air Flow Mode in this Operator's Manual section.



Fan Speed

RXA0167631—UN—26APR19

**Fan Speed** — control fan speed inside cab. See HVAC Settings—Fan Speed in this Operator's Manual section.



A/C

RXA0167632—UN—26APR19

**Air Conditioning (A/C)** — enable or disable air conditioning. See HVAC Settings—Air Conditioning in this Operator’s Manual section.

**Run Page Modules**

Add modules for this application to run pages using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



A/C

RXA0167633—UN—26APR19

*NOTE: Different modules may be available for your application.*

**A/C** — toggle gives you direct access to enable/disable the A/C.

**Shortcut Keys**

Add shortcut keys for this application to the shortcut bar using Layout Manager. See the G5 CommandCenter Operator’s Manual.

Example:



ON

RXA0167634—UN—26APR19

*NOTE: Different shortcut keys may be available for your application.*

**A/C** — quick access to turn air conditioning ON and OFF.

kd34109,1665686496991-19-13OCT22

**HVAC Settings—Climate Control Automation**

Climate Control Automation automatically controls Fan Speed, Air Flow Mode, and A/C based on Set Temperature.

When enabled, the following conditions apply:

- Changing Set Temperature does not disable AUTO mode.
- Selecting Fan Speed, Air Flow Mode, or A/C overrides and disables AUTO mode.
- Pressing Fan Speed or Air Flow Mode buttons on CommandARM overrides and disables AUTO mode.



ON/OFF

RXA0167628—UN—26APR19

Select ON to enable or OFF to disable.

KD34109,00004B9-19-21JUN22

**HVAC Settings—Set Temperature**

Use Set Temperature to select a desired cab temperature.

**Procedure to Modify:**



75° F

Set Temperature

RXA0167629—UN—26APR19

1. Select Set Temperature module to display Set Temperature page.



Adjust Set Temperature

RXA0167639—UN—26APR19

2. Select (+) to increase or (-) to decrease value.



Close

RXA0167129—UN—25MAR19

3. Select to close.

**Alternate Procedure to Modify:**

**Temperature Button** — button on CommandARM to

adjust temperature. See CommandARM Climate, Radio, and Lighting Controls in CommandARM Controls section of this Operator's Manual.

KD34109,00004BA-19-21JUN22

### HVAC Settings—Air Flow Mode

Air Flow Mode is used to adjust distribution of air flow inside the cab.

*NOTE: Air conditioning automatically turns on when defrost air flow mode is selected.*

#### Procedure to Modify:



Air Flow Mode

RXA0167630—UN—26APR19

Select desired air flow mode on toggle bar.



AUTO

RXA0169349—UN—28JUN19

If Climate Control Automation is enabled, toggle bar changes to AUTO. If selected, Climate Control Automation is overridden and disabled.



Defrost/Operator/Floor

RXA0167636—UN—26APR19

**Defrost, Operator, and Floor** — directs air flow at operator and floor, and defrosts the windshield.



Operator/Floor

RXA0167637—UN—26APR19

**Operator and Floor** — directs air flow at operator and floor.

#### Alternate Procedure to Modify:

**Air Flow Mode Button** — button on CommandARM to select mode of air flow. See CommandARM Climate, Radio, and Lighting Controls in CommandARM Controls section of this Operator's Manual.

KD34109,00004BB-19-21JUN22

### HVAC Settings—Fan Speed

Fan Speed page allows control of the fan speed inside the cab.

#### Procedure to Modify:



Fan Speed

RXA0167641—UN—26APR19

1. Select Fan Speed module to display Fan Speed page.



Adjust Fan Speed

RXA0167642—UN—26APR19

2. Select (-) to decrease or (+) to increase speed setting.



Close

RXA0167129—UN—25MAR19

3. Select to close.



AUTO

RXA0167643—UN—26APR19

If Climate Control Automation is enabled, setting display changes to AUTO. If selected, Climate Control Automation is overridden and disabled.

#### Alternate Procedure to Modify:

**Fan Speed Button** — button on CommandARM to adjust fan speed. See CommandARM Climate, Radio, and Lighting Controls in CommandARM Controls section of this Operator's Manual.

KD34109,00004BC-19-21JUN22

### HVAC Settings—Air Conditioning

**IMPORTANT: To avoid possible compressor damage, turn air conditioning OFF if system is not cooling properly.**

*NOTE: Air conditioning turns ON when defrost air flow mode is selected.*

#### Procedure to Modify:



ON/OFF

RXA0167628—UN—26APR19

Select ON to enable or OFF to disable air conditioning.



AUTO

RXA0167645—UN—26APR19

If Climate Control Automation is enabled, toggle bar changes to AUTO. If selected, Climate Control Automation is overridden and disabled.

KD34109,00004BD-19-18OCT19

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# Performance Ballasting

## General Ballasting Information

This section covers maximum weights, proper setup, and ballast limitations.

Adjust ballast to allow 1—5% slippage when operating. Field tests show that maximum available horsepower occurs in this range.

### Major Considerations

Proper ballast configuration is required to ensure proper:

- Weight distribution for braking and steering authority.
- Traction to pull a high draft load efficiently.
- Total weight and static balance for a given implement type (towed, integral, or semi-integral). Always reevaluate the ballast configuration when changing from one implement or attachment to another.

Effects of an improper ballast configuration:

Too Little Ballast	Too Much Ballast
Excessive slip	Soil compaction
Power transfer loss	Power loss
Tread wear	Increased load
Fuel waste	
Reduced productivity	

### Ballast Limitations

**IMPORTANT: Exceeding Maximum Ballast Weight (MBW) can void the warranty due to “overload” conditions. The maximum ballast weight (MBW) for:**

Tractor			Maximum Ballast Weight (MBW) kg (lb)
Type	Undercarriage	Model	
Ag	Narrow <sup>a</sup>	All (9RX 490 and 540)	Do not add ballast.
Scraper	Wide <sup>b</sup>	9RX: 490, 540, and 590	27216 (60000)
Ag	Wide <sup>b</sup>	9RX: 490 and 540	28123 (62000)
Ag	Wide <sup>b</sup>	9RX: 590 and 640	30390 (67000)

<sup>a</sup>Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts.

**To extend drive-train life never operate the tractor with continuous full-power loads below 7.1 km/h (4.4 mph). With any transmission, ground speed can slow briefly in hard-pull situations, but recover to faster speeds during normal operations.**

**Tractors equipped with narrow undercarriages —do not add ballast. Normally equipped tractors are sufficiently ballasted without additional weight. High draft loads at speeds below 7.6 km/h (4.7 mph) can cause damage to the tracks that is not covered by warranty.**

MBW is the vehicle weight and any added ballast at which the tractor power transmission system is qualified for operation under full draft load for extended periods of time. MBW:

- Does not include the vertical load induced by hitch or drawbar-mounted implements.
- Includes fluids at the maximum level (fuel, DEF, and hydraulic oil) and operator.

Adherence to MBW ensures satisfactory power-train life and minimal ground compaction. Increases in the vehicle weight, while decreasing speed results in higher torque through the power train components (such as gears/shafts/bearings/clutches). If ballast limitations are not followed and the vehicle is operated at slow speeds, premature failure of the power train can occur.

Ballast is limited to the lowest capacity of either the tire or the tractor. Never exceed the carrying capacity of each tire. If more weight is needed, consider installing larger tires. See Tire Load Index in the Wheels and Tires—General Information section of this Operator’s Manual.

If the vehicle weight exceeds the MBW due to mounted commodity tanks or other attachments, draft load shall be limited to the MBW-equivalent draft to ensure long-term damage to the drivetrain of the vehicle does not occur. Care shall be taken to not operate the vehicle in such a manner that a single tire/track section loses contact with the ground or permanent damage to the vehicle structure may occur.

EC82310,0000F71-19-10APR23

## General Guidelines

**IMPORTANT: Avoid damage to the tractor. Never exceed the maximum ballast weight when operating with heavy draft loads. The maximum ballast weight (MBW) for:**

Tractor			Maximum Ballast Weight (MBW) kg (lb)
Type	Undercarriage	Model	
Ag	Narrow <sup>a</sup>	All (9RX 490 and 540)	Do not add ballast.
Scraper	Wide <sup>b</sup>	9RX: 490, 540, and 590	27216 (60000)
Ag	Wide <sup>b</sup>	9RX: 490 and 540	28123 (62000)

Tractor			Maximum Ballast Weight (MBW) kg (lb)
Type	Undercarriage	Model	
Ag	Wide <sup>b</sup>	9RX: 590 and 640	30390 (67000)

<sup>a</sup>Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts.

### Tractor Weight Based on Engine Power

A guide to ballasting tractors is to use engine horsepower combined with necessary ballast for a particular job—light, medium, or heavy. Start the process with the lightest ballast that can handle the job. Then add ballast as necessary to get the performance desired.

*NOTE: Correct weight split must be maintained when adding or removing ballast. Cast weight is preferred to obtain the best tractive performance.*

More or less weight is necessary when different travel speeds are used. Higher speeds do not require as much weight. Final indication of correct ballast is slip measured in the field.

*NOTE: Use radar or GPS to monitor slip. Checking slip is manually possible, but only shows slip in the area of the field where the check is performed. See Measuring Slip in this Operator's Manual section.*

The correct tractor weight to efficiently deliver power to the ground for draft applications depends on travel speed. Consult table for recommended weight based on expected travel speed and drawbar/hitch load.

Recommended Travel Speeds	
Implement Draft	Ground Speed km/h (mph)
Light	8.7 (5.4) and faster
Medium	7.2—8.7 (4.5—5.4)
Heavy	7.2 (4.5) and slower

### Light Implement—45 kg/PS (101 lb/hp)

Examples: Drawn planters, air seeders, and PTO-operated equipment that place small vertical loads on the drawbar.

Engine		Tractor Type	
		Ag	Scraper
		Undercarriage Type <sup>ab</sup>	
		Wide	Wide
PS (hp ISO)	hp	Ballast Weight kg (lb)	
490	483	22050 (48612)	22050 (48612)
540	533	24300 (53572)	24300 (53572)

Engine		Tractor Type	
		Ag	Scraper
		Undercarriage Type <sup>ab</sup>	
		Wide	Wide
PS (hp ISO)	hp	Ballast Weight kg (lb)	
590	582	26550 (58533)	26550 (58533)
640	631	28880 (63493)	— <sup>c</sup>

<sup>a</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts. Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Do not add ballast to tractors with Narrow Undercarriages. Normally equipped tractors are sufficiently ballasted without additional weight.

<sup>c</sup>Model not available.

### Medium Implement—47 kg/PS (105 lb/hp)

Examples: Implements that place a larger vertical load on the drawbar such as disks, chisel plows, and field cultivators.

Engine		Tractor Type	
		Ag	Scraper
		Undercarriage Type <sup>ab</sup>	
		Wide	Wide
PS (hp ISO)	hp	Ballast Weight kg (lb)	
490	483	23030 (50772)	23030 (50772)
540	533	25380 (55953)	25380 (55953)
590	582	27730 (61134)	27216 (60000) <sup>c</sup>
640	631	30080 (66315)	— <sup>d</sup>

<sup>a</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts. Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Do not add ballast to tractors with Narrow Undercarriages. Normally equipped tractors are sufficiently ballasted without additional weight.

<sup>c</sup>[Scraper] Maximum Ballast Weight (MBW) 27216 kg (60000 lb).

<sup>d</sup>Model not available.

### Heavy Implement—49 kg/PS (110 lb/hp)

Examples: Implements that place large vertical loads on the hitch or the drawbar such as rippers or hitch-mounted planters.

Optional front axle reinforcements and frame supports are recommended for high drawbar vertical loads or high draft loads.

Engine		Tractor Type	
		Ag	Scraper
		Undercarriage Type <sup>ab</sup>	
		Wide	Wide
PS (hp ISO)	hp	Ballast Weight kg (lb)	
490	483	24010 (52933)	24010 (52933)
540	533	26460 (58334)	26460 (58334)
590	582	28910 (63736)	27216 (60000) <sup>c</sup>
640	631	30390 (67000) <sup>d</sup>	— <sup>e</sup>

<sup>a</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track

belts. Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Do not add ballast to tractors with Narrow Undercarriages. Normally equipped tractors are sufficiently ballasted without additional weight.

<sup>c</sup>[Scraper] Maximum Ballast Weight (MBW) 27216 kg (60000 lb).

<sup>d</sup>[Ag] Maximum Ballast Weight (MBW) 30390 kg (67000 lb) for 9RX: 590 and 640 models with wide undercarriage.

<sup>e</sup>Model not available.

EC82310,0000F72-19-15JUL22

## General Weight Split Guidelines

**CAUTION:** Avoid physical injury or equipment damage. Never exceed maximum listed speed for load at drawbar and rear axle. See Weight Chart—Narrow Track (If Equipped) [Ag] and Extended Road Transport in the Transport section of this Operator's Manual.

**IMPORTANT:** Avoid damage to the tractor. Never exceed the maximum ballast weight when operating with heavy draft loads. The maximum ballast weight (MBW) for:

Engine		Tractor Type	
		Ag	Scraper
		Undercarriage Type <sup>a b</sup>	
		Wide	Wide
PS	HP	Ballast Weight kg (lb)	
490	483	24010 (52933)	24010 (52933)
540	533	26460 (58334)	26460 (58334)
590	582	28910 (63736)	27216 (60000) <sup>c</sup>
640	631	30390 (67000) <sup>d</sup>	— <sup>e</sup>

<sup>a</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts. Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Do not add ballast to tractors with Narrow Undercarriages. Normally equipped tractors are sufficiently ballasted without additional weight

<sup>c</sup>[Scraper] Maximum Ballast Weight (MBW) 27216 kg (60000 lb)

<sup>d</sup>[Ag] Maximum Ballast Weight (MBW) 30390 kg (67000 lb) for 9RX: 590 and 640 models with wide undercarriage.

<sup>e</sup>Model not available.

The weight split varies depending on the application. Increase front axle weight to insure steering authority when using a heavy drawbar load or hitch-mounted implements.

Weight split requirements are based on the type of implement or attachment being used. Maintaining sufficient weight on the front and the rear axles to provide steering authority under both field and transport conditions is a primary consideration. Other factors as indicated in following tables must also be considered.

## Recommended Weight Splits

[Ag]		
Implement	Weight Split <sup>a</sup> %	
	Front	Rear
Towed	51—55	49—45
Hitch-Mounted	55—60	45—40
High Load Transfer	65—70	35—30

<sup>a</sup>Use 60—65 weight split on the front when operating with a heavy draft implement causing extreme weight transfer from front to rear.

[Scraper]		
Implement	Weight Split <sup>a</sup> %	
	Front	Rear
Towed Implement and Dolly-Wheel Scrapers	51—55	49—45
High Load Transfer Implement (Scrapers without Dolly-Wheel)	65—70	35—30

<sup>a</sup>Use 60—65 weight split on the front when operating with a heavy draft implement causing extreme weight transfer from front to rear.

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## Ballast Options

**IMPORTANT:** Avoid damage to the tractor. Never exceed the maximum ballast weight when operating with heavy draft loads. The maximum ballast weight (MBW) for:

Engine		Tractor Type	
Ag	Scraper	Undercarriage Type <sup>ab</sup>	
Wide	Wide		
PS	HP	Ballast Weight kg (lb)	
490	483	24010 (52933)	24010 (52933)
540	533	26460 (58334)	26460 (58334)
590	582	28910 (63736)	27216 (60000) <sup>c</sup>
640	631	30390 (67000) <sup>d</sup>	— <sup>e</sup>

<sup>a</sup>Wide undercarriages use 30 in (762 mm) or 36 in (914 mm) track belts. Narrow undercarriages use 18 in (457 mm) or 24 in (610 mm) track belts.

<sup>b</sup>Do not add ballast to tractors with Narrow Undercarriages. Normally equipped tractors are sufficiently ballasted without additional weight

<sup>c</sup>[Scraper] Maximum Ballast Weight (MBW) 27216 kg (60000 lb)

<sup>d</sup>[Ag] Maximum Ballast Weight (MBW) 30390 kg (67000 lb) for 9RX: 590 and 640 models with wide undercarriage.

<sup>e</sup>Model not available.

## Quick-Tatch Suitcase Weights

Quick-Tatch weights weigh 43 kg (95 lb) each. Up to:

- 36 weights can be installed on the front weight

support. These combinations are limited by tractor options.

- [Ag] 18 weights can be installed on the rear weight frame. Tractors with a rear PTO can install up to 13 weights.

### Idler Weights

Idler weights weigh 70 kg (154 lb) each. One weight can be installed on each of the eight outside track idlers. It is recommended to install the idler weights in groups of four—installing one axle first, then installing on the other axles.

### Weight Adjustment

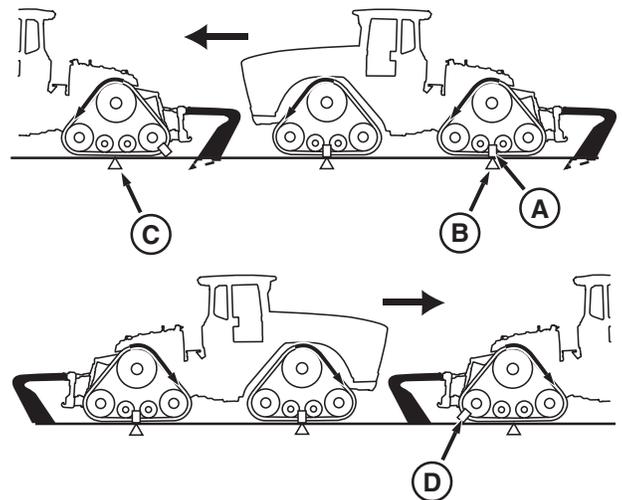
Ballast			Weight Adjustment kg (lb)	
Location	Type	Weight kg (lb)	Front	Rear
Front	Standard Weight Support	436 (961)	+661 (+1457)	-225 (-496)
Quick-Tatch Suitcase Weights	43 (95)	+72 (+159)	-29 (-64)	
Idler Weights (4)	280 (617)	+280 (+617)	0 (0)	
Rear	Quick-Tatch Suitcase Weights	43 (95)	-30 (-66)	+73 (+161)
PTO	415 (915)	-43 (-95)	+458 (+1010)	
Hitch	685 (1510)	-106 (-234)	+791 (+1744)	
Idler Weights (4)	280 (617)	0 (0)	+280 (+617)	

EC82310,0000F74-19-14JUL22

### Measure Slip

**IMPORTANT:** Slip measurement requires an implement attached to tractor. Manual measurement also requires an assistant. Avoid physical injury. Ensure that the assistant is clear of tractor and implement during procedure.

*NOTE: Tractors equipped with an optional radar unit or GPS can automatically determine percentage of slip. Radar and GPS must be calibrated correctly. (See the CommandCenter section in this Operator's Manual).*



RXA0180493—UN—19NOV20

1. Mark a location on the rear track (A) easily viewable by the assistant.
2. Mark a starting point on the ground (B), with the tractor moving and the implement lowered in the ground.
3. Lower the implement and drive the tractor forward at working speed.
4. Have the assistant follow the tractor and mark the ground when the rear track completes ten full revolutions (C).
5. Raise the implement and return the tractor to the original starting point. Line up the mark on the rear

track with the starting point or make a new mark on the rear track.

6. With the implement raised, drive the tractor forward at working speed.
7. Have the assistant follow the tractor and count the rear track revolutions (to the nearest 1/4 revolution) (D) until the previously marked end point is reached.
8. Use the second count and the chart to determine slip.

*NOTE: 1—5% slippage is allowable when operating.*

9. Adjust ballast or the load to give the correct slippage.

*NOTE: Available horsepower is greatly reduced when the slip drops below minimum percent.*

Drive Wheel Revolutions (Step 4)	% Slip	Action
10	0	Remove Ballast
9-7/8	1	No Adjustment Required
9-3/4	2	
9-1/2	5	
9-1/4	7	Add Ballast
9	10	Add Ballast

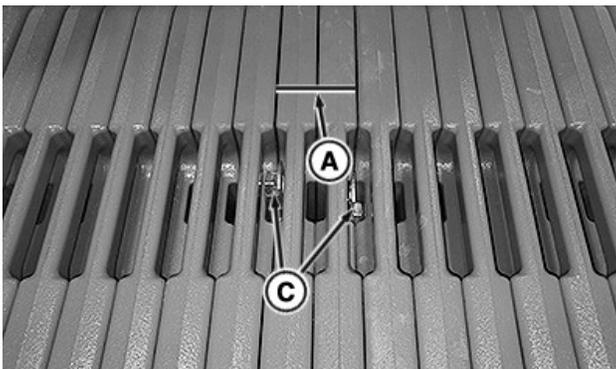
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## Quik-Tatch Weight Use

### Front Frame Weight

#### Standard Front Weight Support

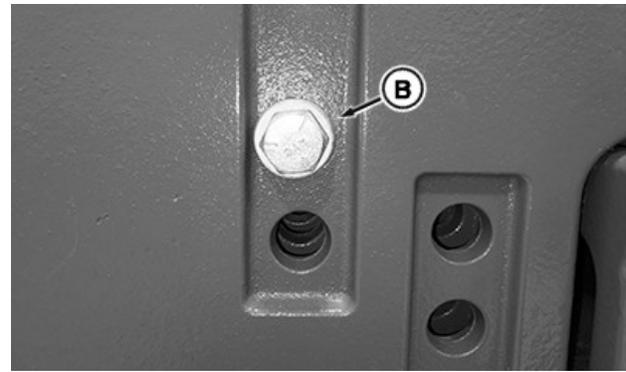
No more than 36 Quik-Tatch weights can be installed on the tractor standard front weight support.



RXA0173127—UN—10DEC19

Front Weight Support (A) and (C)

1. Install Quik-Tatch weights balanced on each side of the center point. The first two weights must be installed as a pair (A).
2. To install:
  - Two to six weights:

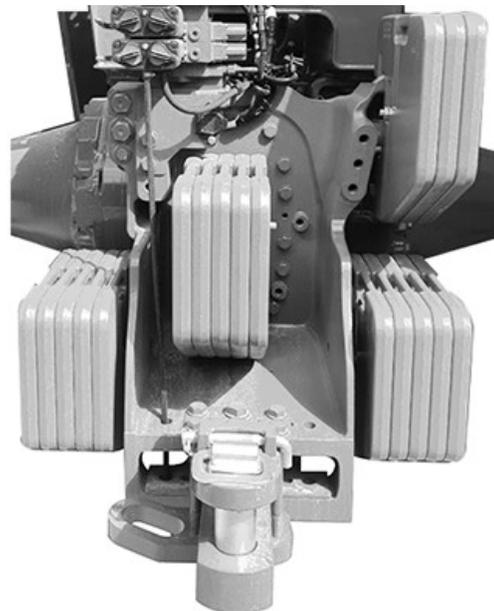


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Front Weight Support (B)

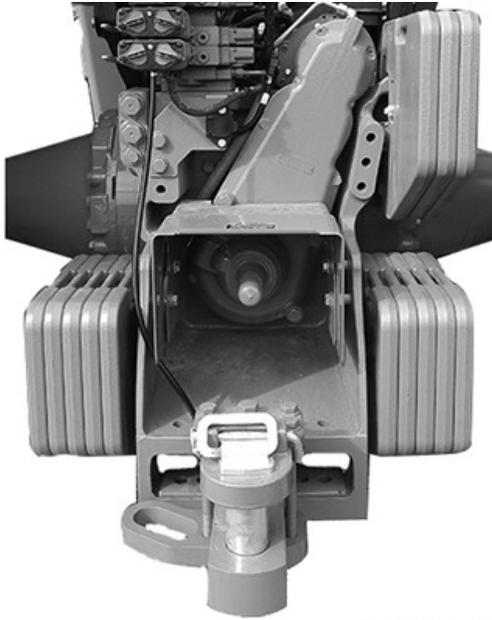
- a. Insert one retaining bolt (B) through the hole in one side of the weights and secure the bolt with a nut on the other side of the weights.
  - b. Tighten the bolt to 230 N·m (170 lb·ft).
- Eight or more weights:
    - a. Insert and position two retainers (C) between the weights. Position one retainer with the threaded hole pointing upward, and position one retainer with the threaded hole pointing downward.
    - b. Run two retaining bolts (B) through the holes at both sides of the weights, threading each bolt into the threaded hole on the retainer.
    - c. Tighten the bolts to 230 N·m (170 lb·ft).
3. Retighten the retaining bolts after 10 hours of use.

### Rear Frame Weight



RXA0152658—UN—07SEP16

Maximum Ballast Configuration Without PTO and Hitch



RXA0153814—UN—07SEP16

Maximum Ballast Configuration With PTO

Rear weight support affects both axles due to the weight transfer effect.

Additional ballast not allowed if tractor equipped with hitch, or hitch and PTO.

Equipment configuration determines maximum quantity of Quik-Tatch weights. A maximum of 18, 43 kg (95 lb) Quik-Tatch weights can be added to rear of tractor as long as the MBW is not exceeded.

### Install Quik-Tatch Weights

To install five or fewer weights:

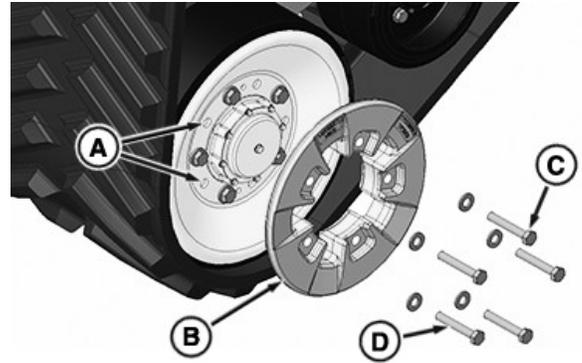
1. Position the weight on the bracket.
2. Install the retaining bolts through the hole.
3. Tighten the bolts to 230 N·m (170 lb-ft).
4. Retighten the retaining bolts after 10 hours of use.

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### Idler Weight Use

**CAUTION:** Avoid injury when installing the idler weights. Use appropriate lifting devices for installation or have the job performed by your John Deere dealer.

**IMPORTANT:** After installation, tighten the idler weight bolts every 3 hours and 10 hours (daily) for the first week of operation or until bolts do not move when tightened.



RXA0180494—UN—19NOV20

1. Remove five of the existing M24 x 60 idler bolts (A) in an every-other pattern.
2. Align idler weight (B) through holes with the available bolt holes in the idler hub.
3. Insert M24 x 140 bolts (D) through the washers (C) and the idler weight. Tighten to 1070 N·m (790 lb-ft).
4. Drive the tractor 100 m (100 yd) and retighten the idler weight bolts.
5. Repeat the steps for all idler weights.

EC82310,0000F76-19-19NOV20

### Implement Guidelines

**IMPORTANT:** Under scraper or severe applications, tighten wheel bolts every 2 hours until all cap screws remain at 610 N·m (450 lb-ft).

### Front-Mounted Implements

**IMPORTANT:** Optional front axle reinforcements and frame supports are required when mounting front sprayer tanks or front-mounted blade. Front-mounted blade is not approved for 9RX Narrow tractor, or for tractor equipped with 762 mm or 914 mm (30 or 36 inch) tracks and 3048 mm (120 in) spacing. See your John Deere dealer for mounting instructions.

For front spray tanks:

- Do not exceed 1136 L (300 gal) capacity on each side.
- Intended for spray application purposes only: not for extra ballast.
- Must use spray tank reinforcement kit.
- Tanks should be empty for road travel.

Front frame reinforcement is recommended whenever tractor has front-mounted dozer blades or spray tanks, is used in scraper applications, or is equipped with front frame ballast.

Reinforcement attaches to the underside of the front axle and to outside of the front frame behind the front

axle. See your John Deere dealer for parts and assistance.

### Towed Scrapers

Follow manufacturer instructions in attaching and using scraper.

### Non-Approved Uses

- **Spray Tanks** - Mounted forward of the grille screen.
- **Spray Tanks** - Unbalanced.
- **Scrapers** - Without proper tractor/scraper drawbar and frame/axle supports (9RX: 490, 540, and 590).
- **Scrapers** - 9RX 640 is not approved in any configuration.
- **Front Hitches** - Are not approved.
- **Tiling Plows** - Are not approved.
- **Fully Mounted Hitch Implements** - Center of gravity greater than 609 mm (24 in) beyond hitch points.
- **Fully Mounted Hitch Implements** - Total weight exceeds 6350 kg (14000 lb)—Category 4 (Without additional implement-mounted lift assist).
- **Fully Mounted Hitch Implements** - Total weight exceeds 6123 kg (13500 lb)—Category 3 (Without additional implement-mounted lift assist).
- **9RX: 490, 540, 590, and 640 with Category 3 Hitch** - Deep ripping/plowing applications using full horsepower (Use Category 4 hitch).
- **Extreme Draft Loads** - Requiring two tractors hooked in tandem.
- **Tow Hooks** - Adding tow hooks is not an option.

JL41210,0000AD1-19-16FEB23

## Calculate Tractor Ballast Package

**CAUTION:** Avoid physical injury or equipment damage due to improper ballast or tire pressure. Never:

- Operate the tractor if the ballast package causes instability or unsafe conditions.
- Exceed maximum axle load capacity.

Tractor efficiency and service life are increased when the:

- Tractor is correctly ballasted for the work task.
- Weight is split appropriately between the front and rear of the tractor.

Examples show correct method of integrating data from tables and information from this Operator's Manual section to determine best possible working ballast for individual tractors and operations.

## Example 1

### Step 1: Tractor Configuration

#### 1A—Show tractor options.

Model	9RX 590
Tread Spacing (mm (in))	2210 (87)
Hitch/PTO	Yes/Yes
Fuel Fill	Full
Engine Power (PS/hp)	590 (582)

#### 1B—Show tread options.

<b>Tracks (mm (in))</b>
762 (30) [Ag] 3500

#### 1C—List ballast options.

Axle		Front	Rear
Ballast Weights	Weight Support	Yes	—
	Quik-Tatch Suitcase Weights	—	—
	Idler Weights	—	—

## Step 2: Calculate Total Tractor Weight

Find and show:

- Unballasted tractor weight. See Unballasted Tractor Weight in this section of this Operator's manual.
- Ballast weights. See Ballast Options in this section of this Operator's Manual.
- Add or subtract the front and rear axle weights to find the adjusted tractor weight for each axle.
- Add the front and rear adjusted tractor weights to calculate the total tractor weight.

Axle		Front kg (lb)	Rear kg (lb)
Unballasted Tractor Weight		14704 (32422)	12330 (27188)
Ballast Weights	Weight Support	661 (1458)	-225 (-496)
	Quik-Tatch Suitcase Weights	—	—
	Idler Weight	—	—
Tractor Weight	Adjusted	15365 (33880) <sup>a</sup>	12105 (26692) <sup>a</sup>
	Total	27470 (60571)	

<sup>a</sup>Weigh axle for actual load.

## Step 3: Results

#### 3A—Calculate weight split.

- Front axle: Divide the front axle weight by the total tractor weight to find the weight split, then multiply the result by 100.

- Rear axle: Subtract the front axle result from 100.

See General Weight Split Guidelines in this section of this Operator's Manual for ideal weight split.

Axle	Front	Rear
Weight Split %	56	44

**3B**—Calculate power to weight ratio. Divide the total tractor weight by Engine PS to find the weight to power ratio. See General Guidelines in this section of this Operator's Manual for listings of Engine PS by model.

Ballast Ratio (kg/PS (lb/hp))	47 (104)
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**3C**—Find recommended implement draft and travel speed with Engine power to weight ratio as calculated in Step 3B. See General Guidelines for Tractor Weight Based on Engine Power in this section of this Operator's Manual.

Recommended	Implement Draft	Medium
	Travel Speed km/h (mph)	7.2—8.7 (4.5—5.4)

**4**—Adjust ballast.

- If the power to weight ratio calculated or weight split is not correct for the application, return to Step 2 and adjust the ballast package. Repeat until results are optimized for application.
- In field adjustments may still need be required in order to achieve desired performance.

**Example 2**

**Step 1: Tractor Configuration**

**1A**—Show tractor options.

Model	9RX 640
Tread Spacing (mm (in))	3048 (120)
Hitch/PTO	No/No
Fuel Fill	Full
Engine Power (PS/hp)	640 (631)

**1B**—Show tread options.

Tracks (mm (in))	762 (30) [Ag] 3500
------------------	--------------------

**1C**—List ballast options.

Axle	Front	Rear	
Ballast Weights	Weight Support	Yes	—
	Quik-Tatch Suitcase Weights	36	18
	Idler Weights	—	—

**Step 2: Calculate Total Tractor Weight**

Find and show:

- Unballasted tractor weight. See Unballasted Tractor Weight in this section of this Operator's manual.
- Ballast weights. See Ballast Options in this section of this Operator's Manual.
- Add or subtract the front and rear axle weights to find the adjusted tractor weight for each axle.
- Add the front and rear adjusted tractor weights to calculate the total tractor weight.

Axle	Front kg (lb)	Rear kg (lb)		
Unballasted Tractor Weight	15221 (33562)	11641 (25668)		
Ballast Weights	Weight Support	661 (1458)	-225 (-496)	
	Quik-Tatch Suitcase Weights	Front	2592 (5715)	-1044 (-2302)
		Rear	-540 (-1191)	1314 (2897)
	Idler Weight	—	—	
Tractor Weight	Adjusted	17934 (39544) <sup>a</sup>	11686 (25768) <sup>a</sup>	
	Total	29620 (65312)		

*Example 2: Calculations*

<sup>a</sup>Weigh axle for actual load.

**Step 3: Results**

**3A**—Calculate weight split.

- Front axle: Divide the front axle weight by the total tractor weight to find the weight split, then multiply the result by 100.
- Rear axle: Subtract the front axle result from 100.

See General Weight Split Guidelines in this section of this Operator's Manual for ideal weight split.

Axle	Front	Rear
Weight Split %	61	39

**3B**—Calculate power to weight ratio. Divide the total tractor weight by Engine kW to find the weight to power ratio. See General Guidelines in this section of this Operator's Manual for listings of Engine kW by model.

Ballast Ratio (kg/PS (lb/hp))	46 (104)
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**3C**—Find recommended implement draft and travel speed with Engine power to weight ratio as calculated in Step 3B. See General Guidelines for Tractor Weight Based on Engine Power in this section of this Operator's Manual.

Recommended	Implement Draft	Light
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	Travel Speed km/h (mph)	8.7 (5.4) and faster
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### Unballasted Tractor Weight Chart

*NOTE: Unballasted weights are calculated by averaging and are figured based on tractor with a full tank of fuel. Each tractor will be different. Have your tractor weighed for exact weight splits.*

**4—Adjust ballast.**

- If the power to weight ratio calculated or weight split is not correct for the application, return to Step 2 and adjust the ballast package. Repeat until results are optimized for application.
- In field adjustments may still need be required in order to achieve desired performance.

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2032 mm (80 in) Tread Spacing for 457 mm (18 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14325 (31581)	14225 (31361)	14313 (31555)	14213 (31334)
	Rear	10680 (23545)	11465 (25276)	11039 (24337)	11825 (26070)
	Total	25005 (55127)	25690 (56637)	25352 (55892)	26038 (57404)
Weight Split (%)		57 / 43	55 / 45	56 / 44	55 / 45

2235 mm (88 in) Spacing for 457 mm (18 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14545 (32066)	14444 (31844)	14533 (32040)	14433 (31819)
	Rear	10926 (24088)	11711 (25818)	11285 (24879)	12071 (26612)
	Total	25470 (56152)	26156 (57664)	25818 (56919)	26504 (58431)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

3048 mm (120 in) Tread Spacing for 457 mm (18 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14736 (32487)	14635 (32265)	14724 (32461)	14624 (32240)
	Rear	11141 (24562)	11927 (26295)	11501 (25355)	12286 (27086)
	Total	25877 (57049)	26562 (58559)	26225 (57816)	26910 (59326)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

2032 mm (80 in) Tread Spacing for 609 mm (24 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14506 (31980)	14406 (31760)	14495 (31956)	14394 (31733)
	Rear	10863 (23949)	11648 (25679)	11222 (24740)	12008 (26473)
	Total	25369 (55929)	26054 (57439)	25717 (56696)	26402 (58206)
Weight Split (%)		57 / 43	55 / 45	56 / 44	55 / 45

2235 mm (88 in) Spacing for 609 mm (24 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14647 (32291)	14546 (32068)	14635 (32265)	14535 (32044)
	Rear	11021 (24297)	11806 (26028)	11380 (25089)	12166 (26821)
	Total	25667 (56586)	26353 (58098)	26015 (57353)	26701 (58866)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

Performance Ballasting

3048 mm (120 in) Tread Spacing for 609 mm (24 in) Camso [Ag] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14917 (32886)	14817 (32666)	14905 (32860)	14805 (32639)
	Rear	11324 (24965)	12110 (26698)	11684 (25759)	12469 (27489)
	Total	26241 (57852)	26927 (59364)	26589 (58619)	27274 (60129)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

2218 mm (87 in) Tread Spacing for 762 mm (30 in) Camso [Ag] 3500 and 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14815 (32661)	14715 (32441)	14804 (32637)	14704 (32417)
	Rear	11185 (24659)	11970 (26389)	11544 (25450)	12330 (27183)
	Total	26000 (57320)	26685 (58830)	26348 (58087)	27033 (59598)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

3048 mm (120 in) Tread Spacing for 762 mm (30 in) Camso [Ag] 3500 and 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	15221 (33557)	15121 (33336)	15210 (33532)	15109 (33310)
	Rear	11641 (25664)	12426 (27395)	12000 (26455)	12786 (28188)
	Total	26862 (59221)	27547 (60731)	27210 (59988)	27895 (61498)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

2218 mm (87 in) Tread Spacing for 914 mm (36 in) Camso [Ag] 3500 and 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14965 (32992)	14865 (32772)	14954 (32968)	14853 (32745)
	Rear	11334 (24987)	12120 (26720)	11694 (25781)	12479 (27511)
	Total	26299 (57979)	26984 (59490)	26647 (58747)	27332 (60257)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

3048 mm (120 in) Tread Spacing for 914 mm (36 in) Camso [Ag] 3500 and 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	15371 (33887)	15270 (33665)	15359 (33861)	15259 (33640)
	Rear	11790 (25993)	12576 (27725)	12150 (26786)	12935 (28517)
	Total	27161 (59880)	27846 (61390)	27509 (60647)	28194 (62157)
Weight Split (%)		57 / 43	55 / 45	56 / 44	54 / 46

2218 mm (87 in) Tread Spacing for 762 mm (30 in) Camso [Scraper] 6500 Tracks					
Hitch/PTO Option		No/No	Yes/No	No/Yes	Yes/Yes
Weight kg (lb)	Front	14815 (32661)	—	—	—
	Rear	11185 (24659)	—	—	—
	Total	26000 (57320)	—	—	—
Weight Split (%)		57 / 43	—	—	—

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# Transport

## Weight Chart—Narrow Track (If Equipped) [Ag]

**CAUTION:** Avoid physical injury or equipment damage. Never exceed maximum listed speed for load at drawbar and rear axle.

**IMPORTANT:** Failure to follow road transport recommendations could cause track damage and void warranty.

- Attachments such as chemical tanks can add significant axle loads.
- Never exceed tractor's or implement's maximum transport speed. Speed is based on tractor capability.
- Speed settings can be locked. See Users and Access in the CommandCenter section of this Operator's Manual.

**NOTE:** If track vibration occurs, increase or decrease ground speed in increments of 0.3 km/h (0.2 mph) until vibration decreases.

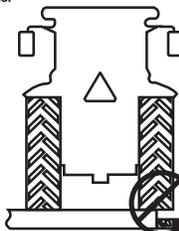
and rear axles individually when payload is added - include front-mounted spray tanks.

**Maximum Transport Speed with Axle Weight**

Highest Single Axle Weight	18" Tracks	24" Tracks
	Max Speed	Max Speed
Tractor <sup>1</sup>	26mph (42km/h)	26mph (42km/h)
35,000lbs (15,900kg)	21mph (34km/h)	26mph (42km/h)
45,000lbs (20,400kg)	16mph (26km/h)	23mph (37km/h)
55,000lbs (24,900kg)	13mph (21km/h)	20mph (32km/h)

1. Tractor only, or up to 32,000lbs (14,500kg) on a single axle.

- High transport speeds with heavy axle loads can damage track components.
- Always operate with tracks fully supported - avoid driving on the edge of the road.
- Speeds shown are for 75°F (24°C) outside air temperature. Reduce speed by 1mph (1.6km/h) for every 15°F (8°C) warmer than 75°F (24°C).
- Maximum speed can be restricted in the CommandCenter™.
- See Operators Manual Transport Section for detailed speed restriction during transport.



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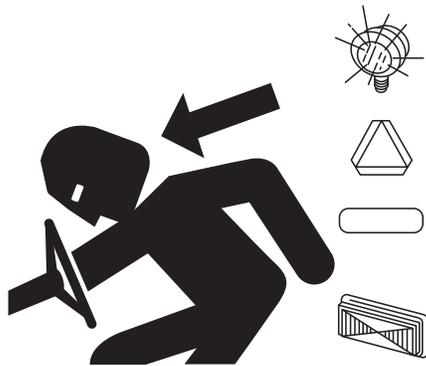
Loads listed in table are for reference only. Weigh front

Weight and Recommended Speed with Typical Implements					
Application	Implement	Weight/Load kg (lb)		Maximum Transport Speed km/h (mph)	
		Drawbar/Hitch	Rear Axle	Tracks	
				18 inch	24 inch
Primary Tillage	11 shank disk ripper (gangs, without rolling baskets)	220 (484)	13608 (30000)	41.8 (26) <sup>a</sup>	41.8 (26) <sup>a</sup>
Secondary Tillage	45' field cultivator	499 (1100)	14061 (31000)	41.8 (26) <sup>a</sup>	41.8 (26) <sup>a</sup>
Secondary Tillage	40' vertical tillage tool	817 (1800)	14515 (32000)	41.8 (26) <sup>a</sup>	41.8 (26) <sup>a</sup>
Secondary Tillage	60' liquid applicator (2400 gal) - empty	1637 (3608)	15422 (34000)	35.4 (22) <sup>a</sup>	41.8 (26) <sup>a</sup>
Secondary Tillage	45' mulch finisher	1905 (4200)	15876 (35000)	33.7 (21) <sup>a</sup>	41.8 (26) <sup>a</sup>
Other	1500 bu grain cart - empty	1724 (3800)	15876 (35000)	33.7 (21) <sup>a</sup>	41.8 (26) <sup>a</sup>
Planters	24 row 30" spacing planter with central bulk hopper	3493 (7700)	18144 (40000)	28.9 (18)	40.2 (25) <sup>a</sup>
Planters	47 row 15" spacing planter with central bulk hopper	3783 (8340)	18597 (41000)	27.3 (17)	38.6 (24) <sup>a</sup>
Planters	36 row 30" planter with central bulk hopper	5579 (12300)	20865 (46000)	25.7 (16)	37.0 (23) <sup>a</sup>
Planters	Hitch-mounted, 24 row 30" spacing planter with central bulk hopper	5897 (13000)	21319 (47000)	24.1 (15)	35.4 (22) <sup>a</sup>
Planters	48 row 30" planter with central bulk hopper	7983 (17600)	24500 (54000)	20.9 (13)	32.1 (20)

<sup>a</sup>Never exceed implement's maximum transport speed. For guidelines on towing equipment with and without trailer brakes, see Towed Loads and Transport with Ballast in this Operator's Manual section.

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## Driving Tractor on Roads



RXA0161723—UN—15JAN18



RXA0161724—UN—15JAN18

**CAUTION:** Avoid personal injury or death from losing control of tractor. When driving tractor on roads:

- Wear Seat belts.
- Reduce speed when driving on icy, wet, or graveled surfaces.
- Ballast tractor correctly (See Performance Ballasting section in this Operator's Manual).
- Prevent wheels from locking and skidding on tractors transporting heavy loads.
- Avoid holes, ditches, sharp turns, hillsides and obstructions which may cause tractor to roll over.
- Frequently check for traffic from rear, especially in turns, and use turn signal lights.
- Always operate flashing lights when traveling on a highway or public roads, except where prohibited by law.

**Lights**—Use headlights and turn signals day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible and in good working order. Replace or repair lighting and marking that has been damaged or lost. An implement safety lighting kit is available from your John Deere dealer.

**Brakes**—Tap brake pedal to ensure differential lock is NOT engaged. Avoid hard application of brakes.

**Remote Cylinders**—Position transport lock switch(es) to eliminate possibility of lowering an implement during transport by inadvertently bumping extend/retract lever (s). (See procedure in Six Position SCV Control Levers in Selective Control Valves section of this Operator's Manual.)

**[Ag] Rear Hitch**—Position or lock hitch in transport position to eliminate possibility of lowering an implement during transport by inadvertently bumping control lever. (See procedure in Hitch section of this Operator's Manual.)

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## Extended Road Transport

**IMPORTANT:** Never exceed implement's maximum transport speed. Avoid roading at high speeds with a new set of tracks and wheels, especially during first full season of operation.

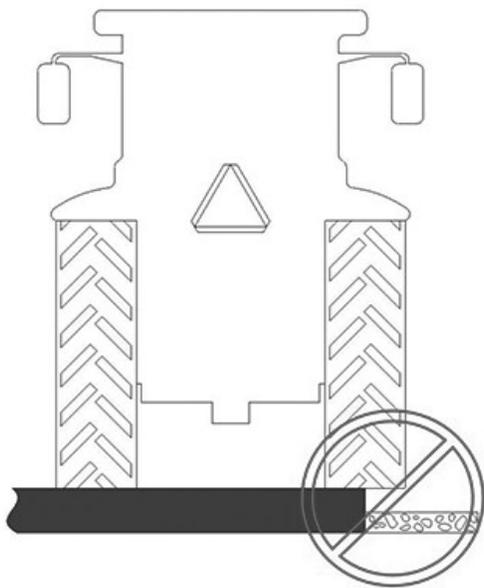
Reduce transport speed for long distances with implements at maximum allowable weight:

- Hitch [Ag] 9072 kg (20000 lb)
- Vertical Drawbar [Ag] 5440 kg (12000 lb)
- Vertical Drawbar [Scraper] 10,206 kg (22,500 lb)

Damage to tracks and elastomeric coated wheels may result due to heat if operating at or near these load limits, especially at high ambient temperatures, for more than two hours. If continuous travel greater than two hours is required, it is recommended to reduce transport speed or long term track, mid-roller, or idler wheel heat damage may result.

### 9RX Narrow Track Tractors Only [Ag]

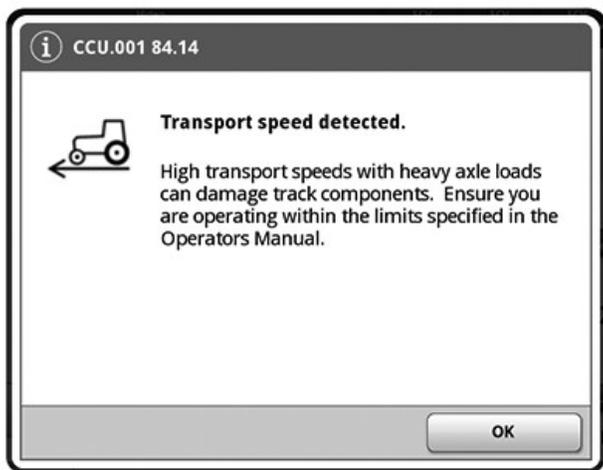
**IMPORTANT:** Driving on edge of road may cause severe damage to track components.



RXA0160970—UN—14SEP17

- 75°F (24°C) outside air temperature. Reduce speed by 1 mph (1.6 kph) for every 15°F (8°C) warmer than 75°F (24°C).
- Failure to follow road transport recommendations could void warranty.

**Extended high transport speed will activate warning. If warning is visible, verify speed and axle weights match reference charts.**



RXA0161251—UN—01NOV17

Maximum Transport Speed by Weight 18 inch Track	
Single Axle Weight <sup>a</sup> kg (lb)	Transport Speed km/h (mph)
14500 (32000)	42 (26)
15000 (33000)	37 (23)
15400 (34000)	35 (22)
15900 (35000)	34 (21)
16300 (36000)	32 (20)
17200 (38000)	31 (19)

Maximum Transport Speed by Weight 18 inch Track	
Single Axle Weight <sup>a</sup> kg (lb)	Transport Speed km/h (mph)
18100 (40000)	29 (18)
19500 (43000)	27 (17)
20900 (46000)	26 (16)
22200 (49000)	24 (15)
23600 (52000)	23 (14)
25400 (56000)	21 (13)
27200 (60000)	19 (12)

<sup>a</sup>Extra weight can be caused by fuel, DEF fluid, mud, and debris.

Maximum Transport Speed by Weight 24 inch Track	
Single Axle Weight <sup>a</sup> kg (lb)	Transport Speed km/h (mph)
16800 (37000)	42 (26)
18100 (40000)	40 (25)
19500 (43000)	38 (24)
20900 (46000)	37 (23)
22200 (49000)	35 (22)
23600 (52000)	34 (21)
24900 (55000)	32 (20)
27200 (60000)	31 (19)

<sup>a</sup>Extra weight can be caused by fuel, DEF fluid, mud, and debris.

TS36762,000035E-19-10MAY18

### Towed Loads and Transport with Ballast

**CAUTION:** Avoid possible injury from losing control while towing a load. Stopping distance increases on slopes and with increased speed and weight of towed loads.

Tractor wheels/tracks may lock and skid on slippery downhill slopes on tractors equipped with IVT/AutoPowr or EVT/eAutoPowr transmissions. See Operate Transmission—IVT in IVT/AutoPowr Transmission section of this Operator's Manual.

Never exceed the maximum transport speed for the implement. Before transporting a towed implement, refer to implement Operator's Manual and implement decals to determine maximum transport speed. This tractor is capable of operating at transport speeds which exceed the maximum allowable transport speed for most towed implements. For John Deere implements, use the implement codes found in the implement Operator's Manual. For non-John Deere implements, see Implement and Tractor Codes in Performance Ballasting section of this Operator's Manual. Failure to adhere to the maximum transport speed for the implement or to have correct ballast can result in:

- Loss of control of tractor/implement combination.
- Reduced or no ability to stop during braking.
- Implement tire failure.
- Damage to implement structure or components.

When towing equipment without brakes:

- Do not transport at speeds greater than 25 km/h (16 mph).
- Towed device must weigh less than 1.5 times the ballasted tractor weight.

When towing equipment with brakes:

- If the manufacturer does not specify a maximum transport speed, do not transport at speeds above 40 km/h (25 mph).
- When transporting at speeds up to 40 km/h (25 mph), the fully loaded implement must weigh less than 4.5 times the tractor weight.
- When transporting at speeds between 40 km/h (25 mph)—50 km/h (31 mph), the fully loaded implement must weigh less than 3 times the tractor weight.

The tractor must be heavy and powerful enough with adequate braking power for the towed load. Add ballast to the tractor or lighten the implement load.

Drive slowly enough to maintain safe control. Be alert for skids. Shift to a lower gear for hillsides, rough ground, and sharp turns, especially when transporting heavy equipment.

Never operate the tractor with the transmission in the NEUTRAL position or with the clutch disengaged.

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## Transport Rear Mounted Implements with Ballast

**CAUTION:** Avoid possible injury when transporting heavy rear-mounted implements.

Drive slowly over rough ground, regardless of how much ballast used.

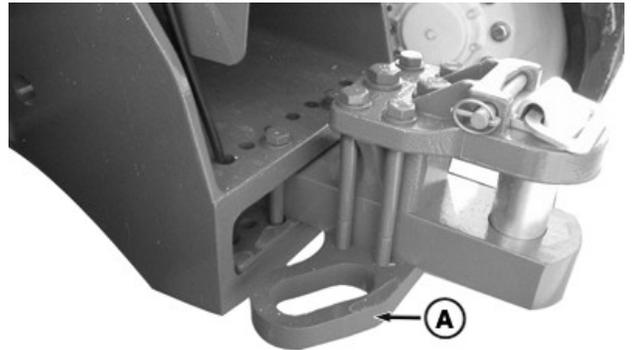
Add weight if needed for stability. Add enough ballast to maintain steering control.

TO84419,0000154-19-04NOV15

## Safety Chains Use

**CAUTION:** Avoid possible accident and injury by using a safety chain on drawn equipment. Use a safety chain with a strength rating equal to or greater than the gross weight of equipment. Provide only enough slack in the chain to permit turning.

**IMPORTANT:** Never use safety chain for towing or possible damage to tractor, implement, and drawbar may result. Safety chain is provided only for transport.



RXA0150482—UN—08DEC15

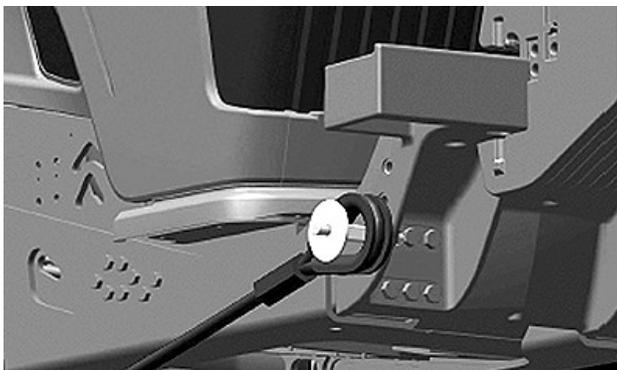
Route safety chain through loop (A) and attach to drawbar support.

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## Tow Points



RXA0180443—UN—13NOV20



RXA0180444—UN—13NOV20

**CAUTION:** Avoid physical injury or equipment damage. Only use tow points shown to maneuver and tow the tractor on hard-surfaced roads only.

Before towing the tractor on hard-surfaced roads with the tow points:

- Cable needs to be removed from the storage position before use.
- Remove any trailers or mounted implements.
- Never use a tow-rope; always use an approved towbar.

To free a mired tractor, see Freeing a Mired Tractor in this Owner's Manual section

Tow points are integrated into the front end of the tractor to allow the tractor to be maneuvered and towed on hard-surfaced roads.

EC82310,0000F60-19-08JAN21

## Carrier Transport

**CAUTION:** Avoid injury:

- Drive carefully.
- Shift the transmission lever into PARK, stop the engine, and remove the key before working in hinge areas.

**IMPORTANT:** Avoid tractor damage:

- Before transporting the tractor, install the steering locks on the hydraulic cylinders using the install steering locks procedure. Before resuming tractor operation, remove the steering locks.
- When transporting a track tractor equipped with extended axles, special procedures and equipment are required. See Load Extended Axle Width Track Tractor in this Operator's Manual section.
- Only haul a disabled tractor on a flat bed carrier.
- Transport regulations vary. Contact local

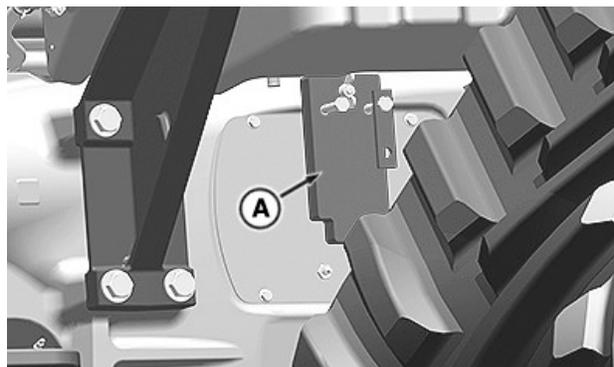
transportation officials for local transportation requirements.

### Drive Tractor onto Carrier

**CAUTION:** A second person is required to guide the driver onto the flat bed carrier. Make sure the tractor is centered on the carrier and watch for potential hazards that may cause injury but are not apparent to the driver.

1. Steer the tractor straight ahead.
2. Stop the tractor.
3. Place the transmission into PARK.
4. Shut off the engine.
5. Remove the key.

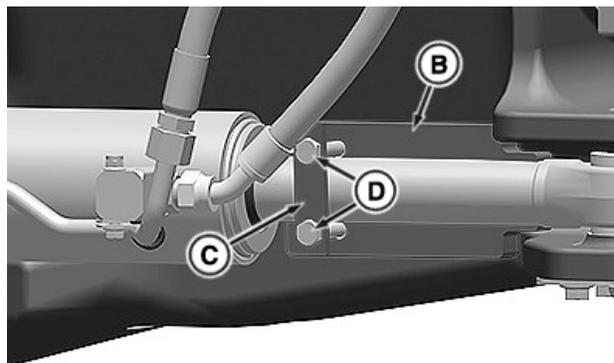
### Install Steering Locks



RXA0188671—UN—23FEB23

Steering Lock Stored (left-hand side)

1. Remove the steering lock (A) from the storage location.



RXA0188672—UN—23FEB23

Steering Lock Installed (left-hand side)

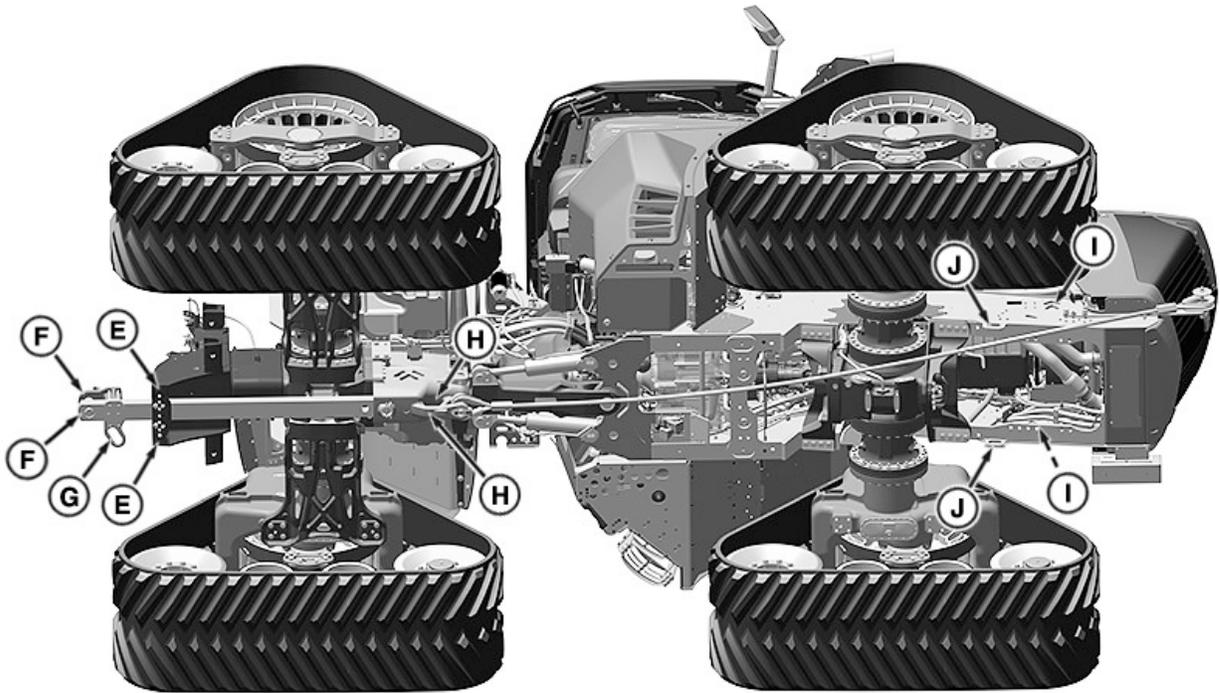
2. Install the steering lock (B) behind the cylinder.
3. Secure the steering lock with the retaining plate (C) and cap screws (D).
4. Tighten the cap screws.
5. Repeat the procedure on the other side of the tractor.

**Tie-Down on Transport Carrier**

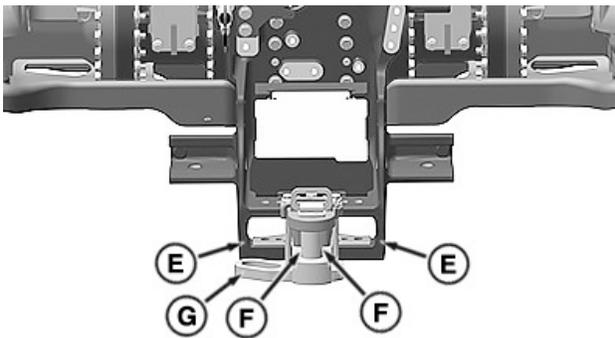
**⚠ CAUTION:** Avoid accident and/or injury. Use tie-down devices to secure the tractor to the carrier.

**IMPORTANT:** Avoid equipment damage. Never use the front weight support as a tie-down location.

Attach tie-down devices securely to:



RXA0188673—UN—23FEB23



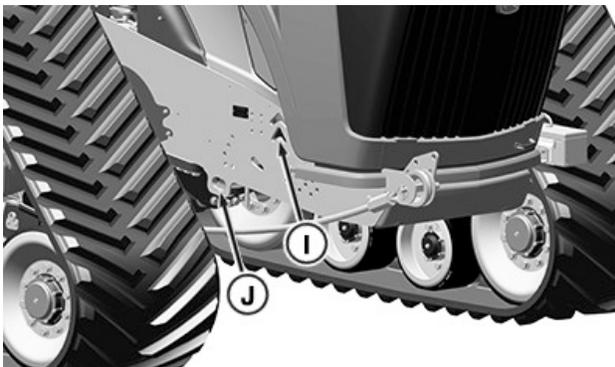
- Rear drawbar support (E)
- Rear drawbar pin (F)
- Rear drawbar safety loop (G)
- Rear axle (H)
- Front frame T-hook slots (I)
- Front frame tie-down loops (J)

**Carrier Tie-Down**

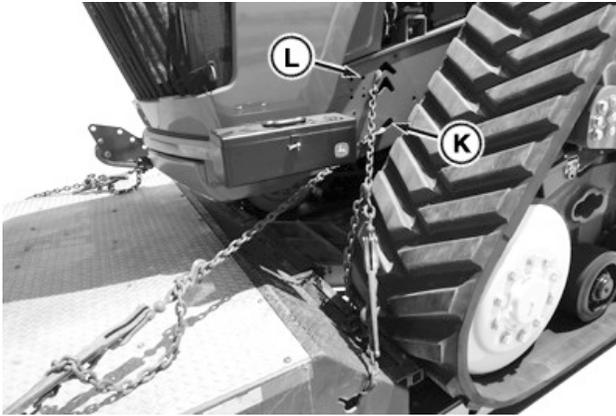
Transport a disabled tractor on a flat bed carrier.

1. Place the tractor into the PARK position.

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RXA0188674—UN—23FEB23



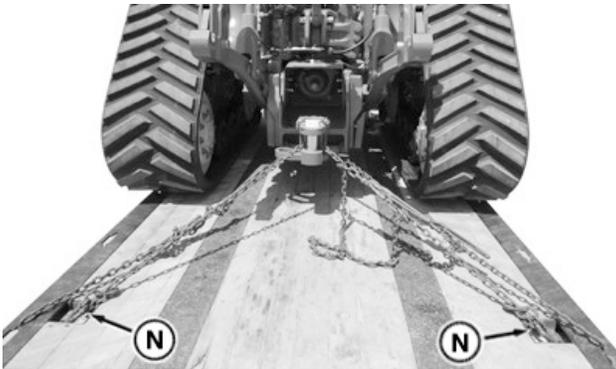
RXA0188676—UN—23FEB23

2. Attach chains to the front tie-down loops (K) and T-hook slots (L) on the right-hand and left-hand sides of the tractor. Tension the chains forward and down to the carrier frame.



RXA0188677—UN—23FEB23

3. Attach chains to the rear axle (M) on the right-hand and left-hand sides of the tractor. Tension the chains forward and down to the carrier frame.



RXA0188678—UN—23FEB23

**NOTE:** Use rubber or protective material to prevent paint damage to the drawbar support.

4. Attach chains to each side of the rear drawbar support (N) to secure the tractor to the carrier.
5. Fold left-hand and right-hand side mirrors forward.
6. Fold left-hand and right-hand extremity lights forward (if equipped).



RXA0188679—UN—23FEB23

7. Attach over-dimension flags to the axles (O).
8. After traveling a short distance, check load shift to ensure tie-downs are secure.

**IMPORTANT: Avoid tractor damage. Before unloading the tractor, remove the steering locks and place them in the storage locations.**

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### Load Extended Axle Width Track Tractor [Ag]

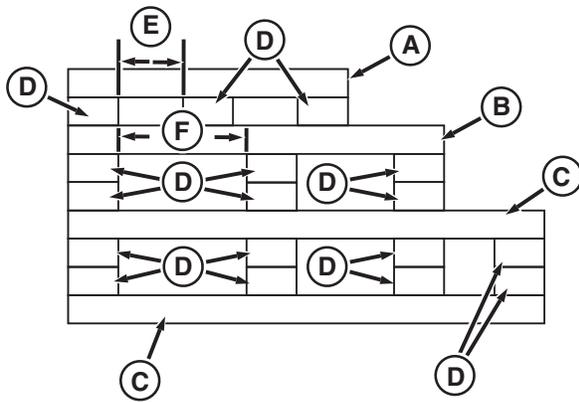
**IMPORTANT: Avoid damage to track and track systems. Load and transport track tractor equipped with extended axles only as instructed. Always use wooden ramps described, even if trailer is equipped with pull-out ramps.**

Transport tractor only on removable gooseneck trailer equipped with aluminum or cast iron outriggers. Install 51 mm (2 in) by 305 mm (12 in) wooden planks placed onto outriggers.

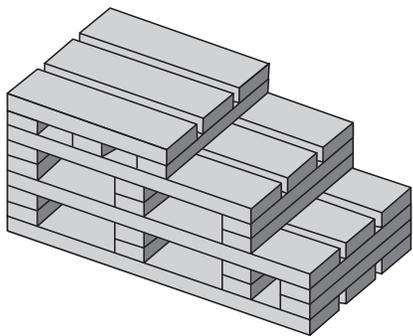
#### Build Loading Ramps

Use wooden ramps to load and unload tractor. Ramps reduce the incline tracks must ascend and descend when moving tractor. Ramps are constructed of 51 mm (2 in) by 102 mm (4 in) lumber. Cutting list:

Part	Length mm (in)	Number of Pieces
A	483 (19)	3
B	737 (29)	3
C	915 (36)	6
D	305 (12)	17



RXA0162412—UN—07MAR18  
Left-Hand Side View (Image Not to Scale)



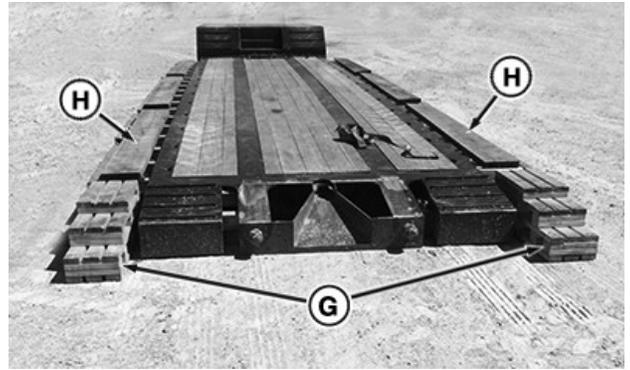
RXA0162413—UN—07MAR18  
Pictorial View (Image Not to Scale)

Assemble as shown. Dimensions E (102 mm (4.025 in)) and F (229 mm (9.025 in)) locate center support blocks. Secure parts with 102 mm (4 in) nails or screws. Install parts A through C evenly across parts D. There will be gaps between the long deck parts (A through C) after installation (see pictorial view).

**Load Tractor**

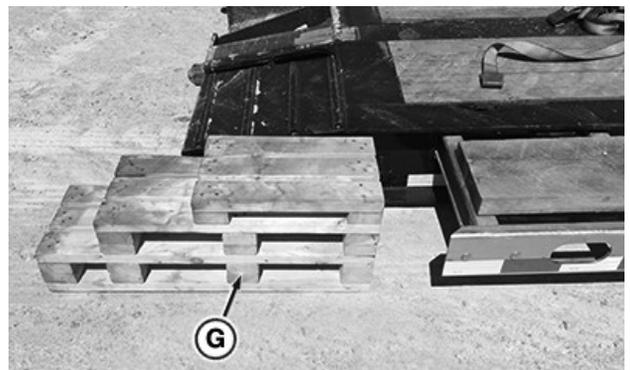


RXA0162414—UN—07MAR18



RXA0163199—UN—09MAY18

1. Place wooden ramps (G) 305 mm (12 in) or less behind and aligned with outriggers equipped with 51 mm (2 in) by 305 mm (12 in) wooden planks (H).



RXA0162416—UN—07MAR18

**⚠ CAUTION: Avoid injury and damage to equipment. Place observers a distance from loading process to assure that ramps do not move and tractor is loaded correctly.**

2. Move tractor slowly toward ramps, aligning tracks with ramps.



RXA0162417—UN—07MAR18

3. Drive tractor slowly up ramps and then onto outrigger planks.
4. Place tractor in Park and shutoff engine.
5. Secure tractor to trailer, see Carrier Transport in this OM section.
6. Unload tractor using ramps and observers. Drive slowly.

RX32825,000007-19-17JUL18

## Tow Mode—Engine Will Start

**IMPORTANT:** Avoid damage to transmission and hydraulic systems:

- Operate engine above 1250 rpm (provides adequate system lubrication).
- Verify all pressure indicator lights are off.
- Never tow machine faster than 8 km/h (5 mph) for a maximum distance of 8 km (5 miles).

1. Verify hydraulic oil reservoir level is within normal operation range. See Hydraulic System Oil Level in Service—Check section of this Operator's Manual.
2. Attach tow bar to drawbar.
3. With transmission in PARK, start machine.
4. Operate engine above 1250 rpm.
5. Place shift lever in NEUTRAL.
6. Steer and brake machine while being towed.
7. After towing is complete, place shift lever in PARK.

RX32825,000018A-19-02SEP21

## Tow Mode—Engine Will Not Start

**CAUTION:** Avoid injury. If hydraulic oil temperature is less than -10°C (14°F), backup pump will not turn on and brakes or steering will not function. If machine still must be moved, contact your John Deere dealer.

**IMPORTANT:** Avoid machine damage:

- Never attempt to start machine by towing.
- Never tow machine faster than 8 km/h (5 mph) for a maximum distance of 8 km (5 miles).
- Never tow machine without releasing park brake.
- Never operate or tow machine with a filter restriction code. If lube or filter STOP or Warning code displays, change appropriate filter. See Service—Change section of this Operator's Manual.

*NOTE:* Special tools are required to release park brake. See your John Deere dealer.



RXA0169804—UN—01AUG19

Located near Left-Hand Rear Fender

1. Ensure hydraulic oil reservoir level in sight gauge is between FULL COLD (A) and MIN COLD (B) marks. If level is below MIN COLD mark, remove cap (C) and add hydraulic oil.
2. Attach tow bar to drawbar.

**IMPORTANT:** If machine has no electrical power, a 100 Amp electrical source must be connected. See Battery Booster or Charger in Engine Operation section of this Operator's Manual.

3. Open load center next to operator seat. See Access Load Center Fuses in Service—Electrical section of this Operator's Manual.
4. Remove fuse 32 and install in fuse 22 location.
5. Remove 10 Amp spare fuse and install in fuse 21 location.
6. Install appropriate park brake release hand pump kit components.
7. Turn key switch to on position.
8. Follow kit instructions to manually release spring-applied park brake.
9. Enable backup steering in Diagnostic Addresses on Controller Diagnostics tab. See Diagnostic Center in CommandCenter section of this Operator's Manual.
10. Select correct control unit:
  - TSB – two-track machines
  - XSB – wheel and four-track machines equipped with ACS (ActiveCommand Steering)
  - XSC – wheel and four-track machines equipped with AutoTrac

*NOTE:* When Back Up Mode is enabled, turning steering wheel activates backup pump.

11. Go to address 025 and select Back Up Mode ON.
12. Press Accept.
13. Go to PTP 055 to monitor park brake pressure.
14. Pump power pack to displayed target value of 1800 kPa (18 bar) (261 psi).
15. Press X to close diagnostic windows.

16. Place shift lever in NEUTRAL and verify on corner post display.
17. Steer and brake machine while being towed.
18. After towing is complete, place shift lever in PARK.
19. Cycle key switch on and off to return address 025 to Back Up Mode Off.
20. Return all removed fuses to original locations.

RX32825,0000189-19-29AUG22

## Freeing a Mired Tractor

 **CAUTION:** Freeing a mired tractor can involve safety hazards. Avoid physical injury, tractor damage, or property damage:

- Verify that the tractor surroundings are clear of people and other hazards before attempting to free a mired tractor.
- A tow chain or tow bar could fail and recoil from a stretched condition.
- A mired tractor could tip rearward.
- The towing machine could overturn.

**IMPORTANT:** H-casting is not to be used for stuck tractor retrieval.

**IMPORTANT:** Avoid tractor damage or property damage:

- Never:
  - Use the front weight support as a tow point or to push other tractors or implements.
  - Use the front suspended axle to tow the tractor.
  - Attempt to start the tractor by towing.
  - Attempt to clear excess soil material by driving the tractor after the mired tractor is freed.
  - Use H-hook attached to the tow cable (If Equipped)
- Always:
  - Have an operator steer and brake the mired tractor. If possible, maintain a minimum of 1250 engine rpm to provide power for lubrication, steering, and brakes.
  - Tow the tractor in as straight a line as possible. Pulling at an angle causes heavy side loads and can damage the suspended axle or frame.
  - Stop immediately if the tracks are spinning and begin to dig below the surface level of soil. Track damage can occur due to material ingestion between the track and drive system components.
  - Remove excess material from the

**undercarriage and drive system components of the freed tractor before driving the tractor under its own power.**

## To Free a Mired Tractor

1. Unhitch and move any towed implements.
2. Attach a tow chain or tow bar to the mired tractor. If the mired tractor is to be pulled:
  - Forward: Use the tow cable (preferred if equipped with a tow cable) or attach at the tow point.
  - Rearward: Attach at the drawbar (preferred if not equipped with a tow cable).
3. Pull the mired tractor.

EC82310,0000B46-19-26AUG21

# Fuel, Lubricants, and Coolant—General Information

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## Determine Tractor Engine Type

**IMPORTANT:** To determine tractor engine type, see Engine Serial Number in Identification Numbers section of this Operator's Manual.

Correct engine oil specification and oil change interval is determined by a number of factors. One important consideration is type of engine aftertreatment installed. To determine engine type, see Engine Serial Number in Identification Numbers section of this Operator's Manual.

RX32825,0001798-19-14DEC16

## Minimizing the Effect of Cold Weather on Diesel Engines

John Deere diesel engines are designed to operate effectively in cold weather.

However, for effective starting and cold-weather operation, a little extra care is necessary. The following information outlines steps that can minimize the effect that cold weather may have on starting and operation of your engine. See your John Deere dealer for additional information and local availability of cold-weather aids.

### Use Winter Grade Fuel

When temperatures fall below 0°C (32°F), winter grade fuel (No. 1-D in North America) is best suited for cold-weather operation. Winter grade fuel has a lower cloud point and a lower pour point.

**Cloud point** is the temperature at which wax begins to form in the fuel. This wax causes fuel filters to plug.

**Pour point** is the lowest temperature at which movement of the fuel is observed.

*NOTE: On average, winter grade diesel fuel has a lower Btu (heat content) rating. Using winter grade fuel may reduce power and fuel efficiency, but should not cause any other engine performance effects. Check the grade of fuel being used before troubleshooting for low-power complaints in cold-weather operation.*

### Air Intake Heater

An air intake heater is an available option for some engines to aid cold weather starting.

### Ether

An ether port on the intake is available to aid cold weather starting.

**CAUTION:** Ether is highly flammable. Do not use ether when starting an engine equipped with glow plugs or an air intake heater.

### Coolant Heater

An engine block heater (coolant heater) is an available option to aid cold weather starting.

### Seasonal Viscosity Oil and Proper Coolant Concentration

Use seasonal grade viscosity engine oil based on the expected air temperature range between oil changes and a proper concentration of low silicate antifreeze as recommended. (See DIESEL ENGINE OIL and ENGINE COOLANT requirements in this section.)

### Diesel Fuel Cold Flow Additive

Use John Deere Fuel-Protect Diesel Fuel Conditioner (winter formula), which contains anti-gel chemistry, or equivalent fuel conditioner to treat non-winter grade fuel (No. 2-D in North America) during the cold-weather season. This generally extends operability to about 10°C (18°F) below the fuel cloud point. For operability at even lower temperatures, use winter grade fuel.

**IMPORTANT:** Treat fuel when outside temperature drops below 0°C (32°F). For best results, use with untreated fuel. Follow all recommended instructions on label.

### Biodiesel

When operating with biodiesel blends, wax formation can occur at warmer temperatures. Begin using John Deere Fuel-Protect Diesel Fuel Conditioner (winter formula) or equivalent at 5°C (41°F) to treat biodiesel fuels during the cold-weather season. Use B5 or lower blends at temperatures below 0°C (32°F). Use only winter grade petroleum diesel fuel at temperatures below -10°C (14°F).

### Winterfronts

Use of fabric, cardboard, or solid winterfronts is not recommended with any John Deere engine. Their use can result in excessive engine coolant, oil, and charge air temperatures. This can lead to reduced engine life, loss of power and poor fuel economy. Winterfronts may also put abnormal stress on fan and fan drive components potentially causing premature failures.

If winterfronts are used, they should never totally close off the grill frontal area. Approximately 25% area in the center of the grill should remain open at all times. At no time should the air blockage device be applied directly to the radiator core.

### Radiator Shutters

If equipped with a thermostatically controlled radiator shutter system, this system should be regulated in such a way that the shutters are completely open by the time the coolant reaches 93°C (200°F) to prevent excessive intake manifold temperatures. Manually controlled systems are not recommended.

If air-to-air aftercooling is used, the shutters must be

completely open by the time the intake manifold air temperature reaches the maximum allowable temperature out of the charge air cooler.

For more information, see your John Deere dealer.

DX,FUEL10-19-13JAN18

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## **Oil Filters**

Filtration of oils is critically important for proper operation and lubrication. John Deere brand oil filters have been designed and produced specifically for John Deere applications.

John Deere filters adhere to engineering specifications for quality of the filter media, filter efficiency rating, strength of the bond between the filter media and the element end cap, fatigue life of the canister (if applicable), and pressure capability of the filter seal. Non-John Deere branded oil filters might not meet these key John Deere specifications.

Always change oil filters regularly as specified in this manual.

DX,FILT1-19-11APR11

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# Fuel

## Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended. Renewable diesel fuel produced by hydrotreating animal fats and vegetable oils is basically identical to petroleum diesel fuel. Renewable diesel that meets EN 590, ASTM D975, or EN 15940 is acceptable for use at all percentage mixture levels.

### Required Fuel Properties

In all cases, the fuel shall meet the following properties:

**Cetane number of 40 minimum.** Cetane number greater than 47 is preferred, especially for temperatures below  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) or elevations above 1675 m (5500 ft.).

**Cloud Point** should be below the expected lowest ambient temperature or **Cold Filter Plugging Point** (CFPP) should be a maximum  $10^{\circ}\text{C}$  ( $18^{\circ}\text{F}$ ) below the fuel cloud point.

**Fuel lubricity** should pass a maximum scar diameter of 0.52 mm as measured by ASTM D6079 or ISO 12156-1. A maximum scar diameter of 0.45 mm is preferred.

**Diesel fuel quality and sulfur content** must comply with all existing emissions regulations for the area in which the engine operates. DO NOT use diesel fuel with sulfur content greater than 10 000 mg/kg (10 000 ppm).

**Materials** such as copper, lead, zinc, tin, brass and bronze should be avoided in fuel handling, distribution and storage equipment as these metals can catalyze fuel oxidation reactions which can lead to fuel system deposits and plugged fuel filters.

### E-Diesel fuel

DO NOT use E-Diesel (Diesel fuel and ethanol blend). Use of E-Diesel fuel in any John Deere machine may void the machine warranty.

 **CAUTION: Avoid severe injury or death due to the fire and explosion risk from using E-Diesel fuel.**

### Sulfur Content for Interim Tier 4, Final Tier 4, Stage III B, Stage IV, and Stage V Engines Above 560 kW

- Use ONLY diesel fuel with a maximum of 500 mg/kg (500 ppm) sulfur content.

### Sulfur Content for Interim Tier 4, Final Tier 4, Stage III B, Stage IV Engines, and Stage V Engines

- Use ONLY ultra low sulfur diesel (ULSD) fuel with a maximum of 15 mg/kg (15 ppm) sulfur content.

### Sulfur Content for Tier 3 and Stage III A Engines

- Use of diesel fuel with sulfur content less than 1000 mg/kg (1000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 1000—2000 mg/kg (1000—2000 ppm) REDUCES the oil and filter change interval.
- BEFORE using diesel fuel with sulfur content greater than 2000 mg/kg (2000 ppm), contact your John Deere dealer.

### Sulfur Content for Tier 2 and Stage II Engines

- Use of diesel fuel with sulfur content less than 2000 mg/kg (2000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content 2000—5000 mg/kg (2000—5000 ppm) REDUCES the oil and filter change interval.<sup>1</sup>
- BEFORE using diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm), contact your John Deere dealer.

### Sulfur Content for Other Engines

- Use of diesel fuel with sulfur content less than 5000 mg/kg (5000 ppm) is RECOMMENDED.
- Use of diesel fuel with sulfur content greater than 5000 mg/kg (5000 ppm) REDUCES the oil and filter change interval.

**IMPORTANT: Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.**

**Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.**

DX,FUEL1-19-01NOV22

## Supplemental Diesel Fuel Additives

Diesel fuel can be the source of performance or other operational problems for many reasons. Some causes include poor lubricity, contaminants, low cetane number, and a variety of properties that cause fuel system deposits. These and others are referenced in other sections of this Operator's Manual.

To optimize engine performance and reliability, closely follow recommendations on fuel quality, storage, and handling, which are found elsewhere in this Operator's Manual.

To further aid in maintaining performance and reliability of the engine's fuel system, John Deere has developed a family of fuel additive products for most global markets. The primary products include Fuel-Protect Diesel Fuel Conditioner (full feature conditioner in winter

<sup>1</sup> See DX,ENOIL12,OEM, DX,ENOIL12,T2,STD, or DX,ENOIL12,T2,EXT for more information on Engine Oil and Filter Service Intervals.

and summer formulas) and Fuel-Protect Keep Clean (fuel injector deposit removal and prevention). Availability of these and other products varies by market. See your local John Deere dealer for availability and additional information about fuel additives that might be right for your needs.

DX,FUEL13-19-07FEB14

## Biodiesel Fuel

Biodiesel fuel is comprised of monoalkyl esters of long chain fatty acids derived from vegetable oils or animal fats. Biodiesel blends are biodiesel mixed with petroleum diesel fuel on a volume basis.

Before using fuel containing biodiesel, review the Biodiesel Use Requirements and Recommendations in this Operator's Manual.

Environmental laws and regulations can encourage or prohibit the use of biofuels. Operators should consult with appropriate governmental authorities prior to using biofuels.

### John Deere Stage V Engines Operating in the European Union

Where the engine is to be operated within the Union on diesel or non-road gas-oil, a fuel with a FAME content not greater than 8% volume/volume (B8) shall be used.

### John Deere Engines with Exhaust Filter Except Stage V Engines Operating in the European Union

Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

Biodiesel concentrations above B20 can harm the engine's emission control systems and should not be used. Risks include, but are not limited to, more frequent stationary regeneration, soot accumulation, and increased intervals for ash removal.

John Deere Fuel conditioners or equivalent, which contain detergent and dispersant additives, are required when using biodiesel blends from B10 to B20, and are recommended when using lower biodiesel blends.

### John Deere Engines Without Exhaust Filter

Biodiesel blends up to B20 can be used ONLY if the biodiesel (100% biodiesel or B100) meets ASTM D6751, EN 14214, or equivalent specification. Expect a 2% reduction in power and a 3% reduction in fuel economy when using B20.

These John Deere engines can operate on biodiesel blends above B20 (up to 100% biodiesel). Operate at levels above B20 ONLY if the biodiesel is permitted by law and meets the EN 14214 specification (primarily available in Europe). Engines operating on biodiesel

blends above B20 might not fully comply with or be permitted by all applicable emissions regulations. Expect up to a 12% reduction in power and an 18% reduction in fuel economy when using 100% biodiesel.

John Deere fuel conditioners or equivalent, which contain detergent and dispersant additives, are required when using biodiesel blends from B10 to B100, and are recommended when using lower biodiesel blends.

## Biodiesel Use Requirements and Recommendations

The petroleum diesel portion of all biodiesel blends must meet the requirements of ASTM D975 (US) or EN 590 (EU) commercial standard.

Biodiesel users in the U.S. are strongly encouraged to purchase biodiesel blends from a BQ-9000 Certified Marketer and sourced from a BQ-9000 Accredited Producer (as certified by the National Biodiesel Board). Certified Marketers and Accredited Producers can be found at the following website: <http://www.bq9000.org>.

Biodiesel contains residual ash. Ash levels exceeding the maximums allowed in either ASTM D6751 or EN14214 can result in more rapid ash loading and require more frequent cleaning of the Exhaust Filter (if present).

The fuel filter can require more frequent replacement when using biodiesel fuel, particularly if switching from diesel. Check engine oil level daily prior to starting engine. A rising oil level can indicate fuel dilution of the engine oil. Biodiesel blends up to B20 must be used within 90 days of the date of biodiesel manufacture. Biodiesel blends above B20 must be used within 45 days from the date of biodiesel manufacture.

When using biodiesel blends up to B20, the following must be considered:

- Cold-weather flow degradation
- Stability and storage issues (moisture absorption, microbial growth)
- Possible filter restriction and plugging (usually a problem when first switching to biodiesel on used engines)
- Possible fuel leakage through seals and hoses (primarily an issue with older engines)
- Possible reduction of service life of engine components

Request a certificate of analysis from your fuel distributor to ensure that the fuel is compliant with the specifications provided in this Operator's Manual.

Consult your John Deere dealer for John Deere fuel products to improve storage and performance with biodiesel fuels.

The following must also be considered if using biodiesel blends above B20:

- Possible coking or blocked injector nozzles, resulting

in power loss and engine misfire if John Deere fuel additives and conditioners or equivalent containing detergent/dispersants are not used

- Possible crankcase oil dilution (requiring more frequent oil changes)
- Possible lacquering or seizure of internal components
- Possible formation of sludge and sediments
- Possible thermal oxidation of fuel at elevated temperatures
- Possible compatibility issues with other materials (including copper, lead, zinc, tin, brass, and bronze) used in fuel handling, distribution, and storage equipment
- Possible reduction in water separator efficiency
- Possible damage to paint if exposed to biodiesel
- Possible corrosion of fuel injection equipment
- Possible elastomeric seal and gasket material degradation (primarily an issue with older engines)
- Possible high acid levels within fuel system
- Because biodiesel blends above B20 contain more ash, using blends above B20 can result in more rapid ash loading and require more frequent cleaning of the Exhaust Filter (if present)

**IMPORTANT: Raw pressed vegetable oils are NOT acceptable for use as fuel in any concentration in John Deere engines. Their use could cause engine failure.**

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## Lubricity of Diesel Fuel

Most diesel fuels manufactured in the United States, Canada, and the European Union have adequate lubricity to ensure proper operation and durability of fuel injection system components. However, diesel fuels manufactured in some areas of the world may lack the necessary lubricity.

**IMPORTANT: Make sure the diesel fuel used in your machine demonstrates good lubricity characteristics.**

Fuel lubricity should pass a maximum scar diameter of 0.52 mm as measured by ASTM D6079 or ISO 12156-1. A maximum scar diameter of 0.45 mm is preferred.

If fuel of low or unknown lubricity is used, add John Deere Fuel-Protect Diesel Fuel Conditioner (or equivalent) at the specified concentration.

## Lubricity of BioDiesel Fuel

Fuel lubricity can improve significantly with BioDiesel

blends up to B20 (20% BioDiesel). Further increase in lubricity is limited for BioDiesel blends greater than B20.

DX,FUEL5-19-07FEB14

## Handling and Storing Diesel Fuel

**⚠ CAUTION: Reduce the risk of fire. Handle fuel carefully. DO NOT fill the fuel tank when engine is running. DO NOT smoke while you fill the fuel tank or service the fuel system.**

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

Keep all storage tanks as full as practical to minimize condensation.

Ensure that all fuel tank caps and covers are installed properly to prevent moisture from entering. Monitor water content of the fuel regularly.

When using biodiesel fuel, the fuel filter may require more frequent replacement due to premature plugging.

Check engine oil level daily prior to starting engine. A rising oil level may indicate fuel dilution of the engine oil.

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

When fuel is stored for an extended period or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel. Keeping the free water drained and treating the bulk fuel storage tank quarterly with a maintenance dose of a biocide will prevent microbial growth. Contact your fuel supplier or John Deere dealer for recommendations.

DX,FUEL4-19-13JAN18

## Fill Fuel Tank

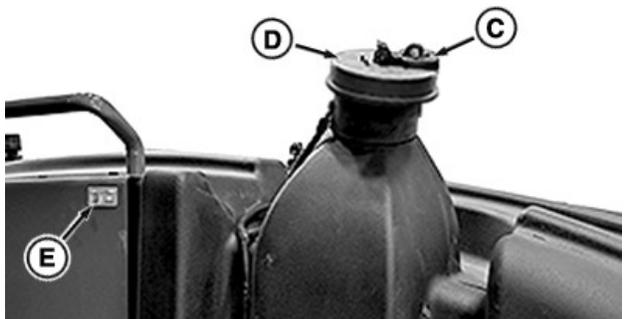


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**CAUTION:** Avoid possible personal injury or fire:

- Fuel is highly flammable; handle it with care.
- Do not refuel while smoking or when near open flame or sparks.
- Stop engine when refueling.
- Clean up spilled fuel.
- Fill fuel tank outdoors.
- Keep machine clean of accumulated trash, grease, and debris.

**IMPORTANT:** Prevent damage to tractor fuel injection system, emissions system, and other components. Never put Diesel Exhaust Fluid (DEF) into fuel tank or fuel system. If DEF is introduced into the fuel tank, see your John Deere dealer.



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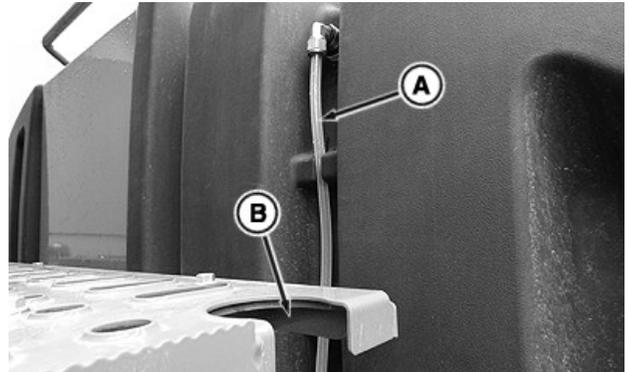
**IMPORTANT:** Prevent damage to engine and emissions system components. If tractor is equipped with Final Tier 4/Stage V engine, use only ultra low sulfur fuel as prescribed by decal (E). Tractors with other emissions specifications may use other fuels. See Diesel Fuel in this Operator's Manual section.

To determine which engine your tractor is equipped with, see Engine Serial Number in Identification Numbers section of this Operator's Manual.

*NOTE: Final Tier 4/Stage V engine equipped tractors require DEF to operate. It is suggested that DEF tank is filled each time tractor is refueled. See Fill DEF Tank - FT4/Stage V Engine in Diesel Exhaust Fluid (DEF) section of this Operator's Manual.*

**IMPORTANT:** Each fuel tank is vented through filter at top of each tank. See Fuel Tank Vent Filters in Service—Change section of this Operator's Manual.

*NOTE: When digital display fuel gauge flashes, approximately 76—95 L (20—25 gal) of fuel remains.*



RXA0158720—UN—07APR17

Approximately 132 L (35 gal) of fuel remains when fuel level is at bottom of sight tube (A).

1. Place fuel nozzle in fuel nozzle holder (B) before climbing steps.
2. Stand on platform.
3. Raise fuel cap lock lever (C).
4. Rotate fuel cap (D) counterclockwise.
5. Remove fuel cap and fill fuel tanks. Filling fuel tanks at end of each day prevents condensation in tank.
6. Place fuel nozzle back in fuel nozzle holder and replace and lock cap before climbing down from platform.

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## Testing Diesel Fuel

A fuel analysis program can help to monitor the quality of diesel fuel. The fuel analysis can provide critical data such as calculated cetane index, fuel type, sulfur content, water content, appearance, suitability for cold weather operations, bacteria, cloud point, acid number, particulate contamination, and whether the fuel meets ASTM D975 or equivalent specification.

Contact your John Deere dealer for more information on diesel fuel analysis.

DX,FUEL6-19-13JAN18

## Fuel Filters

The importance of fuel filtration cannot be overemphasized with modern fuel systems. The combination of increasingly restrictive emission regulations and more efficient engines requires fuel system to operate at much higher pressures. Higher pressures can only be achieved using fuel injection components with very close tolerances. These close

manufacturing tolerances have significantly reduced capacities for debris and water.

John Deere brand fuel filters have been designed and produced specifically for John Deere engines.

To protect the engine from debris and water, always change engine fuel filters as specified in this manual.

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DX,FILT2-19-14APR11

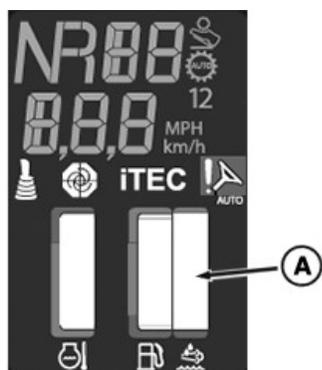
# Diesel Exhaust Fluid (DEF)

## Fill DEF Tank—Final Tier 4/Stage V Engine

**CAUTION:** DEF contains urea. Do not get the substance in eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Do not take internally. In event DEF is ingested, contact a physician immediately. Reference Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** To determine tractor engine type, see Engine Serial Number in Identification Numbers section of this Operator's Manual.

Never put DEF in diesel fuel tank, or diesel fuel in DEF tank.



RXA0152790—UN—13JUL16

To avoid drastic changes in tractor performance, always keep DEF level above topmost red mark on corner post display (A). Monitor DEF level on cornerpost display and refill as necessary. Refill DEF tank every time tractor is refueled, see Diesel Exhaust Fluid (DEF) — Use in Selective Catalytic Reduction (SCR) Equipped Engines in this Operator's Manual section.

**IMPORTANT:** If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and may distort some plastic and rubber components.

To fill DEF tank:

1. Before using containers, funnels, etc. to dispense DEF, wash and rinse items thoroughly with distilled water to remove contaminants.



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2. Wipe DEF tank filler cap (B), area around cap and filler neck to reduce chance of contaminating DEF.
3. Lift DEF tank cap latch lever and turn cap 90° counterclockwise.
4. Lift cap from filler neck.

**IMPORTANT:** Avoid overfilling DEF tank.

Completely filling DEF tank at lower temperatures can cause a blockage in filler neck. If temperatures are expected to reach below -11°C (12°F), do not fill DEF tank more than half way according to DEF level display on corner post. Observe temperature guidelines to assure ability to refill tank.

5. Using funnel, carefully fill DEF tank. DO NOT over fill DEF tank. Best final fill level is determined by ambient air temperature guide:
  - Ambient air temperature at or above -11°C (12°F): Completely fill tank.
  - Ambient air temperature below -11°C (12°F): Keep fill tank level below the filler neck. Although main portion of DEF tank is heated to keep DEF from freezing, filler neck is not heated. Fluid in neck may freeze, preventing refill DEF tank until fluid melts.
6. Replace and securely latch DEF tank cap. Cap can be locked with a padlock.
7. Carefully clean any spills, using clean (preferably distilled) water.

If an unapproved fluid, such as diesel fuel, or engine coolant is added to vehicle DEF tank, see Diesel Exhaust Fluid (DEF) Tank in Service—Clean section of this Operator's Manual.

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## Diesel Exhaust Fluid (DEF) — Use in Selective Catalytic Reduction (SCR) Equipped Engines

In order to maintain the emissions performance of the

engine, it is essential to use and refill DEF in accordance with the specification.

Diesel exhaust fluid (DEF) is a high purity liquid that is injected into the exhaust system of engines equipped with selective catalytic reduction (SCR) systems. Maintaining the purity of DEF is important to avoid malfunctions in the SCR system. Engines requiring DEF shall use a product that meets the requirements for aqueous urea solution 32 (AUS 32) according to ISO 22241-1.

The use of John Deere Diesel Exhaust Fluid is recommended. John Deere Diesel Exhaust Fluid is available at your John Deere dealer in a variety of package sizes to suit your operational needs.

If John Deere Diesel Exhaust Fluid is not available, use DEF that is certified by the American Petroleum Institute (API) Diesel Exhaust Fluid Certification Program or by the AdBlue Diesel Exhaust Fluid Certification Program. Look for the API certification symbol or the AdBlue name on the container.



RG30211—UN—08MAR18

In some cases, DEF is referred to by one or more of these names:

- Urea
- Aqueous Urea Solution 32
- AUS 32
- AdBlue
- NOx Reduction Agent
- Catalyst Solution

DX,DEF(T)-19-08APR22

## Storing Diesel Exhaust Fluid (DEF)

**CAUTION:** Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information.

**Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.**

**IMPORTANT:** It is unlawful to tamper with or remove any component of the aftertreatment system. Do not use DEF that does not meet the required specifications or operate the engine with no DEF.

**Never attempt to create DEF by mixing agricultural grade urea with water. Agricultural grade urea does not meet the necessary specifications and can damage the aftertreatment system.**

**Do not add any chemicals or additives to DEF in an effort to prevent freezing. Any chemicals or additives added to DEF can damage the aftertreatment system.**

**Never add water or any other fluid in place of, or in addition to DEF. Operating with a modified DEF or using an unapproved DEF can damage the aftertreatment system.**

Storage information provided below is for reference and is to be used as a guideline only.

It is preferred to store DEF out of extreme ambient temperatures. DEF freezes at  $-11^{\circ}\text{C}$  ( $12^{\circ}\text{F}$ ). Exposure to temperatures greater than  $30^{\circ}\text{C}$  ( $86^{\circ}\text{F}$ ) can degrade DEF over time. Do not store DEF in direct sunlight.

Dedicated DEF storage containers must be sealed between uses to prevent evaporation and contamination. Containers made of polyethylene, polypropylene, or stainless steel are recommended to transport and store DEF.

Ideal conditions for storage of DEF are:

- Store at temperatures between  $-5^{\circ}\text{C}$  and  $30^{\circ}\text{C}$  ( $23^{\circ}\text{F}$  and  $86^{\circ}\text{F}$ )
- Store in dedicated containers sealed to avoid contamination and evaporation

Under these conditions, DEF is expected to remain useable for a minimum of 18 months. Storing DEF at higher temperatures can reduce its useful life by approximately 6 months for every  $5^{\circ}\text{C}$  ( $9^{\circ}\text{F}$ ) temperature above  $30^{\circ}\text{C}$  ( $86^{\circ}\text{F}$ ).

If unsure how long or under what conditions DEF has been stored, test DEF. See Testing Diesel Exhaust Fluid (DEF).

Long-term storage in the DEF tank (over 12 months) is not recommended. If long-term storage is necessary, test DEF prior to operating engine. See Testing Diesel Exhaust Fluid (DEF).

It is recommended to purchase DEF in quantities that will be consumed within 12 months.

DX,DEF,STORE-19-15JUL20

## Refilling Diesel Exhaust Fluid (DEF) Tank



TS1731—UN—23AUG13

**CAUTION:** Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information.

Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** Use only distilled water to rinse components that are used to deliver DEF. Tap water can contaminate DEF. If distilled water is not available, rinse with clean tap water, then thoroughly rinse with ample amounts of DEF.

If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

If DEF is filled into engine fuel tank or other fluid compartment, do not operate engine until system is properly purged of DEF. Contact your John Deere dealer immediately to determine how to clean and purge the system.

Reasonable care should be taken when refilling the DEF tank. Ensure that the DEF tank cap area is free of debris before removing the cap. Seal containers of DEF between use to prevent contamination and evaporation.

Avoid splashing DEF and do not allow DEF to come into contact with skin, eyes, or mouth.

DEF is not harmful to handle, but DEF can be corrosive to materials such as steel, iron, zinc, nickel, copper, aluminum, and magnesium. Use suitable containers to transport and store DEF. Containers made of polyethylene, polypropylene, or stainless steel are recommended.

Avoid prolonged contact with skin. In case of accidental contact, wash skin immediately with soap and water.

Keep anything used to store or dispense DEF clean of dirt and dust. Wash and rinse containers or funnels thoroughly with distilled water to remove contaminants.

If an unapproved fluid, such as diesel fuel or coolant is added to the DEF tank, contact your John Deere dealer immediately to determine how to clean and purge the system.

If water has been added to the DEF tank, a tank cleaning is necessary. See Cleaning DEF Tank in this manual. After refilling the tank, check the DEF concentration. See Testing Diesel Exhaust Fluid (DEF).

The operator must maintain appropriate DEF levels at all times. Check the DEF level daily and refill the tank as needed. The filling port is identified by a blue colored cap embossed with the following DEF symbol.

DX,DEF,REFILL-19-15JUL20

## Testing Diesel Exhaust Fluid (DEF)

**IMPORTANT:** Using DEF with the correct concentration is critical to engine and aftertreatment system performance. Extended storage and other conditions can adversely alter the DEF concentration.

If DEF quality is questionable, draw a sample out of the DEF tank or storage tank into a clear container. DEF must be crystal clear with a light ammonia smell. If DEF appears cloudy, has a colored tint, or has a profound ammonia smell, it is likely not within specification. DEF in this condition should not be used. Drain tank, flush with distilled water and refill with new or good DEF. After refilling the tank, check the DEF concentration.

If the DEF passes the visual and smell test, check the DEF concentration with a handheld refractometer calibrated to measure DEF.

DEF concentration should be checked when the engine has been stored for extended periods, or if there is suspicion the engine or packaged DEF fluid has been contaminated with water.

Two approved tools are available through your John Deere dealer:

- JDG11594 Digital DEF Refractometer—A digital tool providing an easy to read concentration measurement
- JDG11684 DEF Refractometer—Low-cost alternative tool providing an analog reading

Follow instructions included with either tool to obtain the measurement.

The correct DEF concentration is 31.8—33.2% urea. If the DEF concentration is not within specification, drain the DEF tank, flush with distilled water and fill with new or good DEF. If packaged DEF is not within specification, dispose of DEF packages and replace with new or good DEF.

DX,DEF,TEST-19-13JUN13

### **Disposal of Diesel Exhaust Fluid (DEF)**

Although there is little issue with minor spillage of DEF on the ground, large amounts of DEF should be contained. If large spills occur, contact local environmental authorities for assistance with clean-up.

If a substantial quantity of DEF is not within specification, contact the DEF supplier for assistance with disposal. Do not dump substantial quantities of DEF onto the ground or send DEF to wastewater treatment facilities.

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DX,DEF,DISPOSE-19-13JUN13

# Engine Oil

## Diesel Engine Oil Service Interval for Operation at High Altitude

To avoid excessive oil degradation and potential engine damage, reduce oil and filter service intervals to 50% of the original recommended values when operating engines at altitudes above **1675 m (5500 ft)**.

Oil analysis may allow longer service intervals.

Use only approved oil types.

Example of Original Hours	Corresponding High Altitude Hours
125	60
150	75
175	85
200	100
250	125
275	135
300	150
350	175
375	185
400	200
500	250

DX,ENOIL,SERV,HIALT-19-11NOV14

## John Deere Break-In Plus Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V

New engines are filled at the factory with John Deere Break-In Plus Engine Oil. During the break-in period, add John Deere Break-In Plus Engine Oil, as needed to maintain the specified oil level.

Operate the engine under various conditions, particularly heavy loads with minimal idling, to help seat engine components properly.

During the initial operation of a new or rebuilt engine, change the oil and filter between a minimum of 100 hours and maximum equal to the interval specified for John Deere Plus-50 II oil.

After an engine overhaul, fill the engine with John Deere Break-In Plus Engine Oil.

If John Deere Break-In Plus Engine Oil is not available, use an SAE 10W-30 viscosity grade diesel engine oil meeting one of the following:

- API Service Category CK-4
- API Service Category CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

If one of these oils is used during the initial operation of a new or rebuilt engine, change the oil and filter

between a minimum of 100 hours and a maximum of 250 hours.

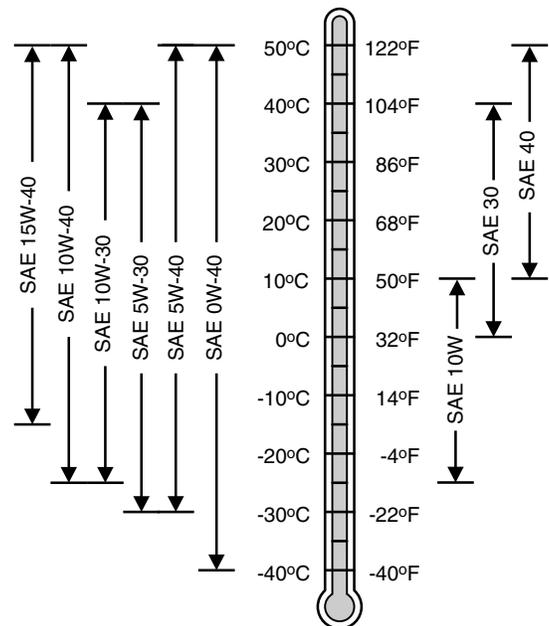
**IMPORTANT: Do not use any other engine oils during the initial break-in of a new or rebuilt engine.**

John Deere Break-In Plus Engine Oil can be used for all John Deere diesel engines at all emission certification levels.

After the break-in period, use John Deere Plus-50 II or other diesel engine oil as recommended in this manual.

DX,ENOIL16(T)-19-05APR22

## Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V



Oil Viscosities for Air Temperature Ranges

TS1743—UN—25APR19

Failure to follow applicable oil standards and drain intervals can result in severe engine damage that might not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere oils, parts, or service.

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

**John Deere Plus-50 II is the recommended engine oil.**

Extended service intervals may apply when John Deere Plus-50 II engine oil is used. Refer to the engine oil drain interval table and consult your John Deere dealer for more information.

If John Deere Plus-50 II engine oil is not available,

engine oil meeting one or more of the following may be used:

- API Service Category CK-4
- API Service Category CJ-4
- ACEA Oil Sequence E9
- ACEA Oil Sequence E6

DO NOT use engine oil containing more than 1.0% sulfated ash, 0.12% phosphorus, or 0.4% sulfur.

**Multi-viscosity diesel engine oils are preferred.**

Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.

**IMPORTANT: Use only ultra low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 mg/kg (15 ppm).**

DX.ENOIL14(T)-19-05APR22

### Engine Oil and Filter Service Intervals — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V Engines

Failure to follow applicable oil standards and drain intervals can result in severe engine damage that might not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere oils, parts, or service.

Recommended oil and filter service intervals are based on a combination of oil pan capacity, type of engine oil and filter used, and sulfur content of the diesel fuel. Actual service intervals also depend on operation and maintenance practices.

#### Approved Oil Types:

- John Deere Plus-50 II
- “Other Oils” include API CK-4, API CJ-4, ACEA E9, and ACEA E6

Use oil analysis to evaluate the condition of the oil and to aid in the selection of the proper oil and filter service interval. Contact your John Deere dealer or other qualified service provider for more information on engine oil analysis.

Change the oil and oil filter at least once every 12 months even if the hours of operation are fewer than the otherwise recommended service interval.

**Diesel fuel sulfur content** affects engine oil and filter service intervals. Higher fuel sulfur levels reduce oil and filter service intervals.

**IMPORTANT: Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm) is REQUIRED.**

*NOTE: The 500-hour extended oil and filter change interval is only allowed if all of the following conditions are met:*

- Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm)
- Use of John Deere Plus-50 II oil
- Use of an approved John Deere oil filter

**Engine operation at high altitude** decreases oil change intervals. See Diesel Engine Oil Service Interval for Operation at High Altitude for additional information.

Engine Oil and Filter Service Intervals	
John Deere Plus-50 II	500 hours
Other Oils	250 hours
Oil analysis may extend the service interval of “Other Oils” to a maximum not to exceed the interval of Plus-50 II oils. Oil analysis means taking a series of oil samples at 50-hour increments beyond the normal service interval until either the data indicates the end of useful oil life or the maximum service interval of John Deere Plus-50 II oils is reached.	

#### IMPORTANT: To avoid engine damage:

- Reduce oil and filter service intervals by 50% when using biodiesel blends greater than B20
- Oil analysis may allow longer service intervals
- Use only approved oil types

DX.ENOIL15,IT4,120toMAX(T)-19-05APR22

# Engine Coolant

## Diesel Engine Coolant (Engine with Wet Sleeve Cylinder Liners)

Failure to follow applicable coolant standards and drain intervals can result in severe engine damage that may not be covered under warranty. Warranties, including the emissions warranty, are not conditioned on the use of John Deere coolants, parts, or service.

### Preferred Coolants

The following pre-mix engine coolants are preferred:

- John Deere Cool-Gard II
- John Deere Cool-Gard II PG

Cool-Gard II pre-mix coolant is available in several concentrations with different freeze protection limits as shown in the following table.

Cool-Gard II Pre-Mix	Freeze Protection Limit
Cool-Gard II 20/80	-9°C (16°F)
Cool-Gard II 30/70	-16°C (3°F)
Cool-Gard II 50/50	-37°C (-34°F)
Cool-Gard II 55/45	-45°C (-49°F)
Cool-Gard II PG 60/40	-49°C (-56°F)
Cool-Gard II 60/40	-52°C (-62°F)

Not all Cool-Gard II pre-mix products are available in all countries.

Use Cool-Gard II PG when a non-toxic coolant formulation is required.

### Additional Recommended Coolants

The following engine coolant is also recommended:

- John Deere Cool-Gard II Concentrate in a 40—60% mixture of concentrate with quality water

**IMPORTANT: When mixing coolant concentrate with water, do not use less than 40% or greater than 60% concentration of coolant. Less than 40% gives inadequate additives for corrosion protection. Greater than 60% can result in coolant gelation and cooling system problems.**

### Other Coolants

Other ethylene glycol or propylene glycol base coolants may be used if they meet the following specification:

- Pre-mix coolant meeting ASTM D6210 requirements
- Is formulated with a 2-ethylhexanoic acid (2-EHA) free additive package
- Coolant concentrate meeting ASTM D6210 requirements in a 40—60% mixture of concentrate with quality water

If coolant meeting one of these specifications is

unavailable, use coolant concentrate or pre-mix coolant that has a minimum of the following chemical and physical properties:

- Provides cylinder liner cavitation protection according to either the John Deere Cavitation Test Method or a fleet study run at or above 60% load capacity
- Is formulated with a nitrite-free additive package
- Is formulated with a 2-ethylhexanoic acid (2-EHA) free additive package
- Protects the cooling system metals (cast iron, aluminum alloys, and copper alloys such as brass) from corrosion

### Water Quality

Water quality is important to the performance of the cooling system. Deionized or demineralized water is recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

### Coolant Drain Intervals

Drain and flush the cooling system and refill with fresh coolant at the indicated interval, which varies with the coolant used.

When Cool-Gard II or Cool-Gard II PG is used, the drain interval is 6 years or 6000 hours of operation.

If a coolant other than Cool-Gard II or Cool-Gard II PG is used, reduce the drain interval to 2 years or 2000 hours of operation.<sup>1</sup>

**IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.**

**Do not mix ethylene glycol and propylene glycol base coolants.**

**Do not use coolants that contain nitrites.**

DX,COOL3(T)-19-04APR22

## John Deere Cool-Gard II Coolant Extender

Some coolant additives gradually deplete during engine operation. For Cool-Gard II pre-mix and Cool-Gard II Concentrate, replenish coolant additives between drain intervals by adding Cool-Gard II Coolant Extender.

Cool-Gard II Coolant Extender should not be added unless indicated by Cool-Gard II Test Strips. These test strips provide a simple, effective method to check the freeze point, additive levels, and pH of your engine coolant.

<sup>1</sup> Coolant analysis may extend the service interval of other "Coolants" to a maximum not to exceed the interval of Cool-Gard II coolants. Coolant analysis means taking a series of coolant samples at 1000 hour increments beyond the normal service interval until either the data indicate the end of useful coolant life or the maximum service interval of Cool-Gard II is reached.

Test the coolant solution at intervals of 12 months and whenever excessive coolant is lost through leaks or overheating.

**IMPORTANT: Do not use Cool-Gard II Test Strips with Cool-Gard II PG.**

Cool-Gard II Coolant Extender is a chemically matched additive system for use with all Cool-Gard II coolants. Cool-Gard II Coolant Extender is not intended for use with nitrite-containing coolants.

**IMPORTANT: Do not add a supplemental coolant additive when the cooling system is drained and refilled with any of the following:**

- John Deere Cool-Gard II
- John Deere Cool-Gard II PG

The use of non-recommended supplemental coolant additives can result in additive drop-out, gelation of the coolant, or corrosion of cooling system components.

Add the recommended concentration of Cool-Gard II Coolant Extender. DO NOT add more than the recommended amount.

DX,COOL16(T)-19-11APR22

**Operating in Warm Temperature Climates**

John Deere engines are designed to operate using recommended engine coolants.

Always use a recommended engine coolant, even when operating in geographical areas where freeze protection is not required.

**IMPORTANT: Water may be used as coolant in emergency situations only.**

Foaming, hot surface aluminum and iron corrosion, scaling, and cavitation occur when water is used as the coolant, even when coolant conditioners are added.

Drain cooling system and refill with recommended engine coolant as soon as possible.

DX,COOL6-19-17FEB20

**Water Quality for Mixing with Coolant Concentrate**

Engine coolants are a combination of three chemical components: ethylene glycol (EG) or propylene glycol (PG) antifreeze, inhibiting coolant additives, and quality water.

Water quality is important to the performance of the cooling system. Deionized or demineralized water is

recommended for mixing with ethylene glycol and propylene glycol base engine coolant concentrate.

All water used in the cooling system should meet the following minimum specifications for quality:

Chlorides	<40 mg/L
Sulfates	<100 mg/L
Total solids	<340 mg/L
Total dissolved hardness	<170 mg/L
pH	5.5—9.0

**IMPORTANT: Do not use bottled drinking water because it often contains higher concentrations of total dissolved solids.**

**Freeze Protection**

The relative concentrations of glycol and water in the engine coolant determine its freeze protection limit.

Ethylene Glycol	Freeze Protection Limit
40%	-24°C (-12°F)
50%	-37°C (-34°F)
60%	-52°C (-62°F)
Propylene Glycol	Freeze Protection Limit
40%	-21°C (-6°F)
50%	-33°C (-27°F)
60%	-49°C (-56°F)

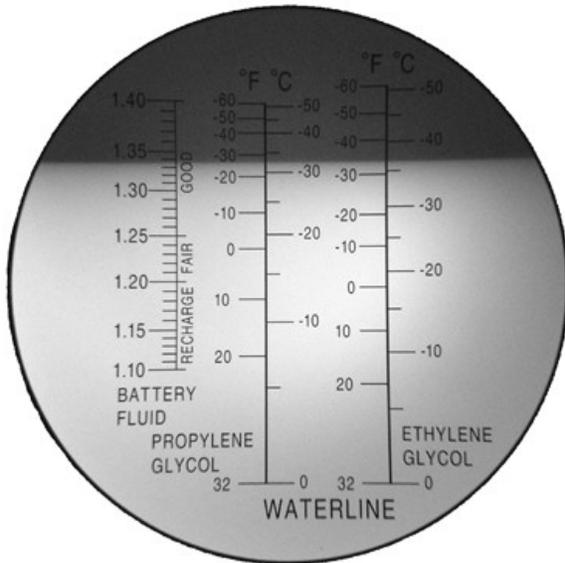
DO NOT use a coolant-water mixture greater than 60% ethylene glycol or 60% propylene glycol.

DX,COOL19-19-13JAN18

**Testing Coolant Freeze Point**



TS1732—UN—04SEP13  
SERVICEGARD Part Number 75240



TS1733—UN—04SEP13  
*Image with a Drop of 50/50 Coolant Placed on the Refractometer Window*

The use of a handheld coolant refractometer is the quickest, easiest, and most accurate method to determine the coolant freeze point. This method is more accurate than a test strip or a float-type hydrometer, which can produce poor results.

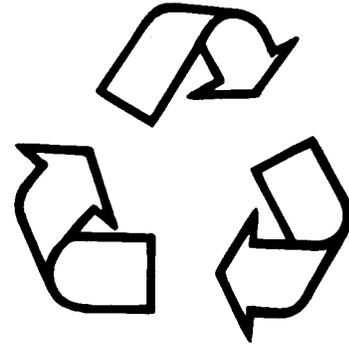
A coolant refractometer is available through your John Deere dealer under the SERVICEGARD tool program. Part number 75240 provides an economical solution for accurate freeze point determination in the field.

To use this tool:

1. Allow cooling system to cool to ambient temperatures.
2. Open radiator cap to expose coolant.
3. With the included dropper, collect a small coolant sample.
4. Open the lid of the refractometer, place one drop of coolant on the window, and close the lid.
5. Look through the eyepiece and focus as necessary.
6. Record the listed freeze point for the type of coolant (ethylene glycol coolant or propylene glycol) being tested.

DX.COOL.TEST(T)-19-04APR22

## Disposing of Coolant



Recycle Waste

TS1133—UN—15APR13

Improperly disposing of engine coolant can threaten the environment and ecology.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

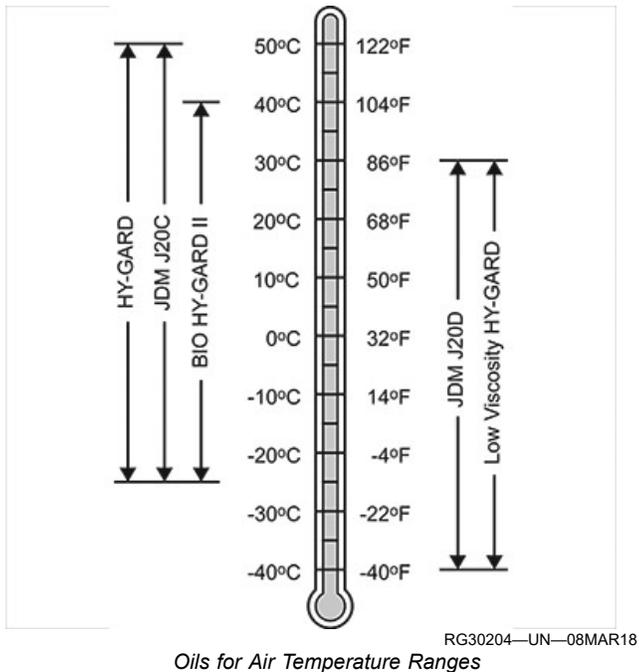
Do not pour waste onto the ground, down a drain, or into any water source.

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

RG.RG34710,7543-19-26APR18

# Other Lubricants

## Transmission and Hydraulic Oil



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

The following oils are preferred:

- John Deere Hy-Gard
- John Deere Low Viscosity Hy-Gard

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

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

Use John Deere Bio Hy-Gard II oil when a biodegradable fluid is required.<sup>1</sup>

DX,ANTI(T)-19-04APR22

## Transmission and Hydraulic Oil Use

**IMPORTANT: To ensure proper shift quality, an oil meeting Hy-Gard or JDM J20C specifications must be used.**

**Shift quality problems and/or drivetrain damage may occur if the Hy-Gard or JDM J20C specifications are not followed.**

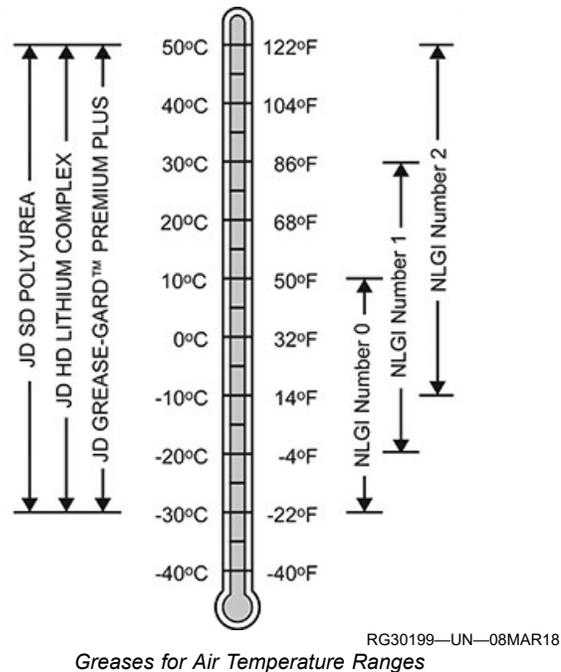
<sup>1</sup> Bio Hy-Gard II meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC L-33-T-82 test method. Bio Hy-Gard II must not be mixed with mineral oils because doing this reduces the biodegradability and makes proper oil recycling impossible.

Tractor transmission/axle and hydraulic reservoir is factory filled with John Deere Hy-Gard JDM J20C oil.

EC82310,0000F57-19-29JUN22

## Multipurpose Extreme Pressure (EP) Grease

**IMPORTANT: For automated lubrication systems, different ambient air temperatures must be considered.**



Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

**John Deere SD Polyurea Grease is preferred.**

The following greases are also recommended:

- John Deere HD Lithium Complex Grease
- John Deere Grease-Gard Premium Plus

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB
- ISO-L-X-BDHB 2 or DIN KP 2 N-10 Lithium Complex, Non-Synthetic Base Oil (100 to 220 mm<sup>2</sup>/s @ 40°C)

**IMPORTANT: Some types of thickeners, base oils, and additives used in greases are not compatible with others. Mixing greases should be avoided. Consult your grease supplier before mixing different types of grease.**

DX,GREA1(T)-19-06APR22

## Lubricant Storage

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

Use clean containers to handle all lubricants.

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

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

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DX,LUBST-19-11APR11

## Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives 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.

Consult your John Deere dealer to obtain specific information and recommendations.

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DX,LUBMIX-19-18MAR96

## Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

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

The temperature limits and service intervals shown in this manual apply to John Deere branded fluids or fluids that have been tested and/or approved for use in John Deere equipment.

Re-refined base stock products may be used if the finished lubricant meets the performance requirements.

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DX,ALTER-19-13JAN18

# Service—General Information

## Service Sections Overview

**CAUTION:** Avoid personal injury. After completing any service procedure, reinstall any shields or covers that have been removed and close and securely latch hood.

**IMPORTANT:** This publication is not a detailed service manual. Procedures shown cover routine maintenance and service. For more detailed service information, purchase a Technical Manual through your John Deere dealer.

**Recommended service intervals are for average conditions. Service more often if tractor is operated under adverse conditions.**

Service sections provide information on service processes and procedures.

### Fuel, Lubrication, and Coolants Sections:

Information on approved fluids for operation and service. Also included are guides to selection of correct service intervals for such procedures as engine oil refill.

**Break-In Service:** Perform listed services during first 100 hours of operation.

**Service—Record Charts:** Charts are provided to:

- Determine what service tasks must be performed when.
- Record when services have been performed.

**Service Procedure Sections:** Various scheduled and unscheduled service procedures are organized by procedure type within six sections. Appropriate Service sections and task names are referenced in Service Record Charts (example: Change: Engine Oil and Filter). Electrical section includes all service information for lighting, fuses, and relays.

**Troubleshooting Sections:** Procedural troubleshooting is provided, as well as information on dealing with Diagnostic Trouble Codes (DTCs) that may display on the CommandCenter.

RX32825.00000A5-19-21JUN22

## Service Tasks Performed As Required

**IMPORTANT:** Perform service tasks when instruments or tractor function indicates that they are required, even if at a time other than specified in Service Interval charts.

Occasionally, operating conditions may require a scheduled service to be performed sooner than indicated on Service Interval charts (for example, air

filters). When such a task is performed, record its completion in an As Required Service chart.

RX32825.00017C6-19-04JAN17

## Identify Tractor Engine Emissions Status

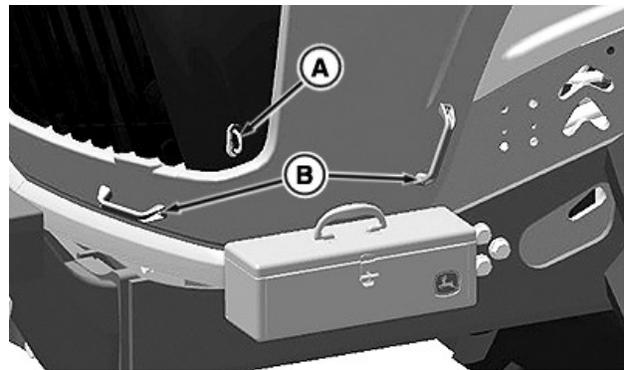
**IMPORTANT:** To determine tractor engine type, see Engine Serial Number in Identification Number Section of this Operator's Manual.

Some service procedures differ depending upon emissions equipment with which tractor engine is equipped.

RX32825.0001764-19-14DEC16

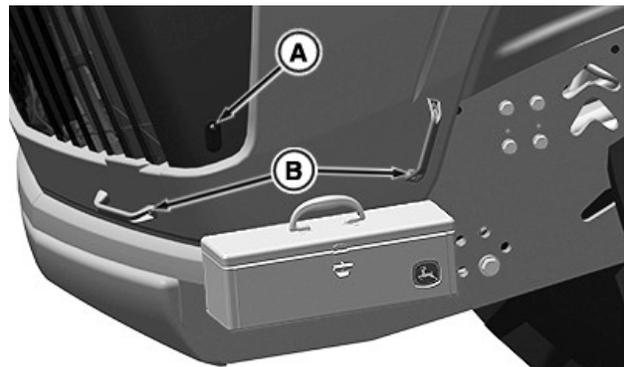
## Open Hood

**CAUTION:** Avoid injury. Close and latch hood securely before starting engine.



RXA0180112—UN—12OCT20

*If Equipped*



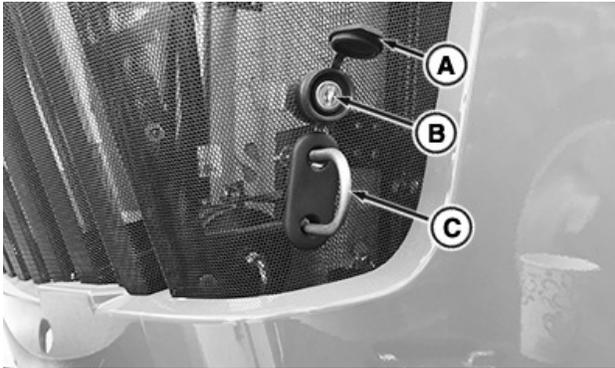
RXA0180141—UN—15OCT20

*If Equipped*

1. Pull hood release (A).
2. Using hood handles (B), raise hood

JL41210.0000A92-19-21APR21

## Open Hood (If Equipped)



RXA0163079—UN—27APR18

1. Open cover (A) and insert key into lock (B).
2. Turn key clockwise to unlock hood latch (C).
3. Pull hood latch and lift hood to open.

**⚠ CAUTION: Avoid injury. Close and latch hood securely before starting engine.**

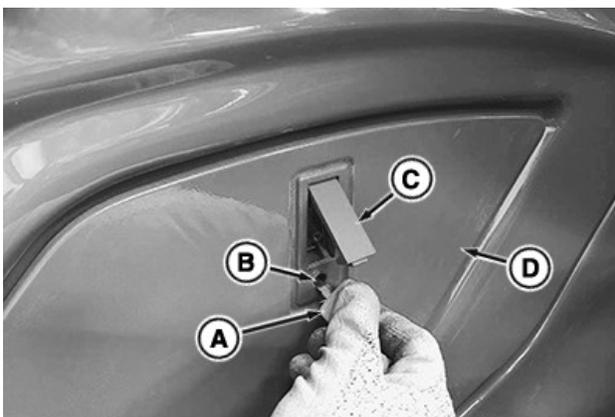
4. Close hood and turn key counterclockwise to lock hood latch.

BH38674,0000D20-19-27APR18

## Remove Engine Access Panel

**⚠ CAUTION: Avoid physical injury and equipment damage:**

- Never start engine with shields removed or hood open.
- Always close and securely latch hood.



RXA0166820—UN—05MAR19

1. Insert key (A) into the panel lock (B).
2. Panel latch (C) opens.
3. Remove engine access panel (D).

BH38674,0000D1B-19-21APR21

## Remove Front Engine Side Shield

**⚠ CAUTION: Avoid physical injury and equipment damage:**

- Never start engine with shields removed or hood open.
- Always close and securely latch hood.

1. Open hood. See Open Hood in this Operators Manual section.



RXA0163065—UN—26APR18

2. Push latch (A).
3. Remove top of engine side shield (B) from magnet (C).
4. Lift engine side shield from alignment posts (D).

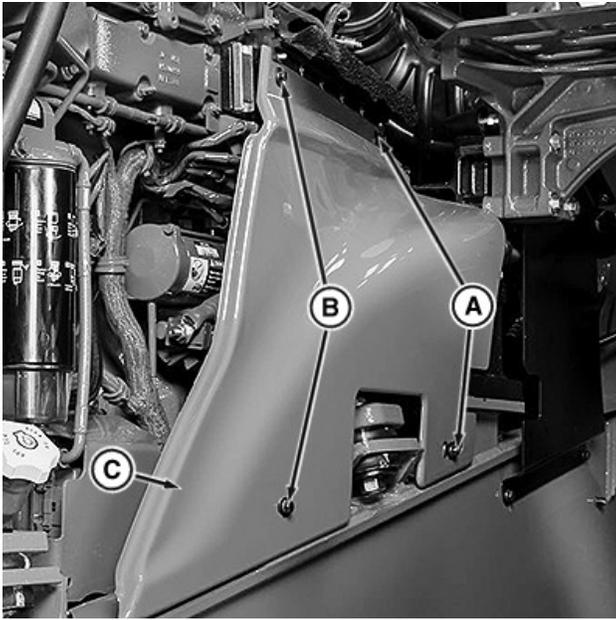
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## Remove Rear Engine Side Shield

**⚠ CAUTION: Avoid physical injury and equipment damage:**

- Never start engine with shields removed or hood open.
- Always close and securely latch hood.

1. Open hood. See Open Hood in this Operator's Manual section.
2. Remove front engine side shield. See Remove Front Engine Side Shield in the Operator's Manual section.

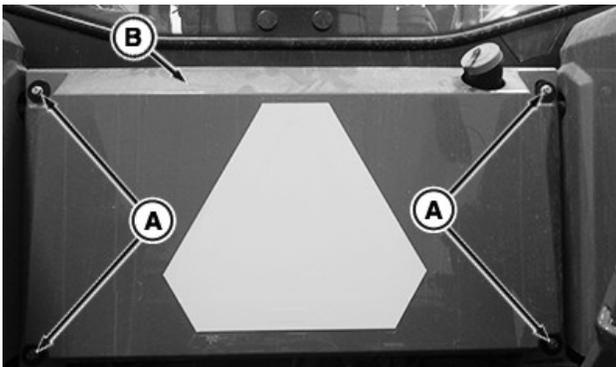


RXA0185233—UN—27AUG21

3. Remove cap screws (A) and (B).
4. Remove rear engine side shield (B).
5. When reinstalling rear engine side shield torque bolts (A) to 37 N·m (37 lb·ft) and (B) to 25 N·m (18 lb·ft).

BH38674,0000D1D-19-27AUG21

## Remove Cab Rear Panel



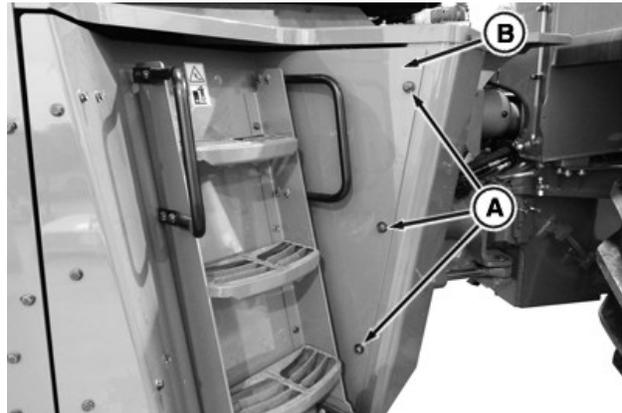
RXA0170334—UN—06SEP19

1. Remove the four rear cab panel screws (A).
2. Remove the cab rear panel (B).

EC82310,0000F61-19-21APR21

## Access Battery Compartment

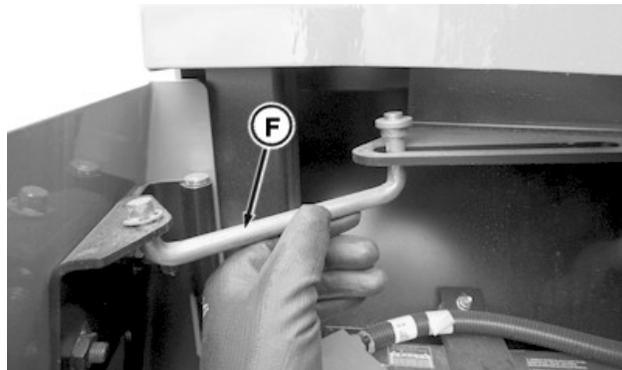
### Open the Battery Compartment



RXA0141965—UN—02JUN14

1. Remove three caps screws (A).
2. Swing open the battery compartment cover (B).

### Close the Battery Compartment



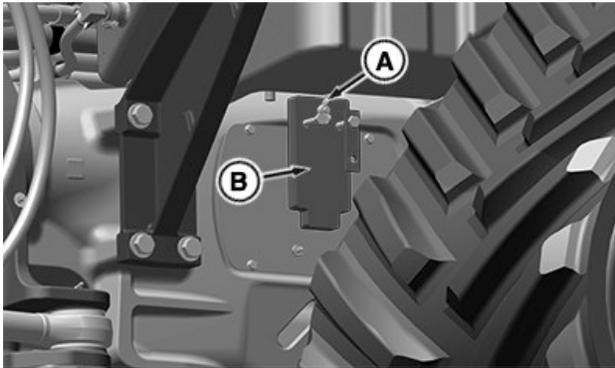
RXA0158218—UN—09MAR17

1. Lift up the battery panel latch (F).
2. Swing the battery compartment cover closed.
3. Reinstall the three cap screws and tighten the cap screws to 73 N·m (54 lb·ft).

EC82310,0000F5B-19-21APR21

## Jack Up Tractor—Lifting Points and Support Stand Placement (EU 1322/2014)

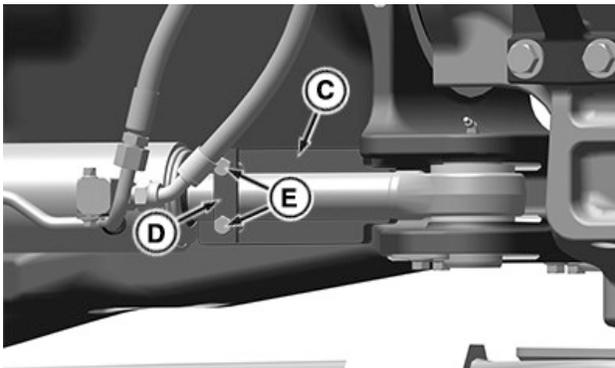
### Install Steering Locks



RXA0188402—UN—20DEC22

Steering Lock Stored (left-hand side)

1. Remove the wing nut (A) to remove the steering lock (B) from the storage location.



RXA0188403—UN—20DEC22

Steering Lock Installed (left-hand side)

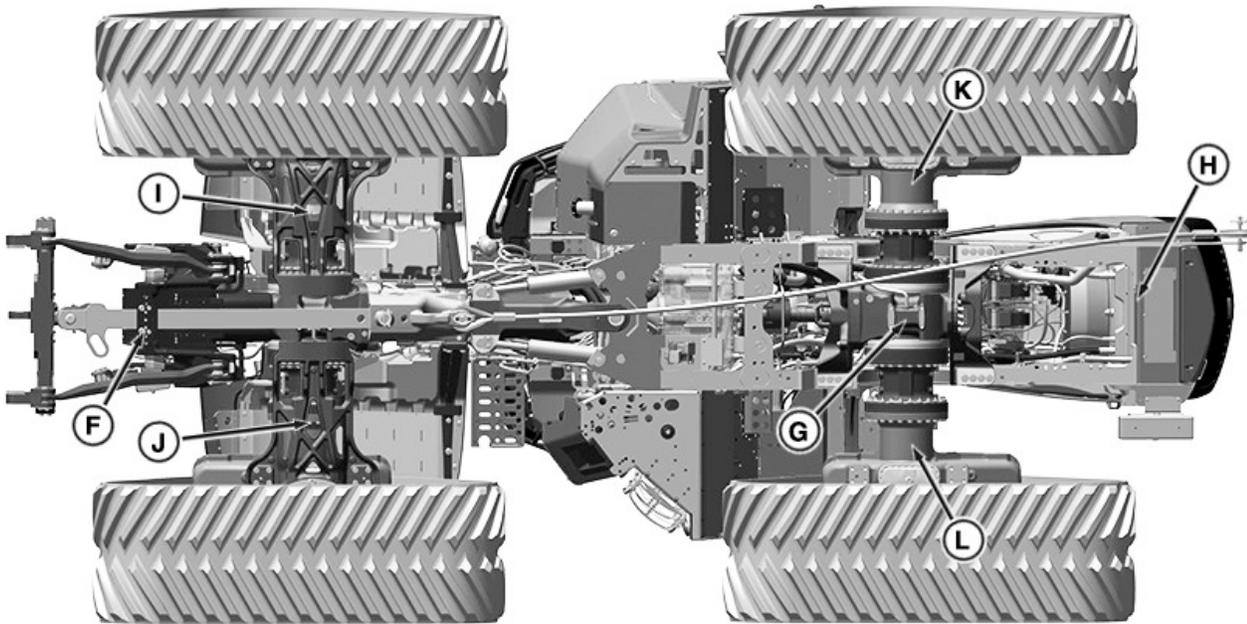
2. Place the plate (C) behind the cylinder.
3. Place the strap (D) in front of the cylinder.
4. Secure the strap to the plate with the cap screws (E).
5. Repeat the procedure on the other side of the tractor.

### **⚠ CAUTION: Avoid injury:**

- Use approved lifting equipment only.
- Install oscillation stops to prevent oscillation during axle removal.
- Jack up the tractor on firm and level ground only. Before doing any further work on the tractor, secure it using suitable support stands. The special John Deere tools shown can be used for this purpose. Support stands are available from your John Deere dealer.

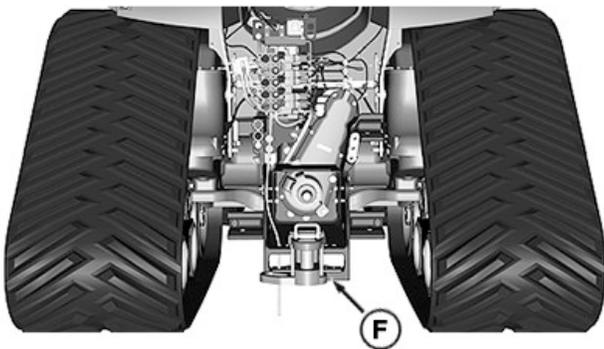
### Lifting Points

Recommended lifting points for jacking up the tractor. Use appropriate and suitable lifting devices.



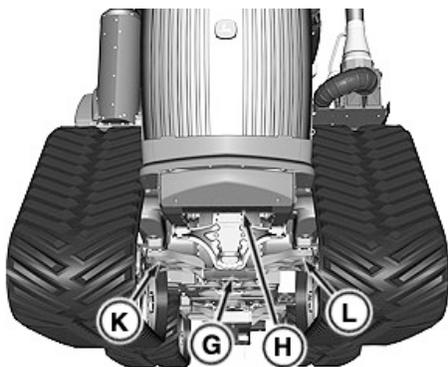
Lift Points (underside with [Ag] drawbar)

RXA0188404—UN—20DEC22



Lift Points (rear drawbar)

RXA0188405—UN—20DEC22



Lift Points (front)

RXA0188406—UN—20DEC22

**F**—Raise the rear of the tractor (example: to remove or adjust the rear tracks)

**G**—Raise the center of the front differential housing

**⚠ CAUTION: Never attempt to lift the tractor using front weights, the front weight support, or the cooling package cleanout cover.**

**H**—Raise the front end of the tractor under the frame

**I**—Raise the right-hand side of the rear axle (example: to remove the right-hand rear track)

**J**—Raise the left-hand side of the rear axle (example: to remove the left-hand rear track)

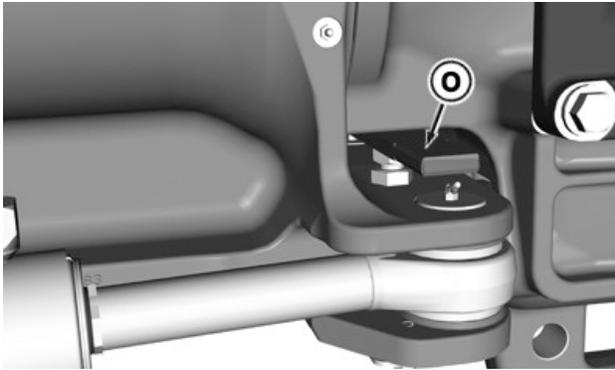
**K**—Raise the right-hand side of the front differential (example: to remove the right-hand front track)

**L**—Raise the left-hand side of the front differential (example: to remove the left-hand front track)

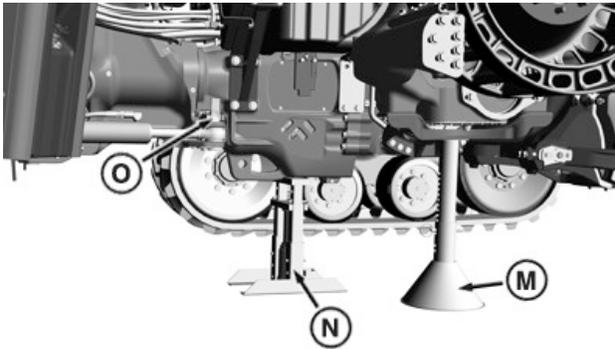
#### Support Stand Placement

1. Disconnect the battery ground cable. See Service Batteries and Connectors in Service—Electrical section of this Operator's Manual.

**⚠ CAUTION: Avoid injury. Always use appropriate equipment to install, change, or uninstall weights. If appropriate equipment is not available, have the job performed by your John Deere dealer.**



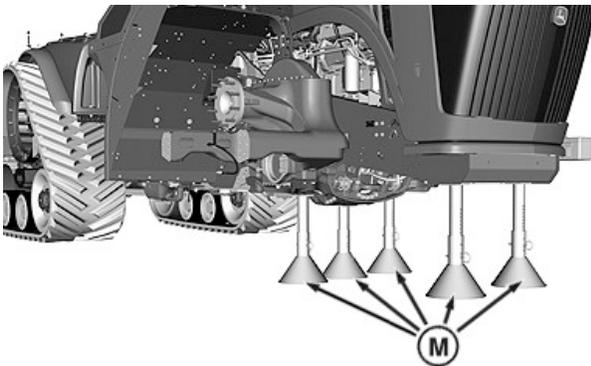
RXA0188407—UN—20DEC22



RXA0188409—UN—20DEC22

**NOTE:** The grease fitting may need to be removed to allow for tool access.

2. Install DFRW254—Gudgeon Oscillation Stops (O) to keep the frame from oscillating.
3. Lift the tractor until approximately 200 mm (8 in) of clearance exists between the track tread and the ground.



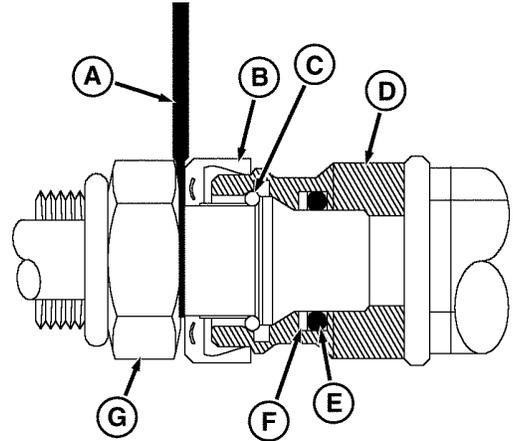
RXA0188408—UN—20DEC22

4. Install JT07211 Support Stands (M) under each placement point.
5. Install JT05725 Universal Support Stand (N).

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## Service and Connect STC (Snap-to-Connect) Fittings

**⚠ CAUTION:** Do not disconnect STC (Snap-to-Connect) fitting when under pressure. Failure to relieve pressure before disconnecting fitting may result in personal injury, damage to equipment or both.



RXA0080095—UN—31MAR05

STC fittings are used on steel lines, hose connections and come in a variety of sizes. JDG1885 STC tool (A) is designed as a spacer to move release ring (B) inward which releases retaining ring (C). Purchase tool from your John Deere dealer.

**IMPORTANT:** Do not use tool to pry fittings apart. Prying with tool may damage fitting and tool.

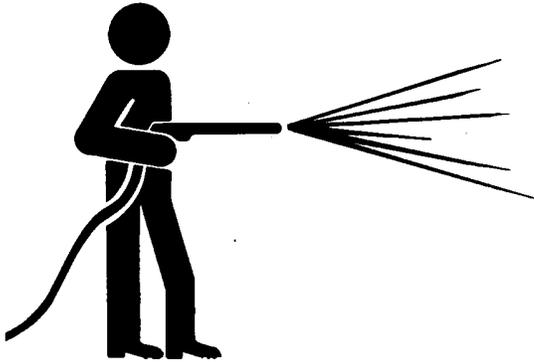
**NOTE:** If retaining ring, back up ring (F) or O-ring (E) are damaged. See your John Deere dealer for replacement kit, and replace all three parts.

1. Insert correct STC tool between release ring and fitting.
2. Remove hose or line from connector.
3. Before connecting STC fitting and mating check surfaces for:
  - Nicks
  - Scratches
  - Flat spots
4. Check for wear or damage:
  - O-ring
  - Back up ring
  - Retaining ring
5. Check for contaminants:
  - Female end (D)
  - Male end (G)
6. Place release ring on male end fitting.

7. Push fitting halves together until a definite snap and solid stop is felt.
8. Pull back on hose to make sure that fitting halves are locked together.

RX32825,000175C-19-23JUN22

## High-Pressure Washer Use



T6642EJ—UN—18OCT88

**IMPORTANT: Avoid damage to components. Always use reduced pressure and spray at a 45—90° angle. Never spray pressurized water directly at:**

- Electronic/electrical components and connectors.
- Bearings and hydraulic seals.
- Fuel injection pumps.
- Exhaust outlet.
- Engine air intake.
- Fluid tanks' fill openings and breathers.
- Any sensitive parts and components.

RX32825,000175D-19-18JUN19

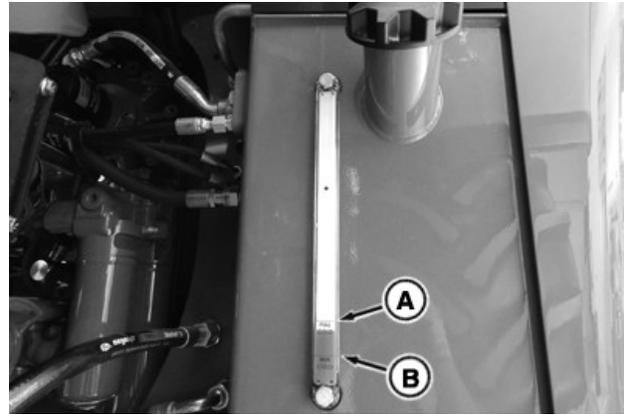
## Transmission Calibration

### When to Calibrate

Transmission calibration is recommended when:

- A clutch solenoid or valve is replaced.
- Shift quality has degraded.
- Transmission filters are replaced.
- Transmission hydraulic fluid is changed.
- Transmission system control unit (PTP) is replaced.
- Transmission is removed for maintenance or replaced for any reason.

**Check Oil Level and Warm-Up Procedure Before Calibration.**



RXA0142195—UN—10JUN14

1. Check oil level sight gauge in hydraulic oil reservoir. Oil level should be between Full Cold (A) and Min. Cold (B) marks.

*NOTE: Only calibrate transmission if shift characteristics change after transmission oil and filter change.*

**Do not** perform oil check soon after transporting tractor in 15th or a higher gear.

**IMPORTANT: Poor shift quality or transmission damage may occur if incorrect transmission-hydraulic oil is used, see Transmission and Hydraulic Oil in Other Lubricants section of this Operator's Manual.**

2. Heat hydraulic oil, see Warm-Up Transmission-Hydraulic System in Transmission—General Information section of this Operator's Manual.
3. When oil is at 50°C (122°F), drive to a level surface.

*NOTE: DO NOT depress brake pedal during this portion of oil warming procedure. If brake pedal is depressed, additional oil will flow to axles and result in inaccurate oil level reading.*

4. Shift transmission lever to PARK. Set engine speed at 1800 rpm and run for 5 minutes.

**IMPORTANT: Do not operate tractor if oil level is below "Min Cold" mark (B) in sight gauge with engine off.**

*NOTE: Reduce engine speed to slow idle, shut engine OFF, and wait 5 minutes for oil to stabilize.*

**⚠ CAUTION: Perform transmission calibration with tractor in an open, outdoor area on flat ground. Do not permit others near tractor during procedure.**

**Verify park brake is functioning properly.**

While calibrating, remain in the operator's seat. Depending on transmission-hydraulic oil temperature at start of procedure, calibration typically takes 12-15 minutes.

**IMPORTANT:** Serious damage to transmission may result if oil level is inadequate.

5. Make sure Efficiency Manager is disabled.

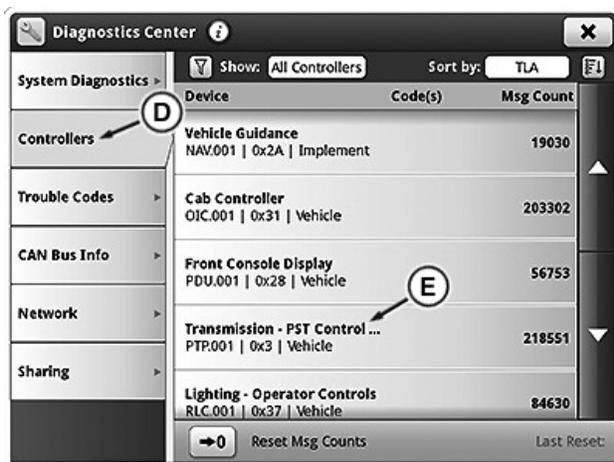


RXA0142149—UN—10JUN14



RXA0142150—UN—10JUN14

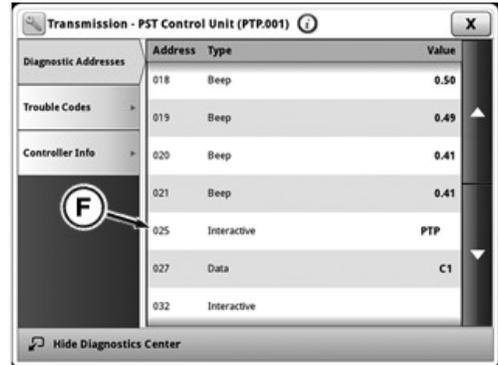
6. Press Menu (A) and System tab (B).
7. Select Diagnostic Center icon (C).



RXA0174962—UN—11FEB20

8. Select Controllers tab (D).

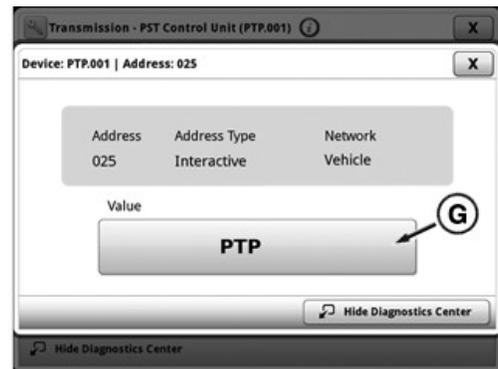
9. Select Transmission-PST Control (PTP.001) (E) from list.



RXA0174963—UN—11FEB20

10. Select Address 025 (F) in drop-down menu.

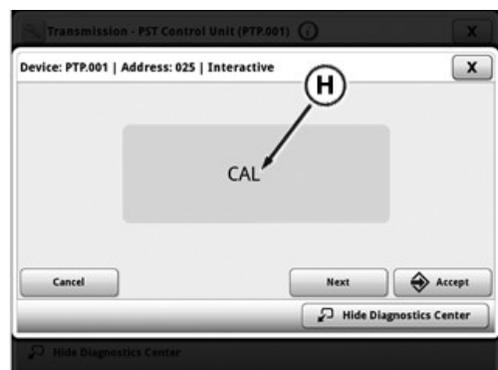
**CAUTION:** Leave shift lever in PARK. Placing shift lever in F or R results in tractor movement.



RXA0174964—UN—11FEB20

11. PTP should appear on CommandCenter display. Press PTP (G).

**IMPORTANT:** Do not leave seat. Operator presence must be detected in this step to allow calibration to continue.



RXA0174965—UN—11FEB20

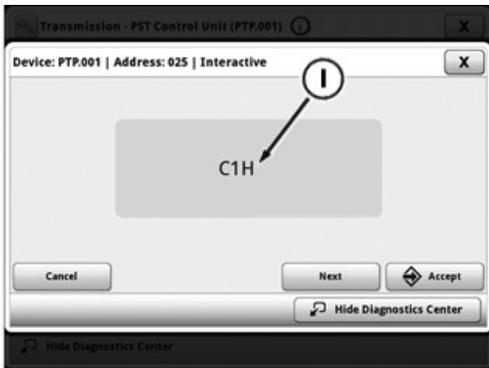
12. When CAL (H) appears on CommandCenter display, transmission calibration is ready to begin.
13. Adjust throttle to 1650 engine rpm.

**CAUTION:** If “P” is NOT displayed on corner post display, do not proceed with calibration. Leave shift lever in PARK. Lever movement to F position will result in unintended tractor movement. Return to Step 2.

14. Move shift lever to N position. P should be displayed on the corner post PDU display.
15. Move shift lever to F position to start calibration.
16. If CLD appears, transmission oil temperature has dropped to less than 50°C (122°F) PTP will halt calibration until temperature has increased sufficiently to allow calibration to restart. If oil temperature (available in PTP Address 33) is more than a few degrees below 50°C (122°F), manually heat oil.

*NOTE: Once calibration begins, do not manually change throttle position, move shift lever, or depress clutch pedal. Calibration will be aborted.*

*NOTE: If calibration aborts due to a fault (for example: no engine or transmission activity is heard for a period of 30 seconds or longer), a three-letter fault message is displayed. Record code. Another calibration attempt may be made if desired, see Abort Transmission Calibration in this section of this Operator’s Manual.*

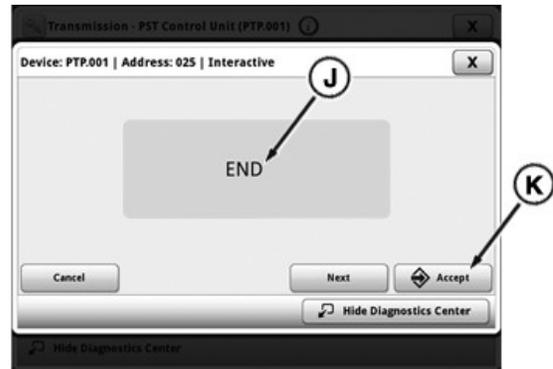


RXA0174966—UN—12FEB20

17. When calibration starts, C1H (I) appears. C1H

indicates Clutch 1 Hold calibration is in progress. As calibration continues, clutch hold calculations for clutches C2, CR, CA, CB, CC, CL, CM, and CH follows. Display indicates which step is being performed during process.

18. When all nine clutch hold stage calibrations are complete, C1F displays as next phase of calibration begins. C1F indicates that Clutch 1 Fill time calibration is in progress. As calibration continues, clutch fill calculations for clutches C2, CR, CA, CB, CC, CM, and CH follows. Display indicates which step is being performed during process.



RXA0174967—UN—12FEB20

19. When END (J) appears, calibration is complete.

*NOTE: Use correct calibration exit procedure to avoid generating unnecessary Diagnostic Trouble Codes (DTCs).*

20. Move shift lever from F to PARK.
21. Throttle down.
22. Press Accept (K) to save and exit calibration.

*NOTE: Display shows instructions for operator and malfunctions that have occurred. If a malfunction is displayed during calibration, new data is not stored.*

23. Turn off the engine. PTP will store new calibration.

Calibration Fault	Meaning	Instruction
CLD	Transmission oil is below 50°C (122°F). Automatic warm-up is in progress.	No action required. Wait for automatic warm-up to warm oil to 50°C (122°F). Calibration begins automatically once temperature is reached.
OIL	Transmission oil temperature is below minimum temperature of 10°C (50°F) to begin automatic warm-up.	Manually heat hydraulic oil to 50°C (122°F), see manual Warm-up for Calibration at beginning of this section.
SPD	Engine speed is not within required range of 1600-1700 rpm to begin or continue calibration.	Set engine speed to 1650 rpm.
CLU	Clutch pedal is not UP or was depressed by operator during calibration.	Make sure that clutch pedal is fully UP, and do not depress during calibration.
NOP	Operator is not in seat when calibration is initiated.	Remain seated during transmission calibration.
FLT	Transmission oil filters are restricted.	Replace transmission filters. Retry calibration after filter replacement.

### Abort Transmission Calibration

PTP aborts calibration, and makes no changes to stored calibration values from last complete calibration if:

- Significant tractor motion is detected
- Address number is incremented or decremented by operator
- System detects problem during calibration
- Shift lever is moved out of gear
- Engine speed moves above or below calibration limits

If calibration aborts, transmission system reverts to last good calibration. If recalibration is still required, a new calibration procedure must be started. Calibration cannot be restarted from point at which it stopped.

SV81855.0000257-19-20JAN15

### Do Not Modify Fuel System

**IMPORTANT:** Increasing horsepower, or altering any aspect of fuel and air delivery on emissions certified engines beyond factory rating, causes emission levels beyond what is approved by United States Environmental Protection Agency (EPA) or equivalent agency. Violations of regulations may result in substantial fines to persons or companies committing such violations.

**Tractor warranty is void if power level is changed from factory specifications.**

**Do not attempt to service injection pump or fuel injectors yourself. Special training and special tools are required. See your John Deere dealer.**

RX32825.000175E-19-01AUG17

### Bleed Fuel System

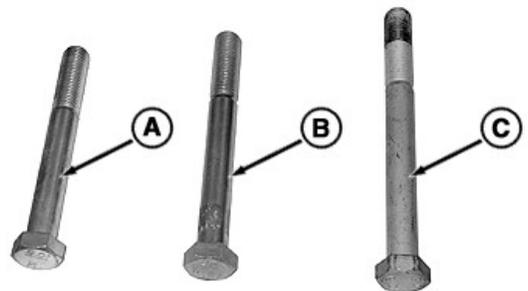
If Diagnostic Trouble Code (DTC) indicates fuel system

problem, and fuel system and filters are found to be correct - or if (even without a DTC present) tractor does not run correctly or fails to start, fuel injection system may need to be bled of air.

1. Turn key switch to run position. Electric fuel pump starts and bleeds air from the fuel system.
2. Allow pump to run for 30 seconds to 1 minute before attempting to restart engine. If the problem persists, see your John Deere dealer.

SV81855.00001F2-19-05MAR19

### Identify Zinc-Flake Coated Fasteners



RXA0073812—UN—03MAR04

Standard cap screws (A) are of a reflective silver color.

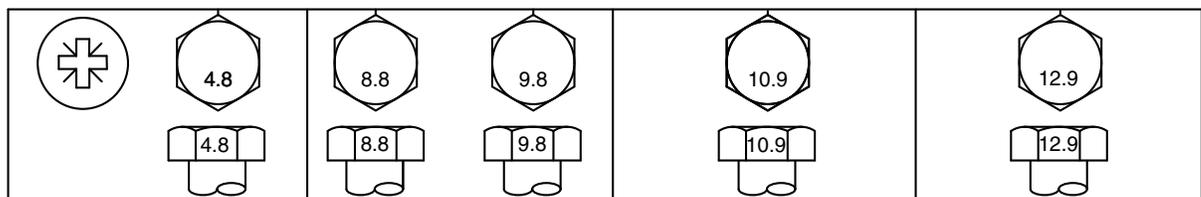
Zinc Plated cap screws (B) are of a reflective bright silver or gold color.

Zinc-Flake Coated cap screws (C) are of a dull silver, gold, or black color.

*NOTE: Zinc-Flake Coated fasteners are tightened to lubricated specifications, unless otherwise noted. See Torque Value Charts in this Operator's Manual section.*

RX32825.0001761-19-31OCT22

### Metric Bolt and Screw Torque Values



TS1742—UN—31MAY18

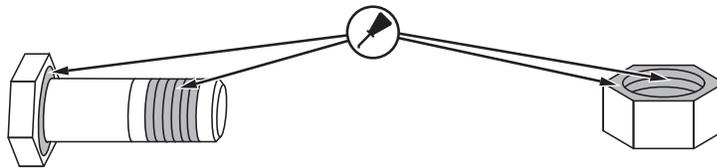
Service—General Information

Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Hex Head <sup>a</sup>		Flange Head <sup>b</sup>		Hex Head <sup>a</sup>		Flange Head <sup>b</sup>		Hex Head <sup>a</sup>		Flange Head <sup>b</sup>		Hex Head <sup>a</sup>		Flange Head <sup>b</sup>	
	N·m	lb·in	N·m	lb·in												
M6	3.6	31.9	3.9	34.5	6.7	59.3	7.3	64.6	9.8	86.7	10.8	95.6	11.5	102	12.6	112
									N·m	lb·ft	N·m	lb·ft	N·m	lb·ft	N·m	lb·ft
M8	8.6	76.1	9.4	83.2	16.2	143	17.6	156	23.8	17.6	25.9	19.1	27.8	20.5	30.3	22.3
			N·m	lb·ft	N·m	lb·ft	N·m	lb·ft								
M10	16.9	150	18.4	13.6	31.9	23.5	34.7	25.6	46.8	34.5	51	37.6	55	40.6	60	44.3
	N·m	lb·ft														
M12	—	—	—	—	55	40.6	61	45	81	59.7	89	65.6	95	70.1	105	77.4
M14	—	—	—	—	87	64.2	96	70.8	128	94.4	141	104	150	111	165	122
M16	—	—	—	—	135	99.6	149	110	198	146	219	162	232	171	257	190
M18	—	—	—	—	193	142	214	158	275	203	304	224	322	245	356	263
M20	—	—	—	—	272	201	301	222	387	285	428	316	453	334	501	370
M22	—	—	—	—	365	263	405	299	520	384	576	425	608	448	674	497
M24	—	—	—	—	468	345	518	382	666	491	738	544	780	575	864	637
M27	—	—	—	—	683	504	758	559	973	718	1080	797	1139	840	1263	932
M30	—	—	—	—	932	687	1029	759	1327	979	1466	1081	1553	1145	1715	1265
M33	—	—	—	—	1258	928	1398	1031	1788	1319	1986	1465	2092	1543	2324	1714
M36	—	—	—	—	1617	1193	1789	1319	2303	1699	2548	1879	2695	1988	2982	2199

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original.

- Make sure that fastener threads are clean.
- Apply a thin coat of Hy-Gard or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.



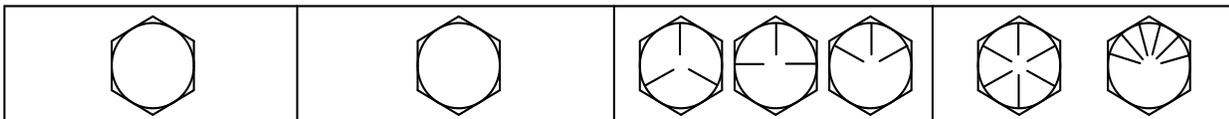
TS1741—UN—22MAY18

<sup>a</sup>Hex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.

<sup>b</sup>Hex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX.TORQ2(T)-19-09MAY22

Unified Inch Bolt and Screw Torque Values



TS1671—UN—01MAY03

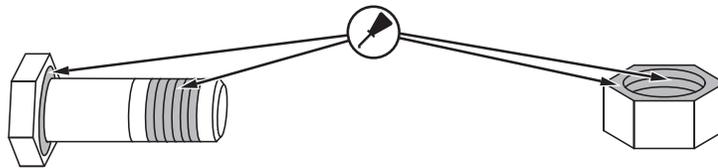
Service—General Information

Bolt or Screw Size	SAE Grade 1 <sup>a</sup>				SAE Grade 2 <sup>b</sup>				SAE Grade 5, 5.1 or 5.2				SAE Grade 8 or 8.2			
	Hex Head <sup>c</sup>		Flange Head <sup>d</sup>		Hex Head <sup>c</sup>		Flange Head <sup>d</sup>		Hex Head <sup>c</sup>		Flange Head <sup>d</sup>		Hex Head <sup>c</sup>		Flange Head <sup>d</sup>	
	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in
1/4	3.1	27.3	3.2	28.4	5.1	45.5	5.3	47.3	7.9	70.2	8.3	73.1	11.2	99.2	11.6	103
													N·m	lb·ft	N·m	lb·ft
5/16	6.1	54.1	6.5	57.7	10.2	90.2	10.9	96.2	15.7	139	16.8	149	22.2	16.4	23.7	17.5
									N·m	lb·ft	N·m	lb·ft				
3/8	10.5	93.6	11.5	102	17.6	156	19.2	170	27.3	20.1	29.7	21.9	38.5	28.4	41.9	30.9
					N·m	lb·ft	N·m	lb·ft								
7/16	16.7	148	18.4	163	27.8	20.5	30.6	22.6	43	31.7	47.3	34.9	60.6	44.7	66.8	49.3
	N·m	lb·ft	N·m	lb·ft												
1/2	25.9	19.1	28.2	20.8	43.1	31.8	47	34.7	66.6	49.1	72.8	53.7	94	69.3	103	75.8
9/16	36.7	27.1	40.5	29.9	61.1	45.1	67.5	49.8	94.6	69.8	104	77	134	98.5	148	109
5/8	51	37.6	55.9	41.2	85	62.7	93.1	68.7	131	96.9	144	106	186	137	203	150
3/4	89.5	66	98	72.3	149	110	164	121	230	170	252	186	325	240	357	263
7/8	144	106	157	116	144	106	157	116	370	273	405	299	522	385	572	422
1	216	159	236	174	216	159	236	174	556	410	609	449	785	579	860	634
1-1/8	305	225	335	247	305	225	335	247	685	505	751	554	1110	819	1218	898
1-1/4	427	315	469	346	427	315	469	346	957	706	1051	775	1552	1145	1703	1256
1-3/8	564	416	618	456	564	416	618	456	1264	932	1386	1022	2050	1512	2248	1658
1-1/2	743	548	815	601	743	548	815	601	1665	1228	1826	1347	2699	1991	2962	2185

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original.

- Make sure that fastener threads are clean.
- Apply a thin coat of Hy-Gard or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.



TS1741—UN—22MAY18

<sup>a</sup>Grade 1 applies for hex cap screws over 6 in (152 mm) long, and for all other types of bolts and screws of any length.

<sup>b</sup>Grade 2 applies for hex cap screws (not hex bolts) up to 6 in (152 mm) long.

<sup>c</sup>Hex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.

<sup>d</sup>Hex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ1(T)-19-09MAY22

# Service—Break-In (100 Hours or Less)

## Perform Break-In Services

**IMPORTANT:** Initial break-in service interval of a new or rebuilt wet sleeve engine with John Deere Break-In Plus must last at least 100 hours to assure surface mating of rings and liners has had an opportunity to occur. 100 hour minimum applies to all new or rebuilt John Deere engines. Maximum service interval is the same as service interval recommended for your engine listed in Engine Oil and Filter Service Intervals for your engine. For subsequent oil changes, see Engine Oil and Filter Service Intervals in Engine Oil section of this Operator's Manual.

**IMPORTANT:** Avoid drivetrain damage. Operate tractor at low speeds (below 10 mph (16 km/h)) for first 6 hours. See Lower Drive Line Bearings in Service—Lubricate section of this Operator's Manual.

### General Break-In

The engine is ready for normal operation. During first 100 hours of operation:

- Operate engine at heavy loads without reaching sustained maximum load.
- Avoid idling engine longer than 5 minutes. If engine will idle longer than 5 minutes, stop engine.
- Closely observe coolant temperature during operation.
- Check engine air intake system hoses and clamps. See Service—Check Section of this Operator's Manual.
- Check for fluid leaks.
- Tighten drive and idler wheel-to-hub cap screws after 3 hours, after 10 hours and daily for first week of operation. See Service—Tighten section of this Operator's Manual.
- Follow tracks systems break-in procedures. See Perform Track Systems Break-In in this section of this Operator's Manual.

### Daily or 10 Hour Service

Perform normal daily or 10 hour services. See 10 Hour or Daily Service in Service—Record Charts section of this Operator's Manual.

For first 100 hours of tractor operation, also perform these additional services daily or every 10 hours:

- Drain water separator. See Water Separator in Service—Check section of this Operator's Manual.
- Check coolant level. See Service—Check section of this Operator's Manual.
- Lubricate hitch (if equipped) components. See Service—Lubricate section of this Operator's Manual.

- Inspect tracks for any damage. See Perform Track Systems Break-In in this section of this Operator's Manual.

After service is performed, reset appropriate service interval hours display to zero. See Service Intervals in the CommandCenter section of this Operator's Manual.

After the break-in period, use John Deere Plus-50 II or other diesel engine oil as recommended in this manual.

KD34109,0001A79-19-06JUL22

## Perform Track Systems Break-In

### Break-In Overview

**IMPORTANT:** Improper track break-in may cause damage or reduction of track component life. Damage caused by improper break-in is not covered under machine warranty.

Track system break-in takes place during first season of use. Correct break-in helps reduce amount of initial drive lug wear. During break-in, drive lugs and idlers undergo a “polishing in” process which:

- Scours out excess rubber flash on rubber wheels.
- Embeds fine dust particles in rubber surfaces to remove tackiness of new rubber.
- Reduces frictional heating in track system.

### Initial Break-In

**IMPORTANT:** Avoid track and track system damage. Do not road tractor for extended distances until break-in period is completed. Even after break-in period is completed, dry lubricant or soil is required to prevent heat generated damage.

When operating with new or cleaned tracks or other frictional components, follow these operational guidelines for first 100 hours:

### DO:

- Use tractor in field with loose soil conditions.
- Avoid transport and roading operations.
- Apply dry lubricant to track system if transport is required or if tractor is unable to be operated in conditions with loose soil<sup>1</sup>.
- Apply dry lubricant to track system every 16 km (10 miles) if unable to avoid driving long distances (over 16 km (10 miles)).

<sup>1</sup> Dry lubricant may consist of: Soil, oil-dry, cat litter, talc powder, other clay based lubricants.

- If unable to avoid driving long distances, reduce speed by 6.5 km/h (4 mph)<sup>2</sup>.
- Ensure that track is properly aligned.

**DO NOT:**

- Attempt long-distance transport (more than 16 km (10 miles)).
- Exceed maximum transport speed shown in implement Operator's Manual, if towing implement. Most implements have max transport speed of 24-32 km/h (15-20 mph).
- Operate in environments where tractor is not exposed to loose soil without adding dry lubricant every 15 minutes.
- Operate with track on edge of road.
- Operate at speeds above those shown in Weight Charts in Tracks—General Information section of this Operators Manual.

**After Break-In**

**IMPORTANT: After initial 100 hour break-in and alignment, long-term break-in process (up to 400 hours) will likely occur. During this period, maximize exposure of tracks to soft soil and minimize high speed, heavily loaded transport operation. See General Track Use Guidelines in Tracks—General Information of this Operators Manual.**

TS36762.000034B-19-16JUN22

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<sup>2</sup> Reduce 6.5 km/h (4 mph) from maximum speed shown on weight chart in Tracks—General Information. Do not exceed maximum recommended speed shown in implement Operator's Manual, if towing implement

# Service—Record Charts

## Service Record Chart Overview

The service record chart is provided to:

- Record when services have been performed.
- Document additional service details as needed.

## Suggested Documentation

- Engine Oil and Filter Change: Indicate which oil was used for refill and record date and hours of operation at each service.
- As Required Service: Record services and repairs that are performed at other than regular service intervals.
- Yearly Service: The listed service tasks are performed annually or at some multiple of years. Record service date and hours.

## 10-hour (Daily) and 50-hour Service Tasks

It is not recommended to record 10-hour (daily) and 50-hour service tasks on the service record chart. If desired, record the completion of these services in a separate notebook.

## Service Interval Chart

Charts show which service tasks must be completed at what engine operating hours or years. If a service task indicates a year and an hourly interval, adhere to whichever interval occurs first. Perform service on items at multiples of the original requirement.

First word of each task title (For example: CHECK or LUBRICATE) directs the person performing service to the appropriate Service Procedure section in this Operator's Manual. Upon completion of a service task, verify that there are no additional tasks to perform at the same time.

Record service tasks when completed on the Service Record Chart found in this section of this Operator's Manual.

Use the engine hour meter display to determine when service must be performed. The hour meter operates whenever the engine is running and shows the accumulated hours of engine operation. Although the hour meter is factory set to 250 hours, it can be reset to any desired elapsed time. See Service Intervals in CommandCenter section of this Operator's Manual.

RX32825,0000022-19-05APR21

Service Task	Operating Hours or Interval										
	Year/s	As Re-quired	Daily or 10	50	250	500	1000	1500	3000	5000	6000
CHECK engine oil level			•								
CHECK hydraulic system oil level			•								
DRAIN fuel water separator			•								
CHECK track wear and trash buildup			•								
CHECK drive and idler wheels and mid-rollers			•								
LUBRICATE hinge pins			<sup>a</sup>	•							
LUBRICATE steering pins			<sup>a</sup>	•							
LUBRICATE heavy duty lift link pins [Ag] <sup>b</sup>				•							
LUBRICATE hose support bracket [Scraper]				•							
CHECK track scraper clearance				•							
CHECK drive wheel scraper clearance				•							
CHECK track tension				•							
CHECK track alignment				•							
CHECK undercarriage articulation bumper stops				•							
CHECK undercarriage wheels and idlers				•							
LUBRICATE lower drive line bearings			<sup>c</sup>		•						
LUBRICATE rear hitch				<sup>d</sup>	•						
CHECK secondary brake <sup>e</sup>					•						
CHECK transmission PARK system					•						
LUBRICATE track tension cylinder fittings					•						
LUBRICATE heavy-duty gudgeon bearings					•						
LUBRICATE PTO drive shaft [Ag] <sup>e</sup>					•						

Service—Record Charts

Service Task	Operating Hours or Interval										
	Year/s	As Re-quired	Daily or 10	50	250	500	1000	1500	3000	5000	6000
CHANGE engine oil and filter <sup>f</sup>	1					•					
CHANGE fuel filters <sup>g</sup>						•					
CHANGE optional fuel water separator						•					
CHECK engine water pump weep hole						•					
CHECK engine air intake system						•					
TIGHTEN drive wheel nuts, idler wheel, and mid-roller cap screws						•					
TIGHTEN drawbar support cap screws						•					
CLEAN dual beam radar sensor <sup>e</sup>							•				
CHECK engine coolant freeze point	1						•				
CHANGE cab recirculation air filter	1						•				
CHANGE cab fresh air filter	1						•				
CHANGE engine primary and secondary air filters	1						•				
CHANGE DEF dosing unit filter <sup>h</sup>	3							•			
CALIBRATE transmission								•			
CHANGE fuel tank vent filter								•			
CHANGE SCV pilot valve filter								•			
CHANGE transmission hydraulic vent filter								•			
CHANGE hydraulic system oil and filters								•			
CHECK auxiliary drive belt and drive belt tensioner								•			
CHECK idler wheel hub and mid-roller oil level								•			
CHANGE DEF tank vent filter <sup>h</sup>								•			
CHANGE DEF in-line filter <sup>h</sup>	3								•		
CHANGE engine crankshaft damper <sup>i</sup>										•	
CHECK engine brake <sup>i</sup>										•	
CHECK engine coolant <sup>l</sup>	6										•
CHECK Drawbar Sensor Calibration [Scraper] <sup>j</sup>	1										
ELECTRIC service batteries and connections	1										
CHECK seat belts	1										
CHECK engine and exhaust area for debris		•									
CLEAN Implement Connector		•									

<sup>a</sup>If used in severe duty/scrapper applications or extremely wet conditions, lubricate daily or every 10 operating hours.

<sup>b</sup>If hitch is in use.

<sup>c</sup>If used in severe duty/scrapper applications or extremely wet conditions, lubricate daily or every 10 hours.

<sup>d</sup>Normal lubrication is every 250 operating hours. If used daily, lubricate every 50 operating hours.

<sup>e</sup>If equipped.

<sup>f</sup>Service in accordance with information in appropriate Diesel Oil and Filter Service Intervals topic in Engine Oil section of this Operator's Manual. Record oil used in Service—Record Charts - Engine Oil and Filter

<sup>g</sup>Change every 500 hours or as indicated, whichever occurs first

<sup>h</sup>Final Tier 4/Stage V engine

<sup>i</sup>See your John Deere dealer.

<sup>j</sup>INITIAL change interval is 6 years or 6000 operating hours, provided cooling system is topped off using only John Deere Cool-Gard II and premix. SCHEDULED interval (2 years or 2000 operating hours) can be extended up to 6 years and 6000 operating hours, depending upon coolant being used. See Drain Intervals for Diesel Engine Coolant in Engine Coolant section of this Operator's Manual.





# Service—Clean

## Cleaning Diesel Exhaust Fluid (DEF) Tank

**CAUTION:** Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

Spilled DEF, if left to dry or if only wiped away with a cloth, leaves a white residue. Improperly cleaned DEF spill can interfere with diagnosis of Selective Catalytic Reduction (SCR) system leakage problems.

If foreign material or fluid has been added to the DEF tank, drain the DEF tank, flush, and fill with new DEF.

If DEF quality is in question, pull a sample out of the DEF tank and place into a clear container. DEF should be crystal clear with a light ammonia smell. If DEF appears cloudy, has a colored tint, or has a profound ammonia smell, it is likely not within specification. DEF in this condition should not be used.

1. Remove drain plug (if equipped), and drain or siphon bad DEF from DEF tank.

*NOTE: Cleaning can take place with DEF tank installed or removed.*

2. Clean DEF tank with new DEF.

DEF must pass visual, smell, and concentration checks before running the engine. See Diesel Exhaust Fluid (DEF) – For Use In Selective Catalytic Reduction (SCR) Equipped Engines in the Fuels, Lubricants, and Coolants Section for more information.

3. Drain or siphon DEF tank.

*NOTE: Repeat steps 2—3 until DEF tank has been cleaned.*

4. **Early version:** Change DEF dosing unit filter and DEF tank header suction screen.

**Later version:** Change DEF dosing unit filter and DEF inline filter.

5. If removed, install DEF tank drain plug.
6. If removed, install DEF tank.
7. Fill DEF tank with new DEF.
8. Check DEF concentration with DEF refractometer, such as JDG11594 or JDG11684. The correct DEF

concentration is 31.8% — 33.2%. See your authorized dealer for more information.

9. If DEF is not within specification, does not appear clear, or does not have a slight ammonia smell, contact your authorized dealer.

DX,DEF,CLEANTANK-19-18SEP19

## DEF Tank Filler Neck Filter

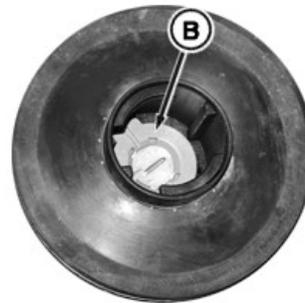
If DEF fill slows, clean tank filler neck filter.

1. Place transmission in Park and shut off engine.



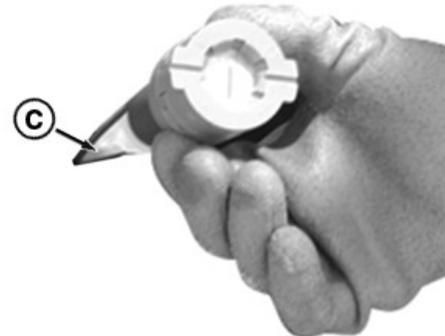
RXA0167615—UN—23APR19

2. Open DEF tank cap (A).



RXA0180368—UN—04NOV20

3. Turn filter retainer (B) counterclockwise until it unlocks, then pull straight out of DEF tank.



RXA0180369—UN—04NOV20

4. Clean filler neck filter (C) with warm water to remove any debris.

5. Install in reverse order.

SV81855,000027F-19-31AUG21

## Tractor Exterior

**IMPORTANT: Avoid damage to the engine, components, and tractor exterior.**

- **Never direct liquid spray to the engine air intake area. If water is sprayed into the engine air intake, drain filter housing and allow housing and filter to dry before starting engine.**
- **For high-pressure washer use: always use reduced pressure and spray at a 45—90° angle. Never spray pressurized water directly at:**
  - **Electronic/electrical components and connectors.**
  - **Bearings and hydraulic seals.**
  - **Fuel injection pumps.**
  - **Exhaust outlet.**
  - **Engine air intake.**
  - **Fluid tanks' fill openings and breathers.**
  - **Any sensitive parts and components.**
- **Never use strong soaps, chemical detergents, or cleaning agents containing acids, caustics, or abrasives. It is best to use commercially available non-detergent car wash products which will not remove protective wax, and which may be applied to paint finish.**
- Wash tractor regularly, particularly if it has been exposed to herbicides, pesticides, road salt, or other chemical agents.
- Never wash the tractor in direct sunlight.
- Rinse all cleaning agents away promptly. Never allow them to dry on the painted surface.
- Waxing tractor occasionally is recommended to remove residue from and further protect paint finish. Never use waxes containing abrasive compounds.
- Inspect paint surface during washing or waxing for chips and scratches. Repaint any areas where paint has been damaged.

See your John Deere dealer for cleaners, waxes, and touch-up paints to help enhance paint finishes and which are compatible with your equipment.

RX32825,0001777-19-21APR21

## Clean Display

**IMPORTANT: Always clean display screen with power off. Cleaning screen while operating could result in unintended button selections.**

To clean display, power down and wipe screen with a soft cloth sprayed with a non-ammonia based cleaner, such as John Deere glass or multipurpose cleaner.

DX,PC,CLEAN\_DISP-19-21OCT16

## Engine Cooling System

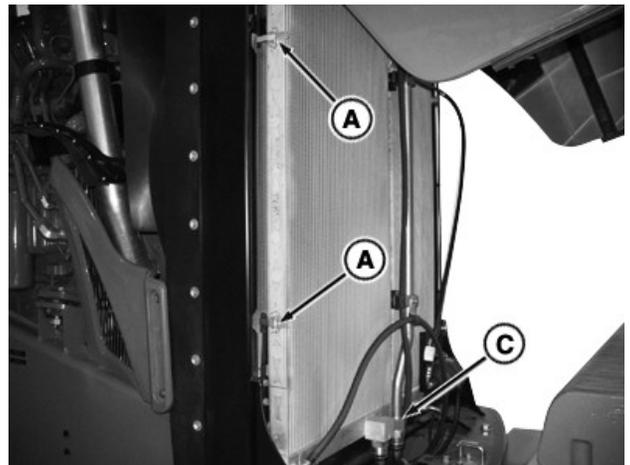
Turn engine OFF.



RXA0180466—UN—19NOV20

Clean grille screen (A) using a brush or compressed air.

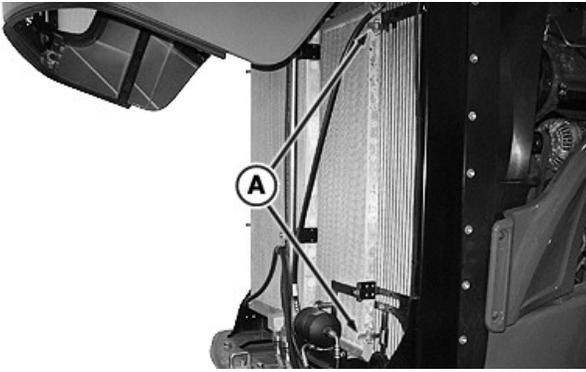
Clean trash from engine compartment shields.



RXA0118331—UN—24JUN11

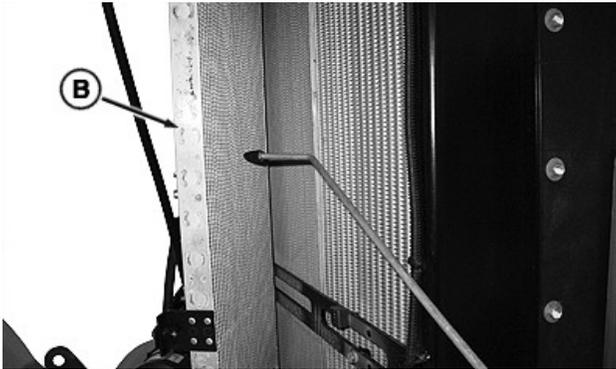
**Use caution when oil cooler is opened. Rubber hose may contact air conditioner line when cooler is at a 30° angle, and can cause damage to the line fitting if extended too far.**

Release hood latch and raise hood.



RXA0148090—UN—29MAY15

Release air conditioning condenser retaining clips (A) to swing condenser forward for better cleaning access.



RXA0118338—UN—23JUN11

Use compressed air to clean air conditioning condenser (B).



RXA0118333—UN—23JUN11

Release oil-fuel cooler retaining clips (A) to swing cooler (D) forward.

Use compressed air to clean radiator. Straighten any bent radiator fins.

Close air conditioning condenser and oil cooler and lock the retaining clips.

Gently lower hood and firmly close until hood latch is locked.

SV81855,0000363-19-11FEB22

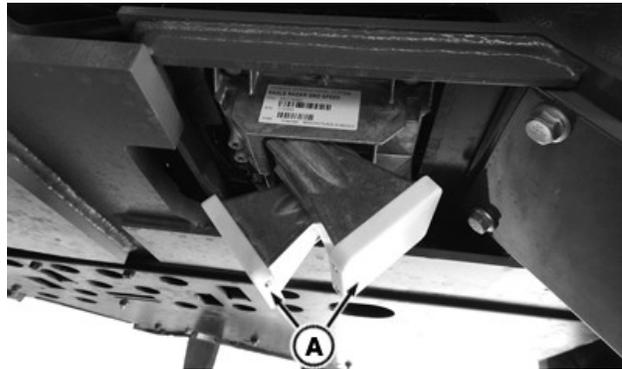
## Dual Beam Radar Sensor

**IMPORTANT:** Inspect radar sensor horns for dirt or debris build up, which affects accuracy performance.

Avoid use of high-pressure washer nozzle pointed directly at radar.

Avoid damage to radar and wiring harness when using sharp tools to remove dirt or packed mud around radar.

1. Check radar sensor for damage.



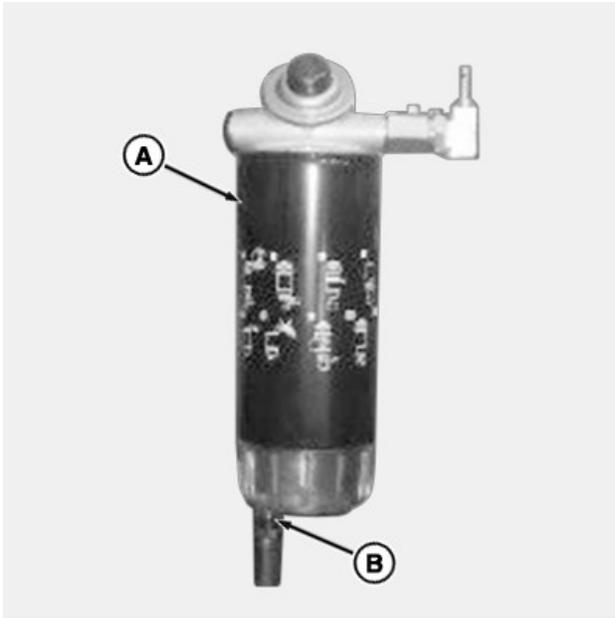
RXA0141826—UN—02JUN14

2. Clean radar sensor horns (A) with warm water and mild soap.
3. Dry with clean soft cloth.

RX32825,000064B-19-19JUL17

## Optional Fuel Water Separator

1. Park machine on a flat, level surface.
2. Lower equipment to ground.
3. Shut off engine.

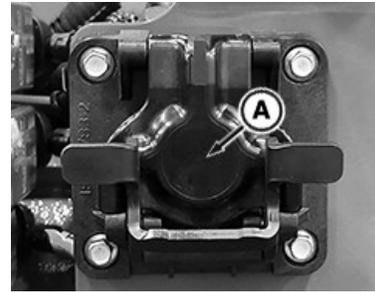


RXA0168512—UN—03JUN19

Priming button cap may differ

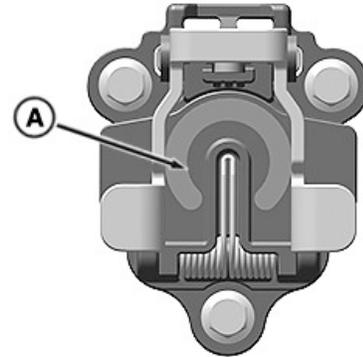
4. Thoroughly clean the exterior of the fuel filter and water separator assembly (A) and surrounding area.
5. Place a suitable container under the drain hose.
6. Open drain valve (B).
7. Allow water and sediment to drain into a suitable container.
8. Close drain valve.
9. Dispose of waste properly.
10. Bleed fuel system. See Bleed Fuel System in the Service—General Information section of this Operator's Manual.

EC82310,0000982-19-21APR21



RXA0169781—UN—30JUL19

Implement Connector



RXA0188727—UN—03MAR23

Implement Ethernet Connector

2. Open implement connector cover (A).
3. Clean implement connector with John Deere Electronic Contact Cleaner.

JL41210,0000ABB-19-23MAY23

## Implement Connector

**IMPORTANT:** Inspect implement connector and implement ethernet connector (if equipped) as required for dirt or debris buildup. Service may be required more often in some operating conditions.

**Avoid damage to implement connector. Do not use compressed air or pressurized water to clean implement connector.**

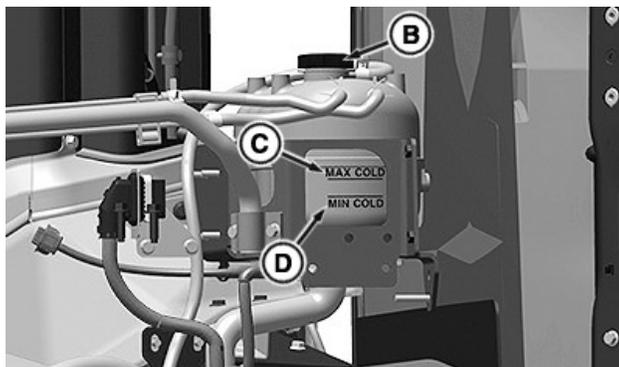
1. Locate the implement connector. See Implement Connector or Implement Ethernet Connector in Accessories section of this Operator's Manual.

# Service—Check

## Engine Coolant Level

Coolant level is monitored electrically. When coolant is low a diagnostic trouble code will appear on the CommandCenter.

1. Open hood. See Open Hood in the Service—General Information section of this Operator's Manual.



RXA0180388—UN—06NOV20

2. Check coolant level on side of deaeration tank. Level should be at or above MIN COLD line (D). If level is low, before adding coolant check for any signs of leakage. Repair if necessary.

**IMPORTANT: Do not open deaeration tank cap (B) when engine is warm. Doing so will add air to coolant system.**

*NOTE: If coolant level is low, but there is no sign of an external leak, there may be an internal coolant leak. Contact your John Deere dealer.*

3. Wait until engine is cool. Remove deaeration tank cap (B) and add coolant as specified in Engine Coolant section of this Operator's Manual. Do not fill above MAX COLD line (C). Reinstall deaeration tank cap.
4. Lower and secure hood.

SV81855,00001C6-19-03NOV22

## Engine Coolant Freeze Point

**IMPORTANT: Test coolant system and add coolant conditioner every 1000 hours, or annually - whichever comes first.**

1. Open hood. See Open Hood in the Service—General Information section of this Operator's Manual.

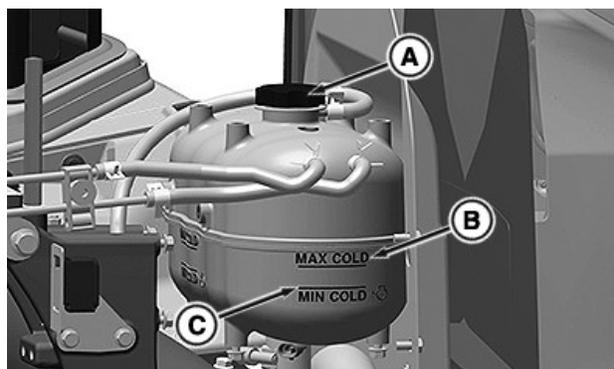
**CAUTION:** Explosive release of fluids from pressurized cooling system can cause serious burns.

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

**Avoid personal injury. Do not remove fill cap when engine is hot. Stop engine and wait until engine has cooled.**

**IMPORTANT: Do not open deaeration tank cap when engine is warm. Doing so will add air to coolant system.**

*NOTE: Deaeration tank will not be full of coolant when cap is removed. When looking in tank, if coolant tank is at least half full, do not add additional coolant.*



RXA0180467—UN—18NOV20

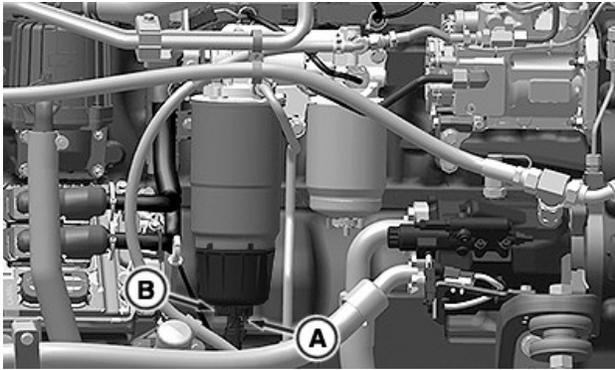
A—Cap  
B—Max Cold Line  
C—Min Cold Line

2. Slowly turn deaeration tank cap (A) to relieve pressure. Remove cap (B).
3. Test coolant. A more precise test device is available from your John Deere dealer, see Testing Coolant Freeze Point in Engine Coolant section of this Operator's Manual.
4. Visually inspect tank cap gasket for sealing effectiveness. No apparent scratches or leak paths should be seen. Replace cap if problem is observed.
5. Install deaeration tank cap and lower hood.

EC82310,0000F50-19-03NOV22

## Water Separator

**IMPORTANT: Water can damage fuel systems. If excessive water is found, draining fuel tanks may be required, see Fuel Tank Sump in this section of this Operator's Manual.**



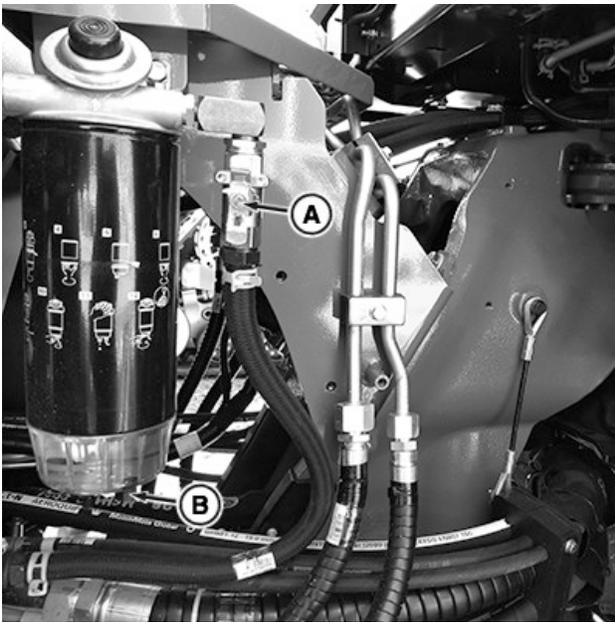
RXA0180389—UN—06NOV20

In addition to a Fuel Water Separator, water can also be drained from fuel system through fuel filters. Turn drain valve nut (A) to release water from fuel filters.

On some filters, tabs (B) are visible and will drop when drain valve nut is opened. Turn drain valve nut completely counterclockwise to drain water.

### Optional Fuel/Water Separator

1. Shut off engine.



RXA0189038—UN—05JUL23

2. Close fuel shut-off valve (A).
3. Open drain valve (B) to release any water from fuel water separator.
4. Close drain valve and reopen fuel shut-off valve.

SV81855.000028A-19-07JUL23

## Engine and Exhaust Compartments

**IMPORTANT:** Accumulated crop residue inside engine compartment can reduce engine and cooling system performance. If tractor has been operated in field conditions which might have caused debris accumulation, inspect and clean engine compartment as necessary.

Directing pressurized water at electronic/electrical components, connectors, bearings and hydraulic seals, fuel injection pump, engine air intake, or other sensitive parts and components may cause product malfunctions. Reduce pressure, and spray at a 45° to 90° angle. See Tractor Exterior in Service—Clean section of this Operator's Manual.

Directing pressurized air at electronic/electrical components or connectors, may cause buildup of static electricity and product malfunctions.

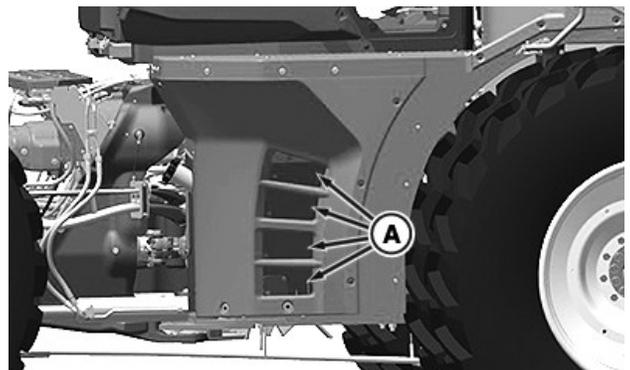
Never steam clean or pour cold water on an injection pump that is operating or hot. Pump could seize.

1. Shut off engine and allow time for engine to cool.
2. Remove front engine side shield. See Remove Front Engine Side Shield in Service—General Information section of this Operator's Manual.
3. Remove any crop or debris within engine and exhaust compartments, especially around turbocharger, exhaust manifold, and exhaust aftertreatment system.
4. Reinstall all engine side shields.
5. Close and securely latch hood.

TS36762.000012C-19-05APR21

## Outer Exhaust Screens

**IMPORTANT:** Reduce possibility of damage to SCR system. Keep screen unrestricted.



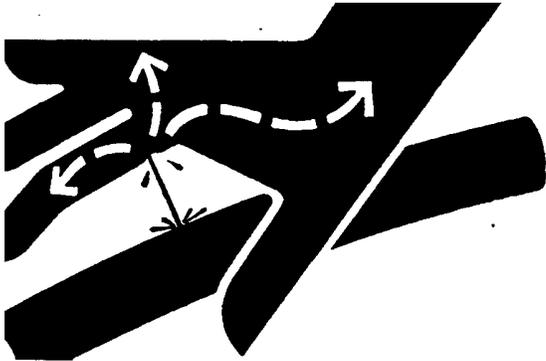
RXA0180390—UN—06NOV20

Right-Hand Panel

Inspect outer exhaust screens (A). Clean out debris as necessary.

SV81855,000027D-19-06NOV20

## Air Conditioning System



X9811—UN—23AUG88

**CAUTION:** Avoid possible injury. Improper servicing may cause refrigerant to penetrate eyes and skin or cause burns.

**IMPORTANT:** R-134a refrigerant must be used in air conditioning system. Service requires special equipment and procedures. See your John Deere dealer.

*NOTE: Some oil seepage from compressor shaft seal is normal.*

Perform following checks if air conditioning system does not cool, or cooling is intermittent:

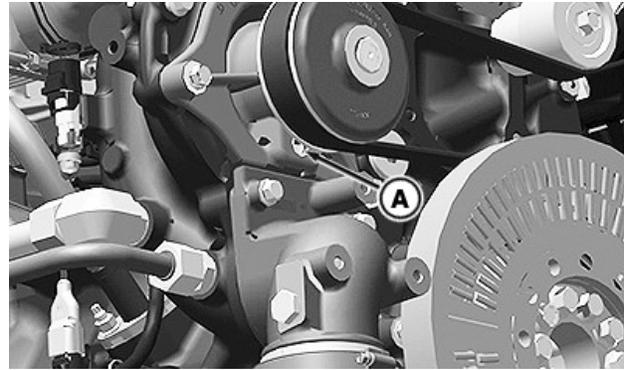
- Confirm that system does not function correctly. Access HVAC page on CommandCenter. Set fan speed to highest setting and temperature to coldest setting. See HVAC Settings—Fan Speed in HVAC section of this Operator's Manual. Operate engine at 2000 rpm. Check air vents to confirm that cold air is not present.
- Inspect and clean cab air filters. Replace filters if necessary. See Cab Filters in Service—Change section of this Operator's Manual.
- Clean grille and radiator. See Engine Cooling System in Service—Clean section of this Operator's Manual.
- Check air vents for cold air flow.

If problems persist, see your John Deere dealer.

TS36762,000012D-19-21JUN22

## Engine Water Pump Weep Hole

1. Remove front engine side shield, see Remove Front Engine Side Shield in Service—General Information section of this Operator's Manual.



RXA0180468—UN—18NOV20

2. Inspect weep hole (A) on under side of water pump for oil or coolant leakage (indicates a damaged front seal). If leakage is detected, see your John Deere dealer.
3. Install front engine side shield, close and secure hood.

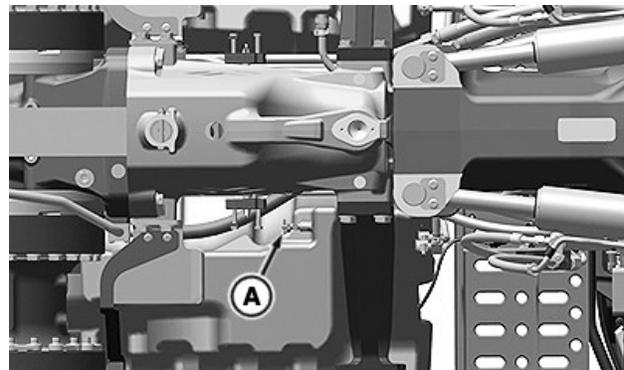
TO84419,00001CE-19-19APR22

## Fuel Tank Sump

*NOTE: Drain fuel tank sump if fuel filters are replaced frequently or water in the fuel tank. Service may be required more often under some conditions.*

1. Place a catch pan under the drain tee.

**IMPORTANT:** Use wrench to hold drain fitting while opening or closing tee or damage to tank threads can occur.



RXA0180465—UN—18NOV20

2. Turn drain tree (A) by hand. Drain fuel until clean, water free fuel appears.
3. Tighten drain tree by hand to close.

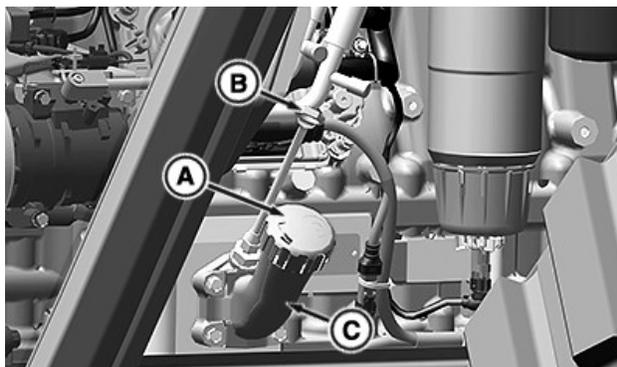
JL41210,0000AA0-19-23NOV20

## Engine Oil Level

1. Park tractor on level ground.
2. Open engine access panel, see Open Engine

Access Panel in Service—General Information section of this Operator's Manual.

**NOTE:** If the tractor has been parked on level ground for several hours or overnight, oil level must be checked before starting the engine for maximum reliability.



RXA0188273—UN—10OCT22

- Remove dipstick (B) and check oil level with tractor on level ground.



RXA0185140—UN—20AUG21

**NOTE:** Oil level on dipstick is considered FULL when oil is within crosshatched area (D).

- Check oil level on dipstick. If oil must be added, perform the following actions:
  - Remove fill cap (A).
  - Add oil through fill tube (C).

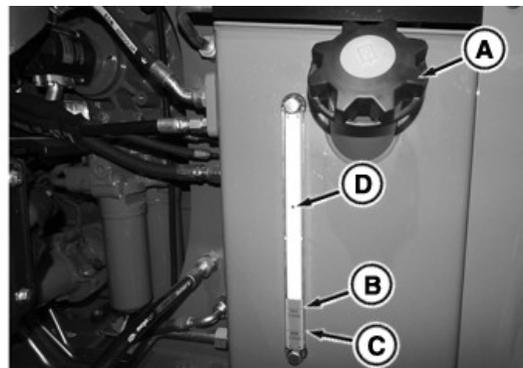
**NOTE:** See Diesel Engine Oil in Engine Oil section of this Operator's Manual.

- Tighten fill cap securely and close engine access panel.

RX32825.000062F-19-16NOV22

## Hydraulic System Oil Level

**IMPORTANT:** Poor shift quality or transmission damage may occur if incorrect oil is used, see Transmission and Hydraulic Oil in Other Lubricants section of this Operator's Manual.



RXA0141848—UN—02JUN14

**Do not operate tractor if oil level is at or below MIN COLD mark (C) in sight gauge with engine off.**

If topping off oil in hydraulic reservoir, use sight gauge marks to estimate volume and add to transmission fill tube.

Hydraulic oil reservoir does not hold all system hydraulic oil capacity. Transmission and front and rear axles hold additional system oil. If possible, check oil level prior to first start of day. Ambient temperature should be 7° C (45° F) or above.

For implements and applications requiring high volumes of oil transfer (example: large air seeders or pulling 3 scrapers), hydraulic reservoir can be filled up to high volume takeout oil mark (D). Additional capacity is 58.5 L (15.4 gal) above MIN COLD (C).

- Check tractor and implement for leaks daily, before start-up.
- Park tractor on level ground with implement fully lowered.
- Place transmission shift lever in PARK.
- Start engine and set engine speed set to 1200 rpm.
- Run engine for five minutes.
- Shut off engine and wait five minutes for oil level to stabilize.

**IMPORTANT:** Contaminated or overheated oil may cause damage to transmission-hydraulic system components. Oil which is:

- Milky or foamy may be contaminated with water. Change oil immediately.
- Discolored or smells burned may have been overheated. See your John Deere dealer.

- Check hydraulic reservoir oil level using sight gauge

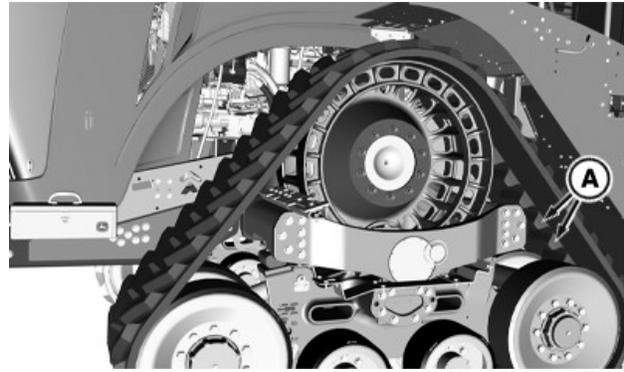
located near the left-hand rear fender. Examine oil in sight gauge for milky or foamy appearance.

**NOTE:** As tractor and hydraulic system temperature increases, oil level will rise in reservoir.

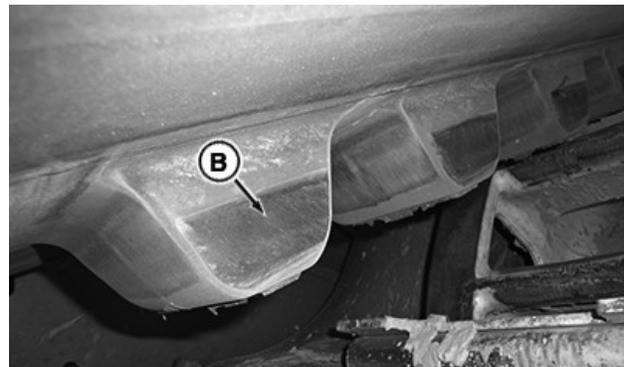
Oil level in reservoir fluctuates depending upon volume of oil exchanged with an attached implement. If low oil level results in hydraulic pressure drop, a STOP engine light will come on.

8. Open hydraulic reservoir cap (A). Check for burned oil odor.
9. If reservoir oil level is between FULL COLD (B) and MIN COLD (C) marks, tractor can be used for normal operation. Volume difference between MIN COLD and FULL COLD marks is about 11.4 L (3 gal).
10. If reservoir oil level is below MIN COLD mark, ensure oil levels are equalized between reservoir, transmission, and axle compartments. Heat up transmission-hydraulic oil (see Warm-Up Transmission-Hydraulic System in Transmission—General Information section of this Operator's Manual) so oil temperature is > 50°C (125°F) and run tractor at 2100 rpm for five minutes. Stop engine and allow to settle for five minutes. Check hydraulic reservoir level. If still below MIN COLD mark, add oil to hydraulic oil reservoir. See Hydraulic System Oil in Service—Change section of this Operator's Manual.

RX32825,000184B-19-29AUG22



RXA0158367—UN—16MAR17



RXA0158368—UN—16MAR17

## Track Alignment

**IMPORTANT:** Avoid operating track in grease, oil, or other petroleum chemicals. Avoid spilling these materials on tracks during servicing of tractor.

**Avoid debris buildup in any of the frame area. Clean as necessary.**

**NOTE:** When tractor is new, track alignment has been preset at factory. Alignment should not be adjusted until after completion of initial break-in.

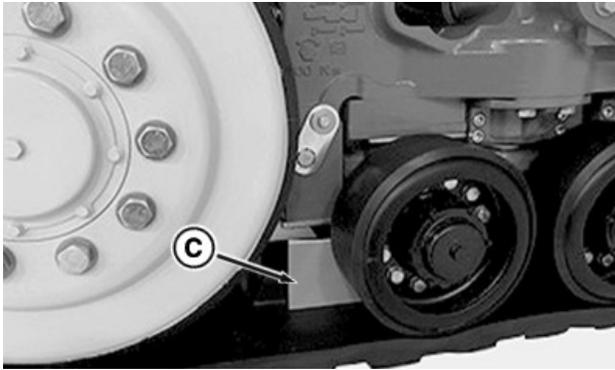
After initial break-in and alignment have been completed, the complete break-in process will occur during the first full operating season. During this time, operate tractor:

- In soft soil as much as possible.
- In high speed transport situations as little as possible - especially when pulling an implement.

1. Inspect drive lugs (A) for side wear. Compare wear on inboard and outboard sides of drive lugs. Even in routine operating conditions, drive lugs will exhibit wear as shown (B), especially during break-in side slope operation. Only perform alignment if there is significant difference in wear between the two sides of a drive lug.
2. If significant differences in drive lug wear are noted, go to step 3.

**IMPORTANT:** Tracks will typically move from side to side during operation, so some drive lug side contact is normal. Track does not need to be centered to achieve proper alignment. If track passes shim check, track alignment is correct.

3. Fabricate 77 mm (3 in) by 204 mm (8 in) track alignment check gauge (shim) from:
  - 3.2 mm (1/8 in) thick metal (wide track).
  - 4.8 mm (3/16 in) thick metal (narrow track).
4. Drive tractor 45 m (150 ft) on level ground. A road is generally not suitable, due to crown of road surface.
5. While still moving, shift to neutral and allow tractor to coast to a stop with no braking or steering input.
6. When tractor stops, shift tractor to PARK and shut off engine.



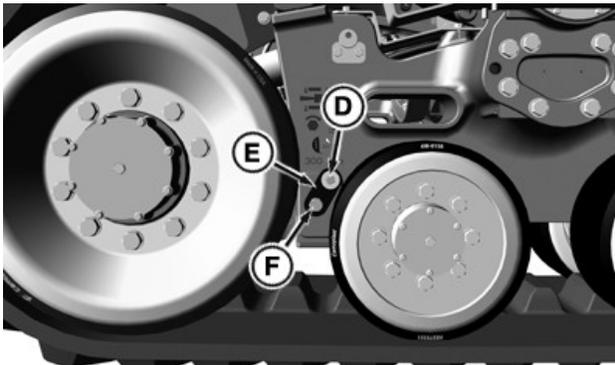
RXA0158393—UN—20MAR17

7. Insert fabricated shim between outboard front mid-roller and drive lug (C). Shim should fit freely all the way down to the track inner surface.
8. Repeat clearance check on outboard front mid-rollers.

**NOTE:** Complete alignment check on all track assemblies before performing any adjustment.

9. If track is aligned but drive lug side wear does not decrease after break-in or have recently accelerated, contact see your John Deere dealer.
10. No alignment adjustment is required if shim fits freely on both sides of drive lug and drive lug is not contacting front mid-roller - even if not equally centered in distance inboard to outboard sides. Go to step 18.

If shim does not fit on one side, adjust track alignment. Go to step 11.

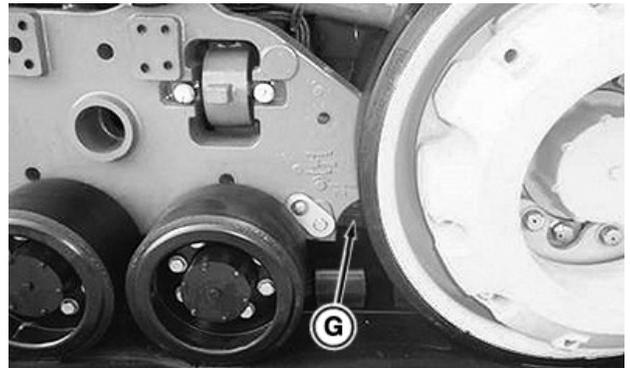


RXA0158388—UN—16MAR17

11. Remove lock plate spacer and bolts (D) and lock plates (E) from inboard and outboard sides of track to be adjusted.
12. On side you want track to move away from, loosen adjustment bolt (F) one turn.

**IMPORTANT:** Avoid damage to special cap screws through incorrect installation or tightening procedures. Use only unpowered hand tools and ratcheting “click” type or equivalent torque wrench to tighten properly.

**IMPORTANT:** Do not apply excessive force to adjustment bolt. Damage to track frame casting can occur from over-torque.



RXA0161031—UN—05OCT17

Check to see if adjustment lever (G) has been adjusted to it's maximum lateral position.

- If lever is hitting casting, refer to diagram on casting. Adjust alignment bolts to first re-center lever. Then apply one turn to move track left on undercarriage.
- If lever movement is hindered by debris buildup, clean as needed.

**NOTE:** One turn is the recommended increment. One half turn may be used as a final adjustment. Adjustments larger than one turn may result in unpredictable alignment results.

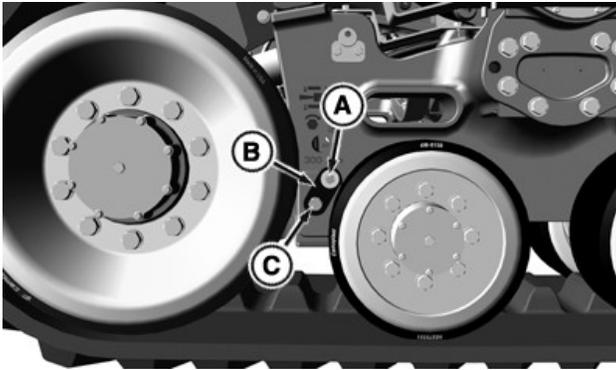
13. Tighten adjustment bolt on the opposite side to 300 N·m (221 lb·ft).
14. Tighten adjustment bolt, loosened in Step 12 to 300 N·m (221 lb·ft).

**IMPORTANT:** Avoid incorrect alignment and potential damage to track and track assembly components. Never make adjustments larger than one turn. Unpredictable track alignment results may occur.

**NOTE:** One turn is the recommended adjustment increment. One-half turn may be used as the final adjustment.

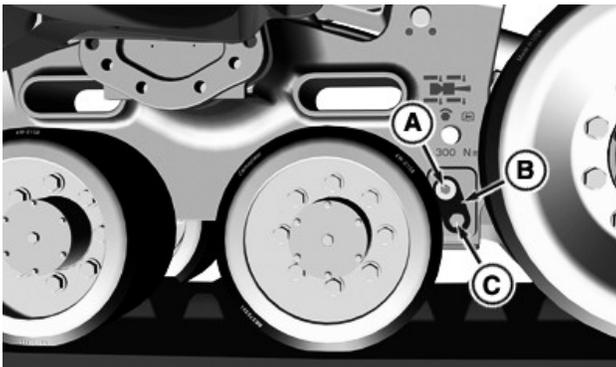
15. In most circumstances, a single adjustment is all that should be done. Track should then run until next scheduled adjustment check in order to give it time to stabilize in new setting.

**NOTE:** Lock plates are reversible to double the available index increments. It may be necessary to increase torque on special cap screw slightly to advance it to next available lock plate index position.



RXA0147877—UN—06APR15

Outside Track Frame



RXA0147878—UN—06APR15

Inside Track Frame

16. Install lock plates (B) and with spacer and bolt (A). Tighten bolt to 130 N·m (95 lb·ft).
17. Confirm inside and outside adjustment bolts (C) are tight on each track frame.
18. If track has been aligned but drive lug side wear does not decrease after break-in or has recently accelerated, see your John Deere Dealer.

TS36762,0000346-19-21AUG18

## Track Tension

### Tension Track

- ⚠ CAUTION:** Escaping fluid under pressure can penetrate skin and cause serious injury.
- Avoid 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.

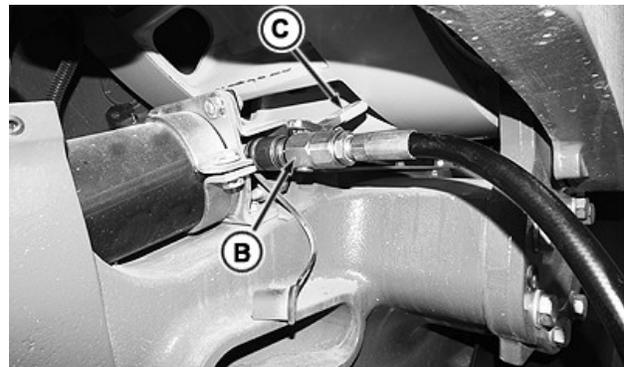
If an accident occurs, see a doctor immediately. Any fluid injected into skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department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

- ⚠ CAUTION:** Avoid possible personal injury. Tension kit valve should be in closed position when attaching either end of hose.

**IMPORTANT:** Foreign material can damage the hydraulic system. Keep hydraulic couplers free from debris.

**IMPORTANT:** Track tensioning is best performed when hydraulic oil in reservoir is less than 38°C (100°F), and track tensioning components are at least 4.5°C (40°F).

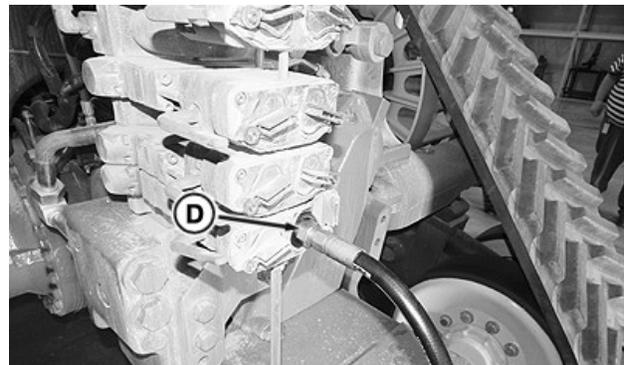
Use track tension/detension hose kit obtained from your John Deere Dealer.



RXA0189040—UN—07JUL23

Track Tension/Detension Hose

1. Remove cap from tension cylinder receptacle and attach tension hose coupler (B).



RXA015272—UN—20OCT15

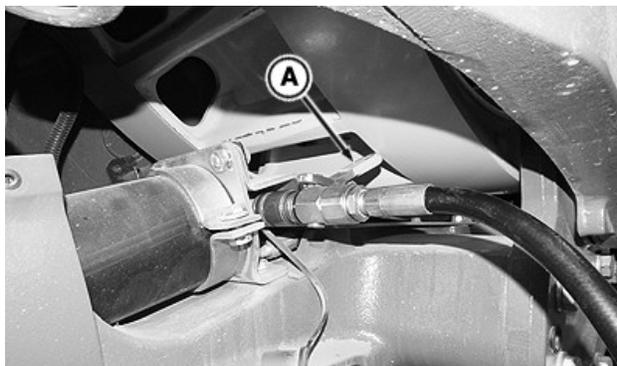
2. With the hose valve handle (C) closed, install other end of tension hose into extend side of the top SCV coupler (D).
3. Enter the cab.

4. Start the engine.



RXA0168447—UN—30MAY19

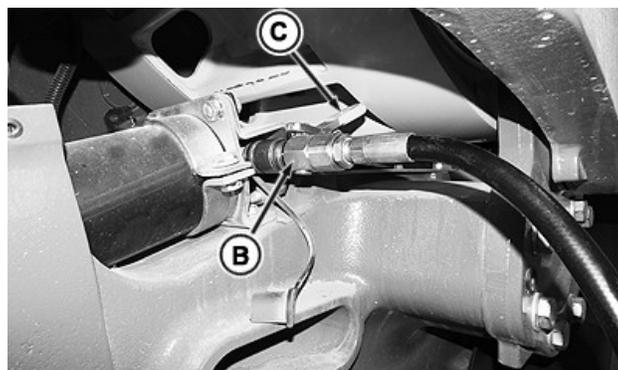
5. Press the SCV shortcut button on Navigation Bar.
6. Select the corresponding SCV on the SCV main page. See SCV settings in the selective Control Valve section of this Operator's Manual.
7. Select the Time tab.
8. Set the time to continuous. See SCV Settings—Time Adjustments in the Selective Control Valve section of this Operator's Manual.
9. Select Flow tab (C).
10. Set the flow setting to 5.00. See SCV Settings—Flow Adjustment in the Selective Control Valve section of this Operator's Manual.
11. Extend the SCV by pulling the SCV control lever backward to the detent position.
12. Exit the tractor.



RXA0189041—UN—07JUL23

13. Open the track tension hose valve handle (A).
14. Allow track to tension for three minutes.
15. Close the hose valve handle.
16. Relieve pressure in the tensioning hose by placing the SCV into the float position
17. Return SCV to the neutral position.
18. Stop the engine.
19. Disconnect the track tension hose from the tension cylinder receptacle.
20. Clean up any oil that may have spilled or leaked during process.

## Detension Track



RXA0189040—UN—07JUL23

Track Tension/Detension Hose

1. Remove the cap from the tension cylinder receptacle.
2. Close the tension hose valve handle (C).
3. Attach the track tension hose coupler (B).



RXA015272—UN—20OCT15

SCV I Coupler

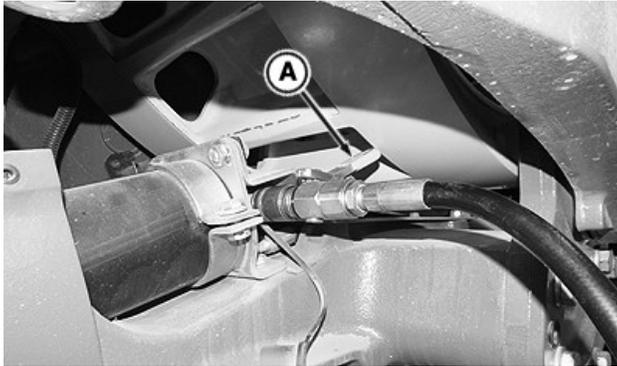
4. Install the other end of the tension hose into the top SCV extend side of the receptacle (D).
5. Enter the cab.
6. Start the engine.



RXA0168447—UN—30MAY19

7. Press the SCV shortcut button on the Navigation Bar.
8. Select the corresponding SCV on the SCV main page. See SCV Settings in the Selective Control Valve section of this Operator's Manual.
9. Select the Time tab.
10. Set the time to continuous. See SCV Settings—Time Adjustment in the Selective Control Valve section of this Operator's Manual.
11. Select the Flow tab.

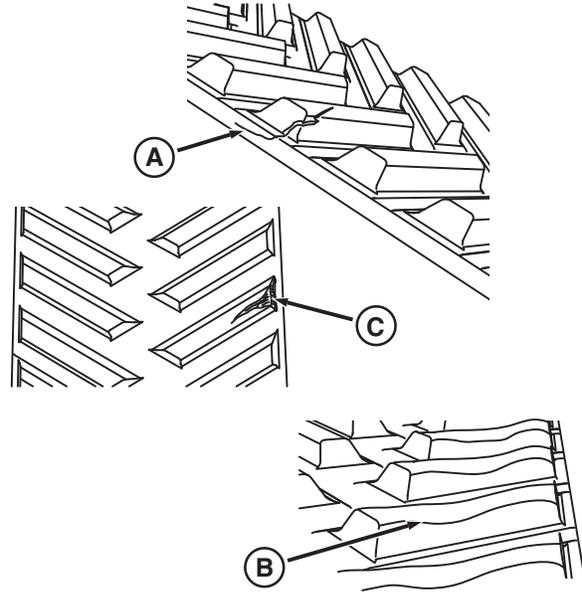
12. Set the flow setting to 5.00. See SCV Settings—Flow Adjustment in the Selective Control Valve section of this Operator's Manual.
13. Retract the SCV by pushing the SCV control lever forward to the detent position.
14. Exit the tractor.



RXA0189041—UN—07JUL23

15. Open the hose valve handle (A) on the track tension hose.
16. Allow the track to detension for three minutes.
17. Close the track tension hose valve handle.
18. Return the SCV to the neutral position.
19. Stop the engine.
20. Disconnect the tension hose from the tension cylinder receptacle.
21. Clean up any oil that may have spilled or leaked during process.

EC82310,0000026-19-05JUL23



RXA0147257—UN—17JUN15

Check track for major operational problems. It is normal to see cracking (A), uneven wear (B), or chipping or chunking (C) on tracks during use.

Check inside of track for any exposed cables. If any loose ends are seen, cut off cable flush with track surface. Then see your John Deere dealer.

Check track for torn or missing treads. If tread has been damaged and part of tread is loose, trim loose portion off to avoid further damage to track carcass.

Check track inner guide or drive lugs for condition. Note if wear patterns have changed since the last inspection and if track alignment may need to be checked. If any guide or drive lugs are loose or missing, see your John Deere dealer.

## Track Wear and Trash Buildup

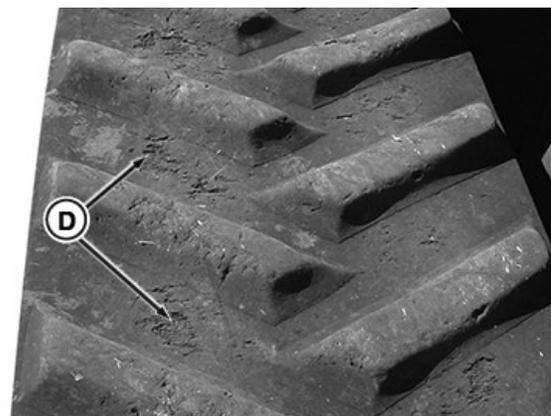
### Track Wear

**CAUTION:** Trash buildup can cause fire from increased friction. Remove trash from trash buildup points between track and tractor frame. Remove Trash Buildup.

**IMPORTANT:** Avoid operating tractor in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service.

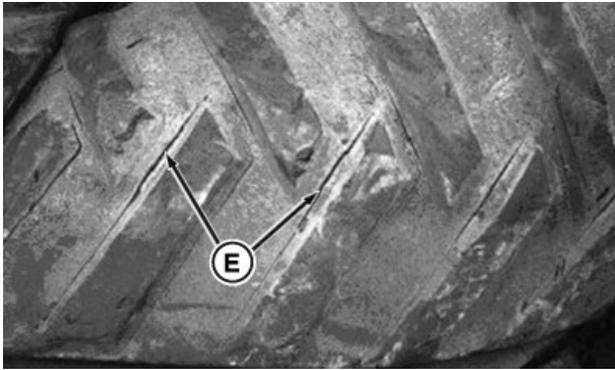
**Avoid damage to hydraulic components. Use care around tension cylinder connections and hydraulic lines.**

Remove any embedded sharp objects from inside or outside of tracks.



RXA0158650—UN—05APR17

Check for exposed plies (D) between tread. It is normal during mid to end of life to see some exposed plies between the treads. If large sections of the track carcass are torn, loose, or missing, see your John Deere dealer.



RXA0158651—UN—05APR17

Check for flex cracking (E). It is normal to see some flex cracking develop during life of track.

### Track Trash Buildup

**IMPORTANT: Avoid grease, oil, or other petroleum chemicals on tracks and wheels. Constant exposure to petroleum-based chemicals may damage rubber surfaces.**

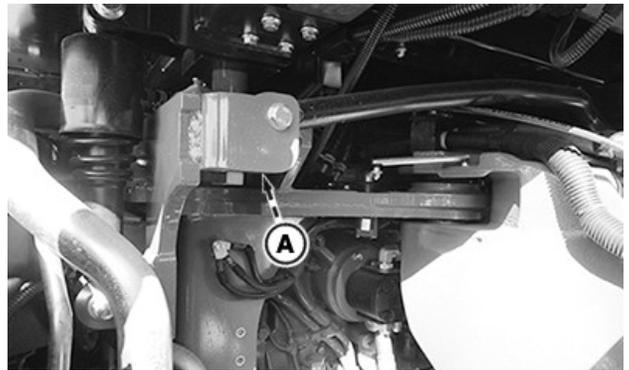
Trash buildup can cause fire from increased friction. Remove trash from trash buildup points between track and tractor frame.

### Undercarriage Inspection and Maintenance

1. Remove any debris or material buildup on top of frame reaction arms. Buildup can wear down rubber on drive wheels and reduce their ability to transfer power to track.
2. Check for material buildup between drive wheels and front idler wheels. Buildup can damage or crush guide lugs and can increase chances of derailing track. If guide lug tip damage is seen, it may be due to material buildup.
3. Look over drive wheels and idlers for visible cracks around bolt pattern or the rim. If seen, see your John Deere dealer for best recommendation for repair or replacement.
4. Remove any embedded rocks, nails, or other sharp object in track belt or mid-rollers.

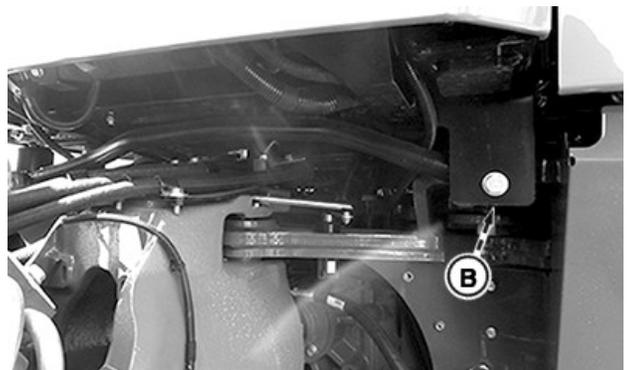
TS36762,000034E-19-02SEP21

### Cab Suspension Bushings



RXA0163831—UN—03JUL18

Left-Hand Side Behind and Below Cab



RXA0163832—UN—03JUL18

Right-Hand Side Behind and Below Cab



RXA0157989—UN—06MAR17

Left-Hand Side Below Cab Door

Check bushings: Left-hand (A), right-hand (B), and left-hand side under cab door (C) for degraded or missing rubber. If rubber is damaged replace complete bushing assembly.

BH38674,0000D55-19-22AUG18

### Undercarriage

**⚠ CAUTION: Avoid possibility of fire. Trash buildup can cause fire from increased friction. Remove trash from trash build-up points between track and tractor frame.**

**IMPORTANT:** Avoid operating tractor in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service. Replace mid-rollers in sets if significant thickness wear is seen on an opposite side wheel.

**IMPORTANT:** Do not pair worn idlers or mid-roller wheels with new wheels on the same axle. Overloading of the opposite side mid-roller may occur. Or correct track alignment may become more difficult in the case of different circumference idler wheels.

1. Remove any debris or material buildup on top of frame reaction arms. Buildup can wear down rubber on drive wheels and reduce their ability to transfer power to track.

2. Check for material buildup between drive wheels and front idler wheels. Buildup can damage or crush guide lugs and increase chances of derailing track. If drive lug tip damage is seen, it may be due to material buildup.

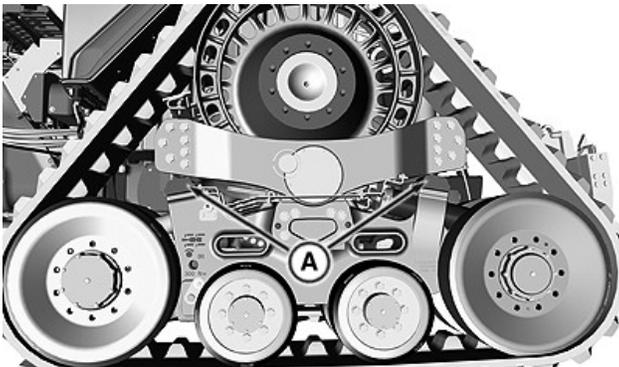
3. Check for material buildup inside the sprocket, in sprocket pockets where the drive lug engages, or on outer surface of sprocket. Remove any buildup in pockets or external surface to avoid damage to track and drive lugs. If material buildup is noted on sprocket, adjust scraper if required. See Drive Wheel Scraper Clearance in Service—Check section of this Operator's Manual.

TS36762.0000348-19-17NOV22

## Undercarriage Articulation Bumper Stops

Inspect articulation bumper stop:

1. Park tractor on level surface to inspect bumpers.

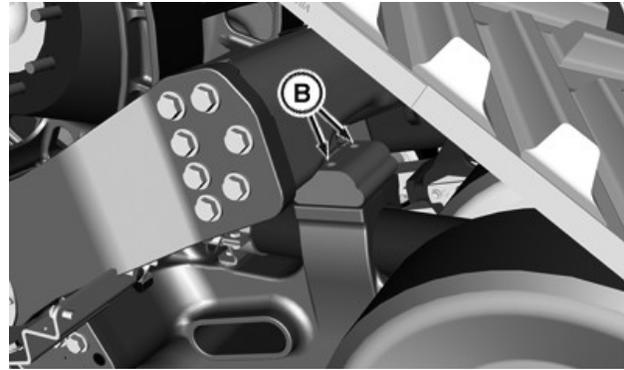


RXA0147610—UN—12MAR15

2. Inspect each articulation bumper stop (A) for damage, excessive wear, or if it is bent or deformed.

3. Damage may be chunking, chipping, or cracking of bumper. If any damage is found, replace bumper.

Replace articulation bumper stop:



RXA0147611—UN—12MAR15

1. Remove cap screws (B).

2. Install new bumper stop.

3. Tighten cap screws to 10 N·m (7 lb·ft).

SV81855.00003A4-19-21FEB18

## Drive, Mid-Rollers, and Idler Wheels

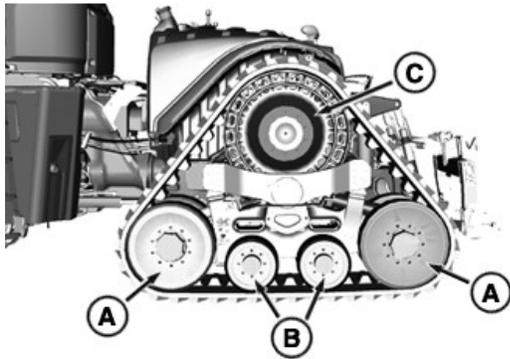
**CAUTION:** Trash build-up can cause fire from increased friction. Remove trash from trash build-up points between track and tractor frame, see Service Check - Remove Trash Buildup.

**IMPORTANT:** Avoid operating tractor in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service.

Replace mid-rollers in sets if significant difference in coating thickness is seen on an opposite side of axle wheel.

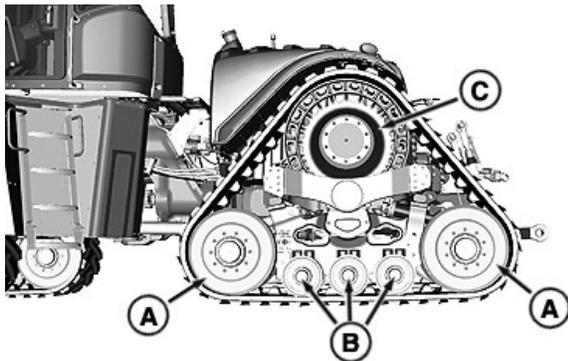
Do not pair worn idler and mid-roller wheels with new wheels on the same axle. Unevenly worn mid-rollers may overload and damage opposite mid-rollers. Unevenly worn drive or idler wheels may negatively impact track alignment.

Avoid damage to hydraulic components. Use care around tension cylinder connections and hydraulic lines.



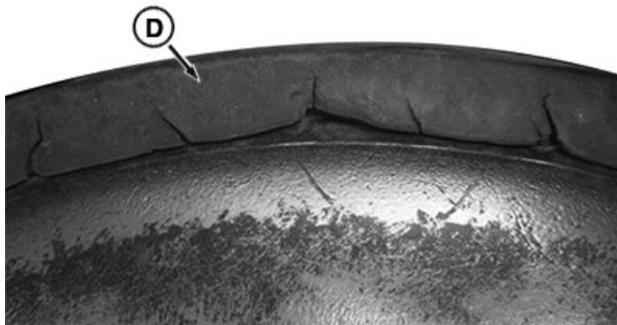
Wide Track

RXA0147242—UN—11FEB15



Narrow Track

RXA0148370—UN—12JUN15



RXA0158389—UN—17MAR17

Check rubber coating for chunking, chipping, or cracking on idler (A) and mid-rollers (B). Wheels typically see rubber wear at edges. Significant edge wear (D) may be evident, but wheel will still perform as intended.

Typical wear patterns in the rubber are numerous small nicks and chunks, some small sections with rubber loss, and slight amount of rubber separation at edges.

Check rubberized wheels for embedded rocks, nails, or other sharp objects. Remove if found. Embedded objects can cause internal damage to track if left in place.

Check wheel bolts for signs of being loose. Wheels are subjected to very high track tension loads and bolts can become loose if not correctly tightened, see Mid-Roller

and Drive and Idler Wheel Fasteners in Service—Tighten section of this Operator's manual.

Inspect and remove any material build up on face of drive wheel (C). remove any material in pockets and between drive bars. Remove excessive material within undercarriage frame.

Inspect idlers and mid-rollers for operational problems. It is normal to see some edge wear on idlers or mid-rollers during service. Replace wheels when:

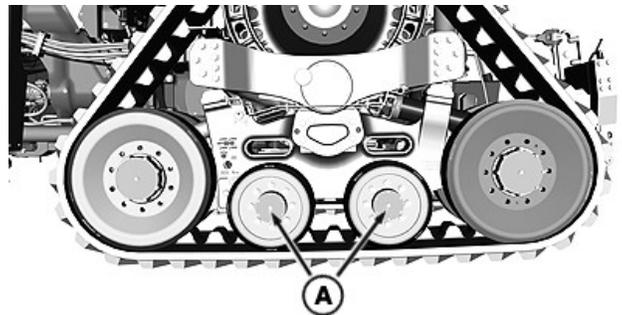
- More than 1/3 of the coating is missing all the way around wheel.
- Any area where coating loss extends across entire wheel width.
- Lack of coating thickness causes dirt build-up on wheel outer surface to begin.
- Any flat spots are visible which may indicate wheel has stopped turning.

KT81203.0000969-19-22APR21

## Mid-Rollers and Idler Wheel Hub Oil Level

### Mid Rollers

1. Park tractor on level surface.
2. Shut off tractor and put transmission into PARK.

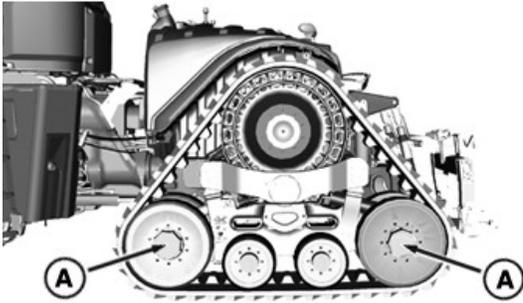


RXA0147253—UN—13FEB15

3. Remove oil fill plug (A) on each mid-roller on front and rear axles.
4. Check oil levels.
5. If oil level is below bottom of a plug hole, fill to bottom of plug hole with John Deere Hy-Gard oil or equivalent, see Transmission and Hydraulic Oil in Other Lubricants section of this Operator's Manual.
6. Reinstall plugs and tighten to 34 N·m (24 lb·ft) torque.
7. Repeat procedure on opposite side of tractor.

### Idler Wheel Hub

1. Park tractor on level surface.
2. Shut off tractor and put transmission into PARK.

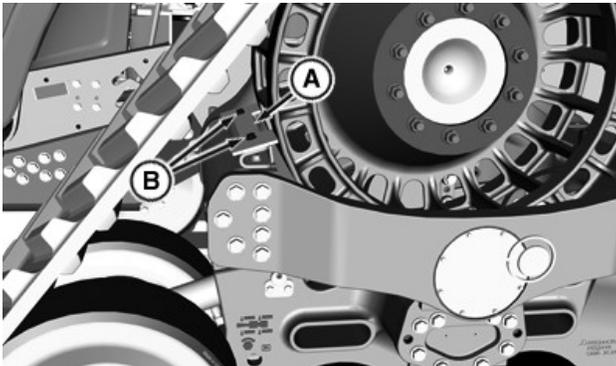


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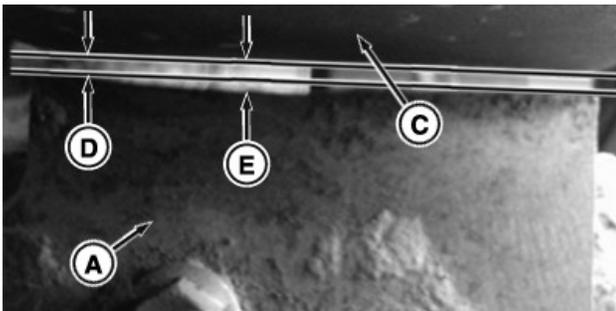
3. Remove oil fill plug (A) on each idler wheel hub on front and rear axles.
4. Check oil levels.
5. If oil level is below bottom of a plug hole, fill to bottom of plug hole with John Deere Hy-Gard oil or equivalent, see Transmission and Hydraulic Oil in Other Lubricants section of this Operator's Manual.
6. Reinstall plugs and tighten to 34 N·m (24 lb·ft) torque.
7. Repeat procedure on opposite side of tractor.

SV81855,0000371-19-11JUL22

### Drive Wheel Scraper Clearance



RXA0147612—UN—12MAR15



RXA0151763—UN—05APR16

Each drive wheel (C) has a scraper (A) to remove debris from drive wheel and prevent damage to inner track components and drive lugs.

1. Measure clearance between scraper edge and drive

wheel face. Minimum clearance is 3 mm (1/8 in) (D) and maximum clearance is 5 mm (3/16 in) (E).

To adjust scraper:

2. Loosen cap screws (B).
3. Position scraper 3 mm (1/8 in) from face of drive wheel and proceed to step 7. If any part of scraper edge exceeds 5 mm (3/16 in) clearance, proceed to step 4.
4. Remove cap screws.
5. Choose option for scraper service:
  - Grind scraper edge flat perpendicular to scraper side.
  - Flip scraper end-to-end.
  - Replace scraper.
6. Position scraper to 3 mm (1/8 in) of clearance.
7. Tighten cap screws to 120 N·m (88 lb·ft).

SV81855,00003A3-19-26OCT17

### Transmission PARK System

**⚠ CAUTION: Avoid physical injury, tractor damage, or property damage:**

- Verify that the tractor surroundings are clear of people before testing.
- If the transmission PARK system does not operate correctly, repair immediately. See your John Deere dealer.

1. Position the tractor on a 20—30% slope with the front of the tractor pointing down the slope.
2. Shift the transmission into PARK.
 

To verify the location of PARK on the transmission, see Shift Transmission in the appropriate Transmission section of this Operator's Manual.
3. If the tractor does not hold in a stationary position on an incline with the transmission in the PARK position, repair the transmission immediately. See your John Deere dealer.

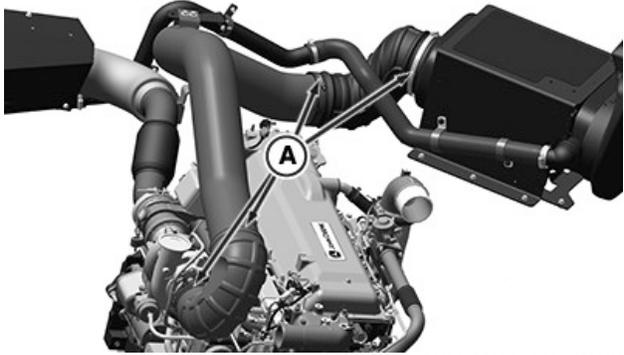
EC82310,0000BA6-19-25NOV19

### Engine Air Intake System

1. Open hood, see Open Hood in Service—General section of this Operator's Manual.
2. Remove front and rear engine side shield, see Remove Front Engine Side Shield and Remove Rear Engine Side Shield in Service—General Information section of this Operator's Manual.

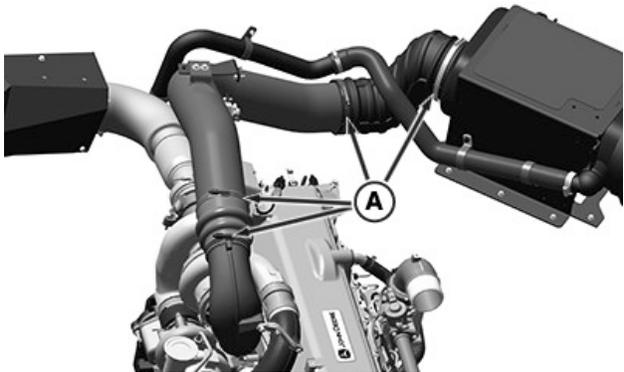
**IMPORTANT:** Operating engine with loose air intake clamps may allow dust entry into system and damage to engine.

*NOTE: Not all air intake clamps are shown, but all need to be checked and tightened.*



RXA0188966—UN—17MAY23

Single-Stage Turbo Engine



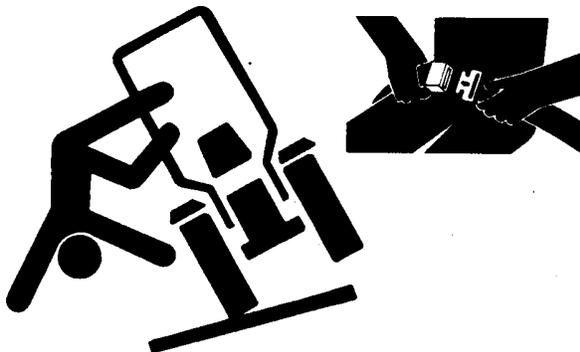
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Dual-Stage Turbo Engine

3. Check air intake system for loose clamps (A) or cap screws.
4. Tighten air intake system clamps to 10 N·m (7 lb·ft).

kd34109,1684165387485-19-30MAY23

## Seat Belts



TS205—UN—23AUG88

**CAUTION:** If seat belt system, including mounting hardware, buckle, belt, or retractor shows any sign of damage such as cuts, fraying, extreme or unusual wear, discoloration or abrasion, the entire seat belt system should be replaced immediately. Replace the belt system only with replacement parts approved for your machine.



RXA0174320—UN—28JAN20

Inspect seat belts (A) and mounting hardware. If seat belts need to be replaced, see your John Deere dealer.

TS36762,0000146-19-28JAN20

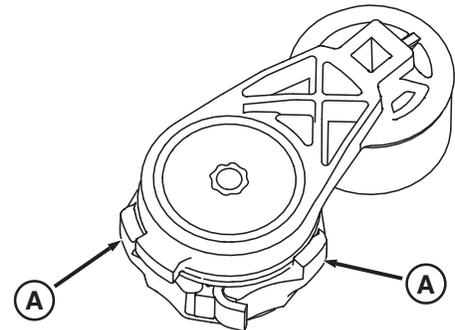
## Engine Auxiliary Drive Belt and Drive Belt Tensioner

*NOTE: Fan belt tensioner is only used on a Tier 2/Stage II or Tier 3/Stage IIIA engine.*

*Pulley or dust shield can be serviced separately from spring tensioner. Spring tensioner is serviced as an assembly.*

*For clarity, alternator and other components are not shown. Belt tensioner assembly remains on tractor during tests.*

1. Remove front engine side shields. See Remove Front Engine Side Shields in Service—General Information section of this Operator's Manual.



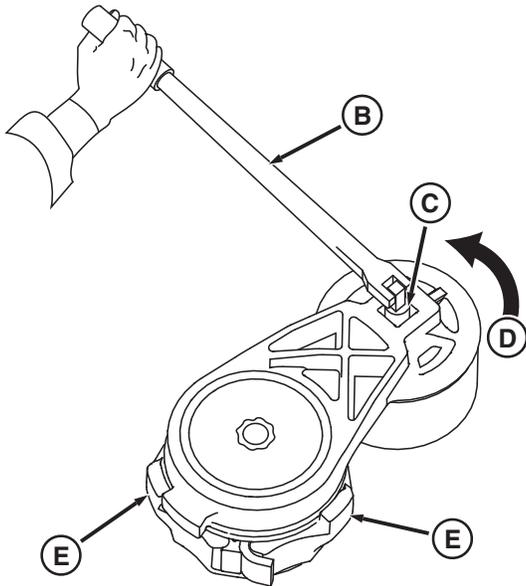
RXA0162898—UN—18APR18

2. Examine belt tensioner assembly. Replace tensioner if:

- A spring stop (A) is cracked or missing.
- Any part of tensioner assembly is cracked or broken.

If tensioner will not be replaced, go to step 3.

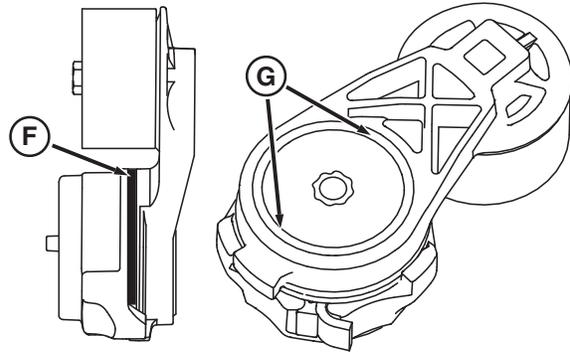
If tensioner must be replaced, replace, and then go to step 9.



RXA0162899—UN—18APR18

3. With belt installed, insert 1/2 inch drive ratchet or breaker bar (B) into the square hole (C) on belt tensioner arm.
4. Twist tensioner arm (D) to reduce tension on belt. Twist as far as tensioner allows.
5. If belt is against free arm stops (E) replace belt. See step 13 for belt service procedure locations. After replacing belt, go to step 5.
6. With belt tension released, examine belt tracking (wear) mark on pulley. If tracking mark is 6.4 mm (1/4 inch) or more wider than belt, replace tensioner assembly. If tensioner assembly will:
  - Not be replaced, go to step 7.
  - Be replaced, replace and then go to step 9.
7. Remove belt. See step 14 for belt service procedure locations.

**IMPORTANT: Do not pry between pulley and spring case.**



RXA0162900—UN—18APR18

8. Rotate tension arm slowly using 1/2 inch drive ratchet or breaker bar. Replace tensioner if:
  - Arm does not rotate smoothly between arm stops (E).
  - Metal to metal contact is present between arm and spring case (F) or arm and end cap (G).

If tensioner will not be replaced, go to step 9.

If tensioner must be replaced, replace, and then go to step 14.

9. If tensioner must be replaced, release tension on belt and remove belt (if not already done).
10. Remove tensioner pivot cap screw.
11. Replace tensioner assembly.
12. Apply thread lock and sealer Loctite 242 to pivot cap screw.
13. Install cap screw and tighten to 70 N·m (51 lb·ft) torque.
14. Install belt. Depending upon engine type, in Service—Change section of this Operator's Manual, see:
  - Fan Belt—Tier 2/Stage II or Tier 3/Stage IIIA Engine in this Operator's Manual section.
  - Engine Auxiliary Drive Belt

**CAUTION:** Never start engine without side shields installed and hood securely closed and latched.

15. Install front engine side shields.
16. Close and securely latch hood.

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## Engine Valve Clearance

*NOTE: To confirm which engine your tractor is equipped with, see Engine Serial Number in Identification Numbers section of this Operator's Manual.*

See your John Deere dealer.

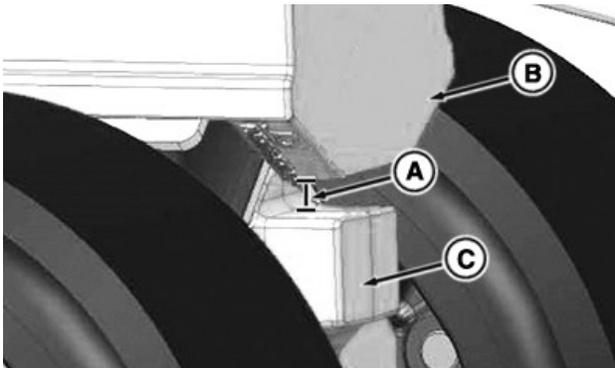
TS36762,0000148-19-14DEC16

### Suspension Mount Clearance (Narrow Track)

1. Remove implements.

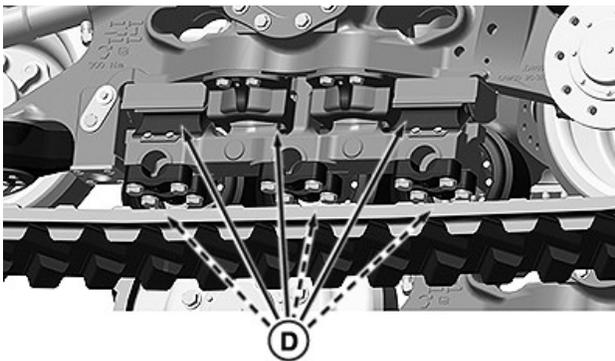
**CAUTION:** Dispose of chemicals in manner consistent with local regulations.

2. Drain contents of spray tanks.
3. Park tractor on level surface. Stop tractor and remove key.



RXA0156203—UN—15DEC16

4. Measure gap (A) between V-block vertical stop (B) and beam vertical stop (C) at front and rear on all four undercarriage units.



RXA0156204—UN—03OCT17

Midrollers removed for illustration purposes.

5. If either measured gap on an undercarriage unit is less than 6 mm (0.25 in.), replace all six suspension mounts (D) on that undercarriage unit. See your John Deere dealer.

TS36762,00002BB-19-11SEP17

### Front Driveshaft Health (FDH) Sensor System



RXA0162182—UN—15FEB18

FDH sensor system monitors front driveshaft for proper operation when rotating. If a problem occurs, sensor triggers a Stop Engine (A) or Service Alert (B) light, an audible warning, and causes a diagnostic code to be displayed on CommandCenter.

1. If Stop Engine warning occurs, stop tractor immediately in a safe location.
2. If Service Alert warning occurs, FDH system requires service and may be disabled. Service FDH system as soon as possible.
3. See your John Deere dealer to fully diagnose and repair problem indicated by code.

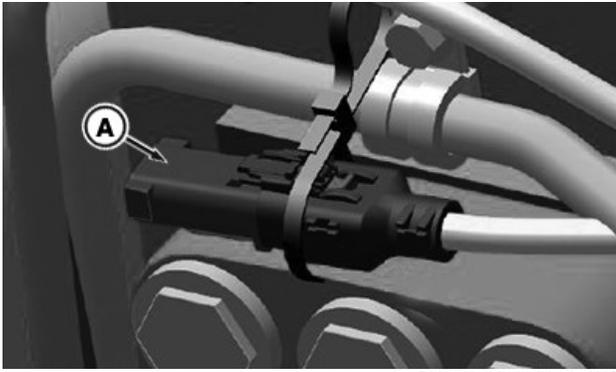
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### Drawbar Sensor Calibration [Scraper]

*NOTE: Tractors equipped with AutoLoad only.*

Calibration requires a drawbar sensor calibration plug. See your John Deere dealer.

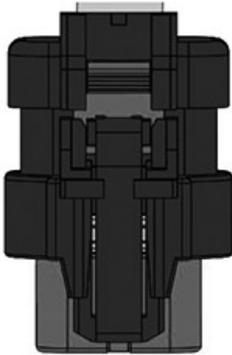
1. Fully load the scraper.
2. Raise the scraper above the ground level.
3. Stop the tractor.
4. Place transmission into PARK.
5. Turn off engine.



RXA0185235—UN—27AUG21

*Draft Sensor Harness Connection*

6. Remove the dust cover (A) from the draft sensor harness connection. The draft sensor harness connection is located to the left of the rear SCV stack.



RXA0185234—UN—27AUG21

*Draft Sensor Calibration Plug*

7. Install the draft sensor calibration plug into the draft sensor harness connection.
8. Start engine and run for a minimum of 15 seconds.
9. Turn off engine. Sensor calibration is complete.
10. Remove and store the draft sensor calibration plug.
11. Replace the dust cover.

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## Engine Brake

See your John Deere dealer.

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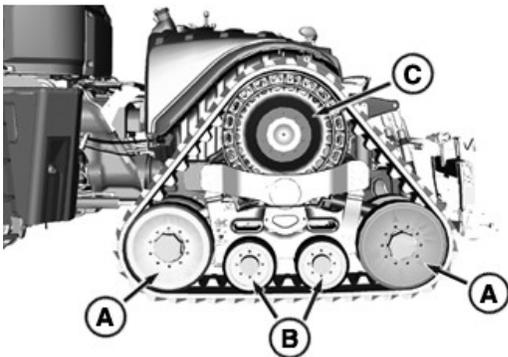
# Service—Tighten

## Mid-Roller, Drive, and Idler Wheel Fasteners

**IMPORTANT:** Avoid operating tractor in grease, oil, or other petroleum chemicals. Avoid spilling these materials on track and wheels during service.

If tractor is operated with loose cap screws, they may become worn and it may be necessary to replace them.

Retighten track cap screws after working 3 hours, and daily or every 10 hours during the first week of operation.



RXA0147242—UN—11FEB15

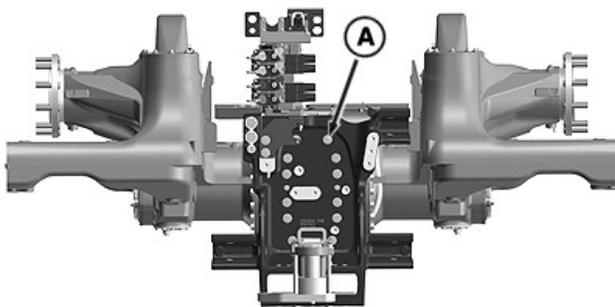
Inspect and tighten cap screws to specifications.

### Torque — Specification

Front Idler Wheel (A) . . . . .	1070 N·m (789 lb·ft)
Mid-Roller (B) . . . . .	450 N·m (332 lb·ft)
Mid-Roller (B) (Narrow) . . . . .	320 N·m (236 lb·ft)
Drive Wheel (C) . . . . .	490 N·m (361 lb·ft)

KT81203,0000968-19-02JUN22

## Drawbar Support Cap Screws



RXA0150415—UN—05NOV15

*Heavy-Duty Drawbar Support*

Inspect and tighten stabilizer cap screws and drawbar support cap screws (A) to 490 N·m (361 lb·ft).

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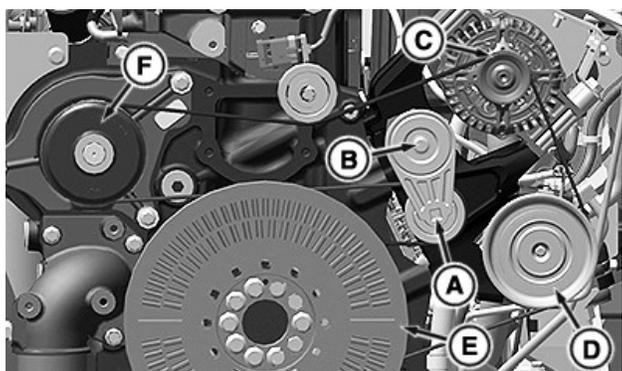
# Service—Change

## Engine Auxiliary Drive Belt

1. Remove front engine side shield, see Remove Front Engine Side Shield in Service - General section of this Operator's Manual.

**IMPORTANT: Keep tension off belt during removal.**

*NOTE: Removal and installation of fan belt requires an assistant.*



RXA0180387—UN—06NOV20  
1/2 in Drive Socket Wrench

2. Insert 1/2 in drive socket wrench into square hole (A) on tensioner arm (B).
3. Push down on wrench handle to relieve tension on drive belt.
4. Have assistant remove auxiliary belt from alternator pulley (C).
5. Remove belt from idler air conditioner pulley (D), crankshaft pulley (E), and water pump (F).
6. Discard old belt.
7. Install new belt to water pump, crankshaft pulley, idler then air conditioner pulley.
8. Install belt on alternator pulley.
9. Remove 1/2 in drive socket wrench and restore tension on new belt.
10. Install front engine side shield and close hood.

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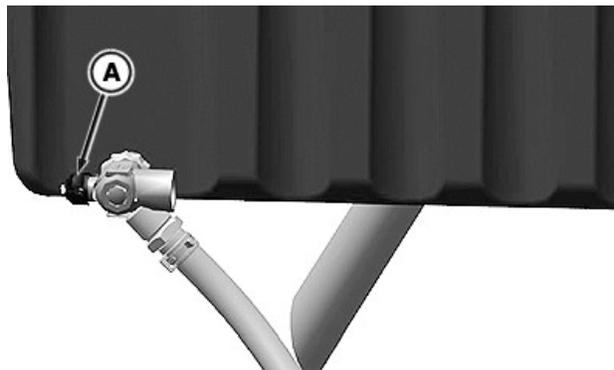
## Engine Oil and Filter

**IMPORTANT: Sulfur content should not exceed 0.10%. Sulfur content less than 0.10% is preferred. Refer to Fuel, Lubricants, and Coolant section for more information on oil change intervals.**

*NOTE: The initial break-in service interval of a new or rebuilt wet sleeve engine with Break-In Plus must go at least 100 hours to assure the surface mating of the rings and liners has had an opportunity to occur. The 100 hour minimum applies to all new or rebuilt engines. The maximum service interval is the same as the service interval recommendations listed in Engine Oil and Filter Service Intervals for your engine. To confirm which engine your tractor is equipped with, see Engine Serial Number in Identification Numbers section of this Operator's Manual.*

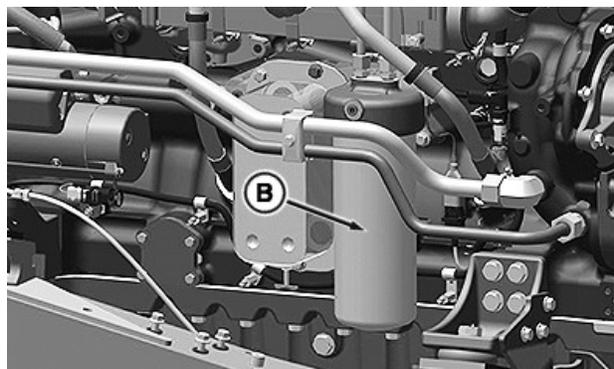
*For subsequent oil changes, see Engine Oil and Filter Service Intervals for your engine located in the Engine Oil section of this Operator's Manual.*

1. Operate engine approximately 5 minutes to warm oil.
2. Stop engine.



RXA0185138—UN—19AUG21

3. Turn crankcase drain fitting (A) to drain oil. Use enough containers for 75.7 L (20.0 gal) and direct flow with attached valve hose.
4. Tighten fitting after oil is completely drained.
5. Remove front engine side shield, see Remove Front Engine Side Shield in Service—General Information section of this Operator's Manual.



RXA0180469—UN—18NOV20

6. Remove filter (B) and remove old O-ring. Clean filter mounting surface with clean dry cloth.
7. Apply a thin film of oil to new O-ring and install new filter.

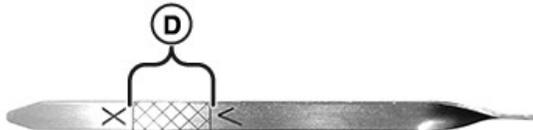
- Hand-tighten filter element, then turn filter element 1/2 - 3/4 turn after gasket contact. Filter wrench is required. Do not overtighten.



RXA0185248—UN—30AUG21

- Remove engine oil fill cap (C) and refill crankcase using fill tube. Use seasonal viscosity grade oil as specified in Engine Oil section of this Operator's Manual. For crankcase capacity, see Capacities in the Specifications section of this Operator's Manual.
- Start and run engine for a two minutes. Then stop engine and check for oil leaks.

**NOTE:** Engine oil level indicator is a dipstick with a "crosshatched" area with a "safe" zone. Anywhere in the dipstick crosshatched safe zone is considered FULL.



RXA0185140—UN—20AUG21

- Recheck oil level with dipstick to ensure that level is in crosshatched (D) "safe" zone area.
- Reinstall front engine side shield and close hood.

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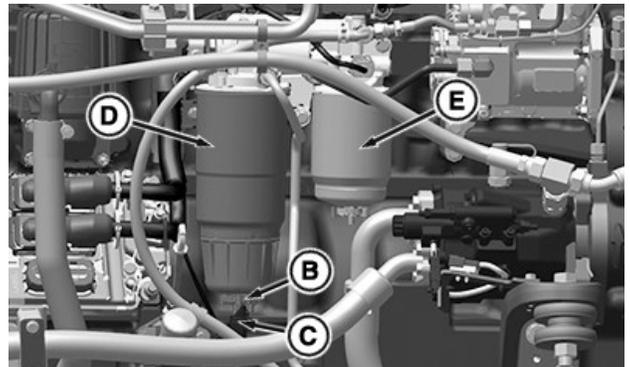
## Fuel Filters

- Remove engine access panel, see Remove Engine Access Panel in Service—General section of this Operator's Manual.

**IMPORTANT:** Replace fuel filter elements anytime audible alarm sounds and diagnostic trouble codes indicate plugged fuel filters (low fuel pressure). If no alarm sounds, replace filters after 500 hours operation.

- Thoroughly clean exterior of fuel filter/water separator assembly and surrounding area.

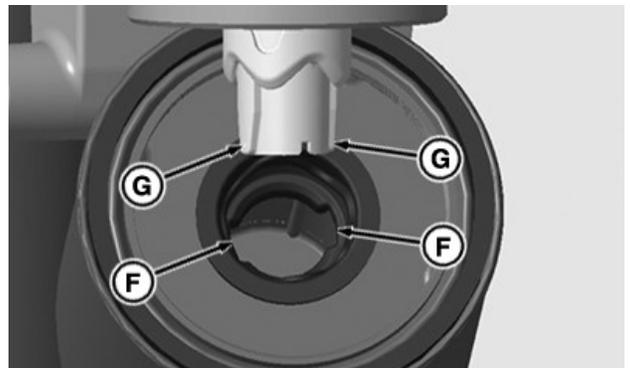
**NOTE:** It is recommended to install a 6 ft, 5/16 in fuel hose to the bottom of the fuel filters to aid with draining into a suitable container.



RXA0180430—UN—12NOV20

- Drain water and contaminants from primary filter into suitable container by opening drain valve (A) on bottom of separator.
- Dispose of drained material in accordance with local laws and ordinances.
- Disconnect the water-in-fuel sensor connector (B) from primary filter.
- Remove primary filter (C), secondary filter (D), and gaskets and discard.

**IMPORTANT:** DO NOT prefill either fuel filter with fuel.



RXA0185335—UN—08SEP21

- Lubricate gasket for primary fuel filter with fuel, and install canister onto base. Align fuel filter slots (F) on the fuel filter to the fuel filter header tabs (G) on the fuel filter header. Tighten 1/2 turn after packing contacts base.

8. Lubricate primary fuel filter water separator gasket with fuel and install onto filter canister. Tighten 1/2 of a full turn after gasket contacts the base.
9. Lubricate gasket for secondary fuel filter with fuel, and install filter onto base. Align fuel filter slots (F) on the fuel filter to the fuel filter header tabs (G) on the fuel filter header. Tighten 1/2 turn after packing contacts base.
10. Connect water-in-fuel separator sensor harness.
11. Install engine access panel.

**IMPORTANT: To provide time to prefill fuel filters, key must be in run position for a total of 3 minutes. Turn key to run position for 60 seconds, three times. The priming pump only stays on for 60 seconds every key cycle. Fuel system is self-bleeding.**

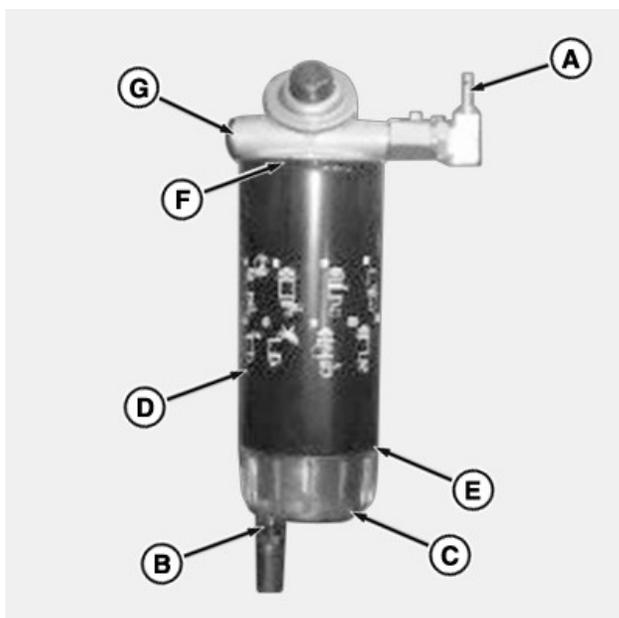
**Do not try to start engine until after 3 minute time elapses or an air lock in the fuel system may occur.**

12. Start engine and run high idle for 2 minutes.

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### Optional Fuel Water Separator Filter Element (If Equipped)

1. Park machine on a flat, level surface.
2. Lower equipment to ground.
3. Shut off engine.



RXA0168513—UN—03JUN19

Priming button cap may differ

4. Close fuel shutoff valve (A).

5. Thoroughly clean fuel filter assembly and surrounding area to prevent dirt and debris from entering the fuel system.

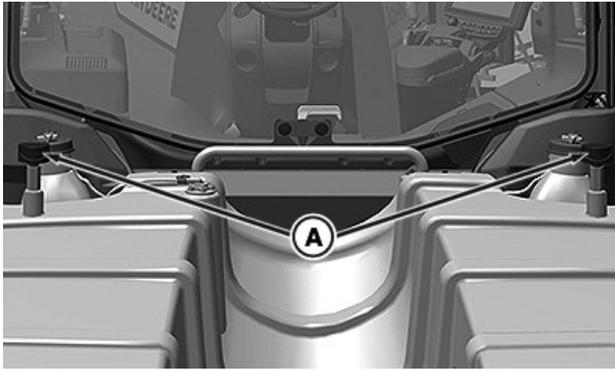
**CAUTION: Fuel in filter is under high pressure. Open drain valve on bottom of the fuel filter housing to relieve pressure before removing filter.**

*NOTE: Catch fluids with an approved container and dispose of according to employer and government guidelines.*

6. Connect a fuel drain line to the filter drain valve (B) on bottom of the filter housing.
7. Open filter drain valve.
8. Drain all fuel.
9. Close drain valve.
10. Remove and retain water separator bowl (C) from filter element.
11. Remove and discard filter element (D).
12. Clean water separator bowl with compressed air.
13. Inspect filter housing and filter canister sealing surfaces. Clean as required.
14. Place new seal (E) on the water separator bowl.
15. Lubricate seal with clean diesel fuel.
16. Install water separator bowl onto new filter element. Tighten water separator bowl 1/2 of a turn after seal contacts filter element.
17. Lubricate new filter element seal (F) with clean diesel fuel.
18. Install filter element assembly to the filter housing (G).
19. Tighten filter element 1/2—3/4 of a turn after seal contacts filter housing.
20. Open fuel shutoff valve.
21. Bleed fuel system. See Bleed Fuel System in the Service—General Information section of this Operator's Manual.

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## Fuel Tank Vent Filters



RXA0180431—UN—11NOV20  
The fuel tank vent filters (A) are at the front top of the left-hand and right-hand fuel tanks.

1. Clean the area around the fuel tank vent filter before removing it.
2. Remove and replace the tank vent filter.
3. Repeat the procedure for the remaining fuel tank vent filter.

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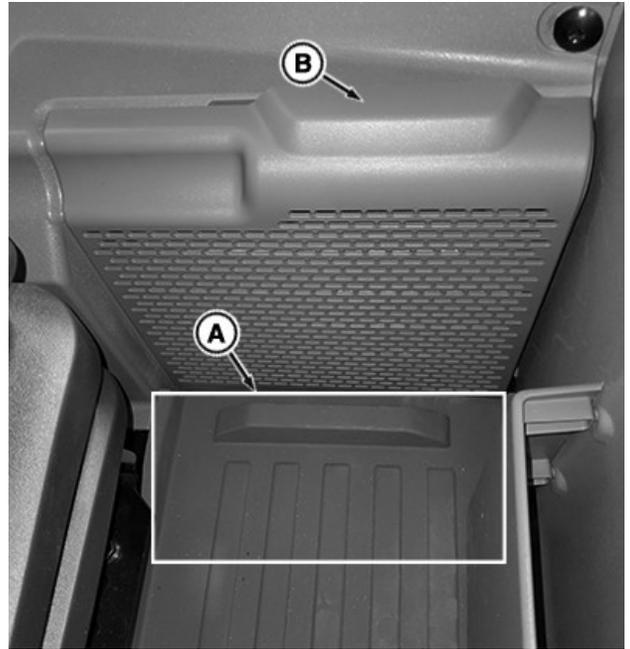
## Cab Filters

### Cab Recirculation Air Filter

**⚠ CAUTION:** Avoid personal injury. The cab recirculation air filter is not designed to filter out harmful chemicals. Before using agricultural chemicals, review and adhere to all cautions and instructions located in the:

- Implement Operator's Manual.
- Chemical Material Safety Data Sheets (MSDS).

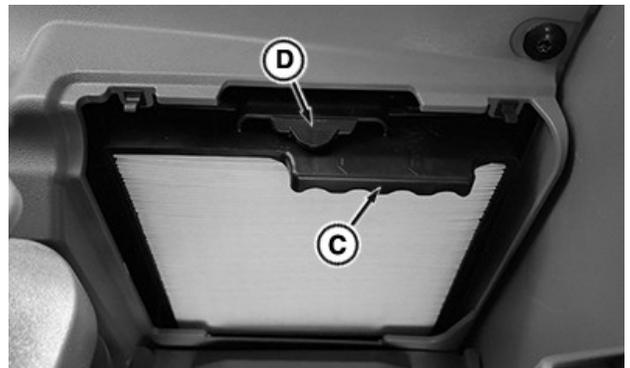
**IMPORTANT:** Avoid damage to the cab air recirculation system:



RXA0172354—UN—03DEC19

- The cab air recirculation system creates enough suction to pull lightweight material onto the cab recirculation air intake cover. Keep the area directly in front of the cab recirculation air intake (A) clear of lightweight material. Failure to do so can cause reduced HVAC performance.
- Replacement interval varies according to operating conditions. Normal service is 1000 hours or annually, whichever occurs first.

1. Switch off the HVAC fan.
2. Locate the cab recirculation air intake behind the operators seat on the lower left-hand side of the rear cab wall.
3. Remove the cab recirculation air intake cover by grasping handle (B) and pulling the intake cover forward and up.



RXA0172355—UN—19NOV19

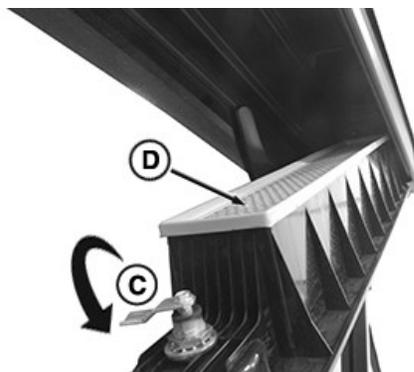
4. Remove the cab recirculation air filter by grasping the air filter handle (C) while pressing tab (D) and pull the air filter forward.
5. Insert a new cab recirculation air filter.

6. Replace the cab recirculation air intake cover.

### Cab Fresh Air Filter

**CAUTION:** Cab air filters are not designed to filter out harmful chemicals. Follow instructions in implement Operator's Manual and those given by chemical manufacturer when using agricultural chemicals.

**IMPORTANT:** Replacement interval can vary according to operating conditions. Normal service is 1000 hours or annually, whichever occurs first.



RXA0172403—UN—22NOV19

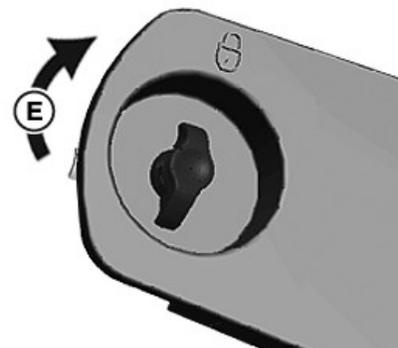
3. Swing down (C) cover.
4. Remove and discard old fresh air filter (D).
5. Wipe down inside and outside of filter cover with a clean cloth.
6. Install new filter.



RXA0099137—UN—19SEP08

1. Support cover (A).

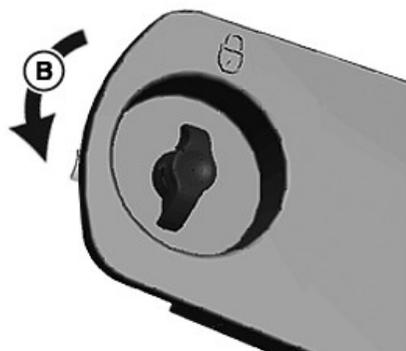
**NOTE:** Filter cover latch has three positions; open, latched, and locked. Cover is not locked when in latched position.



RXA0155035—UN—18OCT16

7. Close cover and turn knob fully clockwise (E) to securely lock latch.

TS36762,000014F-19-05MAY22



RXA0155037—UN—18OCT16

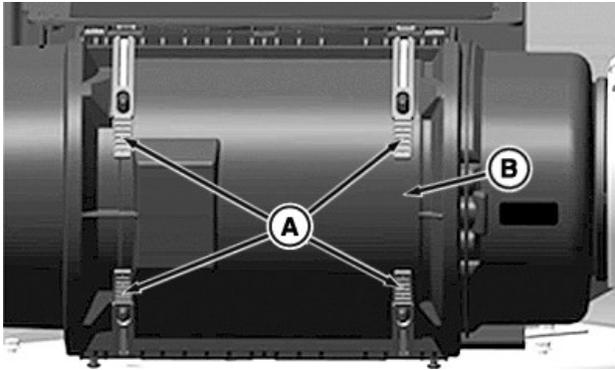
2. Turn knob fully counterclockwise (B) to unlatch cover.

### Engine Primary and Secondary Air Filters

**IMPORTANT:** When Engine Air Filter Restriction Warning is activated, engine performance is reduced. Service engine air filters immediately.

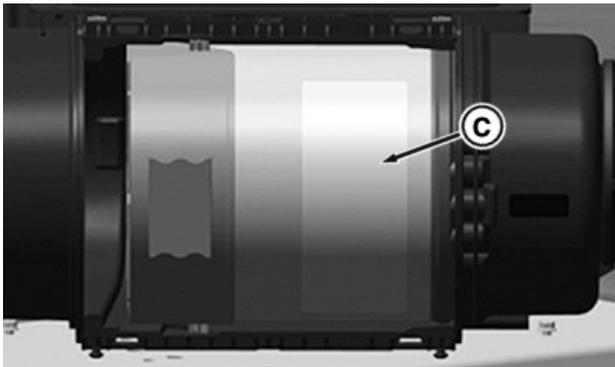
**Service interval may vary due to operating conditions. Replace secondary air filter every second primary air filter change.**

1. Inspect filters and intake seals. Replace filter if seal gap or damage is found.
2. Replace primary engine air filter if diagnostic trouble code remains on.



RXA0180370—UN—04NOV20

3. Unfasten straps (A) and remove air filter cover (B).



RXA0180371—UN—04NOV20

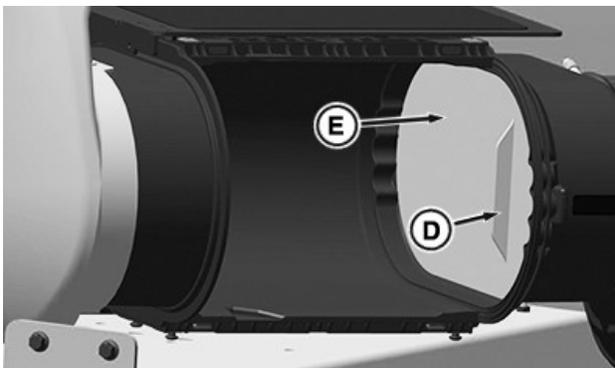
4. Remove primary filter (C) from filter housing.

**IMPORTANT: Do not attempt to clean engine air filters.**

5. Inspect filter for damage or waviness in pleats. Such conditions may indicate overuse or contact with water. Replace filter if problem is found.

**IMPORTANT: Replace secondary filter every other primary filter change.**

**Install new secondary filter immediately to prevent dust from entering air intake system.**



RXA0180372—UN—04NOV20

6. Pull on tab (D) to remove secondary filter (E).
7. Inspect filter for damage. Replace if necessary.

*NOTE: A very small amount of dust coating interior surface of filter housing is not unusual. If larger debris or significant amount of dust or dirt is found, check filters, filter housing, and air intake system for leaks.*



RXA0180373—UN—04NOV20

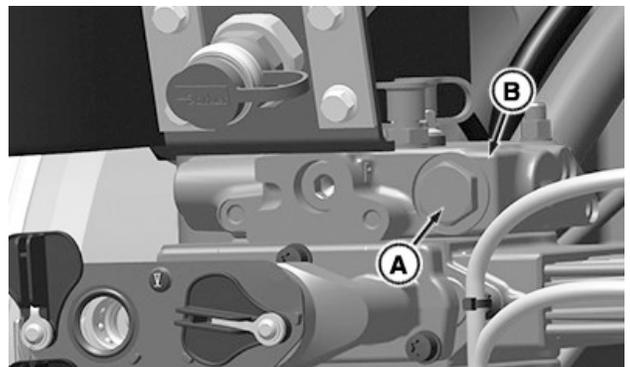
8. Clean debris and dirt from filter housing (F). Use cloth dampened with water.

**IMPORTANT: Incorrect installation of secondary filter tab may result in engine damage.**

9. Replace secondary air filter.
10. Push filter firmly back to properly seat in filter housing.
11. Install primary filter.
12. Install air filter cover and fasten cover straps.

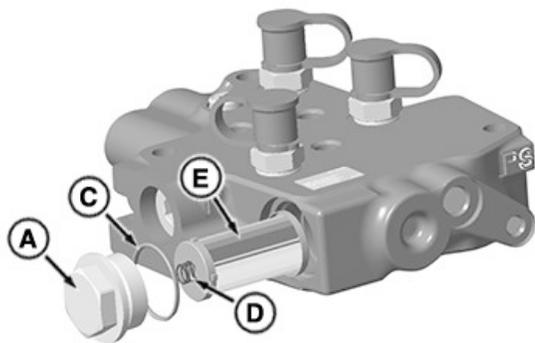
RX32825,0000667-19-03JUL23

## SCV Pilot Valve Filter



RXA0188366—UN—26OCT22

1. Use a socket to remove the 27mm hex plug (A) from SCV pilot filter housing (B).



RXA0188365—UN—26OCT22

2. Remove O-ring (C), spring (D), and SCV pilot filter (E).
3. Install new O-ring, SCV pilot filter, and spring.
4. Install hex plug and torque to 145 N·m (107 lb·ft).

TS36762,0000157-19-31JAN23



RXA0142031—UN—03JUN14

*The DEF tank vent filter (C) is in the battery compartment, above the DEF dosing unit.*

1. Open the battery compartment door. See Access Battery Compartment in the Service—General Information section of this Operator's Manual.
2. Remove and replace the DEF tank vent filter.

AK08008,000019D-19-21APR21

## Diesel Exhaust Fluid (DEF) Tank Vent Filter

**⚠ CAUTION:** Avoid possible personal injury. In case of DEF contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information. Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.

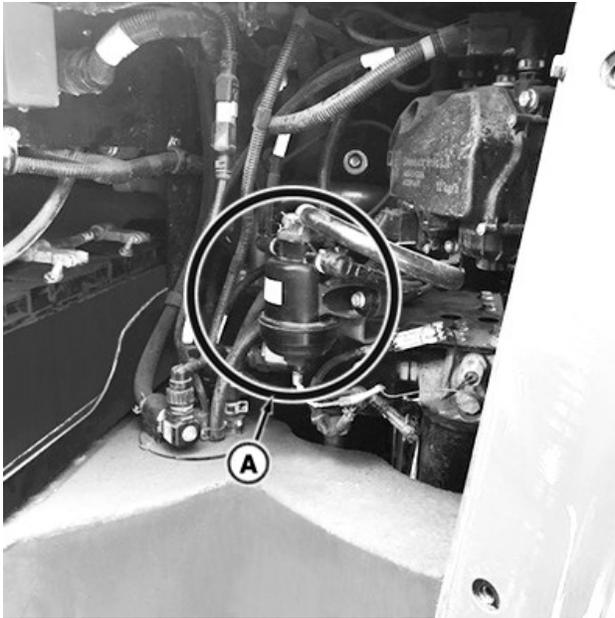
**IMPORTANT:** Avoid corrosion of vehicle parts or surfaces. If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components. Spilled DEF, if left to dry or if only wiped away with a cloth, will leave a white residue. Improperly cleaned DEF spill may interfere with diagnosis of Selective Catalytic Reduction (SCR) system leakage problems.

Replace the DEF tank vent filter every 1500 hours of operation.

## Access Diesel Exhaust Fluid (DEF) In-Line Filter

**IMPORTANT:** Avoid damage to the emissions system:

- Replace the in-line DEF filter every 3000 hours or every 3 years, whichever occurs first.
- Do not begin service on the DEF in-line filter until the light on the battery disconnect switch has gone out. See Battery Disconnect Switch in Engine Operation section of this Operator's Manual.



RXA0163952—UN—24JUL18

The DEF in-line filter (A) is inside the battery compartment.

1. Open the battery compartment door. See Access Battery Compartment in the Service—General Information section of this Operator's Manual.
2. To replace the DEF in-line filter, see Change Diesel Exhaust Fluid (DEF) In-Line Filter in this section of the Operator's Manual.

AK08008,00007DE-19-21APR21

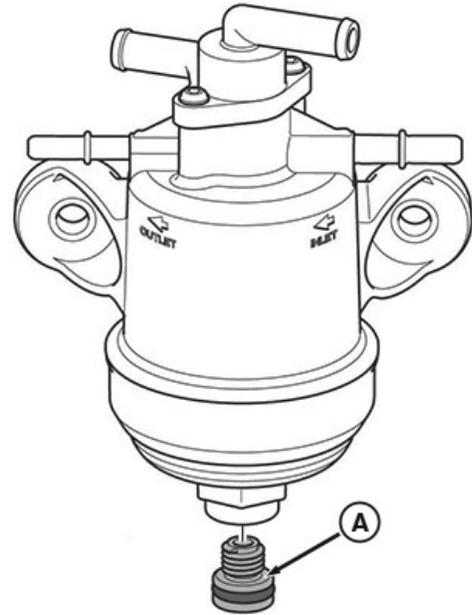
## Change Diesel Exhaust Fluid (DEF) In-Line Filter

**⚠ CAUTION:** Avoid possible personal injury. In case of DEF contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information. Do not ingest DEF. In the event DEF is ingested, contact a physician immediately. Reference the Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** Avoid corrosion of vehicle parts or surfaces. If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components. Spilled DEF, if left to dry or if only wiped away with a cloth, will leave a white residue. Improperly cleaned DEF spill may interfere with diagnosis of Selective Catalytic Reduction (SCR) system leakage problems.

**NOTE:** See your John Deere equipment technical manual or OEM manufacturer's technical manual for in-line DEF filter location.

**IMPORTANT:** Avoid system and filter damage. Ensure that DEF system is not frozen before changing filter. If system is frozen, operate engine until system has thawed completely.



RG30728—UN—08AUG18

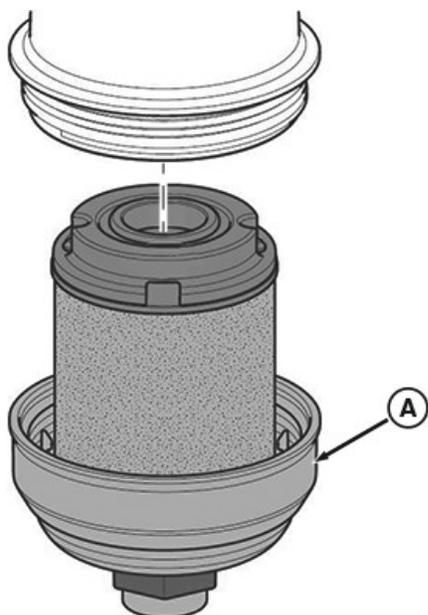
DEF Fluid Removal

A—Drain Plug with O-Ring

1. Remove drain plug with O-ring (A) and discard.

**NOTE:** Container must be DEF compatible and hold at least 300 mL (0.32 qt).

2. Drain DEF into a proper container.



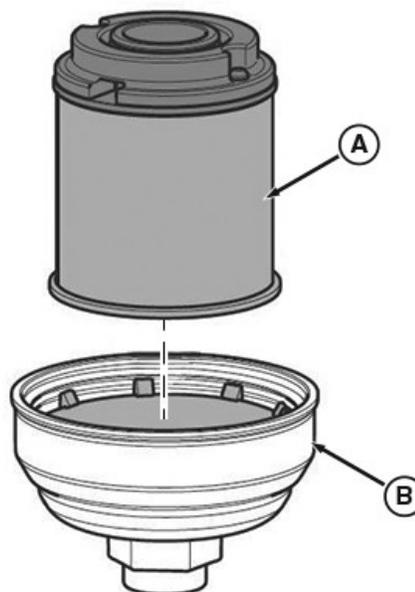
Filter Removal

RG30727—UN—08AUG18

- Remove and discard O-ring (A) and foam compensation element (B).

*NOTE: Filter housing should be cleaned with clean DEF before installing new components to remove any sediment debris or contamination.*

- Install new O-ring (A) and foam compensation element (B) into filter housing (C).

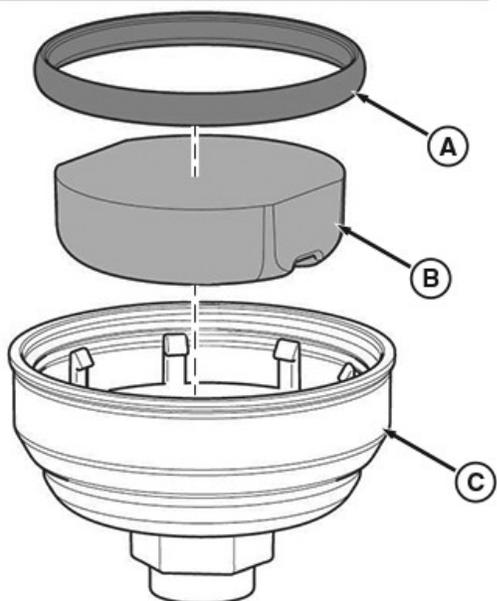


Filter Housing and Components Installation

RG30725—UN—08AUG18

- A—Filter
- B—Filter Housing

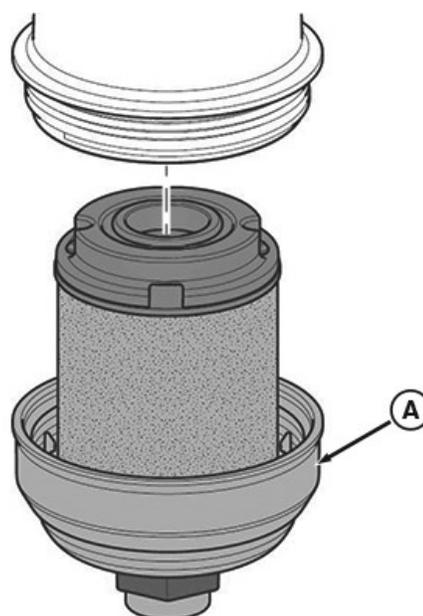
- Install new filter (A) into filter housing (B).



Filter Housing Components

RG30726—UN—08AUG18

- A—O-Ring
- B—Foam Compensation Element
- C—Filter Housing



In-Line DEF Filter Housing Installation

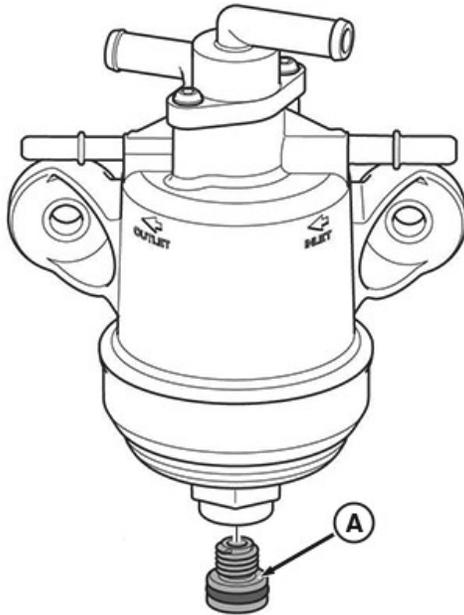
RG30727—UN—08AUG18

**A—Filter Housing**

8. Install filter housing (A) with O-ring, foam compensation element, and filter element.
9. Rotate filter housing (A) clockwise and tighten to specification.

**Specification**

In-Line DEF Filter Housing—Torque. . . . . 25 N·m  
(221 lb·in)



RG30728—UN—08AUG18  
In-Line DEF Filter Drain Plug

**A—Drain Plug with O-Ring**

10. Install new drain plug with O-ring (A). Tighten to specification.

**Specification**

In-Line DEF Filter Drain Plug—Torque. . . . . 4 N·m  
(35 lb·in)

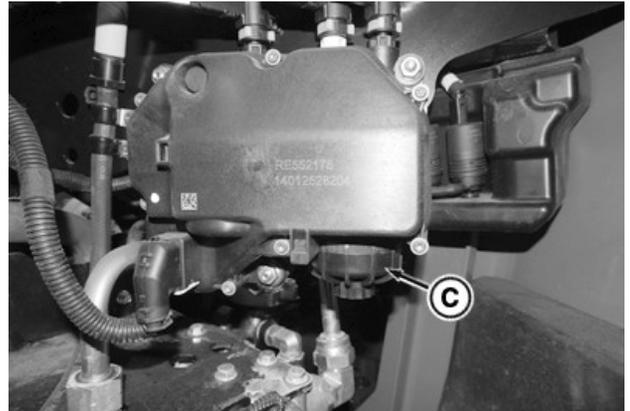
DX,DEF,CHANGE,INLINE,FILT-19-15APR20

**Access Diesel Exhaust Fluid (DEF) Dosing Unit Filter**

**IMPORTANT:** Avoid damage to the emissions system:

- Replace the DEF dosing unit filter every 1500 hours or every 3 years, whichever occurs first.
- Do not begin service on the DEF dosing unit filter until the light on the battery disconnect switch has gone out. See Battery Disconnect

**Switch in Engine Operation section of this Operator's Manual.**



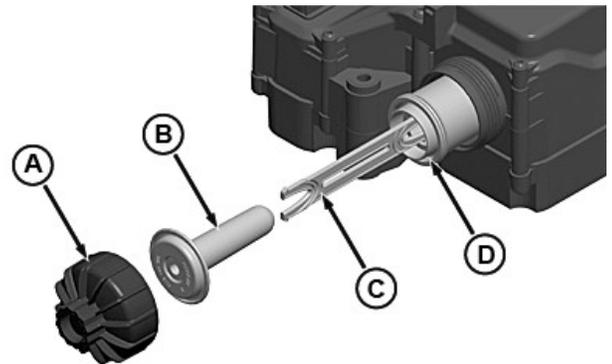
RXA0161214—UN—26OCT17

The DEF dosing unit filter (C) is in the battery compartment, at the bottom of the DEF dosing unit.

1. Open the battery compartment door. See Access Battery Compartment in the Service—General Information section of this Operator's Manual.
2. To replace the DEF dosing unit filter, see Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter in this section of the Operator's Manual.

AK08008,00007E2-19-21APR21

**Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter**



RG22534—UN—21MAR13

DEF Dosing Unit Filter

- A—DEF Dosing Unit Filter Cover
- B—DEF Dosing Unit Filter Equalizing Element
- C—DEF Dosing Unit Filter Tool (supplied with new filter)
- D—DEF Dosing Unit Filter

**CAUTION:** Avoid contact with eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. Reference the Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** If DEF is spilled or contacts any surface other than the storage tank, immediately clean the surface with clear water. DEF is corrosive to painted and unpainted metallic surfaces and can distort some plastic and rubber components.

Spilled DEF, if left to dry or if only wiped away with a cloth, leaves a white residue. Improperly cleaned DEF spill can interfere with diagnosis of Selective Catalytic Reduction (SCR) system leakage problems.

*NOTE:* See your John Deere equipment technical manual or OEM manufacturer's technical manual for DEF dosing unit filter location.

**IMPORTANT:** Avoid system and filter damage. Ensure that DEF system is not frozen before changing filter. If system is frozen, operate engine until system has thawed completely.

1. Remove DEF dosing unit filter cover (A).
2. Remove and discard DEF dosing unit filter equalizing element (B).

*NOTE:* DEF dosing unit filter tool (C) is supplied with replacement filter.

3. Insert "Black" end of DEF dosing unit filter tool (C) into DEF dosing unit filter (D) until CLICK is felt or heard indicating DEF dosing unit filter tool is fully engaged.

*NOTE:* A tool such as a screwdriver can be inserted into DEF dosing unit filter tool slot to assist removal.

4. Pull DEF dosing unit filter tool and DEF dosing unit filter from DEF dosing unit. Discard DEF dosing unit filter and DEF dosing unit filter tool.
5. Clean DEF dosing unit threads and mating surfaces with distilled water.
6. Lubricate DEF filter O-rings with clean DEF. Carefully insert DEF dosing unit filter into DEF dosing unit.
7. Install new DEF dosing unit filter equalizing element into DEF dosing unit filter.
8. Install DEF dosing unit filter cover and tighten to specification.

**Specification**

DEF Dosing Unit Filter Cover—Torque . . . . .	23 N·m (204 lb·in)
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DX,DEF,CHANGE,FILT-19-31OCT19

## Hydraulic System Oil and Filters

**IMPORTANT:** Prevent premature axle failure. Carefully follow drain and fill procedure.

*NOTE:* Recalibrate transmission only if transmission shift characteristics change after transmission oil and filter change, see Transmission Calibration in Service—General Information section of this Operator's Manual.

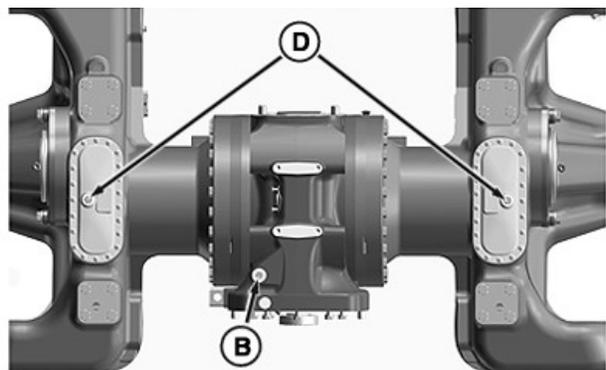
Maximum transmission/hydraulic oil reservoir/axles volume is 265.5 L (71.0 gal), depending on option configuration. Select appropriately sized containers for draining oil.

1. Park tractor on level ground, place transmission in PARK and shut off engine. Allow oil to cool for few minutes.



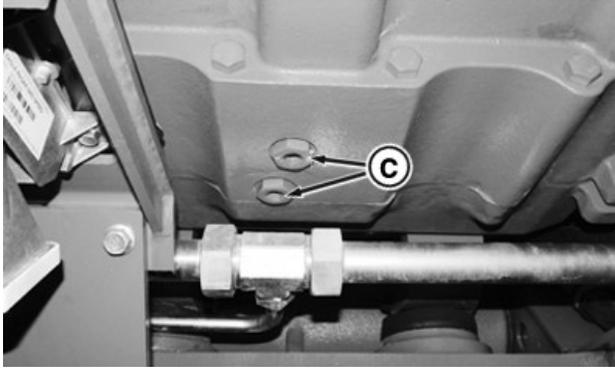
RXA0141856—UN—02JUN14

2. Remove hydraulic reservoir drain plug (A) in gudgeon area and direct oil into a catch oil container.



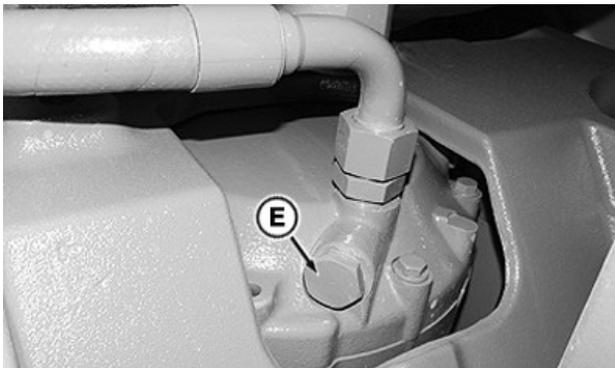
RXA0150421—UN—11NOV15

3. Remove axle plug (B) to drain oil.



RXA0142109—UN—06JUN14

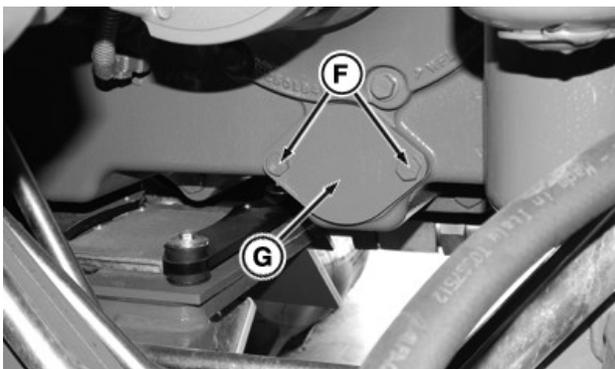
4. Remove two transmission plugs (C) to drain oil.
5. Remove final drive drain plugs (D) to drain oil



RXA0161062—UN—16OCT17

6. If PTO equipped, remove dropbox plug (E).
7. Reinstall reservoir drain plug.
8. Reinstall transmission drain plug and tighten to 70 N·m (52 lb·ft).
9. Reinstall all removed front and rear axle drain plugs. Tighten to 70 N·m (52 lb·ft).
10. If equipped, reinstall PTO dropbox drain plug and tighten to 70 N·m (52 lb·ft).

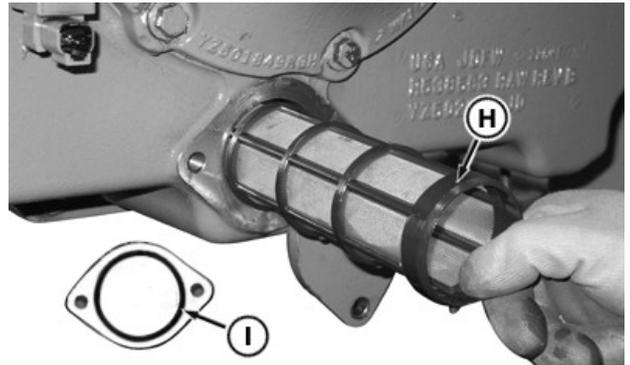
**NOTE:** Some parts in illustration have been removed to better show transmission suction screen.



RXA0161063—UN—16OCT17

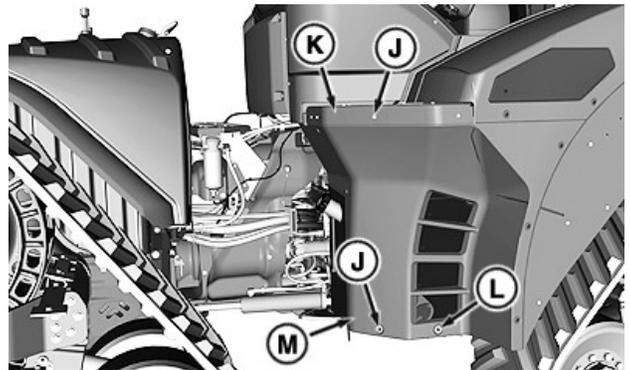
Transmission-Rear View

11. Remove suction screen cover cap screws (F) and remove cover (G) from rear of transmission.



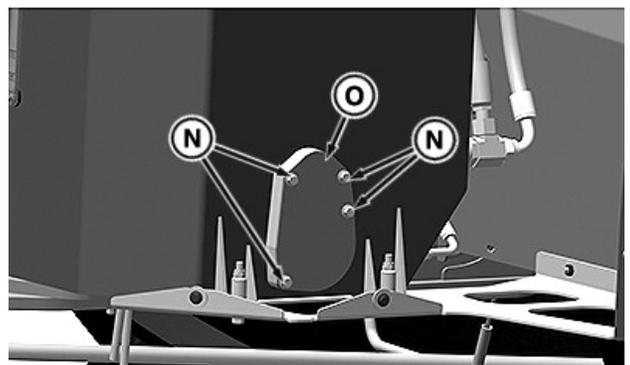
RXA0161064—UN—16OCT17

12. Remove suction screen (H) and clean with a solvent.
13. Remove and discard O-ring (I) on suction screen cover.
14. Inspect for debris in suction screen cavity using a flashlight or magnet.
15. Install new O-ring on cover.
16. Reinstall suction screen and cover. Tighten cap screws to 55 N·m (40 lb·ft).



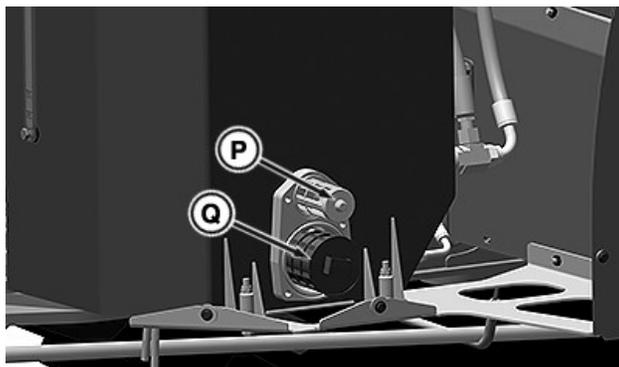
RXA0161268—UN—03NOV17

17. Remove platform cap screws (J) and remove platform step (K).
18. Remove panel cap screws (L) and remove lower shield panel (M).



RXA0185158—UN—26AUG21

19. Remove screen cover cap screws (N) and both screen covers (O).



RXA0185159—UN—26AUG21

20. Remove axle lube suction screen (P) and clean with a solvent.
21. Remove charge pump suction screen (Q) and clean with a solvent.
22. Reinstall suction screens and covers. Tighten cap screws to 79 N·m (58 lb·ft).
23. Reinstall lower panel and tighten cap screws to 37 N·m (27 lb·ft).
24. Reinstall platform and tighten cap screws to 73 N·m (54 lb·ft).

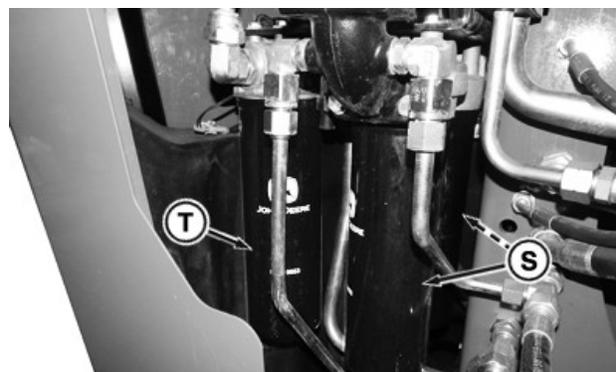
*NOTE: Approximately 1.9 L (2 qts) of oil is lost when changing filter. Size drain pan accordingly.*



RXA0161068—UN—16OCT17

25. Remove transmission oil filters (R), at right-hand rear of transmission.
26. Lubricate new filter O-rings with hydraulic oil and install filters. Tighten one-half turn after O-rings contact filter housing base.

**IMPORTANT: Replace hydraulic oil or axle oil filters every 1500 hours or when indicator illuminates.**



RXA0161070—UN—16OCT17

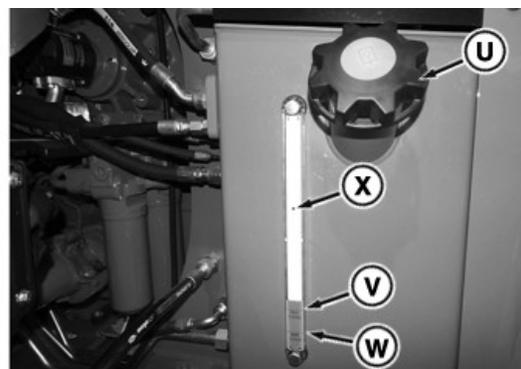
27. Remove hydraulic oil filters (S), on left-hand side of gudgeon.
28. Replace axle oil filter (T), located next to hydraulic oil filters (S).
29. Lubricate hydraulic oil and axle oil filter O-rings with hydraulic oil and install on tractor. Tighten one half turn after O-ring contacts filter housing base.

*NOTE: Hydraulic oil reservoir does not hold all system hydraulic oil. Transmission and front and rear axles also hold additional system oil.*

*If possible, check oil level prior to first start of day. Ambient temperature should be 7°C. (45°F) or above. Oil level in the reservoir fluctuates depending upon the volume of oil exchanged with an attached implement.*

*For applications or implements requiring high volumes of oil transfer (for example - large air seeders or pulling three scrapers), hydraulic reservoir can be filled up to High Volume Takeout Oil Mark 58.5 L (15.4 gal) above MIN COLD.*

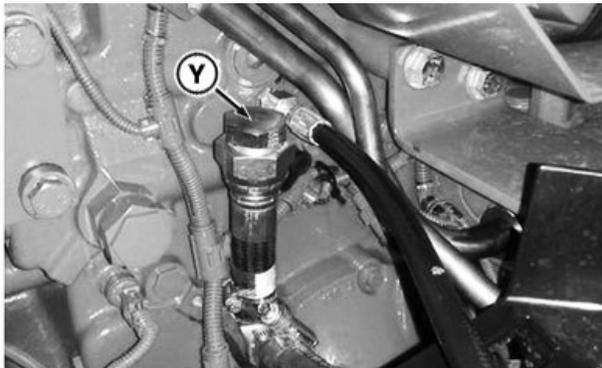
*NOTE: For Transmission-Hydraulic Oil System Capacities (with Filters), see Capacities in Specifications section of this Operator's Manual.*



RXA0161071—UN—16OCT17

30. Remove hydraulic oil reservoir fill cap (U) and add hydraulic oil to the reservoir.
31. Reinstall and tighten hydraulic reservoir fill cap.

**IMPORTANT:** Fill transmission with prescribed quantity of oil to ensure lubrication of transmission lube pump at startup.



RXA0161072—UN—16OCT17

32. Prefill transmission with 37.9 L (10.0 gal) of transmission-hydraulic oil at fill tube (Y). See Transmission and Hydraulic Oil in Other Lubricants section of this Operator's Manual.

**IMPORTANT:** Do not depress brake pedal during this step. If brake pedal is depressed, additional oil flows to axles and result in an inaccurate oil level check.

33. Place transmission in PARK.

- a. Start Engine
- b. Run engine at 1200 rpm for 5 minutes.

34. Shut engine OFF and wait 5 minutes for oil level to stabilize.

*NOTE: Confirm that oil level does not fall too low if tractor is to be used with implements with large hydraulic cylinders that remove large volumes of oil from the hydraulic system. Place implement in position that requires maximum amount of oil. Oil level should be near High Volume Takeout Oil Mark position on sight gauge.*

35. Check to ensure transmission-hydraulic reservoir oil level is visible between Min Cold and Full Cold marks in the sight gauge. If oil level is visible between Min Cold and Full Cold, tractor can be used for normal operation. Oil level in reservoir rises as temperature increases. Replace the transmission-hydraulic oil reservoir vent filter, see Transmission-Hydraulic Vent Filter in this Operator's Manual section.

*NOTE: Volume capacity between Min Cold mark and Full Cold mark is 11.4 L (3 gal).*

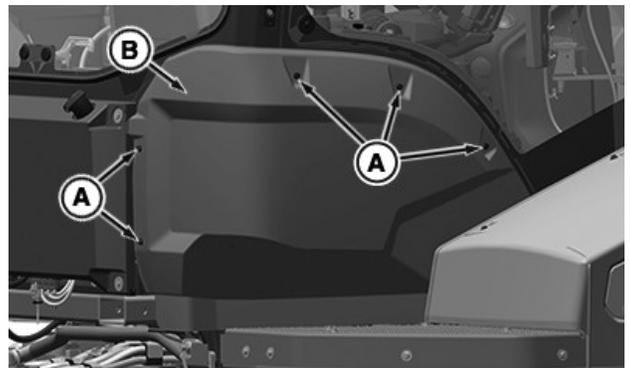
36. If oil level is below Min Cold is sight gauge, add oil through reservoir cap.

**IMPORTANT:** Excess hydraulic oil can result in decreased engine power and decrease fuel economy.

37. If oil level is above Full Cold mark, remove enough oil to bring it down to Full Cold mark level.

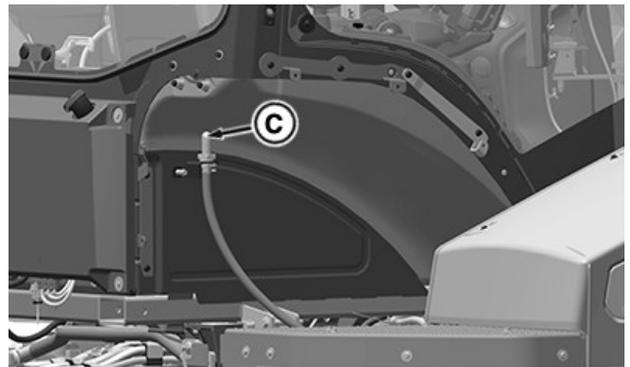
Remove drain plug under hydraulic oil reservoir and direct oil into a container.

### Transmission-Hydraulic Vent Filter



RXA0185252—UN—30AUG21

1. Remove right-hand rear cab panel retaining cap screws (A) and remove cab panel (B).



RXA0185253—UN—30AUG21

2. Release retaining hose clamps to remove vent filter (C) from hose.
3. Install new filter onto hose and secure with retaining hose clamps.

**IMPORTANT:** Do not over tighten retaining screws. Overtightening may result in damage to cab panels.

4. Reinstall cab panel and tighten retaining cap screws.

SV81855.0000370-19-07SEP21

### Engine Coolant

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

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

**IMPORTANT: READ ENTIRE PROCEDURE BEFORE BEGINNING.** Special tools and other products are required to complete the procedure.

Replace the thermostat, thermostat gasket, and de-aeration tank cap whenever the system is flushed.

See your John Deere dealer for recommendations on cleaning solutions.

*INITIAL change interval is 6 years or 6000 operating hours, provided cooling system is topped off using only John Deere Cool-Gard II and premix. SCHEDULED interval (2 years or 2000 operating hours) can be extended up to 6 years and 6000 operating hours, depending upon coolant being used. See Drain Intervals for Diesel Engine Coolant in Engine Coolant section of this Operator's Manual.*

*NOTE: When service is performed on cooling system, make sure to check coolant daily for the next three days of operation. The most effective way to check coolant level is when tractor engine is cool. If coolant is low, fill de-aeration tank to mark on tank.*

1. Park the tractor.
2. Turn the key switch to OFF.
3. Allow the radiator to cool.
4. Open the hood. See Open Hood in the Service—General Information section of this Operator's Manual.
5. Remove the front and rear engine side shields. See Remove Front Engine Side Shield and Remove Rear Engine Side Shield in Service—General Information section of this Operator's Manual.

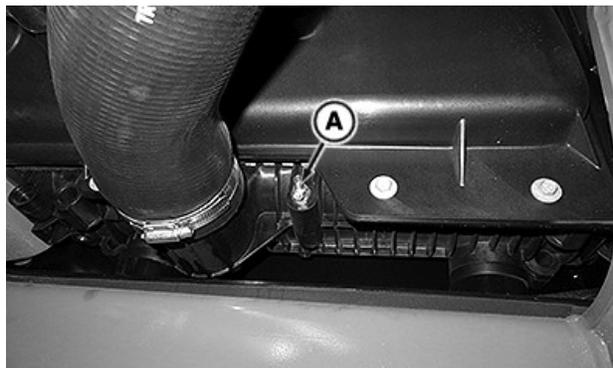
*NOTE: To ensure that the fluids in the heating and air conditioning system are drained, maintain these settings throughout the entire procedure:*

- Key switch in the RUN position.
- Temperature control set to the hottest setting.

6. Turn the key switch to RUN. See Key Switch in the Front Console section of this Operator's Manual.
7. Adjust the temperature control to the hottest setting. See CommandARM Climate, Radio, and Lighting Controls in the CommandARM Controls section of this Operator's Manual.
8. Remove the de-aeration tank cap.

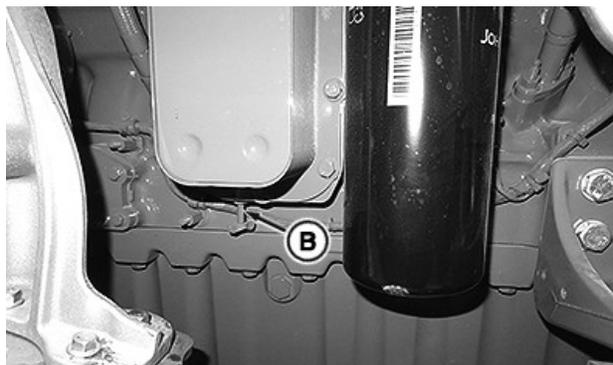
**CAUTION:** Explosive release of fluids from pressurized cooling system can cause serious burns.

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



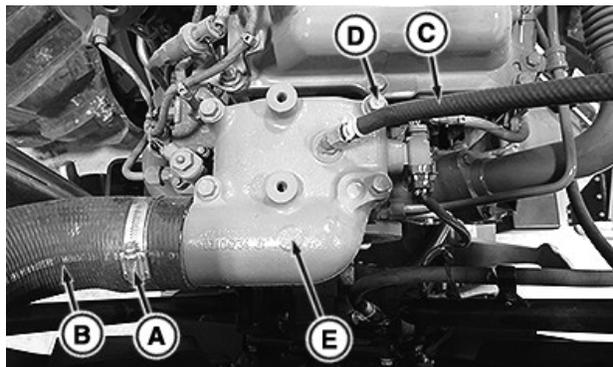
RXA0184960—UN—10AUG21

9. Place catch pan under radiator drain valve (A).
10. Open radiator drain valve and drain coolant into catch pan.
11. Place catch pan under engine drain valve.



RXA0184961—UN—10AUG21

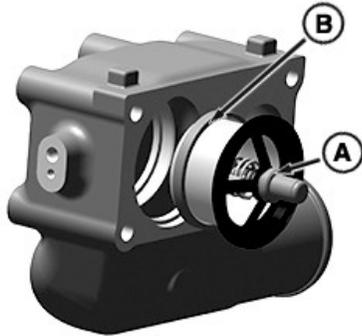
12. Open engine drain valve (B) and drain coolant into catch pan.
13. Allow radiator and engine to drain.



RXA0184962—UN—10AUG21

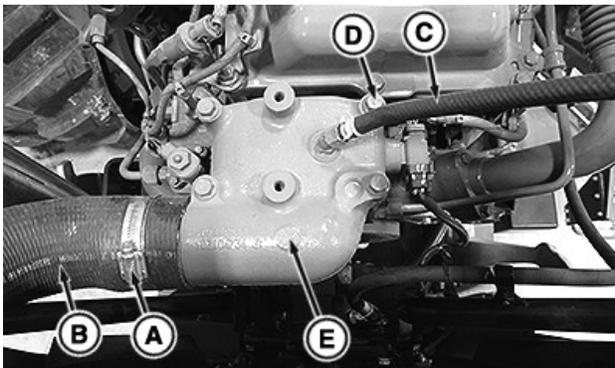
14. Remove clamp (A), radiator hose (B), and coolant return hose (C).

15. Remove cap screws (D) and thermostat housing (E).



RXA0184963—UN—10AUG21

16. Remove thermostat (A) and seal (B).
17. Install new thermostat and seal.



RXA0184962—UN—10AUG21

18. Install thermostat housing (E), cap screws (D). Tighten cap screws to 50 N·m (39 lb·ft)
19. Install coolant return hose (C), radiator hose (B), and clamp (A).
20. Close engine drain valve, and radiator drain valve.
21. Dispose of old coolant in accordance with local laws and ordinances.

**IMPORTANT: Never pour cold water or coolant into hot engine.**

*NOTE: See your John Deere dealer for recommendations on cleaning solutions.*

22. Fill high pressure coolant system at de-aeration tank with cooling system cleaning solution.
23. Install de-aeration cap and close hood.

**CAUTION: Make sure hood is closed before starting engine.**

24. Start engine and run at a minimum of 1500 rpm for 15 minutes.
25. Shut off engine and allow cleaning solution to cool.

26. Make sure that temperature control is turned to hottest setting, then turn key switch to Run position.

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

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

27. Open hood, remove de-aeration cap, put drain pans in place, then open radiator and engine drain valves.
28. Allow cooling system to completely drain.
29. Close engine drain valve, and radiator drain valve.
30. Dispose of cleaning solution in accordance with local laws and ordinances.
31. Fill high pressure coolant system at de-aeration tank with clean water.

**IMPORTANT: Never pour cold water or coolant into hot engine.**

32. Install de-aeration cap and close hood.

**CAUTION: Make sure hood is closed before starting engine.**

33. Start engine and run at a minimum of 1500 rpm for 15 minutes.
34. Shut off engine and allow water to cool.
35. Make sure that temperature control is turned to hottest setting, then turn key switch to Run position.

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

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

36. Open hood, remove de-aeration cap, put drain pans in place, then open radiator and engine drain valves.
37. Allow radiator to drain.
38. Close engine drain valve and radiator drain valve.
39. Dispose of drain clean water in accordance with local laws and ordinances.
40. Fill high pressure coolant system at de-aeration tank with new coolant solution. For cooling system capacity, see Capacities in Specifications section of this Operator's Manual.

 **CAUTION: Make sure hood is closed before starting engine.**

**IMPORTANT: Never pour cold water or coolant into hot engine.**

*NOTE: Coolant may seep out of the de-aeration tank overflow vent as air is purged from the coolant system.*

*Level may change when tractor is running or during the next few cycles.*

*It is highly recommended the cooling system is checked for leaks after draining, flushing and refilling to ensure tractor performance. Consult your John Deere Dealer for procedure and appropriate tools.*

41. Install de-aeration cap, Install engine side shields, close hood, start engine, and run for a minimum of 1500 rpm for 15 minutes.

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## Engine Crankshaft Damper

See your John Deere dealer.

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## Front Drive Shaft U-Joints

See your John Deere dealer.

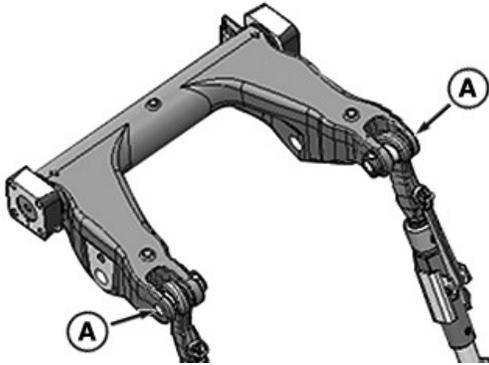
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KD34109,0000312-19-28MAR17

# Service—Lubricate

## Heavy Duty Lift Link Pins (Optional)

**IMPORTANT:** Prevent damage to hitch pins. Grease daily when hitch is in use.



RXA0158577—UN—29MAR17

Lubricate hitch lift link pins (A). Use John Deere SD Polyurea grease or equivalent. See Grease in Other Lubricants section of this Operator's Manual.

RX32825,0000638-19-13JUL17

specified in Fuel, Lubricants and Coolant section of this Operator's Manual.

TS36762,0000352-19-30AUG21

## Steering Pins

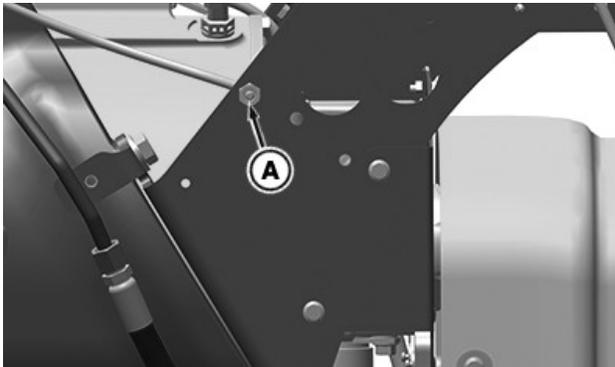
**CAUTION:** Place tractor in PARK and remove key before working in hinge area.



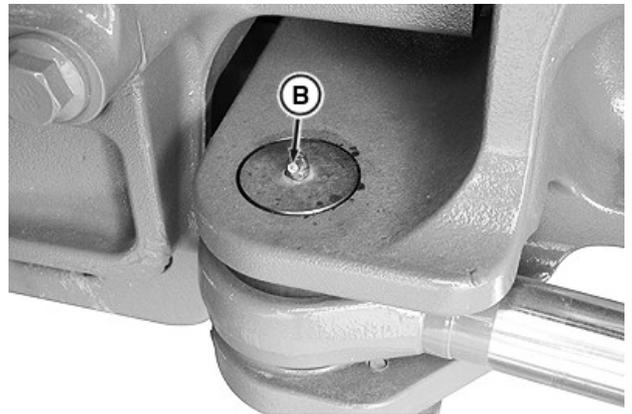
RXA0141971—UN—02JUN14

## Hinge Pins

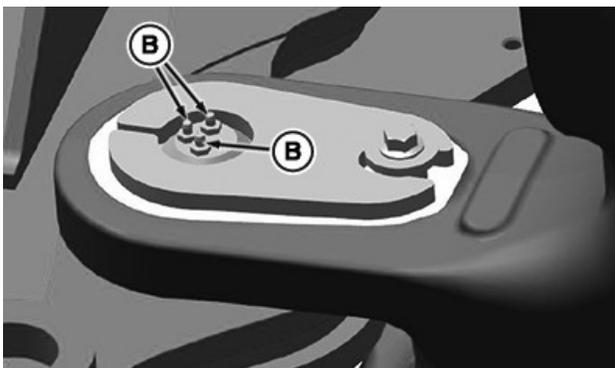
**CAUTION:** Place tractor in PARK and remove key before working in hinge area.



RXA0162410—UN—06MAR18



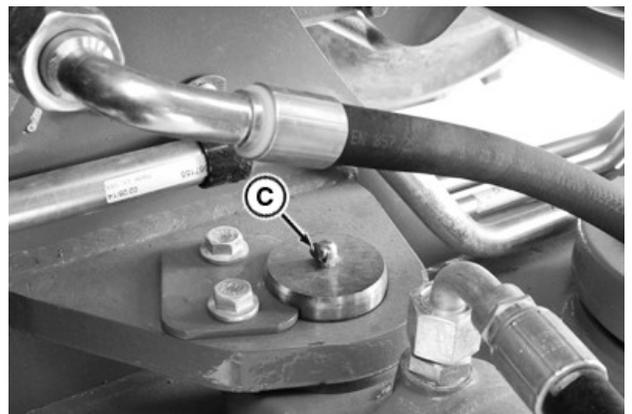
RXA0141972—UN—02JUN14



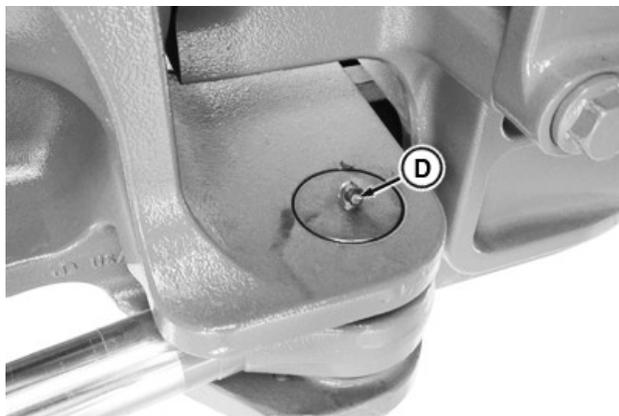
RXA0185249—UN—30AUG21

Lubricate upper (A) and lower hinge pins (B).

Use John Deere SD Polyurea grease or other grease as



RXA0141973—UN—02JUN14



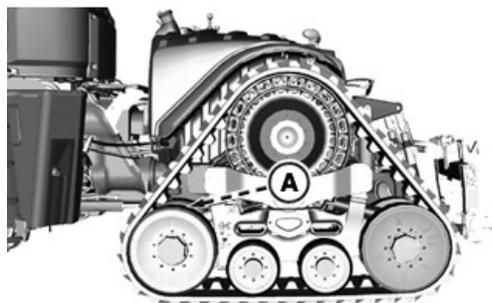
RXA0141974—UN—02JUN14

Lubricate right-hand front (A) and rear (B), left-hand front (C) and rear (D) steering pin bushings.

Use John Deere SD Polyurea grease or other grease as specified in Grease in Other Lubricants section of this Operator's Manual.

RX32825.000063A-19-13JUL17

## Track Tension Cylinder



RXA0147245—UN—11FEB15

Tension Cylinder Fittings



RXA0147246—UN—13FEB15

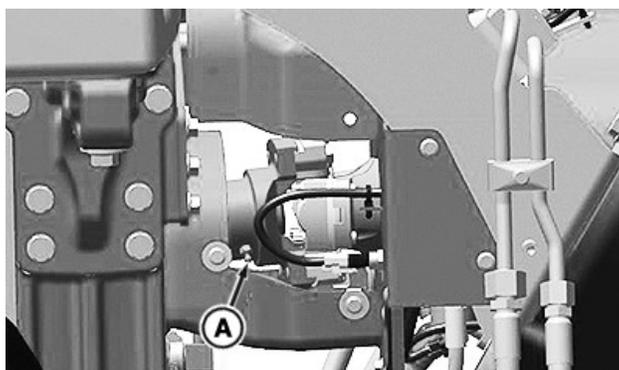
Lower Tension Cylinder Fitting

Apply several shots of grease to tension cylinder grease fittings (A) at each end of cylinder.

Use John Deere HD Grease. See Grease in Other Lubricants section of this Operator's Manual.

SV81855.0000368-19-26JUL17

## PTO Drive Shaft



RXA0185281—UN—31AUG21

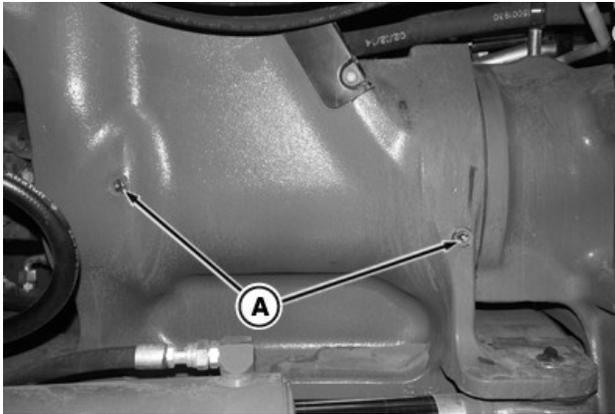
Lubricate rear PTO shaft fitting (A). Use John Deere SD Polyurea grease or other grease as specified in Grease in Other Lubricants section of this Operator's Manual.

RX32825.0000640-19-31AUG21

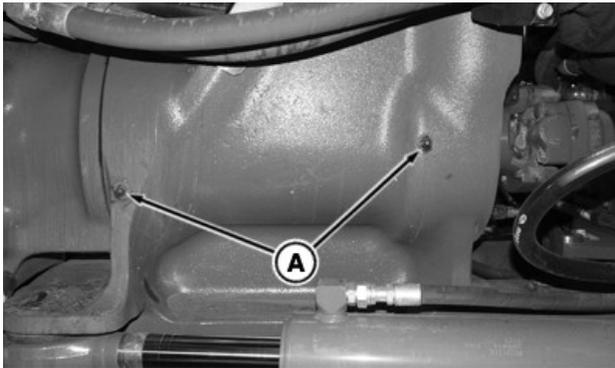
## Heavy-Duty Gudgeon Bearings

**IMPORTANT:** Over-lubrication of bearings may result in damage to bearings, seals, and drive shaft.

Use only hand pump grease gun. other grease gun types fill grease cavity too quickly and displace bearing seal. Grease then may bypass bearing, leaving it improperly lubricated.



RXA0142539—UN—16JUN14



RXA0142540—UN—16JUN14

Lubricate heavy-duty gudgeon tapered roller bearing fittings (A) on both left-hand and right-hand side and on top of gudgeon. Apply approximately 40 pumps of grease to each fitting.

Use John Deere SD Polyurea grease or other grease as specified in Grease in Other Lubricants section of this Operator's Manual.

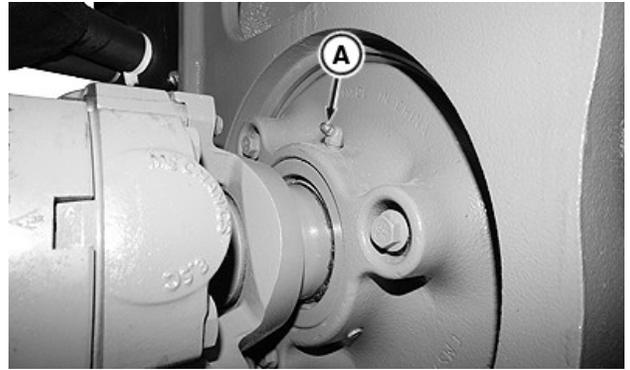
RX32825.0000641-19-03NOV22

## Lower Drive Line Bearings

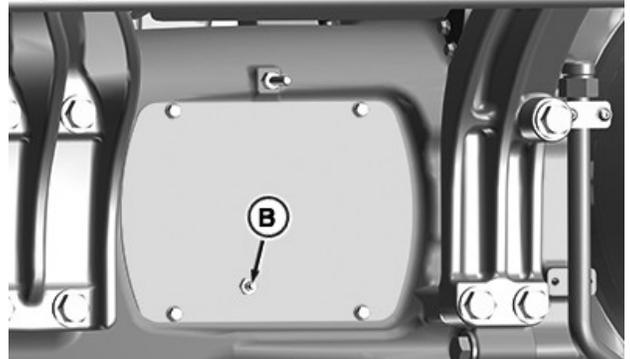
**IMPORTANT:** Normal lubrication is every 250 operating hours. If used in extremely wet conditions, lubricate daily or every 10 operating hours.

**IMPORTANT:** Avoid drivetrain damage. Operate tractor at low speeds (below 10 mph (16 km/h)) for first 6 hours.

**IMPORTANT:** Use only hand pump grease gun. Other types of grease guns fill the grease cavity at greater speed. This can push retention seal out of position, allowing grease to enter gudgeon center cavity and leaving bearing improperly lubricated.



RXA0141923—UN—02JUN14



RXA0161215—UN—26OCT17

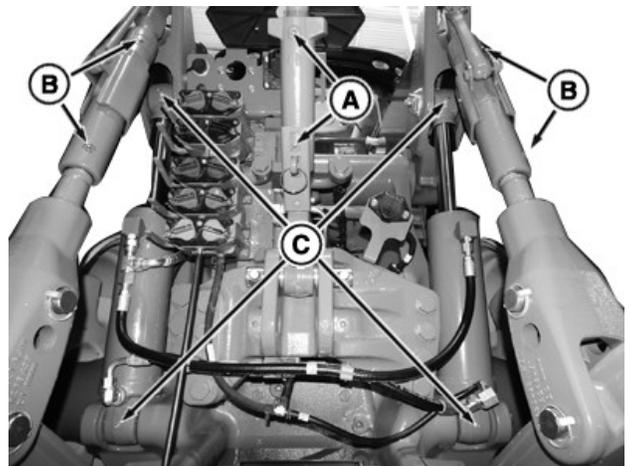
Lubricate front (A) and rear (B, if equipped) lower drive line bearing lubrication fittings.

Use John Deere SD Polyurea grease or other grease as specified in Grease in Other Lubricants section of this Operator's Manual.

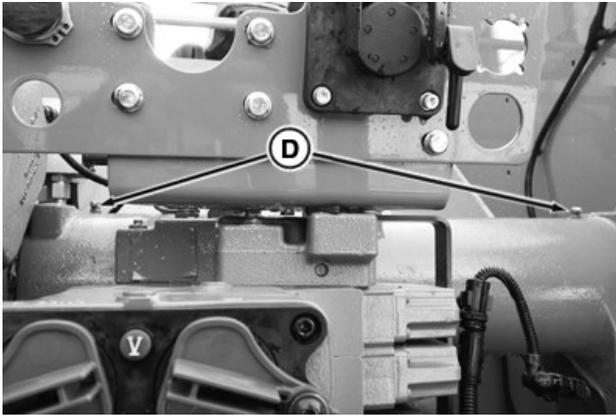
RX32825.0000642-19-16FEB18

## Rear Hitch

**IMPORTANT:** Normal service is every 250 hours. If used daily, service every 50 hours.



RXA0150422—UN—11NOV15



RXA0150423—UN—11NOV15

Lubricate center link (A), lift link (B), lift cylinders (C), and rockshaft (D) hitch fittings.

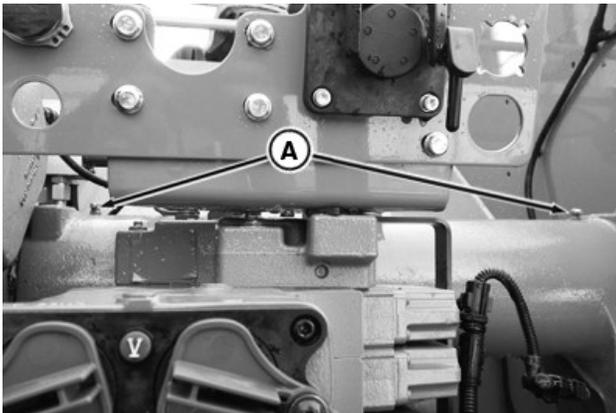
Use John Deere SD Polyurea grease or equivalent. See Grease in Other Lubricants section of this Operator's Manual.

RX32825,0000643-19-08NOV17

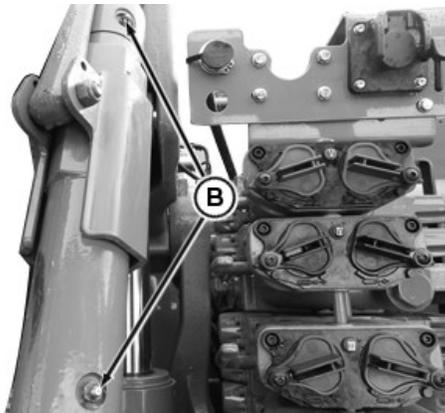
rockshaft fittings. See Grease in Other Lubricants section of this Operator's Manual for correct grease to use.

T084419,0000199-19-13JUL17

## Lift Cylinders and Rockshaft



RXA0141976—UN—02JUN14



RXA0141977—UN—20JUN14

*Rockshaft Assembly*

Lubricate lift cylinder pin fittings (B) on both sides of tractor. Lubricate left-hand (A) and right-hand side

# Service—Electrical

## Service—Electrical Overview

In addition to fuses and relays mounted in fuse panels (behind operator's seat), tractors are also equipped with solid state load centers located in two electronic control units.

These solid-state load centers replace fused relay circuits previously used. Their primary function is to control the majority of high current loads such as rear fender lights and horn. Load center circuitry monitors loads and voltages providing fast reaction time and ability to alert operator if a circuit overloads or if voltage is out of specification, i.e. open circuit (undercurrent) or short circuit (over-current).

If circuit is faulty and a diagnostic trouble code is generated, circuit will stay OFF and diagnostic trouble code will remain active until circuit is recycled by operator. If circuit or one of its components is turned back ON and problem is no longer present, system will function normally.

As an example, if a light circuit is determined to have an over-current condition, load center system will shut the circuit off. If operator turns light switch off and back on, and system senses zero amps when light controlled by the switch is off, system will turn system back on and normal operation will turn back on.

If total current load of load center exceeds a preset level, software will automatically shut down system, turning off one circuit at a time. Logic circuit will wait a few seconds between circuit shutdowns to determine if total controller current has fallen below preset level, or if additional circuits should be turned off.

Solid state circuits are rated for a fixed value. If additional electrical devices need to be added to tractor, it is recommend to use a power strip or convenience outlets in conjunction with an off/on switch. Splicing into a wire in the wrong location could cause circuit to overload and shut circuit down.

If extra implement lights and controls, such as switches are needed, contact your John Deere dealer. A dealer can provide information on correct method to tie in a light switch with one of accessory wires located in 7 pin terminal on back of tractor.

TS36762,000015E-19-25MAR21

## Welding Near Electronic Control Units



TS953—UN—15MAY90

**IMPORTANT: Do not jump-start engines with arc welding equipment. Currents and voltages are too high and may cause permanent damage.**

1. Disconnect the negative (-) battery cable(s).
2. Disconnect the positive (+) battery cable(s).
3. Connect the positive and negative cables together. Do not attach to vehicle frame.
4. Clear or move any wiring harness sections away from welding area.
5. Connect welder ground close to welding point and away from control units.
6. After welding, reverse Steps 1—5.

DX,WW,ECU02-19-14AUG09

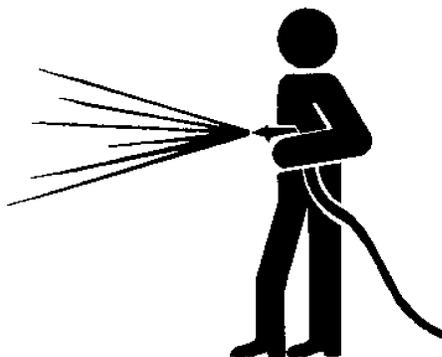
## Keep Electronic Control Unit Connectors Clean

**IMPORTANT: Do not open control unit and do not clean with a high-pressure spray. Moisture, dirt, and other contaminants may cause permanent damage.**

1. Keep terminals clean and free of foreign debris. Moisture, dirt, and other contaminants may cause the terminals to erode over time and not make a good electrical connection.
2. If a connector is not in use, put on the proper dust cap or an appropriate seal to protect it from foreign debris and moisture.
3. Control units are not repairable.
4. Since control units are the components LEAST likely to fail, isolate failure before replacing by completing a diagnostic procedure. (See your John Deere dealer.)
5. The wiring harness terminals and connectors for electronic control units are repairable.

DX,WW,ECU04-19-11JUN09

## Compressed Air Use



RW56455—UN—30JUN97

**IMPORTANT:** Directing pressurized air at electronic/electrical components or connectors, may cause buildup of static electricity and product malfunctions.

TO84419,0000228-19-25JUL17

**IMPORTANT:** Prevent damage to the tractor emissions system. Never disconnect the battery disconnect switch while the battery disconnect switch light is illuminated. See Battery Disconnect Switch in Engine Operation section of this Operator's Manual.

TS36762,0000161-19-11FEB20

## Service Batteries and Connections

**CAUTION:** It can cause a buildup of static charge leading to potential injury.

Battery gas can explode. Keep sparks and flames away from batteries. Use flashlight to check battery electrolyte level.

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

Always remove battery ground cables before positive battery cables and connect them last. Do not let disconnected ground terminal touch metal surface.

**WARNING:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash hands after handling.**

**CAUTION:** Avoid contact with poisonous sulfuric acid in battery electrolyte. Battery acid can burn skin, damage clothing, and cause blindness if splashed into eyes.

*NOTE: Although this battery is a maintenance free battery, conditions such as long periods of operation at high ambient temperatures and excessive engine cranking may require adding water. See label on battery.*

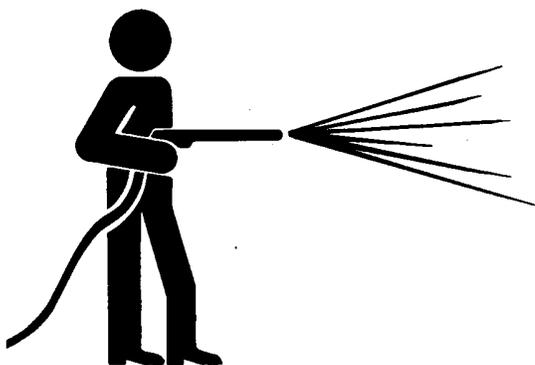
*For optimum battery performance, keep battery terminals clean and tight. For replacement batteries, follow manufacturer's recommendations.*

**IMPORTANT:** Prevent damage to tractor:

- Emissions system. Never disconnect the battery disconnect switch while the battery disconnect switch light is illuminated. See Battery Disconnect Switch in the Engine Operations section of this Operator's Manual.
- Electrical system. Ensure that the key switch is in the OFF position before servicing the batteries and connections.

1. Turn off the battery disconnect switch. See Battery

## High-Pressure Washer Use



T6642EJ—UN—18OCT88

**IMPORTANT:** Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps, exhaust outlet or other sensitive parts and components may cause product malfunctions. Reduce pressure, and spray at a 45 to 90 degree angle. When washing do not direct any water towards the exhaust or any fill tank openings.

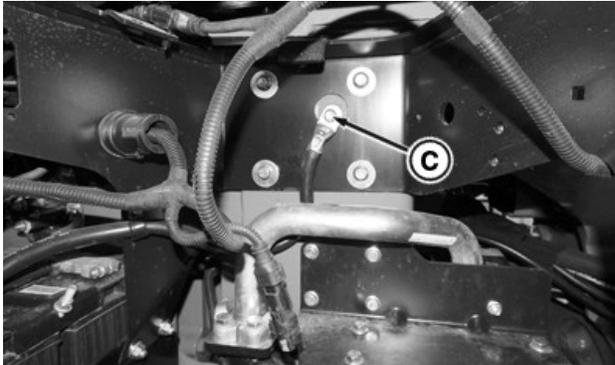
TO84419,0000215-19-20JAN17

## Disconnect Battery

**CAUTION:** Avoid injury or damage to tractor systems from inadvertent contact with electrical power. Disconnect battery when directed.

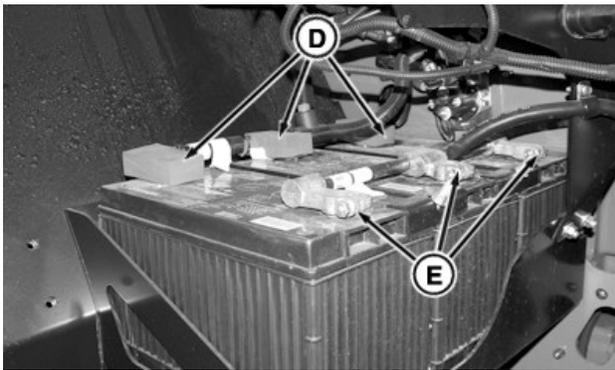
Disconnect Switch in the Engine Operation section of this Operator's Manual.

2. Open the battery compartment cover. See Access Battery Compartment in the Service—General Information section of this Operator's Manual.



RXA0141966—UN—02JUN14

3. Disconnect the single point ground cable (C).



RXA0158217—UN—09MAR17

4. Disconnect negative battery cables (E), then positive battery cables (D).

**IMPORTANT: Never use compressed air to clean batteries.**

5. Remove any corrosion with a terminal brush, then clean terminals and battery posts using a baking soda and water solution.
6. Rinse the batteries with clean water and air dry.
7. If the batteries have been removed for service, slide batteries back into compartment.
8. Install the battery retaining clamp.
9. Connect the:
  - a. Positive battery cables.
  - b. Negative battery cables.

10. Apply a thin coating of grease to cable ends.
11. Connect the single point ground cable to the tractor frame.
12. Close the battery compartment cover. See Access Battery Compartment in the Service—General Information section of this Operator's Manual.
13. Turn on the battery disconnect switch.

RX32825.0000018-19-21APR21

## Load Center—Cab

**IMPORTANT: Prevent damage to the tractor:**

- **Emissions System. Never disconnect the battery disconnect switch while the battery disconnect switch light is illuminated. See Battery Disconnect Switch in Engine Operation section of this Operator's Manual.**
- **Electrical system.**
  - Ensure that the key switch is in the OFF position before changing fuses.
  - Replacement fuse must be the same rating as the original fuse.

## Access Cab Load Center



RXA0167377—UN—05APR19

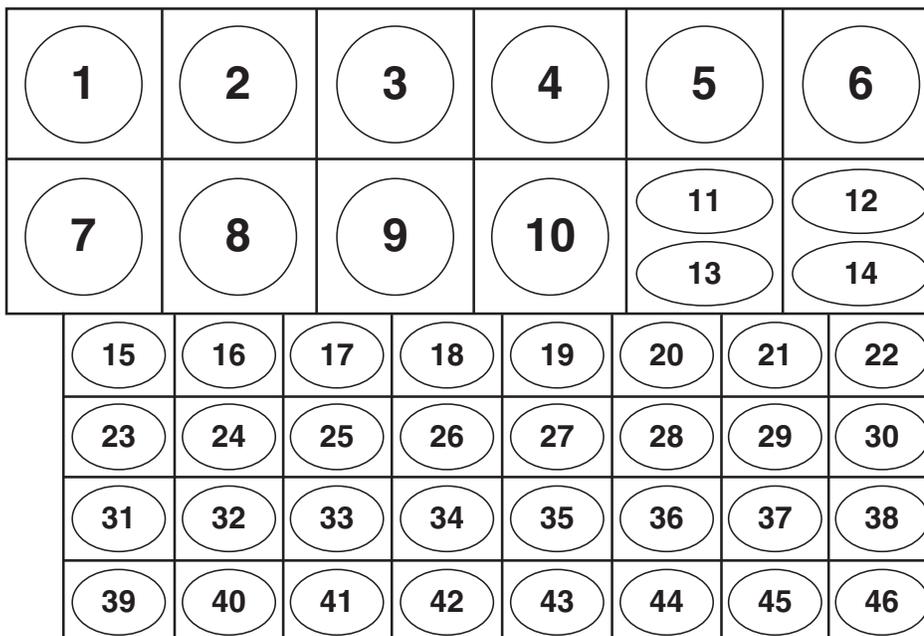
Behind Side Panel (A) at Lower Right of Operator's Seat

Remove the side panel to access the cab load center.

## Relay/Fuse Identification

**K—Relay**  
**F—Fuse**

Relay/Fuse Locations



RXA0173765—UN—13JAN20

- 1—K2: Ignition
- 2—K18: HVAC Blowers
- 3—Not Used
- 4—K4: Trailer Accessory Lighting
- 5—K20: Seat
- 6—K6: Accessory
- 7—K9: 2-Track Suspension
- 8—K8: Trailer Flood
- 9—K9: Buzzer
- 10—K10: Autonomy Relay
- 11—F35: Active Seat (if equipped) (40A)
- 12—F40: DC-AC Inverter (40A)
- 13—F33: Accessory (70A)
- 14—F37: HVAC Blowers (40A)
- 15—F15: Convenience, Lighter, and CB (30A)
- 16—F01: Key/Switch Battery (05A)
- 17—F02: Operator Presence Switch (10A)
- 18—F03: Automatic Temperature Control (10A)
- 19—F17: USB Power Armrest (05A)
- 20—F20: Radio ACC Power (10A)
- 21—F24: Cameras (10A)
- 22—F23: CB, Refrigerator (30A)
- 23—F05: Radio (10A)

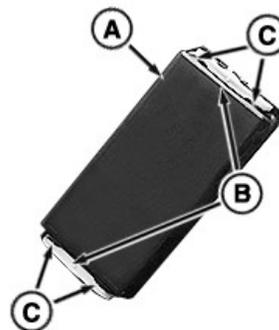
- 24—F07: MTG JDLINK Controller, Ethernet Switch, and GPS Receiver (10A)
- 25—F09: CommandCenter Server (10A)
- 26—F10: Trailer Flood (30A)
- 27—Spare (15A)
- 28—F27: Convenience Outlets (30A)
- 29—F31: Power Mirrors; Trailing Lights (if equipped) (20A)
- 30—F54: Auxiliary Outlets (30A)
- 31—F11: Trailer Lighting (30A)
- 32—F08: Armrest Controller (15A)
- 33—F13: Steering Controller (15A)
- 34—F55: Vehicle Autonomy Controller (05A)
- 35—F32: Come Home (10A)
- 36—F19: Seat Suspension (20A)
- 37—F41: Seat Top (20A)
- 38—F42: Seat Top (30A)
- 39—F18: Primary Display Unit (10A)
- 40—F47: Cab Front Console Controller (15A)
- 41—F16: 2-Track Suspension Motor (30A)
- 42—Spare (10A)
- 43—Come Home Use Only
- 44—Come Home Use Only
- 45—F49: Accessory (low current), Subwoofer (20A)
- 46—F46: USB Power C-Post (10A)

SV81855,0000349-19-25MAY23

## Load Center—Front

**IMPORTANT:** Prevent damage to the tractor:

- **Emissions system.** Never disconnect the battery disconnect switch while the light is illuminated. See **Battery Disconnect Switch** in **Engine Operation** section of this **Operator's Manual**.
- **Electrical system.**
  - Ensure that the key switch is in the **OFF** position before changing fuses.
  - Replacement fuse must be the same rating as the original fuse.



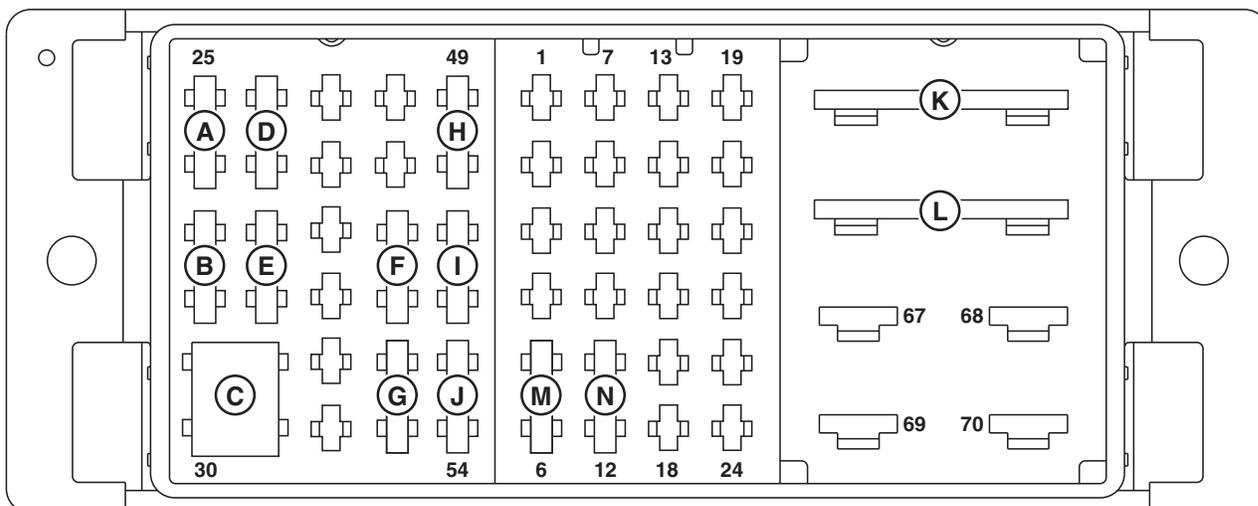
RXA0180445—UN—13NOV20

The front load center (A) is located above the batteries.

### Access Front Load Center

1. Open the battery compartment. See **Access Battery Compartment** in **Service—General Information** section of this **Operator's Manual**.
2. To release the front load center cover and access the front load center:
  - a. Gently slide the yellow locking tabs (B) towards the load center cover front face.
  - b. Squeeze the four black tabs (C) inward towards the load center cover.
3. Replace the front load center cover when the service is complete.
4. Close the battery compartment.

### Front Load Center—Relay/Fuse Identification



RXA0189072—UN—10JUL23

KE—Relay  
FE—Fuse

Location	Relay/Fuse Identification	Size	Description	Pin Number
A	FE28	10A	Rear Chassis Controller	25, 26
B	FE101	10A	Aux Light	27, 28
C	KE14	Relay	Ether	29, 30, 35, 36

Location	Relay/Fuse Identification	Size	Description	Pin Number
D	FE13	2A	ECU	31, 32
E	FE14	15A	Ether	33, 34
F	FE07	10A	Ignition	45, 46
G	FE08	15A	Steering Controller	47, 48
H	FE01	20A	ECU	49, 50
I	FE02	25A	ECU	51, 52
J	FE03	25A	ECU	53, 54
K	FE100	60A	Implement Power	63, 64
L	FE30	30A	Implement ECU Power	65, 66
M	FE43	20A	Rear VPU	5, 6
N	FE44	20A	Front VPU	11, 12

EC82310,0000F54-19-10JUL23

## Access Master Fuses

**CAUTION:** Disconnect both negative and positive battery connections from both batteries prior to fuse inspection or replacement.

**IMPORTANT:** Prevent damage to tractor:

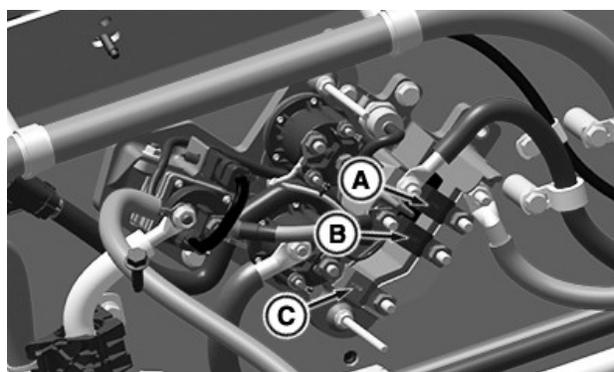
- **Emissions system.** Never disconnect the battery disconnect switch while the battery disconnect switch light is illuminated. See **Battery Disconnect Switch** in the **Engine Operations** section of this Operator's Manual.
- **Electrical system.** Ensure that the key switch is in the **OFF** position before servicing the batteries and connections.
- **Do not attempt to disassemble the master fuses unless instructed by your John Deere dealer.** Replacement fuses must be the same rating as original.

To access the master fuses:

1. Turn the key switch to the **OFF** position.
2. Turn off the battery disconnect switch. See **Battery Disconnect Switch** in the **Engine Operation** section of this Operator's Manual.
3. Access the battery compartment. See **Access Battery Compartment** in the **Service—General Information** section of this Operator's Manual.
4. Disconnect the battery ground (-) cable.

**NOTE:** The master fuse is connected across both posts of the junction box.

The master fuses are:



RXA0180457—UN—17NOV20

Master Fuse (A) is at the back of the battery compartment.

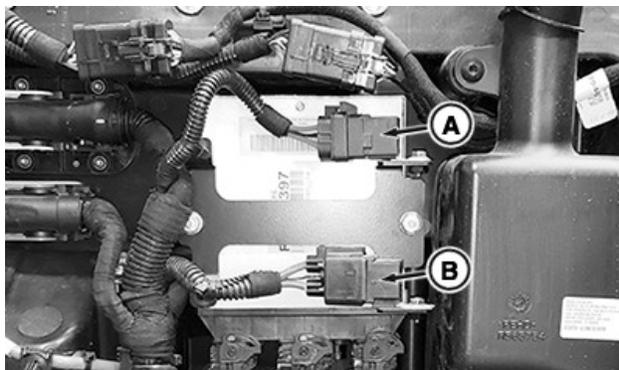
- A—Master Fuse (300A)
- B—Alternator Battery Fuse (300A)
- C—Backup Hydraulic Pump Fuse (175A)

TO84419,00001D9-19-21APR21

## Access Implement Power Relay Module Relays

**IMPORTANT:** Prevent damage to the tractor electrical system. Ensure that the key switch is in the **off** position before replacing the implement power relay module relays.

To access the implement power relay module relays, remove the cab rear panel. See **Remove Cab Rear Panel** in the **Service—General Information** section of this Operator's Manual.



RXA0180458—UN—17NOV20

Upper Right-Hand Corner of Cab Back Panel

A—KE01 ISOBUS Control Unit Power  
B—KE100 ISOBUS Implement Power

### Replace the Relays

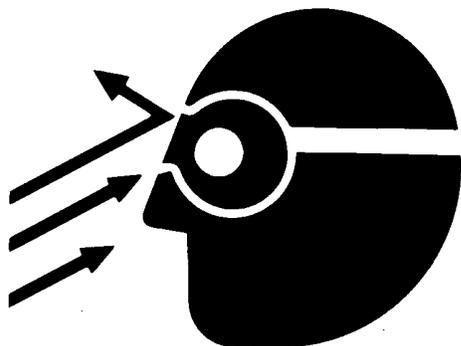
*NOTE: The associated fuses are on the front load center. To replace the associated fuses, see Load Center-Front in this Operator's Manual section.*

To replace the relays:

1. Turn key switch to off position.
2. Disconnect battery. See Disconnect Battery in this section of the Operator's Manual.
3. Disconnect the wiring harness from the relay.
4. Remove the old relay.
5. Attach the new relay.
6. Connect the wiring harness to the relay.

TO84419,00001DA-19-01NOV22

### Handle Halogen Light Bulbs Safely



TS266—UN—23AUG88



H39474—UN—30JUN00

**⚠ CAUTION: Halogen bulbs (A) contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. To avoid possible injury:**

- Turn light switch off and allow bulbs to cool before changing. Leave switch off until bulb change is done.
- Wear eye protection.
- Handle bulb by its base. Keep bulb oil free; wear gloves to avoid touching glass.
- Do not drop or scratch bulb. Keep moisture away.
- Place used bulb in the new bulb carton and dispose of properly. Keep out of reach of children.

TS36762,0000165-19-05SEP17

### Aim Headlights

**⚠ CAUTION: Avoid unacceptable lighting display. As adjustments are made, observe local requirements and regulations.**

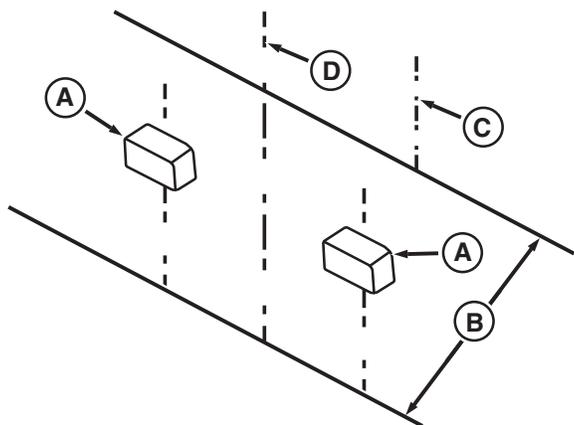
Lighting options provide different combinations and locations of light. See Light Identification in Lights section of this Operator's Manual to identify which lights are high- and low-beam headlights.

High- and low-beam headlights are adjustable to provide desired lighting coverage. In some options packages, LED high- and low-beam headlights are mounted together and cannot be adjusted separately. In others the high- and low-beam lights are mounted separately and must be adjusted individually.

All halogen high- and low-beam headlights can be adjusted individually.

Before aiming headlights, adjust the tractor to duplicate transport conditions. Adjust tire pressures to correct values. Neutralize front axle suspension system (if equipped).

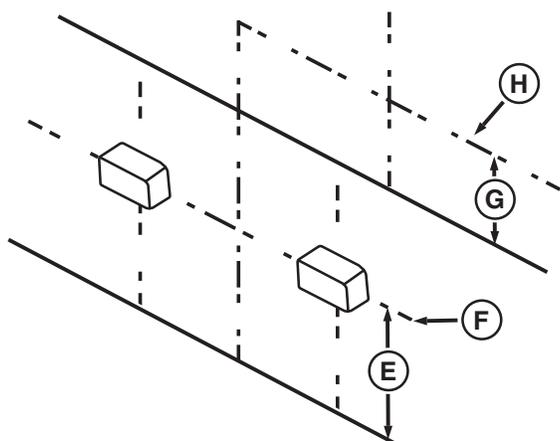
*NOTE: Diagrams are not drawn to scale.*



RXA0172851—UN—19DEC19

1. Park the tractor on a level surface with the low-beam headlight lenses (A) 7.5 meters (25 ft) (B) from a flat, straight, and vertical wall. Tractor must be perpendicular to the wall.
2. Mark a vertical line on the wall (C) corresponding to the tractor vertical center line (D).

**NOTE:** If tractor is equipped with LED headlights without separate low-beam headlights, both high and low beams are adjusted with the low-beam adjustment screws. Use low-beam aiming and adjustment procedures.



RXA0172852—UN—02JAN20

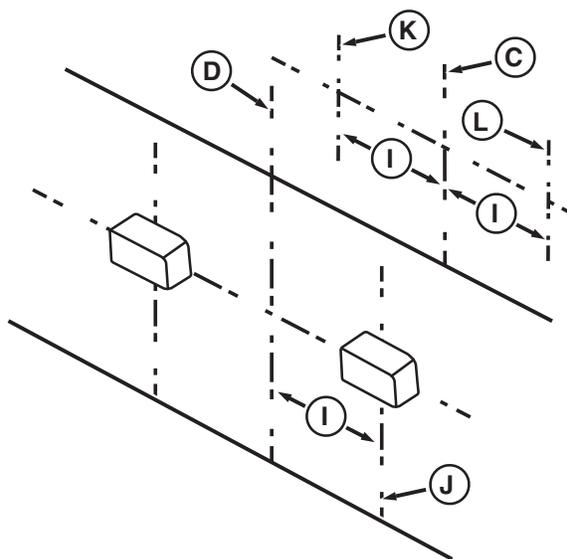
3. On the tractor, measure the vertical distance (E) from the ground to the horizontal center of the light to be adjusted (F).

4. Multiply light vertical height by the appropriate height adjustment factor. Height adjustment factor:

- High Beam = 0.95
- Low Beam = 0.75

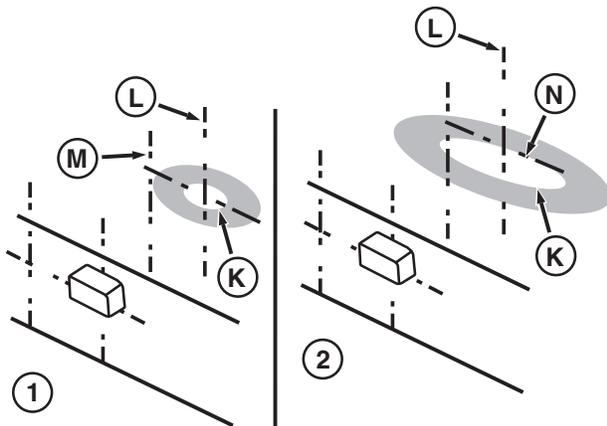
Example: High-beam light center line height from floor (F) is 1.52 m (60 in). Multiplying times 0.95 equals 1.45 m (57 in) height for the wall high-beam horizontal center line (G).

5. Mark a horizontal line (I) on wall at the height calculated in step 4 (J).



RXA0172853—UN—02JAN20

6. Measure the distance (I) from the hood vertical center (D) to the vertical center (L) of the desired right-hand light lens.
7. Place left-hand (K) and right-hand (J) vertical center lines on the wall. Position lines on either side of the tractor center line (C) at the distance (I) measured in step 3.
8. Cover left-hand light.
9. Turn on desired lights.



RXA0172854—UN—19DEC19

*Right-Hand Headlight Adjustment*

- 1—High-Beam Headlight
- 2—Low-Beam Headlight

10. Adjust brightest point of the light beam (hot spot) (K) so that it shines in the correct position. Center the hot spots on the light vertical center lines (L). High beams are centered on the high-beam light horizontal center line (M).

Adjust low beams so that the top of the hot spot (K) is on the low-beam light horizontal center line (N).

See appropriate adjustment information in this Operator's Manual section.

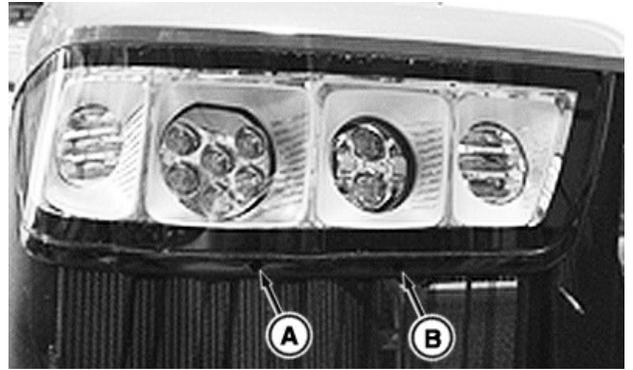
11. Transfer the cover from the left-hand light to right-hand light.
12. Repeat adjustment procedure with the left-hand light.
13. To adjust other lights, return to step 3.

RX32825,00000B4-19-05AUG21

### Adjust Front Grille Lights

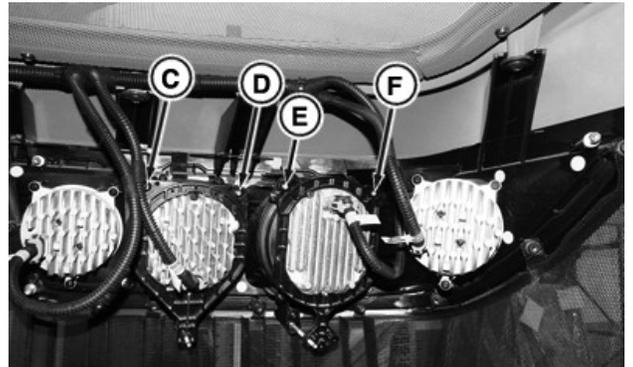
To adjust front grille lights:

#### For Low Beam Headlights:



RXA0169633—UN—15JUL19

1. To lower low beam aim, turn low beam adjustment screw (A) clockwise.



RXA0142138—UN—05JUN14

To raise and tilt out low beam headlights, turn low beam adjustment screw (E) clockwise.

To raise and tilt in low beam headlights, turn low beam adjustment screw (F) clockwise.

#### For High Beam Headlights:

2. To lower high beam aim, turn high beam adjustment screw (B) clockwise.

To raise and tilt out high beam, turn high beam adjustment screw (C) clockwise.

To raise and tilt in high beam, turn high beam adjustment screw (D) clockwise.

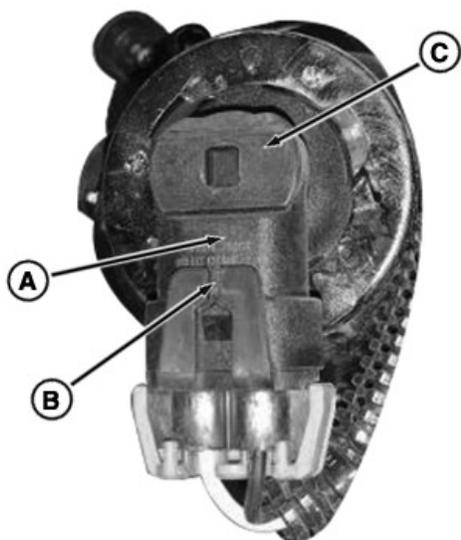
3. Repeat for opposite side of tractor.

SV81855,00002B7-19-17JUL19

### Change Halogen Bulbs

1. Disconnect wiring harness plug by lifting retaining tab (B).

## Change Front/Rear Belt Line Work Lights Replace a Halogen Bulb



RXA0173828—UN—03FEB20  
*Right-Hand Side Shown*

2. Rotate halogen headlight (A) counterclockwise with 1/4 of a turn and remove.
3. Replace halogen light assembly (C).

TS36762,0000167-19-30AUG22

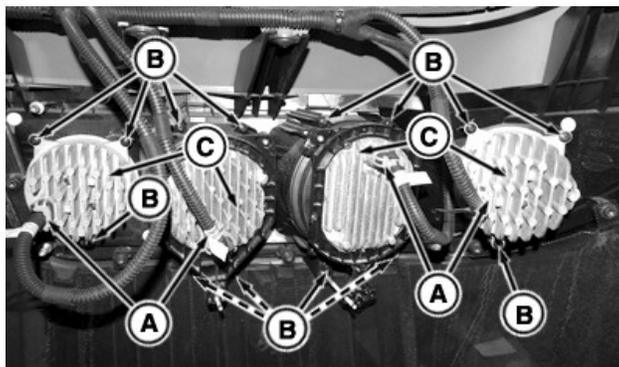


RXA0174703—UN—04FEB20

1. Disconnect the rear wiring harness.
2. Push in, twist, and pull to remove the halogen bulb receptacle from the light housing.
3. Replace the halogen bulb.
4. Replace the halogen bulb receptacle into the light housing.
5. Connect the rear wiring harness.

## Change Front HID/LED Light Assembly

1. Raise hood.



RXA0158062—UN—03MAR17  
*Right-Hand Side Shown*

2. Disconnect harness connector (A).
3. Remove screws (B) and light assembly (C).
4. Replace light assembly.
5. Install new light assembly in reverse order of removal.
6. Close and secure hood.

SV81855,00001FA-19-20JUL17

## Replace a LED Light Assembly



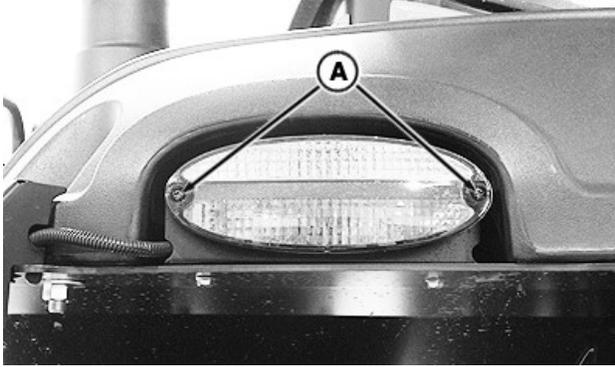
RXA0174821—UN—06FEB20

1. Disconnect the rear wiring harness.
2. Remove nut (A).

3. Replace the LED light assembly.
4. Secure the LED light assembly with the nut.
5. Connect the rear wiring harness.

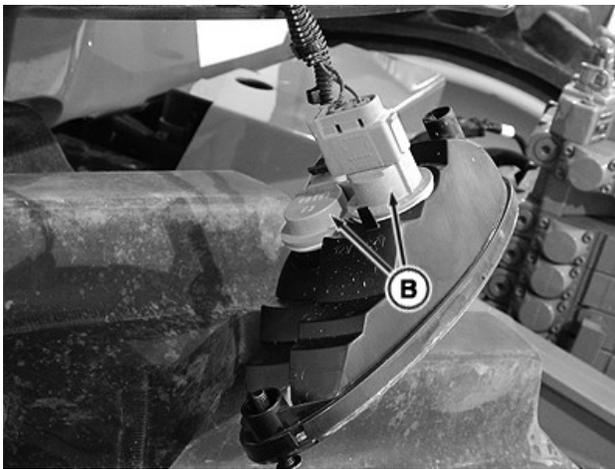
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### Change Brake or Turn Signal Light Bulb



RXA0137101—UN—19NOV13

1. Remove screws (A) and take out light assembly.



RXA0137102—UN—19NOV13

2. Turn bulb (B) counterclockwise 1/4 turn and pull out to remove.
3. Install new bulb in fixture and turn 1/4 turn clockwise.
4. Reinstall assembly and screws.

SV81855,00001FF-19-11JUL17

### Change Cab Roof Light



RXA0172759—UN—03DEC19

Cab Roof Light—LED Light Option Shown

1. Gently pry light out the light assembly using a flat tip screwdriver in slot (A).
2. The cab roof light is equipped with either an LED assembly or a halogen bulb. To replace the cab roof light if the light assembly contains:
  - An LED assembly:
    - a. Disconnect the harness connector.
    - b. Replace the LED assembly.
    - c. Reconnect the harness connector.
    - d. Insert the cab roof light assembly into the cab roof until it snaps into place.
  - A halogen bulb:
    - a. Remove the halogen bulb base from the light assembly.
    - b. Remove and replace the halogen bulb from the halogen bulb base.
    - c. Insert the halogen bulb base into the light assembly.
    - d. Insert the cab roof light assembly into the cab roof until it snaps into place.

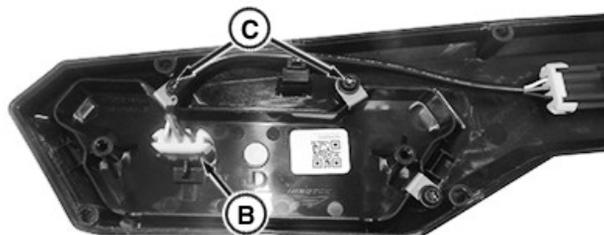
EC82310,0000B84-19-14MAY20

## Change Extremity Arm Light



RXA0172768—UN—03DEC19

1. Remove screws (A).



RXA0172769—UN—03DEC19

2. Remove screws (C).
3. Disconnect the harness connector (B).
4. Replace with a new light assembly.
5. Reassemble in the reverse order.

ZZASX1U,0000065-19-29JUN23

2. Disconnect wiring harness (B).
3. Remove screws (C) holding the light assembly.
4. Replace with new light assembly.
5. Reassemble in the reverse order.

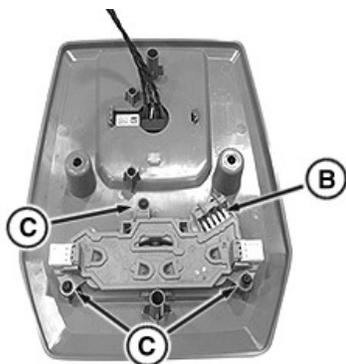
EC82310,0000B8A-19-04APR23

## Change Cab Dome Light



RXA0172763—UN—03DEC19

1. Remove screws (A).



RXA0172764—UN—05DEC19

# Troubleshooting—Procedures

## Troubleshooting Features

Some features listed in this Operator's Manual section may not be applicable to all tractor configurations and

regions. See your John Deere dealer for unresolved product issues.

KD34109,0000944-19-19JUL21

## Electrical System

### Low Battery Voltage (key switch on and engine off)

Problem	Solution
Defective battery.	Check that battery voltage is 12.0—14.5 V. Service or replace battery/batteries. See your John Deere dealer.
Low charging voltage with engine running.	See your John Deere dealer.
High resistance in charging circuit.	See your John Deere dealer.

### Low Charging Voltage (engine running)

Problem	Solution
Low engine speed.	Increase engine speed.
Auxiliary drive belt slips and is not fully powering the alternator.	Check the auxiliary drive belt tension.
Defective battery.	Check that battery voltage is 12.0—14.5 V. See your John Deere dealer.
Defective alternator.	See your John Deere dealer.
Excessive electrical load.	Decrease electrical load. See your John Deere dealer.
Loose or corroded connections.	Clean and tighten connections.
Sulfated or worn-out batteries.	Check that battery voltage is 12.0—14.5 V. Service or replace battery/batteries. See your John Deere dealer.
Loose or defective alternator belt.	Check the auxiliary belt tension. Replace belt.

### Excessive Charging Voltage (engine running)

Problem	Solution
Faulty connection to the alternator.	Check wiring connections.
Defective regulator.	See your John Deere dealer.

### Starter Inoperative

Problem	Solution
Faulty starter or starter solenoid.	See your John Deere dealer.
Loose or corroded connections.	Clean and tighten loose connections.
Low battery output.	Service or replace battery/batteries. See your John Deere dealer.
Failed fuse.	Check fuses. See Center Load—Front in Service—Electrical section of this Operator's Manual. Check the alternator/battery relay fuse. See Access Master Fuses in Service—Electrical section of this Operator's Manual.
Failed relay.	See your John Deere dealer.
Excessive cranking attempts.	To protect the starter, the ECU may prevent starting if several crank/no start events have occurred. Wait 2 minutes and attempt starting again.

### Starter Turns Over Slowly

Problem	Solution
Low battery output.	Check that battery voltage is 12.0—14.5 V. Service or replace battery/batteries. See your John Deere dealer.
Crankcase oil is too heavy.	Use the correct viscosity oil. See Engine Oil section of this Operator's Manual.
Loose or corroded connections.	Clean and tighten loose connections.
Excessive hydraulic load.	Ensure SCVs are in neutral and disconnect the implement hose in the rear load sense port (if used).

### Entire Electrical System Does Not Function

Problem	Solution
Faulty battery connection.	Clean and tighten connections.
Battery disconnect system switch in the off position.	Turn the battery disconnect switch to the on position.
Sulfated or worn out batteries.	Check that battery voltage is 12.0—14.5 V. Service or replace battery/batteries. See your John Deere dealer.
Failed master fuse.	Check the master fuse. See Access Master Fuses in Service—Electrical section of this Operator's Manual.
Loose or corroded connections and/or grounds.	Clean and tighten loose connections.

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## Engine

### Engine Is Hard to Start or Does Not Start

Problem	Solution
Incorrect starting procedure.	Review the starting procedure.
Failed relay.	Check the relay. See Load Center—Cab in Service—Electrical section of this Operator's Manual.
Failed fuse.	Check the fuses. See Load Center—Front in Service—Electrical section of this Operator's Manual.
No fuel.	Check the fuel tank. Add clean fuel. See Fuel section of this Operator's Manual.
Air in the fuel line.	Bleed the fuel line. With the engine off, turn the key to the run position for 60 seconds.
Cold weather.	Check cold-weather starting aids. See Cold Weather Operation section of this Operator's Manual.
Slow starter speed.	See Starter Turns Over Slowly in Electrical System in this Operator's Manual section.
Crankcase oil is too heavy.	Use the correct viscosity oil. See Engine Oil section of this Operator's Manual.
Incorrect type of fuel.	Use the correct fuel type for the operating conditions. Consult the fuel supplier to determine if necessary.
Water, dirt, or air in the fuel system.	Drain, flush, fill, and bleed the system. See Service—General Information section of this Operator's Manual.
Clogged fuel filter.	Replace the filter elements. See Service—Change section of this Operator's Manual.
Dirty or faulty injectors.	See your John Deere dealer.
Excessive hydraulic load.	Ensure SCVs are in neutral and disconnect the implement hose in the rear load sense port (if used).

### Engine Knocks

Problem	Solution
Insufficient oil.	Add oil. See Engine Oil section of this Operator's Manual.
During warm-up, the pilot injection system activates and deactivates depending on the engine operating temperature.	It is normal for the pilot injection system to activate and deactivate depending on the engine operating temperature.
Low engine coolant temperature.	Replace the thermostats. See Service—Change section of this Operator's Manual.
Engine overheats.	See Engine Overheats later in Engine Troubleshooting.

### Engine Runs Irregularly or Stalls Frequently

Problem	Solution
Low coolant temperature.	Replace the thermostats. See Service—Change section of this Operator's Manual.
Clogged fuel filters.	Replace the filter elements. See Service—Change section of this Operator's Manual.
Water, dirt, or air in the fuel system.	Drain, flush, fill, and bleed the system. See Service—General Information section of this Operator's Manual.
Water in the fuel system.	See Fuel Tank Sump in Service—Check section of this Operator's Manual.
Fuel tank vent is obstructed.	Clean the vent. Check the vent lines for restrictions. Replace the vent filter. See Service—Change section of this Operator's Manual.
Dirty or faulty injectors.	See your John Deere dealer.

### Below Normal Engine Temperature

Problem	Solution
Defective thermostat.	Replace the thermostat. See Service—Change section of this Operator's Manual.
Defective temperature gauge or sender.	See your John Deere dealer.

### Fan Drive Speed Surges at a Low Engine Speed

Problem	Solution
Fan drive problem.	See your John Deere dealer.

### Throttle Does Not Allow Full Engine Speed

Problem	Solution
Maximum Set Speed is on and limiting maximum engine rpm.	Adjust Maximum Set Speed to maximum rpm.
Cold oil can limit the engine speed to 1500 rpm.	Warm up the transmission-hydraulic oil. See your John Deere dealer.
Engine derate is active.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes (DTC) section of this Operator's Manual.

### Lack of Power

Problem	Solution
Engine is overloaded.	Reduce load or shift to a lower gear.
Low or high idle speed.	Adjust or turn off the Max Engine Speed setting. Set IVT/AutoPowr or EVT/eAutoPowr correctly. Check the applicable transmission section of this Operator's Manual. See your John Deere dealer.
Intake air restriction.	Service the air cleaner. See Service—Check section of this Operator's Manual.

## Troubleshooting—Procedures

Problem	Solution
Clogged fuel filters.	Replace the fuel filter elements. See Service—Change section of this Operator's Manual.
Water in the fuel system.	See Fuel Tank Sump in Service—Check section of this Operator's Manual.
Incorrect type of fuel.	Use the correct fuel. See the appropriate fuel information in Fuel section of this Operator's Manual.
Engine is overheated.	See Engine Overheats later in Engine Troubleshooting.
Below normal engine temperature.	Check the thermostat. See Service—Change section of this Operator's Manual.
Incorrect valve clearance.	See your John Deere dealer.
Dirty or faulty injectors.	See your John Deere dealer.
Turbocharger does not function.	See your John Deere dealer.
Leaking exhaust manifold gasket.	See your John Deere dealer.
Implement adjusted incorrectly.	See implement Operator's Manual.
Restricted fuel inlet.	Clean or replace the fuel line. See Service—Change section of this Operator's Manual.
Incorrect ballast.	Adjust the ballast to load. See Performance Ballasting section of this Operator's Manual.

### Low Oil Pressure

Problem	Solution
Low oil level.	Add oil. See Engine Oil section of this Operator's Manual.
Incorrect type of oil.	Drain and refill the crankcase with the correct quality and viscosity of oil. See Engine Oil section of this Operator's Manual.

### High Oil Consumption

Problem	Solution
Crankcase oil is too light.	Use the correct viscosity oil. See the appropriate engine oil information in Engine Oil section of this Operator's Manual.
Oil leakage.	Check for leaks in the lines and around the gaskets and the drain plug.
Defective turbocharger.	See your John Deere dealer.
Restricted engine breather tube.	Clean the engine breather tube.

### Engine Emits Smoke

Problem	Solution
Incorrect type of fuel.	Use the correct fuel. See the appropriate fuel information in Fuel section of this Operator's Manual.
Clogged or dirty air cleaner.	Service the air cleaner.
Engine is overloaded.	Reduce the load or shift to a lower gear.
Injection nozzles are dirty.	See your John Deere dealer.
Turbocharger does not function.	See your John Deere dealer.

### Engine Overheats

Problem	Solution
Dirty radiator core, oil cooler, or grille screens.	Remove all trash and clean the coolers. See Service—Check section of this Operator's Manual.
Engine is overloaded.	Reduce the load or shift to a lower gear.
Low engine oil level.	Check the oil level and add oil as required. See Engine Oil section of this Operator's Manual.
Low coolant level.	Fill the de-aeration tank to the correct level. Check the radiator and hoses for loose connections or leaks.
Faulty radiator cap.	Replace the radiator cap.

## Troubleshooting—Procedures

Problem	Solution
Fan drive malfunction.	See your John Deere dealer.
Cooling system blockage.	Flush the cooling system. See Service—Clean section of this Operator's Manual. See your John Deere dealer.
Defective thermostat.	Replace the thermostat. See Service—Change section of this Operator's Manual.
Defective temperature gauge or sender.	See your John Deere dealer.
Loose or defective auxiliary drive belt slipping on coolant pump pulley (6.8 and 13.6 L engines only).	Check the auxiliary belt tension. Replace belt.

### High Fuel Consumption

Problem	Solution
Clogged or dirty air cleaner.	Service the air cleaner. See Service—Check section of this Operator's Manual.
Engine is overloaded.	Reduce the load or shift to a lower gear.
Injection nozzles are dirty.	See your John Deere dealer.
Implement is incorrectly adjusted.	See implement Operator's Manual.
Excessive ballast.	Adjust the ballast to load. See Performance Ballasting section of this Operator's Manual.

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## Hitch

### Insufficient Transport Clearance

Problem	Solution
Center link is too short.	Adjust the center link.
Center link is in the wrong position.	Put the hitch center link in the correct hole. See Rear Hitch section of this Operator's Manual.
Lift links are too short.	Adjust the lift links.
Implement is not level.	Level the implement.
Implement is not adjusted correctly.	See implement Operator's Manual.
Upper Limit is not set correctly.	Adjust Upper Limit in the CommandCenter.
Suspension (if equipped) leveling does not function correctly or extends above level.	Refer to suspension information in this Operator's Manual.

### Hitch Fails to Follow the Lever

Problem	Solution
Malfunction in the lever position sensor circuit or hitch position sensor.	See your John Deere dealer.

### Poor Position Control

Problem	Solution
Hitch Load Depth is not set correctly.	Adjust Load Depth in the CommandCenter.
Malfunction in the lever position sensor circuit or hitch position sensor.	See your John Deere dealer.
Suspension (if equipped) leveling does not function correctly during large draft changes.	Refer to suspension information in this Operator's Manual.

### Hitch Drops Slowly

Problem	Solution
Hitch Drop Rate is not set correctly.	Adjust Drop Rate in the CommandCenter. See Rear Hitch section of this Operator's Manual.

### Hitch Fails to Lift or Lifts Slowly

Problem	Solution
Excessive load on the hitch.	Reduce load.
Center link is in the wrong position.	Put the hitch center link in the correct hole.
Hitch valve leaks.	See your John Deere dealer.
Hitch Upper Limit setting limits lift height.	Adjust Upper Limit in the CommandCenter.
Lack of lubrication.	Lubricate the hitch mechanisms. See Service—Lubricate section of this Operator's Manual.
Manual hitch drain is open.	See Hitch Manual Lowering in Rear Hitch section of this Operator's Manual. Ensure that the screw is not in the open position.
Cold hydraulic oil.	Allow the oil to heat up to the operating temperature.

### Implement Not Operating at the Desired Depth

Problem	Solution
Lift links are too short.	Adjust the lift links.
Lack of soil penetration.	See implement Operator's Manual.
Draft sensor fails.	See your John Deere dealer.
Implement is not level.	See implement Operator's Manual.

### Insufficient or No Hitch Response to Draft Load

Problem	Solution
Hitch Load Depth is not set correctly.	Adjust Load Depth in the CommandCenter.
Hitch Drop Rate is too slow.	Adjust Drop Rate in the CommandCenter.

### Hitch Too Responsive

Problem	Solution
Hitch Load Depth is not set correctly.	Adjust Load Depth in the CommandCenter. See Rear Hitch section of this Operator's Manual.

### Hitch Settles Too Fast after Tractor Is Parked and Engine Is Shut Off

Problem	Solution
Internal leakage.	See your John Deere dealer.
Manual hitch drain is open.	See Hitch Manual Lowering in Rear Hitch section of this Operator's Manual. Ensure that the screw is not in the open position.

### Hitch Does Not Move (controls not working, including rear raise/lower switch)

Problem	Solution
Failed fuse.	Replace the fuse. See Load Center—Cab in Service—Electrical section of this Operator's Manual.
Hitch does not move with an intact fuse.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual.

### External Raise/Lower Switch Does Not Move the Hitch

Problem	Solution
Failure of the raise/lower switch, connector, or wiring harness.	See your John Deere dealer.
Lever is in transport lock.	Move the lever out of transport. Unlock it in the CommandCenter.

### Pickup Hitch Operates Incorrectly

Problem	Solution
Pickup hitch does not latch.	Adjust the pickup hitch. See Rear Hitch section of this Operator's Manual.

### Excessive Implement Movement

Problem	Solution
Hitch sways too much.	Adjust the sway blocks to minimize hitch movement. See Rear Hitch section of this Operator's Manual.

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## Hydraulic System

### Entire Hydraulic System Fails to Function

Problem	Solution
Low oil supply.	Check the hydraulic oil level.
Clogged hydraulic filter.	Replace the oil filters. See Service—Change section of this Operator's Manual.
Clogged hydraulic oil suction screen.	Clean the screen. See Service—Clean section of this Operator's Manual.
Oil cooler air passages are clogged.	Clean the oil cooler.
High-pressure internal leak.	See your John Deere dealer.
Hydraulic pump driveline damaged or failed.	Check hydraulic pump driveline for damage.

### Hydraulic Oil Overheats

Problem	Solution
Low or high oil supply.	Check the hydraulic oil level. See Service—Change section of this Operator's Manual.
Clogged oil cooler air passages.	Clean the oil cooler and condenser in the front cooling module.
Internal leaks.	See your John Deere dealer.
Implement hydraulic load is not matched to the tractor or not properly routed back into the tractor hydraulic system.	See Hydraulic Connections section of this Operator's Manual. See implement Operator's Manual. See your John Deere dealer.
Clogged oil screen.	Clean the filter screen. See Service—Change section of this Operator's Manual. See your John Deere dealer.

KD34109,000093D-19-30MAY23

## Operator's Station

### Excessive Dust Enters Cab

Problem	Solution
Defective seal around the cab filter element, door seal, or window seal.	Check the condition of the seals. Check that the filter installation is correct. See Service—Change Section of this Operator's Manual.
Defective cab filter.	Check the cab recirculation air filter and cab fresh air filter. See Service—Change Section of this Operator's Manual.
Inadequate blower air flow.	See Blower Air Flow Too Low later in Operator's Station Troubleshooting.

### Blower Air Flow Too Low

Problem	Solution
Clogged filter or air intake screen.	Inspect the cab recirculation and cab fresh air filters and the screen for blockage. See Service—Change section of this Operator's Manual.
Clogged heater core or evaporator core.	Clean the heater core or evaporator core.
Frozen heater core.	Thaw the heater core. See your John Deere dealer.

### Blower Malfunctioning

Problem	Solution
Blower does not work.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual. See your John Deere dealer.
Failed fuse.	Check the air conditioner fuses. See Load Center—Cab in Service—Electrical section of this Operator's Manual.
Failed relay.	Check the air conditioning relay. See Load Center—Cab in Service—Electrical section of this Operator's Manual.

### Heater Does Not Switch Off

Problem	Solution
Heater hoses are connected incorrectly.	See your John Deere dealer.
Failed water valve actuator.	See your John Deere dealer.

### Air Conditioner Not Cooling

Problem	Solution
Low refrigerant.	See your John Deere dealer.
Debris blocks the condenser.	Clean the condenser.
Belt slips.	Check the belt tension. See Service—Check section of this Operator's Manual.
CommandCenter air conditioning is set to OFF on the HVAC page.	Set the air conditioning to ON in the CommandCenter. See HVAC Settings in HVAC section of this Operator's Manual.
Clogged filter or air intake screen.	Inspect the cab recirculation and cab fresh air filters and the screen for blockage. See Service—Change section of this Operator's Manual.
Clogged heater core or evaporator core.	Clean the heater core or evaporator core.
Frozen heater core.	Thaw the heater core. See your John Deere dealer.

### Seat Suspension Not Working

Problem	Solution
Failed fuse.	Check the seat fuses. See Load Center—Cab in Service—Electrical section of this Operator's Manual.

### Radio Does Not Function

Problem	Solution
Failed fuse.	Check the radio fuses. See Load Center—Cab in Service—Electrical section of this Operator's Manual.
Radio cutting in and out.	Check the antenna and ground connection.

KD34109,000093F-19-30MAY23

## Selective Control Valve (SCV)

### Remote Cylinder Does Not Lift a Load

Problem	Solution
Flow blockage (worn hydraulic tips).	Cycle the SCV levers. Replace the hydraulic tips and check the connections.
Excessive load.	Reduce load.
SCV lever or joystick is not assigned to the expected SCV.	Change the SCV hose to the desired SCV. Reassign the SCV lever or joystick control to the desired SCV. See Selective Control Valves section of this Operator's Manual.
Hoses are not installed correctly.	Install the hoses correctly and firmly into SCV.
Incorrect remote cylinder size.	Use the correct cylinder size. See Hydraulic Connections section of this Operator's Manual.
SCV control lever lock is engaged.	Release the SCV control lever lock.
Incorrect or damaged hose tips.	Replace the hose tips.

### Remote Cylinder Rate of Travel Too Fast or Too Slow

Problem	Solution
Incorrect flow rate.	Adjust the Flow setting.

### Direction of Remote Cylinder Travel Is Reversed

Problem	Solution
Incorrect hose connections.	Reverse the hose connections.

### Hoses Do Not Couple

Problem	Solution
Incorrect hose male connectors.	Replace the hose tips with ISO-5675 fittings.
Too much system pressure.	Release pressure from the implement or tractor.

### Detent Does Not Hold or Releases Too Soon

Problem	Solution
Detent Time set incorrectly.	Set the correct detent Time.
SCV lever is not released to neutral soon enough.	Return the SCV lever to the center after being in the detent position for more than 0.8 seconds.

### SCV Lever Does Not Release

Problem	Solution
SCV is unexpectedly in float mode.	Do not push the lever down when in the forward position.
Lever mechanism failed.	See your John Deere dealer.
Flow control or detent release setting incorrect.	Adjust the detent relief setting.

### Implement Does Not Operate or Does Not Operate Correctly

Problem	Solution
Incorrect hose connections.	See implement Operator's Manual. See your John Deere dealer.

### Feedback from Top SCVs or Hydraulic Pump

Problem	Solution
Hydraulic pump is making noise.	Make sure that continuous flow oil is not returning to a pressure-free port. See Hydraulic Connections section of this Operator's Manual.

### SCV Is Unresponsive

Problem	Solution
SCV is not operating correctly.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual. Verify that transport lock is off.

KD34109,0000940-19-15JUN23

## Steering System

### Difficult or No Steering

Problem	Solution
Electrical or hydraulic malfunction.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual. See your John Deere dealer.
Tractor is over-ballasted or the front axle is overloaded.	See Performance Ballasting section of this Operator's Manual.

### Tractor Turning Radius Larger than Desired or Tractor Difficult to Turn when Under Load

Problem	Solution
Implement causes side-loading greater than the steering system can overcome when attempting to turn.	Raise the implement. Slow down during a turn or execute a turn by doing a series of brief short turns. Add ballast. See Performance Ballasting section of this Operator's Manual. Let the drawbar swing. See Drawbar section of this Operator's Manual.
Electrical or hydraulic malfunction.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual. See your John Deere dealer.
Differential lock preventing turning under load.	See Differential Lock in Drivetrain section of this Operator's Manual.

### Tractor Drifts or Pulls to One Side

Problem	Solution
Implement causing side load on the tractor.	Adjust the implement to eliminate any side draft. Widen the rear wheels out to the stops or add duals. See Rear Wheels and Tires section of this Operator's Manual. Add ballast. See Performance Ballasting section of this Operator's Manual. Let the drawbar swing. See Drawbar section of this Operator's Manual.

### Tractor Turning Radius Larger than Desired with No Load

Problem	Solution
Electrical or hydraulic malfunction.	Check the CommandCenter for diagnostic trouble codes. See Troubleshooting—Diagnostic Trouble Codes section of this Operator's Manual. See your John Deere dealer.
Attempting to turn while stopped (loose soil, heavy ballast); steering load exceeds the system capacity.	Maintain forward or reverse motion while turning. Increase vehicle speed and/or hold the steering wheel against the stop for a couple of seconds to allow greater steering force. Check the steering stops. See Steering Stop, Fender, and Tread Settings section of this Operator's Manual.

### Tractor Turning Radius Larger than Desired with the Tractor in High Gear or with Low Engine Speed

Problem	Solution
Minimum turn radius is greater in high gears and at a higher speed.	Utilize the turn brakes for a narrower turning radius (not applicable to 8RT and 9 Series Tractors). Shift down before the turn. See the appropriate transmission section of this Operator's Manual. Reduce vehicle speed before a turn to reduce oversteering.
Maximum steering pump oil flow is less at a lower engine speed, reducing the power available to make the turn.	Increase engine speed before a turn.

KD34109,0000941-19-30MAY23

## Tractor Operation

### Tractor Bounces or Jumps

Problem	Solution
Power hop or wheel hop.	See Performance Ballasting section of this Operator's Manual.
Loose wheel hardware.	Tighten the hardware to the correct specification. See Service—Tighten section of this Operator's Manual.
Wheel slip.	Check the CommandCenter for the wheel slip percentage.
ILS malfunction (8R wheel tractors only).	Refer to ILS in this Operator's Manual section.

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## Transmission

### Hydraulic Oil Leak between Transmission and Engine

Problem	Solution
Clogged transmission vent screen.	Clean the vent screen. See the appropriate Transmission section of this Operator's Manual. See your John Deere dealer.

**Transmission Shifts Slowly and Tractor Steers Hard**

Problem	Solution
Cold oil.	See Transmission—General Information section of this Operator's Manual.

**Transmission Slips, Shifts Roughly or Abruptly after Oil Change**

Problem	Solution
Recalibrate the transmission.	See your John Deere dealer.

**Transmission Starts Out Too Quickly or Slowly**

Problem	Solution
No identifiable problem.	Change the start-up gear through CommandCenter settings (16-speed PST and e23 only). See the appropriate Transmission section of this Operator's Manual. Adjust the CommandPRO settings. See CommandPRO Joystick—Acceleration/Deceleration Response in IVT-AutoPowr Transmission with CommandPRO Joystick section of this Operator's Manual.

**AutoClutch Engages Too Quickly or Too Slowly when Pressing Brake Pedals**

Problem	Solution
No identifiable problem.	Verify that the brake pedals are latched together. Adjust the AutoClutch sensitivity settings. See Transmission—General Information section of this Operator's Manual.

**Tractor Will Not Achieve Maximum Speed**

Problem	Solution
Brake pedals unlocked.	Ensure that the brake pedals are latched together. See Brakes section of this Operator's Manual (not applicable to 8RT and 9 Series Tractors).

**Incorrect Wheel Speed Displayed**

Problem	Solution
Incorrect tire size calibration or wheel slip value.	Complete the radar and wheel slip calibrations. See CommandCenter section of this Operator's Manual.

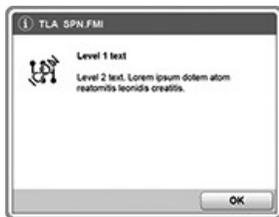
# Troubleshooting—Diagnostic Trouble Codes (DTC)

## STOP, Service, and Information Alerts on CommandCenter

CommandCenter alert overlays display control unit, diagnostic trouble code (DTC), system, and solution. If condition is out of range, the control unit followed by an industry standard number displays. Numbers to the left of the decimal indicate the system and numbers to the right of decimal indicate the condition.

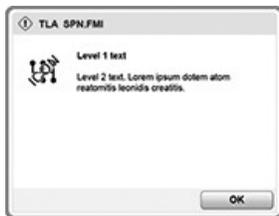
Some alert indicators can be acknowledged by pressing OK. If condition still exists, diagnostic trouble code may reappear later. Follow solution on CommandCenter. If situation cannot be corrected, contact your John Deere dealer. For more information on DTCs, refer to Diagnostics Center. For access information, see Access Diagnostic Trouble Codes in this Operator's Manual section.

**IMPORTANT: Engine will shut down automatically if STOP signal is received when operator is out of the seat for longer than 3 seconds and the transmission control is in PARK. CommandCenter display can be reset by cycling key switch.**



RXA0167778—UN—06MAY19  
Information Alert Overlay

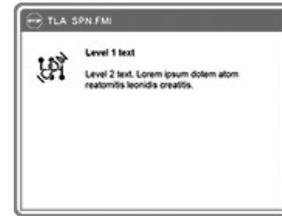
**Information Alert** — in some situations, information (INFO) indicator light comes on continuously and alarm pattern sounds for 2 seconds, indicating a fault condition. Tractor operations can continue without damage but performance of some functions may be degraded. Operating in a different manner may correct and clear an out-of-range condition.



RXA0167779—UN—06MAY19  
Service Alert Overlay

**Service Alert** — light flashes and an alarm pattern sounds five times. A performance or operational problem has been detected and must be resolved as soon as possible. Continued operations can cause a service alert to escalate into a STOP alert. If appropriate corrective action is not taken soon (service, repair,

operate in a different manner), a significant reduction in performance and/or damage to machine will occur.



RXA0167780—UN—06MAY19  
STOP Alert Overlay

**STOP Alert** — light flashes and an alarm pattern sounds continuously. A serious malfunction requiring immediate attention has occurred. If situation allows, stop operations immediately, reduce engine speed to idle, and shut down engine. Turn key to run position to observe CommandCenter display for problem identification and solution. It may be necessary to access the stored codes. See Access Diagnostic Trouble Codes in this Operator's Manual section. Correct problem before restarting. If ignored, damage to machine will occur.

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## Access Diagnostic Trouble Codes

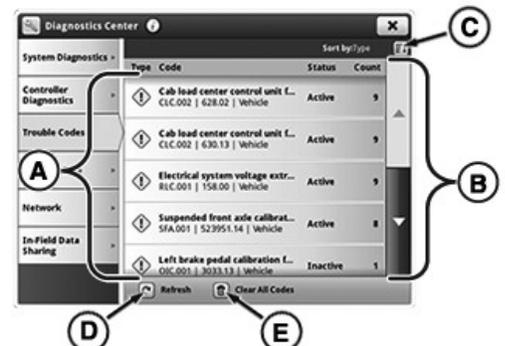
*NOTE: If problem is not resolved after cycling power to tractor or following solution on CommandCenter page, see your John Deere dealer.*

*Not all active DTCs are displayed. Follow steps to retrieve stored DTCs.*



RXA0133360—UN—26JUL13

1. Select Menu.
2. Select System tab.
3. Select Diagnostics Center icon.
4. Select Trouble Codes tab.



RXA0166979—UN—14MAR19

5. Select desired diagnostic trouble code from list (A).  
Use arrow keys (B) to access additional diagnostic trouble codes in the list.

**Additional Features on Trouble Codes Page**

Sort by: (C) — select to sort list by Code, Controller, Count, Status, or Type.

Refresh (D) — select to display the most up-to-date list of codes and counts. Page automatically refreshes upon entry.

Clear All Codes (E) — select to clear inactive DTCs and reset counts to zero. A message displays to verify action since it cannot be undone.

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TS36762.0000283-19-21JUN22

# Service—Storage

## Place Tractor in Storage

**IMPORTANT: If tractor will not be used for more than three months, the following recommendations for storage and removal from storage will minimize corrosion and deterioration.**

*NOTE: Whenever possible store tractor in a building or under a roof to avoid damage resulting from prolonged exposure to the elements.*

1. Lower hitch.
2. Change engine oil and replace filter (if required).

*NOTE: Do not add BioDiesel fuel if placing tractor in storage.*

3. Drain fuel tank and add back approximately 19 L (5 gal) of fuel.

**IMPORTANT: Final Tier 4/Stage V Engines Only: To determine tractor engine type, see Engine Serial Number in Identification Numbers section of this Operator's Manual. Long-term storage of Diesel Exhaust Fluid (DEF) in vehicle (over six months) is not recommended. If long-term storage is necessary, periodic testing of DEF is recommended to ensure that urea concentration does not fall out of specification.**

4. Final Tier 4 and Stage V tractors: Diesel Exhaust Fluid (DEF) has a limited shelf life, but may be stored in vehicle for as long as six months, depending upon storage conditions, see Storing DEF in Diesel Exhaust Fluid (DEF) section of this Operator's Manual. If draining DEF tank is necessary, see Draining DEF Tank in Fuel, Lubricants, and Coolant section of this Operator's Manual for proper procedure.
5. Using plastic bags and either tape or tie-bands, seal air inlets and exhaust, crankcase vent tube, radiator overflow hose, and transmission-hydraulic system fill cap.

**IMPORTANT: Prevent damage to the tractor emissions system. Never disconnect the battery disconnect switch while the battery disconnect switch light is illuminated or blinking. See Battery Disconnect Switch in Engine Operation section of this Operator's Manual.**

**IMPORTANT: Prevent damage to electrical components. Avoid storing tractor equipped with EVT/eAutoPowr in temperatures below -40° C (-40°F).**

6. Turn off the battery disconnect switch.
7. Disconnect batteries. See Service Batteries and

Connections in Service—Electrical section of this Operator's Manual.

8. Remove and store batteries in a cool, dry location. Keep batteries charged.<sup>1</sup>
9. Coat all exposed (machined) metal surfaces such as lift cylinders and steering cylinder rods with light coat of grease.
10. Lubricate all grease fittings.

**If tractor must be stored outside, follow these additional precautions:**

1. Cover instrument panel, control levers, and seat with sheets of material or cardboard to protect against sun rays.
2. Thoroughly clean the tractor exterior. See Tractor Exterior in the Service—Clean section of this Operator's Manual.
3. Wax or cover entire tractor with waterproof material.
4. Raise tires or tracks off the ground and/or cover them to protect from heat and sunlight.

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## Remove Tractor from Storage

1. Remove all coverings placed in or on tractor while preparing for storage.

**IMPORTANT: To avoid engine damage, unseal crankcase vent tube.**

2. Unseal all openings sealed during storage.
3. Remove any accumulated trash or debris, especially around engine and inside engine compartment.

**IMPORTANT: If air conditioning compressor is locked up, engine operation with compressor clutch engaged may damage drive belt or compressor.**

4. Rotate air conditioner compressor pulley several turns. If pulley does not turn freely, compressor components may be seized, see your John Deere dealer.
5. Check auxiliary drive belt for cracking and, if serviceable, install auxiliary drive belt on air conditioning compressor pulley.
6. Check under and around tractor for any evidence of fluid leaks.

<sup>1</sup> Disconnect battery ground cable for short-term storage periods (20 to 90 days).

**IMPORTANT: If transmission-hydraulic oil level was correct at time of storage, and there is no evidence of hydraulic oil leaks, there should be no concern starting tractor even if transmission-hydraulic oil sight glass level is low. Over a period of storage, hydraulic oil may drain into transmission, causing sight glass to read low even when adequate amount of oil is available. If there are indications of oil leaks, do not start tractor until the source has been determined and repairs made. If there are no leakage indications, but there is any doubt about oil level at time of storage, check hydraulic oil level as soon as possible after starting tractor.**

7. Check transmission-hydraulic oil level. Add oil as required.
8. Check all other fluid levels. Fill as required.
9. Fill fuel tank.

**IMPORTANT: To confirm which engine your tractor is equipped with, see Engine Serial Number in Identification Numbers section of this Operator's Manual.**

10. (Final Tier 4 and Stage V engines) If Diesel Exhaust Fluid (DEF) tank has not been drained, test urea concentration, see Testing Diesel Exhaust Fluid (DEF) in Diesel Exhaust Fluid (DEF) section of this Operator's Manual. If concentration is not within specifications, drain and replace with new or good DEF. If DEF tank has been drained, fill tank, see Refilling Diesel Exhaust Fluid (DEF) Tank in Diesel Exhaust Fluid (DEF) section of this Operator's Manual for appropriate procedures.
11. Inspect tires or tacks. To check:
  - Tires: Inspect tires and check inflation pressures. See Front or Rear Wheels and Tires sections of this Operator's Manual.
  - Tracks: Inspect tracks for wear or damage. See Track Wear in the Service—Check section of this Operator's Manual.
12. Perform all Daily or 10 Hour services and any other scheduled services as required, see 10 Hour or Daily Service in Service—Record Charts section of this Operator's Manual.
13. Install batteries and connect cables.
14. Turn battery disconnect switch on.
15. Turn key switch to RUN position for one minute to allow fuel system to prime.

*NOTE: While operating engine at low idle, visually check all instruments and indicators to ensure they function properly.*

16. Start and operate engine at low idle for several minutes.
17. Check tractor functions and systems, including air conditioning.
18. Warm up tractor before putting tractor under load.

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RX32825.00000FE-19-06JAN22

# Specifications

## Engine

[Ag]	9RX			
	490	540	590	640
<b>POWER</b>				
Rated Engine Power PS <sup>a</sup> (hp ISO) at 2100 Engine rpm (ECE-R120)	360 kW (490 hp)	397 kW (540 hp)	434 kW (590 hp)	471 kW (640 hp)
Rated Engine Power PS <sup>a</sup> (hp ISO) at 2100 Engine rpm (ECE-R24)	346 kW (470 hp)	381 kW (518 hp)	417 kW (566 hp)	452 kW (614 hp)
Rated PTO Power (hp SAE) at Rated PTO Speed (1895 erpm) <sup>bc</sup>	249 kW (335 hp)			
Constant Power Range (rpm)	1550			
<b>ENGINE</b>				
Manufacturer	John Deere PowerTech 13.6 L Diesel Engine / JD14X			
Aspiration	Single Wastegated Turbocharger Air-to-Air Aftercooling and Cooled Exhaust Gas Recirculation	Dual Series Turbocharger with Fixed Geometry First Stage, Wastegated Second Stage, Air-to-Air Aftercooling, and Cooled Exhaust Gas Recirculation		
Rated Speed (rpm)	2100			
Type	Diesel, In-Line, 6-Cylinder, Wet-Sleeve Cylinder Liners with 4 Valves-In-Head			
Filter, Engine Air	Dual Stage with Exhaust Aspiration			
Displacement	13.6 L (827 in <sup>3</sup> )			
Bore and Stroke	132 x 165 mm (5.20 x 6.50 in)			
Compression Ratio	15.9:1			
Lubrication	Full-Pressure, Full-Flow Filtration with Bypass			
Filter, Oil	Replaceable Spin-On Style Oil Filter			
<b>FUEL SYSTEM</b>				
Type	Electronically Controlled, High-Pressure Common Rail with Electric Fuel Transfer Pump (self-priming)			
Filter System	Two-Stage with Water Separator and Service Indicator Light			
Filter, Primary	10 Micron Replaceable Cartridge with Water Indication Sensor and Drain			
Filter, Secondary	2 Micron Spin-On Element			
Required Fuel Type	Ultra-Low Sulfur Diesel (B20 diesel compatible)			

<sup>a</sup>German term for horse power in which one PS is equivalent to 0.9863 horse power.

<sup>b</sup>Does not include optional equipment losses.

<sup>c</sup>80% factory observed MOE value.

[Scraper]	9RX		
	490	540	590
<b>POWER</b>			
Rated Engine Power PS <sup>a</sup> (hp ISO) at 2100 Engine rpm (ECE-R120)	360 kW (490 hp)	397 kW (540 hp)	434 kW (590 hp)
Rated Engine Power PS <sup>a</sup> (hp ISO) at 2100 Engine rpm (ECE-R24)	346 kW (470 hp)	381 kW (518 hp)	417 kW (566 hp)
Constant Power Range (rpm)	1550		
<b>ENGINE</b>			
Manufacturer	John Deere PowerTech 13.6 L Diesel Engine / JD14X		
Aspiration	Single Wastegated Turbocharger Air-to-Air Aftercooling and Cooled Exhaust Gas Recirculation	Dual Series Turbocharger with Fixed Geometry First Stage, Wastegated Second Stage, Air-to-Air Aftercooling, and Cooled Exhaust Gas Recirculation	
Rated Speed (rpm)	2100		
Type	Diesel, In-Line, 6-Cylinder, Wet-Sleeve Cylinder Liners with 4 Valves-In-Head		

## Specifications

[Scraper]	9RX		
	490	540	590
Filter, Engine Air	Dual-stage with Exhaust Aspiration		
Displacement	13.6 L (827 in <sup>3</sup> )		
Bore and Stroke	132 x 165 mm (5.20 x 6.50 in)		
Compression Ratio	15.9:1		
Lubrication	Full-Pressure, Full-Flow Filtration with Bypass		
Filter, Oil	Replaceable Spin-On Style Oil Filter		
<b>FUEL SYSTEM</b>			
Type	Electronically Controlled, High-Pressure Common Rail with Electric Fuel Transfer Pump (self-priming)		
Filter System	Two-Stage with Water Separator and Service Indicator Light		
Filter, Primary	10 Micron Replaceable Cartridge with Water Indication Sensor and Drain		
Filter, Secondary	2 Micron Spin-On Element		
Required Fuel Type	Ultra-Low Sulfur Diesel (B20 diesel compatible)		

<sup>a</sup>German term for horse power in which one PS is equivalent to 0.9863 horse power.

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## Capacities

[Ag]	9RX			
	490	540	590	640
Fuel Tank	1514.0 L (400.0 gal)			
DEF Tank	120.0 L (31.7 gal)			
Cooling System <sup>a</sup>	56.5 L (14.9 gal)			
Crankcase Oil Volume <sup>b</sup>	64 L (16.9 gal)			
<b>Hydraulic-Transmission-Axle Oil:</b>				
Without 3-Point Rear Hitch and PTO	234.7 L (62.0 gal)			
With 3-Point Rear Hitch and PTO	242.3 L (64.0 gal)			
<b>Hydraulic Reservoir Reference Marks:</b>				
FULL COLD Mark	103.0 L (27.2 gal)			
MIN COLD Mark	91.8 L (24.3 gal)			
High Volume Take Out Oil Mark (dot on sight gauge) <sup>c</sup>	150.0 L (39.6 gal)			
<b>Transmission-Hydraulic Reservoir:</b>				
Standard Flow	208.0 L (55.0 gal)			
High Flow	212.0 L (56.0 gal)			

<sup>a</sup>Includes deaeration tank capacity.

<sup>b</sup>Includes filter.

<sup>c</sup>For applications requiring large volumes of oil (for example, an Air Seeder).

[Scraper]	9RX		
	490	540	590
Fuel Tank	1514.0 L (400.0 gal)		
DEF Tank	120.0 L (31.7 gal)		
Cooling System <sup>a</sup>	56.5 L (14.9 gal)		
Crankcase Oil Volume <sup>b</sup>	64 L (16.9 gal)		
Hydraulic-Transmission-Axle Oil	234.7 L (62.0 gal)		
<b>Hydraulic Reservoir Reference Marks:</b>			
FULL COLD Mark	103.0 L (27.2 gal)		
MIN COLD Mark	91.8 L (24.3 gal)		
High Volume Take Out Oil Mark (dot on sight gauge) <sup>c</sup>	150.0 L (39.6 gal)		

<sup>a</sup>Includes deaeration tank capacity.

<sup>b</sup>Includes filter.

<sup>c</sup>For applications requiring large volumes of oil (for example, pulling 3 scrapers).

## Specifications

AK08008.0000F04-19-16FEB23

### Hydraulic System

[Ag]	9RX			
	490	540	590	640
<b>Type</b>	Closed-Center, Pressure/Flow Compensated			
<b>Selective Control Valves</b>	Standard—4; Optional—5, 6, 7, and 8			
<b>Maximum Pressure</b>	20000 kPa (2900 psi)			
<b>Rated Flow:</b>				
85 cc Pump	208 L/min (55 gal/min)			
85 cc + 85 cc Dual Pump	416 L/min (110 gal/min)			
<b>Available Flow<sup>a</sup>:</b>				
Single Pump at One 1/2-Inch Coupler	132 L/min (35 gal/min)			
Dual Pump at One 3/4-Inch Coupler	170 L/min (45 gal/min)			

<sup>a</sup>Approximate flow values @ 2100 engine rpm.

[Scraper]	9RX		
	490	540	590
<b>Type</b>	Closed-Center, Pressure/Flow Compensated		
<b>Selective Control Valves</b>	Standard—4; Optional—6		
<b>Maximum Pressure</b>	20000 kPa (2900 psi)		
<b>Rated Flow:</b>			
85 cc + 85 cc Dual Pump	416 L/min (110 gal/min)		
<b>Available Flow<sup>a</sup>:</b>			
Dual Pump at One 3/4-Inch Coupler	170 L/min (45 gal/min)		

<sup>a</sup>Approximate flow values @ 2100 engine rpm.

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### Transmission and Drivetrain

[Ag]	9RX			
	490	540	590	640
<b>TRANSMISSION</b>				
<b>e18 PowerShift (18F/6R) 40 km/h (25.0 mph)<sup>a</sup></b>	Standard			
<b>FRONT AND REAR AXLES</b>				
<b>Final Drives</b>	Bull Gear and Double Idler with Floating Pinion			
<b>120 mm Flanged</b>	Standard			
<b>Rear Axle Supports</b>	Optional <sup>bc</sup>			
<b>Front Axle Supports</b>	Optional <sup>dc</sup>			
<b>Differential Lock:</b>				
Full-Locking Electrohydraulic	Standard			
Auto Disengagement for Various Selectable Turn Angles	Standard			
<b>TRACKS</b>				
<b>Type</b>	Camso 3500 and 6500 Series Tracks			
<b>Width:</b>				
457 mm (18 in) (narrow)	Optional		—	
610 mm (24 in) (narrow)	Optional		—	
762 mm (30 in)	Standard			
914 mm (36 in)	Optional			

## Specifications

[Ag]	9RX			
	490	540	590	640
<b>Spacing:</b>				
2218 mm (87 in)	Standard			
2032 mm (80 in)	Optional		—	
2235 mm (88 in)	Optional		—	
3048 mm (120 in)	Optional			
<b>STEERING</b>				
<b>Hydraulic Power Steering with Electronic Backup Pump</b>	Standard			
<b>ActiveCommand Steering (ACS)</b>	Optional			
<b>BRAKES</b>				
<b>Hydraulic Power, Wet-Disc, Self-Adjusting on Front and Rear Axle</b>	Standard			
<b>Hydraulic Trailer Brakes</b>	Optional			

<sup>a</sup>For ground speed data, see *Ground Speeds—e18 PowerShift Transmission* in this Operator's Manual section.

<sup>b</sup>Included with 3-point hitch.

<sup>c</sup>With 30 or 36 inch tracks.

<sup>d</sup>With sprayer tanks or dozer blade.

[Scraper]	9RX		
	490	540	590
<b>TRANSMISSION</b>			
<b>e18 PowerShift (18F/6R) 40 km/h (25.0 mph)<sup>a</sup></b>	Standard		
<b>FRONT AND REAR AXLES</b>			
<b>Final Drives</b>	Bull Gear and Double Idler with Floating Pinion		
<b>120 mm Flanged</b>	Standard		
<b>Rear Axle Supports</b>	Standard		
<b>Front Axle Supports</b>	Standard		
<b>Differential Lock:</b>			
Full-Locking Electrohydraulic	Standard		
Auto Disengagement for Various Selectable Turn Angles	Standard		
<b>TRACKS</b>			
<b>Type</b>	Camso 6500 Scraper Series Track		
<b>Width:</b>			
762 mm (30 in)	Standard		
<b>Spacing:</b>			
2218 mm (87 in)	Standard		
<b>STEERING</b>			
<b>Hydraulic Power Steering with Electronic Backup Pump</b>	Standard		
<b>ActiveCommand Steering (ACS)</b>	Optional		
<b>BRAKES</b>			
<b>Hydraulic Power, Wet-Disc, Self-Adjusting on Front and Rear Axle</b>	Standard		
<b>Hydraulic Trailer Brakes</b>	Optional		

<sup>a</sup>For ground speed data, see *Ground Speeds—e18 PowerShift Transmission* in this Operator's Manual section.

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## Specifications

### PTO [Ag], Hitch [Ag], and Drawbar

[Ag]	9RT		
	490	540	590
<b>HITCH</b>			
<b>Rear 3-Point Hitch—Category 4N/3 with Quick Coupler (electric-hydraulic with draft sensing):</b>			
6804 kg (15000 lb) Lift Capacity	Optional		—
9072 kg (20000 lb) Lift Capacity	Optional		—
<b>Rear 3-Point Hitch—Category 4N/4 with Quick Coupler (electric-hydraulic with draft sensing):</b>			
6804 kg (15000 lb) Lift Capacity		Optional	
9072 kg (20000 lb) Lift Capacity		Optional	
<b>DRAWBAR</b>			
For Drawbar Load Limitations, see Drawbar Load Limitations [Ag] in Drawbar section of this Operator's Manual.			
<b>PTO</b>			
<b>Rear—Independent:</b>			
1 3/4-Inch, 20-Spline, 1000 rpm		Optional	

[Scraper]	9RX		
	490	540	590
<b>DRAWBAR</b>			
For drawbar load limitations, see Scraper Applications [Scraper] in Drawbar section of this Operator's Manual.			

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### Electrical System

Type	Three Batteries in Parallel
Alternator/Battery	Standard—250A/12V; Optional—330A/12V
Total Cold Cranking Amps	2775 (3-925 CCA group 31 batteries)

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### Integrated Technology

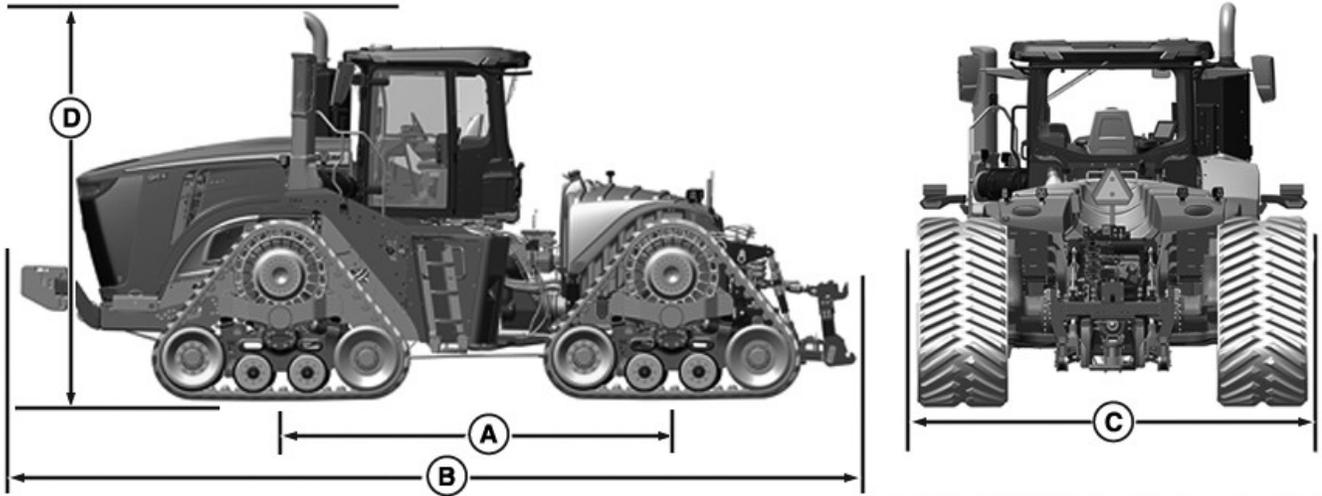
Integrated AutoTrac	Standard
Connectivity Hardware	Includes Integrated Cab Wiring Harness, Antenna, JDLINK Modem (MTG), and Ethernet Harnesses <sup>a</sup>
Connectivity <sup>b</sup>	JDLINK Connectivity can be Enabled in John Deere Operations Center
ISOBUS Implement Connection	Standard (ISO 11783)
<b>G5 CommandCenter:</b>	
G5 CommandCenter 257 mm (10.1 in) display with G5 processor	Availability Dependent Upon Destination
G5 <sup>Plus</sup> CommandCenter 325 mm (12.8 in) display with G5 processor	Availability Dependent Upon Destination

<sup>a</sup>Ethernet harnesses may vary per configuration.

<sup>b</sup>Connectivity service is subject to country availability.

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Overall Dimensions



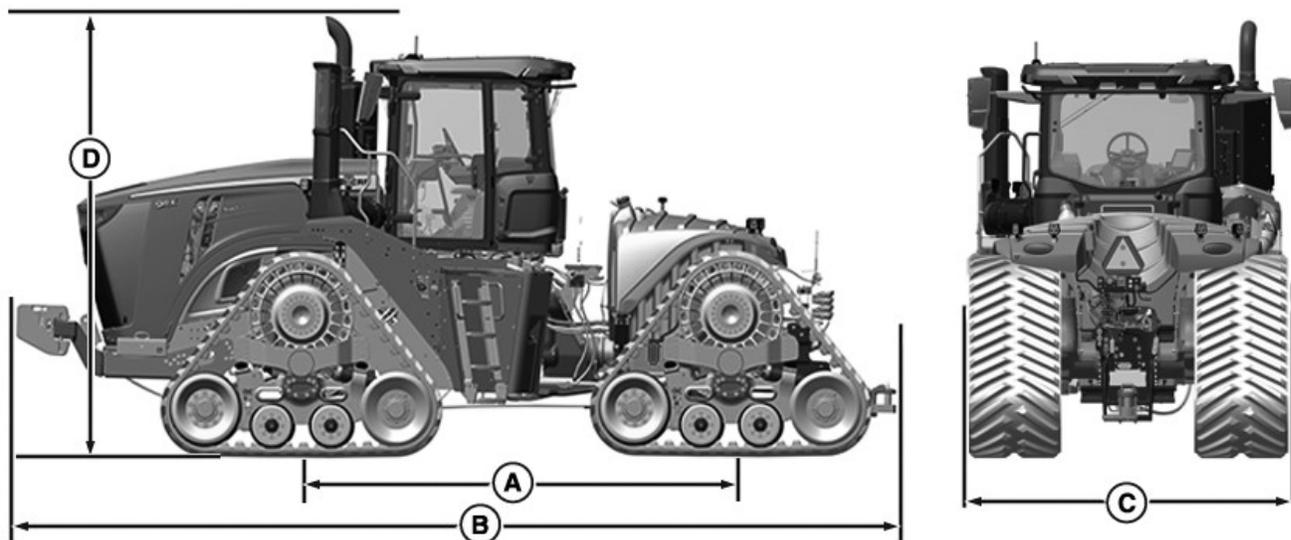
RXA0183324—UN—21MAY21

[Ag]	9RX			
	490	540	590	640
<b>LENGTH</b>				
Wheelbase (A)	4128 mm (162.5 in)			
With Hitch and Coupler (B)	8795 mm (346.3 in)			
<b>WIDTH (C)</b>				
<b>457 mm (18 in) (narrow) Belt Width:</b>				
2032 mm (80 in) Track Spacing	2489 mm (98.0 in)			—
2235 mm (88 in) Track Spacing	2692 mm (106.0 in)			—
3048 mm (120 in) Track Spacing	3505 mm (138.0 in)			—
<b>610 mm (24 in) (narrow) Belt Width:</b>				
2032 mm (80 in) Track Spacing	2642 mm (104.0 in)			—
2235 mm (88 in) Track Spacing	2845 mm (112.0 in)			—
3048 mm (120 in) Track Spacing	3658 mm (144.0 in)			—
<b>762 mm (30 in) Belt Width:</b>				
2218 mm (87 in) Track Spacing		2980 mm (117.3 in)		
3048 mm (120 in) Track Spacing		3810 mm (150.0 in)		
<b>914 mm (36 in) Belt Width:</b>				
2218 mm (87 in) Track Spacing		3132 mm (123.3 in)		
3048 mm (120 in) Track Spacing		3962 mm (156.0 in)		
<b>HEIGHT (D)</b>				
Top of Roof		3716 mm (146.3 in)		
With StarFire Receiver Bracket		3729 mm (146.8 in)		
With Integrated StarFire Receiver		3747 mm (147.5 in)		
With Universal StarFire Receiver		3866 mm (152.2 in)		
Top of Exhaust		3685 mm (145.1 in)		
<b>TURNING RADIUS</b>				
With 762 mm (30 in) Tracks at 2210 mm (87 in) Tread Spacing		6422 mm (21.1 ft)		

## Specifications

[Ag]	9RX			
	490	540	590	640
<b>CLEARANCE</b>				
<b>Drawbar<sup>a</sup></b>	325 mm (12.8 in)			

<sup>a</sup>Ground to bottom of drawbar support.



RXA0183325—UN—28MAY21

[Scraper]	9RX		
	490	540	590
<b>LENGTH</b>			
<b>Wheelbase (A)</b>	4128 mm (162.5 in)		
<b>With Front Weights and Drawbar<sup>a</sup> (B)</b>	8454 mm (332.8 in)		
<b>WIDTH (C)</b>			
<b>762 mm (30 in) Belt Width</b>	2980 mm (117.3 in)		
<b>HEIGHT (D)</b>			
<b>Top of Roof</b>	3730 mm (146.9 in)		
<b>With Integrated StarFire Receiver</b>	3747 mm (147.5 in)		
<b>With Universal StarFire Receiver</b>	3866 mm (152.2 in)		
<b>Top of Exhaust</b>	3685 mm (145.1 in)		
<b>TURNING RADIUS</b>			
<b>With 762 mm (30 in) Tracks at 2210 mm (87 in) Tread Spacing</b>	9144 mm (30 ft)		
<b>CLEARANCE</b>			
<b>Drawbar<sup>b</sup></b>	325 mm (12.8 in)		

<sup>a</sup>Category 5 drawbar in farthest back position.

<sup>b</sup>Ground to bottom of drawbar support.

AK08008,0000F0A-19-20APR23

## Specifications

### Tractor Loads/Weights

[Ag]	9RX			
	490	540	590	640
<b>ESTIMATED SHIPPING WEIGHT<sup>a</sup></b>	26000 kg (57200 lb)			
<b>MAXIMUM BALLAST LEVEL<sup>b</sup></b>	28123 kg (62000 lb)		30390 kg (67000 lb)	

<sup>a</sup>Tractor equipped with 30-inch standard tracks, 87-inch spacing, unladen, a full fuel tank, no PTO, and no 3-point hitch.

<sup>b</sup>For specific ballast instructions, see Performance Ballasting Section of this Operator's Manual.

[Scraper]	9RX		
	490	540	590
<b>ESTIMATED SHIPPING WEIGHT<sup>a</sup></b>	26000 kg (57200 lb)		
<b>MAXIMUM BALLAST LEVEL<sup>b</sup></b>	27216 kg (60000 lb)		

<sup>a</sup>Tractor equipped with 30-inch standard tracks, 87-inch spacing, unladen, and a full fuel tank.

<sup>b</sup>For specific ballast instructions, see Performance Ballasting Section of this Operator's Manual.

kd34109,1657550765004-19-14JUN23

### Ground Speeds—e18 PowerShift Transmission

#### Forward Speeds

Gear	Ground Speeds <sup>a</sup> km/h (mph)
1	4.1 (2.5)
2	5.0 (3.1)
3	5.5 (3.4)
4	6.2 (3.9)
5	6.8 (4.2)
6	7.7 (4.8)
7	8.4 (5.2)
8	9.4 (5.8)
9	10.4 (6.5)
10	11.6 (7.2)
11	12.8 (8.0)
12	14.0 (8.7)
13	15.7 (9.8)
14	17.3 (10.7)
15	21.4 (13.3)
16	25.0 (15.5) <sup>bc</sup>
	26.4 (16.4) <sup>b</sup>
17	25.0 (15.5) <sup>bc</sup>
	32.4 (20.1) <sup>b</sup>
18	25.0 (15.5) <sup>b</sup> @ 1316 erpm <sup>c</sup>
	39.9 (24.8) <sup>b</sup>

<sup>a</sup>Ground speeds are at a rated engine speed of 2100 erpm (unless otherwise noted).

<sup>b</sup>If equipped.

<sup>c</sup>Engine speed is electronically limited.

#### Reverse Speeds

Gear	Ground Speeds km/h (mph)
R1	4.1 (2.5)
R2	5.5 (3.4)
R3	6.2 (3.9)
R4	8.4 (5.2)
R5	9.4 (5.8)
R6	12.8 (8.0)

KD34109,0000947-19-16FEB23

### Limited Battery Warranty

*NOTE: Applicable in North America only. For complete machine warranty, reference a copy of the John Deere warranty statement. Contact your John Deere dealer to obtain a copy.*

#### To Secure Warranty Service

The purchaser must request warranty service from a John Deere dealer authorized to sell John Deere batteries, and present the battery to the dealer with the top cover plate codes intact.

#### Replacement

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship will be eligible for warranty consideration.

#### This Warranty Does Not Cover

Breakage of the container, cover, or terminals.

Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.

Transportation, mailing, or service call charges for warranty service.

### Limitation of Implied Warranties and Purchaser's Remedies

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE.

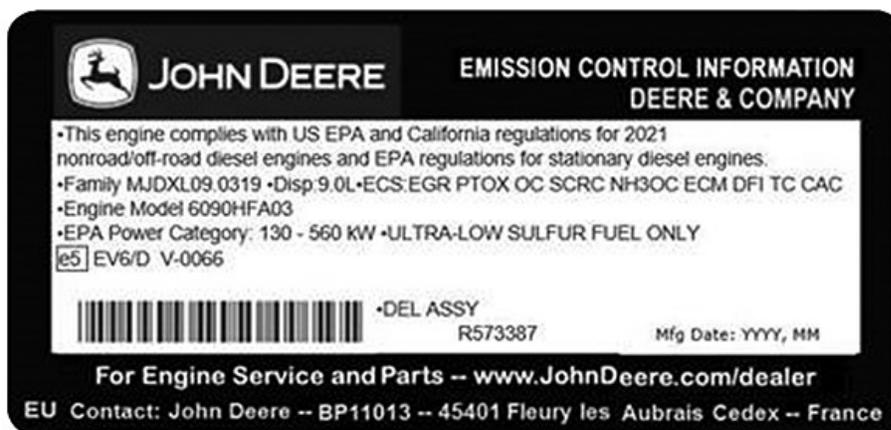
IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

### No Dealer Warranty

The selling dealer makes no warranty of it's own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

DX,BATWAR,NA-19-06AUG21

## Emissions Control System Certification Label



Engine Emissions Label

RG33429—UN—04FEB21

**CAUTION:** Statutes providing severe penalties for tampering with emissions controls may apply to the user or dealer.

The emissions warranty applies to those engines marketed by John Deere that have been certified by the United States Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB); and used in the United States and Canada in Non-road equipment. The presence of an emissions label like the one shown signifies that the engine has been certified with the EPA and/or CARB. The EPA and CARB warranties only apply to new engines having the certification label affixed to the engine and sold as stated above in the geographic areas. The presence of an EU number signifies that the engine has been certified with the European Union countries per Regulation (EU) 2016/1628 and supplementing legislation. The EPA and/or CARB emissions warranties do not apply to the EU countries.

The emissions label has applicable US EPA and/or CARB regulatory year. The regulatory year determines which warranty statement is applicable to engine. See "EPA Non-road Emissions Control Warranty Statement—Compression Ignition" and "CARB Non-road Emissions Control Warranty Statement—Compression Ignition". For additional regulatory year warranty statements, see [www.JohnDeere.com](http://www.JohnDeere.com) or contact the nearest John Deere service dealer for assistance.

### Emission Control System(s) Laws

The U.S. EPA and California ARB prohibit the removal or rendering inoperative of any device or element of design installed on or in engines/equipment in compliance with applicable emission regulations prior to or after the sale and delivery of the engines/equipment to the ultimate purchaser.

DX,EMISSIONS,LABEL-19-05FEB21

## EPA Non-road Emissions Control Warranty Statement—Compression Ignition



JOHN DEERE

DXLOGOV1—UN—28APR09

### U.S. AND CANADA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emissions Control Information" label located on the engine. If the engine is operated in the United States or Canada and the Emissions Control information label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine conforms to US EPA nonroad compression-ignition regulations", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the label states: "This engine complies with US EPA and CARB regulations for nonroad diesel engines", or "This engine conforms to US EPA and California nonroad compression-ignition emission regulations", also refer to the "California Emission Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emissions-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

### JOHN DEERE'S WARRANTY RESPONSIBILITY

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine including all parts of its emission-control system was designed, built and equipped so as to conform at the time of the sale with Section 213 of the Clean Air Act and is free from defects in materials and workmanship which would cause the engine to fail to conform with applicable US EPA regulations for a period of five years from the date the engine is placed into service or 3,000 hours of operation, whichever first occurs.

Where a warrantable condition exists, John Deere will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to you, including expenses related to diagnosing and repairing or replacing emission-related parts. Warranty coverage is subject to the limitations and exclusions set forth herein. Emission-related components include engine parts developed to control emissions related to the following:

Air-Induction System	Aftertreatment Devices
Fuel System	Crankcase Ventilation Valves
Ignition System	Sensors
Exhaust Gas Recirculation Systems	Engine Electronic Control Units

### EMISSION WARRANTY EXCLUSIONS

John Deere may deny warranty claims for malfunctions or failures caused by:

- Non-performance of maintenance requirements listed in the Operator's Manual
- The use of the engine/equipment in a manner for which it was not designed
- Abuse, neglect, improper maintenance or unapproved modifications or alterations
- Accidents for which it does not have responsibility or by acts of God

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel can harm the emissions control system of the engine/equipment and is not approved for use.

To the extent permitted by law John Deere is not liable for damage to other engine components caused by a failure of an emission-related part, unless otherwise covered by standard warranty.

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISIONS OF MATERIAL AND SERVICES AS SPECIFIED HEREIN. WHERE PERMITTED BY LAW, NEITHER JOHN DEERE NOR ANY AUTHORIZED JOHN DEERE ENGINE DISTRIBUTOR, DEALER, OR REPAIR FACILITY OR ANY COMPANY AFFILIATED WITH JOHN DEERE WILL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

Emission\_CI\_EPA (18Dec09)



JOHN DEERE

**U.S. AND CANADA EMISSION CONTROL WARRANTY STATEMENT  
YOUR WARRANTY RIGHTS AND OBLIGATIONS**

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emissions Control Information" label located on the engine. If the engine is operated in the United States or Canada and the Emissions Control information label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine conforms to US EPA nonroad compression-ignition regulations", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the label states: "This engine complies with US EPA and CARB regulations for nonroad diesel engines", or "This engine conforms to US EPA and California nonroad compression-ignition emission regulations", also refer to the "California Emission Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emissions-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

**JOHN DEERE'S WARRANTY RESPONSIBILITY**

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine including all parts of its emission-control system was designed, built and equipped so as to conform at the time of the sale with Section 213 of the Clean Air Act and is free from defects in materials and workmanship which would cause the engine to fail to conform with applicable US EPA regulations for a period of five years from the date the engine is placed into service or 3,000 hours of operation, whichever first occurs.

Where a warrantable condition exists, John Deere will repair or replace, as it elects, any part or component with a defect in materials or workmanship that would increase the engine's emissions of any regulated pollutant within the stated warranty period at no cost to you, including expenses related to diagnosing and repairing or replacing emission-related parts. Warranty coverage is subject to the limitations and exclusions set forth herein. Emission-related components include engine parts developed to control emissions related to the following:

Air-Induction System	Aftertreatment Devices
Fuel System	Crankcase Ventilation Valves
Ignition System	Sensors
Exhaust Gas Recirculation Systems	Engine Electronic Control Units

**EMISSION WARRANTY EXCLUSIONS**

John Deere may deny warranty claims for malfunctions or failures caused by:

- Non-performance of maintenance requirements listed in the Operator's Manual
- The use of the engine/equipment in a manner for which it was not designed
- Abuse, neglect, improper maintenance or unapproved modifications or alterations
- Accidents for which it does not have responsibility or by acts of God

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel can harm the emissions control system of the engine/equipment and is not approved for use.

To the extent permitted by law John Deere is not liable for damage to other engine components caused by a failure of an emission-related part, unless otherwise covered by standard warranty.

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. REMEDIES UNDER THIS WARRANTY ARE LIMITED TO THE PROVISIONS OF MATERIAL AND SERVICES AS SPECIFIED HEREIN. WHERE PERMITTED BY LAW, NEITHER JOHN DEERE NOR ANY AUTHORIZED JOHN DEERE ENGINE DISTRIBUTOR, DEALER, OR REPAIR FACILITY OR ANY COMPANY AFFILIATED WITH JOHN DEERE WILL BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

Emission\_CI\_EPA (18Dec09)

TS1721—UN—15JUL13  
DX,EMISSIONS,EPA-19-12DEC12

**CARB Non-road Emissions Control Warranty Statement—Compression Ignition**

**Emissions Control Warranty Statement 2019 through 2021**



JOHN DEERE

**CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT**

DXLOGOV1—UN—28APR09

## Specifications

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### **YOUR WARRANTY RIGHTS AND OBLIGATIONS**

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emission Control Information" label located on the engine. If the engine is operated in the United States or Canada and the engine label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine complies with US EPA regulations for stationary emergency diesel engines", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the engine label states: "This engine complies with US EPA and CARB regulations for nonroad diesel engines" also refer to the "California Emissions Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

### **CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:**

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2019 through 2021 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

### **EMISSIONS WARRANTY EXCLUSIONS:**

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

### **JOHN DEERE'S WARRANTY RESPONSIBILITY:**

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

## Specifications

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- Air Induction System
- Intake manifold
  - Turbocharger
  - Charge air cooler

- Fuel Metering system
- Fuel injection system

- Exhaust Gas Recirculation
- EGR valve

- Catalyst or Thermal Reactor Systems
- Catalytic converter
  - Exhaust manifold

Emission control labels

- Particulate Controls
- Any device used to capture particulate emissions
  - Any device used in the regeneration of the capturing system
  - Enclosures and manifolding
  - Smoke Puff Limiters

- Positive Crankcase Ventilation (PCV) System
- PCV valve
  - Oil filler cap

Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

SCR systems and urea containers/dispensing systems

Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

### **OWNER'S WARRANTY RESPONSIBILITIES:**

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission\_CI\_CARB (01Feb17)

## Emissions Control Warranty Statement 2019 through 2021

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**JOHN DEERE**

### **CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS**

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the “Emission Control Information” label located on the engine. If the engine is operated in the United States or Canada and the engine label states: “This engine complies with US EPA regulations for nonroad and stationary diesel engines”, or “This engine complies with US EPA regulations for stationary emergency diesel engines”, refer to the “U.S. and Canada Emission Control Warranty Statement.” If the engine is operated in California, and the engine label states: “This engine complies with US EPA and CARB regulations for nonroad diesel engines” also refer to the “California Emissions Control Warranty Statement.”

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

#### **CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:**

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2019 through 2021 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State’s stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB and is free from defects in materials and workmanship which would cause the failure of a warranted part to be identical in all material respects to the part as described in John Deere’s application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first for all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

#### **EMISSIONS WARRANTY EXCLUSIONS:**

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

RG29280—UN—02FEB17

## Specifications

### JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

Air Induction System	Emission control labels	Advanced Oxides of Nitrogen (NOx) Controls
<ul style="list-style-type: none"><li>• Intake manifold</li><li>• Turbocharger</li><li>• Charge air cooler</li></ul>	Particulate Controls	<ul style="list-style-type: none"><li>• NOx absorbers and catalysts</li></ul>
Fuel Metering system	<ul style="list-style-type: none"><li>• Any device used to capture particulate emissions</li><li>• Any device used in the regeneration of the capturing system</li><li>• Enclosures and manifolding</li><li>• Smoke Puff Limiters</li></ul>	SCR systems and urea containers/dispensing systems
<ul style="list-style-type: none"><li>• Fuel injection system</li></ul>	Positive Crankcase Ventilation (PCV) System	Miscellaneous Items used in Above Systems
Exhaust Gas Recirculation	<ul style="list-style-type: none"><li>• PCV valve</li><li>• Oil filler cap</li></ul>	<ul style="list-style-type: none"><li>• Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware</li></ul>
<ul style="list-style-type: none"><li>• EGR valve</li></ul>		
Catalyst or Thermal Reactor Systems		
<ul style="list-style-type: none"><li>• Catalytic converter</li><li>• Exhaust manifold</li></ul>		

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

### OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission\_CI\_CARB (01Feb17)

RG29281—UN—27FEB17

## Emissions Control Warranty Statement 2022 through 2024



JOHN DEERE

DXLOGOV1—UN—28APR09

### CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emission Control Information" label located on the engine. If the engine is operated in the United States or Canada and the engine label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine complies with US EPA regulations for stationary emergency diesel engines", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the engine label states: "This engine complies with US EPA and California regulations for nonroad/off-road diesel engines" also refer to the "California Emissions Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you

## Specifications

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should contact John Deere at 1-319-292-5400.

### CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2022 through 2024 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB. John Deere warrants that this engine is free from defects in materials and workmanship which would cause the failure of emissions warranted parts to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. This applies to all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

### EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

### JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

#### Air Induction System

- Intake manifold
- Turbocharger
- Charge air cooler

#### Fuel Metering system

- Fuel injection system

#### Exhaust Gas Recirculation

- EGR valve

#### Catalyst or Thermal Reactor Systems

- Catalytic converter
- Exhaust manifold

#### Emission control labels

#### Particulate Controls

- Any device used to capture particulate emissions
- Any device used in the regeneration of the capturing system
- Enclosures and manifolding
- Smoke Puff Limiters

#### Positive Crankcase Ventilation (PCV) System

- PCV valve
- Oil filler cap

#### Advanced Oxides of Nitrogen (NOx) Controls

- NOx absorbers and catalysts

#### SCR systems and urea containers/dispensing systems

#### Miscellaneous Items used in Above Systems

- Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware

## *Specifications*

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Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

### **OWNER'S WARRANTY RESPONSIBILITIES:**

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission\_CI\_CARB (14Apr20)

## Emissions Control Warranty Statement 2022 through 2024

DXLOGOV1 —UN—28APR09



**JOHN DEERE**

### CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

To determine if the John Deere engine qualifies for the additional warranties set forth below, look for the "Emission Control Information" label located on the engine. If the engine is operated in the United States or Canada and the engine label states: "This engine complies with US EPA regulations for nonroad and stationary diesel engines", or "This engine complies with US EPA regulations for stationary emergency diesel engines", refer to the "U.S. and Canada Emission Control Warranty Statement." If the engine is operated in California, and the engine label states: "This engine complies with US EPA and California regulations for nonroad/off-road diesel engines" also refer to the "California Emissions Control Warranty Statement."

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete engine warranty, less emission-related parts and components, is provided separately. If you have any questions about your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

#### CALIFORNIA EMISSIONS CONTROL WARRANTY STATEMENT:

The California Air Resources Board (CARB) is pleased to explain the emission-control system warranty on 2022 through 2024 off-road diesel engines. In California, new off-road engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

John Deere warrants to the ultimate purchaser and each subsequent purchaser that this off-road diesel engine was designed, built, and equipped so as to conform at the time of sale with all applicable regulations adopted by CARB. John Deere warrants that this engine is free from defects in materials and workmanship which would cause the failure of emissions warranted parts to be identical in all material respects to the part as described in John Deere's application for certification for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. This applies to all engines rated at 19 kW and greater. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.

#### EMISSIONS WARRANTY EXCLUSIONS:

John Deere may deny warranty claims for failures caused by the use of an add-on or modified part which has not been exempted by the CARB. A modified part is an aftermarket part intended to replace an original emission-related part which is not functionally identical in all respects and which in any way affects emissions. An add-on part is any aftermarket part which is not a modified part or a replacement part.

In no event will John Deere, any authorized engine distributor, dealer, or repair facility, or any company affiliated with John Deere be liable for incidental or consequential damage.

RG32758—UN—19AUG20

## Specifications

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### JOHN DEERE'S WARRANTY RESPONSIBILITY:

Where a warrantable condition exists, John Deere will repair or replace, as it elects, your off-road diesel engine at no cost to you, including diagnosis, parts or labor. Warranty coverage is subject to the limitations and exclusions set forth herein. The off-road diesel engine is warranted for a period of five years from the date the engine is delivered to an ultimate purchaser or 3,000 hours of operation, whichever occurs first. The following are emissions-related parts:

<b>Air Induction System</b> <ul style="list-style-type: none"><li>• Intake manifold</li><li>• Turbocharger</li><li>• Charge air cooler</li></ul>	<b>Emission control labels</b>  <b>Particulate Controls</b> <ul style="list-style-type: none"><li>• Any device used to capture particulate emissions</li><li>• Any device used in the regeneration of the capturing system</li><li>• Enclosures and manifolding</li><li>• Smoke Puff Limiters</li></ul>	<b>Advanced Oxides of Nitrogen (NOx) Controls</b> <ul style="list-style-type: none"><li>• NOx absorbers and catalysts</li></ul> <b>SCR systems and urea containers/dispensing systems</b>
<b>Fuel Metering system</b> <ul style="list-style-type: none"><li>• Fuel injection system</li></ul>	<b>Positive Crankcase Ventilation (PCV) System</b> <ul style="list-style-type: none"><li>• PCV valve</li><li>• Oil filler cap</li></ul>	<b>Miscellaneous Items used in Above Systems</b> <ul style="list-style-type: none"><li>• Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware</li></ul>
<b>Exhaust Gas Recirculation</b> <ul style="list-style-type: none"><li>• EGR valve</li></ul>		
<b>Catalyst or Thermal Reactor Systems</b> <ul style="list-style-type: none"><li>• Catalytic converter</li><li>• Exhaust manifold</li></ul>		

Any warranted emissions-related part scheduled for replacement as required maintenance is warranted by John Deere for the period of time prior to the first scheduled replacement point for the part. Any warranted emissions-related part not scheduled for replacement as required maintenance or scheduled only for regular inspection is warranted by John Deere for the stated warranty period.

### OWNER'S WARRANTY RESPONSIBILITIES:

As the off-road diesel engine owner you are responsible for the performance of the required maintenance listed in your Operator's Manual. John Deere recommends that the owner retain all receipts covering maintenance on the off-road diesel engine, but John Deere cannot deny warranty solely for the lack of receipts or for the owner's failure to ensure the performance of all scheduled maintenance. However, as the off-road diesel engine owner, you should be aware that John Deere may deny you warranty coverage if your off-road diesel engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

The off-road diesel engine is designed to operate on diesel fuel as specified in the Fuels, Lubricants and Coolants section in the Operators Manual. Use of any other fuel may result in the engine no longer operating in compliance with applicable emissions requirements.

The owner is responsible for initiating the warranty process, and should present the machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the authorized John Deere dealer as quickly as possible.

Emissions regulations require the customer to bring the unit to an authorized servicing dealer when warranty service is required. As a result, John Deere is NOT liable for travel or mileage on emissions warranty service calls.

Emission\_CI\_CARB (14Apr20)

RG32759—UN—19AUG20  
DX,EMISSIONS,CARB-19-04AUG23

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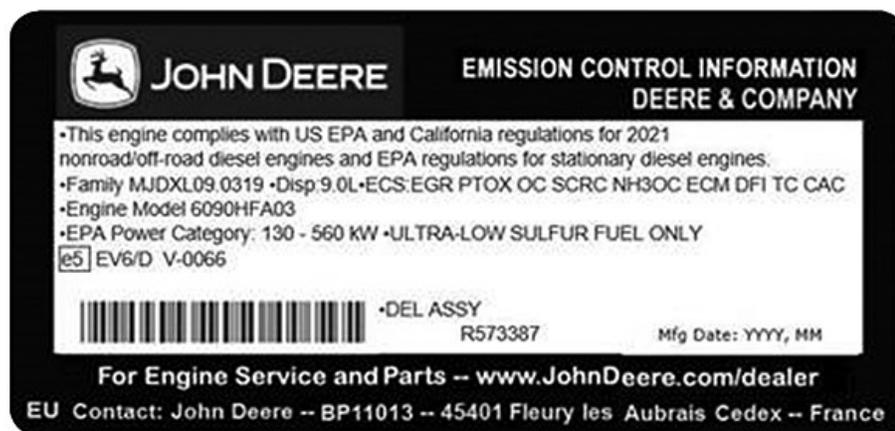
## Required Emission-Related Information

### Service Provider

A qualified repair shop or person of the owner's choosing may maintain, replace, or repair emission control devices and systems with original or equivalent replacement parts. However, warranty, recall, and all other services paid for by John Deere must be performed at an authorized John Deere service center.
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DX,EMISSIONS,REQINFO-19-12JUN15

## Carbon Dioxide Emissions (CO<sub>2</sub>)



SAMPLE - Engine Emissions Label

RG33429—UN—04FEB21

To identify the carbon dioxide (CO<sub>2</sub>) output, locate the engine emissions label. Find the appropriate family on the emissions label and reference the chart.

and shall not imply or express any guarantee of the performance of a particular engine.

DX,EMISSIONS,CO2-19-23JUN23

**NOTE:** The first letter of the family number is not utilized for family identification on the chart.

Emissions Label Family	CO <sub>2</sub> Result
_JDXL02.9323	952 g/kW-hr
_JDXL02.9327	784 g/kW-hr
_JDXL04.5337	819 g/kW-hr
_JDXL04.5338	682 g/kW-hr
_JDXL04.5304	1004 g/kW-hr
_JDXN04.5174	792 g/kW-hr
_JDXL06.8324	720 g/kW-hr
_JDXL06.8328	683 g/kW-hr
_JDXL06.8336	701 g/kW-hr
_JDXN06.8175	771 g/kW-hr
_JDXL09.0319	646 g/kW-hr
_JDXL09.0325	695 g/kW-hr
_JDXL09.0329	657 g/kW-hr
_JDXL09.0333	650 g/kW-hr
_JDXL13.5326	684 g/kW-hr
_JDXL13.6320	651 g/kW-hr
_JDXL13.5340	632 g/kW-hr
_JDXL18.0341	683 g/kW-hr
_JDXL18.0342	687 g/kW-hr
F28	870 g/kW-hr
F32	710 g/kW-hr
F33	677 g/kW-hr

This CO<sub>2</sub> measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type (engine family)

### Third-Party Software Notifications and Licenses

The copyrights for certain portions of the Software on this machine may be owned or licensed by other third parties (“Third Party Software”) and is used and distributed under those licenses. The License Agreement link in the System Information section of the CommandCenter Software Manager includes the acknowledgements, notices and licenses for such Third Party Software. The Third Party Software notices are included with the distribution of this License Agreement. If you are unable to locate these Third Party Software notices, please write to the address included below. The Third Party Software is licensed according to the applicable Third Party Software license notwithstanding anything to the contrary in this Agreement. If the Third Party Software contains copyrighted software that is licensed under the GPL/LGPL or other copyleft licenses, copies of those licenses are included in the Third Party Notices. You may obtain the complete corresponding source code for such Third Party Software from Deere for a period of three years after our last shipment of the Software by sending a request to:

Deere Open Source Compliance Team  
P.O. Box 1202  
Moline, IL 61266-1202  
USA

Please include name of the product and the version number of the software in the request letter. This offer is valid to anyone in receipt of this information.

EC82310.0000F7B-19-14FEB23

# Identification Numbers

## Identification Plates

Each tractor is equipped with the identification plates shown in this section. The complete series of letters and numbers stamped on the plates:

- Identify a component or assembly.
- Are required when ordering parts or identifying a tractor or component for any John Deere product support program.

For each identification plate, accurately record the identification numbers in the space provided.

RW29387,00003B7-19-04MAR20

## Product Identification Number

\* \_\_\_\_\_ \*

Record the PIN in the Space Provided



RXA0185230—UN—25AUG21

PIN Plate (A) is on the Right-Hand Side of the Tractor Frame

**Position 8**—Trim and Series Code

**Position 10**—Character designating calendar year of manufacture

**Position 11**—Transmission and Configuration Option Code

Position 8			
Trim Code	Series Code		
	2	4	6
R	D	M	S

Position 10					
Code	M	N	P	R	S
Year	2021	2022	2023	2024	2025

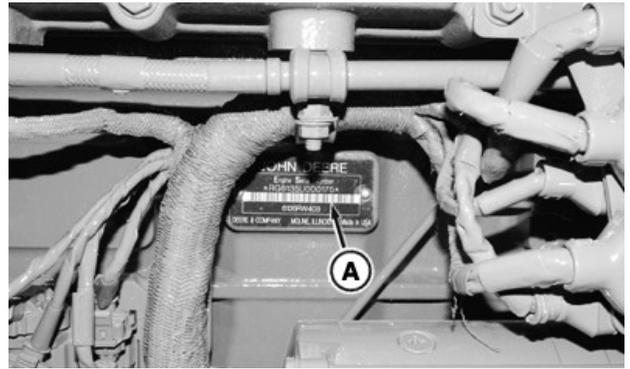
Position 11		
Code		Transmission and Configuration Option
[Ag]	[Scraper]	
J	L	e18 Powershift

SV81855,0000386-19-14JUL22

## Engine Serial Number

\* \_\_\_\_\_ \*

Record the Serial Number in the Space Provided



RXA0160356—UN—03AUG17

Engine Serial Number Plate (A) is on the Left-Hand Side of the Engine Near the Starter (Parts Removed For Clarity)



RXA0184055—UN—10JUN21

Engine Serial Number Plate Example

**Position 7**—Engine emission configuration code (B)

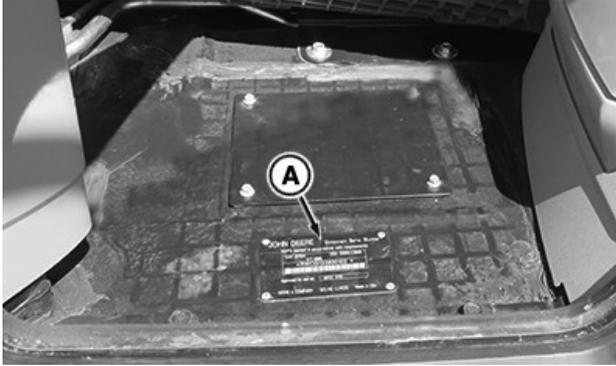
Position 7	
Code	Engine Emission Configuration
U	Final Tier 4/Stage V

SV81855,000002E-19-11FEB22

### Cab Serial Number

\* \_\_\_\_\_ \*

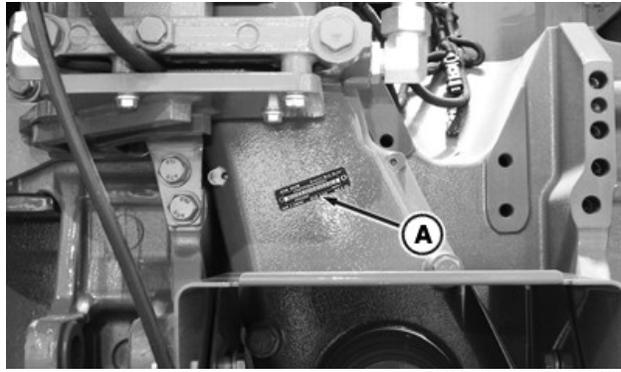
Record the Serial Number in the Space Provided



RXA0179149—UN—18AUG20

Cab Serial Number Plate (A) is Underneath the Cab Floor Mat at the Cab Door

EC82310,000006F-19-22OCT20



RXA0142515—UN—24JUN14

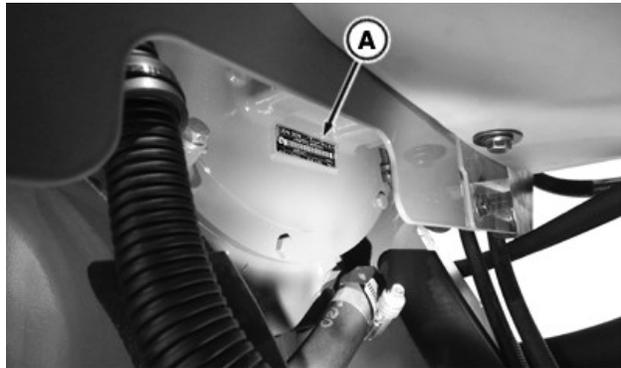
PTO Drop Box Serial Number (A) is on the PTO Drop Box at the Rear of the Tractor

TO84419,0000220-19-22OCT20

### PTO Clutch Serial Number [Ag]

\* \_\_\_\_\_ \*

Record the Serial Number in the Space Provided



RXA0142514—UN—24JUN14

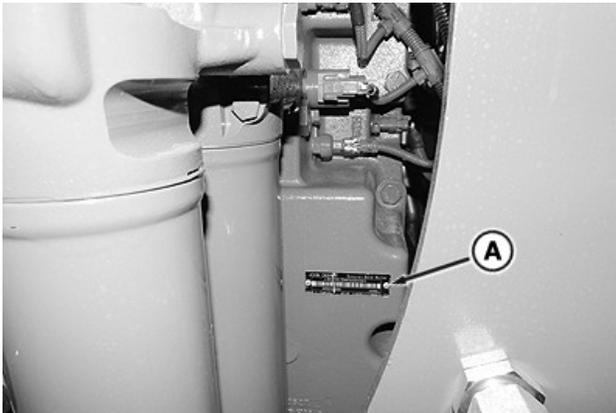
PTO Clutch Serial Number (A) is on the PTO Clutch in the Gudgeon Area

TO84419,0000221-19-22OCT20

### Transmission Serial Number

\* \_\_\_\_\_ \*

Record the Serial Number in the Space Provided



RXA0142107—UN—05JUN14

Transmission Serial Number (A) is on the Right-Hand Rear of the Transmission Case (Near the Transmission Filters)

TO84419,000021F-19-22OCT20

### Track Serial Numbers

#### Front Tracks

\* \_\_\_\_\_ \*

Record the Left Track Serial Number in the Space Provided

\* \_\_\_\_\_ \*

Record the Right Track Serial Number in the Space Provided

#### Rear Tracks

\* \_\_\_\_\_ \*

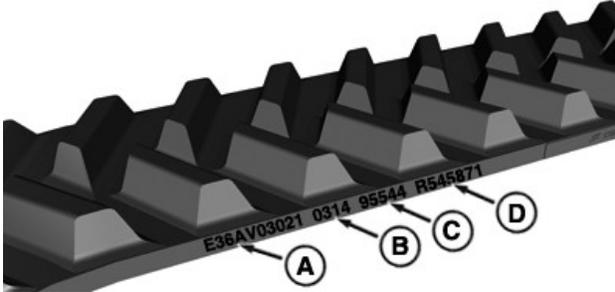
Record the Left Track Serial Number in the Space Provided

## Identification Numbers

\* \_\_\_\_\_ \*

Record the Right Track Serial Number in the Space Provided

Track identification numbers consists of:



RXA0145009—UN—23SEP14

- Camso manufacturer serial number (A) is made up of a combination of ten numbers and letters on track edges.
- Camso track manufacturer date (B): four digits indicating date of manufacture. Example: 0314 (March 2014).
- Five to six digits indicate track serial number (C).
- John Deere part number (D) is a letter followed by six numbers. Example: R123456.

KD34109,000081D-19-27OCT20

## Keep Proof of Ownership



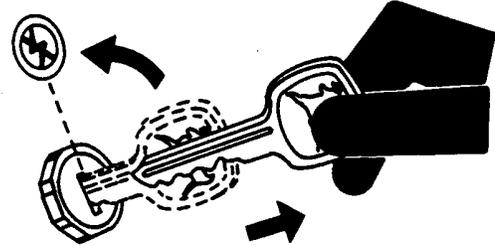
TS1680—UN—09DEC03

1. Maintain in a secure location an up-to-date inventory of all product and component serial numbers.
2. Regularly verify that identification plates have not been removed. Report any evidence of tampering to law enforcement agencies and order duplicate plates.
3. Other steps you can take:
  - Mark your machine with your own numbering system

- Take color photographs from several angles of each machine

DX,SECURE1-19-18NOV03

## Keep Machines Secure



TS230—UN—24MAY89

1. Install vandal-proof devices.
2. When machine is in storage:
  - Lower equipment to the ground
  - Set wheels to widest position to make loading more difficult
  - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.

DX,SECURE2-19-18NOV03

# Change of Ownership

## Subsequent Ownership

### Second Owner

Serial Number:	Tractor Model:
Engine Number:	Registration Number:
Previous Owner:	New Owner:
Address: ..... .....	Address: ..... .....
Purchase Date:  Hours at Purchase:	Dealer's Stamp <i>(only if sold through a dealer)</i>

### Third Owner

Serial Number:	Tractor Model:
Engine Number:	Registration Number:
Previous Owner:	New Owner:
Address: ..... .....	Address: ..... .....
Purchase Date:  Hours at Purchase:	Dealer's Stamp <i>(only if sold through a dealer)</i>

TS36762,000029B-19-23NOV16

# Predelivery

## Predelivery Checklist

*NOTE: Make a copy of this checklist and complete while performing.*

*Some listed options are not available on specific tractors.*

The following inspection, adjustment, and service work were performed before delivery of this machine.

### Complete the Air Conditioning Pre-Run Procedure

**IMPORTANT: Reduce chance of air conditioner compressor damage. Complete pre-run procedure when the tractor:**

- Arrives at the dealership.
- Has not been run for over 29 days.

- 1. Complete the pre-start checks.
- 2. Start tractor and run the engine at a low idle.
- 3. Switch the air conditioning system to high.
- 4. Run the tractor for at least three minutes.
- 5. Shut off the tractor.

### Complete the Following Pre-Start Checks Before Operating the Tractor

- 1. Engine oil level is between Low and Full marks.
- 2. Coolant level is correct.
- 3. Air cleaner elements are installed correctly.
- 4. Air intake system clamps are tight.
- 5. Transmission-hydraulic and axle oil levels are correct.
- 6. Lubrication fittings are greased.
- 7. Shields, guards, handrails, and steps are installed correctly.
- 8. Power assisted implement is connected correctly (if tractor is equipped with VC-B offboarding). See Connecting Power Assisted Implement instructions DZ128740.
- 9. Paint is free of defects.
- 10. Exterior and interior labels are smooth and neat.
- 11. Protective plastic film removed from seats and panels.

### Start the tractor before continuing the checks.

- 12. Start and run tractor at a low idle for at least three minutes.

**IMPORTANT: Determine if the air conditioning pre-run procedure is needed. Run if necessary.**

- 13. Complete the air conditioning pre-run procedure.
- 14. Shut off the tractor.

### Inspect the tractor for:

- 15. Coolant leaks.
- 16. Engine oil leaks.
- 17. Fuel leaks.
- 18. Transmission, hydraulic, and axle oil leaks.

### Complete the Following Checks Inside the Cab

- 1. Check for diagnostic trouble codes. If diagnostic trouble codes are present, record the codes and see Service ADVISOR to resolve and repair as needed. Clear all the codes.
- 2. All brake systems operate correctly:
  - Service brakes.
  - Hydraulic and air trailer brakes.
  - Parking brake.
  - Secondary brake.
- 3. Transmission operates correctly (including PARK position).
- 4. Neutral start switch operates correctly.
- 5. SCVs operate correctly.
- 6. Hitch operates correctly.
- 7. PTO operates correctly.
- 8. Warning system lights and instrument displays and gauges operate correctly.
- 9. All lights operate correctly in all switch positions.
- 10. Engine high and low idle are set correctly.
- 11. Seat can be adjusted properly.
- 12. Check seat belt integrity. Seat belt latches function correctly.
- 13. Doors operate correctly.
- 14. Cab is clean and upholstery appearance neat.
- 15. Premium radio region code set for location.
- 16. Radio operates correctly.
- 17. Washers and wipers operate correctly.
- 18. Heater, ventilation, and air conditioning system operate correctly. For details, see separate information leaflet in tractor cab.
- 19. Back up alarm operates correctly (if equipped).
- 20. All optional equipment is installed and operates correctly.

### Complete These Dealer Services Before Delivery to the Customer

**IMPORTANT: Avoid drivetrain damage. Operate tractor at low speeds (below 10 mph (16km/h)) for first 6 hours.**

- 1. Thoroughly wash the tractor.
- 2. Charge the battery and set the battery date code.

**IMPORTANT: Muffler extension and radio antenna increase tractor height. Be aware of clearance restrictions when transporting tractor.**

- 3. Replace the transport rain cap with the muffler extension.
- 4. Install the AM/FM radio antenna if necessary.<sup>1</sup>
- 5. Check and adjust the tire pressure.
- 6. Adjust the wheel spacings for the customer needs:
  - If equipped with dual tires with John Deere CTIS, see R572695 installation instructions.
  - If equipped with front dual tires without John Deere CTIS, see R572069 installation instructions for the front extension.
- 7. Check track tread settings and track alignment.
- 8. Check and adjust the steering stops.<sup>2</sup>

**IMPORTANT: Failure to follow track tractor road transport recommendations can void the tractor warranty. See Transport section and General Track Use Guidelines in Tracks—General Information section of this Operator's Manual.**

- 9. Perform the track system break-in procedure. See Perform Track Systems Break-In in Service—Break-In (100 Hours or Less) section of this Operator's Manual.

**⚠ CAUTION: Avoid the possibility of personal injury. Never operate the tractor with loose wheel or wheel weight bolts. Failure to follow torquing procedure can result in personal injury. Wheel and wheel weight bolts are critical and require repeated torquing to assure secure tightness.**

**IMPORTANT: Failure to follow correct tightening procedure could result in equipment damage. Retighten bolts after working 3 hours, 10 hours, and daily during the first week of operation.**

- 10. Tighten wheels and weights to specifications (even if no adjustments are made).
- 11. Tighten the track drive (sprocket) wheel, drive (sprocket) wheel sleeve, idler wheel, and mid-roller fasteners to specifications (even if no adjustments are made).
- 12. Reposition all components from shipping to operating positions (i.e. mirrors).
- 13. Adjust all lights, including extremity warning lights and beacon light. Check all lights for compliance with local regulations.
- 14. Adjust the hitch components and lock in position.
- 15. Install the Slow Moving Vehicle emblem (if necessary).
- 16. Set up the display to customer preference.

- 17. Activate the Automatic Exhaust Cleaning Mode in CommandCenter.
- 18. Install the StarFire receiver.
- 19. Perform the Connected Machine Setup Process together with customer. See CCMS Solution 206001 for details.
- 20. Perform a test drive. Verify correct function of all systems, including transmission, brakes, and steering.
- 21. Calibrate the radar.
- 22. Check for diagnostic trouble codes. If codes are present, record codes and see Service ADVISOR to resolve and repair as needed. Clear all codes.
- 23. Install RTK antenna (if equipped). See Mount RTK (Real-Time Kinematic) Radio in Accessories section of this Operator's Manual.
- 24. Check the ExactRate tractor tanks for leaks (if equipped):
  - a. Fill the ExactRate tanks with 38 L (10 gal) of water. See Fill the Tanks in the ExactRate Tractor Tanks section of this Operator's Manual.
  - b. Drive the tractor for 5 to 10 minutes with the ExactRate pump on and circulating water.
  - c. Check the system for leaks.
  - d. Drain the ExactRate tanks. See Drain the System in the ExactRate Tractor Tanks section of this Operator's Manual.
  - e. Tighten the ExactRate tank straps. See Tank Straps in the Service—Tighten section of this Operator's Manual.

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*Date and Signature of Dealer/Service Technician*

KD34109,00005B8-19-12APR23

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<sup>1</sup> Located in the cab.

<sup>2</sup> To avoid equipment damage on tractors equipped with ILS and group 43 or larger tires remove both transport steering stops and adjust tread settings.

## Delivery Checklist and Certificate

Make two copies of this form. Complete one copy for customer and retain a second copy for dealer records.

Customer Copy

Dealer Copy

### Delivery Checklist

#### At the Dealer:

- Predelivery inspection completed
- All necessary forms and literature available
- Labels installed
- Customer specified attachments and options are installed or available

**⚠ CAUTION: Avoid the possibility of personal injury. Never operate tractor with loose wheel or wheel weight bolts. Failure to follow torquing procedure may result in personal injury. Wheel and wheel weight bolts are critical and require repeated torquing to assure secure tightness.**

**IMPORTANT: Failure to follow correct tightening procedure could result in equipment damage. Retighten wheel bolts after working 3 hours, 10 hours, and daily during first week of operation.**

#### At Delivery Area with Customer: (shown and explained)

- All warning labels on machine
- Location of all serial numbers on machine
- Operator's Manual
- Help Text access and function
- Lubrication and service points on machine and attachments
- Tire or track maintenance and care
- Use of lubrication and maintenance schedules
- Break-in service procedures
- Warranty coverage and procedure

#### Demonstrated operating procedures:

- Engine—throttle, starting and stopping
- Transmission
- Steering
- Brakes
- Hitch and SCVs
- Differential lock
- PTO
- Three-point hitch adjustment
- iTEC system
- Lights
- Wipers
- Heater
- Air conditioning
- CommandCenter display and controls
- Operator's seat

- Check hardware is tight on frame, drawbar support, wheels, and wheel weights or track system component

### Delivery Certificate

Serial number:

Vehicle Model:

OM Number:

Issue:

Registration No.:

Engine No.:

Delivery Date:

Owner's Name:

Delivery Hours:

Street Address:

Dealership:

City/State:

Dealer's Stamp:

ZIP/Postal Code/Country:

*Pre-delivery*

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**I hereby confirm receiving the tractor in complete and good condition. I have received the Operator's Manual. All necessary work upon delivery has been carried out and I have been informed of the safe method of operation and the mandatory daily maintenance work as per the Delivery Checklist.**

Customer's Signature: \_\_\_\_\_ Dealership Instructor's Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Date: \_\_\_\_\_

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# John Deere Service Literature Available

## Technical Information

Technical information can be purchased from John Deere. Publications are available in print or CD-ROM format.

Orders can be made using one of the following:

- John Deere Technical Information Store: [www.JohnDeere.com/TechInfoStore](http://www.JohnDeere.com/TechInfoStore)
- Call 1-800-522-7448
- Contact your John Deere dealer

Available information includes:



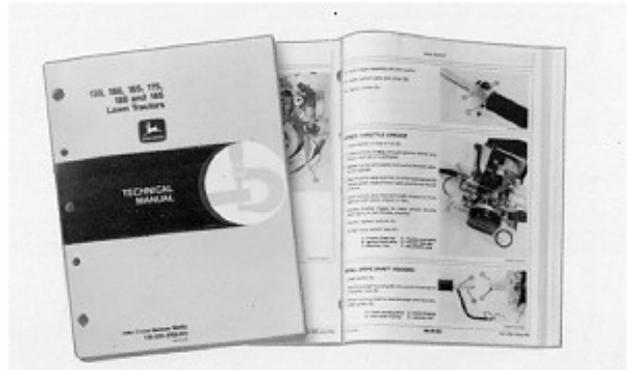
TS189—UN—17JAN89

**PARTS CATALOGS** list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.



TS191—UN—02DEC88

**OPERATOR'S MANUALS** providing safety, operating, maintenance, and service information.



TS224—UN—17JAN89

**TECHNICAL MANUALS** outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in a separate component technical manual.



TS1663—UN—10OCT97

**EDUCATIONAL CURRICULUM** including five comprehensive series of books detailing basic information regardless of manufacturer:

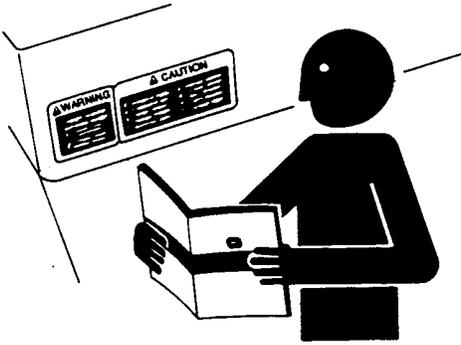
- Agricultural Primer series covers technology in farming and ranching.
- Farm Business Management series examines “real-world” problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
- Fundamentals of Services manuals show you how to repair and maintain off-road equipment.
- Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.
- Fundamentals of Compact Equipment manuals provide instruction in servicing and maintaining equipment up to 40 PTO horsepower.

DX,SERV LIT-19-07DEC16

# John Deere Service Keeps You on the Job

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## John Deere Is At Your Service



TS201—UN—15APR13

CUSTOMER SATISFACTION is important to John Deere.

Our dealers strive to provide you with prompt, efficient parts and service:

- Maintenance and service parts to support your equipment.
- Trained service technicians and the necessary diagnostic and repair tools to service your equipment.

## CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

Your John Deere dealer is dedicated to supporting your equipment and resolving any problem you may experience.

1. When contacting your dealer, be prepared with the following information:

- Machine model and product identification number
- Date of purchase
- Nature of problem

2. Discuss problem with dealer service manager.

3. If unable to resolve, explain problem to dealership manager and request assistance.

4. If you have a persistent problem your dealership is unable to resolve, ask your dealer to contact John Deere for assistance. Or contact the Ag Customer Assistance Center at 1-866-99DEERE (866-993-3373) or e-mail us at [www.deere.com/en\\_US/ag/contactus/](http://www.deere.com/en_US/ag/contactus/).

DX,IBC,2-19-02APR02



