

# 5105ML, 5120ML, and 5130ML Cab Series (FT4) Tractors Operator's Manual (North American, November 2022).



JOHN DEERE

## OPERATOR'S MANUAL

### 5ML Cab Series Tractors (North American, November 2022)

OMTR125920 ISSUE K3 (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 Mexico**  
North American Edition  
PRINTED IN U.S.A.



\* D C Y \*



\* 0 M T R 1 2 5 9 2 0 \*

# 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 in 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.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate or statement which you should have received from your dealer.

This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

THE TIRE MANUFACTURER'S warranty supplied with your machine may not apply outside the U.S.

If you are not the original owner of this machine, it is in your interest to contact your local John Deere dealer to inform them of this unit's serial number. This will help John Deere notify you of any issues or product improvements.

---

DX,IFC1-19-03APR09

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

---

## Emissions Performance and Tampering

### Operation and Maintenance

The engine, including the emissions control system, shall be operated, used, and maintained in accordance

---

# Contents

	Page		Page
<b>General Information</b>			
Product View .....	00-1	Park Machine Safely .....	00A-16
Deere & Company Trademarks .....	00-1	Transport Tractor Safely .....	00A-16
Registered Trademarks .....	00-2	Service Cooling System Safely .....	00A-16
Glossary of Terms .....	00-2	Service Accumulator Systems Safely .....	00A-17
Regions and Country Versions .....	00-4	Service Tires Safely .....	00A-17
How to Use This Manual .....	00-5	Service Front-Wheel Drive Tractor Safely .....	00A-17
<b>Safety Precautions</b>			
Recognize Safety Information .....	00A-1	Tightening Wheel Retaining Bolts/Nuts .....	00A-17
Understand Signal Words .....	00A-1	Avoid High-Pressure Fluids .....	00A-18
Follow Safety Instructions .....	00A-1	Do Not Open High-Pressure Fuel System .....	00A-18
Prepare for Emergencies .....	00A-1	Store Attachments Safely .....	00A-18
Wear Protective Clothing .....	00A-2	Decommissioning — Proper Recycling and Disposal of Fluids and Components .....	00A-18
Protect Against Noise .....	00A-2	<b>Safety Signs</b>	
Handle Fuel Safely—Avoid Fires .....	00A-2	Replace Safety Signs .....	00B-1
Handle Starting Fluid Safely .....	00A-2	Operator's Manual .....	00B-1
Fire Prevention .....	00A-3	Use Seat Belt Properly .....	00B-1
In Case of Fire .....	00A-3	PTO Shield .....	00B-2
Avoid Static Electricity Risk When Refueling .....	00A-4	3 Speed 540/540E/1000 PTO Shield .....	00B-2
Keep ROPS Installed Properly .....	00A-4	Tow Implement Properly .....	00B-3
Use Foldable ROPS and Seat Belt Properly .....	00A-4	Front End Loader .....	00B-3
Stay Clear of Rotating Drivelines .....	00A-5	Engine Coolant Heater .....	00B-4
Use Steps and Handholds Correctly .....	00A-5	AutoTrac Detected .....	00B-4
Read Operator's Manuals for ISOBUS		<b>Controls and Instruments</b>	
Controllers .....	00A-6	Front Console Controls .....	10-1
Use Seat Belt Properly .....	00A-6	Foot-Operated Controls .....	10-1
Operating the Tractor Safely .....	00A-6	Console Controls .....	10-2
Avoid Backover Accidents .....	00A-7	Transmission Controls .....	10-2
Limited Use in Forestry Operation .....	00A-7	Mid-Mount SCV Joystick Controls .....	10-3
Operating the Loader Tractor Safely .....	00A-8	Rear SCV Controls .....	10-4
Keep Riders Off Machine .....	00A-8	Rear Hitch Controls .....	10-4
Instructional Seat .....	00A-8	Rear PTO Controls .....	10-4
Use Safety Lights and Devices .....	00A-9	Front PTO Controls .....	10-5
Use a Safety Chain .....	00A-9	Heat and Air Conditioning Controls .....	10-5
Transport Towed Equipment at Safe Speeds .....	00A-9	<b>Engine Operation</b>	
Use Caution on Slopes, Uneven Terrain, and Rough Ground .....	00A-10	Required Machine Stop Warning .....	20-1
Freeing a Mired Machine .....	00A-10	Engine Menu .....	20-1
Avoid Contact with Agricultural Chemicals .....	00A-11	Engine Fuel System and Power Rating .....	20-2
Handle Agricultural Chemicals Safely .....	00A-11	Check Engine Indicators and Gauges .....	20-3
Handling Batteries Safely .....	00A-12	Operate Key Switch .....	20-4
Avoid Heating Near Pressurized Fluid Lines .....	00A-13	Start Engine .....	20-4
Remove Paint Before Welding or Heating .....	00A-13	Cold Weather Start .....	20-5
Handle Electronic Components and Brackets Safely .....	00A-13	Run Engine .....	20-5
Practice Safe Maintenance .....	00A-14	Engine Speeds and Operational Procedures .....	20-6
Avoid Hot Exhaust .....	00A-14	Stop Engine .....	20-7
Clean Exhaust Filter Safely .....	00A-14	Restart Engine That Has Run Out of Fuel .....	20-7
Work In Ventilated Area .....	00A-15	Engine Block Coolant Heater .....	20-7
Support Machine Properly .....	00A-15		
Prevent Machine Runaway .....	00A-16		

Continued on next page

*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.*

COPYRIGHT © 2023  
DEERE & COMPANY  
Moline, Illinois  
All rights reserved.  
Previous Editions  
Copyright © 2021

## Contents

	Page		Page
<b>Air Intake, Fuel, Coolant, and Exhaust Operation</b>		Off Level Operation .....	50-1
Aftertreatment Indicators Overview .....	30-1	<b>Transmission Operation</b>	
Selective Catalytic Reduction (SCR) System Overview .....	30-3	Transmission Menu .....	50A-1
US EPA Qualified Emergency Use — SCR Derate Override Option .....	30-4	Transmission Settings .....	50A-1
Fuel and Diesel Exhaust Fluid (DEF) Level Gauges .....	30-5	Transmission Indicators .....	50A-2
Fill Fuel Tank .....	30-6	16/16 Speed PowrQuadTMPlus Transmission .....	50A-2
Fill Diesel Exhaust Fluid (DEF) Tank .....	30-6	32/16 Speed Powr8TMTransmission .....	50A-4
Reduce Fuel Consumption .....	30-7	Creeper Gear Operation .....	50A-5
Engine Menu .....	30-7	Downhill Operation in Slippery Conditions .....	50A-6
Exhaust Filter Cleaning Overview .....	30-8	16/16 Speed Transmission Ground Speed Chart .....	50A-6
<b>Electrical and Lighting Operation</b>		32/16 Speed Transmission Ground Speed Chart .....	50A-6
Battery Disconnect Switch .....	40-1	32/16 Speed Transmission Creeper Ground Speed Chart .....	50A-7
Light Switch .....	40-1	Correction Factors for Other Tire Sizes .....	50A-8
Headlights .....	40-2	<b>MFWD and Front Axle Operation</b>	
Loader Headlights .....	40-2	Mechanical Front-Wheel Drive (MFWD On/ Auto/Brake Assist) .....	50B-1
Bucket Lights .....	40-3	<b>Differential and Rear Axle Operation</b>	
Tail and Brake Lights .....	40-3	Differential Lock .....	50C-1
Turn Signals .....	40-4	<b>Power Take-Off (PTO) Operation</b>	
Warning Lights .....	40-4	Match Machine Power to Implement .....	50D-1
Beacon Light .....	40-5	PTO Guard .....	50D-1
Worklights .....	40-6	PTO Shield .....	50D-1
Dome Light .....	40-7	PTO Drive Shaft Shield .....	50D-2
Right-Hand Console Light .....	40-7	Select PTO Drawbar Position .....	50D-2
Horn .....	40-7	Exchangeable 540/1000 rpm PTO Shaft .....	50D-3
Backup Alarm .....	40-8	Attach PTO-Driven Implement .....	50D-3
Front Wiper and Washer .....	40-8	Select Correct PTO Speed .....	50D-4
Rear Wiper and Washer .....	40-9	Operate Rear PTO .....	50D-5
Radio .....	40-9	Operate Rear Remote PTO .....	50D-5
Auxiliary Input and USB Port .....	40-9	Operate Front PTO (Optional) .....	50D-7
Bluetooth Microphone .....	40-10	PTO Automatic Disengage .....	50D-7
Speakers .....	40-10	PTO Alarm .....	50D-8
Radio Antenna .....	40-10	<b>Steering and Brake Operation</b>	
Satellite Module and Antenna .....	40-10	Service Brakes .....	60-1
Implement Connector .....	40-10	AutoTrac Steering System with GreenStar Display .....	60-1
Power Outlet .....	40-11	AutoTrac Basic Steering System with Front Console Display .....	60-2
ISO Cab Connectors .....	40-12	Operate Guidance Systems Safely .....	60-2
ISOBUS Connectors .....	40-12	Enable AutoTrac Basic .....	60-3
ISOBUS Shortcut Button (ISB) .....	40-12	Disable AutoTrac Basic .....	60-3
Service Advisor Connector .....	40-13	AutoTrac Resume Switch .....	60-4
Operator Presence .....	40-13	Activate AutoTrac Basic .....	60-4
JDLINK .....	40-13	Disengage AutoTrac Basic .....	60-4
<b>Displays, Software, and Electronics Operation</b>		Reactivate AutoTrac Basic on Next Pass .....	60-5
Primary Display .....	41-1	AutoTrac Basic Menu .....	60-5
Information Display Navigation Controls .....	41-2	AutoTrac Basic Map .....	60-6
Basic Menu Navigation .....	41-3	AutoTrac Status Pie .....	60-7
Run Pages .....	41-4	AutoTrac Basic Track Setup .....	60-8
Layout Manager Menu .....	41-5	AutoTrac Basic Track Width .....	60-10
Layout Manager Settings .....	41-6	AutoTrac Basic Shift Size .....	60-10
Display Settings Menu .....	41-6	AutoTrac Basic Vehicle .....	60-11
Display Settings .....	41-7	AutoTrac Basic Tuning .....	60-12
Work Monitor Menu .....	41-7	StarFire Correction Mode .....	60-13
Work Monitor Operation .....	41-8		
Maintenance Menu .....	41-8		
Maintenance Counters and Intervals .....	41-8		
<b>Drivetrain Operation</b>			
Drivetrain Information .....	50-1		

## Contents

	Page		Page
AutoTrac Basic TCM Calibration .....	60-14	Operate Loader with Rear SCV .....	70B-7
StarFire USB Drive .....	60-16	Adjust Flow Control .....	70B-7
StarFire GPS Status .....	60-17	Power Beyond .....	70B-7
AutoTrac Basic Settings Locked .....	60-18	Case Drain .....	70B-8
AutoTrac Basic About .....	60-18	Motor Return .....	70B-8
Autotrac Basic SF3000 Functionality .....	60-18	Fast Return-to-Sump .....	70B-8
GPS Receiver Offset Values .....	60-19	Rear SCV Oil Collection .....	70B-9
AutoTrac Universal Information .....	60-19		
<b>Hydraulics Operation</b>		<b>Wheels and Tires Operation</b>	
Warm Transmission/Hydraulic Oil .....	70-1	Wheels and Tires Information .....	80-1
Closed Center Hydraulics .....	70-1		
<b>Hitch and Drawbar Operation</b>		<b>Ballasting</b>	
Match Machine Power to Implement .....	70A-1	Ballasting Information .....	80A-1
Rear Hitch Controls .....	70A-1		
Rear Hitch Components .....	70A-2	<b>Additional Equipment</b>	
Electrohydraulic Hitch System Indicator .....	70A-3	Tool Box .....	80B-1
Operate Electrohydraulic Position Control .....	70A-3	Front Loader .....	80B-1
Operate Electrohydraulic Draft Control .....	70A-4	Front Loader Suspension Activation .....	80B-2
Operate Electrohydraulic Rate-of-Drop Control .....	70A-5	Lockable Fuel Fill Cap .....	80B-2
Operate Electrohydraulic Height Limit Control .....	70A-5	Hood Latch .....	80B-2
Operate Electrohydraulic Hitch Fender Switch .....	70A-6		
Rear Hitch Menu .....	70A-6	<b>Operator's Station Operation</b>	
Load Depth Control .....	70A-7	Doors .....	90-1
Implement Float .....	70A-8	Grab Handles .....	90-1
Upper Limit .....	70A-8	Windows .....	90-1
Drop Rate .....	70A-8	Window Shades .....	90-2
Raise Rate .....	70A-8	Mirrors .....	90-2
Manually Lower Electrohydraulic Hitch .....	70A-9	Cab Seats .....	90-2
Prepare Implement .....	70A-9	Adjust Seat Armrests .....	90-3
Hitch Conversion - Category II to I .....	70A-10	Steering Wheel .....	90-4
Position Center Link .....	70A-10	Heat, Defrost, and Air Conditioning .....	90-4
Adjust Lateral Float .....	70A-11	General Storage .....	90-5
Attach Implement to Rear Hitch - Ball End .....	70A-11	Monitor Mounts .....	90-6
Level Hitch - Ball End .....	70A-12	Rear Window Cable Routing .....	90-6
Attach Implement to Rear Hitch Hook End .....	70A-13	Coat Hook .....	90-6
Level Hitch - Hook-End .....	70A-15	Radio .....	90-7
Adjust Hitch Side Sway .....	70A-16		
Quick Coupler .....	70A-17	<b>Transport and Storage</b>	
Front Hitch Components .....	70A-17	Keep Machines Secure .....	100-1
Front Implement Connection .....	70A-18	Deliver Safely .....	100-1
Operate Front Hitch with Rear SCV Controls .....	70A-19	Road Transportation .....	100-2
Front Hitch - Center Link .....	70A-20	Towing Loads .....	100-2
Front Hitch and Coupler Operation .....	70A-21	Come Home Mode .....	100-3
Drawbar Settings .....	70A-22	Tow Machine .....	100-3
Clevis Drawbar .....	70A-23	Front Tow Points .....	100-4
Drawn Implement Connection .....	70A-23	Rear Tow Points .....	100-5
		Machine Storage .....	100-5
		Remove Machine from Storage .....	100-6
<b>Selective Control Valve Operation</b>			
Rear SCV Controls and Components .....	70B-1	<b>Maintenance Intervals</b>	
Mid-Mount SCV Controls and Components .....	70B-2	Maintain Daily Before Start-Up .....	200-1
Connect Hydraulic Hoses .....	70B-3	Maintenance Interval Chart .....	200-1
Connect to Rear SCVs .....	70B-3		
Connect to Mid-Mount SCVs .....	70B-4	<b>Fuels, Lubricants, and Coolants</b>	
Correct Reversed Cylinder Response .....	70B-4	Alternative and Synthetic Lubricants .....	200A-1
Single-Acting Cylinders .....	70B-4	Diesel Engine Coolant (engine with wet sleeve cylinder liners) .....	200A-1
Implements Requiring Large Volumes of Oil .....	70B-4	Operating in Warm Temperature Climates .....	200A-2
Set SCV Detents .....	70B-5	John Deere COOL-GARD™ II Coolant Extender .....	200A-2
Operate Hydraulic Motor with Rear SCV .....	70B-5	Water Quality for Mixing with Coolant Concentrate .....	200A-2
Operate Power Beyond with Rear SCV .....	70B-6	Testing Coolant Freeze Point .....	200A-3

## Contents

	Page		Page
Diesel Exhaust Fluid (DEF) — Use in Selective Catalytic Reduction (SCR) Equipped Engines .....	200A-3	Clean Diesel Exhaust Fluid (DEF) Tank .....	230-7
Disposal of Diesel Exhaust Fluid (DEF) .....	200A-4	Drain Diesel Exhaust Fluid (DEF) Tank .....	230-7
Refilling Diesel Exhaust Fluid (DEF) Tank .....	200A-4	Service Air Cleaner Elements .....	230-8
Storing Diesel Exhaust Fluid (DEF) .....	200A-4	Check and Tighten Air Intake System and Coolant System Hose Clamps .....	230-8
Testing Diesel Exhaust Fluid (DEF) .....	200A-5	Clean Air Filter Dust Unloading Valve .....	230-10
Diesel Engine Oil Service Interval for Operation at High Altitude .....	200A-5	Clean Grille Screens and Cooling Package .....	230-10
Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V .....	200A-6	Do Not Modify Fuel System .....	230-11
Engine Oil and Filter Service Intervals — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V Engines .....	200A-6	Drain Water and Sediment from Fuel Filter .....	230-11
John Deere Break-In Plus™ Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V .....	200A-7	Bleed Fuel System .....	230-12
Oil Filters .....	200A-7	Change Fuel Filters .....	230-12
Fuel Filters .....	200A-7	Check Coolant Level .....	230-13
Diesel Fuel .....	200A-8		
Handling and Storing Diesel Fuel .....	200A-8	<b>Electrical and Lighting Maintenance</b>	
Lubricity of Diesel Fuel .....	200A-9	Use Booster Battery or Charger .....	240-1
Testing Diesel Fuel .....	200A-9	Check Battery and Connections .....	240-1
Biodiesel Fuel .....	200A-9	Access and Replace Battery .....	240-2
Minimizing the Effect of Cold Weather on Diesel Engines .....	200A-10	Replace Fusible Link .....	240-2
Supplemental Diesel Fuel Additives .....	200A-11	Replace Fuses .....	240-2
Multipurpose Extreme Pressure (EP) Grease .....	200A-12	Handle Halogen Light Bulbs Safely .....	240-6
Mixing of Lubricants .....	200A-12	Replace Halogen Headlight Bulb .....	240-7
Lubricant Storage .....	200A-12	Replace LED Headlight .....	240-7
OilScan™ and CoolScan™ .....	200A-12	Headlight Adjustment .....	240-8
Transmission, Steering, Brake, Hydraulic, and Gear Case Oil .....	200A-13	Replace Loader Headlight Bulb .....	240-8
		Replace Bucket Light .....	240-9
		Replace Tail/Turn/Brake Light Bulb .....	240-9
		Replace Warning Light Bulb .....	240-10
		Replace Halogen Worklight Bulb .....	240-10
		Replace LED Worklight .....	240-11
		Replace LED Beacon Light .....	240-11
		Replace Dome Light Bulb .....	240-11
		Replace Right-Hand Console Light Bulb .....	240-12
<b>As Required Maintenance</b>		<b>Drivetrain Maintenance</b>	
Service As Required .....	200B-1	Drivetrain Information .....	250-1
Paint and Finish Care .....	200B-2		
Wash Machine .....	200B-2	<b>Transmission Maintenance</b>	
		Change Transmission/Hydraulic Oil and Filter .....	250A-1
		Check Neutral Start System .....	250A-1
		Check Transmission Park System .....	250A-1
		Change Transmission Dampener .....	250A-2
<b>Controls and Instruments Maintenance</b>		<b>MFWD and Front Axle Maintenance</b>	
General Controls and Instruments Maintenance .....	210-1	Lubricate MFWD Axle Trunnion .....	250B-1
		Change MFWD Axle Wheel Hub Oil .....	250B-1
		Change MFWD Axle Housing Oil .....	250B-1
<b>Engine Maintenance</b>		<b>Differential and Rear Axle Maintenance</b>	
Break-In Maintenance .....	220-1	Lubricate Rear Axle Bearings .....	250C-1
Break-In Checks .....	220-1		
Check Engine Oil Level .....	220-1	<b>Power Take-Off (PTO) Maintenance</b>	
Change Engine Oil and Filter .....	220-2	Adjust PTO Speed Shift Lever .....	250D-1
Clean Open Crankcase Vent .....	220-3	Lubricate Exchangeable 540/1000 rpm PTO Shaft .....	250D-1
Change Open Crankcase Ventilation Filter .....	220-3	Change Front PTO Oil .....	250D-1
Check Fan Belt Tensioner .....	220-4		
Change Fan Belt .....	220-4	<b>Steering and Brake Maintenance</b>	
Adjust Engine Valve Clearance .....	220-5	Check Manual Brakes .....	260-1
<b>Air, Fuel, Coolant, and Exhaust Maintenance</b>			
Required Emission-Related Information .....	230-1		
Recommended Dealer Performed Service .....	230-1		
Check Engine and Exhaust Compartments for Debris .....	230-1		
Clean Diesel Particulate Filter (DPF) .....	230-1		
Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter .....	230-1		
Change Diesel Exhaust Fluid (DEF) Tank Header Suction Screen .....	230-2		

## Contents

	Page		Page
<b>Hydraulics Maintenance</b>		Keep Cab Protection System Installed Properly	290-2
Check Transmission/Hydraulic System Oil Level	270-1	StarFire Receiver Mount	290-3
Change Transmission/Hydraulic Filter	270-1		
Change Transmission/Hydraulic Oil and Filter	270-2		
<b>Hitch and Drawbar Maintenance</b>		<b>Troubleshooting</b>	
Lubricate Draft Sensing Shaft Seal	270A-1	Engine	300-1
Lubricate Rear Hitch	270A-1	Heat and Air Conditioning	300-5
Lubricate Front Hitch	270A-2	Electrical	300-8
Check Hitch and Drawbar for Excessive Wear	270A-2	Transmission	300-9
		Brakes	300-10
		Hydraulics	300-10
		Hitch	300-11
		Selective Control Valves (SCV)	300-12
<b>Selective Control Valve Maintenance</b>		<b>On-Board Diagnostics</b>	
Adjust Mechanical SCV Cables	270B-1	STOP, Service, Information Alert Indicators, and Alarms	300A-1
Empty Rear SCV Oil Collection Bottle	270B-1	Diagnostics Menu	300A-2
		Diagnostic Trouble Codes	300A-2
		Addresses	300A-3
		CAN Bus	300A-4
<b>Wheels and Tires Maintenance</b>		<b>Specifications</b>	
Inspect Tires	280-1	Metric Bolt and Screw Torque Values	400-1
Adjust and Check Clearance	280-1	Unified Inch Bolt and Screw Torque Values	400-2
Check Tire Inflation Pressure	280-1	Fluid Capacities	400-3
Tire Pressures	280-1	Machine Dimensions	400-3
Tire Inflation Pressure Guidelines	280-2	Machine Weight	400-3
Tire Sidewall Information	280-2	Engine and PTO Power	400-4
Use Correct Tire Combinations	280-3	Engine Specifications	400-4
Correct Tire Selection	280-3	Electrical Specifications	400-4
Changing Tire Sizes	280-4	PTO Engine Speeds	400-5
Select Front Tire Rolling Direction	280-4	Hydraulics Specifications	400-5
Dual Wheel Usage	280-4	Rear Hitch Lift Capacities	400-5
Rear Wheel Tread Width Limitations	280-5	Front Hitch Lift Capacities	400-5
Set Tread—Two-Position MFWD Wheels	280-5	Drawbar Capacities	400-6
Set Tread—Multi-Position MFWD Wheels	280-5	Weight Distribution	400-6
Set Tread—Multi-Position Rear Wheels	280-7	Permissible Load	400-6
Tighten Wheel Bolts Correctly	280-8	Ballast Capacities	400-7
Install Wheel Spacer	280-8	Sound Level	400-7
Tighten Wheel Bolts—MFWD Axle	280-9	Permissible Towable Mass	400-7
Tighten Wheel Bolts—Rear Axle	280-9	Calculate Maximum Permissible Download on Trailer Hitch	400-7
Jacking Up Machine	280-10	Calculate Permissible Mass	400-8
Check Toe-In—MFWD Axle	280-11	Fluorinated Greenhouse Gas	400-9
Adjust Toe-In—MFWD Axle	280-11		
Set Steering Stops	280-11	<b>Identification Numbers</b>	
		Record Product Identification Number	400A-1
<b>Ballasting Maintenance</b>		Record Front Axle Serial Number	400A-1
General Ballast Information	280A-1	Record Engine Serial Number	400A-2
Select Ballast Carefully	280A-1	Record Transmission Serial Number	400A-2
Front-End Ballast	280A-2	Record Cab Serial Number	400A-2
Rear Wheel Ballast	280A-3	Keep Proof of Ownership	400A-3
Control Power Hop - MFWD	280A-3		
Add Liquid Ballast to Tires	280A-4	<b>Certification and Warranty</b>	
Remove Liquid Ballast from Tires	280A-4	Cab ROPS Certificate	400B-1
Measure Wheel Slip	280A-4	Limited Battery Warranty	400B-1
		Emissions Control System Certification Label	400B-2
<b>Additional Equipment Maintenance</b>		Carbon Dioxide Emissions (CO <sub>2</sub> )	400B-3
Front Loader Bracket Installation	280B-1	CARB Non-road Emissions Control Warranty Statement—Compression Ignition	400B-3
Set Pivoting Fender Brackets	280B-2	EPA Non-road Emissions Control Warranty Statement—Compression Ignition	400B-11
Set Fender Position	280B-2		
<b>Operator's Station Maintenance</b>			
Inspect and Replace Cab Air Filters	290-1		
Check Air Conditioning System	290-1		
Change Wiper Blade	290-2		
Inspect Seat Belts	290-2		

Page

**Maintenance Records**

Daily or Every 10 Hours ..... 500-1  
Weekly or Every 50 Hours ..... 500-2  
First 100 Hours ..... 500-3  
Every 250 Hours ..... 500-3  
Every 500 Hours ..... 500-5  
Every 1000 Hours or Annually ..... 500-6  
Every 1500 Hours ..... 500-7  
Every 3000 Hours or 3 Years ..... 500-7  
Every 4500 Hours or 5 Years ..... 500-8  
Every 6000 Hours or 6 Years ..... 500-8  
As necessary ..... 500-9  
Change of Ownership ..... 500-10  
Change of Ownership ..... 500-10  
Change of Ownership ..... 500-10

**Pre-Delivery Inspection**

Service Procedure ..... 510-1  
Notes on Pre-Delivery Inspection ..... 510-1  
Copy for Owner ..... 510-1  
Copy for Dealer ..... 510-2

# General Information

## Product View



*Cab Machine*

APY81416—UN—10JAN23

V5VUVD4,000001-19-04DEC22

## Deere & Company Trademarks

*NOTE: The following are trademarks of Deere & Company.*

AutoClutch	Hy-Gard
AutoTrac	iTEC
Bio Hy-Gard	JDLink
Break-In	Oilscan
CommandQuad	Plus-50
Command8	Powr8
CommandARM	PowrQuad
Cool-Gard	PowrReverser
CoolScan	PowerTech
Deere & Company	Quik-Tatch
Efficiency Manager	SeedStar
Field Cruise	Service ADVISOR
Field Office	SERVICEGARD
Grease-Gard	StarFire

## General Information

GreenStar	
-----------	--

V5VUVD4.0000002-19-25FEB22

## Registered Trademarks

Bluetooth®

Teflon®

*Bluetooth is a trademark of Bluetooth SIG*

*Teflon is a trademark of DuPont Co.*

V5VUVD4.0000003-19-25FEB22

## Glossary of Terms

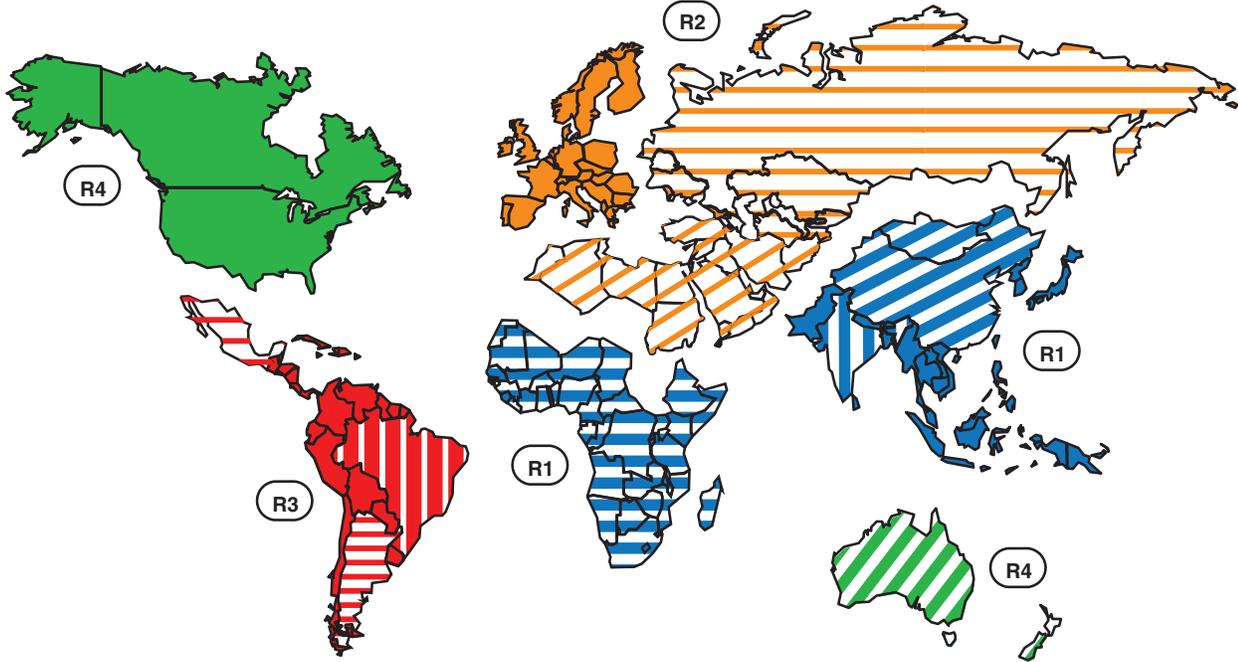
ITEM	ABBREVIATION	DESCRIPTION
Air Conditioning	A/C	System used for cooling the air in the cab
Alternating Current	AC	Electrical current that reverses its direction at regularly recurring intervals
Accessory	ACC	Secondary electrical system
Armrest Interface Control	AIC	Electronic control unit
Agricultural Management System	AMS	Used with machine automatic guidance system
AutoTrac Universal	ATU	Automatic guidance system
Battery	Bat	A device used to furnish electrical current
Controller Area Network	CAN	A communication system linking on-board electronics
Cold Cranking Amperes	CCA	Measured capability of battery to perform during cold-weather operation
Chassis Control Unit	CCU	Electronic control unit
Counterclockwise	CCW	Direction opposite the rotation of the hands of a clock
Cab Load Center	CLC	Electronic control unit
Cab Switch Module	CSM	Electronic control unit
Clockwise	CW	Direction in which the hands of a clock rotate
Direct Current	DC	Electrical current flowing in one direction only
Diagnostic Receptacle	DR	A connection where hydraulic pressure can be measured
Engine Control Unit	ECU	Electronic control unit
Economic Commission for Europe	ECE	Abbreviation
Electrohydraulic	EH	Hydraulic valve function that is controlled electrically
Engine Interface Control	EIC	Electronic Control Unit
Electronic Components Relay	ELX	Relay powering most of the electronic components
Front Console Control	FCC	Electronic control unit
Forward/Neutral/Reverse	FNR	Abbreviation
Forward	FWD	Direction of movement
Gallons per Minute	gpm	Amount of fluid displaced over a period of one minute
GreenStar Display	GSD	Abbreviation
Heating, Ventilating, and Air Conditioning	HVAC	Abbreviation
Hitch Control Unit	HCC	Electronic control unit
Hitch Valve Control	HV1	Electronic control unit
Inside Diameter	ID	Abbreviation
Ignition	IGN	Control for starting and stopping the machine
International Standards Organization	ISO	Standards organization
JDLink Control Unit	JDL	Electronic control unit
Joint Industry Council Organization	JIC	Standards organization

## General Information

ITEM	ABBREVIATION	DESCRIPTION
Left-Hand	LH	Abbreviation
Liquid Crystal Display	LCD	A technology used for displaying information
Mechanical	Mech	Abbreviation
Mechanical Front-Wheel Drive	MFWD	A mechanically powered front axle
Multi-Function Control	MFC	Electronic control unit
Negative	Neg (—)	Electrical ground circuit
Number	No.	Abbreviation
Open Center Hydraulics	OC	Abbreviation
Outside Diameter	OD	Abbreviation
Original Equipment Manufacturer	OEM	Abbreviation
Operator Interface Control	OIC	Electronic control unit
O-ring Face Seal	ORFS or ORS	A type of seal used in hydraulic connections
Primary Display Unit	PDU	Electronic control unit
Product Identification Number	PIN	Serial number relating to machine identification
Positive	Pos (+)	Charged part of an electrical circuit
Front PTO Control	PTF	Electronic Control Unit
Power Take-Off	PTO	Abbreviation
PowerTech E	PTE	Electronically controlled fuel injection
Power Transmission Utility	PTU	Electronic control unit
Reverse	Rev	Direction of movement
Right-Hand	RH	Abbreviation
Revolutions per Minute	rpm	Abbreviation
Rear PTO Control	RPT	Electronic control unit
Society of Automotive Engineers	SAE	Engineering Standards Organization
Selective Control Valve	SCV	Device used to control remote hydraulic functions
SCV Sequence Control	SMB	Electronic control unit
Slow Moving Vehicle	SMV	Warning sign on the rear of the machine
Specification	Spec	Abbreviation
Tachometer	Tach	Abbreviation
Temperature	Temp	Abbreviation
Transmission Interface Utility	TIU	Electronic control unit
Transmission	Trans	Abbreviation
Voltage (Volts)	V	Abbreviation
Vehicle Load Center	VLC	Electronic control unit
Virtual Terminal Vehicle	VTV	Electronic control unit
Without	W/O	Abbreviation
Wide-Open Throttle	WOT	Full throttle
AutoTrac Main Control	XMC	Electronic control unit
AutoTrac Supervisor Control	XSC	Electronic control unit

V5VUV/D4.0000004-19-25FEB22

## Regions and Country Versions



RXA0150920—UN—01FEB16

- R1—Asia and Sub-Saharan Africa (blue)
- R1A—Far East, Sri Lanka, and Pakistan
- R1B—China
- R1C—India
- R1D—Sub-Saharan Africa
- R2—Europe, North Africa, Mid East, CIS (orange)
- R2A—European Union (EU 28+)
- R2B—North Africa and North Middle East (NANME)
- R2C—Common Wealth of Independent States (CIS)

- R3—Central and South America (red)
- R3A—Latin America (JDLA)
- R3B—Brazil
- R3C—Mexico
- R3D—Argentina
- R4—North America (green)
- R4A—USA and Canada
- R4B—Oceania (Australia and New Zealand)

Regions 1, 2, and 3 equipment is traditionally manufactured with Economic Commission for Europe (ECE) features or systems.	Region 4 equipment is traditionally manufactured with Society of Automotive Engineers (SAE) features or systems.
<ul style="list-style-type: none"> <li>• Turn signal lights not mounted to cab roof (at fenders instead)</li> <li>• Turn signal flashers only operate on selected side</li> <li>• Parking lights</li> <li>• License plate light</li> <li>• Secondary service brake</li> <li>• Hydraulic trailer brake</li> <li>• Text-free (pictorial only) safety signs</li> </ul>	<ul style="list-style-type: none"> <li>• Turn signal lights mounted to cab roof</li> <li>• Turn signal flashers operate on selected side while opposite side flasher is on but does not flash</li> <li>• No parking lights</li> <li>• No license plate light</li> <li>• No secondary service brake</li> <li>• No hydraulic trailer brake</li> <li>• Text with picture safety signs</li> </ul>

Drive and signal lighting, traffic signs, safety signs, and braking features are some of the systems that differ between ECE and SAE. For example, text-free (pictorial only) safety signs are used for ECE while text with picture safety signs are used on SAE. Use information above, if equipment information is identified by regions, countries, trade federations, industry standards, or governmental regulations.

*NOTE: Australia and New Zealand (R4B) are available as either region 4 and/or region 2 configurations, only using text-free safety signs.*

## How to Use This Manual

**IMPORTANT: 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.)**

Review manual sections for Controls and Instruments identification, Steering and Brakes, Transmission, and Transportation before operation on the road or in the field.

### Operating the Machine Introduction:

- Sit in the operator's seat and fasten seat belt.
- Start engine. (See Engine Operation section.)
- Turn on lights or signals as required. (See Electrical and Lighting Operation section.)
- Operate transmission to move machine. (See Transmission Operation section.)
- Use steering and brakes as required. (See Steering and Brake Operation section.)
- Activate features and implements as required. (See Operational sections.)

### Preliminary Overview

Use the following list as a reminder to inspect items before operation. Detailed operation and service information is available in the relevant Operational and Maintenance sections.

- Review manual and machine for safety information and safety signs.
- Review manual for proper operation, adjustment, and service.
- Review manual for engine and drivetrain operations. (Throttles, brakes, steering, transmission gears, MFWD, and differential lock.)
- Review manual for control devices (hitch, hydraulic, and electrical).
- Review manual for regular lubrication points and intervals.
- Check for visual signs of leaks, damage, failures, and flat tires.
- Prepare machine hardware, fuel, fluids, lubricants, air, and daily maintenance.
- Check and prepare implements or attachments according to implement or attachment Operator Manuals.

### Using this Manual:

The information provided in this manual is divided into sections. The sections are organized by typical machine features or functional systems (Engine, Electrical,

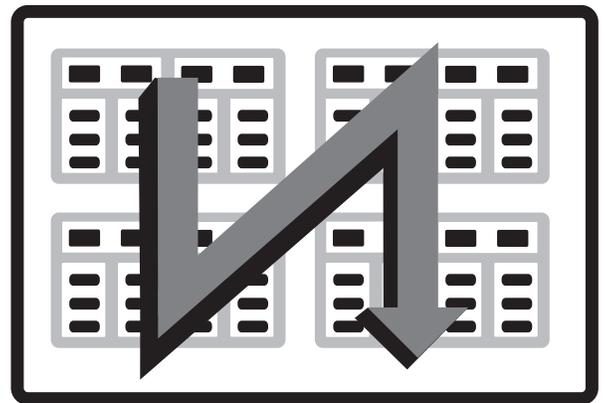
Hydraulic, Transmission, and so on). These sections are identified at the top of each page. Specific information within each section is organized into modules. These modules are enclosed in boxes and the main modules are identified by a heading at the top left. Page numbers identify the section as well as the number of the page in the section.

By reviewing this manual frequently, you learn which section to turn to for specific information. For example:

- Safety information is covered at the beginning.
- Operation of all features and systems is covered in the first half of the manual.
- Maintenance intervals are in the middle of the manual.
- Maintenance of all the features and systems is covered in the second half of the manual.
- Specifications are covered at the end.

A detailed table of contents appears before Safety information and there is an alphabetical index at the very end of the manual.

The Operator's Manual content flows as sequential reading down one column of text and graphic then over to the top of the next column as shown



W28329—UN—18OCT17  
V5VUVD4.0000006-19-28APR23

# Safety Precautions

## 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.

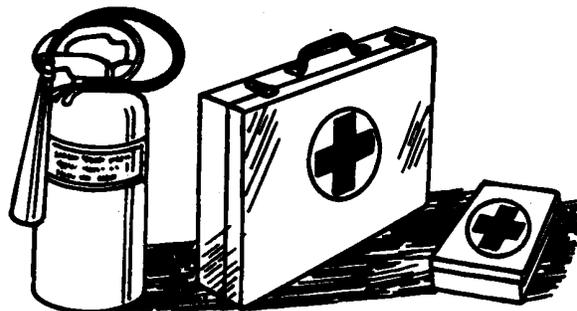
**WARNING;** The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**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

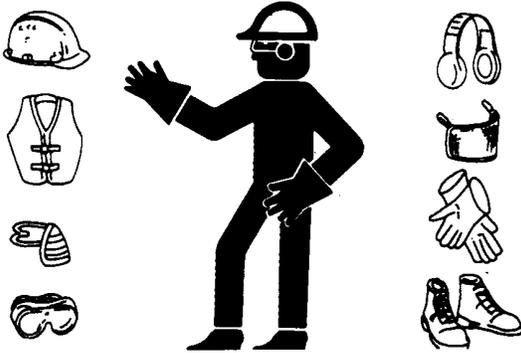
Be prepared if a fire starts.

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

## 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 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

## 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:

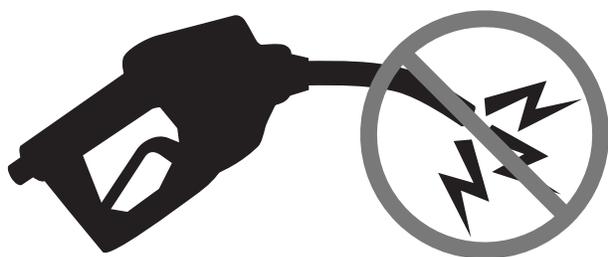
1. Pull the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.
2. Aim low. Point the extinguisher at the base of the fire.
3. Squeeze the lever slowly and evenly.
4. Sweep the nozzle from side-to-side.

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.

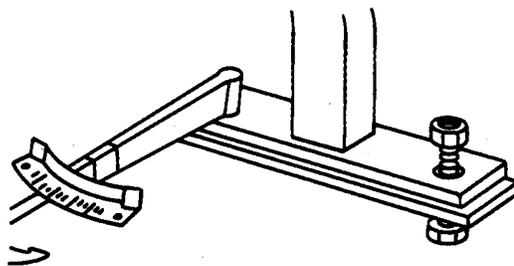
Refineries may have treated the fuel with a static dissipating additive. However, there are many factors that can reduce the effectiveness of the additive over time.

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.

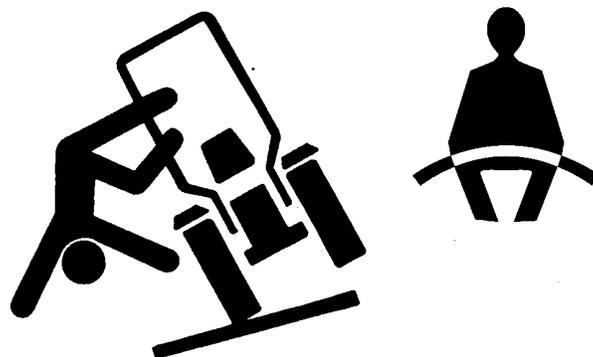
The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.

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.

## Safety Precautions

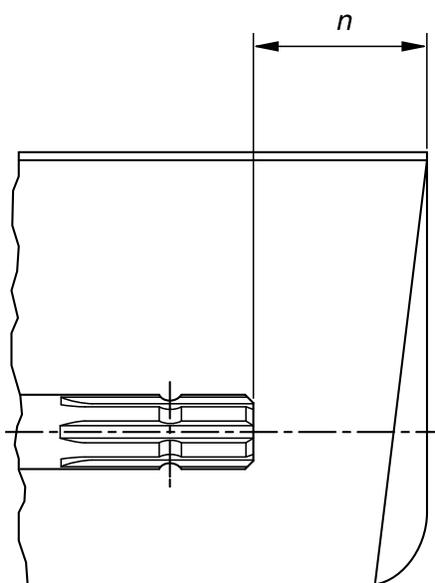
- Snug the seat belt across the hips.
- If this machine is operated with the ROPS folded (for example, to enter a low building), drive with extreme caution. **DO NOT USE** a seat belt with the ROPS folded.
- Return the ROPS to the raised, fully extended position as soon as the machine is operated under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

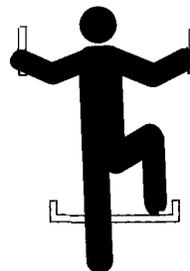
Do not raise implements high enough to damage the tractor master shield or guard of primary implement PTO driveshaft. Detach the PTO driveline shaft if it is necessary to increase implement height. (See Attching/ Detaching PTO Driveline)

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	$n \pm 5 \text{ mm (0.20 in.)}$
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

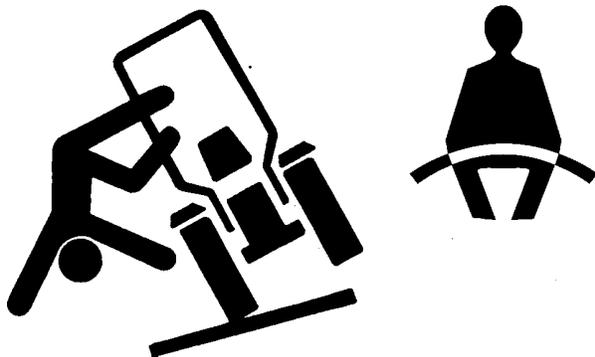
## Read Operator's Manuals for ISOBUS Controllers

In addition to GreenStar™ Applications, this display can be used as a display device for any ISOBUS Controller that meets ISO 11783 standard. This 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 a 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 prior to use.

*NOTE: ISOBUS refers to the ISO Standard 11783*

DX,WW,ISOBUS-19-15JUL15

## 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,

*GreenStar is a trademark of Deere & Company*

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

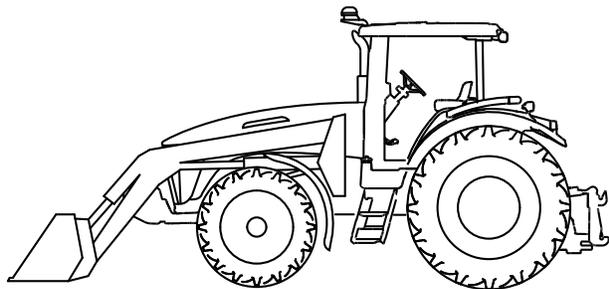
The intended use of John Deere tractors when used in forestry operations is limited to tractor-specific applications like transport, stationary work such as log splitting, propulsion, or operating implements with PTO, hydraulic, or electrical systems.

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.

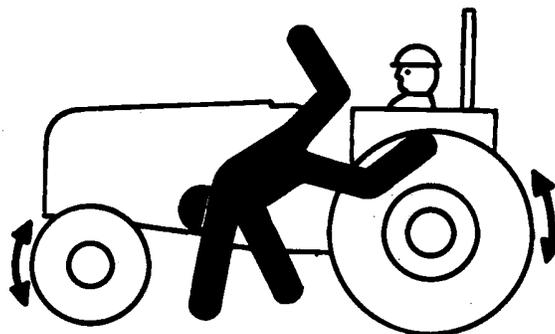
Lower loader to ground before leaving operators station.

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

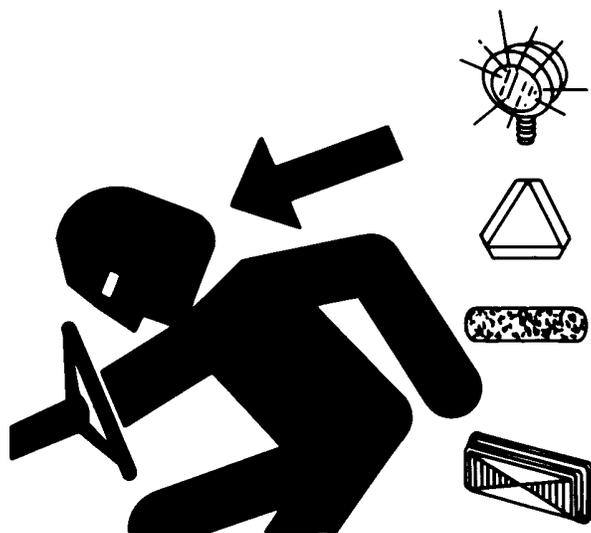


TS1730—UN—24MAY13

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



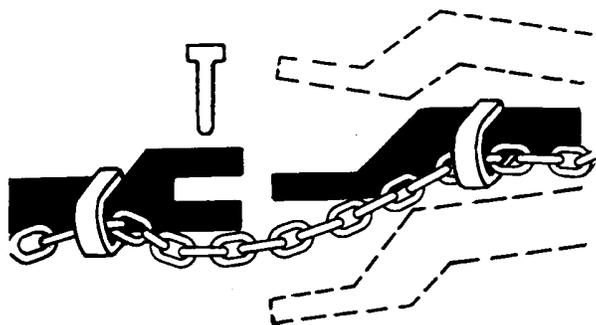
TS951—UN—12APR90

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.

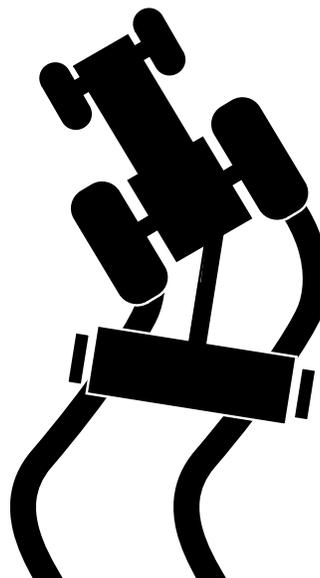
Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

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:**

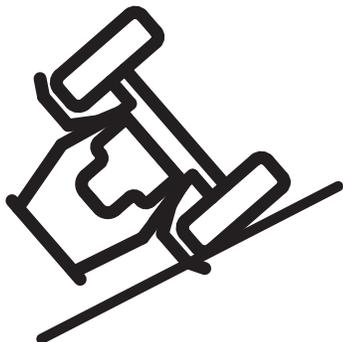
## Safety Precautions

- 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

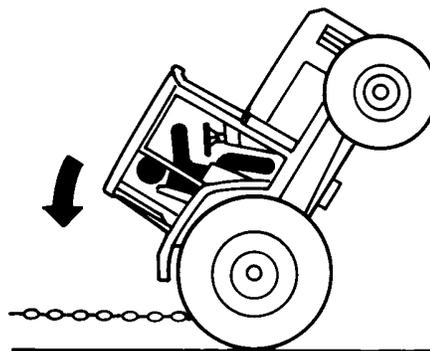
Choose a low ground speed so you will not have to stop or shift while on a slope.

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,MIREd-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.

## Safety Precautions

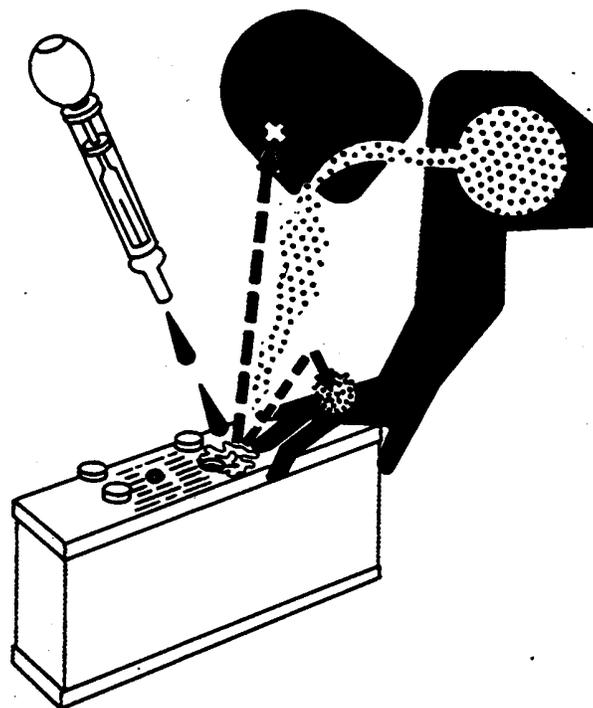
- Do not smoke or eat while applying chemicals.
- After handling chemicals, always bathe or shower and change clothes. Wash clothing before wearing again.
- Seek medical attention immediately if illness occurs during or shortly after use of chemicals.
- Keep chemicals in original containers. Do not transfer 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:

## Safety Precautions

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

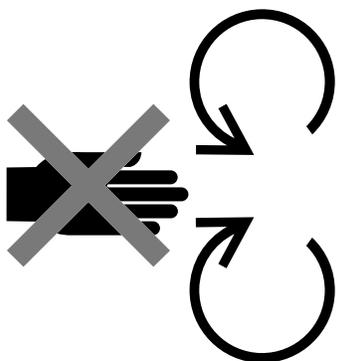
## Clean Exhaust Filter Safely



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



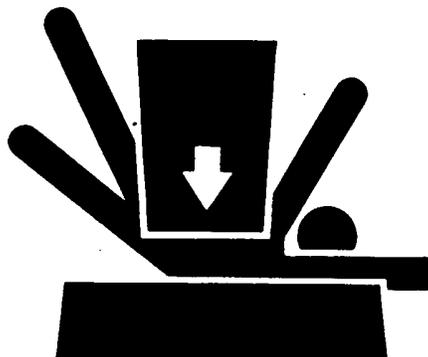
TS220—UN—15APR13

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

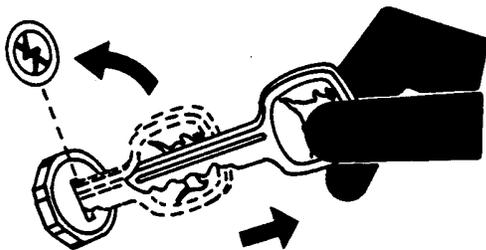
Avoid possible injury or death from machinery runaway.

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



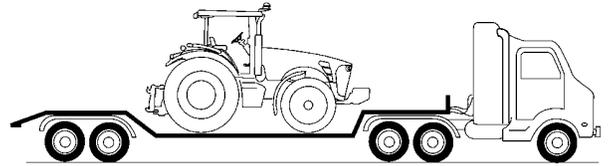
TS230—UN—24MAY89

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.

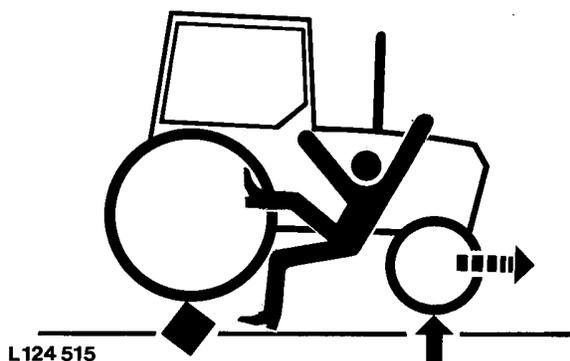
When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

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



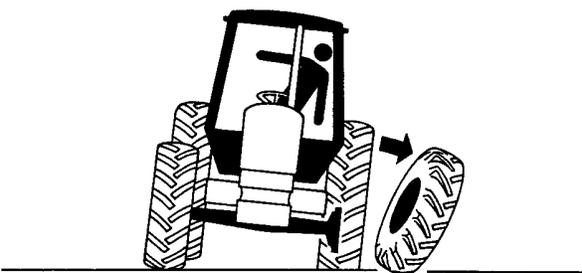
L124 515

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,WV,HPCR1-19-07JAN03

## Store Attachments Safely



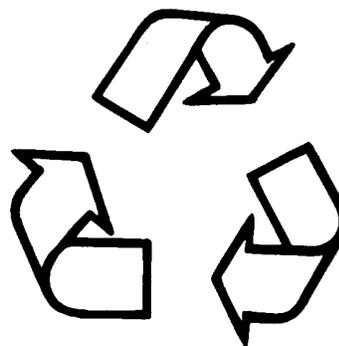
TS219—UN—23AUG88

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.

## Safety Precautions

---

- 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

---

# Safety Signs

## Replace Safety Signs



TS201—UN—15APR13

Replace missing or damaged safety signs. Use this operator's manual for correct safety sign placement.

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

DX,SIGNS-19-18AUG09



APY68986—UN—30SEP22

Left-Hand Corner Post

V5VUVD4.0000007-19-27APR23

## Operator's Manual

**⚠ CAUTION**

1. Read Operator's Manual before operating this tractor.
2. Keep all shields in place.
3. Hitch towed loads only to drawbar to avoid rearward upset.
4. Make certain everyone is clear of machine before starting engine or operation.
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. Couple brake pedals together for road travel.
9. Use flashing warning lights on highway unless prohibited by law.
10. Stop engine, lower implement to ground and shift to "PARK" or set handbrake securely before dismounting.
11. Wait for all movement to stop before servicing machinery.
12. Remove key if leaving tractor unattended.

LV5411—19—17NOV00

## Use Seat Belt Properly

**⚠ WARNING**

**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.

LV15901—19—25JUL12



APY68987—UN—30SEP22  
Right-Hand Corner Post

V5VUVD4,0000008-19-08OCT22



APY78936—UN—31JAN23  
Front PTO Shield (1000 RPM, If Equipped)

**WARNING**

**AVOID INJURY FROM PTO**

- Keep all shields in place
- Keep hands, feet and clothing away

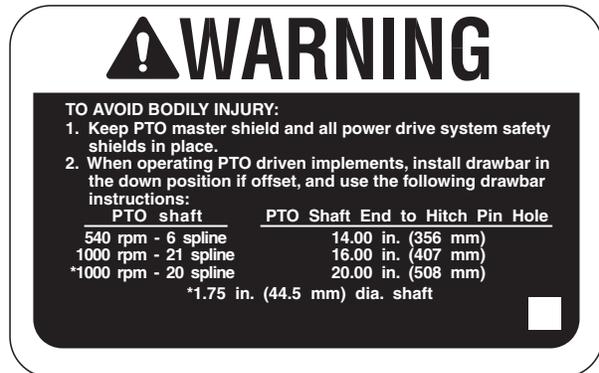
shqw455,1678134189764-19-06MAR23

**PTO Shield**

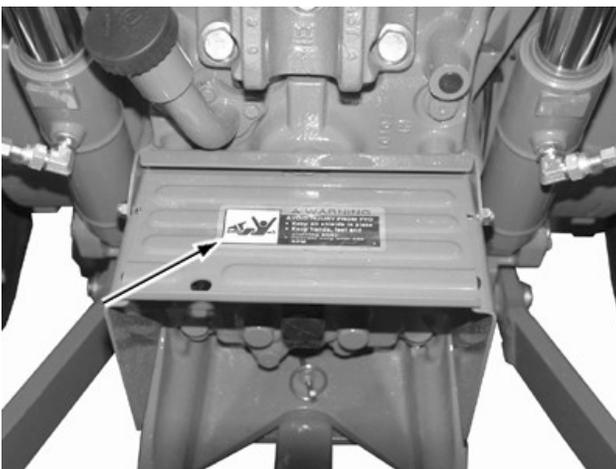


RXA0148607—19—09JUL15  
Warning Label

**3 Speed 540/540E/1000 PTO Shield**



RXA0184730—UN—11AUG21



LV15875—UN—18JUL12  
Rear PTO Shield

## Safety Signs



APY68988—UN—30SEP22

Rear PTO Shield

V5VUVD4,000000B-19-08OCT22



APY68989—UN—30SEP22

Right-Hand Corner Post

V5VUVD4,000000C-19-08OCT22

## Tow Implement Properly



LV15900—19—25JUL12

## Front End Loader



RXA0068062—19—29JUN05

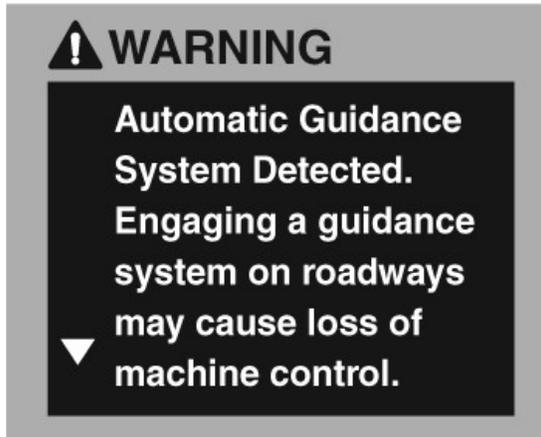


Right-Hand Post

APY79607—UN—30SEP22

V5VUVD4,000000D-19-08OCT22

### AutoTrac Detected



RXA0178550—UN—26JUN20

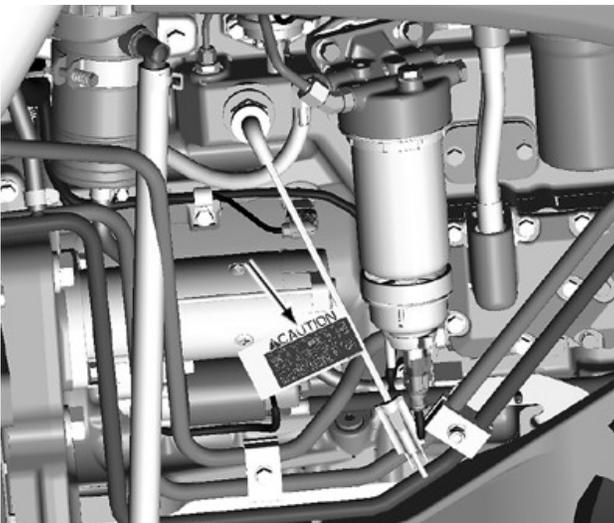
### Engine Coolant Heater



RXA0148588—19—09JUL15



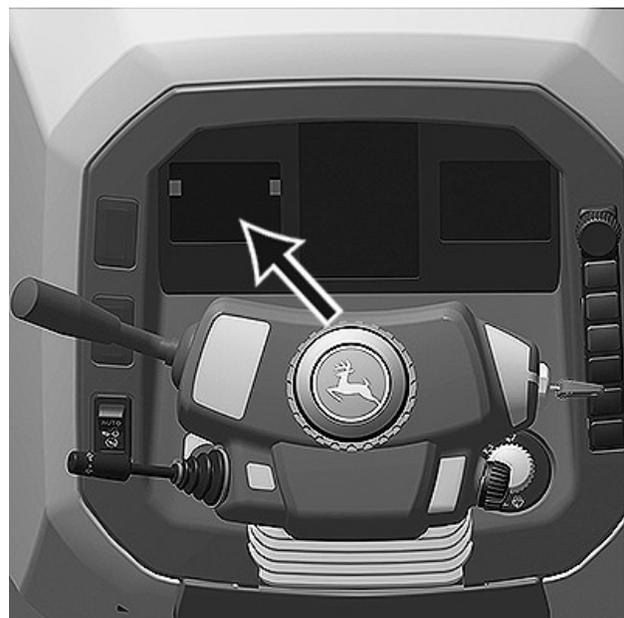
RXA0170764—UN—02OCT19



Right Side of Engine

LV21963—UN—30MAY14

V5VUVD4,000000E-19-08OCT22



Left-Hand Side Information Screen

RXA0180138—UN—26JAN21

*NOTE: This message occurs during start-up on machines with an automatic guidance system installed when a valid track is selected.*

V5VUVD4,000000F-19-08OCT22

---

# Controls and Instruments

## Front Console Controls



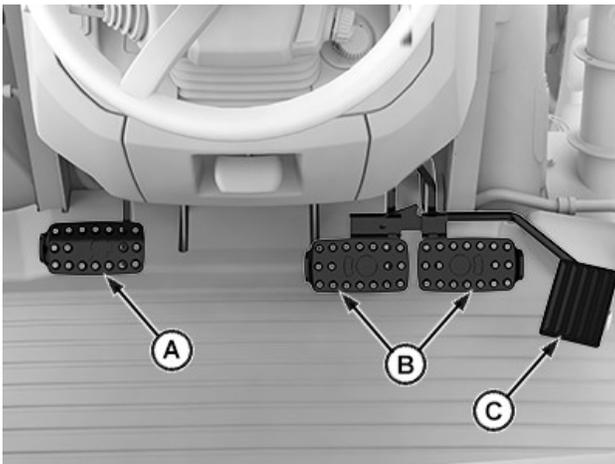
APY68991—UN—07DEC22

- A—Left-Hand Reverser Lever
- B—Turn Signal, Horn, and High/Low Beam Switch
- C—Steering Wheel Telescoping Knob
- D—Steering Wheel Tilt Lever
- E—Front Wiper Switch
- F—Light Switch

- G—Key Switch
- H—Display Navigation Module
- I—Transmission
- J—Worklights
- K—SCV

V5VUVD4.0000010-19-07DEC22

## Foot-Operated Controls

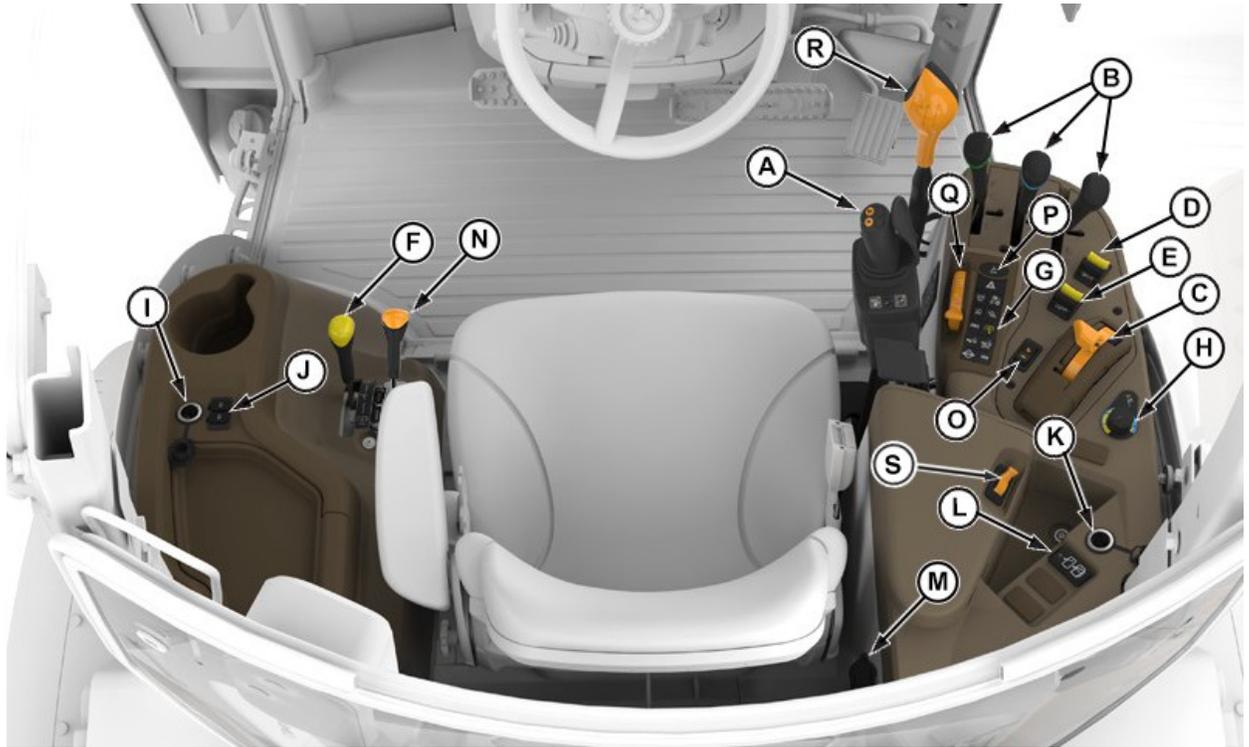


APY68992—UN—25AUG22

- A—Clutch Pedal
- B—Brake Pedals
- C—Foot Speed Control Pedal

V5VUVD4.0000011-19-14NOV22

## Console Controls



P20915—UN—14NOV23

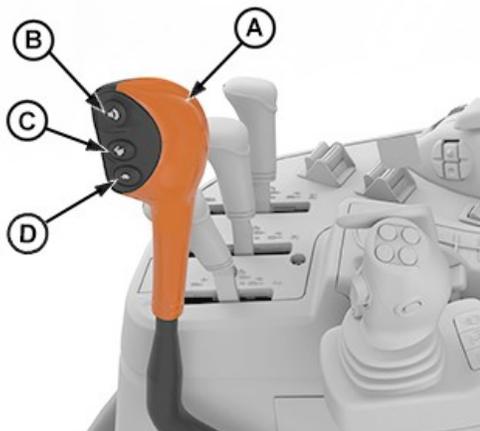
- A—Mid-Mount SCV Joystick
- B—Rear SCV Lever (3)
- C—Rear Hitch Control
- D—Front PTO Switch
- E—Rear PTO Switch
- F—PTO Speed Shift Lever
- G—Remote PTO Enable Switch
- H—Rear Hitch Draft Control Knob
- I—Auxiliary Output Jack

- J—USB Connector (2 used)
- K—Power Outlet
- L—Rear Wiper Switch
- M—Convenience Outlet
- N—Creep Lever
- O—Gear Shift Switch
- P—AutoTrac Resume Switch
- Q—Hand Speed Control
- R—Range-Shift Lever

V5VUVD4,0000012-19-21NOV23

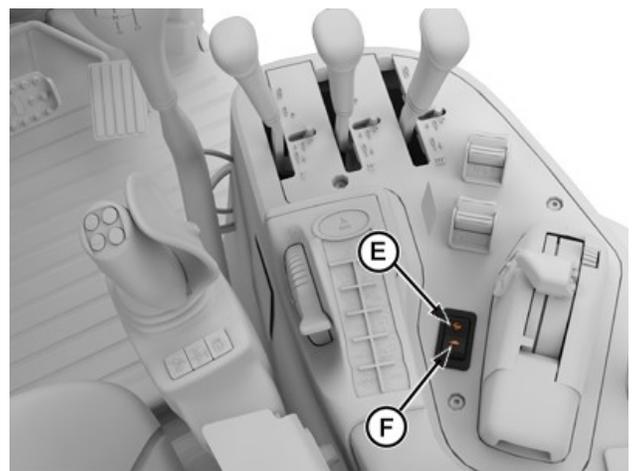
## Transmission Controls

### Gear Shift Controls



APY68994—UN—06SEP22

Declutch with Hi/Lo



APY68995—UN—17AUG22

Right-Hand Console Speed Shift Switch

- A—Range-Shift Lever
- B—Declutch Button
- C—Speed Shift Up
- D—Speed Shift Down

- E—Speed Shift Up
- F—Speed Shift Down

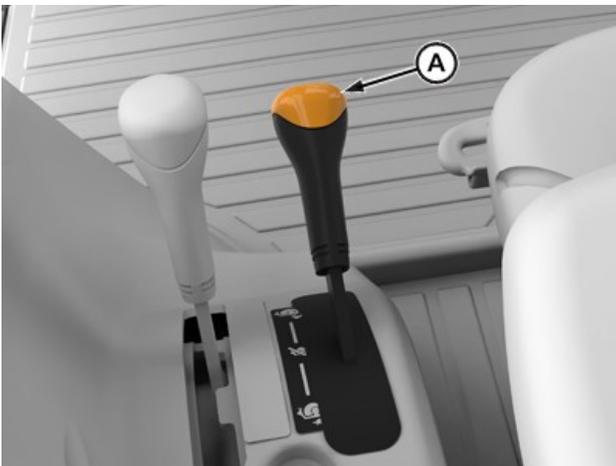
**Left-Hand Reverser**



**A—Left-Hand Reverser Lever**

APY68996—UN—17AUG22

**Creep Shift Lever**



**A—Creep Shift Lever**

APY68997—UN—17AUG22

**Mid-Mount SCV Joystick Controls**



APY68998—UN—12DEC22



APY68999—UN—10NOV22

- A—Mid-Mount SCV Joystick**
- B—Third-Function Switch**
- C—Loader Lock**
- D—Gearshift Buttons**
- E—Loader-Bucket Suspension Button**

V5VUVD4,000014-19-07DEC22

V5VUVD4,000013-19-28APR23

### Rear SCV Controls



A—SCV III Lever  
B—SCV II Lever  
C—SCV I Lever

APY6900—UN—14NOV22

V5VUVD4,0000015-19-13NOV23

### B—Rear Hitch Fender Switch

V5VUVD4,0000016-19-06SEP22

### Rear PTO Controls

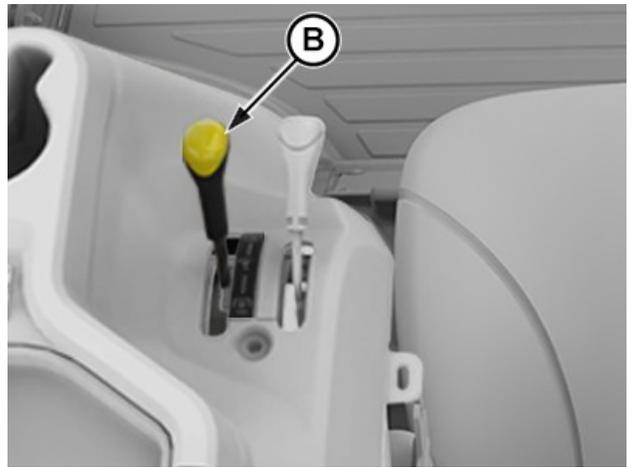


APY79603—UN—30SEP22

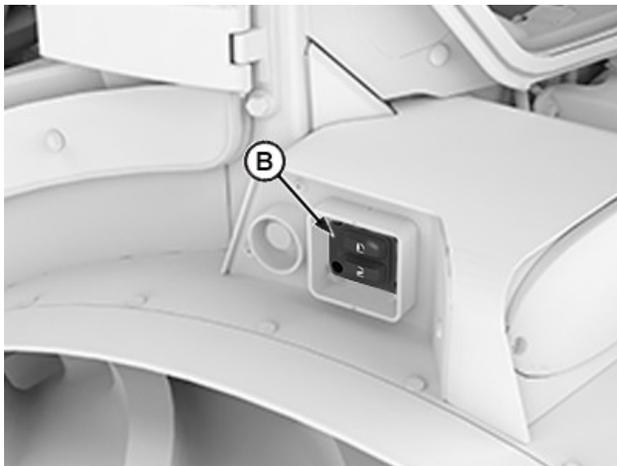
### Rear Hitch Controls



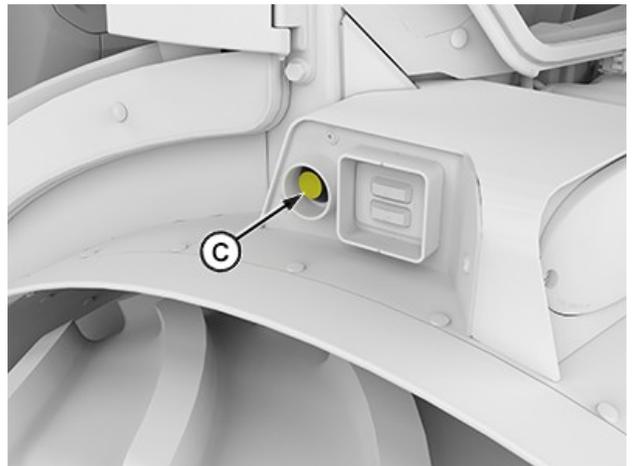
APY79601—UN—30SEP22



APY80693—UN—14NOV22



APY79602—UN—30SEP22



APY79604—UN—30SEP22

A—Electrohydraulic Rear Hitch Controls

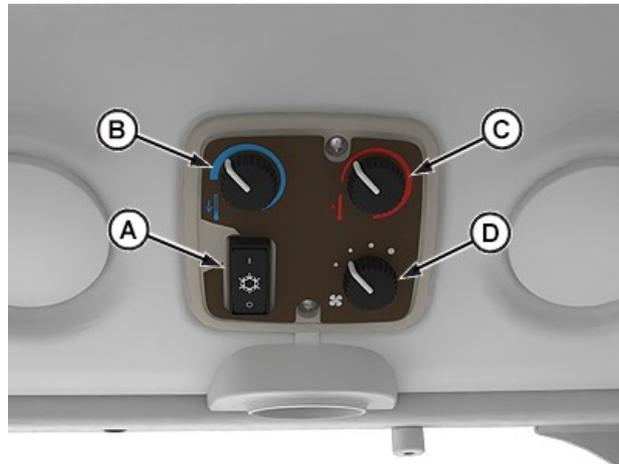


APY79605—UN—30SEP22

- A—Rear PTO Switch
- B—3-Speed Rear PTO Shift Lever
- C—Rear PTO Fender Switch
- D—MFWD Auto Switch

V5VUVD4,000017-19-21NOV23

## Heat and Air Conditioning Controls

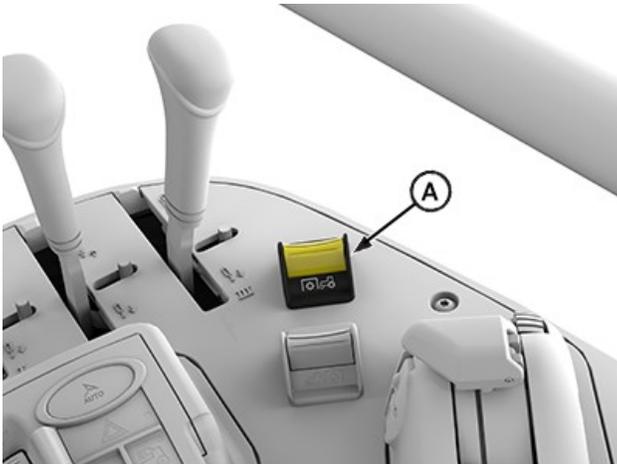


APY79608—UN—30SEP22

- A—Air Conditioning ON-OFF Switch
- B—Air Conditioning Control Knob
- C—Heat Control Knob
- D—Fan Speed Knob

V5VUVD4,000019-19-27APR23

## Front PTO Controls



APY79606—UN—30SEP22

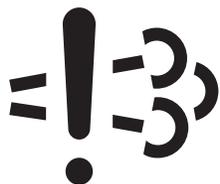
- A—Front PTO Switch

V5VUVD4,000018-19-08OCT22

# Engine Operation

## 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

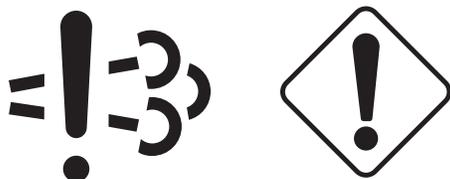
Warning Indicator illuminates when a condition exists which requires operator action.



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 Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



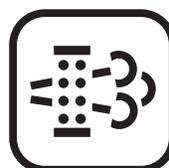
Engine Menu

RXA0152958—UN—21JUL16

1. Locate the engine menu.



RXA0152960—UN—21JUL16  
Auto Filter Cleaning Selection



RXA0152961—UN—21JUL16  
Filter Cleaning Selection

2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

Selection	Range	Engine Response
Auto Filter Cleaning	Automatic cleaning or cleaning disabled.	Automatic cleaning allows exhaust filter cleaning to occur during operation when certain conditions are met. Cleaning disabled prevents automatic cleaning. When the engine is cycled off, it defaults back to automatic.
Filter Cleaning	Parked filter cleaning.	If the symbol is not grayed out, a parked filter cleaning can be performed.

V5VUVD4,000001A-19-11NOV22

## Engine Fuel System and Power Rating

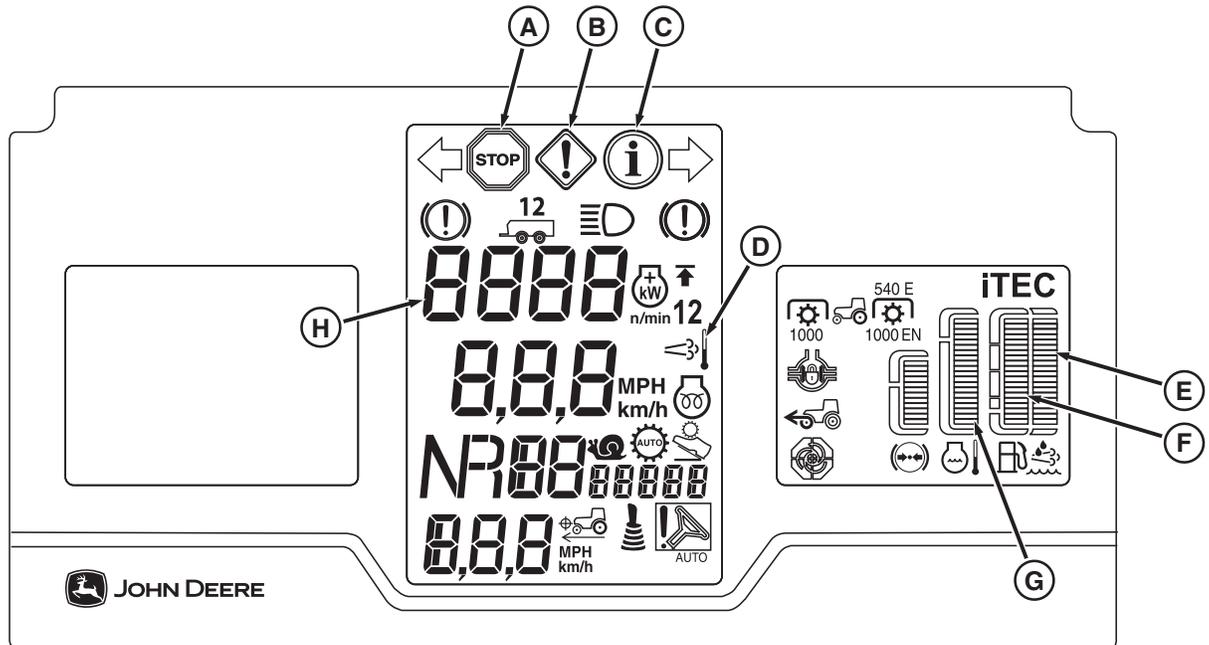
**IMPORTANT: Modification or alteration of the injection system or emission control devices terminates the warranty to purchaser.**

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

**Engine Certification/Power Rating:** kW (hp) rating on the emission certification label specifies gross engine kW (hp), which is flywheel power without fan.

V5VUVD4,000001B-19-11NOV22

## Check Engine Indicators and Gauges



RXA0180995—UN—05FEB21

- A—STOP Indicator
- B—Warning Indicator
- C—Information Indicator
- D—Exhaust Temperature Indicator

- E—Diesel Exhaust Fluid (DEF) Gauge
- F—Fuel Level Gauge
- G—Engine Coolant Temperature Gauge
- H—Tachometer

**STOP Indicator (A):** STOP indicator flashes and an audible alarm sounds continuously to alert operator that a serious malfunction has occurred. Immediate attention is required otherwise damage to machine occurs.

Immediately stop operations, reduce engine to idle, then Shut Off engine otherwise machine damage occurs. If necessary, have your John Deere dealer to diagnose problems.

**Warning Indicator (B):** Warning indicator flashes and an audible alarm sounds five times if a malfunction occurs.

Diagnostic trouble codes are present, but they do not require an immediate machine shutdown. Access the information display to determine severity of DTCs. If necessary, have your John Deere dealer diagnose the problem.

**Information Indicator (C):** When a diagnostic trouble code (DTC) is present, information alert indicator illuminates. Access information display to determine if diagnostic trouble codes are present. If necessary, have your John Deere dealer diagnose the problem.

**Exhaust Temperature Indicator (D):** If exhaust

temperature indicator remains illuminated, the presence of high temperatures inside the exhaust filter exist, which allow active filter cleaning to occur.

**Diesel Exhaust Fluid (DEF) Gauge (E):** Indicates the volume of DEF in the tank. As volume is reduced, bars disappear from the display. Avoid running out of DEF to prevent damage to engine components.

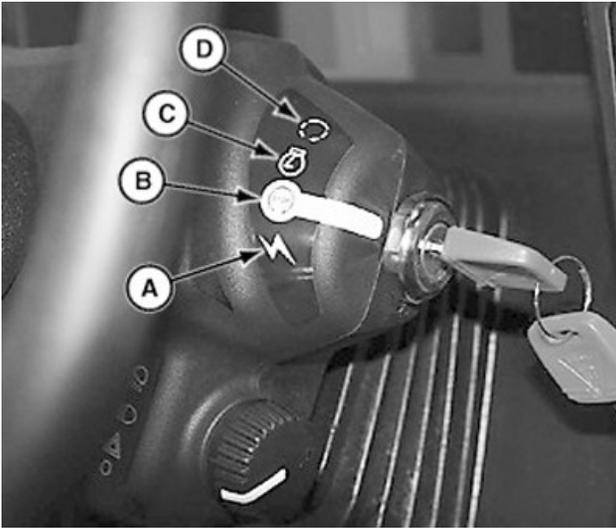
**Fuel Level Gauge (F):** Indicates the volume of fuel left in the tank. As volume is reduced, bars disappear from the display. Avoid running out of fuel to prevent damage to engine components.

**Engine Coolant Temperature Gauge (G):** Indicates the engine coolant temperature. If indicator bars reach the red zone on the display, stop engine. Clean debris from grilles, radiator, and coolers. Allow the engine to cool completely, then check coolant level and fan belt tension.

**Tachometer (H):** Engine revolutions per minute (rpm) are represented in hundreds.

V5VUVD4,000001C-19-28APR23

## Operate Key Switch



P20926—UN—14NOV23

- A—Accessory Position
- B—Stop Position
- C—Run Position
- D—Start Position

**NOTE:** If temperature is below 5°C (41°F), see *Cold Weather Start* procedure in this section.

**ACCESSORY (A):** Push in and turn key to ACCESSORY position to power electrical functions.

**STOP (B):** Turn key to STOP position to stop engine and turn off electrical functions.

**RUN (C):** Turn the key switch to RUN position. Check gauges and indicator lights before starting.

**START (D):** Turn key to START position to start engine. Key returns to run position when released.

V5VUVD4,00001D-19-21NOV23

**Avoid possibility of personal injury or death. Engine starting with shift lever in gear indicates malfunction of the starting circuit. Repair immediately. See your John Deere dealer.**

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

**IMPORTANT:** Do not use starting fluid. Damage to engine can occur.

1. Check fuel, DEF, engine oil, and coolant levels before starting the engine. Fill as required.
2. Place left-hand reverser in neutral position.
3. Place hand speed control in idle position.
4. Disengage PTO.
5. Place SCV levers in neutral position.
6. Lower hitch completely if an implement is attached.
7. Turn the key switch to run position. Do not start engine.
8. Wait until light check sequence is complete.
9. Check for any indicator lights or diagnostic trouble codes that impair machine performance. If necessary, have your John Deere dealer diagnose the problem.
10. Depress clutch and brake pedals.
11. Sound horn.
12. Turn key switch to engage the starter. Release key when the engine starts.

**IMPORTANT:** Avoid starter damage. Do not operate the starter for more than 30 seconds. Wait at least 2 minutes before trying again.

## Start Engine



TS177—UN—11JAN89

**CAUTION:** Do not start engine by shorting across starter terminals. The machine starts in gear when the normal circuitry is bypassed. Start engine **ONLY** from the operator's seat.

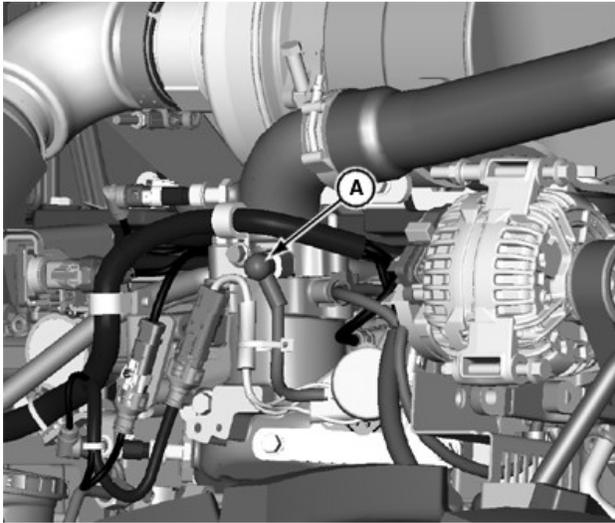
### If Engine Fails to Start:

- Place hand speed control at 1/4 to 1/3 of full throttle and attempt to start machine again.
- In cold weather (at or below 5°C [41°F]), refer to cold weather start procedure in this section.
- Check for diagnostic trouble codes or electrical problems.
- If engine fails to start after three attempts, see your John Deere dealer.

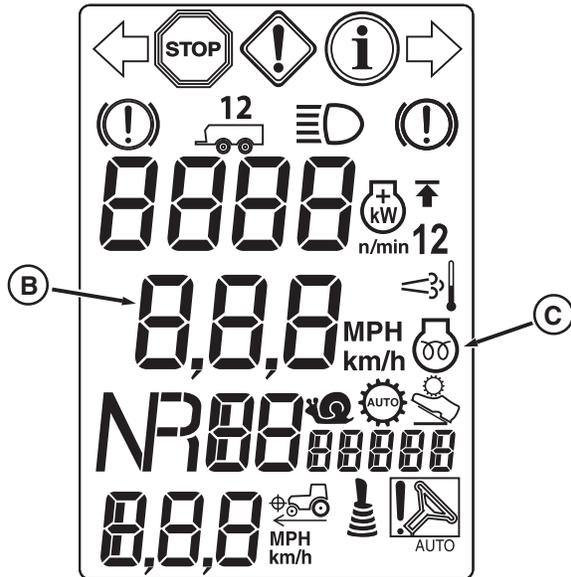
**NOTE:** In cold weather, engine speed is limited to 1440 rpm until transmission/hydraulic oil temperature is above -18°C (0°F).

V5VUVD4,00001E-19-11NOV22

## Cold Weather Start



LV22525—UN—24JUL14



RXA0180994—UN—20JAN21

Cold Start Indicators

- A—Air Intake Heater
- B—Machine Ground Speed
- C—Cold Start Indicator Icon

### IMPORTANT: Do not use starting fluid.

1. Turn key switch to RUN position, but do not start engine.
2. Observe display for the cold start indicator icon (C) to appear.
3. A cold start countdown begins, utilizing the ground speed icon (B) to indicate the air intake heater (A) is heating up.
4. When the cold start countdown reaches zero, icon turns off.

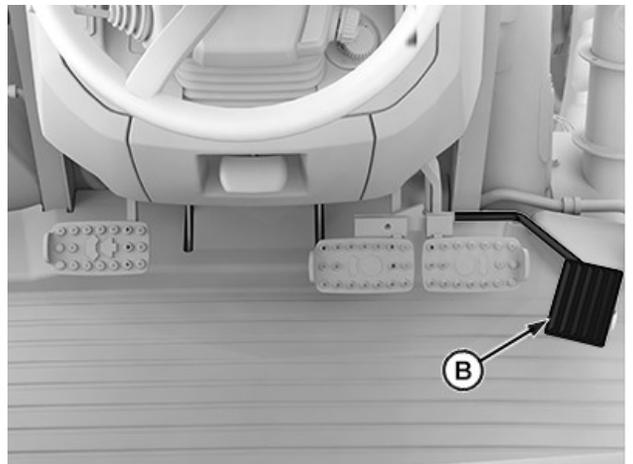
5. Start engine and allow to warm up. (See Run Engine in this section for procedure.)

V5VUVD4,000001F-19-03MAR22

## Run Engine



APY79609—UN—08OCT22



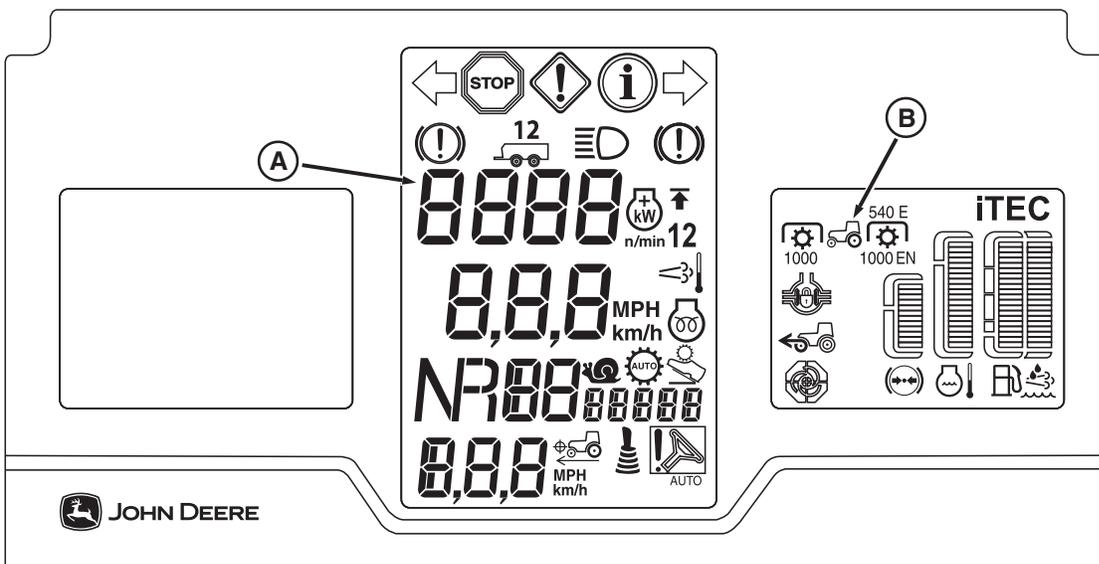
APY79610—UN—08OCT22

- A—Hand Speed Control
- B—Foot Speed Control

1. Start engine.
2. Set hand speed control (A) to 1200 rpm.
3. Allow engine to run at 1200 rpm without load for 1—2 minutes if temperature is above 0°C (32°F). If temperature is below 0°C (32°F), run without load for 2—4 minutes. If temperature is extremely cold, it takes longer to get engine warm enough to operate.
4. Once engine is warm, push hand speed control (A) forward to increase speed.
5. Depress foot speed control (B) to increase engine speed temporarily above the hand speed control setting.

V5VUVD4,0000020-19-08OCT22

## Engine Speeds and Operational Procedures



RXA0180996—UN—05FEB21

### A—Tachometer

#### Warm Up Engine

Do not place machine under full load until it is properly warmed up.

1. Run engine with tachometer (A) reading 1200 rpm for several minutes.

*NOTE: In cold weather, engine speed is limited to 1440 rpm until transmission/hydraulic oil temperature is above -18°C (0°F).*

*If hydraulic functions operate slowly, warm the transmission/hydraulic system oil. See Warm Transmission/Hydraulic System Oil in Hydraulics Operation section.*

2. Run engine at approximately 1900 rpm under light load until engine reaches normal operating condition.

#### Avoid Idling Engine

Prolonged idling causes 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 the exhaust system.

### B—PTO Status Icons

If machine must be left with the engine running for more than 3 or 4 minutes, minimum engine speed must be 1200 rpm.

#### Engine Work Speeds

- Engine nominal full load speed is 1600—2200 rpm.
- Do not operate engine constantly below 1500 rpm during heavy draft usage or when machine is under full PTO load.

#### PTO Speeds

- PTO speed and PTO status (B) are indicated when PTO is engaged.
- PTO mode value is displayed according to PTO speed selected (540E, 540, or 1000).
- Recommended engine speed is 2100 rpm for 540 and 1000 PTO.
- Recommended engine speed is 1645 rpm for 540E PTO.

#### Restart Stalled Engine

If engine stops running due to overload, immediately restart engine. A running engine causes oil and coolant to circulate, which prevents abnormal heat buildup. If engine stalls but does not stop running due to overload,

run at low idle for 1 or 2 minutes in order to dissipate heat buildup.

V5VUVD4,000021-19-03MAR22

## Stop Engine



APY79609—UN—08OCT22

A—Hand Speed Control

**IMPORTANT:** Idle an engine that has been operating at working load at least 1 or 2 minutes at 1000—1200 rpm to cool. If an exhaust filter cleaning has recently been completed, increase engine idle time to 4 minutes.

1. Place left-hand reverser in neutral position.
2. Place hand speed control (A) in idle position.
3. Disengage PTO.
4. Lower any equipment to the ground.
5. Place SCV levers in neutral position.
6. Lower hitch completely if an implement is attached.
7. Turn key to STOP and remove.

V5VUVD4,000022-19-08OCT22

## Restart Engine That Has Run Out of Fuel

**IMPORTANT:** Do not attempt to start for longer than 20 seconds at a time and give 20-30 seconds time gap to avoid starter damage.

1. Fill the fuel tank.
2. Bleed the fuel system to remove excess air. (See Bleed Fuel System in Air, Fuel, Coolant, and Exhaust Maintenance section.)
3. Attempt to start the engine two or three times.
4. If engine does not start, bleed the fuel system again.

5. Attempt to start engine two or three times.
6. If the engine does not start, contact your John Deere dealer.

V5VUVD4,000023-19-09DEC22

## Engine Block Coolant Heater



LV18039—UN—11JUN13

Right Side of Engine

A—Engine Block Coolant Heater

**CAUTION:** To avoid electrical shock or fire, use a heavy-duty electrical cord. Ensure that it is a 3-wire, 14 AWG (14 gauge), that is no longer than 7.6 m (25 ft), 15 amperes rated, and is suitable for outdoor use. Before connecting heater to a power source, be sure that element is immersed in coolant. NEVER energize the heater in air. Doing so can cause the element sheath to burst, resulting in personal injury.

1. Locate engine block coolant heater (A) on the engine.
2. Connect heater plug to a 120-volt outlet protected by ground fault interrupter.

V5VUVD4,000024-19-03MAR22

# Air Intake, Fuel, Coolant, and Exhaust Operation

## Aftertreatment Indicators Overview



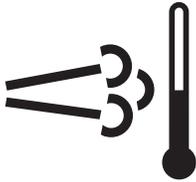
*Diesel Exhaust Fluid Indicator*

RG22487—UN—21AUG13



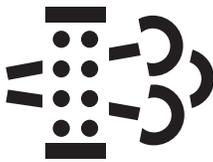
*Engine Stop Indicator*

RG22493—UN—21AUG13



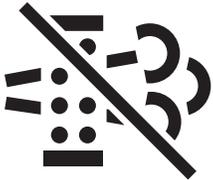
*Engine Emissions Temperature Indicator*

RG22488—UN—21AUG13



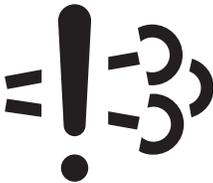
*Exhaust Filter Indicator*

RG22489—UN—21AUG13



*Auto Cleaning Disabled Indicator*

RG22490—UN—21AUG13



*Engine Emissions System Malfunction Indicator*

RG22491—UN—21AUG13



*Warning Indicator*

RG22492—UN—21AUG13

**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.

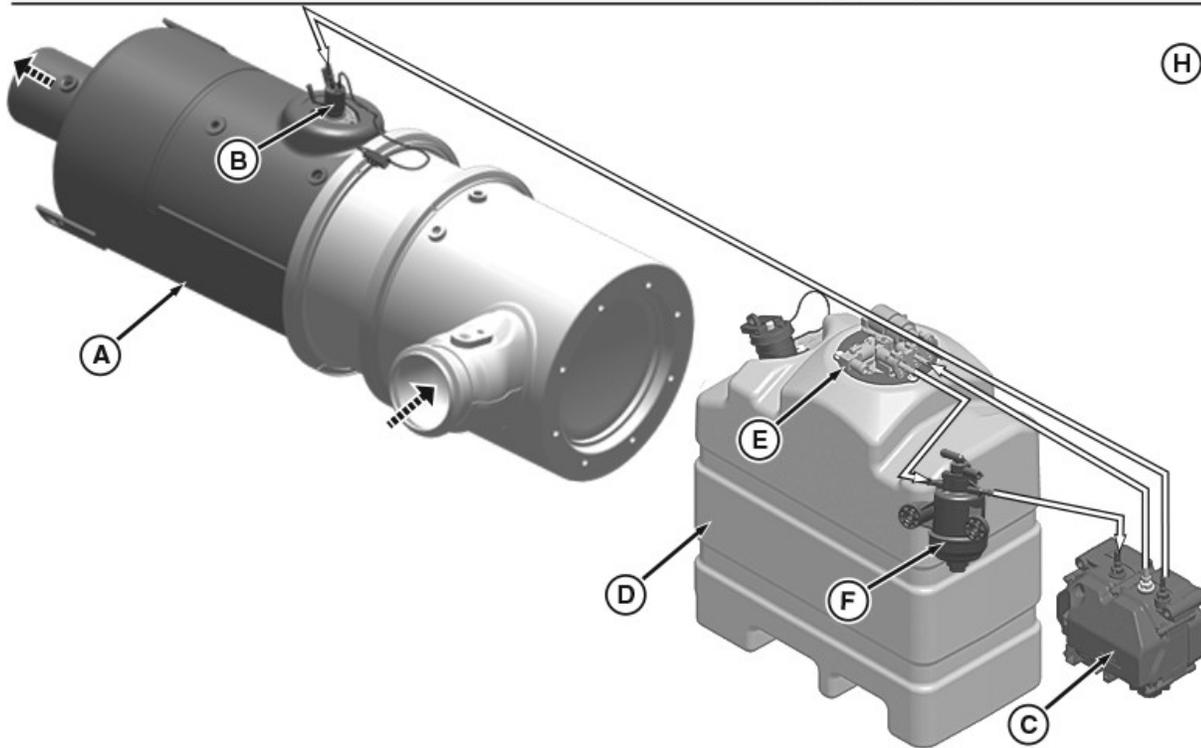
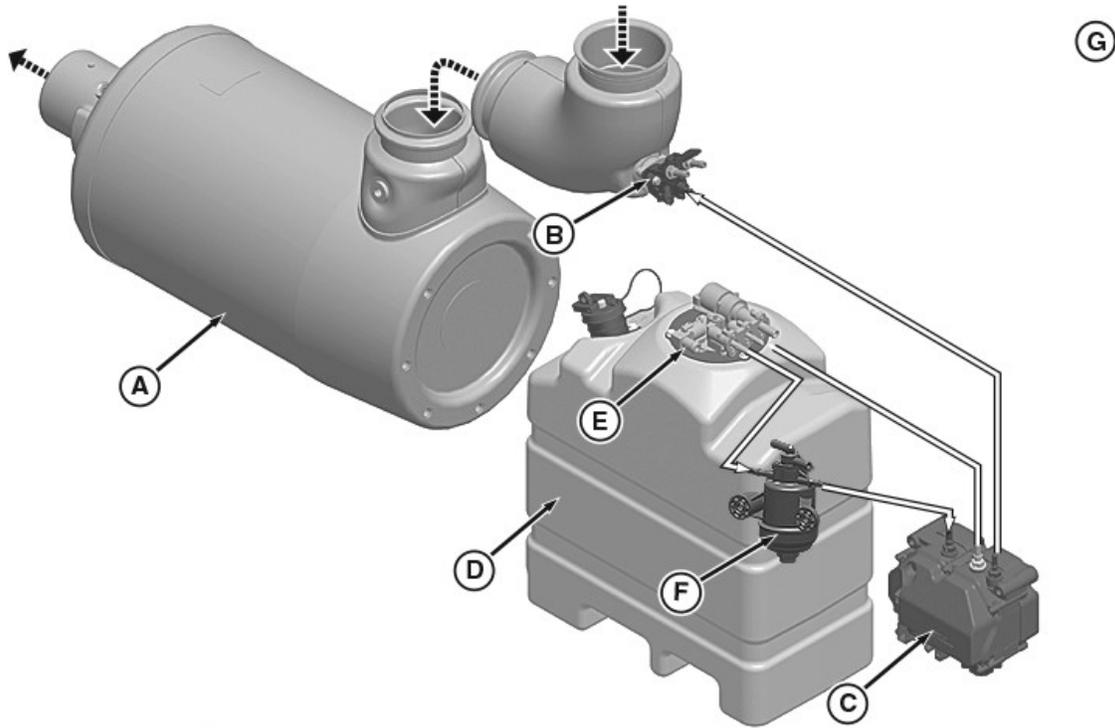
The engine emissions system malfunction indicator illuminates when engine emissions are outside of normal operating range or engine emissions system fault. Follow DTC procedure or see your authorized servicing dealer.

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.

---

DX,AFTRTREAT,INDCATRS-19-12FEB18

## Selective Catalytic Reduction (SCR) System Overview



SCR System

RG22427A—UN—07JAN20

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

## US EPA Qualified Emergency Use — SCR Derate Override Option

*NOTE: This is a US EPA only option.*

**IMPORTANT: Operating the engine without emissions related derates could damage the aftertreatment system.**

## Description: US EPA Qualified Emergency Use – SCR Derate Override Option

Under the US EPA's regulations the Qualified Emergency SCR Derate Override Option (Emergency SCR Derate Override) is considered an Auxiliary Emission Control Device (AECD), which is only permitted during qualified emergency situations. To ensure compliance with US EPA regulations governing this type of AECD it is important that operators read the following information and comply with the requirements.

Emergency SCR Derate Override enables a Selective Catalyst Reduction (SCR) equipped application to operate without emissions-related derates for a specified period of time during qualified emergency situations. A qualified emergency situation is one in which the condition of an engine's emission controls poses a significant direct or indirect risk to human life. An example of a direct risk is an emission control condition that inhibits the performance of an engine being used to rescue a person from a life-threatening situation. An example of an indirect risk is an emission control condition that inhibits the performance of an engine being used to provide electrical power to a data center that routes "911" emergency response telecommunications.

## Emergency SCR Derate Override Activation / Reporting

The operator can activate the Emergency SCR Derate Override through the operator interface. Once activated, the engine can operate free of emissions-related derates for 120 hours. If the derate condition is corrected during the 120 hours, the Emergency SCR Derate Override can be paused in order to preserve the remainder of time for future use. The option expires along with any remaining time 240 hours after the Emergency SCR Derate Override is activated.

When the Emergency SCR Derate Override has expired, the engine informational Diagnostic Trouble Code (DTC) is displayed to the operator upon every engine start and every hour until acknowledged by the operator. To clear the DTC and reset the Emergency SCR Derate Override timer for future use, the operator (or other person responsible for the engine/equipment) must submit a report to the John Deere Dealer Technical Assistance Center, which must include the following:

- Contact name, mail and email addresses, and telephone number for responsible company or entity
- Description of the emergency situation, the location of the engine during the emergency, and the contact information for an official who can verify the emergency situation (such as a county sheriff, fire marshal, or hospital administrator)
- Reason for the Emergency SCR Derate Override activation during the emergency situation, such as the lack of diesel exhaust fluid, or the failure of an

emission-related sensor when the engine was needed to respond to an emergency situation

- Engine's serial number
- Description of the extent and duration of the engine operation while the Emergency SCR Derate Override was active, including a statement describing whether or not the Override was manually deactivated after the emergency situation ended

In no event may this report be submitted to John Deere or other qualified service provide later than 60 calendar days after the Emergency SCR Derate Override is activated.

### LEGAL Notification

The following actions by the operator are an improper use of the Emergency SCR Derate Override and are prohibited by the Clean Air Act and US EPA regulations:

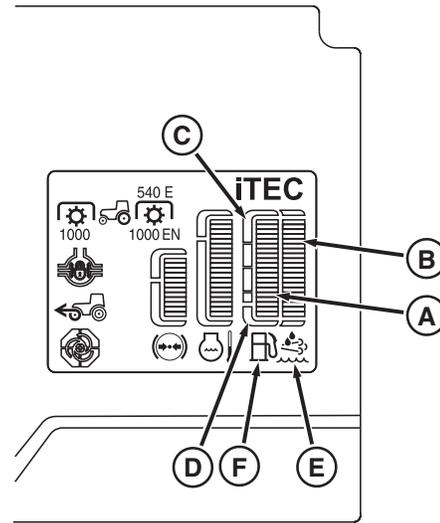
- Activating the Emergency SCR Derate Override for something other than a qualified emergency situation;
- Failing to disable the Emergency SCR Derate Override after a qualified emergency situation ends; and,
- Failing to notify John Deere and send it reports as required in this Operators Manual and federal regulations. Note: John Deere is required to report to the US EPA the operator's failure to report to it any Emergency SCR Derate Override event (to the extent it becomes aware of such event).

The maximum civil penalty the US EPA may assess under 40 CFR 1068.101 is \$4,454 for each day an engine or piece of equipment is operated in violation of the requirements associated with the Emergency SCR Derate Override.

US EPA regulations governing the Emergency SCR Derate Override can be found at 40 CFR §1039.665, as may be amended.

DX,SCR,EMRGNCY,OVERIDE,US-19-24JAN18

## Fuel and Diesel Exhaust Fluid (DEF) Level Gauges



RXA0180983—UN—19FEB21

Fuel and DEF Gauges

- A—Fuel Level Gauge
- B—Diesel Exhaust Fluid (DEF) Gauge
- C—Normal Fuel and DEF Level
- D—Low Fuel and DEF Level
- E—DEF Indicator
- F—Fuel Indicator

Fuel level gauge (A) and DEF gauge (B) are a quick visual check for the operator. Fuel indicator (F) and DEF indicator (E) flash and an alarm goes off when either level is getting low. The information display shows a code when the fuel or DEF level is low as well.

### Normal Fuel and DEF Level (C):

When fuel and DEF levels are in the normal-level range, indicators (E and F) illuminate white and machine operates normally. Always keep level within this range for uninterrupted performance.

### Low Fuel and DEF Level (D):

When fuel and DEF levels fall into the low-level range, indicators flash amber, diagnostic trouble codes are displayed, and an alarm goes off. Fuel and DEF must be filled to continue normal operation.

When fuel and DEF levels approach zero, indicators illuminate amber continuously, diagnostic trouble codes are displayed, and an alarm goes off. If the DEF tank is not refilled immediately, engine power and speed derates. DEF must be refilled and machine must be restarted to return to normal operation.

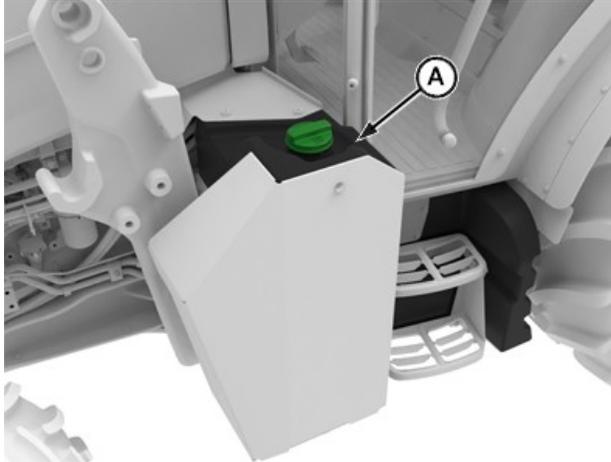
### DEF at Low Temperatures:

DEF freezes at -11°C (12°F) and its flow to the SCR system stops. Machine senses low temperature and allows engine to start and run with no DEF flow. Engine

coolant is used to thaw the DEF tank when engine is running. If DEF has thawed and SCR system is operating normally within 40 minutes, machine operation continues. If DEF flow is not sensed in 40 minutes, a diagnostic trouble code is displayed and a 4-hour internal timer starts. After 4 hours, engine power and speed derate.

V5VUVD4,0000025-19-03MAR22

## Fill Fuel Tank



APY79611—UN—17OCT22

A—Fuel Fill Tank

**CAUTION:** See the Safety Precautions section at the beginning of this manual for information about handling fuel.

**IMPORTANT:** To avoid damage to the fuel system, never put Diesel Exhaust Fluid (DEF) into the fuel tank.

1. Watch fuel level gauge during operation.
2. Fill if necessary during daily operation. Fill fuel tank at end of each day to prevent moisture condensation in the tank.
3. Clean the area around the fuel fill cap before removing.

*NOTE: If the fill cap is locking, it must be unlocked before removing and relocked after reinstalling.*

4. Rotate the fuel fill cap counterclockwise and remove it.
5. Fill tank with ultra low sulfur diesel fuel.
6. Reinstall fuel fill cap and rotate clockwise until secured.

V5VUVD4,0000026-19-14NOV22

## Fill Diesel Exhaust Fluid (DEF) Tank



APY79612—UN—17OCT22

A—DEF Fill Tank

**CAUTION:** Diesel Exhaust Fluid (DEF) contains urea. Avoid contact with eyes. In case of contact, immediately flush the eyes with a lot of water for a minimum of 15 minutes.

Do not ingest DEF. In the event DEF is ingested, contact a physician immediately.

Refer the Materials Safety Data Sheet (MSDS) for additional information.

**IMPORTANT:** Only use DEF at full concentration to fill the tank. If DEF is diluted or another fluid is used, the engine detects an abnormal condition. The engine is derated and performance is reduced.

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 the 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.

1. Observe the Diesel Exhaust Fluid (DEF) gauge during operation.
2. Fill DEF when the fuel is refilled or if the level runs low during operation.
3. Clean area around the DEF fill cap before removing.

4. Lift DEF cap latch lever, then rotate 1/4 turn counterclockwise.
5. Remove the DEF fill cap from the tank.
6. Consider the air temperature before filling the DEF tank.

**IMPORTANT: Avoid overfilling the DEF tank in cold weather. DEF freezes at temperatures below -11°C (12°F). The DEF tank has a heater which cannot thaw if the tank is overfilled.**

7. Fill the tank using a clean funnel.
8. Reinstall DEF tank cap. Rotate cap latch lever 1/4 turn clockwise or until secure. The DEF tank cap can be locked with a padlock.
9. Clean up any spilled DEF fluid with clean water (distilled if possible).

V5VUVD4.0000027-19-14NOV22

## Reduce Fuel Consumption

### Fuel consumption reduction guidelines:

- Replace air cleaner, fuel, engine oil, and transmission/hydraulic filter elements at specified service intervals, see *Maintenance Intervals* section. More frequent maintenance is necessary in extreme operating conditions. If display indicates a service required condition, correct as soon as possible to improve the performance.
- Use recommended oils and lubricants only, see *Fuel, Lubricants, and Coolants* section.
- Adjust the hitch functions for most efficient operation, see *Hitch and Drawbar Operation* section.
- Check tires for correct pressure weekly, see *Wheels and Tires Maintenance* section.
- Ballast the machine for conditions, see *Ballasting* section.
- Select the correct gear. Always drive in the highest possible gear with reduced engine speed. For normal or heavy work, choose a gear so the engine speed drops 150-250 rpm when machine is operating and

engine is under load. For light work, reduce engine speed below 2000 rpm. Select gear so that engine speed drops 200—300 rpm while operating.

V5VUVD4.0000028-19-03MAR22

## Engine Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



Engine Menu

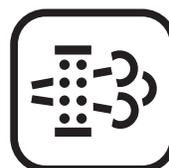
RXA0152958—UN—21JUL16

1. Locate the engine menu.



Auto Filter Cleaning Selection

RXA0152960—UN—21JUL16



Filter Cleaning Selection

RXA0152961—UN—21JUL16

2. Select and change the desired settings as needed. (See Engine Filter Cleaning Overview in this section for additional details on settings.)

Selection	Range	Engine Response
Auto Filter Cleaning	Automatic Cleaning or Cleaning Disabled	Automatic cleaning allows exhaust filter cleaning to occur during operation if certain conditions are met. Cleaning disabled prevents automatic cleaning. When the engine is cycled off, it defaults back to automatic.
Filter Cleaning	Parked Filter Cleaning	If the symbol is not grayed out, a parked filter cleaning can be performed.

V5VUVD4.0000029-19-03MAR22

## Exhaust Filter Cleaning Overview

### Overview:

**IMPORTANT:** The area over and surrounding the engine during a manual exhaust filter cleaning must be free of any flammable objects. Exhaust reaches temperatures as high as 550°C (1022° F).

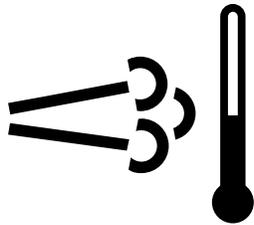
The exhaust filter requires maintenance periodically. Some of the maintenance is transparent to the operator. During continuous heavy loads and other conditions, the engine creates enough heat to remove accumulated soot in the exhaust filter naturally.

When the exhaust filter has accumulated higher levels of soot, the display requests an exhaust filter cleaning. During this request, the equipment must be located in or moved to a suitable location with adequate ventilation. Engine speed must be kept above 1200 rpm and filter cleaning must be allowed to finish uninterrupted. If using the machine to perform work while filter cleaning occurs, there is little to no noticeable impact on the application in most cases.

The symbols that appear on the operator interface are shown. These symbols appear within the information and primary displays.

In addition to the symbols, there are notifications, alarms, and diagnostic trouble codes associated with exhaust filter cleaning. These messages appear on the information display to make the operator aware.

### Emission System Temperature/Filter Cleaning Indicator:



H94829—UN—13OCT09  
Emission System Temperature/Filter Cleaning Symbol

This indicator appears on the primary display as a lighted icon. When this icon is illuminated, the emission system temperature is high enough to allow an automatic filter cleaning to occur, or a filter cleaning is occurring.

Automatic exhaust filter cleaning is started when sulfur or urea deposits in the exhaust filter reach a certain level and the engine speed is above 1200 rpm. Engine system temperature/filter cleaning symbol remains illuminated during the exhaust filter cleaning. Automatic exhaust filter cleaning is initiated and performed without any intervention on the part of the operator.

### Auto Filter Cleaning Icon:



RXA0152960—UN—21JUL16  
Auto Filter Cleaning Selection

This icon is found in the engine menu on the information display. Changes to this setting will reduce machine performance over time. Selecting this option in the engine menu allows the operator to choose between “Automatic Cleaning” and “Cleaning Disabled.”

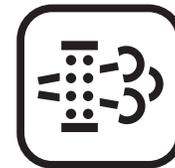
Leave the setting at “Automatic Cleaning” at all times unless a condition exists where high exhaust temperatures are unacceptable. Each time the key is cycled off, the setting reverts to automatic cleaning.

**CAUTION:** Under certain circumstances, high exhaust temperatures associated with exhaust filter cleaning could pose a risk, such as causing a fire. Changing the setting to “Cleaning Disabled” may be desirable for certain applications. Operations connected to exhaust duct work, in confined spaces, working close to combustible materials, and others should be considered.

**IMPORTANT:** Repeatedly disabling the filter cleaning process leads to reduced engine performance and requires a parked exhaust filter cleaning more frequently.

*NOTE:* For additional display navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.

### Filter Cleaning Icon:



RXA0152961—UN—21JUL16  
Filter Cleaning Selection

**IMPORTANT:** If operator disregards indicators and continues to operate machine without allowing an automatic cleaning, engine performance is reduced. A parked exhaust filter cleaning procedure must be performed. Continued disregard requires a John Deere dealer to perform a service exhaust cleaning procedure.

This icon is found in the engine menu on the information display. When allowed, a parked filter cleaning can be performed through this menu. If the exhaust filter has not been allowed to perform automatic cleaning on a regular basis or becomes plugged, a parked cleaning is required. If the system does not require a parked cleaning, the filter cleaning icon is unavailable to select.

### Parked Filter Cleaning:

**CAUTION:** Parked exhaust filter cleaning creates high exhaust temperatures and takes 30—45 minutes to complete. Park machine in an area with adequate ventilation that is away from combustible materials.

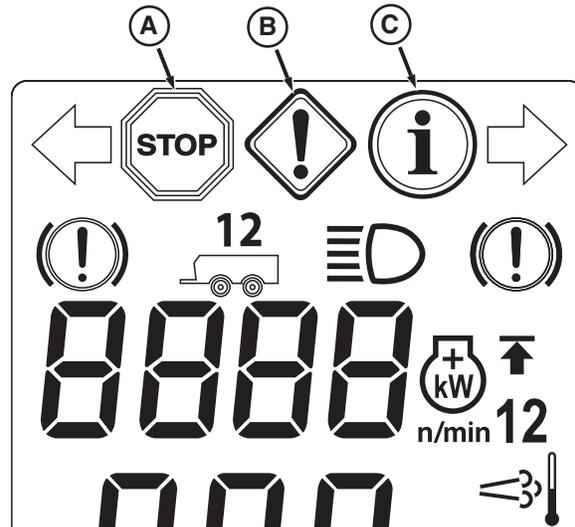
**IMPORTANT:** Once the parked cleaning process is initiated, allow it to finish uninterrupted.

1. Check the fuel and DEF levels. Fill if needed.
2. Park the machine in a suitable space, disengage PTO and any auxiliary functions, and lower any implements all the way to the ground.
3. Set engine speed to low idle.
4. Use NO other machine functions while exhaust filter cleaning is taking place. Excluded are functions that are required for an emergency shutdown of the machine.
5. Select the “Filter Cleaning Icon” in the information display.
6. Display prompts to “Initiate Parked Filter Cleaning.” Select “Start” to begin.
7. A list of conditions to be met appears. If all of the boxes are checked, depress the confirm button on the navigation pad to begin.
8. Select “Next” and depress the confirm button again to initiate.
9. Allow the process to run without interruption. Engine speed increases without any input from the operator. A progress bar shows on the information display during the process.
10. An “Exhaust Filter Cleaning Complete” message appears if the process is successful. Select “OK” to leave the menu.
11. If the process does not complete, an error message appears related to one of the following conditions:
  - a. Speed control was not set to low idle.
  - b. Machine was not in park and wheel speed was detected.
  - c. PTO speed was detected.
  - d. Filter cleaning could not be completed. If this error occurs, it is recommended to take the machine to your John Deere dealer for service.

12. Continue machine operations as normal.

*NOTE: If not returning machine to operation, allow engine time to return to normal operating temperature before stopping engine.*

### Service Exhaust Filter Cleaning



RXA0180999—UN—22FEB21

Warning Indicators

- A—STOP Indicator
- B—Warning Indicator
- C—Information Indicator

**IMPORTANT:** Do not repeatedly cancel or ignore STOP indicator (A), warning indicator (B), or information indicator (C). Failure to perform a requested parked exhaust filter cleaning procedure causes additional engine power limitations and eventually requires dealer service.

**When STOP indicator (A) is illuminated and a corresponding emissions diagnostic trouble code occurs at the same time, contact your John Deere dealer.**

Tips for avoiding service cleaning:

- Use ultra-low sulfur fuel.
- Avoid unnecessary idling.
- Avoid disabling exhaust filter cleaning unless it is necessary.
- Avoid interrupting cleaning process unless it is necessary.
- If possible, do not turn off the engine while the exhaust filter indicator light is on.

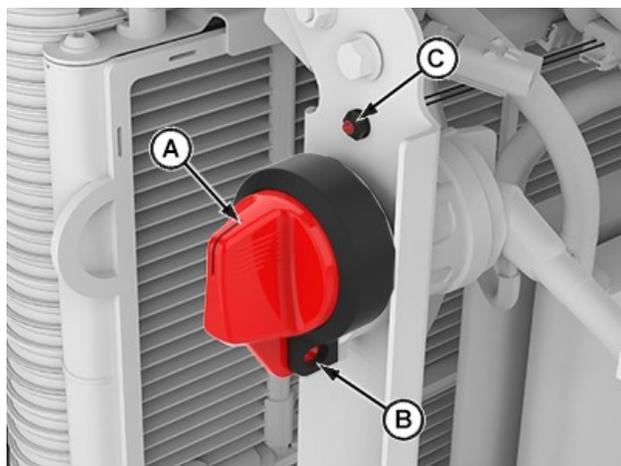
- Take note of information displayed for the operator and act accordingly.

V5VUVD4,000002A-19-03MAR22

---

# Electrical and Lighting Operation

## Battery Disconnect Switch



A—Battery Disconnect Switch  
B—Lock Tabs  
C—Battery Disconnect Indicator Light

APY79613—UN—08OCT22

**CAUTION:** Never switch off power at battery while engine is running! Damage to machine electronics is possible and voltage peaks at alternator can be dangerous.

**IMPORTANT:** When storing for long periods of time, turn battery disconnect switch to the off position (machine electrical system disconnected from battery power supply). Battery discharges if machine is not used and battery disconnect is in on position.

**NOTE:** Wait at least 4 minutes after turning off engine to activate battery disconnect switch or to disconnect the battery cables for any reason.

The battery disconnect switch prevents power from reaching the rest of the electrical system. To disconnect the battery:

1. Turn the ignition switch to the Off position and remove the key.
2. Wait 4 minutes or until the LED indicator light located next to the battery disconnect switch stops blinking (if equipped).
3. Rotate the battery disconnect switch (A) counterclockwise to the power off position to shut the power off to the machine

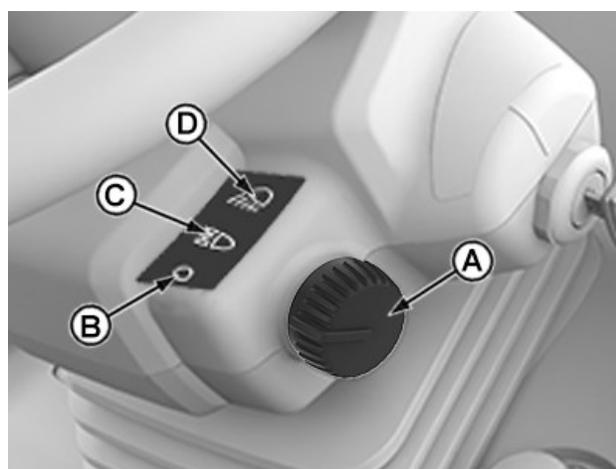
4. If desired, the switch can be locked utilizing the lock tabs (B).

To restore power to the machine:

1. Unlock the battery disconnect if needed.
2. Turn the battery disconnect switch (A) clockwise to the On position.
3. Allow a minimum of 30 seconds for electronic control units to power up.
4. Insert key and start the engine.

V5VUVD4,00002B-19-08OCT22

## Light Switch



A—Light Switch  
B—Off Position  
C—Road Position  
D—Worklight Position

APY81421—UN—07DEC22

**CAUTION:** Use lights in park or road position (C) while operating on public roadways during day or night.

**Do not operate the machine on public roadways with worklights on. Other machine operators can be blinded or confused, impairing their driving ability.**

Rotate light switch (A) from the off position (B) forward to road position (C). Rotate light switch to worklight position (D) to turn on worklights.

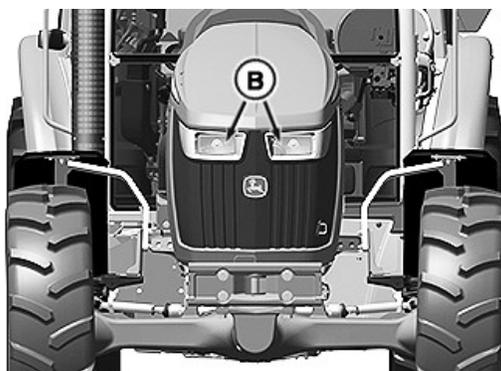
Switch Position	Use	Clearance Lights	Tail Lights Red	Headlights Front Grille
B—Off	Field, Day	Off	Off	Off
C—Road	On Road, Night	On	On	Off
D—Worklight	Field, Night	On	On	On

m86qb7,1669562715461-19-07DEC22

## Headlights



LV15525—UN—05MAR12



RXA0157953—UN—03MAR17

A—Horn/Headlight Control/Turn Signal Lever  
B—Headlights

**CAUTION:** Dim headlights to low beam for oncoming vehicles. Other machine operators can be blinded or confused, impairing their driving ability.

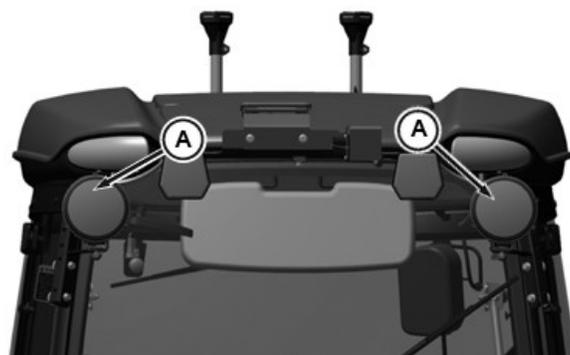
Push lever (A) forward to illuminate high beam headlights (B). High beam indicator illuminates on the primary display. Pull lever into center position to switch to low beam lights.

Operate flash-to-pass function by pulling lever rearward and releasing momentarily to activate high beams.

Lever Position	High Beam	Low Beam
Normal (Center)	Off	On
Forward	On	Off
Rear (Flash-to-Pass)	On	On

V5VUVD4,000002D-19-03MAR22

## Loader Headlights



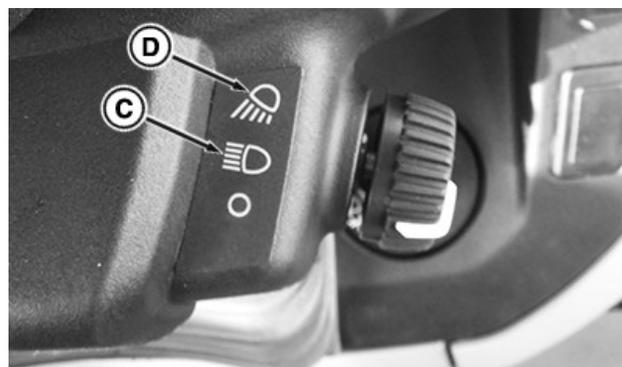
P21075—UN—23NOV23

Loader Headlights



APY79627—UN—09OCT22

Loader Headlights Button



RXA0181712—UN—16MAR21

Light Switch

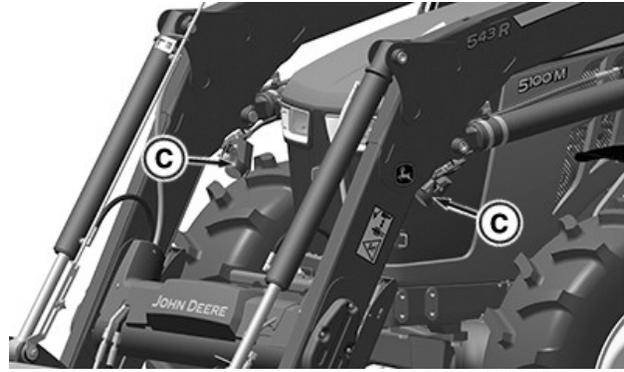
A—Loader Headlight Assembly  
B—Loader Headlights Button  
C—Road Lights Position  
D—Worklights Position

Loader headlights can be used as an alternative for obscured driving headlights mounted in the front grille.

**NOTE:** Loader headlights are only available with loader.

Loader Headlight Button	Main Light Switch	Loader Headlights	Front Grille Headlights
On	C—Road	On	Off
	D—Work	On	Off
Off	C—Road	Off	On
	D—Work	Off	On

V5VUVD4,000002E-19-23NOV23



RXA0158262—UN—14MAR17

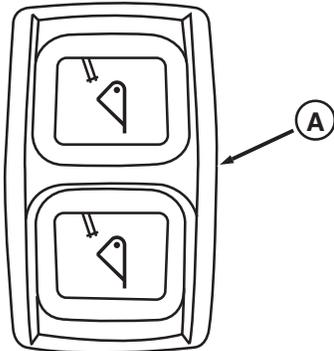
- A—Bucket Attach/Detach Switch
- B—Bucket Lights Switch
- C—Bucket Lights
- D—Loader Suspension Switch

Bucket lights (C) are on the loader mast and illuminate the bucket and contents no matter how the loader is positioned.

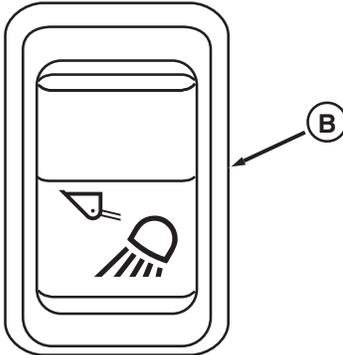
See relevant loader operator's manual for more information on bucket attach/detach switch (A), bucket light switch (B), and loader suspension switch (D).

V5VUVD4,000002F-19-03MAR22

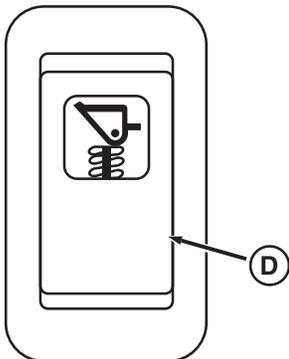
## Bucket Lights



RXA0161635—UN—05JAN18

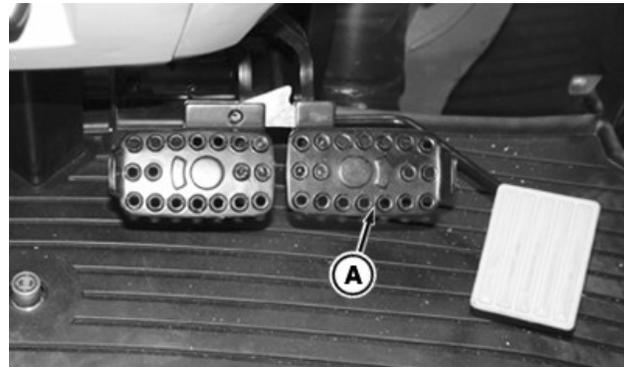


RXA0161636—UN—05JAN18

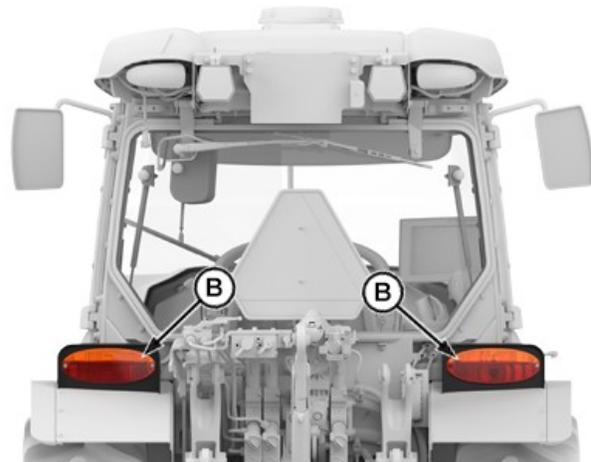


RXA0161638—UN—05JAN18

## Tail and Brake Lights



RXA0153629—UN—30AUG16



Cab

APY79615—UN—08OCT22

- A—Brake Pedals
- B—Tail and Brake Lights

Tail and brake lights (B) both illuminate using the same dual intensity bulb. When the light switch is in road position only, the tail light portion illuminates.

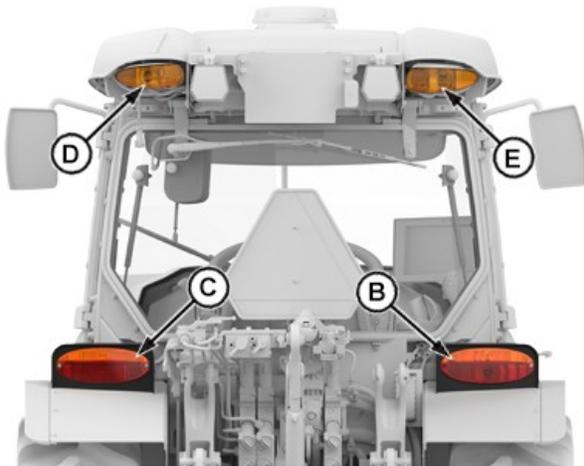
If one or both brake pedals (A) are depressed, the intensity of the light increases since both filaments are illuminated.

V5VUVD4.0000030-19-08OCT22

## Turn Signals



LV15525—UN—05MAR12



APY79616—UN—08OCT22

Cab

- A—Horn/Headlight Control/Turn Signal Lever
- B—Right Turn Signal
- C—Left Turn Signal
- D—Left Rear Warning Lights (front similar)
- E—Right Rear Warning Lights (front similar)

**⚠ CAUTION:** Always use turn signals when making a turn on public roadways as required by local traffic laws or regulations.

Push lever (A) up for right turn, or pull down for left turn.

Audible chirping sound starts. Turn signal icon on primary display flashes to indicate turn signal lever and lights are on.

Return lever to center position after completing turn.

When operating on the road, warning lights must be used in conjunction with turn signals. The following table describes turn signal function based on the lever position.

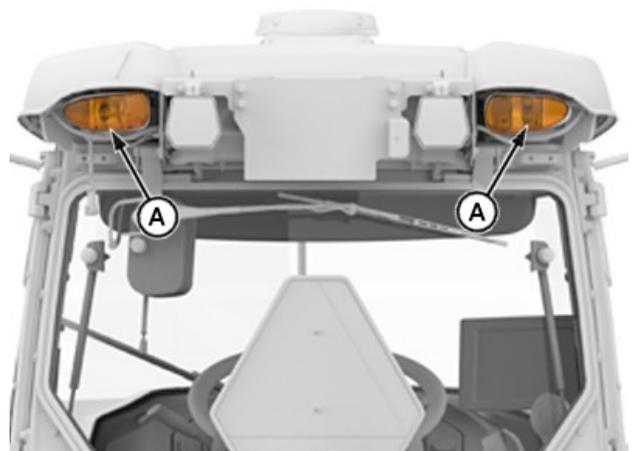
Turn Signal Lever Position	Right Turn Signal (B)	Left Turn Signal (C)	Right Warning Lights (E)	Left Warning Lights (D)
Off	Off	Off	On Flashing	On Flashing
Up	On Flashing	Off	On Flashing	On Steady
Down	Off	On Flashing	On Steady	On Flashing

When operating in the field, warning lights do not have to be used. The following table describes turn signal function without the warning lights.

Turn Signal Lever Position	Right Turn Signal (B)	Left Turn Signal (C)
Off	Off	Off
Up	On Flashing	Off
Down	Off	On Flashing

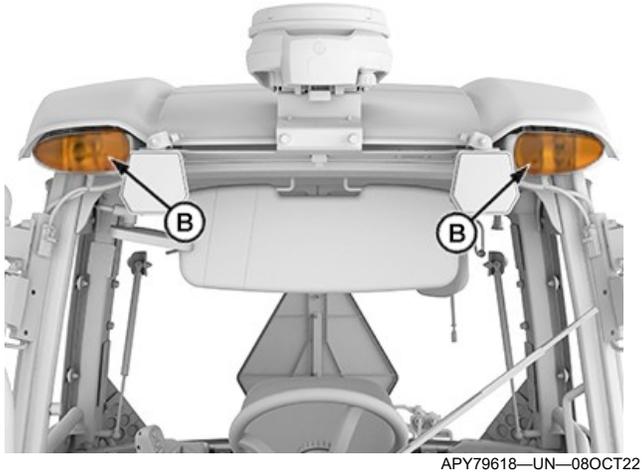
V5VUVD4.0000031-19-08OCT22

## Warning Lights



APY79617—UN—08OCT22

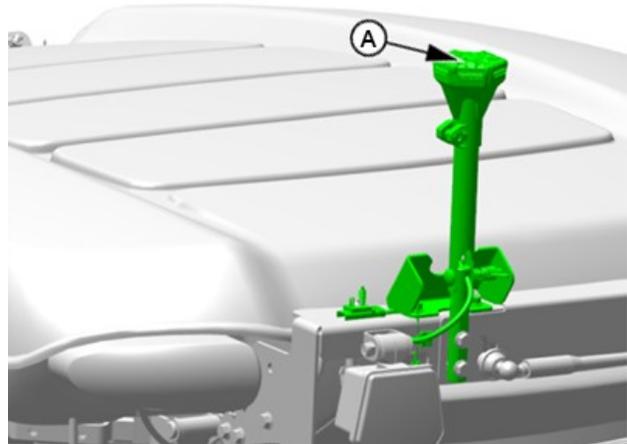
Cab Rear



Cab Front

APY79618—UN—08OCT22

## Beacon Light

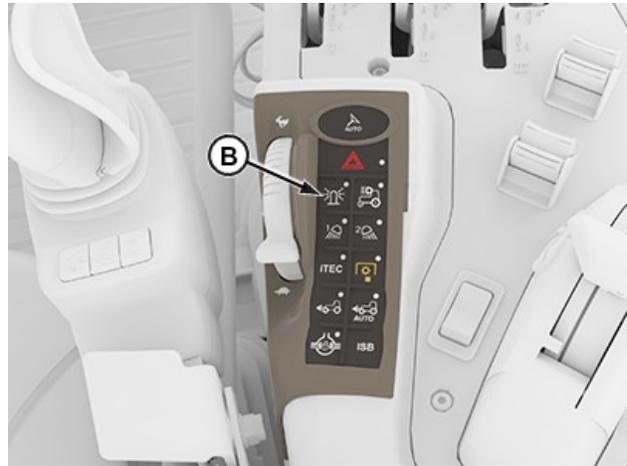


P21070—UN—23NOV23



Light Switch

APY79628—UN—09OCT22



APY79634—UN—10OCT22

A—Beacon Light  
B—Beacon Light Switch

A—Rear Warning Lights  
B—Front Warning Lights  
C—Warning Lights Switch

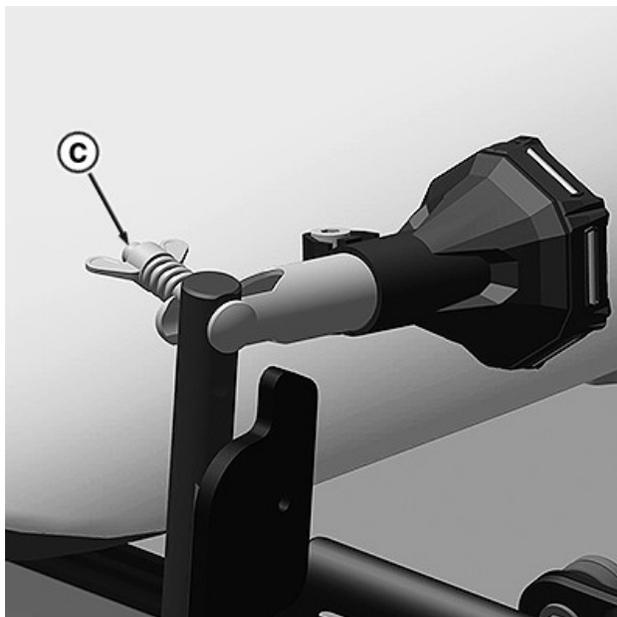
**⚠ CAUTION: Use beacon light on public roadways as required by local traffic laws or regulations.**

**⚠ CAUTION: Use warning lights on public roadways as required by local traffic laws or regulations.**

*NOTE: Warning lights operate any time light switch (C) is pressed, regardless of key position.*

Press light switch (C) on right-hand console to illuminate front (B) and rear warning lights (A). Again press light switch (C) to turn off warning lights.

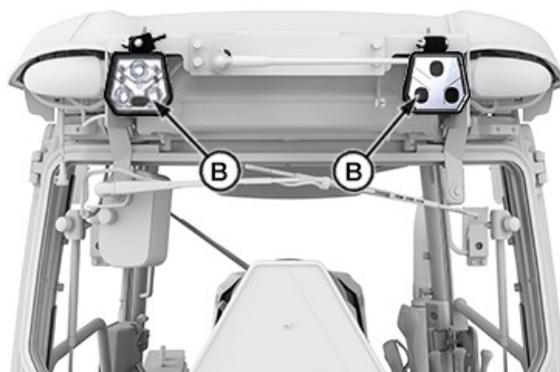
V5VUV4.000032-19-07DEC22



RXA0182395—UN—07APR21

1. Depress beacon light switch (B) to activate beacon light (A).
2. To prevent damage, loosen wing nut (C) and tilt beacon light assembly forwards or backwards when needed.

V5VUVD4,0000033-19-23NOV23



APY79620—UN—08OCT22

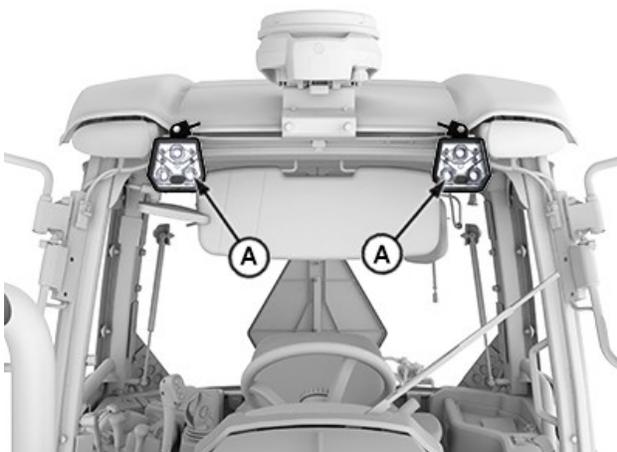
Rear Worklights



APY79614—UN—10OCT22

Front Worklight Position

## Worklights



APY79619—UN—08OCT22

Front Worklights

- A—Front Worklights
- B—Rear Worklights
- C—Field Position

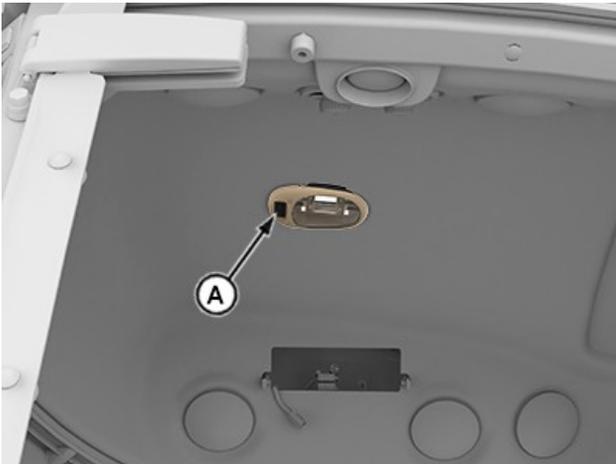
**⚠ CAUTION: Do not use worklights on public roadways unless allowed by local traffic laws or regulations.**

*NOTE: Cab is shown with two front worklights. Two additional front worklights can be added and work in conjunction with the two shown.*

Rotate light switch to field position (C) to illuminate front worklights (A) and rear worklights (B).

V5VUVD4,0000034-19-06DEC22

## Dome Light



APY79621—UN—08OCT22

A—Dome Light Switch

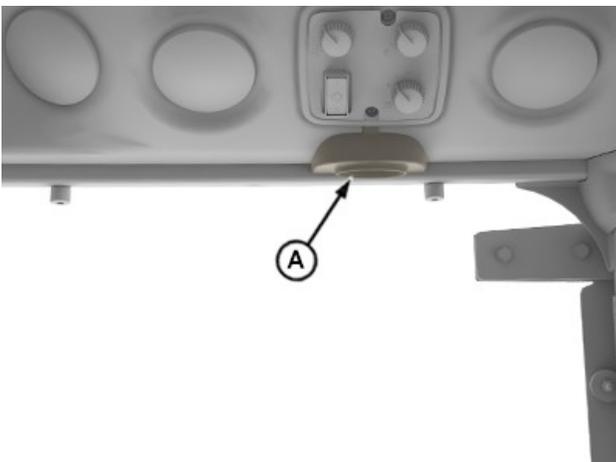
**IMPORTANT:** Before exiting cab, turn dome light to Off or Door position to avoid causing battery to lose its charge.

Dome light switch (A) has three positions:

- Left (on) - light always on.
- Right (door) - light on with door open or light off with door closed.
- Center (off) - light always off.

V5VUVD4,0000035-19-08OCT22

## Right-Hand Console Light



APY79632—UN—10OCT22



RXA0182443—UN—15APR21

A—Right-Hand Console Light  
B—Light Switch

The right-hand console light (A) is only on when the light switch (B) is in road or field positions.

V5VUVD4,0000037-19-10OCT22

## Horn



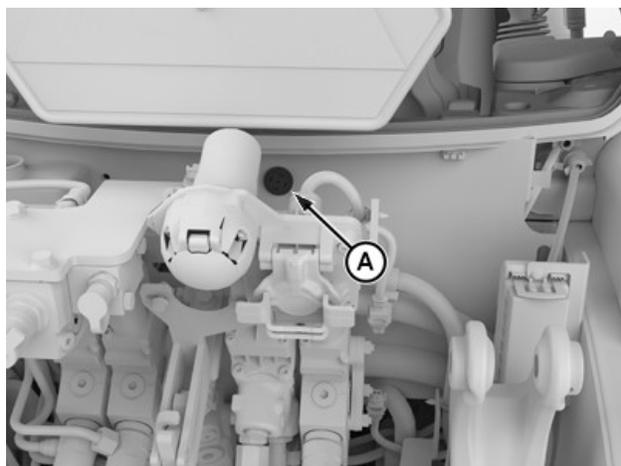
LV15525—UN—05MAR12

A—Horn/Headlight Control/Turn Signal Lever

Push in on end of lever (A) to sound horn.

V5VUVD4,0000038-19-03MAR22

## Backup Alarm



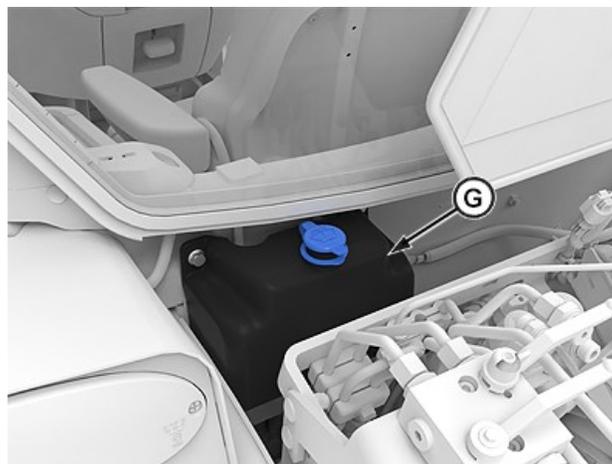
APY80699—UN—29NOV22

### A—Backup Alarm

Backup alarm (A) sounds when the key switch is in the on position and the left-hand reverser lever or range-shift lever is in reverse position.

Backup alarm beeps to alert anyone near that machine is traveling in reverse.

m86qb7,1670394076780-19-28APR23



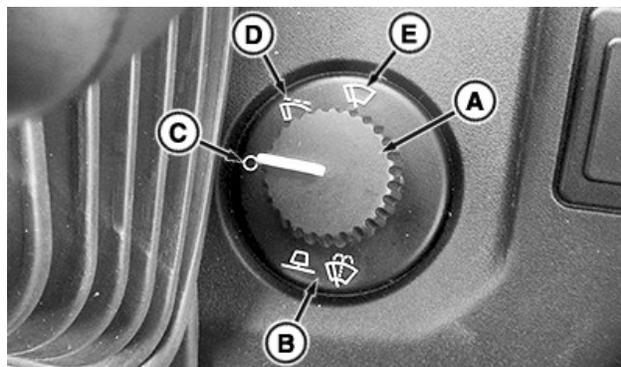
APY79630—UN—29NOV22

- A—Front Wiper/Washer Knob
- B—Washer
- C—Off
- D—Intermittent
- E—Fast
- F—Front Wiper
- G—Washer fluid Reservoir

Wiper/washer knob (A) has three positions:

- OFF (C)
- Intermittent (D)
- Fast (E)

## Front Wiper and Washer

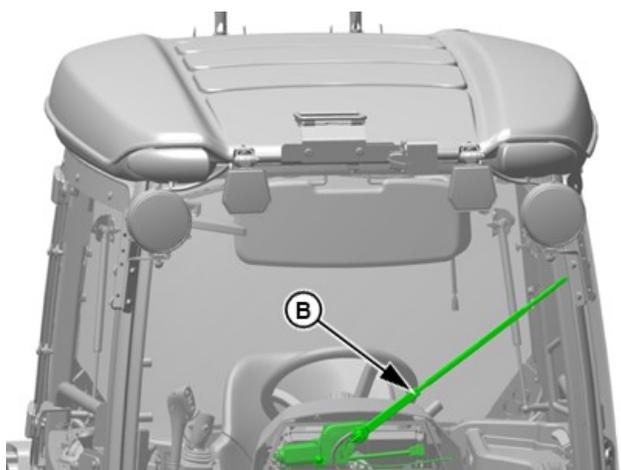


RXA0162452—UN—08MAR18

Rotate knob forward (clockwise) to increase speed of front wiper (F). Rotate rearward (counterclockwise) to slow or shut off. Push knob inward (B) to operate front washer.

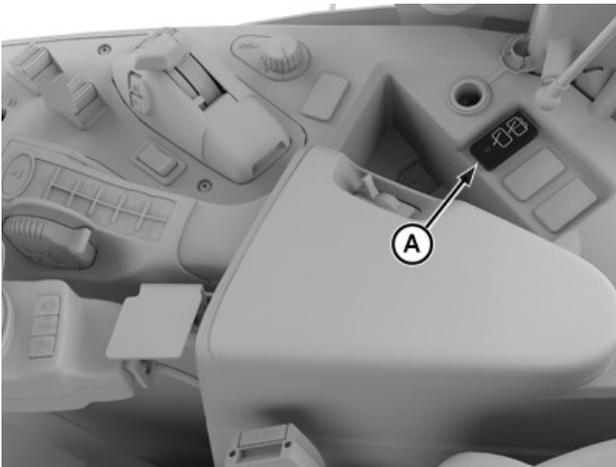
Washer fluid reservoir (G) is located behind the right-hand cab corner. Fill reservoir with windshield washer fluid as required. In cold climates, fill with non-freezing windshield washer fluid. Reservoir supplies both the front and rear wipers.

m86qb7,1670394078878-19-23NOV23

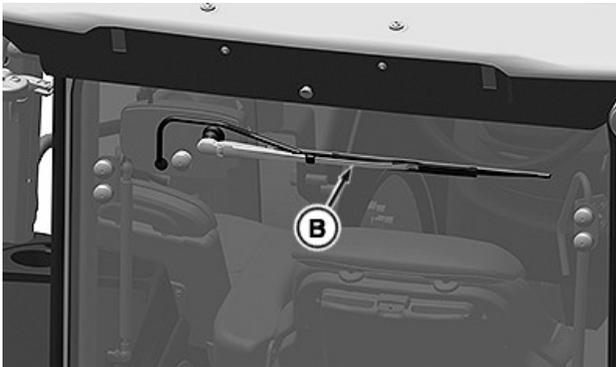


P21065—UN—23NOV23

## Rear Wiper and Washer



APY79629—UN—10OCT22



RXA0153610—UN—30AUG16

- A—Rear Wiper/Washer Switch
- B—Rear Wiper

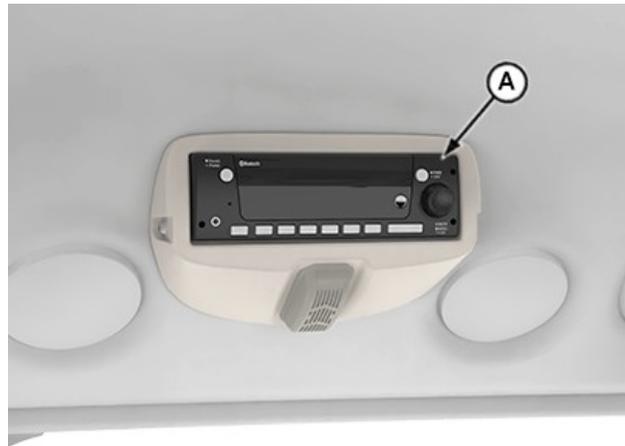
Rear wiper/washer switch (A) has three positions:

- Top - washer and wiper on.
- Center - wiper on.
- Bottom - all off.

Place the switch in center position to operate the rear wiper (B). Place in top position to operate the washer and wiper at the same time.

V5VUVD4,000003B-19-10OCT22

## Radio



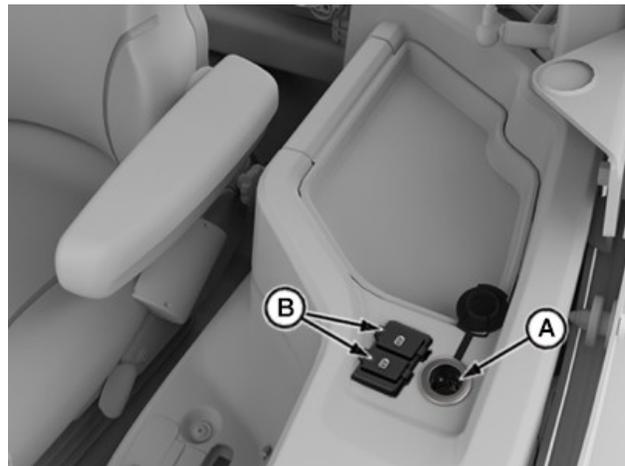
APY79631—UN—10OCT22

A—Radio

Refer to your specific radio reference manuals for more information about operation.

V5VUVD4,000003C-19-10OCT22

## Auxiliary Input and USB Port



APY79623—UN—09OCT22

- A—Auxiliary Input
- B—USB Port

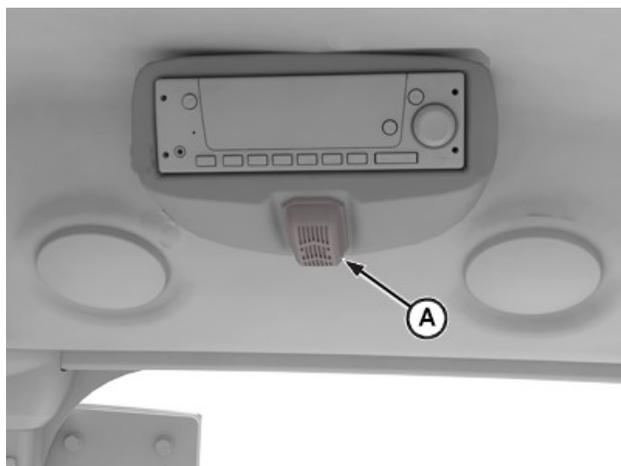
Different external audio sources can be connected to the auxiliary input (A).

The USB port (B) does not connect to the radio. It is only for charging purposes.

Refer to your specific radio reference manuals for more information about operation.

V5VUVD4,000003D-19-21NOV23

## Bluetooth Microphone



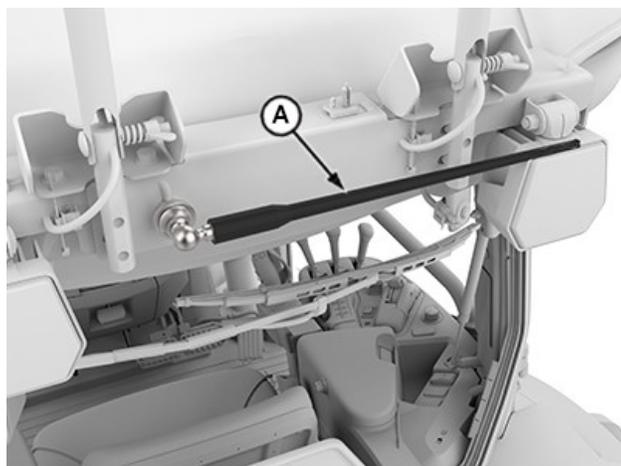
**A—Bluetooth Microphone**

APY80701—UN—29NOV22

A mobile phone can be paired with the premium radio. The Bluetooth microphone (A) is maintenance-free and requires no adjustment. See radio Operator's Manual for procedure to pair the specific mobile device with the premium radio.

V5VUVD4,000003E-19-09DEC22

## Radio Antenna



**Rear of Cab**

APY79635—UN—18OCT22

**A—Radio Antenna**

Adjust radio antenna (A) as required to improve radio reception.

V5VUVD4,0000040-19-11OCT22

## Speakers



**Speakers**

APY81402—UN—02DEC22

**A—Speaker**

Speaker (A) is located in the right and left front corner of the roof behind the headliner and is not visible to the operator.

V5VUVD4,000003F-19-08DEC22

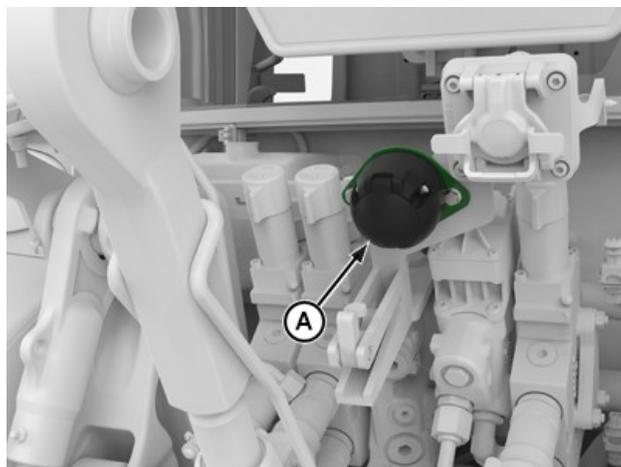
## Satellite Module and Antenna

Satellite is available to improve radio and communication reception. This feature requires no operator interaction and is not visible to the operator. Satellite service provides reception and communications when other services are not available.

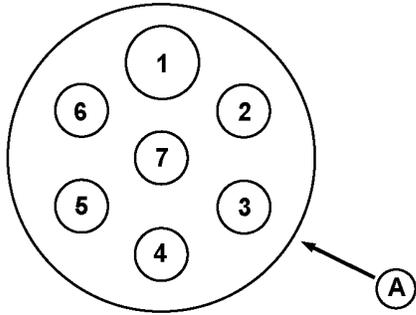
Refer to your specific radio reference manuals for more information about operation.

V5VUVD4,0000041-19-03MAR22

## Implement Connector



APY81403—UN—29NOV22



RW21249A—UN—29APR99  
Connector Terminals



APY79625—UN—09OCT22  
Cab Rear

**A—Implement Connector**

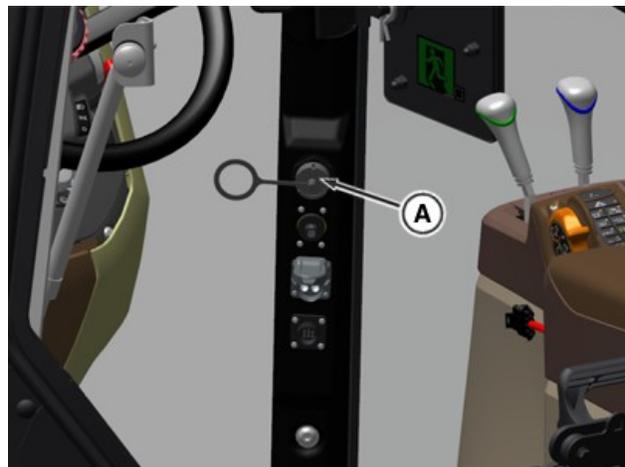
*NOTE: Matching 7-pin plug is available through your John Deere dealer.*

Rear-mounted implement connector (A) is used to connect lights, turn signals and other remote trailer or implement electrical equipment to the machine electrical system.

Terminal Number	Function
1	Ground
2	Implement Worklights
3	Left Turn Signal
4	Brake Lights
5	Right Turn Signal
6	Tail Lights
7	Accessory Power

Always use auxiliary light on towed implement when machine rear signals and other lights are obscured.

V5VUVD4,0000042-19-07DEC22



P20928—UN—14NOV23  
Right-Hand Corner Post

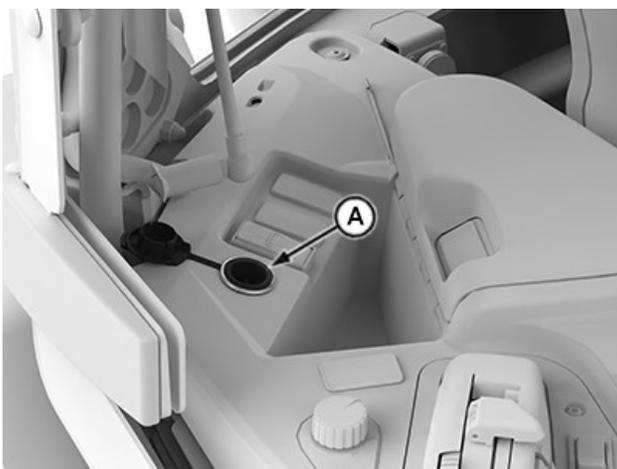
**A—Power Outlet**

Power outlet (A) is an accessory 12 V electrical outlet for connecting auxiliary equipment. Outlet is protected by a 30 amp fuse.

An optional cigarette lighter can be installed in place of the power outlet.

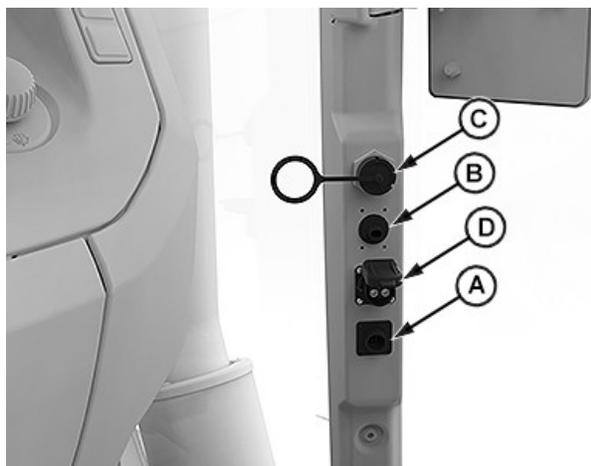
V5VUVD4,0000043-19-21NOV23

**Power Outlet**



APY79624—UN—09OCT22  
Right-Hand Control Console

## ISO Cab Connectors



APY81407—UN—29NOV22

- A—ISO11786 Connector
- B—ISO11783 Connector—ISOBUS In-Cab Connector
- C—GreenStar Display Connector
- D—Convenience Outlet

**IMPORTANT: Only connect ISO11786 and ISO11783 compliant devices to each specific connector, otherwise machine damage occurs.**

Machine is ISOBUS ready and offers a connection for implements conforming to ISO11783 standards.

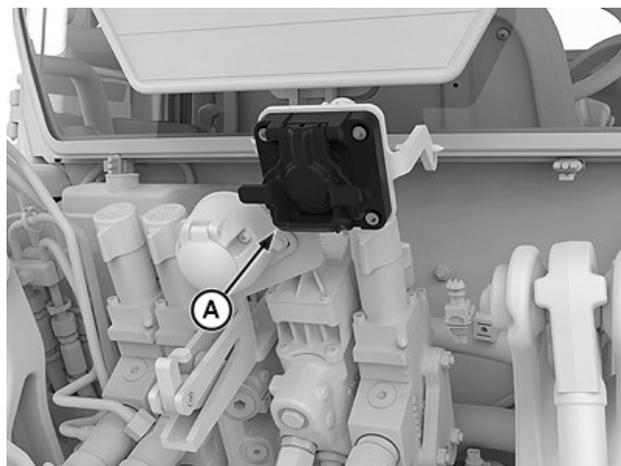
Machine also offers a connection conforming to ISO11786 standards.

ISO11786 connector (A) and ISO11783 connector (B) are used to connect to third-party controls. Refer to the third-party information for using equipment attached to the connector.

GreenStar Display connector (C) allows any GreenStar Display connection. See your John Deere dealer for compatible adapter harnesses.

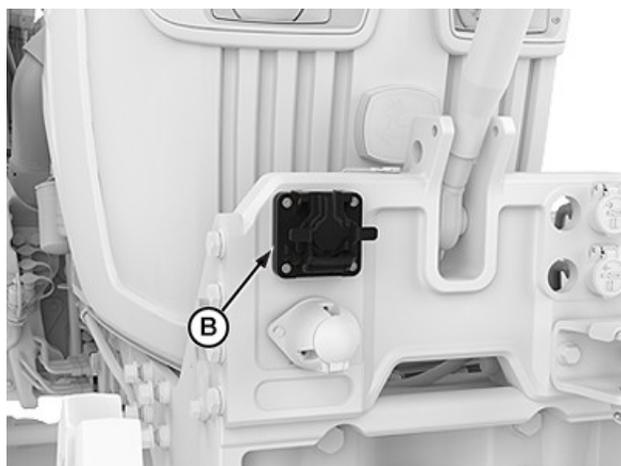
V5VUVD4,0000046-19-07DEC22

## ISOBUS Connectors



APY81408—UN—29NOV22

Rear ISOBUS Connector



APY81409—UN—29NOV22

Front ISOBUS Connector

- A—Rear ISOBUS Connector
- B—Front ISOBUS Connector

ISOBUS ready preparation includes ISOBUS implement connector (A or B) on machine front or rear, facilitating machine/implement communications.

V5VUVD4,0000047-19-07DEC22

## ISOBUS Shortcut Button (ISB)

In an ISOBUS system, operator can activate function of implement over ISOBUS via implement's operator interface on display. See ISOBUS controller operator's manual.

After activation, operator can change screen of display in order to operate another implement or interact with other applications.

Deactivation of functions on first implement is not possible unless operator manually switches back to corresponding screen of first implement. ISB provides a direct method to inform all ISOBUS participants about

operator's desire to deactivate functions that were activated by an ISOBUS control.

**CAUTION:** Read appropriate operator's manual. ISB button function is proprietary to implement manufacturer. Verify button function in a safe and open area that is clear of bystanders.



APY81411—UN—29NOV22

A—ISOBUS Shortcut Button

**ISOBUS Shortcut Button (ISB):** Pressing ISB (A) sends “Stop All Implement Operations” signal out on ISOBUS. Reaction to ISB is proprietary to receiving control unit.

V5VUVD4,0000048-19-06DEC22

## Operator Presence

**CAUTION:** When the operator leaves the seat, the PTO and/or SCVs do not automatically disengage. The machine can move if operator leaves the seat and the transmission is not in Park.

Do not tamper with or disable the operator presence switch to ensure that machine operates correctly.

All operator seats have a switch to detect that the operator is present during operation.

V5VUVD4,000004A-19-03MAR22

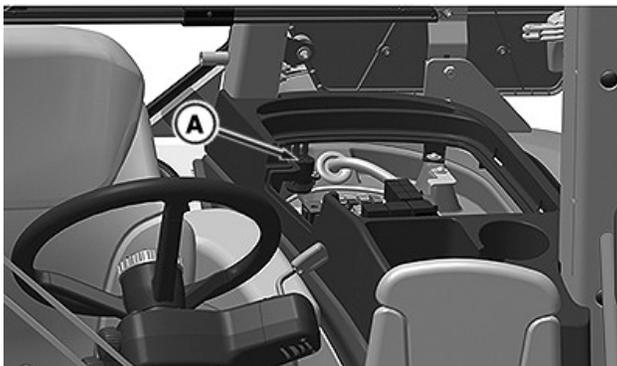
## JDLink

JDLink is an option which allows machine tracking and data collection through cellular or satellite communications.

See JDLink reference manuals for more information on the available options, installation, operation, and maintenance.

V5VUVD4,000004B-19-03MAR22

## Service Advisor Connector



RXA0153612—UN—29AUG16

A—Service Advisor Connector

**IMPORTANT:** Connector is to be used only for Service Advisor equipment, otherwise machine damage occurs.

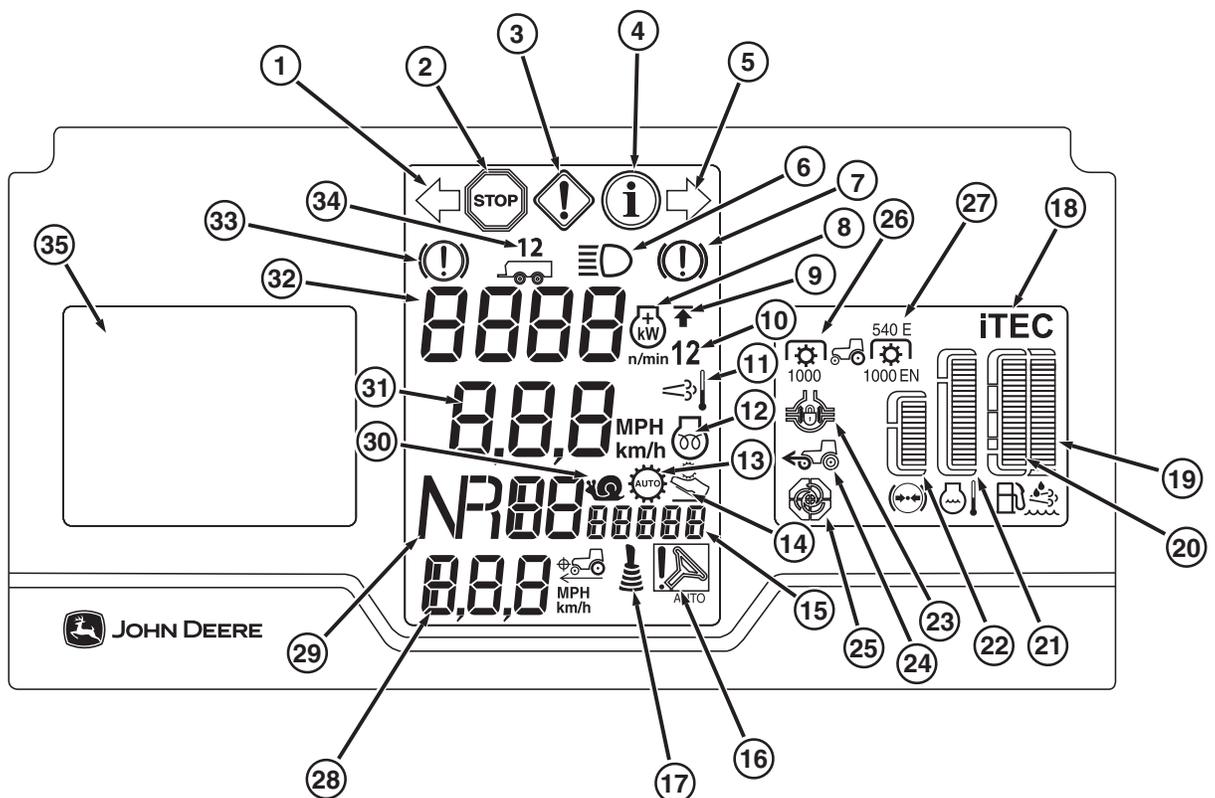
The Service Advisor connector (A) is used by your John Deere dealer to diagnose and repair the machine.

V5VUVD4,0000049-19-03MAR22

# Displays, Software, and Electronics Operation

## Primary Display

*NOTE: Moisture may cause fogging on the inside of the primary display. An anti-fogging agent is used to prevent fogging and may not have been applied correctly. It is normal for the primary display glass to have some moisture inside it on open station machines in certain environments. The primary display is not sealed fully, temperature swings and air moisture content naturally cause condensation. The anti-fog coating disperses the moisture into water droplets so that the operator can see through it. The water droplets should not be any smaller than a pencil lead. If the primary display builds moisture that does not bead up after 20 minutes, it is recommended to replace the primary display.*



RXA0180927—UN—20APR21

Display Icon	Icon Name	Icon Description
1	Left Turn	Flashes when turn signal switch is switched to the left-hand side.
2	Stop	Illuminates when a serious malfunction occurs. SHUT OFF engine IMMEDIATELY and determine cause (review error message on information display). If necessary, have your John Deere dealer diagnose machine.
3	Service Alert	Illuminates when a malfunction occurs (review error message in information display). If necessary, have your John Deere dealer diagnose machine.
4	Information	Illuminates when a possible fault condition has been detected. Monitor machine for potential problems.
5	Right Turn	Flashes when turn signal switch is switched to the right-hand side.
6	High Beam	Illuminates when the headlights are switched to high beam.
7	Brake System Warning	Illuminates when a brake system malfunction occurs. Brake system does not perform as expected. Have John Deere dealer diagnose machine.

## Displays, Software, and Electronics Operation

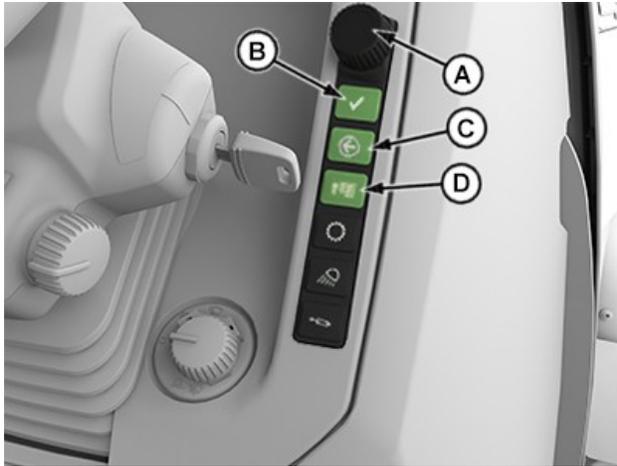
Display Icon	Icon Name	Icon Description
8	Intelligent Power Management	Illuminates when controlled engine power boost is active.
9	FieldCruise (Not used)	Illuminates when maximum set speed is active.
10	FieldCruise Selection (Not used)	Illuminates which maximum set speed setting is activated at the current time.
11	Exhaust Filter Cleaning	Illuminates when exhaust filter temperatures are hot enough to allow active cleaning.
12	Engine Preheat Indicator	Illuminates when engine air heater is active. A countdown utilizing the ground speed indicator occurs.
13	Auto Shift (Not used)	Illuminates when the auto-shift mode is active.
14	Foot Pedal Mode (Not used)	Illuminates when foot pedal mode has been activated.
15	Range and Gear	Indicates the operator-selected range and gear.
16	AutoTrac	Illuminates with AutoTrac engaged.
17	ISOBUS Auxiliary Mode (Not used)	Illuminates when ISOBUS auxiliary mode is activated.
18	iTEC Basic (Not used)	Illuminates when iTEC Basic is active.
19	Diesel Exhaust Fluid (DEF) Gauge	Indicates amount of diesel exhaust fluid remaining in the tank.
20	Fuel Level Gauge	Indicates amount of fuel remaining in tank.
21	Coolant Temperature Gauge	Indicates engine coolant temperature. Red area indicates overheat (coolant level too low, dirty radiator, or clogged screen). SHUT OFF engine IMMEDIATELY to prevent damage. If necessary, have your John Deere dealer diagnose machine.
22	Air Brake Pressure Gauge (Not used)	Indicates the amount of air brake pressure in the system.
23	Differential Lock	Illuminates when differential lock is engaged.
24	MFWD	Illuminates when mechanical front-wheel drive is engaged.
25	Implement Automation (Not used)	Not used currently.
26	Front PTO	Illuminates when front PTO is engaged.
27	Rear PTO	Illuminates when rear PTO is engaged.
28	Set Speed (Not used)	Indicates the operator-selected target speed.
29	Current Direction, Range, and Gear	Indicates the direction (park, neutral, forward, reverse), range, and gear that are currently active.
30	Creeper	Illuminates when the creeper gears are engaged.
31	Machine Ground Speed	Indicates the actual machine speed.
32	Tachometer	Indicates the actual engine rpm.
33	Brake System Stop	Illuminates when a serious brake system malfunction occurs. Brake system does not perform as expected. Have John Deere dealer diagnose machine immediately.
34	Trailer	Illuminates when one or two trailers are connected and indicator lights are working.
35	Information Display	Allows the operator to observe two pre-determined and three customized pages of machine information.

V5VUVD4,000004C-19-02DEC22

### Information Display Navigation Controls

The information display utilizes the buttons and dial on the navigation pad to move through the screens and selections. (See Basic Menu Navigation in this section for more information.)

For more information about specific machine functional systems (hitch, transmission, and so on), see the relevant operational section in this manual.



APY79633—UN—10OCT22

- A—Navigation Dial
- B—Confirm Button
- C—Back Button
- D—Main Menu Button

the selected choice changes and depending on the screen, allows scrolling left and right or up and down. Rotating the dial in the opposite direction reverses the navigation, allowing the operator to back up if a selection is missed.

**Confirm Button (B):** Depress the confirm button to make selections or store settings.

**Back Button (C):** Depress the back button to return to the previous screen.

**Main Menu Button (D):** Depress the main menu button to navigate from the run pages to other pages or back to the main menu at any time.

V5VUVD4.000004D-19-10OCT22

### Basic Menu Navigation

This information is a general guide for basic navigation through the various menus and selections of the information display. Use the following controls on the navigation pad to find and customize the settings within each system. More detailed information about each of the settings is in the operational section for the relevant system.

*NOTE: Some menus and selections show up, but prevent access if the feature is not available at that point in time. Other menus do not show up at all if the feature is not installed, which generally requires the purchase of additional software.*



Main Menu Button

RXA0152991—UN—21JUL16



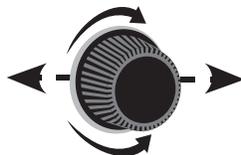
Back Button

RXA0152970—UN—21JUL16



Confirm Button

RXA0152979—UN—29JUL16



Navigation Dial

RXA0152978—UN—28JUL16

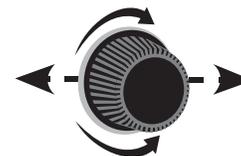


Main Menu Button

RXA0152991—UN—21JUL16

1. Depress the main menu button.

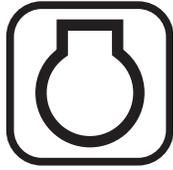
*NOTE: Information display screens use a yellow highlight where the current selection is or a white arrow where scrolling is possible. White outlined areas are typically items which are available for selection by the operator.*



Navigation Dial

RXA0152978—UN—28JUL16

**Navigation Dial (A):** Rotate the navigation dial to navigate from page to page or through a specific page to change selections. The currently selected choice is highlighted in yellow. As the navigation dial is rotated,



RXA0152958—UN—21JUL16  
Example (Engine Menu)

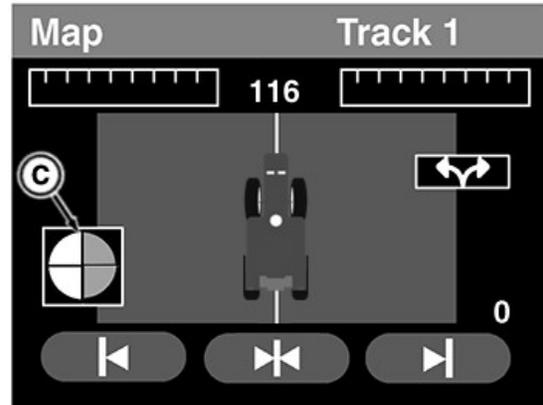


RXA0152979—UN—29JUL16  
Confirm Button

2. Use the navigation dial to locate the relevant or desired system menu:

- Rear Hitch
- SCV
- Transmission
- Engine
- Lighting
- Maintenance
- Diagnostics
- Display Settings
- Layout Manager

5. Depress the confirm button to enter the setting.

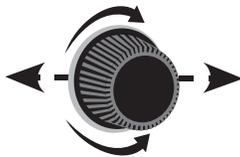


RXA0178551—UN—26JUN20  
Example (AutoTrac Basic Setting)



RXA0152979—UN—29JUL16  
Confirm Button

3. Depress the confirm button to enter the system menu.



RXA0152978—UN—28JUL16  
Navigation Dial

6. Use the navigation dial to change the setting or select a subsetting.



RXA0152979—UN—29JUL16  
Confirm Button

4. Use the navigation dial to select the desired setting.



RXA0170082—UN—10SEP19  
Example (AutoTrac Basic Menu)

7. Depress the confirm button to save changes to the settings.

V5VUVD4,000004E-19-21NOV23

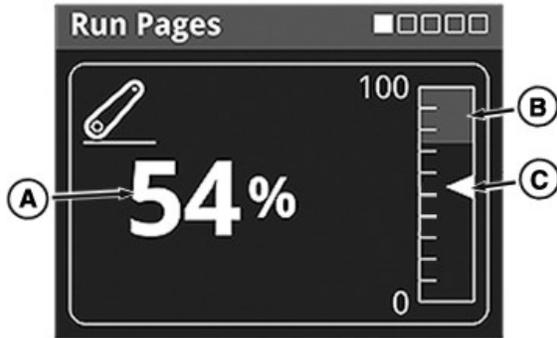
### Run Pages

The run pages will automatically pop up on the information display after boot up if no diagnostic trouble codes or alerts are present. If codes and alerts are present, they must be acknowledged before the run pages appear.

To navigate through the run pages, simply rotate the navigation dial to advance to the next screen.

Run pages allow the operator to observe two pre-determined and three customized pages of machine information. (See Layout Manager Settings in this

section for additional information about creating custom run pages.)



RXA0184700—UN—29JUL21  
Hitch Run Page

- A—Hitch Position Actual Value
- B—Upper Limit Indicator
- C—Hitch Position Actual Indicator

The first page to display is the hitch run page and is not configurable. This monitors the upper limit and actual position of the rear hitch.



RXA0153401—UN—16AUG16  
Custom Run Pages

- A—Run Page Configurable Item 1
- B—Run Page Configurable Item 2

Pages two, three, and four allow the operator to select from many options which information they would like to view.

The fifth page is not configurable and always shows engine hours as the top item and rear PTO speed as the bottom item.

V5VUVD4,000004F-19-03MAR22

Selection	Range	Display Response
Run Page 2	Varies	Operator custom run page 2 is configured.
Run Page 3	Varies	Operator custom run page 3 is configured.
Run Page 4	Varies	Operator custom run page 4 is configured.

V5VUVD4,0000050-19-03MAR22

## Layout Manager Menu

NOTE: For additional navigation information, see *Basic Menu Navigation* in this section.



RXA0152983—UN—25JUL16  
Layout Manager Menu

1. Locate the layout manager menu.



RXA0152993—UN—25JUL16  
Run Page 2 Selection



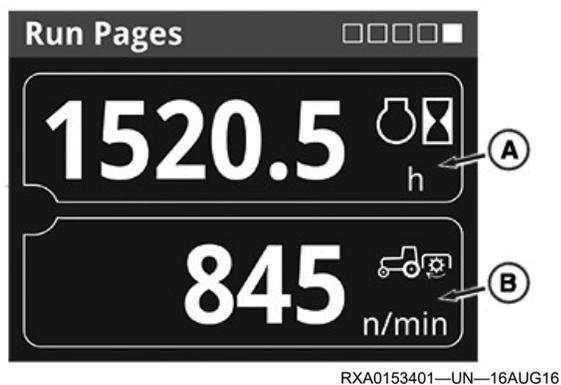
RXA0152994—UN—25JUL16  
Run Page 3 Selection



RXA0154363—UN—07DEC16  
Run Page 4 Selection

2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

## Layout Manager Settings



A—Run Page Configurable Item 1  
B—Run Page Configurable Item 2

RXA0153401—UN—16AUG16

### Layout Manager

The layout manager menu allows the operator to customize some of the run pages for quick access to specific information. Each run page is configured with two different values (A and B) using the layout manager.

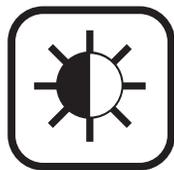
The first and last run pages in the main menu are fixed and not configurable. When configuring run pages through the layout manager, the actual run page number corresponds to the layout manager page number.

Run page configuration choices are: engine hours, PTO speed, hydraulic oil temperature, coolant temperature, engine oil pressure, and many more. Not all choices are available on all machines, depending on installed options.

V5VUVD4.0000051-19-03MAR22

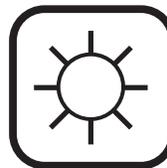
## Display Settings Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in this section.*



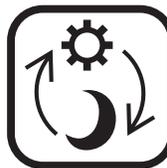
Display Settings Menu

RXA0152984—UN—25JUL16



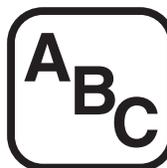
Brightness Selection

RXA0152985—UN—25JUL16



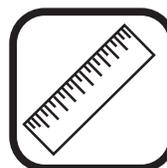
Display Mode Selection

RXA0152986—UN—25JUL16



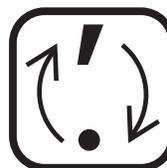
Language Selection

RXA0152987—UN—25JUL16



Units Selection

RXA0152988—UN—25JUL16



Numeric Format Selection

RXA0182564—UN—11MAY21



About Selection

RXA0182563—UN—11MAY21

1. Locate the display settings menu.
2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

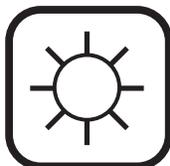
Selection	Range	Display Response
Brightness	5—100	Higher numbers make display brighter.
Display Mode	Auto, Day, or Night	Auto picks the display mode based on the time of day. Day and night are for the respective time of day.

Selection	Range	Display Response
Language	Available	Operator desired language displays.
Units	Imperial, Metric, or US	Operator desired units display.
Numeric Format	Standard Decimal Notation or Scientific Decimal Notation	Operator desired numeric format display.
About	N/A	Software information.

V5VUVD4,0000052-19-03MAR22

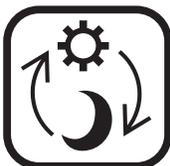
Select units of measure from Imperial, Metric, or US (standard).

## Display Settings



Brightness Icon

RXA0152985—UN—25JUL16

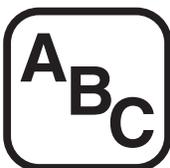


Display Mode Icon

RXA0152986—UN—25JUL16

### Brightness and Display Mode:

Adjust the information display brightness and mode that is best suited to the operational conditions. Set the mode to day, night, or auto. Additional fine-tuning of the brightness is required to achieve the best performance.



Language Icon

RXA0152987—UN—25JUL16

### Language:

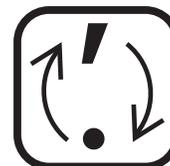
Scroll through and change the display language to the desired preference. The text in the informational window is displayed in the chosen language.



Units Icon

RXA0152988—UN—25JUL16

### Units Format:



Numeric Format Icon

RXA0182564—UN—11MAY21

### Numeric Format:

Select standard decimal notation or scientific decimal notation of numbers.



About Icon

RXA0182563—UN—11MAY21

### About Icon:

Displays current software number, software version, and hardware number.

V5VUVD4,0000053-19-03MAR22

## Work Monitor Menu

NOTE: For additional navigation information, see Basic Menu Navigation in this section.



Work Monitor Menu

RXA0152967—UN—21JUL16

1. Locate the work monitor menu.
2. Select and view available readings.

V5VUVD4,0000054-19-03MAR22

## Work Monitor Operation

### Readings:

Readings are real-time values the operator can view to understand machine performance during operation. Engine hours, front/rear PTO speed, hydraulic oil temperature, engine coolant temperature, engine oil pressure, and system voltage are shown in readings. The operator cannot manually change any of the readings values.

V5VUVD4,0000055-19-03MAR22

## Maintenance Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in this section.*



RXA0152973—UN—21JUL16

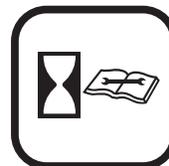
Maintenance Menu

1. Locate the maintenance menu.



RXA0152974—UN—21JUL16

Service Counter Selection



RXA0152975—UN—01AUG16

Service Interval Selection

2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

Selection	Range	Display Response
Service Counter	All values are read only. A reset can be performed by holding the confirm button for 3 s.	Display shows service interval and elapsed time since last reset.
Service Interval	0—990 h	Changes the desired hour interval for the service counter.

V5VUVD4,0000056-19-03MAR22

## Maintenance Counters and Intervals



RXA0152975—UN—01AUG16

Service Interval Icon

### Service Intervals:

To remind the operator when the next machine service is due, set service interval to next required hour interval. The service interval is changed in the maintenance menu.

20 hours before the service interval is due, the system informs the operator that the machine needs service soon. Once the message has been acknowledged, the system informs the operator about the upcoming service at every start-up until service interval is reset.



RXA0152974—UN—21JUL16

Service Counter Icon

### Service Counter:

Service interval is displayed with the elapsed time since the last reset. When service is completed, the counter is reset by depressing the confirm button for 3 seconds.

V5VUVD4,0000057-19-03MAR22

# Drivetrain Operation

---

## Drivetrain Information

The drivetrain information is broken up into different functional systems for operation and maintenance. See the following sections within this manual for detailed information:

### Operational Sections

- Transmission Operation
- MFWD and Front Axle Operation
- Differential and Rear Axle Operation
- Power Take-Off (PTO) Operation

### Maintenance Sections

- Transmission Maintenance
- MFWD and Front Axle Maintenance
- Differential and Rear Axle Maintenance
- Power Take-Off (PTO) Maintenance

V5VUVD4,0000058-19-08MAR22

---

## Off Level Operation

**IMPORTANT: For any off level operation, engine and hydraulic oil levels must be maintained at the FULL mark to avoid machine damage.**

**For information on checking oil levels, see Engine Maintenance and Hydraulics Maintenance sections.**

**IMPORTANT: Machine performance decreases and damage occurs with continuous off level operation in excess of the following recommendations.**

### Stationary Operation (at full power)

- Continuous operation up to + / - 25° angle.

### Mobile Operation (transmitting any combination of, or full transmission, hydraulic, or PTO power)

- Continuous operation up to + / - 20° angle.
- Intermittent operation for 15 minute periods up to +/- 25° angle, but not to exceed 50% of total operating time.
- Intermittent operation for 30 second periods up to +/- 30° angle.

V5VUVD4,0000059-19-08MAR22

---

# Transmission Operation

## Transmission Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



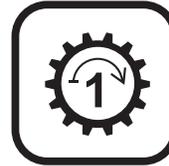
Transmission Menu

RXA0152949—UN—21JUL16



Rev/Fwd Ratio Selection

RXA0152953—UN—21JUL16



Start Gears Selection

RXA0152955—UN—21JUL16

1. Select the transmission menu.

2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

Selection	Range	Transmission Response
Rev/Fwd Ratio	Fwd x 0.2—Fwd x 2.0	Sets the forward-to-reverse speed ratio.
Start Gears	A, B, and C Start Gears	Sets the desired start gear for A, B, and C range selection.

V5VUVD4.000005A-19-14NOV22

## Start Gears

## Transmission Settings

### Reverse/Forward Ratio



Rev/Fwd Ratio Icon

RXA0152953—UN—21JUL16

Independently programmable reverse/forward ratio allows the operator to control the forward speed as a ratio of the reverse speed.

Reverse ratio is adjustable up to 100% faster or up to 80% slower than the forward speed in 20% increments. Example: If forward speed is 10 km/h (6.2 mph) and ratio is set at 1.0, then reverse speed defaults as close to 10 km/h (6.2 mph) as possible.

Independent selection remembers the last forward and reverse gear setting. Once the gear is manually changed in the reverse direction, the gear automatically returns to the last gear when changing directions. If the gear is not manually changed when in reverse direction, then the forward and reverse gears remain the same when changing directions.



Start Gears Icon

RXA0152955—UN—21JUL16

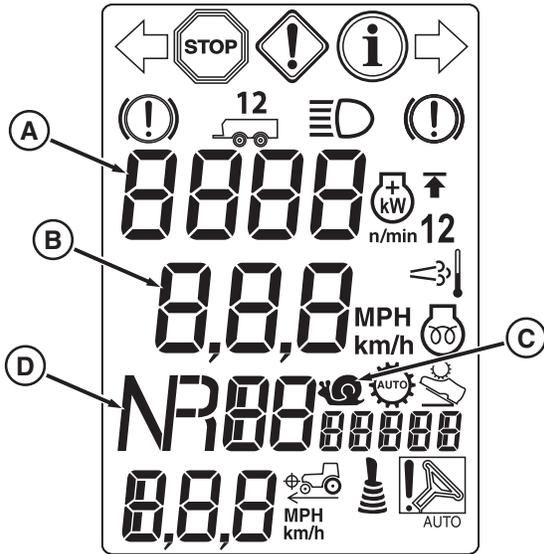
Start gears are selectable by the operator.

- A, B, or C Range: Any gear between 1 and 4 or 1 and 8 (depending on transmission configuration) can be selected.

Example: If 4 is selected as the start gear for A range, any time the range-shift lever is shifted into A range, the transmission defaults to gear 4. The operator can shift to any gear from there, but the starting point is what the operator has programmed. Within any range, the preset start gears are the highest gears within the range. Start gears are not adjustable by the operator.

V5VUVD4.000005B-19-28APR23

## Transmission Indicators



RXA0182444—UN—20APR21

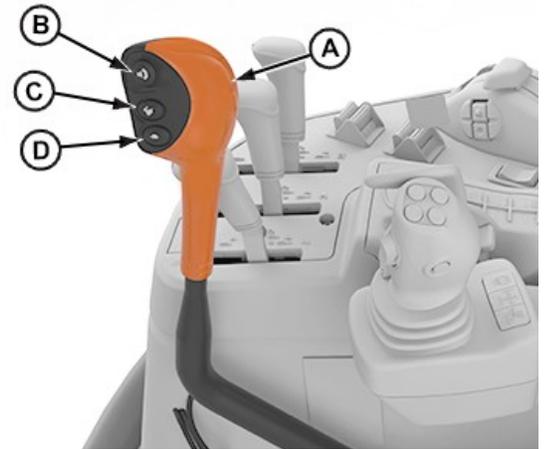
- A—Tachometer
- B—Ground Speed
- C—Creeper Indicator
- D—Direction, Range, and Gear Indicator

- **Tachometer (A):** Displays current engine speed in revolutions per minute.
- **Ground Speed (B):** Displays the actual machine speed in either kilometers per hour or miles per hour.
- **Creeper Indicator (C):** Illuminates when the creeper lever has been shifted into low or high range.
- **Direction, Range, and Gear Indicator (D):** Displays current direction, range, and gear the transmission is in.

- **P** — Park
- **N** — Neutral
- **F D2** — Forward D2 Gear
- **R A3** — Reverse A3 Gear

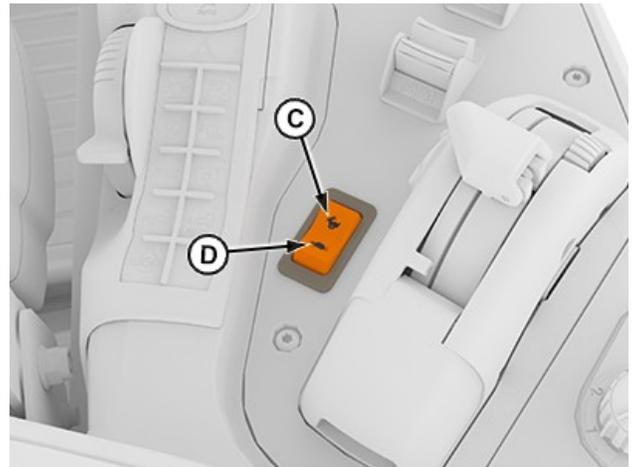
V5VUVD4,000005C-19-12NOV22

## 16/16 Speed PowrQuad™ Plus Transmission



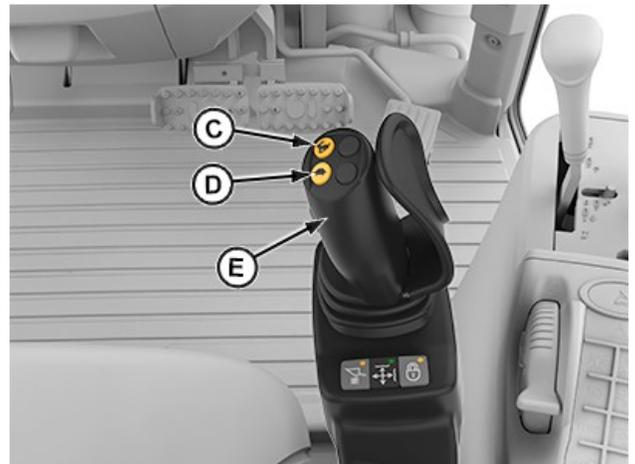
APY78137—UN—01SEP22

Range-Shift Lever



APY78139—UN—16SEP22

Right-Hand Console Speed Shift Switch



APY78140—UN—16SEP22

EH Mid-Mount SCV Joystick Speed Shift Buttons



APY78138—UN—16SEP22

Left-Hand Reverser Lever

- D—Speed Shift Down
- E—EH Mid-Mount SCV Joystick
- F—Direction, Range, and Gear Indicator
- G—Left-Hand Reverser Lever

**CAUTION:** Avoid unintended machine movement. Put the range-shift lever (A) in PARK, left-hand reverser lever (G) in NEUTRAL, and shut machine off before dismounting.

**IMPORTANT:** To prevent unnecessary clutch wear, never “ride” the clutch by resting a foot on the clutch pedal.

The range-shift lever (A) provides four forward and reverse ranges: A, B, C, and D. Declutch button (B) can be used instead of the clutch pedal. There are 16 forward and reverse speeds available.

The left-hand reverser lever (G) provides travel direction (forward or reverse).

1. When starting the machine, put reverser lever in neutral and depress the clutch pedal.

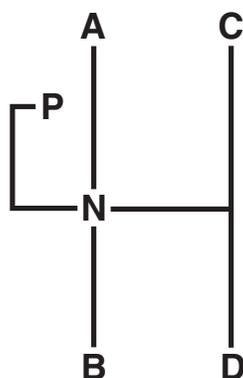
*NOTE:* If either of the following conditions are present, starting is not possible:

- Range-shift lever (A) is in a position other than Neutral or Park.
- Left-hand reverser lever (G) is not in Neutral.

2. Depress clutch pedal or declutch button (B) when shifting between ranges. The gears are synchronized, allowing on-the-go shifting into those ranges.

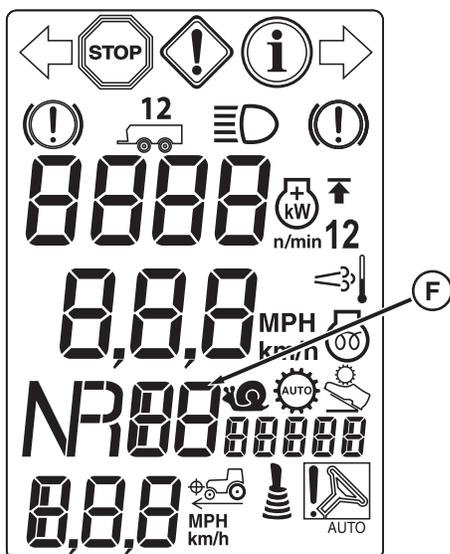
Use the speed shift up (C) and speed shift down (D) buttons on the range-shift lever (A), right-hand console switch, or EH mid-mount SCV joystick (E) to upshift and downshift gears within the selected range.

V5VUVD4,000005D-19-28APR23



RXA0183477—UN—16JUN21

Range-Shift Pattern

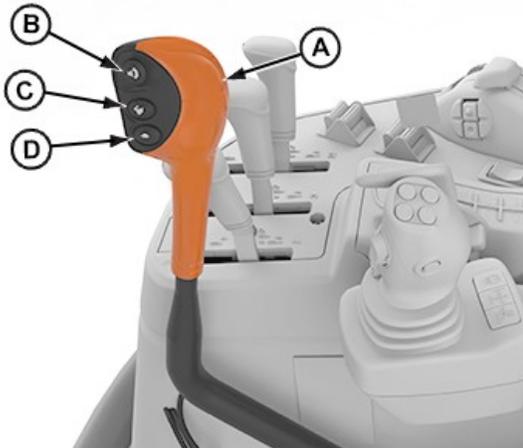


RXA0182557—UN—20APR21

Direction, Range, and Gear Indicator

- A—Range-Shift Lever
- B—Declutch Button
- C—Speed Shift Up

32/16 Speed Powr8™ Transmission



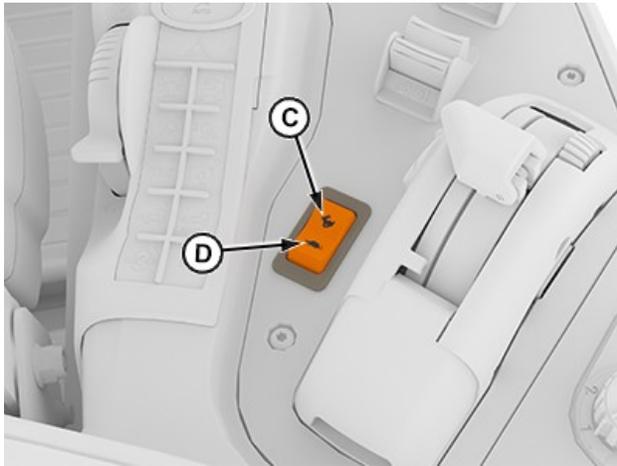
Range-Shift Lever

APY78137—UN—01SEP22



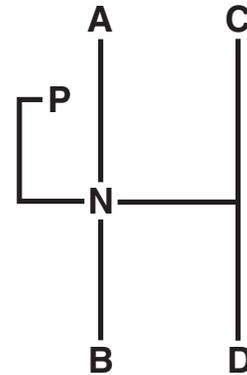
Left-Hand Reverser Lever

APY78138—UN—16SEP22



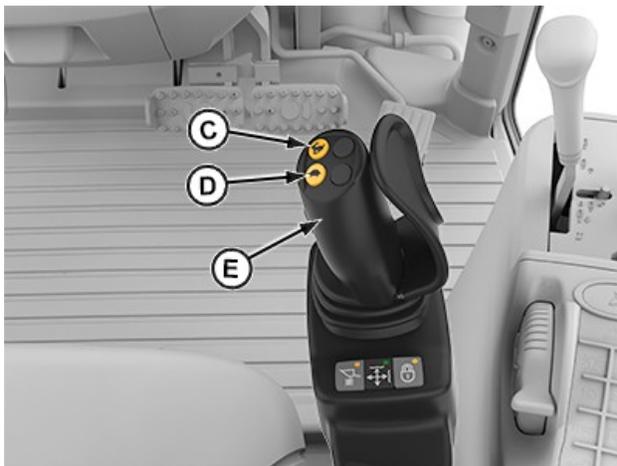
Right-Hand Console Speed Shift Switch

APY78139—UN—16SEP22



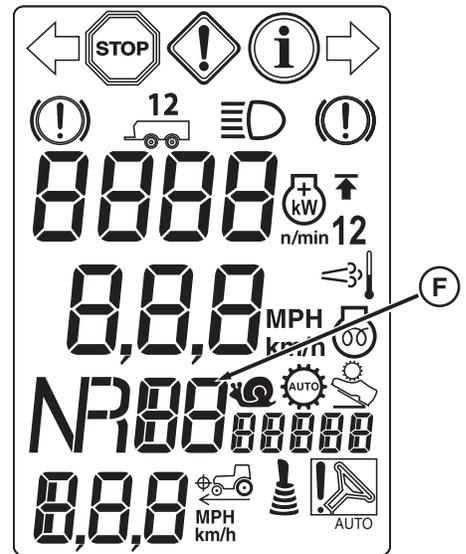
Range-Shift Pattern

RXA0183477—UN—16JUN21

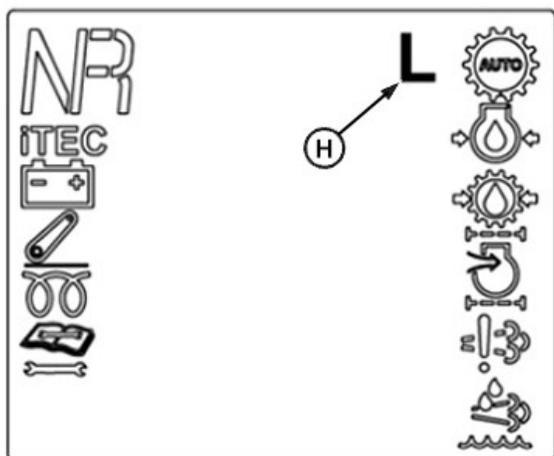


EH Mid-Mount SCV Joystick Speed Shift Buttons

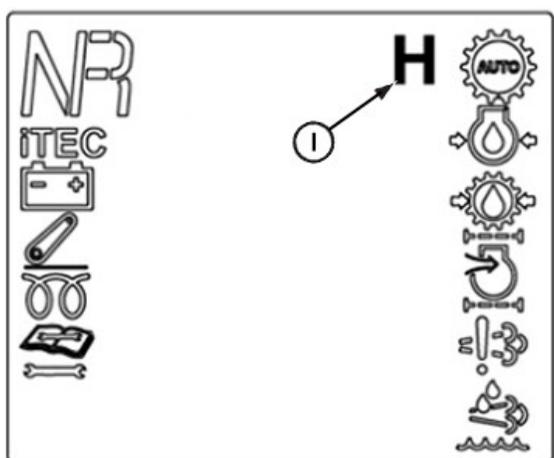
APY78140—UN—16SEP22



RXA0182557—UN—20APR21



APY81418—UN—06DEC22



APY81417—UN—06DEC22

Direction, Range, and Gear Indicator

- A—Range-Shift Lever
- B—Declutch Button
- C—Speed Shift Up
- D—Speed Shift Down
- E—EH Mid-Mount SCV Joystick
- F—Direction, Range, and Gear Indicator
- G—Left-Hand Reverser Lever
- H—Low Speed Indicator
- I—High Speed Indicator

**CAUTION:** Avoid unintended machine movement. Put the range-shift lever (A) in Park, left-hand reverser lever (G) in Neutral, and shut machine off before dismounting.

**IMPORTANT:** To prevent unnecessary clutch wear, never “ride” the clutch by resting a foot on the clutch pedal.

The range-shift lever (A) provides four forward and reverse ranges: A, B, C, and D. Declutch button (B) can be used instead of the clutch pedal. 32 forward and 16 reverse speeds are available due to a high/low clutch which splits each forward gear.

The left-hand reverser lever (G) provides travel direction (forward or reverse).

**NOTE:** If either of the following conditions are present, starting is not possible:

- Range-shift lever (A) is in a position other than Neutral or Park.
- Left-hand reverser lever (G) is not in Neutral.

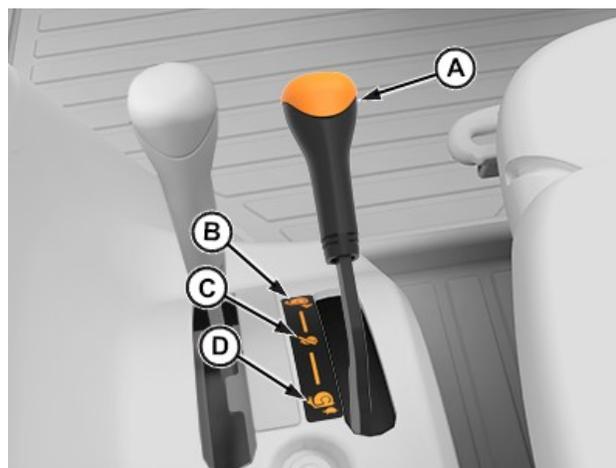
Depress the clutch pedal or declutch button (B) when shifting between ranges. The gears are synchronized, allowing on-the-go shifting into those ranges.

Use the speed shift up (C) and speed shift down (D) buttons on the range-shift lever (A), right-hand console switch, or EH mid-mount SCV joystick (E) to upshift and downshift gears within the selected range.

**NOTE:** Slow speed gearing (creeper) is controlled by a dedicated lever. Range-shift lever must be in Neutral position to shift into creeper.

m86qb7,1670391270435-19-28APR23

### Creeper Gear Operation



APY78135—UN—13SEP22

- A—Creeper Shift Lever
- B—Creeper High Range
- C—Creeper Disengaged
- D—Creeper Low Range

The creeper is a set of low gears that allows operations below 2.50 km/h (1.55 mph). To find the best gear for an application, see 32/16 Speed Transmission Creeper Ground Speed Chart in this section.

#### To engage the creeper:

1. Move machine to a level location.
2. Apply brakes to prevent machine motion.
3. Place the left-hand reverser lever in Neutral.
4. Place the range-shift lever in Neutral.

**NOTE:** Range-shift lever must remain in Neutral to operate creeper.

5. Move creeper shift lever (A) to the left and out of the detent position.
6. Move lever forward for creeper high range (B) or rearward for creeper low range (D).
7. Creeper indicator illuminates on primary display. See Transmission Indicators in this section.
8. Creeper is operated with the speed shift buttons and left-hand reverser, similar to normal transmission function.
9. To disengage, repeat procedure and place lever in the creeper disengaged position (C).

m86qb7,1661621138074-19-28APR23

- Reduce machine speed.
- Select an appropriate gear and range to reduce skidding.
- Set MFWD to On.

V5VUVD4,0000060-19-08MAR22

## 16/16 Speed Transmission Ground Speed Chart

Ground speeds are calculated using 19.5L-24 Goodyear rear tires at 2200 rpm engine speed. To calculate ground speeds for machines equipped with rear tires other than 19.5L-24 Goodyear tires, see Correction Factors for Other Tire Sizes in this section.

**NOTE:** Ground speeds are limited to 40 km/h (25 mph) in forward and 30 km/h (19 mph) in reverse.

## Downhill Operation in Slippery Conditions

**⚠ CAUTION:** Avoid possible injury from losing control of machine while operating on a downhill slope. Wheels can lock and skid on slippery downhill slopes. Observe the following precautions:

Forward Gear	Forward km/h (mph)	Reverse Gear	Reverse km/h (mph)
A1	1.84 (1.14)	A1	1.97 (1.22)
A2	2.27 (1.41)	A2	2.43 (1.51)
A3	2.82 (1.75)	A3	3.01 (1.87)
A4	3.46 (2.15)	A4	3.69 (2.29)
B1	4.26 (2.65)	B1	4.55 (2.83)
B2	5.26 (3.27)	B2	5.62 (3.49)
B3	6.52 (4.05)	B3	6.96 (4.32)
B4	8.00 (4.97)	B4	8.54 (5.31)
C1	8.25 (5.13)	C1	8.81 (5.47)
C2	10.19 (6.33)	C2	10.87 (6.76)
C3	12.62 (7.84)	C3	13.47 (8.37)
C4	15.49 (9.62)	C4	16.53 (10.27)
D1	18.47 (11.48)	D1	19.71 (12.25)
D2	22.81 (14.17)	D2	24.34 (15.13)
D3	28.26 (17.56)	D3	30.16 (18.74)
D4	34.69 (31.55)	D4	37.01 (23.00)

V5VUVD4,0000061-19-21NOV23

## 32/16 Speed Transmission Ground Speed Chart

Ground speeds are calculated using 19.5L-24 Goodyear rear tires at 2200 rpm engine speed. To calculate ground speeds for machines equipped with

rear tires other than 19.5L-24 Goodyear tires, see Correction Factors for Other Tire Sizes in this section.

**NOTE:** Ground speeds are limited to 40 km/h (25 mph) in forward and 30 km/h (19 mph) in reverse.

*Transmission Operation*

Forward Gear	Forward km/h (mph)	Reverse Gear	Reverse km/h (mph)
A1	1.84 (1.14)	A1	1.97 (1.22)
A2	2.07 (1.29)		
A3	2.27 (1.41)		
A4	2.56 (1.59)		
A5	2.82 (1.75)		
A6	3.17 (1.97)		
A7	3.46 (2.15)		
A8	3.89 (2.41)		
B1	4.26 (2.65)	B1	4.55 (2.83)
B2	4.79 (2.98)		
B3	5.26 (3.27)		
B4	5.92 (3.68)		
B5	6.52 (4.05)		
B6	7.33 (4.55)		
B7	8.00 (4.97)		
B8	9.00 (5.59)		
C1	8.25 (5.13)	C1	8.81 (5.47)
C2	9.27 (5.76)		
C3	10.19 (6.33)		
C4	11.45 (7.12)		
C5	12.62 (7.84)		
C6	14.19 (8.82)		
C7	15.49 (9.62)		
C8	17.41 (10.82)		
D1	18.47 (11.48)	D1	19.71 (12.25)
D2	20.76 (12.90)		
D3	22.81 (14.17)		
D4	25.64 (15.93)		
D5	28.26 (17.56)		
D6	31.76 (19.74)		
D7	34.70 (21.56)		
D8	39.00 (24.23)		

V5VUVD4,0000062-19-08MAR22

### 32/16 Speed Transmission Creeper Ground Speed Chart

Ground speeds are calculated using 19.5L-24 Goodyear rear tires at 2200 rpm engine speed. To

calculate ground speeds for machines equipped with rear tires other than 19.5L-24 Goodyear tires, see Correction Factors for Other Tire Sizes in this section.

Forward Gear	Forward km/h (mph)	Reverse Gear	Reverse km/h (mph)
Creeper Low 1	0.35 (0.22)	Creeper Low 1	0.38 (0.23)
Creeper Low 2	0.40 (0.25)		
Creeper Low 3	0.44 (0.27)		
Creeper Low 4	0.49 (0.30)		
Creeper Low 5	0.54 (0.33)		
Creeper Low 6	0.61 (0.38)		
Creeper Low 7	0.66 (0.41)		
Creeper Low 8	0.75 (0.47)		
Creeper High 1	0.88 (0.55)	Creeper High 1	0.94 (0.58)
Creeper High 2	0.99 (0.62)		

## Transmission Operation

Forward Gear	Forward km/h (mph)	Reverse Gear	Reverse km/h (mph)
Creeper High 3	1.09 (0.68)	Creeper High 2	1.16 (0.72)
Creeper High 4	1.23 (0.76)		
Creeper High 5	1.35 (0.84)	Creeper High 3	1.44 (0.89)
Creeper High 6	1.52 (0.95)		
Creeper High 7	1.66 (1.00)	Creeper High 4	1.77 (1.10)
Creeper High 8	1.86 (1.15)		

V5VUVD4,0000063-19-08MAR22

### Correction Factors for Other Tire Sizes

*NOTE: Actual speed varies due to a number of factors. Factors include (but are not limited to) rolling circumference, load, tire pressure, tire manufacturer, and wheel slip. If the precise speed is required for specific applications, then measurement is necessary.*

The following table is used to calculate ground speeds for machines equipped with rear tires other than 19.5L-24 Goodyear tires. Multiply speeds shown in the relevant ground speed charts in this section by the correction factor for the appropriate tire size found in the table.

Be sure to use correct ground speed estimate for transmission type (16/16 or 32/16 speed transmission). Use creeper transmission ground speed estimates as required.

Example: Forward B-3 (16/16 Speed Transmission) at 2200 engine rpm with 16.9R30 (420/85R30) tires.

$$6.52 (4.05) \times 1.11 = 7.2 \text{ km/h (4.5 mph)}$$

Tire Size	Correction Factor
360/70 R 24	0.84
420/70 R 24	0.91
340/85 R 28	0.96
420/70 R 28	1.00
480/65 R 28	1.00
14.9-28	1.02

*Correction Factor for Narrow Axle*

V5VUVD4,0000064-19-07DEC22

# MFWD and Front Axle Operation

## Mechanical Front-Wheel Drive (MFWD On/ Auto/Brake Assist)



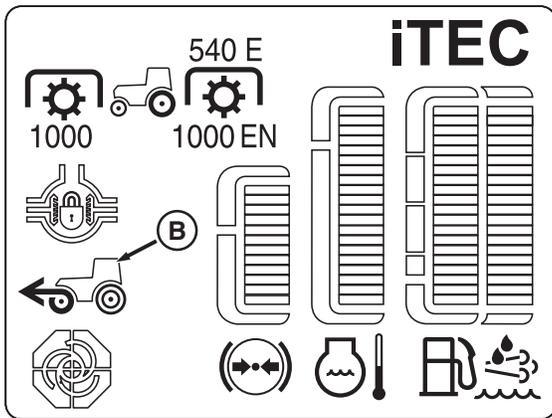
APY78136—UN—16SEP22

- A—MFWD Switch
- B—MFWD Indicator
- C—MFWD Brake Assist
- D—Engine Speed Module

**CAUTION:** Use extra caution on slopes. MFWD use greatly increases traction but does not increase the machine's stability.

**IMPORTANT:** If the machine is under full load and mired down, engaging MFWD while tires are spinning can cause damage. Reduce the load and slow wheel speed before engaging MFWD.

MFWD can be engaged and disengaged in all gears (forward and reverse) during operation and under full load. MFWD switch (A) is provided on the engine speed module (D).



RXA0181045—UN—27APR21

MFWD Selection	MFWD Switch Location	MFWD On	MFWD Off	MFWD Indicator	Recommended for:
AUTO	Switch pad right button (A) on engine speed module (D).	<ul style="list-style-type: none"> <li>• Both brake pedals are depressed at any speed.</li> <li>• Speed is below 19 km/h (11.8 mph).</li> <li>• Neither brake pedal is individually depressed.</li> </ul>	<ul style="list-style-type: none"> <li>• Either brake pedal is individually depressed.</li> <li>• Speed is above 23 km/h (14 mph).</li> </ul>	Illuminates when MFWD On conditions are met.	Transport where MFWD is needed.
On	Switch pad left button (C) on engine speed module (D).	Always.	Never.	Always illuminated.	Field use only at speeds below 23 km/h (14.3 mph).
Brake Assist	Switch pad left button (C) on engine speed module (D).	Speed above 5 km/h (3.1 mph) and both brake pedals are depressed.	Always, unless both brake pedals are depressed above 5 km/h (3.1 mph).	Illuminates when MFWD On conditions are met.	Normal transport where MFWD is not needed.

MFWD Engagement



# Differential and Rear Axle Operation

## Differential Lock

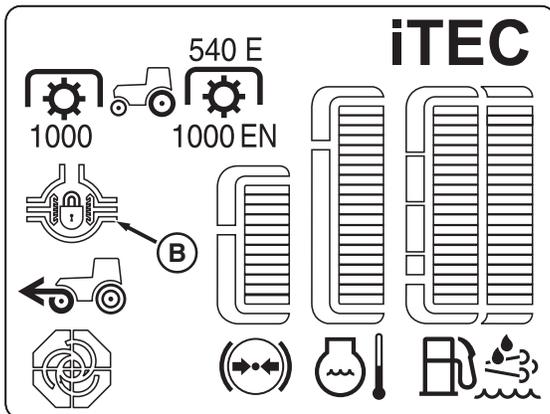


APY78146—UN—16SEP22

does not disengage, depress one brake pedal and then the other.

If tires repeatedly slip, then get traction, then slip again, hold down switch (A) to constantly engage differential lock.

V5VUVD4,0000066-19-13NOV22



RXA0181046—UN—27APR21

A—Differential Lock Switch  
B—Differential Lock Indicator

**CAUTION:** Do not operate the machine at high speed or attempt to turn with the differential lock engaged. Damage to machine can occur.

**IMPORTANT:** Engage the differential lock before entering a situation where wheel slippage occurs or when all wheels appear to be turning at the same speed. Engaging differential lock after wheels begin to spin at different speeds can result in the differential damage.

When one rear wheel starts to lose traction, depress the switch (A) to engage the differential lock. Differential lock indicator (B) illuminates on the primary display when the differential lock is engaged.

Unequal traction keeps the lock engaged. When traction equalizes, lock disengages itself by spring action. If lock

# Power Take-Off (PTO) Operation

## Match Machine Power to Implement

**IMPORTANT:** Matching the machine and the implement ensures that damage to either does not occur.

Overpowering an implement causes damage. Attaching an implement that requires more horsepower than the machine can damage the machine.

Refer to your implement Operator's Manual for minimum and maximum power requirements before attaching to the machine.

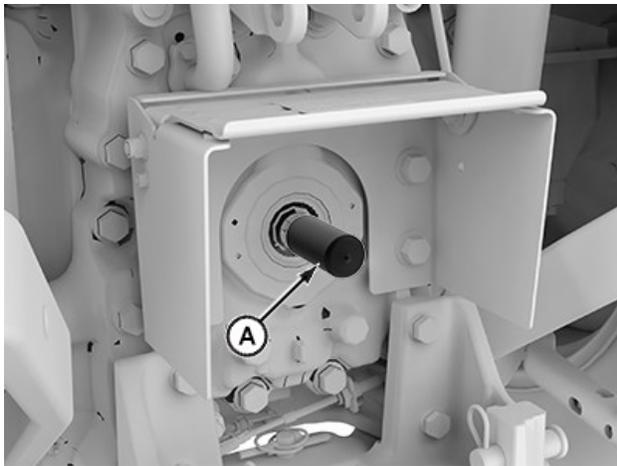
V5VUVD4.0000067-19-28NOV22

Ensure that the PTO is OFF and has come to a complete stop before attaching or detaching implements.

Remove the guard (A) when attaching a PTO-driven implement. After PTO driven implement is unattached, replace the PTO guard (A).

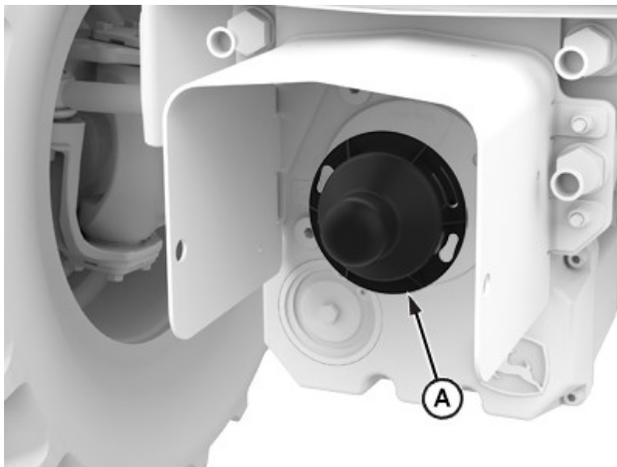
V5VUVD4.0000068-19-07DEC22

## PTO Guard



Rear PTO Guard

APY78150—UN—15SEP22



Front PTO Guard

APY78151—UN—10OCT22

A—PTO Guard

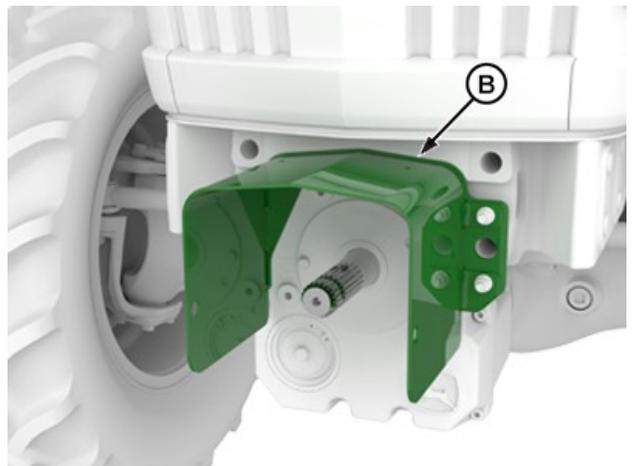
**⚠ CAUTION:** Keep the PTO guard (A) in place when a PTO implement is not attached.

## PTO Shield



Flip-Up PTO Shield--Rear Side

APY78152—UN—15SEP22



Front PTO Shield

APY78178—UN—01SEP22

A—Flip-Up PTO Shield  
B—Front PTO Shield

**⚠ CAUTION:** Avoid injury, do not remove the PTO shield or use as a step.

Flip-up PTO shield (A) allows the top to be moved up to allow more room to connect implements. Once the implement is connected, the top must be pushed down parallel to the PTO shaft before engaging PTO to provide proper protection.

Front PTO shield (B) is a fixed shield and does not open up.

V5VUVD4,0000069-19-28APR23

### PTO Drive Shaft Shield



TS1644—UN—22AUG95

**CAUTION:** Entanglement in the PTO driveshaft causes serious injury or death. Use proper shield and guards in good working order at all times when operating PTO-driven implements.

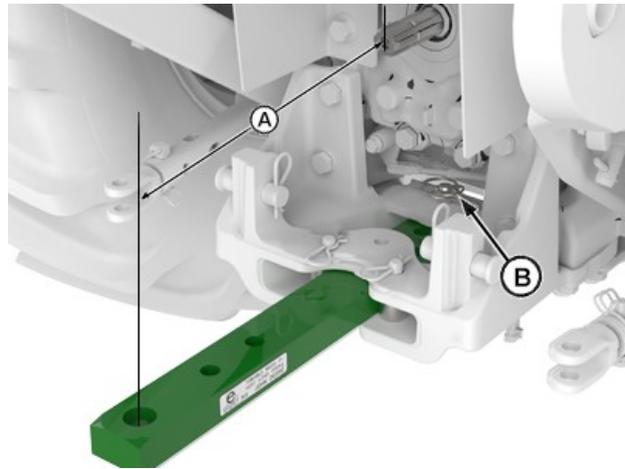
PTO driveshaft shields must be in good working order and completely cover the PTO shaft when installed and during use. PTO driveshaft shield must not rotate with the shaft.

Before connecting, cleaning, or adjusting PTO or PTO-driven equipment, do the following:

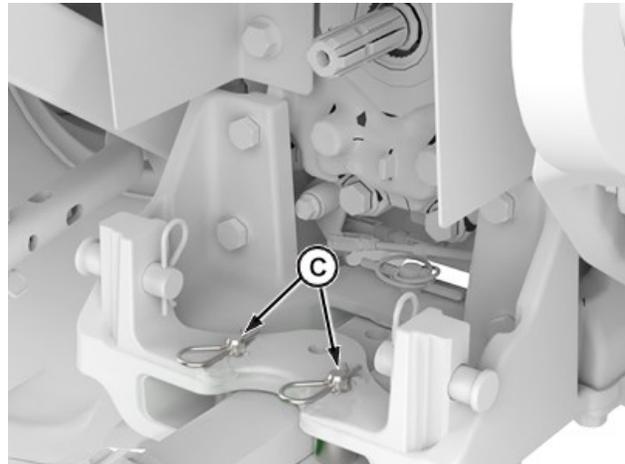
1. Turn the PTO off.
2. Wait for PTO shaft and PTO-driven equipment to come to a complete stop.
3. Turn the engine off.
4. Remove key.

V5VUVD4,000006A-19-28NOV22

### Select PTO Drawbar Position



APY78154—UN—15SEP22



APY78153—UN—15SEP22

A—PTO Shaft End to Hitch Pin Hole  
B—Drawbar Adjustment Pin  
C—Drawbar Alignment Pins

**CAUTION:** Ensure that PTO is OFF, has come to a complete stop, and allowed to cool before attaching or detaching implements.

1. Measure the PTO shaft end to the hitch pin hole (A) and adjust for the application as required.
2. Remove the drawbar adjustment pin (B), set drawbar length, and replace drawbar adjustment pin (B).
3. Set the drawbar to center position (no offset) and install the drawbar alignment pins (C) to prevent the drawbar movement.

PTO Type	PTO Shaft End to Hitch Pin Hole mm (in)
540 and 540E (6-spline) or 1000 (21-spline)	250 (9.84 )
Not Used with 3-Point Hitch-Mounted PTO- Driven Implements	350 (13.78 ) or 400 (15.75 )

3-Point Hitch-Mounted PTO-Driven Implement Drawbar Position

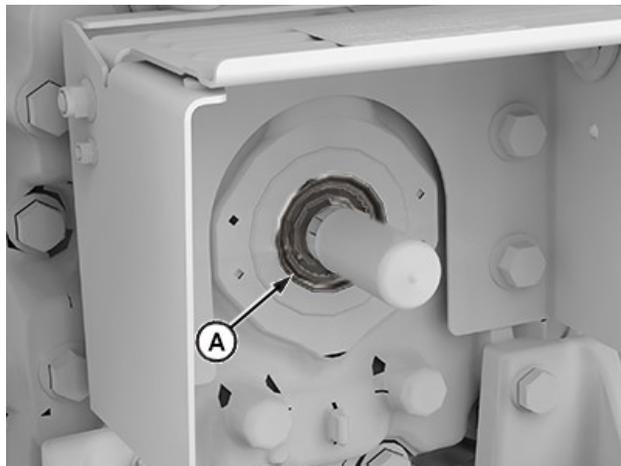
## Power Take-Off (PTO) Operation

PTO Type	PTO Shaft End to Hitch Pin Hole mm (in)
Not Used with Pull-Type PTO-Driven Implements	250 (9.84 )
540 and 540E (6-spline)	350 (13.78 )
1000 (21-spline)	400 (15.75 )

Pull-Type PTO-Driven Implement Drawbar Position

V5VUVD4.000006B-19-07DEC22

### Exchangeable 540/1000 rpm PTO Shaft



APY78147—UN—15SEP22

**NOTE:** When exchanging the PTO shaft, hydraulic oil does not leak out due to a dry socket design.

PTO stub shaft (B) has six splines for operating 540 rpm implements and 21 splines for 1000 rpm implements.

1. Locate the flattened area on the stub shaft (B) which facilitates snap ring (A) removal and installation.
2. Align the snap ring (A) ends with the flattened area. Remove snap ring (A) and pull out the PTO stub shaft (B).
3. Clean PTO shaft (B) thoroughly and lightly coat with grease. Be sure the end bore (C) is clean if installing shaft for 1000 rpm operation.
4. Turn PTO shaft (B) end-for-end and insert in the PTO housing until snap ring groove is visible.
  - a. **540 rpm shaft**—Rotate the shaft (B) back and forth while installing. Ensure that the shaft is properly seated in housing; continue to push the shaft in when installing the snap ring (A).
  - b. **1000 rpm shaft**—Rotate the shaft (B) back and forth while installing until the engagement is felt.
5. Install the snap ring (A) in the groove to retain the PTO stub shaft (B). Align ends of the snap ring with the flat surface of shaft.

V5VUVD4.000006C-19-13NOV22



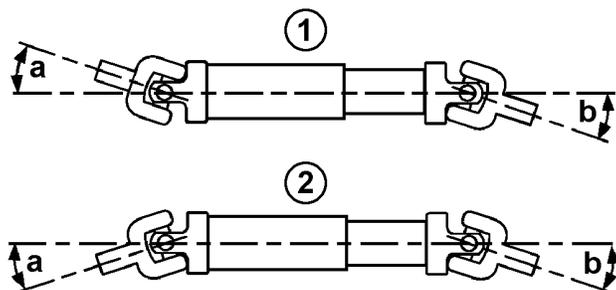
APY78148—UN—15SEP22

A—Snap Ring  
B—PTO Stub Shaft  
C—Bore

**CAUTION:** Ensure that the PTO is OFF, has come to a complete stop, and allowed to cool before attaching or detaching implements.

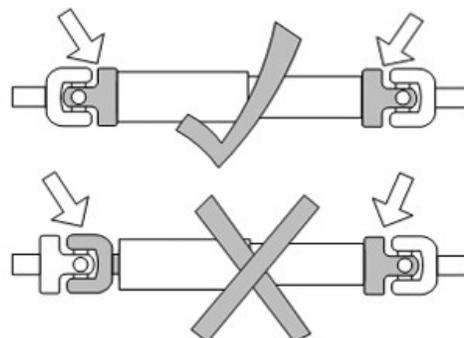
**IMPORTANT:** Make sure to select either 540 rpm or 1000 rpm mode after changing the PTO shaft. PTO disengages if the speed does not match the shaft size. (See Select Correct PTO Speeds in this section.)

### Attach PTO-Driven Implement



LX1049749

LX1049749—UN—21MAY10



LX1049900

LX1049900—UN—22FEB11

1—Z-Shaped Layout

2—W-Shaped Layout

**CAUTION:** Ensure that the PTO is OFF, has come to a complete stop, and allowed to cool before attaching or detaching implements.

The drawings do not show guards on the driveshaft for illustration purposes. A guard is mandatory when using driveshafts.

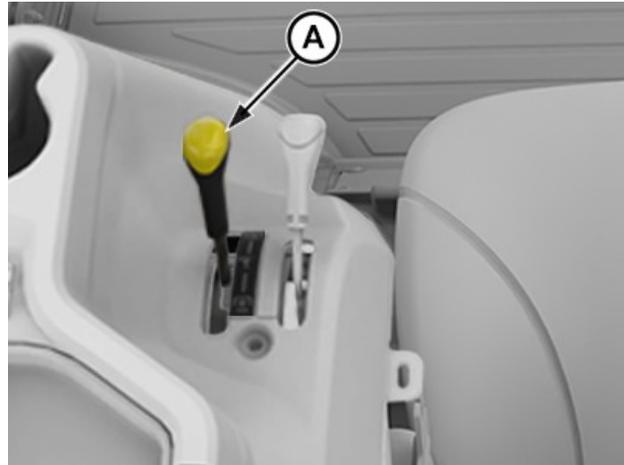
**IMPORTANT:** On telescopic driveshafts, the yokes at each end must be aligned as shown. The yokes at each end must not be at 90° to one another.

Angles (a) and (b) at the universal joints must be nearly the same at both ends of the driveshaft. In applications where it is not possible (sharp turns with PTO engaged), it is recommended to use a continuous-velocity driveshaft.

1. Turn the PTO off.
2. Turn the engine off and remove key.
3. Set drawbar for the application. (See Select PTO Drawbar Position in this section.)
4. Raise the PTO shield (if equipped with flip-up style) and remove the PTO guard.
5. Attach implement to the machine (drawbar or 3-point hitch) before connecting PTO. Raise the hitch to full height (transport) position if it is not to be used.
6. With the engine off, turn the PTO driveshaft by hand to line up splines. Connect implement driveshaft to PTO shaft until driveshaft lock engages. Pull implement driveshaft to be sure that it is locked to PTO shaft.
7. Lower the PTO shield. Check that all shields are in place and in good condition. Check the implement driveshaft shields to ensure that they rotate freely on shaft. Lubricate or repair as necessary.

V5VUVD4,000006D-19-28NOV22

Select Correct PTO Speed



APY78159—UN—11OCT22

A—PTO Shift Lever

**IMPORTANT:** Disengage PTO and allow to come to a complete stop before changing PTO speed with lever (A). NEVER use PTO shift lever (A) to engage or disengage PTO, or damage occurs.

Refer to the implement Operator's Manual for the correct PTO speed and shaft to use for the best performance.

1. Adjust the drawbar for PTO selection.
2. Change the PTO shaft to 540 or 1000 rpm as needed.
3. Attach the implement.
4. If the PTO shaft is set to 540 RPM, Move the PTO shift lever (A) rearward for 540 rpm standard operation.
5. If the PTO shaft is set to 540 RPM, Move the PTO shift lever (A) forward for 540E operation. Economy mode is designed for lighter PTO loads where power requirements do not require higher engine rpm levels. It helps to conserve fuel and lowers noise levels.

PTO Speed	Recommended Applications
540	Normal to heavy loads requiring full engine power.
1000	Normal to heavy loads requiring full engine power.
540E <sup>a</sup>	Light loads not requiring full engine power.

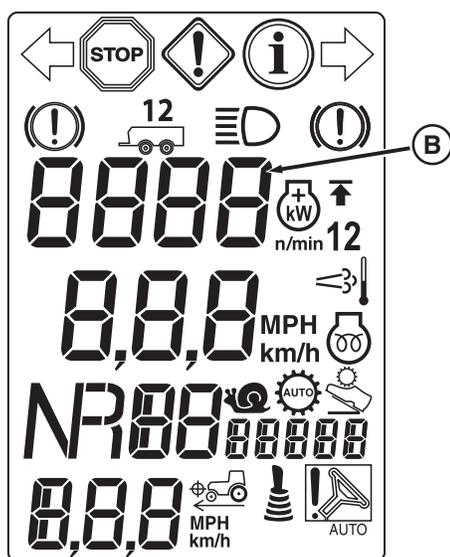
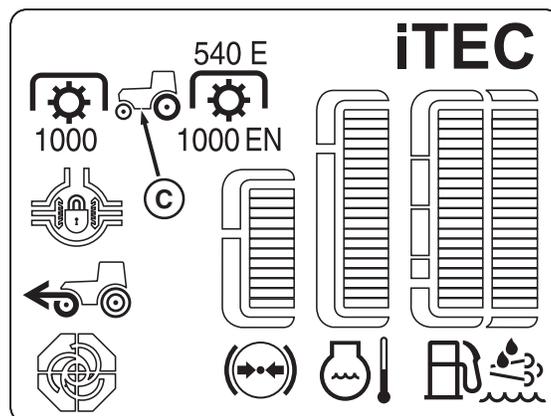
<sup>a</sup>Limited to maximum 1815 rpm.

V5VUVD4,000006E-19-22NOV23

## Operate Rear PTO



APY78160—UN—16SEP22



RXA0182558—UN—20APR21

RXA0181048—UN—27APR21

- A—Rear PTO Switch
- B—Tachometer
- C—Rear PTO Indicator

**CAUTION:** If the PTO engages at engine start-up, contact your John Deere dealer for service.

If the PTO is engaged and the remote switch is pressed, PTO disengages regardless of whether remote operation is armed.

**NOTE:** The engine starts with the PTO switch engaged, but PTO switch must be cycled off and on again before the PTO engages.

1. Start the engine and set to the correct speed rating for PTO application. Observe the tachometer (B) for engine speed.

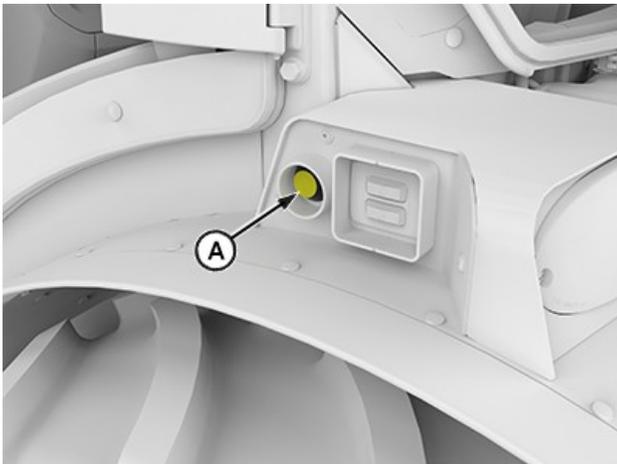
Rear PTO	Engine Speed (rpm)
540/1000	2100
540E	1645

**NOTE:** The operator must be seated when the PTO is engaged. PTO does not engage if the operator is absent.

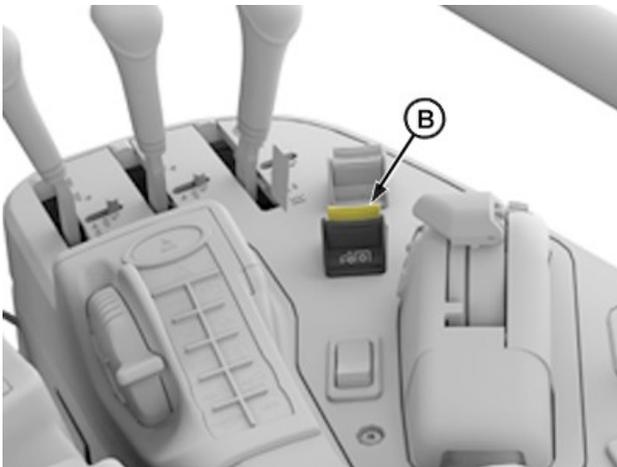
2. Push down and forward on the rear PTO switch (A) to engage the rear PTO.
3. Rear PTO indicator (C) and PTO mode illuminate on the display.
4. Pull the rear PTO switch (A) to disengage the rear PTO.

V5VUVD4,000006F-19-13NOV22

## Operate Rear Remote PTO



APY78155—UN—15SEP22



APY78156—UN—15SEP22



P20523—UN—14JUL23

**A—Rear PTO Fender Switch**

To operate the rear PTO utilizing the rear PTO fender switch (A):

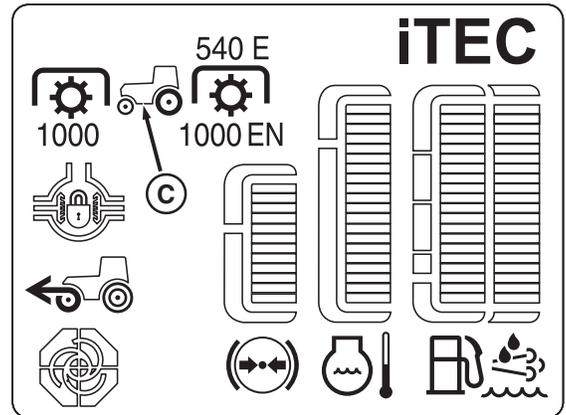
1. Park the machine.
2. Depress the remote PTO enable switch (B) and a LED indicator in the switch illuminates.
3. Push down and forward on the rear PTO switch (B) to arm the PTO.

**B—Rear PTO Switch/Remote PTO Enable Switch**

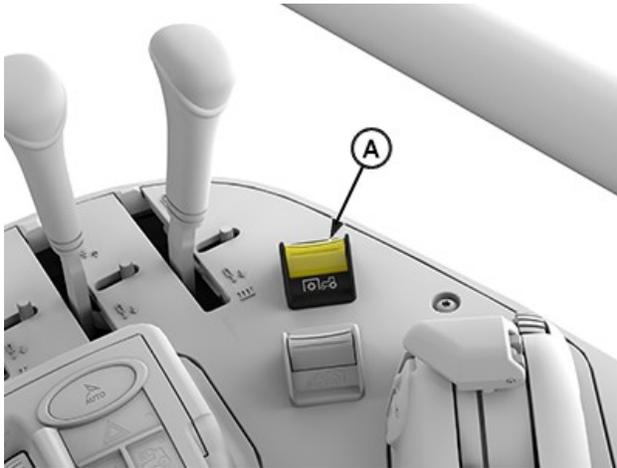
4. An audible warning sounds and hazard warning lights flash to indicate that the rear PTO fender switches are activated. The PTO shaft is not moving.
5. Press and hold the rear PTO fender switch (A). Rear PTO slowly begins to start.
  - Press and hold switch for at least 4 seconds:
    - Audible warning stops.
    - Warning lights turn off.

- PTO continues to operate.
  - Release switch within 4 seconds:
    - PTO slowly stops.
    - Audible warning sounds.
    - Warning lights flash.
6. Press the rear PTO fender switch (A) again to shut off the rear PTO. Rear PTO can also be shut off by pulling rear PTO switch (B) rearward.
7. Rear PTO can be engaged and disengaged using the fender switch until the operator disengages the PTO using the rear PTO switch (B) or returns to the operator's seat.

V5VUVD4,0000070-19-17JUL23



### Operate Front PTO (Optional)



APY78149—UN—15SEP22

RXA0181048—UN—27APR21

- A—Front PTO Switch/Remote PTO Enable Switch
- B—Tachometer
- C—Front PTO Indicator

**CAUTION:** If the PTO engages at engine start-up, contact your John Deere dealer for service.

*NOTE:* The engine starts with the PTO switch engaged, but PTO switch must be cycled off and on again before the PTO engages.

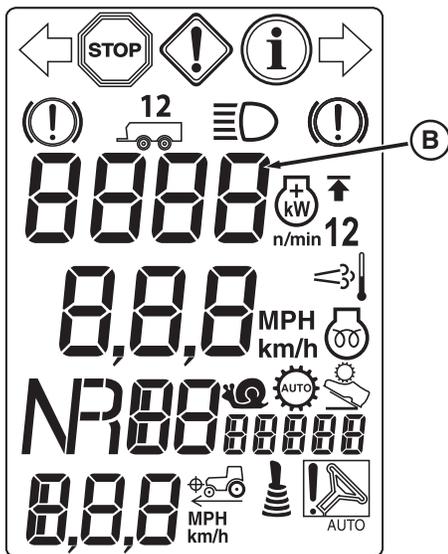
1. Start the engine and set to the correct speed rating for PTO application. Observe the tachometer (B) for engine speed.

Front PTO	Engine Speed (rpm)
1000	2100

*NOTE:* The operator must be seated when the PTO is engaged. PTO does not engage if the operator is absent.

2. Push down and forward on front PTO switch (A) to engage the PTO. Front PTO indicator (C) illuminates on the primary display.
3. Pull front PTO switch (A) rearward to disengage the PTO.

V5VUVD4,0000071-19-14NOV22



RXA0182558—UN—20APR21

### PTO Automatic Disengage

*NOTE:* The PTO will disengage automatically after 7 seconds if the operator leaves the seat with the PTO engaged.

If continuous PTO operation is required and the

*Power Take-Off (PTO) Operation*

operator must exit the seat, perform the following procedure:

1. With PTO running, park the machine.
2. Depress the remote PTO enable switch (A).
3. Exit the seat as needed.
4. Return to the seat, continue the operation.

*NOTE: Each time the operator leaves the seat, the remote PTO enable switch must be activated.*

**PTO Alarm**

**Alarm Events**

An alarm sounds to alert the operator that the PTO is running. See the following scenarios:

V5VUVD4,0000072-19-13NOV22

Scenario	1	2
<b>Machine Movement</b>	Parked or Stationary	Moving above 0.5 km/h (0.31 mph)
<b>Remote PTO Enable Switch</b>	Off	Off
<b>Rear PTO Switch</b>	Engaged	Engaged
<b>Operator</b>	Leaves seat	Leaves seat
<b>Alarm</b>	7 seconds	10 seconds
<b>Rear PTO</b>	Shuts Off after 7 seconds	Stays On
<b>To Keep PTO Enabled</b>	Return to seat or depress the remote PTO enable switch within 7 seconds	No action required
<b>Front PTO</b>	Functions the same as rear PTO	Functions the same as rear PTO

**No Alarm Events**

There will not be an alarm in the following scenarios:

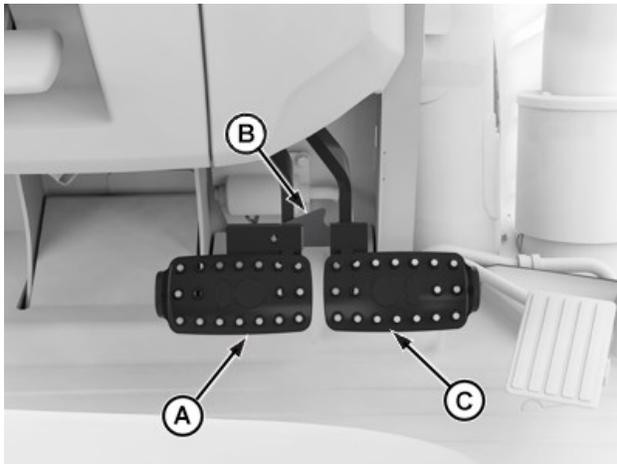
Scenario	1	2 <sup>a</sup>	3
<b>Machine Movement</b>	Parked, Stationary, or Moving	Parked or Stationary	Parked, Stationary, or Moving
<b>Remote PTO Enable Switch</b>	Off	Engaged after the PTO switch	Off
<b>PTO Switch</b>	Engaged	Engaged	Engaged
<b>Operator</b>	Remains in seat	Leaves the seat	Not in seat when the PTO switch was engaged
<b>Alarm</b>	None	None	None
<b>Rear PTO</b>	Stays On	Stays On	Remains Off
<b>To Keep PTO Enabled</b>	No action required	No action required	Return to seat and restart PTO
<b>Front PTO</b>	Functions the same as rear PTO	Functions the same as rear PTO	Functions the same as rear PTO

<sup>a</sup>Machines without rear fender PTO switches.

shqw455,1678134842936-19-06MAR23

# Steering and Brake Operation

## Service Brakes



APY78171—UN—15SEP22

- A—Left Brake Pedal
- B—Brake Pedal Lock
- C—Right Brake Pedal

**IMPORTANT:** To prevent unnecessary wear, never operate with a foot resting on the brake pedals.

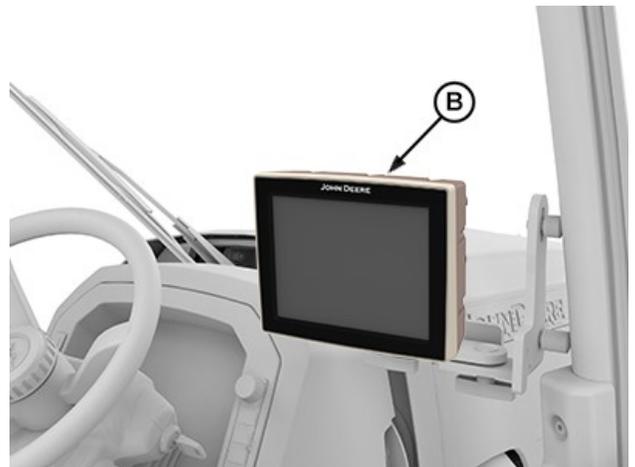
- For field work, unlock brake pedals. Apply the right brake pedal (C) lightly to assist in making sharp right-hand turns and the left brake pedal (A) for left-hand turns.
- Before operating the machine on a road or transporting, use brake pedal lock (B) to hold the brake pedals together.
- Use the brakes lightly and cautiously at transport speeds.
- Reduce the speed if towed load is not equipped with brakes and weighs more than the machine.
- Avoid hard braking applications. Consult implement Operator's Manual for recommended transport speeds.
- Use additional caution when transporting towed loads under adverse conditions, and when turning or stopping on inclines.

V5VUVD4,0000074-19-13NOV22

## AutoTrac Steering System with GreenStar Display



APY78168—UN—15SEP22



APY78169—UN—01SEP22



APY78170—UN—01SEP22

- A—StarFire Position Receiver
- B—GreenStar Display
- C—AutoTrac Resume Button

*NOTE: See the relevant AutoTrac Operator's Manual for more information on the installation, operation, and maintenance.*

**NOTE:** If the GreenStar Display is disconnected, AutoTrac Basic will be available at the next key cycle.

AutoTrac steering system uses the StarFire Position Receiver (A) and the GreenStar Display (B) to support the operator when steering the machine.

AutoTrac is a guidance system. The operator can take control of the machine at any time by actively turning the steering wheel. The operator controls the travel speed by using the brake, the foot speed control, or the hand speed control. Operator must turn the machine to avoid any field obstacles and at the end of each pass. The operator must press the AutoTrac resume button (C) to engage the AutoTrac.

**NOTE:** See GPS Receiver Offset Values in this section for GPS receiver offset values.

V5VUVD4,0000075-19-13NOV22

## AutoTrac Basic Steering System with Front Console Display



APY78168—UN—15SEP22



APY78172—UN—15SEP22



APY78170—UN—01SEP22

**A—StarFire Position Receiver**  
**B—Front Console Display**  
**C—AutoTrac Resume Button**

**NOTE:** If the GreenStar Display is connected, AutoTrac Basic will not be available at the next key cycle.

AutoTrac Basic steering system uses the StarFire Position Receiver (A) and the left screen on the front console display (B) to support the operator when steering of the machine.

AutoTrac Basic is a straight track guidance system. The operator can take control of the machine at any time by actively turning the steering wheel. The operator controls the travel speed by using the brake, the foot speed control, or the hand speed control. Operator must turn the machine to avoid any field obstacles and at the end of each pass. The operator must press the AutoTrac resume button (C) to engage the AutoTrac Basic.

V5VUVD4,0000076-19-13NOV22

## Operate Guidance Systems Safely

Do not use the guidance systems on roadways. Always turn off (disable) guidance systems before entering a roadway. Do not attempt to turn on (activate) a guidance system while transporting on a roadway.

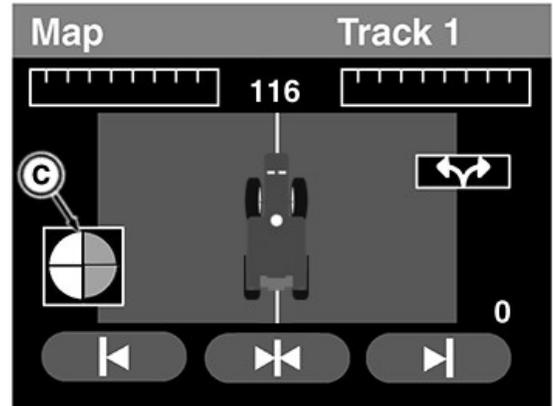
Guidance systems are intended to aid the operator in performing field operations more efficiently. The operator is always responsible for the machine path. Guidance systems do not automatically detect or prevent collisions with the obstacles or the other machines.

Guidance systems include any application that automates the machine steering. This includes, but may not be limited to, AutoTrac, AutoTrac Turn Automation, AutoTrac Implement Guidance (passive), AutoTrac Basic, AutoTrac Universal, RowSense, and Machine Sync.

To prevent injury to the operator and bystanders:

- Never get on or off a moving machine.
- Verify that the machine, implement, and guidance system are set up correctly.
  - If using the AutoTrac Turn Automation, or the AutoTrac Implement Guidance (passive), verify that accurate boundaries have been defined.
  - If using the Machine Sync, verify that the follower's home point is calibrated with sufficient space between the machines.
- Remain alert and pay attention to the surrounding environment.
- Take control of the steering wheel, when necessary, to avoid field hazards, bystanders, equipment, or other obstacles.
- Stop the operation if poor visibility conditions impair your ability to operate the machine or identify people or obstacles in the machine path.
- Consider the field conditions, the visibility, and the machine configuration when selecting the machine speed.

V5VUVD4,0000077-19-28NOV22



RXA0178551—UN—26JUN20

- A—Navigation Dial
- B—Confirm Button
- C—AutoTrac Status Pie

1. Scroll with the navigation dial (A) on the navigation pad to the AutoTrac status pie (C) on the AutoTrac Basic map screen.
2. Press the confirm button (B) on the navigation pad to enable “Steer On.”
3. Press the confirm button (B) again on the navigation pad to disengage the AutoTrac Basic.

V5VUVD4,0000078-19-13NOV22

## Enable AutoTrac Basic

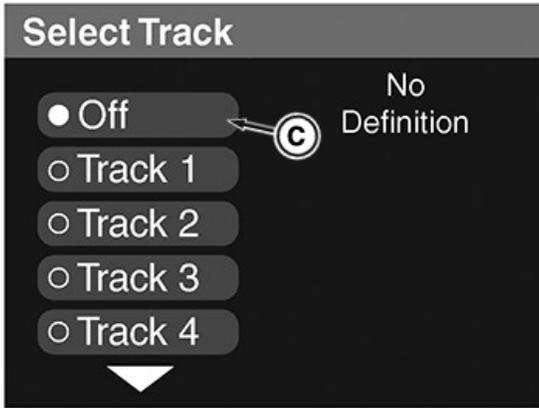


APY80680—UN—04NOV22

## Disable AutoTrac Basic



APY80680—UN—04NOV22



RXA0170767—UN—08OCT19

- A—Navigation Dial
- B—Confirm Button
- C—Off Selected Track

**CAUTION:** Always turn OFF (deactivate and disable) AutoTrac Basic system before entering a roadway.

1. Scroll with the navigation dial (A) on the navigation pad to the AutoTrac Basic track setup selection.
2. Press the confirm button (B) on the navigation pad to enter AutoTrac Basic track setup.
3. Select “Off” (C) on the track selection screen to disable AutoTrac Basic.

V5VUVD4,0000079-19-28NOV22

## AutoTrac Resume Switch



APY80691—UN—10OCT22

### A—AutoTrac Resume Switch

Press the AutoTrac resume switch (A) on the armrest or right-hand console key pad to move the AutoTrac Basic from the enabled stage to the activated stage.

V5VUVD4,000007A-19-13NOV22

## Activate AutoTrac Basic

**CAUTION:** While the AutoTrac Basic is activated, operator is responsible for steering at the end of path and collision avoidance.

**CAUTION:** Do not attempt to turn on (activate) AutoTrac Basic system while transporting on a roadway.

1. Select Steer on-off to enable “Steer on.”
2. Drive the machine onto a guidance track and a highlighted navigation line appears in front of the machine icon.
3. Manually activate the AutoTrac Basic when steering assistance is desired by pressing the AutoTrac resume switch. This initiates the assisted steering.

V5VUVD4,000007B-19-28APR23

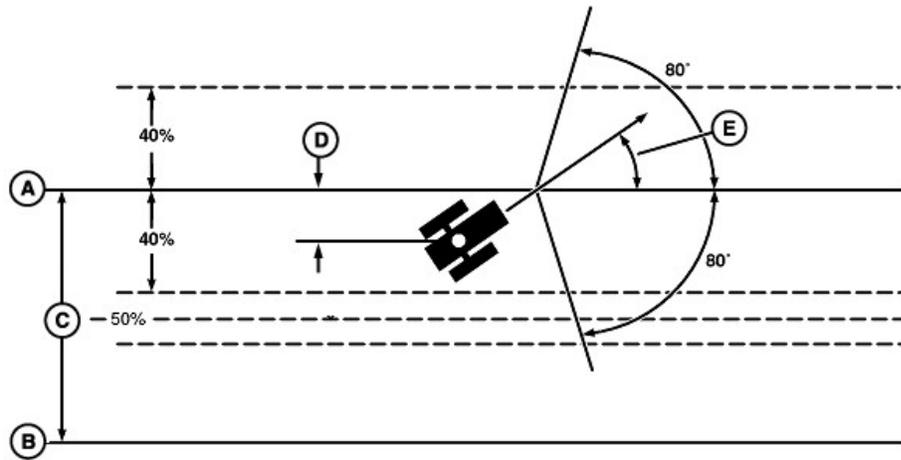
## Disengage AutoTrac Basic

AutoTrac Basic system is disengaged by:

- Turning the steering wheel.
- Slowing to speeds less than 0.5 km/h (0.3 mph).
- Selecting Steer on-off to disengage AutoTrac Basic.
- Operator remaining out of seat for more than 7 seconds if using seat switch, or no activity is detected by the operator presence monitor for 7 minutes.

V5VUVD4,000007C-19-13NOV22

## Reactivate AutoTrac Basic on Next Pass



Tracking

PC8866—UN—02NOV05

A—Track 0  
B—Track 1 South  
C—Track Spacing

D—Off-Track Lateral Error  
E—Track Heading Error

Once the end of the row is reached, the operator must turn the system to next pass. By turning the steering wheel, AutoTrac Basic is deactivated.

AutoTrac Basic can be activated again by pressing the AutoTrac resume switch only after following conditions are met:

- Steering controller determines highest speed while using AutoTrac Basic.
- Forward machine speed is less than 30 km/h (18.6 mph).
- Reverse speed is less than 10 km/h (6 mph).
- In reverse, AutoTrac Basic remains activated for 45 seconds. After 45 seconds, the machine must be put in a forward gear before reverse activates again.
- Machine heading is within 80° of desired track.
- The machine is within 40% of track spacing.
- Operator is seated.
- TCM is on.

V5VUVD4,000007D-19-13NOV22

## AutoTrac Basic Menu

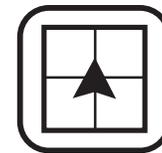
*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



AutoTrac Basic Menu

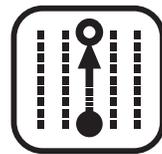
RXA0170082—UN—10SEP19

1. Locate the AutoTrac Basic menu.



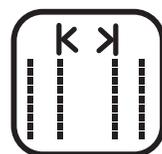
Map Selection

RXA0178552—UN—26JUN20



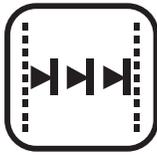
Track Setup Selection

RXA0170084—UN—10SEP19



Track Width Selection

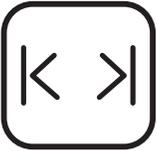
RXA0170085—UN—10SEP19



*Shift Size Selection* RXA0170086—UN—10SEP19



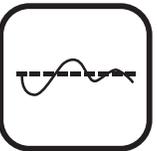
*About Selection* RXA0170093—UN—10SEP19



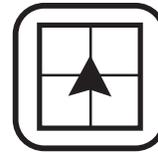
*Vehicle Selection* RXA0170087—UN—10SEP19

2. Select and change the desired setting as needed. See the relevant topic in this section for additional details on settings.

V5VUVD4,000007E-19-08MAR22



*Tuning Selection* RXA0170088—UN—10SEP19



*Map Icon* RXA0178552—UN—26JUN20

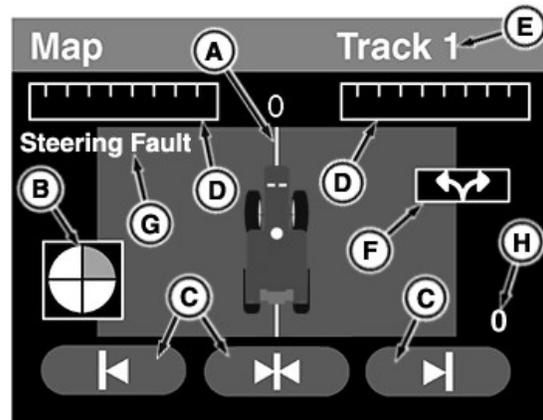


*Correction Mode Selection* RXA0170089—UN—10SEP19

## AutoTrac Basic Map



*TCM Calibration Selection* RXA0170090—UN—10SEP19



RXA0178553—UN—26JUN20

- A—Guidance Line
- B—AutoTrac Status Pie
- C—Shift Track Buttons (3)
- D—Light Bar
- E—Guidance Off/Selected Track
- F—Turn Predictor
- G—AutoTrac Exit Code
- H—Track Number



*USB Drive Selection* RXA0170091—UN—10SEP19

The map screen displays the machine location relative to the guidance line (A). It also shows the AutoTrac status pie (B), shift track buttons (C), lightbar (D), guidance off/selected track (E), turn predictor (F), and exit code text (G).

### Lightbar

The lightbar provides off-track error feedback to the



*GPS Status Selection* RXA0170092—UN—10SEP19

operator. The feedback is shown on the lightbar located above the main run screen.

The minimum error step size is 1 in or 1 cm, depending on the unit type selected (English or metric).

The step size setting is not configurable.

The lightbar indicates error in the steer towards direction, meaning that the AutoTrac Basic system must steer towards the line to reduce the error shown by the lightbar.

### Turn Predictor



RXA0170097—UN—17SEP19  
Turn Predictor Icon

Turn predictor alerts the operator by predicting the end of pass and displays the distance to the end of the pass in the map view.

Turn predictor is intended to predict only the turn point of a machine. It is not a headland alert. Turn predictions are based solely on previous turn behavior of machine. Turn predictions are inaccurate if the field boundary is not linear and continuous, or if the operator turns before or after field boundary.

Distance counts down to predicted turn, and tones sound when machine is 10 seconds from intersecting turn point. This happens again when predicted turn point has been reached.

Visual indicator will change to yellow within 10 seconds of predicted turn, then red after passing the predicted turn location.

Scroll with the navigation dial on the navigation pad to the turn predictor icon. Press the confirm button on the navigation pad to disable the turn predictor. Press the confirm button on the navigation pad again to enable the turn predictor.

Once disabled, it remains off until it is manually turned back on by the operator. The turn predictor icon becomes gray with a diagonal line through the image when disabled.

Whenever the turn predictor is enabled, the turn predictor icon is a non-gray image without a diagonal line through the image.

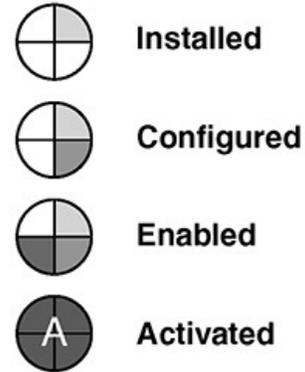
### Track Number

The track number (H) indicates which track the machine is on based upon the original created track. The created track is indicated by a zero on the display. Tracks to the right of the created track are positive increments 1, 2,

and so on. Tracks to the left are negative increments -1, -2, and so on.

V5VUVD4,000007F-19-28NOV22

### AutoTrac Status Pie



RXA0170098—UN—30SEP19  
AutoTrac Status Pie Icon

#### Installed

Steering controller and all other hardware necessary for use are installed. System is disabled.

- AutoTrac Basic controller is installed.
- Steering controller is detected.

#### Configured

A valid track has been established. Correct StarFire signal level is selected. System is ready to be enabled.

The following machine conditions are met:

- Guidance system is turned on.
- Guidance track is defined.
- StarFire signal is present.
- Steering controller has no active faults.
- Speed is in range.
- TCM message is available and valid.
- Machine is in proper operating gear.
- Variable rate of steer switch is enabled.

#### Enabled

AutoTrac on-off button has been pressed. All conditions are met for AutoTrac to operate and system is ready to be activated.

- Select Steer on-off to enable "Steer On".

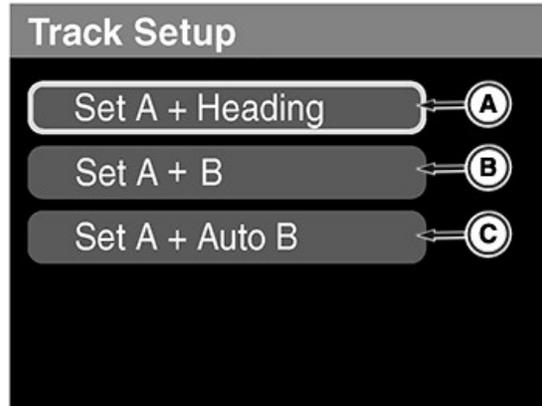
**Activated**

AutoTrac resume button pressed and AutoTrac steering the machine.

The following machine conditions are met:

- AutoTrac resume button has been pressed and AutoTrac Basic is steering the machine.
- Speed is within valid range.
- Heading/angle is within valid range.
- Machine is within 40% of track spacing.

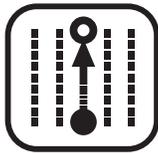
V5VUV4,000080-19-28NOV22



RXA0170100—UN—14OCT19

Track Setup Screen

**AutoTrac Basic Track Setup**

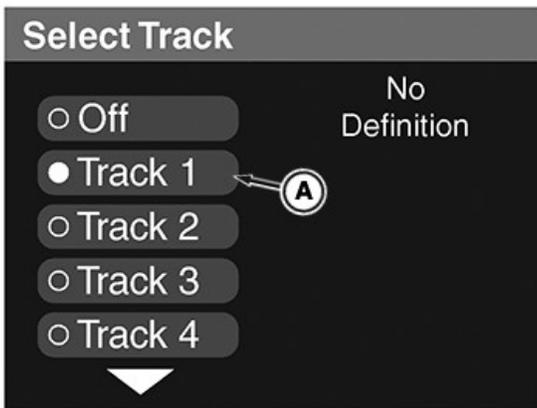


RXA0170084—UN—10SEP19

Track Setup Icon

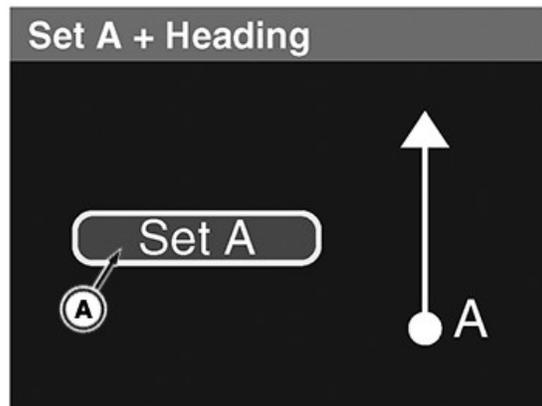
Straight track setup options include:

- A - Set A + Heading**
- B - Set A + B**
- C - Set A + Auto B**



RXA0170099—UN—08OCT19

Track Selection Screen

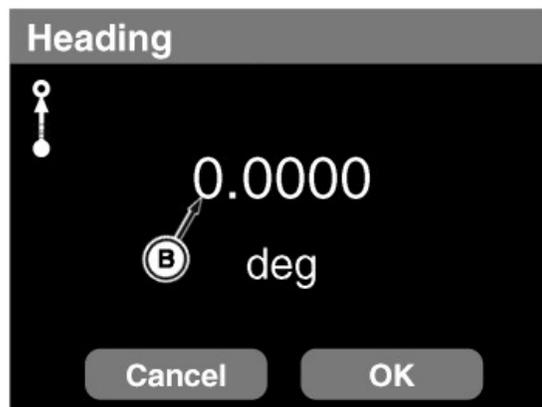


RXA0170432—UN—08OCT19

**A—Pre-Named Guidance Tracks (10)**

AutoTrac Basic is a straight track guidance system only.

A maximum of ten pre-named guidance tracks (A) are available. Operators cannot modify track names or delete tracks from the set.



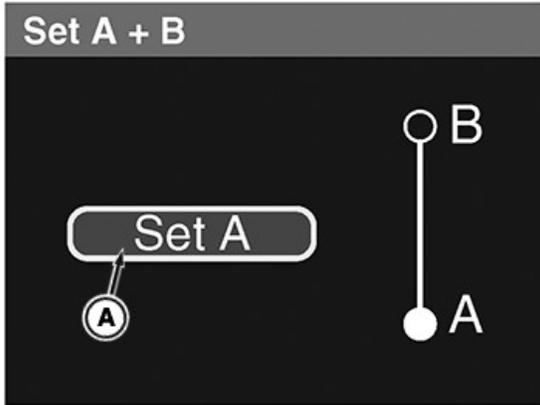
RXA0178554—UN—26JUN20

A—Set Desired A Point

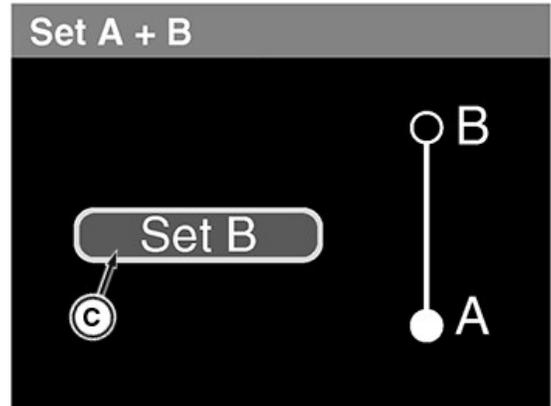
**B—Heading Degree**

**Set A + Heading**

Operator sets desired A point (A). The operator drives the machine and the heading automatically populates to the nearest whole degree from the current GPS course. Operator can either accept the automatically populated heading value (B) or modify the heading degree as needed.



RXA0170435—UN—08OCT19

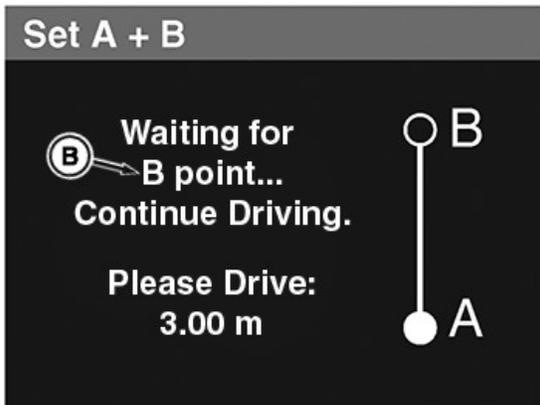


RXA0170437—UN—08OCT19

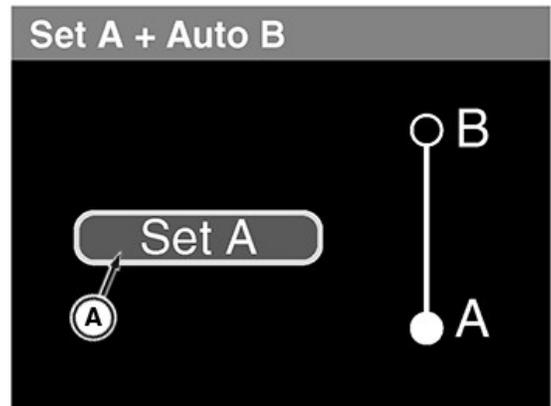
A—Set Desired A Point  
 B—"Waiting for B Point... Continue Driving." Screen  
 C—Set Desired B Point

**Set A + B**

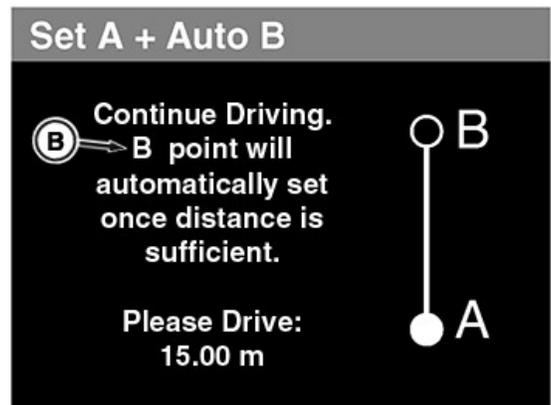
Operator sets desired A point (A). The operator drives the machine and screen (B) appears until operator is allowed to set B point (C).



RXA0178555—UN—26JUN20



RXA0170438—UN—08OCT19



RXA0178556—UN—26JUN20

A—Set Desired A Point

**B**—Continue Driving. **B** point will automatically set once distance is sufficient. Screen

**Set A + Auto B**

Operator sets desired A point (A). The operator drives the machine and screen (B) appears until B point is automatically set.

After each line creation, the AutoTrac status pie jumps to “Enable”. The operator can press the AutoTrac resume button on the key pad to transition the AutoTrac status pie to “Activate”.

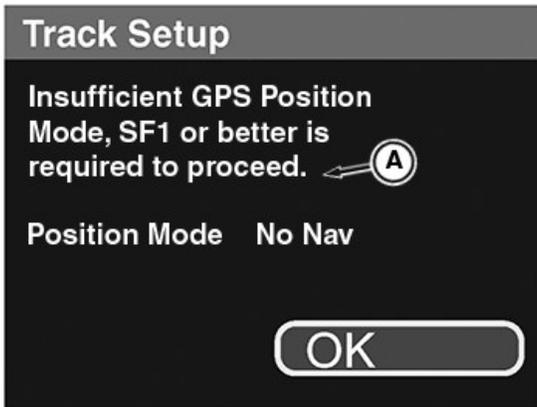


RXA0178557—UN—26JUN20

**A**—Track Width (metric units shown)

Operators can enter track width (A) changes manually in measurements of meters or feet and inches. Track width is not linked to implement profiles and does not automatically update. Implement profiles do not exist with AutoTrac Basic.

V5VUVD4,0000082-19-08MAR22



RXA0170440—UN—08OCT19

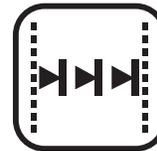
**A**—“Insufficient GPS Position Mode, SF1 or better is required to proceed. Position Mode No Nav” Screen

When the StarFire receiver does not have an appropriate signal in order to set up a guidance line, screen (A) appears.

V5VUVD4,0000081-19-08MAR22

**AutoTrac Basic Shift Size**

*NOTE: Operators can select display to show metric or standard units.*

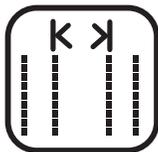


Shift Size Icon

RXA0170086—UN—10SEP19

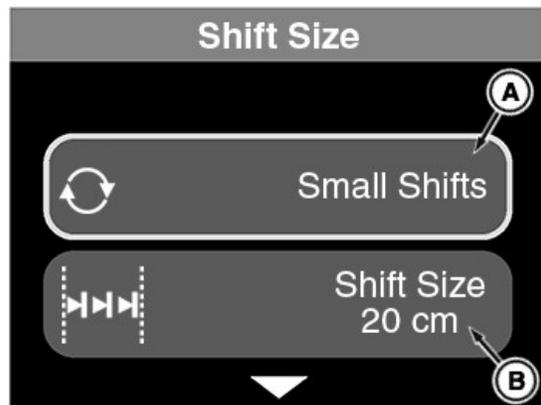
**AutoTrac Basic Track Width**

*NOTE: Operators can select display to show metric or standard units.*



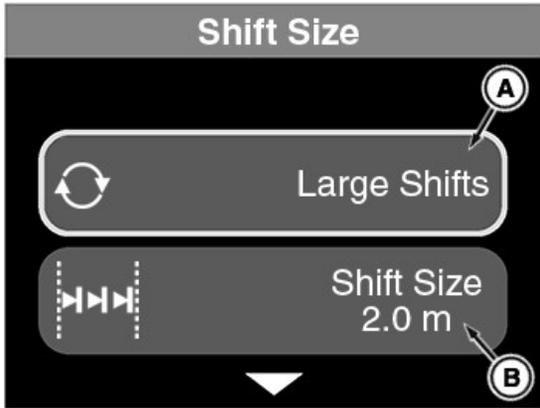
Track Width Icon

RXA0170085—UN—10SEP19



RXA0178558—UN—26JUN20

Small Shift Page



RXA0178559—UN—26JUN20  
Large Shift Page

- A—Shift Size Selection
- B—Shift Size

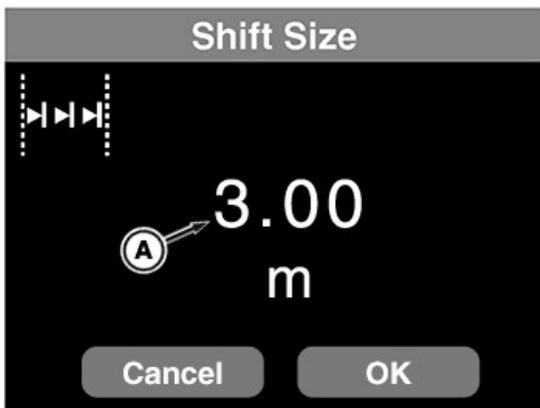
Select small or large shift (A) to adjust the shift size (B) to the desired value.

Small shifts are 31 cm (12 in) or less.

Large shifts are greater than 31 cm (12 in).

*NOTE: Only small shifts of 31 cm (12 in) or less are allowed while AutoTrac is activated.*

*Large shifts are not allowed when AutoTrac is activated. They are allowed in the configuration and enabled modes.*



RXA0178560—UN—26JUN20

- A—Shift Increment

Shift increment (A) defaults to zero. Adjust shift increment value as needed and select OK to save.

The left shift, center shift, and right shift buttons are available on the bottom of the main map screen.

Selecting the left and right shift buttons moves the currently selected guidance line respectively by the shift increment amount.

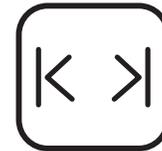
Selecting the center shift button moves the currently selected guidance line to the current machine position.

Total shift magnitude is stored with each track. This allows the operator to come back to a previously shifted track and maintain the shifted location.

V5VUVD4,0000083-19-08MAR22

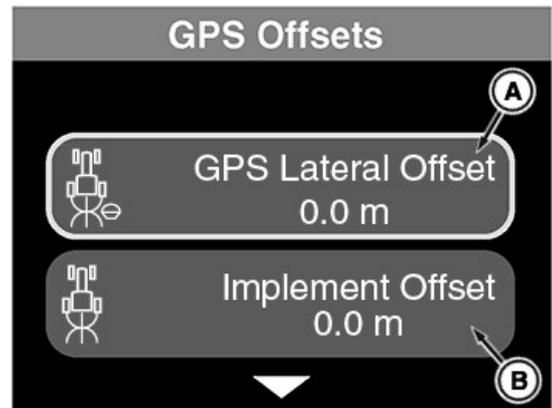
### AutoTrac Basic Vehicle

*NOTE: Operators can select display to show metric or standard units.*

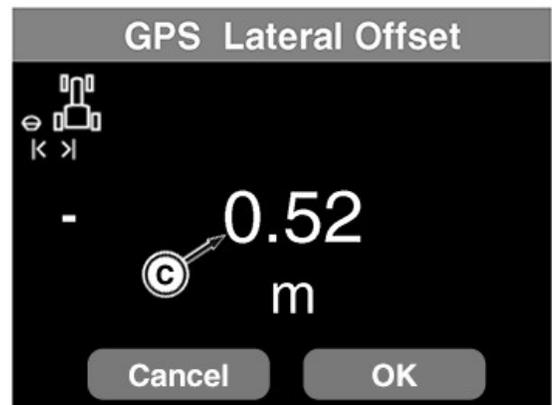


Vehicle Icon

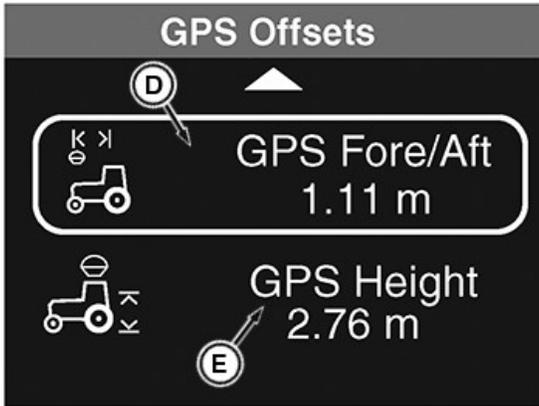
RXA0170087—UN—10SEP19



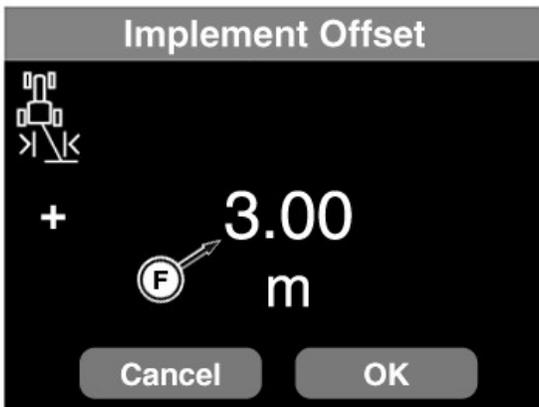
RXA0178561—UN—26JUN20



RXA0178562—UN—26JUN20



RXA0170450—UN—08OCT19



RXA0178563—UN—26JUN20

- A—GPS Lateral Offset
- B—Implement Offset
- C—GPS Lateral Offset Measurement (metric units shown)
- D—GPS Fore/Aft
- E—GPS Height
- F—Implement Offset Measurement (metric units shown)

**NOTE:** See *GPS Receiver Offset Values* in this section for GPS receiver offset values.

GPS lateral offset (A) and implement offset (B) are adjustable. The values are set to zero by default and can be reset.

The GPS lateral offset is to adjust the machine centerline if needed. Navigate to the GPS lateral offset page and adjust the value (C), either positive (right) or negative (left) as needed. Select OK to save the value.

If an offset implement is used and operator desires to have the center of the implement track to the guidance line. Navigate to the implement offset page and adjust the value (F), either positive (right) or negative (left) as needed. Select OK to save the value.

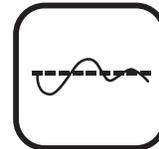
GPS fore/aft (D) and GPS height (E) are detected automatically and populated from the machine steering control unit. GPS fore/aft and GPS height are not editable.

GPS lateral offset (A) defaults to the appropriate machine offset using VIN detection that is based on receiver mounting location.

GPS lateral offset measurement (C) is editable by the operator after the initial detection.

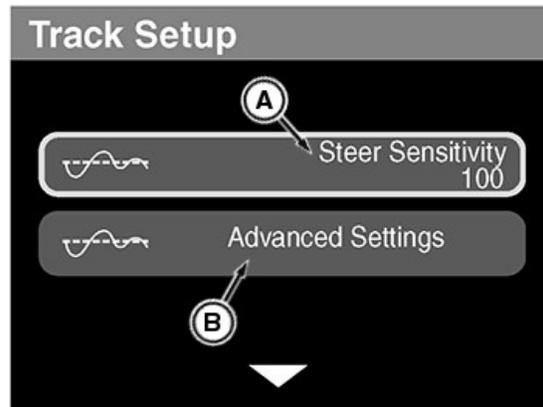
V5VUVD4,0000084-19-08MAR22

### AutoTrac Basic Tuning

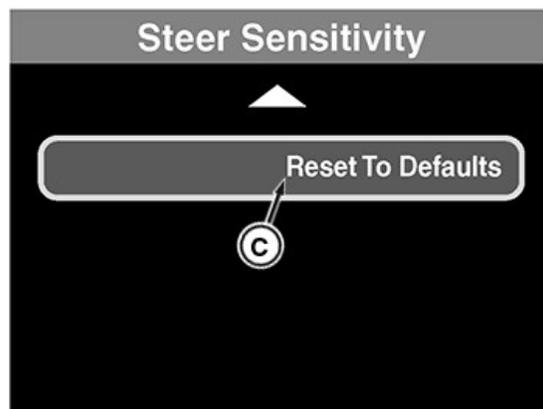


Tuning Icon

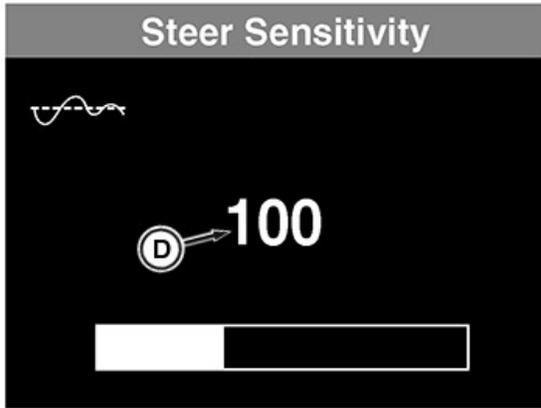
RXA0170088—UN—10SEP19



RXA0170451—UN—08OCT19



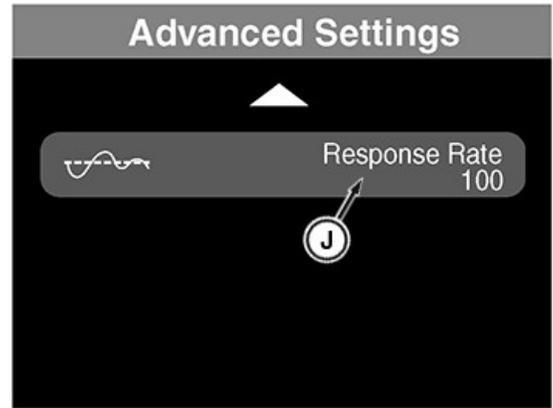
RXA0170452—UN—08OCT19



RXA0170453—UN—08OCT19

- A—Steer Sensitivity
- B—Advanced Settings
- C—Reset To Defaults
- D—Steer Sensitivity Range

AutoTrac Basic is equipped with steer sensitivity (A) and advanced settings (B). Adjust steer sensitivity (A) between a range (D) of 50—200. Advanced settings (B) guide the operator to the full list of AutoTrac Basic advanced settings. A reset to defaults (C) is also available.

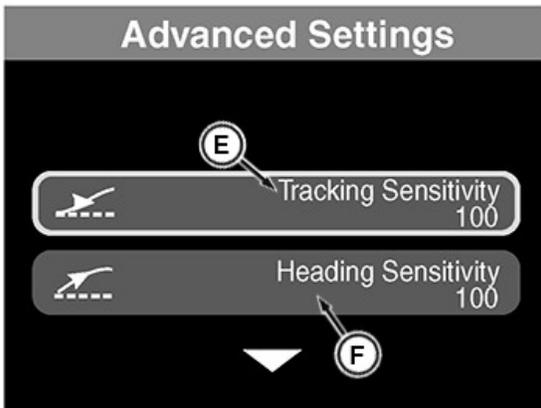


RXA0170456—UN—08OCT19

- E—Tracking Sensitivity
- F—Heading Sensitivity
- G—Heading Lead
- H—Acquire Sensitivity
- I—Response Rate

Advanced Settings are default programmed into the steering control unit. Ranges for advanced settings are 50—200.

V5VUVD4,0000085-19-08MAR22



RXA0170454—UN—08OCT19

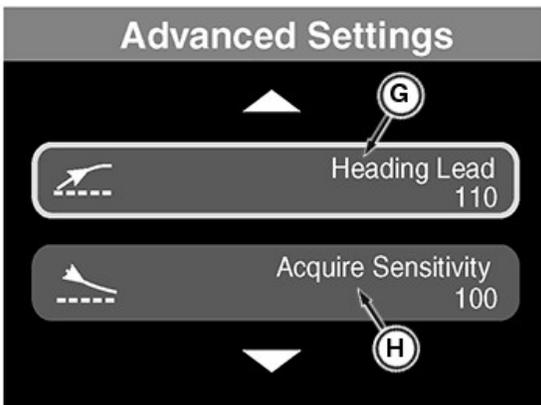
### StarFire Correction Mode

*NOTE: For more information, see the relevant StarFire Receiver Operator Manual.*



RXA0170089—UN—10SEP19

Correction Mode Icon



RXA0170455—UN—08OCT19



RXA0170457—UN—08OCT19

- A—StarFire Status

The correction mode shows the status (A) of the StarFire signal:

- **SF1**
- **SF3**
- **RTK** (Real Time Kinematic) (Only shown if RTK was enabled previously via universal display.)
- **M-RTK** (Machine-Real Time Kinematic) (Only shown if M-RTK was enabled previously via universal display.)

*NOTE: Operator cannot enter RTK or M-RTK through the corner post display. Connect with a universal display is required to enter RTK or M-RTK.*

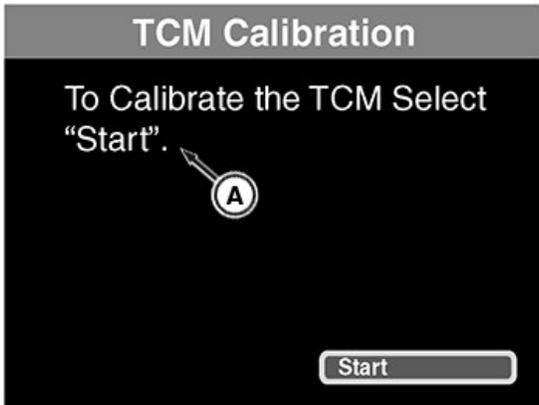
V5VUVD4.0000086-19-08MAR22

RXA0181091—UN—06MAY21

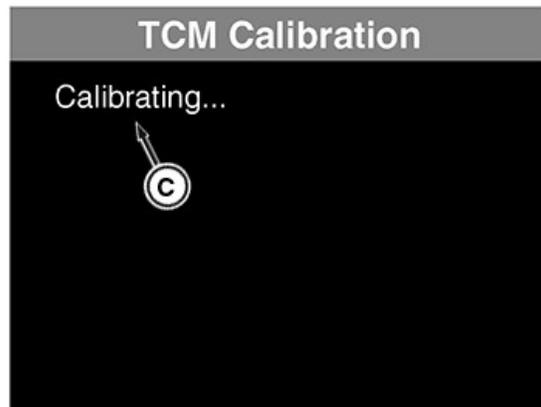
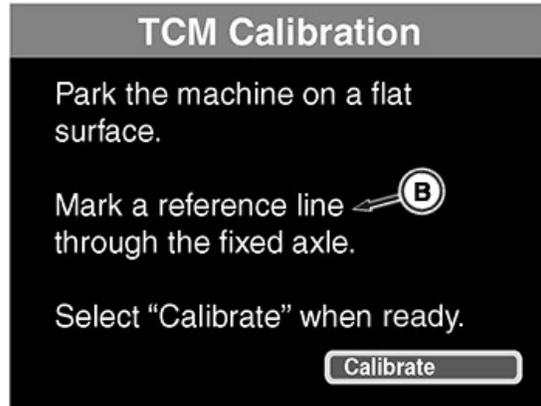
### AutoTrac Basic TCM Calibration



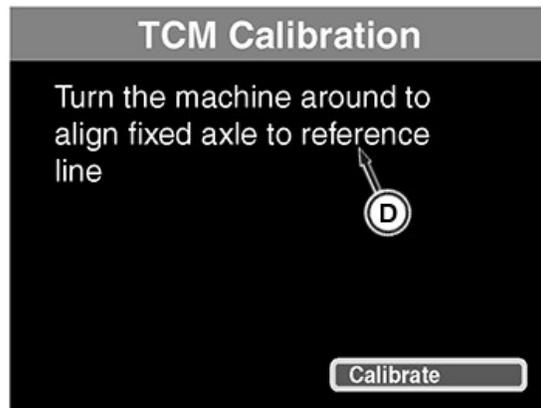
RXA0170090—UN—10SEP19  
TCM Calibration Icon



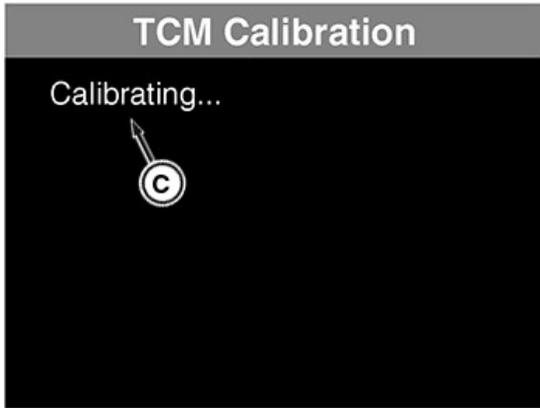
RXA0170458—UN—08OCT19



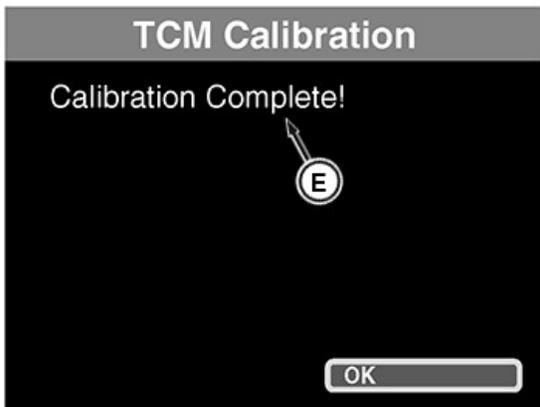
RXA0170460—UN—08OCT19



RXA0170461—UN—08OCT19



RXA0170460—UN—08OCT19



RXA0170462—UN—08OCT19

- A—"To Calibrate the TCM Select "Start"." Screen
- B—"Park the machine on a flat surface. Mark a reference line through the fixed axle. Select "Calibrate" when" Screen
- C—"Calibrating..." Screen
- D—"Turn the machine around to align fixed axle to reference line" Screen
- E—"Calibration Complete!" Screen

**NOTE:** Before calibrating, ensure that machine and implement are in proper working condition and ready for field work.

*Machine must be ballasted and tires properly inflated.*

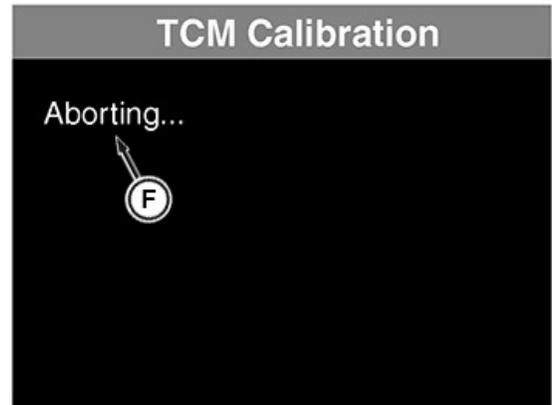
*Lower implement as close as possible to working position when calibrating.*

**NOTE:** Calibrate TCM every time receiver is removed from machine and re-attached or if TCM angle in relation to machine has changed.

The operator calibrates the terrain compensation module (TCM) so the StarFire Receiver can determine 0° roll angle and pitch angle.

The operator performs the on-screen calibration procedure.

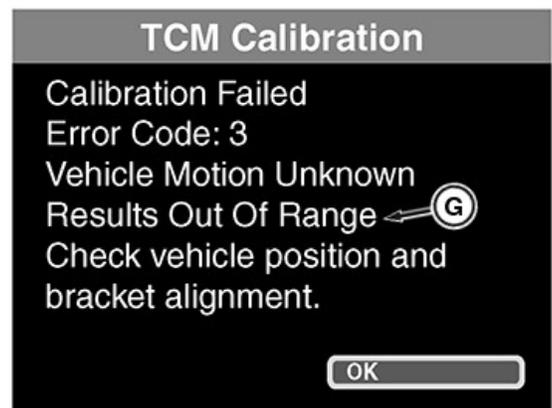
1. The operator selects "Start" on the start calibrate screen (A).
2. Instruction screen (B) appears.
3. The operator positions the machine and selects "Calibrate".
4. The operator leaves the machine in park.
5. Calibrating screen (C) appears.
6. Instruction screen (D) appears.
7. The operator positions the machine and selects "Calibrate".
8. The operator leaves the machine in park.
9. Calibrating screen (C) appears again.
10. Calibration complete screen (E) appears.
11. The operator selects "OK" to complete the calibration.



RXA0170568—UN—08OCT19

**F—Aborting Screen**

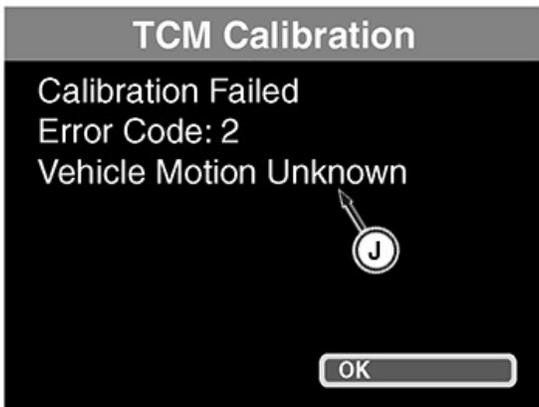
The operator can press the back button on the navigation pad to abort the TCM calibration. Aborting screen (F) appears.



RXA0170569—UN—08OCT19



RXA0170570—UN—08OCT19



RXA0170571—UN—08OCT19

- G—Calibration Failed. Error Code: 3 Vehicle Motion Unknown. Results Out of Range. Check vehicle position and bracket alignment Screen
- H—Calibration Failed. TCM Calibration Failure. Error Code: 6 Vehicle is still facing the original direction Screen
- J—Calibration Failed. Error Code: 2 Vehicle Motion Unknown Screen

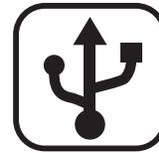
**TCM Calibration Failed**

Messages (G, H, or J) appear when TCM calibration fails. Repeat the TCM calibration process. If the calibration fails again, contact your John Deere dealer.

V5VUVD4,0000087-19-13NOV22

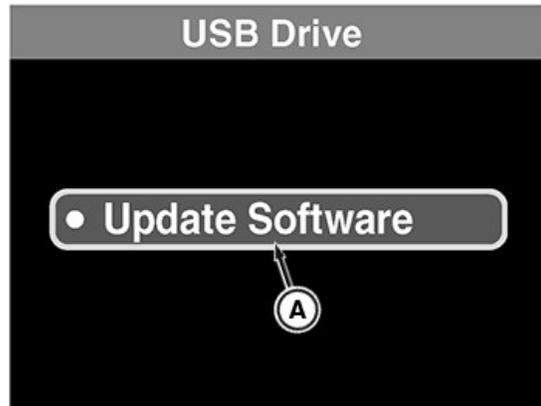
**StarFire USB Drive**

*NOTE: For more information, see the relevant StarFire Receiver Operator's Manual.*

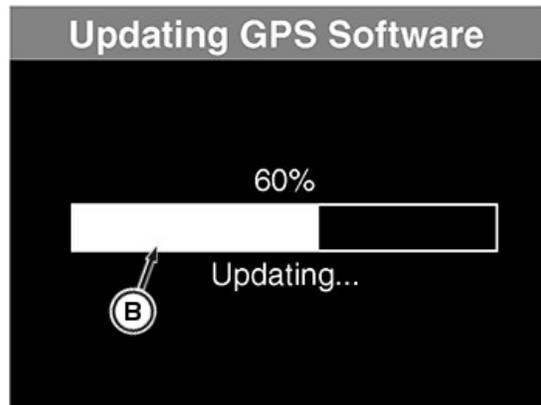


USB Drive Icon

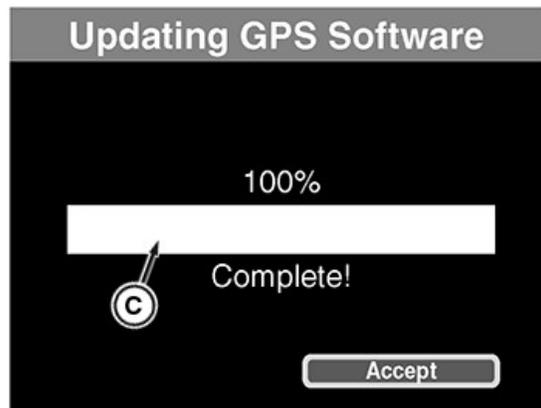
RXA0170091—UN—10SEP19



RXA0170463—UN—08OCT19



RXA0170464—UN—08OCT19



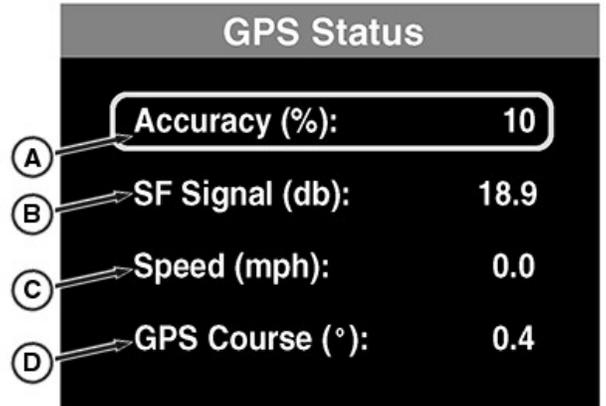
RXA0170465—UN—08OCT19

A—USB Drive Update Software Screen

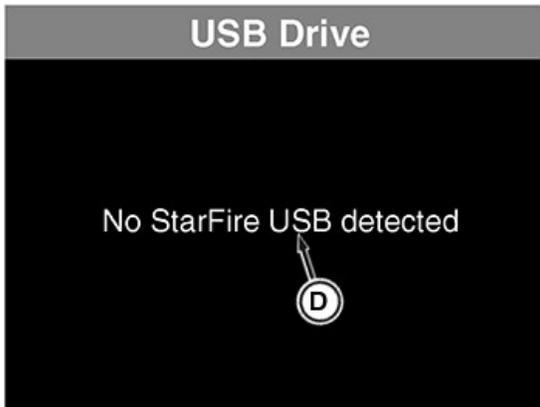
- B—USB Update Progress Screen
- C—USB Update Complete Screen

When there is a StarFire USB drive inserted into the StarFire Receiver, an update software screen (A) appears. The StarFire USB drive updates the GPS software and a progress screen (B) appears. The status bar displays status of update in increments of 10%. An update complete screen (C) appears when the StarFire USB drive is finished updating the GPS software.

*NOTE: StarFire Receiver reboots after a programming event.*



RXA0170467—UN—08OCT19



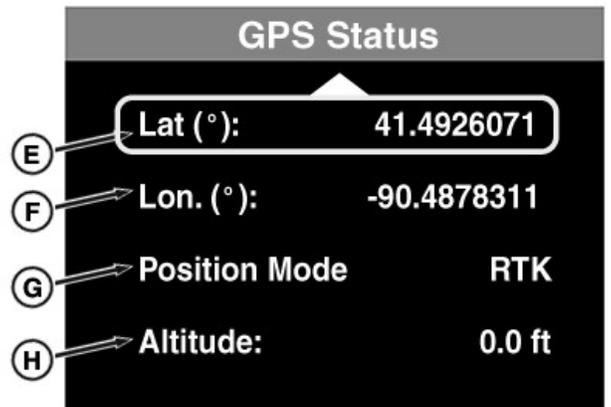
D—"No StarFire USB detected" Screen

RXA0170466—UN—08OCT19

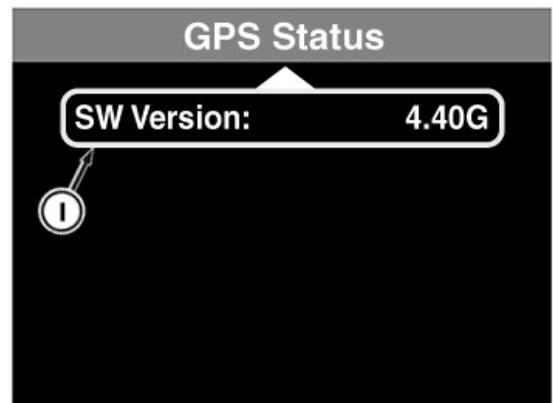
When there is a no StarFire USB drive inserted into the StarFire Receiver, a "No StarFire USB detected" screen (D) appears.

*NOTE: If a USB drive is inserted and a "No StarFire USB detected" screen appears, unplug USB and insert a different one. Some USB drives are not compatible. If the error message continues to appear, see your John Deere dealer.*

V5VUVD4.0000088-19-08MAR22



RXA0178564—UN—26JUN20



RXA0178565—UN—26JUN20

### StarFire GPS Status

*NOTE: For more information, see the relevant StarFire Receiver Operator's Manual.*



GPS Status Icon

RXA0170092—UN—10SEP19

- A—Accuracy
- B—StarFire Receiver Signal
- C—Speed of Machine
- D—GPS Course
- E—Latitude
- F—Longitude
- G—Position Mode
- H—Altitude
- I—Software Version

NOTE: The values are not editable.

V5VUVD4.0000089-19-08MAR22

### AutoTrac Basic Settings Locked



RXA0170470—UN—08OCT19

**A**—This setting cannot be changed while AutoTrac is active. Disable AutoTrac before adjusting setting Screen

The settings locked screen (A) is shown when trying to access the following menus while AutoTrac Basic is active:

- Track Width
- Vehicle
- TCM Calibration
- USB Drive

V5VUVD4.000008A-19-08MAR22

### AutoTrac Basic About



About Icon

RXA0170093—UN—10SEP19



RXA0170469—UN—08OCT19

About displays:

**A** - AutoTrac Basic Active Hours

**B** - Software Version

**C** - Serial Number

NOTE: The values are not editable.

V5VUVD4.000008B-19-08MAR22

### Autotracs Basic SF3000 Functionality

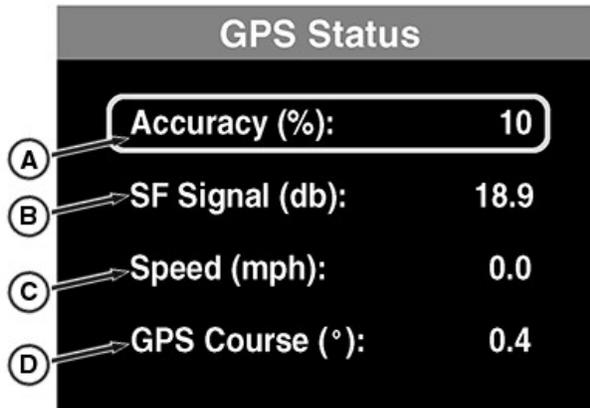


RXA0178566—UN—26JUN20

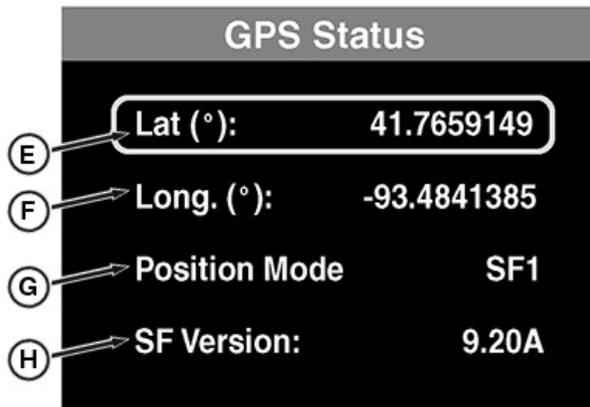
**A**—Acknowledgment Button

SF3000 is not fully supported through the machine display. If Correction Mode, TCM Calibration, or USB Drive is selected, a communication error screen appears. Select the acknowledgment button (A) to return to the menu.

The following information is available through the display:



RXA0170467—UN—08OCT19



RXA0170468—UN—08OCT19

- A—Accuracy
- B—StarFire Receiver Signal
- C—Speed of Machine
- D—GPS Course
- E—Latitude
- F—Longitude
- G—Position Mode
- H—Software Version

NOTE: The values are not editable.

V5VUVD4,000008C-19-08MAR22

### AutoTrac Universal Information

**CAUTION:** Refer the AutoTrac Universal manual for safe and proper operation of the guidance system and ATU.

The AutoTrac Universal (ATU) system uses the Global Positioning System (GPS) for guided steering of the machine. When the AutoTrac Universal system is NOT active, the operator steers the machine manually.

See ATU reference manuals for more information on the installation, operation, and maintenance.

V5VUVD4,000008E-19-13NOV22

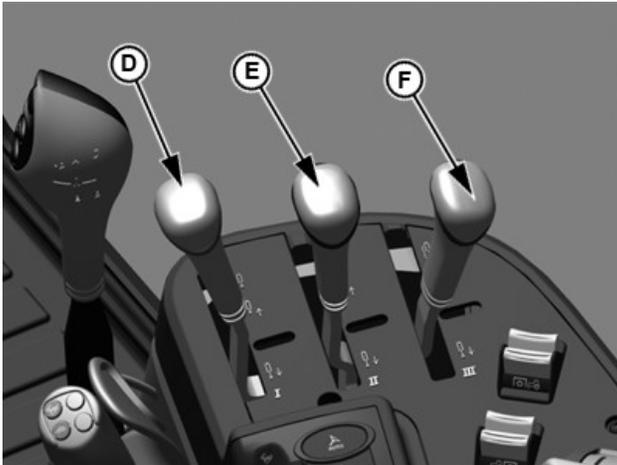
### GPS Receiver Offset Values

GPS Offset Values	
GPS Height	2043 mm (80.4 in) + Measurement from ground to center of rear axle
GPS Lateral Offset (right of the machine center)	523 mm (20.6 in)
GPS In-line (fore/aft) Offset	1112.5 mm (43.8 in)

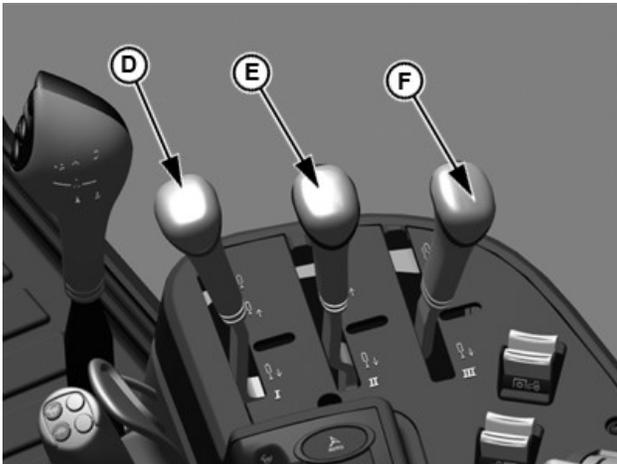
V5VUVD4,000008D-19-08MAR22

# Hydraulics Operation

## Warm Transmission/Hydraulic Oil



P21066—UN—23NOV23



P21066—UN—23NOV23

- A—SCV I Coupler
- B—SCV II Coupler
- C—SCV III Coupler
- D—SCV I Lever
- E—SCV II Lever
- F—SCV III Lever

Steering, transmission, and hydraulic systems are slow to function when the machine is started in the cold weather. To warm-up oil quickly for improved cold-weather operation, follow the below procedure:

1. Connect the jumper hose to SCV I couplers (A).
2. If the SCV is equipped with flow control, open the flow control knob fully to allow the maximum flow.
3. Start the engine and set idle to 1200 rpm.
4. Hold the SCV I lever (D) forward or rearward until the hydraulic oil warm-up to the operating temperature.
5. To check the warm-up progress, turn the steering wheel side-to-side. When the wheel turns smoothly without hesitation, oil has warmed to operating temperature.
6. Return the SCV levers to neutral.
7. Adjust the flow control knobs to the original setting.

8. Remove the jumper hose.

V5VUVD4.000008F-19-24NOV23

## Closed Center Hydraulics

The closed center hydraulic system is a pressure and flow compensated (PFC) hydraulic system. The load-sensing system immediately initiates flow when required. When flow is no longer required, the pump returns to low pressure and to no-flow standby mode.

Pressure for the entire system is established by the function requiring the highest pressure. Hydraulic pump pressure and engine requirements are reduced as demand lessens. The priority valve ensures, even at low idle engine speed, full power to the essential services like steering and brakes. Hydraulic and transmission systems utilize individual pumps, but share a common reservoir.

For additional information on operating hydraulic system functions, see the following sections:

- Hitch and Drawbar Operation
- Selective Control Valve Operation

V5VUVD4.0000090-19-03MAY23

# Hitch and Drawbar Operation

## Match Machine Power to Implement

**IMPORTANT:** Matching the machine and the implement ensures that neither gets damaged.

Overpowering an implement causes damage. Attaching an implement that requires more horsepower than the machine can damage the machine.

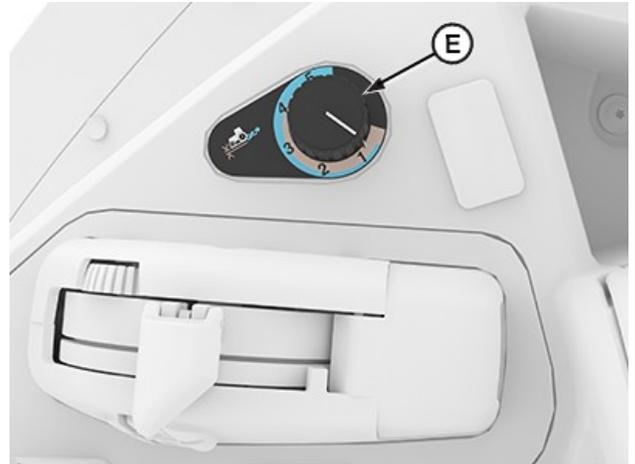
See your implement Operator's Manual for minimum and maximum power requirements before attaching the implement to the machine.

V5VUVD4,0000091-19-13NOV22

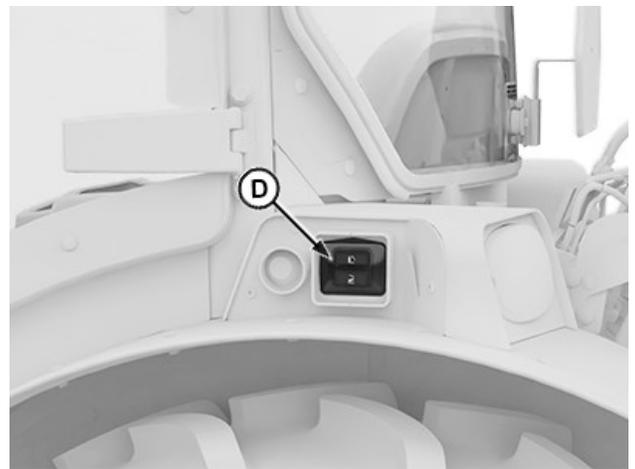
## Rear Hitch Controls



APY78183—UN—19SEP22  
*Electrohydraulic Hitch*



APY78185—UN—19SEP22  
*Electrohydraulic Hitch*



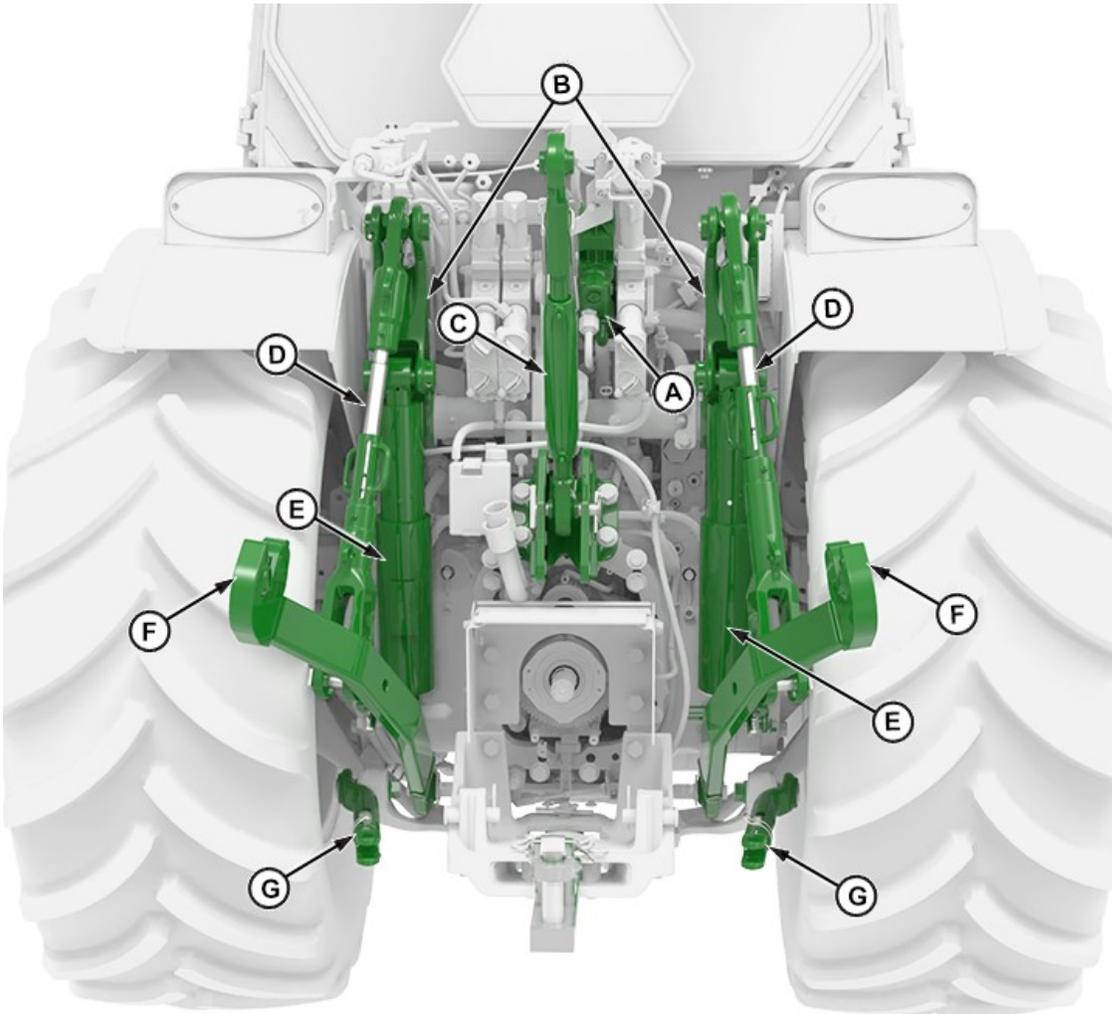
APY78184—UN—19SEP22  
*Cab*

- A—Rear Hitch Position Lever
- B—Rear Hitch Quick Raise/Lower Buttons
- C—Rear Hitch Position Lever Stop
- D—Rear Hitch Fender Switch
- E—Rear Hitch Draft Control

**NOTE:** Hydraulic center link can be plumbed to any rear SCV ports and operated by the appropriate SCV control.

m86qb7,1670173114046-19-07DEC22

## Rear Hitch Components



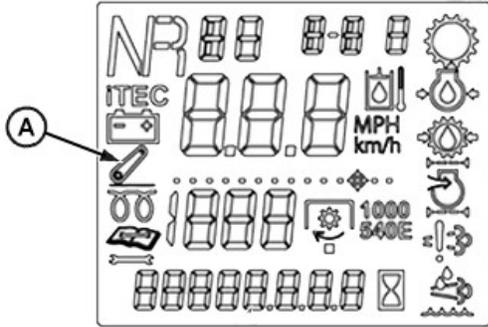
A—Hitch Valve  
B—Lift Arm (2)  
C—Center Link  
D—Lift Link (2)

E—Hitch Cylinder (2)  
F—Draft Link (2)  
G—Sway Bar (2)

APY78186—UN—14NOV22

V5VUVD4.0000093-19-27SEP22

## Electrohydraulic Hitch System Indicator



A—Electrohydraulic Hitch System Indicator

Electrohydraulic hitch system indicator (A) warns of a malfunction in the electrohydraulic hitch control system. See your John Deere dealer.

APY81413—UN—29NOV22  
m86qb7,1670173198006-19-04DEC22

## Operate Electrohydraulic Position Control



A—Rear Hitch Position Lever  
B—Rear Hitch Quick Raise/Lower Buttons  
C—Rear Hitch Position Lever Stop

**CAUTION:** To prevent possible injury, use only the rear hitch position lever (A) when attaching or detaching implements. Do not use the rear hitch quick raise/lower buttons (B).

**IMPORTANT:** Draft control setting automatically influences actual hitch position. For independent position control, rotate the draft knob fully counterclockwise. (See Operate Electrohydraulic Draft Control in this section.)

**IMPORTANT:** If the rear hitch position lever (A) is moved with the engine OFF, then the hitch is out of sync with the lever and does not function correctly. After starting the machine, cycle the rear hitch position lever to the fully raised position and hold for 3 seconds, then to fully lowered position. The rear hitch position is resynced with the rear hitch position lever allowing operator to regain control of the rear hitch.

**NOTE:** The engine must be running for the hitch controls to work.

Rear hitch position lever (A) controls raise or lower movement of 3-point hitch-mounted implement and the ground depth penetration. Pull the lever rearward to raise; push the lever forward to lower.

### Adjust Position Control Depth Stop:

- Push down and rotate the rear hitch position lever stop (C) until stop sets to desired working depth. After raising the hitch, implement returns to set depth when the rear hitch position lever (A) is pushed forward (lowered) to contact stop.

A few minutes of implement operation are required to determine the best depth. Set desired depth with the rear hitch position lever stop (C). Hitch returns implement to previous above- or below-ground depth.

To lower the hitch below the preset depth stop, lift the rear hitch position lever (A) and push forward past stop.

### Electrohydraulic Depth Control (level, in-ground, on-ground, and non-ground engaged situations):



Depth Control

LV09233—UN—26JUL04

- Rear hitch position lever (A) at desired depth.

### Float Control (uneven, ride on-ground contour situations):



Float Control

LV9457—UN—26JUL04

- Rear hitch position lever (A) fully forward and rotate the draft knob fully counterclockwise.

*NOTE: Ensure that the implement skids or the height gauge wheels are set correctly to carry the full implement weight. Ensure that the hitch draft link arms are adjusted for any required lateral float.*

**Height at Turn (end of field turn-around situations):**

- Rear hitch position lever (A) rearward until the implement is out of ground.

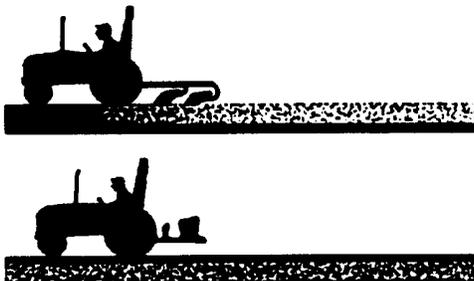
*NOTE: Set hitch height with the limit knob. (See Operate Electrohydraulic Height Limit Control in this section.)*

**Quick Raise at Turn (end of field turn around situations):**

- Press and hold the top raise button of the rear hitch quick raise/lower buttons (B) until the hitch implement is not engaged in or on ground, but not fully raised.

*NOTE: Set hitch height limit with the limit knob.*

**Implement Transport (load and non-load sense usage):**



Implement Transport

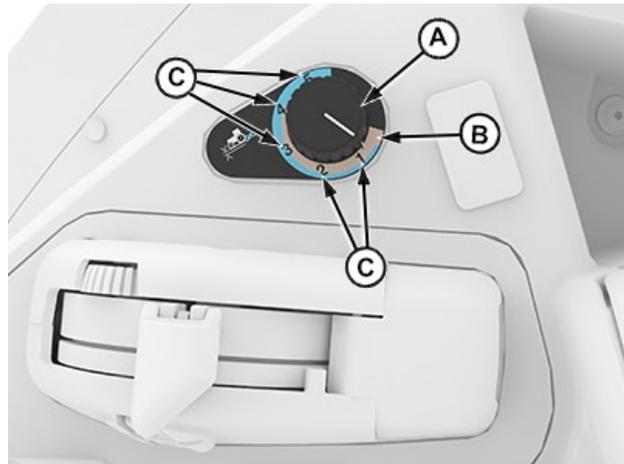
LV09233—UN—26JUL04

- Position the lever (A) fully rearward. Ensure that the lever is in the transport lock position (lever flipped over latch at the padlock symbol).

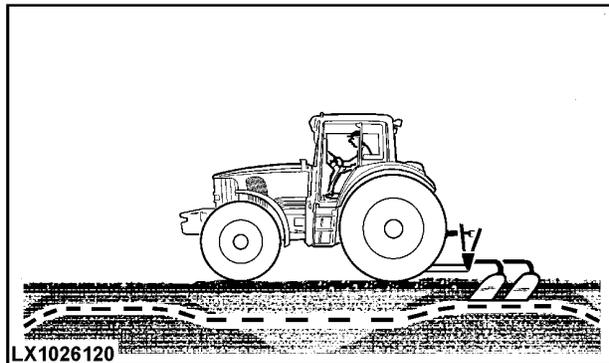
*NOTE: Rear hitch quick raise/lower buttons (B) are disabled when the rear hitch position lever (A) is in the transport lock position. Hitch rises to the transport lock position when the machine is started.*

V5VUVD4.0000094-19-04DEC22

**Operate Electrohydraulic Draft Control**



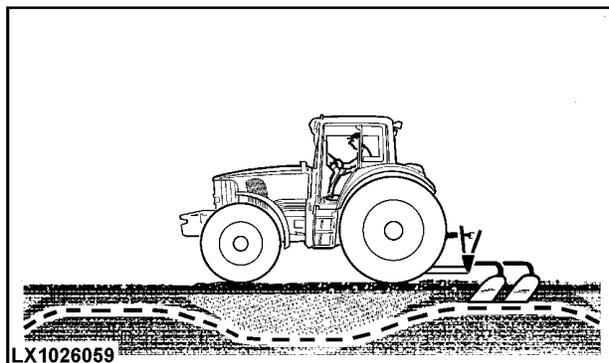
APY78188—UN—19SEP22



LX1026120

LX1026120—UN—10MAY01

Middle Draft Control Setting



LX1026059

LX1026059—UN—18MAY01

High Draft Control Setting

- A—Rear Hitch Load/Depth (Draft) Knob
- B—Rear Hitch Position Control Detent
- C—Rear Hitch Draft Control Setting

Rear hitch load/depth (draft) knob (A) controls 3-point hitch-mounted implement ground penetration response to varying soil conditions.

**Electrohydraulic Hitch Draft Control:**

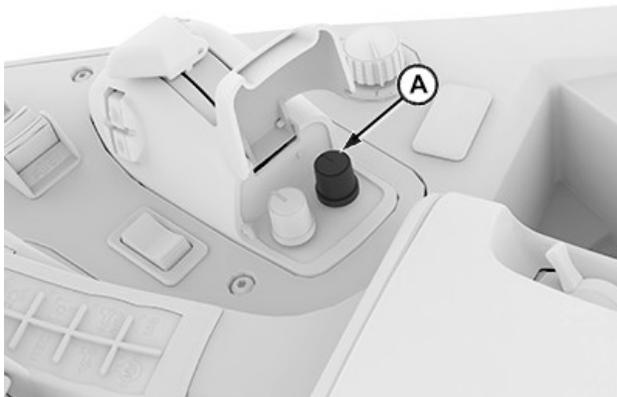
1. Turn rear hitch load/depth (draft) knob (A) to one of the five draft control settings (C), to control the depth and the load, depending on the implement and the field or the soil conditions.
2. Turn counterclockwise to reduce the draft response.
3. Turn clockwise to increase the draft response.

With the control turned to a higher number, the implement is raised as resistance (soil density) increases and lowered as resistance decreases; typical settings are:

Implement	Draft Control Setting
Integral Ripper/Subsoiler	1—3
Integral Chisel Plow	2—4
Semi-Integral Moldboard Plow	2—4
Integral Moldboard Plow	3—5
Integral Field Cultivator or Box Blade Scraper	4—5

V5VUVD4,0000095-19-04DEC22

**Operate Electrohydraulic Rate-of-Drop Control**



APY78189—UN—19SEP22

A—Rear Hitch Rate-of-Drop Control

**CAUTION:** To avoid injury from the hitch movement, only adjust the rear hitch rate-of-drop (A) from the operator's seat.

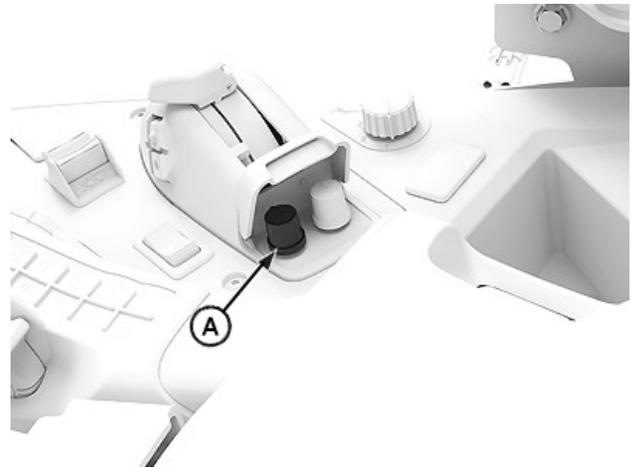
**IMPORTANT:** Ideal minimal implement rate of drop from fully raised to fully lowered is 2 seconds. Rate-of-drop is directly related to the implement weight; therefore select a rate slow enough to prevent the damage.

**Electrohydraulic Rate-of-Drop Control:**

- For faster rate-of-drop, rotate the rear hitch rate-of-drop control (A) to right (clockwise).
- For slower rate-of-drop, rotate the rear hitch rate-of-drop control (A) to left (counterclockwise).

V5VUVD4,0000096-19-28APR23

**Operate Electrohydraulic Height Limit Control**



APY78191—UN—27SEP22

A—Rear Hitch Height Limit Knob

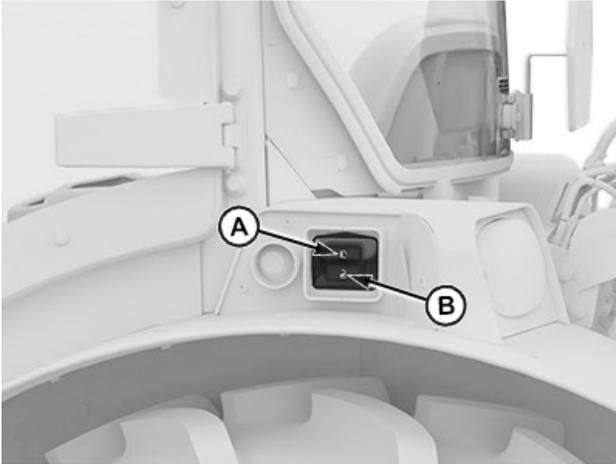
The height to which an implement is raised can be limited with the height limit knob (A).

**Electrohydraulic Height Limit Control:**

- For minimum height, rotate the rear hitch height limit knob (A) fully left (counterclockwise).
- For maximum height, rotate the rear hitch height limit knob (A) fully right (clockwise).

V5VUVD4,0000097-19-04DEC22

## Operate Electrohydraulic Hitch Fender Switch



A—External Raise Switch  
B—External Lower Switch

APY78192—UN—27SEP22

**CAUTION:** Put the machine in park before using the fender switches. The implement moves when the fender switches are used. Stay clear of interference points during operation.

*NOTE: When the remote hitch switches are pressed, the hitch moves slowly but increases speed the longer hitch switch is held.*

1. Rear hitch is raised when the top external raise switch (A) is held.
2. Rear hitch is lowered when the bottom external lower switch (B) is held.
3. Once the external position control switch is activated, the hitch does not respond to the movements of the position lever.

To reactivate the lever, place lever at a position that corresponds with the hitch position and then actuate the quick raise/lower buttons.

V5VUVD4,0000098-19-04DEC22

## Rear Hitch Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*

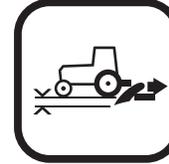
Selection	Range	Hitch Response
Load Depth	Position Control 0.0 Depth Control 1.0—5.0	Position control is for implements with gauge wheels. Higher values provide more/faster draft response.
Upper Limit	10—100	Higher values make the hitch raise higher.
Drop Rate	1.0—5.0	Higher values make the hitch drop faster.



Rear Hitch Menu

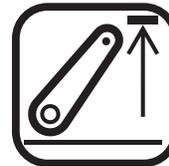
RXA0152936—UN—21JUL16

1. Locate the rear hitch menu.



Load Depth Selection

RXA0152937—UN—21JUL16



Upper Limit Selection

RXA0152938—UN—21JUL16



Drop Rate Selection

RXA0152939—UN—29JUL16



Raise Rate Selection

RXA0152940—UN—21JUL16

2. Select and change the desired settings as needed. See the relevant topic in this section for additional details on settings.

*NOTE: Load depth, upper limit, and drop rate settings are changed by dedicated controls. Raise rate setting is changed by navigation dial.*

## Hitch and Drawbar Operation

Selection	Range	Hitch Response
Raise Rate	1.0—5.0	Higher values make the hitch raise faster.

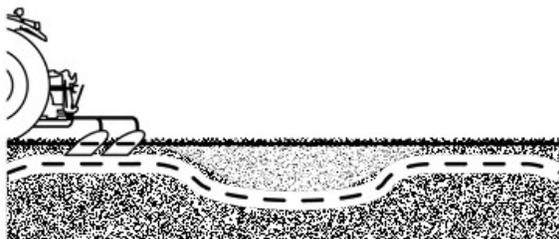
V5VUVD4,000099-19-08MAR22

### Load Depth Control

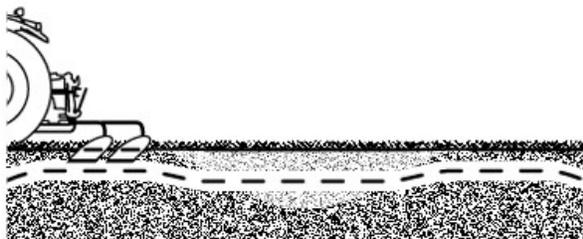


RXA0152937—UN—21JUL16  
*Load Depth Selection*

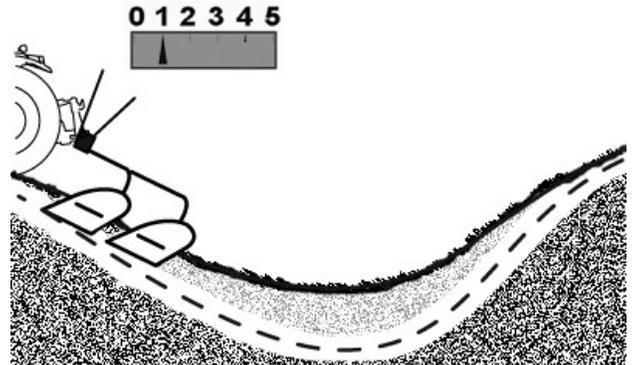
Access the load depth selection through the hitch menu. Use the draft control knob to change the desired setting as needed.



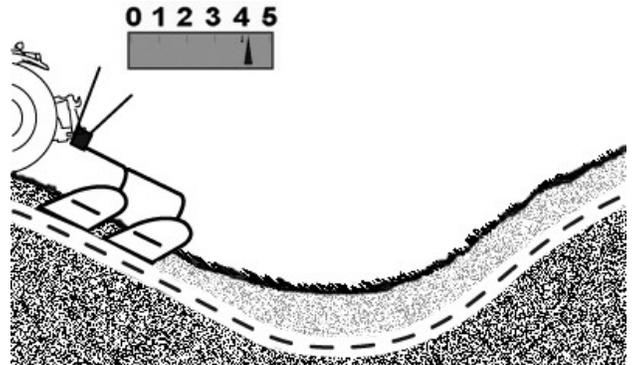
RXA0107203—UN—07APR10  
*High Response Causes More Depth Variation If Soil Varies*



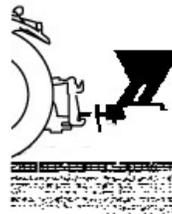
RXA0107204—UN—07APR10  
*Lower Response Controls Depth Better If Soil Varies*



RXA0107205—UN—07APR10  
*Lower Response Causes More Depth Variation In Rolling Terrain*



RXA0107206—UN—07APR10  
*Higher Response Controls Depth Better In Rolling Terrain*



RXA0153757—UN—12SEP16  
*Hitch Held at Selected Position*

Use the draft control to maintain the operating depth of tillage equipment in rolling terrain. If the soil density/resistance varies, higher response setting causes more depth variation. The best setting depends on the implement type and field conditions.

Higher values provide more/faster draft response. Lower values provide less/slower draft response. Setting value to “0” is position control, which means the hitch maintains the height set by the operator.

Adjusting load/depth only changes draft

responsiveness. Use the hitch lever to control/change operating depth.

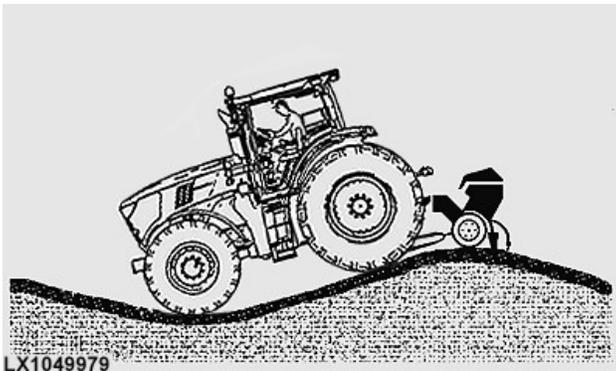
**NOTE:** Low draft response settings slow the drop rate of lighter implements. To increase the speed at which implement enters the ground, hold lever in forward detent. Hitch lowers at the drop rate selected.

Typical load/depth settings:

Integral Field Cultivator or Box Blade Scraper	4—5
Integral Moldboard Plow	3—5
Semi-Integral Moldboard Plow	2—4
Integral Chisel Plow	2—4
Integral Ripper/Subsoiler	1—3
Implements with Gauge Wheels or Non-Ground Engaging Implements	0

V5VUVD4,00009A-19-13NOV22

## Implement Float



LX1049979—UN—18MAY11

Implement Follows Ground Contour

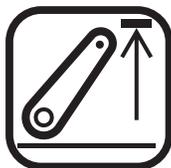
Implements that fully rest on gauge wheels for depth control require the hitch to float and follow the ground contour.

Put the hitch command lever in float position (fully forward) and set load depth control to “0”.

If necessary, adjust the lift links to allow the lateral float. (See Adjust Lateral Float in this section.)

V5VUVD4,00009B-19-13NOV22

## Upper Limit



Upper Limit Selection

RXA0152938—UN—21JUL16

Access the upper limit selection through the hitch menu. Use the upper limit control to change the desired setting as needed. Higher values allow the hitch to raise higher.

Upper limit is the maximum height the hitch lifts. It is set to the operator’s preference for the specific application.

Changes to upper limit are immediate. When the upper limit is the same as the hitch position, hitch follows the upper limit.

V5VUVD4,00009C-19-08MAR22

## Drop Rate



Drop Rate Selection

RXA0152939—UN—29JUL16

**CAUTION:** Avoid physical injury or machine damage due to excessive drop speed. Fully lowering of the implement must take a minimum of 2 seconds.

Access the drop rate selection through the hitch menu. Use the rate-of-drop control to change the desired setting as needed. Higher values make the hitch drop faster.

Drop rate is the speed with which the hitch lowers. It is set as per the operator’s preference for the specific application.

Changes to drop rate are immediate.

V5VUVD4,00009D-19-13NOV22

## Raise Rate



Raise Rate Selection

RXA0152940—UN—21JUL16

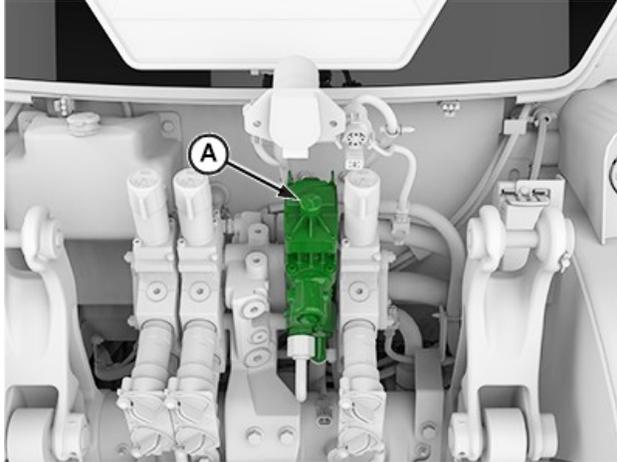
Access the raise rate selection through the hitch menu. Use the navigation dial to change the desired setting as needed. Higher values make the hitch raise faster.

Raise rate is the speed with which the hitch rises. It is set as per the operator’s preference for the specific application.

Changes to raise rate are immediate.

V5VUVD4,00009E-19-13NOV22

### Manually Lower Electrohydraulic Hitch



APY80677—UN—01FEB23

A—Set Screw

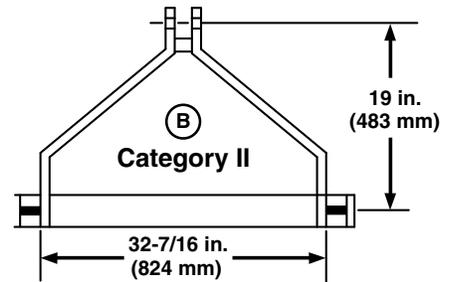
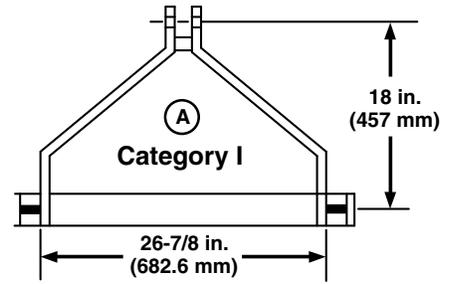
**CAUTION:** Perform procedure from operator's station to avoid possible injury from rear hitch-mounted implements.

If the engine or the electrical power is not available, the hitch can be lowered manually.

1. Park the machine, remove the key.
2. Turn the set screw (A) counterclockwise to lower the hitch.
3. With the hitch lowered, turn the set screw (A) clockwise.

V5VUVD4,00009F-19-14NOV22

### Prepare Implement



LV9639—UN—11AUG04

- A—Category I
- B—Category II

*NOTE:* See the implement Operator's Manual to identify implement category.

When attaching Category I implements to the machine, sway bars need adjustment to prevent binding and limiting full raise of the hitch. (See Adjust Hitch Side Sway in this section.)

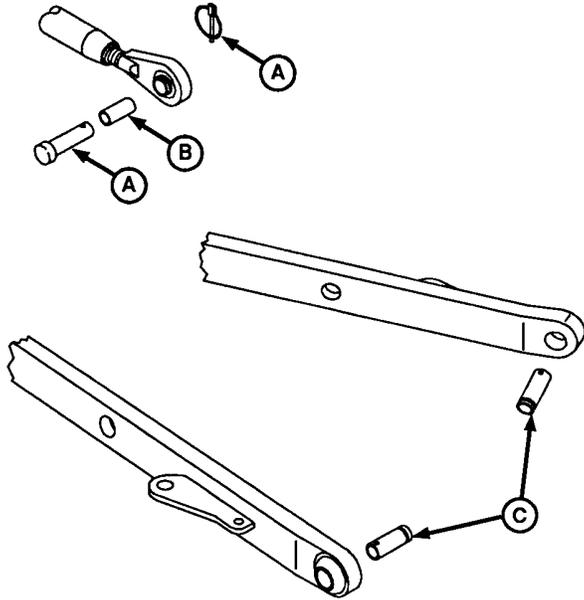
Category I implements (A); hitch is narrower and shorter for smaller implements than Category II (B) implements.

Category II implements (B); hitch is wider and taller for implements larger than Category I (A) implements.

Category	Mast Height mm (in)	Width Between Lower Pins mm (in)	Pin Size	
			Lower	Upper
I (A)	457 (18)	682.6 (26-7/8)	22 (7/8)	19 (3/4)
II (B)	483 (19)	824 (32-7/16)	28 (1-1/8)	25.4 (1)

V5VUVD4,00000A0-19-13NOV22

## Hitch Conversion - Category II to I



M47171A—UN—22APR94

- A—Implement Pin**
- B—Center Link Reducing Bushing**
- C—Draft Link Reducing Bushing**

Center link end and draft link ends are sized for Category II implement attaching pins.

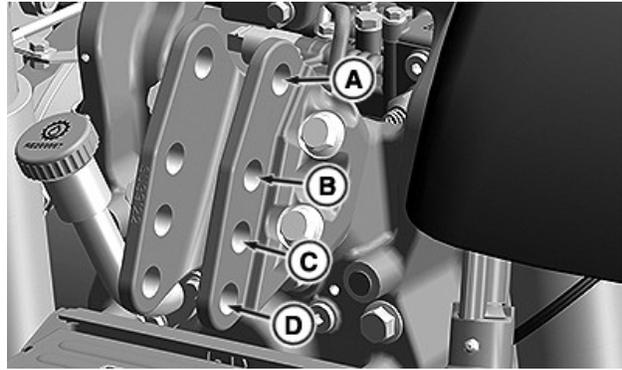
To use Category I implements, convert the Category II hitch:

- Insert the center link reducing bushing (B) in the center link end.
- Use smaller implement pin (A) through the implement mast.
- Add draft link reducing bushing (C) to end of draft links.

See your John Deere dealer for parts.

V5VUVD4,0000A1-19-13NOV22

## Position Center Link



RXA0153878—UN—05DEC16

- A—Highest Position (0 degrees of tilt for category II)**
- B—Second Position (10 degrees of tilt for category II)**
- C—Third Position (15 degrees of tilt for category II)**
- D—Lowest Position (10 degrees of tilt for category I)**

The center link attaching bracket has holes that allow up to four different positions for attaching the center link.

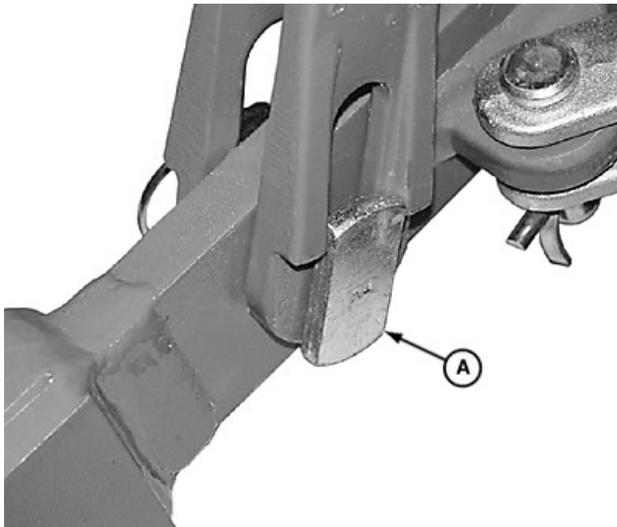
If the following conditions occur, move the center link to indicated holes to correct.

Condition	Use Hole
Rear of implement rises too much when lifted.	A
Rear of implement drags the ground.	B or C
Category I mast height 457 mm (18 in) implement being used.	C or D
Category II mast height 483 mm (19 in) implement being used.	A, B, or C

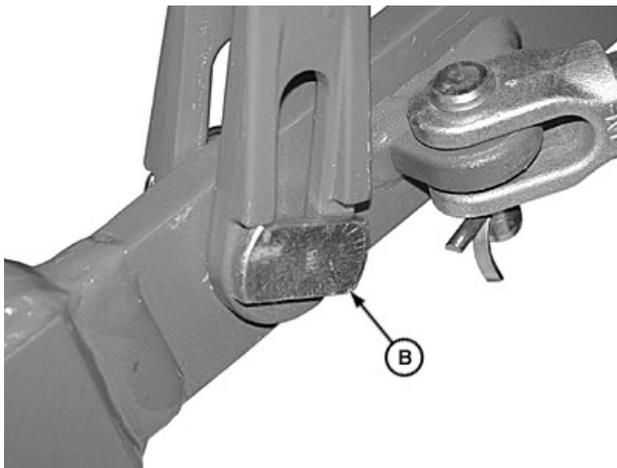
**NOTE:** The implement weight which can be lifted is reduced slightly with center link attachment in lower holes C and D.

V5VUVD4,0000A2-19-02NOV22

## Adjust Lateral Float



LV14581—UN—05AUG11



LV14583—UN—10AUG11

**A**—Pin in Float Position (Vertical)  
**B**—Pin in Fixed Position (Horizontal)

- **Float Position (A):** Ground following implements (cultivator or mower), use ground gauging skids or wheels to rise/lower slightly or twist as implement follows the ground contour.
- **Fixed Position (B):** Ground engaging implements (plows, rippers, disk) require fixed ground depth and alignment with machine, no relative twisting.

V5UVD4,00000A3-19-08MAR22

## Attach Implement to Rear Hitch - Ball End

**⚠ CAUTION:** Hitch movement can cause injury or death.

To prevent unexpected movement of the rear hitch, set the load depth to position control (setting "0") before attaching implement to hitch.

**IMPORTANT:** Ensure center link and lift link adjustments do NOT cause implement contact with fenders.

**NOTE:** The engine must be running for the 3-point hitch control to work.

## Electrohydraulic Position Control Lever

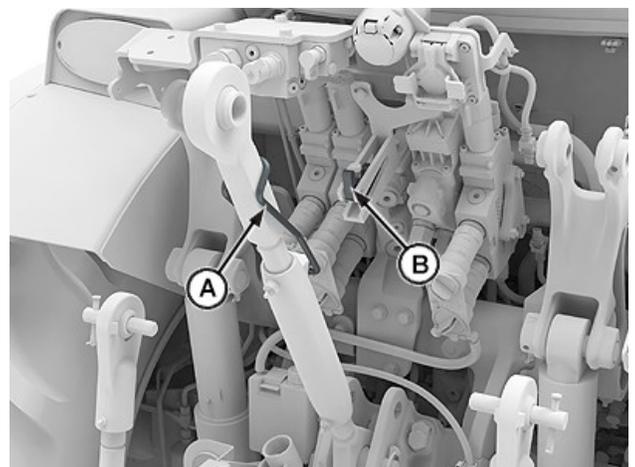


APY78183—UN—19SEP22

**A**—Rear Hitch Position Control Lever  
**B**—Rear Hitch Quick Raise/Lower Buttons  
**C**—Rear Hitch Position Control Lever Stop

1. Back the machine up to implement to be attached. Engine must be running to operate the rear hitch.
2. Use rear hitch position control lever (A) to raise or lower draft links near the attachment points. Do not use rear hitch quick raise/lower buttons (B).
3. Set desired depth with rear hitch position control lever stop (C).
4. Be sure that drawbar does not interfere. If necessary, move the drawbar to fully retracted position or remove it. Check for any other potential interference.

## Center Link

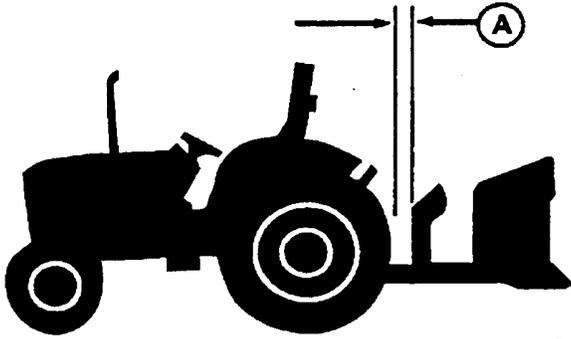


APY78193—UN—28SEP22

**A**—Center Link Locking Clip  
**B**—Release Tab

1. Pull the release tab (B) back and remove the center link locking clip (A) to release center link from the transport hook.
2. Attach center link to implement top mast. Use appropriate SCV to extend hydraulic center link if equipped.

**Adjust and Check Clearance**



A—Clearance

M47177—UN—31JAN92

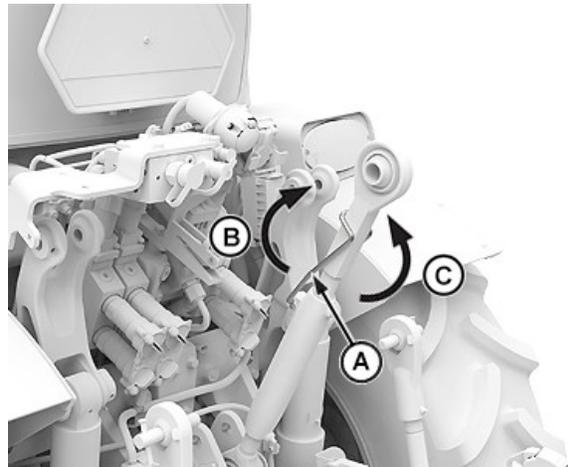
**IMPORTANT: Whenever an implement, quick coupler, or attachment is connected to the hitch, check full range of operation for interference, binding, or PTO separation.**

**When large diameter rear tires are installed, a quick coupler or similar device is required to provide adequate implement-to-tire clearance.**

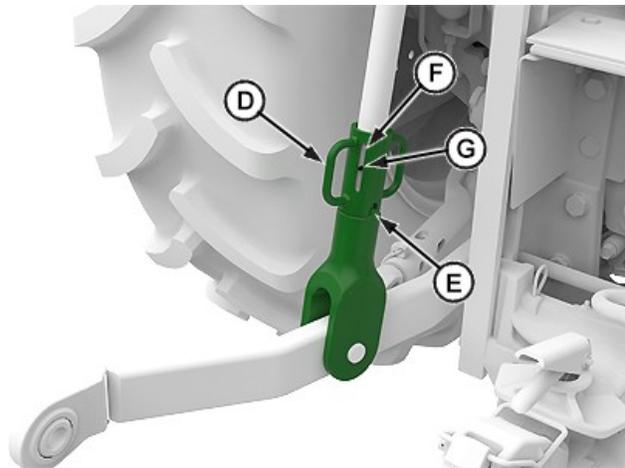
1. Adjust the center link and the lift links as necessary. (See Level Hitch in this section.)
2. Adjust the sway as necessary. (See Adjust Hitch Side Sway in this section.)
3. Start the engine.
4. Slowly raise and lower implement with the hitch fender switch or position control lever.
5. Watch for interference points and adjust hitch setting as required.
6. Check for the adequate clearance (A) between outside diameter of the tire and implement with the hitch in raised position.

V5VUVD4,00000A4-19-05DEC22

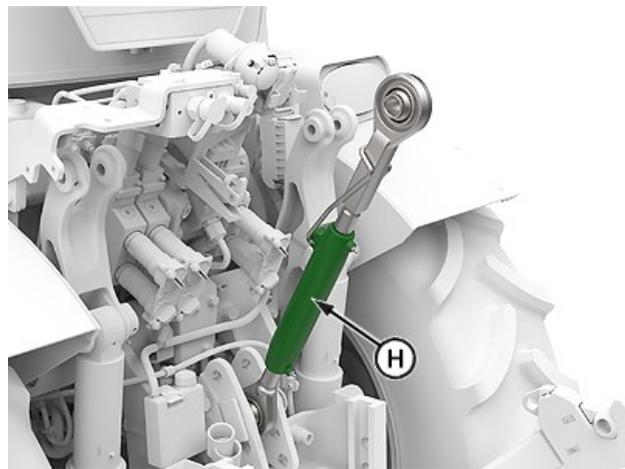
**Level Hitch - Ball End**



APY78197—UN—27SEP22



APY78194—UN—06OCT22



APY78195—UN—27SEP22

- A—Locking Clip
- B—Center Link Clockwise Rotation
- C—Center Link Counterclockwise Rotation
- D—Locking Handle
- E—Locking Tab
- F—Slot
- G—Roll Pin
- H—Hydraulic Center Link

**IMPORTANT:** Do not attempt to over-extend the center link beyond the limits of locking clip or lift links past the stop indicators (missing thread). Link body threads can get damaged.

**Manual Center Link Adjustment:**

1. Lower implement to the ground and adjust center link to level the implement front-to-rear.

*NOTE: Maximum adjustment range of the center link can only be obtained if the ends are positioned equally within the body when attached to an implement.*

2. Unlatch locking clip (A). Rotate link body:
  - a. Clockwise (B) to lengthen.
  - b. Counterclockwise (C) to shorten.

**Lift Link Adjustment:**

1. Adjust the lift link to level the implement side-to-side. Lift the locking handle (D) to clear the locking tab (E). Keep the slot (F) engaged on roll pin (G) and turn locking handle (D):
  - a. Clockwise to raise the draft link.
  - b. Counterclockwise to lower the draft link.
2. When the adjustment is complete, align the slot (F) with the locking tab (E), and lower to lock in place and prevent change of adjustment during operation.

**Hydraulic Center Link Adjustment:**

1. Engage the implement in application.
2. Use the appropriate SCV to extend or retract the cylinder of hydraulic center link (H) to level implement front-to-rear.

V5VUVD4,0000A5-19-28NOV22

**Attach Implement to Rear Hitch Hook End**

**CAUTION:** Hitch movement can cause injury or death.

To prevent unexpected movement of rear hitch, set load depth to position control (setting “0”) before attaching implement to hitch.

**IMPORTANT:** Ensure center link and lift link adjustments DO NOT cause implement contact with fenders.

*NOTE: The engine must be running for the 3-point hitch control to work.*

**Electrohydraulic Position Control Lever**



APY78183—UN—19SEP22

A—Rear Hitch Position Control Lever  
 B—Rear Hitch Quick Raise/Lower Buttons  
 C—Rear Hitch Position Control Lever Stop

1. Back machine up to the implement to be attached. Engine must be running to operate the rear hitch.
2. Use rear hitch position control lever (A) to raise or lower draft links near the attachment points. Do not use rear hitch quick raise/lower buttons (B).
3. Set desired depth with the rear hitch position control lever stop (C).
4. Be sure that drawbar does not interfere. If necessary, move the drawbar to fully retracted position or remove it. Check for any other potential interference.

**Hook-End Draft Links**



APY78196—UN—27SEP22

A—Hook-Type Draft Link

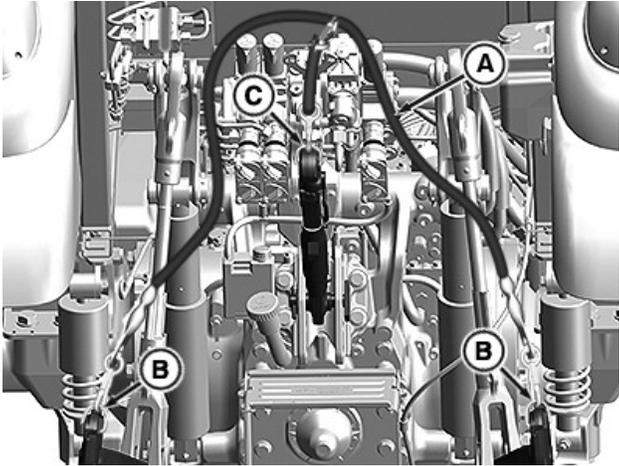
**CAUTION:** When implements with asymmetrical load (e.g. side-mounted mowing unit) are attached, or when driving through high-growing bushes and trees (e.g. when working in the forest), the draft links must be secured against opening accidentally.

**NOTE:** The coupler hooks can be locked in their "open" position by pulling on lever and rotating 90 degrees.

To close the coupler hook again, pull the lever up at an angle and rotate.

Hook-type draft links (A) are intended for Category I, Category II and Category 3N implements. Implements can be attached to and removed from the draft links without the driver having to leave the seat.

### Draft Link Release Cable



PY30462—UN—10MAR17

Draft Link Release Cable

- A—Release Cable
- B—Draft Link Ends
- C—Center Link

Hook-type draft links (B and C) can be released from the operator's position by pulling on cable (A). When cable (A) is released, hook-end draft links return to closed position.

### Attaching Implement



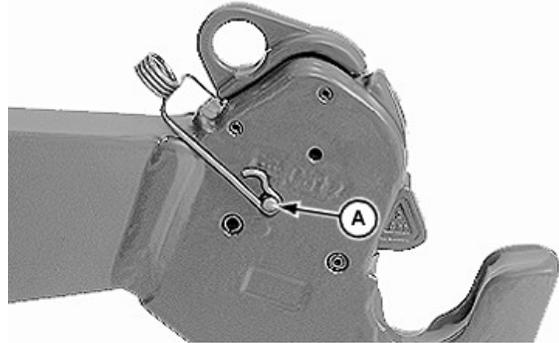
RXA0156170—UN—13DEC16

**IMPORTANT:** Make certain that implement is correctly locked to coupler hooks.

1. With draft links lowered, reverse machine until the coupler hooks are below the implement hitch pins.

2. Slowly raise draft links until pins are engaged in coupler hooks and locked into position.
3. Adjust center link to the required length and attach to top attaching point of implement mast.

### Draft Link Hook Lock



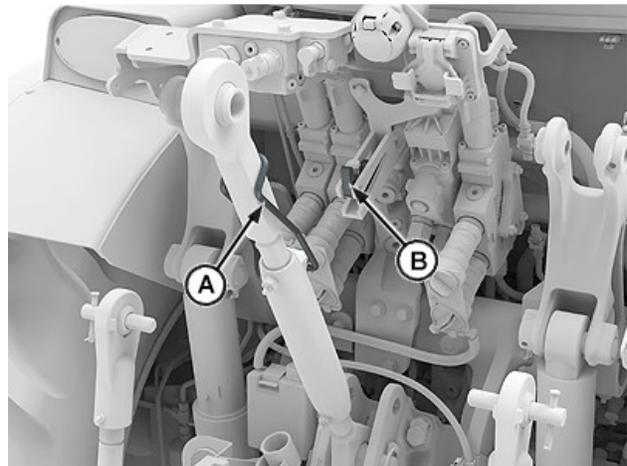
LV16212—UN—22OCT12

A—Draft Link Locking Pin

**CAUTION:** Use draft link locking pins on applications where implement could be forced up and open unintentionally. Examples are driving through high-growing bushes, trees, or implements with asymmetrical load, such as a side-mounted mower.

1. Lower rear hitch below the implement connection points.
2. Position coupler ends of lift arms below the implement link pins and slowly raise hitch until coupler ends lock on the pins.
3. Insert draft link locking pins (A) in both coupler hooks. See your John Deere dealer for locking pins.

### Center Link



APY78193—UN—28SEP22

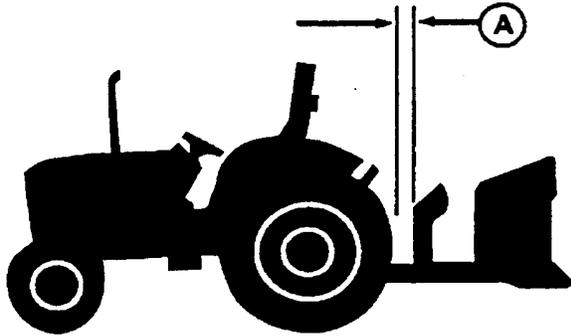
A—Center Link Locking Clip  
B—Release Tab

1. Pull release tab (B) back and remove center link

locking clip (A) to release center link from the transport hook.

2. Attach center link to implement top mast. Use appropriate SCV to extend hydraulic center link if equipped.

**Adjust and Check Clearance**



A—Clearance

M47177—UN—31JAN92

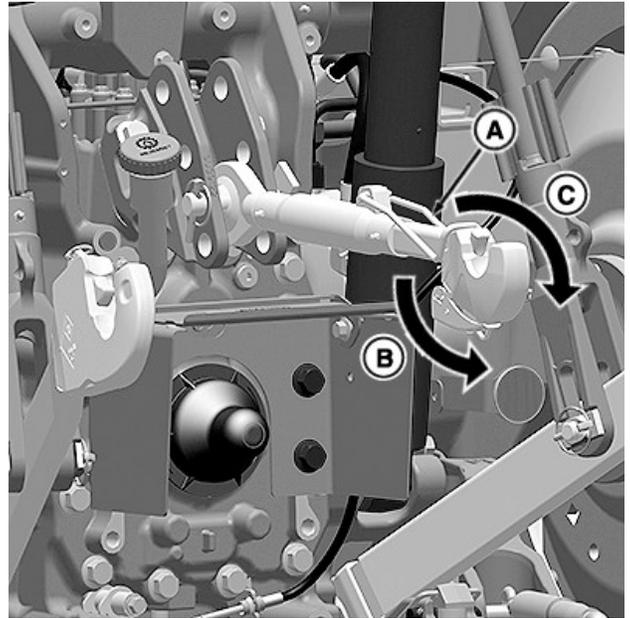
**IMPORTANT: Whenever an implement, quick coupler, or attachment is connected to the hitch, check full range of operation for interference, binding, or PTO separation.**

**When large diameter rear tires are installed, a quick coupler or similar device is required to provide adequate implement-to-tire clearance.**

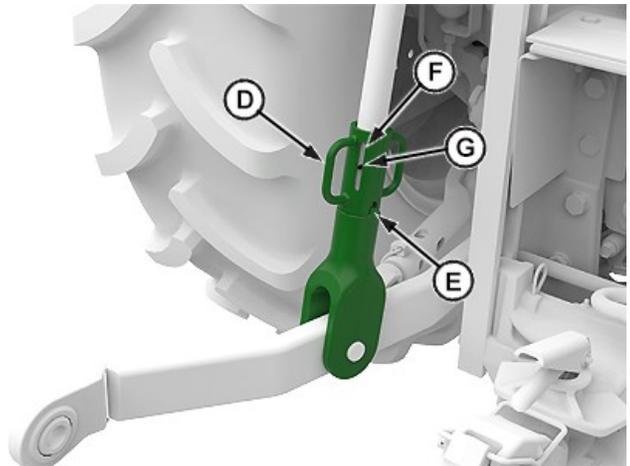
1. Adjust center link and lift links as necessary. (See Level Hitch in this section.)
2. Adjust sway as necessary. (See Adjust Hitch Side Sway in this section.)
3. Start engine.
4. Slowly raise and lower implement with hitch fender switch or position control lever.
5. Watch for interference points and adjust hitch setting as required.
6. Check for adequate clearance (A) between outside diameter of the tire and implement with hitch in raised position.

V5VUVD4,00000A6-19-28APR23

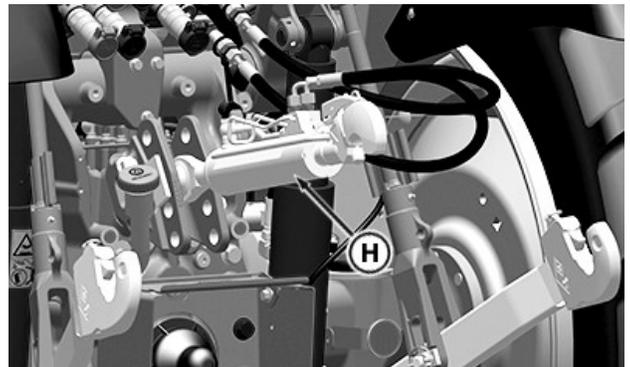
**Level Hitch - Hook-End**



RXA0155541—UN—08NOV16



APY78194—UN—06OCT22



RXA0155553—UN—08NOV16

Hydraulic Center Link

- A—Locking Clip
- B—Center Link Counterclockwise Rotation
- C—Center Link Clockwise Rotation
- D—Locking Handle
- E—Locking Tab
- F—Slot

G—Roll Pin  
H—Hydraulic Center Link

## Adjust Hitch Side Sway

**IMPORTANT:** Do not attempt to overextend the center link beyond limits of locking clip or lift links past the stop indicators (missing thread). Link body threads could be damaged.

### Manual Center Link Adjustment:

1. Lower implement to ground and adjust center link to level implement front-to-rear.

*NOTE: Maximum adjustment range of the center link can only be obtained if the ends are positioned equally within the body when attached to an implement.*

2. Unlatch locking clip (A). Rotate link body:
  - a. Clockwise (C) to lengthen.
  - b. Counterclockwise (B) to shorten.

3. Latch locking clip.

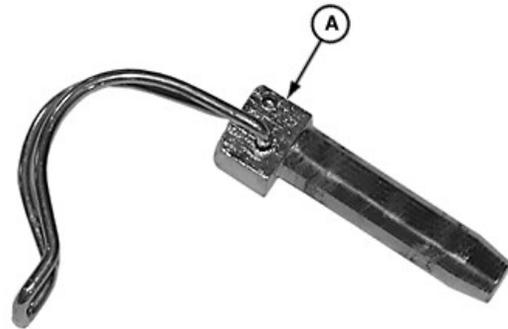
### Lift Link Adjustment:

1. Adjust lift link to level implement side-to-side. Lift locking handle (D) to clear locking tab (E). Keep slot (F) engaged on roll pin (G) and turn locking handle (D):
  - a. Clockwise to raise the draft link.
  - b. Counterclockwise to lower the draft link.
2. When adjustment is complete, align slot (F) with locking tab (E), and lower to lock in place and prevent change of adjustment during operation.

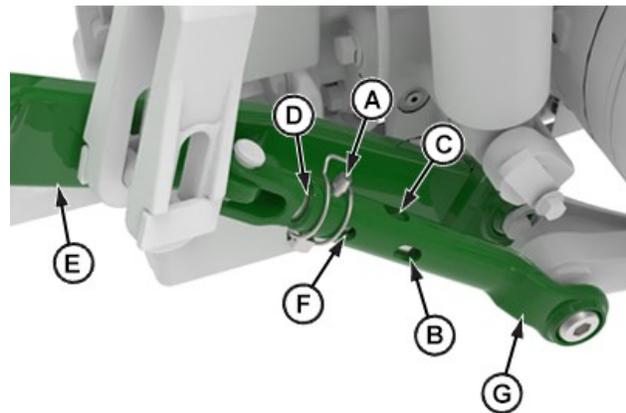
### Hydraulic Center Link Adjustment:

1. Engage implement in application.
2. Use appropriate SCV to extend or retract the cylinder of hydraulic center link (H) to level implement front-to-rear.

V5VUVD4,00000A7-19-28NOV22



LV14576—UN—05AUG11



APY80678—UN—19OCT22

Sway Bar Pin in Sway Position

A—Pin  
B—Sway Position Outer Slot  
C—Sway Position Inner Slot  
D—Inner Sliding Member  
E—Draft Link  
F—Fixed Position Holes  
G—Stabilizer

*NOTE: Check implement Operator's Manual for instruction on whether to allow side sway.*

If sway is desired, install pin (A) in the sway position outer slot (B), ensuring it goes through the inner slot (C).

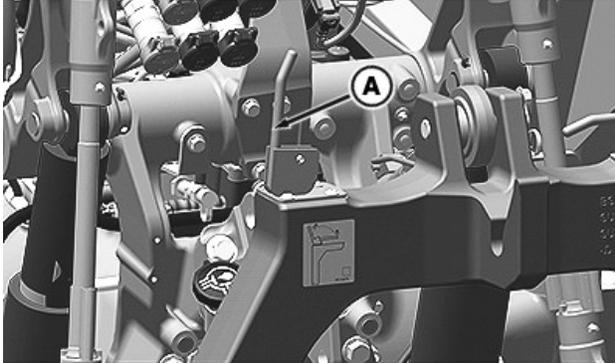
If sway is not desired, move draft link (E) to desired position. Install pin (A) in a fixed position hole (F) that lines up with one of the holes (not slot) of the inner sliding member (D).

Adjust opposite side sway bar to same position.

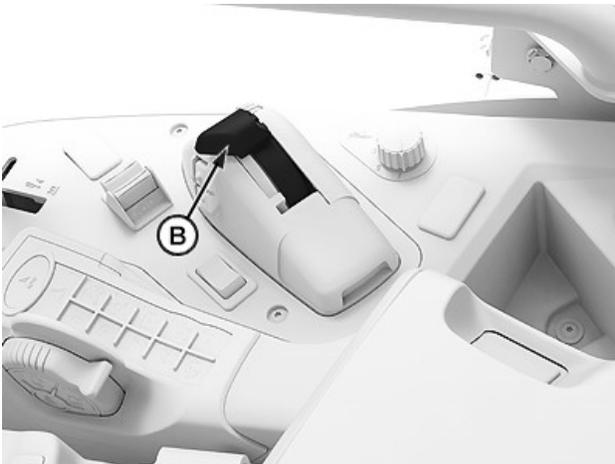
**NOTE:** Additional fixed positions are obtained by adjusting threaded end of stabilizer (G). Remove pin (A) and rotate the stabilizer to desired position. Insert pin in a fixed position hole. Missing thread on stabilizer also acts as a stop indicator.

V5VUVD4,00000A8-19-13NOV22

## Quick Coupler



RXA0181056—UN—17FEB21



APY78198—UN—27SEP22

A—Coupler Latch Handle (2)  
B—Electrohydraulic Position Lever

**CAUTION:** Avoid bodily injury or machine damage:

- Put transmission in park position and check the full range of hitch for interference, binding, or PTO separation whenever an implement is attached.
- Make sure that implement is correctly attached. Incorrect attachment can allow implement to be pulled over the machine wheel and onto the operator's station.
- Do not stand between machine and implement.

### Connect Implement:

1. Pull coupler latch handles (A) up.

2. Lower hitch until quick coupler hooks are lower than implement hitch pins.
3. Back up the machine to implement.
4. Raise hitch enough to engage implement pins in hooks.
5. Push coupler latch handles down to lock implement to quick coupler.
6. Connect hydraulic hoses and electrical connections.

**IMPORTANT: Check for implement interference. Drawbar removal may be necessary.**

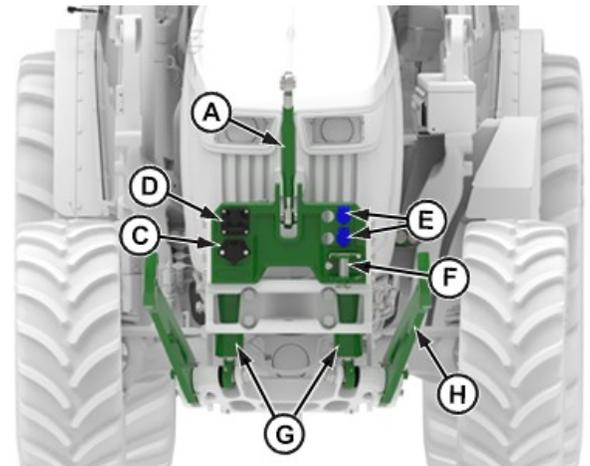
7. Slowly pull rear hitch electrohydraulic position lever (B) to raise implement. Lower implement to ground and adjust upper height limit control if necessary.

### Disconnect Implement:

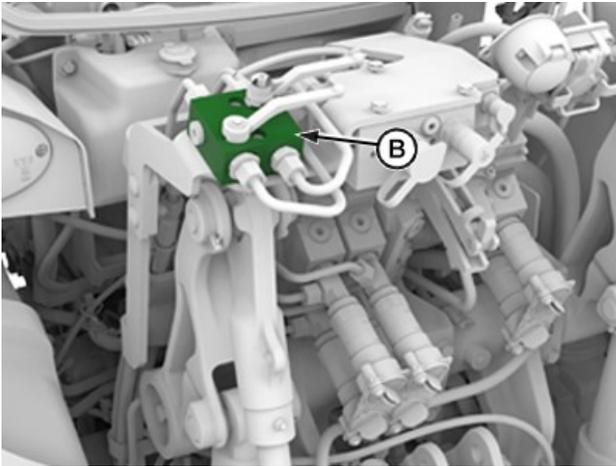
1. Pull the coupler latch handles (A) up with the implement raised.
2. Disconnect the hydraulic hoses and electrical connections.
3. Lower implement to ground and continue lowering quick coupler until hooks clear implement hitch pins.
4. Carefully drive the machine away from implement.

V5VUVD4,00000A9-19-13NOV22

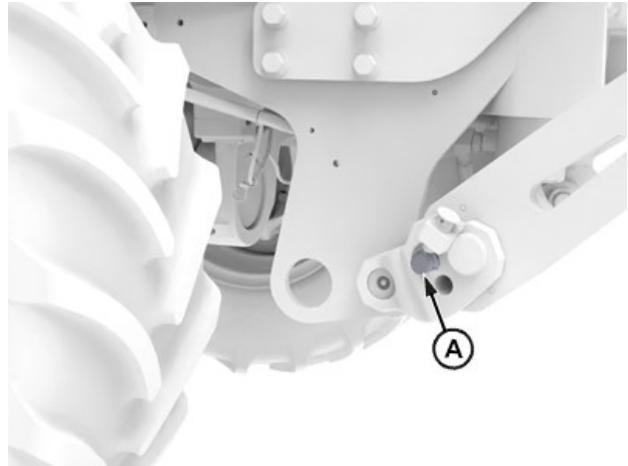
## Front Hitch Components



APY80681—UN—12OCT22



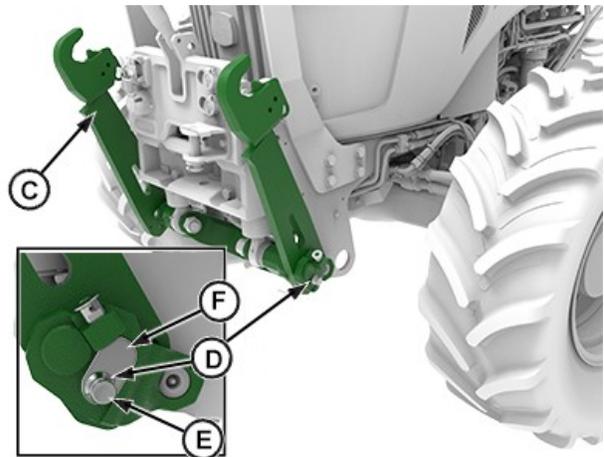
APY80606—UN—14NOV22



APY80692—UN—12OCT22

- A—Center Link
- B—Diverter Valve
- C—Front Implement Connector
- D—Front ISOBUS Connector
- E—Front SCV Coupler (2)
- F—Tow Pin
- G—Hitch Cylinder (2)
- H—Lift Arm (2)

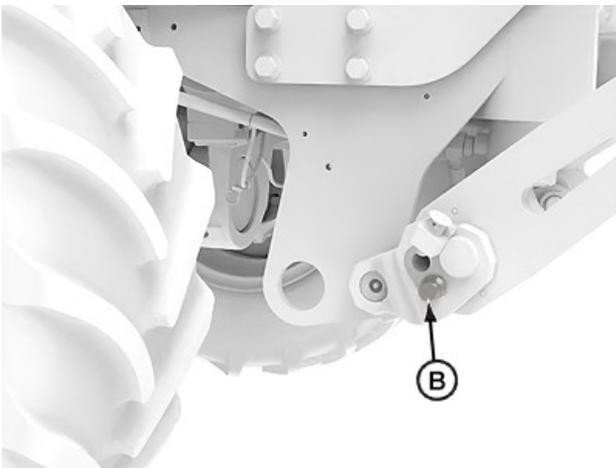
V5VUVD4,00000AA-19-14NOV22



APY80607—UN—11OCT22

## Front Implement Connection

### Draft Link Positions



APY80679—UN—12OCT22

- A—Draft Link in Vertical Float Position
- B—Draft Link in Locked Position
- C—Draft Link in Transport Position
- D—Retaining Clip
- E—Draft Link Pin
- F—Plate

Set front draft links to vertical float position (A), locked position (B), or transport position (C).

To change setting:

1. Remove retaining clip (D) from draft link pin (E).
2. Lift draft link (C) to relieve pressure from pin.
3. Remove draft link pin (E).
4. Move draft link (C) to desired position.
5. Reinstall draft link pin (E) and retaining clip (D).

### Draft Link Hook Lock



APY80608—UN—27SEP22

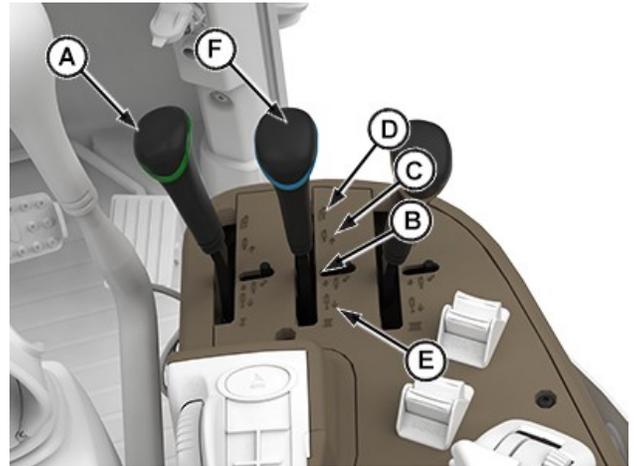
A—Draft Link Locking Pin Hole

**CAUTION:** Use draft link locking pins on applications where implement could be forced up and open unintentionally. Examples are driving through high-growing bushes, trees, or using implements with asymmetrical load, such as a side-mounted mower.

1. Install front-mounted implement using SCV II. For diverter valve settings, see Front Hitch and Coupler Operation in this section.
2. Lower front hitch below the implement connection points.
3. Position coupler ends of lift arms below the implement link pins and slowly raise hitch until coupler ends lock on the pins.
4. Insert draft link locking pin into draft link locking pin hole (A) in both coupler hooks. See your John Deere dealer for locking pins.

V5VUVD4,00000AB-19-12MAY23

### Operate Front Hitch with Rear SCV Controls



APY80609—UN—27SEP22

- A—Rear SCV I Lever
- B—Front Hitch Neutral Position
- C—Front Hitch Lower Position
- D—Front Hitch Float Position
- E—Front Hitch Raise Position
- F—Rear SCV II Lever

*NOTE:* The front hitch utilizes the SCV I (dual SCV) or SCV II (triple SCV) for oil supply and control.

To use the front hitch or the front SCV couplers, the operator must shift the diverter valve. (See Front Hitch and Coupler Operation in this section.)

Rear SCV I or II lever (A or F) controls the front hitch functions.

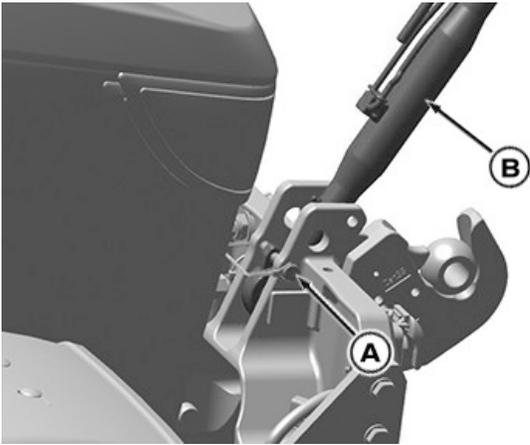
- Neutral - front hitch does not move.
- Lower - front hitch is powered down and has down-pressure.
- Float - front hitch lowers and follows the ground contour.
- Raise - front hitch lifts upward.

Rear SCV II or III lever controls the couplers on the front hitch. The function of the front couplers is the same as rear SCV II.

V5VUVD4,00000AC-19-27SEP22

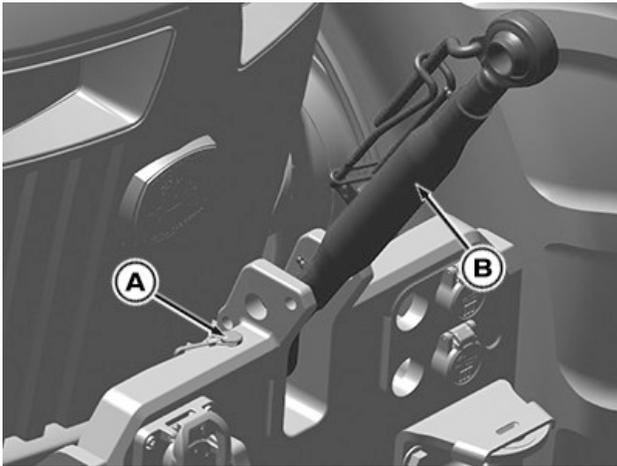
## Front Hitch - Center Link

### Center Link Position



APY84612—UN—20APR23

Center Link (Storage/ Not In Use Condition)



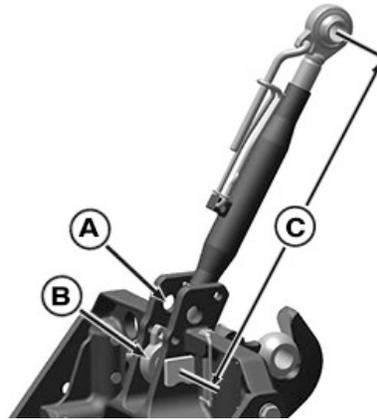
APY84613—UN—20APR23

Center Link (Implement Attached/ In Use Condition)

A—Locking Pin  
B—Center Link

**IMPORTANT:** When the center link (B) is not in use, position the center link (B) and secure with locking pin (A). Make sure that the safety clip of the locking pin (A) is positioned correctly.

### Center Link Adjustment



APY84614—UN—28APR23

A—Top Hole  
B—Bottom Hole  
C—Adjustable Length

**IMPORTANT:** Before using, make sure that a raised implement will not make contact with the tractor. In this case, pay attention to the settings for center link length and maximum raising height.

Length of center link can be adjusted using the adjusting handle. Lift adjusting handle (A) and turn it until the required length is achieved.

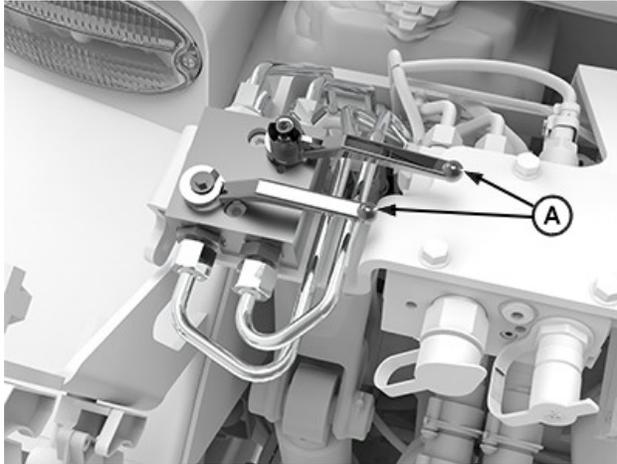
Condition	Hole
CAT 2 mast height 610 mm (24 in) implement being used.	B
CAT 3N mast height 685 mm (27.0 in) implement being used.	A

Ensure that there is no deviation from the specified dimensions. Grooves in the thread indicate the maximum permitted setting. The threads must not be unscrewed any further out of the receiver. After adjusting, push handle down again over center link. Insert attaching pin through implement mast and center link, and secure.

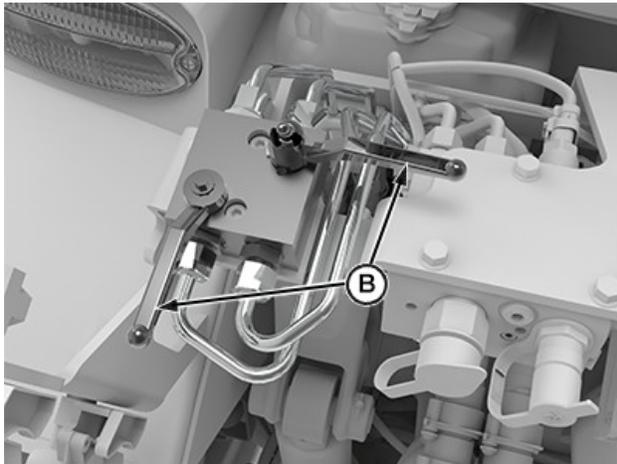
shqw455,1683920029094-19-12MAY23

## Front Hitch and Coupler Operation

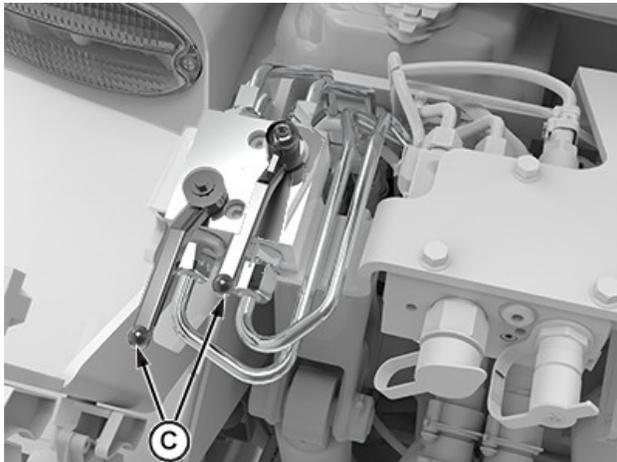
### Diverter Valve Operation



APY80610—UN—27SEP22



APY80611—UN—27SEP22



APY80612—UN—27SEP22

- A—Oil Flow Blocked Setting
- B—Hydraulic Raise, Gravity Lower Setting
- C—Hydraulic Raise and Lower Setting

*NOTE: The SCV configuration determines which SCV levers are used to operate the front hitch and SCV. Dual SCV valves use SCV I for front hitch and SCV II for front SCV. Triple SCV valves use SCV II for front hitch and SCV III for front SCV.*

**⚠ CAUTION: If rear SCV I or II couplers are used for a rear implement, diverter valve must be in the oil flow blocked setting (A) to the front hitch.**

**IMPORTANT: When front-mounted implements with retaining chains are used, avoid damage by selecting hydraulic raise, gravity lower setting (B). Operate SCV I or II in float to allow implement to follow the ground contour.**

The diverter valve is located just outside the rear window on the rear left corner of the cab and only controls front hitch oil flow. Diverter valve handles can be accessed and changed from within the machine cab. There are three settings for the diverter valve:

- Oil flow blocked setting (A). Front hitch does not move.
- Hydraulically raised, gravity lower setting (B) using weight of implement.
- Hydraulically raised and lower setting (C).

### Front Hitch Operation

**⚠ CAUTION: Do not attach hoses to rear SCV I or II couplers if using front hitch. Unexpected movement and undesired performance occur.**

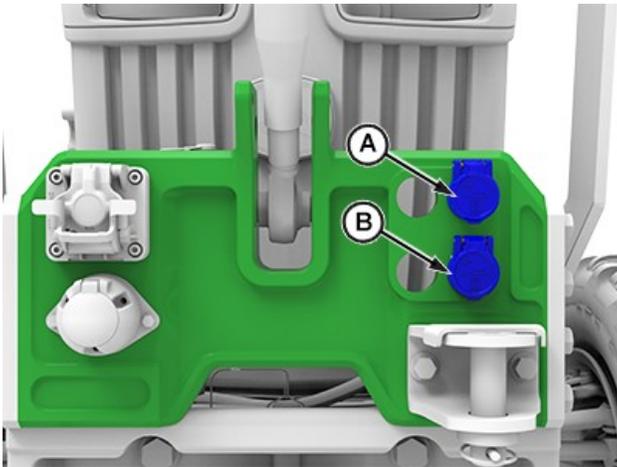
The front hitch utilizes the SCV I (dual SCV) or SCV II (triple SCV) for oil supply and control on the rear SCV assembly.

The front hitch utilizes the SCV XI for oil supply and control on the mid-mount SCV assembly.

To operate front hitch with rear SCV controls, see Operate Front Hitch with Rear SCV Controls in this section.

To operate front hitch with mid-mount SCV controls, see Mid-Mount SCV Controls and Components in the Selective Control Valve Operation section.

## Front Hydraulic Couplers



APY80613—UN—27SEP22

A—Retract Coupler  
B—Extend Coupler

**CAUTION:** Do not attach hoses to rear SCV II or III couplers if using front couplers. Unexpected movement and undesired performance occur.

1. Open cover and connect hoses to retract and extend couplers (A and B) accordingly.

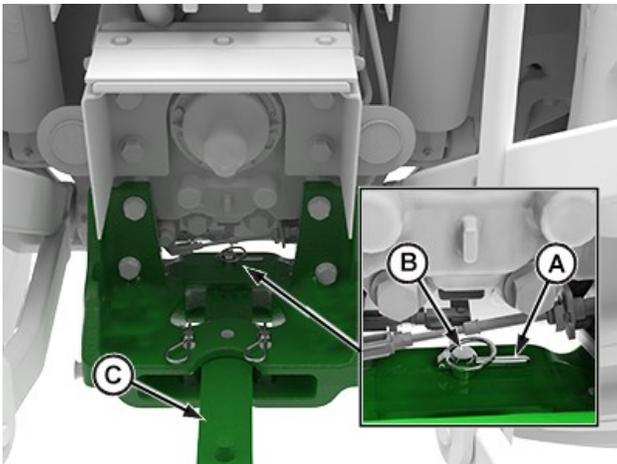
*NOTE: Connection and disconnection are possible when ports are not under pressure. Move SCV II lever to release pressure as required.*

2. Use SCV II (dual SCV) or SCV III (triple SCV) to operate front hydraulic couplers.
3. When removing, firmly pull to disconnect hoses.

V5VUVD4,00000AD-19-14NOV22

## Drawbar Settings

### Adjust Drawbar Length



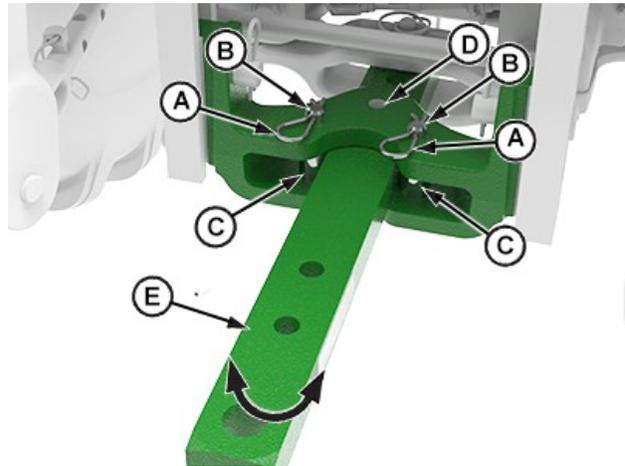
APY80614—UN—15NOV22

A—Retaining Pin  
B—Drawbar Pin

### C—Drawbar

1. Remove retaining pin (A).
2. Remove drawbar pin (B).
3. Slide drawbar (C) to desired position.
4. Install drawbar pin (B) and insert a retaining pin (A) to lock drawbar in place.

### Adjust Drawbar Offset



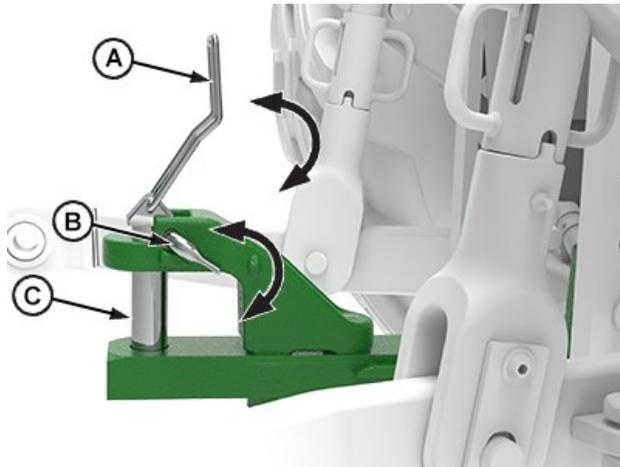
APY80615—UN—15NOV22

A—Retaining Pin (2)  
B—Drawbar Alignment Pin (2)  
C—Spacer (2)  
D—Offset Mounting Hole  
E—Drawbar

1. Remove retaining pin (A).
2. Remove drawbar alignment pin (B) and spacers (C).
3. Offset drawbar (E) toward left or right.
4. Install drawbar alignment pin (B) and insert a retaining pin (A) and spacers (C) into offset mounting hole (D) to hold drawbar (E) in place.

V5VUVD4,00000AE-19-07DEC22

## Clevis Drawbar



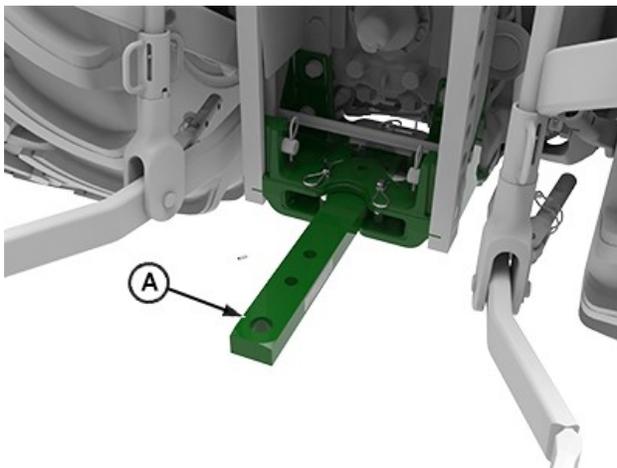
APY80616—UN—10OCT22

- A—Handle
- B—Retaining Pin
- C—Implement Pin

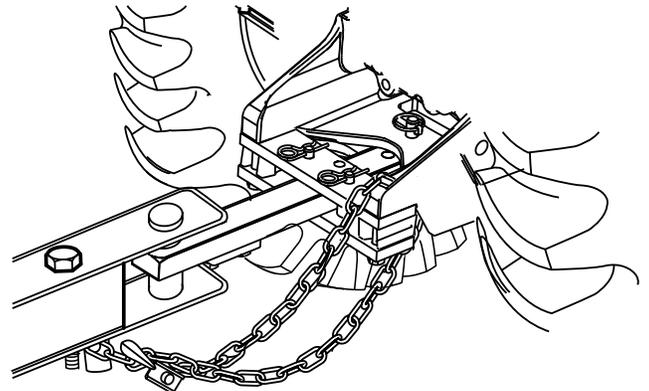
1. Flip handle (A) to the vertical position as indicated.
2. Rotate retaining pin (B) counterclockwise while pulling upward on the handle. Implement pin (C) releases when a notch in retaining pin aligns.
3. Implement pin (C) can be removed during connection or placed in the upper position. There are two detents on the implement pin shaft, one at the top and bottom. If the bottom detent of the implement pin (C) is aligned with the retaining pin (B) and locked, the pin is held up, allowing connection to the implement.

V5VUVD4,00000AF-19-15NOV22

## Drawn Implement Connection

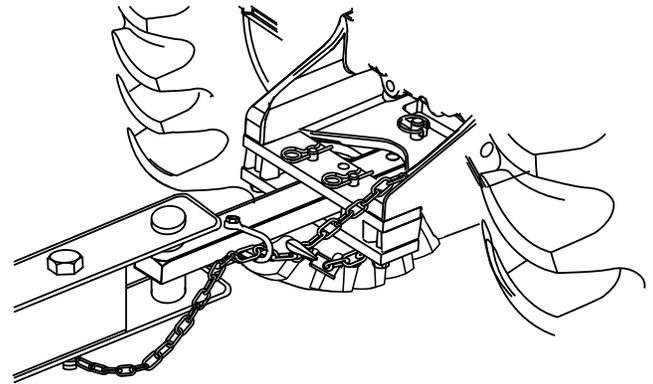


APY80617—UN—27SEP22



PULV000530—UN—11MAR08

Safety Chain with Drawbar Retracted



PULV000531—UN—11MAR08

Safety Chain with Drawbar Extended

A—Drawbar

**CAUTION:** Using smaller diameter pins reduces implement control, increases potential for pin failure, and causes excessive drawbar wear.

**CAUTION:** A safety chain helps control drawn equipment in case it accidentally separates from the drawbar.

Using the appropriate adapter parts, attach the chain to the drawbar support. 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.

**IMPORTANT:** Some heavy implements, such as a loaded single-axle trailer, can put excessive strain on drawbar. Speed and rough terrain increase drawbar strain. Reduce speed with heavy loads. Do not exceed maximum static vertical load on drawbar. See the Specifications section for maximum vertical drawbar load.

1. Back machine up to implement.
2. Align drawbar (A) with the implement connection point as close as possible.

3. Use a drawbar pin that is matched for the machine and implement holes with as little free play as possible.
4. Install a retaining clip in the drawbar pin.
5. Install a safety chain from the implement to the machine.

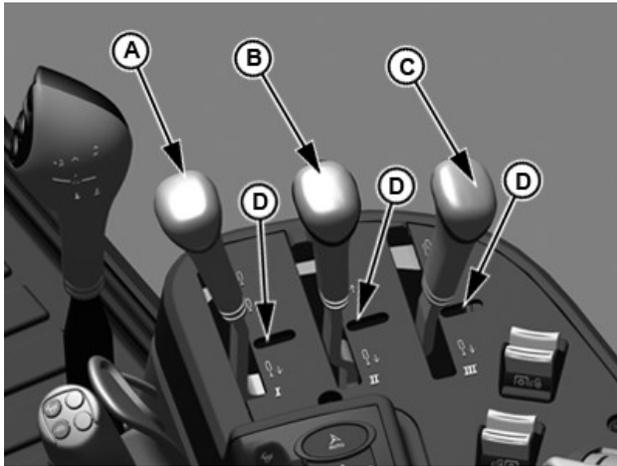
---

V5VUVD4,00000B0-19-27SEP22

# Selective Control Valve Operation

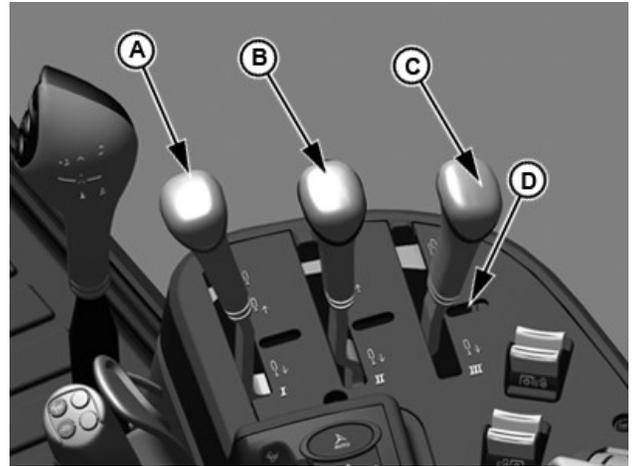
## Rear SCV Controls and Components

### Rear SCV Controls



P21098—UN—23NOV23

- A—SCV I Lever
- B—SCV II Lever
- C—SCV III Lever
- D—Transport Lock (3)

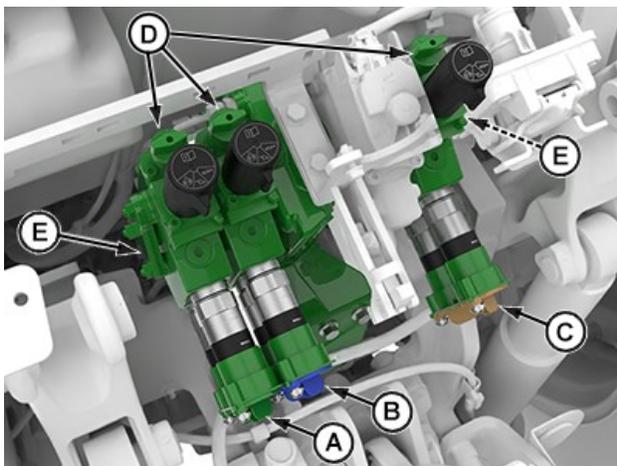


P21099—UN—23NOV23

- A—Extend Position
- B—Float Position
- C—Retract Position
- D—Neutral Position

**IMPORTANT:** Use the transport lock to avoid unintentional rear SCV movement during transport or while the SCV levers are not in use.

### Rear SCV Components



APY80626—UN—06OCT22

- A—SCV I
- B—SCV II
- C—SCV III
- D—Inlet Plate with Adjustable Flow Control
- E—End Plate

Rear SCV levers have four positions:

- Extend - pull and hold the lever rearward as required.
- Retract - push and hold the lever forward as required.
- Neutral - release lever unless in the float detent. If in float, lever must be pulled rearward to return to neutral.
- Float - push the lever forward past retract position and into the float detent.

### Rear SCV Identification

SCV levers and couplers are color coded for easier identification. The SCV control matches the corresponding cap on the SCV.

Rear SCV Numbers and Corresponding Colors	
SCV Number	Color
SCV I	Green
SCV II	Blue
SCV III	Brown

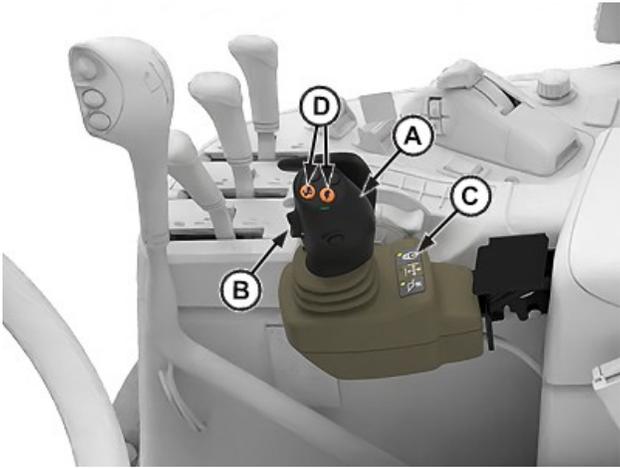
### Rear SCV Operation

#### SCV Levers

V5VUVD4,00000B1-19-23NOV23

## Mid-Mount SCV Controls and Components

### Mid-Mount SCV Controls

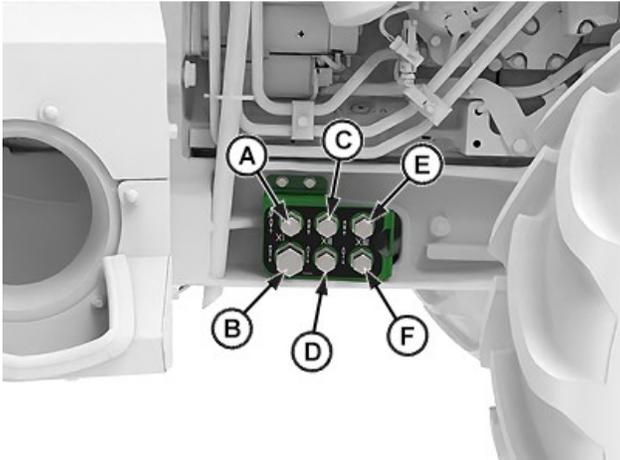


APY80683—UN—12OCT22

Mid-Mount SCV Joystick Lever

- A—Mid-Mount SCV Joystick Lever
- B—Loader Bucket Up/Down Operation
- C—Mid-Mount SCV Joystick Lever Lock
- D—HI/LO Speed Shift Buttons

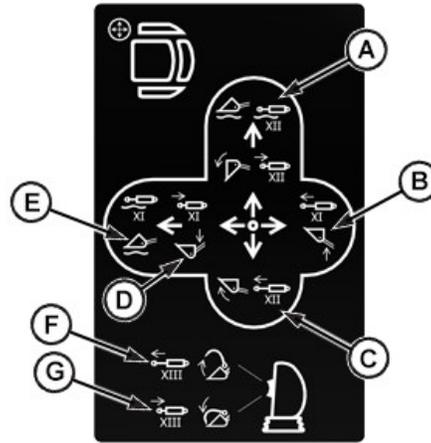
### Mid-Mount SCV Components



APY80684—UN—12OCT22

- A—SCV XI—Retract
- B—SCV XI—Extend
- C—SCV XII—Retract
- D—SCV XII—Extend
- E—SCV XIII—Retract
- F—SCV XIII—Extend

### Mid-Mount SCV Operation



APY80628—UN—29SEP22

Mid-Mount SCV Joystick Lever Functions

**CAUTION:** The mid-mount SCV joystick lever must be locked when the loader or front hitch is not in use, transporting, or when operator dismounts the machine. Turn locking ring to locked position. Check that the loader or front hitch does not respond after locking. If not done, the loader or front hitch can get actuated unintentionally leading to serious accidents.

Position	Direction	Loader Function	SCV Function
A	Right	Bucket Tilt (Dump)	SCV XII Retract
B	Rearward	Boom Raise	SCV XI Extend
C	Left	Bucket Rollback (Curl)	SCV XII Extend
D	Forward	Boom Lower	SCV XI Retract
E	Forward Detent	Boom Float	SCV XI Float
F	Top Button	Grapple Open	SCV XIII Extend
G	Bottom Button	Grapple Close	SCV XIII Retract

Mid-Mount SCV Loader Functions

Position	Direction	Front Hitch Function	SCV Function
A	Right	Front Hydraulic Coupler Retract	SCV XII Retract
B	Rearward	Lift Arm Raise	SCV XI Extend
C	Left	Front Hydraulic Coupler Extend	SCV XII Extend
D	Forward	Lift Arm Lower	SCV XI Retract
E	Forward Detent	Lift Arm Float	SCV XI Float
F	Top Button	Not Used	SCV XIII Extend
G	Bottom Button	Not Used	SCV XIII Retract

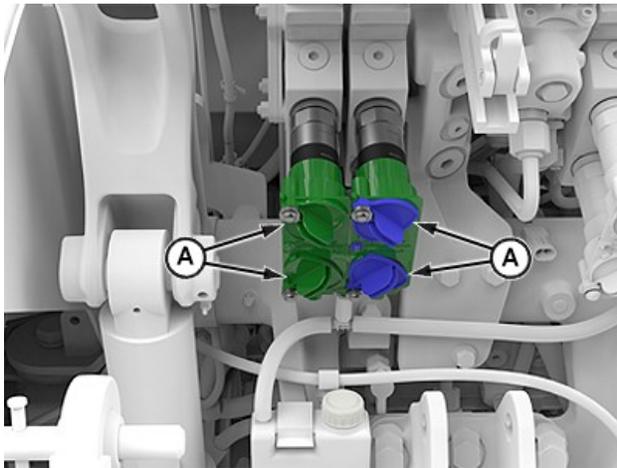
Mid-Mount SCV Front Hitch Functions

## Mid-Mount SCV Identification

Mid-Mount SCV Numbers and Corresponding Colors	
SCV Number	Color
SCV XI	Green
SCV XII	Blue
SCV XIII	Brown

V5VUVD4,00000B2-19-15NOV22

## Connect Hydraulic Hoses



APY80629—UN—29SEP22

A—Coupler Cover

**IMPORTANT:** Hydraulic hoses can fail due to physical damage, kinks, age, and exposure. Check hoses regularly. Replace the damaged hoses.

*NOTE:* Selective control valve (SCV) couplers accept a standard hose tip as recommended by ISO<sup>1</sup> and SAE<sup>2</sup>. Adapters are available to update older hose tips to the ISO couplers on this machine.

*NOTE:* When making connections, it is helpful to relieve hydraulic pressure from the couplers. For mechanical SCVs, turn the key switch off and cycle the SCV levers to the float position.

Installing hydraulic hoses with the SCVs:

1. Clean area around where connection is made and end of implement hydraulic hoses to prevent hydraulic system contamination.
2. Open SCV coupler dust covers (A) as required.
3. Identify extend and retract hoses.
4. Firmly push hoses into couplers. Lightly tug on the

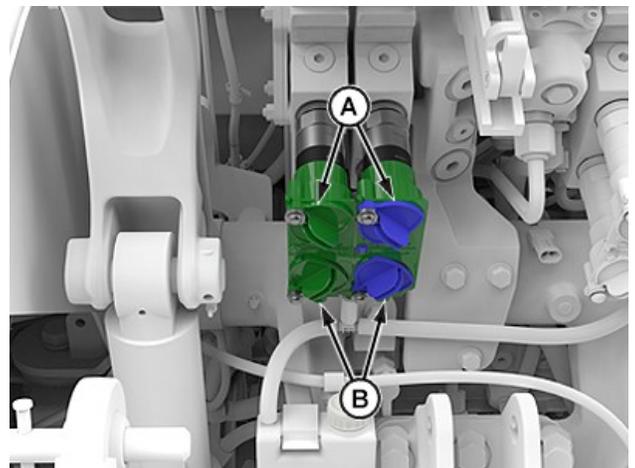
hoses to ensure that connection is made. If connections are difficult, relieve pressure at couplers.

Removing hydraulic hoses from the SCVs:

1. Lower implement to ground before disconnecting hydraulic hoses. If possible, retract remote cylinders as much as possible when stored to protect the rod from damage.
2. Shut off engine.
3. Relieve pressure at the couplers.
4. Lock out SCV controls.
5. Engage lock on mid-mount SCV joystick for mid-mount SCVs.
6. Pull hoses straight out from couplers.
7. Close SCV coupler dust cover (A).

V5VUVD4,00000B3-19-15NOV22

## Connect to Rear SCVs



APY80630—UN—29SEP22

A—Retract Couplers  
B—Extend Couplers

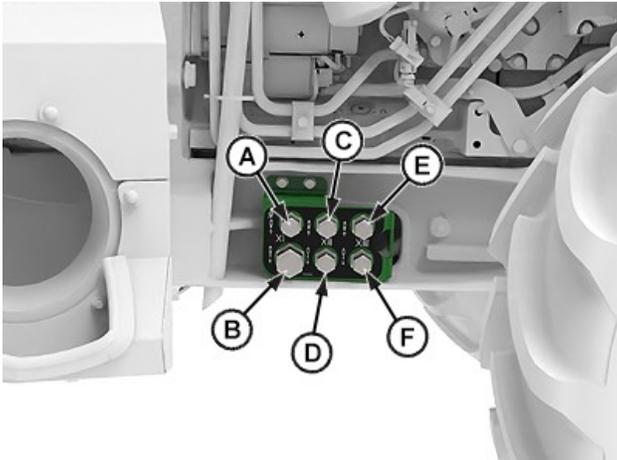
1. Identify extend and retract hoses.
2. Remove dust caps from the hose end.
3. Open coupler covers.
4. Making sure that the hose end and coupler are clean, push the hose tip firmly into SCV coupler. Pull on hose, making sure that positive connection is made.
5. Connect retract hoses to the top couplers (A) and extend hoses to the bottom couplers (B).

V5VUVD4,00000B4-19-13NOV22

<sup>1</sup> International Standards Organization (ISO) 7241-1

<sup>2</sup> Society of Automotive Engineers

## Connect to Mid-Mount SCVs



APY80684—UN—12OCT22

- A—Boom Cylinder—Retract
- B—Boom Cylinder—Extend
- C—Bucket Cylinder—Retract
- D—Bucket Cylinder—Extend
- E—Third-Function Cylinder—Retract
- F—Third-Function Cylinder—Extend

**IMPORTANT:** Hydraulic hoses can fail due to physical damage, kinks, age, and exposure. Check hoses regularly. Replace the damaged hoses.

*NOTE:* Connections are capped and require couplers to be installed if using hose with ISO ends. Direct connection to the fittings can be made for permanent applications.

1. Match the hoses to the corresponding couplers.
2. Remove dust caps from the hose ends.
3. Remove cap assembly from the selective control valve (SCV) couplers.
4. Ensure that the hose end and couplers are clean, slide sleeve back, push hose tip firmly into coupler, and release sleeve.
5. Make sure that positive connection was made by pulling on hose.

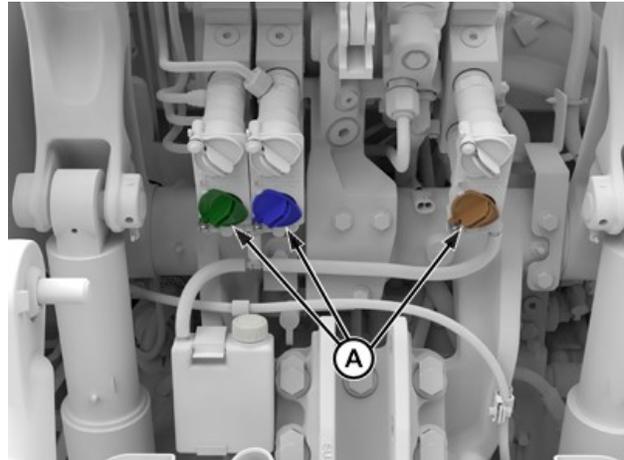
V5VUVD4,00000B5-19-15NOV22

## Correct Reversed Cylinder Response

**CAUTION:** If cylinder response is opposite of the SCV lever, extending when it should retract, reverse hose connections at couplers.

V5VUVD4,00000B6-19-08MAR22

## Single-Acting Cylinders



APY80646—UN—07OCT22

- A—Extend Couplers

**IMPORTANT:** Volume of oil required to extend a cylinder lowers the transmission/hydraulic oil level. With cylinder fully extended, check oil level and fill to the proper level. (See Check Transmission/Hydraulic System Oil Level in the Hydraulics Maintenance section.)

Only connect single-acting cylinders to SCV extend coupler (A).

Pull SCV lever back to pressurize and extend a single-acting cylinder.

Push SCV lever fully forward to “float” position and retract the cylinder.

V5VUVD4,00000B7-19-02NOV22

## Implements Requiring Large Volumes of Oil

**IMPORTANT:** Removing too much oil can result in malfunction when raising hitch or using extend function of SCVs.

**Do not add oil to the hydraulic system with engine running.**

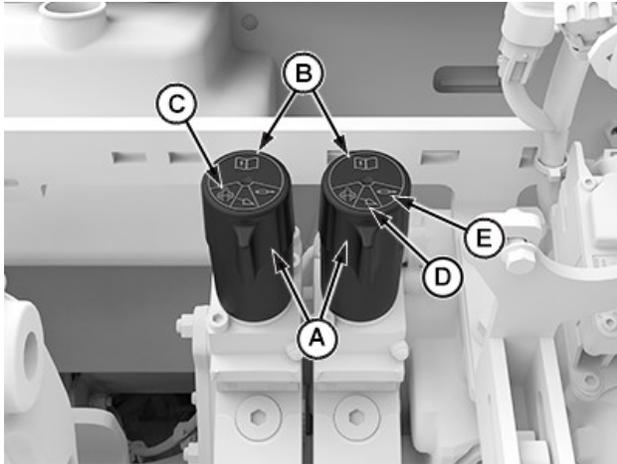
To determine if sufficient oil is available for implement being used:

1. Cycle all implement cylinders after starting the machine.
2. Check the transmission/hydraulic oil level.
3. Add oil if necessary.
4. Lower the implement to return oil to reservoir.
5. Recheck the oil level when the implement is removed.

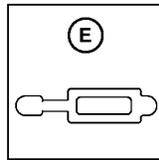
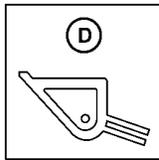
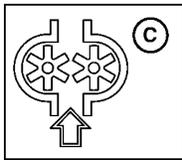
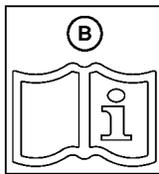
6. Drain excess oil if necessary.

V5VUVD4,00000B8-19-13NOV22

### Set SCV Detents



APY80632—UN—29SEP22



LV22102—UN—12JUN14

- A—SCV Detent Dial
- B—Read Operator's Manual
- C—Continuous Detent (Motor)
- D—No Detent (Loader)
- E—Automatic Detent (Cylinder)

**IMPORTANT: To avoid overheating hydraulic oil and damage to machine, use SCV I when long duration “continuous” (motor) operation is required. Section I of deluxe SCV has a flow control valve. When properly adjusted, valve provides flow to operate an implement at required speed while maintaining oil temperature within the normal operating range.**

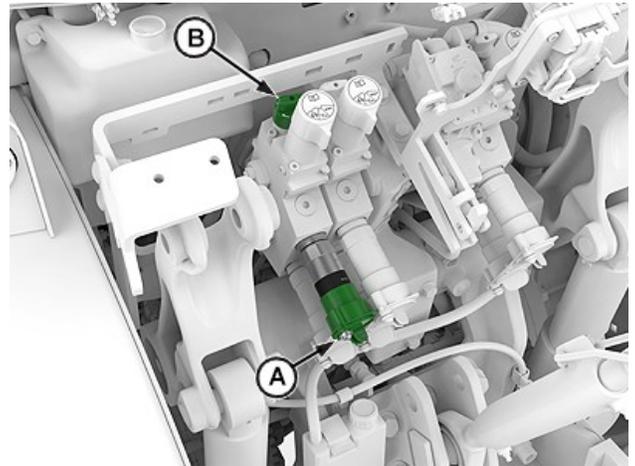
Section 1 of the deluxe SCV has selectable detents, used to change mid-mount SCV joystick operations to meet operating requirements of different implements. Detent settings affect only extend and retract lever positions, not “float.”

*NOTE: “Read Operator’s Manual (B)” symbol is for reference only and is not a selectable setting.*

SCV Knob Position	SCV Lever Detent
Continuous Detent (Motor) (C) for motor operation	Holds lever in operating position until manually returned to neutral.
No Detent (Loader) (D) for loader operation	Lever returns to neutral when released.
Automatic Detent (Cylinder) (E) for cylinder operation	Lever automatically returns to neutral when a cylinder reaches the end of stroke.

V5VUVD4,00000B9-19-15NOV22

### Operate Hydraulic Motor with Rear SCV



APY80633—UN—03NOV22

- A—SCV I Retract Coupler
- B—Adjustable Flow Control Valve

**IMPORTANT: Avoid damage to hydraulic motors. Use only SCVs equipped with flow control or power beyond to operate hydraulic motors.**

*NOTE: To understand motor requirements, refer to implement Operator’s Manual.*

Use SCV I retract coupler (A) with adjustable flow control for most hydraulic motor operations.

To regulate oil flow when operating a hydraulic motor with any standard valve without adjustable flow control, use an external flow control valve.

**IMPORTANT: Never regulate oil flow from an SCV with a flow control valve using an external flow control valve. Having two flow control valves in the same hydraulic circuit overheats oil, causing component malfunctions and damage.**

**Do not use deluxe rear SCV for any low-flow, high-pressure applications such as the SeedStar variable rate drive planter motor or active downforce circuits. PTO driven hydraulic motor is recommended for low flow, high pressure applications.**

### Recommendations to Avoid Hydraulic Motor Damage

Use hydraulic motor return coupler for implements having:

- Single directional hydraulic motor.
- Hydraulic motor with a low-pressure shaft seal.
- Hydraulic motor with an internal case drain.

Use hydraulic motor case drain connection for implements having motor with a case drain line. (See Case Drain in this section.)

**IMPORTANT: If implement motor is not equipped with return coupler, use “float” position to stop hydraulic motor.**

### Hydraulic Motor Hose Connections and SCV Lever Operations

**IMPORTANT: Use only the SCVs with adjustable flow control for “continuous” (motor) applications.**

1. Shut OFF the engine.
2. Move the SCV lever to be connected to motor full forward, into “float” detent.
3. Connect the hydraulic motor supply hose to the SCV retract coupler and return hose to the SCV extend, or case drain as required by application.
4. Set SCV lever detent for continuous “motor” operation.

5. Start the engine.

6. Do not return hydraulic motor directly to sump via a port on differential case, except intermittent high-pressure applications, such as a post pounder.

To activate the hydraulic motor, move SCV lever to “retract” position.

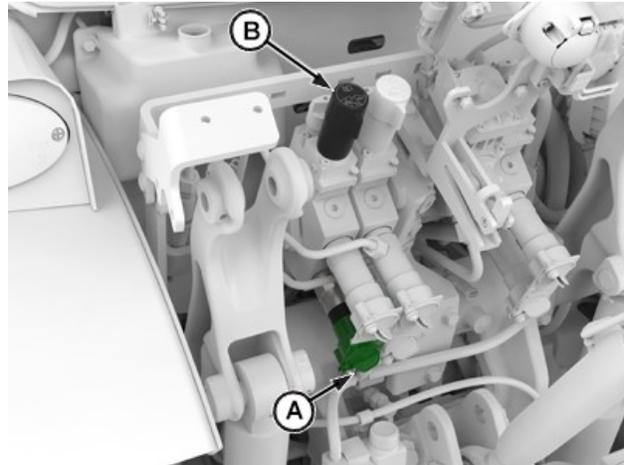
7. To stop hydraulic motor, move SCV lever fully forward into “float” detent.

**IMPORTANT: To stop hydraulic motor, do not use neutral lever position.**

8. Shut off the engine and disconnect the hoses from the couplers.

V5VUVD4,00000BA-19-13NOV22

### Operate Power Beyond with Rear SCV



APY80634—UN—03NOV22



APY80685—UN—12OCT22

- A—Rear SCV I Extend Coupler
- B—SCV I Detent
- C—Continuous Detent Position

**IMPORTANT: Power beyond connections must be used when operating any external hydraulic orbital motor with this machine. Failure to comply with power beyond connections overheats and possibly damages the hydraulic system.**

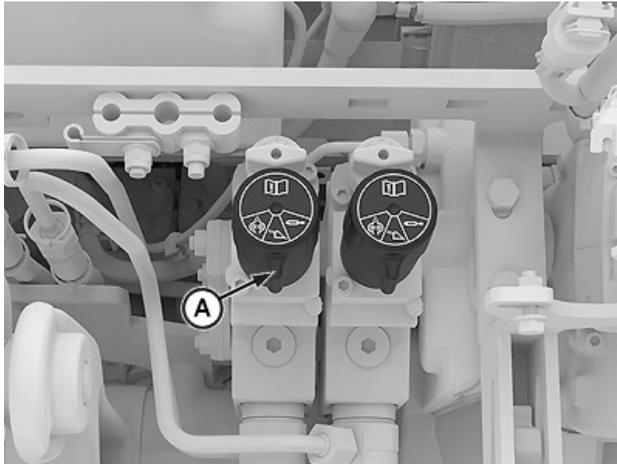
*NOTE: Oil can be supplied to power beyond equipment using SCV 1 on the deluxe SCV (in continuous mode) or by using a power beyond kit with the standard dual rear SCV.*

1. Shut off the engine.
2. Connect power beyond hose to rear SCV I extend coupler (A).
3. Set rear SCV I detent (B) to continuous (C).
4. Start the engine.
5. Move SCV I lever into extend.
6. Oil is now supplied to power beyond device.

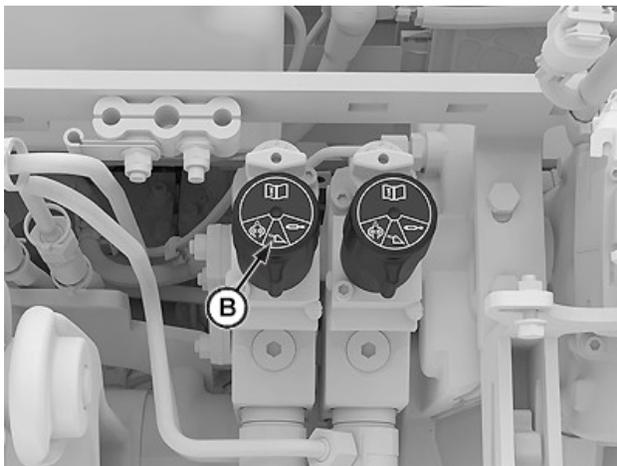
- To stop, de-activate power beyond device, then return SCV I lever to neutral.
- Shut off engine and disconnect hoses.

V5VUVD4,00000BB-19-13NOV22

## Operate Loader with Rear SCV



APY80686—UN—12OCT22



APY80687—UN—12OCT22

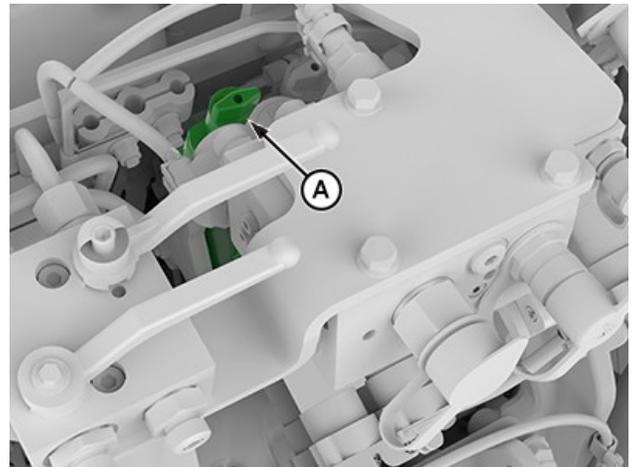
- A—SCV Detent Selector Knob
- B—No Detent (Loader) Position

**CAUTION:** Avoid injury or death caused by falling loads. When using selective control valve (SCV) to operate loader, detent must be set in loader setting (B), for loader movement to stop when SCV lever is released. Moving SCV lever to any other position would cause the loader to perform unexpectedly and potentially cause injury.

When using loader with rear SCVs, **ALWAYS** put the SCV detent selector knob (A) in loader setting (B) to prevent unexpected movement.

V5VUVD4,00000BC-19-18OCT22

## Adjust Flow Control



APY80635—UN—03NOV22

Rear SCV Adjustment

### A—Flow Control Adjustment

**CAUTION:** Excessive operating speed may cause injury or machine damage.

Decrease flow rate if hydraulic oil overheats, remote cylinder moves too quickly, or if hydraulic motor turns too fast.

Flow control adjustment (A) only affects rear SCV I and the electrohydraulic (grapple) section of the three-function mid-mount SCV. This adjustment does not affect other valve sections.

To increase flow, rotate left (counterclockwise).

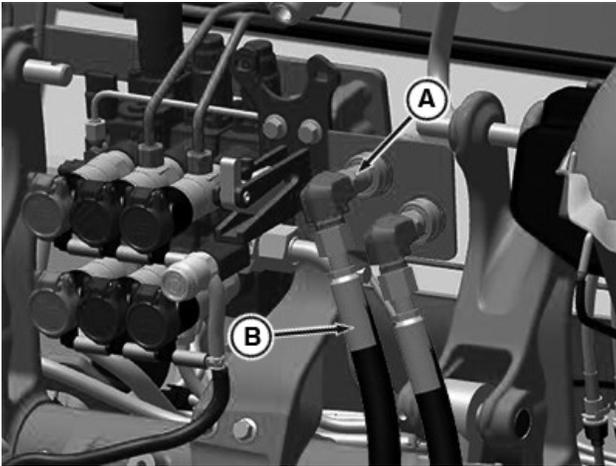
To decrease flow, rotate right (clockwise).

*NOTE: Rear SCV: If detent kicks out before end of cycle, adjust flow control using SCV I.*

V5VUVD4,00000BD-19-15NOV22

## Power Beyond

Power beyond is designed for applications where continuous high-volume hydraulic oil flow is needed.



PY42083—UN—18MAY17

A—Hose Coupler  
B—Power Beyond Hose

1. To use power beyond feature, remove hose (B) from coupler (A) and attach to implement “return” port.
2. To complete the hydraulic circuit, attach implement “pressure” hose to open coupler (A).
3. When not in use, plug hose end into coupler for storage (as shown).

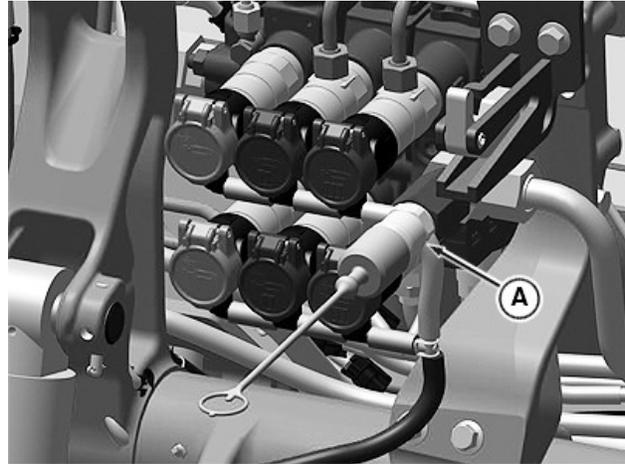
Parts for this attachment are available from your John Deere dealer.

V5VUVD4,00000BE-19-08MAR22

Parts for this attachment are available from your John Deere dealer.

V5VUVD4,00000BF-19-08MAR22

### Motor Return



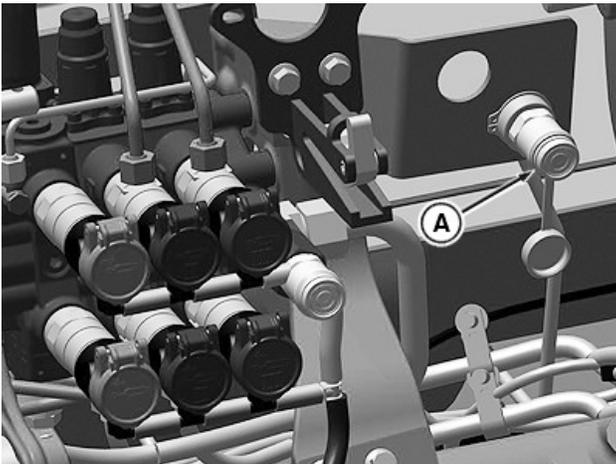
PY42080—UN—18MAY17

A—Motor Return Coupler

Connect motor return hose to the motor return coupler (A) to provide an unrestricted path to sump.

V5VUVD4,00000C0-19-08MAR22

### Case Drain

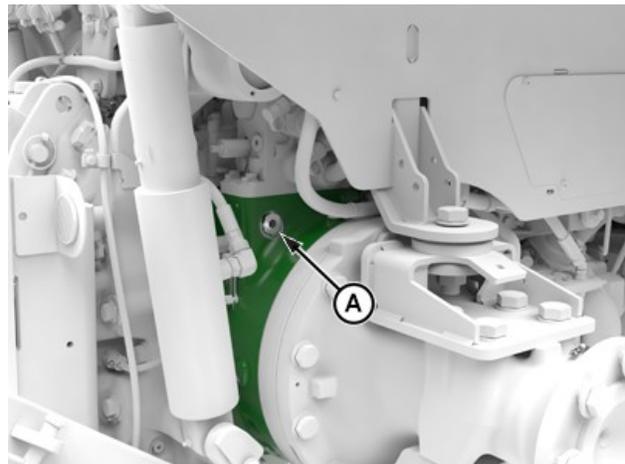


PY42082—UN—18MAY17

A—Flat-Faced Drain Connector

If implement motor is equipped with a case drain hose, attach it to the flat-faced drain connector (A). Make sure that the hose coupler and drain connector are clean before attaching. Install protective dust cap when connector is not in use.

### Fast Return-to-Sump



APY80636—UN—03OCT22

A—Plug

**IMPORTANT: Use fast return-to-sump connection only for intermittent high-flow applications. Do not use for other applications.**

Some implements, such as a post pounder, require use of a high-flow or fast return-to-sump connection.

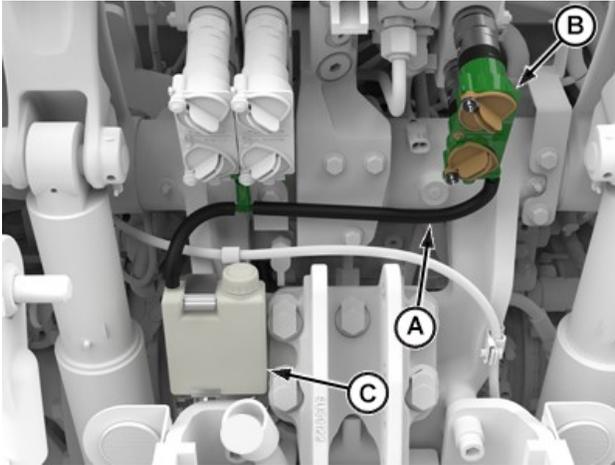
If a high-flow return connection is needed, remove plug (A) from the transmission housing and install connector.

*NOTE: Connector is available from your John Deere dealer.*

V5VUVD4,00000C1-19-27SEP22

---

## Rear SCV Oil Collection



APY80637—UN—29SEP22

- A—Hose**
- B—SCV Coupler**
- C—Oil Collection Bottle**

Oil can leak during hose uncoupling with rear selective control valve (SCV). Collars installed onto couplers (B) capture oil and hoses (A) transfer oil to a removable collection bottle (C).

Parts for this attachment are available from your John Deere dealer.

V5VUVD4,00000C2-19-27SEP22

---

# Wheels and Tires Operation

---

## Wheels and Tires Information

Refer to the **Wheels and Tires Maintenance** section of this manual for information.

V5VUVD4,0000C3-19-08MAR22

---

# Ballasting

---

## **Ballasting Information**

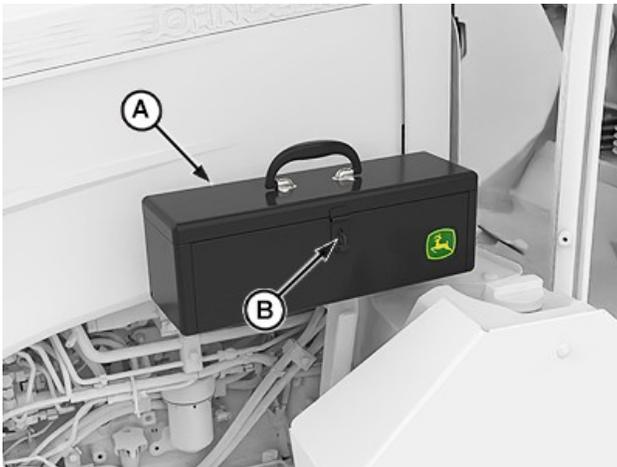
**Refer to the Ballasting Maintenance section of this manual for information.**

V5VUVD4,0000C4-19-08MAR22

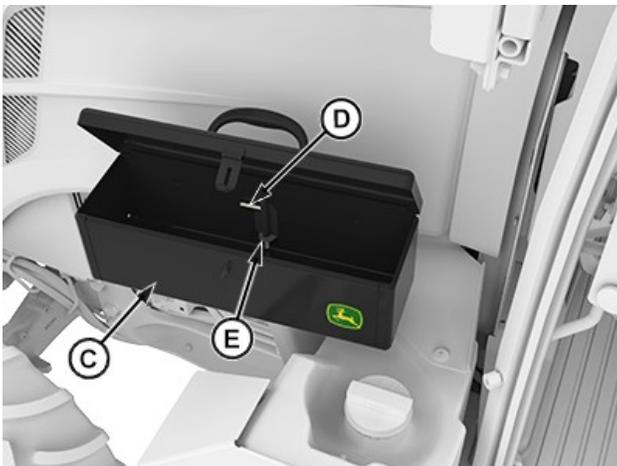
---

# Additional Equipment

## Tool Box



APY80648—UN—07OCT22



APY80675—UN—07OCT22

- A—Lid
- B—Latch
- C—Tool Box
- D—Removal Pin
- E—Retaining Tab

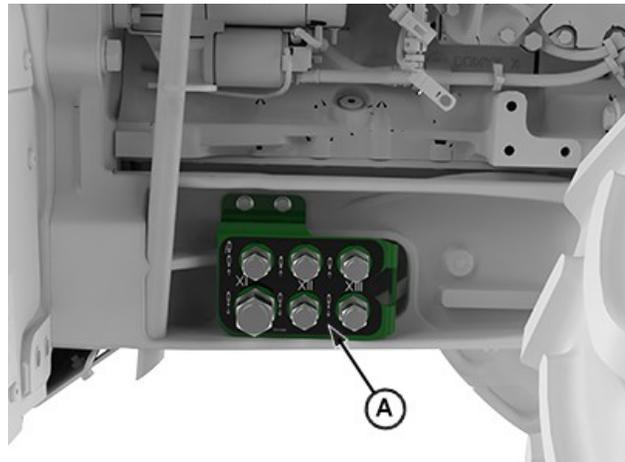
The tool box (C) is lockable and removable. To lock, close latch (B) and place a padlock through eye.

To remove tool box:

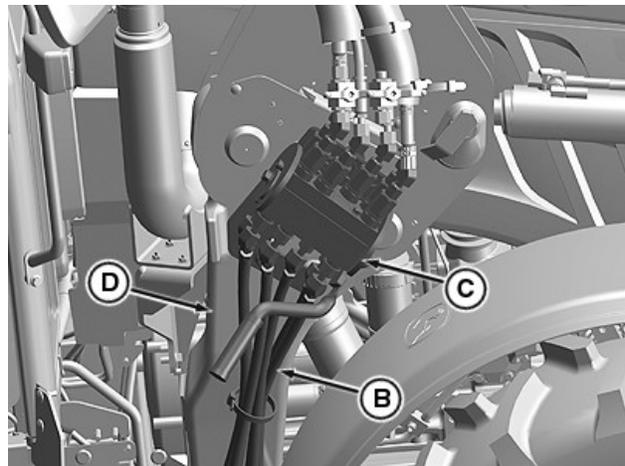
1. Lift latch (B).
2. Open lid (A).
3. Support bottom of the tool box (C).
4. Pull removal pin (D) upward to release.
5. Slide toolbox away from retaining tab (E) to release tool box.
6. Reverse process to reinstall.

V5VUVD4,00000C5-19-07OCT22

## Front Loader



APY80649—UN—12OCT22



PY39988—UN—09MAY17

- A—Mid-Mount SCV Couplers
- B—Loader Extension Hoses
- C—Loader Multicoupler
- D—Loader Mounting Frame

- For information on installing the loader brackets, see Additional Equipment Maintenance section.
- For information on how to attach the loader to the machine and basic functionality, refer to the specific Loader Operator's Manual.
- For information on how to use the controls to operate the loader, see Selective Control Valve Operation section.
- For information on how to use loader lighting, see Electrical and Lighting Operation section.

V5VUVD4,00000C6-19-05OCT22

## Front Loader Suspension Activation



RXA0170574—UN—19SEP19  
Front Loader Suspension Icon



RXA0170573—UN—18SEP19  
Front Loader Suspension Button

### A—Front Loader Suspension Button

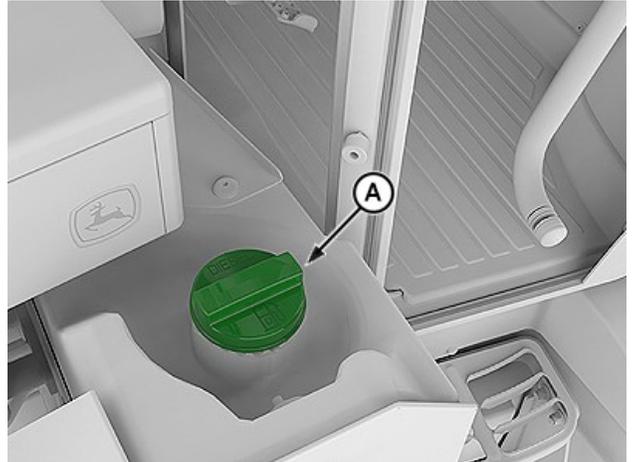
1. Hold the front loader suspension button (A) and switch on the ignition.
2. Hold the front loader suspension button (A) until the LED in the button starts to flash.
3. Release the front loader suspension button (A).
4. Press the front loader suspension button (A) again within 5 seconds to gain access to the programming mode.
5. Current programming of the front loader suspension system is as follows:
  - LED OFF, front loader suspension system deactivated.
  - LED ON, front loader suspension system activated.
6. Press the front loader suspension button (A) to active or deactivate the front loader suspension system.
7. To leave the programming mode and save the setting, press any button on the mid-mount SCV joystick lever or switch off the ignition.

**IMPORTANT:** Cycle the lift cylinders circuit several times to bleed air before testing.

8. Test the front loader suspension system.

V5VUVD4,00000C7-19-08MAR22

## Lockable Fuel Fill Cap



APY80650—UN—07OCT22

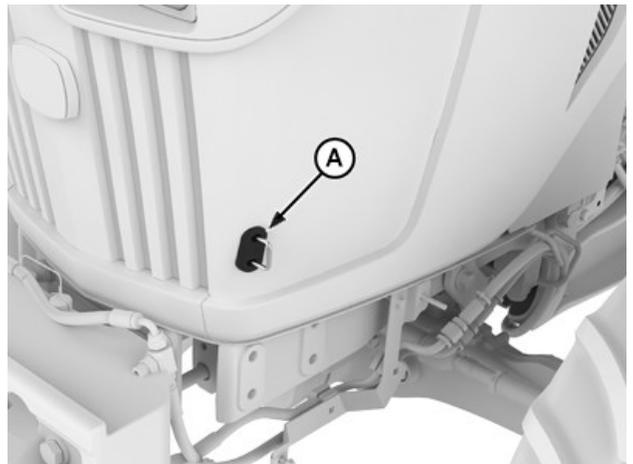
### A—Lockable Fuel Fill Cap

*NOTE:* It is recommended to use a vented locking fuel cap for all machines.

Machine can be equipped with a lockable fuel fill cap (A).

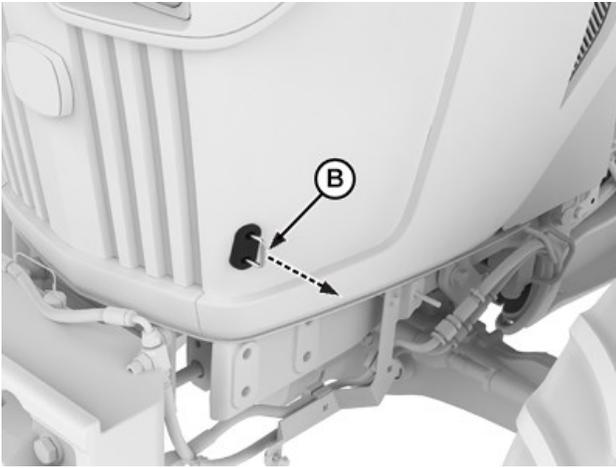
V5VUVD4,00000C8-19-05OCT22

## Hood Latch



APY80651—UN—07OCT22

Hood Latch Location



APY80652—UN—07OCT22

**A—Hood Latch**

**B—Hood Latch Release Rod**

1. Shut off engine and remove the ignition key.
2. Hood latch (A) is located below left headlight on the left side of the hood.
3. Pull the hood latch release rod (B) outward to release the latch.
4. Lift the hood to open the engine compartment.

V5VUVD4,00000C9-19-28NOV22

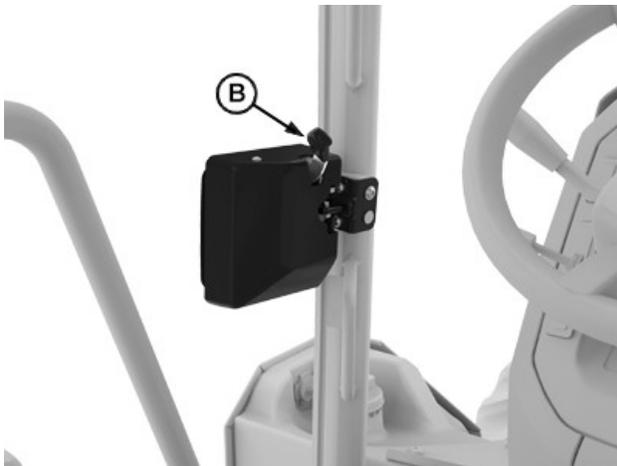
---

# Operator's Station Operation

## Doors



APY80653—UN—07OCT22



APY80654—UN—07OCT22

- A—Exterior Door Latch
- B—Interior Door Latch

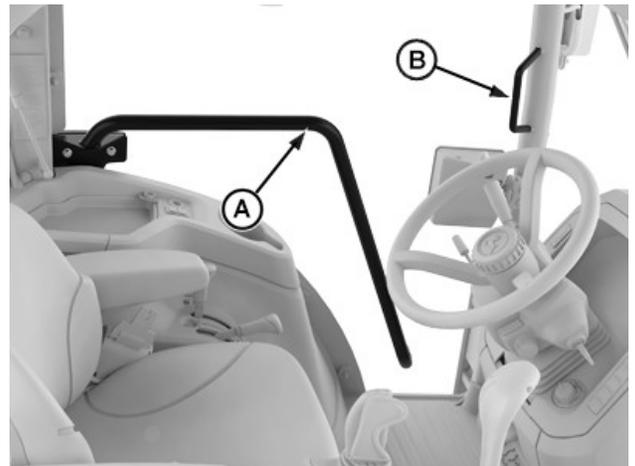
Depress the button on the exterior door latch (A) to release and pull to open door. An optional exterior locking latch is available.

Pull interior door latch (B) to release and push to open door.

V5VUVD4,00000CA-19-05OCT22

## Grab Handles

### Interior Handles



APY80655—UN—07OCT22

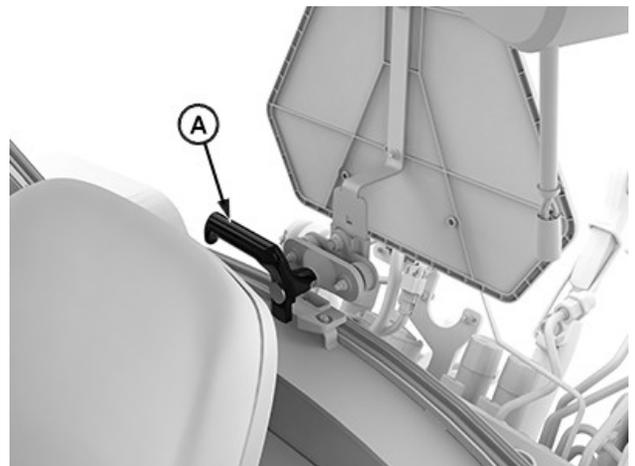
- A—Door Grab Handle
- B—Corner Post Grab Handle

Both doors are equipped with grab handles (A) to assist operator with entering and exiting the cab. The handles are also used to assist with opening and closing the doors.

The corner post grab handle (B) is used to assist the operator when getting into and out of the seat.

V5VUVD4,00000CB-19-05OCT22

## Windows



APY80656—UN—11OCT22

- A—Rear Window Latch

**CAUTION:** In an emergency situation, rear window provides an exit path if cab doors are blocked. The panoramic sunroof does not open under any circumstance.

### Rear Window

Rotate rear window latch (A) clockwise and push window open.

V5VUVD4,00000CC-19-05OCT22

### Window Shades



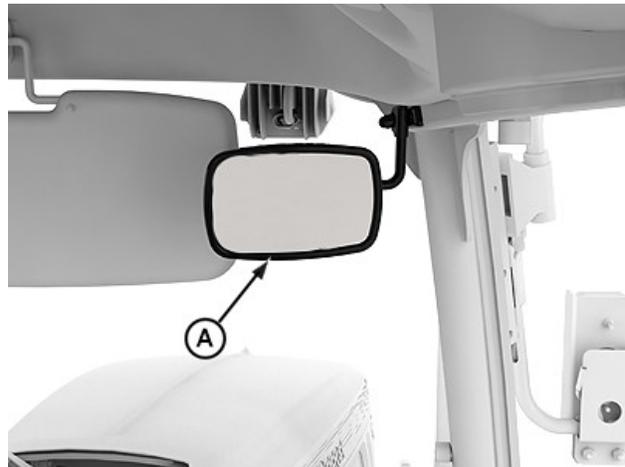
A—Front Window Shade

APY80657—UN—11OCT22

Pull front window shade (A) straight down to desired position. Shade can be positioned anywhere between fully open and closed. Push shade up to retract.

V5VUVD4,00000CD-19-05OCT22

### Interior Rearview Mirror



APY80659—UN—11OCT22

A—Mirror

Push mirror (A) up, down, left, or right to move into desired position.

V5VUVD4,00000CE-19-07DEC22

### Mirrors

#### Exterior Non-Telescoping Mirrors



APY81422—UN—07DEC22

A—Mirror Arm  
B—Mirror

Push mirror arm (A) forward or pull rearward to desired position. Push mirror (B) up, down, left, or right to move into desired position.

### Cab Seats

#### Air Suspension Seat



APY80660—UN—27MAR23



APY80661—UN—19OCT22

- A—Seat Belt Buckle
- B—Forward or Backward Adjustment Lever
- C—Weight Adjustment Lever
- D—Backrest Adjustment Handle
- E—Armrest Height Adjustment Knob
- F—Seat Belt Latch

**CAUTION:** Wear seat belt at all times during machine operation.

To avoid accidents, adjust the seat before driving.

**IMPORTANT:** While adjusting seat, make sure that all controls can be easily accessed.

Adjust the following to operator preference:

#### Seat Belt

1. Pull latch end (F) of the seat belt to extend.
2. Push latch end (F) into buckle (A) until an audible click is heard.
3. Tug on the seat belt to ensure that it is latched.
4. While exiting, depress the button on buckle (A) to release.

#### Forward or Backward Adjustment

1. Pull up the handle of adjustment lever (B) to adjust seat position.
2. Slide seat to desired position.
3. Release forward or backward lever (B) to lock seat in position.

#### Weight Adjustment

1. Flip out weight adjustment lever (C).
2. Turn lever clockwise (increase load) or counterclockwise (decrease load) to reach desired suspension travel for operator's weight.

**IMPORTANT:** Stop turning lever (C) counterclockwise (decreasing load) when seat reaches minimum weight position and lever resistance increases. Seat mechanism could be damaged.

*NOTE:* Adjustable weight range is 40-150 kg (88-330 lb). Suspension should not bottom out when properly adjusted.

3. Return lever (C) to lock seat in position.



APY83054—UN—27MAR23

#### Backrest Adjustment

##### D—Backrest Adjustment Handle

1. Lift on backrest adjustment handle (D).
2. Adjust backrest to desired position.
3. Release handle to lock backrest into position.

V5VUVD4.00000CF-19-02MAY23

#### Adjust Seat Armrests



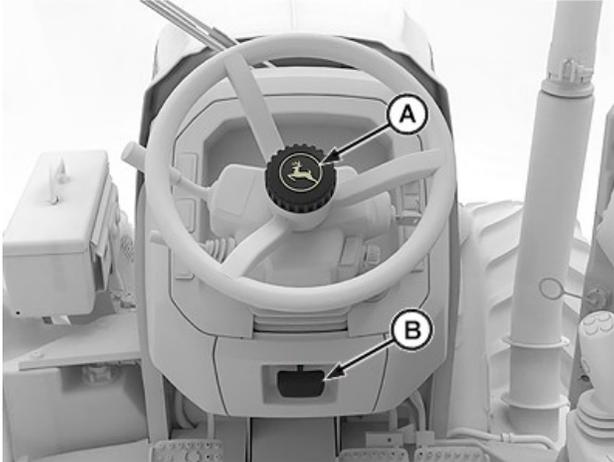
APY83055—UN—29MAR23

##### A—Armrest Height Adjustment Knob

1. Rotate armrest height adjustment knob (A) anticlockwise to loosen.
2. Rotate armrest height adjustment knob (A) clockwise to tighten.

m86qb7,1670593978213-19-08APR23

## Steering Wheel



APY80663—UN—11OCT22

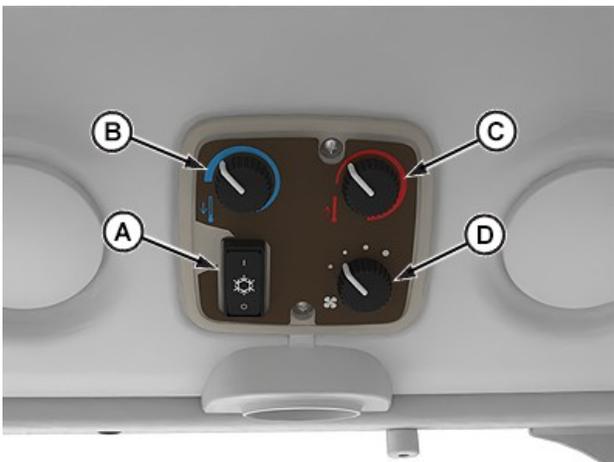
- A—Steering Wheel Telescope Release Knob
- B—Steering Wheel Tilt Release Lever

**Telescope:** Rotate steering wheel telescope release knob (A) counterclockwise. Extend or retract the steering wheel to desired position. Rotate knob clockwise to lock.

**Wheel Tilt:** Pull up on steering wheel tilt release lever (B) and move steering wheel to desired position. Release lever to lock.

V5VUV4,00000D2-19-05OCT22

## Heat, Defrost, and Air Conditioning Temperature Controls



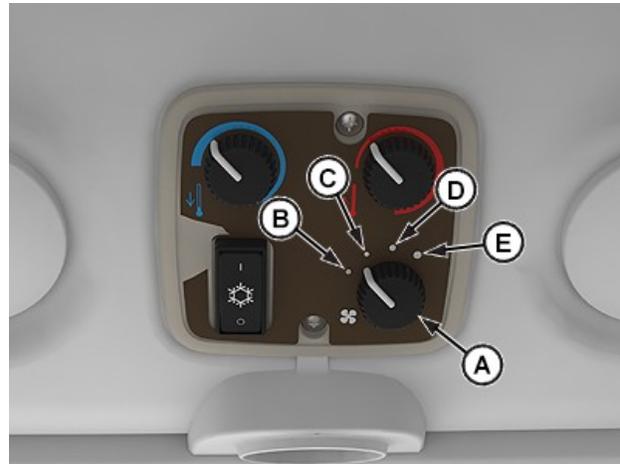
APY80664—UN—11OCT22

- A—Air Conditioner and Defog Switch

- B—Air Conditioner Temperature Control Knob
- C—Heater Temperature Control Knob
- D—Fan Speed Control Knob

- Push top half of switch (A) to turn on air conditioner/ defog.
- Turn control knob (B) to adjust air conditioner temperature.
- Turn control knob (C) to adjust heater temperature.

## Fan Speed Control

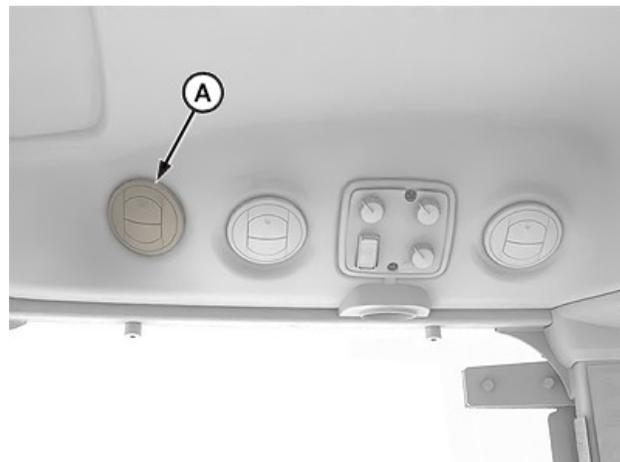


APY80665—UN—11OCT22

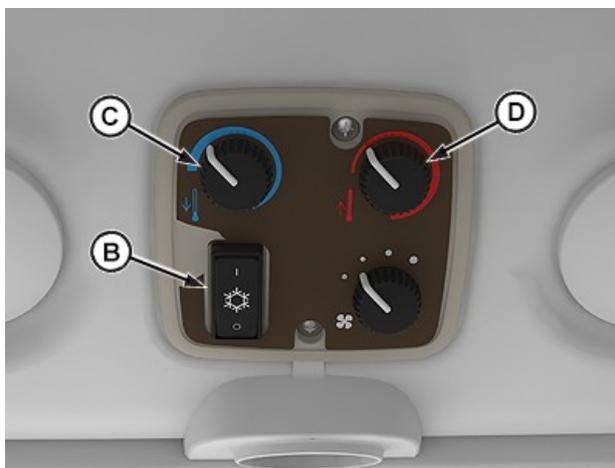
- A—Fan Speed Control Knob
- B—Off
- C—Low
- D—Medium
- E—High

Turn fan speed control knob (A) to desired heater, ventilation, or air conditioner setting.

## Defog



APY80666—UN—11OCT22



APY80667—UN—11OCT22

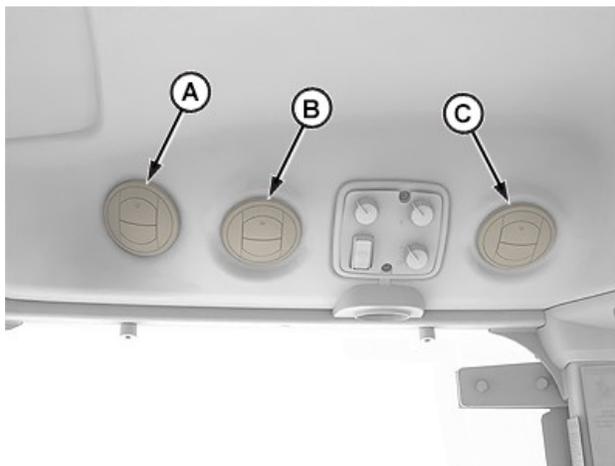
- A—Front Vent
- B—Defog Switch
- C—Air Conditioner Temperature Control Knob
- D—Heater Temperature Control Knob

1. Aim front vents (A) toward windshield.

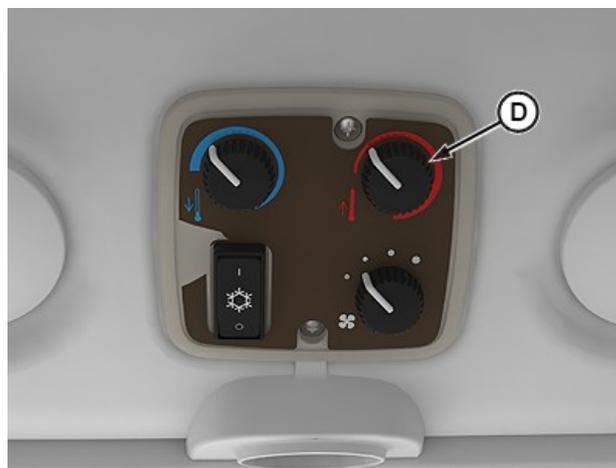
*NOTE: Closing all upper vents will defog the windshield faster.*

2. Press top half of defog switch (B) and turn air conditioner temperature control knob (C) to full counterclockwise position.
3. Turn heater temperature control knob (D) clockwise to obtain desired temperature.

### Heat and Air Vent Control



APY80668—UN—11OCT22



APY80669—UN—11OCT22

- A—Front Vent
- B—Middle Vent
- C—Rear Vent
- D—Heater Temperature Control Knob

Adjust individual vents to target heating or cooling:

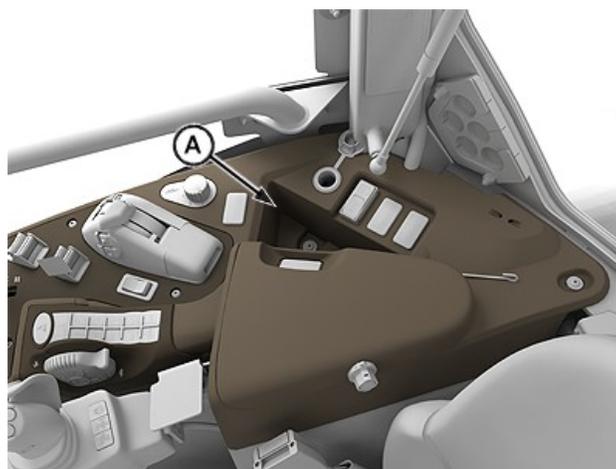
- Aim front vents (A) toward legs and mid-body.
- Aim middle vents (B) toward your head.
- Aim rear vents (C) toward your back.
- Aim all vents (A, B, and C) down to heat the floor and feet.

*NOTE: For maximum cooling effect, turn heater temperature control knob (D) to full counterclockwise position.*

V5VUVD4,00000D3-19-18OCT22

### General Storage

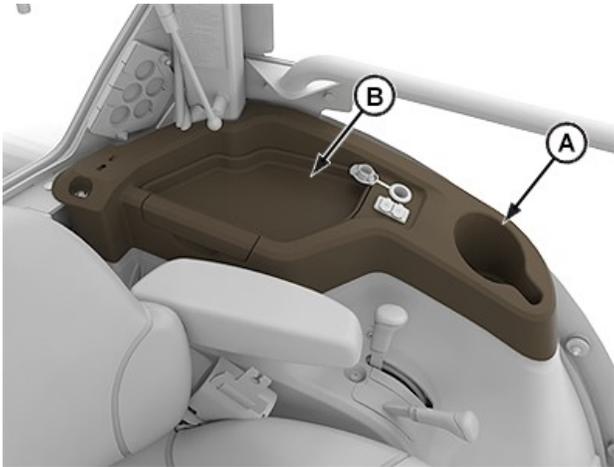
#### Right-Hand Storage



APY80670—UN—11OCT22

- A—Storage

### Left-Hand Storage

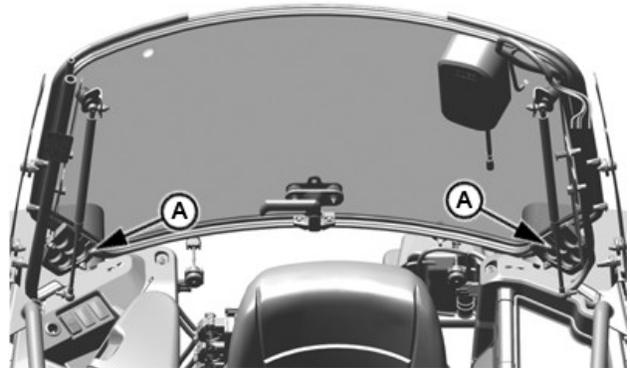


APY80671—UN—15NOV22

- A—Beverage Holder
- B—Writing/Computer Surface

V5VUVD4,00000D5-19-15NOV22

### Rear Window Cable Routing



P21074—UN—23NOV23

#### A—Cable Routing Locations

The rear window of the cab is provided with two openings, allowing the cables to be routed.

1. Open the window and take out the rubber stoppers.
2. Cut the rubber stoppers at the incisions provided to enable the cables to be routed.
3. Route cables and make connections as required.
4. Insert the rubber stoppers and close the window.

V5VUVD4,00000D8-19-23NOV23

### Monitor Mounts



APY80672—UN—11OCT22

Front Post

#### A—Front Right Corner Post Mounting Location

Install monitor at front right corner post mounting locations (A).

V5VUVD4,00000D7-19-19OCT22

### Coat Hook



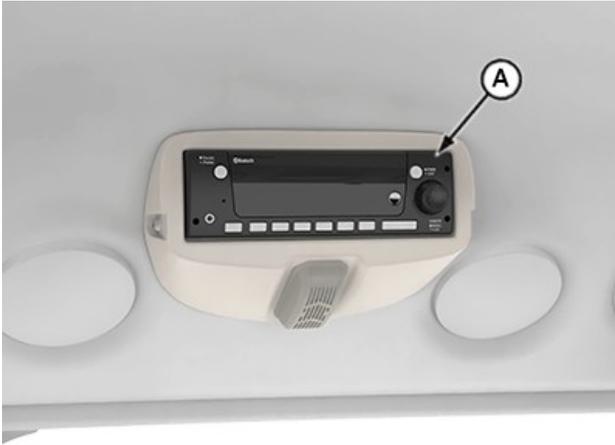
APY80673—UN—11OCT22

#### A—Coat Hook

Coat hook (A) is supplied for operator's convenience.

V5VUVD4,00000D9-19-05OCT22

## Radio



APY79631—UN—10OCT22

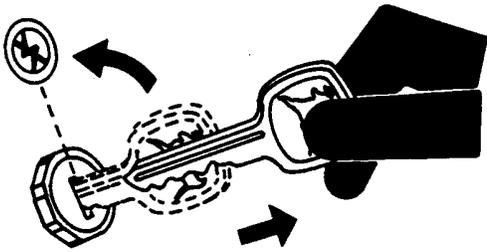
### A—Radio

Refer to your specific radio reference manuals for more information about operation.

m86qb7,1669378075324-19-25NOV22

# Transport and Storage

## Keep Machines Secure

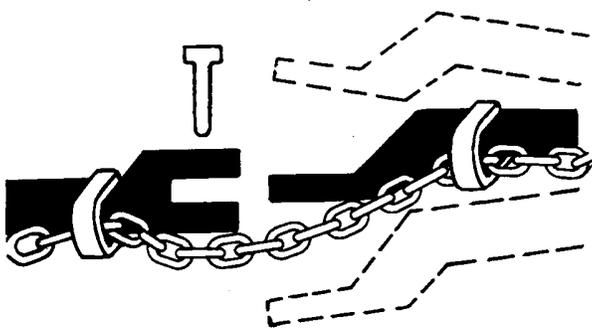


TS230—UN—24MAY89

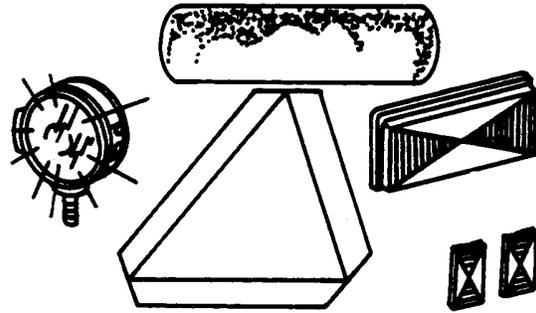
1. Install vandal-proof devices.
2. When machine is in storage:
  - Lower equipment to the ground
  - Set wheels to widest position to make loading more difficult
  - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When 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

## Deliver Safely



TS217—UN—23AUG88



TS949—UN—22MAR90

The best method for delivering tractors, self-propelled equipment, and most implements or attachments is on a flatbed truck or trailer. Secure loads with tie down chains, straps, and binders.

Be aware of height and width restrictions to avoid collision with overpasses, bridge abutments, or other road users. Check with local authorities regarding oversized load transport restrictions and requirements.

When towing, remember that towed loads can swerve, upset or cause loss of control when towed with an undersized towing unit.

Never tow an implement behind a truck or other motor vehicle. The ability to maintain control and brake the implement and vehicle mass is compromised. The ability to properly attach the implement hitch and safety chain to the motor vehicle may be marginal. With most motor vehicles it is not possible to properly operate the warning, tail and turn signal lights on the implement, and in most cases the implement tires are not rated for highway speeds.

Tow drawn implements only with a properly sized and weighted tractor equipped with a stationary drawbar. (See tractor operator's manual for ballast requirements.)

Integral and semi-integral implements should be attached to a tractor with a three-point hitch as specified in the implement operator's manual. The tractor should have the proper size rear tires and the sway blocks should be in the down position. Do not transport unless the tractor front end is ballasted to the weight levels specified in the tractor operator's manual for the correct implement code.

Before transporting, attach a properly sized safety tow chain between the implement and tractor.

Stopping distance increases with speed and weight of towed loads, and when transporting on slopes. Observe these recommended maximum road speeds, or local speed limits that may be lower:

- If towed equipment does not have brakes, do not transport at speeds above 32 km/h (20 mph) and do not tow loads that weigh more than 1.5 times the weight of the tractor.
- If the towed equipment has brakes, do not transport

at speeds above 40 km/h (25 mph) and do not tow loads more than 4.5 times the weight of the tractor.

Use additional caution and reduce speed when towing under adverse surface conditions, when turning, and when on inclines.

Attach the implement lighting harness to the tractor and make sure that the warning and taillights on both the tractor and implement are on and functioning properly.

Make sure that the SMV and other markings on the implement are clean and visible.

DX,DELIVER-19-26JUL19

## Road Transportation

**⚠ CAUTION:** Before operating machine on public roadways, familiarize yourself with the machine and the controls. Read this manual thoroughly, familiarize yourself with the machine, and understand how to use all of the controls. Consider weather, type of towed implement, roadway surface, lighting conditions, and traffic when operating on public roadways.

When transporting, use adequate accessory lights and devices to warn operators of other machines. Frequently check for traffic from the rear, especially in turns. Use your turn signals. Check local governmental regulations. Various safety devices are available from your John Deere dealer. Keep safety items in good condition. Replace missing or damaged items.

The following items must be considered before transporting on public roads:

1. Always wear your seat belt.
2. Correct driving lights for road use and using implement connector to power implement lights. Turn signal and warning light usage. (See Electrical and Lighting Operation section.)
3. Locking brake pedals together, see Steering and Brake Operation section.
4. Transmission operation, see Transmission Operation section.
5. Correct MFWD setting for road use, see MFWD and Front Axle Operation section.
6. Disengage differential lock, see Differential and Rear Axle Operation section.
7. Lock rear hitch in transport position, see Hitch and Drawbar Operation section.
8. Lock loader cylinders, see loader operator's manual for more info.
9. Lock SCVs or lock implement cylinders to prevent

accidental engagement, see Selective Control Valve Operation section or implement operator's manual.

10. Clean windows, slow moving machine sign, and lights. Adjust steering wheel, seat, and mirrors. (See Operator's Station Operation section.)
11. Ballast machine correctly, see Ballasting section.
12. Use the foot speed control instead of the hand speed control. (See Engine Operation section.)

V5VUVD4,00000DB-19-08MAR22

## Towing Loads

**⚠ CAUTION:** Avoid possible injury from losing control while towing a load. Stopping distance increases with speed and weight of towed loads, and on slopes.

Never operate with transmission in neutral position or with clutch disengaged.

Never exceed implement maximum transport speed. Before transporting a towed implement, refer to the implement Operator's Manual and implement decals to determine the maximum transport speed. Use implement code in the implement Operator's Manual to determine minimum number of front weights required.

Failure to adhere to implement maximum transport speed or to have correct ballast can result in:

- Loss of control of machine/implement combination.
- Reduced or no ability to stop during braking.
- Implement tire failure.
- Damage to implement structure or components.

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.

Machine must be heavy and powerful enough with adequate braking power for towed load. Add ballast to the machine or lighten implement load.

### Guidelines for Towing Equipment without Brakes:

- Do not transport at speeds greater than 32 km/h (20 mph).

### Guidelines for Towing Equipment with Brakes:

- If the implement manufacturer does not specify a maximum transport speed, avoid transport at speeds above 40 km/h (24.8 mph).
- When transporting at speeds up to 40 km/h (24.8

mph), the fully loaded implement must weigh less than 4.5 times machine weight.

V5VUVD4,0000DC-19-27APR23

## Come Home Mode

**IMPORTANT:** The come home feature allows operation of the machine at a limited capacity. If an electrical issue prevents the machine from moving, the operator can engage come home mode to move the machine.

This mode is intended for limited operation at low speeds to move the machine to a location where it can be transported to a repair facility. Extended operation in come home mode could lead to machine damage.

*NOTE: Engine speed is limited to 1300 rpm while come home mode is active.*

### Enter Come Home Mode:

1. Place left-hand reverser in Neutral position.
2. Start engine.
3. The operator must stand up fully and sit back down for the machine to acknowledge operator presence.
4. Remove the F34 fuse from the fuse panel.
5. Come home mode is active. Diagnostic code OIC 523966.31 is present and the transmission indicator on the display flashes.

### Operate Machine:

1. Depress clutch.
2. Select a speed and range.

*NOTE: Only low speeds are available in come home mode.*

3. Place the left-hand reverser in forward or reverse as needed.
4. Release clutch to move machine.
5. Depress clutch pedal and place left-hand reverser in Neutral to stop machine.

### Exit Come Home Mode:

1. Shut key switch off.
2. Replace the F34 fuse in the fuse panel.

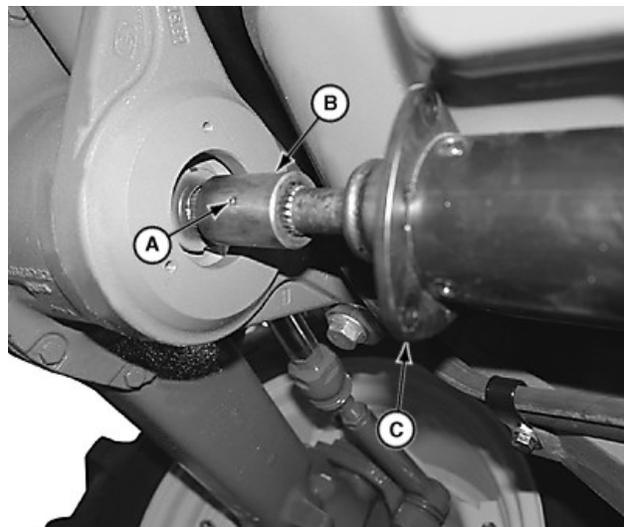
V5VUVD4,0000DD-19-08MAR22

## Tow Machine

**CAUTION:** Remove MFWD drive shaft if towing machine with front wheels on a carrier. Loss of electrical power or transmission/hydraulic system pressure engages the MFWD and can pull machine off the carrier, even with switch in the DISENGAGED position.

**IMPORTANT:** To avoid damage to transmission and power train components, **NEVER** attempt to start machine by towing; engine will not start.

1. If equipped with MFWD and towing machine with front wheels on a carrier, remove driveshaft:
  - a. Remove three cap screws and slide driveshaft shield (C) away. Repeat on opposite end.

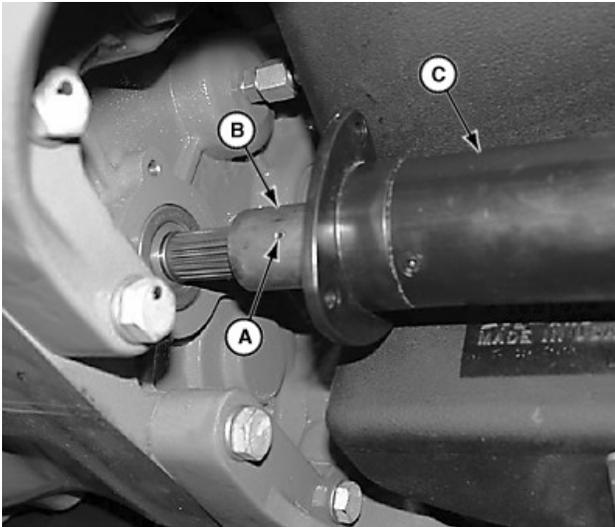


LV14557—UN—03AUG11

Drive Shaft—Axle End

A—Spring Pin  
B—Coupler  
C—Driveshaft Shield

- b. Remove spring pin (A) using a punch and hammer.



LV14558—UN—03AUG11

Drive Shaft—Transmission End

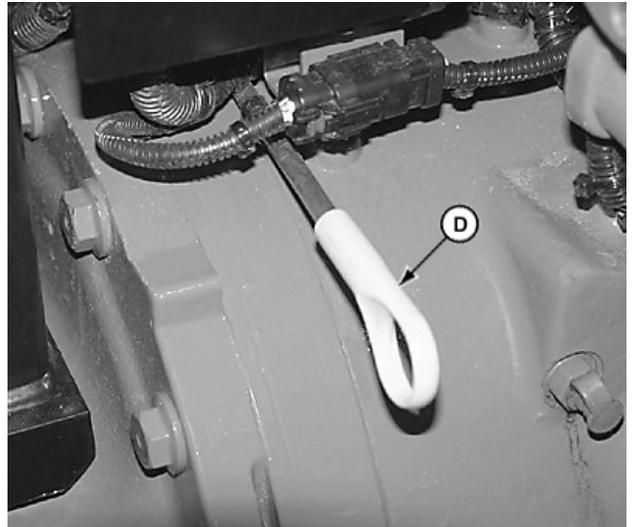
- A—Spring Pin
- B—Coupler
- C—Driveshaft Shield

- c. While supporting driveshaft, slide coupler (B) toward shield (C) to disengage.
  - d. Remove driveshaft, shields, and couplers.
2. If possible, operate engine above 1250 rpm to provide lubrication, power steering, and power brakes. Have an operator steer and brake machine.
  3. If not possible to run engine, add 40 L (10 gal) of transmission/hydraulic oil to transmission. Drain excess oil after transporting.
  4. To make sure that differential lock is not engaged, tap brake pedals .
  5. Disengage PTO and move range and speed shift levers to Neutral.
  6. If equipped with a left-hand reverser, move lever to Neutral.
  7. Do not tow a machine faster than 8 km/h (5 mph). Do not exceed 3 km/h (2 mph) for the first 10 minutes at temperatures below freezing.

#### After Towing

If equipped with MFWD, apply multi-purpose grease to couplers and shaft splines, and reinstall driveshaft assembly.

Drain excess transmission/hydraulic oil to return system to normal operating level.



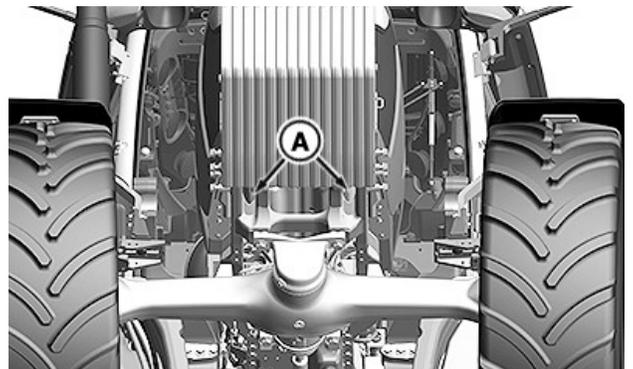
LV14559—UN—03AUG11

#### D—Dipstick

Check oil level with dipstick (D) after draining and again after operating for five minutes.

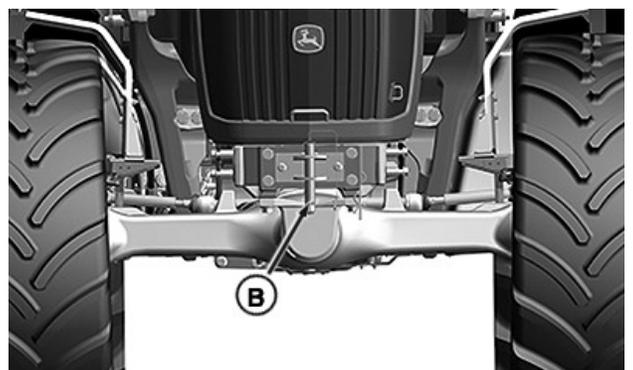
V5VUVD4,00000DE-19-28APR23

#### Front Tow Points



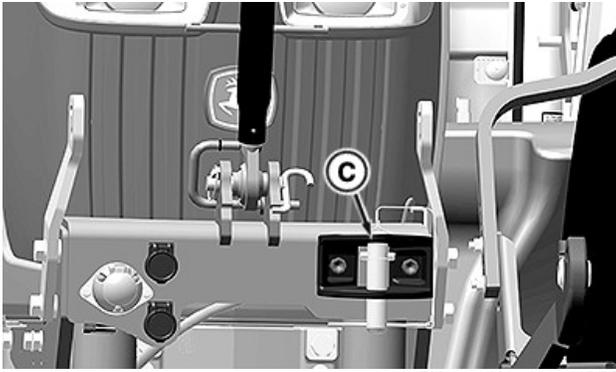
RXA0151018—UN—19JAN16

Oil Pan Tow Points (Weights Installed)



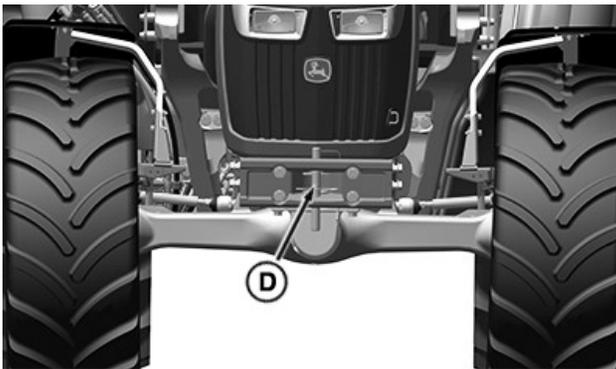
RXA0151020—UN—19JAN16

Front Tow Pin (Without Weight Bracket)



Front Hitch Tow Pin

RXA0151069—UN—06DEC16



Front Tow Pin (Weight Bracket Without Weights)

RXA0151311—UN—11NOV16

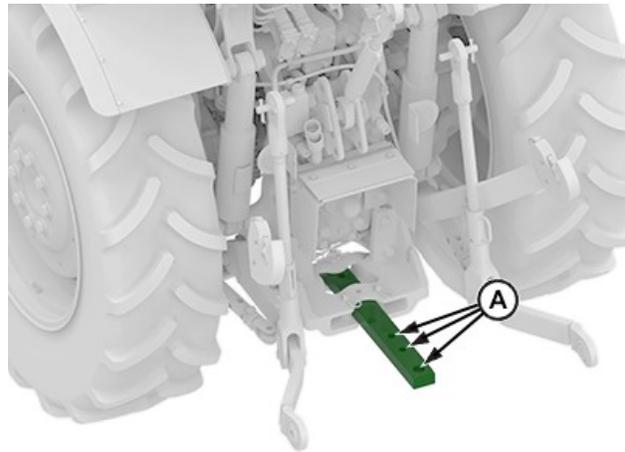
- A—Oil Pan Tow Points
- B—Front Tow Pin
- C—Front Hitch Tow Pin
- D—Front Weight Bracket Tow Pin

**CAUTION:** Using improper towing devices can result in device failure and personal injury. If towing or freeing a mired machine is required, use pins, clevises, tow straps, or chains which are rated higher than the machine and implement weight. See your John Deere dealer.

Connect towing device to the tow points as necessary. Oil pan tow points (A) can be used on any machine if a chain with hooks on both ends is secured to both points.

V5VUVD4,00000DF-19-08MAR22

## Rear Tow Points



A—Rear Drawbar Tow Points

APY77546—UN—15NOV22

**CAUTION:** Using improper towing devices can result in device failure and personal injury. If towing or freeing a mired machine is required, use pins, clevises, tow straps, or chains which are rated higher than the machine and implement weight. See your John Deere dealer.

Connect towing device to the tow points as necessary.

V5VUVD4,00000E0-19-15NOV22

## Machine Storage

**IMPORTANT:** Anytime machine is not used for several months, use this procedure to minimize corrosion and deterioration. Use an engine storage kit and an extra 0.95 L (1 pt) of corrosion inhibitor. See your John Deere dealer.

**IMPORTANT:** Long-term storage of Diesel Exhaust Fluid in the DEF tank (over 12 months) is not recommended. If long-term storage is necessary, test DEF before operating engine. (See Fuel, Lubricants, and Coolants section.)

**NOTE:** Whenever possible, store machine in a building or under a roof to avoid damage resulting from prolonged exposure to the elements.

**Perform the following steps to place machine into storage:**

1. Service air cleaner, see Air, Fuel, Coolant, and Exhaust Maintenance section.
2. Change engine oil and filter, see Engine Maintenance section.
3. If coolant has not been changed within the last 2 years, flush cooling system. (See your John Deere

dealer.) Add 50% antifreeze/water mixture. Test coolant for adequate cold-weather protection.

4. Add 0.5 L (16 oz) of corrosion inhibitor to engine at the oil fill cap.
5. Add 0.25 L (9 oz) of corrosion inhibitor to the transmission/hydraulic reservoir at the oil fill cap.
6. Drain fuel and add back 4 L (1 gal) of fuel. Then add 0.5 L (16 oz) of corrosion inhibitor to fuel tank.
7. Depress clutch and start engine. Run engine until it reaches operating temperature. Also raise and lower front and rear hitches several times. When done, fully lower rear hitch and raise front hitch to retract cylinders.
8. Shut off engine.
9. Remove air intake hose at the manifold. Pour 0.1 L (3 oz) inhibitor into manifold and replace hose.
10. Disconnect crankshaft position sensor wiring connector. (Preventing engine from starting while engaging the starter.)
11. Pull hand speed control back to low idle position. Crank engine only a few revolutions.
12. Release tension on auxiliary drive belts. Remove belt from the air conditioner pulley and fan pulley.
13. Remove and clean battery. Store in a cool, dry place. Keep battery charged. Disconnect battery ground cable for short-term storage periods (30 to 90 days). (See Electrical and Lighting Maintenance section.)
14. Coat exposed metal surfaces, such as steering cylinder rods, if extended, with grease or a corrosion inhibitor.
15. Seal air inlets, exhaust, crankcase fill cap, fuel tank cap, radiator overflow hose, and transmission and hydraulic system fill cap using plastic bags and tape.
16. Protect tires from heat and sunlight:
  - Raise tires off the ground (move machine once a month if tires are not raised off the ground).
  - Cover wheels with waterproof tarpaulin.
  - Avoid storing at temperatures greater than 29°C (85°F).
  - Avoid direct sunlight.
17. Thoroughly clean machine. Touch up any painted surfaces that are scratched or chipped.
18. Wax entire machine.
19. If machine is stored outside, follow additional precaution: Cover instrument panel, controls, and seat with sheets of material or cardboard, or cover

entire machine with waterproof material to protect against sunlight.

V5VUVD4,00000E1-19-08MAR22

## Remove Machine from Storage

**IMPORTANT: If machine has been stored over 12 months, test DEF before operating engine. (See Fuel, Lubricants, and Coolants section.)**

**To remove machine from storage, perform the following steps:**

1. Remove all coverings placed in or on machine while storing it.
2. Inspect tires and check tire inflation pressure, see Wheels and Tires Maintenance section.
3. Unseal all openings sealed before storing.
4. Charge and install battery.
5. Install auxiliary belt drive on the air compressor pulley and fan pulley.
6. Check levels of engine oil, transmission/hydraulic oil, engine coolant, and diesel exhaust fluid (DEF). Add if necessary.
7. To purge any moisture condensation that has collected, drain a small amount of fuel from the fuel tank.
8. Fill fuel tank.
9. Check all instruments and indicators by turning ignition switch to ON position.
10. Connect crankshaft position sensor connector.
11. Crank engine for a few revolutions.

**IMPORTANT: Do not operate the starter more than 20 seconds at a time, and wait at least 2 minutes for starter to cool before trying again.**

12. Start the engine.
13. Operate engine at low idle for some time.
14. Check air conditioning system.
15. Operate air conditioning system at low idle for 2 minutes.
16. Check all other system functions.

V5VUVD4,00000E2-19-08MAR22

# Maintenance Intervals

## Maintain Daily Before Start-Up

**IMPORTANT: Do not operate when oil level is below lower mark on dipstick.**

**For any off level operation, engine oil must be maintained at the FULL mark to avoid engine damage.**

1. Check engine oil level. (See Engine Maintenance section for procedure.)
2. Raise hood. Clean dust unloading valve. (See Air, Fuel, Coolant, and Exhaust Maintenance section for procedure.)
3. Check transmission/hydraulic oil. (See Hydraulics Maintenance for procedure.)
4. Inspect machine for damage. Repair as needed before operation.

- Debris around cooling package
- Exhaust and engine areas
- Mud and field debris buildup
- Low tire pressure
- Loose hardware

5. If operating in wet or muddy conditions, lubricate the following at the 10-hour service interval with multi-purpose grease:

- Front axle pivot pin
- Rear axle bearings
- Front and rear hitch

V5VUVD4,00000E3-19-28APR23

## Maintenance Interval Chart

Item	Daily or Every 10 Hours	Weekly or Every 50 Hours	First 100 Hours	Every 250 Hours	Every 500 Hours
Check Engine Oil Level	•				
Clean Air Filter Dust Unloading Valve	•				
Drain Water and Sediment from Fuel Filter	•				
Check Coolant Level		•			
Check Transmission/Hydraulic System Oil Level		•			
Inspect Tires		•			
Check Tire Inflation Pressure		•			
Lubricate MFWD Axle Trunnion		•			
Lubricate Front Hitch		•			
Lubricate Rear Hitch		•			
Inspect Tractor for Loose Hardware		•			
Check and Tighten Air Intake System and Coolant System Hose Clamps			•		
Change Transmission/Hydraulic Filter			•		•
Check Hitch and Drawbar for Excessive Wear				•	
Change Activated Carbon Filter (If Equipped, CAT4)				•	
Lubricate Draft Sensing Shaft Seal				•	
Check Neutral Start System					•
Change Engine Oil and Filter					•
Change Fuel Filters					•
Change MFWD Axle Wheel Hub and Housing Oil					•
Replace Cab Air Filters				•	•
Clean Open Crankcase Vent					•
Lubricate Rear Axle Bearings					•
Check Front Axle Pivot Pin End Play					•

Maintenance Chart — Daily (10 Hours) to 500 Hours

Item	Every 1000 Hours Or Annually	Every 1500 Hours	Every 3000 Hours or 3 Years	Every 4500 Hours or 5 Years	Every 6000 Hours or 6 Years	As necessary
Check Battery and Connections	•					
Check Coolant Properties	•					

*Maintenance Intervals*

Item	Every 1000 Hours Or Annually	Every 1500 Hours	Every 3000 Hours or 3 Years	Every 4500 Hours or 5 Years	Every 6000 Hours or 6 Years	As necessary
Check Seat Belts	•					
Check Fan Belt Tensioner	•					
Change Fan Belt	•					
Change Front PTO Oil	•					
Clean Fuel Tank Vent Filter	•					
Service Air Cleaner Elements	•					
Lubricate Exchangeable 540/1000 rpm PTO Shaft	•					
Change Open Crankcase Ventilation Filter	•					
Change Transmission/Hydraulic Oil and Filter		•				
Supply Module (SM) Filter <sup>a</sup>		•				
DEF Header Filter <sup>b</sup>		•				
Adjust Engine Valve Clearance <sup>c</sup>			•			
Change Transmission Dampener <sup>c</sup>				•		
Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter				•		
Change Diesel Exhaust Fluid (DEF) Tank Header Suction Screen				•		
Change Thermostat			•			
Drain and Replace Coolant					•	
DEF Tank Vent						•
DEF Tank						•

*Maintenance Chart — 1000 Hours to 6000 Hours*

<sup>a</sup>3 years or with DEF Header Filter Change - Whichever occurs first.

<sup>b</sup>Always replace SM Filter when changing header filter.

<sup>c</sup>See your John Deere dealer for service.

m86qb7,1683134834466-19-21NOV23

# Fuels, Lubricants, and Coolants

## 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.

DX,ALTER-19-13JAN18

## 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 a 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

COOL-GARD is a trademark of Deere & Company

If 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,COOL3-19-25AUG20

## 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

## 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.

Test the coolant solution at intervals of 12 months and whenever excessive coolant is lost through leaks or overheating.

*COOL-GARD is a trademark of Deere & Company*

<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.

**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,COOL16-19-15MAY13

## 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)

Ethylene Glycol	Freeze Protection Limit
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.

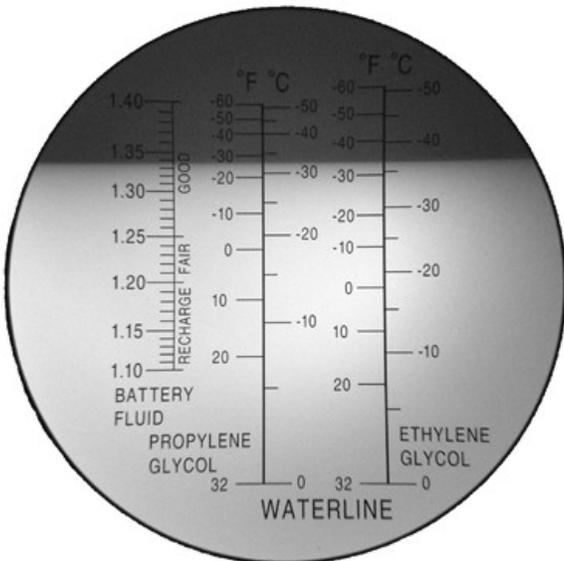
DX,COOL19-19-13JAN18

## 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 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 to 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-19-13JUN13

## 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

SERVICEGARD is a trademark of Deere & Company  
AdBlue is a trademark of VDA, the German Association of the Automotive Industry.

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-19-13JAN18

## 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.

DX,DEF,DISPOSE-19-13JUN13

## 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

## 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

## 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

## 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.

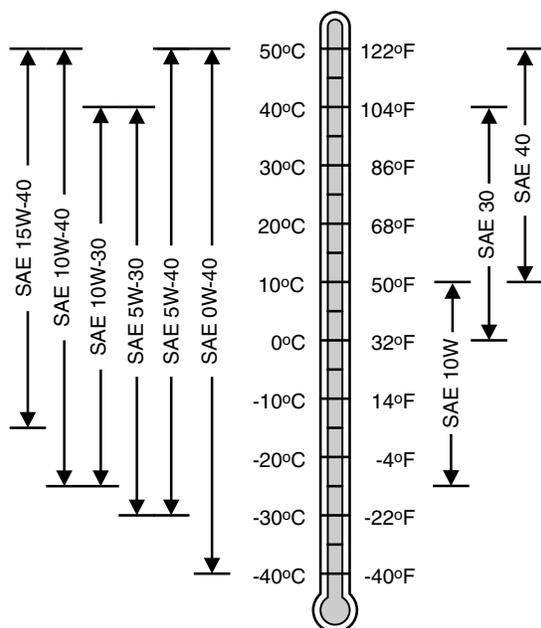
Use only approved oil types.

Example of Original Hours	Corresponding High Altitude Hours
125	60
150	75

Example of Original Hours	Corresponding High Altitude Hours
175	85
200	100
250	125
275	135
300	150
350	175
375	185
400	200
500	250

DX,ENOIL,SERV,HIALT-19-11NOV14

### Diesel Engine Oil — Interim Tier 4, Final Tier 4, Stage IIIB, Stage IV, and Stage V



TS1743—UN—25APR19

Oil Viscosities for Air Temperature Ranges

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 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.

Plus-50 is a trademark of Deere & Company

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,ENOIL14-19-23APR19

### 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 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.

Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm) is **REQUIRED**.

**Engine operation at high altitude** decreases oil change intervals. See Diesel Engine Oil Service Interval for Operation at High Altitude for additional information.

**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 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-19-13JAN18

## 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 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

*Break-In Plus is a trademark of Deere & Company*

- 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,ENOIL16-19-13JAN18

## 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

## 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.

DX,FILT2-19-14APR11

*Plus-50 is a trademark of Deere & Company.*

## 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>2</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

## 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.

<sup>2</sup> See DX,ENOIL12,OEM, DX,ENOIL12,T2,STD, or DX,ENOIL12,T2,EXT for more information on Engine Oil and Filter Service Intervals.

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

## 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

## 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

## 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.**

DX,FUEL7-19-13JAN18

---

### **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

### 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.

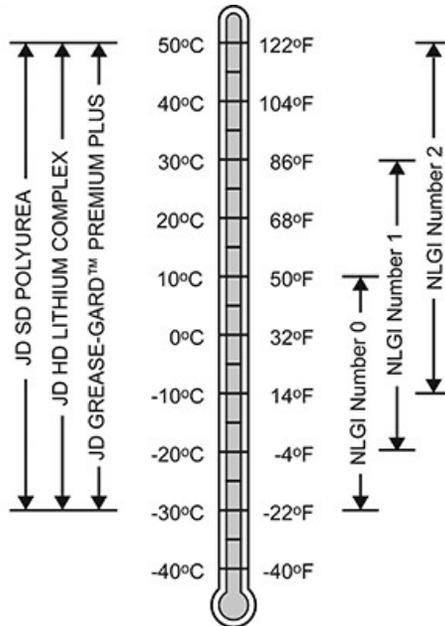
To optimize engine performance and reliability, closely follow recommendations on fuel quality, storage, and handling, which are found elsewhere in this Operator's Manual.

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 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

## Multipurpose Extreme Pressure (EP) Grease

**IMPORTANT: For automated lubrication systems different ambient air temperatures need to be considered.**



RG30199—UN—08MAR18

Greases for Air Temperature Ranges

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,GREA1-19-13JAN18

## Mixing of Lubricants

In general, avoid mixing different brands or types of oil.

*Grease-Gard is a trademark of Deere & Company*

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.

DX,LUBMIX-19-18MAR96

## Lubricant Storage

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

Use clean containers to handle all lubricants.

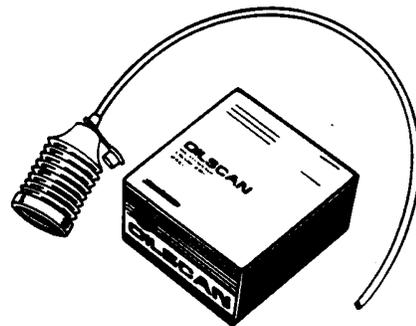
Store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

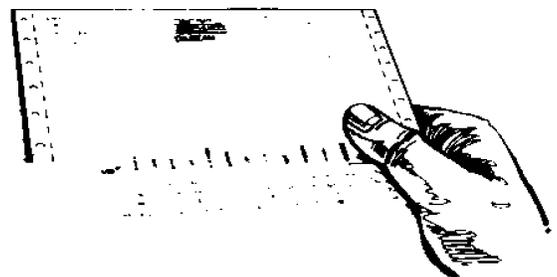
Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST-19-11APR11

## Oilscan™ and CoolScan™



T6828AB—UN—15JUN89



T6829AB—UN—26AUG11

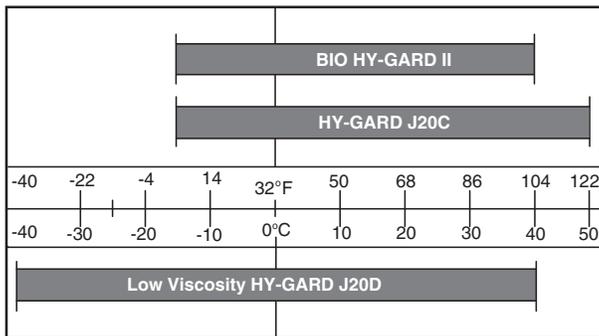
Oilscan™ and CoolScan™ are John Deere sampling programs to help you monitor machine performance and identify potential problems before they cause serious damage.

Oil and coolant samples should be taken from each system before its recommended change interval.

Check with your John Deere dealer for the availability of Oilscan™ and CoolScan™ kits.

DX,OILSCAN-19-13SEP11

## Transmission, Steering, Brake, Hydraulic, and Gear Case Oil



RXA0171623—UN—21OCT19

Oils for Air Temperature Ranges

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

The following oils are preferred:

- John Deere Hy-Gard
- John Deere Low Viscosity Hy-Gard

Other oils may 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>3</sup>

V5VUVD4,00000E5-19-08MAR22

Oilscan is a trademark of Deere & Company  
CoolScan is a trademark of Deere & Company

<sup>3</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 should not be mixed with mineral oils, because this reduces the biodegradability and makes proper oil recycling impossible.

# As Required Maintenance

## Service As Required

*NOTE: Maintain machine as required and as often as necessary. For maintenance items, see the relevant maintenance sections.*

Maintenance Item	Maintenance Section
Paint and Finish Care	As Required Maintenance
Wash Machine	As Required Maintenance
General Control and Instrument Maintenance	Controls and Instruments Maintenance
Break-In Checks	Engine Maintenance
Check Engine and Exhaust Compartments for Debris	Air, Fuel, Coolant, and Exhaust Maintenance
Clean Diesel Particulate Filter (DPF)	Air, Fuel, Coolant, and Exhaust Maintenance
Clean Diesel Exhaust Fluid (DEF) Tank	Air, Fuel, Coolant, and Exhaust Maintenance
Drain Diesel Exhaust Fluid (DEF) Tank	Air, Fuel, Coolant, and Exhaust Maintenance
Clean Grille Screens and Cooling Package	Air, Fuel, Coolant, and Exhaust Maintenance
Bleed Fuel System	Air, Fuel, Coolant, and Exhaust Maintenance
Use Booster Battery or Charger	Electrical Maintenance
Access and Replace Battery	Electrical Maintenance
Replace Fusible Link	Electrical Maintenance
Replace Fuses	Electrical Maintenance
Replace Halogen Headlight Bulb	Electrical Maintenance
Replace LED Headlight	Electrical Maintenance
Headlight Adjustment	Electrical Maintenance
Replace Loader Headlight Bulb	Electrical Maintenance
Replace Bucket Light	Electrical Maintenance
Replace Tail/Turn/Brake Light Bulb	Electrical Maintenance
Replace Warning Light Bulb	Electrical Maintenance
Replace Halogen Worklight Bulb	Electrical Maintenance
Replace LED Worklight	Electrical Maintenance
Replace LED Beacon Light	Electrical Maintenance
Replace Dome Light Bulb	Electrical Maintenance
Replace Map Light Bulb	Electrical Maintenance
Replace Right-Hand Console Light Bulb	Electrical Maintenance
Check Transmission Park System	Transmission Maintenance
Adjust PTO Speed Shift Lever <sup>a</sup>	Power Take-Off (PTO) Maintenance
Check Manual Brakes	Steering and Brakes Maintenance
Adjust Mechanical SCV Cables <sup>a</sup>	Selective Control Valve Maintenance
Empty SCV Oil Collection Tank	Selective Control Valve Maintenance
Tighten Wheel Bolts Correctly	Wheels and Tires Maintenance
Tighten Wheel Bolts—MFWD Axle	Wheels and Tires Maintenance
Tighten Wheel Bolts—Rear Axle	Wheels and Tires Maintenance
Check Air Conditioning System	Operator's Station Maintenance
Change Wiper Blade	Operator's Station Maintenance
Keep Cab Protection System Installed Properly	Operator's Station Maintenance

<sup>a</sup>See your John Deere dealer for service.

V5VUVD4,00000E6-19-08MAR22

## Paint and Finish Care

**IMPORTANT: Do not use strong soaps, chemical detergents, or cleaning agents containing acids, caustics, or abrasives. It is best to use commercially available car wash (non-detergent) products which do not remove protective wax applied to the paint finish.**

- Wash machine regularly, particularly if it has been exposed to herbicides, pesticides, road salt, or other chemical agents.
- Do not wash machine in direct sunlight.
- Rinse all cleaning agents away promptly and do not allow to dry on painted surface.
- Waxing machine occasionally is recommended to remove residue from and further protect paint finish. Do not use waxes containing abrasive compounds.
- Inspect paint surface during washing or waxing for chips and scratches. Repaint any areas where paint has been damaged.

Your John Deere dealer has a full line of cleaners, waxes, and touch-up paints compatible with your equipment to help enhance the paint finishes.

V5VUVD4,00000E7-19-08MAR22

---

## Wash Machine

**IMPORTANT: Cab seals are designed to be rain proof and are not able to withstand high water pressure during washing. Using a pressure washer or high pressure hose causes water ingress into the cab.**

- Avoid using high-pressure water around roof seals, door seals, and vents.
- Directing pressurized water at electronic/electrical components or connectors, bearings and hydraulic seals, fuel injection pumps, exhaust outlet or other sensitive parts and components can cause product malfunctions.
- Reduce pressure and wash at a 45 to 90 degree angle.
- Do not use water at temperatures over 50°C (122°F).
- When washing do not direct any water towards electrical connectors, control units, the exhaust or any fill tank openings.
- Do not spray or wash components (for example, the engine) with cold water when hot.

V5VUVD4,00000E8-19-08MAR22

---

# Controls and Instruments Maintenance

---

## General Controls and Instruments Maintenance

- Ensure that controls and instruments are clean and no bindings are present. See your John Deere dealer for recommended cleaners to prolong life of products.
- Adjust mechanical SCV levers, shiftable PTO lever, and creeper lever. See your John Deere dealer for proper adjustments.

V5VUVD4,00000E9-19-08MAR22

---

# Engine Maintenance

## Break-In Maintenance

After a minimum of 100 hours and a maximum of 500 hours of operation:

Replace Break-In Plus Engine Oil

**IMPORTANT:** If make-up oil is required during the break-in period, John Deere Break-In Plus oil must be used whenever possible. New engines are filled at the factory with Break-In Plus engine oil.

Do not add make-up oil until the oil level is **BELOW** the ADD mark on dipstick. (See Fuel, Lubricant, and Coolants section.)

If any of the following occur during the first 100 hours, it is advised to extend the break-in to 500 hours before changing the oil.

- Too much operating time at idle.
- Too much operating time at a constant speed.
- Too much light load usage.
- Make-up oil is required in the first 100 hours.

V5VUVD4,00000EA-19-27NOV22

## Break-In Checks

**IMPORTANT:** Initial break-in maintenance interval of a new or rebuilt wet sleeve engine must last at least 100 hours with John Deere Break-In Plus oil. The surface mating of rings and liners usually occurs during the first 100 hours.

Maximum maintenance interval is the same as the maintenance interval recommended for your engine. (See Engine Oil and Filter Service Intervals in Fuels, Lubricants, and Coolants section.)

**IMPORTANT:** If engine oil must be added before first normal oil change, use John Deere Break-In Plus engine oil.

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 idles longer than 5 minutes, stop engine.
- Closely observe coolant temperature during operation.
- Check air intake hoses and clamps. (See Air, Fuel, Coolant, and Exhaust Maintenance section.)
- Check for fluid leaks.
- Tighten wheel, wheel weight, and axle bolts after 3

**HOURS**, after **10 HOURS**, and **DAILY** for the first week of operation. (See Wheels and Tires Maintenance section.)

## Daily or Every 10 Hours

Perform normal daily services:

- Check engine oil. (See Engine Maintenance section.)
- Clean dust unloading valve. (See Air, Fuel, Coolant, and Exhaust Maintenance section.)

For first 100 hours of machine operation, perform these additional services daily or every 10 hours:

- Drain water separator. (See Air, Fuel, Coolant, and Exhaust Maintenance section.)
- Check coolant level. (See Air, Fuel, Coolant, and Exhaust Maintenance section.)
- Lubricate rear and front hitch components. (See Hitch and Drawbar Maintenance section.)
- Inspect tires for cuts or punctures. (See Wheels and Tires Maintenance section.)

V5VUVD4,00000EB-19-08MAR22

## Check Engine Oil Level

MAINTENANCE INTERVAL

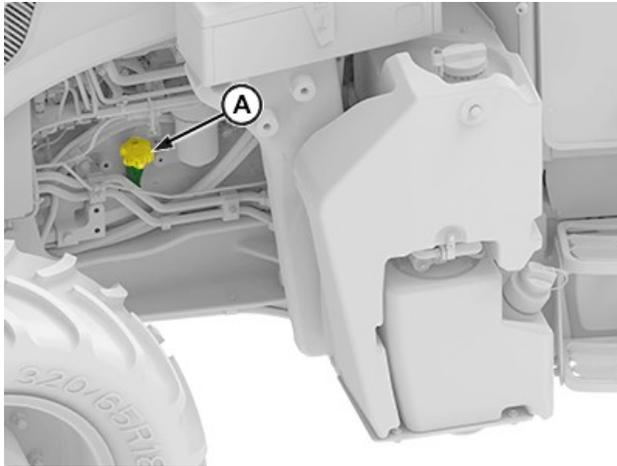
Daily or Every 10 Hours

**IMPORTANT:** Engine comes from the factory, filled with John Deere Break-In <sup>TM</sup>Plus oil. (See Break-In Maintenance in this section.)

**IMPORTANT:**

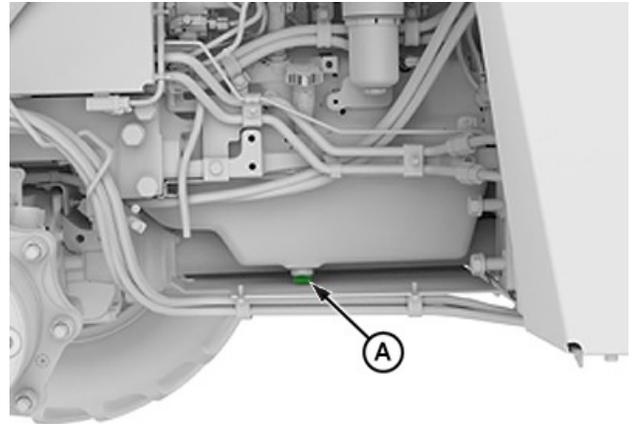
- Do not operate engine with the oil level below the lower mark on dipstick.
- Avoid damage by maintaining full oil level.
- Use seasonal viscosity grade oil. (See Fuels, Lubricants, and Coolants section.)

Break-In



APY77547—UN—10OCT22

Left Side of Engine

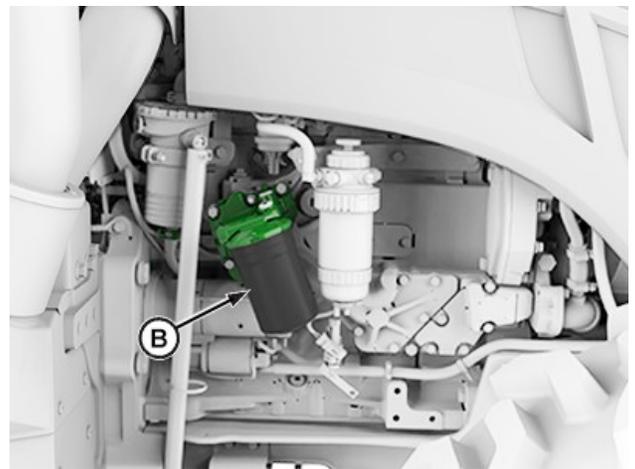


APY77579—UN—12OCT22

Bottom Left Side of Engine

**A—Engine Oil Fill Cap/Dipstick**

1. Park machine on level ground and shut off engine.
2. Remove key.
3. Allow engine to cool.
4. Remove engine oil fill cap/dipstick (A). Wipe off, then fully reinsert the dipstick.
5. Remove engine oil fill cap/dipstick (A). Check engine oil level. Oil level must be between two marks on dipstick.
6. If level is low, add oil through engine oil fill hole until even with the top mark on dipstick. Do not overfill.
7. Reinstall engine oil fill cap/dipstick (A) before operating engine.



APY77580—UN—01FEB23

Right Side of Engine

V5VUVD4,00000EC-19-02NOV22

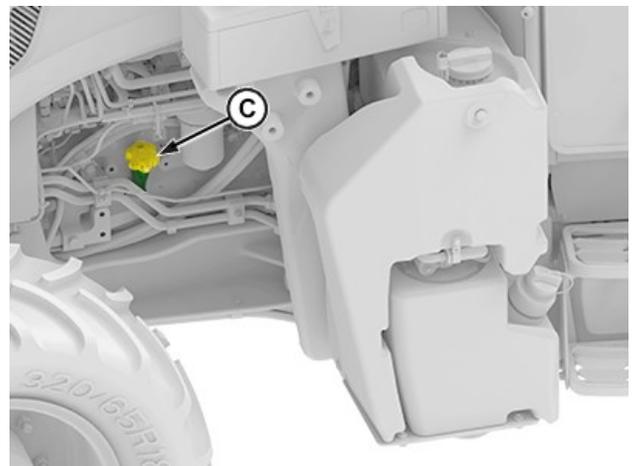
**Change Engine Oil and Filter**

**MAINTENANCE INTERVAL**

**INITIAL — 100 to 500 Hours**

**REGULAR (AFTER INITIAL CHANGE) — Every 500 HOURS** If John Deere Plus-50™ II oil and John Deere filter are used. Maintenance interval is every 250 hours for all other brands of oil or filters.

Plus-50



APY77591—UN—19OCT22

Left Side of Engine

- A—Engine Oil Drain Plug**
- B—Engine Oil Filter**
- C—Engine Oil Fill Cap/Dipstick**

1. Operate engine to warm oil.
2. Park machine on level ground and shut off engine.

3. Remove key.
4. Remove engine oil fill cap/dipstick (C).

**NOTE:** Remove driveshaft shield to access the engine drain plug (A).

Place a container under drain plug (A) and capture waste oil. Dispose of oil properly.

5. Remove engine oil drain plug (A) and allow oil to drain.
6. Open hood.
7. Remove engine oil filter (B).

**NOTE:** Make sure that old filter gasket is removed from housing before installing new filter.

8. Apply a film of oil on the new oil filter gasket and install new filter. Hand-tighten plus 1/2 turn.
9. Install engine oil drain plug (A).
10. Add engine oil to engine oil fill hole. (See Fuel, Lubricants, And Coolants section for oil grades and specifications.)

**Specification**

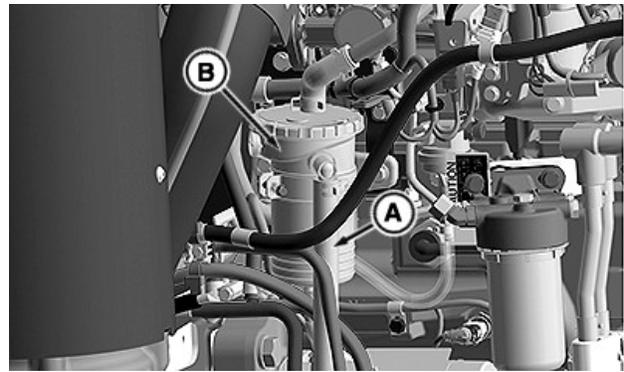
4.5 Liter 4-Cylinder Engine  
 Oil—Capacity. . . . . 13 L  
 (3.4 gal)

11. Install engine oil fill cap/dipstick (C).
12. Remove engine oil fill cap/dipstick (C). Wipe off, then fully reinsert the fill cap/dipstick.
13. Remove engine oil fill cap/dipstick (C). Check engine oil level. Oil level must be between two marks on dipstick.
14. Reinstall fill cap/dipstick (C).
15. Start engine and inspect drain plug and filter for leaks.
16. Stop engine and remove key.
17. Recheck engine oil level on dipstick, add if necessary.
18. Lower hood.

V5VUVD4,00000ED-19-02NOV22

**Clean Open Crankcase Vent**

**MAINTENANCE INTERVAL**  
 Every 500 Hours



RXA0182224—UN—15APR21

A—Open Crankcase Vent Tube  
 B—Open Crankcase Vent Filter Housing

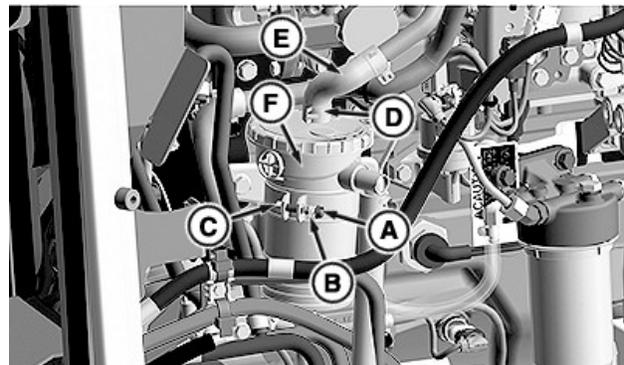
**⚠ CAUTION:** Reduce compressed air pressure to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment, including eye protection.

1. Remove open crankcase vent tube (A) from the open crankcase vent filter housing (B).
2. Wash the open crankcase vent tube (A) in solvent or blow clean with compressed air.
3. Install open crankcase vent tube (A) to the open crankcase vent filter housing (B). Be sure that the vent tube is not kinked or pinched.

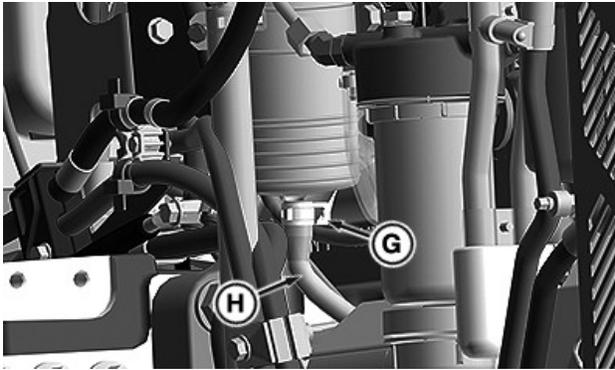
V5VUVD4,00000EE-19-08MAR22

**Change Open Crankcase Ventilation Filter**

**MAINTENANCE INTERVAL**  
 Every 1000 hours or Annually



RXA0182225—UN—15APR21



RXA0182226—UN—15APR21

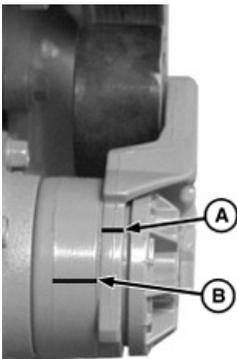
- A—Cap Screw
- B—Spring
- C—Lock Nut
- D—Hose Clamp
- E—Hose
- F—Open Crankcase Vent Filter Housing
- G—Hose Clamp
- H—Hose

1. Remove and retain cap screw (A), spring (B), and lock nut (C).
2. Loosen hose clamp (C) and remove hose (D) on top of the open crankcase vent filter housing.
3. Loosen hose clamp (G) and remove hose (H) on bottom of the open crankcase vent filter housing.
4. Unscrew open crankcase vent filter housing top and remove filter.
5. Inspect open crankcase vent filter housing. Clean if necessary.
6. Install new filter and reinstall filter housing top.
7. Reinstall open crankcase vent filter housing.

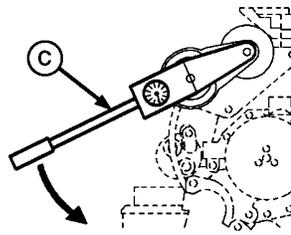
V5VUVD4,00000EF-19-21NOV23

### Check Fan Belt Tensioner

**MAINTENANCE INTERVAL**  
Every 1000 Hours or Annually



LV12526—UN—13APR05



LV12528—UN—12APR05

A—Mark on Swing Arm

- B—Mark on Tensioner Mounting Base
- C—Torque Wrench

*NOTE: A belt tension gauge does not provide an accurate measurement of the belt tension. Measure tensioner spring tension using a torque wrench.*

1. Place machine in park and shut off engine. Remove key.
  2. Remove fan belt. See procedure in this section.
  3. Put a mark (A) on the swing arm of the tensioner as shown.
  4. Measure 21 mm (0.83 in) from (A) and put a mark (B) on tensioner mounting base.
  5. Rotate the swing arm using a torque wrench until marks (A and B) are aligned.
- Pull tensioner with torque wrench away from engine.
6. Record torque wrench measurement and compare with specification. If recorded measurement is below specification, have your John Deere dealer replace tensioner assembly.

**Specification**

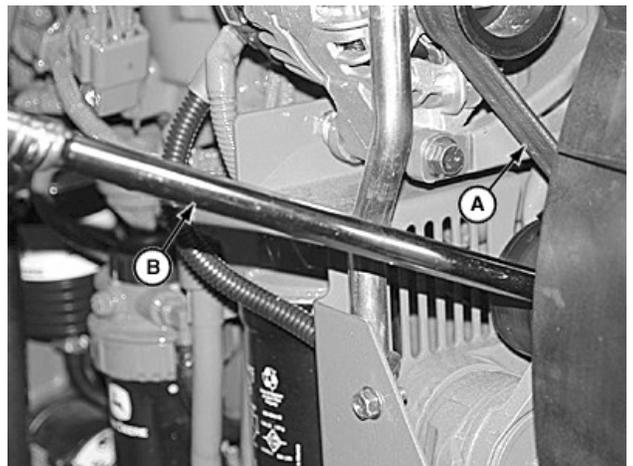
Belt Tensioner—Torque. . . . . 18—22 N·m  
(159—195 lb·in)

7. Install fan belt. See procedure in this section.

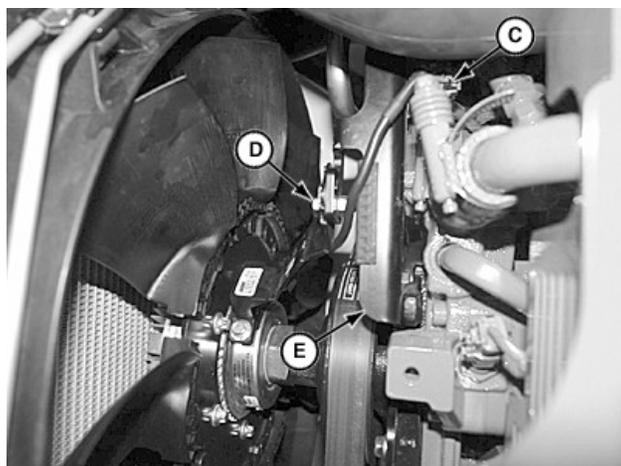
V5VUVD4,00000F0-19-08MAR22

### Change Fan Belt

**MAINTENANCE INTERVAL**  
Every 1000 Hours or Annually



LV14667—UN—18AUG11

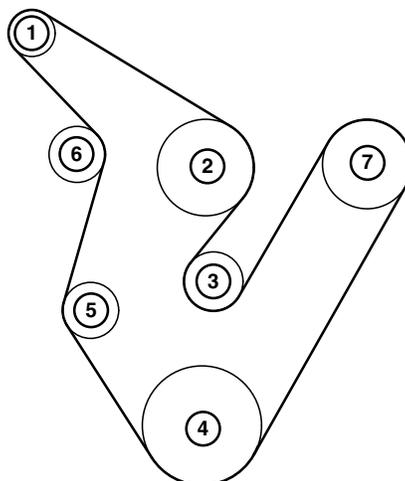


LV14668—UN—18AUG11

- A—Belt
- B—Breaker Bar
- C—Fan Clutch Connector
- D—Lock Nut and Flanged Screw
- E—Wire Harness Support Bracket

**NOTE:** Fan belt drive has an automatic tensioner that does not require adjustment.

1. Place machine in park and shut off engine. Remove key.
2. Release tension on belt using a long-handle 1/2-in drive breaker bar (B) to pull the tensioner away from engine.
3. Remove belt (A) from alternator pulley.
4. Release tension on tensioner and remove breaker bar.
5. Disconnect fan clutch connector (C).
6. Remove lock nut and flanged screw (D) from wire harness support bracket (E).
7. Use breaker bar to push the tensioner into position for removing the belt.
8. Remove belt by bringing it over the wire harness support and cooling fan. Slip it between the fan blades and fan shroud.
9. Install new belt in reverse order of removal.



RXA0154358—UN—27OCT16

Fan Belt Routing

Belt Routing	
1	Alternator
2	Fan Drive
3	Idler
4	Crankshaft Pulley
5	Coolant Pump
6	Tensioner
7	Air Conditioning Compressor

10. Install wire harness support using lock nut and flanged screw. Tighten to specification.

**Specification**

Wire Harness Support Lock Nut—Torque. . . . . 14 N·m (124 lb·in)

11. Reconnect fan clutch connector (C).
12. Use breaker bar to push the tensioner into position for belt installation.

V5VUVD4,00000F1-19-08MAR22

**Adjust Engine Valve Clearance**

<p><b>MAINTENANCE INTERVAL</b> Every 3000 Hours or 3 Years</p>
--

Have your John Deere dealer check and adjust engine valve clearance.

V5VUVD4,00000F2-19-08MAR22

# Air, Fuel, Coolant, and Exhaust Maintenance

## 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.

DX,EMISSIONS,REQINFO-19-12JUN15

## Recommended Dealer Performed Service

### Check Engine Coolant Properties

#### MAINTENANCE INTERVAL

Every 1000 Hours or Annually

Ask your John Deere dealer to check engine coolant properties. Use Cool-Gard II only if additional coolant is required.

### Change Thermostat, Drain Coolant, and Replace Coolant

#### MAINTENANCE INTERVAL

Every 6000 Hours or 6 Years If Cool-Gard™ II is used. Machine must be initially filled and only serviced with properly diluted Cool-Gard II coolant.

Every 2000 Hours or 2 Years If Cool-Gard™ II is not used.

*Cool-Gard*

Have your John Deere dealer flush the cooling system, replace thermostat, and fill the system with Cool-Gard™ II.

V5VUVD4,00000F3-19-21NOV23

## Check Engine and Exhaust Compartments for Debris

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

Directing pressurized air at electronic/electrical components or connectors can 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 to cool.
2. Open and raise engine hood.

*Cool-Gard*

3. Remove any crop or debris within engine and exhaust compartments, especially around turbocharger, exhaust manifold, and exhaust aftertreatment system.
4. Reinstall all shields. Close and securely latch hood.

V5VUVD4,00000F4-19-08MAR22

## Clean Diesel Particulate Filter (DPF)

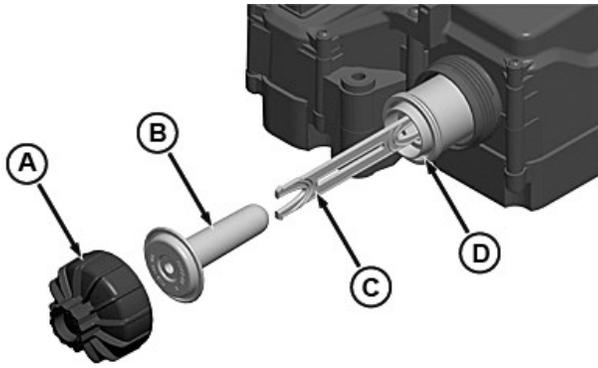
1. When exhaust filter and warning light indicators are illuminated, ensure that exhaust filter cleaning is set to "Auto".
2. Operate machine above 1200 rpm to allow an automatic exhaust filter cleaning to occur.
3. If indicators remain illuminated after an automatic cleaning has occurred, additional cleaning is required. Perform parked exhaust filter cleaning (if system allows). (See Air, Fuel, Coolant, and Exhaust Operation section for procedure.)
4. If a parked exhaust filter cleaning has been performed and exhaust filter and warning light indicators are still illuminated, contact your John Deere dealer.

V5VUVD4,00000F5-19-08MAR22

## Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter

#### MAINTENANCE INTERVAL

Every 1500 Hours



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.

*NOTE:* Servicing DEF dosing unit filter may require removing additional covers or components.

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**

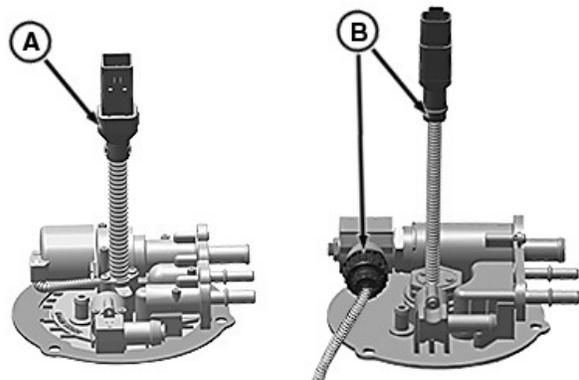
DEF Dosing Unit Filter	
Cover—Torque	20 N·m (177 lb·in)

V5VUVD4,00000F6-19-15MAY23

## Change Diesel Exhaust Fluid (DEF) Tank Header Suction Screen

<b>MAINTENANCE INTERVAL</b> Every 1500 Hours
---

### DEF Tank Header Identification



RG29623—UN—18JUL17  
DEF Tank Header Identification

- A—Type A DEF Tank Header (one electrical connection)
- B—Type B DEF Tank Header (two electrical connections)

*NOTE:* Accessing DEF tank header may require removing additional covers or components.

Type A DEF tank header has one wiring harness connection (A). Type B DEF tank header has two wiring

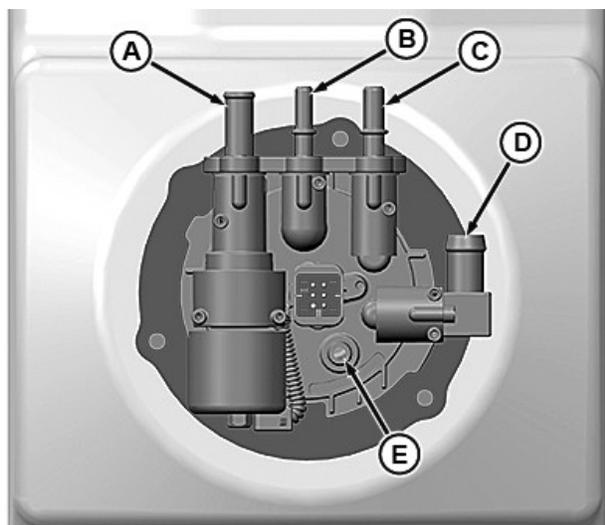
harness connections (B). Refer to the procedure that is applicable to your DEF tank header.

### Replace Type A DEF Tank Header Suction Screen

**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.



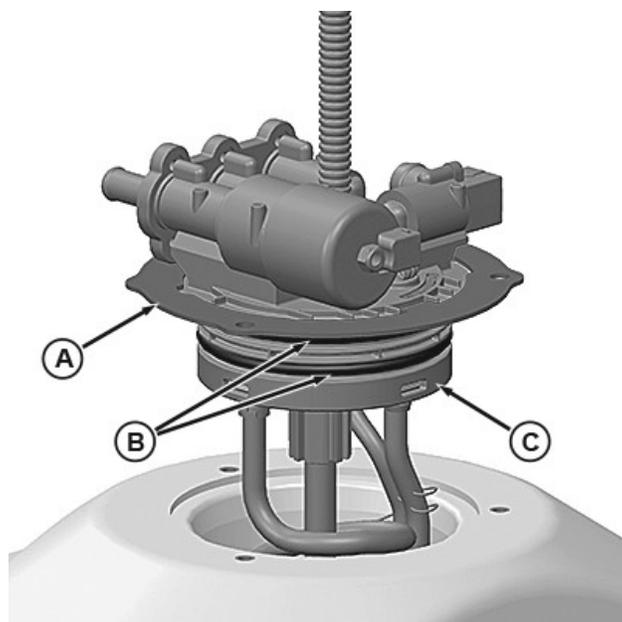
- A—Coolant Outlet Fitting
- B—DEF Return Line Fitting
- C—DEF Supply Line Fitting
- D—Coolant Inlet Fitting
- E—Vent Line Fitting

1. Clear all debris from area around DEF tank header.

**CAUTION:** Explosive release of fluids from pressurized cooling system can cause serious burns. Before disconnecting coolant hoses, wait until engine coolant is cool enough to touch the surge tank cap with bare hands. Slowly loosen the surge tank cap to first stop to relieve pressure.

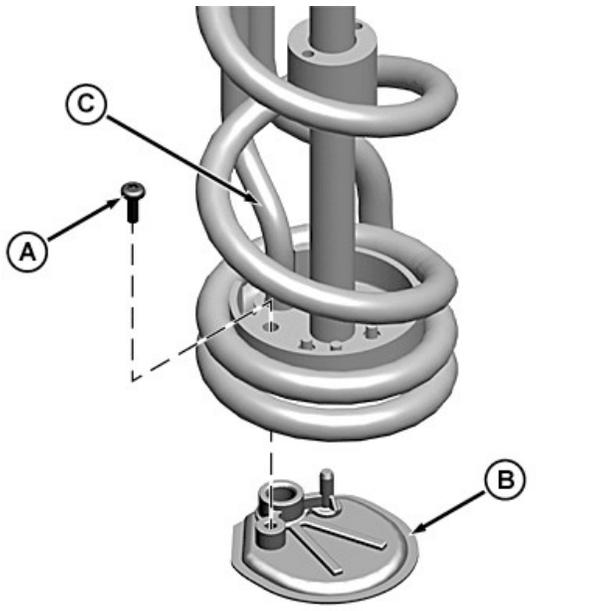
**IMPORTANT:** Cap and plug all lines and fittings to prevent contamination. Coolant in DEF causes Selective Catalytic Reduction (SCR) system performance issues.

2. Disconnect coolant hoses from fittings (A and D).
3. Disconnect DEF return and supply lines from fittings (B and C).
4. Disconnect DEF tank header electrical connector.
5. Remove vent hose from fitting (E).



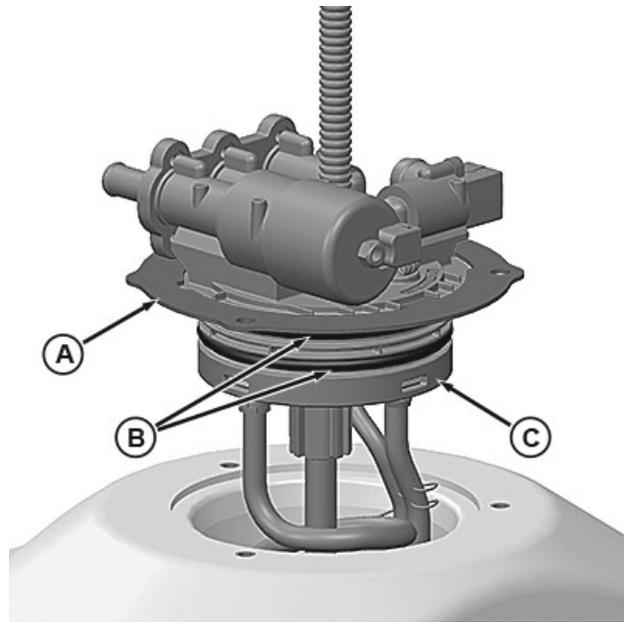
- A—DEF Tank Header Locking Ring
- B—O-Ring (2)
- C—DEF Tank Header

6. Remove cap screws from DEF tank header locking ring (A).
7. Remove DEF tank header (C) from tank.
8. Remove O-rings (B) and inspect for damage.
9. Replace O-rings (B) if necessary.



DEF Suction Screen

RG23672—UN—01JUL13



DEF Tank Header

RG29625—UN—25JUL17

- A—Screw
- B—Suction Screen
- C—Suction Tube

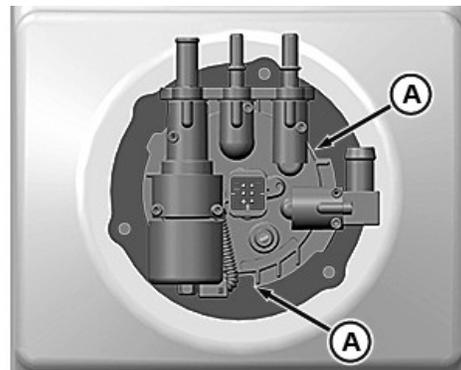
- A—DEF Tank Header Locking Ring
- B—O-Ring (2)
- C—DEF Tank Header

10. Remove screw (A) that secures suction screen (B) to suction tube (C).
11. Remove suction screen (B).
12. Install suction screen (B) to suction tube (C).
13. Install screw (A) and tighten to specification.

14. Lubricate O-rings (B) with clean DEF.
15. Insert DEF header into tank and align holes on locking ring (A) with holes in tank.

**Specification**

DEF Suction Screen	
Screw—Torque . . . . .	1 N·m (11 lb·in)



Alignment Notches

RG25370—UN—03APR14

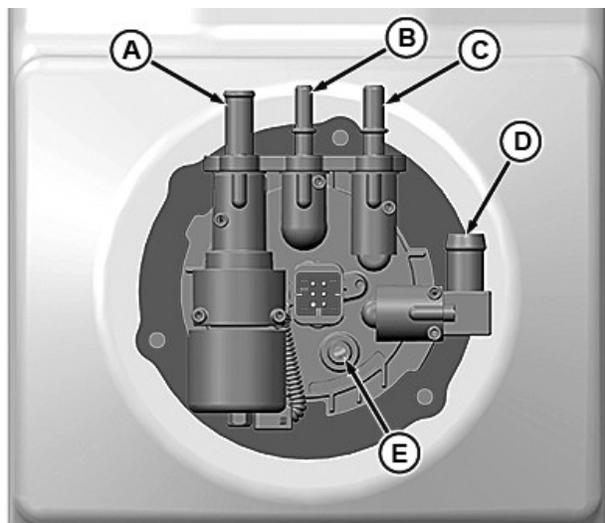
- A—Alignment Notch (2)

**IMPORTANT: Prevent DEF leak, header, and lock ring damage. Ensure that alignment notches on the locking ring are properly aligned with plastic tabs on the header.**

16. Install stainless steel cap screws into mounting holes and tighten to specification.

**Specification**

DEF Tank Header M6 Cap	
Screw—Torque . . . . .	9 N·m (80 lb·in)



RG29624—UN—19JUL17

DEF Tank Header Fittings

- A—Coolant Outlet Fitting
- B—DEF Return Line Fitting
- C—DEF Supply Line Fitting
- D—Coolant Inlet Fitting
- E—Vent Line Fitting

17. Connect 9.5-mm (3/8-in) vent hose to fitting (E).
18. Connect 16-mm (5/8-in) coolant hose to coolant inlet fitting (D).
19. Connect 13-mm (1/2-in) coolant hose to coolant outlet fitting (A).

**IMPORTANT:** Push DEF line onto fitting until you hear a “click”, then lightly pull back to ensure that it is connected and locked in place.

*NOTE:* DEF supply and return lines have unique sized fittings.

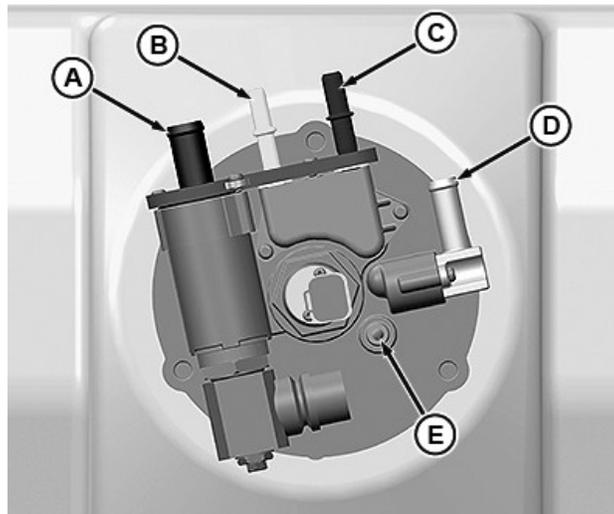
20. Connect DEF return and supply lines to fittings (B and C).
21. Connect DEF tank header electrical connector.

#### Replace Type B DEF Tank Header Suction Screen

**⚠ 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.



RG29626—UN—19JUL17

DEF Tank Header Fittings

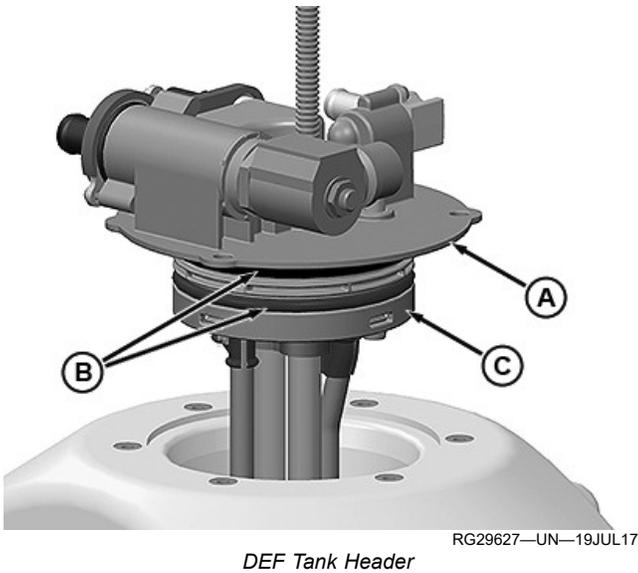
- A—Coolant Inlet Fitting
- B—DEF Return Line Fitting
- C—DEF Supply Line Fitting
- D—Coolant Outlet Fitting
- E—Vent Line Fitting

1. Clear all debris from area around DEF tank header.

**⚠ CAUTION:** Explosive release of fluids from pressurized cooling system can cause serious burns. Before disconnecting coolant hoses, wait until engine coolant is cool enough to touch the surge tank cap with bare hands. Slowly loosen surge tank cap to first stop to relieve pressure.

**IMPORTANT:** Cap and plug all lines and fittings to prevent contamination. Coolant in DEF causes Selective Catalytic Reduction (SCR) system performance issues.

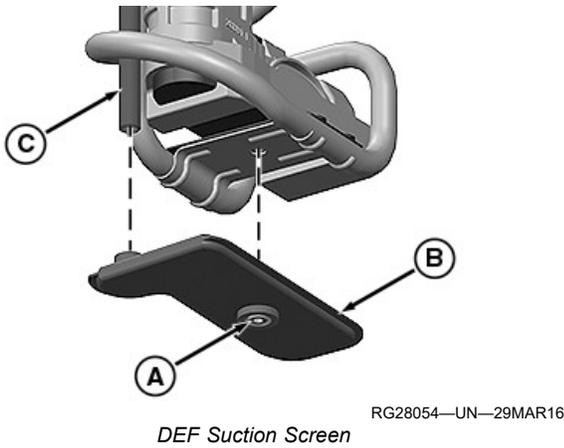
2. Disconnect coolant hoses from fittings (A and D).
3. Disconnect DEF return and supply lines from fittings (B and C).
4. Disconnect DEF tank header electrical connectors.
5. Remove vent hose from fitting (E).



DEF Tank Header

- A—DEF Tank Header Mounting Flange
- B—O-Ring (2)
- C—DEF Tank Header

6. Remove cap screws from DEF tank header mounting flange (A).
7. Remove DEF tank header (C) from tank.
8. Remove O-rings (B) and inspect for damage.
9. Replace O-rings (B) if necessary.



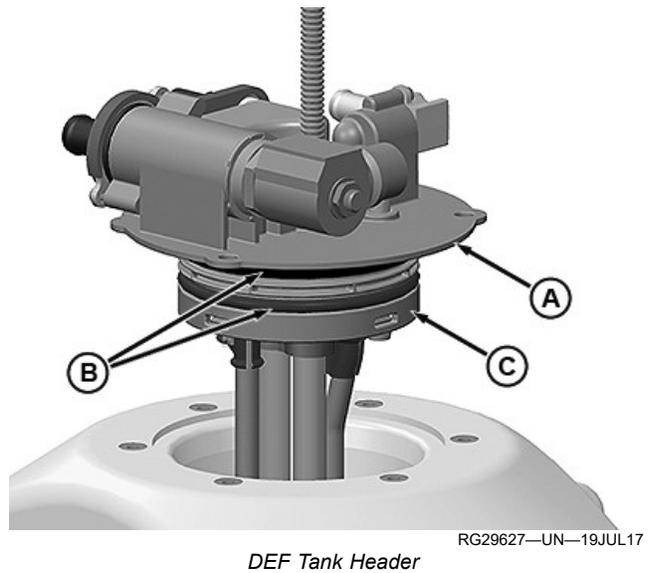
DEF Suction Screen

- A—Screw
- B—Suction Screen
- C—Suction Tube

10. Remove screw (A) that secures suction screen (B) to suction tube (C).
11. Remove suction screen (B).
12. Install suction screen (B) to suction tube (C).
13. Install screw (A) and tighten to specification.

**Specification**

DEF Suction Screen	
Screw—Torque. . . . .	1 N·m (11 lb·in)



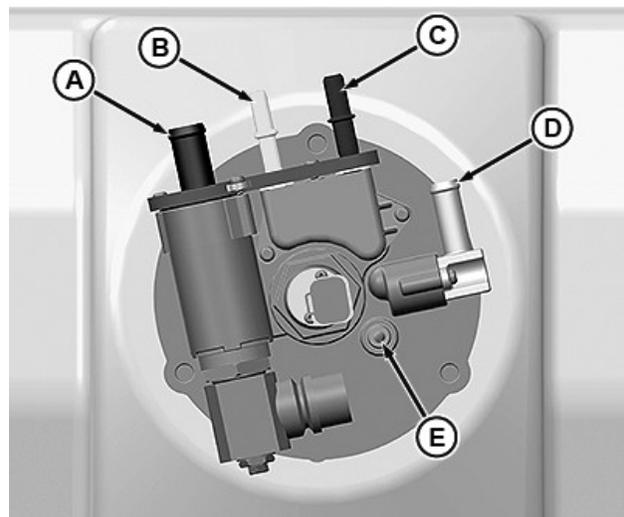
DEF Tank Header

- A—DEF Tank Header Mounting Flange
- B—O-Ring (2)
- C—DEF Tank Header

14. Lubricate O-rings (B) with clean DEF.
15. Insert DEF header (C) into tank and align mounting holes on mounting flange (A) with holes in tank.
16. Install stainless steel M6 cap screws into mounting holes and tighten to specification.

**Specification**

DEF Tank Header Cap	
Screw—Torque. . . . .	9 N·m (80 lb·in)



DEF Tank Header Fittings

- A—Coolant Inlet Fitting
- B—DEF Return Line Fitting
- C—DEF Supply Line Fitting
- D—Coolant Outlet Fitting
- E—Vent Line Fitting

17. Connect 9.5-mm (3/8-in) vent hose to fitting (E).
18. Connect 16-mm (5/8-in) coolant hose to coolant inlet fitting (A).
19. Connect 13-mm (1/2-in) coolant hose to coolant outlet fitting (D).

**IMPORTANT:** Push DEF line onto fitting until you hear a “click”, then lightly pull back to ensure that it is connected and locked in place.

*NOTE:* DEF supply and return lines have unique sized fittings.

20. Connect DEF return and supply lines to fittings (B and C).
21. Connect DEF tank header electrical connectors.

V5VUVD4.00000F7-19-15MAY23

## Clean 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.

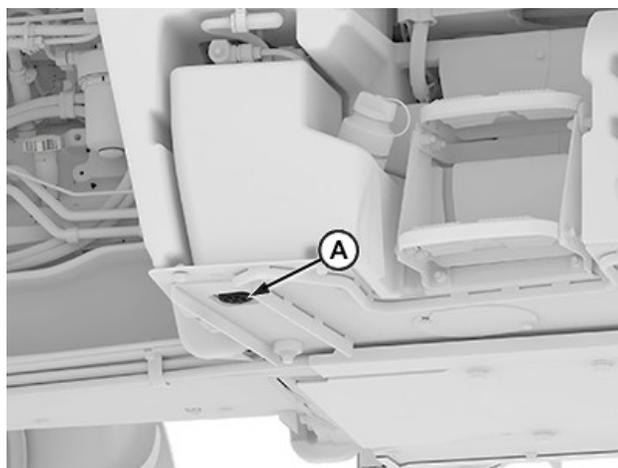
*NOTE:* Allowable capacity to be filled is 11.2 L (3 gal) only.

*DEF tank capacity is 12 L (3.2 gal)*

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.

V5VUVD4.00000F8-19-01MAY23

## Drain Diesel Exhaust Fluid (DEF) Tank



A—DEF Tank Drain Plug

APY77548—UN—10OCT22

**IMPORTANT:** Do not overtorque the drain plug.

1. Place a container below the drain and capture waste. Dispose of waste properly.
2. Remove DEF tank drain plug (A) and drain DEF from tank.
3. Check o-ring for defects. Replace if needed.
4. Clean DEF tank. (See Cleaning Diesel Exhaust Fluid (DEF) Tank in this section.)
5. Clean out any DEF crystallization in threads.
6. Install drain plug and tighten to specification.

**Specification**

DEF Tank Drain Plug—Torque. . . . . 7 N·m  
(5.16 lb·ft)

7. Clean all DEF from machine surfaces with clean water.

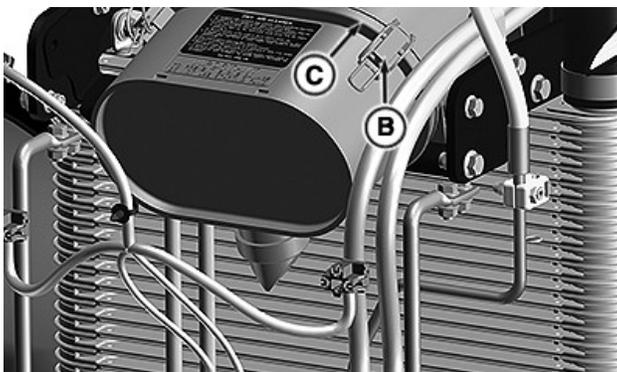
V5VUVD4,00000F9-19-01MAY23

**Service Air Cleaner Elements**

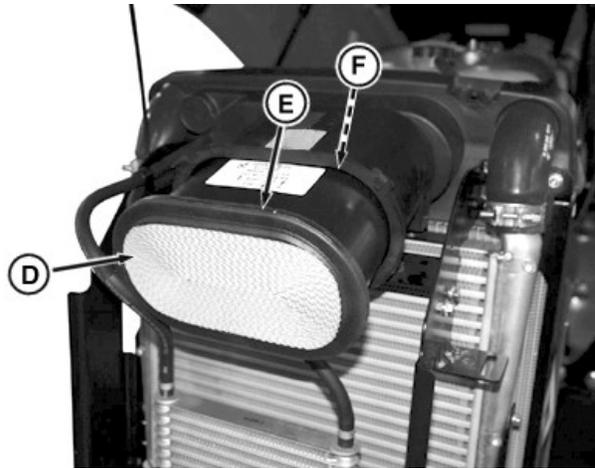
**MAINTENANCE INTERVAL**  
Every 1000 Hours or Annually



RXA0152424—UN—28OCT16



RXA0153091—UN—28JUL16



RXA0156171—UN—14DEC16

- A—Air Filter Restriction Indicator
- B—Latch
- C—Cover
- D—Primary Air Cleaner Element
- E—Guide Ring
- F—Secondary Air Cleaner Element

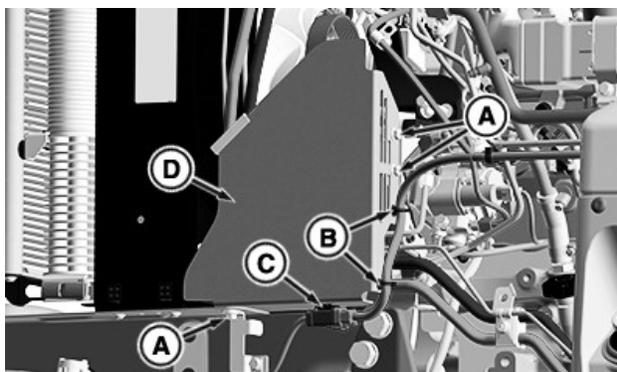
**IMPORTANT: Dirty air cleaner element is indicated when air filter restriction indicator (A) appears on the information display.**

1. Release latch and raise hood.
2. Open the latch (B) and cover (C).
3. Remove primary air cleaner element (D). If primary element does not pull out with ease, move side-to-side.
4. When the air cleaner element must be serviced in the field, tap it on the palm of your hand. Do not use compressed air or filter damage occurs.
5. Inspect guide ring (E) for damage.
6. Replace elements if core material or seals (both ends) are damaged, or if indicator remains illuminated.
7. Install elements and reinstall the air filter cover.
8. Close the hood.

V5VUVD4,00000FA-19-08MAR22

**Check and Tighten Air Intake System and Coolant System Hose Clamps**

**MAINTENANCE INTERVAL**  
Initial **100 Hours**



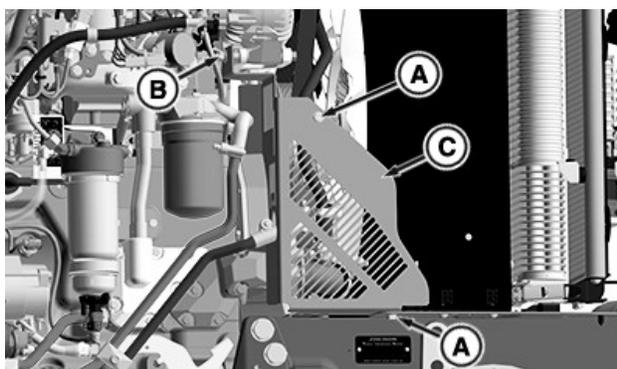
RXA0182227—UN—19APR21

Left Side of Engine

- A—Cap Screw (3)
- B—Wire Clip (2)
- C—Connector Clip
- D—Fan Shield

**⚠ CAUTION: Do not operate the engine without the fan shields installed.**

1. Park machine, shut off engine, and remove key.
2. Raise the hood.
3. Remove and retain cap screws (A), wire clips (B), connector clip (C), and fan shield (D).

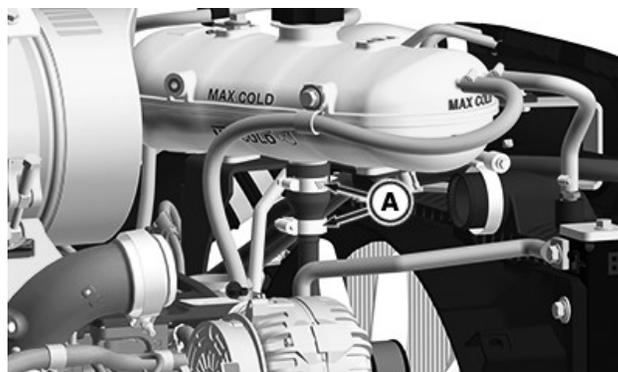


RXA0182228—UN—19APR21

Right Side of Engine

- A—Cap Screw (2)
- B—Lock Nut
- C—Fan Shield

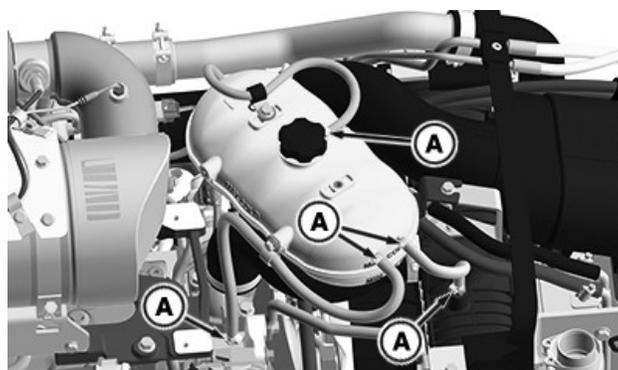
4. Remove and retain cap screws (A), lock nut (B), and fan shield (C).



RXA0182229—UN—19APR21

A—Hose Clamp (2)

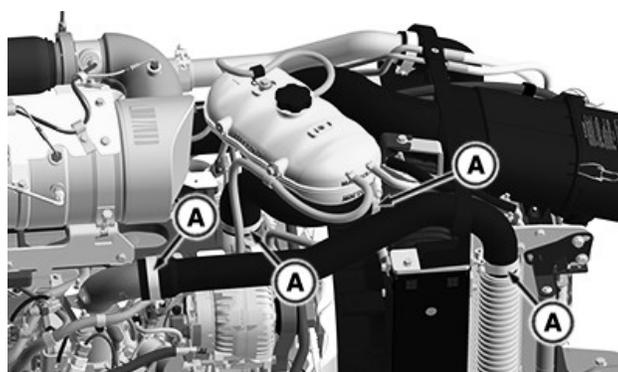
5. Inspect hose clamps (A) on the bottom of the coolant tank. Tighten any loose hose clamps.



RXA0182230—UN—19APR21

A—Hose Clamp (5)

6. Inspect hose clamps (A). Tighten any loose hose clamps.

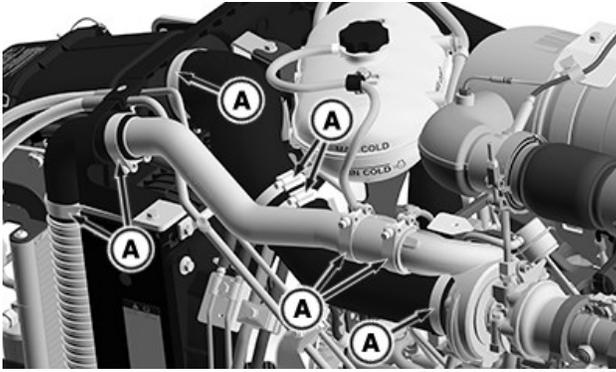


RXA0182231—UN—19APR21

Right Side of Engine

A—Hose Clamp (4)

7. Inspect hose clamps (A). Tighten any loose hose clamps.



RXA0182232—UN—19APR21

Left Side of Engine

### Clean Grille Screens and Cooling Package

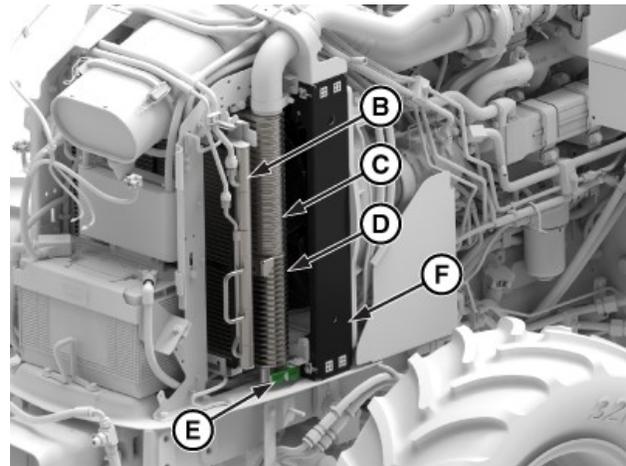


RXA0153092—UN—28JUL16

#### A—Hose Clamp (8)

8. Inspect hose clamps (A). Tighten any loose hose clamps.
9. Reinstall shields and lower hood before operating machine.

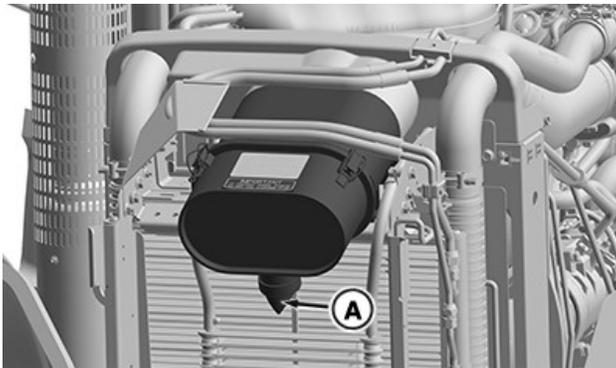
V5VUVD4,00000FB-19-08NOV23



APY83126—UN—08MAY23

### Clean Air Filter Dust Unloading Valve

**MAINTENANCE INTERVAL**  
Daily or Every 10 Hours



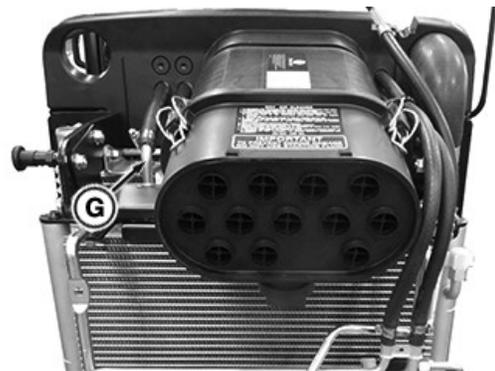
RXA0154394—UN—24FEB17

#### A—Dust Unloading Valve

**IMPORTANT: Do not operate the engine without air cleaner elements or dust unloading valve installed.**

1. Park machine on level ground and shut off engine.
2. Raise hood.
3. Squeeze the end of the dust unloading valve (A) open and remove any excessive buildup of dust and dirt. Replace if damaged.
4. Lower hood.

V5VUVD4,00000FC-19-08MAR22



RXA0153100—UN—01AUG16

- A—Grille
- B—Air Conditioner Condenser
- C—Charge Air Cooler
- D—Hydraulic Oil Cooler
- E—Clip
- F—Radiator
- G—Hydraulic Oil Cooler Lines

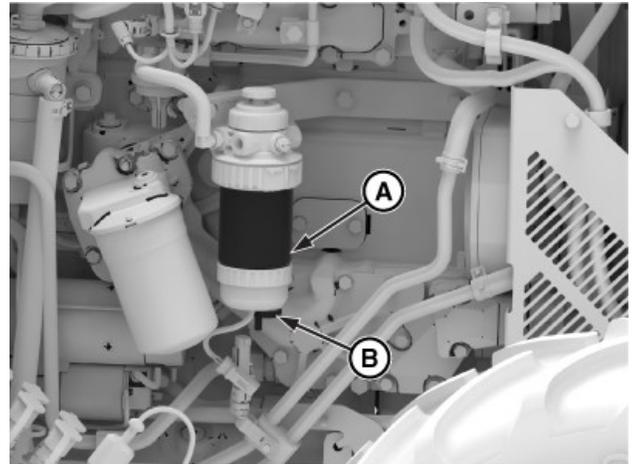
**⚠ CAUTION: Reduce compressed air pressure to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.**

1. Remove trash buildup on the front grille (A) as required.

2. Release hood latch and raise hood.
3. Inspect air conditioner condenser (B), charge air cooler (C), hydraulic oil cooler (D), and radiator (F) for debris. Clean using compressed air.  
If a more thorough cleaning is required, air conditioner condenser and hydraulic oil cooler can be tipped out of position for easier access.
4. **Air Conditioner Condenser:** Release clip (E) and pull conditioner condenser up. Clean as needed.
5. **Hydraulic Oil Cooler:** While the condenser is raised up, inspect charge air cooler (C) and hydraulic oil cooler (D).
6. **Radiator:** Release clip (E) on the hydraulic oil cooler (D) and raise up to inspect radiator.
7. Inspect hydraulic oil cooler lines (G) for loose connections or any damage.
8. Straighten any bent fins.
9. Lift release latch (H).
10. Return air conditioner condenser and hydraulic oil cooler to their original positions. Secure them with their clips (E).

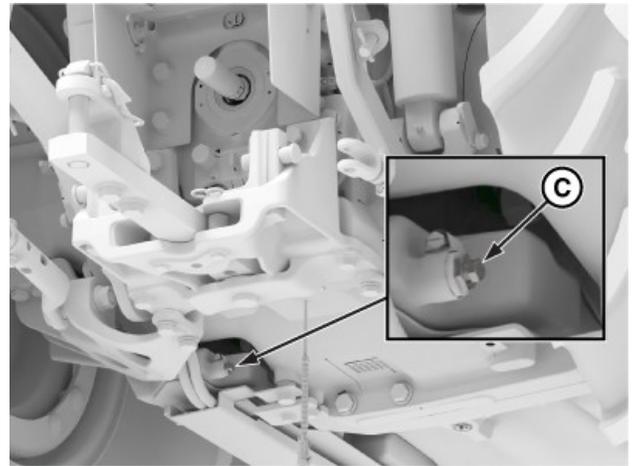
*NOTE: Verify that lines are not pinched or kinked when coolers are repositioned.*

rn86qb7,1682875689692-19-08MAY23



APY83127—UN—08MAY23

Right Side of Engine



APY83128—UN—08MAY23

Rear Side of Engine

- A—Primary Fuel Filter
- B—Water Separator Drain Valve
- C—Fuel Tank Drain Plug

## Do Not Modify Fuel System

**IMPORTANT:** Increasing horsepower or altering fuel and air delivery beyond the factory rating causes emissions to exceed United States Environmental Protection Agency (EPA) approved levels. Violations of EPA regulations can result in substantial fines to persons or companies committing such violations.

**Machine 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.**

V5VUVD4,00000FE-19-08MAR22

## Drain Water and Sediment from Fuel Filter

<p><b>MAINTENANCE INTERVAL</b> Daily or Every 10 Hours</p>
--

**IMPORTANT:** Place a suitable sized container under the fuel drain locations (filters, water separator, and tanks). Dispose of waste properly.

1. Park machine on level ground and shut off engine. Remove key.
2. Raise hood and locate primary fuel filter (A) on the right-hand side of machine.
3. Open water separator drain valve (B) to bleed accumulated water and sediment from filter. Close when clear fuel runs from the drain valve.
4. Run engine for minimum of 20 seconds and check water separator drain valve again for water and sediment.
5. If moisture or sediment is present, drain fuel tank.
6. Open fuel tank drain plug (C) to bleed accumulated moisture and sediment from the fuel tank.

7. Apply Teflon tape or equivalent to threads of the drain plug.
8. Tighten plug when clear fuel runs from the fuel tank drain. Replace and tighten.
9. Lower hood.

m86qb7,1683531062227-19-08MAY23

4. Loosen filter housing bleed screw (B). Capture the discharge waste and dispose of properly.
5. Push priming mechanism (C) at the transfer pump (D) until all air is purged and fuel runs out smoothly from bleed screw. Tighten bleed screw.
6. Lower hood.

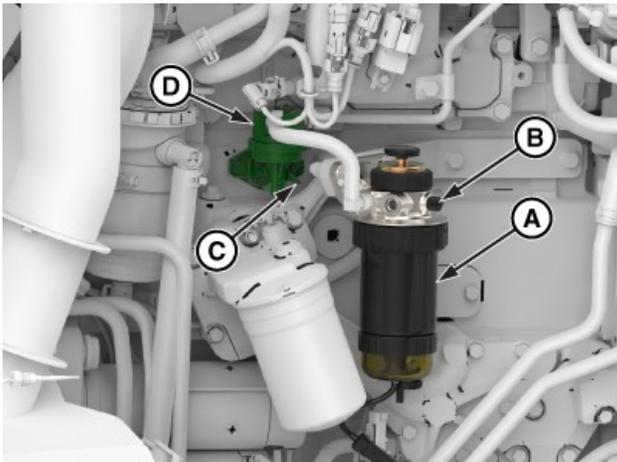
m86qb7,1683531409630-19-08MAY23

## Bleed Fuel System

**⚠ CAUTION:** Escaping fluid under pressure has the potential to 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 can result. Doctors unfamiliar with this type of injury must reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

**IMPORTANT:** To avoid injection pump damage, Do not attempt to start the engine while bleeding the fuel system.



APY83130—UN—08MAY23

Right Side of Engine

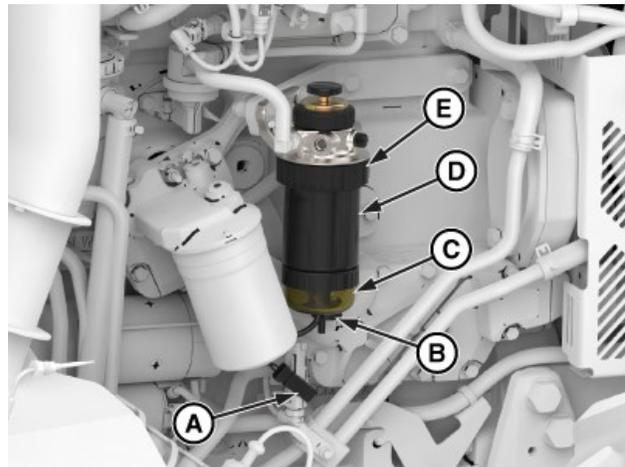
- A—Fuel Filter
- B—Bleed Screw
- C—Priming Mechanism
- D—Transfer Pump

1. Park machine on level ground. Remove key.
2. Check fuel level. Add if necessary.
3. Raise hood and locate primary fuel filter (A) on the right-hand side of machine.

## Change Fuel Filters

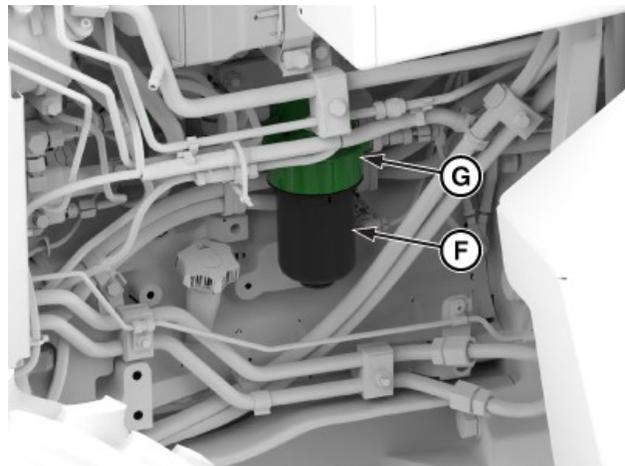
### MAINTENANCE INTERVAL

Every 500 Hours



APY83129—UN—08MAY23

Right Side of Engine



APY83131—UN—08MAY23

Left Side of Engine

- A—Water-in-Fuel Sensor
- B—Drain Valve
- C—Water Separator Bowl Assembly
- D—Primary Fuel Filter
- E—Primary Fuel Filter Housing
- F—Secondary Fuel Filter
- G—Secondary Fuel Filter Housing

**IMPORTANT: Be sure characteristics of the new filter match the original filter.**

The fuel filters (D and F) are different, do not interchange. See your John Deere dealer for correct replacement parts. Replace one after another to avoid interchange.

**IMPORTANT: Do not use a filter wrench when tightening filters. Hand tighten filter only.**

1. Place machine in park, turn off engine, and remove key. Allow engine to cool.
2. Raise hood.
3. Disconnect water-in-fuel sensor (A) on the bottom of the primary fuel filter on the right-hand side of the engine.
4. Open drain valve (B) on water separator bowl assembly (C) of the primary fuel filter (D). Drain fuel. Capture the discharge waste and dispose of properly.
5. Remove primary filter from the fuel filter housing (E) by turning counterclockwise.
6. Remove water separator bowl assembly from the primary fuel filter.
7. Clean water separator bowl. Dry with compressed air.
8. Install new seals (supplied with the new filter) on the water separator bowl and drain valve. Install water separator assembly on the new primary fuel filter.
9. Fill filters with clean diesel fuel before installing on engine.
10. Apply a small amount of clean oil on the primary fuel filter gasket.
11. Install new primary fuel filter assembly.
12. Connect water-in-fuel sensor.
13. Remove secondary fuel filter (F) on the left-hand side of the engine from the filter housing (G) by turning counterclockwise.

*NOTE: Do not fill the secondary fuel filter assembly with fuel when reassembling.*

14. Apply a small amount of clean oil on the new secondary fuel filter gasket.
15. Install new secondary fuel filter.
16. Bleed the fuel system. (See Bleed Fuel System in this section.)
17. Start engine and run until warm.
18. Turn off engine and remove key.
19. Inspect drain valve and filters for leaks.

20. Lower hood.

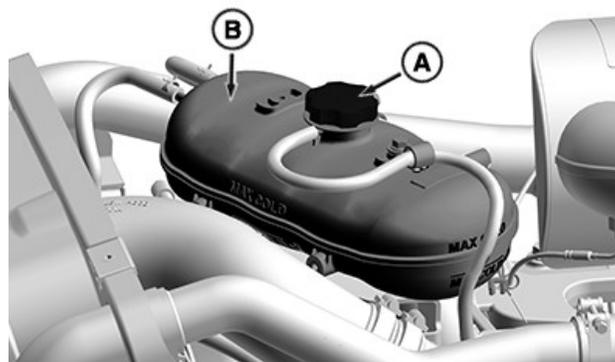
rn86qb7,1683531595653-19-08MAY23

## Check Coolant Level

<p><b>MAINTENANCE INTERVAL</b> Weekly or Every 50 Hours</p>
---



TS281—UN—15APR13



RXA0154402—UN—24FEB17

A—Cap  
B—Coolant Recovery Tank

**CAUTION: Avoid injury from hot, spraying fluid. Add make-up coolant through the coolant recovery tank. If cap must be removed, do not remove when engine is hot. Shut off engine and wait until cap is cool enough to touch with bare hands. Slowly loosen cap to relieve pressure before removing completely.**

1. Park machine on level ground and shut off engine. Remove key.
2. Allow engine to cool completely.
3. Raise hood and check level in the coolant recovery tank (B).
4. If coolant level is below **the MIN COLD** mark, remove cap (A) and add coolant to the recovery tank. Fill tank level between **MIN COLD** and **MAX COLD** marks with Cool-Gard II pre-diluted coolant. (See Fuel, Lubricants, and Coolants section.)

5. Replace cap.
6. Lower hood.

V5VUVD4,0000103-19-27NOV22

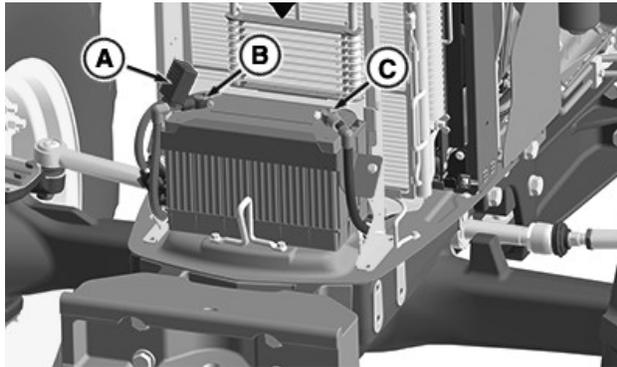
---

# Electrical and Lighting Maintenance

## Use Booster Battery or Charger



TS204—UN—15APR13



RXA0158321—UN—22MAR17

In Front of Engine

- A—Cover
- B—Positive Terminal
- C—Negative Terminal

**⚠ CAUTION: Battery gas is explosive. Keep sparks and flames away from battery. Make last connection and first disconnection at a point away from battery.**

### Booster Battery

1. Remove protective cover (A) from the positive terminal.
2. Attach positive jumper cable to the machine battery positive terminal (B).
3. Attach positive jumper cable to the booster battery positive terminal.
4. Attach negative jumper cable to the machine battery negative terminal (C).
5. Attach negative jumper cable to the booster battery negative terminal.
6. Turn key to Start.
7. When engine starts, remove negative jumper cables first, then the positive cables.
8. Reinstall the protective cover on the positive terminal.

### Battery Charger

1. Remove protective cover (A) from the positive terminal.
2. Turn charger off.
3. Attach positive charger lead to the battery positive terminal (B).
4. Attach negative charger lead to the battery negative terminal (C).
5. Charge battery according to charger manufacturer instructions.
6. Turn charger off.
7. Disconnect negative charger lead first, then positive lead.
8. Reinstall the protective cover on the positive terminal.

m86qb7,1668511133632-19-28NOV22

## Check Battery and Connections

### MAINTENANCE INTERVAL

Every 1000 Hours or Annually

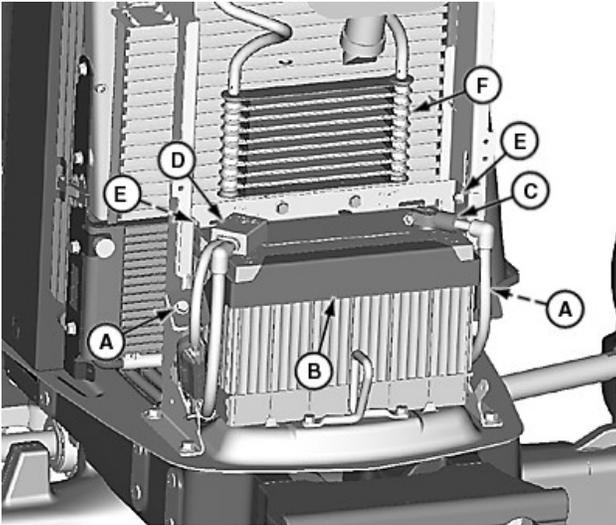
**IMPORTANT: Do not add water in freezing weather unless machine is run at least 30 minutes to assure thorough mixing.**

*NOTE: Although this battery is a maintenance-free battery, conditions such as long periods of operation at high ambient temperatures and excessive starting could require adding water. See label on the battery.*

1. Clean the battery and remove debris buildup from top of battery case as needed.
2. Check level of the electrolyte in each cell as needed. Ensure that every cell has fluid level above the top of plates. Only use clean, soft water to fill up electrolyte level.
3. Wipe battery with a damp cloth.
4. Remove, clean, and tighten connections if needed.
5. Coat terminals with a small amount of grease.
6. If battery is not performing as desired, charge as needed or see your John Deere dealer.

m86qb7,1668511497478-19-28NOV22

## Access and Replace Battery



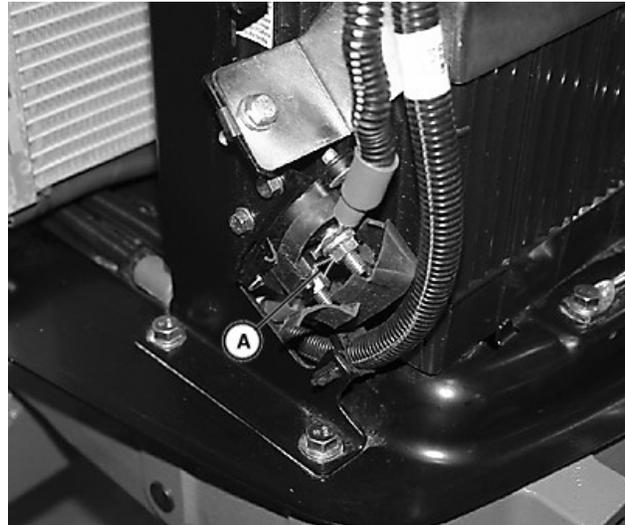
LV14822—UN—27SEP11

- A—Cap Screws
- B—Battery Hold-Down
- C—Negative Battery Cable
- D—Positive Battery Cable
- E—Fuel Cooler Support Cap Screws
- F—Fuel Cooler

1. Raise the hood.
2. Remove nut and disconnect negative battery cable (C) first.
3. Remove nut and disconnect positive battery cable (D).
4. Remove cap screws (A) and battery hold-down (B).
5. Loosen fuel cooler support cap screws (E).
6. Slide fuel cooler (F) up and tighten cap screws, securing the fuel cooler in the upper slot position.
7. Remove the battery.
8. Replace battery in opposite order.
9. Lower the hood.

m86qb7,1668511584049-19-28NOV22

## Replace Fusible Link



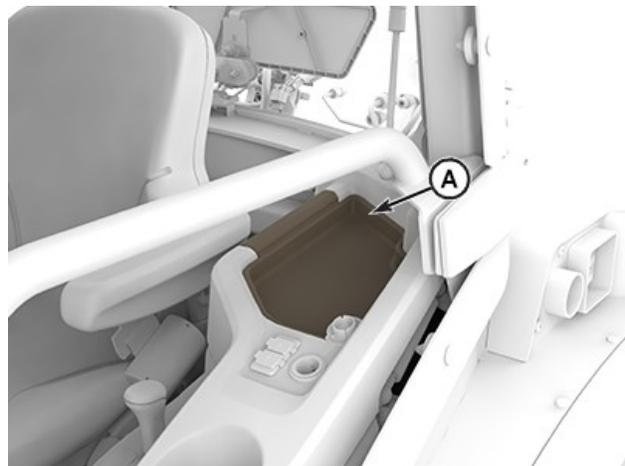
LV14690—UN—07SEP11

- A—Fusible Link

1. Raise the hood.
2. Disconnect the battery.
3. Locate fusible link (A) next to the battery.
4. Open the cover.
5. Replace the fusible link with the correct part from your John Deere dealer.
6. Close cover, reconnect the battery, and lower hood.

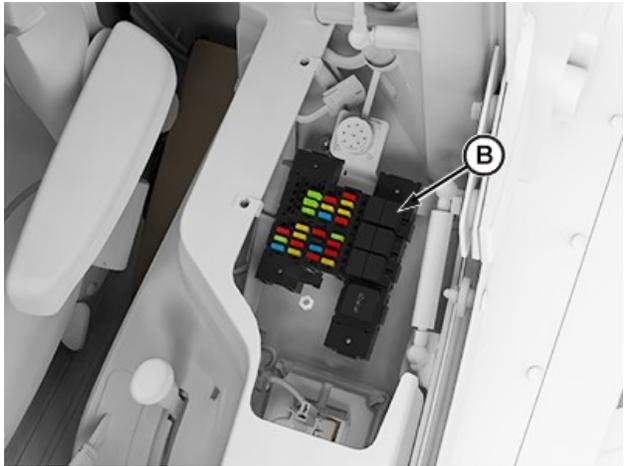
m86qb7,1668511646415-19-28NOV22

## Replace Fuses



APY77549—UN—12OCT22

Fuse Box Mounting at Left Console



APY77550—UN—24NOV22

Fuse/Relay Box

A—Left-Hand Console Cover  
B—Fuse/Relay

**IMPORTANT:** Never replace the original fuse with a higher rated fuse or machine damage will occur. If the original size fuse does not carry electrical load and continues to fail, have the electrical system checked by your John Deere dealer.

*NOTE:* A fuse and relay reference label is provided under the left-hand console cover (A).

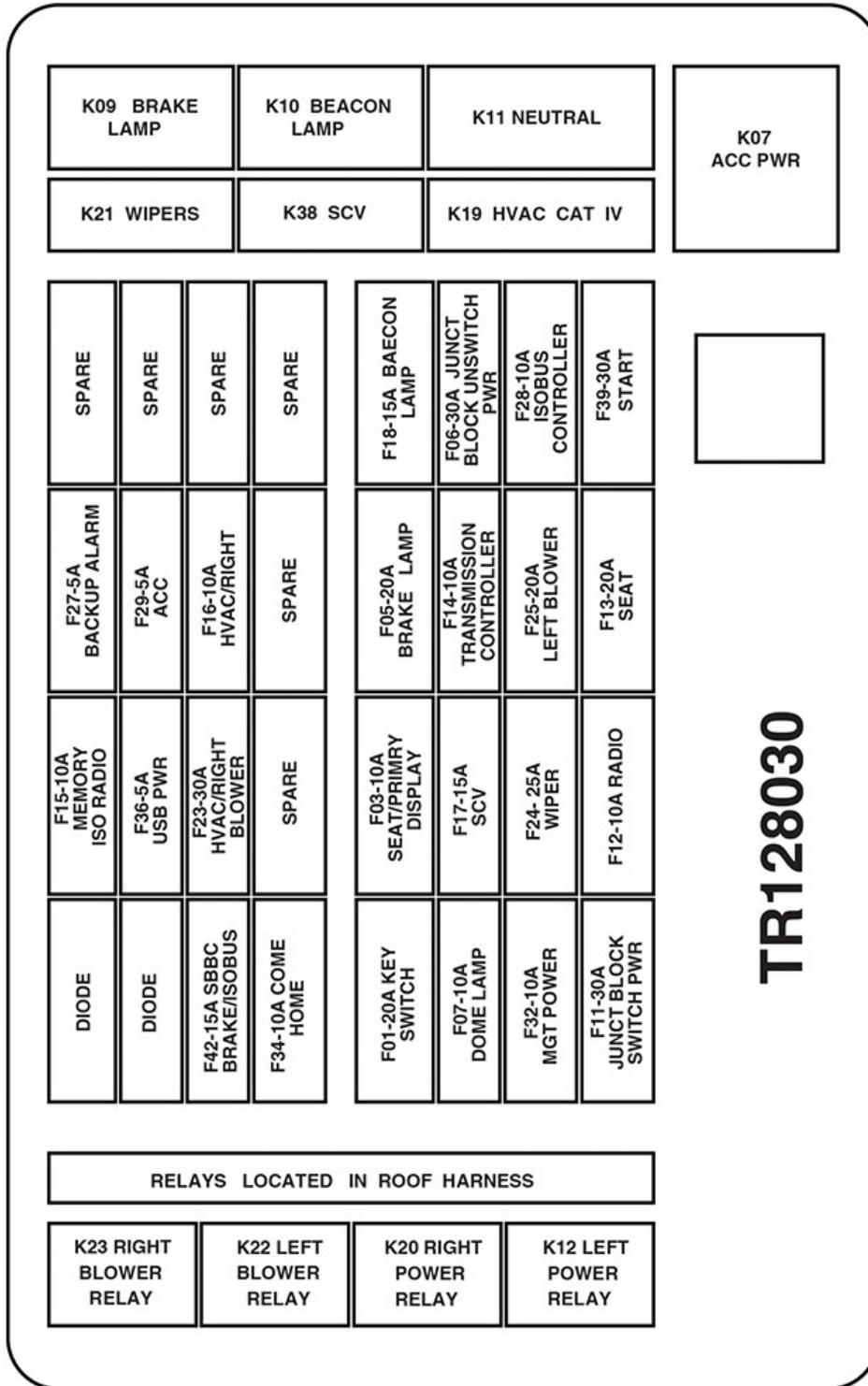
Remove left-hand console cover (A) to access fuse and relay.

All electrical circuits are protected by fuses. Amperage rating is marked on each fuse. Fuses are color coded to facilitate proper replacement.

Fuse Rating in Amperes	Color
5	Tan
10	Red
15	Blue
20	Yellow
25	Clear
30	Green

*NOTE:* Most fuses and relays are located in the main load center as shown. Additional relays and a diode block are located inside the front console.

*Fuses use an "F" designator and relays use a "K" designator as identifiers.*



Cab Load Center

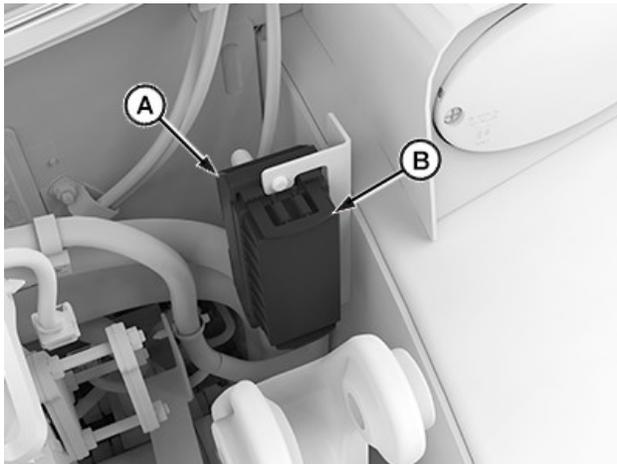
APY78200—UN—12SEP22

F01—Key Switch

F03—Seat/Primary Display

- F05—Brake Lights
- F06—Junction Block Unswitched Power
- F07—Dome Light
- F11—Junction Block Switched Power
- F12—Radio
- F13—Seat
- F14—Transmission Controller
- F15—ISO Radio Memory
- F16—Power Outlet
- F17—SCV Relay
- F18—Beacon Light
- F23—Heating, Ventilation, and Cooling/Right Blower
- F24—Wiper
- F25—Left Blower
- F27—Backup Alarm
- F28—ISOBUS Controller
- F29—Accessory Power

**Chassis Load Center**



APY80695—UN—25NOV22

*Fuse Box Mounting at Rear Right Wheel Fender*

- A—Fuse/Relay Box
- B—Fuse/Relay Box Cover

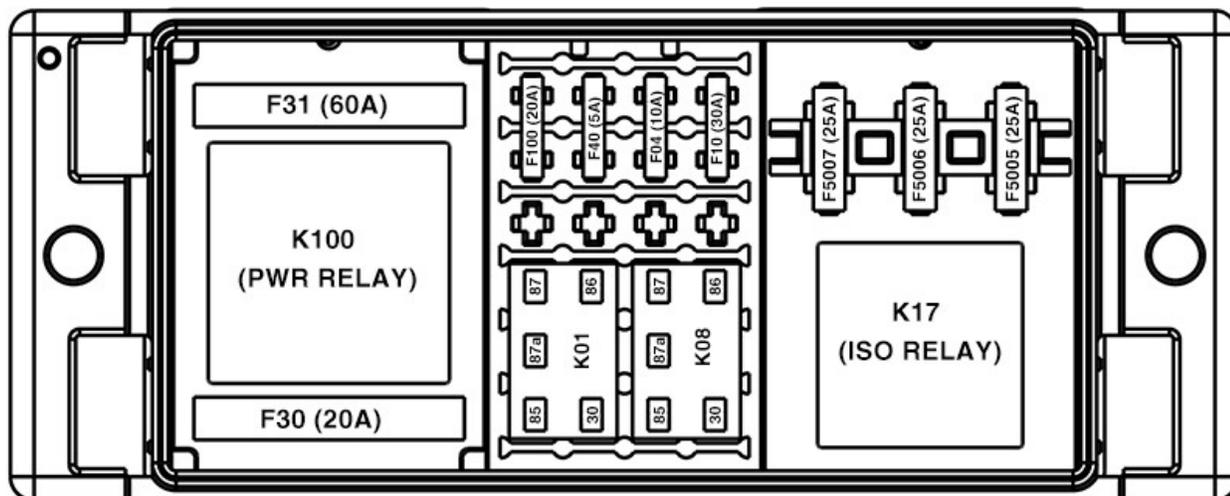
- F32—Subwoofer Power
- F34—Come Home
- F36—USB Power
- F39—Start Relay
- F42—ISOBUS
- K07—Accessory Power
- K09—Brake Lights
- K10—Beacon Light
- K11—Neutral
- K12—Left Power
- K19—HVAC CAT IV
- K20—Heating, Ventilation, and Cooling
- K21—Wiper
- K22—Left-Hand Blower
- K23—Right-Hand Blower
- K38—SCV
- Spare—Extra Fuses

**IMPORTANT:** Never replace the original fuse with a higher rated fuse or machine damage will occur. If the original size fuse does not carry electrical load and continues to fail, have the electrical system checked by your John Deere dealer.

Remove fuse box cover (B) to access fuse and relay. All electrical circuits are protected by fuses. Amperage rating is marked on each fuse. Fuses are color coded to facilitate proper replacement.

Fuse Rating in Amperes	Color
5	Tan
10	Red
15	Blue
20	Yellow
25	Clear
30	Green

LOAD CENTER COMPONENT PLACEMENT



Chassis Load Center

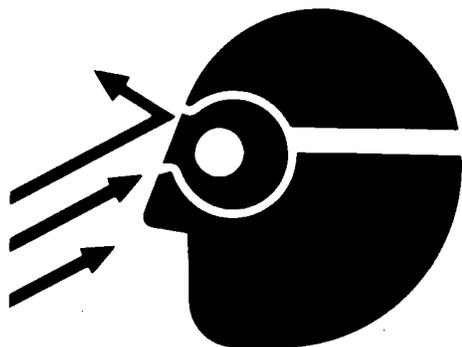
APY81424—UN—09DEC22

F04—Front PTO Control Unit Fuse  
 F10—Implement Power Fuse  
 F30—ISOBUS ECU Power Fuse  
 F31—ISOBUS Implement Power Fuse  
 F40—Radio Power Fuse  
 F100—Trailer Worklights Fuse  
 F5005—ECU Power Fuse

F5006—ECU Power Fuse  
 F5007 —ECU Power Fuse  
 K01—ISOBUS ECU Power Relay  
 K08—Trailer Worklights Relay  
 K17—Implement Power Relay  
 K100—ISOBUS Implement Power Relay

V5VUVD4.0000108-19-09DEC22

Handle Halogen Light Bulbs Safely



TS266—UN—23AUG88



A—Halogen Bulb

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:

- Handle bulb by its base. Keep bulb oil free; wear gloves to avoid touching glass.
- Turn light switch off and allow bulbs to cool

before changing. Leave switch off until bulb change is done.

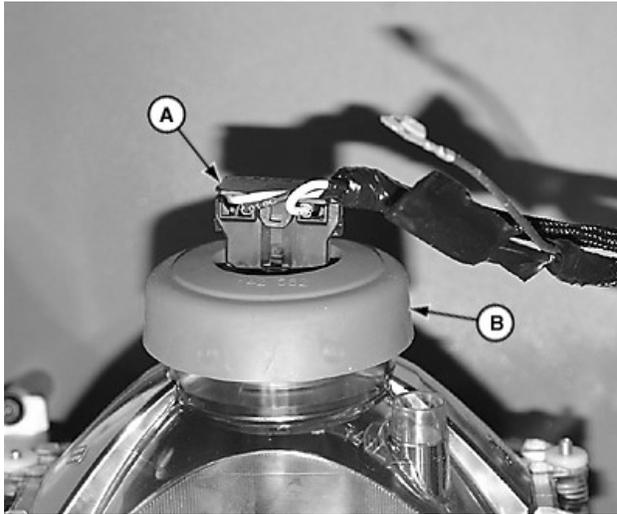
- Wear eye protection.
- Do not drop or scratch bulb. Keep moisture away from bulb.
- Place used bulb in the new bulb carton and dispose of properly. Keep out of the reach of children.

V5VUVD4,0000109-19-08MAR22

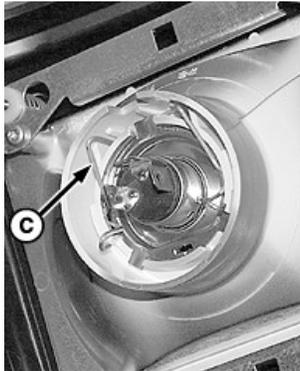
3. Remove dust boot (B).
4. Unlatch retaining spring (C) and remove light bulb.
5. Install new bulb in reverse order of removal.
6. Adjust headlights, if necessary.

V5VUVD4,000010A-19-28NOV22

## Replace Halogen Headlight Bulb



LV14699—UN—25AUG11



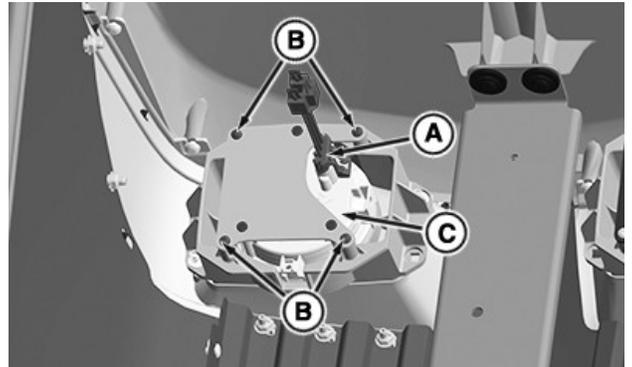
LV9511—UN—01AUG04

- A—Wiring Harness Plug
- B—Dust Boot
- C—Retaining Spring

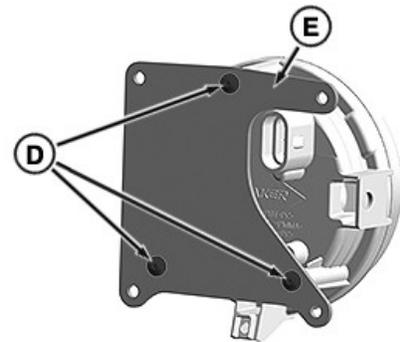
**CAUTION:** See Handle Halogen Light Bulbs Safely in this section.

1. Raise the hood.
2. Disconnect wiring harness plug (A).

## Replace LED Headlight



RXA0154413—UN—01NOV16



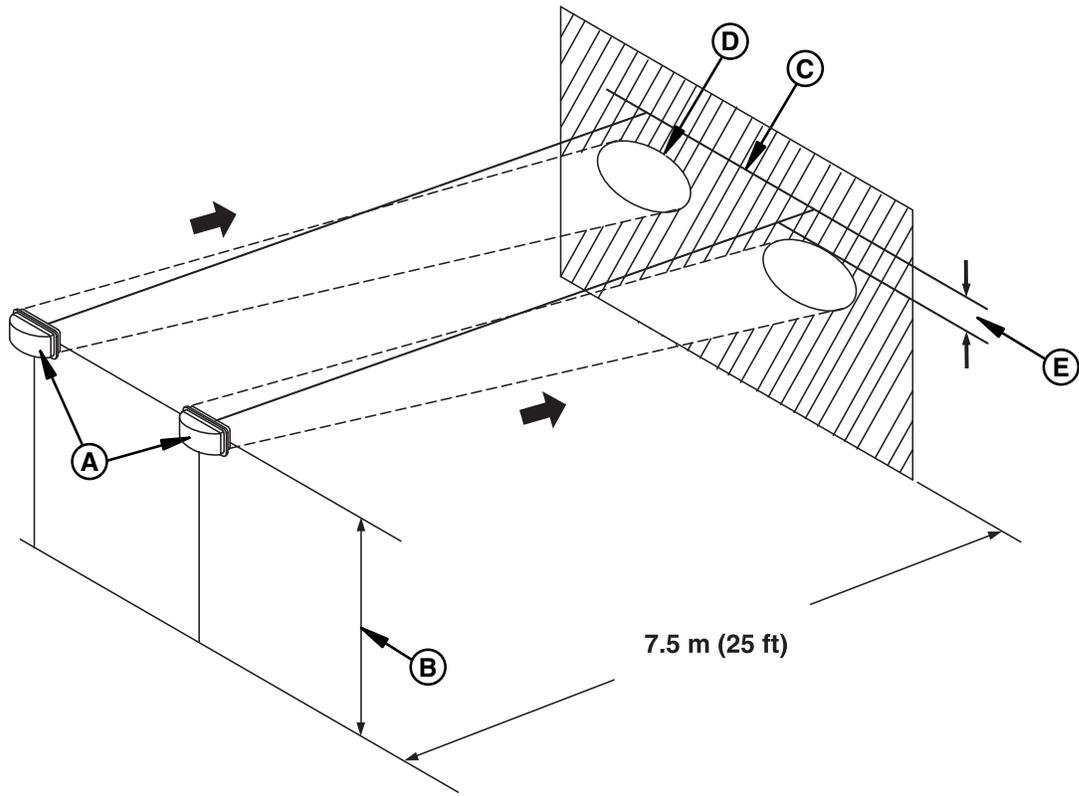
RXA0154414—UN—01NOV16

- A—Harness Connector
- B—Light Retaining Screws
- C—LED Headlight Bulb
- D—Backing Plate Screw
- E—Backing Plate

1. Raise the hood.
2. Disconnect wiring harness connector (A).
3. Remove light retaining screws (B).
4. Remove LED headlight bulb (C).
5. Remove screws (D) from backing plate (E).
6. Replace the headlight bulb with a new part and reassemble in reverse order.

V5VUVD4,000010B-19-28NOV22

## Headlight Adjustment



Headlight Aiming Diagram

PULV000659—UN—05MAY08

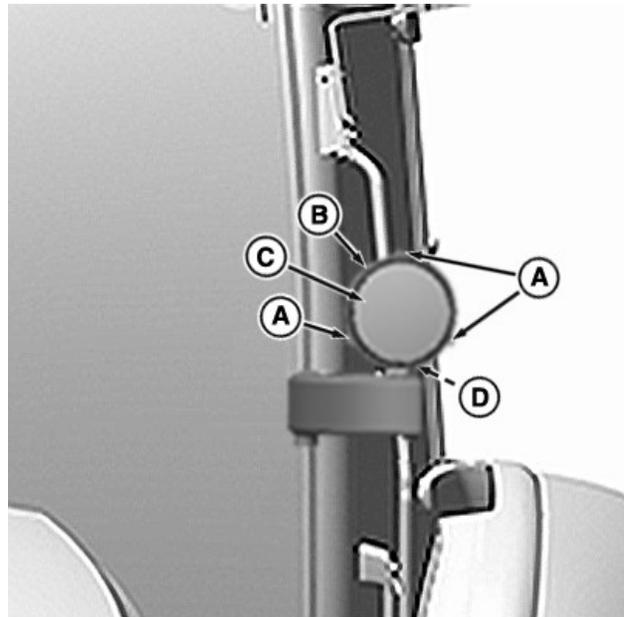
**A—Headlights**  
**B—Distance from Center of Headlight to Ground**  
**C—Horizontal Line on Wall**

**D—Border of Bright Area**  
**E—10% of Distance (B)**

1. Park machine on a level surface with headlights (A) 7.5 meters (25 ft) from a vertical wall.
2. Measure the distance (B) from the center of a headlight to the ground.
3. Mark a horizontal line (C) on the wall, the same distance from the ground as (B).
4. Turn headlight switch to low beam and observe bright areas on the wall.
5. Use screws at the back of lights for adjustment.

V5VUVD4,000010C-19-08MAR22

## Replace Loader Headlight Bulb



**A—Retaining Ring Screws**  
**B—Retaining Ring**

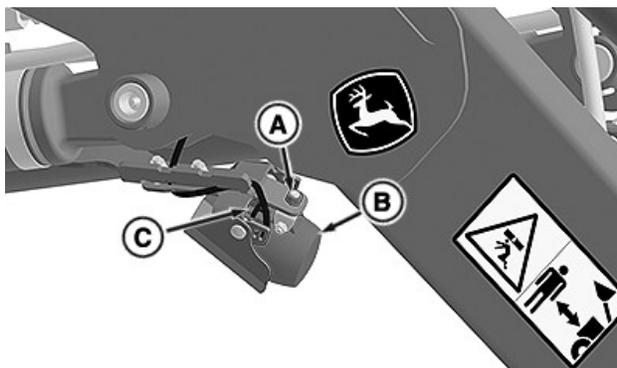
RXA0156148—UN—12DEC16

C—Lens  
D—Harness Connector

1. Disconnect harness connector (D).
2. Remove retaining ring screws (A) and retaining ring (B).
3. Pull bulb to remove from socket.
4. Install new bulb in socket.
5. Reinstall in reverse order.

m86qb7,1669576077695-19-27NOV22

### Replace Bucket Light



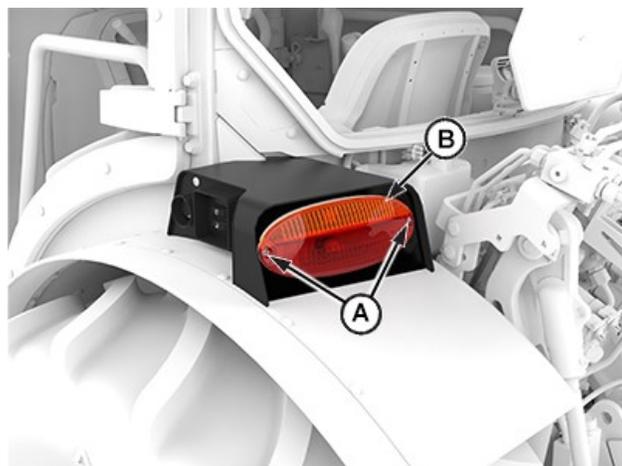
RXA0158319—UN—22MAR17

A—Nut  
B—Light Fixture  
C—Wire Harness

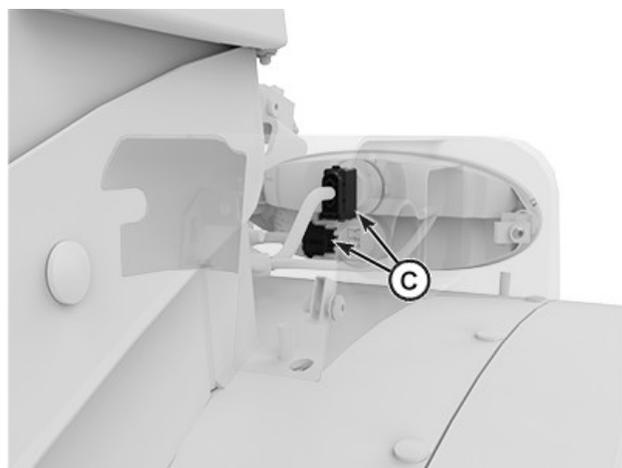
1. Remove nut (A).
2. Remove light fixture (B).
3. Disconnect wiring harness (C).
4. Install new light fixture in reverse order.
5. Adjust, if necessary.

V5VUVD4,000010E-19-08MAR22

### Replace Tail/Turn/Brake Light Bulb



APY77551—UN—12OCT22



APY77552—UN—12OCT22

A—Screw (2)  
B—Housing  
C—Socket (2)

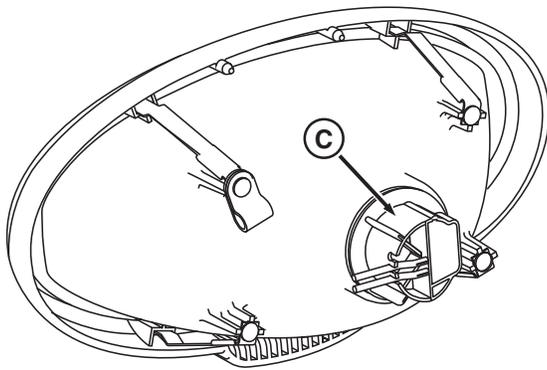
1. Remove screws (A).
2. Pull housing (B) away from fender.
3. Rotate socket (C) and remove from housing.
4. Pull bulb to remove from socket.
5. Install new bulb in socket.
6. Reinstall in reverse order.

V5VUVD4,000010F-19-07OCT22

## Replace Warning Light Bulb



APY77553—UN—12OCT22



RXA0181720—UN—12APR21

**A—Mounting Screw (2)**  
**B—Housing**  
**C—Bulb and Socket**

**NOTE:** Bulb replacement procedures for front and rear warning lights are the same.

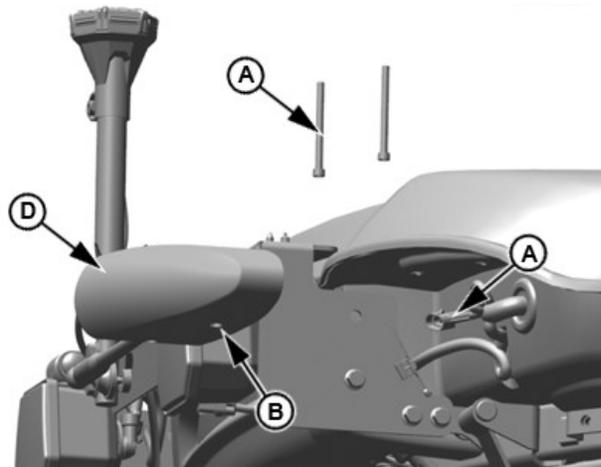
1. Remove mounting screws (A) securing housing (B) to cab roof.
2. Remove bulb and socket (C) from housing.
3. Pull bulb from socket.
4. Install new bulb and socket into housing.

**NOTE:** Apply thread lock and sealer (medium strength) to mounting screws (A) if equipped with auxiliary worklights.

5. Install housing and screws to cab roof.

V5VUVD4.0000110-19-07OCT22

## Replace Halogen Worklight Bulb



P21100—UN—23NOV23

**A—Screws**  
**B—Bracket**  
**C—Harness Connector**  
**D—Halogen Light Housing**

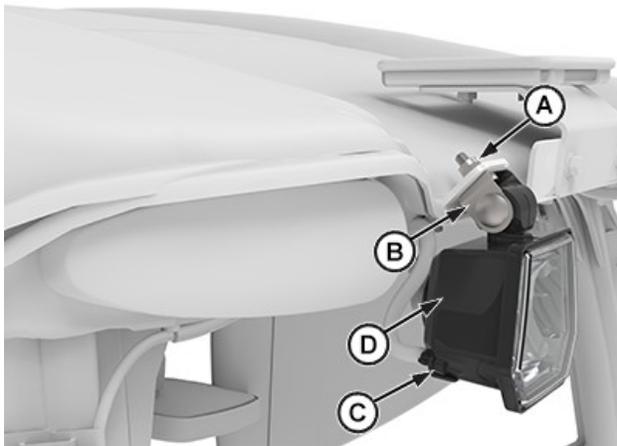
**⚠ CAUTION:** Halogen bulbs contain gas under pressure. Handling a bulb improperly could cause it to shatter into flying fragments. (See Handle Halogen Light Bulbs Safely in this section.)

**NOTE:** Bulb replacement procedures for front, side, rear, and auxiliary worklights are the same.

1. Tilt halogen light housing outward and remove screws (A) from the light bracket (B).
2. Disconnect harness connector (C) from the light housing (D). A protective connector cover may need to be removed.
3. Rotate bulb and remove from housing.
4. Install new bulb in the housing.
5. Reinstall housing in reverse order of removal.

V5VUVD4.0000111-19-23NOV23

## Replace LED Worklight



APY77554—UN—13OCT22

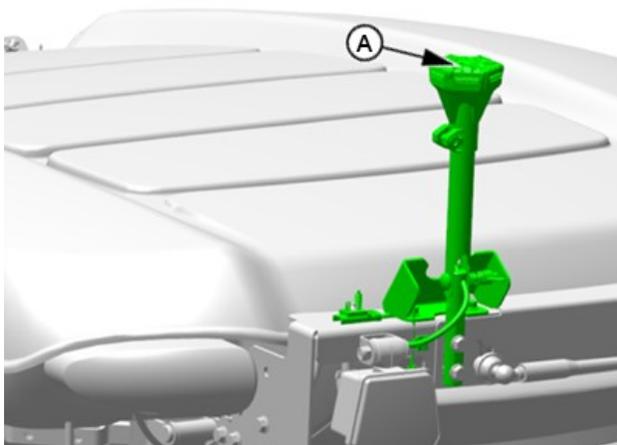
- A—Nut
- B—Bracket
- C—Harness Connector
- D—LED Light Bulb

*NOTE: Bulb replacement procedures for front, side, rear, and auxiliary worklights are the same.*

1. Tilt LED light housing outward and remove nut (A) from the light bracket (B).
2. Disconnect harness connector (C) from light bulb (D).
3. Replace LED light bulb.
4. Reinstall housing in reverse order of removal.

V5VUVD4.0000112-19-19OCT22

## Replace LED Beacon Light



P21070—UN—23NOV23



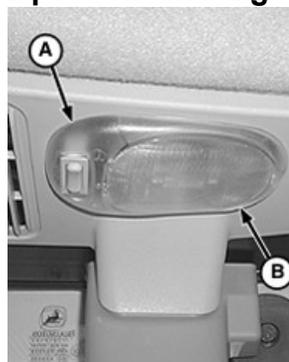
RXA0182394—UN—16APR21

- A—Screws (3)
- B—Wire Harness

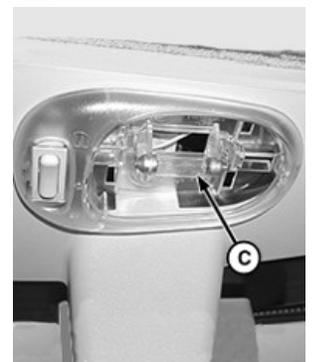
1. Remove screws (A) from top of beacon light assembly.
2. Disconnect wire harness (B) and remove beacon light assembly.
3. Install new beacon light assembly in reverse order of removal.

V5VUVD4.0000113-19-23NOV23

## Replace Dome Light Bulb



LV12533—UN—13APR05



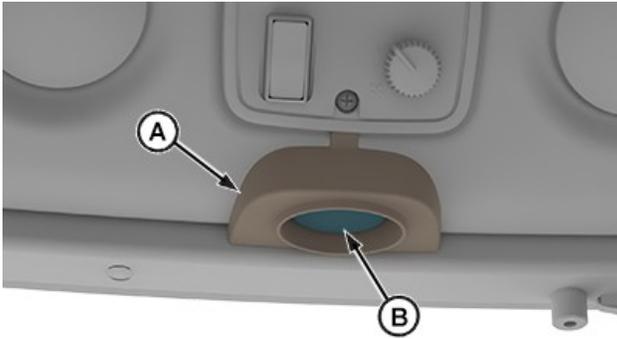
LV12534—UN—13APR05

- A—Housing
- B—Cover
- C—Bulb

1. Remove cover (B) from housing (A).
2. Pull bulb (C) from socket.
3. Install new bulb and cover.

V5VUVD4.0000114-19-08MAR22

## Replace Right-Hand Console Light Bulb



APY81423—UN—07DEC22

*Remove Lamp Assembly*

**A—Panel**  
**B—Lamp Assembly**

1. Pry off lamp (B) from inside of the panel (A).
2. Lower lamp assembly to access and disconnect the harness connector.
3. Pull out the lamp assembly.
4. Install new lamp assembly in reverse order of removal.

V5VUVD4.0000116-19-09DEC22

---

# Drivetrain Maintenance

---

## Drivetrain Information

The drivetrain information is broken up into different functional systems for operation and maintenance. See the following sections within this manual for detailed information:

### Operational Sections

- Transmission Operation
- MFWD and Front Axle Operation
- Differential and Rear Axle Operation
- Power Take-Off (PTO) Operation

### Maintenance Sections

- Transmission Maintenance
- MFWD and Front Axle Maintenance
- Differential and Rear Axle Maintenance
- Power Take-Off (PTO) Maintenance

V5VUVD4,0000117-19-08MAR22

---

# Transmission Maintenance

## Change Transmission/Hydraulic Oil and Filter

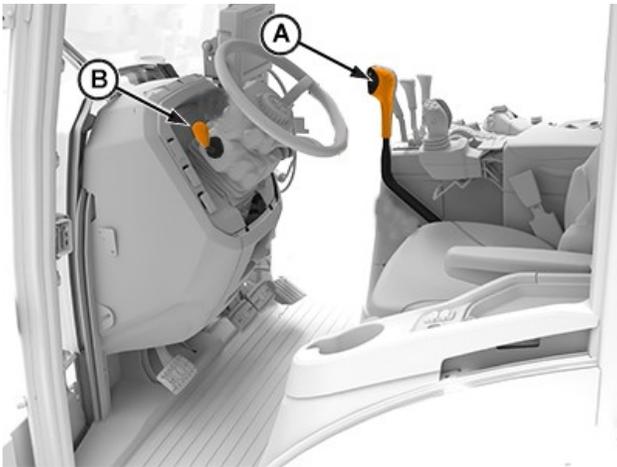
See Hydraulics Maintenance section for procedure.

V5VUVD4,0000118-19-08MAR22

## Check Neutral Start System

### MAINTENANCE INTERVAL

Every 500 Hours



APY77573—UN—20OCT22

A—Range-Shift Lever  
B—Left-Hand Reverser Lever

**CAUTION:** If machine starts while left-hand reverser lever (B) is held in forward or reverse position, see your John Deere dealer immediately for repairs.

**CAUTION:** If PTO rotates while starting the engine, see your John Deere dealer immediately for repairs.

Do not leave the seat with the engine running and PTO engaged.

*NOTE: Machine is designed to prevent inadvertent movement or PTO engagement when the engine is started.*

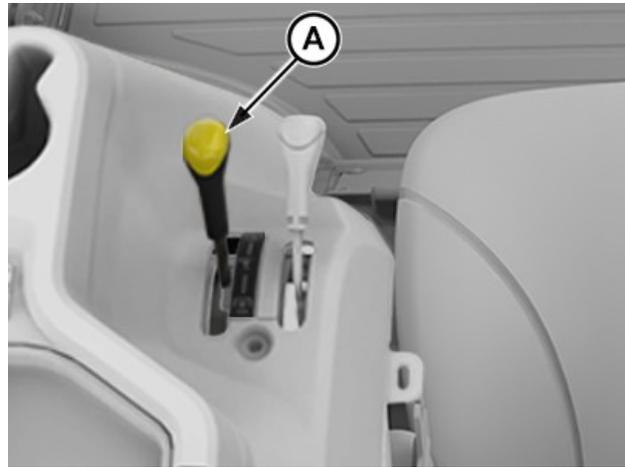
## Transmission Check

**IMPORTANT:** Engine should start with the transmission in NEUTRAL or PARK positions only.

1. Shut off the engine.
2. Depress the clutch pedal and brake pedals.
3. Place the range-shift lever (A) in any range. Range-shift lever (A) must not be in neutral or park.

4. Place the left-hand reverser lever (B) into forward or reverse direction position.
5. Attempt to start the engine.

## PTO Check



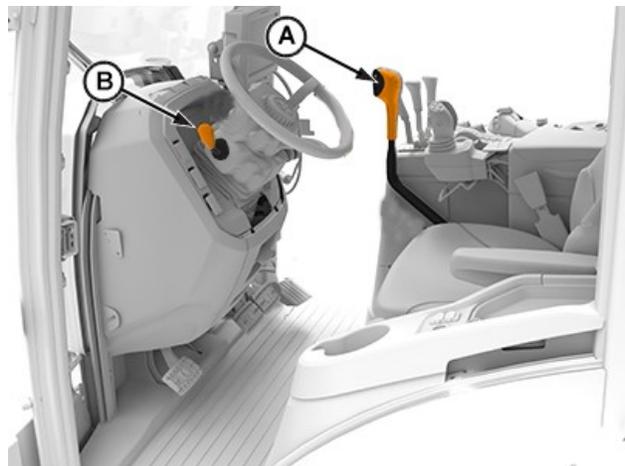
APY77577—UN—11OCT22

A—Shiftable PTO Speed Lever

1. Shut off the engine.
2. Place the range-shift lever in neutral or park.
3. Place the shiftable PTO speed lever (A) into any speed.
4. Switch rear PTO engagement switch in the engaged position.
5. Start the engine. Engine starts but rear PTO does not rotate.
6. Shut off the engine. Shift the PTO speed lever into another speed and repeat steps 1—5.

V5VUVD4,0000119-19-28APR23

## Check Transmission Park System



APY77573—UN—20OCT22

A—Range-Shift Lever  
B—Left-Hand Reverser Lever

 **CAUTION: Avoid personal injury. Make sure that everyone is clear of machine.**

**If machine does not hold stationary on an incline with reverser lever in Park position, see your John Deere dealer immediately for repairs.**

1. Position machine on a 30% incline with the front of machine facing downward.
2. Depress the clutch pedal and brake pedals.
3. Place the range-shift lever (A) in park.
4. Place the left-hand reverser (B) in neutral.
5. Release the clutch pedal and brake pedals. Wait 10—15 seconds, watching for movement.

---

V5VUVD4,000011A-19-28APR23

## Change Transmission Dampener

<b>MAINTENANCE INTERVAL</b>
-----------------------------

<b>Every 4500 Hours or 5 Years</b>
------------------------------------

Have your John Deere dealer inspect and service the transmission dampener.

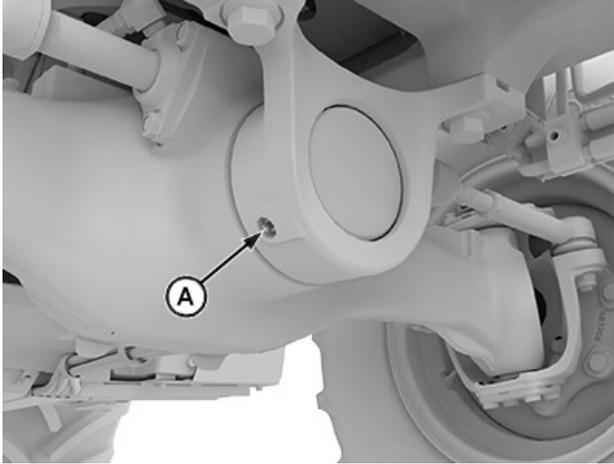
---

V5VUVD4,000011B-19-16NOV22

# MFWD and Front Axle Maintenance

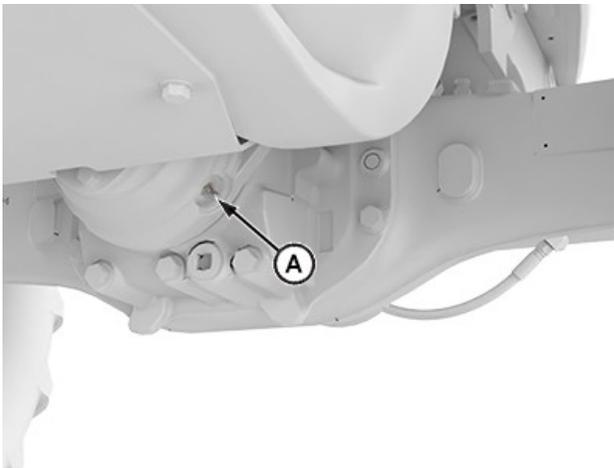
## Lubricate MFWD Axle Trunnion

**MAINTENANCE INTERVAL**  
Weekly or Every 50 Hours



Front Side of Axle

APY83068—UN—11APR23



Back Side of Axle

APY83069—UN—11APR23

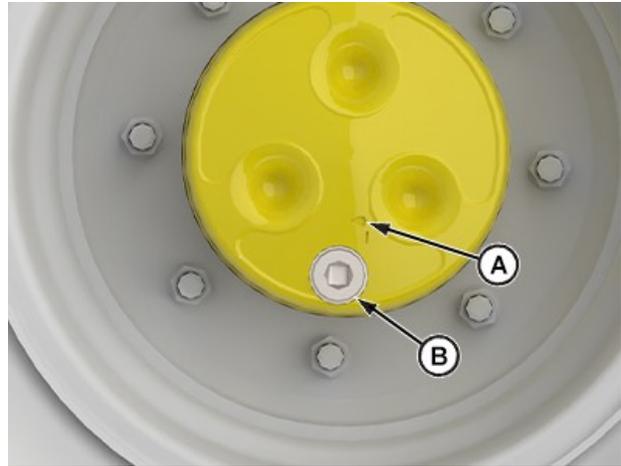
### A—Trunnion Grease Points

Apply several shots of multi-purpose grease to trunnion. (See Fuel, Lubricants, and Coolants section.)

uuf6xgz,1681288090332-19-12APR23

## Change MFWD Axle Wheel Hub Oil

**MAINTENANCE INTERVAL**  
Every 500 Hours



APY83071—UN—11APR23

A—Oil Level  
B—Drain/Fill Port Plug

**NOTE:** Approximate oil capacity for MFWD hubs is 0.8 L (0.84 qt). (See Fuel, Lubricants, and Coolants section.)

1. Park machine on a level surface, with wheel rotated until drain/fill port plug (B) is at bottom of hub.
2. Remove drain/fill port plug (B) and drain oil.
3. After oil has drained, move and park machine so that "OIL LEVEL" mark at the drain/fill port is parallel to ground.
4. Add Hy-Gard™ J20C until it reaches oil level (A) at bottom of the drain/fill port plug (B).
5. Install drain/fill port plug (B) and tighten to specifications.

### Specification

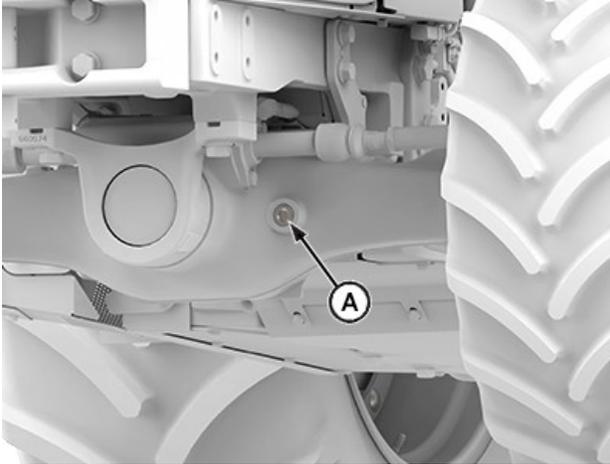
Plug to Hub—Torque. . . . . 80 N·m  
(59 lb·ft)

m86qb7,1682181354494-19-01MAY23

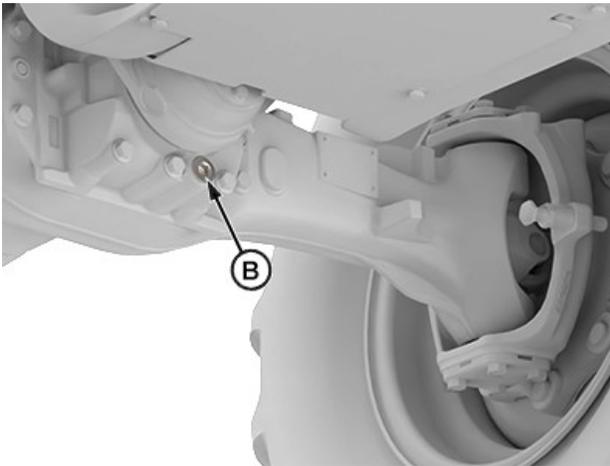
## Change MFWD Axle Housing Oil

**MAINTENANCE INTERVAL**  
Every 500 Hours

Hy-Gard



APY83072—UN—11APR23



APY83081—UN—11APR23

**A—Fill Plug**  
**B—Drain Plug**

*NOTE: Approximate MFWD axle housing oil capacity is 5 L (1.3 gal). (See Fuel, Lubricants, and Coolants section.)*

1. Park machine on level ground. Remove key.
2. Remove fill plug (A) and drain plug (B).
3. Install drain plug (B) and tighten to specification.
4. Add Hy-Gard™ J20C until even with the bottom of fill plug (A).
5. Install the fill plug (A) and tighten to specification.

**Specification**

Plug to Housing—Torque . . . . . 80 N·m  
(59 lb·ft)

m86qb7,1682182453619-19-01MAY23

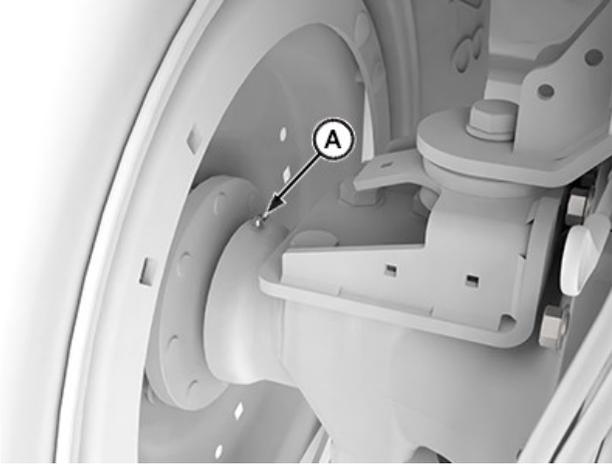
# Differential and Rear Axle Maintenance

---

## Lubricate Rear Axle Bearings

<b>MAINTENANCE INTERVAL</b>
-----------------------------

Every 500 Hours
-----------------



APY83073—UN—11APR23

**A—Grease Point**

*NOTE: Service more often if operated in wet and muddy conditions.*

Lubricate rear axle grease points (A) on left and right-hand sides of the axle with several shots of multi-purpose grease. (See Fuel, Lubricants, and Coolants section.)

uuf6xgz,1681288734922-19-28APR23

---

# Power Take-Off (PTO) Maintenance

## Adjust PTO Speed Shift Lever

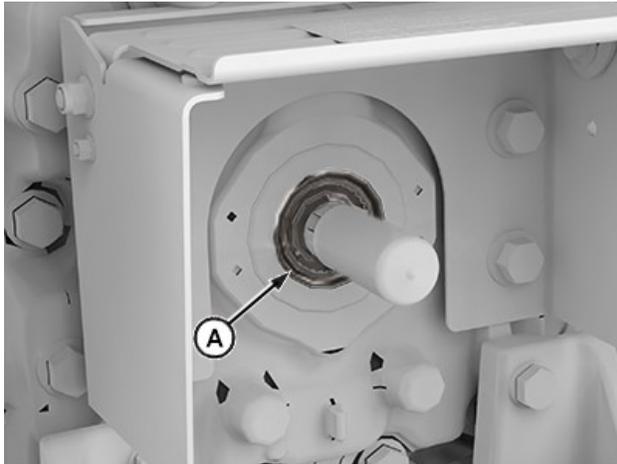
Have your John Deere dealer check and adjust PTO speed shift lever.

V5VUVD4,0000120-19-08MAR22

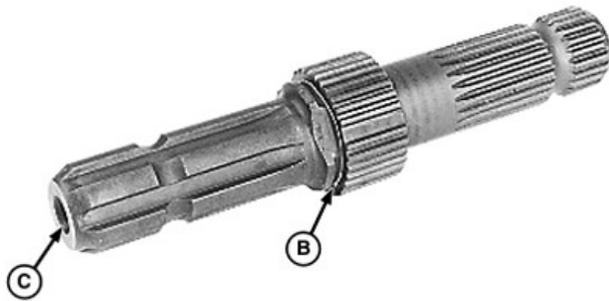
## Lubricate Exchangeable 540/1000 rpm PTO Shaft

### MAINTENANCE INTERVAL

Every 1000 Hours or Annually



APY78147—UN—15SEP22



LV12604—UN—26APR05

A—Snap Ring  
B—Stub Shaft  
C—Bore

**IMPORTANT:** Ensure that PTO is stopped and allowed to cool before servicing.

*NOTE:* When exchanging the PTO shaft, hydraulic oil does not leak out due to a dry socket design.

1. Locate flattened area on the stub shaft which facilitates snap ring removal and installation.
2. Align snap ring ends with flattened area. Remove snap ring (A) and pull out PTO shaft (B).
3. Clean PTO shaft thoroughly and apply a light coat of

grease. Be sure the end bore (C) is clean if installing shaft for 1000 rpm operation.

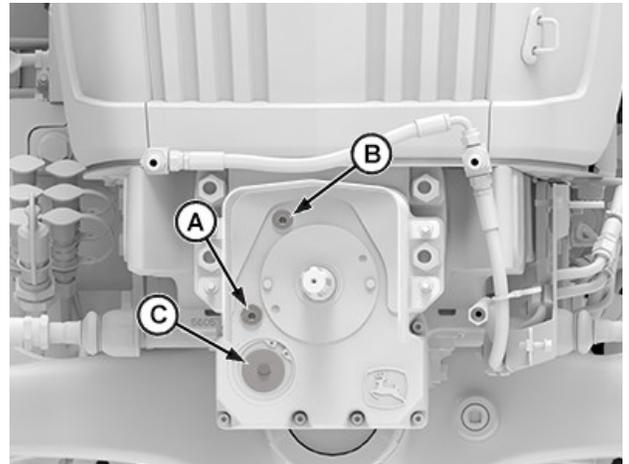
4. Turn PTO shaft end-for-end and insert in the PTO housing until snap ring groove is visible.
  - a. **540 rpm shaft**—Rotate the shaft back and forth while installing. Ensure that the shaft is properly seated in housing; continue to push shaft in when installing snap ring.
  - b. **1000 rpm shaft**—Rotate the shaft back and forth while installing until engagement is felt.
5. Install snap ring in the groove to retain PTO stub shaft. Align ends of the snap ring with flat surface of shaft.

rn86qb7,1683018957555-19-02MAY23

## Change Front PTO Oil

### MAINTENANCE INTERVAL

Every 1000 Hours or Annually



APY83083—UN—26APR23

A—Drain Plug  
B—Fill Plug  
C—Cover

**IMPORTANT:** J20D is the only acceptable transmission/hydraulic oil for use in the front PTO.

1. Remove fill plug (B).
2. Remove drain plug (A).
3. Drain oil into a suitable container.
4. Remove snap ring and cover (C).
5. Remove and clean oil screen.
6. Check O-ring, install oil screen, close cover, and install snap ring.
7. Install drain plug (A) and tighten to specification.

**Specification**

Drain Plug—Torque. . . . . 42 N·m  
(31 lb·ft)

8. Add J20D transmission/hydraulic oil to the PTO housing. (See Fuel, Lubricants, and Coolants section.)

**Specification**

Front PTO—Capacity. . . . . 3.1 L  
(0.8 gal)

9. Install fill plug (B) and tighten to specification.

**Specification**

Fill Plug—Torque. . . . . 42 N·m  
(31 lb·ft)

10. Check fluid level after changing oil and after initial run.

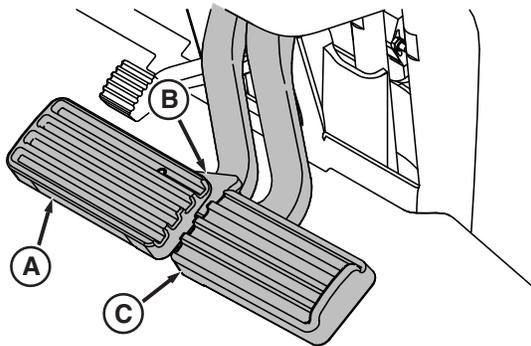
uuf6xgz,1681289746047-19-12APR23

---

# Steering and Brake Maintenance

---

## Check Manual Brakes



RXA0068386—UN—27AUG03

A—Left Brake Pedal  
B—Latch Bar  
C—Right Brake Pedal

**IMPORTANT: Any noticeable pedal drift downward from initial point of resistance (solid pedal) indicates brake leakage. See your John Deere dealer.**

1. Machine must be in park with engine shut off to check brakes for correct function.
2. Position latch bar (B) to allow brake pedals to operate separately.
3. Pump the left brake pedal (A) and right brake pedal (C) individually. Pedals should have a solid feel. If pedals do not feel solid, have your John Deere dealer bleed brakes.
4. Check to make sure that pedals do not settle to end of stroke within 10 seconds after being applied. If leakage exceeds this rate or if one pedal settles faster than the other, see your John Deere dealer.

V5VUVD4,0000123-19-08MAR22

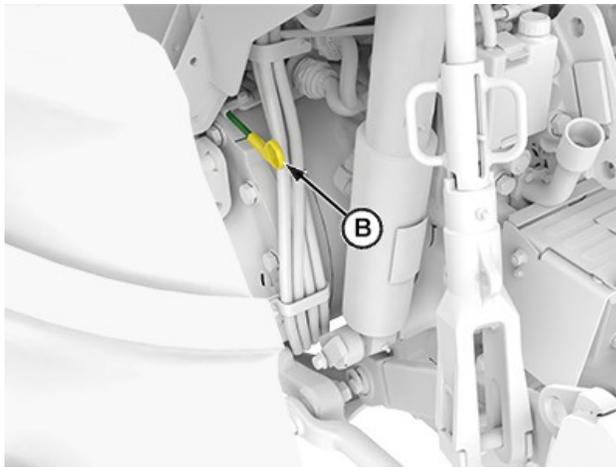
# Hydraulics Maintenance

## Check Transmission/Hydraulic System Oil Level

**MAINTENANCE INTERVAL**  
Weekly or Every 50 Hours



APY83074—UN—11APR23



APY83075—UN—11APR23

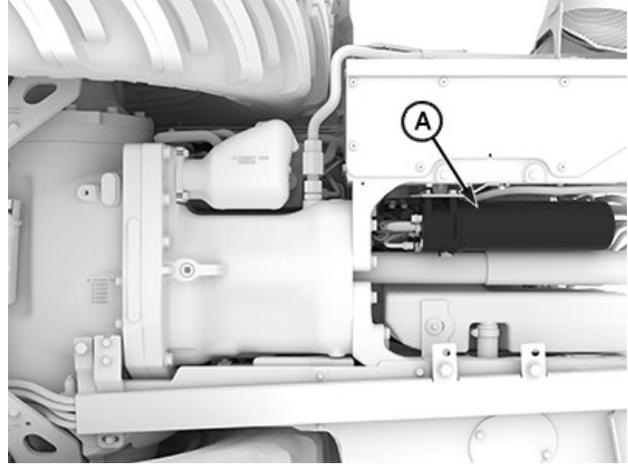
**A—Transmission Oil Fill Cap**  
**B—Dipstick**

1. Park machine on level ground, lower hitch, and other hydraulic implements.
2. Shut off engine. Remove key.
3. Let oil settle for a minimum of five minutes.
4. Check level at the mark on dipstick (B). Level must be at the full oil level mark.
5. Remove transmission oil fill cap (A) and add transmission oil to the fill port if level is low. (See Fuel, Lubricants, and Coolants section for correct oil.)

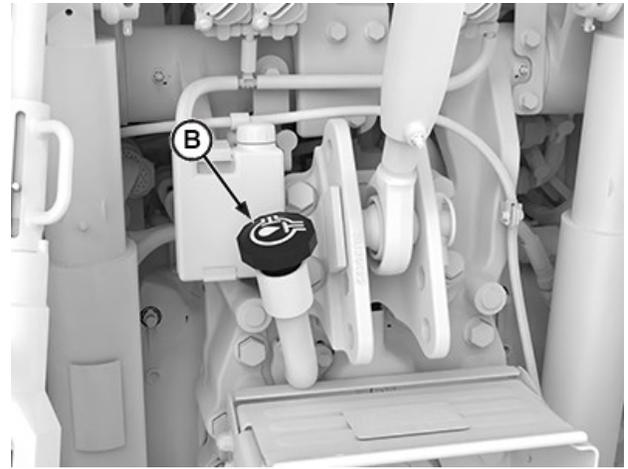
uuf6xgz,1681288924628-19-12APR23

## Change Transmission/Hydraulic Filter

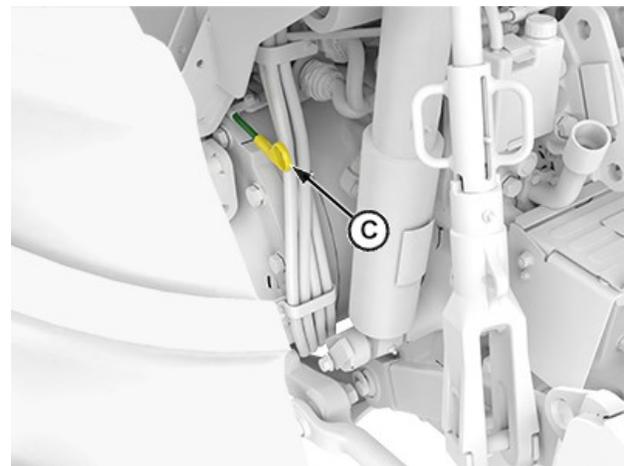
**MAINTENANCE INTERVAL**  
INITIAL — 100 Hours  
REGULAR (AFTER INITIAL CHANGE) — Every 500 Hours



APY77574—UN—12OCT22



APY83086—UN—26APR23



APY83089—UN—28APR23

**A—Transmission/Hydraulic Oil Filter**  
**B—Transmission Oil Fill Cap**  
**C—Transmission Oil Dipstick**

**IMPORTANT: Capture oil from filter using a drain pan. Dispose of waste oil properly.**

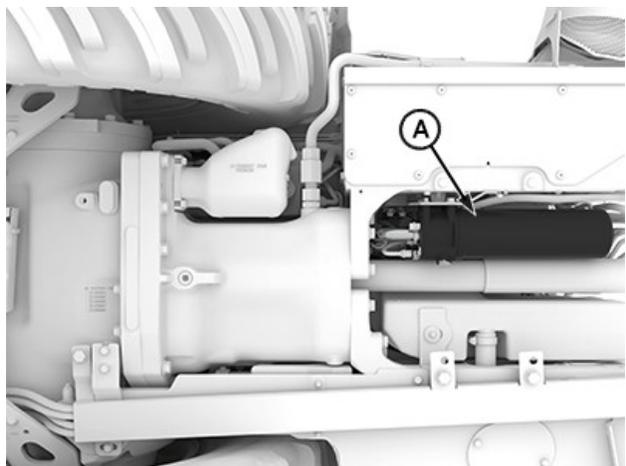
**IMPORTANT: Do not overtighten filter.**

1. Park machine on level ground and shut off engine. Remove key.
2. Remove transmission oil fill cap and use a shop-vac to apply suction to the fill port to prevent excessive draining of hydraulic fluid.
3. Remove transmission/hydraulic oil filter (A) from the filter base.
4. Clean threads on the filter base and on new filter.
5. Apply oil to the new filter seal and install transmission/hydraulic oil filter. Tighten filter by hand, then tighten an additional 1/8 turn.
6. Check oil level with transmission oil dipstick (C).
7. If level is low, remove transmission oil fill cap (B) and add transmission/hydraulic oil as necessary to fill system. (See Fuel, Lubricants, and Coolants section for correct oil.)
8. Recheck oil level after five minutes of operation.

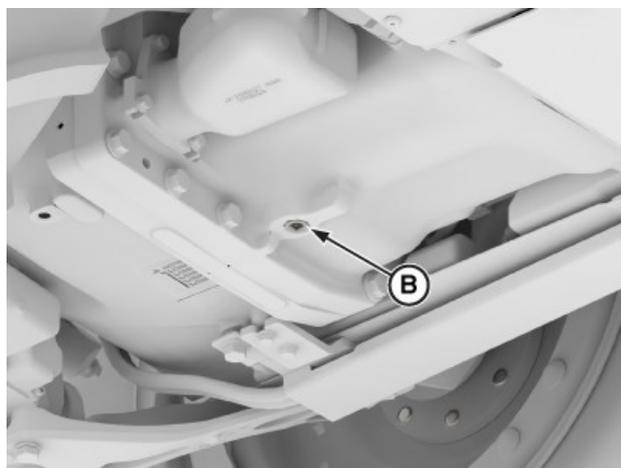
m86qb7,1682927803437-19-01MAY23

## Change Transmission/Hydraulic Oil and Filter

<p><b>MAINTENANCE INTERVAL</b> Every 1500 Hours</p>
---



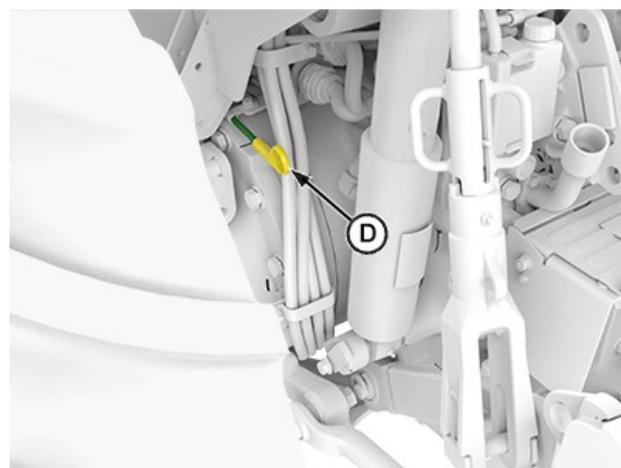
APY77574—UN—12OCT22



APY83090—UN—28APR23



APY83087—UN—28APR23



APY83088—UN—28APR23

- A—Transmission/Hydraulic Oil Filter
- B—Transmission Drain Plug
- C—Transmission Oil Fill Cap
- D—Transmission Oil Dipstick

**IMPORTANT: Capture oil from reservoir and filter using a drain pan. Dispose of waste oil properly.**

**IMPORTANT: Do not overtighten filter.**

1. Lower rear hitch to remove trapped oil.

2. Park machine on level ground and shut off engine.  
Remove key.
3. Remove transmission drain plug (B).
4. Remove transmission/hydraulic oil filter (A) from the filter base.
5. Clean threads on the filter base and on the new transmission/hydraulic oil filter with clean transmission/hydraulic oil.
6. Apply oil to the new transmission/hydraulic oil filter seal and install transmission/hydraulic oil filter.  
Tighten transmission/hydraulic oil filter by hand, then tighten an additional 1/8 turn.
7. Install transmission drain plug.
8. Remove transmission oil fill cap (C) and fill oil. (See Fuel, Lubricants, and Coolants section for correct oil.)

**Specification**

Transmission Oil—Capacity. . . . . 57 L  
(15.1 gal)

9. Check oil level with transmission oil dipstick (D) and again after five minutes of operation.

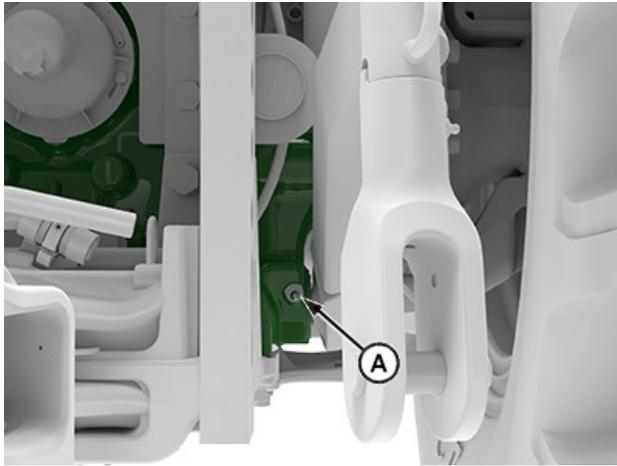
V5VUVD4.0000126-19-07NOV23

---

# Hitch and Drawbar Maintenance

## Lubricate Draft Sensing Shaft Seal

**MAINTENANCE INTERVAL**  
Every 250 Hours



APY77575—UN—12OCT22

A—Grease Point

*NOTE: Grease point on the right side of the PTO housing shown, left side similar.*

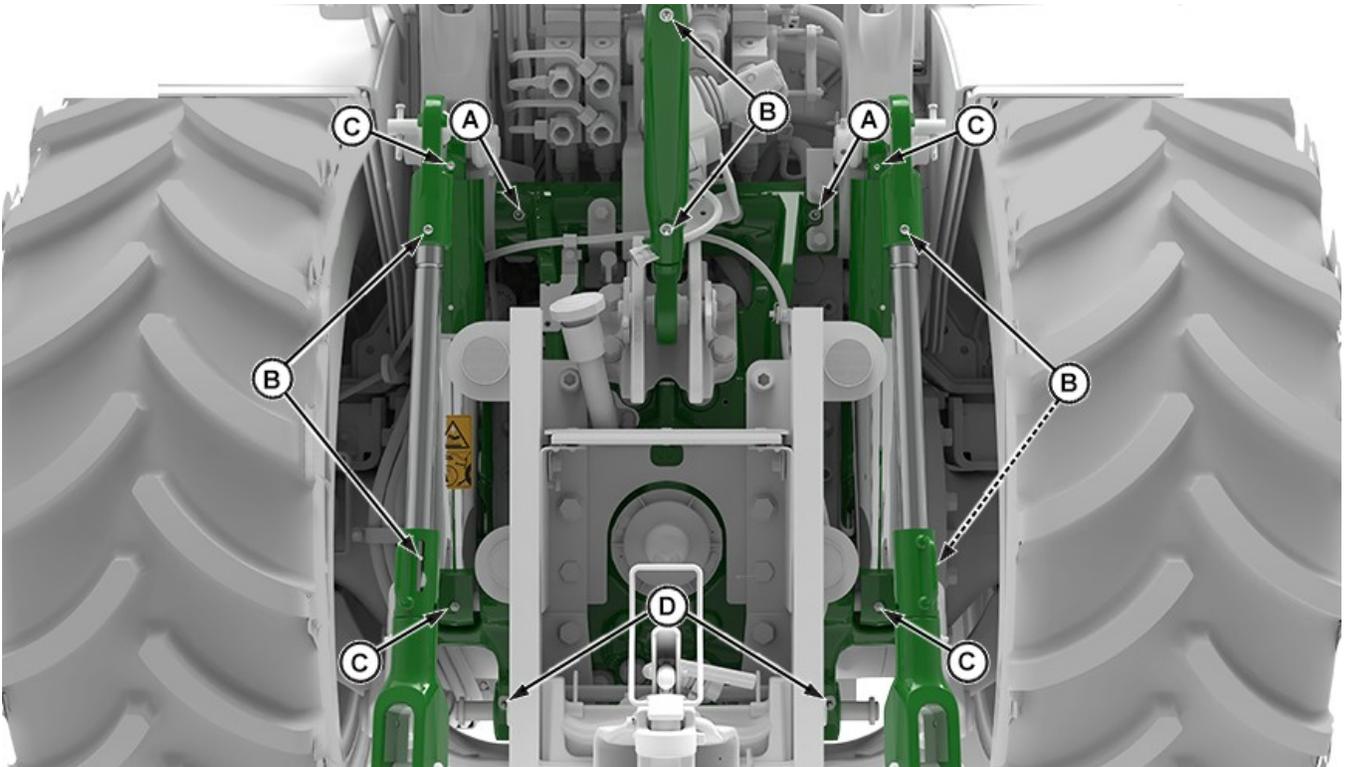
*Grease daily if operated in wet and muddy conditions.*

Apply several shots of general-purpose grease to the grease point (A). (See Fuel, Lubricants, and Coolants for correct lubricant.)

V5VUVD4,0000127-19-09OCT22

## Lubricate Rear Hitch

**MAINTENANCE INTERVAL**  
Weekly or Every 50 Hours



APY77576—UN—01DEC22

A—Hitch Bushing Grease Point  
B—Hitch Linkage Grease Point

C—Lift Cylinder Grease Point  
D—Draft Sense Shaft Seal

*NOTE: Grease daily when operating in wet and muddy conditions.*

grease points (A—C). See Fuel, Lubricants, and Coolants for correct lubricant.)

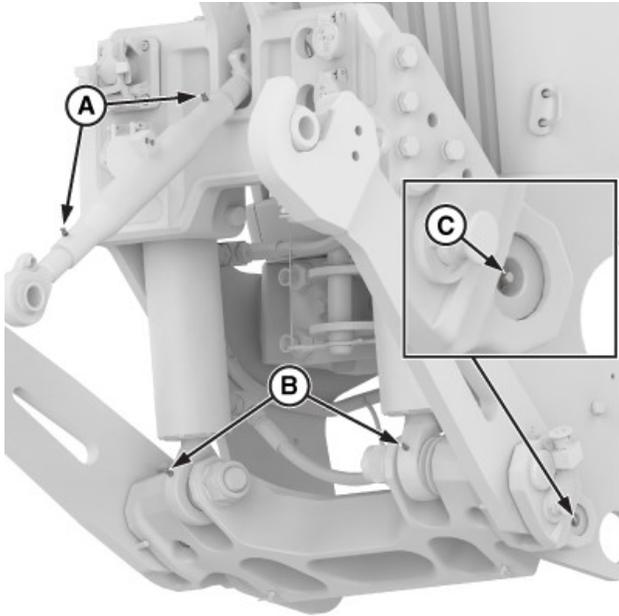
V5VUVD4,0000128-19-09OCT22

Apply several shots of general-purpose grease to the

## Lubricate Front Hitch

**MAINTENANCE INTERVAL**

Weekly or Every 50 Hours



APY83084—UN—26APR23

Viewed From Below Hitch

- A—Hitch Linkage Grease Point
- B—Lift Cylinders Grease Point
- C—Hitch Bushing Grease Point

**NOTE:** Grease daily when operating in wet and muddy conditions.

Apply several shots of general-purpose grease to the grease points (A—C). (See Fuel, Lubricants, and Coolants for correct lubricant.)

uuf6xgz,1681289914532-19-12APR23

## Check Hitch and Drawbar for Excessive Wear

**MAINTENANCE INTERVAL**

Every 250 Hours

Visually inspect the hitch and drawbar for excessive wear, hole deformation, cracks, or damage. Replace parts as needed, see your John Deere dealer.

V5VUVD4,000012A-19-08MAR22

# Selective Control Valve Maintenance

---

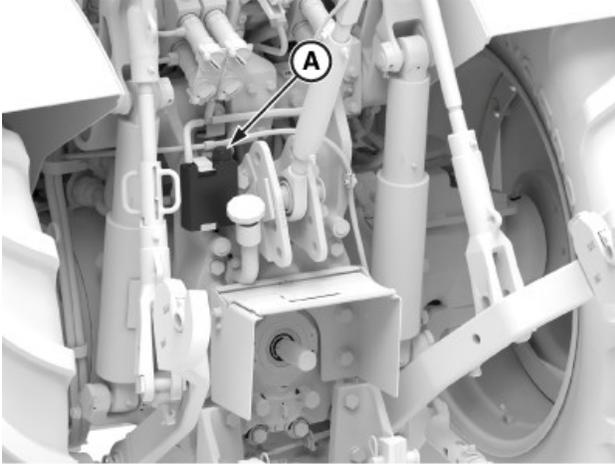
## Adjust Mechanical SCV Cables

See your John Deere dealer for adjusting mechanical mid and rear SCV cables.

V5VUVD4,000012B-19-08MAR22

---

## Empty Rear SCV Oil Collection Bottle



APY83091—UN—26APR23

### A—Oil Collection Bottle

Check oil collection bottle (A) and empty as required.  
Dispose of waste properly.

m86qb7,1683004019782-19-02MAY23

---

# Wheels and Tires Maintenance

## Inspect Tires

### MAINTENANCE INTERVAL

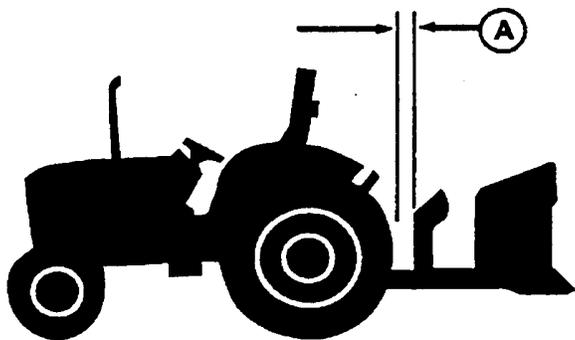
Weekly or Every 50 Hours

### IMPORTANT: Keep wheel hardware tight for safety.

1. Check tires daily for damage or noticeably low pressure.
2. Have any cuts or breaks repaired as soon as possible.
3. At least every 50 hours of operation, check tires with an accurate gauge having 10 kPa (0.1 bar) (1 psi) graduations. If tires contain liquid ballast, use a special air-water gauge and measure with the valve stem at bottom.
4. Check wheel hardware torque before operating, twice during first 10 hours of operation and thereafter every week/50 hours of operation.
5. Remove chemicals and petroleum products from tires as soon as possible to avoid damage.

V5VUVD4,000012D-19-08MAR22

## Adjust and Check Clearance



A—Clearance

M47177—UN—31JAN92

**IMPORTANT: Whenever an implement, quick-coupler, or attachment is connected to the hitch, check full range of operation for interference, binding, or PTO separation.**

**When large diameter rear tires are installed, a quick-coupler or similar device is required to provide adequate implement-to-tire clearance.**

1. Adjust center link and lift links as necessary. (See Level Hitch in Hitch and Drawbar Operation section.)
2. Adjust sway as necessary. (See Adjust Hitch Side Sway in Hitch and Drawbar Operation section.)
3. Start engine.

4. Slowly raise and lower implement with hitch fender switch or position lever.
5. Watch for interference points and adjust hitch setting as required.
6. Check for adequate clearance (A) between outside diameter of the tire and implement with hitch in raised position.

V5VUVD4,000012E-19-10OCT22

## Check Tire Inflation Pressure

### MAINTENANCE INTERVAL

Weekly or Every 50 Hours

### Consider the Following When Inflating Tires:

- At least every 50 hours of operation, check inflation pressure with a gauge. Use an accurate gauge having 10 kPa (0.1 bar) (1 psi) graduations. If tires contain liquid ballast, use a special air-water gauge and measure with the valve stem at bottom.
- Correctly inflated radial tires show a large deflection of the sidewall or “cheeks.” Deflection is normal and does not damage the tire if the inflation pressure is maintained.
- Overinflation reduces performance and increases strain of both tire and rim.
- Regularly monitor inflation pressures less than 80 kPa (0.8 bar) (12 psi) because of the increased risk of low-pressure leaks (especially due to leaking valve cores).
- When operating machine on a steep side slope or furrow plowing, increase inflation pressures 28 kPa (0.28 bar) (4 psi) above the values listed to compensate for lateral weight transfer.
- Tires run as singles in high-traction conditions sometimes experience bead slip. Increasing the inflation pressure compensates for this condition but causes reduced traction.
- If higher load capacities are needed, contact your John Deere dealer for tire manufacturer load and inflation table information.
- Maximum tire pressure is specified on the tire sidewall.
- Increase front tire pressures 30 kPa (0.3 bar) (4 psi) above values listed when operating with a loader to compensate for weight transfer.

V5VUVD4,000012F-19-10OCT22

## Tire Pressures

Long life and satisfactory performance of the tires depend on proper tire inflation. Underinflation of tires

leads to rapid wear. Overinflated tires reduce traction and increase wheel slippage.

Since correct tire pressures vary with working conditions and load, but also with model, tire size and manufacturer, we recommend that you approach your John Deere dealer or tire company for advice.

V5VUVD4,0000130-19-08MAR22

### Tire Inflation Pressure Guidelines

Check tire inflation pressure while tires are cool, using an accurate dial or stick-type gauge having 10 kPa (0.1 bar) (1 psi) graduations.

*NOTE: Use a special air-water gauge and measure with the valve stem at bottom, if tires contain liquid ballast.*

Correctly inflated radial tires show a deflection of the sidewall. This is normal and will not damage the tire.

Inflation pressures less than 83 kPa (0.8 bar) (12 psi) must be monitored frequently because of the increased risk of low-pressure leaks.

*NOTE: Bead-slip can be experienced in high-traction conditions when using single tires. Increasing inflation pressure helps, but reduce traction.*

Maximum tire pressure is specified on the tire sidewall.

#### Determining Correct Tire Pressure

Integral implements transfer significant weight to the rear axle. Always include this weight when determining correct inflation pressures. Weigh the machine as described in order to determine the correct tire pressure:

**Rear-Mounted Implement** - The front axle must be weighed with implement lowered. The rear axle must be weighed with the implement raised.

**Front-Mounted Implement** - The front axle must be weighed with the implement raised. The rear axle must be weighed with the implement lowered.

**Front- and Rear-Mounted Implements** - Weigh the machine with front and rear implements both raised.

Set tire inflation pressures according to the weight measured. *Ballasting and tire inflation pressure may need to be adjusted when operating conditions change.* Refer to the tire manufacturers recommended inflation pressures as an initial starting point.

#### Altering Tire Inflation Pressure

Machines operating with a loader should increase front tire pressures 30 kPa (0.3 bar) (4 psi) above the values listed to compensate for weight transfer.

Machines operating on steep side slopes or furrow plowing should increase rear tire pressures 30 kPa (0.3

bar) (4 psi) above the values listed for base pressures 80 kPa (0.8 bar) (12 psi) and above to compensate for lateral weight transfer. For base pressures below 80 kPa (0.8 bar) (12 psi), pressure should be increased by 30%.

Reduce inflation pressure when using towed implements.

Machines with heavy hitch-mounted implements that require additional front cast weights to maintain steering stability require increased front and rear tire inflation pressure to carry the increased weight.

V5VUVD4,0000131-19-08MAR22

### Tire Sidewall Information

**520 / 85 R 42 158 A8**  
 (A) (B) (C) (D) (E) (F)

RXA0149658—UN—13AUG15

Information useful in selecting and working with tires is displayed on tire sidewalls.

- A**—Tire section width – Width in millimeters.
- B**—Aspect ratio – Ratio of height to tire section width.
- C**—Construction type – R = Radial, B = Bias.
- D**—Rim diameter – Diameter in inches (not total tire height or group size).
- E**—Load index – Numerical code indicates tire load-carrying capacity. Higher load index number designates higher load capacity.
- F**—Speed rating – Maximum speed tire is designed to travel.

Additional information that may be displayed on sidewall:

**Tread pattern**—Indicates tread design and tire usage. Designs offered are all lug- or bar-type tires and are separated into one of three specifications: R1, R1W, or R2.

**Direction of rotation**—Icon (usually an arrow or group of arrows) indicating tire rotation direction.

**Manufacturer name**—Name of tire manufacturer.

**Max load and pressure information**—Maximum load a tire is permitted to carry under specified

pressure and operating conditions.

**Safety warnings**—Important information provided by tire manufacturer.

V5VUVD4,0000132-19-08MAR22

## Use Correct Tire Combinations

**IMPORTANT:** When replacing tires, consult your tire or John Deere dealer. Mixing worn and new tires, bias and radial, or tires of different diameters or loaded radii can reduce tire life and overall machine performance.

Using tire combinations not listed in the Tire Compatibility Chart could result in premature tire and driveline wear due to excessive underspeed or overspeed.

In order to achieve maximum drawbar pull, maintain proper steerability, and reduce tire wear and fuel consumption, comply with the correct tire combinations.

When MFWD front tires show excessive wear in comparison with the rear tires, the front tires must be replaced in order to maintain the predetermined tire ratio.

Front	Rear
240/70R16	360/70R24
280/70R16	420/70R24
250/80R18	340/85R28
280/70R18	420/70R28
320/65R18	480/65R28

Tire Combinations for Narrow Front Axle

Front	Rear
320/70R20	420/70R28
360/70R20	420/70R28
360/70R20	480/65R28
12.5/80-18R4	19.5L-24R4

Tire Combinations for Standard Front Axle

shqw455,1700600158790-19-21NOV23

## Correct Tire Selection

**IMPORTANT:** When replacing tires, consult your tire dealer. Mixing worn and new tires, bias and radial, or tires of different diameters or loaded radii can reduce tire life and overall tractor performance.

Using any tire combination, other than those listed on the Tire Compatibility Chart, could result in premature tire and driveline wear due to excessive underspeed or overspeed.

**IMPORTANT:** If a different tire combination is selected, or new rear tires are selected with an SRI (speed/radius index) higher than the previous one, the tractors electronics must be recalibrated by your John Deere dealer.

**IMPORTANT:** To prevent damage to the drivetrain and avoid premature tire wear, obtain a front axle overspeed calculation between 100—105%. This correlates to a 0—5% MFWD axle overspeed, which is recommended for optimal performance.

The size ratio of the front wheels to the rear ones is precisely determined in order to produce a positive front wheel lead of between 0% and 5%. To ascertain the correct ratio when changing tires, proceed as follows:

*NOTE: There are three different methods for calculating MFWD axle overspeed.*

**Calculate MFWD Axle Overspeed with Front/Rear Axle Ratio:**

**Determine Front/Rear Axle Ratio**



RXA0139133—UN—05FEB14

Locate front/rear axle ratio displayed on a label located below the rear window on the right-hand side inside of the cab. The following ratios are possible:

- 1.347
- 1.392

**Determine Tire Rolling Circumferences**

This information must be obtained from the tire manufacturers manual.

1. Select tires with suitable load-bearing capability.
2. Select tires appropriate to the tractors top speed.
3. From the manual, obtain the rolling circumference of the tire desired for the rear wheel.

- From the manual, obtain the rolling circumference of the tire desired for the front wheel.

**MFWD Axle Overspeed Formula**

Calculate the overall transmission ratio using the following formula:

$$\text{MFWD Axle Overspeed} = \frac{\text{Rolling Circumference of Front Tire}}{\text{Rolling Circumference of Rear Tire}} (\times \text{F/R Axle Ratio}) \times 100\%$$

MFWD Axle Overspeed Formula (F/R Axle Ratio)

Using the above formula, the following is an example of the calculation:

- Rolling circumference of the front tire = 3420 mm (134.6 in)
- Rolling circumference of the rear tire = 4395 mm (173.0 in)
- Front to rear axle ratio = 1.347

$$\text{MFWD Axle Overspeed} = \frac{3420}{4395} (\times 1.347) \times 100\%$$

MFWD Axle Overspeed Example

In the example, the MFWD axle overspeed equates to 104.8% or a 4.8% overspeed. The tires would be acceptable to use.

**Calculate MFWD Axle Overspeed Alternate Method:**

- Mark the front/rear tires and the ground where they contact.
- With the MFWD Off**, roll the machine ten revolutions of the rear tires and count the revolutions of the front tire.
- With the MFWD On**, roll the machine ten revolutions of the rear tires and count the revolutions of the front tire.
- Calculate the difference percentage.

$$\text{MFWD Axle Overspeed} = \frac{[(\text{MFWD On Revolutions} - \text{MFWD Off Revolutions}) / \text{MFWD Off Revolutions}] \times 100}{1}$$

MFWD Axle Overspeed Formula (Alternate Method)

V5VUVD4,0000134-19-08MAR22

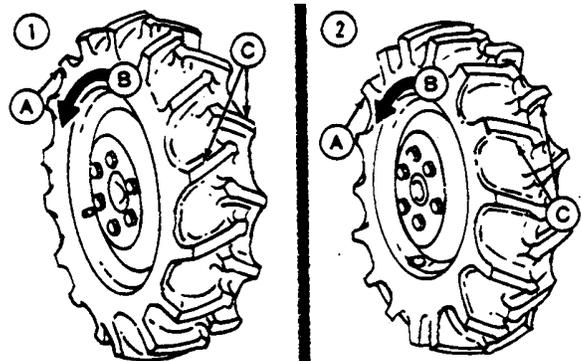
**Changing Tire Sizes**

*NOTE: When changing tire sizes, it is recommended to have your John Deere dealer ensure that the machine is properly set up.*

- Changing tire sizes requires a software change to ensure that correct ground speed is achieved and displayed.
- Any change of tire combination must conform to a combination authorized for that particular machine.
- Depending on the new tire size, a change to the MFWD ratio may be required.

V5VUVD4,0000135-19-08MAR22

**Select Front Tire Rolling Direction**



RW510—UN—06APR89

Left Tire (Viewed From Rear)

- A—Front Tire (Viewed from Rear)
- B—Rolling Direction of Tire
- C—Tire Lugs

- Under most conditions, front tires (A) are mounted with the direction of tire lugs (C) the same as the tire rolling direction (B).
- If machine is used primarily for loader operations, lug direction can be reversed on the MFWD axle for improved tire wear.

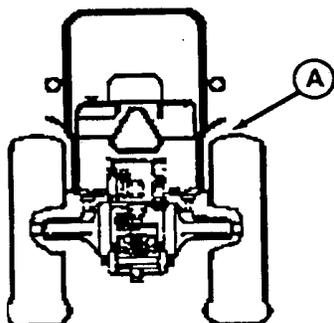
V5VUVD4,0000136-19-08MAR22

**Dual Wheel Usage**

**IMPORTANT: Do not use dual wheels on this machine. Machine damage occurs if dual wheels are installed and used on either the front or rear axle.**

V5VUVD4,0000137-19-08MAR22

### Rear Wheel Tread Width Limitations



**IMPORTANT:** Tires must have at least 25 mm (1 in) clearance with fenders (A). When rear tires are installed, check clearance between the tire and fenders.

V5VUVD4,0000138-19-08MAR22

### Set Tread—Two-Position MFWD Wheels

- Adjust wheel tread by exchanging the wheels from side-to-side and by using spacers.
- Tread settings are measured at the middle of the tires at axle height.

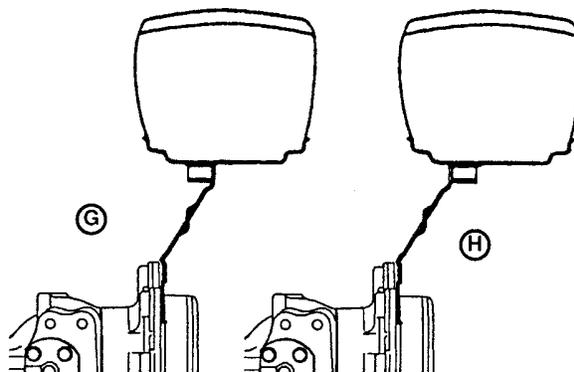
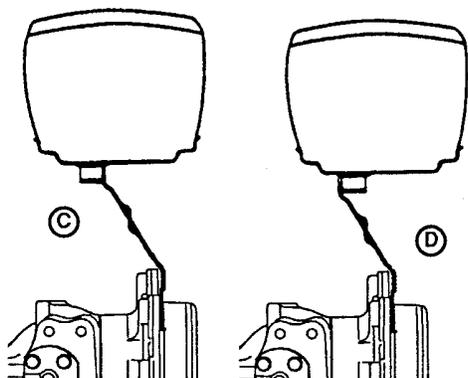
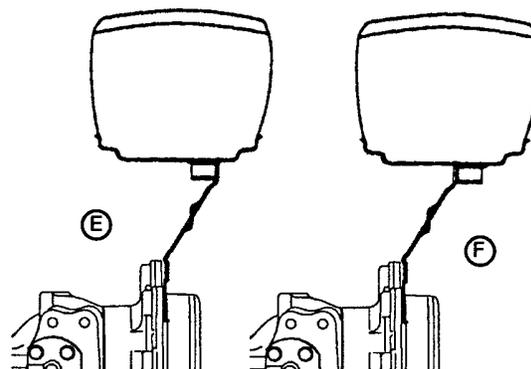
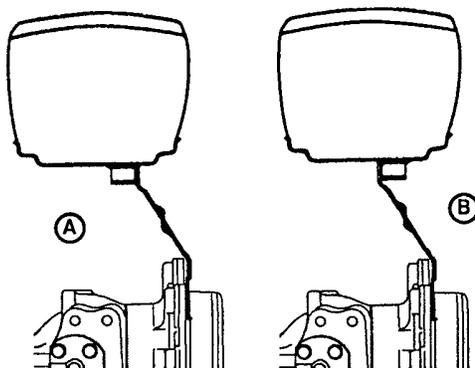
A—Rear Wheel-to-Fender Clearance

M47179—UN—31JAN92

Two-Position MFWD Wheels—Tread Width (Centerline-to-Centerline) mm (in)				
Tire	No Spacer		60 mm Spacer	
	A	B	C	D
12.5/80-18	1578 (62.1)	1723 (67.8)	1698 (66.85)	1844 (72.59)

shqw455,1700600248392-19-21NOV23

### Set Tread—Multi-Position MFWD Wheels



LV601—UN—22APR94

LV602—UN—22APR94

- Wheel tread with multi-position wheels is adjusted by repositioning or exchanging the rims or by reversing the wheel disks.
- Wheel tread can also be adjusted by exchanging the complete wheel to the opposite side of the machine.

## Wheels and Tires Maintenance

This permits the change from disk-dished-in to disk-dished-out operations without disassembling the wheel.

- When changing wheels from one side to the other, the arrow on the sidewall of tire points in the direction of forward rotation.

- The wheel tread can be adjusted by exchanging the wheels from side-to-side and by using spacers.
- Tread settings are measured at the middle of the tires at axle height.

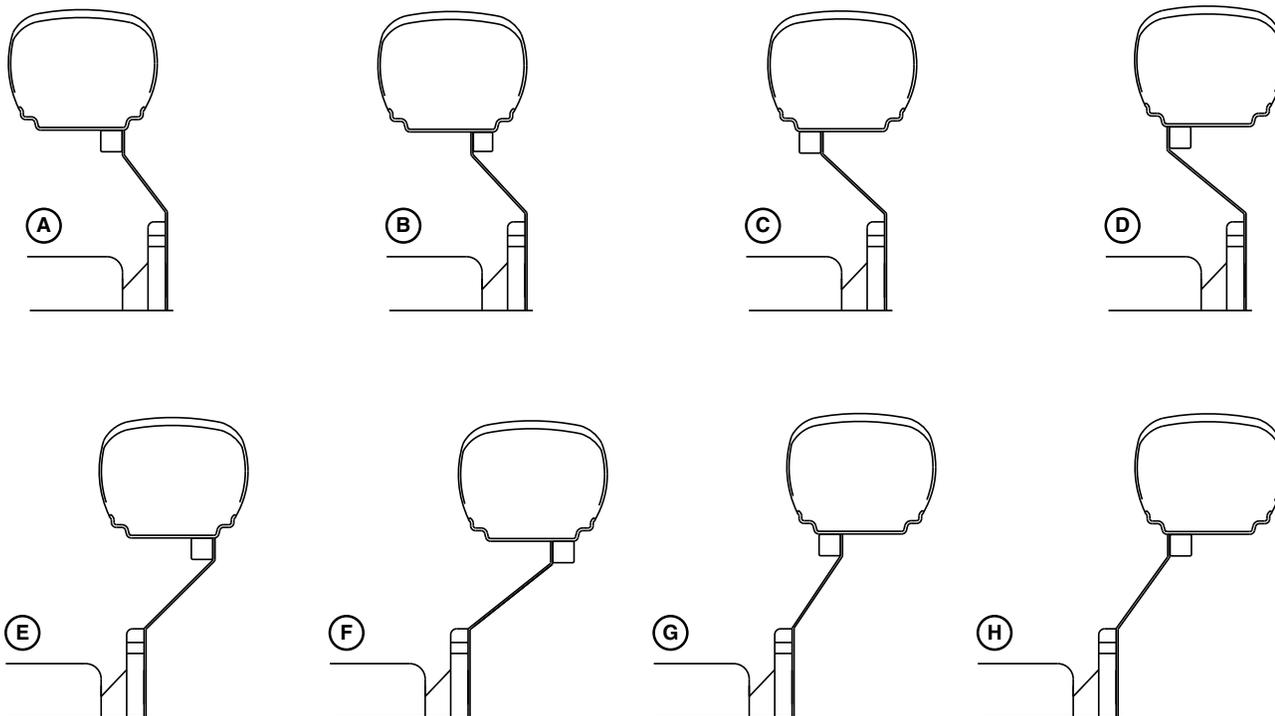
Multi-Position MFWD Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
No Spacer								
Tire	A	B	C	D	E	F	G	H
240/70R16	Interference	Interference	Interference	1337 (52.63)	Interference	Interference	Interference	Interference
280/70R16	Interference	Interference	Interference	1337 (52.63)	Interference	Interference	Interference	Interference
250/80R18	Interference	Interference	Interference	1521 (59.88)	1145 (45)	Interference	Interference	Interference
280/70R18	Interference	Interference	Interference	1365 (53.74)	1305 <sup>a</sup> (51.38)	Interference	Interference	Interference
320/65R18	Interference	Interference	Interference	1407 (55.39)	N/A	Interference	Interference	Interference
320/70R20	Interference	Interference	Interference	1701 (66.97)	1601 (63.03)	Interference	Interference	Interference
360/70R20	Interference	Interference	Interference	1701 (66.97)	1601 (63.03)	Interference	Interference	Interference
12/5/80-18	Interference	Interference	Interference	1723 (67.83)	1578 (62.13)	Interference	Interference	Interference

<sup>a</sup>Fender Adjustment Required

Multi-Position MFWD Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
60 mm Spacer								
Tire	A	B	C	D	E	F	G	H
240/70R16	Interference	Interference	Interference	1457	1449	Interference	Interference	Interference
280/70R16	Interference	Interference	Interference	1457	1449	Interference	Interference	Interference
250/80R18	Interference	Interference	Interference	1641	1265	Interference	Interference	Interference
280/70R18	Interference	Interference	Interference	1485	1425	Interference	Interference	Interference
320/65R18	Interference	Interference	Interference	1527	1382	Interference	Interference	Interference
320/70R20	Interference	Interference	Interference	1821	1721	Interference	Interference	Interference
12/5/80-18	Interference	Interference	Interference	1843	1698	Interference	Interference	Interference

shqw455,1700600248098-19-24NOV23

### Set Tread—Multi-Position Rear Wheels



LV8610—UN—28AUG03

- Wheel tread with multi-position wheels is adjusted by repositioning or exchanging the rims or by reversing the wheel disks.
- Wheel tread can also be adjusted by exchanging the complete wheel to the opposite side of the machine. This permits the change from disk-dished-in to disk-dished-out operations without disassembling the wheel.
- When changing wheels from one side to the other, the arrow on the sidewall of tire points in the direction of forward rotation.
- The wheel tread can be adjusted by exchanging the wheels from side-to-side and by using spacers.
- Tread settings are measured at the middle of the tires at axle height.

Multi-Position Rear Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
No Spacer								
Tire	A	B	C	D	E	F	G	H
360/70R24	1284 (50.55)	1386 (54.56)	1244 (48.97)	1345 (52.95)	1584 (62.36)	1685 (66.33)	1543 (60.74)	1645 (64.76)
420/70R24	1284 (50.55)	1386 (54.56)	1244 (48.97)	1345 (52.95)	1584 (62.36)	1685 (66.33)	1543 (60.74)	1645 (64.76)
340/85R28	Interference	1237 (48.7)	1297 (51.1)	1397 (55.0)	1537 (60.5)	1637 (64.4)	1697 (66.8)	1797 (70.7)
420/70R28	Interference	1237 (48.7)	1297 (51.1)	1397 (55.0)	1537 (60.5)	1637 (64.4)	1697 (66.8)	1797 (70.7)
480/65R28	Interference	Interference	1295 (50.9)	1395 (54.9)	1539 (60.5)	1639 (64.5)	1695 (66.7)	1795 (70.6)
19.5L-24	Interference	Interference	Interference	1420 (55.9)	1506 (59.3)	1602 (63.1)	1724 (67.8)	1820 (71.6)

Multi-Position Rear Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
30 mm Spacer								
Tire	A	B	C	D	E	F	G	H
360/70R24	1344	1446	1304	1405	1644	1745	1603	1705
420/70R24	Interference	1336	1304	1402	1644	1742	1710	1808

## Wheels and Tires Maintenance

Multi-Position Rear Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
30 mm Spacer								
Tire	A	B	C	D	E	F	G	H
340/85R28	1197	1297	1357	1457	1597	1697	1757	1857
420/70R28	Interference	1297	1357	1457	1597	1697	1757	1857
480/65R28	Interference	Interference	1355	1455	1599	1699	1755	1855
19.5L-24	Interference	Interference	1384	1480	1566	1662	1784	1880

Multi-Position Rear Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
44 mm Spacer								
Tire	A	B	C	D	E	F	G	H
360/70R24	1372	1474	1332	1433	1672	1773	1631	1733
420/70R24	1266	1364	1332	1430	1672	1770	1738	1836
340/85R28	1225	1325	1385	1485	1625	1725	1785	1885
420/70R28	Interference	1325	1385	1485	1625	1725	1785	1885
480/65R28	Interference	1327	1383	1483	1627	1727	1783	1883
19.5L-24	Interference	Interference	1412	1508	1594	1690	1812	1908

Multi-Position Rear Wheels—Tread Width (Centerline-to-Centerline) mm (in)								
111 mm Spacer								
Tire	A	B	C	D	E	F	G	H
360/70R24	1506	1608	1466	1567	1806	1907	1765	1867
420/70R24	1400	1498	1466	1564	1806	1904	1872	1970
340/85R28	1359	1459	1519	1619	1759	1859	1919	2019
420/70R28	1359	1459	1519	1619	1759	1859	1919	2019
480/65R28	1361	1461	1517	1617	1761	1861	1917	2017
19.5L-24	Interference	1424	1546	1642	1728	1824	1946	2042

shqw455,1700600247770-19-21NOV23

### Tighten Wheel Bolts Correctly

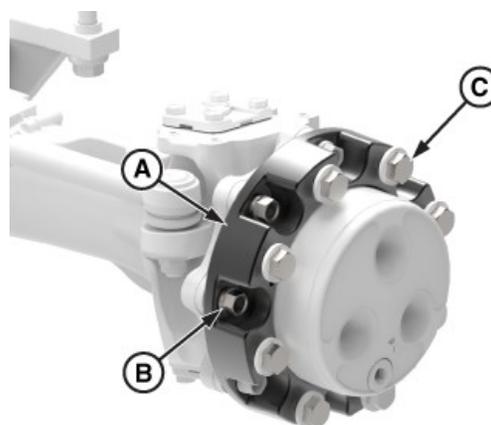
**⚠ CAUTION: NEVER operate machine with a loose rim, wheel, hub, or axle.**

*NOTE: Follow checking procedure when a new machine is first used or wheels have been off.*

Any time hardware is loosened, tighten to specified torque. (See Tighten Wheel Bolts for the specific axle on the machine in this section.)

1. After driving machine about 100 m (109 yd) and before placing it under load, tighten hardware to specified torque.
2. Check hardware after working 3 hours and again after 10 hours.
3. Check all hardware frequently every 50 hours thereafter.

### Install Wheel Spacer



A—Spacer  
B—Flange Nut (8)  
C—Cap Screw (8)

APY83085—UN—11APR23

V5UUV4,000013C-19-08MAR22

**NOTE:** Front and rear wheel spacers are available. See your John Deere dealer.

Any time hardware is loosened, tighten to specified torque.

1. Install the spacer (A) over the hub.
2. Lubricate and install flange nuts (B).
3. Tighten to specified torque.

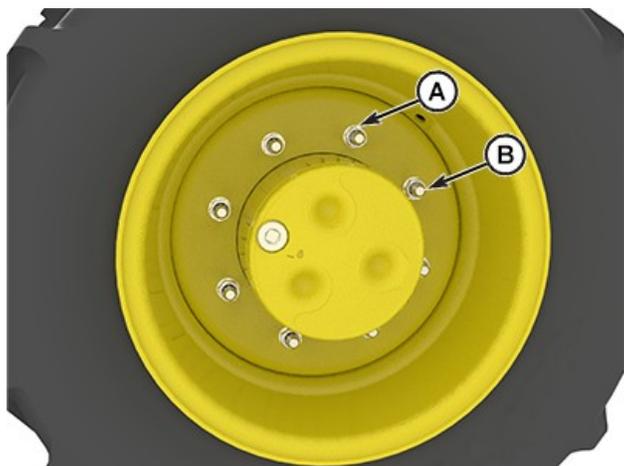
**Specification**

Flange Nut—Torque. . . . . 320 N·m  
(236 lb·ft)

4. Install wheel and tighten cap screws (C) to specified torque. (See Tighten Wheel Bolts for the specific axle on the machine in this section.)

uuf6xgz,1681289535255-19-01MAY23

**Tighten Wheel Bolts—MFWD Axle**



APY80676—UN—10OCT22

- A—MFWD Wheel Nut (8 used on each side)
- B—MFWD Wheel Bolt (8 used on each side)

1. Tighten the MFWD wheel with the help of bolt (B) and nut (A) to specification.

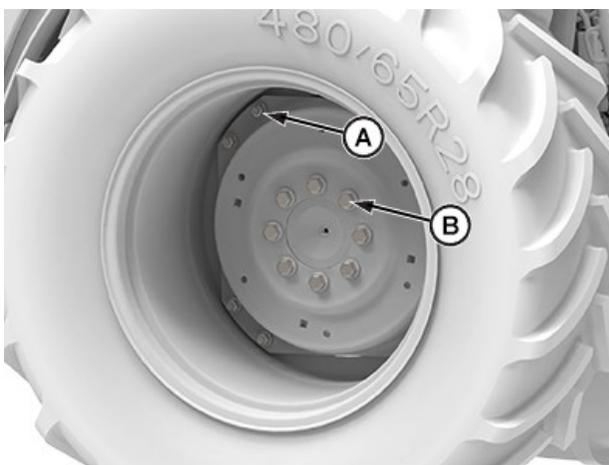
**Specification**

MFWD Wheel Bolt and Nut—Torque. . . . . 300 ± 30 N·m  
(221 ± 22 lb·ft)

2. Drive machine 100 m (109 yd) and tighten again.

V5VUVD4,000013E-19-11MAY23

**Tighten Wheel Bolts—Rear Axle**



APY83080—UN—11APR23

- A—Rear Wheel Rim-to-Disk Nut (other side of disk, 8 used with washers)
- B—Rear Wheel Disk-to-Hub Bolt (8 used with washers)

1. Tighten wheel rim-to-disk nuts (A) to specification.

**Specification**

Rear Wheel Rim-to-Disk Nuts (A)—Torque. . . . . 245 N·m  
(181 lb·ft)

2. Tighten wheel disk-to-hub bolts (B) to specification.

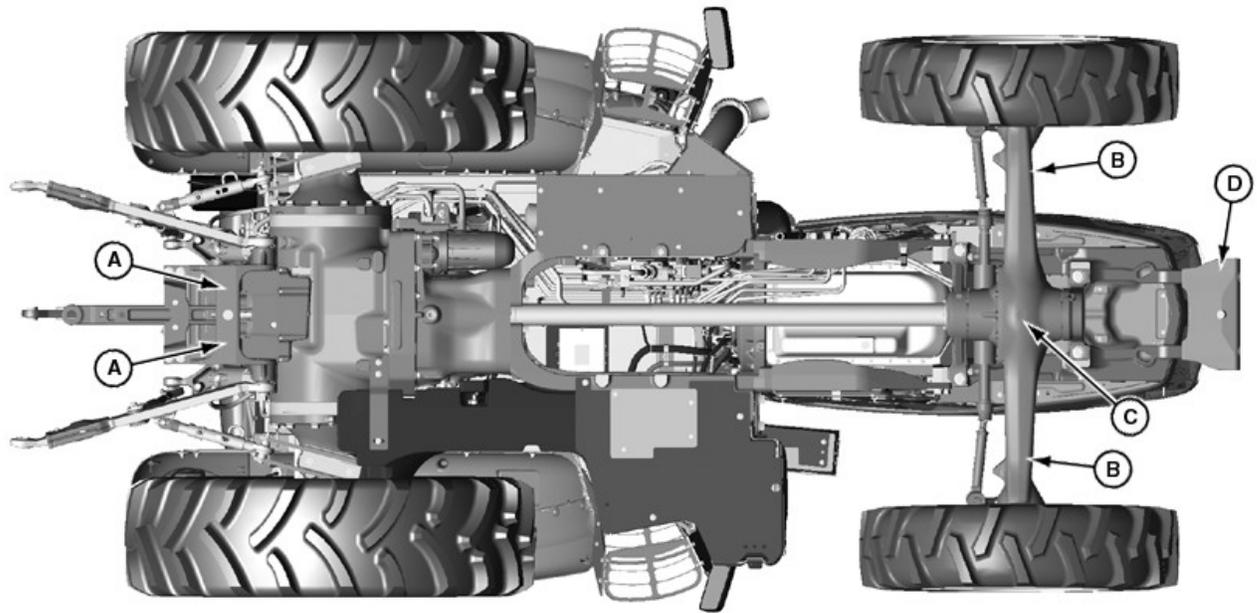
**Specification**

Rear Steel Wheel Disk-to-Hub Bolts (B)—Torque. . . . . 550 ± 50 N·m  
(406 ± 37 lb·ft)

3. Drive machine 100 m (109 yd) and tighten again.

uuf6xgz,1681289608006-19-01MAY23

## Jacking Up Machine



A—Rear of Machine Lift Point  
B—Front of Machine Lift Point

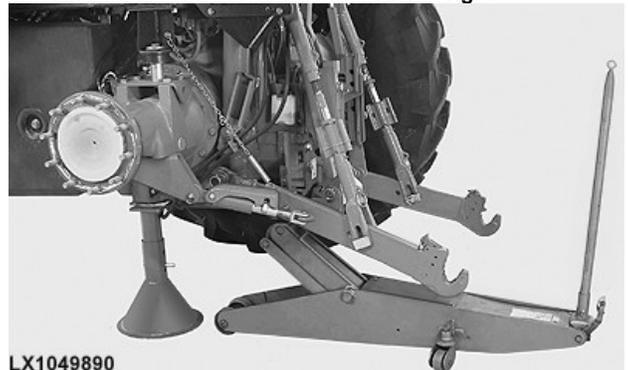
C—Center of Axle Lift Point (use wooden wedges to prevent axle from tilting)  
D—Front End of Machine under the Basic Weight

**CAUTION:** Use approved lifting equipment only. Jack up the machine on firm, level ground only.

Before doing any work on the machine, first secure it using suitable jackstands.

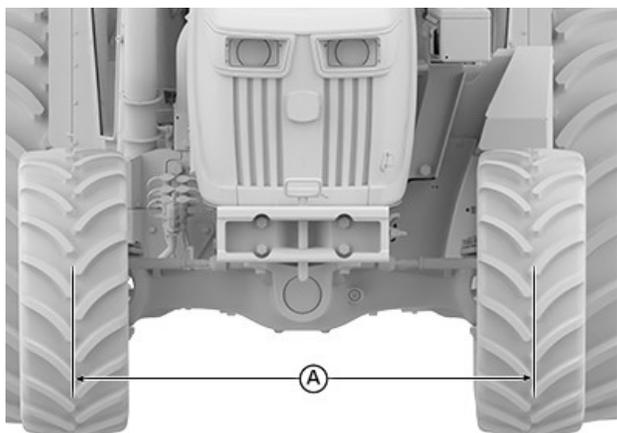
*NOTE: It is recommended to remove front ballast weights before lifting front end of machine.*

The illustration shows the recommended lifting points for jacking up the machine. Use a stable jack with sufficient lifting force. (See Specification section.)



LX1049890—UN—11FEB11  
V5VUVD4,0000140-19-08MAR22

### Check Toe-In—MFWD Axle



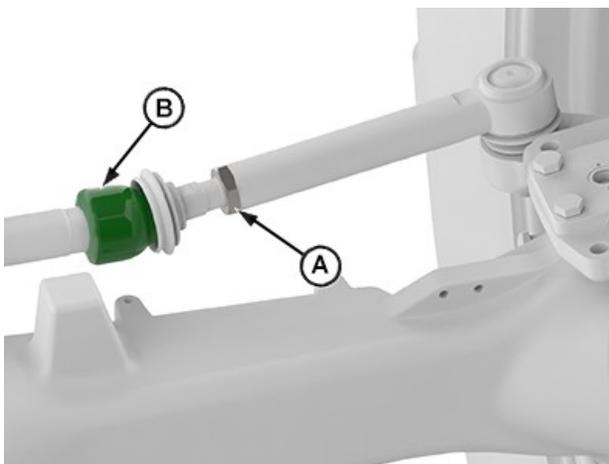
APY83076—UN—11APR23

**A—MFWD Axle Toe-In Distance**

1. Disengage MFWD and park machine on smooth, level surface. Steer front wheels straight ahead. Stop engine.
2. Measure MFWD axle toe-in distance (A) between centerline of tires at hub level in front of axle, using an outside lug of each tire or an inside lug of each tire. Record measurement and mark the tires.
3. Move machine back about 1 m (3 ft), so mark is at the hub level behind the axle. Again, measure distance between tires at same point on tire. Record measurement.
4. Determine the difference between front and rear measurements. If the front measurement is smaller, toe is in. If the rear is smaller, toe is out. The difference may be in either direction (toe-in or toe-out), but must be less than 3 mm (1/8 in). Adjust toe-in if necessary. (See Adjust Toe-In—MFWD Axle in this section.)

uuf6xgz,1681289115828-19-12APR23

### Adjust Toe-In—MFWD Axle



APY83078—UN—11APR23

**A—Tie Rod Jam Nuts  
B—Inner Rod**

1. Loosen tie rod lock nuts (A) on both ends of tie rod.
2. Adjust both sides equally by rotating the inner rod (B) to lengthen or shorten the tie rod to obtain toe-in or toe-out of less than 3 mm (1/8 in).

Tie Rod Rotation	Approximate Change
1/8 turn	4 mm (3/16 in)
1/4 turn	8 mm (3/8 in)
1/2 turn	16 mm (5/8 in)

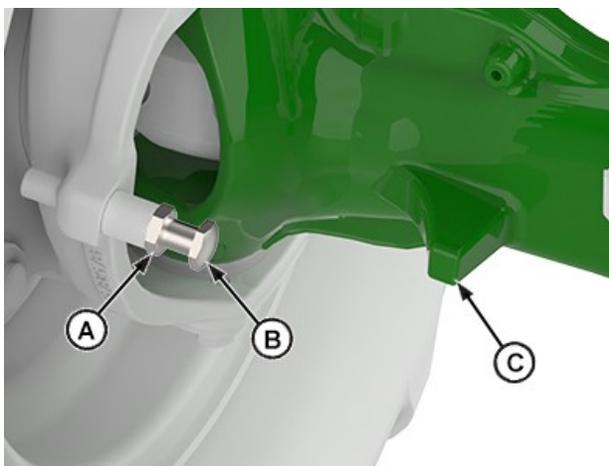
3. Tighten lock nuts to specification.

**Specification**

Tie Rod Lock Nut—Torque. . . . . 220—240 N·m  
(162—177 lb·ft)

uuf6xgz,1681289155279-19-12APR23

### Set Steering Stops



APY83077—UN—11APR23

**A—Steering Stop Lock Nut  
B—Steering Stop Bolt**

**C—Steering Stop**

*NOTE: Wide tread settings and large tire sizes increase turn radius slightly.*

1. Raise and support front of the machine so the MFWD axle can be oscillated to its stops.
2. Slowly turn steering wheel to the left until steering cylinder travel has reached its limit, the steering stops, or the tires are within 25 mm (1 in) of grille screen or side panels.
3. Raise left side of the axle against its stop and measure clearance between tire and nearest machine component. The distance must not be less than 25 mm (1 in).
4. Loosen lock nut (A) on steering stop and adjust steering stop bolt (B) so it touches steering stop (C). Shorten the stop bolt (B) in order to obtain maximum turning angle if necessary.
5. Tighten steering stop bolt retaining lock nut (A) to specifications.

**Specification**

Steering Stop Bolt Retaining  
Lock Nut—Torque. . . . . 125 N·m  
(92 lb·ft)

6. Turn wheel fully to the left. Impact knuckle housing to steering stop five times.
7. Tighten steering stop bolt retaining nuts again to specification.
8. Repeat steps for the right side.

uuf6xgz,1681289155343-19-12APR23

---

# Ballasting Maintenance

## General Ballast Information

**CAUTION:** Do not exceed permissible axle load or tire carrying capacities when adding ballast to the machine.

**IMPORTANT:** As front weight and tread width increase, steering capacity of machine is reduced.

## Basic Ballasting Definitions

Ballast is mass added to machine chassis and/or wheels to:

- Increase total weight and/or
- The influence of weight distribution between the front axle and rear axle (static balance). Static means that front and rear axle loads are determined when machine is parked.

Weight split is the static weight distribution between front and rear axles. It is expressed as percentages of total machine static weight supported by front and rear axles. For example, if the front axle supports 40% of total static machine weight, machine has a 40/60 weight split. Percentage of front axle weight is always stated first in this form.

A properly ballasted machine for a given type of implement (towed, integral, or semi-integral) has both correct total weight and static balance for that implement type.

## Major Considerations

Required ballast amount and mounting location depend on type of implement being used and operating speed.

Ballasting is required to:

- Assure front axle carries sufficient weight for steering security and stability with a field draft load, as well as transport in field and on road.
- Provide sufficient traction to pull high draft loads efficiently.
- Provide proper fore/aft balance to minimize occurrence of power hop in MFWD machines.
- Assure rear axle carries sufficient weight for traction, braking, and stability when a loader or other front implement is attached to front of machine.

Reconfigure ballast on machine when changing from one implement or attachment to another.

## MFWD:

Implement Type	Rear % of Machine Weight	Front % of Machine Weight
Towed	65	35
Semi-Integral	60	40

Implement Type	Rear % of Machine Weight	Front % of Machine Weight
Integral	60 <sup>a</sup>	40

<sup>a</sup>Front weight requirements are determined by weight of hitch-mounted implements. Add enough front weights to maintain steering control.

V5VUVD4.0000144-19-10OCT22

## Select Ballast Carefully

**CAUTION:** When determining axle ballast, ensure permissible axle loads and the permissible weight are not exceeded. (See Specifications section.)

Comply with local regulations regarding installation and maximum permissible number of weights. To maintain steering capability, at least 20% of total weight must be on the front axle.

**CAUTION:** Use suitable lifting tools when handling weights.

Safety and performance of your machine depend on ballasting of the front axle (front weights) and rear axle (wheel weights, filling tires with liquid ballast).

Match amount of ballast needed for each job. Changing implements or attaching a loader requires changing ballast for best performance.

Factors determining amount of ballast:

- Soil surface—loose or firm
- Type of implement—integral/semi-integral or towed
- Travel speed—slow or fast
- Machine power output—partial or full load
- Tire size

## Ballasting MFWD Machines

Ideal tire slippage for MFWD is 8—12%. To reduce wheel slip, more weight is needed on the front. The ideal weight is 40% front and 60% rear of total machine weight. In some cases, liquid ballast is needed in tires to obtain this weight split.

The best way to check for correct ballast is to measure amount of travel reduction (% slip) of the drive wheels. Add more weight to drive wheels if slip is above 12%. If there is less than 8% slip, remove wheel weights.

If a loader is attached, provide adequate ballast to rear.

## Matching Ballast to Work Load

Use no more ballast than necessary, and remove ballast when it is no longer needed.

Rather than weighing machine down to pull heavy loads, try to reduce load. Pulling a lighter load at a higher speed is more economical and more efficient.

Too Little Ballast		Too Much Ballast	
1.	Excessive wheel slip	1.	Increased load
2.	Power loss due to churning soil	2.	Power loss due to carrying extra weight
3.	Tire wear	3.	Tire strain
4.	Fuel waste	4.	Soil compaction
5.	Lower productivity	5.	Fuel waste
		6.	Lower productivity

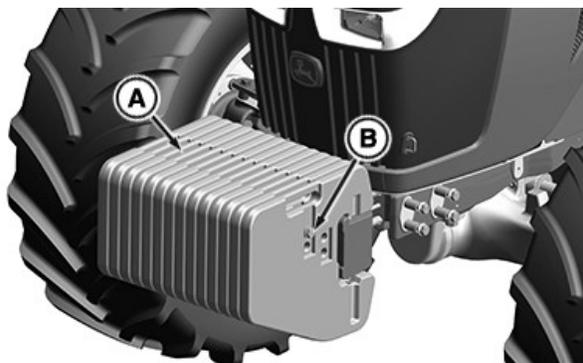
### Ballast Limitations

Ballast is limited by tire capacity or machine capacity. Each tire has a recommended carrying capacity, see Wheels and Tires Maintenance section. If a greater amount of weight is needed for traction, consider a larger single tire.

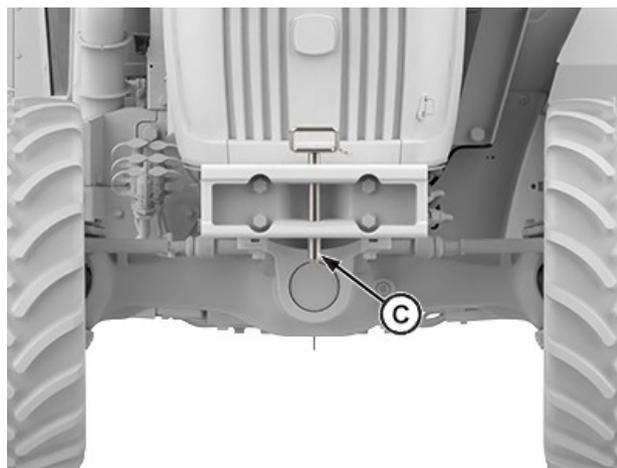
When determining axle ballast, ensure permissible axle loads and the permissible weight are not exceeded. (See Specifications section.)

V5VUVD4,0000145-19-10OCT22

### Front-End Ballast



RXA0151009—UN—14JAN16



APY83082—UN—11APR23

- A—Ballast Center
- B—Ballast Retaining Bolt
- C—Ballast Retaining Pin

**CAUTION:** Additional front ballast may be needed for rear-mounted implements. Heavy pulling and heavy rear-mounted implements tend to lift front wheels. Use proper lifting equipment for weights.

Determine the minimum number of front weights required from implement code in the implement operator's manual.

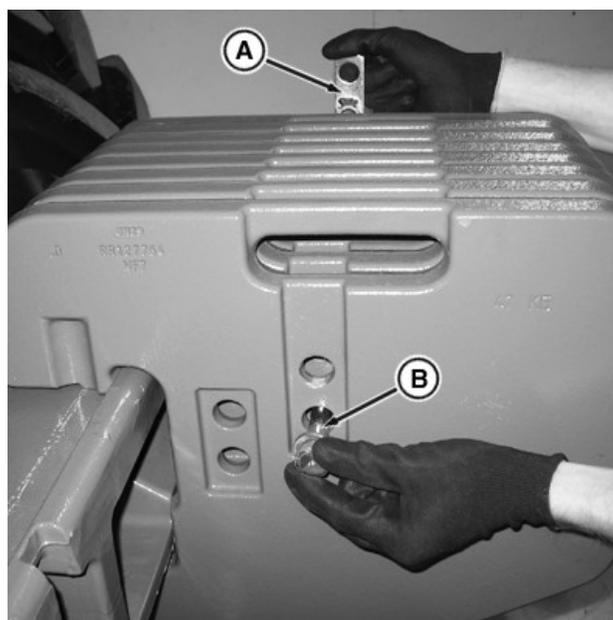
**NOTE:** Quik-Tatch weights can be installed on the front of the machine up to the width of the weight bracket. Do not exceed the maximum permissible axle load (See Specifications section).

1. Install weights in pairs, one on each side of the ballast retaining pin (C). Place weights evenly on left and right sides of the retaining pin.
2. To hold six weights or fewer in position, insert retaining bolts (B) through holes and secure with a nut. Tighten to specification.

#### Specification

Ballast Weight Retaining  
 Bolt—Torque. . . . . 215 N·m  
 (159 lb-ft)

3. When eight or more weights are installed, insert retainers (A) between weights, one with the threaded hole upward and the other with the threaded hole downward. Insert retaining bolts (B) through holes and secure with a nut. Tighten to specification.

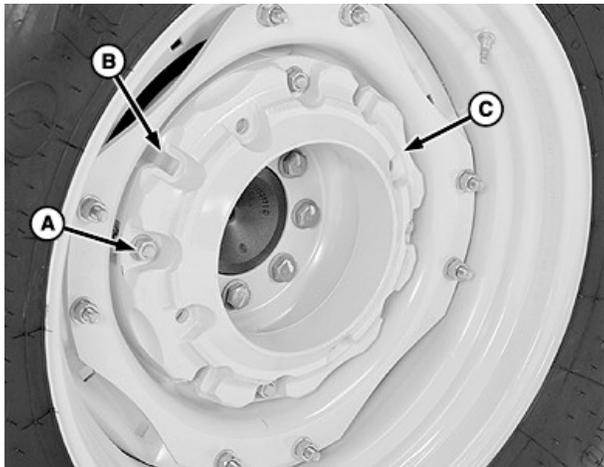


RXA0113871—UN—09FEB11

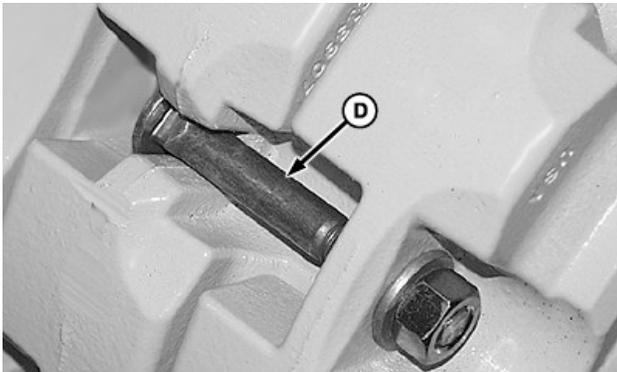
- A—Retainer
- B—Retaining Bolt

uuf6xgz,1681289343718-19-12APR23

## Rear Wheel Ballast



LV9684—UN—17AUG04



LV9692—UN—19AUG04

Install Bolt in Slot (Additional Weight)

- A—Nut, 5/8-11 (4)
- B—Slot (4)
- C—Wheel Weight
- D—Round-Head Bolt (4)

**CAUTION:** When installing weights, use appropriate lifting equipment or have the job performed by your John Deere Dealer.

1. Remove wheel.
2. Attach weight (C) to wheel disks using four special round-head bolts, washers, and nuts (A). Tighten nuts to specifications.

### Specification

Wheel Weight-to-Disk	
Nuts—Torque. . . . .	215 N·m (159 lb·ft)

3. Install additional weights:
  - a. Insert round-head bolts (D) through slots (B) of first weight. Install bolts with the square neck in slot (as shown).
  - b. Align mounting holes of second weight with the round-headed bolts and install weight. Fasten

with washers and nuts. Tighten nuts to specifications.

### Specification

Wheel Weight-to-Weight	
Nuts—Torque. . . . .	215 N·m (159 lb·ft)

4. Install wheel and tighten mounting hardware. (See Wheel and Tire Maintenance section.)
5. Retighten bolts after 3 hours, 10 hours, and every 250 hours of operation thereafter.

V5VUVD4,0000147-19-08MAR22

## Control Power Hop - MFWD

Power hop is a condition where an MFWD machine without suspension exhibits severe bounce and/or pitch motions at field working speeds when pulling a towed implement. It can occur when pulling medium to high draft loads in loose, dry soil on top of a firm base and/or when climbing hills. As a result, machine cannot maintain pull due to either loss of traction, rough ride or both. Adjust only after assuring guidelines for optimum performance with towed implements have been followed. They are:

- No more than 40% of weight can be on the front axle.
- If liquid ballast is used in rear tires, do not exceed 40% fill (4 o'clock valve stem position).
- Front and rear inflation pressures are set correctly based on static axle loads.

### Then if power hop occurs:

1. Increase front inflation pressures by 40 kPa (0.4 bar) (6 psi) and operate machine.
2. If power hop still occurs:
 

Increase front inflation pressures by another 40 kPa (0.4 bar) (6 psi) and operate machine. Increase front inflation pressure as needed, up to a maximum of 40 kPa (0.4 bar) (6 psi) **above** the maximum pressure rating for tires. Usually 40--80 kPa (0.4—0.8 bar) (6—12 psi) above rated pressure for front axle load suffices to control power hop.
3. If power hop still occurs:
 

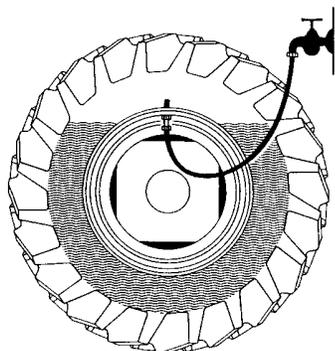
Remove all front ballast weights. Leave same front maximum inflation pressure from previous step and operate machine.
4. If power hop still occurs:
 

Install 75% liquid in front tires. Reinflate front tires to the maximum pressure rating for tires and operate machine.

*NOTE: In most cases, step 4 is not required to control power hop.*

V5VUVD4,0000148-19-08MAR22

### Add Liquid Ballast to Tires



LX009450

LX009450—UN—03JAN95

To fill a tire:

1. Jack up machine and turn wheel so that the tire valve is at the top.
2. Remove valve insert and screw water valve onto the valve stem. While water is entering, air escapes through a lateral bore in the water valve.
3. Stop filling tire when water drains from the vent hole of valve. Depending on tire size, filling a tire takes 15—30 minutes. Quantity of liquid ballast required varies, depending on tire size and type. If in doubt, consult your John Deere dealer or tire manufacturer.
4. After adding liquid, screw in the air valve and pump up tire to normal inflation pressure.

For low temperature climates:

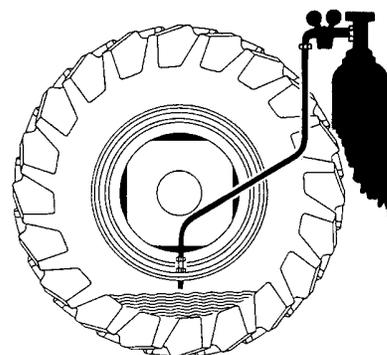
*NOTE: Add calcium chloride to the water, NOT water to calcium chloride.*

*Do not use this antifreeze solution in radiator.*

1. There are several types of liquid ballast available. Tire manufacturers recommend a mixture of water and calcium chloride. To provide protection down to -25°C (-13°F), dissolve 34 kg (75 lb) of calcium chloride in 86 L (22.7 gal) of water. This mixture makes 100 L (26.4 gal) of antifreeze solution. This solution produces an increase in weight of 120 kg (269 lb).
2. Draw antifreeze solution from an elevated tank. To speed up filling operation, use a pump (flush pump with clear water afterwards).

V5VUVD4,0000149-19-08MAR22

### Remove Liquid Ballast from Tires



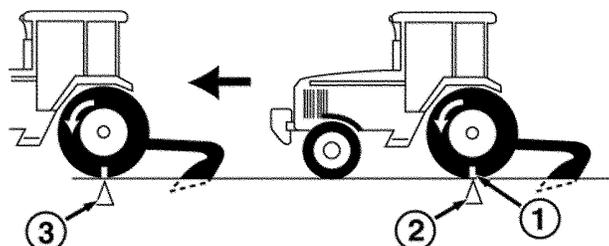
LX009451

LX009451—UN—03JAN95

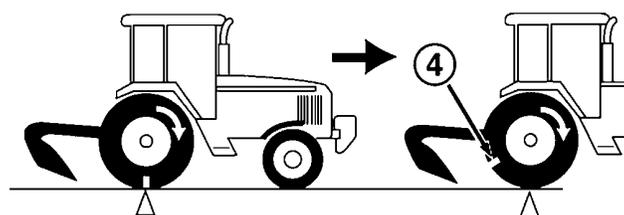
1. Jack up machine.
2. Remove air valve from the tire and allow liquid to drain out.
3. Clear remainder of liquid from tire by inserting drain tube with hose extension and pump air into tire. The air pressure pushes remaining liquid out of tire.

V5VUVD4,000014A-19-08MAR22

### Measure Wheel Slip



RW26776—UN—12JAN00



RW26777—UN—13JAN00

- 1—Mark on Tire
- 2—Mark Starting Point
- 3—Mark Ending Point After Ten Revolutions
- 4—Revolution Count with Implement Raised

**IMPORTANT: Make sure that tire pressures are set for axle loads before measuring wheel slip.**

1. Mark a rear tire.
2. Mark a starting point on ground with machine moving and implement lowered on ground.
3. Follow machine and mark ground again where marked tire completes ten full revolutions.
4. Repeat procedure with implement raised at same working speed. Count revolutions between same two marks.
5. Use second count and chart to determine slippage.

*NOTE: Ideal slippage is 8—12% (machines with MFWD).*

6. Adjust ballast or load to give correct slippage.

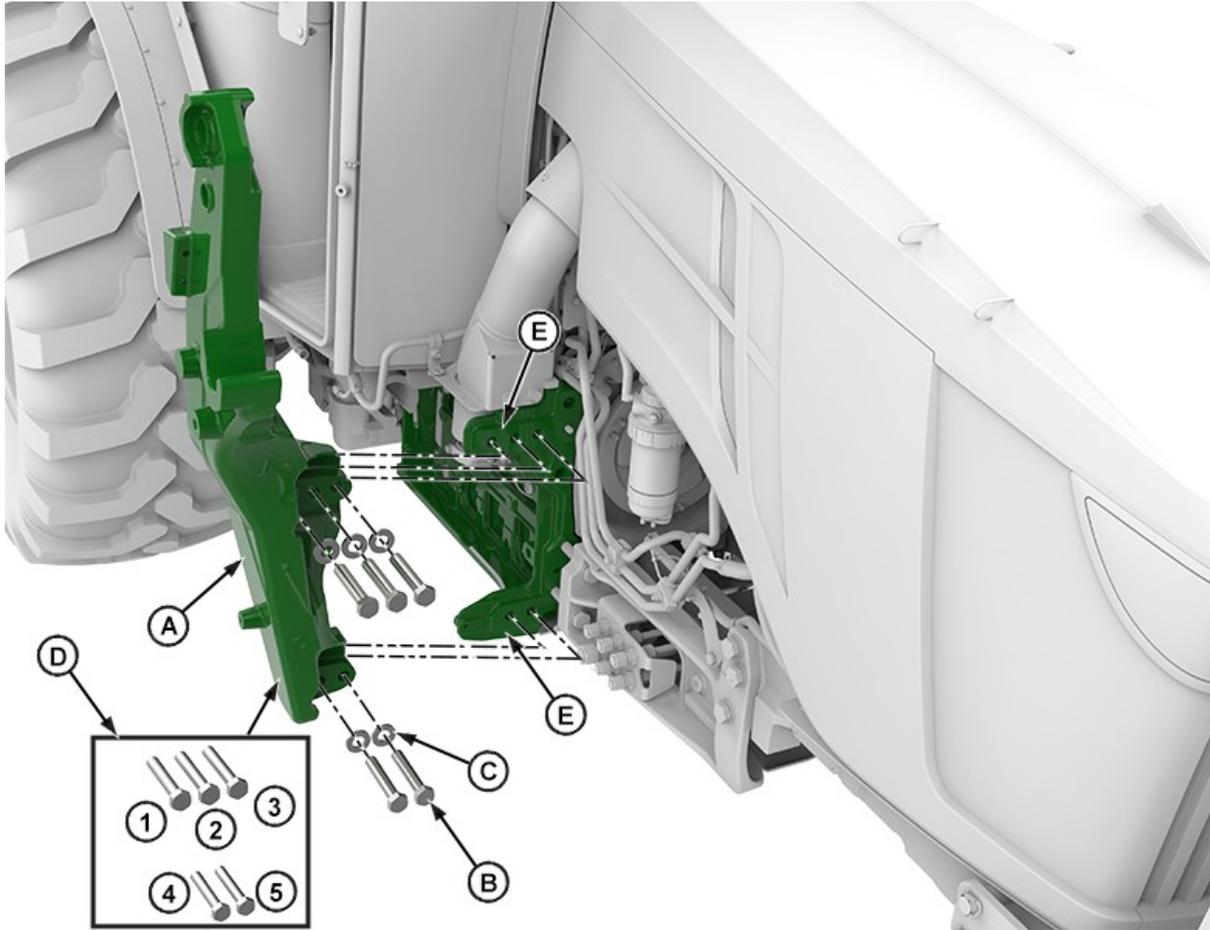
*NOTE: Available horsepower is greatly reduced when wheel slip drops below minimum percent.*

Wheel Slippage Chart		
Wheel Revolutions (Step 4)	% Slip	Result
10	0	Remove Ballast
9-1/2	5	
9	10	Correct Ballast
8-1/2	15	Add Ballast
8	20	
7-1/2	25	
7	30	

V5VUVD4,000014B-19-08MAR22

# Additional Equipment Maintenance

## Front Loader Bracket Installation



APY77545—UN—06OCT22

A—Front Loader Bracket (2)  
 B—Hex Head Cap Screw (10)  
 C—Flat Washer (10)

D—Torque Sequence  
 E—Mounting Surfaces

John Deere Front Loader Bracket Hardware						
Description	Quantity	Width across Flats	Standard	Thread	Length	Identification/Grade
Hex Head Cap Screw (B)	10	30 mm	ISO 4014	M20 x 2.5	110 mm	12.9
Washer (C)	10	—	JDS 130	—	—	300HV

**IMPORTANT: Attach loader brackets as shown with hardware listed in the table. Do not attach loader brackets at other points or using other hardware.**

**Comply with Operator's Manual and Installation Instructions of the front loader.**

1. Remove any paint or debris from mounting surfaces (E).
2. Torque loader bracket bolts as indicated in the diagram. Follow sequence as indicated 1—5. Right-hand shown, left is opposite.

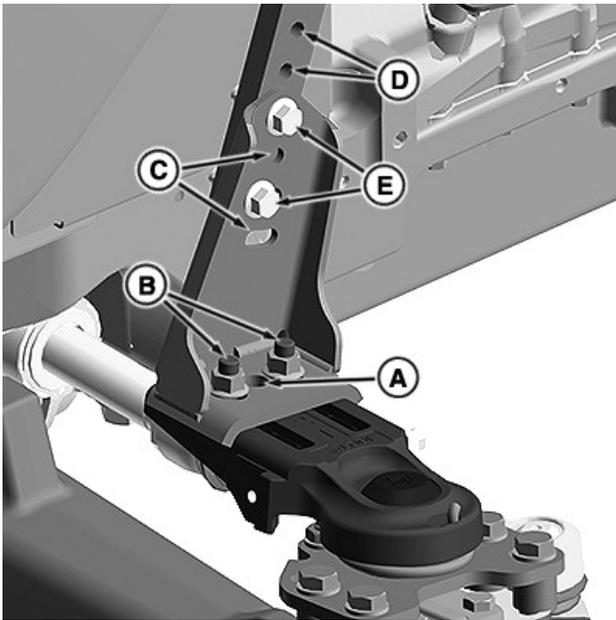
### Specification

Loader Mounting Bracket  
 Hardware—Torque. . . . . 625 ± 62.5 N·m  
 (461 ± 46.1 lb·ft)

3. Start on the top outward bolt first. Work inward to the machine.
4. Repeat on the bottom bracket bolts.
5. Repeat on the other bracket.
6. Check torque regularly.

V5VUVD4,000014C-19-01MAY23

## Set Pivoting Fender Brackets



RXA0154421—UN—11NOV16

- A—Position Indicator
- B—Position Bolt (2)
- C—Height and Angle Adjustment Slot (4)
- D—Fender Arm Height Adjustment Hole (5)
- E—Height Bolts

**NOTE:** It is best to set fenders with the tires on the machine, resting on the ground, and inflated to intended application pressure.

1. Loosen position bolts (B) to allow fender arm to be moved in or out as needed.
2. Select a position (1—5) that allows tire clearance and centers the fender arm over the center of the tire as close as possible. Number is visible in the position indicator (A) hole in the bracket.
3. Tighten position bolts.
4. Loosen and remove height bolts (E) to change fender height.
5. Set fender height to allow clearance for tire movement and material buildup on the tire.

**NOTE:** Height bolts must be located correctly in the height and angle adjustment slots (C). Use the top and third slot (as shown) or the second and fourth.

6. Insert height bolts through the bracket and fender arm height adjustment holes (D) as required to obtain proper height for tire clearance.
7. Fender tilts forward or rearward to get desired clearance. Tighten bolts once position is set.
8. Additional adjustment of the fender is possible to get

proper alignment. (See Set Fender Position in this section.)

V5VUVD4,000014D-19-08MAR22

## Set Fender Position



RXA0154422—UN—11NOV16

- A—Fender Bolt (2)
- B—Fender

1. To adjust fender position, loosen bolts (A).
2. Slide fender (B) inward or outward as required to center the fender over the tire.
3. Tighten bolts once position is set.
4. Verify fender clearance by turning steering wheel to left stop and right stop. If the fender contacts machine or tire, readjust brackets and fender to resolve the problem.

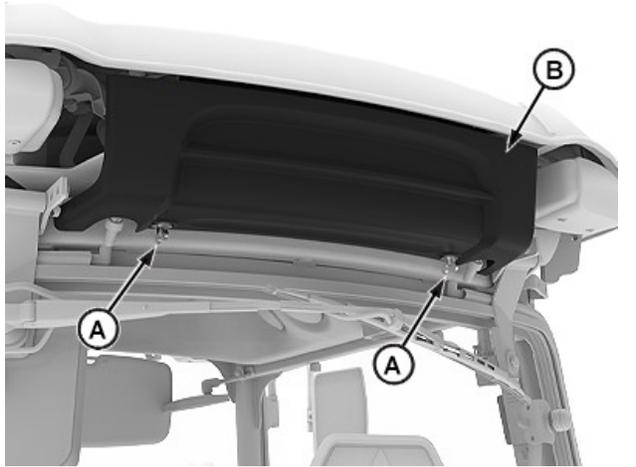
V5VUVD4,000014E-19-08MAR22

# Operator's Station Maintenance

## Inspect and Replace Cab Air Filters

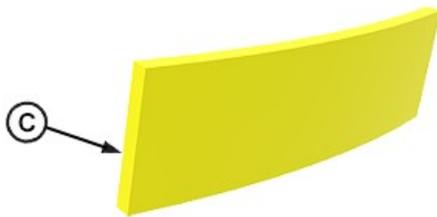
### MAINTENANCE INTERVAL

**Every 250 Hours** Inspect and replace standard fresh air filter.



APY77542—UN—04OCT22

Rear Side of Cab Roof



APY77544—UN—27MAR23

Filter Assembly

- A—Screws (2)
- B—Filter Cover
- C—Air Filter

**CAUTION:** Check whether the cab offers sufficient protection before working in an environment containing hazardous substances (pesticides and others). Refer to the product data sheets of the spray manufacturer specifying the category required for the cab.

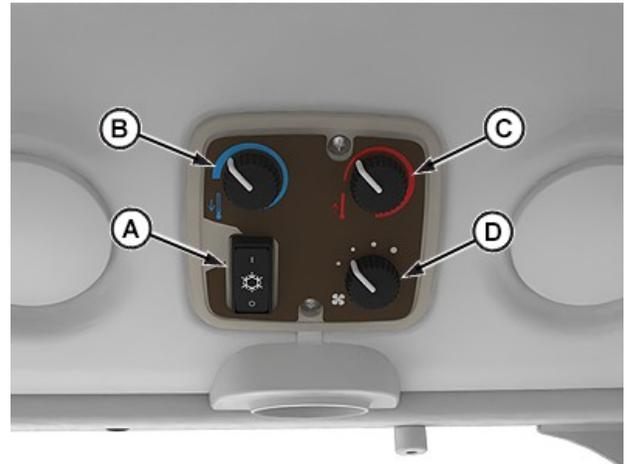
The air system filters are not designed to filter out harmful chemicals. Follow the implement Operator's Manual and chemical manufacturer instructions when using agricultural chemicals.

1. Remove screws (A) and filter cover (B).
2. Inspect filters for damage. Replace as necessary.

3. Remove Filter (C).
4. Inspect filters for damage. Replace as necessary.

V5VUVD4,000014F-19-08NOV23

## Check Air Conditioning System



APY77535—UN—04OCT22

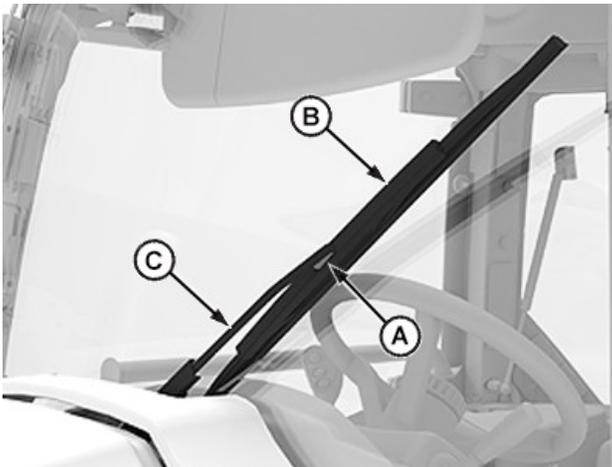
- A—Air Conditioner and Defog Switch
- B—Air Conditioner Temperature Control Knob
- C—Heater Temperature Control Knob
- D—Fan Speed Control Knob

Perform following checks if air conditioning system does not cool, or cooling is intermittent:

1. Confirm that system does not function correctly. Reconfirm after cleaning or adjustments are made.
  - a. Turn air conditioner and defog switch (A) on.
  - b. Set fan speed control knob (D) to highest speed.
  - c. Set temperature control knobs (B and C) to coldest setting.
  - d. Operate engine at 2000 rpm.
  - e. Check air vents to confirm that cold air is not present.
2. Cleaning air filters with pressurized air can damage the filters. Filters should be inspected and replaced if found necessary. (See Clean Air Filters in this section.)
3. Clean grille and radiator. (See Clean Grille Screens and Cooling Package in the Air, Fuel, Coolant, and Exhaust Maintenance section.)
4. If problems persist, see your John Deere dealer.

V5VUVD4,0000150-19-21MAR23

## Change Wiper Blade



APY77536—UN—04OCT22

A—Blade Retainer  
B—Wiper Blade  
C—Wiper Arm

1. Insert screwdriver in the blade retainer (A) to release.
2. Slide wiper blade (B) toward the wiper arm (C) to remove.
3. Align and slide new wiper blade into the arm until it locks into place.

V5VUVD4,0000151-19-04OCT22

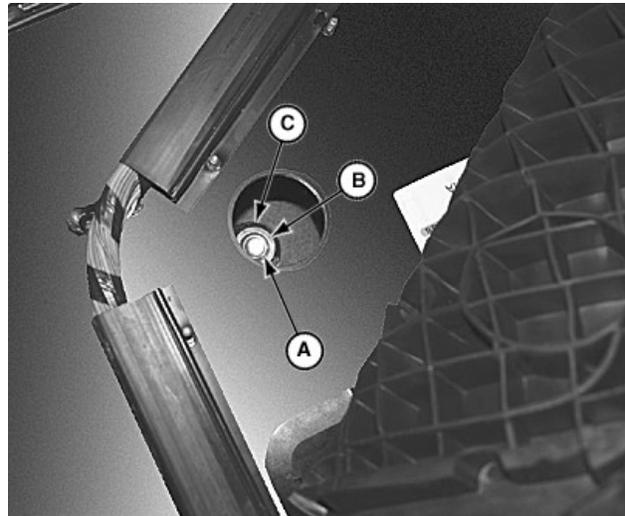
**CAUTION:** Inspect operator's seat belts (A), buckles, retractors, and mounting hardware. Check for any sign of damage, cuts, fraying, extreme or unusual wear, discoloration, or abrasions.

If damage is found, the entire seat belt system must be replaced immediately. Replace the belt system only with replacement parts approved for your machine. See your John Deere dealer.

V5VUVD4,0000152-19-01NOV22

## Keep Cab Protection System Installed Properly

**CAUTION:** The manufacturer must approve any cab alteration. The cab protection system is impaired if it is subjected to structural damage, or is in any way altered by welding, bending, drilling, or cutting. A damaged cab protection system must be replaced.

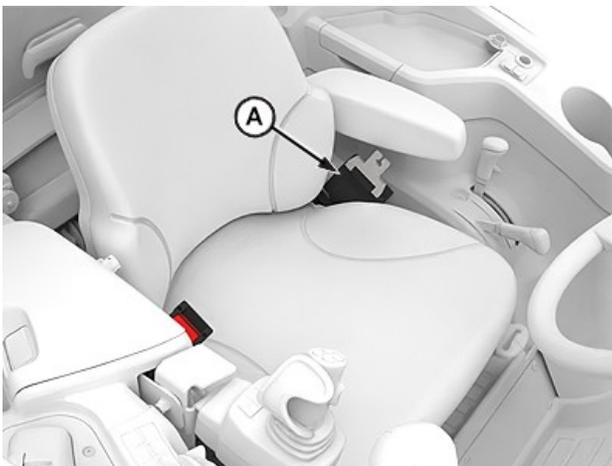


LV14682—UN—24AUG11

Front Cab Mount

## Inspect Seat Belts

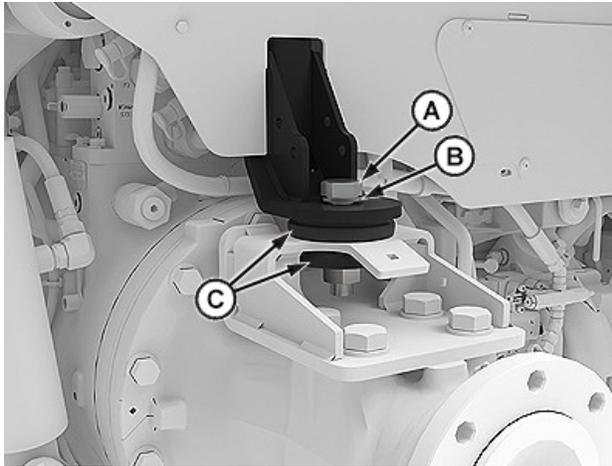
**MAINTENANCE INTERVAL**  
Every 1000 Hours or Annually



APY77537—UN—04OCT22

Operator's Seat Belt

A—Seat Belts



APY77538—UN—04OCT22

Rear Cab Mount

**A—Receiver Bracket Mount**

Use the provided location if mounting a StarFire receiver to the machine.

V5VUVD4,0000154-19-04OCT22

- A—Cap Screw (2)
- B—Washer (2)
- C—Isolator (2)

*NOTE: When installation of equipment on or repair of the machine necessitates loosening or removing cab protection system, replace and tighten mounting cap screws to specification.*

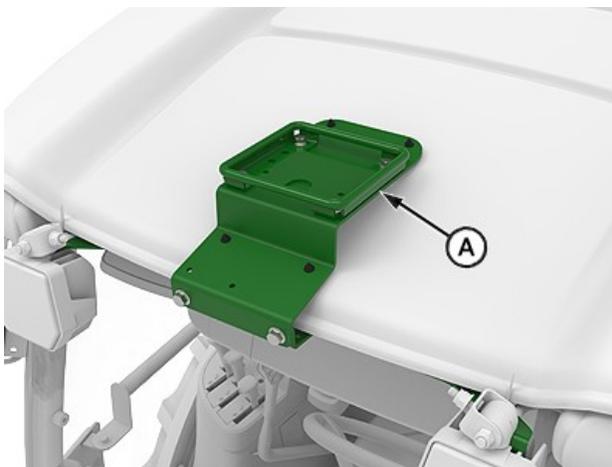
1. To access front mounting hardware, lift up rubber floor mat and pry out plugs.
2. Check cab mounting hardware (A, B, and C) for proper torque.

**Specification**

Cab Mount Cap	
Screws—Torque. . . . .	400 N·m (295 lb-ft)

V5VUVD4,0000153-19-04OCT22

**StarFire Receiver Mount**



APY77540—UN—04OCT22

Receiver Mount

# Troubleshooting

---

## Engine

Symptom	Problem	Solution
<b>Engine turns over but does not start.</b>	Incorrect starting procedure.	Review starting procedure.
	No fuel.	Check fuel tank.
	Exhaust restricted.	Check and correct exhaust restriction.
	Fuel filter plugged or full of water.	Replace fuel filter or drain water from filter.
	Injection pump not getting fuel or air from the fuel system.	Check fuel flow at the supply pump or bleed fuel system.
	Faulty injection pump or nozzles.	See your John Deere dealer.
<b>Engine hard to start or does not start.</b>	Air in fuel line.	Bleed fuel system.
	Cold weather.	Use cold weather starting procedure.
	Slow starter speed.	See Starter Turns Over Slowly in Electrical System Troubleshooting.
	Crankcase oil too heavy.	Use oil of proper viscosity.
	Improper type of fuel.	Consult fuel supplier; use the proper type of fuel for operating conditions.
	Water, dirt, or air in the fuel system.	Drain, flush, fill, and bleed system.
	Clogged fuel filter.	Replace filter element.
	Dirty or faulty injectors.	See your John Deere dealer.
	Injection pump shutoff not reset.	Turn ignition switch to STOP, then to ON.
	<b>Engine knocks.</b>	Low engine oil level.
Low coolant temperature.		See your John Deere dealer.
<b>Engine runs irregularly or stalls frequently.</b>	Low coolant temperature.	See your John Deere dealer.
	Clogged fuel filter.	Replace fuel filter element.
	Water, dirt, or air in the fuel system.	Drain, flush, fill, and bleed system.
	Dirty or faulty injectors.	See your John Deere dealer.
<b>Below normal engine temperature.</b>	Defective thermostat.	Remove and check thermostat.

## *Troubleshooting*

---

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
	Defective temperature gauge or sender.	Check gauge, sender, and conditions.
<b>Lack of power.</b>	Exhaust filter restriction.	See your John Deere dealer.
	Engine overloaded.	Reduce load.
	Low high idle speed.	See your John Deere dealer.
	Intake air restriction.	Service air cleaner.
	Clogged fuel filter.	Replace filter element.
	Improper type of fuel.	Use proper fuel.
	Overheated engine.	Check coolant level, inspect fan belt, and check radiator fins for debris.
	Below normal engine temperature.	See your John Deere dealer.
	Improper valve clearance.	See your John Deere dealer.
	Dirty or faulty injectors.	See your John Deere dealer.
	Turbocharger not functioning.	See your John Deere dealer.
	Leaking exhaust manifold gasket.	See your John Deere dealer.
	Implement improperly adjusted.	See implement operator's manual.
	Restricted fuel line.	See your John Deere dealer.
	Restricted return line.	See your John Deere dealer.
	Improper ballast.	Adjust ballast to load.
	Poor fuel quality.	See your John Deere dealer.
	Poor bio-fuel quality.	See your John Deere dealer.
<b>Low oil pressure.</b>	Low oil level.	Add oil.
	Improper type of oil.	Drain and refill crankcase with oil of proper viscosity and quality.
	Bad pump.	See your John Deere dealer.
	Bad sender.	See your John Deere dealer.
	Sender disconnected.	Connect sender.
<b>High oil consumption.</b>	Crankcase oil too light.	Use proper viscosity oil.

## Troubleshooting

---

Symptom	Problem	Solution
	Oil leaks.	Check for leaks in lines, around gaskets and drain plugs.
	Restricted crankcase vent tube.	Clean vent tube.
	Defective turbocharger.	See your John Deere dealer.
<b>Engine emits white smoke.</b>	Improper fuel type.	Use proper fuel.
	Low engine temperature.	Warm up engine to normal operating temperature.
	Engine out of time.	See your John Deere dealer.
	Cold start advance or light load advance not functioning.	See your John Deere dealer.
<b>Engine emits black or gray exhaust smoke.</b>	Improper fuel type.	Use proper fuel.
	Clogged or dirty air cleaner.	Service air cleaner.
	Engine overloaded.	Reduce load or shift to a lower gear.
	Engine out of time.	See your John Deere dealer.
	Turbocharger not functioning.	See your John Deere dealer.
<b>Engine overheats.</b>	Engine overloaded.	Reduce load.
	Dirty radiator core or grille screen.	Remove all debris.
	Low coolant level.	Fill radiator to the proper level. Check radiator, coolant recovery tank, and hoses for loose connection or leaks.
	Stretched serpentine belt or defective belt tensioner.	Check automatic belt tensioner and check belts for stretching. Replace as required.
	Low engine oil level.	Check oil level. Add oil as required.
	Cooling system needs flushing.	See your John Deere dealer.
	Defective thermostat.	See your John Deere dealer.
	Defective temperature gauge or sender.	See your John Deere dealer.
	Incorrect grade of fuel.	Use proper fuel.
	Cooling fan drive not engaged.	See your John Deere dealer.
	Dirty charge air cooler.	Clean charge air cooler fins.

## *Troubleshooting*

---

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
<b>High fuel consumption.</b>	Improper type of fuel.	Use proper fuel.
	Clogged or dirty air cleaner.	Service air cleaner.
	Engine overloaded.	Reduce load or shift to a lower gear.
	Fuel leakage.	Check fuel supply and return line for leaks. Check fuel tank for leaks and tighten clamps.
	Improper valve clearance.	See your John Deere dealer.
	Engine out of time.	See your John Deere dealer.
	Implement improperly adjusted.	See implement Operator's Manual.
	Low engine temperature.	See your John Deere dealer.
	Excessive ballast.	Adjust ballast to load.
	Defective turbocharger.	See your John Deere dealer.
	Restricted air intake system.	Check system.
	Plugged crankcase vent tube.	Clean vent tube.
	Transmission oil overfilled.	Drain excess oil.
<b>Undercharged electrical system.</b>	Excessive electrical load from added accessories.	Remove accessories or install a higher output alternator.
	Excessive engine idling.	Increase engine rpm when heavy electrical load is used.
	Poor electrical connections on battery, ground strap, starter, or alternator.	Inspect and clean as necessary.
	Defective battery.	Test battery.
	Defective alternator.	Test charging system.
<b>Battery uses too much water.</b>	Cracked battery case.	Check for moisture and replace as necessary.
	Defective battery.	Test battery.
	Battery charging rate too high.	Test charging system.
<b>Batteries do not charge.</b>	Loose or corroded connections.	Clean and tighten connections.
	Sulfated or worn-out batteries.	See your John Deere dealer.

## Troubleshooting

---

Symptom	Problem	Solution
	Stretched serpentine belt or defective belt tensioner.	Adjust belt tension or replace belts.
<b>Starter does not turn over.</b>	Loose or corroded connections.	Clean and tighten loose connections.
	Low battery output voltage.	See your John Deere dealer.
	Faulty start circuit relay.	See your John Deere dealer.
<b>Starter turns over slowly.</b>	Low battery output.	See your John Deere dealer.
	Crankcase oil too heavy.	Use proper viscosity oil.
	Loose or corroded connections.	Clean and tighten loose connections.
<b>Entire electrical system does not function.</b>	Faulty battery connection.	Clean and tighten connections.
	Sulfated or worn-out batteries.	See your John Deere dealer.

V5VUVD4,0000155-19-09DEC22

---

## Heat and Air Conditioning

Symptom	Problem	Solution
<b>All cab electrical switches do not work.</b>	Loose, defective, or blown fusible link.	See your John Deere dealer.
<b>Blower malfunctioning.</b>	Blower does not work.	Check both blower fuses.
<b>Blower operates only in purge position.</b>	One of two fuses blown.	Replace fuse.
	Blown blower resistance assembly.	See your John Deere dealer.
<b>Heater does not work.</b>	Low coolant level.	Check coolant level; add if necessary.
	Faulty thermostat.	See your John Deere dealer.
	Heater control valve not functioning properly.	See your John Deere dealer.
	Heater core or hoses clogged or damaged.	Flush cooling system. See your John Deere dealer. Replace heater core or hoses. See your John Deere dealer.
<b>Air conditioning does not work.</b>	Fan belt loose or slipping.	Check belt tension. Replace belt if necessary.
	Blown fuse.	Replace fuse.
	Defective switch.	See your John Deere dealer.

## *Troubleshooting*

---

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
	Faulty wiring or loose connections.	See your John Deere dealer.
	Defective compressor clutch.	See your John Deere dealer.
	Condenser dirty.	Clean condenser.
	Heater valve leaking.	See your John Deere dealer.
	No Freon charge.	See your John Deere dealer.
<b>Drafts.</b>	Poor air distribution.	Adjust directional air louvers. Set blower switch to medium or low position.
<b>Inadequate air flow.</b>	Clogged air filters.	Air filters should be inspected and replaced if necessary.
	Evaporator core air flow restricted.	Clean evaporator and housing with compressed air.
	Faulty blower fan motors.	See your John Deere dealer.
	Defective blower switch.	See your John Deere dealer.
	Faulty wiring or loose connections.	See your John Deere dealer.
<b>Water leaking or dripping from evaporator core compartment.</b>	Loose hose clamp.	Tighten clamp.
	Air-conditioning drip pan dirty.	Clean evaporator pan and outlet with compressed air.
	Air-conditioning drain tubes plugged.	Clean drain tubes.
<b>Strange odors inside cab.</b>	Dirty air filters.	Air filters should be inspected and replaced if necessary.
	Evaporator condenser pan dirty.	Clean pan and outlet with compressed air.
	Drain tubes plugged.	Clean drain tubes.
	Foreign substance on the evaporator exterior.	Air filters should be inspected and replaced if necessary.
<b>Partial frosting and sweating of lines combined with poor cooling.</b>	Cooling fan belt slipping.	Check belt tension. Replace belt if necessary.
	Loss of refrigerant.	Check system for leaks. See your John Deere dealer.
	Restricted or clogged liquid line.	See your John Deere dealer.

## Troubleshooting

---

Symptom	Problem	Solution
	Expansion valve malfunctioning.	See your John Deere dealer.
<b>Ice flecks blowing from evaporator.</b>	Control dial set too low.	Adjust the temperature control to a warmer position.
<b>Failure to cool.</b>	Insufficient blower speed.	Increase blower speed.
	Dirty air filters.	Air filters should be inspected and replaced if necessary.
	Debris on the front grille.	Clean front grille.
	Lint or dirt on condenser fins.	Blow out condenser fins with compressed air.
	Refrigerant is lost or low.	See your John Deere dealer.
	Loose cooling fan belt.	Check belt tension. Replace belt if necessary.
	Compressor clutch not engaging.	See your John Deere dealer.
	Expansion valve not functioning.	See your John Deere dealer.
	Restriction in the refrigerant system.	See your John Deere dealer.
	Faulty wiring or loose connections.	See your John Deere dealer.
	Defective temperature control switch.	See your John Deere dealer.
	Outside temperature too low, below 21°C (70°F).	Wait until day gets warmer. If there is a malfunction in system, see your John Deere dealer.
	Condenser is overheating.	Clean condenser screens, cores, and fins of condenser and radiator.
	Severe restriction in the high side.	See your John Deere dealer.
	Burned out clutch field or faulty field.	See your John Deere dealer.
	Short circuit in the control circuit or failure of a switch in circuit.	See your John Deere dealer.
	Cooling fan drive not engaged.	See your John Deere dealer.
<b>Hissing noise at the expansion valve.</b>	Loss of refrigerant.	Check system for leaks. See your John Deere dealer.

## Troubleshooting

---

Symptom	Problem	Solution
	Restriction in the refrigerant system.	Check for kinks in hoses. Check receiver-drier for uniformity of temperature. See your John Deere dealer.

V5VUVD4,0000156-19-08NOV23

---

### Electrical

Symptom	Problem	Solution
<b>Battery does not charge.</b>	Loose or corroded connections.	Clean and tighten connections.
	Sulfated or worn-out battery.	See your John Deere dealer.
	Loose or defective cooling fan belt.	Check belt tension. Replace belt if necessary.
<b>Charging system diagnostic trouble codes are present.</b>	Low engine speed.	Increase speed.
	Defective battery.	See your John Deere dealer.
	Defective alternator.	See your John Deere dealer.
	Slipping fan belt.	Check belt tension. Replace belt if necessary.
<b>Starter inoperative.</b>	Low battery output.	See your John Deere dealer.
	Blown fuse.	Replace fuse.
	Left-hand reverser in forward or reverse.	Move lever to Park or Neutral.
	Bypass starter circuit.	See your John Deere dealer.
<b>Starter turns over slowly.</b>	Low battery output.	See your John Deere dealer.
	Crankcase oil too heavy.	Use proper viscosity oil.
	Loose or corroded connections.	Clean and tighten loose connections.
<b>Light system does not function; rest of the electrical system functions.</b>	Blown fuse.	Replace fuse.
<b>Worklights do not work.</b>	Blown fuse.	Replace fuse.
	Defective bulb or switch.	Replace bulb or see your John Deere dealer.
	Faulty wiring or loose connections.	See your John Deere dealer.

## *Troubleshooting*

---

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
<b>Dome light does not work.</b>	Blown fuse.	Replace fuse.
	Defective bulb or switch.	Replace bulb or see your John Deere dealer.
	Defective door switch.	See your John Deere dealer.
	Faulty wiring or loose connections.	See your John Deere dealer.
<b>All cab electrical switches do not work.</b>	Loose, defective, or blown fusible link.	See your John Deere dealer.
<b>Window wipers and washer do not operate.</b>	Blown fuse.	Replace fuse.
	Defective switches.	See your John Deere dealer.
	Defective motors.	See your John Deere dealer.
	Faulty wiring or loose connections.	See your John Deere dealer.
<b>Radio does not work.</b>	Blown fuse.	Replace fuse.
<b>Entire electrical system does not function.</b>	Faulty battery connections.	Clean and tighten connections.
	Sulfated or worn-out battery.	See your John Deere dealer.
	Blown fuse.	Replace fuse.

V5VUVD4,0000157-19-08MAR22

---

## **Transmission**

<b>Symptom</b>	<b>Problem</b>	<b>Solution</b>
<b>Transmission oil overheats.</b>	Low oil supply.	Fill system with correct oil.
	Clogged transmission/hydraulic oil filter.	Replace filter.
	Internal hydraulic leak.	See your John Deere dealer.
	Implement-mounted hydraulic motor not plumbed correctly or matched to circuit.	See your John Deere dealer.
	SCV lever held in extend or retract position.	Return SCV lever to neutral position.
	Transmission oil over full mark.	Drain to the full mark.
	Oil cooler dirty.	Clean oil cooler.

---

## Troubleshooting

---

Symptom	Problem	Solution
	Hitch feedback linkage improperly adjusted.	Adjust linkage. See your John Deere dealer.
	Cooling fan drive not engaged.	See your John Deere dealer.
<b>Low transmission pressure.</b>	Low oil supply.	Fill system with correct oil.
	Clogged transmission/hydraulic oil filter.	Replace filter.

V5VUVD4,0000158-19-08MAR22

## Brakes

Symptom	Problem	Solution
<b>Pedal feels soft and brakes do not perform well.</b>	Air in system.	See your John Deere dealer.
<b>Pedal settles.</b>	Rear brake piston seal leaking.	See your John Deere dealer.
<b>Excessive pedal travel.</b>	Air in system.	See your John Deere dealer.
<b>Brakes drag during transport.</b>	Brakes out of adjustment.	See your John Deere dealer.

V5VUVD4,0000159-19-08MAR22

## Hydraulics

Symptom	Problem	Solution
<b>Entire hydraulic system fails to function.</b>	Low oil supply.	Fill system with correct oil.
	Clogged transmission/hydraulic oil filter.	Replace filter.
	High-pressure internal leak.	See your John Deere dealer.
<b>Hydraulic oil overheats.</b>	Low oil supply.	Fill system with correct oil.
	Clogged transmission/hydraulic oil filter.	Replace filter.
	Internal hydraulic leak.	See your John Deere dealer.
	Implement-mounted hydraulic motor not plumbed correctly or matched to circuit.	See your John Deere dealer.
	SCV lever held in extend or retract position.	Return SCV lever to neutral position.
	Flow control or detent setting incorrect.	Adjust flow control and/or detent setting.

## Troubleshooting

---

Symptom	Problem	Solution
	Hitch feedback linkage improperly adjusted.	Adjust linkage. See your John Deere dealer.
<b>Direction of remote cylinder travel is reversed.</b>	Improper hose connections.	Reverse hose connections.
<b>Hoses do not couple.</b>	Improper hose male tips.	Replace tip with ISO standard tips.
<b>Remote cylinder does not lift load.</b>	Excessive load.	Reduce load.
	Hoses not installed correctly.	Attach hoses correctly.
	Incorrect remote cylinder size.	Use correct cylinder size.

V5VUVD4,000015A-19-08MAR22

---

## Hitch

Symptom	Problem	Solution
<b>Insufficient transport clearance.</b>	Center link too short.	Adjust center link.
	Lift links too short.	Adjust lift links.
	Implement not level.	Level implement.
	Hitch feedback linkage not properly adjusted.	See your John Deere dealer.
	Implement not properly adjusted.	See implement Operator's Manual.
	Front of center link in upper holes.	Move center link to lower holes.
	Sway bars too short.	Adjust sway bars.
	Raise height limit not correctly set.	Adjust raise height limit.
<b>Hitch fails to follow the lever.</b>	Malfunction in the lever position sensor or hitch position sensor.	See your John Deere dealer.
<b>Poor position control.</b>	Load/depth mix control in wrong position.	Turn load/depth mix control to "position" control detent.
	System is reset (fender switches override operator's control).	Enable system with operator's control.
	Malfunction in the lever position sensor or hitch position sensor.	See your John Deere dealer.
<b>Hitch drops slowly.</b>	Rate-of-drop control not properly set.	Adjust rate-of-drop.
<b>Hitch fails to lift or lifts slowly.</b>	Excessive load on hitch.	Reduce load.
	Center link in wrong position.	Adjust center link.

## Troubleshooting

Symptom	Problem	Solution
	Low oil level.	Fill system with proper oil.
	Hydraulic oil too cold.	Allow oil to warm.
	Transmission/hydraulic oil filter clogged.	Replace filter.
<b>Implement does not operate at desired depth.</b>	Lift links too short.	Adjust lift links.
	Lack of penetration.	See implement Operator's Manual.
	Draft sensor failed.	See your John Deere dealer.
	Improper setting of the hitch control stop.	Adjust position.
	Improper setting of load/depth control.	Adjust load/depth for the implement type.
<b>Insufficient or no hitch response to draft load.</b>	Load/depth control in position 1.	Turn load/depth mix control to higher setting.
	Lift links too short.	Adjust lift links.
	Lack of penetration.	See implement Operator's Manual.
	System is reset.	Enable system.
	Rate-of-drop too slow.	Adjust rate-of-drop.
<b>Hitch too responsive.</b>	Load/depth mix control not correctly set.	Turn load/depth mix control to lower setting.
<b>Hitch drops too fast.</b>	Rate-of-drop set too fast.	Adjust rate-of-drop.
<b>Hitch settles too fast after machine is parked and engine shut off.</b>	Internal system leakage.	See your John Deere dealer.
<b>Hitch does not move (controls not working, including external raise/lower switch).</b>	Fuses blown.	Replace fuses.
<b>External raise/lower switch does not move hitch.</b>	Failure of the raise/lower switch, connector, or wiring harness.	See your John Deere dealer.
<b>Hitch codes are present.</b>	One or more hitch component failures.	See your John Deere dealer.

V5VUVD4,000015B-19-09DEC22

### Selective Control Valves (SCV)

Symptom	Problem	Solution
---------	---------	----------

## Troubleshooting

---

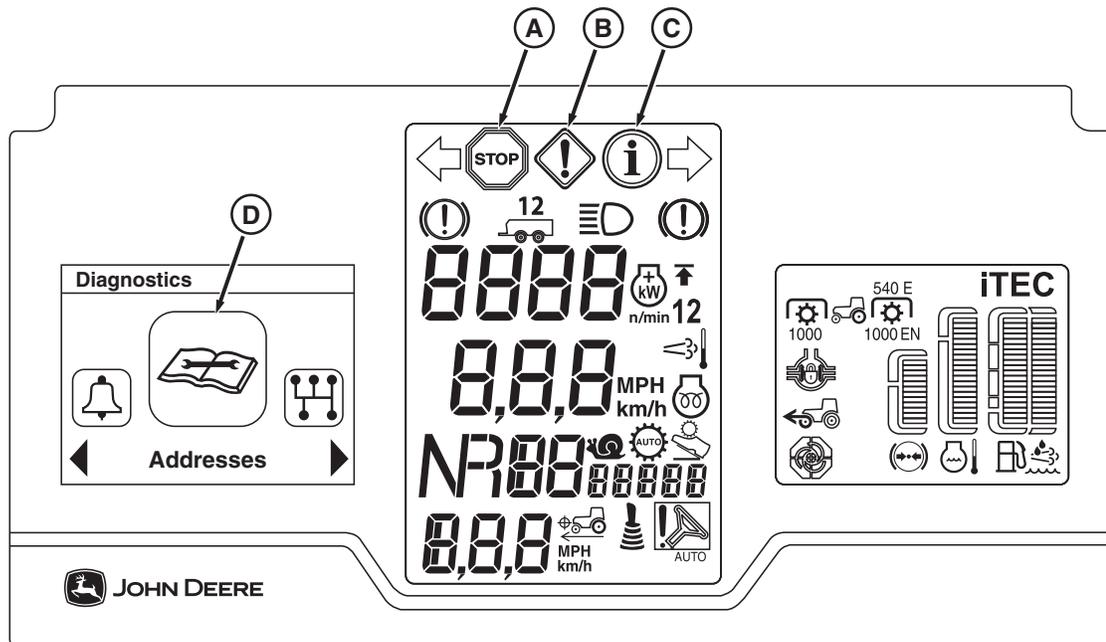
Symptom	Problem	Solution
<b>Flow control knob or detent does not turn.</b>	Dirt buildup.	Clean dirt from the flow control knob shaft.
<b>Remote cylinders rate-of-travel too fast or too slow.</b>	Incorrect flow control adjustment.	Adjust flow control.
<b>Detent does not hold SCV lever.</b>	Detent selector in wrong position.	Turn selector to correct position.
	Flow control or detent setting incorrect.	Adjust flow control and detent setting.
	Low engine rpm.	Increase engine rpm.
	Pressure restriction with some implements.	Reduce oil flow by changing flow control setting.
	Mid-Mount SCV activated.	Avoid use of mid-mount SCV.
	Hitch activated.	Avoid use of hitch.
<b>SVC lever releases too soon.</b>	Detent selector in wrong position.	Turn selector to correct position.
	Kick out pressure setting incorrect.	See your John Deere dealer.
<b>SCV lever does not release.</b>	Detent selector not in automatic detent position.	Turn selector to correct position.
		See your John Deere dealer.
	Built-in pressure leakage with some implements.	Increase oil flow by changing flow control setting.
	Incorrect flow control.	Adjust flow control.
	Overtorqued cable-to-valve connection.	Adjust torque at the connector.
<b>Rear SCV fails to function.</b>	Rear SCV does not generate pressure.	Check power beyond fitting in mid-mount SCV.

V5VUVD4,000015C-19-08MAR22

---

# On-Board Diagnostics

## STOP, Service, Information Alert Indicators, and Alarms



RXA0180998—UN—20APR21

A—STOP Alert Indicator  
B—Service Indicator

C—Information Indicator  
D—Diagnostic Trouble Code Indicator

**IMPORTANT: Capture information regarding operating conditions, machine performance, and environment whenever any alert or alarm is active. Use information to self-correct operation, or contact your John Deere dealer for assistance.**

or conduct maintenance. Contact your John Deere dealer as needed.

Alarm conditions are visually communicated using alert indicators for STOP alert indicator (A), service indicator (B), and information indicator (C). Audible alarms (beeping or continuous) accompany alert indicators and/or diagnostic trouble code indicator (D).

Diagnostic trouble code indicator (D) illuminates when a condition occurs that triggers a code to set. Other indicator lights may illuminate, which corresponds to a functional system of the machine when alarms and indicators are present. Severity levels for alarms are as follows, from the highest level of priority to the lowest:

1. STOP alert indicator (A)
2. Operator out of seat
3. Service indicator (B)
4. Information indicator (C)

STOP alert indicator (A) represents an urgent warning. Immediate attention or service is required in order to prevent serious malfunction or damage. Engine or function shuts down. Do not continue operation. Contact your John Deere dealer to diagnose the problem.

For display details, see Displays, Software, and Electronics Operation section and further details in this section.

Service alert indicator (B) represents a performance/protection warning. Immediate attention or operation is required in order to prevent reduced performance, malfunction, or damage. Adjust operating conditions or conduct maintenance. Contact your John Deere dealer as needed.

Contact your John Deere dealer for troubleshooting assistance. Your dealer has additional access to the information display and tools to diagnose and repair problems.

Information alert indicator (C) represents an informational warning. Attention or adjustment may be required in order to maintain performance and prevent a more severe alert condition. Adjust operating conditions

V5VUVD4,000015D-19-08MAR22

## Diagnostics Menu

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



Diagnostics Menu

RXA0152980—UN—21JUL16



Diagnostic Trouble Codes Selection

RXA0152981—UN—25JUL16



Addresses Selection

RXA0152980—UN—21JUL16

1. Locate the diagnostics menu.

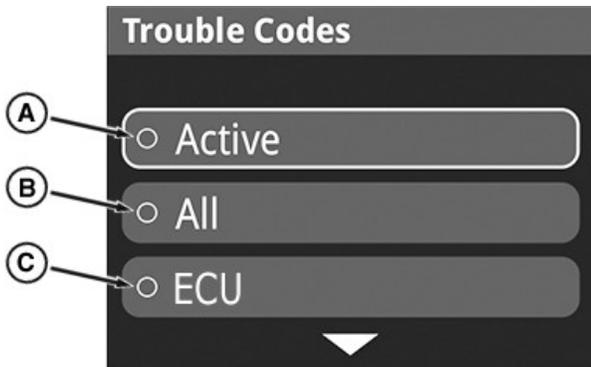
2. Select and enter the desired selection. See the relevant topic in this section for additional details on selections.

Selection	Range	Display Response
Diagnostic Trouble Codes	Diagnostic trouble codes listed by functional area.	Displays active and stored diagnostic trouble codes.
Addresses	Addresses listed by functional area.	Displays addresses that the operator can view or adjust.

V5VUVD4,000015E-19-08MAR22

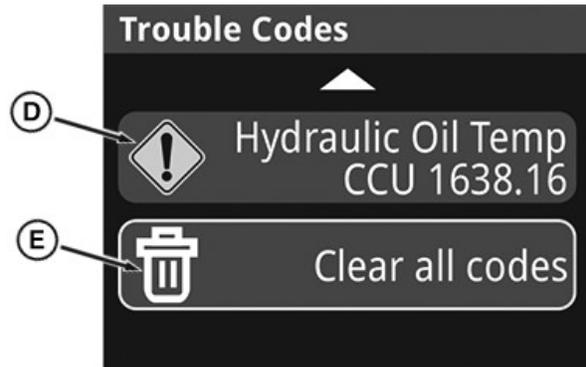
## Diagnostic Trouble Codes

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



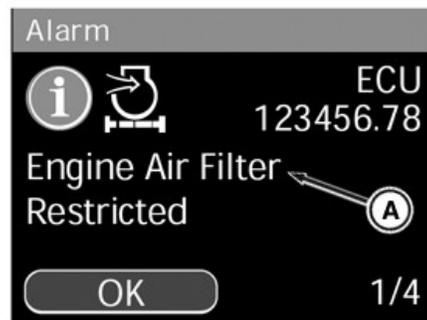
Diagnostic Trouble Code Menu

RXA0153445—UN—19AUG16



Diagnostic Trouble Code List

RXA0153446—UN—19AUG16



Example (code information)

RXA0152424—UN—28OCT16

- A—Active Codes
- B—All Codes
- C—Control Unit Codes
- D—Diagnostic Trouble Code
- E—Clear All Codes Function

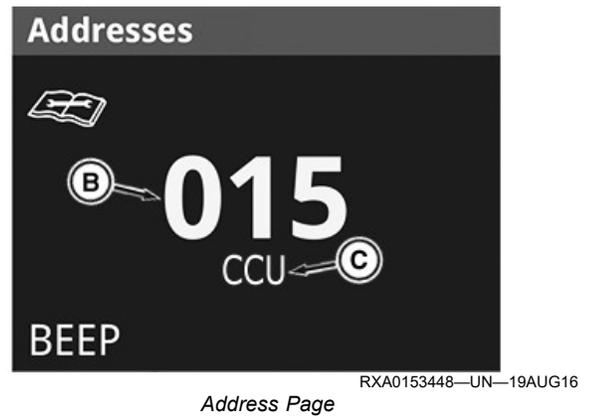
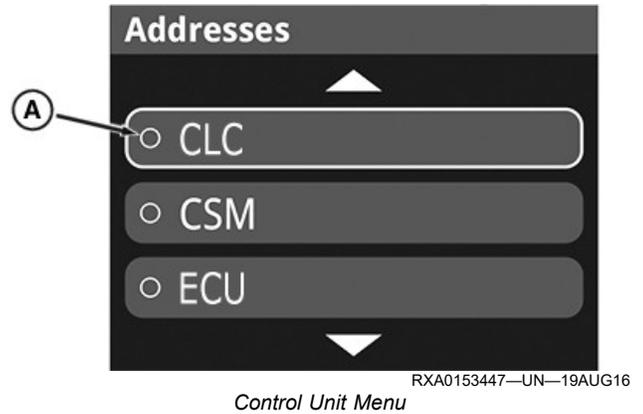
1. Access the diagnostic trouble code menu. A list appears, allowing the operator to choose which code groupings they want to see.
  - a. Active (A) - only the codes that are currently occurring on the machine.
  - b. All (B) - all codes that have occurred or are currently occurring. This selection allows the operator to clear diagnostic trouble codes.
  - c. Control unit code (C) (ECU - engine control unit) - only shows codes related to that control unit.
2. Selecting All (B) provides the most information and allows for clearing of codes. Press the confirm button to navigate to the code list. It takes several seconds, possibly longer, to pull all of the codes.
3. Once the list of diagnostic trouble codes appears, navigate to and select a code (D) to find more information about it.
4. After selecting a code, use the navigation dial to scroll down the text if an arrow appears near the bottom of the page. Selecting "OK" at the bottom of the page acknowledges the code.
5. Return to the code list and review other codes as desired.
6. Once codes have been reviewed, scroll to the bottom of the code list and use clear all codes (E). Select this option and depress the confirm button to remove all of the stored and active codes.
7. The message "No codes stored" appears.
8. Use the back button to return to the main menu.

Contact your John Deere dealer for troubleshooting assistance. Your dealer has additional access to the on-board display and tools to diagnose and repair problems.

V5VUVD4,000015F-19-08MAR22

## Addresses

*NOTE: For additional navigation information, see Basic Menu Navigation in the Displays, Software, and Electronics Operation section.*



- A—Control Unit Selection
- B—Address Number
- C—Control Unit Acronym

1. Access the address menu. A list appears, allowing the operator to choose which control unit they want to see.
2. Scroll down and choose the control unit selection (A) for the relevant information the operator would like to view or configure.
3. The page with the address number (B) and control unit acronym (C) opens.
4. Use the navigation dial to scroll through the addresses. Depress the confirm button to select an address to view additional information.
  - a. Address 1 is a list of stored diagnostic trouble codes for that selected control unit software. (See Diagnostic Trouble Codes in this section.)
  - b. Address 2 is a beep mode. Operate a control device (switch, button, lever) to see an address number display, a value change state, and sound an audible beep.
  - c. Addresses 3—199 are various feature or function information related to status, configuration, and operation.
  - d. Addresses 200—251 are related to software and hardware numbers and versions.

5. If an address is configurable by the operator, there is an "Edit" icon in the lower right-hand corner. Selecting the edit option allows changes to the values used by the software. It is not recommended to change values unless the user fully understands what is being changed. Contact your John Deere dealer for more information.
6. After entering the edit mode, the confirm button moves the selection box and the navigation dial changes the value within the selection box.
7. After the value has been changed, the back button navigates to a "Cancel" or "Save" screen. Depressing the back button again cancels changes, and the confirm button saves changes.

Contact your John Deere dealer for troubleshooting assistance. Your dealer has additional access to the on-board display and tools to diagnose and repair problems.

V5VUVD4,0000160-19-08MAR22

---

## CAN Bus

Accessing Controller Area Network (CAN) bus information page displays status of communication between the control units on CAN bus. Machine CAN bus connects control units such as engine, hydraulics, and transmission.

### Network Status

- Active - System is working as expected. In addition to display, at least one control unit is connected and communicating on CAN bus.
- Inactive - Display is not communicating with any other control units on CAN bus. If the display is the only control unit on CAN bus, Total Message Count increases, but network status is inactive.
- Error - Display is not communicating with CAN bus.

### Message Count

Message count is the number of messages sent over CAN bus. When machine is running, this value counts up continuously since there are always messages sent on CAN bus.

### CAN Hi and CAN Lo Voltage

Peak voltage is highest average voltage that has occurred since last cold boot. Peak CAN high and peak CAN low voltages normally range between 1.8 and 3.3 Volts.

*NOTE: A cold boot occurs after display has been off for 24 hours or all power has been disconnected from display.*

### Bus Utilization

If a control unit or implement is not running as expected,

bus utilization of 45% or higher could be the reason. Some devices cannot send and receive all necessary messages if bus load is too high.

*NOTE: Some ISOBUS implements do not work with bus loads higher than 25%.*

*Unplugging implements or GPS receivers can reduce bus utilization.*

### Baud Rate

*NOTE: Machine and implement CAN Bus run at different speeds or baud rates.*

Baud rate indicates how fast the CAN bus is working. Any control unit connected to this system must work at 500 kbd. Any device operating at a different baud rate does not function properly.

### CAN Bus Status

- Active - CAN bus is running without any problems.
- Inactive - CAN bus is not communicating as expected and has stopped.
- Error - CAN bus errors have occurred.

### Error Counts

If one of these errors occurs, display records number of times it happens.

*Passive Error Count* - If value counts up higher than zero, a control unit on CAN bus did not receive all messages. Important information might have been lost, most likely due to high CAN bus utilization.

*CAN Bus Warn Count* - If value counts up higher than zero, a control unit on CAN bus has issues.

*CAN Bus Off Count* - If value counts up higher than zero, a control unit on CAN bus has issues. It missed a certain number of messages and does not receive messages anymore. Important information has been lost. It most likely occurs in combination with high CAN bus utilization.

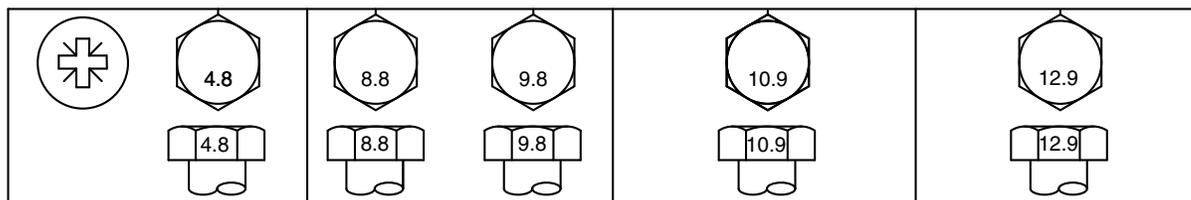
*Overrun Error Count* - Indicates that applications or control units on CAN bus receive messages faster than they can process them. The result is missing messages and system malfunctions. It most likely occurs in combination with high CAN bus utilization.

V5VUVD4,0000161-19-08MAR22

---

# Specifications

## Metric Bolt and Screw Torque Values



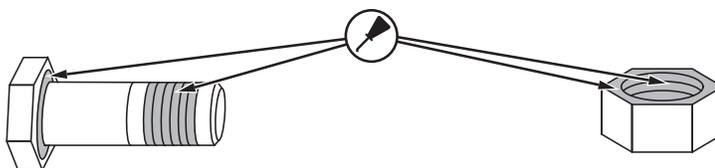
TS1742—UN—31MAY18

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
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
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
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.



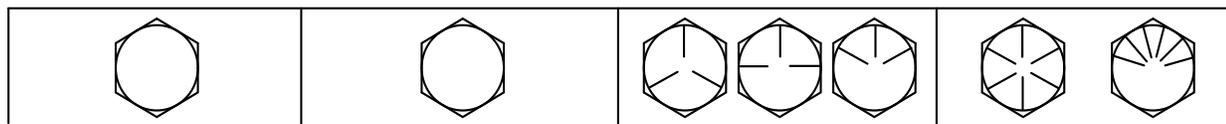
TS1741—UN—22MAY18

<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, TORQ2-19-09MAY22

## Unified Inch Bolt and Screw Torque Values



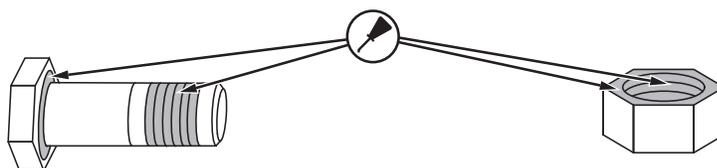
TS1671—UN—01MAY03

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
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
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
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
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,TORQ1-19-09MAY22

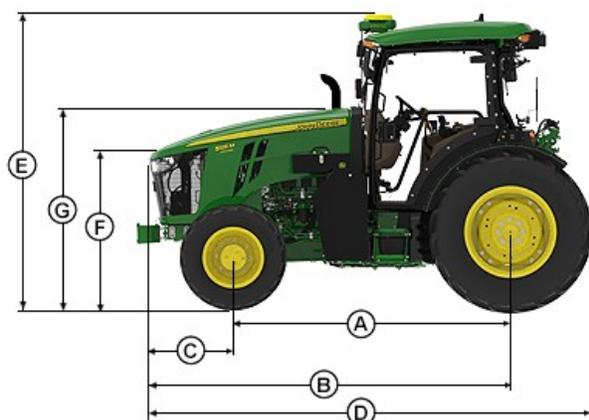
## Specifications

### Fluid Capacities

	Liters	Gallons
Fuel Tank Capacity (Standard)	144	38
DEF Tank Capacity	12	3.17
Engine Crankcase with Filter	13	3.4
Transmission/Hydraulic System	39.5	10.4
Cooling System	22	5.8
MFWD Differential Housing	4.8	1.3
MFWD Wheel Hub (Each)	0.8	0.2

V5VUVD4,0000162-19-02APR23

### Machine Dimensions



- A—Wheelbase
- B—Hood Length
- C—Hood in Front of Axle
- D—Overall Length
- E—Overall Height
- F—Front Hood Height
- G—Rear Hood Height

APY77541—UN—10OCT22

	Millimeters	Inches
Wheelbase	2300 for Narrow Axle 2350 for Wide Axle	90.55 for Narrow Axle 92.51 for Wide Axle
Hood Length	2996.5	117.97
Hood in Front of Axle	646.5	25.45
Overall Length	3664	144.25
Overall Height (480/65 R28)	2453	96.57
Overall Width	2058 (Standard)	81.02 (Standard)
Front Hood Height	1352.3	53.24
Rear Hood Height	1680.9	66.17
Ground Clearance	349.7	13.76

m86qb7,1683140527572-19-22NOV23

### Machine Weight

*NOTE: Machine weight is measured with more than 18.9 L (5 gal) of fuel and all other fluids at full capacity.*

*Machine weight is approximately shipping weight. Adding or removing options will change the weight. If more accurate weight is desired, weigh on a platform scale.*

## Specifications

Base Machine Weight	Kilograms	Pounds
MFWD Cab	3975	8763

V5VUVD4.0000164-19-01MAY23

## Engine and PTO Power

	5105ML	5120ML	5130ML
Engine Power at 2200 rpm (Factory observed per 97/68/EC ISO industry standard) (± 3 %)	77.4 kW 103.8 hp	88.51 kW 118.7 hp	95.82 kW 128.5 hp
PTO Power at 2100 rpm (Factory observed per SAE industry standard) (± 5%)	67.11 kW 90 hp	78.3 kW 105 hp	85.75 kW 115 hp

V5VUVD4.0000165-19-01MAY23

## Engine Specifications

Description	John Deere PowerTech™ 4045 PWS
Type	4045HLV81
Family	NJDXL06.8309
Aspiration	Turbocharged and Aftercooled
Cylinders	In-line 4
Cylinder Liner	Wet sleeved
Emission level	Final Tier 4
After Treatment Type	DOC/DPF/SCR 4 cylinders: 4.5 L
Displacement	4.5 L 276 in <sup>3</sup>
Fuel Control	Electronic
Low Idle Speed	900 ±10 rpm
Rated Speed	2200 rpm
High Idle Speed	2300 ±50 rpm

V5VUVD4.0000166-19-02APR23

## Electrical Specifications

Battery Voltage	12 Volts
Battery Cold Cranking Capacity	950 Amperes
Reserve Capacity	180 Minutes
Alternator Capacity	Cab: 120 Amperes Field Installed Option: 200 Amperes
Working lights	Standard: Halogen Optional: LED
Type of Bulb in Headlight	Standard: Halogen Optional: LED
Type of Bulb in Beacon	Optional: LED

V5VUVD4.0000167-19-02APR23

## Specifications

### PTO Engine Speeds

PTO Speed	Engine Speed (rpm)
540	2100
540E	1645
1000	2100

V5VUVD4,0000168-19-08MAR22

### Hydraulics Specifications

Pump Type	Gear
Hydraulic Pump Rated Output	117 L/min 31 gpm
Available Flow at a Single Rear SCV	100 L/min 26.4 gpm
Charge – Lube Pump Rated Output	219.5 L/min 58 gpm
Transmission Pump Rated Output	30.7 L/min 8.1 gpm
Piston Pump Displacement	45 cc/rev (variable) 2.7 in <sup>3</sup> /rev
Charge – Lube Pump Displacement	85 cc/rev (variable) 5.2 in <sup>3</sup> /rev
Transmission Pump Displacement	14 cc/rev (fixed) 0.85 in <sup>3</sup> /rev
Maximum Pressure-Steering	17500-18100 kPa 175-181 bar 2538-2625 psi
Maximum Pressure-Implement	19300-20500 kPa 193-205 bar 2799-2973 psi

rn86qb7,1683150506544-19-09MAY23

### Rear Hitch Lift Capacities

**IMPORTANT: In all applications, pay attention to axle load capacity and tire load capacity.**

Region	Cylinder Diameter	Throughout Lift Range Force kN(kg)		Max Lift Force kN(kg)	
		At Hitch Ball	610 mm Behind Lift Point	At Hitch Ball	610 mm Behind Lift Point
R4	70 mm	27.14 (2767 Kg)	28.97 (2954 Kg)	41 (4182 Kg)	33.2 (3386 kg)
	75 mm (opt)	30.5 (3112 Kg)	31.95 (3257 Kg)	45.6 (4646 Kg)	36.7 (3747 Kg)
R2	65 mm	23.56 (2402 Kg)	25.76 (2627 Kg)	35.9 (3662 Kg)	29.3 (2986 Kg)
	70 mm (opt)	27.14 (2767 Kg)	28.97 (2954 Kg)	41 (4182 Kg)	33.2 (3386 Kg)

*NOTE: Hitch Lift Capacities 70 mm (opt): 65 mm - 75 mm Diameter combination.*

### Front Hitch Lift Capacities

**IMPORTANT: In all applications, pay attention to axle load capacity and tire load capacity.**

V5VUVD4,000016A-19-06NOV23

## Specifications

Throughout Lift Range Force		Max Lift Force	
At Hitch Ball	610 mm Behind Hitch Ball	At Hitch Ball	610 mm Behind Hitch Ball
28.7 kN	18 kN	29.5 kN	33 kN
2926 kg	1835 kg	3010 kg	3365 kg
7840 lb	4920 lb	8060 lb	9015 lb

V5VUVD4,000016B-19-01MAY23

## Drawbar Capacities

Maximum Static Vertical Loads		
Drawbar Category	Category 2	
Drawbar-Standard	Road/Field Use 250 mm Extended	1450 kg 3197 lb
	Field Use 350 mm Extended	1200 kg 2646 lb
	Field Use 400 mm Extended	1200 kg 2646 lb
Drawbar-Heavy Duty	250 mm Extended	1450 kg 3197 lb
	350 mm Extended	1200 kg 2646 lb
Maximum vertical load	Field Use 350 mm Extended	1200 kg 2646 lb
	Field Use 400-mm extended	1200 kg 2646 lb

V5VUVD4,000016C-19-01MAY23

## Weight Distribution

### MFWD

Tractor SN	Region	Cab	Front Axle	Transmission	Tires (Front)	Tires (Rear)	Weight Bracket	Fuel Tank	DEF Tank	Right Front (lbs)	Left Front (lbs)	Right Rear (lbs)	Left Rear (lbs)	Total Front (lbs)	Front %	Total Rear (lbs)	Rear %	Tractor Total (lbs)
1L-V512-5RT-G3-X800-22	R4	Orchard	Narrow	32/16 w/creeper	210/95R-18	340/85R-28	Yes	Full	Full	1720	1660	2580	2480	3380	40	5060	60	8440

V5VUVD4,000016D-19-21NOV23

## Permissible Load

**IMPORTANT:** Always consult your tire manufacturer's information, as permissible load varies per manufacturer, load capacity, inflation pressure, speed-radius index, and travel speed.

## Specifications

Machine Configuration	Max Permissible Weight	Max Front Axle Load	Max Rear Axle Load	Max Payload
MFWD	7500 kg 16534 lb	3000 kg 6614 lb	6000 kg 13228 lb	3325 kg 7330 lb

V5VUVD4,000016E-19-03MAY23

## Ballast Capacities

Maximum Ballast Weight	5500 kg 12125 lb
Front Base Weight	55 kg 121 lb
Maximum Number of Front Weights	14
Maximum Front Ballast	755 kg 1664 lb
Maximum Number of Rear Weights	Maximum of 3 weights per wheel (not more than 45 kg (99 lb) per wheel)

m86qb7,1683129162253-19-03MAY23

## Sound Level

Max. sound level at operator's ear	Measurement method in accordance with Directive 2009/76/EC
Cab	78 dB (A)

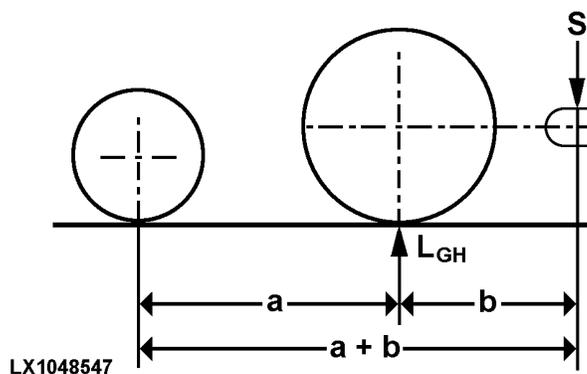
shqw455,1699450870631-19-24NOV23

## Permissible Towable Mass

No Brake	3500 kg 6614 lb
Independent Brake	5000 kg 11023 lb
Inertia Brake	16000 kg 35274 lb
Assisted Brake (Air or Hydraulic)	32000 kg 70548 lb

m86qb7,1679488897880-19-22MAR23

## Calculate Maximum Permissible Download on Trailer Hitch



## Specifications

LX1048547—UN—20JUL09

Calculation of maximum permissible download at the trailer hitch in relation to Load Index (LI)

- The load index can be read on the sidewall of the tire. If the index is not provided, refer to the tire's load capacity as quoted by the tire manufacturer.
- The load index is quoted in conjunction with a Speed Index (SI).
- As a rule, the load capacity of the tire in kg can be derived directly from the LI; see the following table:

LI	kg	LI	kg	LI	kg	LI	kg
90 . .	600	111 . .	1090	132 . .	2000	153 . .	3650
91 . .	615	112 . .	1120	133 . .	2060	154 . .	3750
92 . .	630	113 . .	1150	134 . .	2120	155 . .	3875
93 . .	650	114 . .	1180	135 . .	2180	156 . .	4000
94 . .	670	115 . .	1215	136 . .	2240	157 . .	4125
95 . .	690	116 . .	1250	137 . .	2300	158 . .	4250
96 . .	710	117 . .	1285	138 . .	2360	159 . .	4375
97 . .	730	118 . .	1320	139 . .	2430	160 . .	4500
98 . .	750	119 . .	1360	140 . .	2500	161 . .	4625
99 . .	775	120 . .	1400	141 . .	2575	162 . .	4750
100 . .	800	121 . .	1450	142 . .	2650	163 . .	4875
101 . .	825	122 . .	1500	143 . .	2725	164 . .	5000
102 . .	850	123 . .	1550	144 . .	2800	165 . .	5150
103 . .	875	124 . .	1600	145 . .	2900	166 . .	5300
104 . .	900	125 . .	1650	146 . .	3000	167 . .	5450
105 . .	925	126 . .	1700	147 . .	3075	168 . .	5600
106 . .	950	127 . .	1750	148 . .	3150	169 . .	5800
107 . .	975	128 . .	1800	149 . .	3250	170 . .	6000
108 . .	1000	129 . .	1850	150 . .	3350	171 . .	6150
109 . .	1030	130 . .	1900	151 . .	3450	172 . .	6300
110 . .	1060	131 . .	1950	152 . .	3550	173 . .	6500

As a general rule, SI A8 implies a top speed of 40 km/h (25 mph), while SI B implies a top speed of 50 km/h (31 mph). If the SI is different, the manufacturer's instructions apply.

Calculate maximum trailer hitch download as follows:

$$S = \frac{(H_{\max} - L_{GH}) * a}{a + b}, \text{ where}$$

- $H_{\max}$  = the smaller value from 2\*load capacity of a tire on the rear axle and the maximum permissible rear axle load in kg
- $L_{GH}$  = the mass in kg acting on the ground through the rear wheels (to be ascertained by weighing)
- $a$  = the wheelbase (the horizontal distance between the front and rear axles)
- $b$  = the rear overhang (the horizontal distance between the center of the rear axle and center of the hitch point)

Example of how to calculate maximum trailer hitch download:

- Given that:
- Empty mass on rear axle  $L_{GH} = 1800$  kg
  - Wheelbase  $a = 2100$  mm
  - Overhang  $b = 600$  mm
  - Tire marking = 130A8
  - Maximum permitted speed of machine = 40 km/h (25 mph)
  - Permissible rear axle load = 3500 kg
  - $H_{\max} = 3500$  kg
  - ( $1900 \text{ kg} * 2 = 3800 \text{ kg}$ , rear axle load = 3500 kg)

$$S = \frac{(3500 \text{ kg} - 1800 \text{ kg}) * 2100 \text{ mm}}{2100 \text{ mm} + 600 \text{ mm}} = 1322 \text{ kg}$$

**CAUTION: At least 20% of the machine's total unladen mass must be on the front axle.**  
**Trailer hitch download must not exceed the trailer hitch limit specified by the manufacturer.**

m86qb7,1679488994326-19-22MAR23

### Calculate Permissible Mass

#### Calculating permissible machine mass and permissible trailer mass on the basis of the D value

EC-approved, dynamically tested hitches are always provided with a D value. This is calculated as follows:

$$D = \frac{G * A * B}{A + B}, \text{ where}$$

- $D$  = D value of hitch
- $G$  = Gravitational constant 9.81 m/s<sup>2</sup>
- $A$  = Machine mass
- $B$  = Trailer mass

To calculate trailer mass for a given D value and a given machine mass, and to calculate machine mass for a given D value and a given trailer mass, use the following formulas:

$$\text{Machine mass } A = \frac{D * B}{G * B - D}$$

$$\text{Trailer mass } B = \frac{D * A}{G * A - D}$$

$$G * A - D$$

*NOTE: If when calculating A the product of G\*B is less than the D value, or if when calculating B the product of G\*A is less than the D value, then the result of this calculation is negative. Even so, the D value is sufficient for every combination of machine mass and trailer mass.*

Example of how to calculate permissible trailer mass:

Given that: D value, D = 55 kN = 55000 N  
Machine mass A = 7000 kg

$$B = \frac{55000 \text{ N} * 7000 \text{ kg}}{9.81 \text{ m/s}^2 * 7000 \text{ kg} - 55000 \text{ N}} = 28163 \text{ kg}$$

Pay close attention to permissible towed mass and machine mass!

m86qb7,1679489075446-19-22MAR23

## Fluorinated Greenhouse Gas

*NOTE: Cab refrigerator (if equipped) contains approximately 0.040 kg (0.090 lb) of refrigerant.*

### 4.5 Liter 4 Cylinder Engine

Air Conditioner System contains Fluorinated Greenhouse Gas (F-Gas)	
Type of F-Gas:	R-134a
F-Gas Mass:	1.47 kg 3.25 lb
CO <sub>2</sub> Equivalent (tonnes):	2.27 t
Global Warming Potential (GWP):	1430

m86qb7,1679489278382-19-22MAR23

# Identification Numbers

## Record Product Identification Number

Each machine has its own unique Product Identification

Number (PIN). The PIN number is broken down as follows:

1	P	0	5	1	2	0	M	#	M	#	1	2	3	4	5	6	
WMC	Build Factory	Machine Series	Engine hp			Machine Family	Check Letter	Calendar Year	Transmission Type	Serial Number							
		Model Number															

WMC: World Manufacturing Code.

Build Factory: represents manufacturing location.

Machine Series: represents machine series.

Engine hp: represents approximate engine horsepower.

Machine Family: represents overall machine configuration.

Check Letter: calculated based on values and positions of the other characters in the PIN.

Calendar Year = represents calendar year of manufacture (2010 = A, 2031 = 1, 2040 = A again).

Model Number: made up of series, hp, and family; example shown 5120M.

Serial Number: made up of an operator's station identifier and build sequence; example shown 401376.

Refer below chart to see Transmission Type

Position 11	Transmission Type
1	Available
2	TSS 24X8
3	TSS 12X24
4	9X3 SYNC
5	PR 12X12
6	PR 24X12
7	12X4 SYNC PLUS
8	16X16 POWQUAD
9	PR 16X16
A	32/16 POWR8
B	Available
C	Available
D	Available



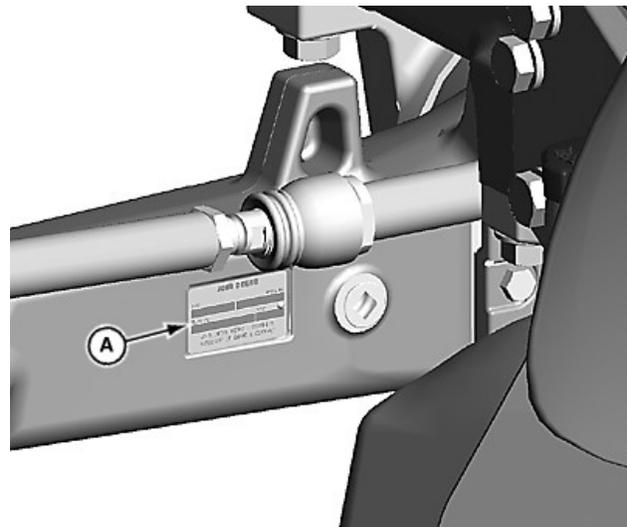
LV14221—UN—03MAY11

Product Identification Number (PIN) plate is on the right front support member of the machine.

Product Identification Number \_\_\_\_\_

rd91939,1665649369578-19-12APR23

## Record Front Axle Serial Number



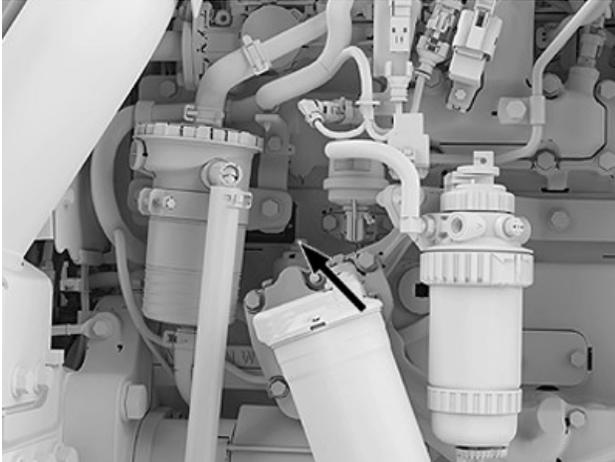
LV18529—UN—30JUL13

The serial number plate is on the rear side of the left-hand axle housing.

Front Axle Serial Number \_\_\_\_\_

V5VUVD4,0000172-19-08MAR22

### Record Engine Serial Number



APY77581—UN—12OCT22



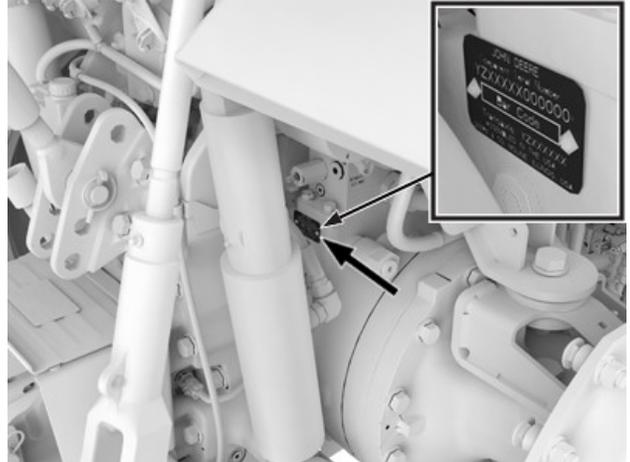
LV22864—UN—21AUG14

The serial number is placed in two locations. The plate is on the right-hand side of the engine block, behind the OCV filter bracket. The sticker is on the left-hand side of the engine to the right of the fuel filter.

Engine Serial Number \_\_\_\_\_

V5VUVD4,0000173-19-11OCT22

### Record Transmission Serial Number



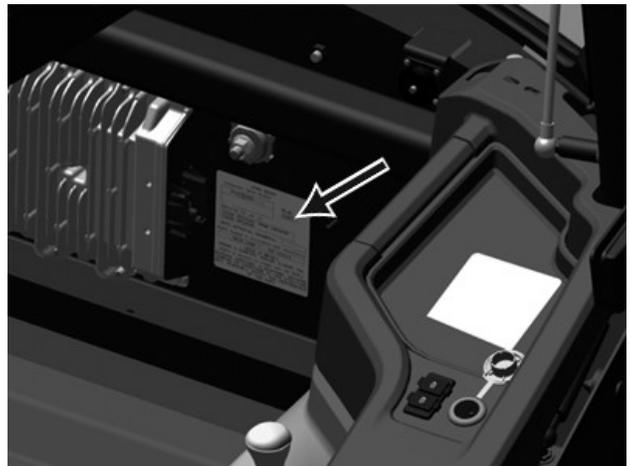
APY77582—UN—12OCT22

The serial number plate is located behind the right-hand hitch lift arm on the differential housing.

Transmission Serial Number \_\_\_\_\_

V5VUVD4,0000174-19-11OCT22

### Record Cab Serial Number



P21072—UN—23NOV23

The serial number label is located behind the operator's seat underneath the rear window.

Cab Serial Number \_\_\_\_\_

V5VUVD4,0000175-19-23NOV23

## 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

---

# Certification and Warranty

## Cab ROPS Certificate

JOHN DEERE  
Component Serial Number  
PXCG155-----\* Model: CG155

Approved for use on:  
5100M ORCHARD, 5115M ORCHARD  
5125M ORCHARD

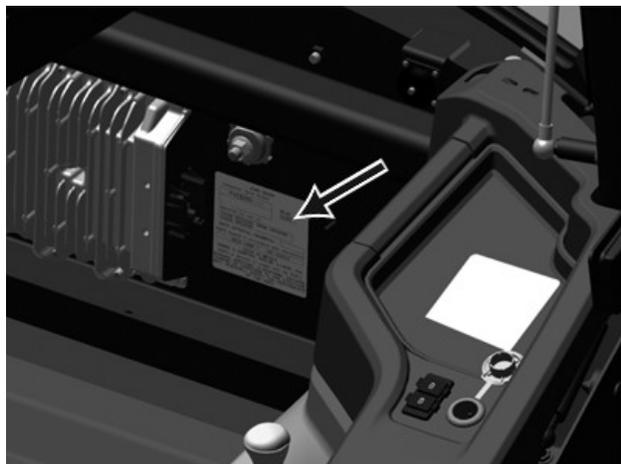
OECD APPROVAL NUMBER(S):

ROPS tested in accordance with requirements:  
OECD CODE 7 ISO 12003-2

MADE IN MEXICO  
DEERE & COMPANY, MOLINE, ILLINOIS, USA  
ROPS is deemed to comply with AS 1636.2  
WARNING: ADDITIONS, ALTERATIONS, CRACKING,  
DAMAGE OR CORROSION TO THIS STRUCTURE  
MAY ADVERSELY AFFECT THE PERFORMANCE  
OF THE ROPS

P21097—UN—23NOV23

ROPS Certification Label



P21072—UN—23NOV23

Cab Wall Behind Seat

**ROPS tested in accordance with requirements:**

**SAEJ2194 AUG02 AS1636.1**

**CSA B352.1 - 1999**

**MADE IN MEXICO**

**DEERE & COMPANY, MOLINE, ILLINOIS USA**

**WARNING: ADDITIONS, ALTERATIONS, CRACKING,  
DAMAGE or CORROSION TO THIS STRUCTURE  
MAY ADVERSELY AFFECT ITS PERFORMANCE**

V5VUVD4,0000176-19-23NOV23

## 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

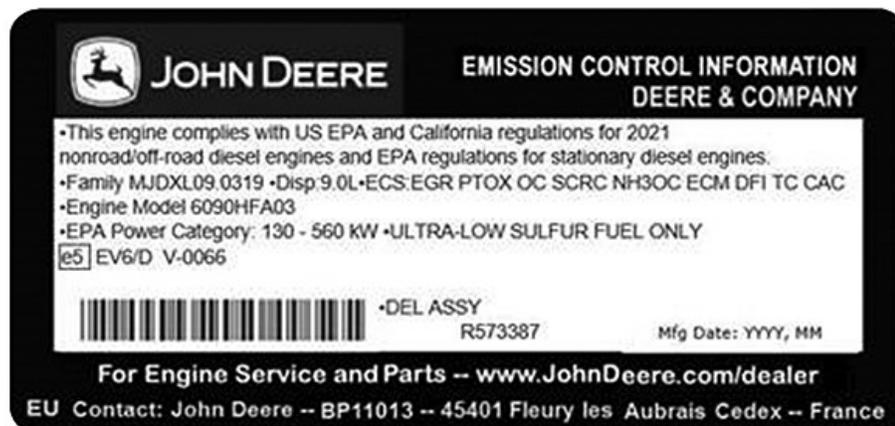
To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, 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 its 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



RG33429—UN—04FEB21

Engine Emissions Label

**⚠ 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.

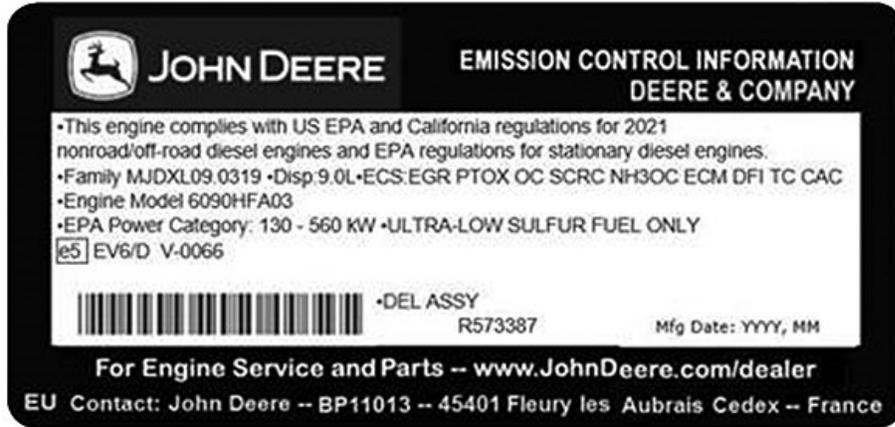
The emissions label has applicable US EPA and/or CARB regulatory year. The regulatory year determines which warranty statement is applicable to engine. See “EPA Non-road Emissions Control Warranty Statement—Compression Ignition” and “CARB Non-road Emissions Control Warranty Statement—Compression Ignition”. 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

**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.

*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

Emissions Label Family	CO <sub>2</sub> Result
_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) and shall not imply or express any guarantee of the performance of a particular engine.

DX.EMISSIONS.CO2-19-23JUN23

**CARB Non-road Emissions Control Warranty Statement—Compression Ignition**

**Emissions Control Warranty Statement 2019 through 2021**



**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 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:

**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 catalyts

**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

## *Certification and Warranty*

---

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

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 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

**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:

<p>Air Induction System</p> <ul style="list-style-type: none"> <li>• Intake manifold</li> <li>• Turbocharger</li> <li>• Charge air cooler</li> </ul> <p>Fuel Metering system</p> <ul style="list-style-type: none"> <li>• Fuel injection system</li> </ul> <p>Exhaust Gas Recirculation</p> <ul style="list-style-type: none"> <li>• EGR valve</li> </ul> <p>Catalyst or Thermal Reactor Systems</p> <ul style="list-style-type: none"> <li>• Catalytic converter</li> <li>• Exhaust manifold</li> </ul>	<p>Emission control labels</p> <p>Particulate Controls</p> <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> <p>Positive Crankcase Ventilation (PCV) System</p> <ul style="list-style-type: none"> <li>• PCV valve</li> <li>• Oil filler cap</li> </ul>	<p>Advanced Oxides of Nitrogen (NOx) Controls</p> <ul style="list-style-type: none"> <li>• NOx absorbers and catalysts</li> </ul> <p>SCR systems and urea containers/dispensing systems</p> <p>Miscellaneous Items used in Above Systems</p> <ul style="list-style-type: none"> <li>• Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware</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

## Certification and Warranty

---

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

## *Certification and Warranty*

---

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

**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:

<p><b>Air Induction System</b></p> <ul style="list-style-type: none"> <li>• Intake manifold</li> <li>• Turbocharger</li> <li>• Charge air cooler</li> </ul> <p><b>Fuel Metering system</b></p> <ul style="list-style-type: none"> <li>• Fuel injection system</li> </ul> <p><b>Exhaust Gas Recirculation</b></p> <ul style="list-style-type: none"> <li>• EGR valve</li> </ul> <p><b>Catalyst or Thermal Reactor Systems</b></p> <ul style="list-style-type: none"> <li>• Catalytic converter</li> <li>• Exhaust manifold</li> </ul>	<p><b>Emission control labels</b></p> <p><b>Particulate Controls</b></p> <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> <p><b>Positive Crankcase Ventilation (PCV) System</b></p> <ul style="list-style-type: none"> <li>• PCV valve</li> <li>• Oil filler cap</li> </ul>	<p><b>Advanced Oxides of Nitrogen (NOx) Controls</b></p> <ul style="list-style-type: none"> <li>• NOx absorbers and catalysts</li> </ul> <p><b>SCR systems and urea containers/dispensing systems</b></p> <p><b>Miscellaneous Items used in Above Systems</b></p> <ul style="list-style-type: none"> <li>• Electronic control units, sensors, actuators, wiring harnesses, hoses, connectors, clamps, fittings, gasket, mounting hardware</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

**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

# Maintenance Records

## Daily or Every 10 Hours

MAINTENANCE PROCEDURE		
<input type="checkbox"/> Check Engine Oil Level	<input type="checkbox"/> Clean Air Filter Dust Unloading Valve	
<input type="checkbox"/> Drain Water and Sediment from Fuel Filter		
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp

V5VUVD4,0000177-19-20FEB23

**Weekly or Every 50 Hours**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> Check Coolant Level	<input type="checkbox"/> Check Transmission/Hydraulic System Oil Level	
<input type="checkbox"/> Inspect Tires	<input type="checkbox"/> Check Tire Inflation Pressure	
<input type="checkbox"/> Lubricate MFWD Axle Trunnion	<input type="checkbox"/> Lubricate Front Hitch	
<input type="checkbox"/> Lubricate Rear Hitch		
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

*Maintenance Records*

**First 100 Hours**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> Check and Tighten Air Intake System and Coolant System Hose Clamps	<input type="checkbox"/> Change Transmission/Hydraulic Filter	
Hours:	Hours:	Hours:
Date:	Date:	Date:
Signature:	Signature:	Signature:
Dealer's Stamp	Dealer's Stamp	Dealer's Stamp

V5VUVD4,0000179-19-08MAR22

**Every 250 Hours**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> Check Hitch and Drawbar for Excessive Wear	Change Activated Carbon Cab Filter	
<input type="checkbox"/> Lubricate Draft Sensing Shaft Seal		
Hours:	Hours:	Hours:
Date:	Date:	Date:
Signature:	Signature:	Signature:
Dealer's Stamp	Dealer's Stamp	Dealer's Stamp
Hours:	Hours:	Hours:
Date:	Date:	Date:
Signature:	Signature:	Signature:
Dealer's Stamp	Dealer's Stamp	Dealer's Stamp
Hours:	Hours:	Hours:
Date:	Date:	Date:
Signature:	Signature:	Signature:
Dealer's Stamp	Dealer's Stamp	Dealer's Stamp

*Maintenance Records*

<b>MAINTENANCE PROCEDURE</b>		
<input type="checkbox"/> <b>Check Hitch and Drawbar for Excessive Wear</b>	<b>Change Activated Carbon Cab Filter</b>	
<input type="checkbox"/> <b>Lubricate Draft Sensing Shaft Seal</b>		
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

V5VUVD4,000017A-19-08MAR22

Maintenance Records

**Every 500 Hours**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> <b>Change Transmission/Hydraulic Filter</b>	<input type="checkbox"/> <b>Check Neutral Start System</b>	
<input type="checkbox"/> <b>Change Engine Oil And Filter</b>	<input type="checkbox"/> <b>Change Fuel Filters</b>	
<input type="checkbox"/> <b>Change MFWD Axle Wheel Hub and Housing Oil</b>	<input type="checkbox"/> <b>Clean Cab Air Filters</b>	
<input type="checkbox"/> <b>Clean Open Crankcase Vent</b>	<input type="checkbox"/> <b>Lubricate Rear Axle Bearings</b>	
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp
Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp	Hours:  Date:  Signature:  Dealer's Stamp

V5VUVD4,000017B-19-08MAR22

**Every 1000 Hours or Annually**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> Check Battery and Connections	<input type="checkbox"/> Check Coolant Properties	
<input type="checkbox"/> Check Seat Belts	<input type="checkbox"/> Check Fan Belt Tensioner	
<input type="checkbox"/> Change Fan Belt	<input type="checkbox"/> Change Front PTO Oil	
<input type="checkbox"/> Clean Fuel Tank Vent Filter	<input type="checkbox"/> Service Air Cleaner Elements	
<input type="checkbox"/> Lubricate Exchangeable 540/1000 rpm PTO Shaft		
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

**Every 1500 Hours**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> <b>Change Open Crankcase Ventilation Filter</b>	<input type="checkbox"/> <b>Change Transmission/Hydraulic Oil and Filter</b>	
<input type="checkbox"/> <b>Supply Module (SM) Filter</b>	<input type="checkbox"/> <b>DEF Header Filter</b>	
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

V5VUVD4,000017D-19-27APR23

**Every 3000 Hours or 3 Years**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> <b>Adjust Engine Valve Clearance</b>		
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

V5VUVD4,000017E-19-08MAR22

**Every 4500 Hours or 5 Years**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> <b>Change Transmission Dampener</b>	<input type="checkbox"/> <b>Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter</b>	
<input type="checkbox"/> <b>Change Diesel Exhaust Fluid (DEF) Tank Header Suction Screen</b>		
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

V5VUVD4,000017F-19-08MAR22

**Every 6000 Hours or 6 Years**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> <b>Change Thermostat</b>	<input type="checkbox"/> <b>Drain and Replace Coolant</b>	
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

V5VUVD4,0000180-19-08MAR22

Maintenance Records

**As necessary**

MAINTENANCE PROCEDURE		
<input type="checkbox"/> DEF Tank Vent		<input type="checkbox"/> DEF Tank
Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp	Hours: Date: Signature: Dealer's Stamp

shqw455,1682628483995-19-27APR23

Maintenance Records

**Change of Ownership**

Machine Model:
Serial Number:
Engine Number:
Previous Owner:
Address:
Purchase Date:
Hours at Purchase:
Registration Number:
New Owner:
Address:
Dealer's Stamp (if sold through dealer)

Purchase Date:
Hours at Purchase:
Registration Number:
New Owner:
Address:
Dealer's Stamp (if sold through dealer)

V5VUVD4,0000183-19-08MAR22

V5VUVD4,0000181-19-08MAR22

**Change of Ownership**

Machine Model:
Serial Number:
Engine Number:
Previous Owner:
Address:
Purchase Date:
Hours at Purchase:
Registration Number:
New Owner:
Address:
Dealer's Stamp (if sold through dealer)

V5VUVD4,0000182-19-08MAR22

**Change of Ownership**

Machine Model:
Serial Number:
Engine Number:
Previous Owner:
Address:

# Pre-Delivery Inspection

## Service Procedure

ag32641,1663940756562-19-17OCT22

## Notes on Pre-Delivery Inspection

*NOTE: Depending on the regional peculiarities and individual vehicle configuration, the tasks are only applicable if the corresponding equipment is available. The configuration can be found in the order information of the vehicle. Subsequent additions and conversions must be taken into account.*

rd91939,1665650963898-19-13OCT22

## Copy for Owner

Serial Number: \_\_\_\_\_ Vehicle model: \_\_\_\_\_  
Operator's Manual No.: \_\_\_\_\_ Issue: \_\_\_\_\_ Registration Number: \_\_\_\_\_  
Engine Number: \_\_\_\_\_ Delivery Date: \_\_\_\_\_  
Owner's Name: \_\_\_\_\_ Operating Hours at Delivery: \_\_\_\_\_  
Address: \_\_\_\_\_ Number of Keys Handed Over (only for immobilizer): \_\_\_\_\_  
\_\_\_\_\_  
Dealer: \_\_\_\_\_  
\_\_\_\_\_  
Dealer's Stamp: \_\_\_\_\_

## DELIVERY CHECK LIST

**The following checklist is a reminder of important information, which should be conveyed directly to the customer at the time tractor is delivered. Tick off each item as it is fully explained to the customer. Refer to the Operator's Manual and the Technical Manual for more information.**

- |   |  |
|---|--|
| <input type="checkbox"/> Give Operator's Manual to customer. Encourage the customer to read manual.                             | <input type="checkbox"/> Recommended lubricants. (See the lubrication and maintenance section in Operator's Manual.)   |
| <input type="checkbox"/> John Deere warranty  | <input type="checkbox"/> Review service intervals and lubrication points. (See the lubrication and maintenance section in Operator's Manual.)  |
| <input type="checkbox"/> Safe and correct operation and service   | <input type="checkbox"/> Review all adjustments. (See the service section in Operator's Manual.)   |
| <input type="checkbox"/> Daily and periodic inspections   | <input type="checkbox"/> When the tractor is transported on a road or highway at night or during the day, lights and devices should be used for adequate warning to operators of other vehicles. |
| <input type="checkbox"/> Servicing machine regularly and correctly  | <input type="checkbox"/> John Deere parts and service  |
| <input type="checkbox"/> Recommended machine storage  | <input type="checkbox"/> Remove and file this page.  |
| <input type="checkbox"/> Transporting machine correctly   |  |
| <input type="checkbox"/> Make the customer aware of all the safety precautions that must be exercised while using this machine. |  |

To the best of my knowledge, this machine has been delivered ready for field use and above points has been explained in detailed for the proper care and operation.

Signature of Customer

Date:

Pre-Delivery Inspection

- Operator's seat, all possible seat configurations
- Consoles/corner post display
- Differential lock
- Transmission
- Starting and stopping
- Steering and steering system
- Brakes and brake systems
- Speed control
- Lights
- Wipers
- Heater

Operating the Tractor

- Air conditioning system
- PTOs
- Rear hitch, front hitch, and selective control valves
- Hydraulic pickup hitch
- Three-point hitch adjustment
- Fuel system and fuel quality
- Checking fluid levels (radiator, engine, transmission)
- Settings on the corner post display
- Front axle suspension
- Cab suspension

To the best of my knowledge, this machine has been delivered ready for field use and above points has been explained in detailed for the proper care and operation.

Signature of Customer

Date:

rd91939,1665650970774-19-13OCT22

Copy for Dealer

Serial Number: \_\_\_\_\_ Vehicle model: \_\_\_\_\_

Operator's Manual No.: \_\_\_\_\_ Issue: \_\_\_\_\_ Registration Number: \_\_\_\_\_

Engine Number: \_\_\_\_\_ Delivery Date: \_\_\_\_\_

Owner's Name: \_\_\_\_\_ Operating Hours at Delivery: \_\_\_\_\_

Address: \_\_\_\_\_ Number of Keys Handed Over (only for immobilizer): \_\_\_\_\_

\_\_\_\_\_ Dealer: \_\_\_\_\_

\_\_\_\_\_ Dealer's Stamp:

DELIVERY CHECK LIST

The following checklist is a reminder of important information, which should be conveyed directly to the customer at the time tractor is delivered. Tick off each item as it is fully explained to the customer. Refer to the Operator's Manual and the Technical Manual for more information.

- Give Operator's Manual to customer. Encourage the customer to read manual.
- John Deere warranty
- Safe and correct operation and service
- Daily and periodic inspections
- Recommended lubricants. (See the lubrication and maintenance section in Operator's Manual.)
- Review service intervals and lubrication points. (See the lubrication and maintenance section in Operator's Manual.)
- Review all adjustments. (See the service section in Operator's Manual.)

*Pre-Delivery Inspection*

---

**DELIVERY CHECK LIST**

- Servicing machine regularly and correctly
- Recommended machine storage
- Transporting machine correctly
- Make the customer aware of all the safety precautions that must be exercised while using this machine.
- When the tractor is transported on a road or highway at night or during the day, lights and devices should be used for adequate warning to operators of other vehicles.
- John Deere parts and service
- Remove and file this page.

To the best of my knowledge, this machine has been delivered ready for field use and above points has been explained in detailed for the proper care and operation.

Signature of Dealer

Date:

**Operating the Tractor**

- Operator's seat, all possible seat configurations
- Consoles/corner post display
- Differential lock
- Transmission
- Starting and stopping
- Steering and steering system
- Brakes and brake systems
- Speed control
- Lights
- Wipers
- Heater
- Air conditioning system
- PTOs
- Rear hitch, front hitch, and selective control valves
- Hydraulic pickup hitch
- Three-point hitch adjustment
- Fuel system and fuel quality
- Checking fluid levels (radiator, engine, transmission)
- Settings on the corner post display
- Front axle suspension
- Cab suspension

To the best of my knowledge, this machine has been delivered ready for field use and above points has been explained in detailed for the proper care and operation.

Signature of Dealer

Date:

---

rd91939,1665650979409-19-13OCT22

# Index

<b>A</b>	
Activate AutoTrac Basic.....	60-4
Add Liquid Ballast to Tires.....	280A-4
Adjust and Check Clearance.....	280-1
Adjust Engine Valve Clearance.....	220-5
Adjust Flow Control.....	70B-7
Adjust Hitch Side Sway.....	70A-16
Adjust Lateral Float.....	70A-11
Adjust Mechanical SCV Cables.....	270B-1
Adjust PTO Speed Shift Lever.....	250D-1
Adjust Toe-In—MFWD Axle.....	280-11
Aftertreatment indicators overview.....	30-1
Aftertreatment system	
Emergency SCR derate override.....	30-4
Attach Implement to Rear Hitch	
Ball-End.....	70A-11
Hook-End.....	70A-13
Attach PTO Driven Implement.....	50D-3
Automatic Exhaust Filter Cleaning.....	30-8
AutoTrac Basic About.....	60-18
AutoTrac Basic Map.....	60-6
AutoTrac Basic Menu.....	60-5
AutoTrac Basic Settings Locked.....	60-18
Autotrac Basic SF3000 Functionality.....	60-18
AutoTrac Basic Shift Size.....	60-10
AutoTrac Basic Steering System with Corner Post	
Display.....	60-2
AutoTrac Basic TCM Calibration.....	60-14
AutoTrac Basic Track Setup.....	60-8
AutoTrac Basic Track Width.....	60-10
AutoTrac Basic Tuning.....	60-12
AutoTrac Basic Vehicle.....	60-11
AutoTrac Resume Switch.....	60-4
AutoTrac Status Pie.....	60-7
AutoTrac Steering System.....	60-1
Autotrac Universal.....	60-19
Auxiliary Input and USB Port.....	40-9
Avoid static electricity risk when fueling.....	00A-4

<b>B</b>	
Ballast Capacities.....	400-7
Ballasting Information.....	80A-1
Basic Menu Navigation.....	41-3
Battery	
Warranty.....	400B-1
Battery Disconnect Switch.....	40-1
Battery Handling, Safety	
Safety, Battery Handling.....	00A-12
Beacon Lights.....	40-5
Biodiesel fuel.....	200A-9
Bleed Fuel System.....	230-12
Bluetooth Microphone.....	40-10
Bolt and screw torque values	
Metric.....	400-1
Unified inch.....	400-2
Break-in Checks.....	220-1

Break-in engine oil	
Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V.....	200A-7
Break-In Maintenance.....	220-1
Bucket Lights.....	40-3

<b>C</b>	
Cab ROPS Certificate.....	400B-1
Cab Seats.....	90-2
CAN Bus	
Controller Area Network.....	300A-4
Carbon Dioxide Emissions.....	400B-3
Case Drain.....	70B-8
Change Diesel Exhaust Fluid (DEF) Dosing Unit Filter	
.....	230-1
Change Diesel Exhaust Fluid (DEF) Tank Header	
Suction Screen.....	230-2
Change Engine Oil and Filter.....	220-2
Change Fan Belt.....	220-4
Change Front PTO Oil.....	250D-1
Change Fuel Filters.....	230-12
Change MFWD Axle Housing Oil.....	250B-1
Change MFWD Axle Wheel Hub Oil.....	250B-1
Change of Ownership.....	500-10
Change Open Crankcase Vent Filter (OCV).....	220-3
Change Transmission Dampener.....	250A-2
Change Transmission/Hydraulic Filter.....	270-1
Change Transmission/Hydraulic Oil and Filter.....	250A-1, 270-2
Change Wiper Blade.....	290-2
Changing Tire Sizes.....	280-4
Check Air Conditioning System.....	290-1
Check and Tighten Air Intake System and Coolant	
System Hose Clamps.....	230-8
Check Coolant Level.....	230-13
Check Engine and Exhaust Compartments for Debris	
.....	230-1
Check Engine Oil Level.....	220-1
Check Fan Belt Tensioner.....	220-4
Check Hitch and Drawbar for Excessive Wear.....	270A-2
Check Manual Brakes.....	260-1
Check Neutral Start System.....	250A-1
Check Seat Belts.....	290-2
Check Tire Inflation Pressure.....	280-1
Check Toe-In—MFWD Axle.....	280-11
Check Transmission Park System.....	250A-1
Check Transmission/Hydraulic System Oil Level.....	270-1
Clean Air Filter Dust Unloading Valve.....	230-10
Clean Cab Air Filters.....	290-1
Clean Diesel Exhaust Fluid (DEF) Tank.....	230-7
Clean Diesel Particulate Filter (DPF).....	230-1
Clean Grille Screens and Cooling Package.....	230-10
Clean Open Crankcase Vent.....	220-3
Clevis Drawbar.....	70A-23
Coat Hook.....	90-6
Cold Weather Start.....	20-5

Index

Come Home Mode ..... 100-3  
Connect Hydraulic Hoses..... 70B-3  
Connect to Mid-Mount SCVs..... 70B-4  
Connect to Rear SCVs..... 70B-3  
Control Power Hop - MFWD ..... 280A-3  
Control Unit Addresses  
    Diagnostic ..... 300A-3  
Controls  
    Console  
        Cab..... 10-2  
    Foot Operated ..... 10-1  
    Front Console..... 10-1  
    Front PTO ..... 10-5  
    Heat  
        Air Conditioning..... 10-5  
    Rear Hitch..... 10-4  
    Rear PTO..... 10-4  
    Rear SCVs ..... 10-4  
    Transmission..... 10-2  
Coolant  
    Diesel engine  
        Engine with wet sleeve cylinder liners..... 200A-1  
        John deere COOL-GARD II coolant extender .....  
            200A-2  
        Mixing with concentrate, water quality ..... 200A-2  
        Testing freeze point ..... 200A-3  
        Warm temperature climates ..... 200A-2  
CoolScan ..... 200A-12  
Correct Reversed Cylinder Response..... 70B-4  
Correct Tire Selection  
    MFWD Ratio ..... 280-3  
Correction Factors for Other Tire Sizes..... 50A-8

**D**

Deere & Company Trademarks..... 00-1  
DEF  
    Disposal ..... 200A-4  
    Storing ..... 200A-4  
    Tank, refilling..... 200A-4  
    Testing ..... 200A-5  
    Use in SCR equipped engines..... 200A-3  
Diagnostic Trouble Codes ..... 300A-2  
Diagnostics Menu..... 300A-2  
Diesel engine oil  
    Interim tier 4, final tier 4, stage IIIB, stage IV, and  
        stage V ..... 200A-6  
    Service interval for operation at high altitude 200A-5  
Diesel engines, cold weather effect ..... 200A-10  
Diesel fuel ..... 200A-8  
    Supplemental additives ..... 200A-11  
Diesel fuel, testing..... 200A-9  
Differential Lock ..... 50C-1  
Disable AutoTrac Basic ..... 60-3  
Disabled Exhaust Filter Cleaning ..... 30-8  
Disengage AutoTrac Basic ..... 60-4  
Display Settings..... 41-7

Display Settings Menu ..... 41-6  
Do Not Modify Fuel System ..... 230-11  
Dome Light ..... 40-7  
Doors..... 90-1  
Downhill Operation in Slippery Conditions..... 50A-6  
Drain Diesel Exhaust Fluid (DEF) Tank..... 230-7  
Drain Water and Sediment from Fuel Filter ..... 230-11  
Drawbar Capacities..... 400-6  
Drawbar Settings ..... 70A-22  
Drawn Implement Connection..... 70A-23  
Drivetrain Maintenance ..... 250-1  
Drivetrain Operation..... 50-1  
Dual Wheel Usage ..... 280-4

**E**

Effect of cold weather on diesel engines ..... 200A-10  
Electrical Specifications..... 400-4  
Emission system  
    Certification label ..... 400B-2  
Emissions  
    Required language  
        EPA ..... 230-1  
Emissions Performance  
    Tampering ..... 2  
Empty Rear SCV Oil Collection Tank ..... 270B-1  
Enable AutoTrac Basic..... 60-3  
Engine and PTO Power..... 400-4  
Engine Block Coolant Heater ..... 20-7  
Engine Fuel System and Power Rating..... 20-2  
Engine Indicator and Gauges ..... 20-3  
Engine Menu ..... 20-1, 30-7  
Engine oil  
    Break-In  
        Interim tier 4, final tier 4, stage IIIB, stage IV, and  
            stage V ..... 200A-7  
    Diesel  
        Interim tier 4, final tier 4, stage IIIB, stage IV, and  
            stage V ..... 200A-6  
        Service interval for operation at high altitude .....  
            200A-5  
Engine oil and filter service intervals  
    Interim tier 4, final tier 4, stage IIIB, stage IV, and  
        stage V  
        0.12 L/kW or greater oil pan ..... 200A-6  
        Operation at high altitude..... 200A-5  
Engine Specifications ..... 400-4  
Engine Speeds and Operational Procedures .... 20-6  
Exchangeable 540/1000 rpm PTO Shaft ..... 50D-3  
Exhaust Filter Cleaning Overview ..... 30-8  
Exhaust Filter, Safety  
    Safety, Exhaust Filter ..... 00A-14

**F**

Fast Return-to-Sump ..... 70B-8  
Fill Diesel Exhaust Fluid (DEF) Tank..... 30-6

Fill Fuel Tank.....	30-6	Inspect Tires.....	280-1
Filters, Oil		Install Wheel Spacer .....	280-8
Oil Filters .....	200A-7	ISO Cab Connectors .....	40-12
Fluid Capacities.....	400-3	ISOBUS Connectors .....	40-12
Front End Ballast .....	280A-2	ISOBUS Shortcut Button (ISB).....	40-12
Front Hitch and Coupler Operation.....	70A-21		
Front Hitch Components.....	70A-17	<b>J</b>	
Front Hitch Lift Capacities .....	400-5	Jacking Up Machine.....	280-10
Front Implement Connection .....	70A-18	JDLINK.....	40-13
Front Loader.....	80B-1		
Front Loader Bracket Installation .....	280B-1	<b>K</b>	
Front Tow Points.....	100-4	Keep Cab Protection System Installed Properly	290-2
Front Worklights .....	40-6		
Fuel		<b>L</b>	
Biodiesel.....	200A-9	Layout Manager Menu .....	41-5
Diesel .....	200A-8	Layout Manager Settings .....	41-6
Handling and storing .....	200A-8	Level Hitch	
Lubricity.....	200A-9	Ball-End.....	70A-12
Fuel and Diesel Exhaust Fluid (DEF) Level Gauges ..	30-5	Hook-End.....	70A-15
Fuel Filters		Loader Lights.....	40-2
Filters, Fuel.....	200A-7	Lockable Fuel Fill Cap .....	80B-2
		Lubricant	
<b>G</b>		Mixing .....	200A-12
General Ballast Information .....	280A-1	Lubricant Storage	
General Controls and Instruments Maintenance	210-1	Storage, Lubricant.....	200A-12
General Storage .....	90-5	Lubricants, safety .....	200A-1
Glossary of Terms .....	00-2	Lubricate Draft Sensing Shaft Seal.....	270A-1
GPS Receiver Offset Values .....	60-19	Lubricate Exchangeable 540/1000 rpm PTO Shaft ...	250D-1
Grab Handles .....	90-1	Lubricate Front Hitch .....	270A-2
Grease		Lubricate MFWD Axle Trunnion.....	250B-1
Multipurpose Extreme Pressure (EP) .....	200A-12	Lubricate Rear Axle Bearings.....	250C-1
		Lubricate Rear Hitch .....	270A-1
<b>H</b>		Lubricity of diesel fuel.....	200A-9
Handle Halogen Light Bulbs Safely .....	240-6		
Hardware torque values		<b>M</b>	
Metric .....	400-1	Machine Dimensions .....	400-3
Unified inch.....	400-2	Machine Overview .....	00-5
Headlight Adjustment.....	240-8	Machine stop warning, required .....	20-1
Headlights .....	40-2	Machine Storage.....	100-5
Heat, Defrost, and Air Conditioning .....	90-4	Machine Weight.....	400-3
Hitch Conversion - Category II to I .....	70A-10	Maintain Daily Before Start-Up.....	200-1
Hitch Drop Rate.....	70A-8	Maintenance Counters and Intervals.....	41-8
Hitch Load Depth Control.....	70A-7	Maintenance Menu .....	41-8
Hitch Raise Rate.....	70A-8	Maintenance Record	
Hitch Upper Limit .....	70A-8	Daily or Every 10 Hours .....	500-1
Horn .....	40-7	Every 500 Hours.....	500-5
Hydraulic Specifications.....	400-5	Every 1000 Hours or Annually .....	500-6
		Every 1500 Hours .....	500-7
<b>I</b>		Every 3000 Hours or 3 Years .....	500-7
Implement Connector .....	40-10	Every 4500 Hours or 5 Years .....	500-8
Implement Float.....	70A-8	Every 6000 Hours or 6 Years .....	500-8
Implements Requiring Large Volumes of Oil ...	70B-4	First 100 Hours .....	500-3
Indicators overview .....	30-1	Weekly or Every 50 Hours .....	500-2
Information Display Navigation Controls.....	41-2	Match Machine Power to Implement.....	50D-1, 70A-1

Index

Measure Wheel Slip ..... 280A-4  
Mechanical Front-Wheel Drive (MFWD On/Auto/Brake Assist) ..... 50B-1  
Metric bolt and screw torque values ..... 400-1  
MFWD Ratio  
    Tire Selection ..... 280-3  
Mid-Mount SCV Controls and Components ..... 70B-2  
Mid-Mount SCV Joystick Controls ..... 10-3  
Mirrors ..... 90-2  
Mixing lubricants ..... 200A-12  
Monitor Mounts ..... 90-6  
Motor Return ..... 70B-8  
Multipurpose Extreme Pressure (EP) grease 200A-12

**O**

Off Level Operation ..... 50-1  
Oil  
    Brake ..... 200A-13  
    Engine  
        Interim tier 4, final tier 4, stage IIIB, stage IV, and stage V ..... 200A-6  
    Gear case ..... 200A-13  
    Hydraulic ..... 200A-13  
    Steering ..... 200A-13  
    Transmission ..... 200A-13  
Oilscan ..... 200A-12  
Open Center Hydraulics ..... 70-1  
Operate Electrohydraulic Draft Control ..... 70A-4  
Operate Electrohydraulic Height Limit Control . 70A-5  
Operate Electrohydraulic Hitch Fender Switch . 70A-6  
Operate Electrohydraulic Position Control ..... 70A-3  
Operate Electrohydraulic Rate-of-Drop Control 70A-5  
Operate Front PTO ..... 50D-7  
Operate Guidance Systems Safely ..... 60-2  
Operate Hydraulic Motor With Rear SCV ..... 70B-5  
Operate Key Switch ..... 20-4  
Operate Loader with Rear SCV ..... 70B-7  
Operate Manual Lower for Electrohydraulic Hitch ..... 70A-9  
Operate Power Beyond With Rear SCV ..... 70B-6  
Operate Rear PTO ..... 50D-5  
Operate Rear Remote PTO ..... 50D-5  
Operator Presence ..... 40-13

**P**

Paint and Finish Care ..... 200B-2  
Parked Exhaust Filter Cleaning ..... 30-8  
Permissible Load ..... 400-6  
Position Center Link ..... 70A-10  
Power Beyond ..... 70B-7  
Power Outlet ..... 40-11  
Prepare Implement ..... 70A-9  
Primary Display ..... 41-1  
Product View ..... 00-1  
PTO Alarm ..... 50D-8

PTO Automatic Disengage ..... 50D-7  
PTO Drive Shaft Shield ..... 50D-2  
PTO Engine Speeds ..... 400-5  
PTO Guard ..... 50D-1  
PTO Shield ..... 50D-1

**Q**

Qualified emergency use  
    SCR derate override option ..... 30-4  
Quick Coupler ..... 70A-17

**R**

Radio ..... 40-9  
Radio Antenna ..... 40-10  
Reactivate AutoTrac Basic on Next Pass ..... 60-5  
Rear Hitch Components ..... 70A-2  
Rear Hitch Lift Capacities ..... 400-5  
Rear Hitch Menu ..... 70A-6  
Rear SCV Controls and Components ..... 70B-1  
Rear SCV Oil Collection ..... 70B-9  
Rear Tow Points ..... 100-5  
Rear Wheel Ballast ..... 280A-3  
Rear Wheel Tread Width Limitations ..... 280-5  
Rear Window Cable Routing ..... 90-6  
Rear Wiper and Washer ..... 40-9  
Recommended Dealer Performed Service ..... 230-1  
Record Cab Serial Number ..... 400A-2  
Record Engine Serial Number ..... 400A-2  
Record Front Axle Serial Number ..... 400A-1  
Record Product Identification Number ..... 400A-1  
Record Transmission Serial Number ..... 400A-2  
Reduce Fuel Consumption ..... 30-7  
Refueling, avoid static electricity risk ..... 00A-4  
Registered Trademarks ..... 00-2  
Remove Liquid Ballast from Tires ..... 280A-4  
Remove Machine from Storage ..... 100-6  
Replace Bucket Light ..... 240-9  
Replace Dome Light Bulb ..... 240-11  
Replace Fuses ..... 240-2  
Replace Halogen Headlight Bulb ..... 240-7  
Replace Halogen Worklight Bulb ..... 240-10  
Replace LED Beacon Light ..... 240-11  
Replace LED Headlight ..... 240-7  
Replace LED Worklight ..... 240-11  
Replace Right-Hand Console Light Bulb ..... 240-12  
Replace Tail/Turn/Brake Light Bulb ..... 240-9  
Replace Warning Light Bulb ..... 240-10  
Required machine stop warning ..... 20-1  
Restart Engine That Has Run Out of Fuel ..... 20-7  
Right-Hand Console Light ..... 40-7  
Road Transportation ..... 100-2  
Run Engine ..... 20-5  
Run Pages ..... 41-4

<b>S</b>	
Safety	
Protect against noise.....	00A-2
Rotating drivelines, stay clear.....	00A-5
Safe maintenance, practice.....	00A-14
Tires, service safely.....	00A-17
Towed equipment, transport at safe speeds	00A-9
Tractor, operating safely.....	00A-6
Use caution on slopes, uneven terrain, and rough ground.....	00A-10
Safety, Avoid High-Pressure Fluids	
Avoid High-Pressure Fluids.....	00A-18
Safety, Fire Prevention	
Fire Prevention.....	00A-3
Safety, Forestry Operations	
Limited Use in Forestry Operation.....	00A-7
Safety, Handle Fuel Safely, Avoid Fires	
Avoid Fires, Handle Fuel Safely.....	00A-2
Safety, lubricants.....	200A-1
Safety, ROPS	
ROPS, Keep Installed Properly.....	00A-4
Safety, Steps and Handholds	
Use Steps and Handholds Correctly.....	00A-5
Safety, Tightening Wheel Retaining Bolts/Nuts	
Tightening Wheel Retaining Bolts/Nuts.....	00A-17
Satellite Module and Antenna.....	40-10
SCR	
System overview.....	30-3
Select Ballast Carefully.....	280A-1
Select Correct PTO Speed.....	50D-4
Select Front Tire Rolling Direction.....	280-4
Select PTO Drawbar Position.....	50D-2
Service ADVISOR Connector.....	40-13
Service Air Cleaner Elements.....	230-8
Service as Required.....	200B-1
Service Brakes.....	60-1
Service Filter Cleaning.....	30-8
Service Interval Chart.....	200-1
Set Fender Position.....	280B-2
Set Pivoting Fender Bracket.....	280B-2
Set SCV Detents.....	70B-5
Set Steering Stops.....	280-11
Set Tread—Multi-Position MFWD Wheels.....	280-5
Set Tread—Multi-Position Rear Wheels.....	280-7
Set Tread—Two-Position MFWD Wheels.....	280-5
Signal words, understand.....	00A-1
Single-Acting Cylinders.....	70B-4
Sound Level.....	400-7
Speakers.....	40-10
Specifications	
Sound Level.....	400-7
StarFire Correction Mode.....	60-13
StarFire GPS Status.....	60-17
Starfire Receiver Mount.....	290-3
StarFire USB Drive.....	60-16
Start Engine.....	20-4
Steering Wheel.....	90-4
Stop Engine.....	20-7
STOP, Service, Information Alert Indicators, and Alarms.....	300A-1
Storing fuel.....	200A-8
<b>T</b>	
Tail and Brake Lights.....	40-3
Testing diesel fuel.....	200A-9
Tighten Wheel Bolts Correctly.....	280-8
Tighten Wheel Bolts—MFWD Axle.....	280-9
Tighten Wheel Bolts—Rear Axle.....	280-9
Tire Inflation Pressure Guidelines.....	280-2
Tire Pressures.....	280-1
Tire Sidewall Information.....	280-2
Tires, service safely.....	00A-17
Tool Box.....	80B-1
Torque charts	
Metric.....	400-1
Unified inch.....	400-2
Tow Machine.....	100-3
Towed equipment, transport at safe speeds ...	00A-9
Towing Loads.....	100-2
Tractor, operating safely.....	00A-6
Transmission Indicators.....	50A-2
Transmission Menu.....	50A-1
Transmission Settings.....	50A-1
Troubleshooting	
Brakes.....	300-10
Electrical.....	300-8
Engine.....	300-1
Heat and Air Conditioning.....	300-5
Hitch.....	300-11
Hydraulics.....	300-10
Selective Control Valves.....	300-12
Transmission.....	300-9
Turn Signals.....	40-4
<b>U</b>	
Unified inch bolt and screw torque values.....	400-2
Use Correct Tire Combinations.....	280-3
<b>W</b>	
Warm Transmission/Hydraulic Oil.....	70-1
Warning Lights.....	40-4
Warranty	
Non-road emissions control warranty statement-- compression ignition	
CARB.....	400B-3
EPA.....	400B-11
Wash Machine.....	200B-2
Weight Distribution.....	400-6
Wheels and Tires Information.....	80-1
Window Shades.....	90-2
Windows.....	90-1

*Index*

---

Work Monitor Menu ..... 41-7  
Work Monitor Operation ..... 41-8

# John Deere Service

## 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:



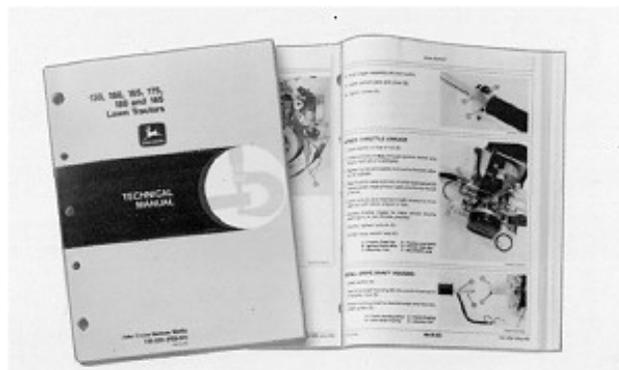
TS189—UN—17JAN89

**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.



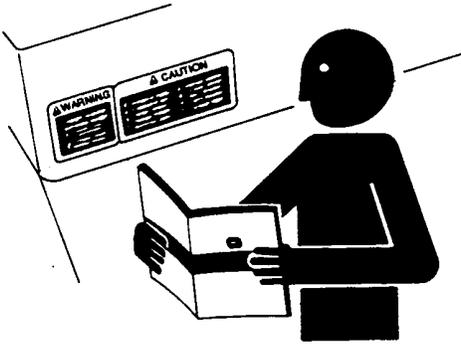
TS1663—UN—10OCT97

**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 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