

John Deere RTK Radio 900 (China)



OPERATOR'S MANUAL John Deere RTK 900 MHz (China) OMPFP15415 ISSUE I5 (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:

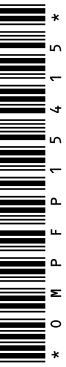
WARNING

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.

Additional Proposition 65 Warnings can be found in this manual.

John Deere Ag Management Solutions
PRINTED IN U.S.A.



Introduction

Foreword

THANK YOU for purchasing a John Deere product.

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

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your product and should remain with the product 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 the machine or implement will travel when going forward.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Operator's Manual. Accurately record all the numbers to help in tracing the product should it be stolen.

Serial Number:

Your dealer also needs these numbers when you order parts. File a backup of the identification numbers in a safe location off the machine or away from the product.

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.

If you are not the original owner of this product, 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.

JS56696,0000C4C -19-26JUN15-1/1

John Deere Technical Information Bookstore

NOTE: Product functionality may not be fully represented in this document due to product changes occurring after the time of printing. Read the latest Operator's Manual prior to operation. To obtain a copy, see your dealer or visit www.deere.com and use the 'Search for Agricultural Equipment Operator's Manuals' link to locate the John Deere Technical Information Bookstore.

CZ76372,000071F -19-20APR15-1/1

Contents

	Page		Page
Safety		Specifications	
Recognize Safety Information	05-1	Toxic or Hazardous Substances or	
Understand Signal Words.....	05-1	Elements Disclosure	40-1
Follow Safety Instructions.....	05-1		
Practice Safe Maintenance.....	05-2		
Use Steps and Handholds Correctly	05-2		
Handle Electronic Components and			
Brackets Safely	05-3		
Use Electronic Display Properly	05-3		
Prevent Electrical Shock and Fires.....	05-4		
Avoid Exposure to High Radio			
Frequency Fields.....	05-4		
Avoid Electrical Power Lines	05-4		
Avoid Buried Utility Lines	05-4		
Safety Labels			
Text Label	10-1		
Text-Free Labels.....	10-2		
Regulatory Notifications to User			
Public Satellite Based Augmentation			
Systems (PSBAS)	15-1		
Country Use Restrictions.....	15-1		
Overview			
Theory of Operation.....	20-1		
Components	20-1		
Configuring RTK Network			
Configure Real Time Kinematic (RTK)	25-1		
Set Absolute Base Location	25-2		
Configuring Shared Base Station Security			
Theory of Operation.....	30-1		
Set Up Shared Base Station Security.....	30-1		
Machine Shared Base Station (SBS)			
Security Status	30-3		
Troubleshooting and Diagnostics			
Shading and Multipathing	35-1		
Verify RTK Radio Network.....	35-1		
Base Station Quality Indicator (BSQI)	35-2		
SF2 Fallback.....	35-2		
Readings Tab.....	35-3		
Radio Self Test	35-4		
Diagnostic LEDs	35-5		
Frequently Asked Questions	35-6		

Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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A John Deere ILLUSTRATION™ Manual

Safety

Recognize Safety Information

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 -19-29SEP98-1/1

T81389 —UN—28JUN13

Understand Signal Words

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

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

 **DANGER**

 **WARNING**

 **CAUTION**

DX,SIGNAL -19-03MAR93-1/1

TS187 —19—30SEP88

Follow Safety Instructions

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 -19-16JUN09-1/1

TS201 —UN—15APR13

Practice Safe Maintenance

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

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

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

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

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.



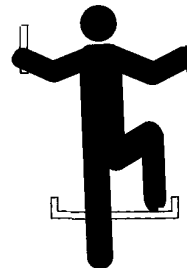
TS218 —UN—23AUG88

DX,SERV -19-17FEB99-1/1

Use Steps and Handholds Correctly

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.



T133468 —UN—15APR13

DX,WWW,MOUNT -19-12OCT11-1/1

Handle Electronic Components and Brackets Safely

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.



TSS249 —UN—23AUG88

DX,WW,RECEIVER -19-24AUG10-1/1

Use Electronic Display Properly

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

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

To prevent injury while operating the machine:

- Position the display according to the installation instructions. Ensure the device is secured and does not obstruct the driver's view or interfere with the machine operating controls.
- Do not become distracted by the display. Stay alert. Pay attention to the machine and surrounding environment.

- Do not change settings or access any functions that require prolonged use of the display controls while machine is moving. Stop the machine in a safe location and place in park position before attempting such operations.
- Never set the volume so high that you cannot hear outside traffic and emergency vehicles.

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

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

RR94114,0001FFA -19-18DEC14-1/1

Prevent Electrical Shock and Fires

Battery-powered equipment or other electric power sources produce an electrical shock, sparks, or arcs if a short circuit occurs. Electrical short circuits can reach temperatures high enough to burn people, or ignite or melt common materials.

To prevent injury from electrical shock, burns, or potential fire hazards, always disconnect battery power or other electric power source on equipment before installing or servicing:

- Remove ground (negative terminal [-]) battery clamp.
- Detach and remove battery.
- Switch off main battery or other electric power source.
- Unplug electric power source from equipment.

Understand and follow all local codes and regulations when installing electrical equipment.



PC12631—UN—04JUN10

HC94949,0000487 -19-27JAN14-1/1

Avoid Exposure to High Radio Frequency Fields

Prevent injury from exposure to high radio frequency fields at the antenna. Do not touch antenna while the system is transmitting. Always disconnect power to the antenna before installing or servicing.

The antenna should always be separated from the operator or nearby persons by a minimum distance of 20 cm (8 in.).



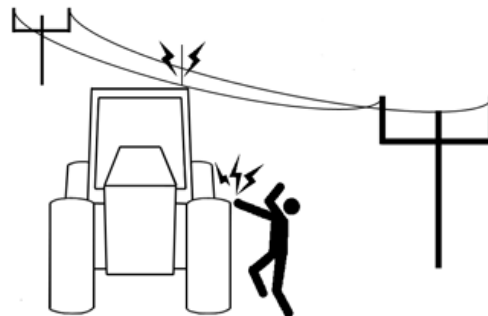
PC12632—UN—04JUN10

JS56696,0000C0E -19-11DEC12-1/1

Avoid Electrical Power Lines

Machine antenna may be high enough to come in contact with low-hanging electrical cables. Avoid severe electrical shock injury:

- Keep away from all low-hanging electrical cables while operating or transporting machine.



PC13658—UN—08NOV11

HC94949,0000488 -19-24JAN14-1/1

Avoid Buried Utility Lines

Digging through gas, electric, or water lines can cause serious injury or death to you or others. Contact local utility companies to determine and mark off location of gas, electric, or water lines before digging.



PC18243—UN—17DEC13

HC94949,0000462 -19-17DEC13-1/1

Safety Labels

Text Label

A—Label, Warning



A

HC94949,0000477 -19-24JAN14-1/1

PC18291—UN—06/JAN14

PC18408—19—24/JAN14

Text-Free Labels

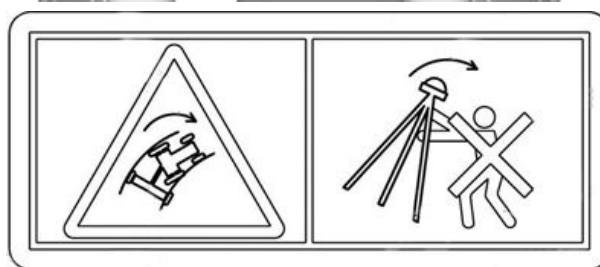
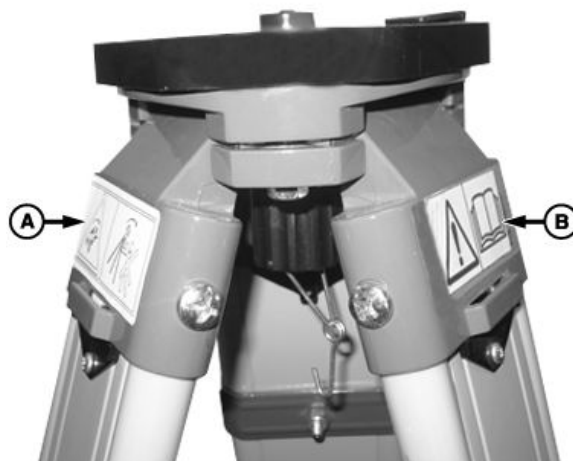
Label A—Warning

Movement of StarFire™ Receiver while connected to power source could cause unexpected machine movement resulting in serious injury or death.

Label B—Warning

This Operator's Manual contains important information necessary for safe machine operation. Carefully observe all safety rules to avoid accidents.

A—Label, Receiver Movement B—Label, Operator's Manual



A



B

PC18296 —UN—07JAN14

PC18259 —UN—07JAN14

PC18317 —UN—17JAN14

HC94949,0000478 -19-10JAN14-1/1

Regulatory Notifications to User

Public Satellite Based Augmentation Systems (PSBAS)

Public Satellite Based Augmentation Systems (PSBAS) is a general term given to satellite signals available for use by the public. The type of PSBAS available depends upon the user's geographical location in the world. For example, the PSBAS in North America is WAAS.

Region	PSBAS Name
North America	WAAS
Europe	EGNOS
Japan	MSAS
China	BDS

AE77568,000004F -19-05MAY15-1/1

Country Use Restrictions

IMPORTANT: Contact your local radio authorities for country-specific regulations and licensing.

John Deere RTK 900 MHz radio is designed to operate on a specific range of frequencies. It is the operator's

responsibility to ensure radio operates to all local regulations and licensing. Operating on some frequencies may require a specific license or permit.

John Deere RTK 900 MHz radio is designed to operate in China on free license frequency band of 920.5—924.5 MHz.

AE77568,0000059 -19-07MAY15-1/1

Overview

Theory of Operation

John Deere RTK 900 MHz system delivers 2.5 cm (1 in.) repeatable accuracy. This system consists of a local base station placed in a field or mounted on a structure that transmits high accuracy corrections to a machine StarFire™ Receiver using real time kinematic (RTK) radios. The system requires machine and base station receivers to see a minimum of the same seven satellites.

(Reference StarFire™ Receiver Operator's Manual for more information.)

RTK radio on machine must have direct line of sight with base station to receive RTK correction signals.

StarFire is a trademark of Deere & Company

Operating distance from base station affects RTK system performance. When operating beyond 20 km (12 mi.), degraded accuracy occurs and it may take longer to acquire RTK signal.

John Deere RTK 900 MHz systems are not compatible with systems that operate outside of 900 MHz frequency range. The 900 MHz frequency is usable by various applications. To avoid interference, watch for other 900 MHz radio applications in your area. John Deere RTK signals are encrypted and can only be decoded by a StarFire™ Receiver.

AE77568,0000050 -19-05MAY15-1/1

Components

⚠ CAUTION: To prevent injury and allow uninterrupted operation of base station, installation must meet all applicable electrical standards and regulations. Components mounted far away from ground must be grounded and have lightning protection. Use a licensed electrician to ensure system installation is correct and compliant.

IMPORTANT: Install antenna and tighten antenna by hand before powering radio on. Do not overtighten antenna. Powering radio without an antenna may cause permanent damage.

NOTE: StarFire™ Receiver must be SF2 ready and have a real time kinematic (RTK) activation.

John Deere RTK 900 MHz system includes the following hardware components:

*StarFire is a trademark of Deere & Company
GreenStar is a trademark of Deere & Company*

Base Station

- GreenStar™ Display is used to set up radio and can be removed.
- StarFire™ Receiver uses global positioning system (GPS) and correction satellites to calculate accurate base station position.
- John Deere RTK 900 MHz radio transmits correction signals to machine for accurate positioning.
- Radio antenna transmits signal for radio.
- Power source converts alternating current (AC) power to 12 V direct current (DC) power.

Machine

- GreenStar™ Display is used to set up radio.
- StarFire™ Receiver uses GPS and correction satellites to calculate accurate machine position.
- John Deere RTK 900 MHz radio receives correction signals from base station. Machine radio does not transmit signal.
- Radio antenna receives signal for radio.

(Refer to component Installation Instructions, Operator's Manual, and (or) contact your John Deere dealer for more information on a specific component.)

AE77568,0000051 -19-28APR15-1/1

Configuring RTK Network

Configure Real Time Kinematic (RTK)

IMPORTANT: Anytime radio is configured or changed, cycle power at global positioning system (GPS) receiver before continuing.

1. Select Menu button > StarFire™ Receiver button > RTK softkey > Configure button.
2. Select Operating Mode from drop-down menu (A).
 - **Vehicle**—Use this mode for machine to receive signal corrections from base station.
 - **Quick Survey Base**—Use this mode to test functionality without performing 24-hr. survey. Guidance lines are not repeatable and require shifting.
 - **Absolute Base**—Receiver must be mounted to a fixed position, like a building or post mounted in concrete. Absolute Base mode requires 24-hr. survey conducted on location before first use. After survey is completed, base station starts transmitting corrections. Since an absolute base station does not experience GPS drift, guidance lines are repeatable and do not require shifting.
 - **OFF**—Use this mode to disable all RTK functionality in receiver. RTK Operating Mode must be OFF for normal SF1 or SF2 operation.

NOTE: Base station and machine must be set up with same Radio Channel (B) and Network ID (C). Network ID must be set between 4001—4090 to set up Shared Base Station (SBS) RTK Security.

3. Enter Radio Channel and Network ID.
4. Select Accept button (D).

A—Operating Mode Drop-down Menu.
 B—Radio Channel Entry Box
 C—Network ID Entry Box
 D—Accept Button

PC8663 —UN—29APR15



Menu Button

PC13006 —UN—05NOV14



StarFire™ Receiver Button

PC18498 —UN—05NOV14



RTK Softkey

PC18499 —UN—05NOV14



Configure Button

Configure RTK Network

Operating Mode

Vehicle A

Radio Channel
(1-13)

1 B

Network ID
(1 - 4000)

4080 C

///

➡ D

Configure RTK Network

AE77568,0000052 -19-05MAY15-1/1

PC21107 —UN—24APR15

Set Absolute Base Location

Once Absolute Base is configured, conduct a 24-hr. survey or manually enter base location information from previous survey. Select Edit stored RTK Base Start button (A).

A—Start Button

RTK Network Configuration		Base Station Data	
Configure		Status No Navigation	
Operating Mode Absolute Base		Sat. Corrections 0	
Radio Channel (1-13) 8		Location Number No Stored Base	
Network ID (1 - 4000) 1500		Distance (ft) 0.00	
		Direction (°) 0	
		Base Battery (V) 13.8	
Radio Data Noise Level 0		Edit stored RTK Base Start A	
↺			

PC21109 —UN—05MAY15

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AE77568,0000053 -19-30APR15-1/3

Edit RTK Base Location—24-hr. Survey

Select Survey RTK Base Location Start button (A). Read and follow steps in popup. Once survey is started, a 24-hr. countdown displays on RTK Configuration page. During the 24-hr. countdown, base station is non-functional and cannot be used. Do not switch power off. Once survey is complete, record and store base location survey results at a separate location for future reference.

Survey RTK Base Location

1. Select storage location (B).
2. Position StarFire™ Receiver.
3. Select Start 24 hr survey button (C).
4. Wait 24 hr. (display can be disconnected).
5. Base station location automatically saves at end of 24-hr. survey.

A—RTK Base Location Start Button
B—Storage Location Drop-down Menu
C—Start 24 hr. Survey Button

Edit RTK Base Location

Survey RTK Base Location

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AE77568,0000053 -19-30APR15-2/3

PC18508 —UN—26FEB14

PC18509 —UN—26FEB14

Edit RTK Base Location—Manual Entry

Ensure receiver is mounted in exact same position as previous survey. Enter previously recorded 24-hr. survey results.

1. Select Base Location from drop-down menu (A).
2. Enter Base Latitude (B).
3. Enter Base Longitude (C).
4. Enter Base Altitude (D).
5. Select Accept (E).

A—Base Location Drop-down Menu
B—Base Latitude
C—Base Longitude
D—Base Altitude
E—Accept Button

Edit RTK Base Location

AE77568,0000053 -19-30APR15-3/3

PC18507 —UN—26FEB14

Configuring Shared Base Station Security

Theory of Operation

Shared Base Station (SBS) Security adds restrictions so unwanted users cannot access real time kinematic (RTK) network. This security feature only allows authorized receivers to access RTK corrections from base station. Receiver serial numbers can be added and removed at any time with a GreenStar™ 3 Display.

*GreenStar is a trademark of Deere & Company
StarFire is a trademark of Deere & Company*

Compatibility

Update StarFire™ Receiver software to latest version for best performance and compatibility.

AE77568,0000054 -19-05MAY15-1/1

Set Up Shared Base Station Security

PC20169 —UN—05NOV14

Select Shared Base Station (SBS) Security softkey.

Only machine receiver serial numbers on Rover Access List (RAL) (A) can access real time kinematic (RTK) corrections from base station when Network Status (B) is in Secure mode (C). Record and store RAL at a separate location for future reference. RAL holds up to 300 serial numbers. Select page buttons (D and E) to navigate through RAL.

Select Network Status toggle (F) to switch between Secure and Public (G) modes.

- Public – This mode does not restrict machines from receiving RTK corrections as long as they have the same Network ID and Frequency as base station.
- Secure – This mode only allows a machine to receive RTK corrections if the serial number is entered in RAL.

A—Rover Access List
B—Network Status
C—Secure
D—Previous Page

E—Next Page
F—Network Status Toggle
G—Public

SBS Security Softkey

RAL Setup

Access List
Delete Rover
Delete List

Network Status

Secure (C) / Public (G)

Rover Access List (A)

1:	21:	41:
2:	22:	42:
3:	23:	43:
4:	24:	44:
5:	25:	45:
6:	26:	46:
7:	27:	47:
8:	28:	48:
9:	29:	49:
10:	30:	50:
11:	31:	51:
12:	32:	52:
13:	33:	53:
14:	34:	54:
15:	35:	55:
16:	36:	56:
17:	37:	57:
18:	38:	58:
19:	39:	59:
20:	40:	60:

1/5

Previous Page (D) / Next Page (E)

PC20170 —UN—05NOV14

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RW00482,000040D -19-03MAR15-1/5

Rover Access List

PC20180 —UN—04NOV14

1. Select Access List button.
2. Enter rover number (A).
3. Select Accept (B).

A—Rover Number Entry Box B—Accept Button

Edit Rover Access List — Page 1

RW00482,000040D -19-03MAR15-2/5

PC20178 —UN—04NOV14

NOTE: To view receiver six-digit serial number, select Menu > StarFire™ softkey > Activations tab.

4. Enter machine receiver serial number (A).
 5. Select Accept (B) to place machine receiver on RAL.
- If serial number already exists in RAL, Serial Number Already Exists popup is displayed.

A—Serial Number Entry Box B—Accept Button

Edit Rover Access List — Page 2

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RW00482,000040D -19-03MAR15-3/5

PC20179 —UN—29JAN15

Delete Rover

PC20181 —UN—04NOV14

1. Select Delete Rover button.
2. Enter rover number (A) to be deleted from RAL.
3. Select Delete button (B).

NOTE: Once a machine receiver serial number has been deleted from RAL, it takes approximately 18 min. before machine stops operating off that base station. During this time, machine transitions into RTK extend.

NOTE: Verify rover has been deleted by viewing RAL.

A—Rover Number Entry Box B—Delete button

Delete Rover

Enter rover number
to be deleted from the list

Rover # (1-300) A

//
Delete B

Delete Rover

RW00482,000040D -19-03MAR15-4/5

PC20184 —UN—04NOV14

Delete All Entries

PC20182 —UN—04NOV14

1. Select Delete List button.
2. Select Yes (A) to delete all receivers from RAL. Select No (B) to return to SBS Security page without deleting all receivers from RAL.

A—Yes B—No

Delete List

Delete Rover Access List

Are you sure you want to
delete the entire Rover Access List?

No B
Yes A

Delete Rover Access List

RW00482,000040D -19-03MAR15-5/5

PC20185 —UN—04NOV14

Machine Shared Base Station (SBS) Security Status

Machines on a secured network have one of the following real time kinematic (RTK) authorization states:

Unknown – Machine StarFire™ Receiver powers up in an unknown RTK authorization state. It exists in this state until communication with base station is established.

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Authorized – RTK page displays satellite corrections greater than 0 when authorized.

Not Authorized – Machine receiver serial number is not on RAL. If an unauthorized machine receiver tries to access a secured network, an alarm triggers on display.

RW00482,000040E -19-10NOV14-1/1

Troubleshooting and Diagnostics

Shading and Multipathing

Shading and multipathing are responsible for most problems with the base station.

Shading occurs when objects are more than 5 degrees above the horizon and block the receiver's direct line of sight of a satellite. If an object can cast a natural shadow over the receiver, it can also cause shading.

Multipathing occurs when satellite signals are reflected off of objects and cause signal travel time to increase. Reflected signals take longer to reach base station receiver than direct signals and cause inaccurate satellite range measurements. Reflections can even interfere with the direct signal enough that the receiver temporarily

loses the satellite. Metal buildings, chain-link fences, and bodies of water are all good reflectors that can make a base station less reliable.

If a base station experiences either of these problems, it could be detrimental to your entire real time kinematic (RTK) system and operation. Ensure base station receiver:

- Is mounted to a rigid structure that does not move or sway.
- Has a good view of the sky, more than 5 degrees above the horizon.
- Has few to no reflective objects close to it.

(For more information, refer to base station Technical Manual, User Guide, or contact your John Deere dealer.)

RW00482,0000437 -19-02DEC14-1/1

Verify RTK Radio Network

Select Menu button > StarFire™ Receiver button > RTK softkey.

Verify RTK Network Configuration (A)

All real time kinematic (RTK) radios in network must match base station Radio Channel (B) and Network ID (C). If a machine in network does not match base station configuration, configure them to match.

Verify Base Station Data (D)

Ensure Base Station Data shows Status (E) as OK, Satellite Corrections (F) more than seven, and Distance (G) to base station location is less than 20 km (12 mi.).

Verify Radio Data (H)

Select Radio Data Refresh button (I) and observe % Received (J) for at least 15 minutes. The % Received increases 10% every 4 sec. until value is stable. If % Received is constantly between 80% and 100%, the position is good. If % Received is below 80%:

- Check for other 900 MHz radio applications in area, and change RTK Network Configuration (Network ID and Radio Channel) on all network RTK radios to avoid interference.
- If available, select different base station as signal. Vehicle RTK Network Configuration must match RTK Network Configuration of signal source.

RTK Network Configuration		Base Station Data	
Configure		Status	No Signal
Operating Mode	Vehicle	Sat. Corrections	0
Radio Channel (1-13)	1	Location Number	No Signal
Network ID (1 - 4000)	4080	Distance (mi)	0.00
		Direction (°)	0
		Base Battery (V)	0.0
		Radio Data	
		% Received	0
		Noise Level	25

- A—RTK Network Configuration
- B—Radio Channel
- C—Network ID
- D—Base Station Data
- E—Status
- F—Satellite Corrections
- G—Distance
- H—Radio Data
- I—Radio Data Refresh Button
- J—% Received

- Select different base station location. Do not exceed a maximum distance of 20 km (12 mi.) between radios (base station to machine).

AE77568,0000055 -19-05MAY15-1/1

PC21108—UN—30APR15

Base Station Quality Indicator (BSQI)

BSQI indicates the average drift in centimeters of the base station position over the previous 24 hours. BSQI requires 25 hr. of continuous power to ensure base station has good positioning, 1 hr. for pull-in plus 24 hr. base station operation. Diagnostic address values do not correlate with field accuracy. Values indicate if the base station receiver

is experiencing shading, multipathing, or movement. If a value exceeds a threshold limit, a diagnostic trouble code (DTC) is displayed.

To access diagnostic address select Menu button > Message Center button > Addresses softkey > device drop-down > ITC.001 Implement.

Diagnostic Address	Description	Good Positioning Value	Bad Positioning Value
140	24-hr. survey position standard deviation, east (in. or cm)	<5	>5
141	24-hr. survey position standard deviation, north (in. or cm)	<5	>5
142	24-hr. survey position standard deviation, up (in. or cm)	<10	>10

AE77568,00000C0 -19-02JUN15-1/1

SF2 Fallback

IMPORTANT: Do not enable SF2 fallback in situations where RTK accuracy is critical. Accuracy while operating in SF2 mode is not equal to performance of RTK.

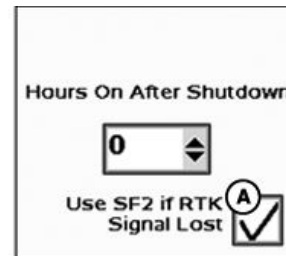
Select Menu button > StarFire™ button > StarFire™ softkey > Setup tab.

SF2 fallback defaults to off. Enable SF2 fallback by selecting checkbox (A).

Enabling SF2 fallback allows real time kinematic (RTK) users to transition directly to SF2 after RTK signal corrections are lost and RTK Extend™ (RTK-X) times out. StarFire™ signal must be present when RTK-X times out.

SF2 fallback can be used for up to 14 days after RTK corrections are lost. The receiver then defaults to PSBAS if available. After 14 days, a connection to RTK is required to continue use of this feature. When returning to RTK corrections, a guidance line jump may be experienced.

StarFire is a trademark of Deere & Company
RTK Extend is a trademark of Deere & Company



A—Use SF2 if RTK Signal Lost Checkbox

In order to have SF2 fallback available at machine, base station receiver must complete acquisition of StarFire™ signal (average 45 min.). When RTK corrections are lost at machine, RTK-X lasts for 15 min. before SF2 fallback is utilized.

PC19999 — UN—04SEP14

AE77568,00000C1 -19-02JUN15-1/1

PC18516 —UN—26FEB14

Readings Tab

To view real time kinematic (RTK) readings:

1. Select Diagnostics softkey.
2. Select Reading tab (A).
3. Select information from drop-down menu (B).

Hardware and Software

- Software Part Number
- Software Version Number
- Hardware Part Number
- Hardware Serial Number

System Voltages

- Unswitched Voltage
- Switched Voltage
- CAN High Voltage
- CAN Low Voltage

Receiver Status

- Receiver Hours
- Receiver Address
- QuickStart Status
- External Antenna
- Serial NMEA

The following readings only appear when receiver has a real time kinematic (RTK) activation.

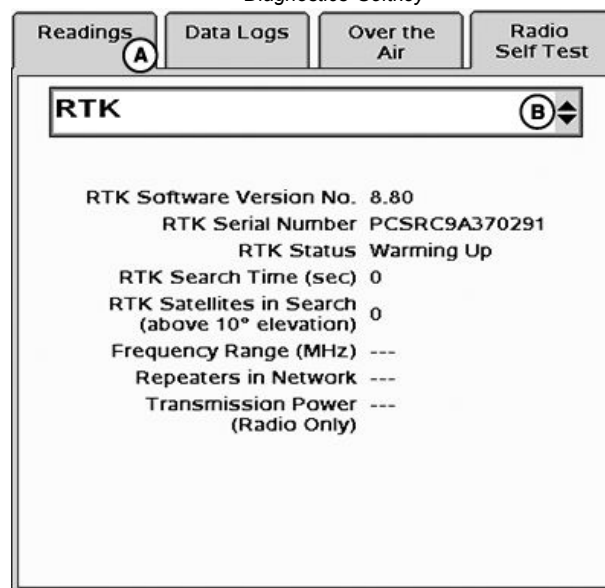
RTK

- RTK Software Version Number
- RTK Serial Number
- Frequency Range (MHz)
- Transmission Power (Radio Only)

StarFire is a trademark of Deere & Company



Diagnostics Softkey



A—Readings Tab

B—Readings Drop-down Menu

SF2 Fallback

- SF2 Fallback Status
- SF2 Fallback Days Remaining
- StarFire™ Offset Status
- StarFire™ Signal
- Last SF2 Fallback Failure Mode
- Time of Last Failure

PC21106 —UN—24JUL15

AE77568,0000057 -19-27APR15-1/1

Radio Self Test

IMPORTANT: Radio Self Test must be performed while machine is NOT moving.

StarFire™ 3000 Receiver MUST be in RTK mode to perform radio self test.

Select Menu button > StarFire™ Receiver button > Diagnostics softkey > Radio Self Test tab (A) > Start button (B).

(C) Number of updates—Number of times radio receives information during self test.

(D) Radio distance (m)—Distance from base station radio to machine radio measured in meters. Reading is invalid for base station radios.

(E) Number of disconnects—Number of times the connection between base station and machine radio has broken from the time machine radio is powered on until radio is put into Setup (Configure) mode. Two or more disconnects may indicate weak connection, presence of severe interference problems, or loss of power to radio. Reading is invalid for base station radios.

(F) Radio temperature (°C)—Internal temperature of the radio, measured in degrees Celsius. Acceptable range of values: -40°—75°C (-40°—167°F). If beyond acceptable range, performance may be impacted.

(G) Antenna reflected power—A value of the transmitted power reflected back into the radio. This can indicate a loose connection or a mismatched antenna or cable. Values less than 30 indicate a good connection. If greater than 30, check antenna, coaxial cable, and all connections. Consider replacing antenna.

(H) Average noise level—Cumulative effect from other transmitters operating in same frequency band. Average power of background noise and interference at radio. Values should be below 70. Values above 70 indicate a high level of interference. Check local environment for possible sources of interference near the radio or business / school / government entity.

(I) Average signal level—Average received base station signal level. This value should be at least 25 greater than average noise level. If margin is below 25, check the base station. Value is dependent on radio frequency connection quality, power output, and receiver sensitivity. Reading is invalid for base station radios.

(J) Overall receive rate (%)—Percentage of data that was successfully transmitted from base station to machine radio on the first attempt. Values higher than 75% indicate a good radio connection. Reading is invalid for base station radios.

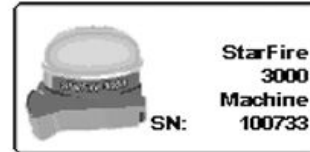
StarFire is a trademark of Deere & Company

PC8663 —UN—29APR15



Menu Button

PC13006 —UN—05NOV14



StarFire™ Receiver Button

PC18516 —UN—26FEB14



Diagnostics Softkey

Readings	Data Logs	Over the Air	Radio Self Test
(K)	(L)	(M)	(A)
Radio Self Test (B) Start			
(C)	Number of updates 2		
(D)	Radio distance(m) 832		
(E)	Number of disconnects 0		
(F)	Radio temperature(°C) 24		
(G)	Antenna reflected power 00		
(H)	Average noise level 28		
(I)	Average signal level 80		
(J)	Overall receive rate(%) 89		

- | | |
|--------------------------------|----------------------------|
| A—Radio Self Test Tab | H—Average Noise Level |
| B—Radio Self Test Start Button | I—Average Signal Level |
| C—Number of Updates | J—Overall Receive Rate (%) |
| D—Radio Distance (m) | K—Readings Tab |
| E—Number of Disconnects | L—Data Logs Tab |
| F—Radio Temperature | M—Over the Air Tab |
| G—Antenna Reflected Power | |

PC21115 —UN—05AUG15

Continued on next page

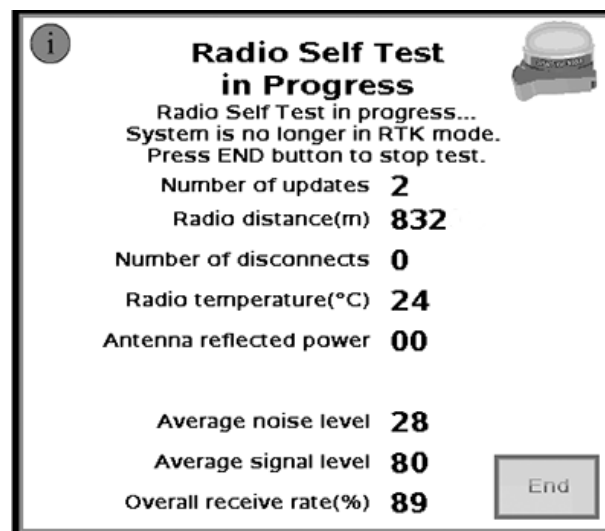
AE77568,000005B -19-05AUG15-1/2

While test is in progress, page displays:

Radio Self Test in progress. . .

System is no longer in RTK mode.

Select End button to stop test.



AE77568,000005B -19-05AUG15-2/2

PC21392—UN—04AUG15

Diagnostic LEDs

Use diagnostic LEDs on RTK radio to determine working state of RTK Radio 900 system.

RTK Radio 900 LEDs

After radio is powered, three LEDs in window (A) display working state of radio.

NOTE: RTK Radio 900 allows up to 6 min. for machine and base station to connect.

Radio enters configuration mode when parameters are being read or set, and when diagnostics are being retrieved. Radio does not transmit or receive communications while in configure mode.



A—LED Window

RTK Radio 900	Base Station (TX)	Machine (RX)
Searching	Base station does not search	Solid Red Off Slow Blinking Red
Connected and Transmitting	Solid Red Fast Blinking Red Off	Machine radio does not transmit
Connected and Receiving	Base station does not receive	Solid Green Off Solid Red
Configuring	Solid Green Solid Green Solid Green	Solid Green Solid Green Solid Green

Radio LEDs Table

AE77568,00000BD -19-10JUN15-1/1

PC21191—UN—01JUN15

Frequently Asked Questions

John Deere RTK 900 MHz Radio Network Planning and Setup

1. Do I need more base stations in case I cannot receive RTK corrections in the field?

Base station range depends on terrain and any obstacles in the line of sight between base station and machine. Set up additional base station, if necessary.

2. Why is line of sight so important to operate a proper RTK network?

It is important to obtain line of sight to ensure RTK corrections are transmitted between antennas (base station and machine) within an RTK network.

3. Whom can I ask for help?

In order to achieve an optimum RTK network setup, involve your John Deere dealer at the beginning of the RTK network planning, throughout network setup, and before any network expansions.

AE77568,0000058 -19-05MAY15-1/1

Specifications

Toxic or Hazardous Substances or Elements Disclosure

The Environment Friendly Use Period (EFUP) marked on this product refers to the safety period of time in which the product is used under the conditions specified in the product instructions without leakage of noxious and harmful substances.

The EFUP relates only to the environmental impact of the product in normal use, it does not imply product life.

In accordance with the requirements specified in SJ/T11364-2006, all Real Time Kinematic Radios sold in the People's Republic of China are marked with the following pollution control logo.

PC15290 —UN—31OCT12



Part Name	Toxic or hazardous substances and elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated biphenyls (PBB)	Polybrominated dephenyl ethers (PBDE)
Antenna	X	O	O	O	O	O
Harnesses	X	O	O	O	O	O

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006.

AE77568,000013D -19-31AUG15-1/1

Index

	Page		Page
A		RTK	
Absolute Base Location	25-2	Configure	25-1
Absolute Base Mode	25-1	Readings Tab	35-3
B		Set Base Station Location.....	25-2
Base Station Quality Indicator (BSQI)	35-2	Verify Radio Network	35-1
C		S	
Components	20-1	Safety, Steps and Handholds	
Configure Real Time Kinematic (RTK)		Use Steps and Handholds Correctly	05-2
Absolute Base Mode.....	25-1	Set	
Quick Survey Base Mode	25-1	Absolute Base Location	25-2
Country Use Restrictions	15-1	Set Up	
D		Rover Access List	30-1
Delete All (Rover) Entries	30-3	Shared Base Station Security	30-1
Delete Rover.....	30-3	SF2 Fallback.....	35-2
Diagnostic.....	35-5	Shading	35-1
Diagnostic LEDs	35-5	Shared Base Station (SBS) Security	30-1
Diagnostics		Machine (Rover) Status	30-3
Base Station Quality Indicator (BSQI).....	35-2	T	
Frequently Asked Questions	35-6	Theory of Operation	
Radio Self Test.....	35-4	John Deere RTK 900 MHz	20-1
Readings Tab	35-3	Shared Base Station (SBS) Security	30-1
E		Toxic or Hazardous Substances or Elements	
Edit RTK Base Location		Disclosure	40-1
24-hr. Survey	25-3	Troubleshooting	
Manual Entry	25-3	Diagnostic LEDs	35-5
F		Diagnostic Readings Tab	35-3
Frequently Asked Questions	35-6	Frequently Asked Questions.....	35-6
M		V	
Multipathing	35-1	Verify RTK Radio Network.....	35-1
P			
Public Satellite Based Augmentation Systems.....	15-1		
Q			
Quick Survey Base Mode	25-1		
R			
Radio Self Test	35-4		
Rover Access List			
Add Machine (Rover)	30-2		
Delete All Entries	30-3		
Delete Machine (Rover)	30-3		

John Deere Service Literature Available

Technical Information

Technical information can be purchased from John Deere. Some of this information is available in electronic media, such as CD-ROM disks, and in printed form. There are many ways to order. Contact your John Deere dealer. Call **1-800-522-7448** to order using a credit card. Search online from <http://www.JohnDeere.com>. Please have available the model number, serial number, and name of the product.

Available information includes:

- **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.
- **OPERATOR'S MANUALS** providing safety, operating, maintenance, and service information. These manuals and safety signs on your machine may also be available in other languages.
- **OPERATOR'S VIDEO TAPES** showing highlights of safety, operating, maintenance, and service information. These tapes may be available in multiple languages and formats.
- **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 separate component technical manuals
- **FUNDAMENTAL MANUALS** detailing basic information regardless of manufacturer:
 - Agricultural Primer series covers technology in farming and ranching, featuring subjects like computers, the Internet, and precision farming.
 - 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.



TS189 —UN—17JAN89



TS191 —UN—02DEC88



TS224 —UN—17JAN89



TS1663 —UN—10OCT97

DX,SERVLIT -19-31JUL03-1/1

John Deere Service Keeps You On The Job

John Deere Is At Your Service

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.



TS201 —UN—15APR13

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/.

DX,IBC,2 -19-02APR02-1/1

