John Deere RTK Radio 450

JOHN DEERE

OPERATOR'S MANUAL

John Deere RTK Radio 450

OMPFP18401 ISSUE D8 (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. 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.

Serial Number:

JS56696,0000C4C-19-03FEB17

John Deere Technical Information Bookstore

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-19-17FEB17

Read This Manual

IMPORTANT: Displays are not weather-proof and should only be used on machines equipped with a cab. Improper use may void warranty.

Before operating display or software, familiarize yourself with components and procedures required for safe and proper operation.

RW00482,0000289-19-09APR14

Contents

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.

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-19-29SEP98

Understand Signal Words

TS187—19—30SEP88

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

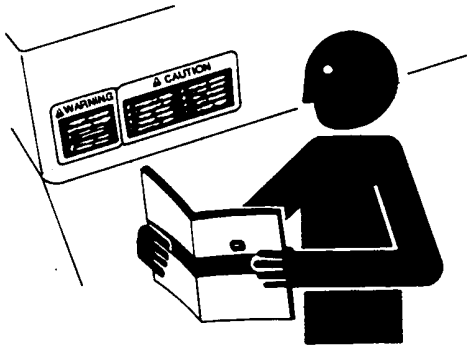
WARNING; The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

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

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-19-16JUN09

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.

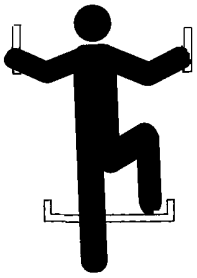
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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

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

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

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

Prevent Electrical Shock and Fires

PC12631—UN—04JUN10

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.

If installing with the power amplifier option, use a 14 AWG heavy-duty electrical cord with 15 amp rating suitable for outdoor use.

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

RW00482,00002E0-19-28APR14

Avoid Exposure to High Radio Frequency Fields

PC12632—UN—04JUN10

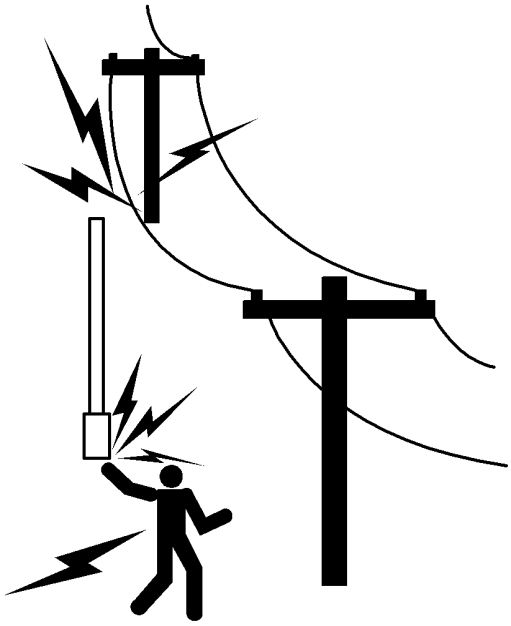
Prevent injury from exposure to high radio frequency fields at an RTK base station. Do not touch the antenna while the system is transmitting. Always disconnect power to the receiver, radio, and amplifier before installing or servicing.

While the RTK base station amplifier and radio are operating together, stay at least 3.6 m (12 ft.) away from the base antenna. The minimum separation distance 23cm.

While using the base station radio without the amplifier option, stay at least 40 cm (16 in.) away from the radio antenna.

JS56696,0000A46-19-27JUL11

Avoid Electrical Power Lines

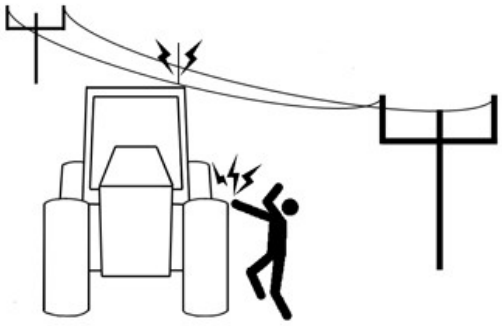


PUPC000036—UN—09DEC09

Watch for wires. Do not install the base antenna near power lines. It may come into contact with low-hanging electrical cables. This would result in the installer suffering serious injury or death from electrocution.

JS56696,00008AC-19-03JUN10

Avoid Electrical Power Lines



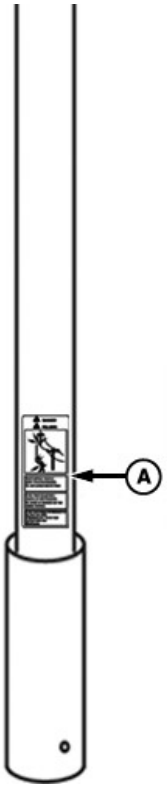
PC13658—UN—08NOV11

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.

HC94949,0000488-19-24JAN14

Antenna – Text Label



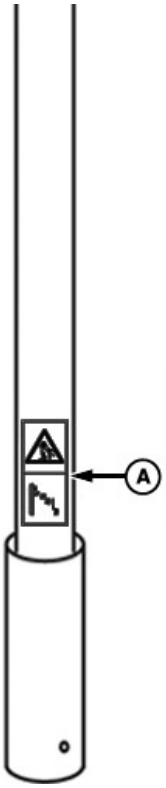
PC19600—UN—30APR14

PC19602—UN—30APR14

A—Label, Danger *A*

CZ76372,000078E-19-03MAR17

Antenna – Text-Free Label



PC19601—UN—30APR14

PC19603—UN—30APR14

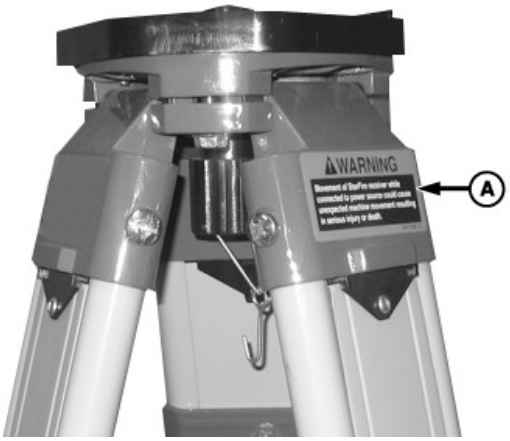
A—Label, Danger *A*

Label A–Danger

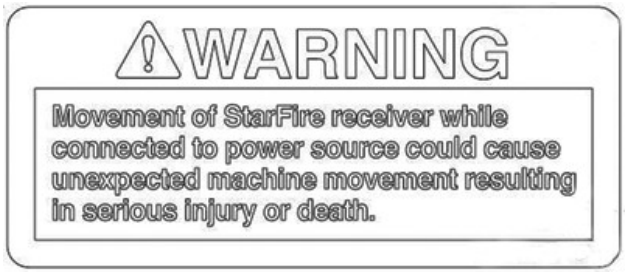
Avoid serious injury or death from electrocution. Do not come into contact with electrical lines.

CZ76372,000078F-19-03MAR17

Text Label



PC18291—UN—06JAN14



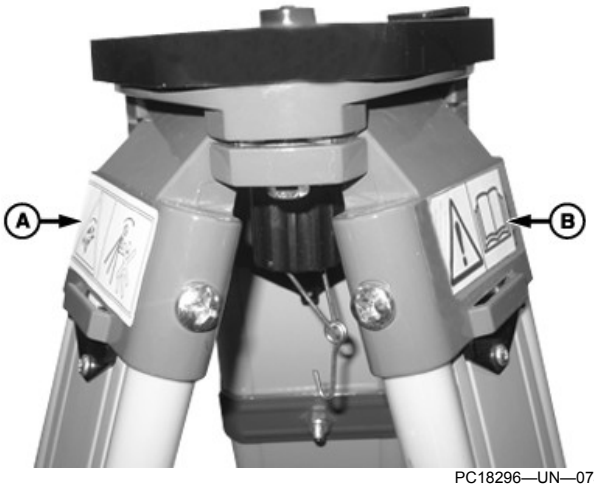
PC18408—19—24JAN14

A

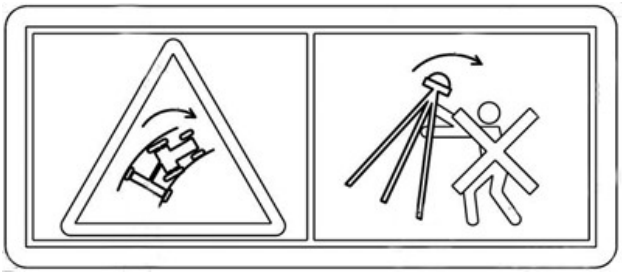
A—Label, Warning

CZ76372,0000790-19-03MAR17

Text-Free Labels

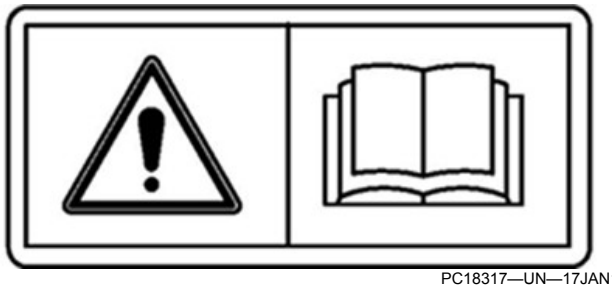


PC18296—UN—07JAN14



PC18259—UN—07JAN14

A



PC18317—UN—17JAN14

B

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

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.

HC94949,0000478-19-10JAN14

Country Use Restrictions

The John Deere RTK Radio 450 is designed to operate on frequency ranges, the exact use of which differs from one region and (or) country to another. The user of the radio modem must take care that the said device is not operated without permission of the local authorities on frequencies other than those specifically reserved and intended for use without a specific permit. (For more information, refer to Set Radio Power to Meet Licensed ERP.)

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

HC94949,0000CEB-19-07FEB18

Licensing of John Deere RTK Radio 450

The intent of RTK Radio 450 is to increase the range and reliability of the RTK link. RTK Radio 450 uses a licensed band radio. The end user of the licensed band transmitting radio is responsible for obtaining and maintaining a valid site license from the local spectrum authorities. Each base station and repeater in RTK Radio 450 system requires a license.

Machine radios in RTK Radio 450 system are not transmitters. Since they only receive corrections from the base or repeater, RTK Radio 450 machine radios do not require a site license.

IMPORTANT: Please contact your local radio authorities or partnering frequency coordinator for region-specific regulations and licensing.

An end user can apply for the license by applying directly to the local spectrum authority. An end user can also apply with the aid of a frequency coordinator. A frequency coordinator is a private company that has been certified by the local frequency spectrum authority to recommend and aid in the application for a licenses. For a fee, these third-party coordinators will reduce the complexity and confusion of the application process. However, the final responsibility of the license still resides with the end user.

Check **StellarSupport.com** for country-specific instructions on how to obtain a site license.

License Renewal Scams

After being granted a license for a RTK Radio 450, base station operators should be aware of license renewal scams. Spectrum licenses are public record. Other companies can retrieve licensee information and mail current license holders offers to prepare applications for license renewal. The letters contain warnings that there will be monetary penalties if the licensee does not comply. These companies are not affiliated with government spectrum authorities. They are taking advantage of the public record and the licensee's desire to comply with the law. Their intention is to charge a "processing" fee on top of the actual amount that a licensee would pay for renewal. While it is important to not let your license expire, licensees should work directly with their local spectrum authority or a certified frequency coordinator. Internet searches of the companies involved usually identify if the company is relevant.

RW00482,000028B-19-04APR14

Set Radio Power to Meet Licensed ERP

RTK Radio 450 system is designed to meet a wide range of possible configurations. This gives end user the ability to optimize the system for their specific location and application. It is the end user's responsibility to ensure that RTK Radio 450 system parameters are configured correctly. Conform frequency, bandwidth, output power, and antenna height to granted license.

RTK Radio 450 output power and frequency are programmable. The available ranges are:

Frequency	435–470 MHz
Frequency Resolution	6.25 kHz
Bandwidth	12.5 kHz
Radio Output Power	0.2–2.0 W
Amplifier Output Power	5.0–50.0 W

Adjust total output power of system to comply with the granted license. Radio output power is configured using GreenStar™ Display. Equivalent Radiated Power (ERP) of radio should be adjusted to ensure that RTK Radio 450 total system output power complies with license granted by local spectrum authority.

HC94949,0000D11-19-14MAR18

UNITED STATES

Federal Communication Commission (FCC) Notification

These devices comply with Part 15 of the FCC Rules. Operation is subject to the condition that these devices do not cause harmful interference.

These devices must be operated as supplied by John Deere Ag Management Solutions. Any changes or modifications made to these devices without the express written approval of John Deere Ag Management Solutions may void the user's authority to operate these devices.

450 MHz RTK

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to

GreenStar is a trademark of Deere & Company

provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, no guarantee shall be made that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

The installer of this device should ensure that radio frequency (RF) radiation is compliant to the requirements set forth in Code of Federal Regulations (CFR) 47 Section 2.1091 and 15.247 (b) (4) addressing RF Exposure from radio frequency devices as defined in Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

RW00482,0000219-19-04APR14

CANADA

This Class B digital apparatus meets all the requirements of the relevant Canadian Interference-Causing Equipment and Radio Equipment Regulations.

The installer of this device should ensure that radio frequency radiation is not emitted in excess of the Health Canada's requirement. Information can be obtained online on the Health Canada website.

RW00482,00002B7-19-27MAR14

Paraguay Dealer

KUROSU & CIA. S.A. Ruta Transchaco Km. 18.5 2040 MARIANO ROQUE ALONSO 0059521755511
AUTOMOTORES Y MAQUINARIA S.A.E.C.A YEGROS ESQ. F. R. MORENO 00000000 ASUNCION 595-21-493-111

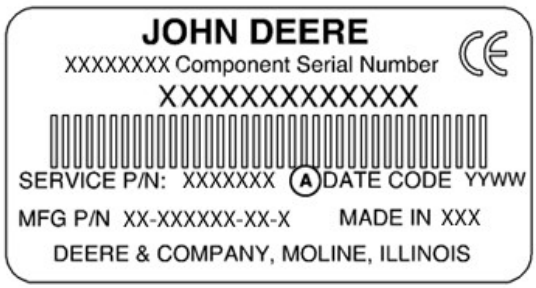
HC94949,0000D25-19-19MAR18

Vietnam–Declaration of Conformity

This product complies with Circular 30/2011/TT-BCT regulating the allowable limits for hazardous substances in electronic and electric products.

HC94949,0000BAE-19-13JUN17

Identify Date Code



PC17568—UN—16AUG13

Product Label Example

PC17574—UN—16AUG13

Date Code Example

A—Date Code (Date of Manufacture)
B—Last Two Numbers of Year of Manufacture
C—Week Number of Calendar Year of Manufacture

Use the date code (A) on the product label to identify the date of manufacture. "YY" (B) identifies the last two numbers of the year of manufacture; "WW" (C) identifies the week number of calendar year of manufacture.

NOTE: The week number of manufacture ranges between 01-53.

Date Code		
YY	Last Two Numbers of Year of Manufacture	Example: **11** = 20**11** **12** = 20**12** **13** = 20**13**
WW	Week Number of Calendar Year of Manufacture	Example: 01, 02, 03...53

HC94949,0000342-19-23AUG13

Customs Union–EAC

Eurasian Economic Union - EAC

Information for products that bear conformity mark of the Eurasian Economic Union member states

Manufacturer: Deere & Company
Moline, Illinois U.S.A

Model: John Deere RTK Radio 450
Made in USA

Name and address of the authorized representative in the Eurasian Economic Union:
Limited Liability Company "John Deere Rus"

Address: 142050, Russia, Moscow region, Domodedovo district, Domodedovo, Beliye Stolbi micro district, vladenye "Warehouse 104," Building 2.

For technical support, please contact your dealer.

EAC

PC24044—UN—07APR17

Евразийский экономический союз (ЕАЭС)

Информация об изделиях, которые имеют знак соответствия требованиям технических регламентов Евразийского экономического союза (ЕАЭС)

Производитель: Компания Deere & Company
г. Молин, Штат Иллинойс, США

Модель: Радиомодем John Deere RTK450
Сделано в США.

Наименование и адрес уполномоченного представителя на территории Евразийского экономического союза (ЕАЭС):
Общество с ограниченной ответственностью "Джон Дир Русь"

Адрес:
142050, Россия, Московская область, Домодедовский район, г. Домодедово, микрорайон "Белые столбы", владение "Склады 104," стр. 2.

Для получения технической поддержки обращайтесь к дилеру, обслуживающему вашу организацию.

EAC

PC24045—UN—07APR17

Еуразиялық экономикалық одақ - ЕАС

Еуразиялық экономикалық одаққа мүше елдердің сәйкестік белгісі бар өнімдер туралы ақпарат

Өндіруші: Deere & Company
Молин, Иллинойс, АҚШ

Үлгі: John Deere RTK Радио 450
АҚШ-та жасалған

Еуразиялық экономикалық одақтағы заңды өкілдің аты мен мекенжайы:
"John Deere Rus" жауапкершілігі шектеулі серіктестігі

Мекенжайы: 142050, Ресей, Мәскеу облысы, Домодедово қаласы, Белые столбы ықшам ауданы, "Склады 104," қожалығы, 2 үй.

Техникалық қолдау алу үшін дилеріңізбен хабарласыңыз.

EAC

PC24046—UN—07APR17
HC94949,0000B5B-19-07APR17

Thailand—Declaration of Conformity

เครื่องโทรคมนาคมและอุปกรณ์นี มีความสอดคล้องตามข้อกาหนดของ กทช./กสทช.

PC22534—UN—20APR16
AE77568,00001CC-19-11APR17

EU Declaration of Conformity

Deere & Company
Moline, Illinois U.S.A.

The undersigned hereby declares that:

Product: John Deere RTK Radio 450

fulfill(s) all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Radio and Telecommunications Terminal Equipment Directive (R&TTE)	1999/5/EC	Annex IV (Notified Body)

The product is in conformity with the following standards and/or other normative documents:

EN 60950-1:2006
EN 60950-22:2006
ETSI EN 301 489-1 V1.8.1
ETSI EN 300 113-1 V1.6.2
ETSI EN 300 113-2 V1.4.2

Notified body involved:

Nemko AS
Gåsevikveien 8
2027 Kjeller, Norway
Identification mark: 0470

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere GmbH & Co. KG
Mannheim Regional Center
John Deere Strasse 70
D-68163 Mannheim, Germany

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Place of Declaration: Kaiserslautern, Germany
Date of Declaration: 18 May 2011
Manufacturing Unit: John Deere Intelligent Solutions Group

Name: Aaron Senneff
Title: Engineering Manager, John Deere Intelligent Solutions Group

CE

DXCE01—UN—28APR09
HC94949,0000B19-19-07APR17

Theory of Operation

NOTE: RTK Radio 450 systems are not compatible with systems that operate outside of the 450 MHz frequency range.

RTK Radio 450 system delivers 2.5 cm (1 in) repeatable accuracy. RTK accuracy is expressed as an absolute value (without + or -) because RTK performance is not subject to satellite drift over time. RTK Radio 450 system consists of a local base station that transmits high accuracy corrections to a machine that has a StarFire™ Receiver equipped with RTK Radio 450. An optional amplifier may be used to boost the base station signal. Contact your John Deere dealer for availability and certification in your country. Ensure that RTK radio on machine has a direct line of sight with base station or repeater to receive the RTK signal. Transmission power and wavelength of RTK Radio 450 aids in transmission through trees and foliage. It cannot penetrate through earth in hilly terrains.

Performance of RTK correction is related to operating distance from base station. RTK signal accuracy degrades and takes longer to acquire when operating beyond 20 km (12 mi).

HC94949,0000CEC-19-03APR18

Components

IMPORTANT: Install antenna before radio is powered ON. Powering radio without an antenna may cause permanent damage.

RTK Radio 450 system includes the following hardware components:

Base Station

GreenStar™ Display is used to set up radio and can be removed after setup.

StarFire™ Receiver uses global positioning system (GPS), global navigation satellite system (GLONASS), and correction satellites to calculate accurate machine position.

To configure the RTK radio, the StarFire™ Receiver must acquire SF1 signal to determine its location. The GPS position is used to ensure the receiver follows local governmental regulations for using RTK radio communications.

RTK Radio 450 transmits correction signals to machine for accurate positioning.

Radio antenna transmits signal for radio.

- Standard antenna
- High gain antenna

Power source converts AC power to DC power.

NOTE: If power loss or interruption occurs, verify base station settings. Ensure that operating mode and position (latitude, longitude, and height) have not changed before resuming use of RTK signal. Battery maintainer may need to be reset.

Machine

GreenStar™ Display is used to set up radio.

StarFire™ Receiver uses GPS, GLONASS, and correction satellites to calculate accurate machine position.

RTK Radio 450 receives correction signals from base station or repeater. Machine radio does not transmit signal.

Radio antenna receives signal for radio.

- Standard antenna
- High gain antenna

Optional Components

RTK Radio 450 repeater receives signal from base station radio and resends it to machine radio. Contact your John Deere dealer for more information on components and setup.

Base station amplifier strengthens base station signal. (Not available in all locations.)

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

HC94949,0000CED-19-06FEB18

Select StarFire™ Main Page

RTK functions are available from StarFire™ Main page. Activate and configure RTK Radio 450 before operating.

PC8663—UN—29APR15

Menu Button

1. Select Menu button.

PC21222—UN—02JUN15

StarFire™ Receiver Button

2. Select StarFire™ Receiver button.

HC94949,0000CEE-19-06FEB18

Activate RTK

RTK Radio 450 must be activated before it can be used.

PC21311—UN—02JUL15

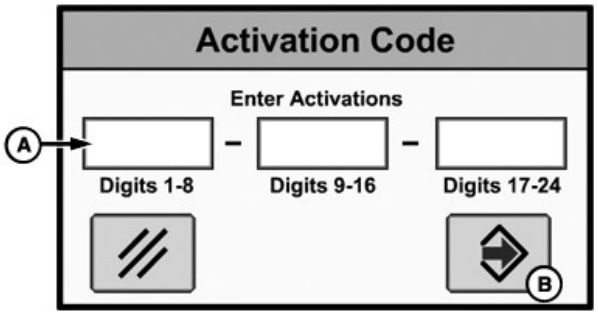
Activations Tab

1. Select Activations tab.

PC25308—UN—05FEB18

Enter Activations Code Button

2. Select Enter Activations Code (A).



PC23753—UN—20FEB17

Activation Code Popup

A—Activations Entry Boxes
B—Accept Button

3. Enter activations code (A).
4. Select Accept (B).

HC94949,0000CEF-19-06FEB18

Configure RTK

IMPORTANT: Anytime radio is configured or changed, cycle power at GPS receiver before continuing.

NOTE: To configure RTK radio, StarFire™ 3000 and StarFire™ 6000 Receivers must have GPS and SF1 signal.

PC18498—UN—05NOV14

RTK Softkey

1. Select RTK softkey.

PC18499—UN—05NOV14

Configure Button

2. Select Configure button.

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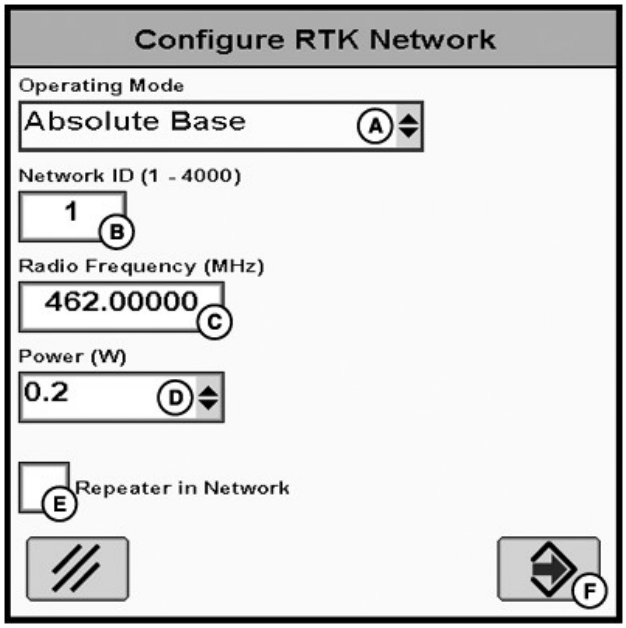


PC18504—UN—25FEB14

Configure RTK Network

A—Operating Mode Drop-Down Menu
B—Network ID Entry Box
C—Radio Frequency Entry Box
D—Power Drop-Down Menu
E—Repeater in Network Checkbox
F—Enter Button

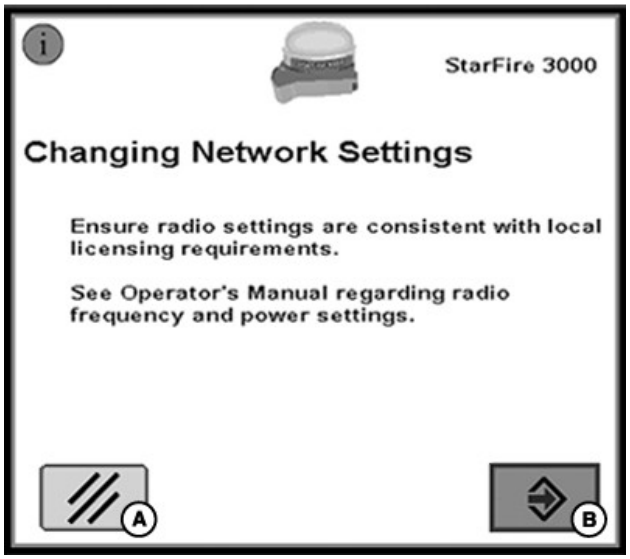
3. Select Operating Mode from drop-down menu (A).
   - **Vehicle** – Use this mode for machine to receive signal corrections from base station or repeater.
   - **Quick Survey Base** – Use this mode to test functionality without performing a 24-hour Absolute Base survey–for example, when temporary field work does not need long-term repeatability or field areas are small. The tripod can be set up for localized coverage and moved after completing the operation. This mode allows rapid deployment of an RTK solution and transmits corrections quickly. Usage of Quick Survey mode is only permitted at dedicated location as stated by license agreement.
   - **Absolute Base** – Use this mode when repeatability is a concern. For example, when a secure RTK network and seasonal RTK coverage are required. Receiver must be mounted to a fixed position, like a building or post mounted in concrete. This mode requires a 24-hour self-survey conducted on location before first use. This survey averages short-term anomalies. 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 need to be shifted.
   - **OFF** – Use this mode to disable all RTK functionality in receiver. RTK Operating Mode must be OFF for normal SF1 or SF2 operation on SF2 licensed receiver.

NOTE: Base station and machine must be set up with same Frequency and Network ID (B).

4. Enter Network ID.

IMPORTANT: It is the responsibility of end user to ensure that radio frequency and power settings are consistent with local regulations and licensing.

5. Enter Radio Frequency (C).
6. For base station operating modes:
   - Select Power from drop-down (D).
   - If there is a repeater in network, select checkbox (E).
7. Select Enter button (F).



PC18505—UN—25FEB14

Changing Network Settings

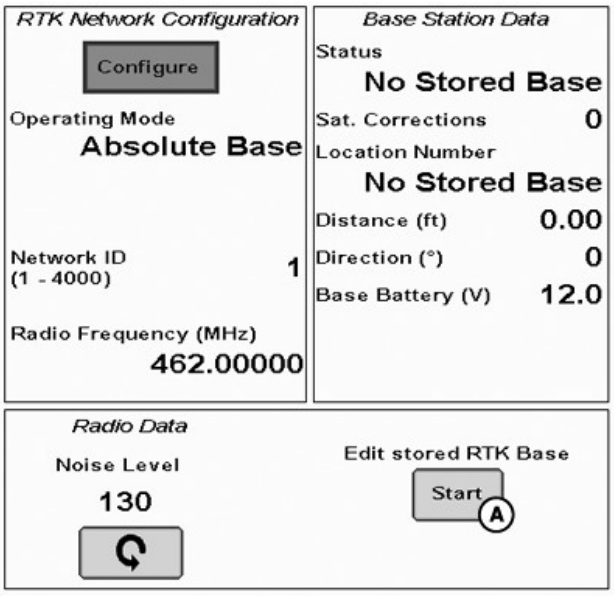
A—Cancel Button
B—Enter Button

Changing Network Settings popup asks user to confirm that radio settings are consistent with local licensing requirements. If setup information does not match local licensing requirement, select Cancel (A) and enter correct information. If setup information is correct and meets local licensing requirements, select Enter (B). It can take up to 2 minutes for radio to configure.

HC94949,0000CF0-19-03APR18

Set Absolute Base Location

NOTE: In case of power loss or interruption, verify base station settings. Ensure that operating mode and position (latitude, longitude, and height) has not changed before resuming use of RTK signal.



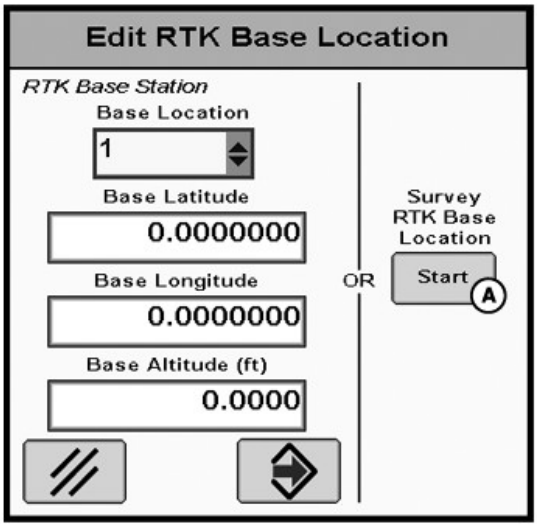
PC18506—UN—25FEB14

RTK Configuration Page

A—Start Button

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

Edit RTK Base Location – 24-Hour Survey



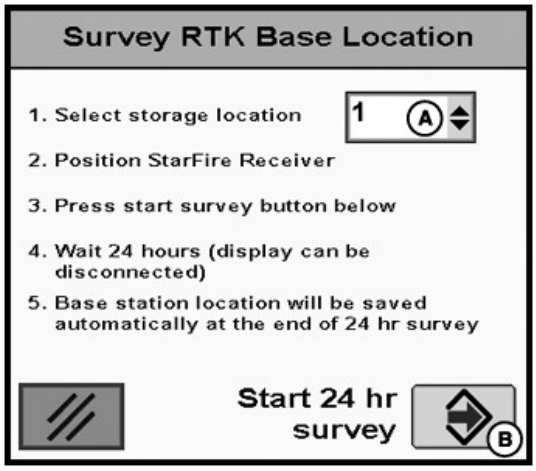
PC18508—UN—26FEB14

Edit RTK Base Location

A—RTK Base Location Start Button

Select Survey RTK Base Location Start button (A). Read and follow steps in popup. Once survey is started, a 24-hour countdown displays on RTK Configuration page. Once survey is complete, record and store base location survey results at a separate location for future reference.

Survey RTK Base Location



PC23752—UN—20FEB17

Survey RTK Base Location

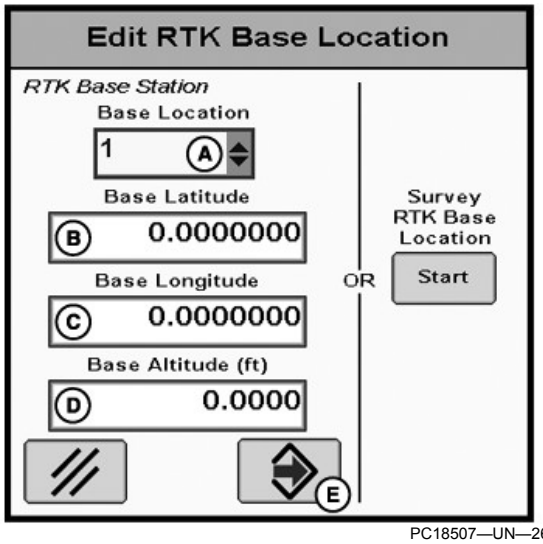
A—Storage Location Drop-Down Menu
B—Start 24-Hour Survey Button

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

Edit RTK Base Location – Manual Entry

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

NOTE: Do not enter values other than locations calculated using the 24-hour survey.



PC18507—UN—26FEB14

Edit RTK Base Location

A—Base Location Drop-Down Menu

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B—Base Latitude
C—Base Longitude
D—Base Altitude
E—Accept Button

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).

HC94949,0000CF1-19-06FEB18

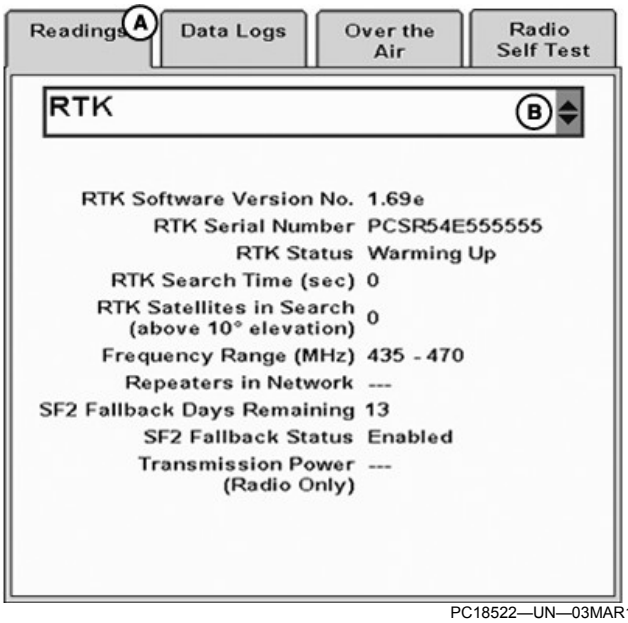
View RTK Readings

To view RTK readings:

PC18516—UN—26FEB14

Diagnostics Softkey

1. Select Diagnostics softkey.



PC18522—UN—03MAR14

StarFire™ Diagnostics – Readings

A—Readings Tab
B—Readings Drop-Down Menu

2. Select Reading tab (A).
3. Select RTK from drop-down menu (B).

The following RTK readings are displayed:

- RTK Software Version No.
- RTK Serial Number
- RTK Status
- RTK Search Time (seconds)
- RTK Satellites in Search (above 10° elevation)
- Frequency Range (MHz)
- Repeaters in Network
- SF2 Fallback Days Remaining
- SF2 Fallback Status
- Transmission Power (Radio Only)

HC94949,0000B16-19-06MAR17

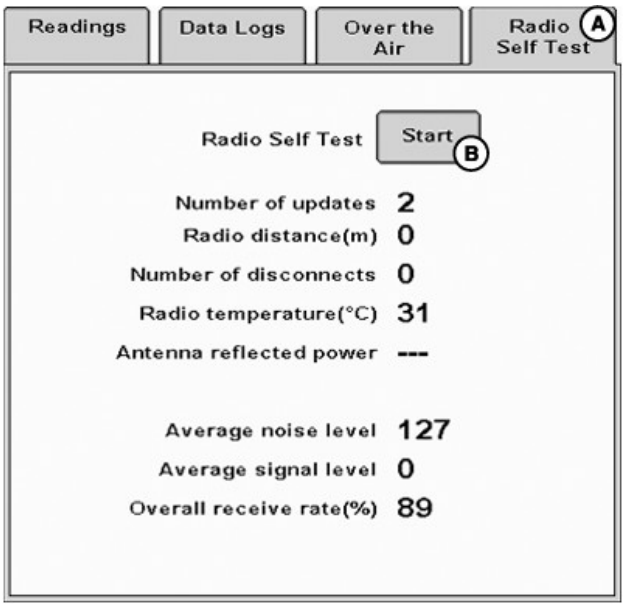
Radio Self Test

Results of last performed test are displayed on Radio Self Test page. Run Radio Self Test to display current values.

PC18516—UN—26FEB14

Diagnostics Softkey

1. Select Diagnostics softkey.

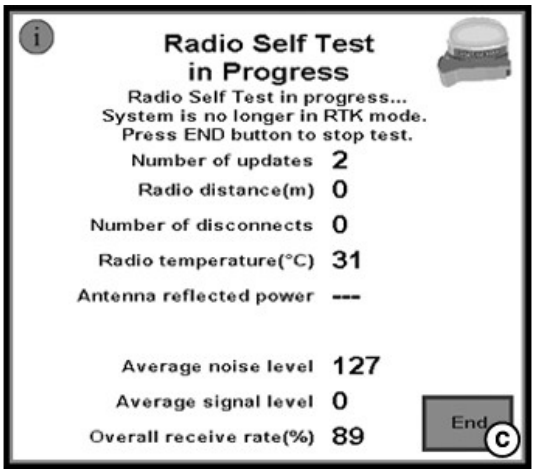


PC18517—UN—26FEB14

StarFire Diagnostics – Radio Self Test Tab

A—Radio Self Test Tab
B—Radio Self Test Start Button

2. Select Radio Self Test tab (A).
3. Select Radio Self Test Start button (B).



PC18518—UN—03MAR14

Radio Self Test in Progress Popup

C—End Button

4. Select End button (C) to stop test.

Radio Self Test Diagnostics

Perform Radio Self Test when installing a new RTK radio and record values. If an issue arises, run another self test, and compare values to determine discrepancies.

Radio Self Test Diagnostics			
Measurement Description	**Base Station**	**Machine**	**Notes**
Number of Updates Number of Radio Self Tests performed.	0 or greater	0 or greater	Displays 0 if Radio Test has never been performed.
Radio Distance (m) Distance in meters between linked machine radio and base or repeater radio.	Invalid reading	Varies	Accurate when beyond 1.6 km (1 mi.) from base station.
Number of Disconnects Number of disconnects during test.	Invalid reading	0–2	If greater than 2, check base station setup, check line of sight, and consider using repeaters.
Radio Temp (°C) Internal radio temperature.	-30–60 °C	-30–60 °C	If beyond acceptable range, performance may be impacted.
Antenna Reflected Power Amount of transmitted power reflected back to transceiver.	Less than 30 is acceptable. 0–5 is best. May be invalid with amplifier.	Less than 30 is acceptable 0–5 is best. "- - -" with StarFire™ 3000 Receiver is acceptable.	If greater than 30, check antenna, cable, and all connections. Consider replacing antenna.
Transmit Current Current at base station. Measurement may not be available.	100–750 mA.	Invalid reading	If machine has no signal, check power source and connections.
Average Noise Level Average power of background noise and interference (- dBm). Measurement is below 1 mW.	-120– -105: Good -105– -95: Fair -95– -80: Poor	-120– -105: Good -105– -95: Fair -95– -80: Poor	Values in Fair or Poor ranges indicate radio interference. Values on Display do not show (-) sign. Check local environment for possible sources of interference near radio.
Average Signal Level Average power of signal received (- dBm). Measurement is below 1 mW.	Invalid reading	-90: Stronger -40: Weaker Reading is good if it is 25 or more above Average Noise Level	If difference between Average Signal Level and Average Noise Level is less than 25, check base station. RF link quality, power output, and receiver sensitivity affect Average Signal Level. Radio receiver sensitivity is -112, which means -87 is strongest Average Signal Level where margin of 25 applies. Margin of less than 25 may be acceptable with "Stronger" signal readings.
Difference Between Signal and Noise Average Signal Level minus Average Noise Level.	Invalid reading	Greater than 25	Measurement is not displayed in test. Value is determined by user. If difference between Average Signal Level and Average Noise Level is less than 25, check base station for transmit issues and environment for signal interference.
Overall Receive Rate Base station signal packets received at machine without retry. As radio traffic increases, receive levels may decrease. Radio traffic increases with	Invalid reading	For mid to small-size networks: Greater than 75% is acceptable. Greater than 85% is best.	Mid to small networks are typically 10 or fewer radios. If below acceptable value, check signal, noise levels, and line of sight. Value below 15 indicates weak link. Check base station for transmit issues. Check local environment for possible signal interference.

repeaters enabled and additional non-base station radios.			

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HC94949,0000B17-19-10MAY17

Diagnostic LEDs

Use diagnostic LEDs on RTK radio and in-line amplifier to determine working state of RTK Radio 450 system.

RTK Radio 450 LEDs

PC13863—UN—13JUL11

A—LED Window

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

NOTE: RTK Radio 450 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.

Operation	Base Station Configuration
Searching	Base station does not search.
Connected and Transmitting	Solid Red Fast Blinking Red Off
Configuring	Solid Green Solid Green Solid Green

Radio LEDs (Base Station)

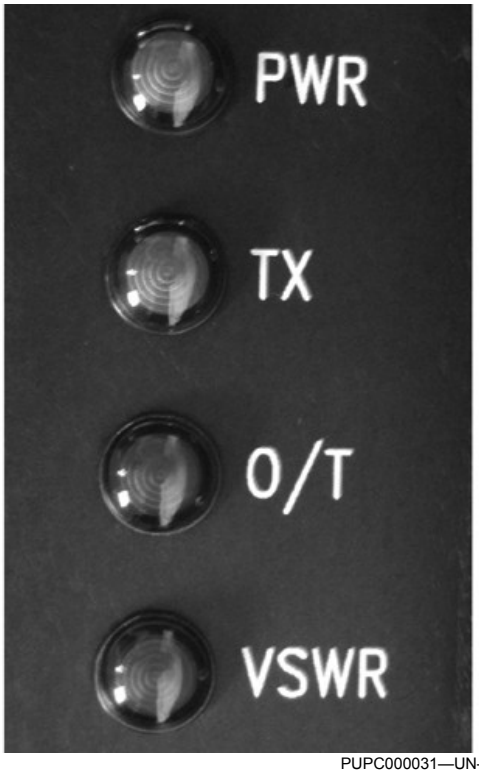
Operation	Machine Configuration
Searching	Solid Red Off Slow Blinking Red
Connected and Transmitting	Solid Green Off Solid Red
Configuring	Solid Green Solid Green Solid Green

Radio LEDs (Machine)

Operation	Repeater Configuration
Searching	Solid Red Off Slow Blinking Red
Connected and Transmitting	Solid Green Fast Blinking Red Solid Red
Configuring	Solid Green Solid Green Solid Green

Radio LEDs (Repeater)

Amplifier LEDs



PUPC000031—UN—07DEC09

LEDs are located on side of amplifier.

Power LED indicates amplifier has DC power.

TX LED indicates RF signal is being actively amplified and transmitted. Blinking light indicates normal function.

O/T LED indicates unit has exceeded its internal temperature limits. When light is on, unit ceases amplification and waits to cool down to prevent permanent damage.

VSWR LED indicates faulty antenna path. When light is on, unit ceases amplification. Output power is prevented

from reflecting back into amplifier and causing permanent damage.

CZ76372,0000791-19-06MAR17

Specifications

RTK Radio 450 Specifications

Model Number	Country	Frequency Range
PFA10094	Namibia, Mozambique, Russia, Tanzania, Zimbabwe	435–447 MHz
PFA10095	Ukraine	440–450 MHz
PFA10096	Azerbaijan, Belarus, Kazakhstan, New Zealand	435–470 MHz
PFA10097	Australia, Brazil, Canada, Guatemala, Honduras, Nicaragua, Panama, USA	435–470 MHz

Bandwidth Options	12.5 kHz	
Modulation	Level 2 GFSK	
RF Baud, 12.5 kHz BW	9.6 kbps at L2	
Frequency Channels	2800 at 12.5 kHz	
Output Power	0.2–2 W	
Sensitivity	-108 dBm at BER 10^{-3}: -106 dBm at BER 10^{-6}	-112 dBm at BER 10^{-6}.
In and Out Impedance	50 Ohm	
Operating Voltage	9–15 V DC	
Operating Temperature	-30–60 °C	
Out RF Connectors	TNC Receptacle	
Control Connector	4-pin DEUTSCH®	

DEUTSCH is a trademark of Deutsch Co.

HC94949,0000B1A-19-27APR17

450 MHz Amplifier Specifications

Model Number	PF81443
Frequency Range	450–470 MHz
Input Power	0–2 W
Output Power	0–50 W
Current During Transmission	8 amp
Nominal Voltage	13.8 V DC
Internal Fuse	15 amp
In/Out Impedance	50 ohm
Operating Voltage	11–15 V DC
Max Duty Cycle	100%
Operating Temperature	-30–60° C
In RF Connector	TNC Receptacle
Out RF Connectors	N-Type Receptacle
Power Connector	Amphenol® (EcoMate™ C016 20D003 110 12)

Amphenol is a trademark of Amphenol Corporation.
EcoMate is a trademark of Amphenol Corporation.

CZ76372,0000792-19-06MAR17

RTK Radio 450 Antenna Specifications

NOTE: Pair antenna type with appropriate radio. For example, pair white-striped antenna (450–470 MHz) with RTK Radio 450 that is certified for frequencies within that range.

Always mount radio antenna vertically to make sure RTK signal radiates outwards. An angled antenna causes received data to be lower than expected.

RTK Radio 450 (450–470 MHz) Whip Antenna Specifications

Model Number	PF81461
Stripe Color	White
Gain	2 dBi
Frequency Range	450–470 MHz
Impedance	50 Ohm
VSWR	< 2:1
RF Connector	TNC Receptacle
Length	33.5 cm (13.2 in)

RTK Radio 450 (435–450 MHz) Whip Antenna Specifications

Model Number	PFP10612
Stripe Color	Green
Gain	1 dBi
Frequency Range	435–450 MHz
Impedance	50 Ohm
VSWR	< 2:1
RF Connector	TNC Receptacle
Length	33.5 cm (13.2 in)

RTK Radio 450 Base Station High Gain Antenna

Model Number	PF81452
Gain	7 dBi
Frequency Range	435–470 MHz
Max Power	200 W (UHF)
Impedance	50 OHMS
VSWR	< 1.7:1
RF Connector	TNC Receptacle
Length	2 m (81 in)
Fiberglass Tube	5 cm (2 in)

Base Pipe	28 cm (11 in) long, 6 cm (2-3/8 in) diameter
Wind Survival	161 km/h (100 mph)

NOTE: For countries following European Telecommunications Standards Institute (ETSI) standards, use RTK Radio 450 machine high gain magnetic mount antenna for radios on machines.

RTK Radio 450 Machine High Gain Magnetic Mount Antenna

Model Number	PF81457
Gain	5 dBi
Frequency Range	435–470 MHz
Max Power	200 W (UHF)
Impedance	50 Ohms
VSWR	< 2.0:1
RF Connector	TNC Plug, 90°
Length	78.2 cm (30.8 in)
Base	Magnetic Mount

HC94949,0000CF2-19-03APR18

Index

John Deere Service Literature Available

Technical Information

Technical information can be purchased from John Deere. Publications are available in print or CD-ROM format.

Orders can be made using one of the following:

- John Deere Technical Information Store: **www.JohnDeere.com/TechInfoStore**
- 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

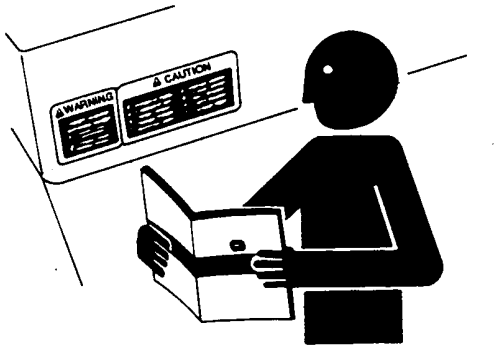
EDUCATIONAL CURRICULUM including five comprehensive series of books detailing basic information regardless of manufacturer:

- 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,SERVLIT-19-07DEC16

John Deere Service Keeps You On The Job

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/.

DX,IBC,2-19-02APR02