



John Deere AutoTrac™ Controller 250



JOHN DEERE



OPERATOR'S MANUAL

John Deere AutoTrac™ Controller 250

OMPFP23143 ISSUE E2 (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 time of printing. Read the latest Operator's Manual prior to operation. To obtain a copy, see your dealer or visit techpubs.deere.com.

CZ76372,000071F-19-08OCT19

Read This Manual

Before operating this system, familiarize yourself with components and procedures required for safe and proper operation.

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

- GreenStar™ Displays
- AutoTrac™ Controller

HC94949,0000D46-19-06APR18

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

Safety

Recognize Safety Information



T81389—UN—28JUN13

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

Follow recommended precautions and safe operating practices.

DX,ALERT-19-29SEP98

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

Understand Signal Words



▲ WARNING

▲ CAUTION

TS187—19—30SEP88

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

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

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

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards. DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

DX,SIGNAL-19-05OCT16

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.

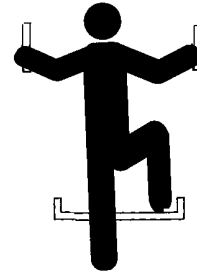
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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 offer a wide range of functionality, are used in many different machine system applications and can be used with other secondary devices such as handheld electronic devices.

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

To prevent injury while operating the machine:

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

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

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

DX,ELEC,DISPLAY-19-13JAN15

Operate Guidance Systems Safely

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

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

Guidance systems include any application that automates machine steering. This includes, but may not be limited to, AutoTrac™, iTEC™, AutoTrac™ Turn Automation, AutoTrac™ Implement Guidance (passive),

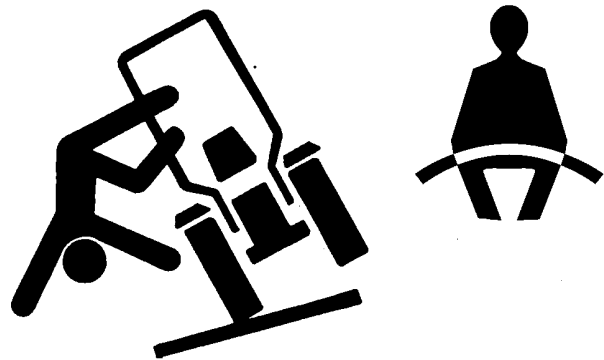
AutoTrac™ Universal, AutoTrac™ Controller, AutoTrac™ RowSense™, and Machine Sync.

To prevent injury to the operator and bystanders:

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

AL70325,000048F-19-15APR21

Use Seat Belt Properly



TS1729—UN—24MAY13

Avoid crushing injury or death during rollover.

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

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

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

Inspect seat belt and mounting hardware at least once a

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iTEC is a trademark of Deere & Company*

RowSense is a trademark of Deere & Company

year. Look for signs of loose hardware or belt damage, such as cuts, fraying, extreme or unusual wear, discoloration, or abrasion. Replace only with replacement parts approved for your machine. See your John Deere dealer.

DX,ROPS1-19-22AUG13

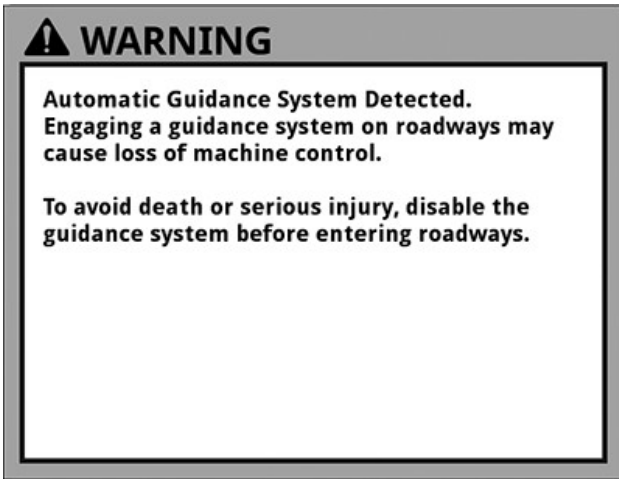
Use AutoTrac™ Controller on Approved Machines

Use AutoTrac™ Controller only on approved machines. Refer to StellarSupport.com for list of approved machines.

AL70325,0000188-19-22SEP14

Safety Signs

Safety Warning — AutoTrac™ Detected



PC20441—19—06JUN18

This message occurs during startup on machines with an automatic guidance system installed.

CZ76372,0000607-19-06JUN18

Regulatory and Compliance Information

Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

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

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communication. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

HC94949,0000EBB-19-10DEC18

EU Declaration of Conformity

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

The undersigned hereby declares that

Product: M50 VCU (CABM) Vehicle Control Unit

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

Directive	Number	Certification Method
Electromagnetic Compatibility Directive	2014/30/EU	Annex II of the Directive

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

EN 55032: 2012/AC: 2013

EN ISO 14982: 2009

EN 55024: 2010

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

John Deere Walldorf GmbH & Co. KG
Customer Support
Impexstraße 3
D-69190 Walldorf

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

Place of declaration: Urbandale, Iowa, USA

Name: Scott Torgerson

Date of declaration: 12 April 2021

Title: Delivery Manager Electronic Hardware

Manufacturing Unit: Deere & Company, Moline,
IL 61265

HC94949,0000EB7-19-05MAY22



DXCE01—UN—28APR09

UK Declaration of Conformity

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

The undersigned hereby declares that

Product Name(s): M50 VCU (CABM) Vehicle Control Unit

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

Regulation	Number	Certification Method
The Electromagnetic Compatibility Regulations	S.I. 2016 / 1091	Schedule 2, Module A

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

EN 55032: 2012/AC: 2013

EN ISO 14982: 2009

EN 55024: 2010

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

John Deere Ltd
Harby Road
Langar
Nottinghamshire
NG13 9HT
United Kingdom
EUConformity@JohnDeere.com

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

Place of declaration: Urbandale, Iowa, USA

Name: Scott Torgerson

Date of declaration: 15 April 2021

Title: Delivery Manager Electronic Hardware

Manufacturing Unit: Deere & Company, Moline,
IL 61265



PC28470—UN—18MAY21
CT47125,000126E-19-05MAY22

System Overview

Theory of Operation

The John Deere AutoTrac™ Controller 250 is a guidance system that provides automated steering when activated using a John Deere display and StarFire™ Receiver. The AutoTrac™ control unit sends adjustments to the Danfoss PVED-CLS valve control unit based on inputs from the display, receiver, wheel angle sensor (WAS), and steering input device (SID).



PC26537—UN—21NOV18

Danfoss Valve Control Unit, Top View



PC26538—UN—21NOV18

Danfoss Valve Control Unit, Side View

The Danfoss PVED-CLS valve control unit is configured for John Deere guidance during installation and setup. When AutoTrac™ is active, the control unit commands the electronic spool valves that direct hydraulic flow to the hydraulic steering cylinder. The hydraulic steering cylinder steers the machine to the defined guidance line.

The system uses a Danfoss steering encoder as the SID to detect when an operator manually steers the machine. The SID sends a signal that disengages AutoTrac™.

The WAS measures an angle on the machine to determine the position of hardware and machine heading. The WAS measures the angle of the front wheels (for row-crop tractors) or the angle of the pivot point (for articulated tractors). The system uses a three-wire WAS with an input voltage of either 5 V or 12 V. For either type of sensor, the voltage output ranges from about 0.8 V at one stop to about 4.1 V at the other stop. As the voltage increases and decreases, the signal is sent to the AutoTrac™ control unit.

The following criteria must be met to operate AutoTrac™:

- Master Switch is set to ON
- Machine speed is greater than 0.5 km/h (0.8 mph) and less than 19.3 km/h (18.6 mph)
- StarFire™ Receiver recognizes a differential GPS signal
- StarFire™ Receiver with terrain compensation module (TCM) is turned ON and calibrated
- System state is Ready
- AutoTrac™ is activated on display
- Machine is moving within 45 degrees of the guidance line
- Electrohydraulic steering valve diagnostic test mode is OFF
- Operator is detected in seat
- AB line is defined
- Operator presses resume switch to engage system
- Hardware components are compatible
- Steering valve is configured for John Deere guidance

HC94949,0000EA4-19-12DEC18

Requirements

- Display
 - GreenStar™ 3 2630 Display
 - John Deere 4240 Universal Display
 - John Deere 4640 Universal Display

NOTE: Display must have software version 18-2 or newer.

- StarFire™ Receiver
 - StarFire™ 3000 Receiver
 - StarFire™ 6000 Receiver

NOTE: Receiver activation is required for SF1, SF2, SF3, or real-time kinematics (RTK).

John Deere kit components:

- AutoTrac™ control unit
- Resume switch
- Wiring harnesses
- Hardware and software

Case IH machine components:

- Factory-installed Danfoss steering valve
- Seat switch
- Wheel angle sensor (WAS)

StarFire is a trademark of Deere & Company
AutoTrac is a trademark of Deere & Company

- Steering input device (SID)

NOTE: Ensure that the machine is equipped with AccuGuide™ components.

Optional component:

- ISOBUS harness

HC94949,0000DEA-19-21NOV18

AutoTrac™ Accuracy

IMPORTANT: John Deere AutoTrac™ system relies on the global positioning system (GPS) network operated by the United States government, which is solely responsible for its accuracy and maintenance. System is subject to changes that could affect accuracy and performance of all GPS equipment.

Overall AutoTrac™ system accuracy is dependent on many variables.

AutoTrac™ System Accuracy = Signal accuracy + Machine Setup + Implement Setup + Field and Soil Conditions.

It is very important to remember:

- Receiver has to go through a warm-up period after starting.
- Machine must be set up properly (for example, machine is ballasted according to Operator's Manual).
- Mechanical steering system needs to be in good condition (tight steering with minimal play in steering axle).
- Implement must be set up to run properly (wear parts, such as shanks, shovels, and sweeps, are in good working condition and correctly spaced).
- How field and soil conditions affect system (loose soil requires more steering than firm soil, and firm soil can cause uneven draft loads).

IMPORTANT: Although AutoTrac™ system can be activated when SF2 (or SF1 if using AutoTrac™ SF1 activation) correction signal is confirmed, system accuracy may continue to increase after powering up system.

AutoTrac™ SF2 activation operates on SF1, SF2, SF3, or RTK signal.

AutoTrac™ SF1 activation operates on SF1 signal only.

HC94949,0000DE6-19-12DEC18

AutoTrac™ Controller and Valve Compatibility

For a complete list of compatible machines, visit StellarSupport.com.

AutoTrac™ Controller Compatibility		
Machine	Model Numbers	Valve
Case Quadtrac	420	Danfoss PVED-CLS
	470	
	500	
	540	
	580	
	620	
Case Steiger®	420	
	470	
	500	
	540	
	580	
	620	

AutoTrac is a trademark of Deere & Company
Steiger is a trademark of CNH Industrial N.V.

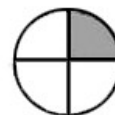
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AutoTrac™ Status Pie

NOTE: Both steering control unit (SSU) and AutoTrac™ activation must be detected to display status pie and steer icon.

AutoTrac™ icon has four stages as shown in the AutoTrac™ Status Pie:

- INSTALLED
- CONFIGURED
- ENABLED
- ACTIVATED



Stage 1—INSTALLED

PC8832—UN—25OCT05

Stage 1 **INSTALLED** (1/4 of pie)—SSU and all other hardware necessary for use are installed:

- SSU is detected



Stage 2—CONFIGURED

PC8833—UN—25OCT05

Stage 2 **CONFIGURED** (2/4 of pie)—Guidance and StarFire™ Receiver are configured, and machine conditions are met:

- Guidance system has been turned ON in the display.
- Guidance Track 0 has been defined.
- AutoTrac™ activation is detected.
- StarFire™ signal is present. Correct StarFire™ signal level for AutoTrac™ activation is selected.
- SSU has no active faults pertaining to the steering function.
- Hydraulic oil is warmer than minimum temperature.
- Speed is less than maximum limit.
- Terrain compensation module (TCM) message is valid.
- Machine is in proper operating gear.



Steer On/Off

PC20221—UN—10NOV14

Steer On/Off—Press the steer on/off button to move AutoTrac™ from the CONFIGURED stage to the ENABLED stage.



Stage 3—**ENABLED**

PC8834—UN—25OCT05

Stage 3 ENABLED (3/4 of pie)—Steer button has been pressed. All conditions are met for AutoTrac™ to operate and system is ready to be activated:

- Select Steer On/Off button once to turn “Steer On”.



Stage 4—**ACTIVATED**

PC8835—UN—25OCT05

Stage 4 ACTIVATED (4/4 of pie with “A”)—Resume switch has been pressed and AutoTrac™ is steering the machine:

- Press Resume Switch—AutoTrac™ has been activated.

HC94949,0000E6D-19-17OCT18

Component Overview

StarFire™ Receiver



PC20489—UN—03JUL19

Receiver uses navigation satellites with StarFire™ correction satellites to determine machine location and direction of travel. An integrated terrain compensation module (TCM) adjusts machine position to compensate for uneven terrain. A StarFire™ signal activation is required to operate AutoTrac™.

HC94949,0000AAE-19-25SEP19



PC25486—UN—04APR18

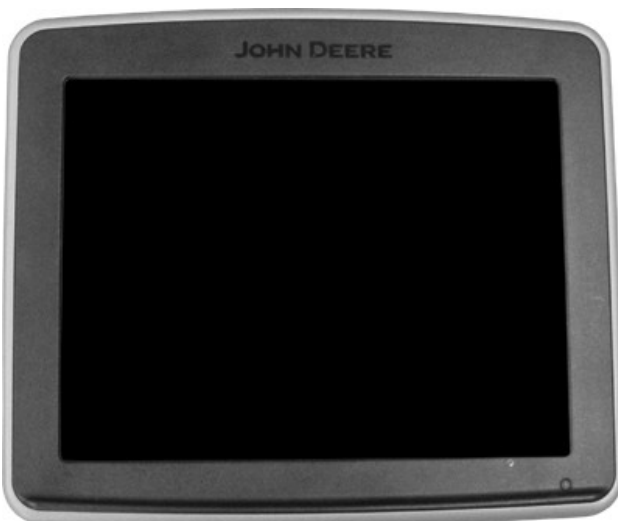
4640 CommandCenter™

The display is a user interface used by the operator to:

- Configure and calibrate system components.
- Monitor system performance.
- Make system adjustments.
- Program software.
- View diagnostic tests.

HC94949,0000D44-19-21SEP18

GreenStar™ Display or Generation 4 Display



PC13407—UN—20APR11

GreenStar™ 3 2630 Display

AutoTrac™ Controller Harness (Case IH Steiger®)



PC26367—UN—10OCT18

AutoTrac™ Controller Harness (Case IH Steiger®)

HC94949,0000E64-19-05DEC18

GreenStar™ Harness



GreenStar™ Harness

PC26368—UN—10OCT18

HC94949,0000E65-19-05DEC18



PC20010—UN—11SEP14

Master Switch is used when transporting machine. When the switch is set to off position, no power is supplied to the electrohydraulic valve. This ensures AutoTrac™ is disabled while driving on roads or when operator does not want AutoTrac™ to be activated. Switch is also referred to as Road Mode or Road Switch.

HC94949,0000D28-19-17JUL18

Resume Switch



Resume Switch

PC20201—UN—10NOV14

Press the resume switch to change AutoTrac™ from Enabled to Activated status.

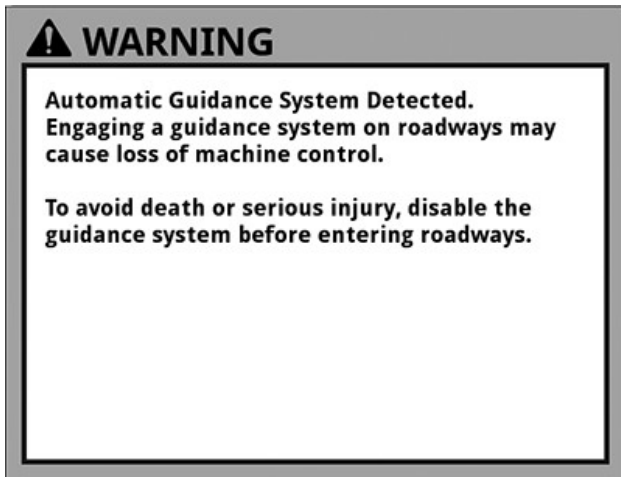
HC94949,0000D3B-19-17JUL18

Master Switch

NOTE: Location varies on machine.

Setting Up

Read and Accept Warning on GreenStar™ Display



PC20441—19—06JUN18

IMPORTANT: When starting machine with AutoTrac™ installed and start-up screen is not displayed, update software on StellarSupport.com.

Each time a machine equipped with AutoTrac™ is started, start-up screen appears as a reminder of operator responsibilities when using AutoTrac™ steering system.

Operator must select Accept before display will move on to next page.

HC94949,0000E00-19-21SEP18

GreenStar™ Display and Generation 4 Display Activations

NOTE: John Deere AutoTrac™ Controller (ATC) requires a valid AutoTrac™ software activation.

GreenStar™ Display

To view or activate software on GreenStar™ 3 2630 Display, select:



Menu Button

PC8663—UN—29APR15

1. Menu button



PC12685—UN—29APR15

GreenStar™ Button

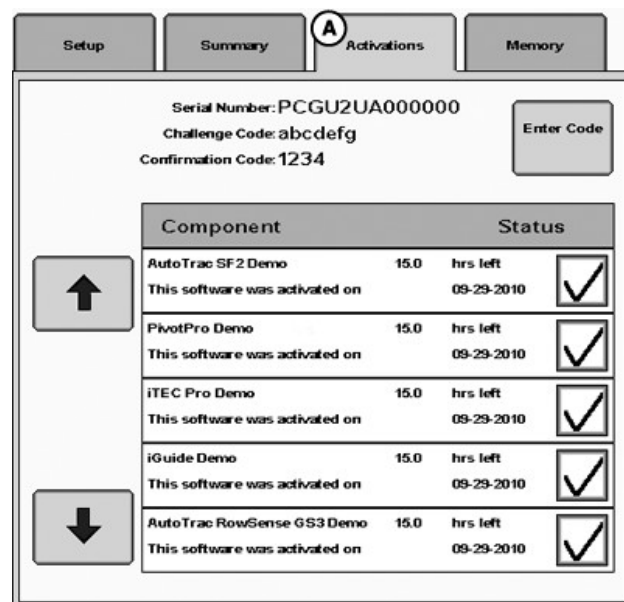
2. GreenStar™ button



PC12686—UN—14JUL10

GS3 Softkey

3. GS3 softkey



PC20355—UN—01DEC14

GreenStar™ Display Activations

A—Activations Tab

4. Activations tab (A)

NOTE: Verify proper activation and that SF2 or SF3 license is active and meets expected accuracy levels for operation. Contact your John Deere dealer to obtain a StarFire™ license or RTK activation.

Generation 4 Display

To update software, activate features, and find software version details, select:



Menu Button

PC17269—UN—15JUL13

1. Menu button



System Tab

PC24666—UN—05SEP17

2. System tab



Software Manager Application

PC15346—UN—11JUL13

3. Software Manager application

HC94949,0000EA5-19-21NOV18

StarFire™ Receiver Activations

NOTE: John Deere AutoTrac™ Controller (ATC) requires a valid StarFire™ signal activation.

GreenStar™ Display

To view or activate signal on StarFire™ Receiver, select:



Menu Button

PC8663—UN—29APR15

1. Menu button



StarFire™ Button

PC21222—UN—02JUN15

2. StarFire™ button



Main Softkey

PC25753—UN—07JUN18

3. Main softkey

Generation 4 Display

To view or activate signal on StarFire™ Receiver, select:



Menu Button

PC17269—UN—15JUL13

1. Menu button



Applications Tab

PC24662—UN—30AUG17

2. Applications tab



StarFire™ Application

PC20690—UN—19JAN15

3. StarFire™ application

4. Choose receiver.

HC94949,0000DE7-19-21NOV18

Activations Tab



Activations Tab

PC21311—UN—02JUL15

Activations tab displays activations on receiver.

Activations **(A)**
Activation Code

SF1, SF3 Ready, RTK Ready

SF3 Subscription No **(B)**
 SF3 End Date **(C)**
 StarFire SN A10GT6T7600076 **(D)**

PC21418—UN—30JUL15

- A**—Activations
B—SF3 Subscription
C—SF3 End Date
D—StarFire™ S.N.

Activations (A)—Displays activations on the receiver.

- SF1—Activated on every receiver.
- SF3 Ready (if available)—Receiver must be SF3 Ready to license SF3 signal subscription or activate real time kinematic (RTK). An SF3 Ready upgrade can be purchased.
- RTK Ready—Requires RTK Ready activation.

SF3 Subscription (B)—Displays status of receiver SF3 subscription.

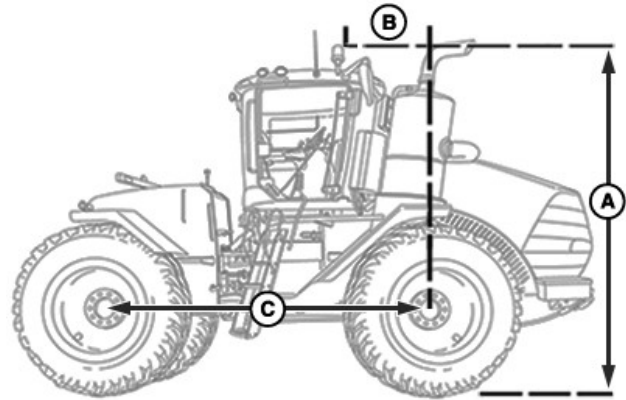
- Yes Enabled—A valid SF3 subscription exists, and SF3 is the differential correction mode selected.
- Yes Disabled—A valid SF3 subscription exists, but SF3 is not the differential correction mode selected.
- No—No valid SF3 subscription exists or SF3 subscription has expired.

SF3 End Date (C)—Displays date when SF3 subscription expires.

StarFire™ S.N. (D)—Displays serial number of StarFire™ Receiver.

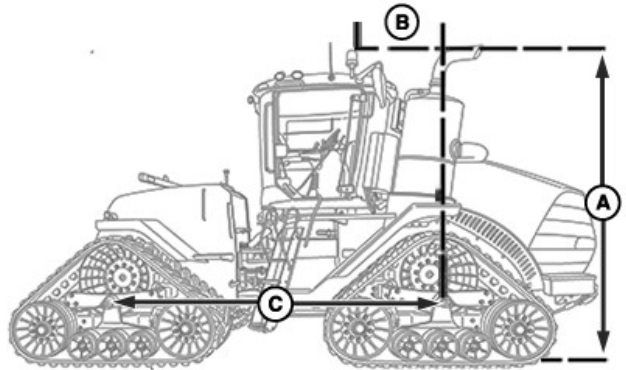
HC94949,0000C2B-19-30SEP19

StarFire™ Height, Fore-Aft, and Wheelbase



PC26485—UN—13NOV18

Articulated Wheeled Machines



PC26575—UN—06DEC18

Articulated Track Machines

- A**—Height
B—Fore-Aft
C—Wheelbase

StarFire™ Height—Enter the height of the StarFire™ Receiver. Height is measured from the ground to the top of the dome.

StarFire™ Fore-Aft—Enter the fore-aft measurement (the distance from the fixed axle of the machine to the receiver). The fixed axle is the front axle on an articulated tractor. For articulated tractors, the fore-aft measurement is a negative value.

Wheelbase (cm)—Enter the wheelbase measurement (the distance between axles).

HC94949,0000EB0-19-03DEC18

StarFire™ Measurements Table

NOTE: Default measurements are 161 in for height and -22 in for fore/aft.

Use the following table to record the height and fore/aft measurements of the StarFire™ Receiver.

StarFire™ Measurements			
Machine	Height	Fore/aft	Wheelbase

HC94949,0000DF6-19-12DEC18

Calibrate Terrain Compensation Module (TCM)



Menu Button

PC20197—UN—05NOV14

1. Select the Menu button.



StarFire™ Button

PC21222—UN—02JUN15

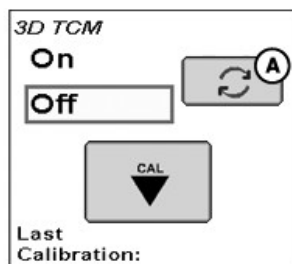
2. Select the StarFire™ button.



Setup Tab

PC20199—UN—05NOV14

3. Select the Setup tab.



PC19992—UN—04SEP14

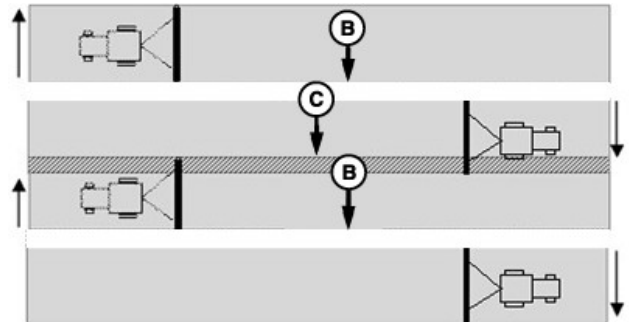
A—TCM Toggle Button

Select the TCM toggle button (A) to turn the TCM ON and OFF. When the TCM is turned OFF, StarFire™ global positioning system (GPS) message is not corrected for machine dynamics or side slopes. TCM defaults to ON after cycling power.

NOTE: TCM must be turned ON for AutoTrac™ to activate.

Calibrate the TCM so the receiver can determine zero degree roll angle and pitch angle.

Before calibrating, ensure that machine and implement are in proper working condition and ready for field work. Machine must be ballasted and tires properly inflated. Lower implement as close as possible to the working position when calibrating.



PC19993—UN—03SEP14

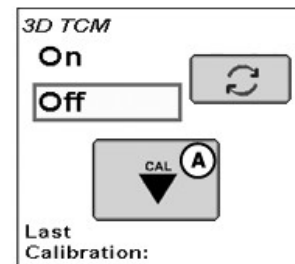
B—Skip
C—Overlap

Calibrate the TCM every time the receiver is removed from the machine and reattached or if the TCM angle in relation to the machine has changed. Changes in the TCM angle in relation to machine can create an offset and look like a consistent skip (B) or overlap (C) in pass-to-pass operation. Possible causes of this offset could be the StarFire™ mounting bracket is slightly offset, the machine cab is slightly offset, or uneven tire pressures from one side to other.

To eliminate offset, position the machine and calibrate the TCM, drive down a pass, turn around, and drive down same pass in opposite direction. If the machine does not follow same pass, measure the offset distance and enter in implement offset.

Position Machine and Calibrate Terrain Compensation Module (TCM)

1. Park the machine on a hard, level surface and come to a complete stop (cab is not rocking).
2. Mark the location of tires or tracks on ground to note the location of axle.



PC19994—UN—04SEP14

A—Calibration Button

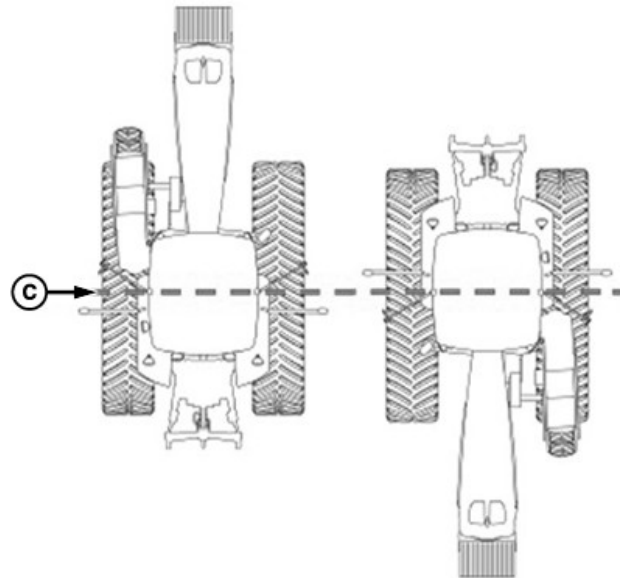
3. Select the Calibration button (A).



Accept Button

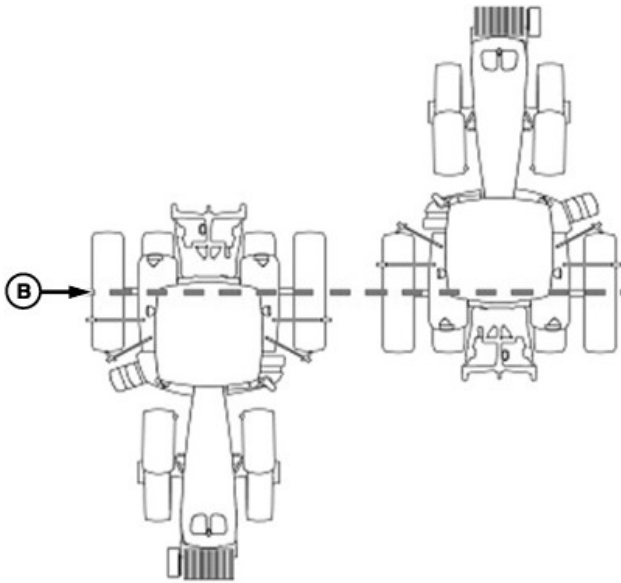
PC22267—UN—14MAR16

4. Select the Accept button. Calibrating status bar appears, then disappears when finished.
5. Turn the machine 180 degrees to face the opposite direction. Ensure that tires are in proper location for fixed or floating front axle and machine has come to a complete stop (cab is not rocking).



PC19996—UN—03SEP14

Fixed Axle Wheels Or Track Machines



PC19995—UN—03SEP14

Floating Front Axle Machines

C—Machine Pivot Point

- For fixed-axle wheels or track machines (track tractors, 47X0 and 49X0 series sprayers, or 9000 and 9020 series wheel tractors), place wheels or tracks so machine pivot point (C) is in same location when facing either direction.

6. Select the Accept button. Calibrating status bar appears, then disappears when finished.
7. Select the Accept button to return to Setup tab. If calibration was unsuccessful, recalibrate the TCM.

HC94949,0000EBE-19-12DEC18

B—Rear Axle

- For floating front axle machines (mechanical front wheel drive [MFWD], Independent Link Suspension [ILS™], or Triple-Link Suspension [TLS™]), place wheels so rear axle (B) is in same location when performing 2-point calibration.

Enter Machine Information and Offsets



Menu Button

PC8663—UN—29APR15

1. Select Menu button.



GreenStar™ Button

PC12685—UN—29APR15

2. Select GreenStar™ button.



Equipment Softkey

PC21184—UN—20MAY15

3. Select Equipment softkey.

PC26032—UN—27JUL18

Enter Machine Information

- A—Machine Tab
- B—Machine Type Drop-Down Menu
- C—Machine Model Drop-Down Menu
- D—Machine Name Drop-Down Menu
- E—Connection Type Drop-Down Menu
- F—Machine Turn Radius Input Box
- G—Turning Sensitivity Input Box
- H—Change Offsets Button

4. Select Machine tab (A).

NOTE: Drop-down menu or input boxes may be grayed out if the machine is automatically recognized.

5. Select or enter the machine information (B—G).
6. Select Change Offsets button (H).

PC26031—UN—27JUL18

- A—Lateral distance from center-line of machine to GPS receiver.
- B—In-line distance from non-steering axle to GPS receiver
- C—In-line distance from non-steering axle to connection point
- D—Vertical distance from GPS receiver to the ground
- E—Left or Right Offset Toggle Button
- F—Non-Steering Axle Location Drop-Down Menu
- G—Accept Button

7. Select or enter the machine offsets information (A—F).
8. Select Accept button (G).

HC94949,0000DF3-19-01OCT18

Setting Up—AutoTrac™ Controller 250

Set Up System

IMPORTANT: Before calibrating, determine the wheelbase, fore-aft (GPS to fixed axle distance), and height (GPS to ground distance). Enter all machine measurements into the display input boxes.



PC26028—UN—06SEP18

AutoTrac™ Controller 250 Button

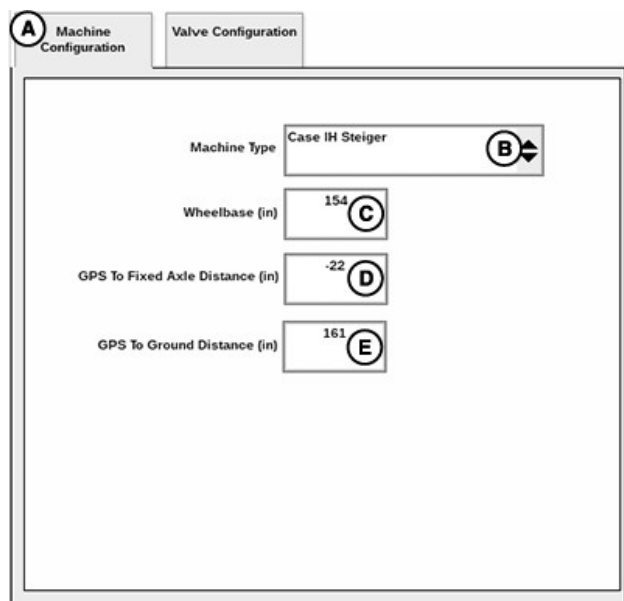
1. Select AutoTrac™ Controller 250 button.



PC24210—UN—15MAY17

Setup Softkey

2. Select Setup softkey.



PC26200—UN—05SEP18

Machine Configuration Tab

- A—Machine Configuration Tab
- B—Machine Type Drop-Down Menu
- C—Wheelbase (in) Input Box
- D—GPS To Fixed Axle Distance (in) Input Box
- E—GPS To Ground Distance (in) Input Box

3. Select Machine Configuration tab (A).
4. Select a Machine Type from the drop-down menu (B).

NOTE: Ensure Wheelbase (C), GPS to Fixed Axle Distance (D), and GPS to Ground Distance (E) are correct before entering values.

Wheelbase must be set before calibrating.

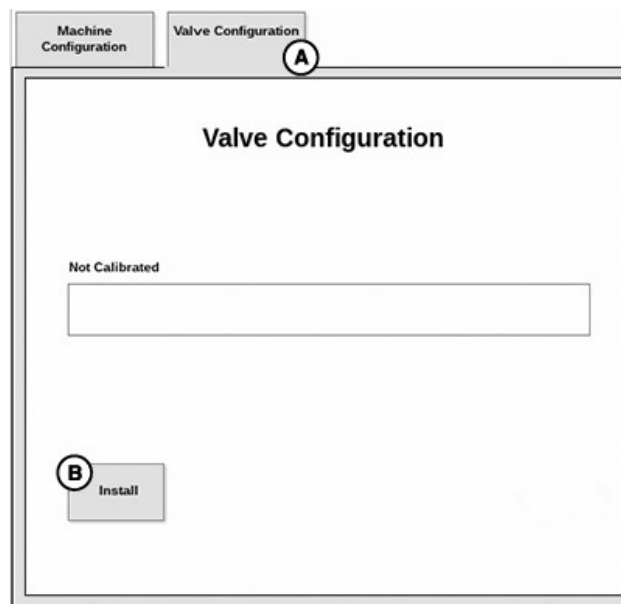
5. Enter Wheelbase.

NOTE: GPS to Fixed Axle Distance is the same as the fore-aft measurement. (See StarFire™ Height, Fore-Aft, and Wheelbase.)

6. Enter GPS to Fixed Axle Distance.
7. Enter GPS to Ground Distance.

HC94949,0000E30-19-07DEC18

Configure Valve



PC26201—UN—22OCT18

Valve Configuration Tab

- A—Valve Configuration Tab
- B—Install Button

The valve configuration loads the required settings to the Danfoss valve control unit.

1. Select Valve Configuration tab (A).
2. Select Install button (B).

After configuration is completed, the Install button is grayed out.

If the operator must remove the AutoTrac™ Controller 250 due to a machine lease or trade-in:



Setup Softkey

PC24210—UN—15MAY17

1. Press and hold the Setup softkey for five seconds.



Uninstall Button

PC25991—UN—17JUL18

2. Select the Uninstall button.

HC94949,0000DF0-19-30NOV18

Test Steering

CAUTION: To avoid serious injury or death, test steering system when first installed on machine and prior to any use.



AutoTrac™ Controller 250 Button

PC26028—UN—06SEP18

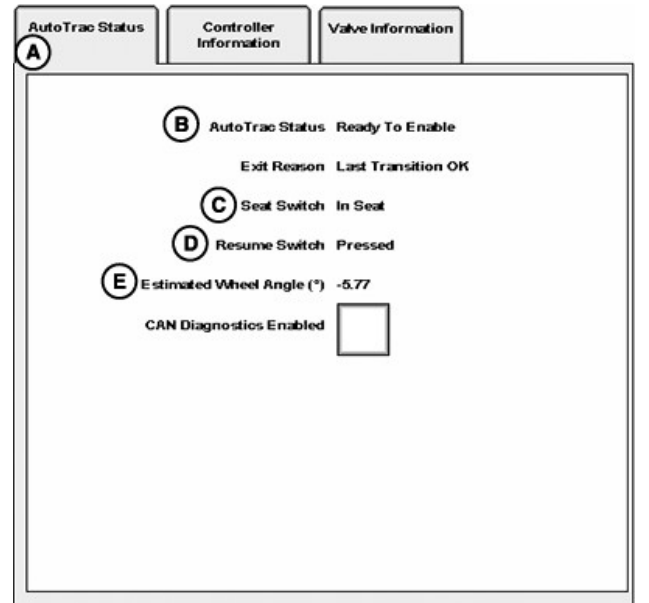
1. Select AutoTrac™ Controller 250 button.



Diagnostics Softkey

PC24234—UN—18MAY17

2. Select Diagnostics softkey.



PC26076—UN—22OCT18

AutoTrac™ Status Tab

- A—AutoTrac™ Status Tab
- B—AutoTrac™ Status
- C—Seat Switch
- D—Resume Switch
- E—Estimated Wheel Angle (°)

3. Select AutoTrac™ Status tab (A).
4. Check AutoTrac™ status (B) and make sure that there are no exit codes.
5. Make sure seat switch (C) recognizes that operator is in and out of the seat.
6. Press resume switch (D).
7. StarFire™ Receiver determines the estimated wheel angle (E). Drive machine in an S pattern to ensure value changes with each turn.

NOTE: The factory sets the valve and wheel angle sensor calibrations. The machine dealer can update these calibrations, if needed.

HC94949,0000DEF-19-30NOV18

Operating–GreenStar™ 3 2630 Display

Create Guidance Line

NOTE: Instructions are for a basic guidance line. For complete guidance setup instructions, see *GreenStar™ 3 2630 Display Operator's Manual*.



Menu Button

PC8663—UN—29APR15

1. Select Menu button.



GreenStar™ Button

PC12685—UN—29APR15

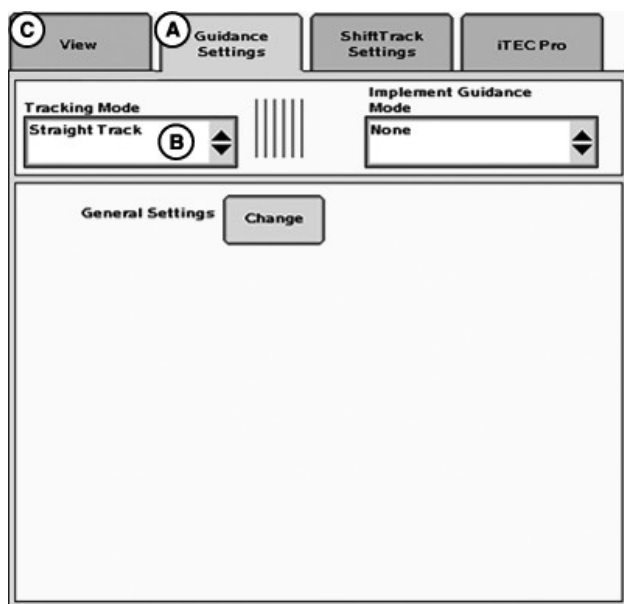
2. Select GreenStar™ button.



Guidance Softkey

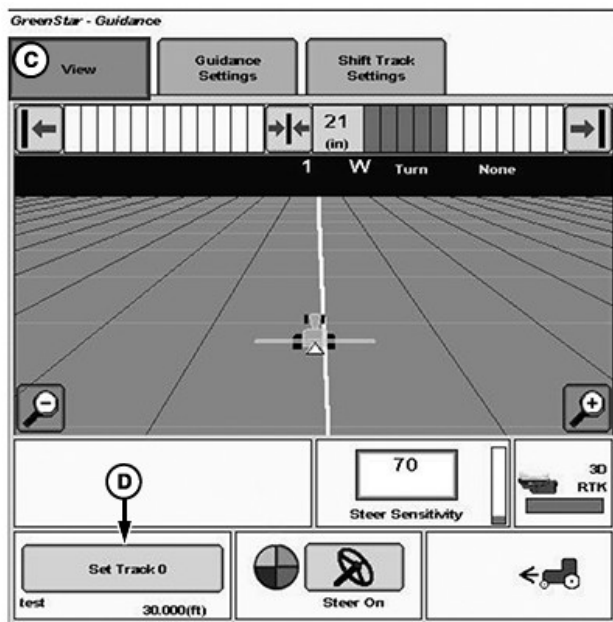
PC21148—UN—11MAY15

3. Select Guidance softkey.



Guidance Settings

PC21690—UN—06OCT15

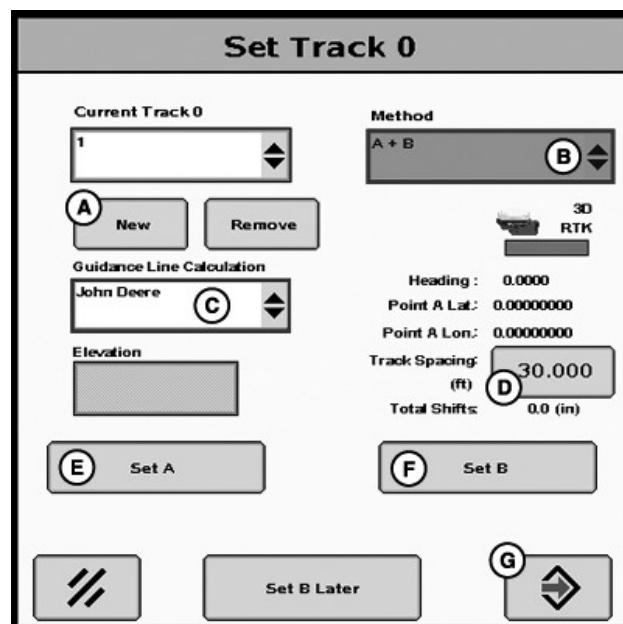


Guidance View

PC20334—UN—25NOV14

A—Guidance Settings Tab
B—Tracking Mode Drop-Down Menu
C—View Tab
D—Set Track 0 Button

4. Select Guidance Settings tab (A).
5. Select Straight Track mode (B).
6. Select View tab (C).
7. Select Set Track 0 button (D).



Set Track 0

PC20335—UN—25NOV14

A—New Button
B—Method Drop-Down Menu
C—Guidance Line Calculation Drop-Down Menu

D—Track Spacing Button
E—Set A Button
F—Set B Button
G—Enter Button

8. Select New button (A).
9. Enter a name for Track 0 using keypad. Select Enter button to accept and return to Track 0 setup.
10. Select A + B option from Method drop-down menu (B).
11. Select John Deere from Guidance Line Calculation drop-down menu (C).
12. Enter desired track spacing (D).
13. Drive machine to the desired location in the field, and select Set A button (E).

NOTE: To set B, it is required to drive more than 3 m (10 ft).

14. Drive machine to the desired point B, and select Set B button (F).
15. To complete Track 0 setup, select Enter button (G).

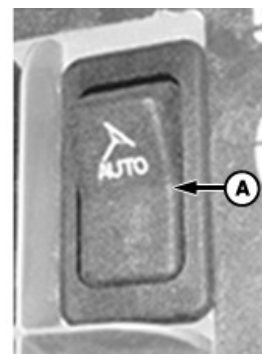
HC94949,0000DE2-19-02OCT18

instead of the Steer ON and OFF button. Select button to view AutoTrac™ Diagnostics. The diagnostics page indicates the requirements for each of the four pie pieces and the status of all requirements.

NOTE: AutoTrac™ may not become available until hydraulic fluid has reached the required temperature (only one pie piece until fluid is warm). This issue does not display a diagnostic code or show in the status menu.

HC94949,0000910-19-14OCT15

Activate System



Resume Switch

PC21691—UN—06OCT15

Enable AutoTrac™



Stage 2—CONFIGURED

PC8833—UN—25OCT05

When AutoTrac™ status pie has two pieces filled in, the hardware and software requirements to AutoTrac™ have been met.



Steer ON and Off Button

PC20221—UN—10NOV14

1. Select Steer ON and OFF button to enable and disable AutoTrac™. Three pieces of the pie fill-in when steering is on.



AutoTrac™ Diagnostics Wrench

PC11973—UN—09APR09

If any of the hardware and software requirements have not been met, a Diagnostic Wrench button is displayed

AutoTrac is a trademark of Deere & Company

A—Resume Switch

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

Do not attempt to turn on (Activate) AutoTrac™ system while transporting on a roadway.

NOTE: To activate the system, the machine must be moving forward.

After system has been Enabled, operator must manually change system to Activated status when steering assistance is desired.

1. Press resume switch (A) to initiate assisted steering.

To activate system, the following criteria must be met:

- Machine speed is greater than 0.5 km/h (0.3 mph).
- Machine is within 45 degrees of desired track.
- Machine speed is less than 30 km/h (18.6 mph).
- Master switch in On position.
- Terrain compensation module (TCM) is on and calibrated.
- In reverse, AutoTrac™ remains activated for 45

seconds. After 45 sec, machine must be put in a forward gear before reverse activates again.

HC94949,0000E4F-19-24OCT18

Disengage, Deactivate, and Disable System

 **CAUTION:** To avoid death or serious injury, disable guidance system before entering roadways.

Disengage AutoTrac™ System

AutoTrac™ system is disengaged by the following methods:

- Turning steering wheel.
- Slowing to speeds less than 0.5 km/h (0.3 mph).
- Toggle Steer ON/OFF button until Steer OFF is displayed in Guidance View tab or Guidance Application.
- Operator out of seat for more than 7 seconds if using seat switch, or no activity detected by operator presence monitor for 7 minutes.

When AutoTrac™ is active, the operator can turn the steering wheel to disengage AutoTrac™ and steer manually. Alternately, the operator can turn the road and resume switch to OFF to disengage AutoTrac™.

Deactivate AutoTrac™ System

Toggle Steer ON/OFF button in Guidance View tab or Guidance Application until Steer OFF is displayed and AutoTrac™ is dropped to 2/4 status pie.

Disable AutoTrac™ System

Turn the road and resume switch to OFF and AutoTrac™ is dropped to 1/4 status pie.

To disable AutoTrac™ through GreenStar™ Displays, select Guidance softkey > Guidance Settings tab > Tracking Mode drop-down menu > choose Guidance Off.

On Generation 4 Displays, select Settings icon at the top of the Guidance Application and toggle Guidance Master to OFF.

HC94949,0000EB8-19-10DEC18

Operating—Optimizing AutoTrac™ Controller

Optimize AutoTrac™ Controller Performance

NOTE: AutoTrac™ Controller has been tuned to perform in most field conditions using various implements. For conditions outside of normal, Advanced Settings allows operator to fine-tune system for specific field conditions and implements.

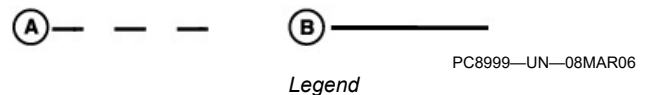
Read this information in its entirety before tuning AutoTrac™ Advanced Settings.

1. **Check and fix problems before tuning.** Perform necessary mechanical checks and calibrations on machine. Tuning without fixing problems can mask actual machine faults and cause issues later.
2. **Access Advanced AutoTrac™ Settings page.** (To access Advanced AutoTrac™ Settings page, see display Operator's Manual.)
3. **Start with factory default settings.** Steering Sensitivity value correlates to value on Guidance View tab. Use a value for current conditions (70 for concrete, 100 for most conditions, and 120 for soft ground). Adjust number to fine-tune system as needed.
4. **General Tuning Instructions**
 - Attempt to adjust settings in problem field conditions while AutoTrac™ is active. Adjust one value at a time. Reset to factory defaults if settings do not correct performance.
 - If adjusting one value does not give satisfactory performance, try different combinations of parameters.

Adjustment Recommendations:

- **Steering Sensitivity**—Set at 100 before making other adjustments, then adjust in increments of 10.
- **Line Sensitivity Heading**—Adjust in increments of 10.
- **Line Sensitivity Tracking**—Adjust in increments of 20.
- **Heading Lead**—Adjust in increments of 10.
- **Steering Response Rate**—Adjust in increments of 10.
- **Acquire Sensitivity**—Adjust in increments of 20.
- **Curve Sensitivity**—Adjust in increments of 20.

NOTE: If desired performance is not achieved, see Troubleshooting AutoTrac™ Controller for more detail.



A—Desired Track—Broken Line
B—Actual Track—Solid Line

Optimize Line Sensitivity

A: Line Sensitivity—Heading

Determines how aggressively AutoTrac™ responds to heading error.

- Tune line sensitivity—heading while operating on AB line.
- If front of machine wanders too far from track direction, adjust line sensitivity—heading higher.
- If machine becomes unstable, adjust line sensitivity—heading lower.

B: Line Sensitivity—Tracking

Determines how aggressively AutoTrac™ responds to off-track (lateral) error.

- Tune line sensitivity—tracking while operating on AB line.
- If machine wanders too far from the AB line, adjust line sensitivity—tracking higher.
- If machine becomes unstable around AB line, adjust line sensitivity—tracking lower.

NOTE: Line sensitivities work together. If both are set too high, machine becomes unstable. If both are set too low, machine wanders around AB line.

Optimize Heading Lead

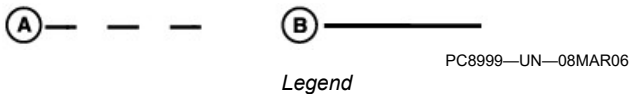
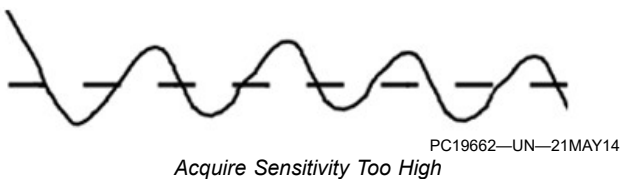
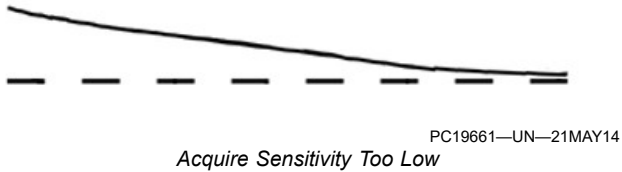
Determines impact of yaw rate (machine rate of turn) on tracking performance. This can be thought of as a look-ahead setting. Large adjustments may result in poor performance.

- Higher settings result in more aggressive response to changes in machine direction.
- Lower settings result in less aggressive response to changes in machine direction.

Optimize Steering Response Rate

Adjusts rate of machine steering in order to maintain tracking performance. Increasing steering responsiveness generally results in better tracking performance.

- Tune speed by operating parallel to and 1.2 m (4 ft) off the AB line.
- While tuning, adjust in increments of 10 between range of 50 to 200.

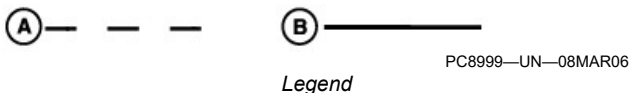
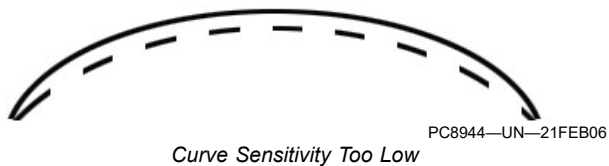


A—Desired Track—Broken Line
B—Actual Track—Solid Line

Optimize Acquire Sensitivity

Determines how aggressively machine acquires track. This setting affects performance while acquiring track only.

- Tune speed by operating parallel to and 1.2 m (4 ft) off the AB Line.
- Tune acquire sensitivity until machine acquires line smoothly.



A—Desired Track—Broken Line
B—Actual Track—Solid Line

Curve Sensitivity

Determines how aggressively AutoTrac™ responds to a curve in track. This setting affects performance in curve track guidance only. Start with curve sensitivity equal to optimized acquire sensitivity.

- Tune curve sensitivity while operating in curve track.
- If machine turns outside of curve, adjust sensitivity higher.
- If machine turns inside of curve, adjust sensitivity lower.

HC94949,0000E01-19-12DEC18

Monitor AutoTrac™ Performance GreenStar™ 3 2630 Display



Guidance Settings Tab

PC11948—UN—30JUN09

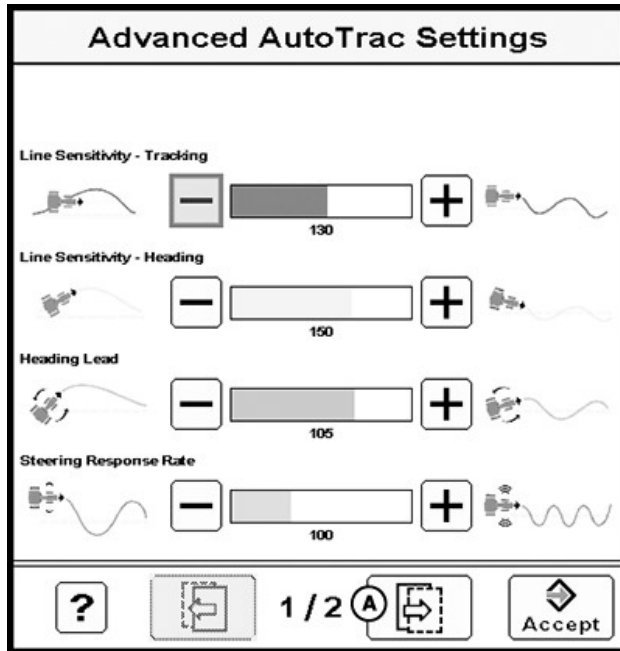
1. Select Guidance Settings tab.



AutoTrac™ Advanced Settings Button

PC21902—UN—03DEC15

2. Select AutoTrac™ Advanced Settings button.



PC26036—UN—26JUL18

Advanced AutoTrac™ Settings-Page 1

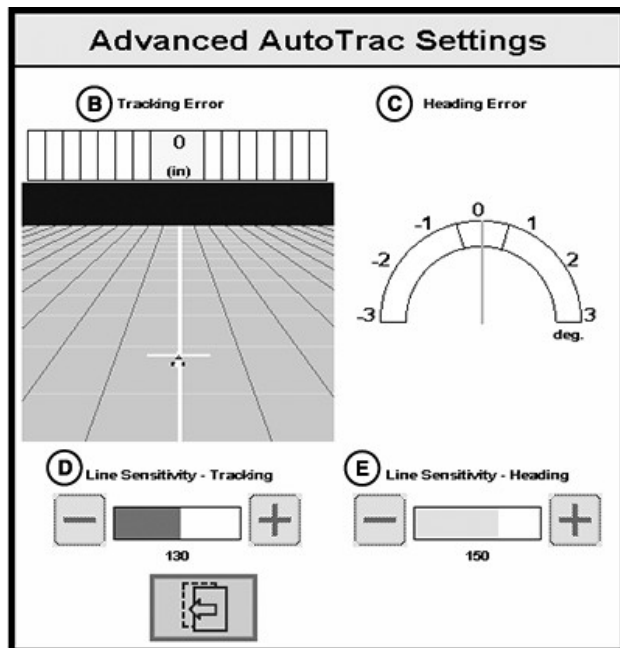
3. Select page 3 (A).



PC22002—UN—07JAN16

Performance Monitor Button

4. Select Monitor Performance button.



PC26038—UN—06AUG18

Tracking and Heading Error

- A—Next Button
- B—Tracking Error
- C—Heading Error
- D—Line Sensitivity—Tracking
- E—Line Sensitivity—Heading

Use the two graphs to monitor tracking (B) and heading (C) error.

1. Acquire line and drive for 30 seconds.
2. Monitor both values for 30 seconds.

NOTE: Adjust steering sensitivity to preferred performance before adjusting line sensitivity tracking and heading settings.

Values closest to zero error are preferred and indicate better system performance.

3. Adjust settings until desired performance is achieved based on signal accuracy and overall machine condition and health.

NOTE: Adjust Line Sensitivity—Tracking (D) for tracking error.

Adjust Line Sensitivity—Heading (E) for heading error.

HC94949,0000D31-19-06AUG18

AutoTrac™ Performance Chart

AutoTrac™ performance can be optimized for commonly used operations and speeds. When optimizing AutoTrac™ on a tractor, it is recommended to first optimize performance without an implement to set baseline. Use the chart to record values of AutoTrac™ advanced settings so they can be referenced when changing operations.

Operating—Optimizing AutoTrac™ Controller

Operation / Speed	Steer Sensitivity	Line Sensitivity —Heading	Line Sensitivity —Tracking	Heading Lead	Steering Re-sponse Rate	Acquire Sensitivity	Curve Sensitivity

HC94949,0000EB9-19-10DEC18

Troubleshooting

Diagnostics Readings



Menu Button

PC8663—UN—29APR15

1. Select Menu button.



AutoTrac™ Controller 250 Button

PC26028—UN—06SEP18

2. Select AutoTrac™ Controller 250 button.



Diagnostics Softkey

PC24234—UN—18MAY17

3. Select Diagnostics softkey.
4. Select AutoTrac™ Status, Controller Information, and Valve Information tabs for diagnostic readings information.

HC94949,0000EA6-19-30NOV18

C—Exit Reason
D—Seat Switch
E—Resume Switch
F—Estimated Wheel Angle (°)
G—CAN Diagnostics Enabled Checkbox

AutoTrac™ Status—Identifies the current status pie.

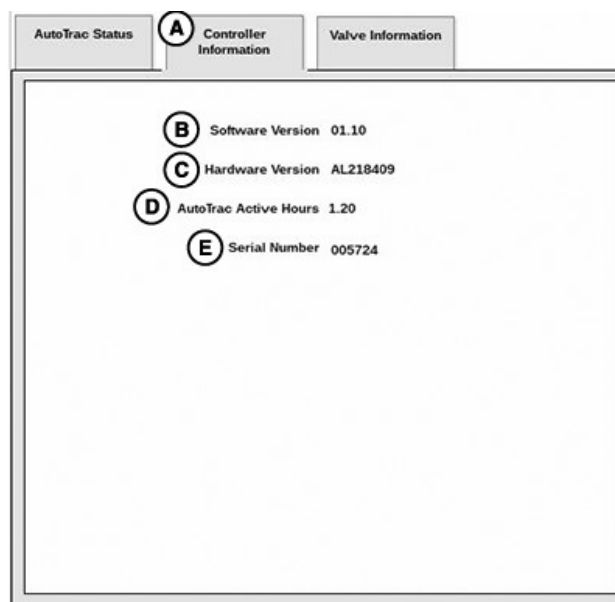
Exit Reason—Identifies AutoTrac™ stop codes.

Estimated Wheel Angle—Uses the global positioning system (GPS) to determine the angle of the wheels. The display uses yaw rate and wheelbase to calculate the wheel angle.

CAN Diagnostics Enabled—To enable broadcasting of diagnostic values and statuses for CAN recording, select the CAN Diagnostics Enabled checkbox (G). CAN recordings are used for advanced troubleshooting.

HC94949,0000EAE-19-06DEC18

Controller Information Tab

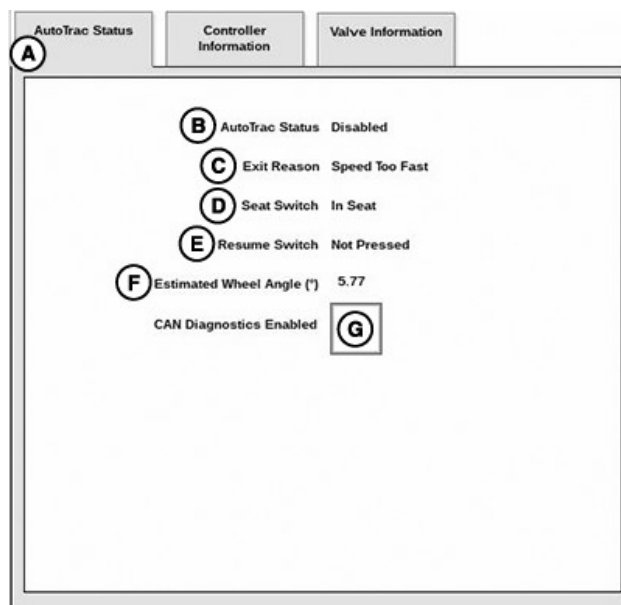


PC25972—UN—16JUL18

A—Controller Information Tab
B—Software Version
C—Hardware Version
D—AutoTrac™ Active Hours
E—Serial Number

HC94949,0000DCB-19-01OCT18

AutoTrac™ Status Tab

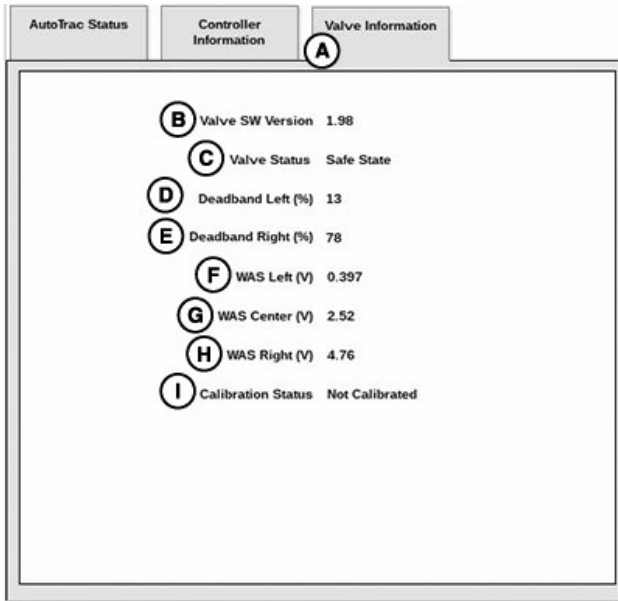


PC25971—UN—06DEC18

A—AutoTrac™ Status Tab
B—AutoTrac™ Status

AutoTrac is a trademark of Deere & Company

Valve Information Tab



PC25973—UN—06SEP18

A—Valve Information Tab
 B—Valve SW Version
 C—Valve Status
 D—Deadband Left (%)
 E—Deadband Right (%)
 F—WAS Left (V)
 G—WAS Center (V)
 H—WAS Right (V)
 I—Calibration Status

HC94949,0000DCC-19-01OCT18

Observable Symptoms

Symptom

AutoTrac™ Controller calibration failed. No steering input device detected.

Problem

Calibration procedure fails.
 AutoTrac™ does not engage.

Solution

Wheel Angle Sensor (WAS) is not detected on display. Check WAS and harness.

Ensure status of steering input device (SID) on calibration page changes from inactive to active when steering wheel is moved.

Check wiring harness from control unit to SID for damaged or exposed wires.

AutoTrac™ Controller does not activate. AutoTrac™ does not resume.

Stop code encountered.

See list of stop codes to find issue.

System State does not show Ready.

Complete valve configuration. (See Configure Valve.)

AutoTrac™ Controller does not appear in main menu.

System does not recognize AutoTrac™ Controller on CAN bus.

Ensure AutoTrac™ Controller is connected to GreenStar™ harness and receiving power.

Check for faulty fuses in AutoTrac™ Controller wiring harness.

Verify terminator is connected.

Symptom	Problem	Solution
Direction cannot be determined.	Old terrain compensation module (TCM) software.	Update TCM to newest software.
	No differential correction.	Verify differential correction frequency with your John Deere dealer.
	No global positioning system (GPS) signal.	Ensure clear view of sky. Move machine away from obstructions.
	AutoTrac™ Controller did not establish direction correctly.	Drive forward at a speed greater than 1.6 km/h (1 mph) and turn steering wheel greater than 45 degrees in one direction.
	Direction of travel is wrong on the display.	Select toggle button to set direction of travel to either forward or reverse.
Tractor acquires guidance line, but tracks to right or left of line.	Receiver measurements are incorrect.	Verify receiver measurements are entered correctly.
	AutoTrac™ Controller has encountered a bad WAS calibration and has an incorrect WAS bias.	Recalibrate WAS and ensure center point is accurately selected. (See machine dealer.)
AutoTrac™ Controller unstable when entering track.	Acquire sensitivity too high.	Optimize acquire sensitivity. (See Optimize AutoTrac™ Controller Performance.)
AutoTrac™ Controller takes too long to enter next track.	Acquire sensitivity too low.	Optimize acquire sensitivity. (See Optimize AutoTrac™ Controller Performance.)
AutoTrac™ Controller constantly weaves in the row.	StarFire™ Receiver height or fore/aft not properly set.	Enter correct height and fore/aft dimensions.
	Aggressive S-ing motion.	Optimize line sensitivities. (See Optimize AutoTrac™ Controller Performance.)
	Lazy S-ing motion.	Optimize line sensitivities. (See Optimize AutoTrac™ Controller Performance.)
	StarFire™ Receiver mount direction setting is different from actual mount direction.	Correctly match mount direction in receiver setup.
	AutoTrac™ Controller did not establish direction correctly.	Drive forward at a speed greater than 1.6 km/h (1 mph) and turn steering wheel greater than 45 degrees in one direction.
	Loose soil.	Add ballast. (Follow recommended machine specifications.)

Symptom	Problem	Solution
AutoTrac™ Controller drives inside or outside curve.	Curve sensitivity too high or low.	Optimize curve sensitivity. (See Optimize AutoTrac™ Controller Performance.)
AutoTrac™ Controller calibration fails.	Not enough area to complete calibration without stopping.	Ensure machine has enough area to complete calibration.
	Steering wheel turned to avoid obstacles.	Ensure area is clear of obstacles.
	Incorrect inputs provided by operator.	Start calibration process over. Verify operator inputs.
	Wheel angle sensor (WAS) not responding.	Check WAS wiring harness connections for damage or debris.
	Electro-hydraulic (EH) valve not responding.	Check EH valve wiring harness connections for damage or debris.
	Machine hardware failure.	Contact your John Deere dealer.
Poor AutoTrac™ Controller performance.	Incorrect installation.	Contact your John Deere dealer.
	Advanced AutoTrac™ Controller settings are set incorrectly.	Adjust steering response rate. (See Optimize AutoTrac™ Controller Performance.)
		Ensure advanced AutoTrac™ settings are at default values before optimizing.
	Machine type is set incorrectly.	Reconfigure system. Select correct machine type during calibration procedure. (See Set Up System.)
	Steering is stiff.	Recalibrate hydraulic system. Temperature changes throughout the day can affect machine characteristics. (See machine dealer.)
	Steering is loose.	Recalibrate hydraulic system. Temperature changes throughout the day can affect machine characteristics. (See machine dealer.)

HC94949,0000E05-19-05DEC18

AutoTrac™ Status Pie Diagnostic Readings

1. Select the Menu button.



Menu Button

PC8663—UN—29APR15



PC17340—UN—24OCT13

GreenStar™ 3 Pro Button

2. Select the GreenStar™ button.



PC20267—UN—14NOV14

Diagnostics Softkey

3. Select the Diagnostics softkey.

Read the latest Operator Manual prior to operation. To obtain a copy, see your dealer or visit www.StellarSupport.com.

View **AutoTrac** A

Last Exit Code Issued: N/a B

Time of Last Exit Code: 00: 00: 00 00/ 00/ 0000

State	Conditions	Status
	Steer Ctrl Capabilities (Curve, Reverse, Steer Sensitivity) AutoTrac License	No, No, No SF2
	GPS Valid Differential Correction Differential Mode Selected Tracking Mode Selected Pivot Pro License AB Line Defined Free of Steer Ctrl Trouble Codes Valid Implement Guidance Configuration	Yes No None Straight Track No --- Yes N/a
	Steer On/Off Button	No
	Vehicle Gear Selected Speed Within Range Within 80 Degrees of Line Within 40% Tracking Width	Neutral --- --- ---

PC20269—UN—14NOV14

Diagnostic Readings - AutoTrac™ View

A—View Drop-Down Menu

B—Last Exit Code Issued

4. Select the AutoTrac™ from the View drop-down menu (A).

AutoTrac™ View displays the status of required conditions for each pie state.

Pie State	Conditions
1 piece out of 4	AutoTrac™ License
2 pieces out of 4	Steering Controller Capabilities (Curve, Reverse, and Steer Sensitivity)
	Global Positioning System (GPS) Valid
	Differential Correction
	Differential Mode Selected
	Tracking Mode Selected
	Pivot Pro Licensed
	AB Line Defined
3 pieces out of 4	Free of Steer Control Trouble Codes
	Valid Implement Guidance Configuration
4 pieces out of 4	Steer On-Off Button
	Machine Gear Selected
	Speed Within Range
	Within 80° of Line
	Within 40% Tracking Width

If AutoTrac™ disengages, check Last Exit Code Issued (B). If AutoTrac™ does not engage, verify that conditions of first three pieces of pie are met.

AL70325,00001B2-19-30SEP19

AutoTrac™ Exit Codes and Deactivation Messages

Select Menu > GreenStar™ > Diagnostics > AutoTrac™ from View drop-down menu. The following Exit Codes can be displayed.

Select Menu > GreenStar™ > Guidance > View tab. The following deactivation messages can be displayed.

Each time AutoTrac™ is deactivated, text is displayed indicating the reason why it deactivated. Messages are also displayed when AutoTrac™ does not activate. The deactivation message displays for 3 seconds and then disappears.

Exit Code	Deactivation Message	Description	Solution
None	None	Nothing has been checked yet.	Boot-up code. System has not been checked for errors.
Wheel Speed Too Slow	Speed too slow	Machine speed too slow to use AutoTrac™.	Increase speed over 0.5 km/h (0.3 mph).
Wheel Speed Too Fast	Speed too fast	Machine Speed too high to use AutoTrac™.	Reduce speed below platform limit. Tractor — 30 km/h (18.6 mph) Windrower — 19.3 km/h (12 mph)

Troubleshooting

Exit Code	Deactivation Message	Description	Solution
			Reverse speed on row-crop tractors only — 10 km/h (6 mph)
Track Changed	Track number changed	Track number changed.	Align machine on desired track and press resume.
Lost Dual GPS	Invalid GPS signal	SF1, SF2, or RTK signal was lost.	Establish signal.
RSC Fault	Steering Controller fault	A steering control fault severe enough to disable AutoTrac™.	Cycle tractor power.
OK	None	Last state upgrade was successful.	
PT Turned Off	None	Tracking not turned on.	Turn tracking on in Guidance Settings > Tracking Mode.
Steering Wheel	Steering wheel moved	Steering wheel has moved to deactivate AutoTrac™.	Press resume switch to reactivate AutoTrac™. If steering wheel was not moved, increase steering override effort.
Heading Error	Heading error too large	Heading error is out of range.	Align tractor within heading limit: • 80 degree below 6 mph • 45 degree above 6 mph
Lateral Error	Off track error too large	Lateral error is out of range.	Align tractor within lateral limit (40% of track spacing).
No TCM	No TCM corrections	Either no terrain compensation module (TCM) present or TCM is turned off.	Turn on TCM, or install TCM.
Master Switch	Road mode	Machine master switch is off.	Set switch status to on.
Reverse Timeout	Reverse timeout	Reverse timeout (greater than 45 seconds).	Select forward gear before resuming in reverse.
Incorrect Direction	Vehicle not moving in a forward direction	Machine is not traveling in a forward direction.	Machine must be in forward gear to activate.
Bad Resume Data Received	Resume switch error	Steering Controller sending bad data from resume switch.	See John Deere dealer.
Unknown Direction	Unknown direction	Unknown direction.	Drive forward faster than 1.6 km/h (1 mph) and turn steering wheel greater than 45°.
Curvature Mismatch	Curve too sharp	Curve Track radius is tighter than AutoTrac™ allows.	Manually drive through tight radius curves.
Bad Wheelbase Data	None	Steering Controller sending bad wheelbase data.	Bad wheelbase for machine class. See John Deere dealer to obtain latest steering controller software.

HC94949,000091E-19-04APR16

Guidance Alarms

ACI Communication Error	No communication with vehicle steering controller (Steering Controller). Check vehicle for diagnostic codes and contact your John Deere Dealer.
Turn Predictor Turned On	Turn predictor is turned ON. Use the check box to turn it OFF
AutoTrac Deactivated	AutoTrac system deactivates when operator is out of seat for more than 5 seconds
AutoTrac	The operator is responsible for collision avoidance. Turn AutoTrac OFF before entering roadways.
Data Card Problem!	A data card must be inserted in the compact flash drive with the door closed to use the GreenStar2 Pro application.
No Setup Data!	Setup data for the GreenStar2 Pro application could not be found on the data card. The GreenStar2 Pro application will not be available until a data card with setup data is inserted
AutoTrac Steering Controller Software Incompatible	See your John Deere Dealer for Steering Controller update.
Communication Error	Communication problem with controller. Check connections to controller.

Troubleshooting

Mobile Processor Detected	Mobile Processor Detected on CAN Bus. GreenStar Application is disabled. Remove mobile processor and cycle power to enable GreenStar application.
GPS Communication Problem	No communication with GPS receiver. Check connections at GPS receiver.
Tracking Inaccurate	The GPS receiver must be set to report at the 5Hz message output rate. Confirm settings on GPS receiver and change output to 5Hz.
Invalid Boundary	An invalid boundary has been recorded. You may continue recording or clear the current boundary and start recording again.
Activation Error	Invalid activation code. Please reenter activation code.
Invalid Filter	All the fields that are required to be filled out based on the Totals Type Selected have not been filled out.
Flags of Same Selection	Selected the Flags of same name and mode.
Name Already Exists	The name you have entered already exists in this list. Please enter a new name.

Alarms

GPS Communication Problem	No communication with GPS receiver. Check connection at GPS receiver and perform operation again.
Curve Track Memory Full	Internal memory available for Curve Track is full. Data must be cleared to continue Curve Track Operation. Clear curved track data from system
AutoTrac Disabled	AutoTrac SF1 license cannot operate with current StarFire software. Update StarFire software to operate AutoTrac.
AutoTrac Disabled	AutoTrac SF1 license cannot operate while SF2 corrections are turned on. Turn SF2 corrections off to operate AutoTrac.
License Problem	No license available for the selected tracking mode. Previous tracking mode will be selected.
Duplicate Name	Name already exists. Select another name.
Curve Track Recording	Curve Track recording in progress. Cannot perform operation until recording is turned off.
Circle Definition Problem	There was an internal error during Circle definition. Redefine the circle.
Circle Definition Problem	Communication with GPS receiver was lost during circle definition. Redefine the circle once communication has been re-established.
Circle Definition Problem	Center point is too far. Select another center point.
A-B Line Definition Problem	There was an internal error during A-B line definition. Redefine the A-B line.
A-B Line Definition Problem	A timeout occurred during A-B line definition. Redefine the A-B line.
A-B Line Definition Problem	A and B points of the A-B line are too close. Perform operation again.
Loss of GPS While Recording Boundary	GPS has been lost while recording the boundary. Point logging will resume when the GPS signal returns. This may result in an inaccurate boundary.
Data Card Full	Unload and cleanup data card or insert new data card.
Data Card 90% Full	Unload and cleanup data card or insert new data card.
No Memory	No Memory available for Curve Track. Unload and cleanup data card or insert new data card.
Low Memory	Low Memory available for Curve Track. Unload and cleanup data card or insert new data card.
No Memory	No Memory available for Straight Track. Unload and cleanup data card or insert new data card.
No Memory	No Memory available for Circle Track. Unload and cleanup data card or insert new data card.
Circle Definition Problem	The distance from the vehicle to the center point is greater than 1 mile. Select another center point or drive another circle.
Zero All Totals	You have decided to zero all totals for the selected filter.
Incorrect RS232 Controller Model Selected	The RS232 controller model selected is incorrect. Please verify and reenter manufacturer and model number.
Prescription Error	Controller is not setup to accept prescriptions.
Prescription Error	Controller is setup to accept prescriptions. No controller prescription has been selected.
Prescription Error	Prescription rate is out of controller range.
Controller Unit of Measure Error	Controller will only operate when using metric units.
Controller Unit of Measure Error	Controller will only operate when using English (US) units.
Controller Unit of Measure Error	Controller will only operate when using metric or English (US) units.
Controller Operation Error	Invalid operation selected for controller.
Prescription Warning	Out of field prescription rate is now being applied.
Prescription Warning	Loss of GPS signal has occurred. Loss of GPS prescription rate is now being applied.
Prescription Warning	Controller does not support selected prescription.

INFO

CF86321.0000333-19-23MAY11

AutoTrac™ Controller Diagnostic Addresses

Diagnostic Addresses

Select Diagnostic Address button and a list of control units appear and control units with diagnostic codes are indicated.

Individual control units can be accessed by pressing Enter button to view codes for that control unit.

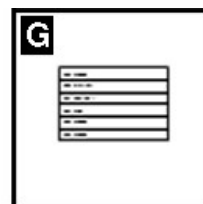
To view the AutoTrac™ Controller, select ACI.001 Implement from the device drop-down menu.

Codes can also be displayed for all control units by selecting Show All button and pressing Enter button. Codes can be relayed to a John Deere dealer to assist in diagnosing machine problems.



PC8655—UN—05AUG05

Message Center Button (With Info Icon)



PC8668—UN—05AUG05

Diagnostic Addresses

All diagnostic codes below are specific to AutoTrac™ Controller.



PC8663—UN—29APR15

Menu Button

Diagnostic Address	Description
003	Battery Voltage
004	Key Switch Voltage
005	5 V Reference Regulator 1 Voltage
006	5 V Reference Regulator 2 Voltage
014	CAN 2 High Voltage
015	CAN 2 Low Voltage
026	Steering Tests
027	PVED-CLS Memory Recovery
029	Enable/Disable CAN Diagnostics
035	Hand Wheel Position (deg)
037	Road Wheel Angle Sensor 1 (%)
038	Road Wheel Angle Sensor 2 (%)
039	Wheel Setpoint Cmd Source
040	Wheel Setpoint Cmd (%)
041	Road Wheel Angle Steering Stops
042	Road Wheel Angle (deg)
090	PVED-CLS Software Version
091	PVED-CLS Software Date
092	PVED-CLS Memory Calibration Status
093	PVED-CLS Vehicle Steering Type
094	PVED_CLS Wheelbase
095	Valve Max Spool Position Left
096	Valve Max Spool Position Right
097	Valve Deadband Left
098	Valve Deadband Right
099	WAS Primary Max Left Position

Troubleshooting

Diagnostic Address	Description
100	WAS Primary Neutral Position
101	WAS Primary Max Right Position
102	WAS Redundant Max Left Position
103	WAS Redundant Neutral Position
104	WAS Redundant Max Right Position
105	PVED-CLS Main Controller DTC
106	PVED-CLS Main Controller DTC
107	PVED-CLS Main Controller DTC
108	PVED-CLS Safety Controller DTC
109	PVED-CLS Safety Controller DTC
110	PVED-CLS Safety Controller DTC
120	Display Format (English vs. Metric)
121	StarFire™ Fore/Aft
122	StarFire™ Height
123	Platform Type
124	Platform Type (ASCII)
125	Vehicle Class
126	Vehicle Wheelbase
157	Seat Switch ADC
158	Operator Presence
161	GPS Speed
163	Wheel-based Vehicle Speed
167	GreenStar™ Yaw Rate
168	Steering Control Mode
172	Auxiliary Exit Code
180	AutoTrac™ Faster Speed Threshold
181	AutoTrac™ Slower Speed Threshold
183	Estimated Curvature
184	AutoTrac™ Curvature Cmd
185	GreenStar™ Lateral Error
186	GreenStar™ Heading Error
187	GreenStar™ Curvature
188	AutoTrac™ Lateral Integrator
189	AutoTrac™ Information
190	AutoTrac™ Exit Code
191	AutoTrac™ Hours
193	AutoTrac™ Aggressiveness
194	AutoTrac™ Heading Lead
195	AutoTrac™ Heading Gain
196	AutoTrac™ Curve Sensitivity
197	AutoTrac™ Acquisition Sensitivity
198	AutoTrac™ Lateral Gain
225	EOL Part Number
226	EOL Version Number
227	Boot Block Part Number
228	Boot Block Version
231	JDOS Part Number
232	JDOS Version
233	Software Part Number
234	Software Version
235	Controller Part Number
236	Controller Serial Number
237	Software Assembly Part Number

Troubleshooting

Diagnostic Address	Description
238	Software Assembly Version
245	CAN Bus Off Count
246	CAN Bus Off Interval
251	Controller PIN

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AutoTrac is a trademark of Deere & Company

HC94949,0000E3A-19-20NOV18

Maintenance

Preseason Checklist

Before start of season, it is recommended that machine operator performs the following software updates, inspections, and calibrations:

- ☐ Reference electronic Operator's Manual from JohnDeere.com or contact your John Deere dealer for downloadable versions.
- ☐ Update equipment software. Visit StellarSupport.com for latest software.
 - ☐ Display
 - ☐ Receivers
 - ☐ Controller
 - ☐ Other AMS equipment
- ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations.
- ☐ Inspect wiring harness at connectors for wear on exposed wires.
- ☐ Inspect connector seals and latching mechanisms.
 - ☐ Receivers
 - ☐ Displays
 - ☐ Steering Controller
- ☐ Inspect mechanical steering system for wear.
- ☐ Inspect hydraulic system for leaks.
- ☐ Verify StarFire™ height and fore/aft values.
- ☐ Calibrate the receiver terrain compensation module (TCM).
- ☐ Operate AutoTrac™ and recalibrate if necessary.
- ☐ Ensure that machine has correct ballast.
- ☐ Inspect tires for wear.

HC94949,0000D8C-19-01OCT18

- ☐ Ensure that machine has correct ballast.
- ☐ Inspect tires for wear.

HC94949,0000D8D-19-01OCT18

Daily Checklist

It is recommended that machine operator performs the following inspections daily:

- ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations.
- ☐ Inspect wiring harness at connectors for wear on exposed wires.
- ☐ Inspect hydraulic system for leaks.
- ☐ Inspect mounting hardware.
 - ☐ Displays
 - ☐ Receivers

AL70325,000014A-19-01DEC14

Postseason Checklist

After the conclusion of season, it is recommended that machine operator performs the following inspections:

- ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations.
- ☐ Inspect wiring harness at connectors for wear on exposed wires.
- ☐ Inspect mechanical steering system for wear.
- ☐ Inspect hydraulic system for leaks.
- ☐ Inspect connector seals and latching mechanisms.
- ☐ Inspect connector pins for wear, debris, and corrosion.
 - ☐ Receivers
 - ☐ Displays
 - ☐ Steering Controllers

StarFire is a trademark of Deere & Company

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John Deere Service Literature Available

Technical Information

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

Orders can be made using one of the following:

- John Deere Technical Information Store: **www.JohnDeere.com/TechInfoStore**
- Call 1-800-522-7448
- Contact your John Deere dealer

Available information includes:



TS189—UN—17JAN89

PARTS CATALOGS list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.



TS191—UN—02DEC88

OPERATOR'S MANUALS providing safety, operating, maintenance, and service information.



TS224—UN—17JAN89

TECHNICAL MANUALS outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in a separate component technical manual.



TS1663—UN—10OCT97

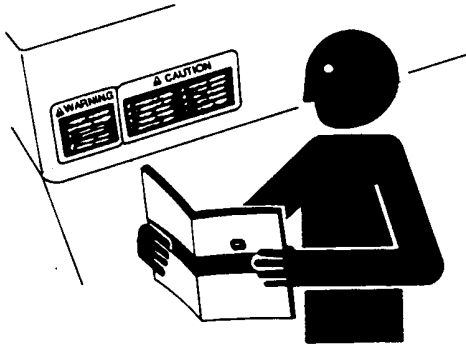
EDUCATIONAL CURRICULUM including five comprehensive series of books detailing basic information regardless of manufacturer:

- Agricultural Primer series covers technology in farming and ranching.
- Farm Business Management series examines “real-world” problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
- Fundamentals of Services manuals show you how to repair and maintain off-road equipment.
- Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.
- Fundamentals of Compact Equipment manuals provide instruction in servicing and maintaining equipment up to 40 PTO horsepower.

DX,SERV LIT-19-07DEC16

John Deere Service Keeps You On 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

