

GreenStar™ Rate Controller Dry



JOHN DEERE

OPERATOR'S MANUAL

GreenStar™ Rate Controller Dry

OMPFP23415 ISSUE J2 (ENGLISH)

CALIFORNIA

Proposition 65 Warning

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

If this product contains a gasoline engine:



WARNING

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

The State of California requires the above two warnings.

John Deere 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.

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

Serial Number: _____

JS56696,0000C4C-19-03FEB17

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

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Safety

Recognize Safety Information



T81389—UN—28JUN13

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

Follow recommended precautions and safe operating practices.

DX,ALERT-19-03OCT22

Follow Safety Instructions



TS201—UN—15APR13

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

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

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

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

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

DX,READ-19-01AUG22

Understand Signal Words



▲ WARNING

▲ CAUTION

TS187—19—30SEP88

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

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

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

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

DX,SIGNAL-19-05OCT16

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.

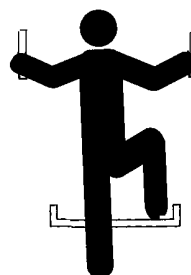
On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

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 (activate) a guidance system while transporting on a roadway.

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

Guidance Systems include any application that automates machine steering. This includes, but may not be limited to, AutoTrac™, iGuide™, iTEC™ Pro,

*AutoTrac is a trademark of Deere & Company
iGuide is a trademark of Deere & Company
iTEC is a trademark of Deere & Company*

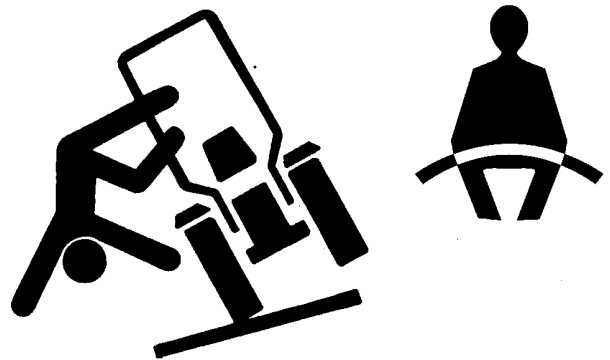
AutoTrac™ Turn Automation, AutoTrac™ Universal (ATU), RowSense™, and Machine Sync.

To prevent injury to the operator and bystanders:

- Never get on or off a moving machine.
- Verify the machine, implement, and guidance system are set up correctly.
 - If using iTEC™ Pro or AutoTrac™ Turn Automation, verify accurate boundaries have been defined.
 - If using Machine Sync, verify 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.

JS56696,0000ABC-19-20DEC17

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.

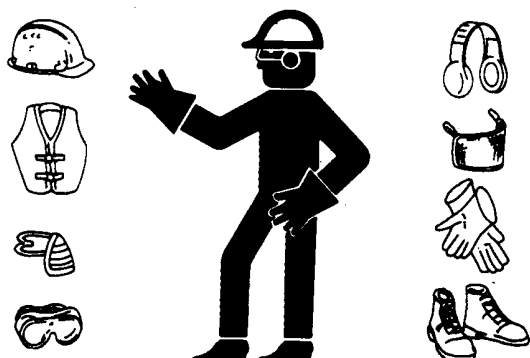
Inspect seat belt and mounting hardware at least once a

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

Wear Protective Clothing



TS206—UN—15APR13

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

Prolonged exposure to loud noise can cause impairment or loss of hearing.

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

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

DX,WEAR-19-10SEP90

Operate Safely



N39547—UN—06OCT88

Never allow children on or near machine.

Before operating, make sure air has been bled from wing-fold hydraulic system.

Be sure area around machine is clear before raising or lowering machine frame or wings.

Do not operate close to a ditch or creek.

Do not operate with wings folded.

Slow down when turning and traveling over rough ground.

Always shut off tractor and shift to PARK or set brakes when leaving tractor. Remove key when leaving tractor unattended.

Always have tractor stopped on level ground when raising or lowering wings.

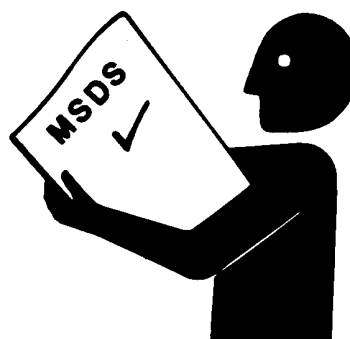
Operate machine from tractor seat only.

If chemicals are used, follow manufacturer's recommendations for handling and storage.

Tow machine behind a properly equipped tractor only.

JS56696,000065B-19-28JUL09

Read and Understand MSDS



TS1132—UN—15APR13

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

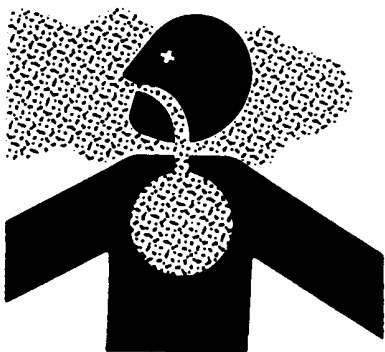
A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Follow all recommended procedures.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)

JS56696,0000661-19-28JUL09

Handle Agricultural Chemicals Safely



TS220—UN—15APR13



A34471

A34471—UN—11OCT88

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

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

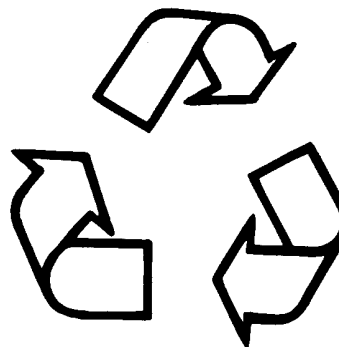
Reduce risk of exposure and injury:

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

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

DX,WW,CHEM01-19-24AUG10

Decommissioning — Proper Recycling and Disposal of Fluids and Components



TS1133—UN—15APR13

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

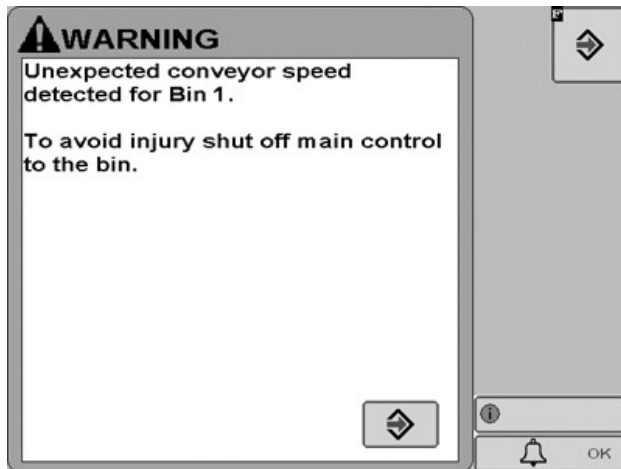
- Use appropriate tools and personal protective equipment such as clothing, gloves, face shields or glasses, during the removal or handling of objects and materials.
- Follow instructions for specialized components.
- Release stored energy by lowering suspended machine elements, relaxing springs, disconnecting the battery or other electrical power, and releasing pressure in hydraulic components, accumulators, and other similar systems.
- Minimize exposure to components which may have residue from agricultural chemicals, such as fertilizers and pesticides. Handle and dispose of these components appropriately.
- Carefully drain engines, fuel tanks, radiators, hydraulic cylinders, reservoirs, and lines before recycling components. Use leak-proof containers when draining fluids. Do not use food or beverage containers.

- Do not pour waste fluids onto the ground, down a drain, or into any water source.
- Observe all national, state, and local laws, regulations, or ordinances governing the handling or disposal of waste fluids (example: oil, fuel, coolant, brake fluid); filters; batteries; and, other substances or parts. Burning of flammable fluids or components in other than specially designed incinerators may be prohibited by law and could result in exposure to harmful fumes or ashes.
- Service and dispose of air conditioning systems appropriately. Government regulations may require a certified service center to recover and recycle air conditioning refrigerants which could damage the atmosphere if allowed to escape.
- Evaluate recycling options for tires, metal, plastic, glass, rubber, and electronic components which may be recyclable, in part or completely.
- Contact your local environmental or recycling center, or your John Deere dealer for information on the proper way to recycle or dispose of waste.

DX,DRAIN-19-01JUN15

Safety Signs

Unexpected Conveyor Speed Detected

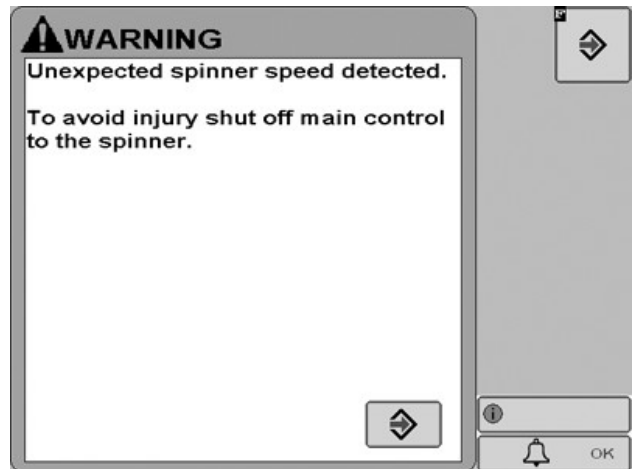


PC13640—19—14JUL11

This message will be displayed when the commanded speed of specified conveyor is zero/stopped, but movement has been detected for more than five seconds.

CZ76372,000031B-19-14JUL11

Unexpected Spinner Speed Detected

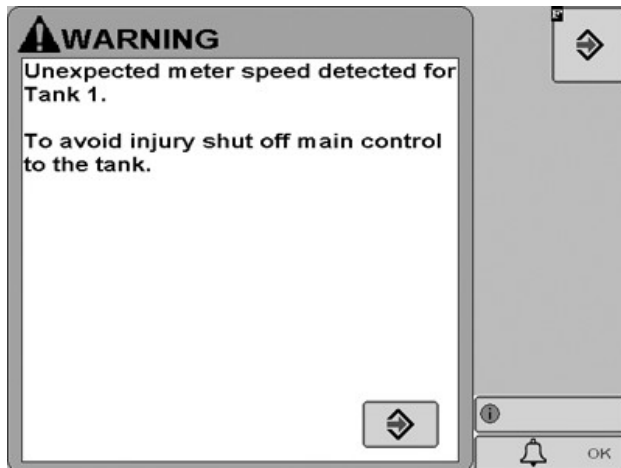


PC13641—19—14JUL11

This message will be displayed when the commanded speed of the spinner is zero/stopped, but movement has been detected for more than ten seconds.

CZ76372,000031F-19-14JUL11

Unexpected Meter Speed Detected

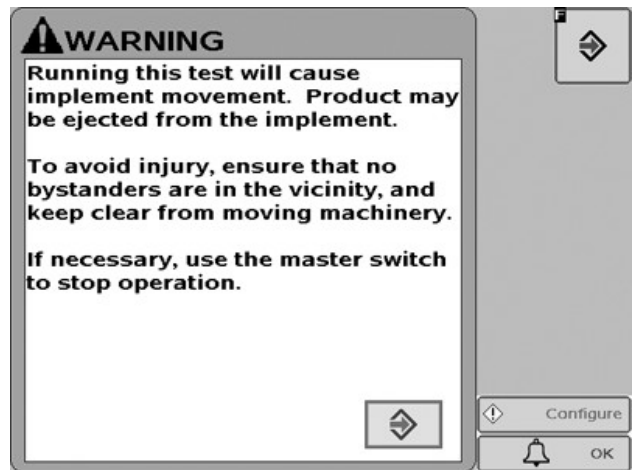


PC15045—19—21MAY12

This message will be displayed when the commanded speed of specified meter is zero/stopped, but movement has been detected for more than five seconds.

BA31779,000046F-19-24MAY12

Diagnostic Tests or Calibration Procedures



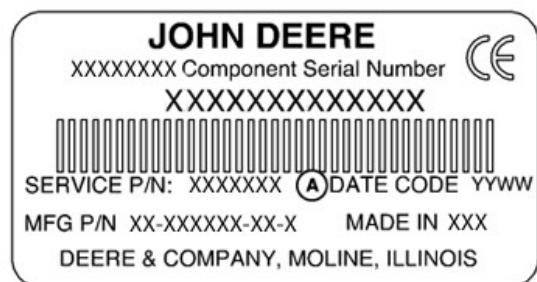
PC13642—19—14JUL11

This message will be displayed when any diagnostic test or calibration procedure is selected that will discharge product.

CZ76372,000031C-19-14JUL11

Regulatory and Compliance Information

Identify Date Code



PC17568—UN—16AUG13

Product Label Example

DATE CODE YY WW

(B) (C)

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 = 2011 12 = 2012 13 = 2013
WW	Week Number of Calendar Year of Manufacture	Example: 01, 02, 03...53

HC94949,0000599-19-15AUG14

Customs Union—EAC (English and Russian)

Customs Unions—EAC

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

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

Model: GreenStar™ Rate Controller
GreenStar™ Rate Controller Dry
Made in USA

Name and address of the authorized representative in the Customs Union of Russia, Belarus, and Kazakhstan:
Limited Liability Company "John Deere Rus"

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

For technical support, please contact your dealer.



PC20729—UN—28JAN15

Таможенный союз—EAC

Информация об изделиях, которые имеют знак соответствия требованиям технических регламентов Таможенного союза

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

модель:
Контроллер нормы внесения жидких удобрений GreenStar™
Контроллер нормы внесения сухих удобрений GreenStar™
Сделано в США.

Наименование и адрес уполномоченного представителя на территории Таможенного союза России, Белоруссии и Казахстана: 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.



PC20730—UN—28JAN15
HC94949.0000715-19-28JAN15

EU Declaration of Conformity

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

The undersigned hereby declares that:

Product: GreenStar Rate Controller

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 other normative documents:

ISO 14982: 1998

EN 55022: 2010

EN 55024: 2010

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: Urbandale, Iowa, U.S.A.

Date of Declaration: 26 April 2016

Manufacturing Unit: John Deere Intelligent Group

Name: Aaron Senneff

Title: Software Development

RW00482,0000233-19-21FEB18



DXCE01—UN—28APR09

Thailand—Declaration of Conformity

เครื่องโทรคมนาคมและอุปกรณ์นี้ มีความสอดคล้องตามข้อกำหนดของ กทช./กสทช.

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

UK Declaration of Conformity

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

The undersigned hereby declares that:

Product Name(s): GreenStar Rate Controller

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 other normative documents:

EN ISO 14982:2009

EN 55024: 2010

Name and address of the person 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.

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RXA0179545—UN—16APR21
d6vudh3,1667278252268-19-01NOV22

System Overview

Theory of Operation

GreenStar™ Rate Controller Dry system controls product application on pull-type spreaders, self-propelled spreaders, and air cart configurations.

NOTE: A limit of 20 products can be created on controller.

It is designed to turn implement on and off using coverage, boundary, and global positioning system (GPS) information to work with John Deere Section Control.

NOTE: A maximum of three implement configurations or names can be saved per controller.

(See GS3 2630 Display Operator's Manual for further details on Section Control.)

Controller controls hydraulic oil flow to hydraulic motors based on display settings, vehicle speed, foot switch status, signals from speed sensors, and status of switches on optional switchbox controller (SBC).

SBC monitors status of ten switches plus a master switch, and broadcasts switch messages to controller. Master switch is wired directly to controller. This allows operator to enable and disable bins, tanks, or spinner on spreader manually rather than rely on display for these settings. Master switch permits operator to shut off all bins or tanks on system. Master switch on switchbox serves the same purpose as foot switch, and one is required for system operation.

HC94949,00005A7-19-28JAN15

- If applicable, use Section Control to turn on bin. If bin is not turned on, Section Control deactivates.

NOTE: Section Control works with pull-type spreaders, self-propelled spreaders, and air carts.

- Machine speed must be greater than 0.8 km/h (0.5 mph).

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GreenStar™ Rate Controller Requirements

Hardware:

- GreenStar™ 3 2630 Display
- Foot switch
- GreenStar™ Rate Controller Dry harnesses
- GreenStar™ harness
- Switchbox controller (optional)
- StarFire™ Receiver

Conditions:

- Complete implement and product setup.
- Turn on master switch.
- If switchbox is present, assign switch to a bin or tank, and turn on switch.
- Turn on bin or tank on GS3 2630 Display.
- Turn on spinner or fan.

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StarFire is a trademark of Deere & Company*

Component Overview

StarFire™ Receiver

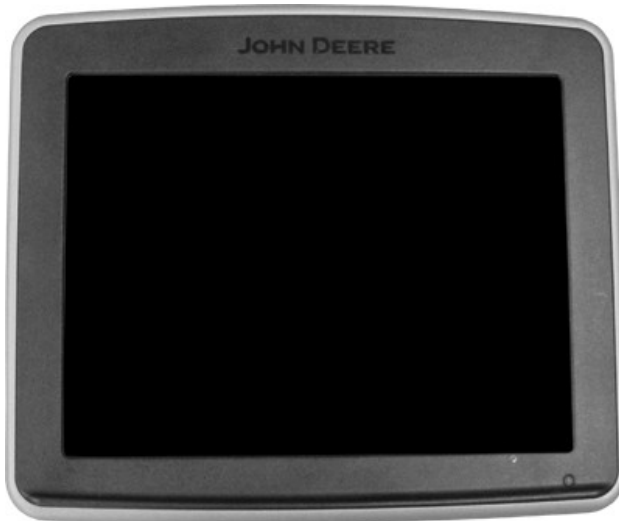


PC20203—UN—06NOV14

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™.

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Display



PC13407—UN—20APR11

GreenStar™ 3 2630 Display



PC24742—UN—28SEP17

John Deere 4640 Universal Display

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

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

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Switch Box



PC25178—UN—09JAN18

Switch Box Controller (Optional)

The purpose of the optional switch box controller (SBC) is to allow the operator to enable or disable individual control valves manually rather than rely on the display for these settings.

The master switch permits the operator to shut OFF the control valves. The master switch on the switch box serves the same purpose as the foot switch, and only one of the two is required for system operation.

Each switch controls control valves assigned to it during the system setup procedure. Even if the master switch and individual switches are ON, control valves must still be enabled on the display in order for it to activate.

(For more information, reference System Setup.)

NOTE: More than one control valve can be assigned to the same switch number.

RW00482,0000235-19-27FEB18

Foot Switch



PC20244—UN—13NOV14

Foot switch is used to activate and deactivate master switch if switchbox option is not utilized.

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Spreader Overview

Theory of Operation

The GreenStar™ Rate Controller Dry enables the GreenStar™ 3 2630 Display to integrate with self-propelled and pull-type dry box spinner spreaders. The controller eliminates the need of a separate third-party controller to operate the dry box equipment. The controller is configured as a single implement section, spanning the entire working width of the implement. It uses spreader width and machine speed to determine the amount of ground covered.

The controller can be configured to spread seed or fertilizer products. It stores up to 20 different products. Each product is defined in the controller memory by a name, application units, density, spread width, spinner speed, and spinner frame. Each product bin or tank is then assigned a specific product that is applied by the implement.

The controller controls fast valves and PWM valves. Both types of valves control either the flow of hydraulic oil or an electric motor that is used to drive the product metering and delivery systems on the implement. The product metering and delivery systems are configured for the specific valve types. The control valve calibration number on each valve can be adjusted for proper product application and spinner speed control.

During operation, both valve types are operated as fast close and PWM valves on the product metering system. Both valve types close to stop the product metering system when the controller commands the dry box to stop applying product. Implements equipped with PWM valves may require the use of a boost box to handle the electrical current requirement with some manufacturers' valves.

The controller can operate a dry box with up to four product bins and spinners. The product bins are configured for their capacity, bin level switch functionality, micronutrient bin capability, and speed sensor settings. Bin capacity is calculated using a heaped bin capacity, which is the maximum volume of product that a bin can contain when loaded. Within the four available product bins, the controller can be configured to run up to three micronutrient bins with one required carrier bin. Each product bin can be manually turned on and off on the GS3 2630 Display while dispensing product.

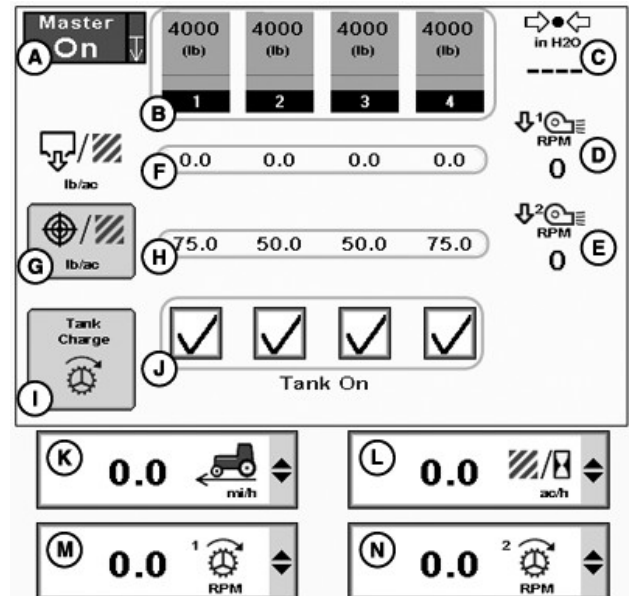
The controller can be configured to monitor product bin level switches. The first two product bins can also be configured as carrier bins that are chained together. Bin chaining requires bin level switches and can automatically start the second bin when the first bin is empty. This functionality provides broad acre capacity when applying one product with a two-bin dry box spreader.

The controller does rate smoothing. Rate smoothing removes small fluctuations in application rate and spinner speed values shown on display. If actual value

is within a user-defined percentage of target value, target value is displayed. Percentage range is 3–15% and system defaults to 3%.

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Spreader Run Page



PC20654—UN—09JAN15

Spreader Run Page

- A—Master Switch Indicator
- B—Tank Level Indicators
- C—Pressure Reading
- D—Fan 1 Actual Speed
- E—Fan 2 Actual Speed
- F—Actual Rates
- G—Target Rate Button
- H—Target Rates
- I—Tank Charge Button
- J—Tank ON Checkboxes
- K–N—Information Drop-Down Menus

HC94949,00006CA-19-22JAN15

Component Overview and Compatibility

The following component configurations are compatible with the Rate Controller Dry. See 37-Pin Connector Tables at the end of the manual for additional pin out information.

Control Valves

- Control Valve types: Fast (Servo/Motorized) and PWM (Proportional).
- Control Valves that require 12 V power to open.
- Control Valves that require less than 2.5 amps of current. (For Control Valves requiring more than 2.5 amps, a boost box is needed. See your John Deere dealer.)

- Control valves are used to drive conveyor belt(s) and spinners on spreader.

- **Fast Close (Servo) Control Valves**

The Fast Close Control Valve serves as the rate control valve and completely closes when it is necessary to stop product flow. To start product flow once again, the fast close valve opens and quickly ramps flow back up to achieve the target application rate.

- **PWM Close Control Valves**

The PWM Close Control Valve serves as the rate control valve and completely closes when it is necessary to stop product flow. To start product flow once again, the PWM close valve opens and quickly ramps flow back up to achieve the target application rate.

Performance of PWM valves is slightly better than performance of Fast (Servo) valves due to the immediate responsiveness of PWM valves.

A Bin Level Switch is used to alert the operator of low bin status.

The optical switch senses the presence or absence of product in the bin. When the bin level switch output voltage is low, product is absent and the bin is nearly empty.

A Bin Level Switch is required for bin chaining.

NOTE: Maximum application ground speed for spinner spreader systems is 56.3 km/h (35 mph).

HC94949,00006CB-19-21JAN15

Conveyor Speed Sensor

A speed sensor is required for each configured bin/conveyor and is used to monitor the conveyor speed for rate control.

The sensor can be powered by 5 V or 12 V and must provide a frequency-based square wave signal with respect to the conveyor speed. The sensor must pull the signal to ground to create the lower portion of the square wave and the controller will pull the signal up to 5V when the sensor is not in the active state, completing the square wave.

Conveyor speed sensors are available in several styles including optical encoders and gear tooth sensors.

Spinner Speed Sensor

A speed sensor is required for the spinner if the speed will be controlled by the controller (for example, Control Valve Type is not "None"). If the spinner speed will not be controlled by the controller then the sensor is optional. The sensor is used to monitor the spinner speed for automatic or manual speed control.

The sensor can be powered by 5 V or 12 V and must provide a frequency-based square wave signal with respect to the spinner speed. The sensor must pull the signal to ground to create the lower portion of the square wave and the controller will pull the signal up to 5V when the sensor is not in the active state, completing the square wave.

Spinner speed sensors usually are magnetic pickup sensors that sense bolt heads or gear teeth.

Bin Level Switch (Optional)

Configuring Spreader

Configure GreenStar™ Rate Controller Dry Access GreenStar™ Rate Controller Dry

Configuring Spreader

1. Implement Setup
2. System Setup
3. Alarms Setup (optional)
4. Rate Smoothing Setup (optional)

Configuring Spreader Products

1. Product Setup
2. Product Bin Setup
3. Bin Chaining (optional)
4. Review Product Summary

Calibrating Spreader

1. Charge Bin for Calibration
2. Calibrate Bin Test
3. Calibrate PWM Limits

GreenStar™ Rate Controller Dry Operation - Spreader

1. Verify User-Defined Values
2. Bin Operation
3. Activate and Deactivate System
4. Monitor System Performance
5. Bin Cleaning (See Spreader Diagnostics)

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Access GreenStar™ Dry Rate Controller

To access the GreenStar™ Dry Rate Controller main page:



Menu Button

PC8663—UN—29APR15

1. Select the Menu button.



GreenStar™ Rate Controller Dry Button

PC13638—UN—06JUL11

2. Select the GreenStar™ Rate Controller Dry button.

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Each GreenStar™ Rate Controller Dry is identified by the control unit serial number and implement name once the setup procedure has been completed.

NOTE: The GreenStar™ Rate Controller Dry button appears upon power-up after the harness is installed and the GreenStar™ Rate Controller Dry is connected.

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Implement Setup



Implement Setup Softkey

PC13261—UN—21APR11

1. Select the Implement Setup softkey.

NOTE: Turn OFF the master switch to change most settings or values.

The screenshot shows the 'Implement' tab selected. At the top are tabs labeled A (Implement), G (System), H (Alarms), and I (Display Smoothing). The main area shows 'Implement' type set to 'Pull-behind Spreader' (C) and 'Implement Name' set to 'spreader' (D). Below these are buttons E (New), 'Rename', 'Remove', and a checkbox F (Disable This GDC). The 'Number of Bins' is set to 3 (J). At the bottom is a switchbox B with two rows of numbers (1, 2, 3) and a value of 10.

PC20627—UN—19DEC14

- A—Implement Tab
- B—Switchbox Switch Numbers
- C—Implement Type Drop-Down Menu
- D—Implement Name Drop-Down Menu
- E—New Button
- F—Disable This GDC Checkbox
- G—System Tab
- H—Alarms Tab
- I—Display Smoothing Tab
- J—Number of Bins Drop-Down Menu

2. Select the Implement tab (A).

NOTE: Switchbox switch numbers (B) are only available if a switchbox is connected.

3. Select implement type (pull-behind spreader or self-propelled spreader) from the drop-down menu (C).
4. Select implement name from the drop-down menu (D), or select the New button (E) and enter a name.

NOTE: If Rate Controller Dry is not used, but remains connected, select the *Disable This GDC checkbox (F)* to eliminate connection to display for documentation, Section Control, and control unit warnings.

Define implement name to enable the System tab (G), Alarms tab (H), and Display Smoothing tab (I).

5. Select the number of bins from the drop-down menu (J).

This is the maximum number of bins for multiple bin configuration, regardless of whether all bins are in use.

RW00482,0000237-19-27FEB18

System Setup

System tab allows operator to configure bins for defined operations. Setup includes the control valve type, control valve calibration, sensor calibration, and switchbox (if equipped) for each bin.

Bin and Micronutrient Bin Setup

	Control Valve Type	Control Valve Calibration	Sensor Calibration
Bin 1 System	PWM Close	500	158
Bin 2 System	PWM Close	8888	888
Bin 3 System	Fast Close	5023	180
Bin 4 System	PWM Close	6666	666
Spinner Setup	None	---	---

PC20592—UN—16DEC14

System Setup

- A—System Tab
B—Bin 1 System Button
C—Bin 2 System Button
D—Bin 3 System Button
E—Bin 4 System Button

1. Select the System tab (A).

2. Select the Bin System button (B–E).

(Reference Component Overview and Compatibility in the Spreader Overview section for components compatible with GreenStar™ Rate Controller Dry.)

PC20687—UN—16JAN15

Conveyor Control Valve Type Drop-Down Menu

- A—Fast Close
B—PWM Close

3. Select Fast Close (A) or PWM Close (B) from the Conveyor Control Valve Type drop-down menu.

NOTE: When selecting PWM Close, display interface changes and includes a PWM Settings button.

Manufactur- er	Model	Bin or Spinner	Valve Type	Initial Calibra- tion Number
BBI	Triad	Main 1	Fast (servo)	5023
BBI	Triad	Micro 2	Fast (servo)	1535
BBI	Triad	Micro 3	Fast (servo)	1535
BBI	Endurance	Main 1	Fast (servo)	5023
BBI	MagnaSpread	Main 1	Fast (servo)	5023
FORCE Unlimited	AgForce	Spinner	PWM	5013
FORCE Unlimited	AgForce	Main 1	PWM	5023
FORCE Unlimited	Duo-Force	Main 2	PWM	3023
FORCE Unlimited	Tri-Force	Micro 3	PWM	3023
FORCE Unlimited	Quad Force	Micro 4	PWM	5023
FORCE Unlimited	AgForce	Spinner	Fast (servo)	5003
FORCE Unlimited	AgForce	Main 1	Fast (servo)	5033
FORCE Unlimited	Duo-Force	Main 2	Fast (servo)	5023
FORCE Unlimited	Tri-Force	Micro 3	Fast (servo)	5023

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Manufacturer	Model	Bin or Spinner	Valve Type	Initial Calibration Number
FORCE Unlimited	Quad Force	Micro 4	Fast (servo)	7503
New Leader	G4 - Single	Spinner	PWM	2503
New Leader	G4 - Single	Bin 1	Fast (servo)	5043
New Leader	G4 - MultiApplier	Bin 2	Fast (servo)	5043
New Leader	G4 - MultiBin	Bin 3	Fast (servo)	5043
New Leader	G4 - MultiBin	Bin 4	Fast (servo)	5043

Recommended Initial Control Valve Calibration Numbers

4. Configure bin.

If using a fast close valve:

PC20696—UN—21JAN15

Bin 1 Setup – Fast Close Valve

- A—Conveyor Control Valve Calibration Input Box
 B—Conveyor Speed Sensor Calibration Input Box
 C—Heaped Bin Capacity Input Box
 D—Bin Level Switch Checkbox
 E—Switch Assignment Drop-Down Menu

- Enter Conveyor Control Valve Calibration (A).
- Enter Conveyor Speed Sensor Calibration (B).
(Reference the spreader manufacturer Operator's Manual for value.)
- Enter Heaped Bin Capacity (C). If exact value is unknown, it is recommended to enter a value higher than the estimated capacity.
- If applicable, select the Bin Level Switch checkbox (D).
- If a switchbox is present, select switch number from the drop-down menu (E).

If using a PWM valve:



PWM Settings Button

PC20680—UN—16JAN15

- Select the PWM Settings button.

PC20685—UN—30JAN15

PWM Settings Page

- A—Control Valve Calibration Input Box
 B—Coil Frequency Input Box
 C—Calibrate PWM Limits Button
 D—Accept Button

- Enter Control Valve Calibration (A).
- Enter Coil Frequency (B).

(Reference the control valve manufacturer Operator's Manual for the PWM coil frequency.)

NOTE: Calibrate PWM Limits button (C) only appears if PWM Close is selected as a control valve type for at least one bin conveyor or spinner.

- Select the Calibrate PWM Limits button and follow on-screen instructions. Once calibration is completed, select the Setup softkey to return to System Setup.
(Reference Spreader Diagnostics for more information.)

NOTE: High Limit is between 1-255 and Low Limit is between 0-254. High Limit must be greater than Low Limit. Service ADVISOR™ is recommended for optimal fine-tuning adjustments. For more information, contact your John Deere dealer.

Bin 2 Setup

Conveyor Control Valve Type: PWM Close

Conveyor Control Valve Calibration: PWM Settings

Conveyor Speed Sensor Calibration: 23 (A)

Heaped Bin Capacity (ft³): 85 (B)

Bin Level Switch Installed: ☒ (C)

Micronutrient Bin: ☒ (D)

Buttons: Cancel, Accept (E)

PC25313—UN—06FEB18

- A—Conveyor Speed Sensor Calibration Input Box
 B—Heaped Bin Capacity Input Box
 C—Bin Level Switch Checkbox
 D—Micronutrient Bin Checkbox
 E—Accept Button

- e. Enter Conveyor Speed Sensor Calibration (A).
(Reference the spreader manufacturer Operator's Manual for value.)
- f. Enter Heaped Bin Capacity (B). If exact value is unknown, it is recommended to enter a value higher than the estimated capacity.
- g. If applicable, select the Bin Level Switch checkbox (C).

NOTE: Micronutrient Bin checkbox (D) only applies to bin 2.

- h. If applicable, select the Micronutrient Bin checkbox.
(To calibrate PWM limits, reference Calibrating Spreader.)
- i. Select the Accept button (E).



Spinner Setup Button

PC20655—UN—09JAN15

5. Select the Spinner Setup button.

Spinner Setup

Spinner Control Valve Type: Fast Close (A)

Spinner Control Valve Calibration: 5203 (C)

Spinner Speed Sensor Installed: ☒ (E)

Spinner Speed Sensor Calibration: 2 (F)

Switchbox Assignment: 10 (G)

Buttons: Cancel, Accept (H)

PC20155—UN—21NOV14

Spinner Setup

Fast Close

Fast Close (B)

PWM Close (D)

None

PC20238—UN—21NOV14

Spinner Control Valve Type

- A—Spinner Control Valve Type Drop-Down Menu
 B—Fast Close Valve
 C—Spinner Control Valve Calibration Input Box
 D—PWM Close Valve
 E—Spinner Speed Sensor Installed Checkbox
 F—Spinner Speed Sensor Calibration Input Box
 G—Switchbox Assignment Drop-Down Menu
 H—Accept Button

6. Select spinner control valve type from the drop-down menu (A).
7. For Fast Close valves (B), enter Spinner Control Valve Calibration (C).

(To adjust calibration, reference Recommended Initial Control Valve Calibration Numbers table.)

For PWM Close valves (D), select the PWM Settings button. Enter Control Valve Calibration Number, Coil Frequency, and then High and Low Limits.

(Refer to manufacturer's recommendation for PWM Coil Frequency.)

8. If None is selected in Spinner Speed Control Valve Type and a speed sensor is installed, select the checkbox (E).
9. Enter Spinner Speed Sensor Calibration (F).
Spinner Speed Calibration is the number of bolt heads sensed in a revolution. Common values are 2 or 4.
10. If a switchbox is present, select a switchbox assignment from the drop-down menu (G).
11. When all required information is complete, select the Accept button (H).

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Alarm Setup

Implement	System	A Alarms	Display Smoothing																				
		<table border="1"> <thead> <tr> <th></th> <th>Application Rate (% +/- of Target Rate)</th> <th>Low Bin Level (%)</th> <th>Bin Level Switch</th> </tr> </thead> <tbody> <tr> <td>Bin 1 Alarms B</td> <td>20</td> <td>20</td> <td>None</td> </tr> <tr> <td>Bin 2 Alarms C</td> <td>20</td> <td>20</td> <td>None</td> </tr> <tr> <td>Bin 3 Alarms D</td> <td>20</td> <td>20</td> <td>None</td> </tr> <tr> <td>Bin 4 Alarms E</td> <td>20</td> <td>20</td> <td>None</td> </tr> </tbody> </table>		Application Rate (% +/- of Target Rate)	Low Bin Level (%)	Bin Level Switch	Bin 1 Alarms B	20	20	None	Bin 2 Alarms C	20	20	None	Bin 3 Alarms D	20	20	None	Bin 4 Alarms E	20	20	None	
	Application Rate (% +/- of Target Rate)	Low Bin Level (%)	Bin Level Switch																				
Bin 1 Alarms B	20	20	None																				
Bin 2 Alarms C	20	20	None																				
Bin 3 Alarms D	20	20	None																				
Bin 4 Alarms E	20	20	None																				
		Spinner Alarms L Spinner Speed (% +/- of target RPM) 20																					

PC20657—UN—09JAN15

Bin 1 Alarms

Alarm?

Application Rate
(% +/- of Target Rate)

☒ **F**

20 **I**

Low Bin Level
(%)

☒ **G**

20 **J**

Bin Level Switch

☒ **H**

Cancel

K Accept

PC20656—UN—09JAN15

- A**—Alarms Tab
B-E—Bin Alarm
F—Application Rate Input Box
G—Low Bin Level Input Box
H—Bin Level Switch Input Box
I—Application Rate Percentage Input Box
J—Low Bin Level Percentage Input Box
K—Accept Button
L—Spinner Alarms Button

Alarms tab (A) allows the operator to predefine alerts for application rate and low bin level. Alarms are based on percentages and alert the operator when value goes outside of range. For example, when 20% is entered for application rate, an alarm is triggered if actual rate goes below 80% or above 120% of target rate.

1. Select Alarms tab.
2. Select Bin Alarm buttons (B–E).
3. Select checkboxes to enable Application Rate (F), Low Bin Level (G), and Bin Level Switch (H).
4. Enter percentage value (I–J) to trigger alarm.
5. Select Accept (K).
6. Select checkbox to enable Spinner Speed (L).

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Rate Smoothing Setup

Implement System Alarms **A** Display Smoothing

Rate Smoothing

Bin 1 **B** ☒ **F** 3 %

Bin 2 **C** ☒ **G** 4 %

Bin 3 **D** ☒ **H** 5 %

Bin 4 **E** ☒ **I** 6 %

Speed Smoothing

Spinner **J** ☒ **K** 7 %

PC20593—UN—19DEC14

Rate Smoothing

- A**—Display Smoothing Tab
B-E—Bin Checkbox
C-E—Percentage Input Box 1
D—Spinner Checkbox
E—Spinner Percentage Input Box

1. Select Display Smoothing tab (A).

*NOTE: Smoothing percentages range between 3-15%.
 Lower value results in higher sensitivity, and higher values result in less sensitivity.*

2. Select checkbox (B–E) for appropriate bin, and enter desired percentages value (F–I) for that bin.
3. Select checkbox (J) for spinner, and enter desired percentage value (K).

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Configuring Spreader Products

Product Setup



Product Setup Softkey

PC13274—UN—02MAY11

1. Select the Product Setup softkey.

Product Information

PC20674—UN—14JAN15

- A—Product Information Tab
- B—Product Name Drop-Down Menu
- C—New Product Button
- D—Product Type Drop-Down Menu
- E—Application Units Drop-Down Menu
- F—Product Density Input Box
- G—Spread Width Input Box
- H—Target Spinner Speed Input Box
- I—Spinner Frame Input Box
- J—Rate Mode Drop-Down Menu
- K—Manual Rate Change Increment

2. Select the Product Information tab (A).
3. Select product name from the drop-down menu (B) or select the New button (C) to create a product.
4. Select product type from the drop-down menu (D).
5. Select application units from the drop-down menu (E).
6. Enter Product Density (F), Spread Width (G), Target Spinner Speed (H), and Spinner Frame (I).

NOTE: Spinner frame is adjustable on most spinner spreaders. This spinner frame measurement is only used for reference and is saved to product name in the product setup. This value is optional, and system performance is not based on this value.

(Reference the spreader manufacturer Operator's Manual for the spinner frame measurements.)

7. Select rate mode from the drop-down menu (J).

If using prescriptions, select Map-Based.

If Manual is selected, enter a Manual Rate Change Increment (K). On the Main page, manual rate can be adjusted with the increase (+) and decrease (-) buttons. Each button press adjusts the target rate by the increment amount. Enter an increment of 0 to disable the increase and decrease buttons.

Predefined Rates (kg/ha)	1	2	3
	700.0	900.0	1100.0

PC20734—UN—27JAN15

Predefined Rates

If using Predefined Rates, enter up to three predefined values.

RW00482,000023A-19-07MAR18

Product Bin Setup

Product Bin Setup

PC20700—UN—21JAN15

Bin 1 Product Setup

Product Name: Urea (C)

Feed Gate Opening (in): 2.0 (D)

CFR (cu. ft/rev): 0.2500 (E) [Calibrate CFR (F)]

[Cancel] [Accept (G)]

PC20701—UN—21JAN15

Bin 1 Product Setup

- A—Bin Enable/Disable Checkboxes
 B—Bin Setup Buttons
 C—Product Name Drop-Down Menu
 D—Feed Gate Opening Input Box
 E—CFR Input Box
 F—Calibrate CFR Button
 G—Accept Button
 H—Bin Chaining Type Drop-Down Menu
 I—Bin Chaining Order Drop-Down Menu

1. Enable each bin applying product by placing a check in checkbox (A) next to Bin Setup buttons (B). Uncheck any bins that are not currently in use.

NOTE: Disabled bins are not controlled and do not produce product documentation information or warnings.

2. Select a Bin Setup button to configure that bin.
3. On the Bin Product Setup popup, select the predefined Product Name from drop-down menu (C).
4. Enter Feed Gate Opening value (D). This value is critical and must be accurate. This value does not control the feed gate opening.
5. Enter CFR value (E) for conveyor. This value is quoted from most manufacturers and is the amount of product dispensed in 1 revolution of the conveyor pulley if the gate height is set at 1 in. (or 1 cm if using metric).

If the CFR is unknown, select Calibrate CFR (F) (for more information, see the Spreader Calibration section).
6. Select Accept (G).
7. Set up Bin Chaining Type (H) and Bin Chaining Order (I), if desired (see Bin Chaining in this section).

HC94949,00006FF-19-22JAN15

Bin Chaining

Bin Chaining Type: Manual (A)

Bin Chaining Order: 1 to 2 (B)

PC13277—UN—05MAY11

Bin Chaining

- A—Bin Chaining Type
 B—Bin Chaining Order

Bin chaining requires two main bins, and both with the same product. Bin chaining does not work with micronutrient bins.

When using documentation, this creates one as-applied map from the two main bins.

The first bin to empty must contain a bin level sensor.

1. Select Bin Chaining Type (A):

- Auto—Controller automatically switches bins when bin level switch is activated.
- Manual—User is notified when bin level switch is activated, and user switches bins manually.
- Off—Bin chaining off.

2. Select Bin Chaining Order (B):

- 1 to 2—Bin 1 is emptied before switching to Bin 2.
- 2 to 1—Bin 2 is emptied before switching to Bin 1.

Reset Bin Chaining

Bin chaining resets to original bin once machine stops and bin level sensor is covered.

HC94949,00005F8-19-20NOV14

Review Product Summary

Product Information	Product Bin Setup	Product Summary				
	Bin 1	Bin 2	Bin 3	Bin 4		
Bin Enabled	Enabled	Enabled	Disabled	Disabled		
Product Name	Urea	Urea				
Product Density (lb / cu. ft)	65.0	65.0				
CFR (cu. ft/rev)	0.2500	0.2500				
Feed Gate Opening (in)	2.0	2.0				
Rate Mode	Manual	Manual				
Spinner Frame (in)	5.0				520	
		RPM				
Spread Width (ft)	70.00	Values are based on:			Bin 1, Urea	

PC13278—UN—05MAY11

Product Summary

The Product Summary tab displays the product information for each bin. Use this page to verify all information is set as desired.

HC94949,000068F-19-09DEC14

Calibrating Spreader

Calibrate CFR — Catch Test

Calibrate CFR — Catch Test adjusts the calibration value by dispensing product into a container, without moving the machine. Enter the amount collected to calibrate the CFR and fine-tune spreader operation.

To fine-tune spreader operation, calibrate the CFR.

NOTE: To perform calibration, set up system, product, and product bin.

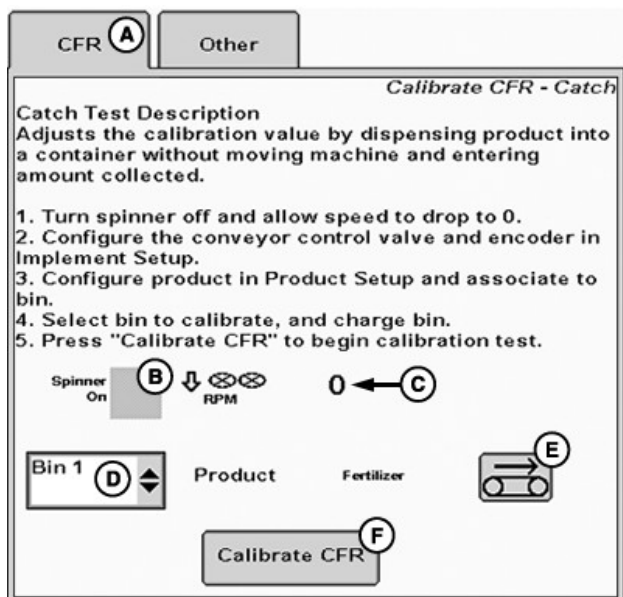
(Reference *Configuring Spreader and Configuring Spreader Products* for more information.)



PC13612—UN—13MAY11

Calibration Softkey

1. Select the Calibration softkey.



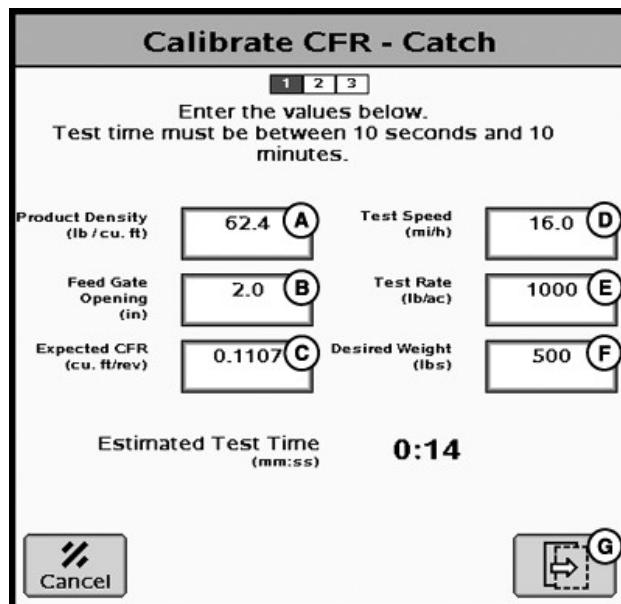
PC25320—UN—08FEB18

- A—CFR Tab
- B—Spinner On Checkbox
- C—Speed
- D—Bin Drop-Down Menu
- E—Charge Bin Button
- F—Calibrate CFR Button

2. Select the CFR tab (A).
3. Uncheck the Spinner On checkbox (B) and allow speed (C) to slow down to 0.
4. Select a bin to calibrate from the drop-down menu (D).

NOTE: Ensure that bin is charged before beginning calibration. Product must be ready to dispense at start of test.

5. Select the Charge Bin button (E).
6. Select the Calibrate CFR button (F).



PC25321—UN—08FEB18

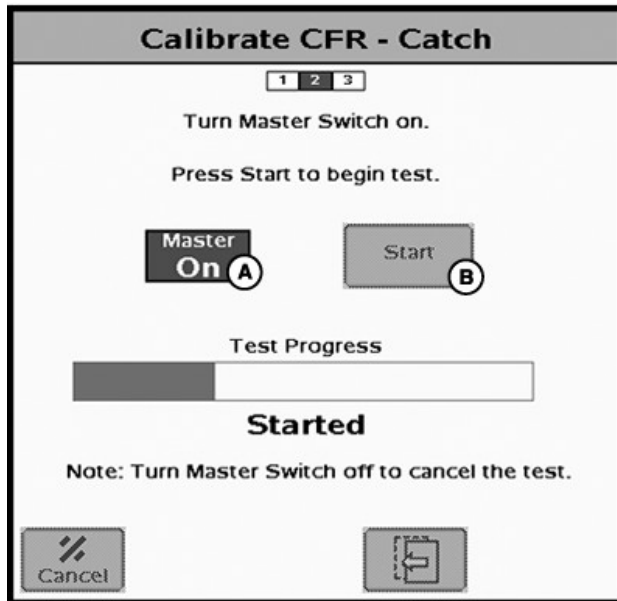
- A—Product Density
- B—Feed Gate Opening
- C—Expected CFR
- D—Test Speed
- E—Test Rate
- F—Desired Weight
- G—Next Page Button

NOTE: Use conditions in this test that are comparable to normal operation. Larger dispense volumes result in longer, but more accurate calibration tests.

Values for Product Density (A), Feed Gate Opening (B), or Expected CFR (C) are populated for the product in the currently selected bin. Changes to these values are saved if new CFR value is accepted at end of test.

Test Speed (D) and Test Rate (E) values should reflect desired operating conditions. Desired Weight (F) value is the amount of the desired product to be dispensed during the test.

7. Enter calibration test parameters (A–F). Test time must be between 10 sec and 10 min.
8. Select the Next Page button (G).



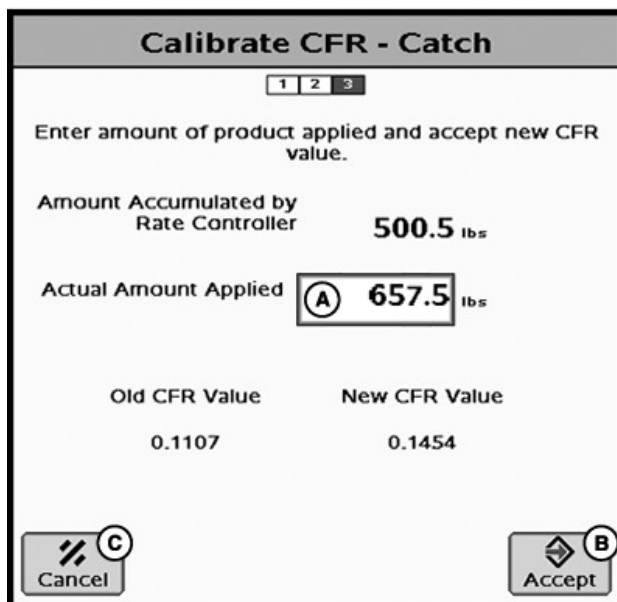
PC25322—UN—08FEB18

A—Master Switch Indicator
B—Start Button

9. Turn ON the master switch. Indicator (A) displays the current state of the master switch.

NOTE: Turn OFF the master switch at any time to cancel test.

10. Select the Start button (B).



PC25323—UN—08FEB18

A—Actual Amount Applied
B—Accept Button
C—Cancel Button

11. Once test is complete, enter the Actual Amount Applied (A).
12. To save the new CFR value, select the Accept

button (B). To use the old CFR value, select the Cancel button (C).

RW00482,0000239-19-27FEB18

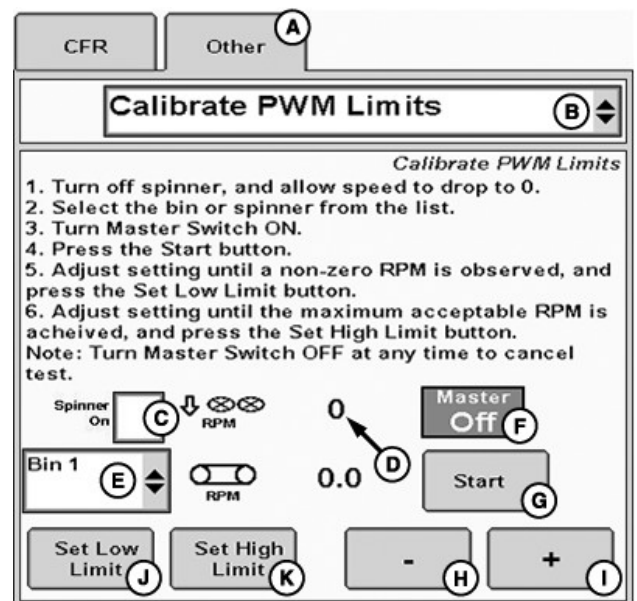
Calibrate PWM Limits



Calibration Softkey

PC13612—UN—13MAY11

1. Select the Calibration softkey.



PC25338—UN—09FEB18

A—Other Tab
B—Calibration Type Drop-Down Menu
C—Spinner On Checkbox
D—Speed
E—Bin or Spinner Drop-Down Menu
F—Master Switch Indicator
G—Start Button
H—Decrease (-) Button
I—Increase (+) Button
J—Set Low Limit Button
K—Set High Limit Button

2. Select the Other tab (A).

NOTE: Calibrate PWM Limits only appears if PWM Close is selected as a control valve type for at least one bin conveyor or spinner.

(Reference System Setup for more information.)

3. Select Calibrate PWM Limits from the drop-down menu (B).
4. Uncheck the Spinner On checkbox (C) and allow speed (D) to slow down to 0.

5. Select a bin or spinner from the drop-down menu (E).

NOTE: Turn OFF the master switch at any time to cancel test.

6. Turn ON the master switch. Indicator (F) displays the current state of the master switch.
7. Select the Start button (G).
8. Adjust setting using decrease (H) and increase (I) buttons until the slowest possible non-zero RPM is achieved.
9. Select the Set Low Limit button (J).
10. Adjust setting using decrease and increase buttons until the maximum acceptable RPM is achieved.
11. Select the Set High Limit button (K).

RW00482,0000244-19-27FEB18

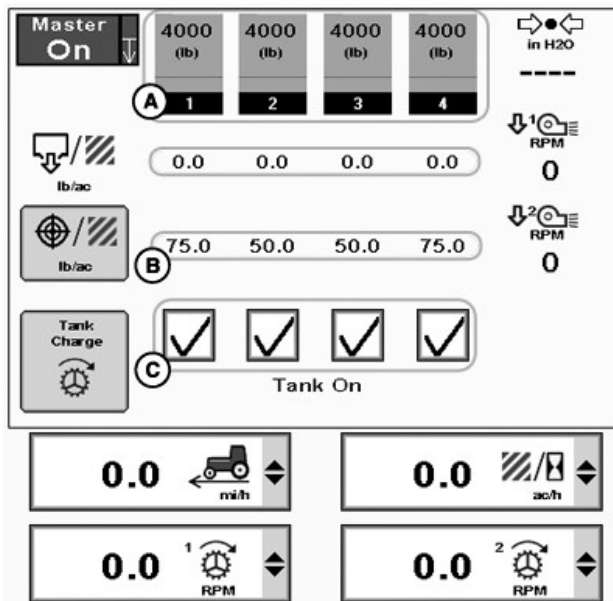
Operating Spreader

GreenStar™ Rate Controller Dry-Spreader

1. Verify User-Defined Values
2. Manage Bins, if necessary
 - a. Bin Level Indicator and Filling
 - b. Rate Control
 - c. Bin Charging
 - d. Bin Chaining
3. Activate and Deactivate System
4. Monitor System Performance
5. Bin Cleaning (see Spreader Diagnostics section)

HC94949,0000690-19-12JAN15

Verify User-Defined Values



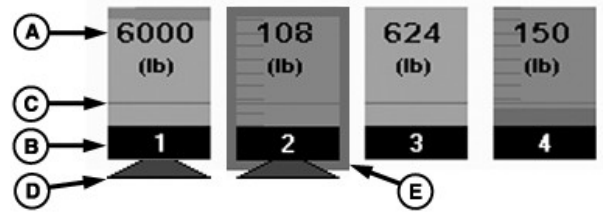
PC20662—UN—12JAN15

- A—Tank Level Indicators
- B—Target Rates
- C—Tank ON Checkboxes

1. Verify Tank Levels (A) for accuracy.
2. Verify Target Rates (B).
3. Verify tanks are enabled (C).

HC94949,00006D5-19-12JAN15

Bin Level Indicator and Filling



PC20664—UN—12JAN15

Bin Level Indicator

- A—Estimated Amount of Product Remaining
- B—Bin Number
- C—Low-Level Indicator
- D—Bin Applying Indicator
- E—Bin Level Sensor Indicator

Bin level indicator displays the estimated amount of product remaining (A) in each bin.

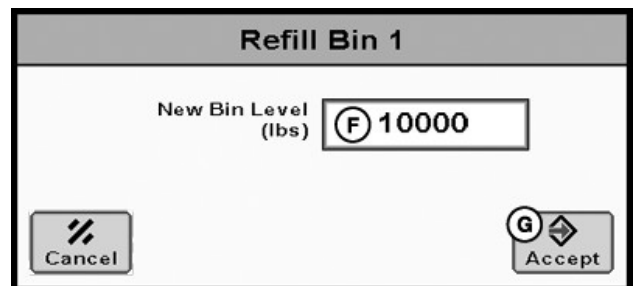
The maximum level of each indicator is based on heaped bin capacity entered in the implement setup and density of the product assigned to the bin number (B) in the product setup.

The bar graph is orange when the amount of product is above the low-level indicator (C) and turns red once the amount drops below. Adjust low-level indicator in the alarm setup. Active bins are identified with the bin applying indicator (D).

If a bin is equipped with a bin level sensor and the sensor indicates a low level, a thick red line appears around the bin level sensor indicator (E).

Refilling Bin

1. To display a Refill Bin window, select one of the bin level indicators.



PC20663—UN—12JAN15

Refill Bin 1

- F—New Bin Level Input Box
- G—Accept Button

2. Enter the estimated weight of a product in bin (F).
3. To save new bin level, select the Accept button (G).

RW00482,0000245-19-27FEB18

Rate Control

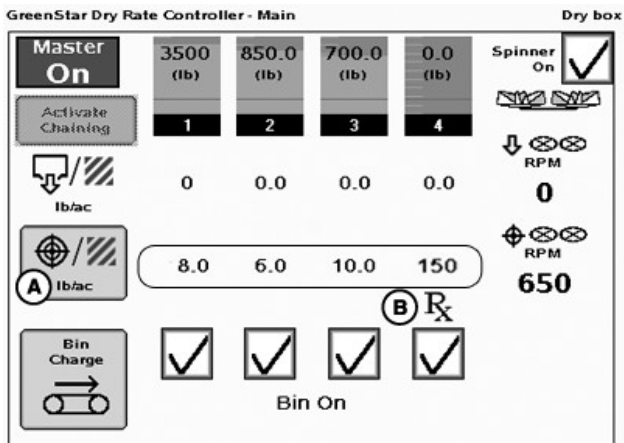
Rate mode (predefined, manual, or map-based) is determined by the product selected for a bin.

To change rate mode:



Product Setup Softkey

1. Select the Product Setup softkey.
2. Select the Product Information tab.



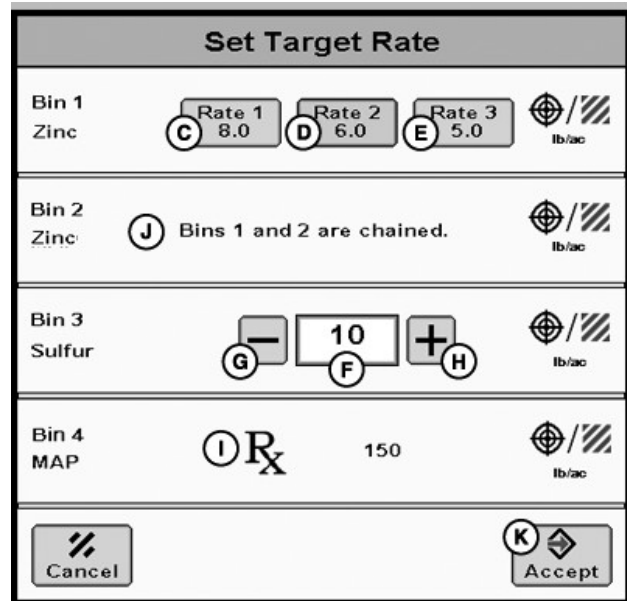
PC20323—UN—21NOV14

- A—Target Rate Button
B—Map-Based Rate Enabled Icon

3. To display Set Target Rate window, select the Target Rate button (A).

If Map Based is selected as the rate mode for a product in a bin, prescription (Rx) (B) is displayed.

Predefined Rate



PC20167—UN—12JAN15

Set Target Rate

- C—Rate 1
D—Rate 2
E—Rate 3
F—Rate Input Box
G—Decrease Button (-)
H—Increase Button (+)
I—Bin 4 Prescription Rate
J—Bin Chaining Statement
K—Accept Button

Predefined rates are entered on Product Information tab of the product setup.

(For more information, reference Configuring Spreader Products.)

Select a rate button (C–E) to change target rate. The current target rate button is highlighted.

Manual Rate

Select input box (F) to enter desired rate for bin. To change a value, use the decrease (G) or increase (H) buttons. Increment value is entered on Product Information tab.

Map Based Rate

If Map Based is selected as rate mode for the product in a bin, rate from prescription is displayed with an Rx symbol (I).

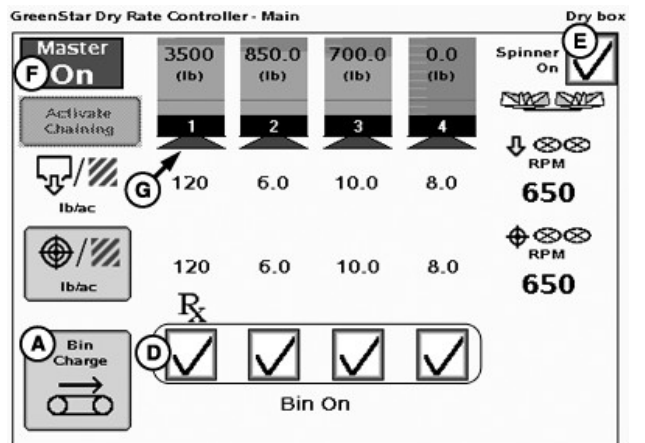
NOTE: Ensure that prescription is selected in GreenStar™ Documentation.

If bin chaining is active, “Bins 1 and 2 are chained” (J) is displayed.

To save changes, select the Accept button (K).

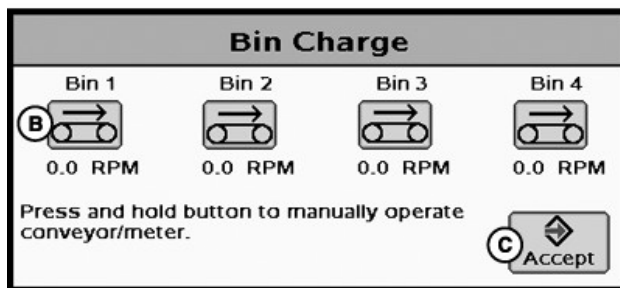
Bin Charging

NOTE: If a bin is not enabled, bin charge button is grayed out.



PC20258—UN—14NOV14

Bin Operation



PC20259—UN—14NOV14

Bin Charge Popup

- A—Bin Charge Button
- B—Bin Charge Button - Bin Charge Popup
- C—Accept Button
- D—Bin On Checkbox
- E—Spinner On Check box
- F—Master On Indicator
- G—Bin Applying Indicator

1. Select Bin Charge button (A) to display Bin Charge window.
2. Press and hold Bin Charge button (B) on Bin Charge popup window to turn on conveyor and move product to spinner. Select Accept (C) when finished.

NOTE: Bin Charge runs conveyor at 25 RPM.

CAUTION: Always check for bystanders before starting spinner. Failure to do so may cause injury to you or others.

3. Turn on Spinner and all Bins that are dispensing product by using checkboxes (D and E).

If using a Switchbox, use both switches and

checkboxes to turn spinner and bins on. Use one of the two to turn spinner and bins off.

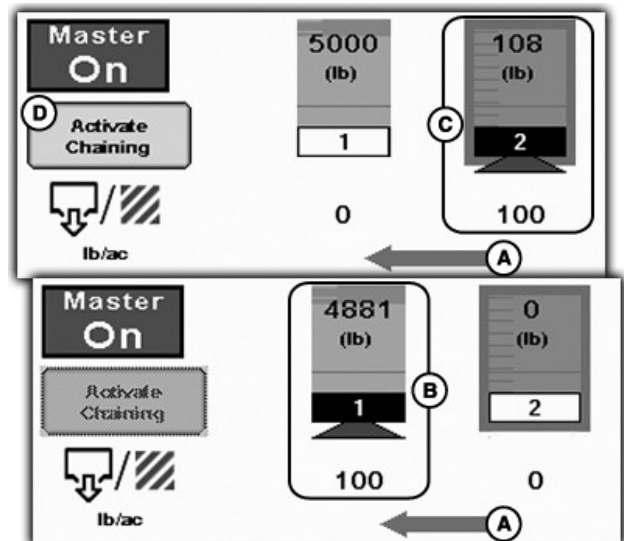
HC94949,00005B4-19-22JAN15

Bin Chaining



PC20665—UN—13JAN15

Manual Bin Chaining Ready Notification



PC20666—UN—13JAN15

Main Page — Bin Chaining

- A—Bin Chaining Arrow
- B—Bin 1
- C—Bin 2
- D—Activate Chaining Button

Bin Chaining Arrow (A) indicates the order that Bins 1 (B) and 2 (C) are emptied. It remains in place as long as bin chaining is enabled.

If Bin Chaining Type is set as Auto, the control unit automatically switches bins when bin level sensor indicates a low level.

If the Bin Chaining Type is set to Manual:

1. User is prompted with a Manual Bin Chaining Ready notification to change bins when bin level sensor is activated.
2. If notification is selected, Activate Chaining button (D) becomes enabled on Main page.
3. To switch bins, select the Activate Chaining button.

RW00482,0000247-19-27FEB18

Activate and Deactivate System

1. To activate system:
 - Switchbox—Turn Master Switch to On position.
 - Foot Switch—Press switch.
2. To deactivate system:
 - Switchbox—Turn Master Switch to Off position.
 - Foot Switch—Press switch.

NOTE: Master Switch Indicator on run page displays an On/Off state.

Conveyor only operates when machine ground speed is greater than 0.5 km/h (0.3 mph).

Bins applying product are marked with a green triangle under bin level indicator.

HC94949,00006D8-19-21JAN15

Viewing Spreader Reports and Totals

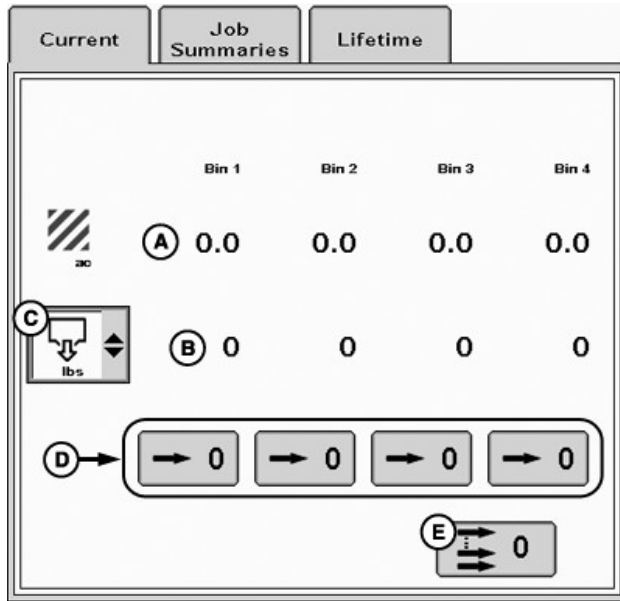
Reports and Totals



Totals Softkey

PC13279—UN—05MAY11

Select Reports and Totals softkey to show totals stored on controller.



Current Totals

PC13280—UN—06MAY11

- A—Area
- B—Total Applied
- C—Units Selection
- D—Clear Bin Totals
- E—Clear Implement Totals

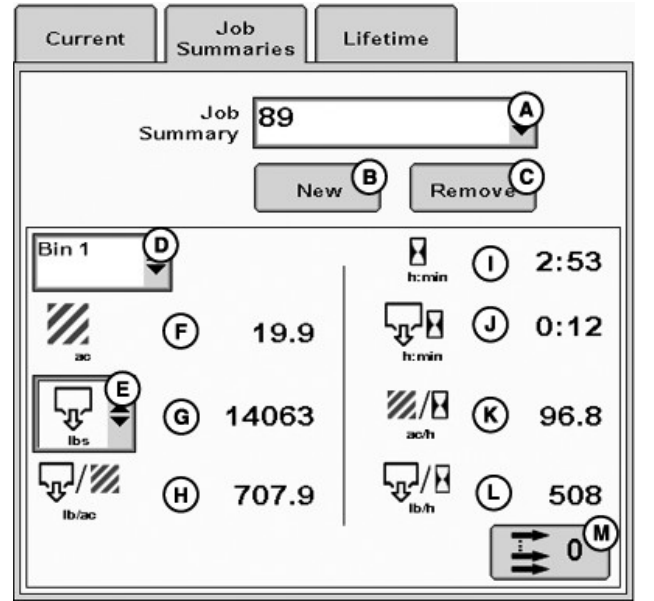
Current

Current tab displays totals for currently selected implement.

Use the Units drop-down (C) to change units.

Clear totals for individual bins using the Bin Zero button (D).

Clear totals for all bins using the Implement Zero button (E).



Job Summaries

PC13281—UN—06MAY11

- A—Job Summary Selection
- B—New Button
- C—Remove Button
- D—Bin Selection
- E—Unit Selection
- F—Area
- G—Total Applied
- H—Average Applied per Area
- I—Total Time
- J—Application Time
- K—Average Area per Hour
- L—Average Applied per Hour
- M—Clear Job Totals

Job Summaries

Job Summaries page keeps track of totals by user-defined jobs (A). Only values for the currently selected job summary are incremented.

Job Summaries are stored on the controller. The controller can store up to 6 different jobs for each configuration.

NOTE: Job Summaries page can be exported using the screenshot functionality of the GreenStar™ 3 2630 Display. Use GS3 2630 Display documentation for exporting operation totals to desktop software is recommended (see GS3 2630 Display Operator's Manual for more information).

To create a new job follow these steps:

1. Select the New button (B) and a keypad appears.
2. Type in a name for the current job on the key pad.
3. Select Enter.

Jobs that are no longer needed may be deleted by selecting the job (A) and pressing the remove button (C).

GreenStar is a trademark of Deere & Company

Use Bin Selection drop-down to view separate totals for each bin.

Change units by using the Unit Selection drop-down (E).

Totals can be reset to zero by pressing the zero button (M).

CurrentJob SummariesLifetime

Pull-behind Spreader

Spreader A

B

h:min

3:40

C

Bin 1

Bin 2

Bin 3

Bin 4

E

23.3

18.7

0.0

0.0

D

F

5419

9667

0

0

G

0:15

0:12

0:00

0:00

PC13282—UN—29JUN11

Lifetime

- A—Implement Name
- B—Total Time
- C—Bins
- D—Unit Selection
- E—Area
- F—Total Applied
- G—Application Time

Lifetime

Lifetime tab keeps track of all totals for the lifetime of selected implement (A).

Change units by using Unit Selection drop-down (D).

HC94949,00006DA-19-22JAN15

70-2

Spreader Diagnostics

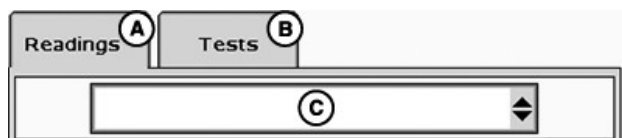
Spreader Diagnostics



Diagnostics Softkey

PC13283—UN—11MAY11

1. Select the Diagnostics softkey.



Diagnostics Tabs

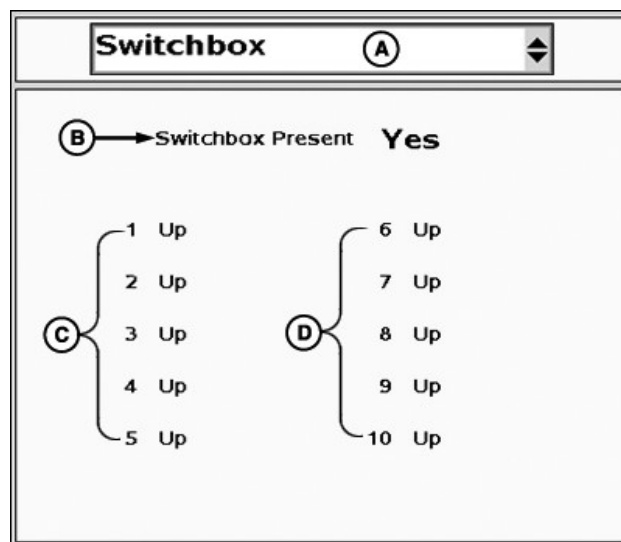
PC12249—UN—14SEP09

- A—Readings Tab
- B—Tests Tab
- C—Drop-Down Menu

2. Select either the Readings (A) or Tests (B) tab.
3. Select a reading or test from the drop-down menu (C).

RW00482,0000248-19-14FEB18

Switchbox Readings

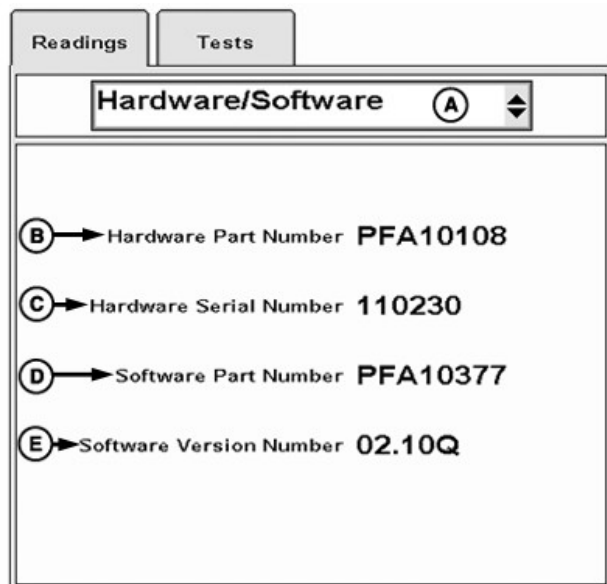


PC12251—UN—06OCT09

- A—Readings Selection Drop-Down Menu
- B—Switchbox Present Status
- C—Switches 1 Through 5 Status on Switchbox
- D—Switches 6 Through 10 Status on Switchbox

RW00482,0000127-19-25MAR13

Hardware/Software Readings

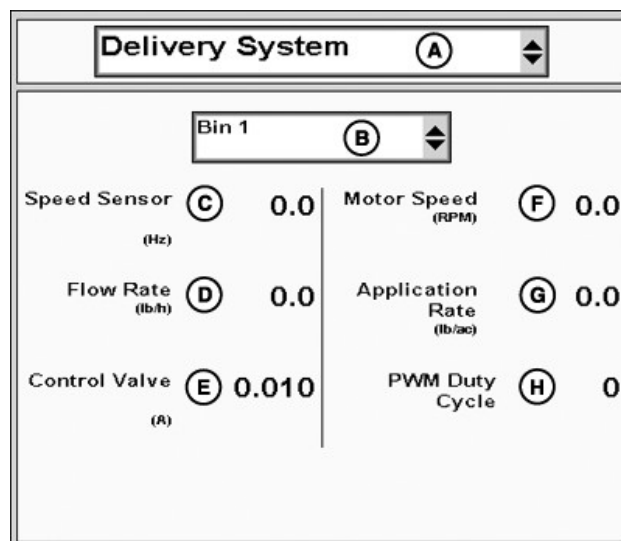


PC19558—UN—14APR14

- A—Readings Selection Drop-down Menu
- B—Hardware Part Number
- C—Hardware Serial Number
- D—Software Part Number
- E—Software Version Number

HC94949,00004DC-19-28APR14

Delivery System Readings



PC13284—UN—10MAY11

- A—Readings Selection Drop-Down Menu
- B—Bin Selection Drop-Down Menu
- C—Speed Sensor
- D—Flow Rate
- E—Control Valve
- F—Motor Speed
- G—Application Rate
- H—PWM Duty Cycle

PWM Duty Cycle—This number represents current position of PWM Close Control Valve. The number is between the current High and Low Limit settings while operating.

RW00482,0000128-19-18APR13

System Voltages Readings

PC12255—UN—06OCT09

A—Readings Selection Drop-Down Menu

B—ECU Power

C—Sensor 1 Power

D—Sensor 2 Power

E—Sensor 3 Power

F—Sensor 4 Power

G—Valve Power

H—Valve 1 Power

I—Valve 2 Power

J—Valve 3 Power

K—Valve 4 Power

NOTE: If Valve Power is not connected, Valve Power shows "None".

RW00482,0000129-19-25MAR13

D—Speed Source

RW00482,000012A-19-25MAR13

Switches/Status Readings

PC13285—UN—10MAY11

A—Readings Selection Drop-down Menu

B—Master Switch Status

C—Bin Level 1 Switch Status

D—Bin Level 2 Switch Status

CZ76372,0000309-19-13JUL11

Working Parameters Readings

PC12256—UN—06OCT09

A—Readings Selection Drop-Down Menu

B—Working Width

C—Speed

Flow Control Test

Operator can run a Flow Control Test to ensure that control valves are functioning properly.

To begin test:

RPM	Variance (%)
57.8	0
52.0	0
46.2	0
40.4	0
34.6	0
28.8	0
23.0	0
17.2	0
11.4	0
5.6	30

PC13286—UN—10MAY11

Flow Control Test

A—Tests Drop-Down Menu

B—Spinner On Checkbox

C—Control Valve Drop-Down Menu
D—Master Switch Indicator
E—Start Button

1. Select Flow Control Test from the drop-down menu (A).
2. Uncheck the Spinner On checkbox (B) and allow speed to slow down to 0.
3. Select the valve to test from the drop-down menu (C).
4. Turn ON the master switch. Indicator (D) displays the current state of the master switch.

NOTE: Turn OFF the master switch at any time to cancel test.

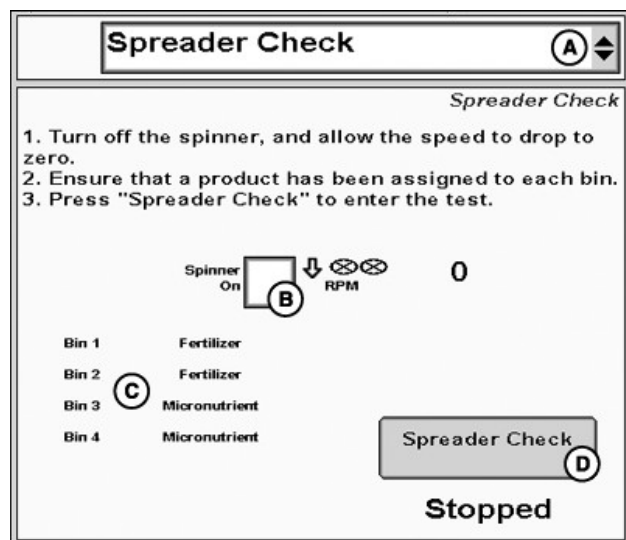
5. Select the Start button (E).

The valve is tested across the entire range of control. Results are displayed in the RPM/Variance table on the display.

If the system does not control speed accurately, there are a few things to look for and adjust. A high variance number in desired RPM range indicates inaccurate rate control.

- Ensure to enter correct calibration value for the control valve type (or a similar valve type) that is being used. This value is a starting point and can be tuned to your specific system.
- The lower the variance, the better the control unit is able to control at a desired RPM. There are a few issues that might cause variance during the test to be inconsistent:
 - Improper tuning of valve calibration value. (For more information, reference Calibrating Spreader.)
 - Incorrect speed sensor calibration. Ensure the correct number of pulses per revolution value is entered.
 - Noisy speed signal. Ensure belt, spinner, or rollers turn freely and are not scraping or chattering during test.
- System operating parameters (for example, tractor speed) may need to be adjusted to increase performance at certain levels.

Spreader Check Test



PC16833—UN—18APR13

A—Tests Drop-Down Menu
B—Spinner Enable Checkbox
C—Bin Product Assignments
D—Spreader Check Button

Operator can run a Spreader Check Test to ensure that control valves are functioning properly for conveyor belt (s) and spinners.

NOTE: Turn Master Switch OFF at any time to cancel test.

To begin spreader check test:

1. Select Spreader Check from Tests drop-down menu (A).
2. Turn off spinner (B), and allow speed to drop to 0.
3. Ensure that a product has been assigned to each bin.
4. Press “Spreader Check” button (D) to enter test.

RW00482,0000249-19-27FEB18

Tests: Spreader Check

1 2

1. Enable bins to apply, and enter target rates.
2. Enter Test Speed.
3. Enable Spinner if desired.

Bin 1 Bin 2 Bin 3

Bin On ☒ ☒ ☒ (A)

lb/ac 1000 1500 200 (B)

Test Speed (mph) 10.0 (C)

Spinner On ☒ (D)

Cancel (E)

PC16834—UN—18APR13

- A—Bin Enable Checkboxes
- B—Target Rate Entries
- C—Test Speed Entry
- D—Spinner Checkbox
- E—Next Button

5. Enable bins to apply (A), and enter target rates (B).
6. Enter Test Speed (C).
7. Enable Spinner (D) if desired.
8. Press Next button (E).

Tests: Spreader Check

1 2

4. Turn Master Switch ON.
5. Press Start Button.
NOTE: Turn Master Switch OFF at any time to cancel test.

Bin 1 Bin 2 Bin 3

lb/ac 1000 1500 200 (A)

lb/ac 1000 1500 200 (B)

RPM 22.9 55.7 9.3 (C)

Master On (D)

RPM 520 RPM 516

Cancel (E) Start (F)

PC16835—UN—18APR13

- A—Actual Rates
- B—Target Rate Entries
- C—RPM's
- D—Master Switch Indicator
- E—Start Test Button
- F—Accept Button

9. Turn Master Switch ON (D).
10. Press Start Button (E).

NOTE: Turn Master Switch OFF at any time to cancel test.

NOTE: Operator may adjust rates while test is running.

HC94949,00006DC-19-22JAN15

Bin Cleanout

Bin Cleanout (A)

Bin Cleanout

1. Turn off the spinner, and allow speed to drop to 0.
2. Select bins to be cleaned out.
3. Turn Master Switch ON.
4. Press Start button.
5. Toggle bins on or off using the checkboxes.
Note: Turn Master Switch OFF at any time to cancel test

Spinner On ☐ (B)

RPM 0

Bin 1 Bin 2 Bin 3 Bin 4

(C) ☒ ☒ ☒ ☒

Master Off (D) Status Master Start (E)

PC16840—UN—18APR13

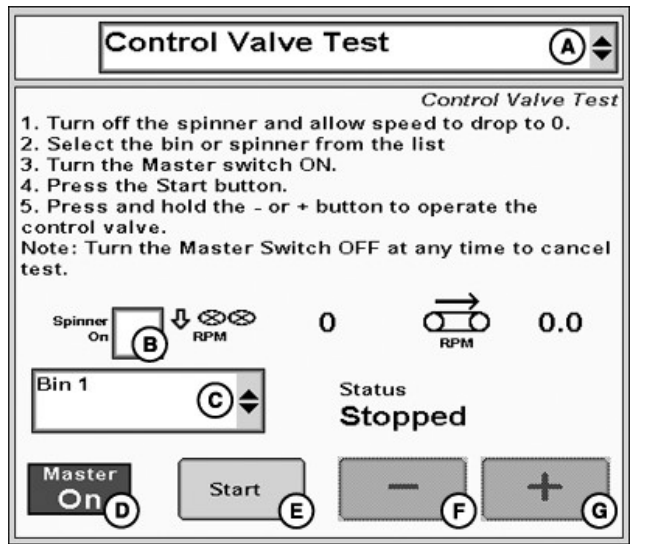
- A—Tests Drop-Down Menu
- B—Spinner Enable Checkbox
- C—Bin Enable Checkboxes
- D—Master Switch Indicator
- E—Start Button

1. Turn off spinner (B), and allow speed to drop to 0.
2. Select bins (C) to be cleaned out.
3. Turn Master Switch ON (D).
4. Press Start Button (E).
5. Toggle bins on or off using checkboxes (C).

NOTE: Turn Master Switch OFF at any time to cancel test.

RW00482,0000152-19-16MAY13

Control Valve Test



PC16841—UN—18APR13

- A—Test Drop-Down Menu
- B—Spinner Enable Checkbox
- C—Control Valve Selection Drop-Down Menu
- D—Master Switch Indicator
- E—Start Test Button
- F— - Button
- G— + Button

This is a visual test to verify that the control valve(s) for conveyor belt(s) and spinners are functional.

NOTE: This test can be ran without product in bins.

1. Turn off spinner (B), and allow speed to drop to 0.
2. Select bin or spinner from list (C).
3. Turn Master switch ON (D).
4. Press Start button.
5. Press and hold - (F) or + (G) button to operate control valve.

NOTE: Turn Master Switch OFF at any time to cancel test.

HC94949,00006DD-19-21JAN15

Air Cart Overview

Theory of Operation

GreenStar™ Rate Controller Dry is compatible with competitive multi-tank air carts. Controller can be configured as an air cart implement type and eliminates the need for a third-party controller. Controller controls up to four tanks containing different product and monitors up to two fans. Controller is configured as a single implement section, spanning the entire working width of the implement. GreenStar™ 2630 Display then serves as the operator interface that controls the product application with the air cart.

The air cart functionality also supports the use of an implement height switch or height sensor (potentiometer). This automatically shuts off the flow of product when the implement is raised out of the ground. Controller is also able to receive height switch commands from another controller when used in conjunction on the same implement.

Each product is defined by a name, application units, density, and fan speed in the memory of the controller. Each tank is then assigned a specific product that is applied by the implement.

During operation, both valve types are operated as fast close and PWM valves on the product metering system. Both valve types close to stop the product metering system when the controller commands the air cart to stop applying product. Implements equipped with PWM valves may require the use of a boost box to handle the electrical current requirement with some manufacturers' valves.

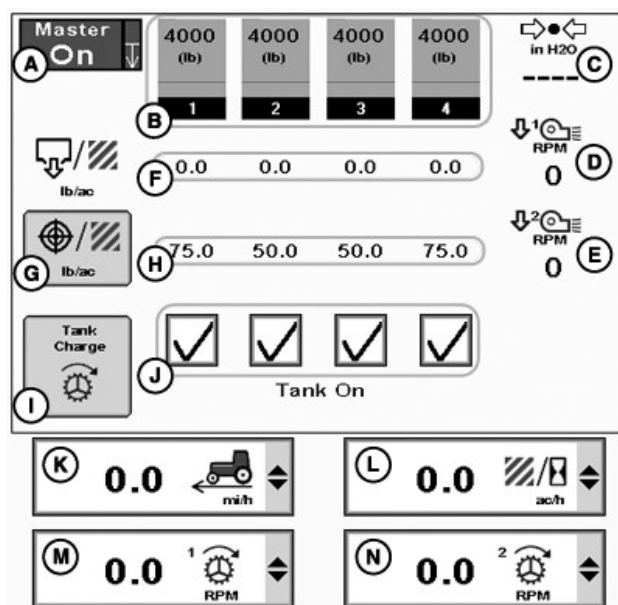
For air carts, there is the option of controlling a valve as a fast valve instead of a fast close valve. In these configurations, a main clutch and (or) tank clutches are required to stop the product metering system when controller commands the air cart to stop applying product. Clutch polarity signal is selected depending on clutch configuration. Clutch configuration options are:

- Active high: clutch engages when 12 V is applied and disengages when 12 V is removed.
- Active low: clutch disengages when 12 V is applied and engages when 12 V is removed.

Controller does rate smoothing. Rate smoothing removes small fluctuations in application rate and spinner speed values shown on display. If actual value is within a user-defined percentage of target value, target value is displayed. Percentage range is 3–15% and system defaults to 3%.

HC94949,0000647-19-21NOV14

Air Cart Run Page



PC20654—UN—09JAN15

Spreader Run Page

- A—Master Switch Indicator
- B—Tank Level Indicators
- C—Pressure Reading
- D—Fan 1 Actual Speed
- E—Fan 2 Actual Speed
- F—Actual Rates
- G—Target Rate Button
- H—Target Rates
- I—Tank Charge Button
- J—Tank ON Checkboxes
- K-N—Information Drop-Down Menus

HC94949,0000703-19-23JAN15

Component Overview and Compatibility

The following component configurations are compatible with GreenStar™ Rate Controller Dry (see 37-Pin Connector Tables at end of manual for additional pin out information).

Control Valves

- Control valves are used to drive meters on air cart.
- Control valve types: Fast (servo/motorized) and PWM (proportional).
- Control valves must require 12 V power to open.
- Control valves must require less than 2.5 amp of current. (For control valves requiring more than 2.5 amp, a boost box is needed. See your John Deere dealer.)

Fast Control Valve

Fast control valves are used in dual-valve systems and in conjunction with an on/off valve or clutch. The on/off valve or clutch stops product flow and the fast control valve remains in its current position. When on/off valve or clutch re-opens, the fast control valve

should need little to no adjustment, assuming target flow rate has not changed dramatically.

Configuration:

- Vary speed through transmission metering system on ground driven air cart.
- Tank clutch control.

- **Fast Close (Servo) Control Valves**

Fast close control valve serves as the rate control valve and completely closes when it is necessary to stop product flow. To start product flow once again, fast close valve opens and quickly ramps flow back up to achieve target application rate.

Configuration:

- Metered with hydraulic motor.

- **PWM Close Control Valves**

PWM close control valve serves as the rate control valve and completely closes when it is necessary to stop product flow. To start product flow once again, PWM close valve opens and quickly ramps flow back up to achieve target application rate.

Configuration:

- Metered with hydraulic motor.
- Metered with direct drive electric motor.

Performance of PWM valves is slightly better than performance of Fast (Servo) valves due to the immediate responsiveness of PWM valves.

Meter Speed Sensor

A speed sensor is required for each configured tank/meter and is used to monitor the meter speed for rate control.

The sensor can be powered by 5 V or 12 V and must provide a frequency-based square wave signal with respect to meter speed. The sensor must pull signal to ground to create lower portion of square wave, and the controller pulls signal up to 5 V when sensor is not in active state, completing the square wave.

Meter speed sensors are available in several styles, including optical encoders and gear tooth sensors.

Fan Speed Sensor

Fan speed sensor is used to monitor fan speed for automatic or manual speed control. Sensor can be powered by 5 V or 12 V and must provide a frequency-based square wave signal with respect to fan speed. Sensor must pull signal to ground to create lower portion of square wave. The controller pulls signal up to 5 V when sensor is not in active state, completing the square wave. Fan speed sensors usually are magnetic pickup sensors that sense bolt heads or gear teeth.

Tank Level Switch (Optional)

A tank level switch is used to alert operator of low tank status.

The optical switch senses the presence or absence of product in tank. When tank level switch output voltage is low, product is absent and tank is nearly empty.

NOTE: Maximum application ground speed for air seeding systems is 32.1 km/h (20 mph).

HC94949,0000649-19-27JAN15

Configuring Air Cart

Configure Air Cart

Access GreenStar™ Rate Controller Dry

Configuring Air Cart

1. Implement Setup
2. System Setup
3. Alarm Setup (optional)
4. Rate Smoothing Setup (optional)

Configuring Air Cart Products

1. Product Setup
2. Product Tank Setup
3. Review Product Summary

Calibrating Air Cart

1. Charge Tank for Calibration
2. Calibrate Tank Test
3. Calibrate PWM Limits

GreenStar™ Rate Controller Dry Operation - Air Cart

1. Verify User-Defined Values
2. Tank Operation
3. Activate and Deactivate System
4. Monitor System Performance
5. Tank Cleaning (see Spreader Diagnostics for instructions)

HC94949,0000695-19-28JAN15

Access GreenStar™ Dry Rate Controller

To access the GreenStar™ Dry Rate Controller main page:



Menu Button

PC8663—UN—29APR15

1. Select the Menu button.



GreenStar™ Rate Controller Dry Button

PC13638—UN—06JUL11

2. Select the GreenStar™ Rate Controller Dry button.

Each GreenStar™ Rate Controller Dry is identified by the control unit serial number and implement name once the setup procedure has been completed.

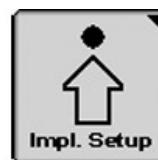
NOTE: The GreenStar™ Rate Controller Dry button appears upon power-up after the harness is installed and the GreenStar™ Rate Controller Dry is connected.

RW00482,0000236-19-22FEB18

Implement Setup

Implement Selection

NOTE: Turn OFF the master switch to change most settings or values.



Implement Setup Softkey

PC13261—UN—21APR11

1. Select the Implement Setup softkey.

Implement Setup

PC20260—UN—14NOV14

- A—Implement Tab
- B—Implement Drop-Down Menu
- C—Implement Name Drop-Down Menu
- D—New Button
- E—Disable This GDC Checkbox
- F—System Tab
- G—Alarms Tab
- H—Display Smoothing Tab
- I—Number of Tanks Drop-Down Menu
- J—Implement Width Input Box
- K—Height Indication Drop-Down menu

GreenStar is a trademark of Deere & Company

L—Calibrate Height Sensor Button
M—Send Status Checkbox

2. Select the Implement tab (A).
3. Select Air Cart from the drop-down menu (B).
4. Select implement name from the drop-down menu (C), or select the New button (D) and enter the implement name.

NOTE: If GreenStar™ Rate Controller Dry is not to be used but remains connected, select the Disable This GDC checkbox (E) to eliminate connection to display for documentation, Section Control, and control unit warnings.

Define Implement Name to enable System (F), Alarms (G), and Display Smoothing (H) tabs.

Tank Selection

Select the number of tanks from the drop-down menu (I). Enter the maximum number of tanks the implement has regardless of the number of tanks in use.

Implement Width

Enter the Implement Width (J).

Height Indication

Select height indication from the drop-down menu (K).

- None
- Switch
- Sensor
- Receive

Calibrate Height Sensor button (L) becomes available when Sensor is selected from the drop-down menu. Height sensor must be calibrated when Sensor is selected.

When Switch or Sensor is selected, Send Status checkbox (M) is available to send status to another control unit.

Receive is used to receive status from another control unit.

(For information on height sensor calibration, reference Calibrating Air Cart.)

RW00482,000024B-19-07MAR18

System Setup

	Control Valve Type	Control Valve Calibration	Sensor Calibration
Tank 1 System	Fast Close	50	56
Tank 2 System	Fast Close	55	80
Tank 3 System	Fast Close	60	60
Fan Setup	None	---	50

	Main Clutch	Tank Clutches	Pressure Sensor
Clutch Setup	Active High	Active Low	☐

PC20707—UN—22JAN15

System Tab

A—System Tab
B—Tank 1 System
C—Tank 2 System
D—Tank 3 System

To configure tanks for defined operations:

1. Select the System tab (A).
2. Select a Tank System button (B–D).

PC20739—UN—27JAN15

Meter Control Valve Type Drop-Down Menu

A—Fast Close
B—PWM Close

3. Select Fast Close (A) or PWM Close (B) from the Meter Control Valve Type drop-down menu.

NOTE: When selecting PWM Close, display interface changes and includes a PWM Settings button.

(For information on metering valves, reference Component Overview and Compatibility.)

4. Configure tank.

Tank 1 Setup

Meter Control Valve Type: Fast Close

Meter Control Valve Calibration: 5513 (A)

Meter Speed Sensor Calibration: 24 (B)

Tank Capacity (bu): 803 (C)

Tank Capacity Units: bu (D)

Tank Level Switch Installed: ☒ (E)

Cancel (F) Accept (F)

PC20740—UN—27JAN15

Tank Setup

- A—Meter Control Valve Calibration Input Box
 B—Meter Speed Sensor Calibration Input Box
 C—Tank Capacity Input Box
 D—Tank Capacity Units Drop-Down Menu
 E—Tank Level Switch Installed Checkbox
 F—Accept Button

- a. For a fast close valve, enter Meter Control Valve Calibration (A).
 (For information on meter control valve calibration, reference Troubleshooting.)
 - b. Enter Meter Speed Sensor Calibration (B).
 (Reference the air cart Operator's Manual for the calibration value.)
 - c. Enter the Tank Capacity (C). If exact value is unknown, enter a value higher than the estimated capacity.
 - d. Select the Tank Capacity Units (D).
 - e. If applicable, select the Tank Level Switch checkbox (E).
 - f. Select the Accept button (F).
5. If using a PWM Valve:



PWM Settings Button

PC20680—UN—16JAN15

- a. Select the PWM Settings button.

PWM Settings

Control Valve Calibration: 5203 (A)

Coil Frequency: 122 (B)

High Limit: 255 (C)

Low Limit: 30

Calibrate PWM Limits (C)

Cancel (D) Accept (D)

PC20685—UN—30JAN15

PWM Settings Page

- A—Control Valve Calibration Input Box
 B—Coil Frequency Input Box
 C—Calibrate PWM Limits Button
 D—Accept Button

- b. Enter Control Valve Calibration (A).
 - c. Enter Coil Frequency (B).
 (Reference manufacturer's recommendation for PWM coil frequency.)
- NOTE:** Calibrate PWM Limits button (C) only appears if PWM Close is selected as a control valve type for at least one tank.
- d. Select the Calibrate PWM Limits button and follow the on-screen instructions. Once calibration is completed, select the Setup softkey to return to System Setup.
 (Reference Air Cart Diagnostics for more information.)
- NOTE:** If Tank 1 is set up as a fast control valve, all other tanks are automatically set to fast and disabled in the tank setup. Fast valve is only a control valve option for Tank 1 setup.
- e. Select the Accept button (D).



Fan Setup Button

PC20712—UN—23JAN15

6. Select the Fan Setup button.

NOTE: The control unit does not control fan speed, but can be configured to monitor up to two fans.

Fan Setup

Fan Speed Sensor Installed ☒ (A)

Fan Speed Sensor Calibration (B)

2nd Fan Speed Sensor Installed ☒ (C)

2nd Fan Speed Sensor Calibration (D)

(E)

PC20263—UN—14NOV14

Fan Setup

Clutch Setup

Main Clutch ☒ (A)

Main Clutch Polarity (B)

Tank Clutches ☒ (C)

Tank Clutch Polarity (D)

Note: Active High will engage the clutch with a high signal. Active Low will engage the clutch with a low signal.

(E)

PC20264—UN—14NOV14

Clutch Setup

- A—Fan Speed Sensor Installed Checkbox
 B—Fan Speed Sensor Calibration Input Box
 C—Second Fan Speed Sensor Installed Checkbox
 D—Second Fan Speed Sensor Calibration Input Box
 E—Accept Button

- If a sensor is present, select the Fan Speed Sensor Installed checkbox (A).
- Enter Fan Speed Sensor Calibration (B).

NOTE: Fan Speed Calibration is the number of signal readings sensed in one revolution. Common value is 1. (If unsure of what value should be or if fan speed readings are not accurate, reference the manufacturer's recommendation for fan speed sensor calibration.)

- Repeat the previous two steps if a second fan (C and D) is present.
- Select the Accept button (E).

- A—Main Clutch Checkbox
 B—Main Clutch Polarity Drop-Down Menu
 C—Tank Clutches Checkbox
 D—Tank Clutch Polarity Drop-Down Menu
 E—Accept Button

- To control the main clutch, select the Main Clutch checkbox (A).
- Select main clutch polarity from the drop-down menu (B).
- To control tank clutches, select the Tank Clutches checkbox (C).
- Select tank clutch polarity from the drop-down menu (D).
- Select the Accept button (E).

RW00482,000024D-19-07MAR18



PC20713—UN—23JAN15

Clutch Setup Button

- Select the Clutch Setup button.

NOTE: GreenStar™ Rate Controller Dry can be set up to control the main clutch and tank clutches.

Alarm Setup

	Application Rate (% +/- of Target Rate)	Low Tank Level (%)	Tank Level Switch
Tank 1 Alarms	20	20	Disabled
Tank 2 Alarms	20	20	None
Tank 3 Alarms	20	20	None
Tank 4 Alarms	20	20	None

Fan Alarms

Fan Speed (% +/- of target RPM) 20

Fan 2 Speed (% +/- of target RPM) 20

Pressure Alarms

Minimum (in H2O) 8.0

Maximum (in H2O) 20.0

Setup Alarms

PC20715—UN—30JAN15

- A—Alarms Tab
 B—Tank 1 Alarms Button
 C—Tank 2 Alarms Button
 D—Tank 3 Alarms Button
 E—Tank 4 Alarms Button

1. Select the Alarms tab (A).
2. Select a Tank Alarm button (B–E). Multiple alarms can be set.

Tank 1 Alarms

Alarm?

Application Rate (% +/- of Target Rate) ☒ (F)

Low Tank Level (%) ☒ (G)

Tank Level Switch ☒ (H)

Tank Alarms

PC20596—UN—19DEC14

- F—Application Rate Checkbox
 G—Low Tank Level Checkbox
 H—Tank Level Switch Checkbox
 I—Application Rate Input Box
 J—Low Tank Level Input Box
 K—Accept Button

3. To enable alarms, select the Application Rate, Low Tank Level, and Tank Level Switch checkboxes (F–H).
4. Enter Application Rate (I) and Low Tank Level (J).
5. Select the Accept button (K).



Fan Alarms Button

PC20757—UN—30JAN15

6. Select the Fan Alarms button.

Fan Alarms

Alarm?

Fan Speed (% +/- of target RPM) ☒ (A)

Fan 2 Speed (% +/- of target RPM) ☒ (B)

Fan Alarms

PC20743—UN—28JAN15

- A—Fan Speed Checkbox
 B—Fan 2 Speed Checkbox
 C—Fan Speed Input Box
 D—Fan 2 Speed Input Box
 E—Accept Button

7. To enable alarms, select the Fan Speed and Fan 2 Speed checkboxes (A and B).
8. Enter Fan Speed (C) and Fan 2 Speed (D).
9. Select the Accept button (E).



Pressure Alarms Button

PC20718—UN—23JAN15

10. Select the Pressure Alarms button.

PC20744—UN—28JAN15

Pressure Alarms

- A—Display Smoothing Tab
 B—Tank Rate Smoothing Checkbox
 F—I—Tank Rate Smoothing Percentage Input Box
 J—K—Fan Speed Smoothing Checkbox
 L—M—Fan Speed Smoothing Percentage Input Box

1. Select Display Smoothing tab (A).

NOTE: Smoothing percentages range between 3-15%. Lower value results in higher sensitivity, and higher values result in less sensitivity.

2. Select checkbox for tank (B–E) to have rate smoothing applied. Enter percentage (F–I).
3. Select checkbox for appropriate fan (J and K). Enter percentage (L and M).

HC94949,00006F3-19-30JAN15

- E—Accept Button
 F—Minimum Checkbox
 G—Maximum Checkbox
 H—Minimum Pressure Input Box
 I—Maximum Pressure Input Box

11. To enable alarms, select the Minimum (F) and Maximum (G) pressure checkboxes.
12. Enter the Minimum Pressure (H) and Maximum Pressure (I).
13. Select the Accept button (E).

RW00482,000024C-19-28FEB18

Rate Smoothing Setup

PC20583—UN—15DEC14

Rate Smoothing

Configuring Air Cart Products

Product Setup



Product Setup Softkey

PC13274—UN—02MAY11

Predefined Rates (gph)	1	2	3
	700.0	900.0	1100.0

PC20734—UN—27JAN15

Predefined Rates

If using Predefined Rates, enter up to three predefined values.

RW00482,000024E-19-07MAR18

1. Select the Product Setup softkey.

PC25386—UN—23FEB18

- A—Product Information Tab
- B—Product Name Drop-Down Menu
- C—New Button
- D—Product Type Drop-Down Menu
- E—Application Units Drop-Down Menu
- F—Product Density Input Box
- G—Target Fan Speed Input Box
- H—Rate Mode Drop-Down Menu
- I—Manual Rate Change Increment Input Box

2. Select the Product Information tab (A).
3. Select product name from the drop-down menu (B) or select the New button (C) to create a product.
4. Select product type from the drop-down menu (D).
5. Select application units from the drop-down menu (E).
6. Enter the Product Density (F) and Target Fan Speed (G).
7. Select rate mode from the drop-down menu (H).

If using prescriptions, select Map-Based.

If Manual is selected, enter a Manual Rate Change Increment (I). On the Main page, manual rate can be adjusted with increase (+) and decrease (-) buttons. Each button press adjusts the target rate by the increment amount. Enter an increment of 0 to disable the increase and decrease buttons.

Product Tank Setup

PC20737—UN—27JAN15

Product Tank Setup

- A—Tank 1 Enable Checkbox
- B—Tank 2 Enable Checkbox
- C—Tank 3 Enable Checkbox
- D—Tank 4 Enable Checkbox
- E—Tank 1 Setup Button
- F—Tank 2 Setup Button
- G—Tank 3 Setup Button
- H—Tank 4 Setup Button

1. Enable each tank that is applying product by placing a check in the box (A–D). Uncheck any tanks that are not currently in use.

NOTE: Disabled tanks are not controlled and do not produce product documentation information or warnings.

2. Select the Tank Setup button (E–H) for the tank being configured.

PC20738—UN—28JAN15

Tank 1 Product Setup

- I—Product Name Drop-Down Menu
 J—CFR Input Box
 K—Calibrate CFR Button
 L—Assign Product to Fan 1 Checkbox
 M—Assign Product to Fan 2 Checkbox
 N—Target Fan Speed 1 Input Box
 O—Target Fan Speed 2 Input Box
 P—Accept Button

3. Select a predefined product name from the drop-down menu (I).
4. Enter the CFR (J) for meter. This value is provided by most manufacturers and is the amount of product dispensed in one revolution of meter.
 If CFR is unknown, select the Calibrate CFR button (K).
 (For more information, reference Calibrating Air Cart.)

NOTE: Each individual tank must be set up if more than one tank is being used.

5. To assign fans to the chosen product, select checkboxes (L and M).
6. Enter desired Target Fan Speeds (N and O).
7. Select the Accept button (P).

RW00482,000024F-19-28FEB18

Review Product Summary

Product Information	Product Tank Setup	Product Summary			
		Tank 1	Tank 2	Tank 3	Tank 4
Tank Enabled		Enabled	Enabled	Enabled	Enabled
Product Name		MAP	Canola	Canola	MAP
Product Density (lb / ft^3)		65.0	65.0	65.0	65.0
CFR (ft^3/rev)		0.0448	0.7176	0.7176	0.0448
Rate Mode		Predefined	Predefined	Predefined	Predefined
				Speed	Tank
				1 RPM	1
				2 RPM	1

PC16777—UN—08APR13

Product Summary tab displays product information for each tank. Use this page to verify that all information is set as desired.

If a target fan speed is not assigned to a specific product and tank in Tank Product Setup tab, target fan speed will default to lowest numbered enabled tank, usually Tank 1.

HC94949,0000697-19-16DEC14

Calibrating Air Cart

Calibrate CFR — Catch Test

Calibrate CFR — Catch Test adjusts the calibration value by dispensing product into a container, without moving the machine. Enter the amount collected to calibrate the CFR and fine-tune spreader operation.

NOTE: To perform calibration, set up system, product, and product tank.

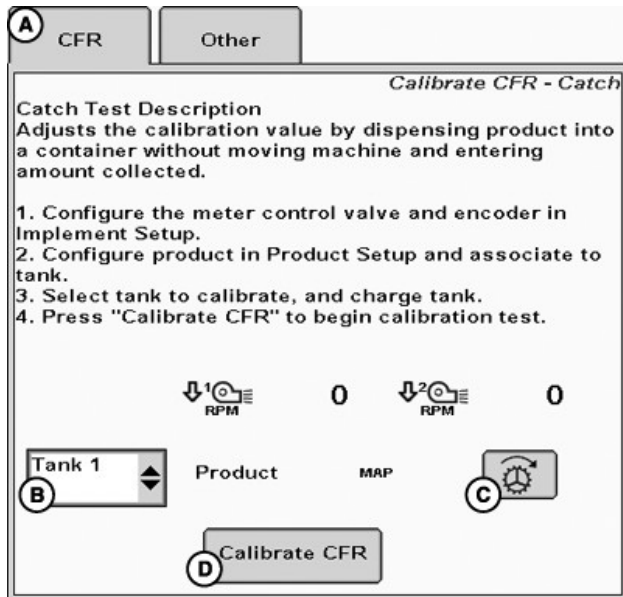
(Reference *Configuring Air Cart* for more information.)



Calibration Softkey

PC13612—UN—13MAY11

1. Select the Calibration softkey.



Calibrate CFR

PC20736—UN—27JAN15

- A—CFR Tab
- B—Tank Drop-Down Menu
- C—Charge Tank Button
- D—Calibrate CFR Button

2. Select the CFR tab (A).
3. Select a tank from the drop-down menu (B).

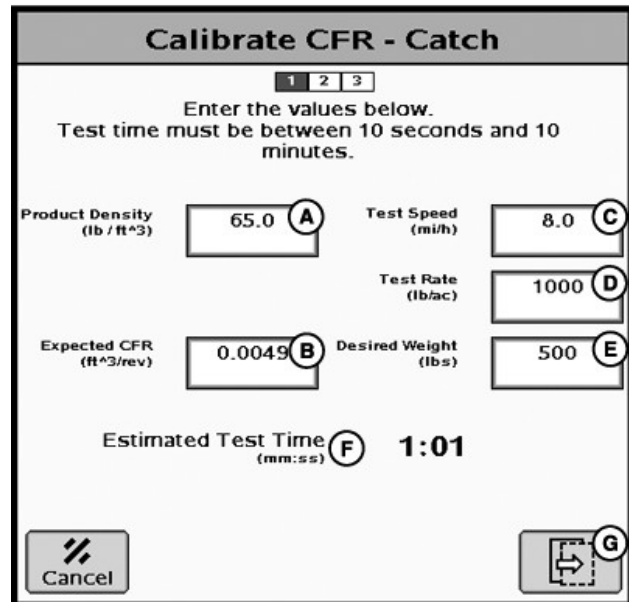
NOTE: Ensure that tank is charged before beginning calibration. Product must be ready to dispense at start of test.

A fan speed reading only appears if a Fan Speed Sensor checkbox is selected and has a sensor calibration value.

4. Select the Charge Tank button (C).

5. To begin calibration test, select the Calibrate CFR button (D).

Calibrate Tank



PC14647—UN—07FEB12

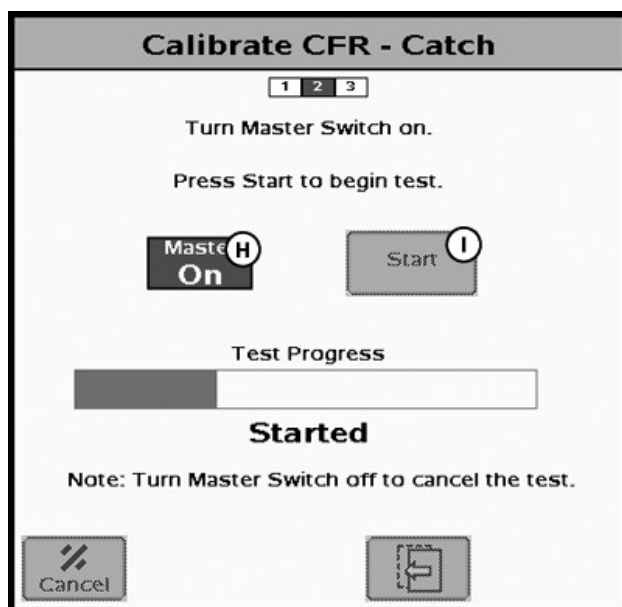
- A—Product Density
- B—Expected CFR
- C—Test Speed
- D—Test Rate
- E—Desired Weight
- F—Estimated Test Time
- G—Next Button

NOTE: Use conditions in this test that are comparable to normal operation. Larger dispense volumes result in longer, but more accurate, calibration tests.

Values for Product Density (A) and Expected CFR (B) are populated for product in the currently selected tank. Changes to these values are saved if new CFR value is accepted at end of test.

Test Speed (C) and Test Rate (D) values should reflect desired operating conditions. Desired Weight (E) value is the amount of desired product to be dispensed during the test.

1. Enter calibration test parameters. Test time must be between 10 sec and 10 min.
2. Select the Next button (G).



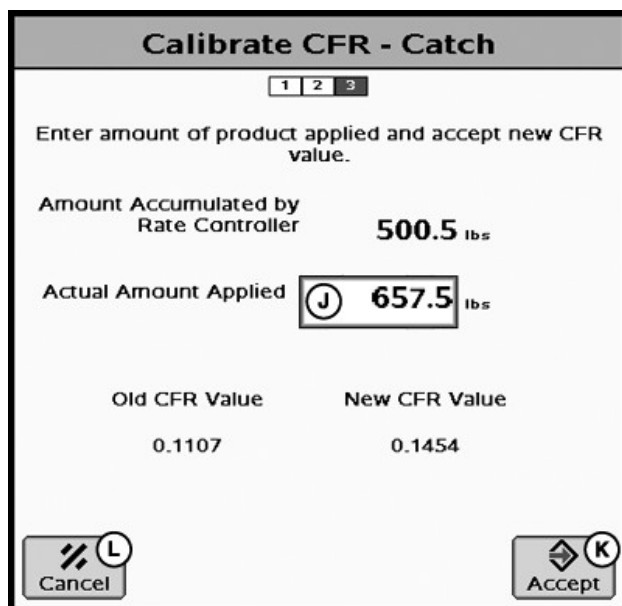
PC13622—UN—09JUN11

H—Master Switch Indicator
I—Start Button

- Turn ON the master switch. Indicator (H) displays the current state of the master switch.

NOTE: Turn OFF the master switch at any time to cancel test.

- To begin test, select the Start button (I).



PC25343—UN—13FEB18

J—Actual Amount Applied
K—Accept Button
L—Cancel Button

- Once the test is complete, enter the Actual Amount Applied (J).
- To save the new CFR value, select the Accept button

(K). To use the old CFR value, select the Cancel button (L).

RW00482.0000250-19-28FEB18

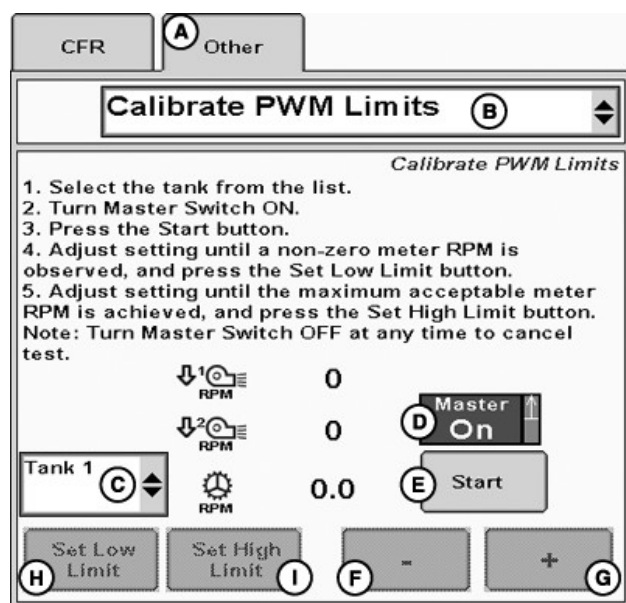
Calibrate PWM Limits



Calibration Button

PC13612—UN—13MAY11

- Select the Calibration button.



PC20735—UN—27JAN15

Calibrate PWM Limits

A—Other Tab
B—Calibration Type Drop-Down Menu
C—Tank Drop-Down Menu
D—Master Switch Indicator
E—Start Button
F—Decrease (-) Button
G—Increase (+) Button
H—Set Low Limit Button
I—Set High Limit Button

- Select the Other tab (A).
- Select Calibrate PWM Limits from the drop-down menu (B).

NOTE: Calibrate PWM Limits only appears if PWM Close is selected as the control valve type for at least one tank meter.

(Reference Implement Setup in the Configuring Air Cart section for more information.)

- Select a tank from the drop-down menu (C).

5. Turn ON the master switch. Indicator (D) displays the current state of the master switch.

NOTE: Turn OFF the master switch at any time to cancel test.

6. Select the Start button (E).
7. Adjust setting using the decrease (F) and increase (G) buttons until the slowest possible non-zero RPM is achieved.
8. Select the Set Low Limit button (H).
9. Adjust setting using decrease and increase buttons until the maximum acceptable RPM is achieved.
10. Select the Set High Limit button (I).

RW00482.0000251-19-28FEB18

Calibrate Pressure Sensor

NOTE: Calibrate Pressure Sensor option is only available when a pressure sensor is enabled. To enable, select the Implement Setup softkey > System tab > Enable Pressure Sensor checkbox.

There are two options for calibrating a pressure sensor. Operation Based Calibration requires one calibration point when slope of the pressure sensor is not known. Voltage Based Calibration can be used when slope of the pressure sensor is known and only requires a zero point.

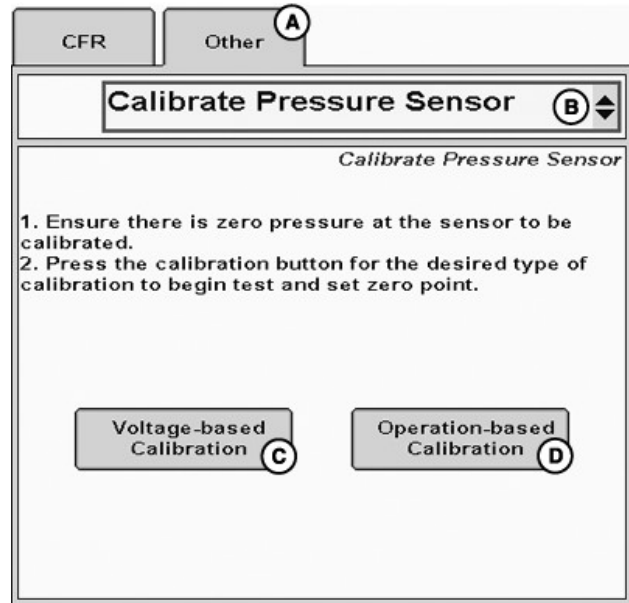
To calibrate the pressure sensor:



Calibration Softkey

PC13612—UN—13MAY11

1. Select the Calibration softkey.

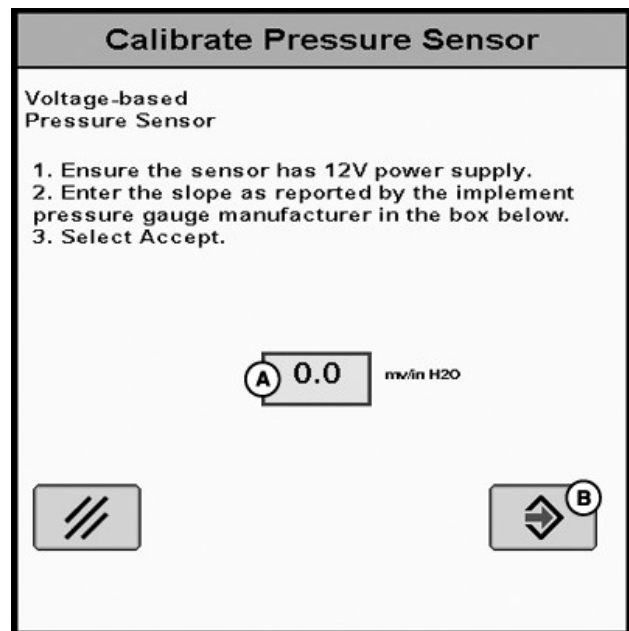


PC25345—UN—13FEB18

- A—Other Tab
- B—Calibration Type Drop-Down Menu
- C—Voltage-Based Calibration Button
- D—Operation-Based Calibration Button

2. Select the Other tab (A).
3. Select Calibrate Pressure Sensor from the drop-down menu (B).
4. Ensure that there is zero pressure at the sensor to be calibrated.
5. Select desired Calibration button (C or D).

Calibrate Voltage-Based Pressure Sensor



PC25346—UN—13FEB18

- A—Slope Input Box
- B—Accept Button

1. Ensure that the sensor has 12 V power supply.

2. Enter the Slope (A) as reported by the pressure sensor manufacturer.
3. Select the Accept button (B).

Calibrate Operation-Based Pressure Sensor

PC25347—UN—13FEB18

A—Pressure Input Box
B—Accept Button

1. Set the fan to normal operating speed.
2. Enter the Pressure (A) as reported by the implement pressure gauge.
3. Select the Accept button (B).

RW00482,0000252-19-28FEB18

Calibrate Height Sensor



Calibration Softkey

PC13612—UN—13MAY11

1. Select the Calibration softkey.

PC20711—UN—23JAN15

Calibrate Height Sensor

A—Other Tab
B—Calibration Type Drop-Down Menu
C—Calibrate Height Sensor Button

2. Select the Other tab (A).
3. Select Calibrate Height Sensor from the drop-down menu (B).
4. Select the Calibrate Height Sensor button (C).

PC14800—UN—09MAR12

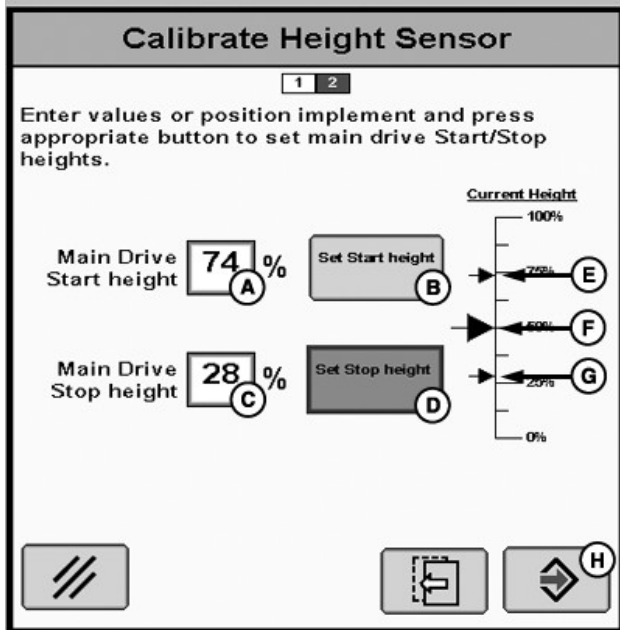
A—Current Height Sensor Reading
B—Set Raised Position Button
C—Set Lowered Position Button
D—Next Page Button

5. Raise the implement completely and select the Set Raised Position button (B).

6. Lower implement completely and select the Set Lowered Position button (C).

NOTE: Difference between the raised and lowered settings must be greater than 1 V.

7. Select the Next Page button (D).



PC14801—UN—08MAY12

- A—Main Drive Start Height Input Box
- B—Set Start Height Button
- C—Main Drive Stop Height Input Box
- D—Set Stop Height Button
- E—Main Drive Start Height
- F—Current Implement Height
- G—Main Drive Stop Height
- H—Accept Button

8. Enter Main Drive Start Height (A) or position implement and select the Set Start Height button (B).
9. Enter Main Drive Stop Height (C) or position implement and select Set Stop Height button (D).

NOTE: Start height (E) must be greater than or equal to the stop height (G).

Start heights above 80% or stop heights below 20% are not recommended and could cause unexpected or inconsistent product application.

Main Drive Start and Stop Height is the percentage of the full range of movement of implement. Implement full range of movement is based on the raised and lowered settings on first page of the Calibrate Height Sensor procedure.

10. To save the new height sensor calibration, select the Accept button (H).

RW00482,0000253-19-28FEB18

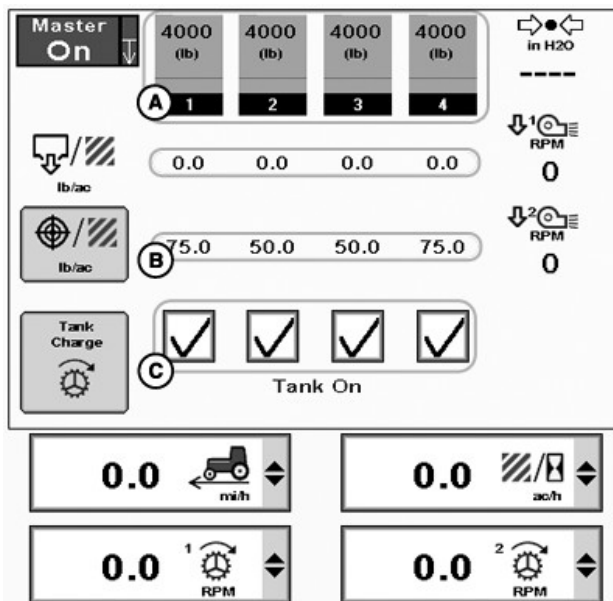
Operating Air Cart

GreenStar™ Rate Controller Dry–Air Cart

1. Verify User-Defined Values
 - a. Tank Level Indicator and Refilling
 - b. Rate Control
3. Tank Charging
4. Activate and Deactivate System
5. Monitor System Performance
6. Tank Cleaning (see Spreader Diagnostics for instructions)

HC94949,00006FA-19-28JAN15

Verify User-Defined Values



Main Page

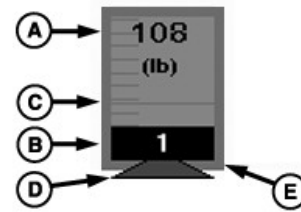
PC20669—UN—13JAN15

- A—Tank Level Indicators
- B—Target Rates
- C—Tank On Checkboxes

1. Verify Tank Levels (A) for accuracy.
2. Verify Target Rates (B).
3. Verify tanks are enabled (C).

HC94949,00006FB-19-28JAN15

Tank Level Indicator and Filling



Tank Level Indicator

PC20672—UN—14JAN15

- A—Estimated Product Remaining
- B—Tank Number
- C—Low-Level Indicator
- D—Tank Applying Indicator
- E—Low Tank Level Sensor Indicator

Tank level indicators display the estimated amount of product remaining (A) in each tank.

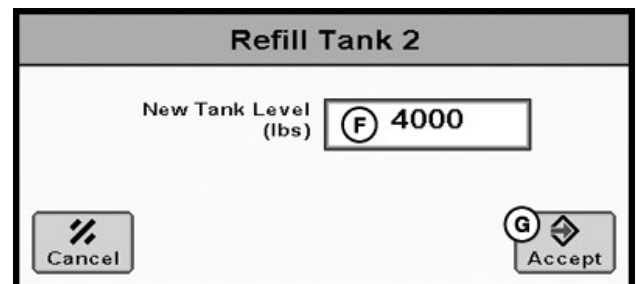
The maximum level of each indicator is based on the tank capacity entered in Implement Setup and the density of product assigned to tank (B) in Product Setup.

The bar graph is orange when amount of product is above the low-level indicator (C), and turns red once the amount drops below. Adjust low-level indicator in Alarm Setup. Active tanks are identified with the tank applying indicator (D).

If a tank is equipped with a tank level sensor and sensor indicates a low level, a thick red line appears around low tank level sensor indicator (E).

Refilling Tank

1. To display a Refill Tank window, select one of the tank level indicators.



Refill Tank

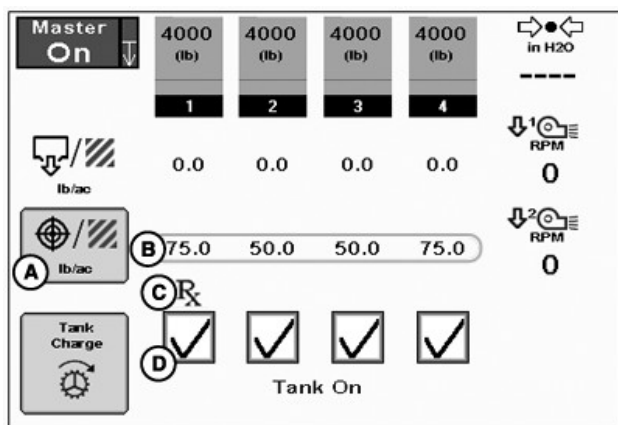
PC20673—UN—14JAN15

- F—New Tank Level Input Box
- G—Accept Button

2. Enter estimated weight of the product in tank (F).
3. To save new tank level, select the Accept button (G).

RW00482,0000254-19-28FEB18

Rate Control

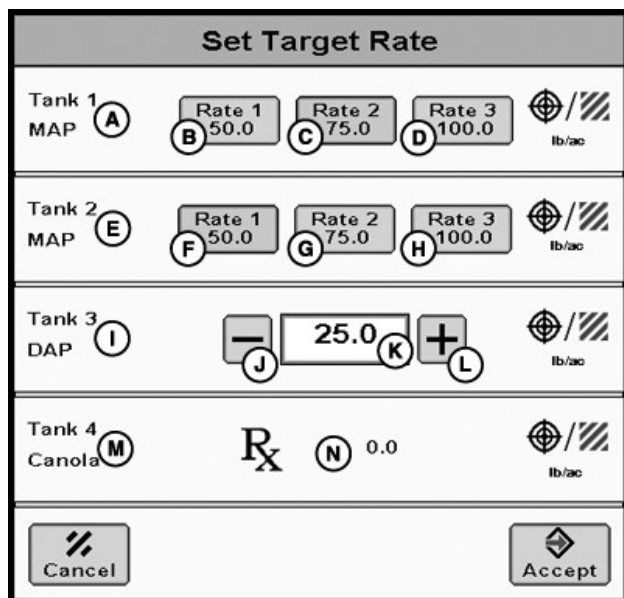


PC20667—UN—13JAN15

- A—Target Rate Button
B—Target Rates
C—Prescription (Rx) Symbol
D—Tank Checkboxes

Select Target Rate button (A) to display Set Target Rate window.

If Map Based is selected as Rate Mode for product in a tank, a prescription (Rx) symbol (C) is displayed above tank checkboxes (D).



PC16783—UN—09APR13

- A—Tank 1 Rate Mode
B—Tank 1 Rate 1
C—Tank 1 Rate 2
D—Tank 1 Rate 3
E—Tank 2 Rate Mode
F—Tank 2 Rate 1
G—Tank 2 Rate 2
H—Tank 2 Rate 3
I—Tank 3 Rate Mode
J—Tank 3 Decrease Rate
K—Tank 3 Rate Entry Box
L—Tank 3 Increase Rate
M—Tank 4 Rate Mode
N—Tank 4 Prescription Rate

Predefined Rate

Rate mode (predefined, manual, or map based) is determined by product selected for each bin. Select Product Setup softkey > Product Information tab.

Manual Rate

Enter desired rates in rate entry box for each tank.

Use + (L) and - (J) buttons to increase or decrease rate. The increment value is entered in Product Setup.

Map Based Rate

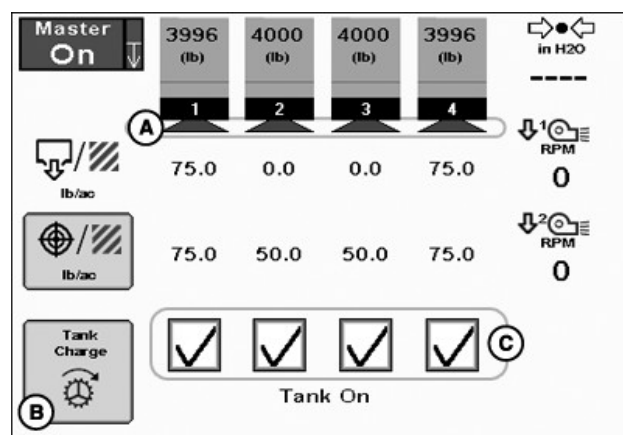
Displays a Rx symbol and prescription rate.

NOTE: Ensure prescription is selected in GreenStar™ Documentation.

Configure Rate Mode in Product Setup.

HC94949,00006FD-19-29JAN15

Tank Charging



PC20282—UN—17NOV14

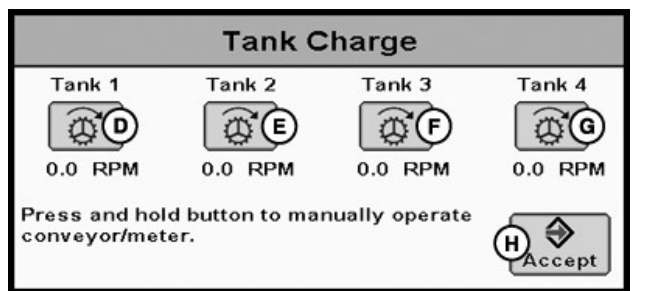
Tank Operation

- A—Tank Applying Indicators
B—Tank Charge Button
C—Tank On Checkboxes

Tanks applying product are marked with a green triangle (A) under the Tank Level Indicator.

- To display Tank Charge window, select the Tank Charge button (B).
- Turn ON all the tanks that are dispensing product by selecting checkboxes (C).

If using a switchbox, use both switches and checkboxes to turn ON tanks. Use one of the two to turn OFF tanks.



PC20283—UN—17NOV14

Tank Charge

- D—Tank 1 Charge Button
- E—Tank 2 Charge Button
- F—Tank 3 Charge Button
- G—Tank 4 Charge Button
- H—Accept Button

3. To turn on the conveyor or meter and move product to the fan, select and hold a Tank Charge button (D–G).

NOTE: Tank Charge runs the meter at 25 RPM.

4. When finished, select the Accept button (H).

RW00482,0000255-19-28FEB18

Activate and Deactivate System

1. To activate system:

- Switchbox—Turn Master Switch to On position.
- Foot switch—Press switch.

NOTE: Once machine ground speed exceeds minimum speed (0.5 km/h [0.3 mph]), controller starts meter.

2. To deactivate system:

- Switchbox—Turn Master Switch to Off position.
- Foot switch—Press switch.

NOTE: Master Switch Indicator on run page displays an On/Off state.

HC94949,00006E7-19-29JAN15

Viewing Air Cart Reports and Totals

Reports and Totals



Totals Softkey

PC13279—UN—05MAY11

Select Reports and Totals softkey to show totals stored on controller.

PC16785—UN—09APR13

- A—Area
- B—Total Applied
- C—Units Drop-Down Menu
- D—Tank Zero Button
- E—Implement Zero Button

Current

Current tab displays totals for the currently selected implement.

Use Units drop-down (C) to change units.

Clear totals for individual tanks using Tank Zero button (D).

Clear totals for all bins using Implement Zero button (E).

Job Summaries

PC16804—UN—12APR13

- A—Job Summary Selection
- B—New Button
- C—Remove Button
- D—Tank Selection
- E—Unit Selection
- F—Area
- G—Total Applied
- H—Average Applied per Area
- I—Total Time
- J—Application Time
- K—Average Area per Hour
- L—Average Applied per Hour
- M—Clear Job Totals

Job Summaries page keeps track of totals by user-defined jobs (A). Only values for the currently selected job summary are incremented.

Job summaries are stored on controller. The controller can store up to 6 different jobs for each configuration.

NOTE: Job Summaries page can be exported using the screenshot functionality of the GreenStar™ 3 2630 Display. Use GS3 2630 Display documentation for exporting operation totals into desktop software (For more information, see GS3 2630 Display Operator's Manual).

To create a new job, follow these steps:

1. Select New button (B) and a keypad appears.
2. Type in a name for current job on key pad.
3. Select Enter.

Jobs that are no longer needed may be deleted by selecting the job (A) and selecting the remove button (C).

Use Tank Selection drop-down (D) to view separate totals for each tank.

Change units by using Unit Selection drop-down (E).

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Totals can be reset to zero by pressing Zero button (M).

Lifetime

Air Cart

Air Cart (A)

h:min (B) 5:02

	(C) Tank 1	Tank 2	Tank 3	Tank 4
(E) Area	0.0	1.0	0.5	0.6
(F) Total Applied	4	600	0	42
(G) Application Time	0:00	0:04	0:02	0:03

Unit Selection (D): lbs

PC16805—UN—12APR13

A—Implement Name

B—Total Time

C—Tank

D—Unit Selection

E—Area

F—Total Applied

G—Application Time

Lifetime tab keeps track of all totals for the lifetime of selected implement (A).

Change units by using the Unit Selection drop-down (D).

HC94949,00006E1-19-13JAN15

Air Cart Diagnostics

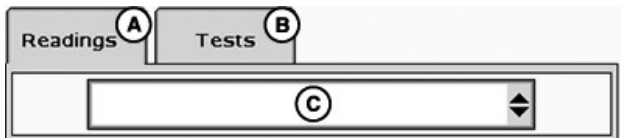
Air Cart Diagnostics



Diagnostics Softkey

PC13283—UN—11MAY11

1. Select the Diagnostics softkey.



Diagnostics Tabs

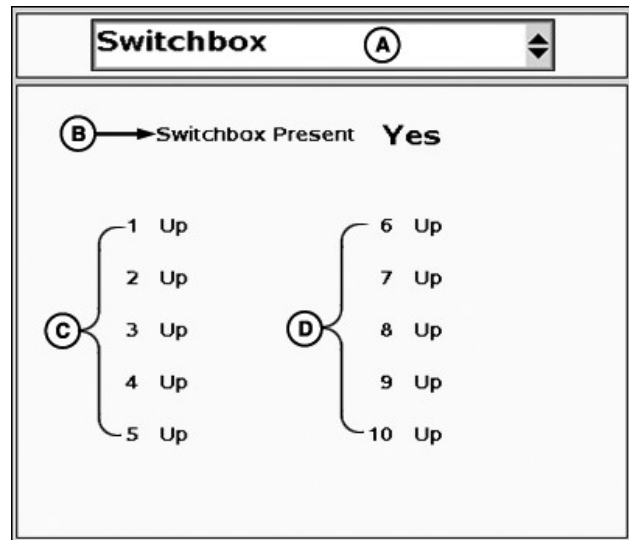
PC12249—UN—14SEP09

A—Readings Tab
B—Tests Tab
C—Drop-Down Menu

2. Select either the Readings (A) or Tests (B) tab.
3. Select a reading or test from the drop-down menu (C).

RW00482,0000256-19-14FEB18

Switchbox Readings

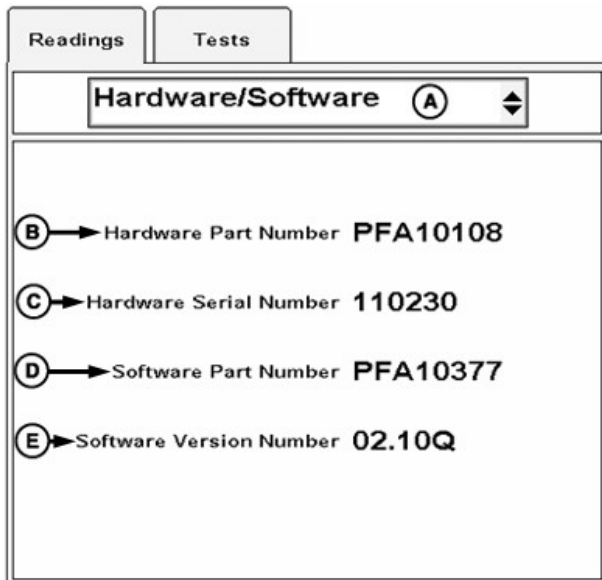


PC12251—UN—06OCT09

A—Readings Selection Drop-Down Menu
B—Switchbox Present Status
C—Switches 1 Through 5 Status on Switchbox
D—Switches 6 Through 10 Status on Switchbox

RW00482,0000133-19-25MAR13

Hardware/Software Readings

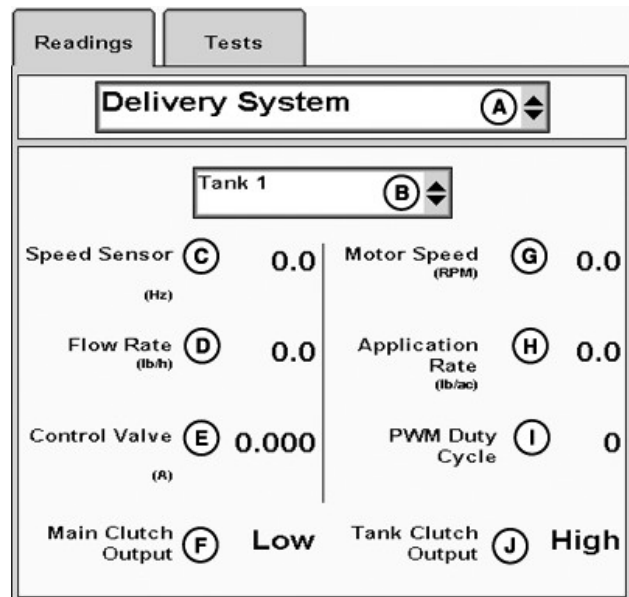


PC19555—UN—14APR14

A—Readings Selection Drop-down Menu
B—Hardware Part Number
C—Hardware Serial Number
D—Software Part Number
E—Software Version Number

HC94949,00004DB-19-28APR14

Delivery System Readings



PC16727—UN—22MAR13

A—Readings Selection Drop-Down Menu
B—Tank Selection Drop-Down Menu
C—Speed Sensor
D—Flow Rate
E—Control Valve
F—Main Clutch Output
G—Motor Speed
H—Application Rate
I—PWM Duty Cycle
J—Tank Clutch Output

PWM Duty Cycle—This number represents the current position of PWM Close Control Valve. The number is

between the current High and Low Limit settings while operating. Value only appears when PWM Close is selected as control valve type for chosen tank meter from tank selection drop-down.

RW00482,0000134-19-16MAY13

System Voltages Readings

System Voltages (A)	
ECU Power (v)	13.7 (B)
Sensor Power 1 (v)	5.0 (C)
Sensor Power 2 (v)	5.0 (D)
Sensor Power 3 (v)	5.0 (E)
Sensor Power 4 (v)	0.0 (F)
Valve Power (v)	13.8 (G)
Valve Power 1	OK (H)
Valve Power 2	OK (I)
Valve Power 3	OK (J)
Valve Power 4	OK (K)

PC12255—UN—06OCT09

A—Readings Selection Drop-Down Menu

B—ECU Power
 C—Sensor 1 Power
 D—Sensor 2 Power
 E—Sensor 3 Power
 F—Sensor 4 Power
 G—Valve Power
 H—Valve 1 Power
 I—Valve 2 Power
 J—Valve 3 Power
 K—Valve 4 Power

NOTE: If Valve Power is not connected, Valve Power shows "None".

RW00482,0000135-19-25MAR13

Working Parameters Readings

Working Parameters (A)	
Working Width (ft)	0.0 (B)
Speed (mi/h)	0.0 (C)
Speed Source	None (D)

PC12256—UN—06OCT09

A—Readings Selection Drop-Down Menu

B—Working Width
 C—Speed
 D—Speed Source

RW00482,0000136-19-25MAR13

Switches/Status Readings

Switches/Status (A)	
Master Switch	On (B)
Tank Level 1	Not Empty (C)
Tank Level 2	Not Empty (D)
Tank Level 3	Not Empty (E)
Tank Level 4	Not Empty (F)

PC16807—UN—15APR13

A—Readings Selection Drop-Down Menu

B—Master Switch Status
 C—Tank Level 1 Switch Status
 D—Tank Level 2 Switch Status
 E—Tank Level 3 Switch Status
 F—Tank Level 4 Switch Status

RW00482,0000137-19-15APR13

Sensors/Status Readings

Height Indication

NOTE: Height Indication will not be available in Sensors/Status drop down (B), if None is selected as height indication on Implement Setup >> Implement Tab

Readings Tests

Sensors/Status (A)

Height Indication (B)

Height Indication

Type **Sensor** (C)

Current Status **Up** (D)

Current Position **0.00 V** (E)

Calibration Points

Point	Value	Unit
Raised	---	%
Start Height	---	%
Stop Height	---	%
Lowered	---	%

PC16728—UN—25MAR13

- A—Readings Selection Drop-Down Menu
 B—Sensor/Status Selection Drop-Down Menu
 C—Type
 D—Current Status
 E—Current Position
 F—Raised
 G—Start Height
 H—Stop Height
 I—Lowered

Pressure Sensor

NOTE: Pressure Sensor option is only available when Pressure Sensor is enabled. To enable go to Implement Setup >> System Tab and select Pressure Sensor Enable/Disable checkbox.

Readings Tests

Sensors/Status (A)

Pressure Sensor (B)

Pressure Sensor (V) (C)

0.0 (C)

Calibration Points

Point	Value	Unit
0.0 in H2O	0.0	v
0.0 in H2O	0.0	v

Pressure (in H2O) (E)

0.0 (E)

Slope (mv/in H2O) (F)

0.0 (F)

PC16729—UN—25MAR13

- A—Readings Selection Drop-Down Menu
 B—Sensor/Status Selection Drop-Down Menu
 C—Pressure Sensor (V)
 D—Calibration Points
 E—Pressure (in H2O)
 F—Slope (mv/in H2O)

RW00482,0000138-19-19APR13

Flow Control Test

Readings Tests

Flow Control Test (A)

Flow Control Test

1. Select the tank from the list.
2. Turn Master Switch ON.
3. Press Start.
4. Optimal Variance is 0 %.

Note: Turn Master Switch OFF at any time to cancel test.

Tank	RPM	Variance (%)
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0
0.0	0	0

Tank 1 (B)

Status **Stopped**

Master **On** (C)

Start (D)

PC16808—UN—16APR13

- A—Tests Drop-Down Menu
 B—Control Valve Selection Drop-Down Menu
 C—Master Switch Indicator
 D—Start Configuration Test Button

Operator can run a Flow Control Test to ensure control valves are functioning properly.

NOTE: Turn Master Switch OFF at any time to cancel test.

To begin test:

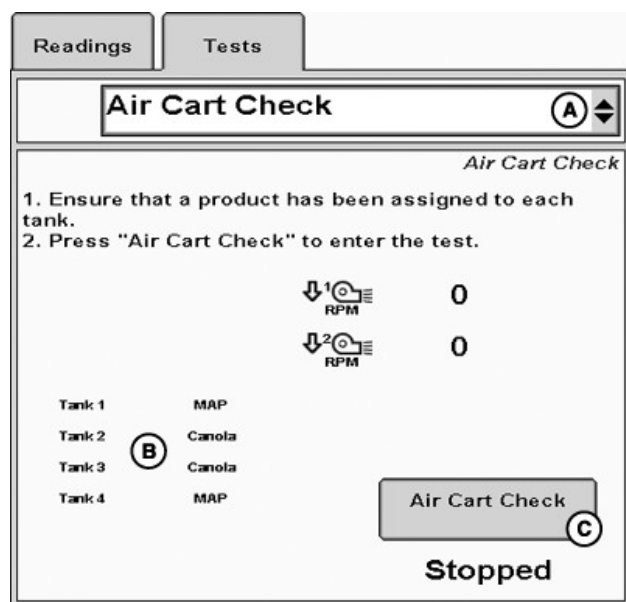
1. Select Flow Control Test from tests drop-down menu (A).
2. Select Valve to test from control valve selection drop-down menu (B).
3. Turn the Master Switch ON.
4. Select Start button (D) on the screen.

The valve is tested across the entire range of control. Results are displayed in the RPM / Variance table on the screen.

If the system does not control speed accurately, there are a few things to look for and adjust. A high variance number in desired RPM range indicates inaccurate rate control.

- Ensure correct calibration value is entered for the control valve type (or a similar valve type) that is being used. This value is a starting point and can be tuned to your specific system.
- The lower the Variance (%), the better Rate Controller Dry is able to control at a desired RPM. There are a few issues that might cause the variance on the test to be inconsistent:
 - Improper tuning of valve calibration value. See section on valve calibration tuning.
 - Incorrect speed sensor calibration. Ensure the correct number of pulses per revolution is entered.
 - Noisy speed signal. Ensure belt, fan, or rollers turn freely and are not scraping or chattering during the test.
- System operating parameters (ie. tractor speed, etc.) may need to be adjusted to increase performance at certain levels.

Air Cart Check Test



PC16812—UN—16APR13

- A—Tests Drop-Down Menu**
B—Tank Product Assignments
C—Air Cart Check Button

Operator can run an Air Cart Check Test to ensure that control valves are functioning properly for the meters.

NOTE: Turn Master Switch OFF at any time to cancel test.

To begin air cart check test:

1. Select Air Cart Check from tests drop-down (A).
2. Ensure a product has been assigned to each Tank (B).
3. Select Air Cart Check button (C) to enter test.

RW00482,0000139-19-19APR13

PC16813—UN—16APR13

- A—Tank Enable Checkboxes
B—Target Rate Entries
C—Test Speed Entry
D—Next Button

4. Enable tanks (A) to apply, and enter target rates (B).
5. Enter Test Speed (C).
6. Select Next button (D).

PC16814—UN—16APR13

- A—Actual Rates
B—Target Rate Entries
C—RPM's
D—Master Switch Indicator
E—Start Test Button
F—Accept Button

7. Turn Master Switch ON (D).

8. Select Start Button (E).

NOTE: Turn Master Switch OFF at any time to cancel test.

The operator may adjust rates while the test is running.

HC94949,00006E0-19-13JAN15

Tank Cleanout

PC16815—UN—16APR13

- A—Tests Drop-Down Menu
B—Tank Enable Checkboxes
C—Master Switch Indicator
D—Start Button

1. Select tanks to be cleaned out (B).
2. Turn Master Switch ON (C).
3. Select Start Button (D).
4. Toggle tanks on or off using checkboxes (B).

NOTE: Turn Master Switch OFF at any time to cancel test.

RW00482,000014C-19-19APR13

Control Valve Test

Control Valve Test (A) ▴ ▾

Control Valve Test

1. Select the tank from the list
2. Turn the Master switch ON.
3. Press the Start button.
4. Press and hold the - or + button to operate the control valve.

Note: Turn the Master Switch OFF at any time to cancel test.

↓ 1 RPM 0

↓ 2 RPM 0

RPM 0.0

Tank 1 (B) ▴ ▾

Status **Stopped**

Master On (C) Start (D) - (E) + (F)

PC16816—UN—16APR13

- A—Test Drop-Down Menu
 B—Control Valve Selection Drop-Down Menu
 C—Master Switch Indicator
 D—Start Test Button
 E—Decrease (-) Button
 F—Increase (+) Button

1. Select the tank from drop-down (B)
2. Turn Master switch ON (C).
3. Select Start button (D).
4. Press and hold - (E) or + (F) button to operate control valve.

NOTE: Turn Master Switch OFF at any time to cancel test.

RW00482,000013B-19-16MAY13

Clutch Test (A) ▴ ▾

Clutch Test

1. Turn the Master Switch on.
2. Press the Start Button.
3. Toggle tank clutches on or off using the checkboxes.

Note: Turn Master Switch OFF at any time to cancel test.

Main: (B) ☐

Tanks: (C) 1 ☐ 2 ☐ 3 ☐

Master On (D) Status **Stopped** Start (E)

PC17001—UN—29MAY13

- A—Test Drop-Down
 B—Main Clutch Checkbox
 C—Tank Clutch Checkboxes
 D—Master Switch Indicator
 E—Start Test Button

1. Turn the Master Switch ON.
2. Press the Start Button.
3. Toggle tank clutches ON or OFF using the checkboxes.

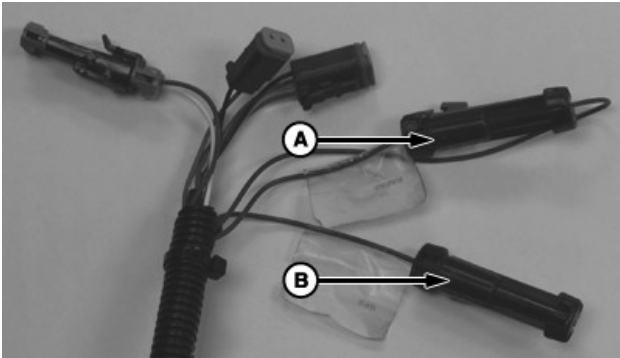
NOTE: Turn Master Switch OFF at any time to cancel.

RW00482,000019F-19-03JUN13

Clutch Test

System Speed Signal

System Speed Signal



PC13637—UN—01JUL11

GreenStar Harness

A—Radar Speed Source Input

B—GPS Speed Source Input

The Rate Controller Dry System requires an approved speed signal.

If the vehicle has no John Deere GPS receiver, the Rate Controller Dry can utilize a speed source (radar or wheel speed) on CAN or CCD Bus. If no speed source is available, it will be necessary to install a radar or GPS based speed sensor.

Use corresponding connector to interface to the radar or GPS speed source.

CZ76372.0000317-19-05JUL11

Troubleshooting

Rate Controller Dry Troubleshooting

Bin or Spinner Speed not stopping when turned OFF

- Ensure the speed feedback wires for each bin and spinner are properly connected to the correct controller inputs (see 37-pin Connectors wiring pin outs)
- Ensure the valve signal wires for each bin and spinner are properly connected from the controller to the valve
- For PWM valve:
 - Unplug valve power connection. If system remains operating, valve is sticking. Try loosening valve from block.
- For Fast valve:
 - Unplug the valve and check voltage coming from controller is +/- 12 VDC.

Bin or Spinner performance is erratic, too slow, or overshoots desired speed

- Ensure operating speed range is not too low. May need to reduce gate height or increase vehicle speed to improve controllability.
- Control Valve Calibration value is not tuned properly. See Control Valve Calibration Tuning section and perform Flow Control tests to confirm performance.

Bin or Spinner desired speed is not achievable

- Ensure adequate hydraulic flow is going to the valves. Check SCV flow rates and/or PTO pump speed.
- Check valve max operating speed using Flow Control tests and ensure the system is capable of the desired speeds. If not, gate height may need to be increased to slow the desired speeds down accordingly.

CZ76372,000032E-19-13JUL11

Rate Controller Dry Troubleshooting

Tank or Fan Speed not stopping when turned OFF

- Ensure speed feedback wires for each tank and fan are properly connected to correct controller inputs (see 37-pin Connectors wiring pin outs).
- Ensure valve signal wires for each tank and fan are properly connected from controller to valve.
- For PWM valve:
 - Unplug valve power connection. If system remains operating, valve is sticking. Try loosening valve from block.
- For Fast valve:
 - Unplug valve and check voltage coming from controller is +/- 12 VDC.

Tank or Fan performance is erratic, too slow, or overshoots desired speed

- Ensure operating speed range is not too low. May need to increase vehicle speed to improve controllability.
- Control Valve Calibration value is not tuned properly. See Control Valve Calibration Tuning section and perform Flow Control tests to confirm performance.

Tank or Fan desired speed is not achievable

- Ensure adequate hydraulic flow is going to the valves. Check SCV flow rates and/or PTO pump speed.
- Check valve max operating speed using Flow Control tests and ensure the system is capable of desired speeds.

No fan speed reading on display or reading decreases as actual fan speed increases

- Ensure feedback wires for fan(s) are properly connected to correct controller inputs (see 37-pin Connector wiring pin outs).
- If feedback wires are properly connected and still unable to read fan speed, the controller may not be capable of reading signal due to electrical characteristics of fan sensor. Contact your John Deere Dealer for further assistance.

RW00482,0000195-19-22MAY13

Rate Controller Dry Trouble Codes

Fault Code Number	Description
GDC 158.03	System voltage is above 15.5V for 5 seconds.
GDC 158.04	System voltage is below 10.0V for 5 seconds.
GDC 628.12	Re-programming.
GDC 629.12	Internal fault (Watchdog reset).
GDC 630.13	System needs to be configured/calibrated.
GDC 639.14	CAN in bus-off.
GDC 3131.16	Fan 1 is operating above the user-defined maximum fan speed.

Troubleshooting

GDC 3131.18	Fan 1 is operating below the user-defined minimum fan speed.
GDC 3131.31	Product Application attempted with no fan speed for Fan 1.
GDC 3509.03	Sensor Supply Voltage 1 above 5.2V for 2 seconds.
GDC 3509.04	Sensor Supply Voltage 1 below 4.8V for 2 seconds.
GDC 3510.03	Sensor Supply Voltage 2 above 5.2V for 2 seconds.
GDC 3510.04	Sensor supply voltage 2 below 4.8V for 2 seconds.
GDC 3511.03	Sensor Supply Voltage 3 above 5.2V for 2 seconds.
GDC 3511.04	Sensor Supply Voltage 3 below 4.8V for 2 seconds.
GDC 3512.03	Sensor Supply Voltage 4 above 5.2V for 2 seconds.
GDC 3512.04	Sensor supply voltage 4 below 4.8V for 2 seconds.
GDC 516468.03	Voltage for pressure sensor is out of range high.
GDC 516468.04	Voltage for pressure sensor is out of range low.
GDC 516466.16	Fan 2 is operating above the user-defined maximum fan speed.
GDC 516466.18	Fan 2 is operating below the user-defined minimum fan speed.
GDC 516466.31	Product Application attempted with no fan speed for Fan 2.
GDC 520237.31	Bin/Tank Level Sensor 1 indicates empty tank.
GDC 520238.31	Bin/Tank Level Sensor 2 indicates empty tank.
GDC 520239.31	Bin/Tank Level Sensor 3 indicates empty tank.
GDC 520716.00	The system is detecting meter movement while the control valve is commanded closed.
GDC 520716.01	The system is detecting zero meter speed while the control valve is commanded open.
GDC 520716.16	The system is operating above the user-defined maximum application rate.
GDC 520716.18	The system is operating below the user-defined minimum application rate.
GDC 520723.31	Bin/Tank Level Sensor 4 indicates empty tank.
GDC 520724.17	Bin/Tank 2 volume has fallen below the operator designated minimum level.
GDC 520725.17	Bin/Tank 3 volume has fallen below the operator designated minimum level.
GDC 520728.17	Bin/Tank 4 volume has fallen below the operator designated minimum level.
GDC 520729.00	The system is detecting spinner/fan movement while the control valve is commanded closed.
GDC 520729.01	The system is detecting zero spinner/fan speed while the control valve is commanded open.
GDC 520729.16	The spinner is operating above the user-defined maximum spinner/fan speed.
GDC 520729.18	The spinner/fan is operating below the user-defined minimum spinner speed.
GDC 520729.31	Product Application attempted with no spinner/fan speed.
GDC 523346.00	The system is detecting meter movement while the control valve is commanded closed.
GDC 523346.01	The system is detecting zero meter speed while the control valve is commanded open.
GDC 523346.16	The system is operating above the user-defined maximum application rate.
GDC 523346.18	The system is operating below the user-defined minimum application rate.
GDC 523393.00	The system is detecting meter movement while the control valve is commanded closed.
GDC 523393.01	The system is detecting zero meter speed while the control valve is commanded open.
GDC 523393.16	The system is operating above the user-defined maximum application rate.
GDC 523393.18	The system is operating below the user-defined minimum application rate.
GDC 523394.00	The system is detecting meter movement while the control valve is commanded closed.
GDC 523394.01	The system is detecting zero meter speed while the control valve is commanded open.
GDC 523394.16	The system is operating above the user-defined maximum application rate.
GDC 523394.18	The system is operating below the user-defined minimum application rate.
GDC 523418.17	Bin/Tank 1 volume has fallen below the operator designated minimum level.
GDC 523823.00	The maximum speed threshold for applying product has been exceeded.
GDC 523935.06	Output driver over current or short to ground.
GDC 523966.31	Operator has Limp Home Mode enabled.

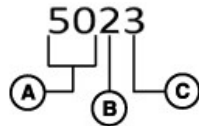
RW00482,000018C-19-15MAY13

GreenStar Rate Controller Switch Box Trouble Codes

Fault Code Number	Description	Recommended Initial Action
SBC 000168.03	Switched Supply Voltage High	System voltage is above 15.5 V. for 5 seconds.
SBC 000168.04	Switched Supply Voltage Low	System voltage is below 10.0 V. for 5 seconds.
SBC 000628.02	Controller Memory Corrupted	Contact dealer.
SBC 000628.12	Controller Unit Programming	Wait until GreenStar Rate Control Switch Box has finished programming. If programming is hung up, contact dealer
SBC 000629.12	Controller Unit Fault	Contract dealer.
SBC 000639.14	CAN Communication Error	CAN Bus problem or GreenStar Rate Controller Switch Box has a CAN Bus error. Contract dealer.
SBC 523910.02	Controller Memory Corrupted	Contract dealer.
SBC 524058.02	Master Switch Conflict	Master switch digital inputs are not in a valid state. Contract dealer.

CZ76372,000032F-19-13JUL11

Control Valve Calibration Number Tuning



PC14715—UN—10FEB12

A—XX: Valve Speed
B—Y: Overshoot Reduction
C—Z: % Error Allowed

The control valve calibration number is set up in the following format **XXYZ**.

The numbers work similar for all control valve types in spinner and conveyor configurations.

XX adjusts how fast the valve reacts to error between target and actual speeds. If the control is too slow, increase this value. If the control is too fast or fluctuates constantly, reduce this value. Input range is 1-99. Typical values are between 25-75.

Y adjusts overshoot when controlling to a speed change. If the system overshoots the target, increase this number. If control is slow reacting to a speed change, reduce this number. Input range is 0-9. Typical values are between 2-4.

XX and **Y** can affect each other when changed. Adjusting one value may require a change to the other. It is best to adjust the **XX** value first to ensure that the system is quick to react. Then change **Y** value as needed.

Z adjusts control deadband. It represents the error (% of target conveyor/spinner speed) allowed when reaching a target speed. To make the controller more responsive to errors, lower the value. To make the controller more accepting of errors, increase the value. If oscillation or chasing of the target speed occurs, increase this number. The input range is between 0-9. Typical starting value is 3.

BA31779,00003C6-19-14MAR12

Rename Implement

PC20157—UN—03NOV14

A—Rename Button

NOTE: Renaming an implement does not affect settings on System, Alarm, and Rates tabs. Existing calibrations remain valid.

1. Select implement name to be revised from drop-down.
2. Select Rename (A), and enter new name using keyboard.
3. Select Enter.

HC94949,0000628-19-20NOV14

Remove Implement

PC20158—UN—03NOV14

A—Remove Button

1. Select implement name to be deleted from drop-down.
2. Select Remove (A).
3. Accept pop-up notification.

HC94949,0000629-19-03NOV14

Observable Symptoms

Symptom

Inconsistent volume of product being applied or undesired valve function (spreader).

Problem

Possible incorrect calibration for valve applied.

Solution

Perform flow control test.

Control valve not functioning properly. Perform spreader check test.

Perform control valve test.

Inconsistent volume of product being applied or undesired valve function (air cart).

Possible incorrect calibration for valve applied.

Perform flow control test.

Control valve not functioning properly. Perform spreader check test.

Perform control valve test.

Clutches not responding as desired (air cart).

Clutch could be malfunctioning or incorrect polarity assigned.

Perform clutch test.

Master Switch Indicator not changing status to On.

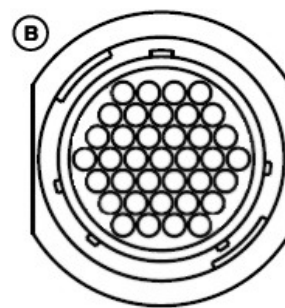
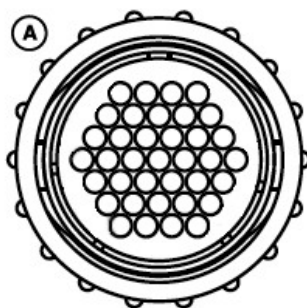
Master Switch on switchbox or foot switch failing to communicate with controller.

Verify that switchbox or foot switch is plugged in.

HC94949,0000656-19-30JAN15

Specifications

37-Pin Connectors



PC13624—UN—13JUN11

A—Connector 1

B—Connector 2

Connector 1		Connector 2	
PIN #	FUNCTION	PIN #	FUNCTION
1	Valve Ground	1	Future Use
2	Valve Ground	2	Meter/Conveyer #3 Speed Sensor Signal
3	Valve Power	3	Meter/Conveyer #4 Speed Sensor Signal
4	Driver 1	4	Power - 5V Sensor
5	Driver 2	5	Power - 5V Sensor
6	Driver 3	6	Ground - 5V Sensor
7	Driver 4	7	Ground - 5V Sensor
8	Driver 5	8	Future Use
9	Driver 6	9	Future Use
10	Driver 7	10	Future Use
11	Driver 8	11	Future Use
12	Driver 9	12	Bin/Tank Level Switch #4 Signal
13	Driver 10	13	Bin/Tank Level Switch #3 Signal
14	Future Use	14	Ground - 5V Sensor
15	Driver 16	15	Bin/Tank Level Switch #2 Signal
16	Driver 15	16	Future Use
17	Driver 14	17	Future Use
18	Driver 13	18	Future Use
19	Driver 12	19	Future Use
20	Driver 11	20	Future Use
21	Ground - 5V Sensor	21	Ground - 12V Sensor
22	Power - 5V Sensor	22	Power - 12V Sensor
23	Meter/Conveyer #2 Speed Sensor Signal	23	Future Use
24	Future Use	24	Ground - 5V Sensor
25	Power - 5V Sensor	25	Spinner/Fan 1 Speed Sensor Signal
26	ECU Power (12V)	26	Power - 12V Sensor
27	ECU Ground	27	Ground - 12V Sensor
28	Meter/Conveyer #1 Speed Sensor Signal	28	Fan 2 Speed Sensor Signal
29	Ground - 5V Sensor	29	Bin/Tank Level Switch #1 Signal
30	Power - 5V Sensor	30	Future Use
31	Pressure Sensor Signal	31	Future Use
32	Future Use	32	Power - 5V Sensor
33	Future Use	33	Power - 5V Sensor
34	Power - 5V Sensor	34	Future Use
35	Future Use	35	Future Use
36	Valve Power	36	Future Use
37	Valve Power	37	Future Use

Connector Information for Adapter Harness

Description	John Deere Service Part Number
Mating Connector to Connector 1 (Plug)	
37-pin Connector Body (Receptacle)	57M9834
Cable Clamp for 37-pin Connector Body	57M9870
Terminal Pin (14-18 gauge / 0.8 - 2.0 mm ²)	R77464
Mating Connector to Connector 2 (Receptacle)	
37-pin Connector Body (Plug)	57M9833
Cable Clamp for 37-pin Connector Body	57M9870
Terminal Socket (14-18 gauge / 0.8 - 2.0 mm ²)	R77465

Connector Information

NOTE: Ensure that proper crimp tools are used when assembling a harness.

RW00482,0000257-19-28FEB18

Driver Outputs Table

Driver 1	Bin/Tank 1 (-)
Driver 2	Bin/Tank 1 (+) / PWM
Driver 3	Bin/Tank 2 (+) / PWM
Driver 4	Bin/Tank 2 (-)
Driver 5	
Driver 6	Bin/Tank 3 (-)
Driver 7	Bin/Tank 3 (+) / PWM
Driver 8	Bin/Tank 4 (+) / PWM

Driver 9	Bin/Tank 4 (-)
Driver 10	Main Clutch
Driver 11	Tank 1 Clutch
Driver 12	Tank 2 Clutch
Driver 13	Tank 3 Clutch
Driver 14	Tank 4 Clutch
Driver 15	Spinner (+) / PWM
Driver 16	Spinner (-)

RW00482,000018A-19-14MAY13

Recommended Wire Sizes

Minimum Recommended Wire Size—Metric (mm ²)					
Length (mm)	Current (amp)				
	0.5	1.0	1.5	2.0	2.5
1000	0.8	0.8	0.8	0.8	0.8
2500	0.8	0.8	0.8	0.8	0.8
5000	0.8	0.8	0.8	0.8	1.0
7500	0.8	0.8	0.8	1.0	2.0
10000	0.8	0.8	1.0	2.0	2.0
15000	0.8	1.0	2.0	3.0	3.0

Minimum Recommended Wire Size—SAE (gauge)					
Length (in.)	Current (amp)				
	0.5	1.0	1.5	2.0	2.5
39	18	18	18	18	18
98	18	18	18	18	18
197	18	18	18	18	16
295	18	18	18	16	14
394	18	18	16	14	14
591	18	16	14	12	12

CZ76372,0000330-19-27JUN11

Maintenance

Preseason Checklist

In addition to performing checklist before season begins, utilize preseason checklist if any of the following occur:

- A different tractor or implement is introduced to system.
 - A hydraulic system component is repaired, replaced, or adjusted.
 - An Ag Management Systems (AMS) component is replaced.
- ☐ Refer to electronic Operator's Manual from Manuals. Deere.com or contact your John Deere dealer for latest version.
 - ☐ Update software. Refer to StellarSupport.com for latest software.
 - ☐ Display
 - ☐ Controller
 - ☐ Load and activate applications on display.
 - ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations. Repair as necessary.
 - ☐ Inspect connector seals and latching mechanisms. Repair as necessary.
 - ☐ Inspect connector pins for wear, debris, and corrosion. Clean and (or) repair as necessary.
 - ☐ ISO connector
 - ☐ Controller connectors
 - ☐ Display
 - ☐ Inspect mounting hardware. Retorque as necessary.
 - ☐ Display
 - ☐ Controller mount
 - ☐ Calibrate sensors and control values.
 - ☐ Verify switch functionality if switchbox is present.
 - ☐ Perform system voltage test.
 - ☐ Perform flow control test.

(Reference implement Operator's Manual for detailed checklists.)

NOTE: Some tests are not available depending on application.

HC94949,00005E4-19-03FEB15

Daily Checklist

- ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations. Repair as necessary.
- ☐ Inspect wiring harness at connectors for wear on exposed wires. Repair as necessary.
- ☐ Inspect mounting hardware. Retorque as necessary.

- ☐ Display
- ☐ Controller mount
- ☐ Run control unit diagnostic tests.
- ☐ Perform Control Valve test.
- ☐ Verify section status readings.
- ☐ Verify system voltage readings.
- ☐ Verify switches and status readings.
- ☐ Verify sensor and status readings.

(Reference implement Operator's Manual for detailed checklists.)

NOTE: When changing product, empty bin or tank, perform rinse cycle, and perform new product setup and calibration.

Some tests are not available depending on application.

HC94949,00005E5-19-13DEC17

Postseason Checklist

- ☐ Inspect wiring harness for wear and damage around pinch points, corners, edges, and harness support locations. Repair as necessary.
- ☐ Inspect wiring harness at connectors for wear on exposed wires. Repair as necessary.
- ☐ Inspect connector seals and latching mechanisms. Repair as necessary.
- ☐ Inspect connector pins for wear, debris, and corrosion. Clean and (or) repair as necessary.
 - ☐ ISO connector
 - ☐ Control unit connectors
 - ☐ Display
- ☐ Inspect mounting hardware. Retorque as necessary.
 - ☐ Display
 - ☐ Control unit mount
- ☐ Perform rinse cycle.

(Reference implement Operator's Manual for detailed checklists.)

NOTE: Some tests are not available depending on application.

HC94949,00005E6-19-13DEC17

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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,SERVIT-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

