



DCY

# iGrade

## OPERATOR'S MANUAL

### iGrade

OMPFP11794 ISSUE K1 (ENGLISH)

#### CALIFORNIA

#### Proposition 65 Warning

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

If this product contains a gasoline engine:

### **⚠ WARNING**

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

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

**John Deere Ag Management Solutions**  
(This manual replaces OMPFP11262)

Printed in U.S.A.



OMPFP11794

# Introduction

## **www.StellarSupport.com**

*NOTE: Product functionality may not be fully represented in this document due to product changes occurring after the time of printing. Read the latest Operator's Manual and Quick Reference Guide prior to operation. To obtain a copy, see your dealer or visit [www.StellarSupport.com](http://www.StellarSupport.com)*

OUO6050,0000FB1 -19-10AUG10-1/1

## **Foreword**

WELCOME TO THE GreenStar™ System offered by John Deere.

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

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your system and should remain with the system when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification or Identification Numbers section.

*GreenStar is a trademark of Deere & Company*

Accurately record all the numbers to help in tracing the components should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate 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.

JS56696,00007CC -19-04MAR10-1/1

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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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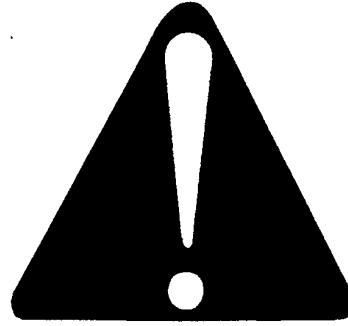


# Safety

## Recognize Safety Information

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.



T81388 —UN—07DEC88

DX,ALERT -19-29SEP98-1/1

## Understand Signal Words

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

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



TS187 —19—30SEP88

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

## Follow Safety Instructions

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

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

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

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



TS201 —UN—23AUG88

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

DX,READ -19-16JUN09-1/1

### Practice Safe Maintenance

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

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

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

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

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

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



TS218 —UN—23AUG88

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

### Handle Electronic Components and Brackets Safely

Falling while installing or removing electronic components mounted on equipment can cause serious injury. Use a ladder or platform to easily reach each mounting location. Use sturdy and secure footholds and handholds. Do not install or remove components in wet or icy conditions.

If installing or servicing a RTK base station on a tower or other tall structure, use a certified climber.

If installing or servicing a global positioning receiver mast used on an implement, use proper lifting techniques and wear proper protective equipment. The mast is heavy and can be awkward to handle. Two people are required when mounting locations are not accessible from the ground or from a service platform.



TS249 —UN—23AUG88

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

### Operate Implement Automation Systems Safely

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

Implement automation systems are intended to aid the operator in performing field operations more efficiently. The operator is always responsible for the machine path.

Implement automation systems include any application that automates implement movement. This includes but may not be limited to iGrade and Active Implement Guidance.

To prevent injury to the operator and bystanders:

- Verify the machine, Implement, and automation systems are set up correctly.
- Remain alert and pay attention to the surrounding environment.
- Take control of the implement when necessary to avoid field hazards, bystanders, equipment, or other obstacles.



PC13793 —JUN—25MAY11

- Stop operation if poor visibility conditions impair your ability to operate the machine or identify people or obstacles in the machine path.

CF86321.0000366 -19-25MAY11-1/1

### Avoid High-Pressure Fluids

Inspect hydraulic hoses periodically – at least once per year – for leakage, kinking, cuts, cracks, abrasion, blisters, corrosion, exposed wire braid or any other signs of wear or damage.

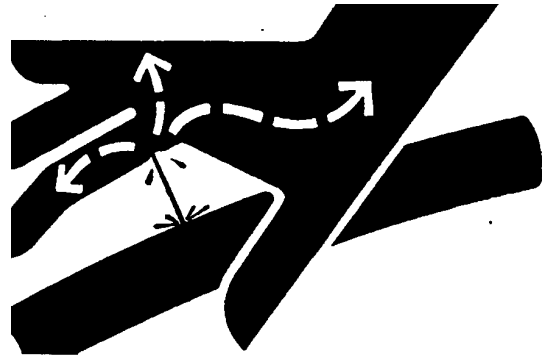
Replace worn or damaged hose assemblies immediately with John Deere approved replacement parts.

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar



X9811 —JUN—23AUG88

with this type of injury should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

DX,FLUID -19-12OCT11-1/1

# Introduction

## Theory of Operation

iGrade is an active elevation control system which uses a machine's SCVs to control an implement's elevation

based off of GPS elevation data. iGrade can also perform SCV functions at set distance intervals.

JS56696,00007AF -19-06MAY10-1/1

## Activating iGrade

To run iGrade on the Application Controller a 26 digit activation code is required.

1. Visit [www.StellarSupport.com](http://www.StellarSupport.com) or call 1-888-953-3373
2. Using the controller serial number and the COMAR order number, a 26 digit activation code will be generated.
3. On the display, select APPLICATION CONTROLLER from the main menu.
4. Select SETUP softkey.
5. Select ACTIVATION ENTRY (A) button.
6. Enter 26 digit code (B).

If iGrade is activated, Activation Entry screen will display:

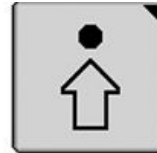
- Distance Trip
- Remote Control
- Grade Control
- Plane Control

PC13071 —UN—29AUG11



APPLICATION CONTROLLER

PC12961 —UN—29AUG11



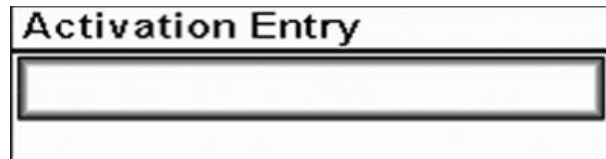
SETUP Softkey

PC13507 —UN—29AUG11



ACTIVATION ENTRY Button

PC13508 —UN—29AUG11



ACTIVATION ENTRY Screen

JS56696,000099E -19-27APR11-1/1

## System Requirements

### iGrade Functional Requirements:

#### Hardware:

- GS2 2600 or GS3 2630 display (recommended)
- GS2 2600 or GS3 2630 display required for SurfaceWater Pro Plus (SWP+) automation.
- John Deere StarFire GPS receiver and bracket mounted on implement.
- John Deere StarFire GPS receiver mounted on tractor for Load Limiting, Distance Trip, AutoTrac, and Surface Water Pro Plus automation (Remote Control).
- Implement controller installed on tractor.
- Various harnesses associated with power supply, controller integration, and receiver installation.

#### Software:

- iGrade operation requires all implement receivers to have an RTK signal level.
- RTK is required on vehicle and implement receivers and when using:
  - Distance Trip
  - Max Cut
- SF1/SF2 can be used on the vehicle receiver (if not using Distance Trip or Max Cut):
  - Load Limit

- Must have SF2, or RTK on the vehicle when using SWP+ and RTK on the implement.

*NOTE: If using SF1/SF2 on the vehicle, Distance Trip will not function and Max Cut MUST be disabled*

- Updated StarFire receiver software.

*NOTE: When operating dual scrapers it is important to use the same model of receiver on both implements—only use 2 iTC or 2 SF3000's. The receivers calculate elevation differently, so should be only used in like pairs when operating dual scrapers. Likewise when operating SWPro, the same receivers (iTC or SF3000's) should be used for collecting elevation data as the actual ditching operation.*

- Machine receiver setup including TCM calibration.
- Implement receiver setup including TCM calibration.

*NOTE: There are no receiver offsets for iGrade so, when using multiple scrapers, receivers must be installed the same height from blade to receiver. If a constant offset is noticed during operation between scrapers corrections must be made with shims to the implement mast.*

BA31779,000029F -19-11OCT11-1/1

## Tractor Controller Compatibility

If installing iGrade on a tractor in serial number ranges listed in table, please follow up with John Deere Dealer to

8100 -021245	8100T -902028	9100 -10365
8200 -021030	8200T -902047	9200 -10849
8300 -021780	8300T -902166	9300 -10928
8400 -022341	8400T -902636	9400 -10931

Tractor Controller Compatibility

determine if any required controller updates are needed for machine prior to operating iGrade.

JS56696,0000982 -19-20APR11-1/1

## Installation Requirements

- **Implement Constant Power Harness**—Connected to convenience outlet and routed to rear of cab connecting Front Extension Harness.
- **Front Extension Harness (3m or 10m)**—Connects to Constant Power Harness and ISO implement connector. Harness is routed along on vehicle frame and connected to Implement Receiver Application Harness.
- **Implement Receiver Application Harness**—Connects to Front Extension Harness and is routed up the mast to implement receiver.
- **Center Extension Harness (2m and 8m)**—Extends the distance between Front Extension Harness and Implement Receiver Application Harness. Center

Extension Harness may not be necessary for certain applications.

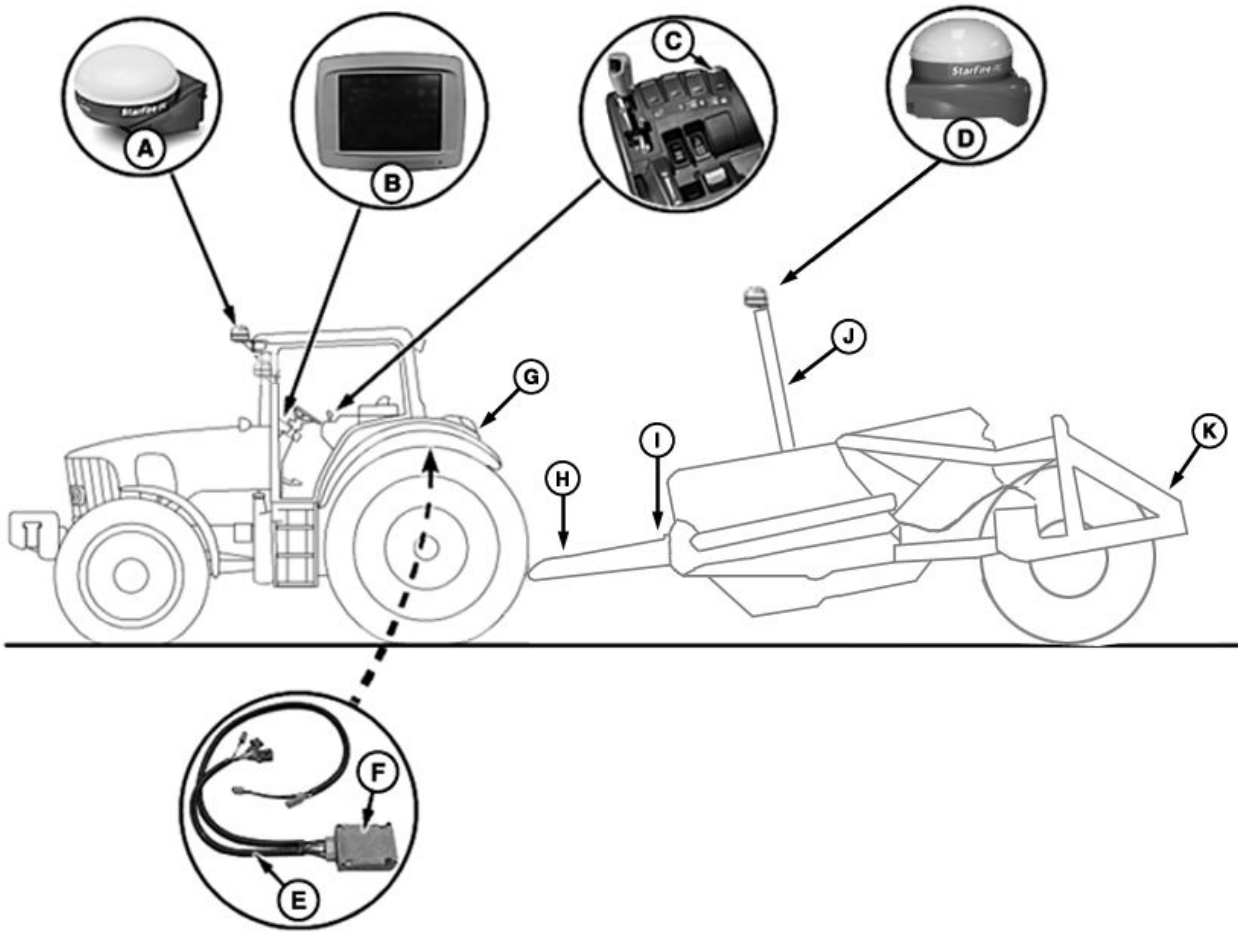
- **Rear Extension Harness (optional)**—Provides ISO 9 pin connector on rear side of scraper.
- **StarFire iTC or StarFire 3000 receiver**
- **RTK Activation and Radio** installed for all Implement receivers.
- **RTK Activation and Radio** installed for each vehicle receiver using Distance Trip and Max Cut.
- **Deluxe Receiver and RTK Radio Shroud**

*NOTE: iGrade does not require an implement feedback sensor and that section can be ignored in the installation manual.*

BA31779,00002A0 -19-11OCT11-1/1

# System Components

## iGrade Components



A—StarFire RTK GPS Receiver  
B—Display  
C—SCV Control Lever

D—StarFire RTK GPS Receiver  
with Deluxe Shroud  
E—Application Controller  
Harness  
F—Application Controller

G—Constant Power Harness  
H—Front Extension Harness  
I—Center Extension Harness

J—Implement Receiver  
Application Harness  
K—Rear Extension

- Set SCV lever (C) to auto AC mode (Actively Controlling).
- StarFire Receivers (D) communicate elevation of blade height to implement controller (F).
- Desired elevation information is calculated by the implement controller from operator inputs using the display (B).
- The SCV controller communicates instructions from the implement controller to automate blade height.
- Constant adjustments are made to keep the height at the targeted grade elevation.
- Constant Power Harness—Harness is connected to convenience outlet and routed to rear of cab where it connects to the Front Extension Harness.
- Front Extension Harness—Two different lengths of the Front Extension Harness are available (3m and 10m).

Harness connects to Constant Power Harness and ISO implement connector. Harness is routed along frame of vehicle and connects to the Implement Receiver Application Harness.

- Center Extension Harness (if needed)—Extends the distance between Front Extension Harness and Implement Receiver Application Harness. Harness is available in two lengths (2m and 8m).
- Implement Receiver Application Harness—Harness connects to Front Extension Harness and is routed up the mast to the implement receiver.
- Rear Extension Harness (optional)—Provides ISO 9 pin connector on rear of scraper.

**NOTE:** Terminator is needed at the end of harness if a Rear Extension Harness is not used.

PC12516 —UN—26APR10

CZ76372.0000238 -19-17NOV10-1/1

## Receiver Setup

iGrade requires an RTK enabled GPS receiver for operation.

Each StarFire receiver needs TCM turned on and calibrated for iGrade to work. StarFire receiver pages on display are similar for each receiver. TCM calibration pages have an image to guide operators with calibration setup for implement TCM. Use the implement axle as the calibration point.

- StarFire receiver and Deluxe Bracket mounted on implement.
- StarFire receiver mounted on tractor for Load Limiting, Max Cut, Distance Trip, AutoTrac, and SurfaceWater Pro Plus automation (Remote Control).
- Implement receivers (iTC or 3000) are required to have a RTK signal level.
- Vehicle receivers (Gen2, iTC, or 3000) require RTK when using Distance Trip and Max Cut
- Vehicle receivers can use SF1/SF2 if Distance Trip is not being used and Max Cut is Disabled.

*NOTE: StarFire 300 receiver can be used as a machine receiver for providing speed for Load Limiting application only.*

*If using SF2 on the vehicle, Distance Trip will not function and Max Cut must be disabled*

- There are no receiver offsets for iGrade so, when using multiple implements, receivers must be installed the same height from blade to receiver.



StarFire 3000 Receiver

- Implement receiver should not be mounted higher than 4.0 m (13.1 ft.) above ground level.
- Implement receiver must be connected to tractor's implement CAN bus through ISO connector.

For best performance:

- Receiver masts must be mounted in the center of implement and located over the control point or where work is being done.
- Both receivers must be mounted the same height above the blade. Implement GPS offsets can not be entered in the display to account for mounting error. If a constant offset is noticed during operation between scrapers, corrections must be made to implement mast using shims.
- Use shroud and mounting bracket provided in kit. This kit includes isolators that reduce receiver vibration.

BA31779,00002A1 -19-11OCT11-1/1

PC13406 —UN—20APR11

## GreenStar Display

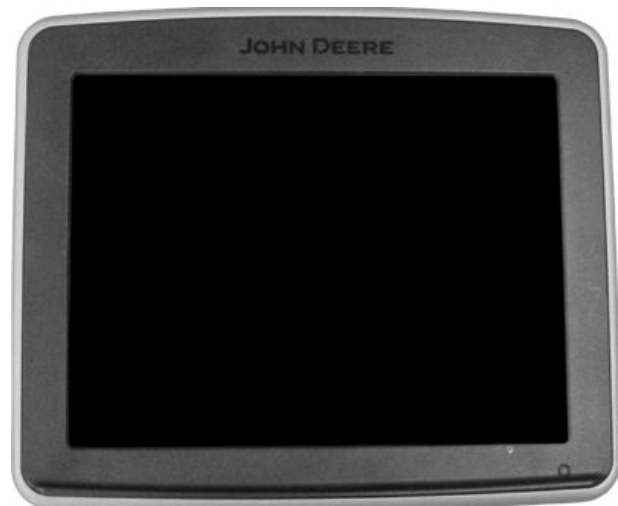
iGrade is compatible with the following displays:

- GS2 2100
- GS2 2600
- GS3 2630

Surface Water Pro Plus Automation is compatible with the following displays:

- GS2 2600
- GS3 2630

*NOTE: Update Software on display.*



GreenStar2 2630 Display

JS56696,000099C -19-25APR11-1/1

PC13407 —UN—20APR11

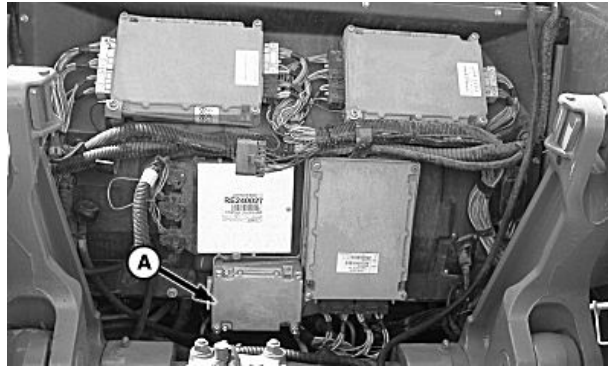
## Application Controller

The Application Controller (A) is located on rear of tractor, under cab rear cover.

*NOTE: Controller location and alignment may differ for each model of tractor. Picture is for general reference only.*

The Application Controller contains:

- *Display Software*—used by the cab-mounted console
- *Microprocessor*—translates signals from implement GPS receivers and adjusts implement according to the desired operation.
- *Non-volatile Memory*—factory defaults and operator entered settings are stored here



PC12186 —UN—07OCT09

A—Application Controller

CZ76372,0000239 -19-17NOV10-1/1

## Dual Scrapers

When using dual scrapers, two receiver softkeys appear on display. Each softkey contains the receiver serial number and its location (machine or implement). When implement receiver is connected to Implement Receiver Application Harness, the receiver softkey appears on the display.

- Running dual scrapers requires a receiver mounted on each scraper.
- Implement harnesses accommodate multiple receivers.
- Selecting the same control type for SCV 1 and SCV 3 allows dual scrapers to control the same plane or grade.

*NOTE: Stored planes or grades are the same for both SCV's when using the same control type.*

**IMPORTANT: Mount implement receiver with lowest serial number on front scraper and connect scraper to SCV 1. Mount implement receiver with higher serial number on rear scraper and connect scraper to SCV 3.**

For best performance:

- Receiver masts must be mounted in the center of implement and located over the control point or where work is being done.
- Both receivers must be mounted the same height above the blade. Implement GPS offsets can not be entered in



PC12492 —UN—02MAR10

the display to account for mounting error. If a constant offset is noticed during operation between scrapers, corrections must be made to implement mast using shims.

- Use shroud and mounting bracket provided in kit. This kit includes isolators that reduce receiver vibration.

*NOTE: When operating dual scrapers, it is important to only use 2 iTC or 2 SF3000's. The receivers calculate elevation differently so they should only be used in like pairs when operating dual scrapers. When operating SurfaceWater Pro, the same receivers (iTC or SF3000's) should be used for collecting elevation data as the actual ditching operation.*

JS56696,00009D9 -19-12MAY11-1/1

# Setup

## Setup Requirements

- StarFire RTK receivers installed and functioning on machine and implement.
- Application Controller hardware installation complete.
- iGrade activated on Application Controller
- Updated to latest StarFire receiver software.
- Machine receiver TCM calibration complete.

- Implement receiver setup (including offsets) and TCM calibration complete.
- Optional: AutoTrac setup complete and activated on display.
- Surface Water setup is complete if using Remote Control for Surface Water Pro Plus automation

JS56696,0000985 -19-20APR11-1/1

## SCV Threshold Calibration

SCV threshold calibration may be needed if control is erratic.

**CAUTION:** To avoid serious injury, keep area around equipment clear. This procedure requires vehicle to move forward.

**Implement will move during calibration.**

Each time an Application Controller with iGrade is installed on a different vehicle, SCV threshold calibration should be performed. Without SCV threshold calibration, scraper may move significantly faster in one direction, under compensate, over compensate, or not perform as expected due to hydraulic limitations. These factors will make it difficult for the controller to maintain an accurate elevation.

*NOTE: To calibrate the SCV threshold the vehicle must be slowly moving forward (greater than 0.5 kph (0.3 mph)) with selected SCV (SCV I or III) detented to "AC", as indicated on right-hand display. The implement **does not** need to be in the lowered (working) position for calibration.*

*If vehicle is not moving faster than 0.5 kph (0.3 mph), SCV control **will not** produce hydraulic flow.*

### Calibrate SCV Thresholds

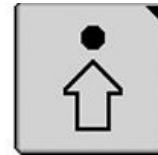
1. From the main menu, select APPLICATION CONTROLLER button

PC13071 —UN—29AUG11



APPLICATION CONTROLLER softkey

PC12961 —UN—29AUG11



SETUP softkey

PC13474 —UN—25APR11

### Setup Menu

SCV Threshold Setup



SCV THRESHOLD SETUP button

2. Select SETUP softkey.
3. Select SCV THRESHOLD SETUP button.

Continued on next page

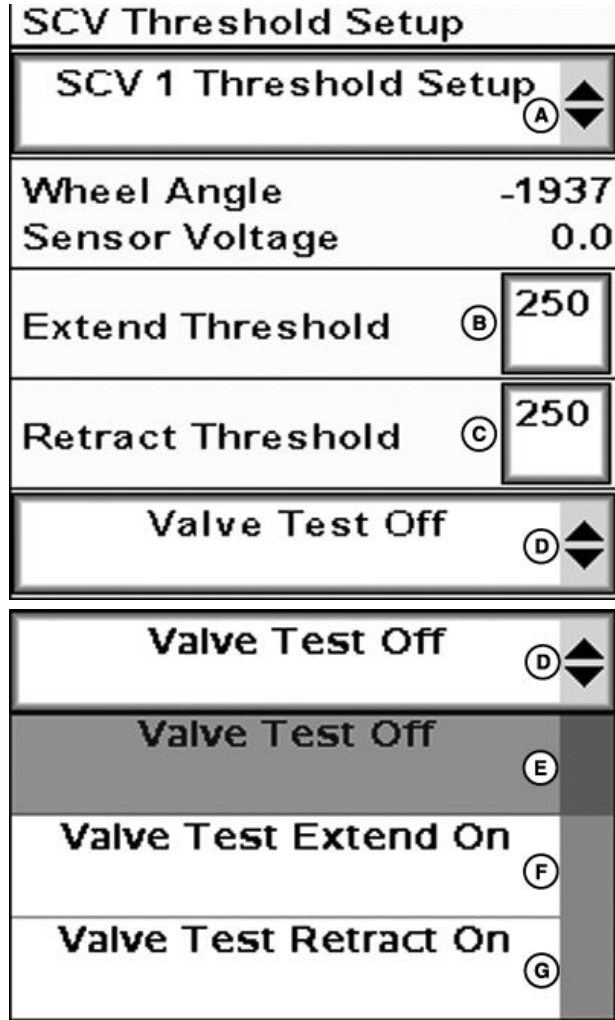
JS56696,0000986 -19-12MAY11-1/2

4. Select SCV being used.
5. Select VALVE TEST EXTEND ON (F) from the VALVE TEST drop-down menu (D).
6. Adjust the EXTEND THRESHOLD value (B) to lowest possible setting that still produces a steady, consistent motion.
  - If scraper height does not change significantly, the Extend Threshold value (B) must be increased.
  - If scraper moves quickly or erratically, the Extend Threshold value (B) must be decreased.
  - Repeat procedure as required to obtain a smooth, constant change in scraper height.
7. Select VALVE TEST RETRACT ON (G) from drop-down menu.
8. Repeat adjustment procedures used in Valve Test Extend calibration.
9. Turn valve test OFF (E) when calibration is complete.

If SCV's flow rate is too high, scraper could be overly sensitive and cause washboard effect.

If SCV's flow rate is too low, control and load limit functionality could be impaired or limited.

- |                                      |                         |
|--------------------------------------|-------------------------|
| A—SCV Threshold Setup drop-down menu | E—Valve Test Off        |
| B—Extend Threshold                   | F—Valve Test Extend On  |
| C—Retract Threshold                  | G—Valve Test Retract On |
| D—Valve Test drop-down menu          |                         |



## Load Limiting

Load Limiting will raise a scraper when Engine Speed and Slip Thresholds have been exceeded in an attempt to protect the vehicle.

The Load Limiting feature will function with Grade Control, Remote Control, and Plane Control.

1. On the display, select APPLICATION CONTROLLER from the main menu.
2. Select MAIN MENU softkey.
3. Select PLANE CONTROL, REMOTE CONTROL, or GRADE CONTROL SETUP button.
4. Select LOAD PARAMETER SETUP button.
5. Set up the Elevation Control Sensitivity.

**Elevation Control Sensitivity**—Allows operator to adjust sensitivity of up and down movement of their water management implement.

Elevation Control Sensitivity defaults to 2000, but can be changed to between 10—10,001. The lower the number, the slower and less aggressive the implement's up and down movement will be. The higher the number, the faster and more aggressive the implement's up and down movement will be.

6. Select LOAD LIMIT SETUP button.

PC13071 —UN—29AUG11



APPLICATION CONTROLLER softkey

PC13072 —UN—16NOV10



MAIN MENU softkey

PC13421 —UN—20APR11



PLANE CONTROL SETUP button

PC13422 —UN—20APR11



LOAD PARAMETER SETUP button

PC13423 —UN—20APR11



ELEVATION CONTROL SENSITIVITY

Continued on next page

JS56696.0000987 -19-12MAY11-1/2

7. Enable Load Limiting by selecting Load Limiting On from the drop-down menu (A). Disable Load Limiting by selecting Load Limiting Off from the drop-down menu (A).

8. Set Engine Speed (B) and Slip % thresholds (C).

If either threshold is reached, system will raise the blade until condition restored. Slip % requires machine GPS receiver to function as the ground speed source. Engine Speed (rpm) will default to 1500 and Slip % will default to 15%.

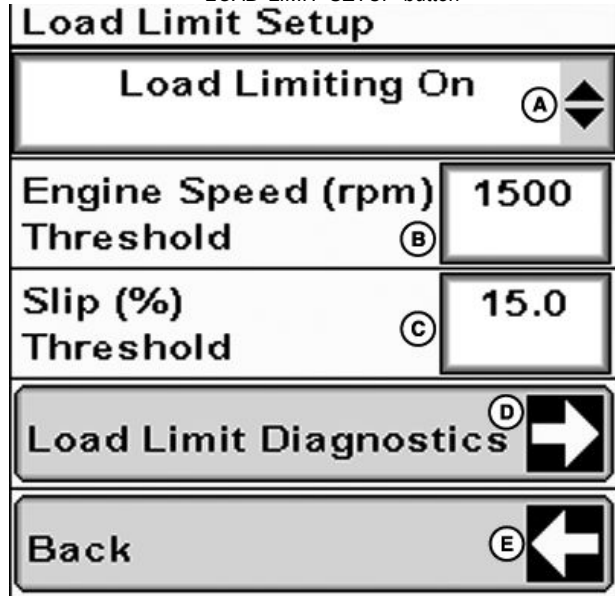
A—Load Limiting drop-down menu  
 B—Engine Speed Threshold  
 C—Slip Threshold

D—Load Limit Diagnostics  
 E—Back button

PC13424 —UN—20APR11



LOAD LIMIT SETUP button



PC13482 —UN—25APR11

JS56696,0000987 -19-12MAY11-2/2

## Max Cut

Max Cut allows the operator to set a maximum amount of cut the water management implement will take in a single pass. The Max Cut feature requires the vehicle and implement to have a receiver with a RTK activation installed.

1. On the display, select APPLICATION CONTROLLER from the main menu.
2. Select MAIN MENU softkey.
3. Select PLANE CONTROL, REMOTE CONTROL, or GRADE CONTROL SETUP button.
4. Select LOAD PARAMETER SETUP button.

*NOTE: If using SF2 on the vehicle, Distance Trip will not function and Max Cut must be disabled*

PC13071 —UN—29AUG11



APPLICATION CONTROLLER softkey

PC13072 —UN—16NOV10



MAIN MENU softkey

PC13421 —UN—20APR11



PLANE CONTROL SETUP button

PC13422 —UN—20APR11



LOAD PARAMETER SETUP button

Continued on next page

BA31779,00002A3 -19-02NOV11-1/2

- Set up the Elevation Control Sensitivity.

**Elevation Control Sensitivity**—Allows operator to adjust sensitivity of up and down movement of their water management implement.

Elevation Control Sensitivity defaults to 2000, but can be changed to between 10—10,001. The lower the number, the slower and less aggressive the implement's up and down movement will be. The higher the number, the faster and more aggressive the implement's up and down movement will be.

- Select MAX CUT SETUP button.
- Enable Max Cut by selecting Max Cut Enabled (A) from the drop-down menu.

Disable Max Cut by selecting Max Cut Disabled from the drop-down Menu.

- Operate the water management implement manually at the desired max cut depth and select SET MAX CUT HERE button (B). Select SHIFT MAX CUT DOWN (C) or SHIFT MAX CUT UP button (D) to increase or decrease the maximum cut depth in increments of 2 cm.

**Disable Max Cut**

- On the display, select APPLICATION CONTROLLER from the main menu.
- Select MAIN MENU softkey.
- Select PLANE CONTROL or GRADE CONTROL SETUP button.
- Select LOAD PARAMETER SETUP button.
- Select MAX CUT SETUP button.
- Disable Max Cut by selecting Max Cut Disabled from the drop-down Menu.

PC13423 —UN—20APR11



LOAD PARAMETER SETUP button

PC13426 —UN—20APR11



MAX CUT SETUP button

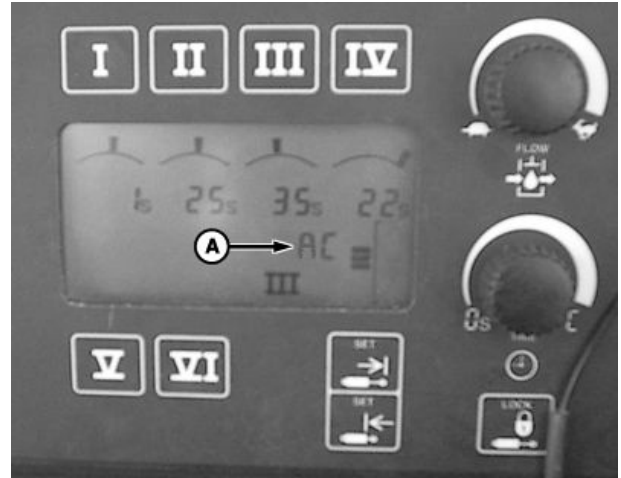


PC13427 —UN—25APR11

- A—Max Cut drop-down menu
- B—Set Max Cut Here
- C—Set Max Cut Down
- D—Shift Max Cut Up
- E—Back button

### Basic Operation

- SCV controller is set to AC mode (Actively Controlling) by placing SCV into detent position.
- Adjust hydraulic flow to change control speed.
- iGrade calculates an elevation error using the location of the StarFire RTK GPS receiver(s) in relation to a desired elevation set up by the operator.
- When auto control is *enabled* and *activated*, and *if* the implement requires height adjustment to bring it back on desired grade, a signal is sent from iGrade, through the Application Controller harness, to the tractor SCV controller.
- The SCV controller communicates instructions for sending hydraulic fluid to the implement control cylinder.
- This entire process returns to the first step to continually monitor for any implement elevation error. Constant adjustments are made to keep the implement on desired grade.



SCV Controller Set in AC Mode

A—SCV Controller Set in AC Mode

PC12522 —UN—31MAR10

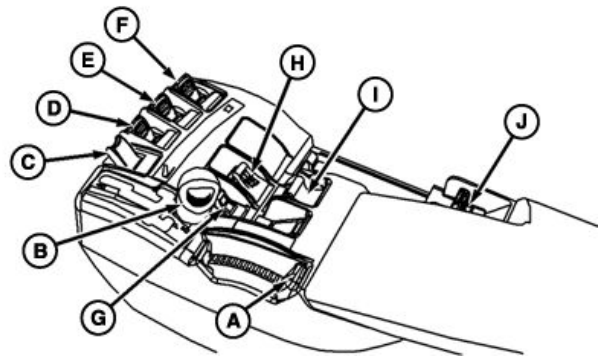
CZ76372,000023A -19-18NOV10-1/2

Move SCV lever to forward detent to start automatic control.

Verify that EC turns AC on the command center.

Move SCV lever in any direction to stop automatic control or to control manually.

- |  |   |
|--|---|
| A—Engine Speed Control/Hand Throttle   | F—SCV III Control Lever                     |
| B—Speed Control Lever (IVT Equipped Tractors) or Shift Lever (PST Equipped Tractors) | G—IMS Sequence Switch                       |
| C—Hitch Command Lever  | H—AutoTrac Resume Switch                    |
| D—SCV I Control Lever  | I—Rear PTO Switch                           |
| E—SCV II Control Lever   | J—SCV IV Lever or Front Hitch (If equipped) |



PC12493 —UN—02MAR10

CZ76372,000023A -19-18NOV10-2/2

# Engaging iGrade

## Engaging iGrade

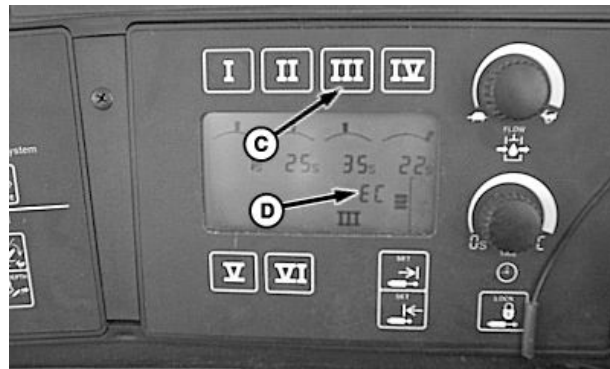
1. Set up control type display.
2. Using SCV controls, press SCV lever (A) to detent position to activate elevation control.
3. Select SCV button (C) on right-hand display.
4. Verify that "EC" (manual SCV control) on Right-Hand Display (D) changes to "AC" (auto SCV control).

**IMPORTANT: iGrade will begin acquiring desired elevation immediately after SCV is placed into detent assuming the machine is moving greater than 0.5 kph and the control type has been properly set up.**

A—SCV Control Lever      C—SCV Selection Button  
B—AutoTrac Resume Switch      D—SCV Right-Hand Display



PC12212—UN—18AUG09



PC12211—UN—10SEP08

JS56696.00007BD -19-24MAY10-1/1

# Remote Control—Surface Water Pro Plus

## Theory of Operation

SurfaceWater Pro Plus is an advanced ditching program that generates a “best fit drain.” SurfaceWater Pro Plus calculates the most effective drain in a field while moving the least amount of soil. This information is generated from vertical GPS signals calculated from the StarFire receiver. SurfaceWater Pro Plus requires a RTK enabled receiver on the implement and SF2 or RTK enabled on the vehicle receiver.

The automation upgrade or remote control functionality adjusts the scraper height while making a cut in advance

ditching operations. This Remote Control feature automatically controls the blade height to a desired elevation calculated by the display matching the visual commands used for manual SurfaceWater Pro Plus operation.

*NOTE: If using SF2 on the vehicle, Distance Trip will not function and Max Cut must be disabled.*

BA31779,00002A4 -19-11OCT11-1/1

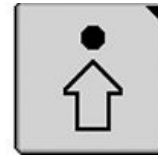
## Control Selection

1. Select SETUP softkey.
2. Select CONTROL SELECTION button.
3. Select REMOTE CONTROL from SCV1 control drop-down menu.

*NOTE: Remote Control is only available for SCV1 and will only work with one scraper. Turn other SCV off.*

4. Select BACK button.

PC12961 —UN—29AUG11

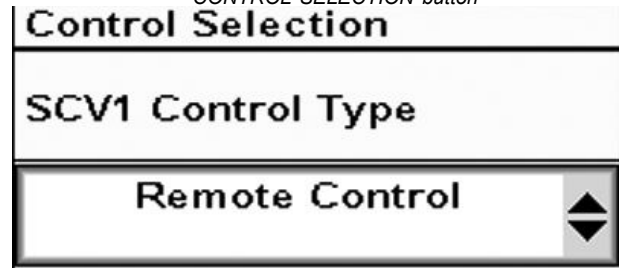


SETUP softkey

PC13428 —UN—20APR11



CONTROL SELECTION button



REMOTE CONTROL drop-down menu

PC13430 —UN—20APR11



BACK button

PC13589 —UN—11MAY11

JS56696,00009A0 -19-11MAY11-1/1

**Offsets**

1. Select MAIN softkey.
2. Select REMOTE CONTROL MAIN button.

After SCV(s) have been placed in detent and AC enabled, the display will control blade height to grade as shown on the display.

- Offsets may be entered for Remote Control. Offsets are based on designed ditch, not ground level (distance off grade, not a maximum cut limit).
- Offsets are changed in increments.
- Useful when pan is attempting to cut too much.
  - Shift offset up (B) to achievable cut and shift back to 0 over subsequent passes.
- Set Offset—Zero Error (A) takes the current error and applies it as an offset to the designed ditch.

*NOTE: Offsets can be placed both in Remote Control Main and also SWP+ but are 2 separate offsets. If system is not cutting to grade, check both offsets.*

A—Set Offset—Zero Error      C—Shift Offset Down  
 B—Shift Offset Up

PC13072 —UN—16NOV10

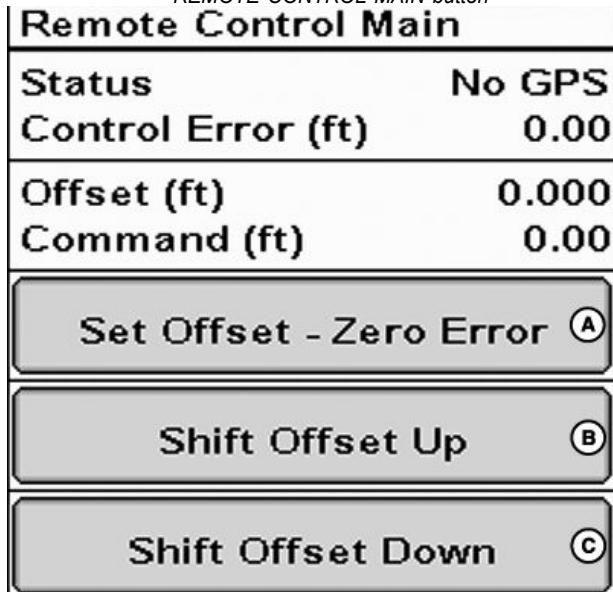


MAIN softkey

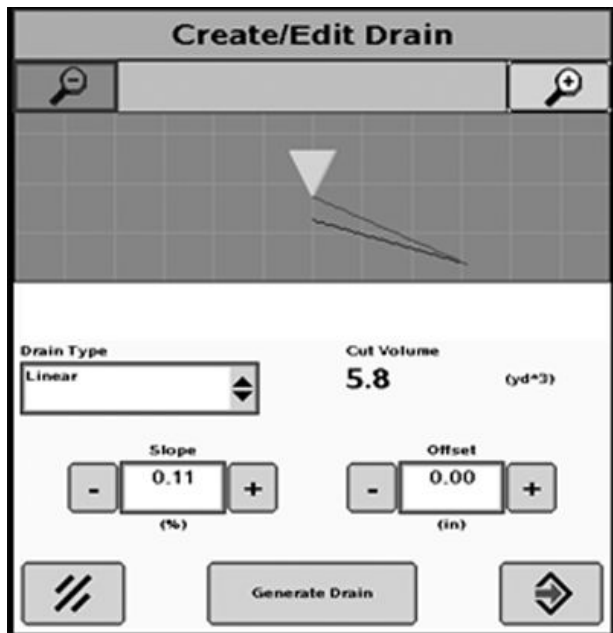
PC13437 —UN—21APR11



REMOTE CONTROL MAIN button



PC13436 —UN—25APR11



CREATE/EDIT DRAIN

PC12524 —UN—23MAR10

JS56696,00009A1 -19-25APR11-1/1

# Remote Control—Serial Port

## Theory of Operation

The John Deere Application Controller allows the ability to connect with 3rd Party Software through the use of a serial connection. This functionality may be useful if you currently use an additional software package to provide capabilities such as cut/fill mapping and would like the John Deere Application Controller to connect and communicate with this software. After a serial connection

is established, the 3rd Party Software can send setpoint commands that the Application Controller will use to automatically control elevation on an implement. This is accomplished using the serial port on the controller and the operation specific message protocols. The controller is also capable of retransmitting GPS data to the third party software using the same serial port, eliminating the need for an additional connection.

JS56696,00009A2 -19-25APR11-1/1

## Message Definition

The John Deere Application Controller can use two types of command messages.

### Elevation Setpoint

The 3rd Party software can send a commanded elevation to the Application Controller. The implement will be controlled such that the implement receiver elevation attempts to match the setpoint elevation. The message protocol is as follows:

\$JD,ELEV, 274.32 Carriage Return

Where the elevation value is in meters and can handle two decimal places. Ensure that there are no spaces and that the carriage return ends the message.

### Depth Setpoint

The 3rd Party software can send a commanded depth to the Application Controller. The implement will be controlled such that the implement receiver elevation attempts to match the setpoint depth. When using this mode a machine receiver will be needed to calculate the elevation of the ground surface. Offsets will need to be used to account for height differences between the machine and implement receivers. The message protocol is as follows:

\$JD,DEPTH, 1.54 Carriage Return

Where the depth value is in meters and can handle two decimal places. Ensure that there are no spaces and that the carriage return ends the message.

CZ76372,0000236 -19-15NOV10-1/1

## Serial Port Hardware

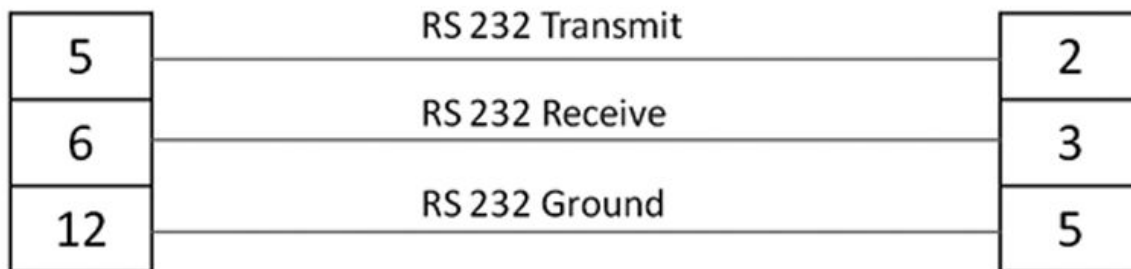
### Parts List

Qty.	Part Number	Description
1	57M9804	Mating Connector to Controller Harness
3	57M8164	Pins for 57M9804
1	—	DB9 Female Connector Assembly
3	—	2.5 m (8 ft) of 0.5 mm <sup>2</sup> (20 AWG) wire

57M9804



DB9 Female



Serial Port Wiring Pinouts

PC13069—UN—15NOV10

JS56696,00009A4 -19-26APR11-1/1

## Serial Port Setup

PC12961 —UN—29AUG11

1. Select SETUP softkey.
2. Select SERIAL PORT SETUP Button.
3. Select Baud Rate from the drop-down menu (A).

- 4800
- 9600
- 19200
- 38400

*NOTE: Baud Rate is the data transfer rate that will be used for commands from 3rd party software as well as GPS position data going to the 3rd party software if applicable.*

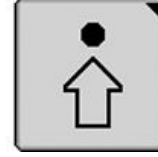
4. If utilizing Application Controller to retransmit StarFire implement position data via the serial port, select the NMEA messages needed by the 3rd party software from the drop-down menu (B).

- NO NMEA
- NMEA GGA
- NMEA GGA, GSA
- NMEA GGA, GSA, RMC
- NMEA ALL

*NOTE: If not using Application Controller to send StarFire implement position data via the serial port, select NMEA Off.*

5. If utilizing the Application Controller to retransmit StarFire implement position data via the serial port, select data frequency needed by 3rd party software from the drop-down menu (C).

- 1 Hz
- 5 Hz

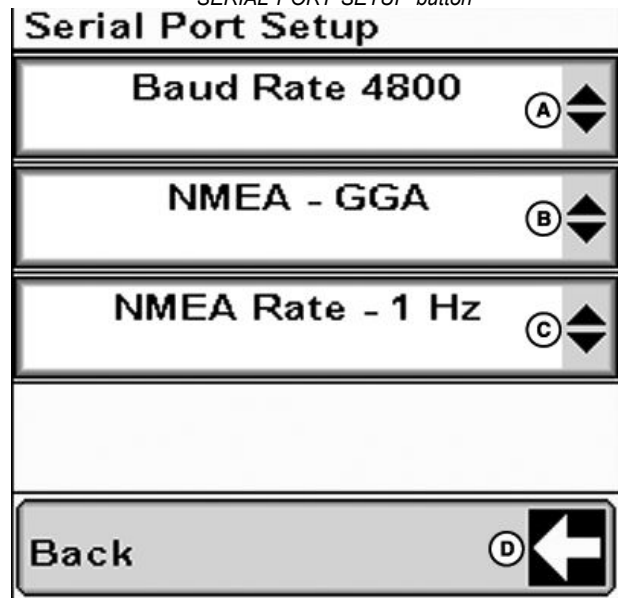


SETUP softkey

PC13438 —UN—29AUG11



SERIAL PORT SETUP button



A—Baud Rate drop-down menu  
B—NMEA Message drop-down menu

C—NMEA Rate drop-down menu  
D—Back button

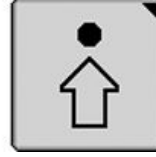
PC13438 —UN—26APR11

JS56696,00009A3 -19-12MAY11-1/1

### Control Selection

PC12961 —UN—29AUG11

1. Select SETUP softkey.
2. Select CONTROL SELECTION button.
3. Select REMOTE CONTROL from SCV1 control drop-down menu (A).



SETUP softkey

*NOTE: Remote Control is only available for SCV1 and will only work with one scraper. Turn other SCV off.*

PC13445 —UN—21APR11

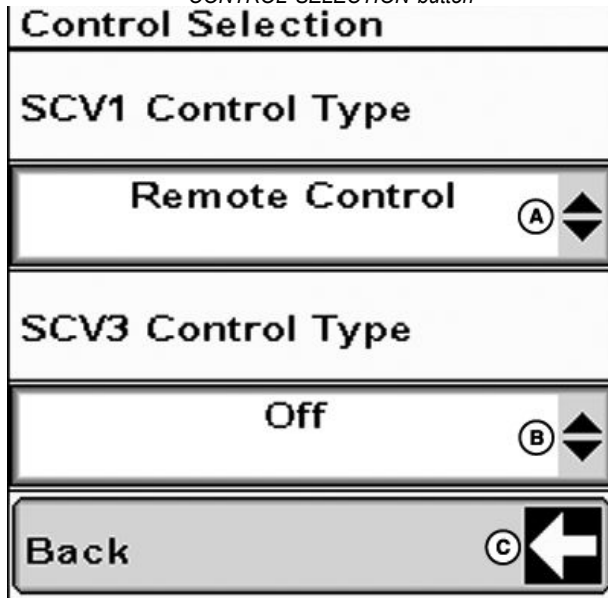
4. Select Back button (C).

A—SCV 1 Control Type  
B—SCV 3 Control Type

C—Back button



CONTROL SELECTION button



PC13446 —UN—26APR11

JS56696,00009A5 -19-27APR11-1/1

**Offsets**

After SCV(s) have been placed in detent and AC enabled, the display will control implement as desired.

- Offsets may be used for Remote Control. Offsets are based on the desired command from the 3rd party software.
- Offsets are changed in increments.
- Useful when implement is attempting to control an elevation that the machine cannot attain.
  - Shift offset up (B) to achievable elevation and shift back to 0 over subsequent passes.
- Set Offset—Zero Error (A) takes the current error and applies it as an offset to the desired command.

A—Set Offset—Zero Error      C—Shift Offset Down  
 B—Shift Offset Up

Remote Control Main	
Status	No GPS
Control Error (ft)	0.00
Offset (ft)	0.000
Command (ft)	0.00
Set Offset - Zero Error (A)	
Shift Offset Up (B)	
Shift Offset Down (C)	

PC13436—UN—25APR11

JS56696,00009A6 -19-27APR11-1/1

# Grade Control

## Theory of Operation

Grade Control will control the system to a given slope over a GPS distance. System will control to a desired grade based on distance traveled. Direction of travel does not affect grade. Operation can be performed during uphill or downhill operation. The slope causes an increase in

elevation over a given distance for uphill operations and downhill decreases in elevation.

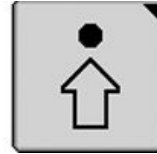
Example, if 5% downhill slope is selected, scraper blade elevation drops 1.5 m (5 ft.) for every 30.5 m (100 ft.) traveled regardless of direction.

JS56696,00009A7 -19-26APR11-1/1

## Grade Calculator

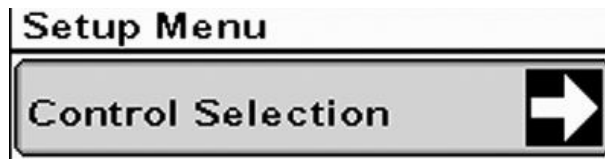
1. Select SETUP softkey.
2. Select CONTROL SELECTION button.
3. Select Grade Control for SCV1 (or SCV1 and SCV3 for dual scrapers).
4. Select MAIN softkey.
5. Select GRADE CONTROL SETUP.

PC12961 —UN—29AUG11

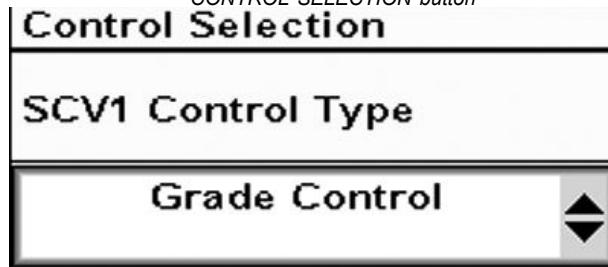


SETUP softkey

PC13445 —UN—21APR11



CONTROL SELECTION button



GRADE CONTROL drop-down menu

PC13072 —UN—16NOV10



MAIN softkey

PC13591 —UN—11MAY11



GRADE CONTROL SETUP button

Continued on next page

JS56696,00009A8 -19-27APR11-1/2

6. Enter Slope (A) if known.




Grade Calculator (B) will record a series of points and will calculate the slope needed to connect the end points of the recorded path.

*NOTE: Operator must drive the same path during operation as recorded with the Grade Calculator. If the same path is not driven the final elevation may not match the desired or recorded elevation due to the different distance traveled. Make sure scraper remains in a constant position during data collection (for example: all the way up).*

- Select Start Grade Calculator (D) to reset Grade Calculator and clear any previous data and take start position.
- Drive to end position and select Stop Grade Calculator (D).
- Grade Statistics will be given on screen.
- Select Set as Grade Control Slope (E) if data appears correct.

**IMPORTANT: Be sure to use front scraper or SCV1 to define grade.**

- |                        |                                      |
|------------------------|--------------------------------------|
| A—Slope                | D—Select Start/Stop Grade Calculator |
| B—Grade Calculator     | E—Set as Grade Control Slope         |
| C—Load Parameter Setup | F—Back button                        |

Grade Control Setup	
Grade Control Status	SCV 1 Cycle Power
Grade Length (ft)	0
GPS Altitude (ft)	0.00
Slope (%)	0.0000 <b>(A)</b>
<b>Grade Calculator</b> <b>(B)</b> 	
<b>Load Parameter Setup</b> <b>(C)</b> 	
Grade Calculator	
<b>Start/Stop Grade Calculator</b> <b>(D)</b>	
<b>Set as Grade Control Slope</b> <b>(E)</b>	
Downhill Grade %	0.0000
Grade Length (ft)	0
Max Cut (ft)	0.00
Max Fill (ft)	0.00
<b>Back</b> <b>(F)</b> 	

PC13483 —UN—26APR11

PC13484 —UN—26APR11

JS56696,00009A8 -19-27APR11-2/2

**Selecting Grade**

- Select Grade Direction (C) (Up Hill or Down Hill).
- Move pan to a point on the grade and select Start Grade button (A).
- When pan is full, select Pause button (B) to stop grade and empty pan.
- After returning, select resume to continue the defined grade.

*NOTE: Uphill is a positive slope and downhill is a negative slope.*

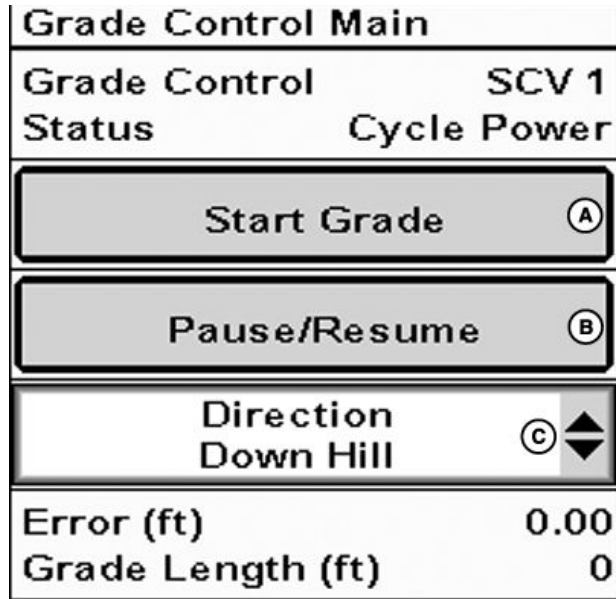
A—Start Grade                      C—Grade Direction  
 B—Pause/Resume

PC13072 —UN—16NOV10



MAIN softkey

PC13592 —UN—11MAY11



PC13485 —UN—26APR11

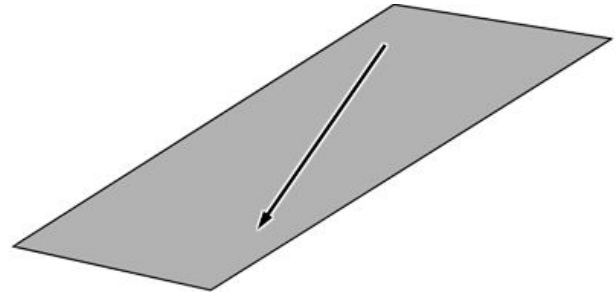
JS56696,00009A9 -19-11MAY11-1/1

# Plane Control

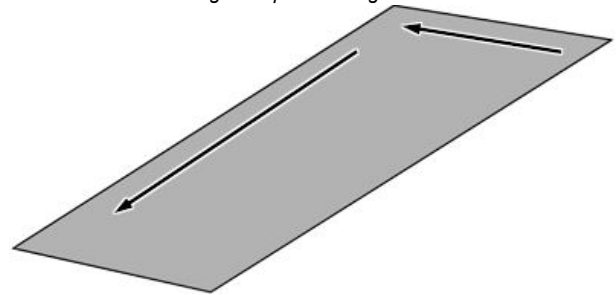
## Theory of Operation

Plane Control automatically controls the scraper to cut to an elevation on an operator defined plane. The operator defined planes can be a single sloped plane (constant slope in 1 direction) or a dual sloped plane (slopes in 2 directions). The system will define plane based on operator inputs (slope and direction) for a set origin point on the plane. The system allows the operator to set up two independent planes that can be used as a cut and a fill plane.

The system can also create a best fit plane using the Plane Calculator based on elevation recorded data. Once all data has been collected, a best fit plane is create. The system then controls the plane defined by the plane calculator.



Single Slope 160 degrees .012%



Dual Slope 90 degrees .00012% 180 Degrees .014%

PC12525 —UN—24MAR10

PC12526 —UN—24MAR10

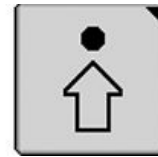
JS56696,00009AD -19-26APR11-1/1

## Control Selection

1. Select SETUP softkey.
2. Select CONTROL SELECTION Button.
3. Select Plane Control from SCV1 Control Type drop-down menu.

*NOTE: For ease of instruction this manual will use SCV 1 for the iGrade system. Turn other SCV Controls to OFF unless using dual scrapers.*

PC12961 —UN—29AUG11

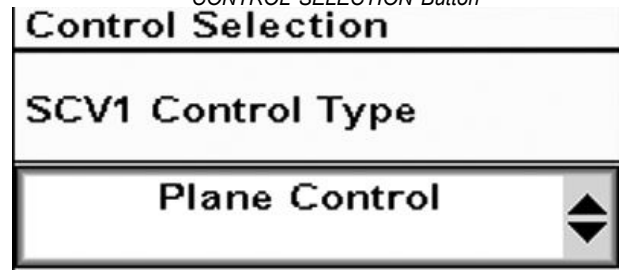


SETUP softkey

PC13445 —UN—21APR11



CONTROL SELECTION Button



SCV Control Type

PC13449 —UN—21APR11

JS56696,00009AE -19-26APR11-1/1

### Select Active Plane

1. Select MAIN softkey.
2. Select PLANE CONTROL SETUP button.
3. Select active plane from Plane Control Setup drop-down menu.

*NOTE: Both SCVs control same active plane if same control type is selected for both SCVs.*

PC13072 —UN—16NOV10



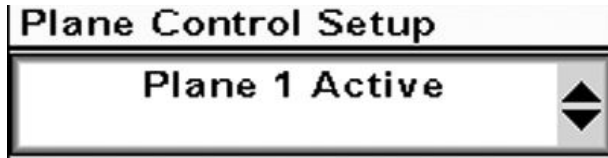
MAIN Softkey

PC13450 —UN—21APR11



PLANE CONTROL SETUP button

PC13451 —UN—21APR11



PLANE CONTROL SETUP

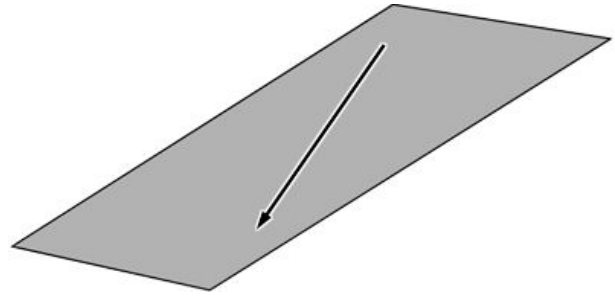
JS56696,00009AF -19-26APR11-1/1

### Single Slope Plane

1. Select the Plane that you wish to define.
2. Select Single Slope Entry button from Plane Control Setup page.
3. Enter plane slope (A) and direction (B) (if known).
4. Drop scraper to a point on plane and press Set Plane Origin button (C). The plane is created at the elevation of the set origin.

*NOTE: If running dual scrapers, use the front scraper (SCV1) to set plane origin.*

A—Slope  
 B—Down Slope Direction  
 C—Set Plane Origin button



Single Slope 160 degrees .012%

**Plane Control Setup**

Plane 1 Active

Single Slope Entry

PLANE CONTROL SETUP

Single Slope Entry

Slope (%)	0.0000 <sup>(A)</sup>
Down Slope Direction (deg)	0.00 <sup>(B)</sup>

Set Plane Origin <sup>(C)</sup>

PC12525 —UN—24MAR10

PC13452 —UN—21APR11

PC13453 —UN—26APR11

JS56696,00009B0 -19-26APR11-1/1

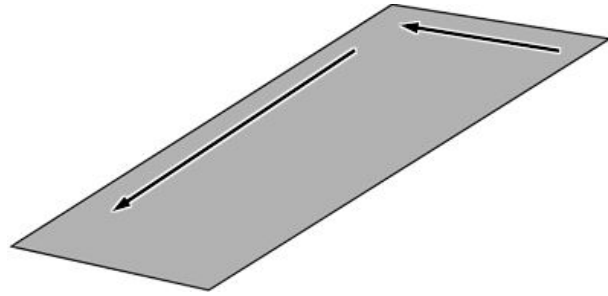
### Dual Slope Plane

1. Select Plane to define.
2. Select Dual Slope Entry button from Plane Control Setup page.
3. Select Dual Slope Input button.
4. Enter plane slope (A and C) and direction in two directions (B and D) (if known).
5. Select Dual Slope Setup button to return to Dual Slope Entry page to set plane origin.
6. Drop scraper to a point on the plane and press Set Plane Origin button. The plane is created at the elevation of the set origin.

*NOTE: If running dual scrapers, use the front scraper (SCV1) to set the plane origin.*

*NOTE: Slope direction allows operators to define desired direction of slopes in relation to each other. Slope directions can be at any angle to one another.*

- A—Slope1
- B—Down Slope Direction1
- C—Slope2
- D—Down Slope Direction2
- E—Back button

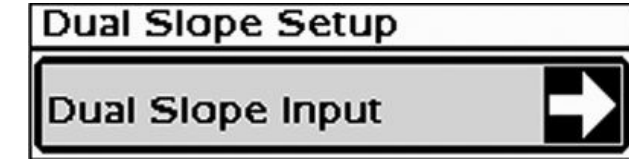


Dual Slope 90 degrees .00012% 180 Degrees .014%

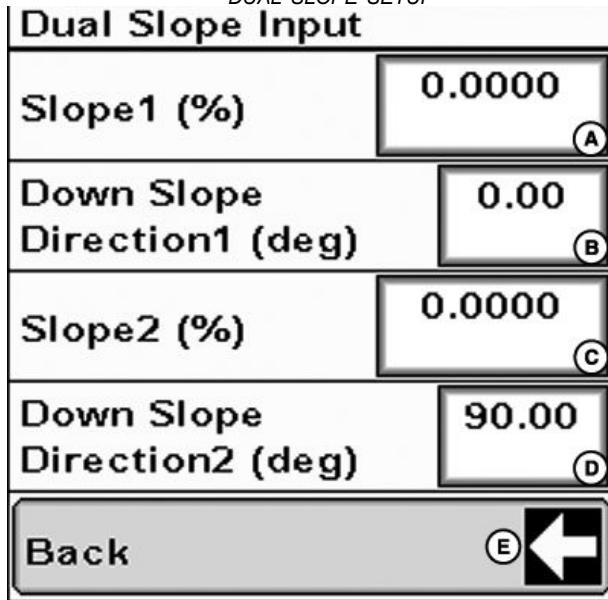


PLANE CONTROL SETUP

PC13456 —UN—21APR11



DUAL SLOPE SETUP



DUAL SLOPE INPUT

JS56696,00009B1 -19-26APR11-1/1

PC12526 —UN—24MAR10

PC13454 —UN—21APR11

PC13455 —UN—26APR11

## Plane Calculator

### Theory of Operation

Plane calculator records a series of elevation points (approximately every 1.5 m (5 ft.)) and stores elevation data. When data collection is turned off, iGrade generates a best fit plane and displays calculated slope and direction. If the given slope and direction look realistic, select Save to Active Plane button. Data can be continuously recorded by leaving Data Collection ON or only recorded at desired points of interest by turning Data Collection OFF between points to generate the best fit plane.

If calculated plane does not appear correct, collect and save more data points to active plane or plane data can be cleared and collection restarted. Plane created will be displayed in both the Single and Dual Sloped Entries pages.

### Tips

- Use front scraper and SCV1 to define plane.
- Collecting more points results in better accuracy.
- Scatter data points (don't drive in straight line unless collecting data from the entire area).
- Continuous recording or only points of interest.
- Clear plane data at the start of every new plane. If old data is not cleared, it will be applied to current plane.
- Edit calculated plane information if needed through the Single or Dual Slope entry pages after the created plane has been saved to the active plane.
- Make sure scraper remains in a constant position during data collection (i.e. all the way up or constant position).
- Plane Calculator assumes a 1:1 cut-fill ratio.
- Plane Calculator calculates a plane origin based on the height of the implement receiver during data collection. This origin can be shifted to an actual on-grade point by using the Set Plane Origin button in either Single Slope or Dual Slope Entry pages or by using offsets.

1. Select Plane Calculator.
2. Clear Plane Data (A) if new plane.
3. Turn Data Collection On (B) and gather data.

PC13486 —UN—26APR11

The screenshot shows the 'Plane Control Setup' screen. At the top, there is a header 'Plane Control Setup'. Below it is a large button labeled 'Plane Calculator' with a right-pointing arrow. Underneath, the text 'Plane Control Setup' is repeated. The main display area shows 'Plane Calculator' with two data fields: 'Slope (%)' set to '0.0000' and 'Direction (deg)' set to '0.00'. Below these fields are four buttons: 'Clear Plane Data' (labeled A), 'Start Data Collection' (labeled B), 'Save to Active Plane' (labeled C), and 'Back' (labeled D) with a left-pointing arrow.

A—Clear Plane Data  
B—Stat Data Collection

C—Save to Avtive Plane  
D—Back button

4. Turn off data collection and review calculated slope and heading.
5. If correct, select Save to Active Plane (C) to accept and enter plane information in both Single and Dual Slope Entry pages for selected active plane.

JS56696,00009B2 -19-26APR11-1/1

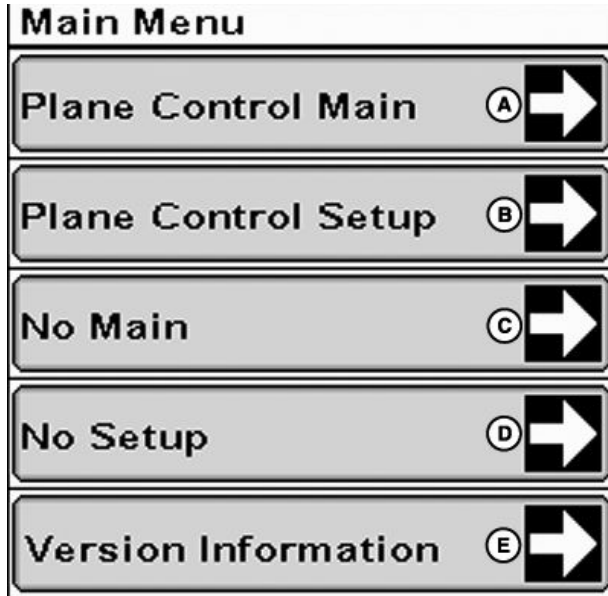
PC13487 —UN—26APR11

### Dual Scraper

- Select the same control type for each SCV.
- Plane setup may be completed through either control, but only one plane will be used for both scrapers.
- The front scraper (SCV1) must be used for Plane/Grade Calculators and to set plane origins.
- Dual Scrapers are only possible for Plane Control, not for Grade Control.

A—SCV1 Main  
 B—SCV1 Setup  
 C—SCV1II Main

D—SCV1I1 Setup  
 E—Version Information



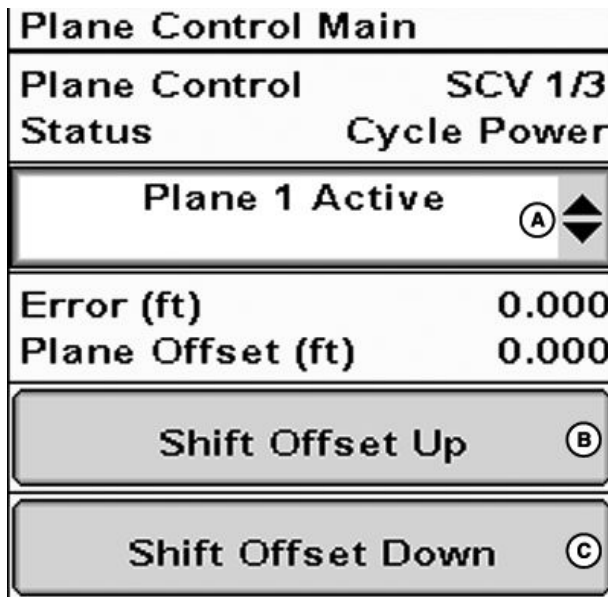
PC13488—UN—26APR11

JS56696,00009B3 -19-26APR11-1/1

### Operation

1. Select active plane (A).
2. Use shift offset buttons (B, C) to adjust designed plane.
  - When pan cut is too aggressive, select shift offset up button (B) to obtain an achievable cut. Shift offset back to 0.00 on subsequent passes.
  - When pan cut is not aggressive enough, select shift offset down button (C) to obtain an achievable cut. Shift offset back to 0.00 on subsequent passes.
  - Plane shift offsets are based on previously designed plane, not ground level. Offsets shift entire plane up or down.

A—Active Plane drop-down      C—Shift Offset Down  
 B—Shift Offset Up



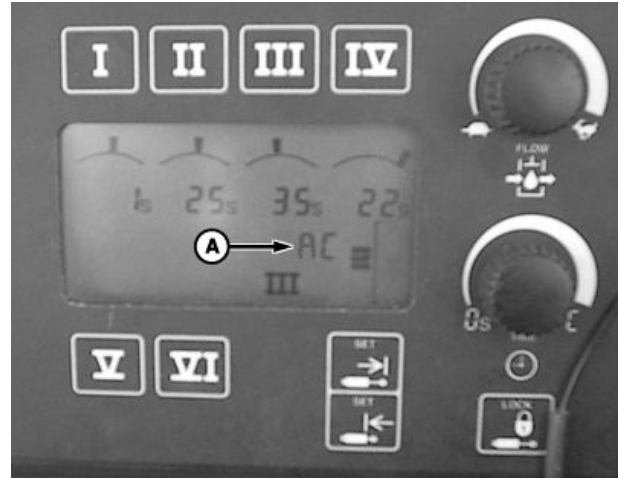
PC13489—UN—26APR11

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JS56696,00009B4 -19-26APR11-1/2

iGrade will cut to active plane as long as tractor is in AC mode. When scraper is full, raise scraper, dump, and place tractor back in AC mode. iGrade will return blade elevation to active plane.

**A—SCV Controller Set in AC Mode**



SCV Controller Set in AC Mode

JS56696,00009B4 -19-26APR11-2/2

PC12522 —UN—31MAR10

# Distance Trip

## Theory of Operation

Distance Trip control type collects GPS distance and cycles the SCV controller based off of a predetermined interval. The controller calculates where the trip needs to occur based off of a furrow heading in degrees and the

distance between furrows. This allows for the direction of travel to be at varying angles to the furrow. Distance Trip operation requires a RTK-enabled vehicle and machine receiver. Distance Trip works off of GPS distance, not elevation.

BA31779,00002A5 -19-11OCT11-1/1

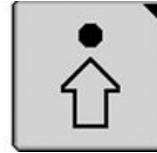
## Selecting Distance Trip

1. Select SETUP softkey.
2. Select CONTROL SELECTION button.
3. On drop-down menu for SCV1, select DISTANCE TRIP. For the other SCV select OFF.

*NOTE: Distance Trip is only available on SCV1.*

*If using SF2 on the vehicle, Distance Trip will not function and Max Cut must be disabled.*

PC12961 —UN—29AUG11



SETUP softkey

PC13428 —UN—20APR11



Setup Menu

PC13462 —UN—21APR11



DISTANCE TRIP

BA31779,00002A6 -19-11OCT11-1/1

### Setting Trip Distances

1. Select MAIN softkey.
2. Select DISTANCE TRIP SETUP button.

Furrow Heading refers to the angle or heading of the in field furrows in reference to North (0 degrees), not travel direction.

A—Furrow Heading  
B—Interval Distance

C—GPS Offset to Implement  
D—Implement Width

PC13072 —UN—16NOV10



MAIN Softkey

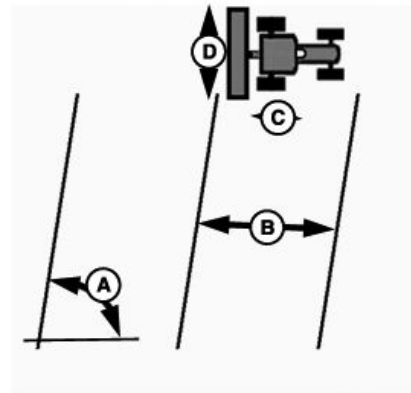
PC13463 —UN—21APR11



Main Menu

Distance Trip Setup	
Furrow Heading (deg)	75 <span style="float: right;">(A)</span>
Interval Distance (ft)	6.561 <span style="float: right;">(B)</span>
GPS Offset to Implement (ft)	11.000 <span style="float: right;">(C)</span>
Implement Width (ft)	15.000 <span style="float: right;">(D)</span>

PC13464 —UN—27APR11



Distance Trip Setup

PC10857WC —UN—26APR10

JS56696,0000998 -19-21APR11-1/1

### Initiating Trip Cycle

1. Select MAIN softkey.
2. Select DISTANCE TRIP MAIN button.

**Trigger First Trip**—Cycles SCV controller and sets current locations as origin point to calculate distance.

**Manual Trip**—Cycles SCV without distance setup or setting current point as origin.

**Left or Right Furrow Position**—Allows iGrade to calculate the correct GPS distance based off which side of implement furrow is located to trip implement.

A—Trigger First Trip  
B—Manual Trip

C—Furrow Position Right

PC13072 —UN—16NOV10



MAIN Softkey

PC13465 —UN—21APR11



Distance Trip Main



PC13500 —UN—27APR11

JS56696,0000999 -19-21APR11-1/1

### Adjusting Trip Cycle

**Stop Tripping**—stops measuring distance and tripping SCV

**Trip Earlier / Later**—shifts preset trip interval to occur sooner or later but does not increase or decrease interval distance.

Each press of the Earlier/Later buttons will change the trip distance by 5 cm (approximately 2 in.).

A—Stop Tripping  
B—Trip Earlier

C—Trip Later



PC13501 —UN—27APR11

JS56696,0000999A -19-27APR11-1/1

# Disconnecting iGrade

## Disconnecting the iGrade System

*NOTE: If an electronic failure occurs, hydraulic control can be set to operate in normal, manual mode.*

*Without electronic control, automatic implement height adjustments are not possible.*

### Disconnection Procedure for Changing Tractor or Implement:

1. Shut OFF machine, set parking brake, and remove key.
2. Disconnect implement receiver harness at ISO 9 pin connector (A).
3. Disconnect constant power harness (harness not shown).

*NOTE: Once completed, tractor SCV control will revert to normal manual operation.*

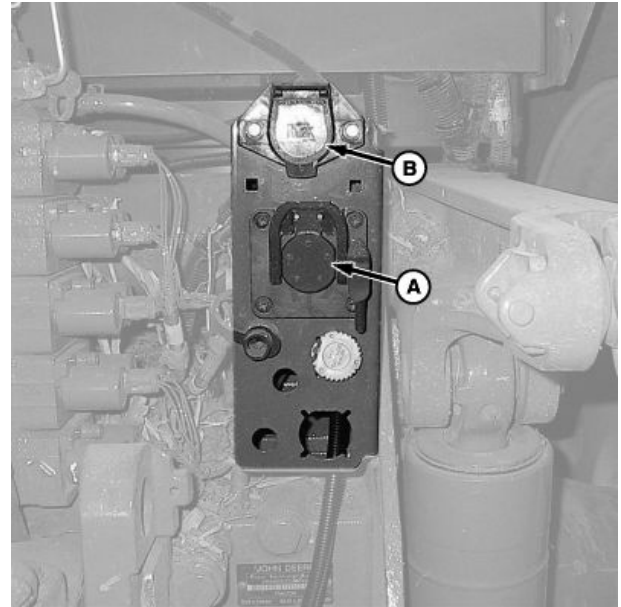
4. Disconnect lighting connector (B) and all other implement connections related to releasing equipment from tractor.

### Disconnection Procedure for Electronic Failure:

- On Application Controller *Setup Menu*, select CONTROL SELECTION.
- On CONTROL SELECTION drop-down menu, select OFF.
- After OFF has been selected, cycle vehicle power and iGrade will be disabled.

### Disconnection Procedure for Permanent Removal:

- Shut OFF machine, set parking brake, and remove key.



Rear of Tractor Shown

A—ISO Connector

B—Lighting Connector

- Disconnect Application Controller from rear of ISO connector.
- Remove controller and components following procedures in Application Controller installation instructions.

PC12191—JUN—05OCT09

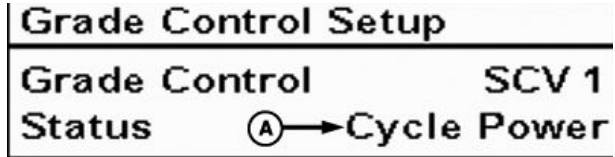
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# Troubleshooting

## Troubleshooting—iGrade System

PC13502 —UN—27APR11

A—Status Code Location



Status Code	Description	Solution
No GPS	No GPS visible on system at location specified in control selection area for this SCV. Indicates status of both implement receivers when using multiple control types. If both receivers do not have GPS signal, the Status will be No GPS.	Change control selection for GPS to correct location or install GPS.
Cycle Power	Controller must be restarted to communicate with new function.	Shut OFF tractor and start again.
No RTK	No RTK correction seen on selected GPS, or RTK not currently available. Indicates status of both implement receivers when using multiple control types. If both receivers do not have GPS signal, the Status will be No GPS.	Activate RTK on implement GPS and/or machine GPS.
Update GPS SW	Incompatible software loaded.	Update software on GPS implement receiver(s) to compatible version.
OK	System is ready to be operated. Any faults still occurring are likely to be independent of iGrade control system and on tractor or implement.	System is working properly.

Symptom	Problem	Solution
<b>Monitor Screen not Readable on hookup to Machine</b>	No communications with implement controller.	<p>Shut OFF power, check connections, and power up to reboot system.</p> <p>Check 4 pin DEUTSCH connector at back of ISO implement connector on tractor for cleanliness and proper attachment.</p> <p>Verify connector at head of implement is seated and tight.</p>
<b>Paused</b>	Shows current state of Grade Control.	Grade Control is currently paused. Either restart or resume operation.
<b>No Remote Cmds</b>	Display is not set up to send proper elevation error from SurfaceWater Pro Plus.	Make sure that display software is up-to-date or that SurfaceWater Pro Plus is set up correctly.

JS56696,000099B -19-27APR11-1/1

### Troubleshooting — Machine

Symptom	Problem	Solution
<b>AC (Auto Control) not showing on SCV Display</b>	Dirty or loose 10-pin connector at rear of tractor.	Clean connectors and reconnect tightly.  Verify correct control type and SCV are selected in iGrade setup and power has been cycled.
<b>Machine is not adjusting to desired grade.</b>	EC displayed on SCV display.	Push correct SCV control lever into detent to bring up AC mode.
<b>Loss of Display and Operation of Implement</b>	Dirty or loose 4-pin connection at rear of tractor.	Clean connectors and reconnect tightly.
	GreenStar harness improperly connected.	Disconnect harness, clean, and install properly.
	Electrical short in harness.	Check electrical wiring for breaks, shorts, and damage.
<b>Washboarding—scraper overly sensitive and causes washboard effect</b>	SCV's flow rate is too high	Adjust SCV flow rate down.
<b>Control and load limit functionality impaired or limited.</b>	SCV's flow rate is too low	Adjust SCV flow rate up.

JS56696,00007C1 -19-20MAY10-1/1

# Service

## iGrade System

Being an electronic controller, minimal service is required to maintain performance levels. However, John Deere Ag Management Solution's commitment to continued improvement and quality may lead to periodical software updates available for this controller. To maintain optimum performance, these updates should be loaded.

For the GreenStar system, this is accomplished when performing a "live update" using a connection to the StellarSupport™ website ([www.stellarsupport.com](http://www.stellarsupport.com)). Updates, once downloaded, must be loaded onto a USB flash drive (A). After updating the USB flash drive, the next time the flash drive is inserted into the display console (B) the operating system will prompt the operator of available updates. Accepting updates will automatically update iGrade system to the most recent version.



A—USB Flash Drive

B—GreenStar 3 2630 Display Console

PC13509—UN—27APR11

*StellarSupport is a trademark of Deere & Company*

JS56696,00009B5 -19-27APR11-1/1

## EC Declaration of Conformity

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

The person named below declares that

Product: Universal CAN Controller

fulfills all relevant provisions and essential requirements of the following directives:

Directive	Number	Certification Method
Electromagnetic Compatibility Directive	2004/108/EC	Self certified, per Annex II of the Directive

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

Brigitte Birk  
Deere & Company European Office  
John Deere Strasse 70  
Mannheim, Germany D-68163  
EUConformity@johndeere.com

Place of declaration: Urbandale, Iowa U.S.A

Name: John H. Leinart

Date of declaration: 09 April 2010

Title: Engineering Manager, Ag Management Solutions

Manufacturing unit: John Deere Intelligent Solutions Group



DXCE01—UN—28APR09

BA31779,00002F4 -19-23NOV11-1/1

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# John Deere Service Literature Available

## Technical Information

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

Available information includes:

- **PARTS CATALOGS** list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.
- **OPERATOR'S MANUALS** providing safety, operating, maintenance, and service information. These manuals and safety signs on your machine may also be available in other languages.
- **OPERATOR'S VIDEO TAPES** showing highlights of safety, operating, maintenance, and service information. These tapes may be available in multiple languages and formats.
- **TECHNICAL MANUALS** outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in separate component technical manuals
- **FUNDAMENTAL MANUALS** detailing basic information regardless of manufacturer:
  - Agricultural Primer series covers technology in farming and ranching, featuring subjects like computers, the Internet, and precision farming.
  - Farm Business Management series examines "real-world" problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
  - Fundamentals of Services manuals show you how to repair and maintain off-road equipment.
  - Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.



TS189 —UN—17JAN89



TS191 —UN—02DEC88



TS224 —UN—17JAN89



TS1663 —UN—10OCT97

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# John Deere Service Keeps You on The Job

## John Deere Is At Your Service

CUSTOMER SATISFACTION is important to John Deere.

Our dealers strive to provide you with prompt, efficient parts and service:

- Maintenance and service parts to support your equipment.
- Trained service technicians and the necessary diagnostic and repair tools to service your equipment.



## CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

Your John Deere dealer is dedicated to supporting your equipment and resolving any problem you may experience.

1. When contacting your dealer, be prepared with the following information:

- Machine model and product identification number
- Date of purchase
- Nature of problem

2. Discuss problem with dealer service manager.

3. If unable to resolve, explain problem to dealership manager and request assistance.

4. If you have a persistent problem your dealership is unable to resolve, ask your dealer to contact John Deere for assistance. Or contact the Ag Customer Assistance Center at 1-866-99DEERE (866-993-3373) or e-mail us at [www.deere.com/en\\_US/ag/contactus/](http://www.deere.com/en_US/ag/contactus/).

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