

GREENSTAR™ AutoTrac Assisted Steering System



D C Y

OPERATOR'S MANUAL GREENSTAR AutoTrac Assisted Steering System

OMPC20181 Issue K2 (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
(This manual replaces OMPC20160 Issue B2)

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Introduction

Foreword

WELCOME TO GREENSTAR™ PRECISION FARMING SYSTEMS offered by John Deere. The GREENSTAR AutoTrac Assisted Steering system is an integrated precision farming package. AutoTrac and Parallel Tracking systems are intended to aid the operator to more efficiently operate the machine.

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. 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.

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A John Deere ILLUSTRATION® Manual

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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.



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

T81389 -UN-07DEC88

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.



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

TS187 -19-30SEP88

Follow Safety Instructions

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

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 -19-03MAR93-1/1

TS201 -UN-23AUG88

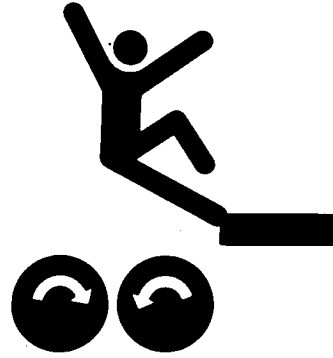
Keep Riders and Children Off Machine

Only allow the operator on the machine. Keep riders off the machine except for periods of training or short periods of observation.

Riders are subject to injury such as being thrown off the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.

Children should never be allowed on the machine or in the machine cab when the engine is running.

The instructional seat should only be used for instruction or short periods of machine observation, and not for the accommodation of children.



TS253 -UN-23AUG88

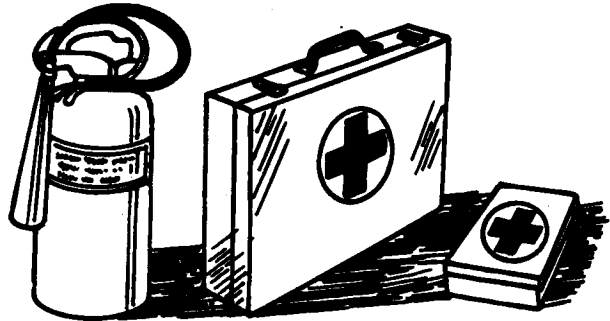
OUO6092,000025F -19-28AUG01-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93-1/1

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, and set the parking brake. 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.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.



TS218 -UN-23AUG88

HX,STSSA,K -19-22JUL99-1/1

General Information

General Information

IMPORTANT: This system is intended to aid the operator to more efficiently operate the machine. The operator must continue to pay attention to the surrounding environment while operating the machine.

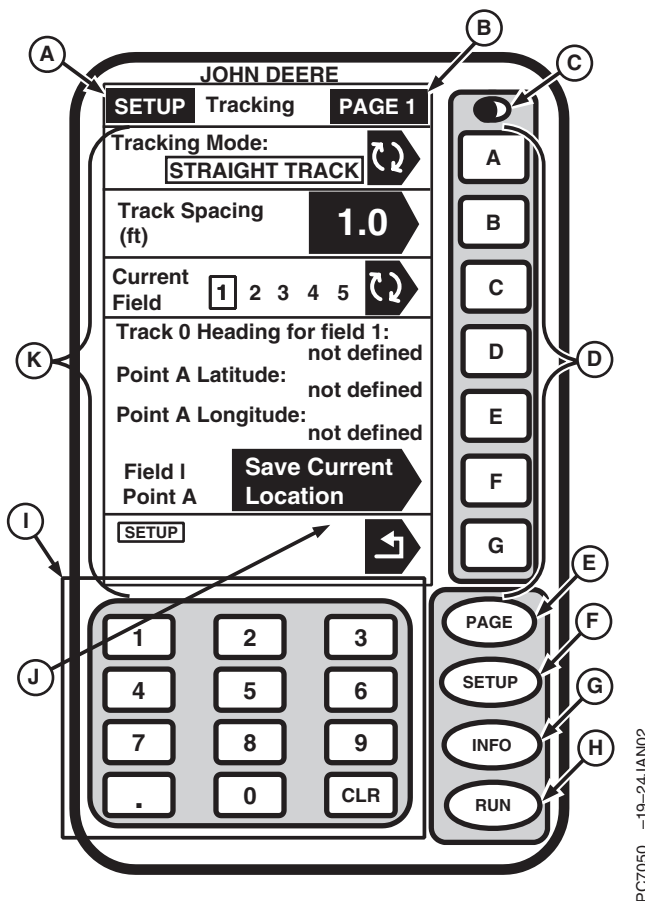
Display screen illustrated on the following pages are provided for reference only. Your actual screens may appear differently due to connection of optional devices and/or software version in use.

NOTE: Before operating the AutoTrac/Parallel Tracking system make sure your KeyCard has the latest software available. To acquire the latest version of software visit the Internet at www.stellarsupport.com, call 1888GRNSTAR or contact your John Deere dealer.

When the GREENSTAR™ system is first installed it will default to yield mapping. See Setup and Program Parallel Tracking System for procedures on reprogramming the system from yield mapping to AutoTrac.

GREENSTAR AutoTrac is an assisted steering system which is only operational on AutoTrac capable machines. AutoTrac KeyCard, GREENSTAR display, mobile processor, and STARFIRE™ position receiver can be moved to another machine with a GREENSTAR harness and full Parallel Tracking functionality will be available. This manual address both AutoTrac and Parallel Tracking systems.

The GREENSTAR Display is a multipurpose display with easy-to-use, menu-driven commands. It has a display area with several information display cells, seven alpha keys (A-G) located to the right of the display cells, a numeric keypad, a PAGE key and three mode select keys (SETUP, INFO and RUN).



- A—Mode Identification: SETUP, INFO or RUN MODE
- B—Mode Page Sequence
- C—Contrast Button
- D—Alpha Button Pad
- E—Advance Screen Page
- F—SETUP Mode Button
- G—INFO Mode Button
- H—RUN Mode Button
- I—Numeric Key Pad
- J—Active Cell
- K—Display Area

An example of each display screen is shown on the following pages. Each screen contains many cells and each cell displays a specific piece of information.

Each information display cell is either active or inactive. Active cells display information that can be changed and are highlighted by a black arrow. Inactive cells just display information and cannot be changed. Pressing the alpha key to the right of an active cell results in one of the following:

- Data in cell may be changed using numeric key pad.
- New menu will appear.
- Process will be started.
- New page will appear.
- The selected item will be changed.

OUO1035,00001F1 -19-06NOV02-2/2

Theory of Operation

IMPORTANT: AutoTrac requires an SF2 differential correction subscription.

Parallel Tracking can be operated with either SF2 or SF1, which are licensed STARFIRE differential correction subscriptions. Parallel Tracking can also be used with WAAS differential correction signal. Optimal system performance can only be achieved with the SF2 correction signal. When using SF2 accuracy may continue to increase after powering up the system.

After powering up a STARFIRE receiver with a SF2 correction subscription, there may be a delay until the receiver switches from SF1 to SF2. There may be a slight shift in position when this change occurs. If the machine was receiving SF2 when it was shut down, the 10 minute delay will not occur unless it has been shut down for longer than three hours.

The static accuracy (over a 24 hour period) of the STARFIRE position receiver is approximately 30 cm (12 in) when using SF2 correction signal 66% of the time. Pass to pass accuracy (over a 15 minute period) is +/- 10 cm, (4 in) 95% of the time when using SF2 correction signal.

The GREENSTAR AutoTrac system provides the operator with easy-to-use menu driven commands. These commands allow operators to customize the system to their specifications.

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OUC1035,000010E -19-10JAN02-1/2

The main display (A) provides a visual indicator (navigation bar) (B) for driving equally spaced parallel paths (straight or Curved Track). The perspective shown is that of the operator sitting in the operator's seat of the machine. The display shows the hood and front wheels of the machine. The line is the closest track. If the navigation bar is shown to the right of the machine, the operator will steer to the right. If the navigation bar is to the left of machine, the operator will steer to the left. In addition to the visual indicator, an audible signal can be used to alert the operator when the machine is off track.

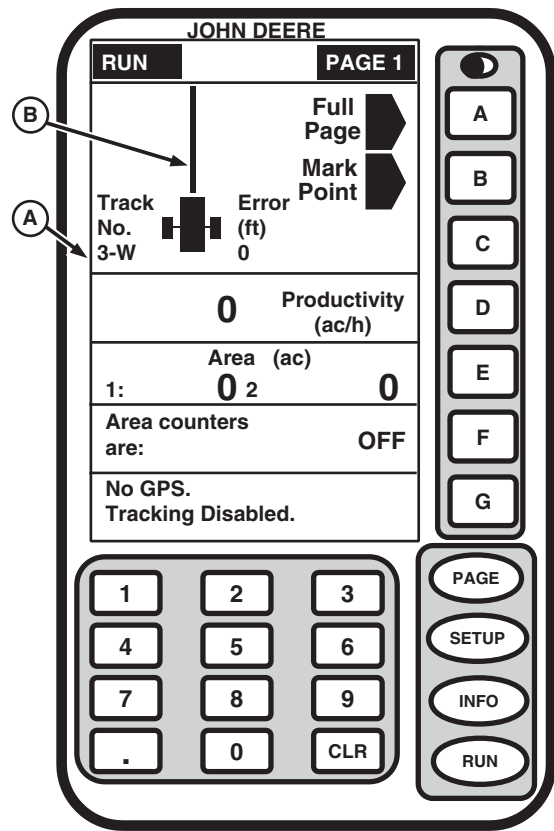
Parallel Tracking can be operated in three modes: straight track, RowFinder and Curved Track.

- Straight Track. Assists the operator in driving straight parallel paths.
- RowFinder. Assists the operator in finding the middle of the next pass in row crop applications.
- Curved Track. Assists the operator in driving curved parallel paths.

Additional features of the system are turning view, mark point, Shift Track, and adjustable tracking tones.

- Turning view assists the operator when turning into a new path.
- Mark Point feature allows storage of up to five locations and provides a visual guide to locate the stored locations.
- Shift Track allows the operator to "move" the A-B lines to the left, right or re-center based on the machines current location.
- Adjustable tracking tones allow the operator to set when the audible signal for off track error will sound.

NOTE: The Parallel Tracking system can be used with either WAAS, SF1 or SF2 correction signal. In order to take full advantage of the accuracy of the system, a SF2 differential correction license is strongly recommended. AutoTrac requires SF2 correction signal to operate.



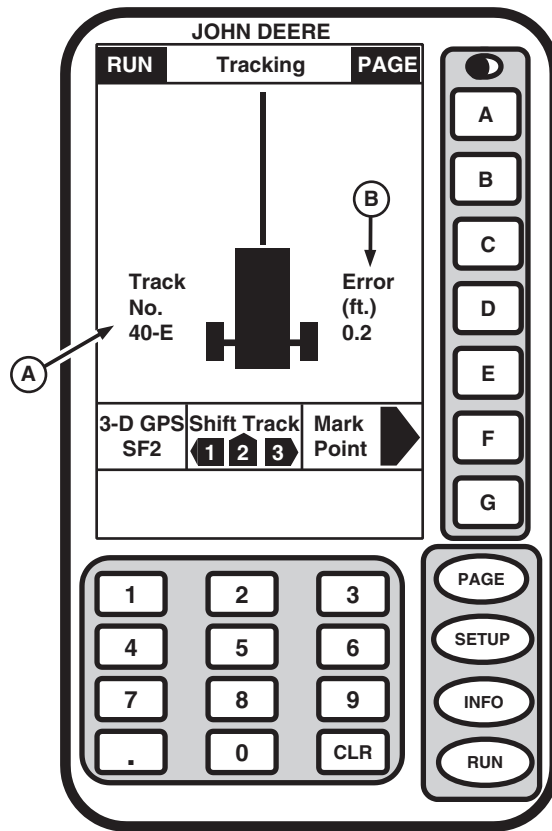
A—Main Display
B—Navigation Bar

PC6797 -19-27AUG01

Straight Track

This mode is used to help guide the machine in a straight line. The perspective shown is that of the operator sitting in the operator's seat of the machine. The display shows the hood and front wheels of the machine and the navigation bar represents the current track that the operator is following. If the navigation bar is shown to the right of the machine, the operator will steer to the right. If the navigation bar is to the left of machine, the operator will steer to the left. In addition to the visual indicator, an audible signal can be used to alert the operator when the machine is off track. The system displays the current track number (A) that the machine is on in relation to track 0 as well as the off track error (B). (See Setup Straight Track section for more information).

A—Current Track
B—Off Track Error



PC7049 -19-31JAN02

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RowFinder

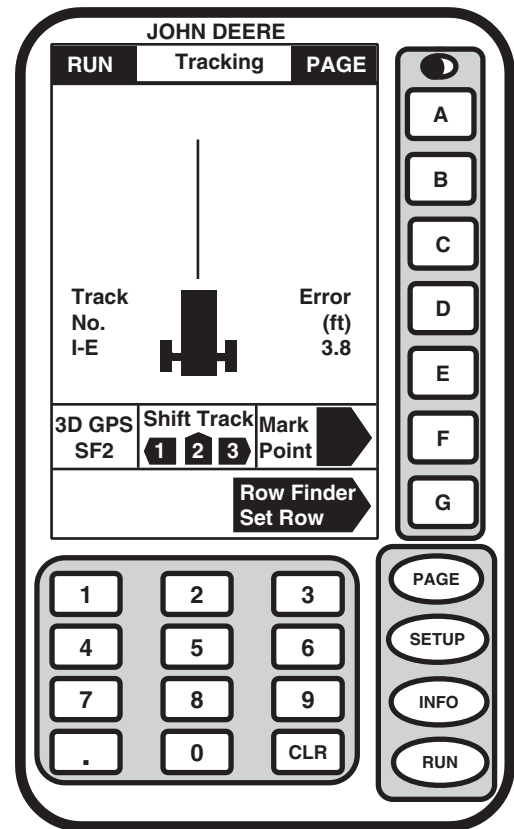
NOTE: Only parallel tracking operates in the RowFinder mode.

This mode allows the operator to create a new track 0 at the end of a pass. Then by using the turning view, the system will guide the operator into the center of the next pass. This option is intended for use in row crop applications where rows are not always equally spaced. RowFinder can be operated in two modes, continuous and turns only. RowFinder is set up under SETUP - Tracking - PAGE 1.

To use RowFinder, the operator will press “Set Row” on RUN - PAGE at the end of a pass. This will set a new track 0, using the current position and heading of the machine. Once the operator starts turning, turning view (if activated) will guide them into the next pass.

The system can be set in two modes continuous or turns only.

When continuous mode is selected, the navigation line will remain visible on the display. If turns only is selected, the navigation line will remain on the display for a distance of four times the track spacing from where the Set Row button was pressed. (See Setup RowFinder for more information).



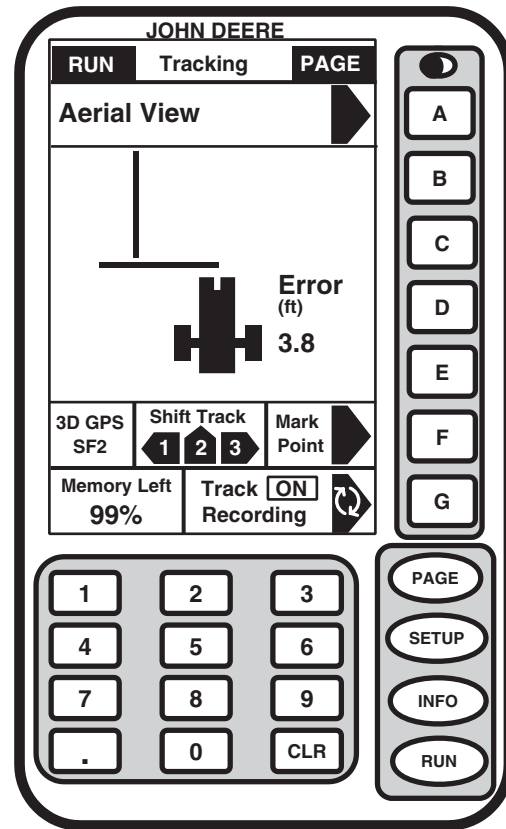
PC6986 -19-10JAN02

OUO1035,0000117 -19-21OCT02-1/1

Curved Track

NOTE: Only parallel tracking operates in the curved track mode.

This mode assists the operator in driving equally spaced curved paths. The system has the capability to guide the operator along a variety of patterns including: back and forth, race-track, and center pivot operations. A look ahead steering indicator (horizontal line above the machine icon) alerts the operator of the direction and degree of an approaching curve. (See Setup Curved Track for more information). An additional aerial view can be selected showing the approximate path of the curved track. Press A to select aerial view.



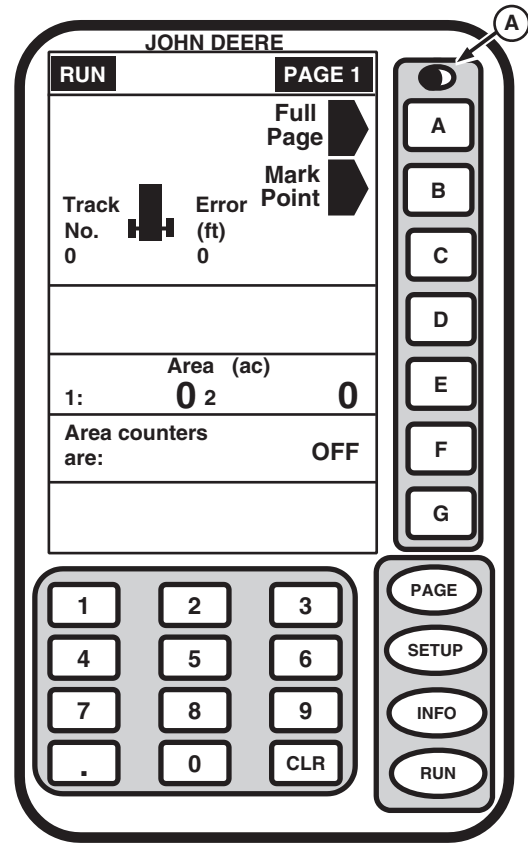
PC7297 -19-14OCT02

OUO1035,00001E6 -19-21OCT02-1/1

Contrast Button

Contrast button (A) is used to adjust the light level of the display for visibility and clarity. Adjust the contrast by pressing the contrast button and holding until the desired contrast level is reached. Pressing the button will cause the screen to lighten or darken each time the button is pressed. The back-lighting level may also be changed to increase the visibility of the screen (see SETUP section).

A—Contrast Button



PC7298 -19-14OCT02

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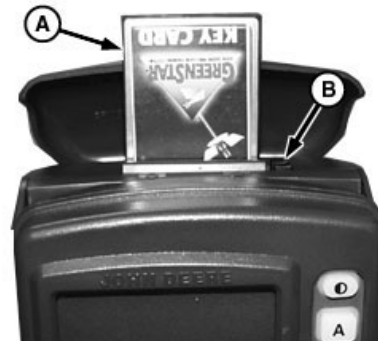
At Startup

NOTE: There is no power on/off switch for the display. Power is applied when the machine is turned on.

KeyCard can be installed in either slot A or B.

Make sure KeyCard (A) is inserted in mobile processor. KeyCard is inserted correctly when the GREENSTAR label faces the operator and the arrows on the card and case are lined up. To remove the card press the black button (B) and lift the card from the mobile processor.

A—KeyCard
B—Black Button

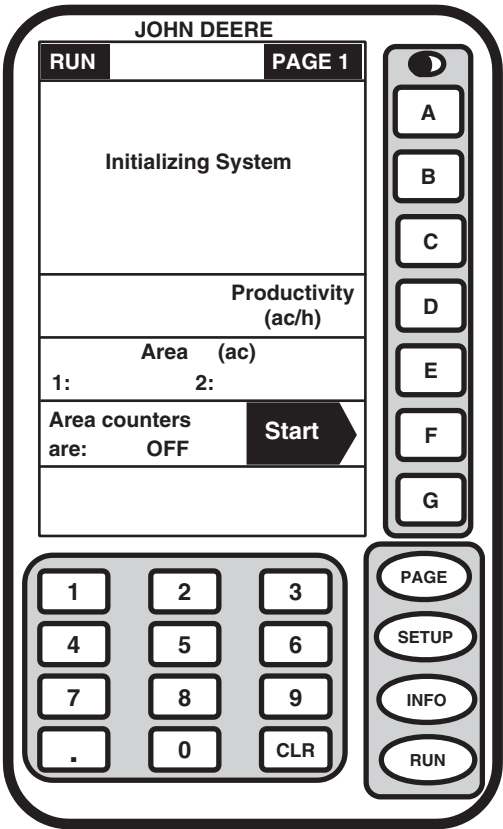


PC6424 -UN-25JUL00

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On startup, Initializing System will be displayed on RUN - PAGE 1. This message will self cancel once the power up sequence is completed.



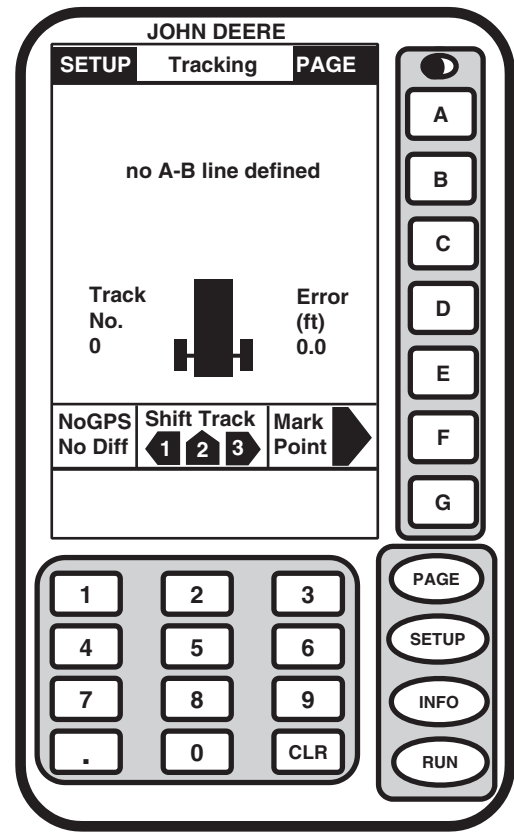
PC6413 -19-12SEP00

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OUO6092,0000257 -19-23OCT02-2/3

At initial start-up the display will show RUN - PAGE 1 screen or if full page mode was active when the machine was shut down it will return to full page mode. To change the screen, press PAGE, SETUP or INFO.

“No A-B line defined” will appear in Straight Track mode until track 0 has been set (see SETUP - TRACKING).



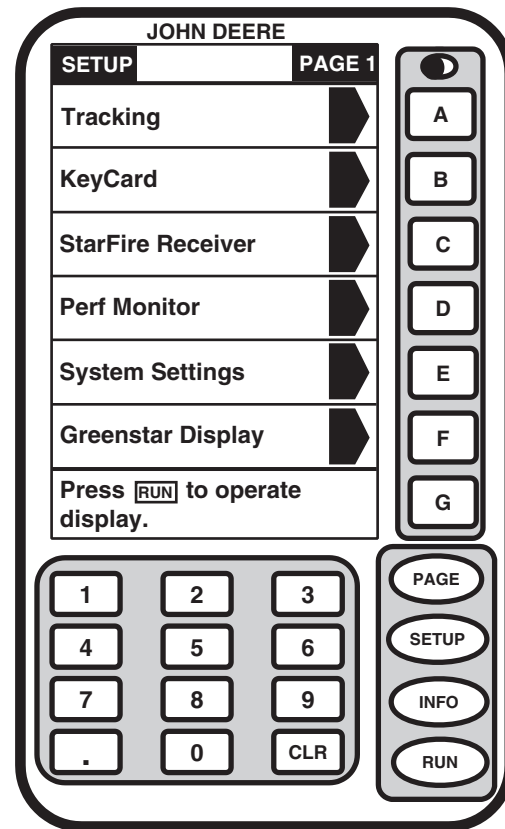
PC7012 -19-18JAN02

OUO6092,0000257 -19-23OCT02-3/3

SETUP Screen

NOTE: Depending on the number of programs loaded on the KeyCard some selections may not appear on the current page. Press the PAGE button to access additional screens.

The SETUP screen allows the operator to change operating information. When SETUP button has been pushed a menu will appear. AutoTrac/Parallel Tracking setup screens are accessed by pressing the button next to Tracking.



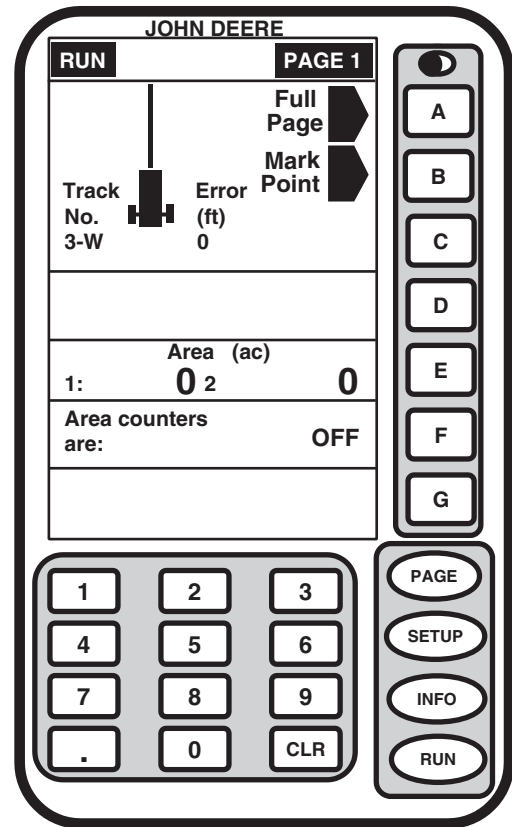
PC6793 -19-27AUG01

OUO1035,00001E7 -19-21OCT02-1/1

RUN Screen

RUN screens are the basic operating screens. RUN screens are accessed by pressing the RUN button. Pressing PAGE button toggles the display between two available RUN pages. AutoTrac/Parallel Tracking information appears only on RUN - PAGE 1.

Performance monitor or other GREENSTAR equipment will use RUN - PAGE 1 and 2. AutoTrac/Parallel Tracking also has a full page display option. If full page option is selected (on SETUP - Tracking - PAGE 2), Parallel Tracking information will be displayed on RUN - PAGE 3. If SETUP or INFO is selected from the full screen mode, the display will return to full screen mode when the RUN button is pressed. If mark point screen is selected from the full screen mode, the display will return to full screen mode when the return key is pressed, and to RUN - PAGE 1 screen when the RUN button is pressed.



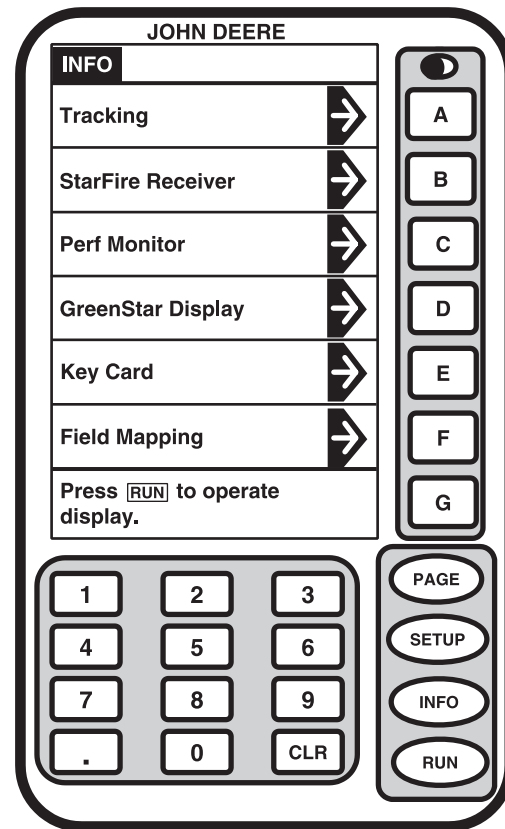
PC7299 -19-15OCT02

OUO1035,00001E8 -19-23OCT02-1/1

INFO Screen

NOTE: Depending on the number of programs loaded on the KeyCard some selections may not appear on the current page. Press the **PAGE** button to access additional screens.

The INFO screen allows the operator to view general information screens. When the INFO button has been pushed a menu will appear. AutoTrac/Parallel Tracking INFO screens are accessed by pressing button next to Tracking.



PC7008 -19-10JAN02

OUO1035,00001E9 -19-21OCT02-1/1

Reprogramming System to AutoTrac

General Information

NOTE: AutoTrac system may be operated with multiple displays, please see Reprogram Second Display. When reprogramming with multiple displays, disconnect the second display before reprogramming the first display.

In order to use AutoTrac system, the GREENSTAR components must be reprogrammed with AutoTrac software. There are three possible scenarios. Each scenario requires a different programming procedure, as described below.

1. Reprogramming from Yield Mapping. All GREENSTAR components are shipped from the factory with Yield Mapping software installed. See Install and Reprogram GREENSTAR System from Yield Mapping to AutoTrac for instructions.
2. Reprogramming from Parallel Tracking or Field Doc to AutoTrac. If the components had already been programmed with either Parallel Tracking or Field Doc software, see reprogramming Parallel Tracking to AutoTrac section.
3. Reprogramming with two displays on CAN bus. See Reprogram Second Display.

OUC1035,0000161 -19-06FEB02-1/1

Install and Reprogram GREENSTAR System from Yield Mapping to AutoTrac

NOTE: Before operating the AutoTrac system make sure your KeyCard has the latest software available. To acquire the latest version of software on the Internet at www.stellarsupport.com, call 1888GRNSTAR or contact your John Deere dealer.

If a newer software is installed on the KeyCard than on the system the automatic software load should start and load the newest version of the software (see Automatic Software Load later in this section).

All GREENSTAR components are shipped programmed with yield mapping software. When a GREENSTAR system is programmed for yield mapping and is moved onto another machine to be used for AutoTrac, the system must be reprogrammed.

The following procedures show the basic connections and programming steps needed to prepare the system to operate in the AutoTrac mode. The mobile processor, GREENSTAR display and position receiver must be reprogrammed to operate in the AutoTrac mode.

Continued on next page

OUC1035,000010F -19-21OCT02-1/13

IMPORTANT: If AutoTrac/Parallel Tracking display is used with a second display on the same wiring harness, AutoTrac display address must be set to auxiliary 1 after it has been reprogrammed (See Reprogramming Second Display). The other display (SPRAYSTAR or SEEDSTAR display) address must be set to primary (See procedures in SETUP section).

When re-programming a system with two displays, only one display can be connected to the wiring harness at a time. Disconnect the wiring harness connector from the display not being reprogrammed then reconnect after programming is completed. Repeat procedure on second display.

NOTE: The reprogramming steps shown below are for yield mapping systems with software version 6.32 or greater. All other versions, refer to your Yield Mapping operator's manual for reprogramming information.

If components are already installed in a machine intended for use with AutoTrac skip to step 7.

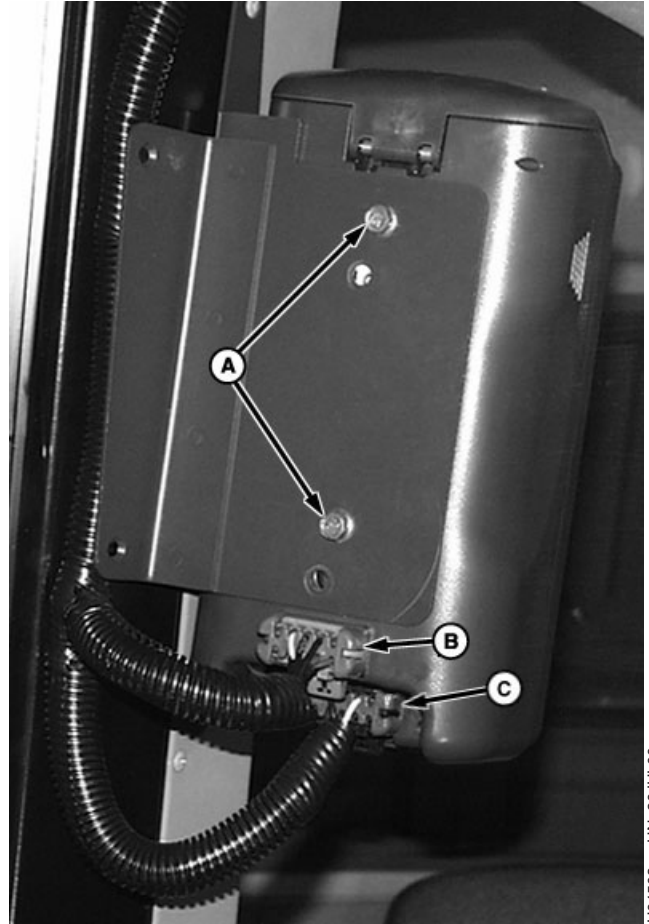
1. Disconnect main wiring harness connector from position receiver connector and remove position receiver from machine.

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OUC1035,000010F -19-21OCT02-2/13

2. Disconnect gray (B) and black (C) wiring harness connectors.
3. Remove cap screws (A) and display assembly.
4. Install position receiver onto machine and connect machine wiring harness to position receiver.

A—Cap Screw
B—Gray Mobile Processor Connector
C—Black Display Connector



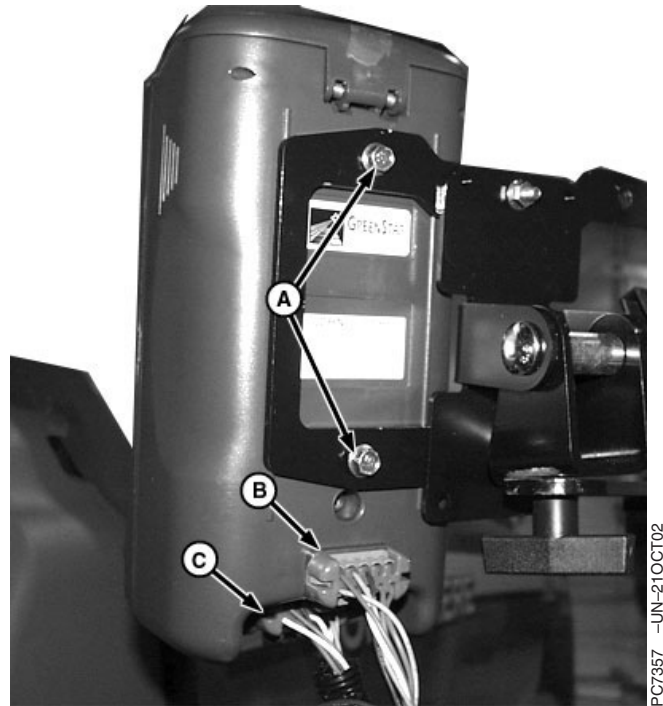
H64503 -UN-26JUL00

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5. Attach display to bracket with hardware (A) provided.
6. Attach gray connector (B) to mobile processor connector and black connector (C) to display connector.

A—Hardware
B—Gray Mobile Processor Connector
C—Black Display Connector



PC7357 -UN-21OCT02

OUO1035,000010F -19-21OCT02-4/13

IMPORTANT: If using two displays, make sure only one display is connected at a time when reprogramming.

NOTE: Before starting reprogramming make sure PC DataCard is removed from the mobile processor.

7. Install KeyCard (A) into top slot of mobile processor.
8. Turn ignition key to RUN position.
9. Press CONTINUE to cancel the following warning messages.

- KeyCard Warning
- Setup Data Missing
- Data Network Error



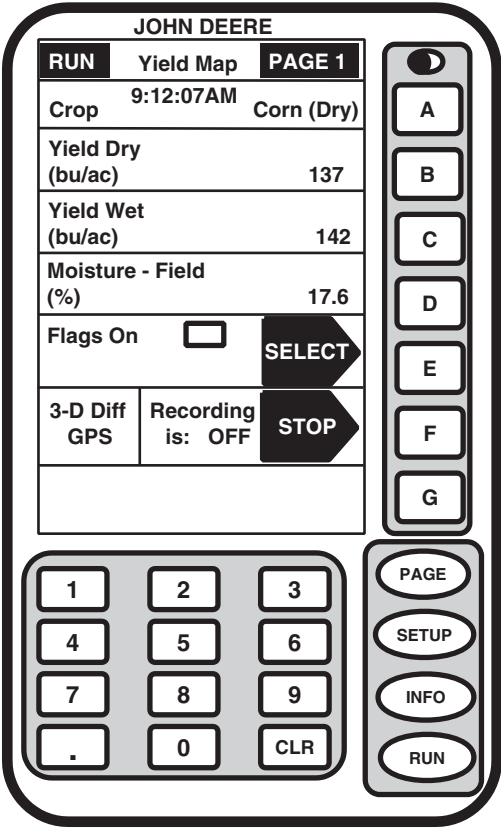
A—KeyCard

PC6433 -UN-04AUG00

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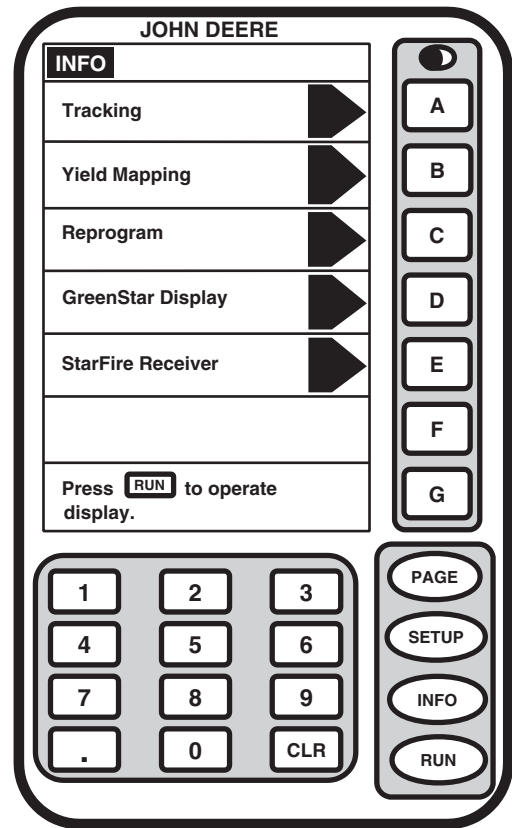
OUO1035,000010F -19-21OCT02-5/13

10. When RUN - PAGE 1 appears press INFO button.



PC6759 -19-12JUN01

11. To begin loading software, press button next to Reprogram.

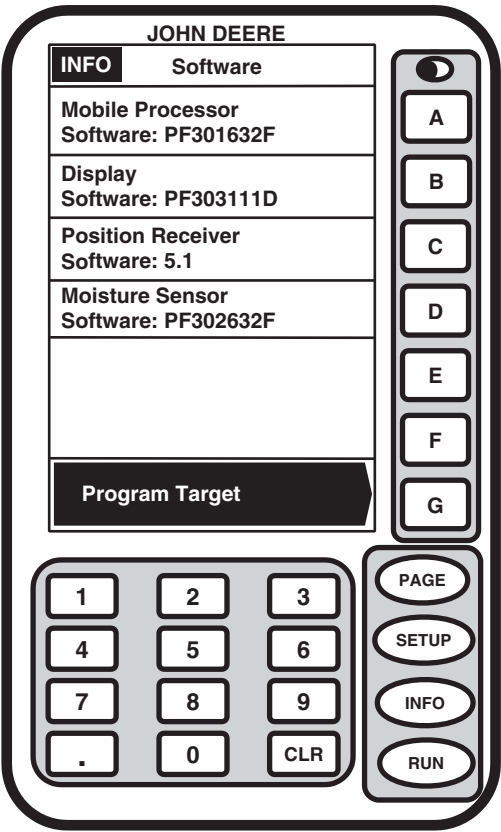


PC7074 -19-01FEB02

Continued on next page

OUO1035,000010F -19-21OCT02-7/13

12. Press button next to Program Target.



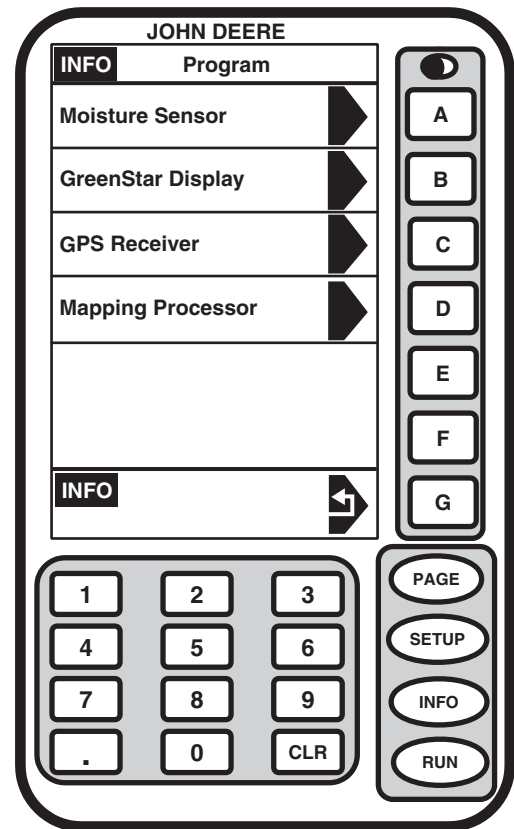
PC6756 -19-12JUN01

Continued on next page

OOU1035,000010F -19-21OCT02-8/13

13. Press button next to Mapping Processor or cycle power to cancel programming.

NOTE: Some GREENSTAR displays will produce the following message: "Display Communications Overload-Reset Display or cycle power". If this message appears repeat steps 5 — 7 and immediately after pressing Program Target, press D key on the display. Repeat steps until software version appears.



PC6831 -19-07SEP01

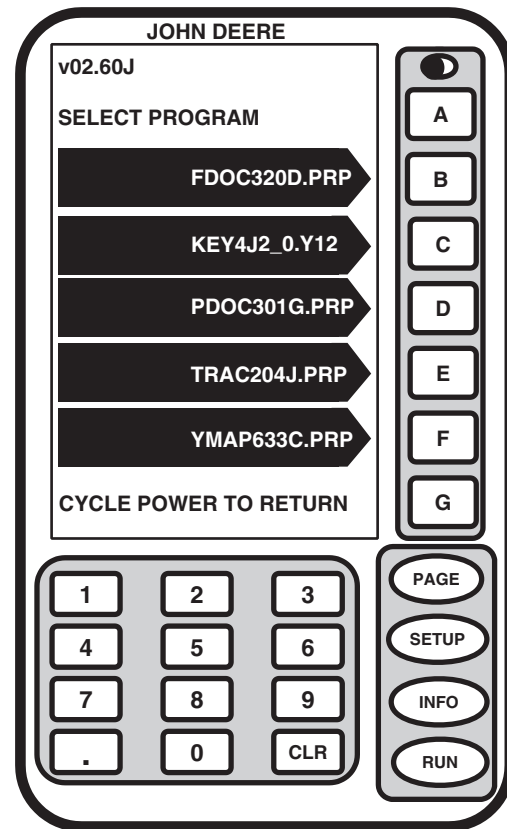
Continued on next page

OUO1035,000010F -19-21OCT02-9/13

NOTE: To select the correct KeyCard software, choose the file starting with the word KEY. (In this example KEY0R1_0.Y12 would be the correct choice.)

If additional language needed to be loaded (see Setup and Load a Language later in this section).

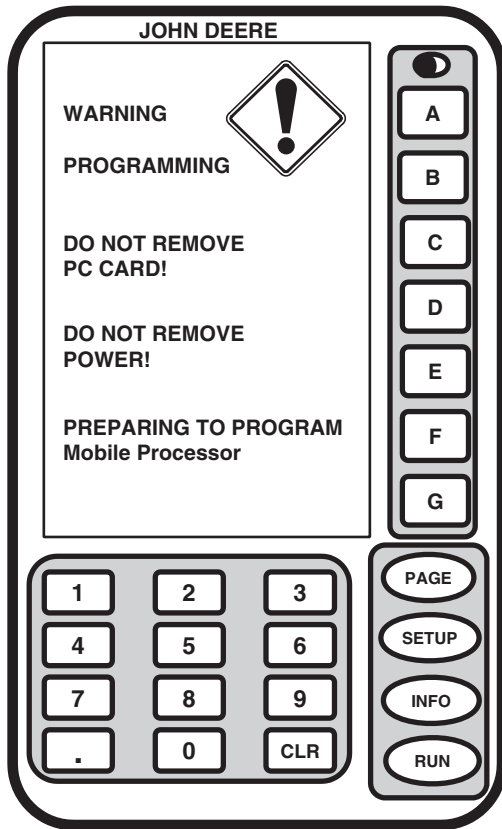
14. Press button next to KeyCard software version or cycle power to cancel programming.



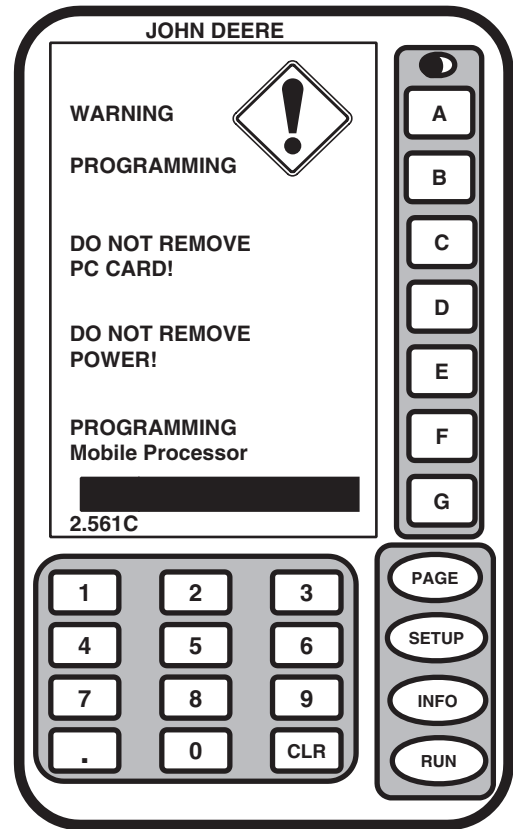
PC7403 -19-05NOV02

Continued on next page

OUO1035,000010F -19-21OCT02-10/13



PC7307 -19-14OCT02



PC7308 -19-14OCT02

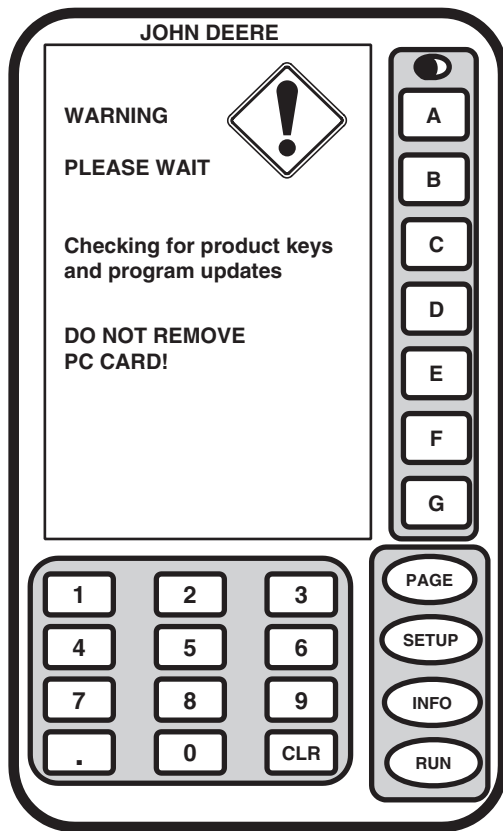
15. Wait until WARNING PROGRAMMING screen appears and follow directions on screen.

DO NOT REMOVE PC CARD

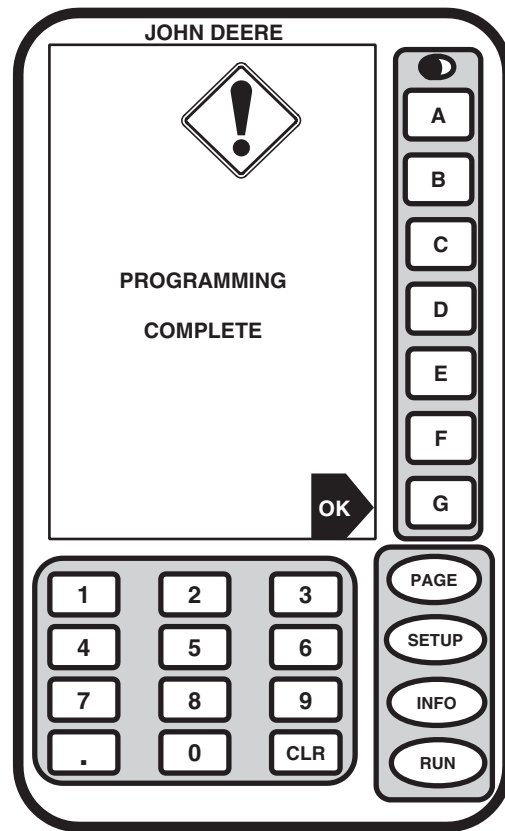
DO NOT REMOVE POWER

Continued on next page

OUC1035,000010F -19-21OCT02-11/13



PC7309 -19-14OCT02



PC7310 -19-14OCT02

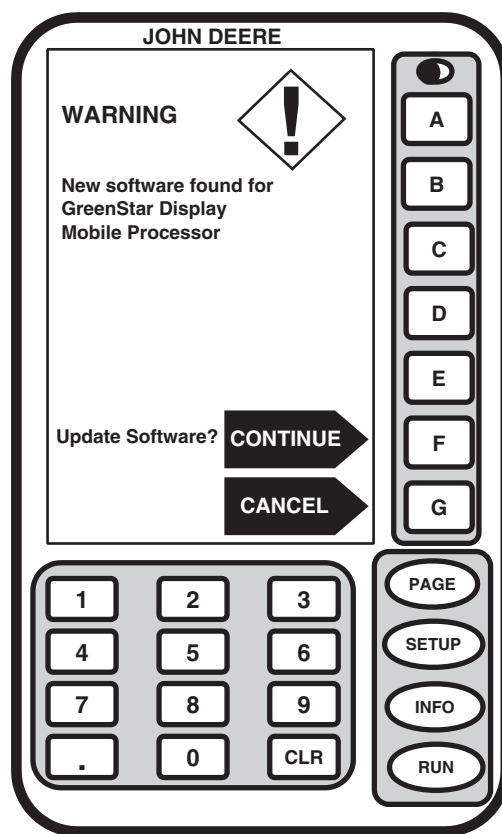
16. When programming is complete, the PROGRAMMING COMPLETE screen may appear. If PROGRAMMING COMPLETE screen does appear OK will be displayed in the lower left corner.

17. Continue process with AUTOMATIC SOFTWARE LOAD.

Continued on next page

OUO1035,000010F -19-21OCT02-12/13

18. Press letter button next to CONTINUE to update software for each component and follow on-screen instructions.
19. Proceed to Setup Tracking section.



PC6436 -19-23AUG00

OUC1035,000010F -19-21OCT02-13/13

Install and Reprogram Parallel Tracking to AutoTrac

Follow these steps when Parallel Tracking is installed, and the user needs to reprogram the software for use with AutoTrac.

The following procedures show the basic connections and programming steps needed to prepare the system to operate in the AutoTrac mode. The mobile processor, GREENSTAR™ display and position receiver must be reprogrammed to operate in the AutoTrac mode.

In order to use parallel tracking after programming the system for AutoTrac, user does not need to reprogram parallel tracking software co-exists with AutoTrac software.

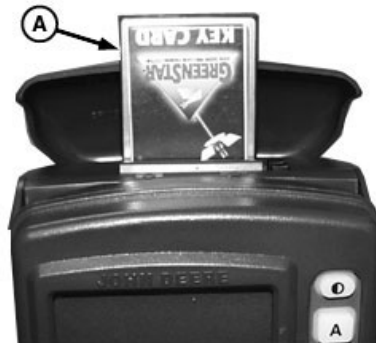
GREENSTAR is a trademark of Deere & Company

OUO6092,0000273 -19-03OCT01-1/8

Reprogram Procedure 1- Automatic Software Load

1. Insert the AutoTrac KeyCard (A) into mobile processor.
2. Turn ignition key to ON position.

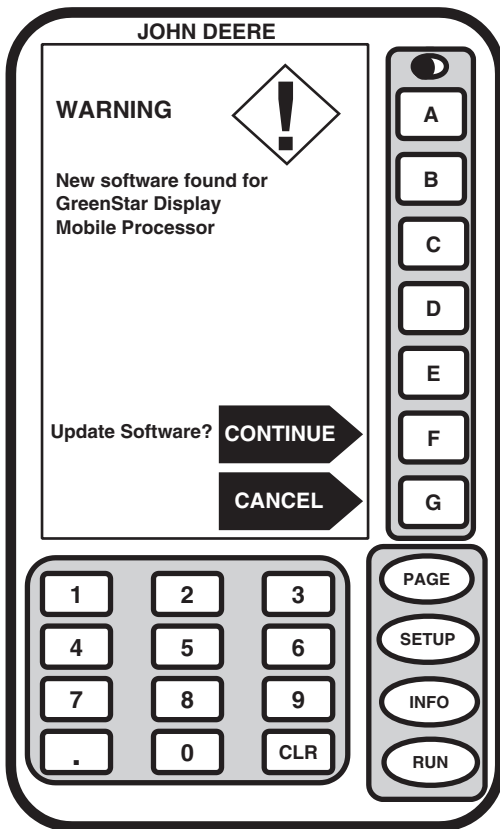
A—AutoTrac KeyCard



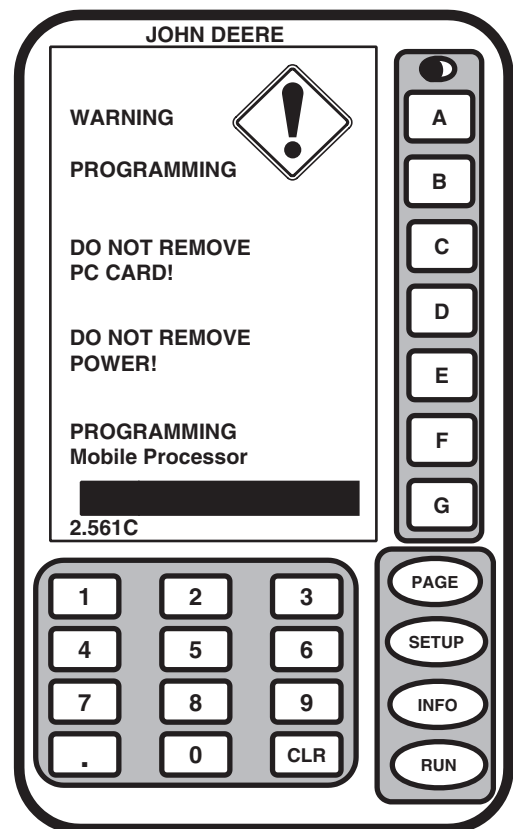
Continued on next page

OUO6092,0000273 -19-03OCT01-2/8

PC6433 -UN-04AUG00



PC6436 -19-23AUG00



PC7308 -19-14OCT02

NOTE: When KeyCard software is installed in the mobile processor and the power is ON, the system will check version of software on mobile processor, GREENSTAR display, and position receiver. If KeyCard contains a more recent version of software, the system will ask the operator if they want to update with the most recent version of software.

Reprogramming will take a few minutes for each of the components.

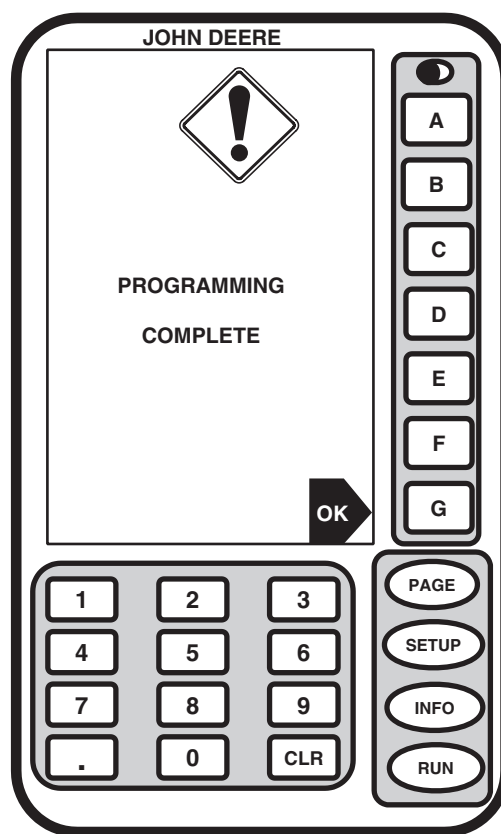
3. The system should prompt the user that new software has been found. Press CONTINUE to update software for each component and follow on-screen instructions.

If new software is not found, proceed to Reprogram Procedure 2 later in this section.

Continued on next page

OUC6092,0000273 -19-03OCT01-3/8

4. When programming is complete, the PROGRAMMING COMPLETE screen will appear. OK may be displayed in the lower left corner.
5. Press G.
6. Proceed to Setup Tracking section.



PC7310 -19-14OCT02

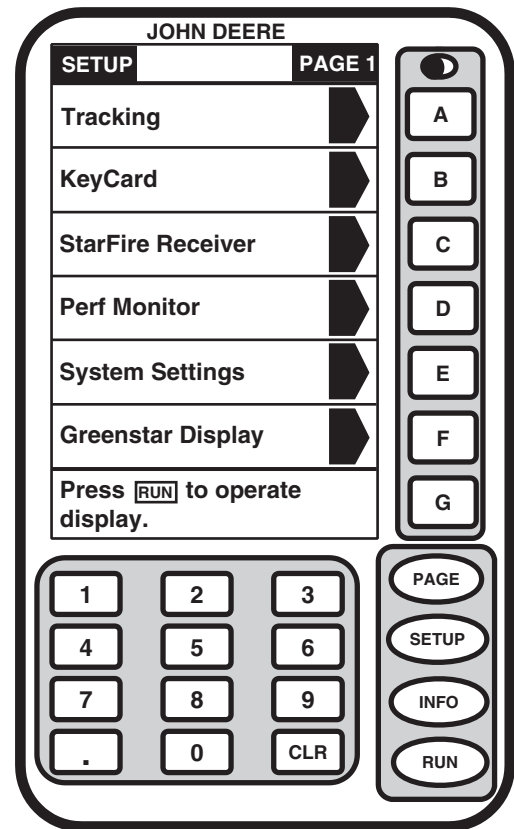
Continued on next page

OUC6092,0000273 -19-03OCT01-4/8

Reprogram Procedure 2

NOTE: Use this procedure if Parallel Tracking is already installed on the system and automatic software load does not engage.

1. Press SETUP button to access Setup screen.
2. Press button next to KeyCard.

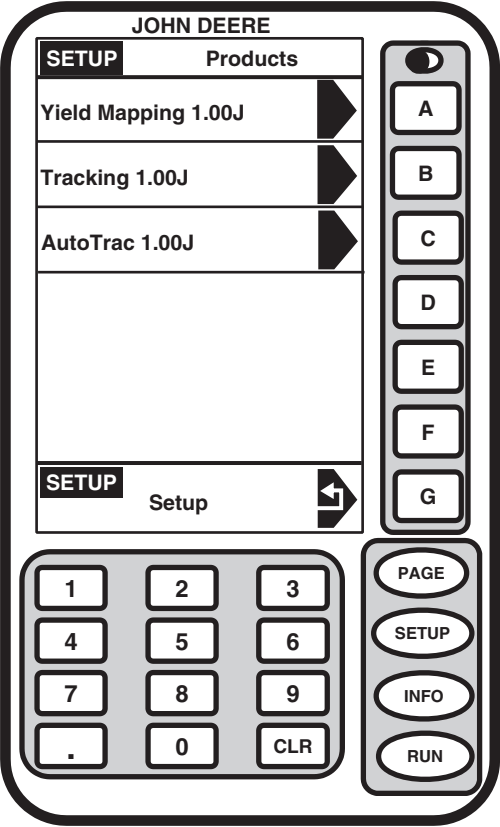


PC6793 -19-27AUG01

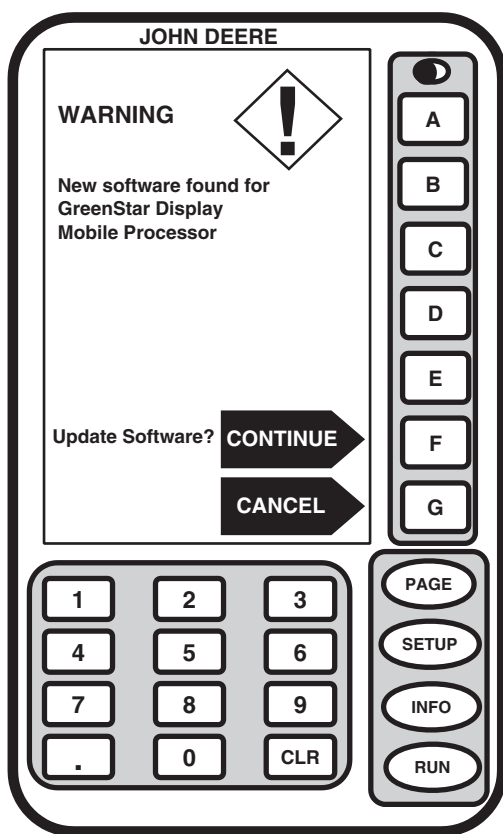
Continued on next page

OUC6092,0000273 -19-03OCT01-5/8

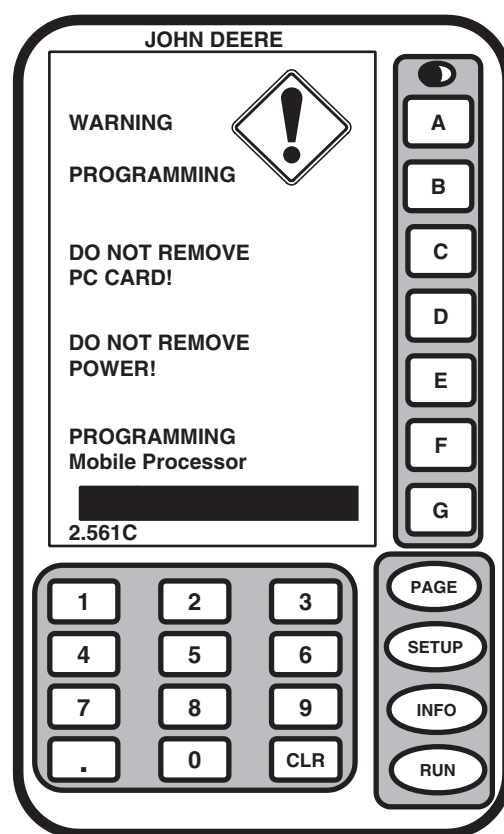
3. Press button next to AutoTrac on the SETUP - Products screen.



PC6879 -19-18OCT01



PC6436 -19-23AUG00



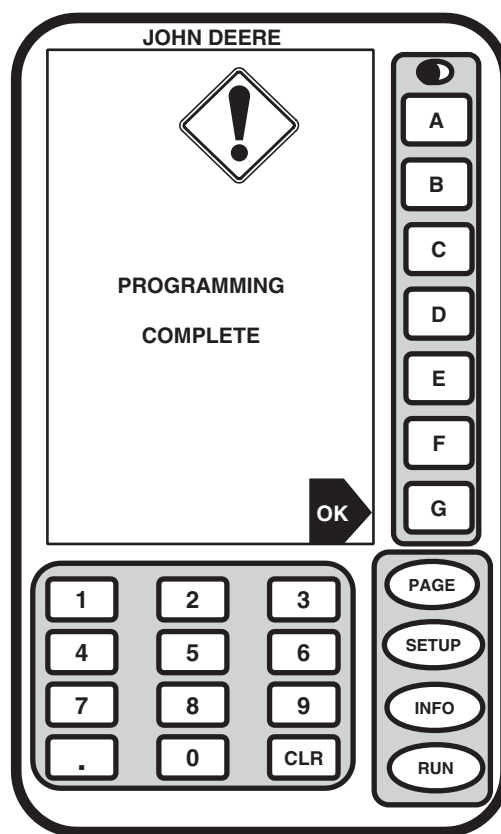
PC7308 -19-14OCT02

4. Press letter button next to CONTINUE to update software for each component and follow on-screen instructions.

Continued on next page

OUO6092,0000273 -19-03OCT01-7/8

5. When programming is complete, the PROGRAMMING COMPLETE screen will appear. OK may be displayed in the lower left corner.
6. Press G.
7. Proceed to Setup Tracking section.



PC7310 -19-14OCT02

OUO6092,0000273 -19-03OCT01-8/8

Reprogramming Second Display

The following procedures show programming steps for reprogramming a second display. The mobile processor, GREENSTAR display and position receiver must be reprogrammed to operate in the Parallel Tracking mode.

IMPORTANT: If AutoTrac/Parallel Tracking display is used with a second display on the same wiring harness, AutoTrac/Parallel Tracking display address must be set to auxiliary 1 after it has been reprogrammed. The other display (SPRAYSTAR or SEEDSTAR display) address must be set to primary (See procedures in SETUP section).

When re-programming a system with two displays, only one display can be connected to the wiring harness at a time. Disconnect the wiring harness connector from the display not being reprogrammed then reconnect after programming is completed. Repeat procedure on second display.

Programming second display: Use the following procedure to program a second display after programming the AutoTrac display as described earlier in this section.

1. Set the AutoTrac/Parallel Tracking display address to auxiliary 1 (see Changing Display Address in SETUP section).
2. Turn ignition switch OFF.
3. Disconnect wiring harness connector from AutoTrac/Parallel Tracking display.
4. Connect second (i.e. SPRAYSTAR) display.
5. Turn power on and automatic software load should begin. Press continue to update software.

NOTE: When KeyCard software is installed in the mobile processor and the power is ON, the system will check version of software on mobile processor, GREENSTAR display, and position receiver. If KeyCard contains a more recent version of software, the system will ask the operator if they want to update with the most recent version of software.

*In order for the automatic software load to operate correctly when two displays are being used, both displays (primary and auxiliary) must have the most recent **(1.7 or higher)** version of the loader software. The system will automatically update the loader version for the primary display. The auxiliary display must be manually updated.*

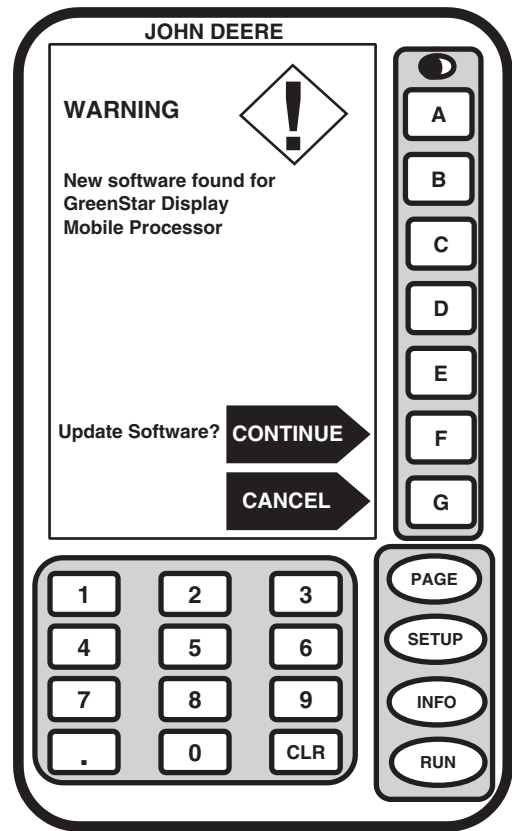
6. Press CONTINUE if new mobile processor loader update software is found for mobile processor.

Continued on next page

OUO1035,000016A -19-22OCT02-2/4

NOTE: Reprogramming will take a few minutes for each of the components.

7. Press CONTINUE if new software is found.



PC6436 -19-23AUG00

Continued on next page

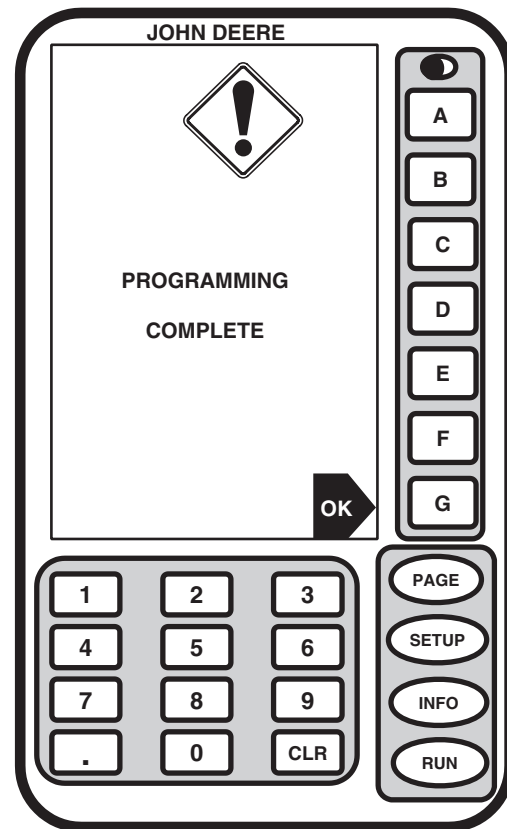
OUO1035,000016A -19-22OCT02-3/4

8. When programming is complete, the PROGRAMMING COMPLETE screen will appear. OK may be displayed in the lower left corner.
9. Press G.
10. Turn key switch to OFF.
11. Connect wiring harness connector to other display.
12. Turn ignition switch on.

IMPORTANT: The display set to primary must be connected to the main GREENSTAR wiring harness in order for AutoTrac to operate properly. The auxiliary display must be plugged into the auxiliary harness. AutoTrac may be on either display.

NOTE: When operating AutoTrac or Parallel Tracking with two displays only one display can have AutoTrac or Parallel Tracking active at a time. An error message will be displayed if AutoTrac or Parallel Tracking are active on more than one display at a time on the same CAN Bus.

13. Setup Tracking. (See SETUP Functions section).



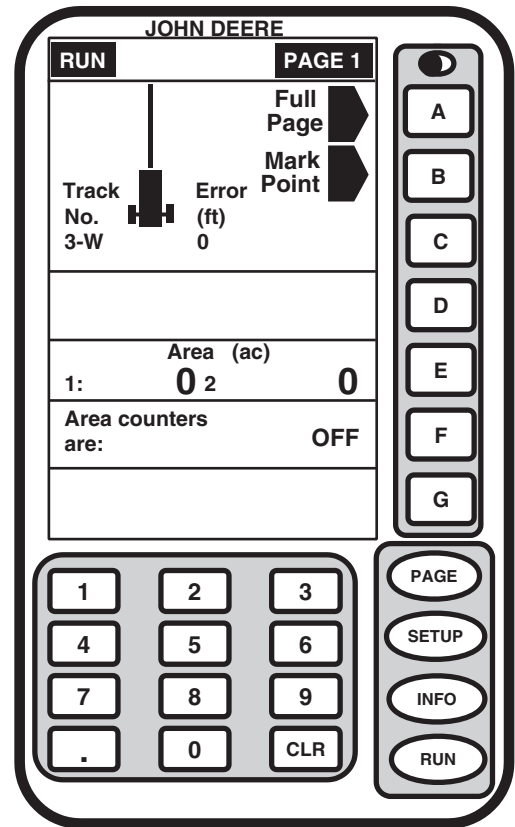
PC7310 -19-14OCT02

OUO1035,000016A -19-22OCT02-4/4

Returning to Yield Mapping

Perform this procedure to return to yield mapping operation after operating in tracking mode.

1. Press SETUP button to access Setup screen.

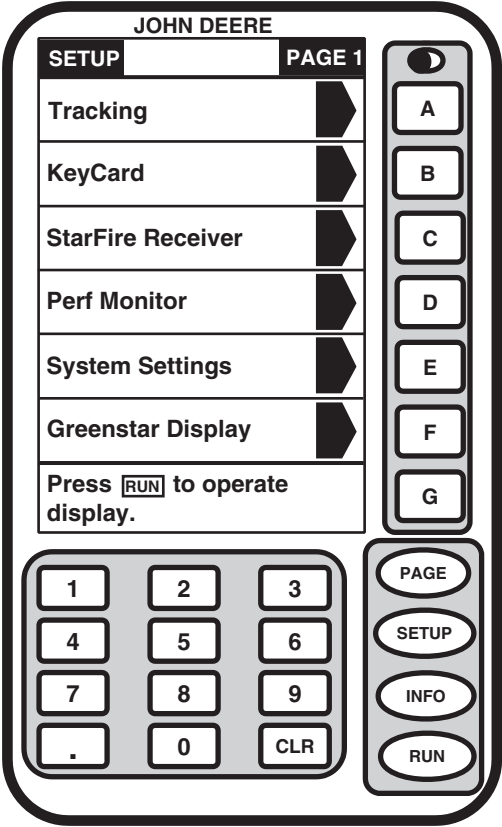


PC7299 -19-15OCT02

Continued on next page

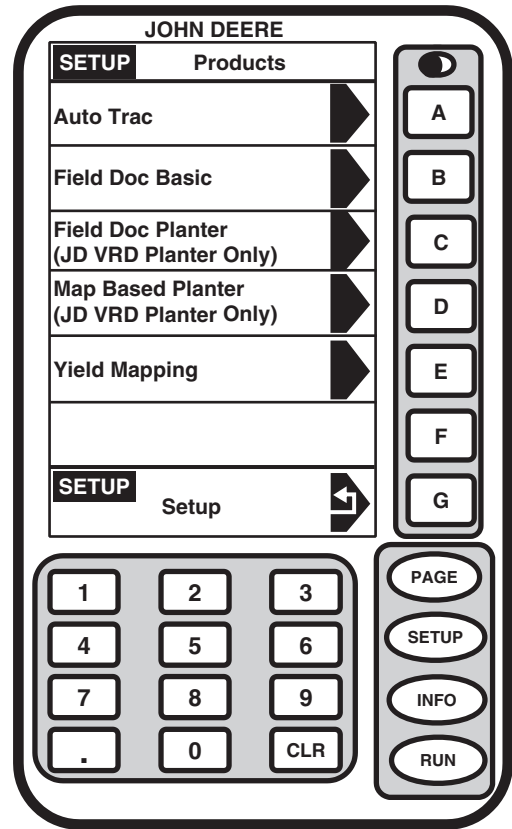
OUO1035,0000111 -19-23OCT02-1/6

2. Press button next to KeyCard.



PC6793 -19-27AUG01

3. Press button next to Yield Mapping on the SETUP - Products screen.

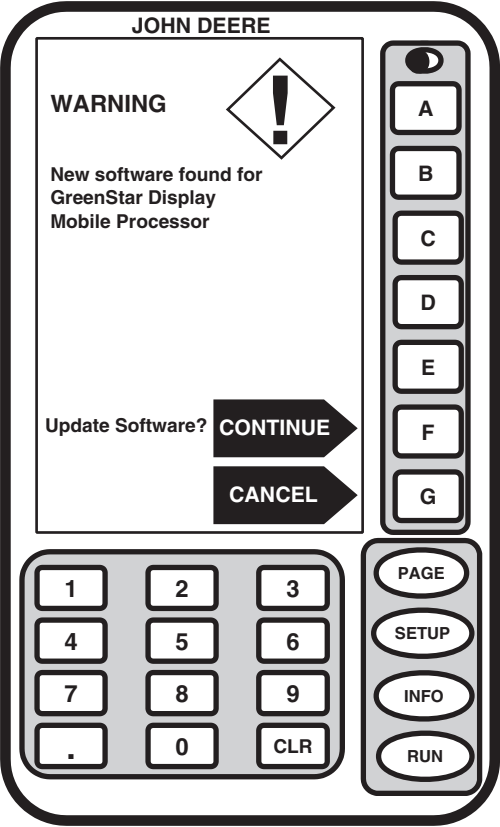


PC7312 -19-14OCT02

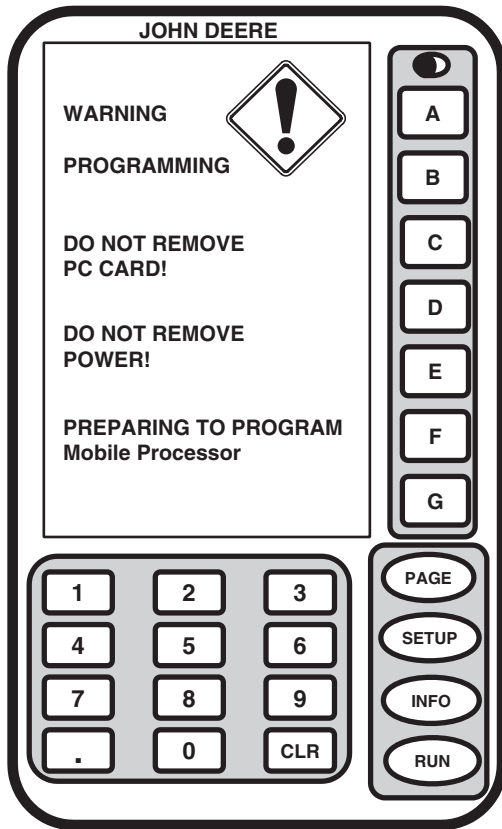
Continued on next page

OUO1035,0000111 -19-23OCT02-3/6

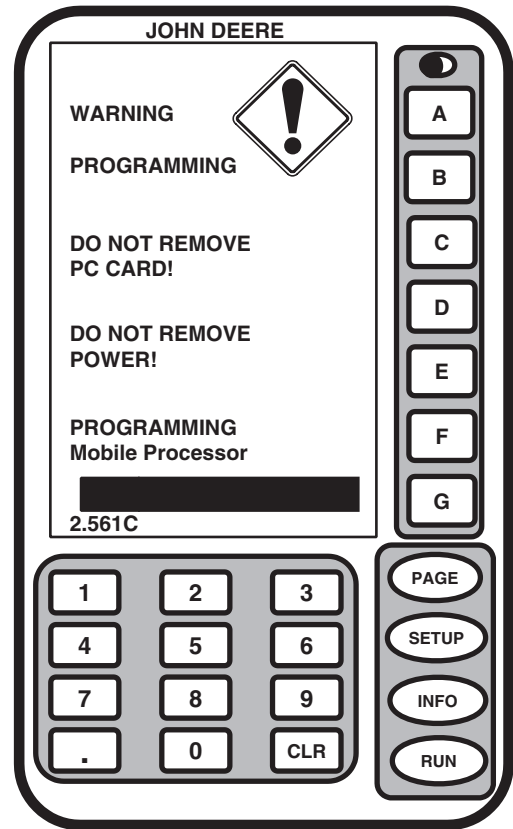
4. Press button next to Continue to update software.



PC6436 -19-23AUG00



PC7307 -19-14OCT02



PC7308 -19-14OCT02

5. Wait until WARNING PROGRAMMING screen appears and follow directions on screen.

DO NOT REMOVE PC CARD

DO NOT REMOVE POWER

Continued on next page

OUO1035,0000111 -19-23OCT02-5/6

6. When programming is complete, RUN - Yield Map - PAGE 1 screen will appear.
7. Press RUN button.
8. Remove the KeyCard with parallel tracking/yield mapping software from the mobile processor and insert yield mapping data card.

JOHN DEERE

RUN	Yield Map	PAGE 1
00:00:36 AM		
Crop	Corn (Dry)	
Yield Dry - Field (bu/ac)	0	
Yield Wet - Field (bu/ac)	0	
Moisture - Field (%)	0.0	
Flags On	0	Select
No GPS No Diff	Recording is: OFF	Start

1 2 3
4 5 6
7 8 9
. 0 CLR

PAGE
SETUP
INFO
RUN

PC6833 -19-07SEP01

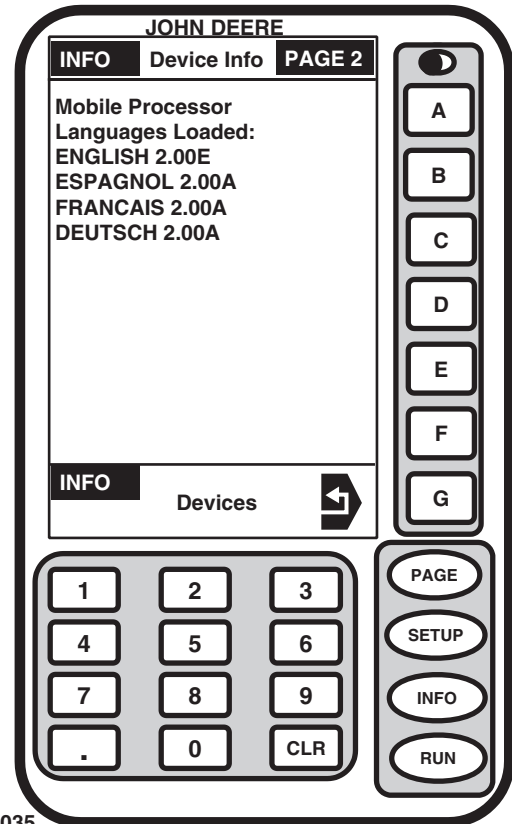
OUO1035,0000111 -19-23OCT02-6/6

Setup and Load a Language

NOTE: Before loading a language make sure your KeyCard has the latest software available. To acquire the latest version of software on the Internet at www.stellarsupport.com, call 1888GRNSTAR or contact your John Deere dealer.

All components (GREENSTAR display, mobile processor and STARFIRE receiver) are factory set to English language. If a language other than English is needed, each component must be individually loaded with the desired language loaded on the KeyCard.

Languages already loaded on each component (mobile processor, display and STARFIRE receiver) are shown under INFO - KeyCard - Devices on Can Bus - PAGE 2 screens (see INFO Functions section).



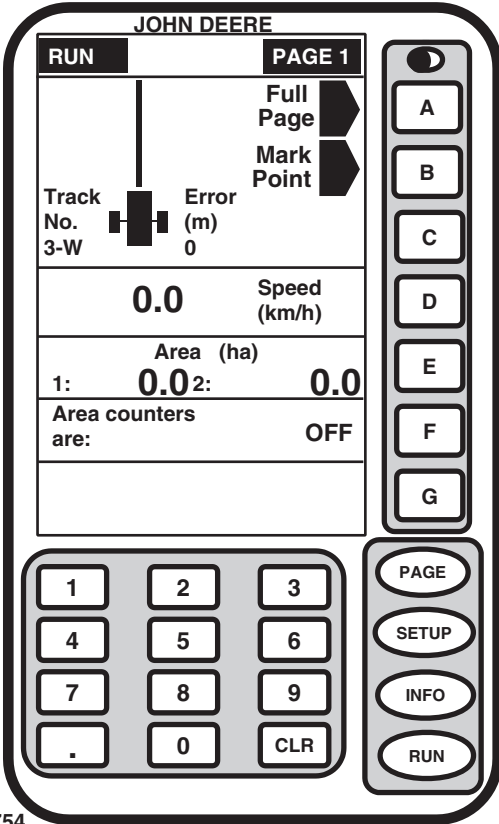
Languages available for the Mobile Processor

ZX027035 -19-20DEC01

Continued on next page

OUC1035,0000112 -19-06NOV02-1/10

1. Press INFO key.

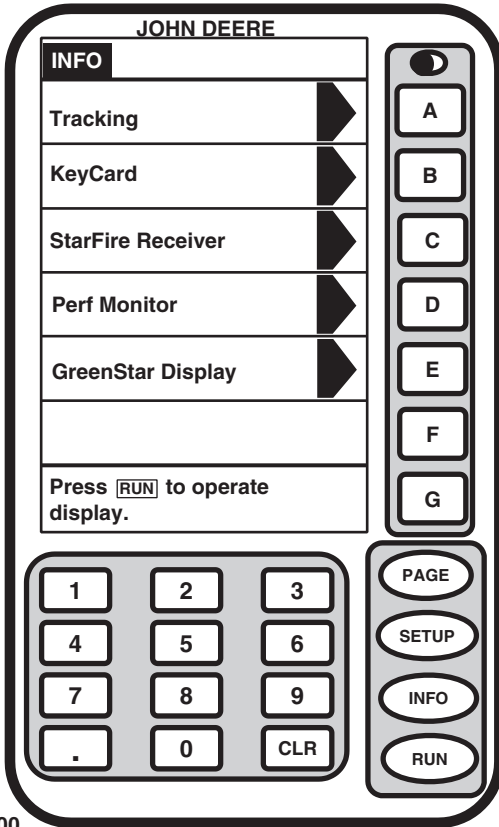


ZX026754

ZX026754 -19-20DEC01

OUO1035,0000112 -19-06NOV02-2/10

2. Press letter key next to KeyCard to access INFO - KeyCard screen.



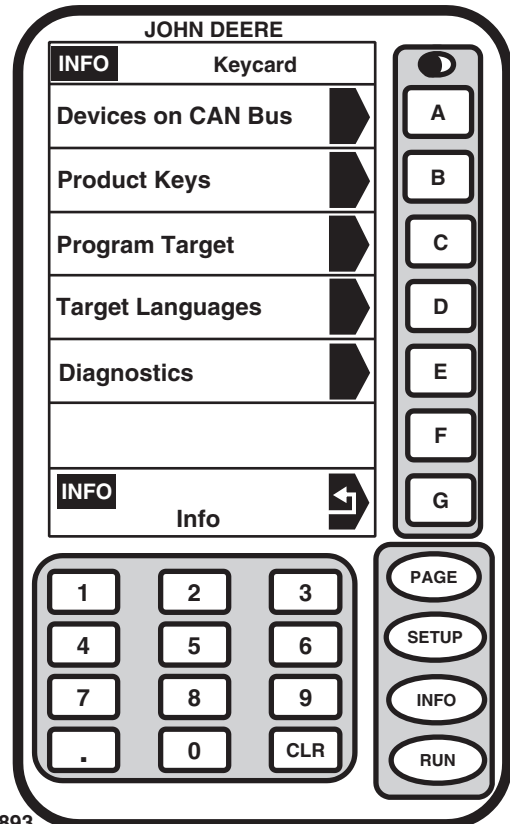
ZX026900

ZX026900 -19-09MAR02

Continued on next page

OUO1035,0000112 -19-06NOV02-3/10

- Press letter key next to Target Languages to access INFO - Target languages screen.



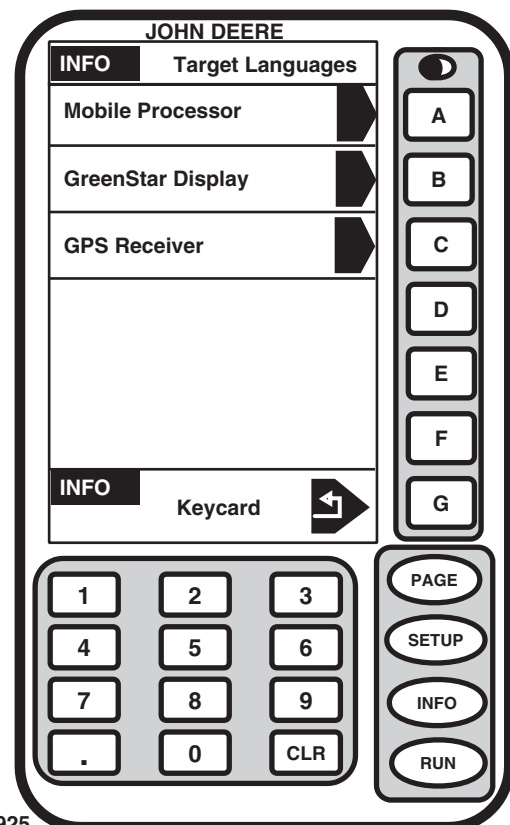
ZX026893

OUO1035,0000112 -19-06NOV02-4/10

ZX026893 -19-20DEC01

- Press key next to the desired component that you would like to program a language to (i.e. the mobile processor). INFO - Select language screen will appear.

IMPORTANT: Each component (mobile processor, display and STARFIRE receiver) must be individually loaded with the desired language.

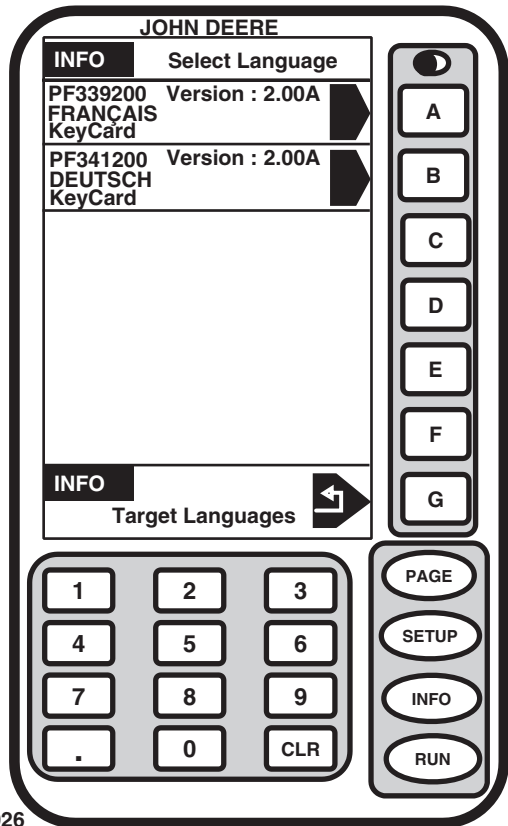


ZX026925

Continued on next page

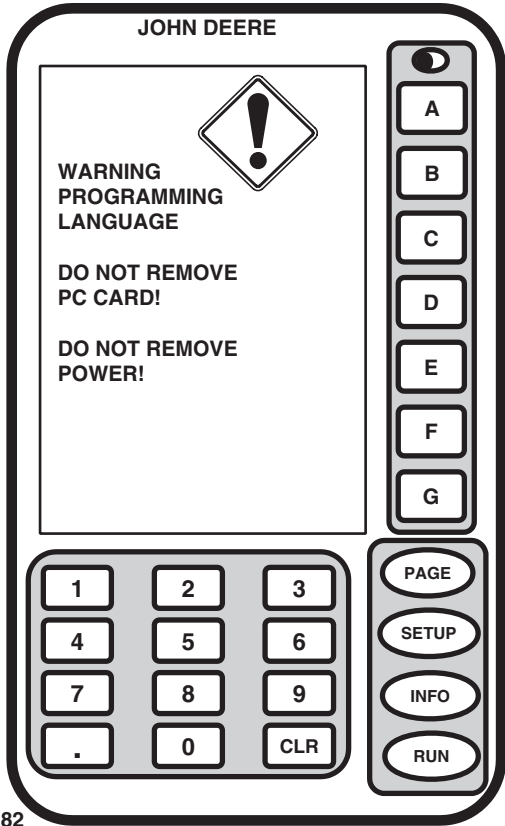
OUO1035,0000112 -19-06NOV02-5/10

ZX026925 -19-20DEC01



ZX026926

ZX026926 -19-20DEC01



ZX027482

ZX027482 -19-20DEC01

5. Select the language(s) you want to load (i.e. French).

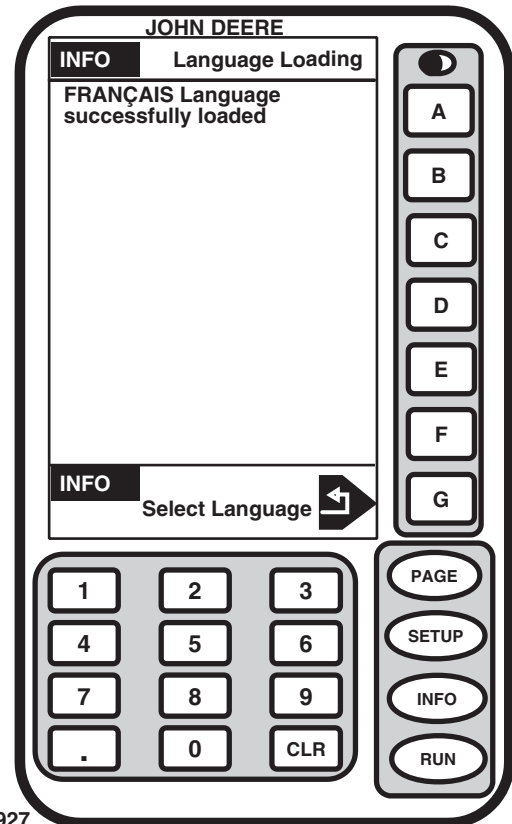
NOTE: Warning screen will be displayed while programming a new language. DO NOT

REMOVE PC CARD, DO NOT REMOVE POWER!

Continued on next page

OUO1035,0000112 -19-06NOV02-6/10

6. The display will show "Language successfully loaded". Press G to load more than one language.
7. Repeat steps 1—6 to load languages onto additional components.
8. After the desired language has been loaded for each component individually, press SETUP key to change the language for the system.

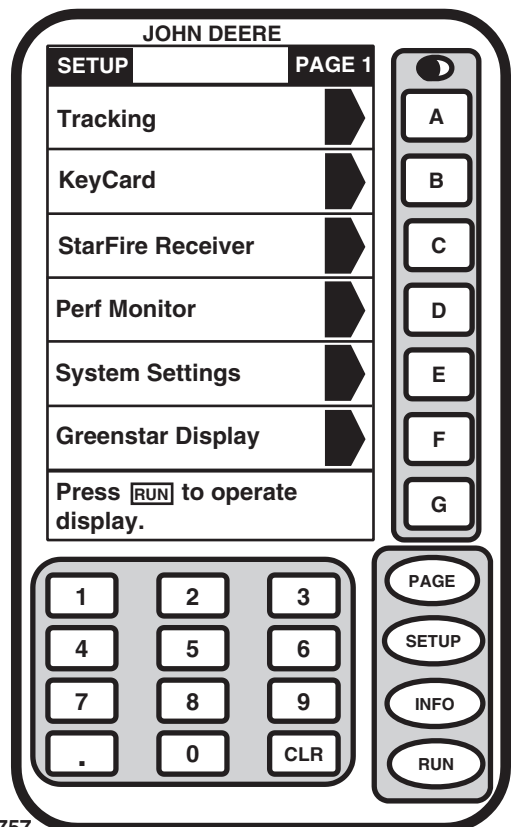


ZX026927

ZX026927 -19-20DEC01

OUO1035,0000112 -19-06NOV02-7/10

9. Press letter key next to System Settings to access SETUP - System screen. (See Setup System Settings).

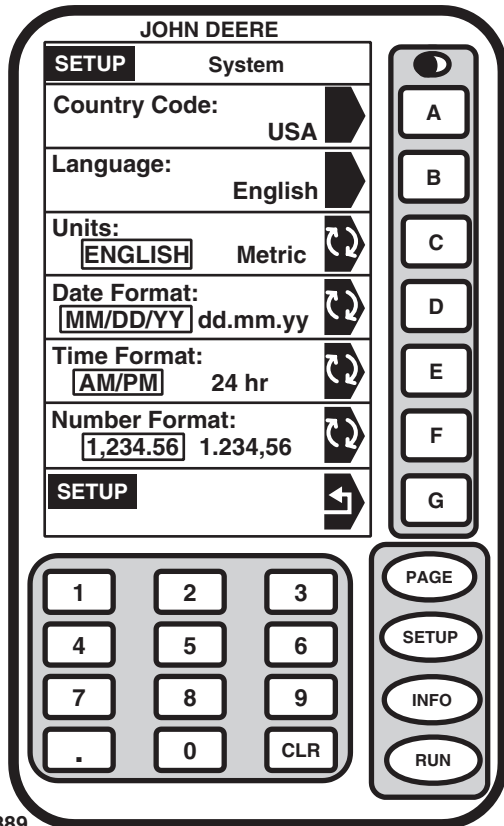


ZX026757

ZX026757 -19-09MAR02

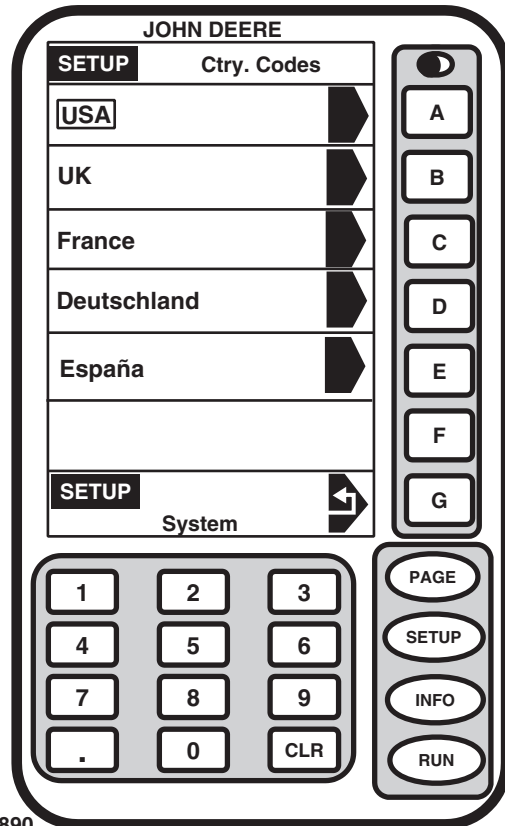
Continued on next page

OUO1035,0000112 -19-06NOV02-8/10



ZX026889

ZX026889 -19-20DEC01



ZX026890

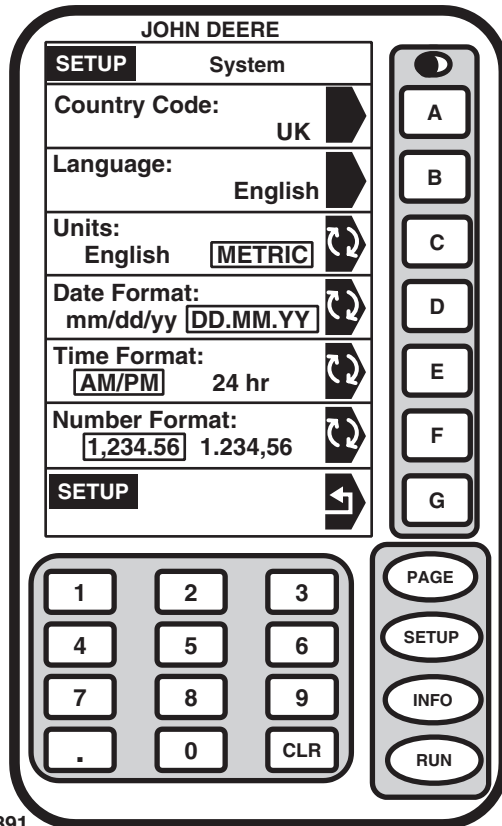
ZX026890 -19-20DEC01

10. Press A to change country preference. Then press letter key next to the desired country.

NOTE: Upon your language choice, the date, time and number formats and the units can be affected.

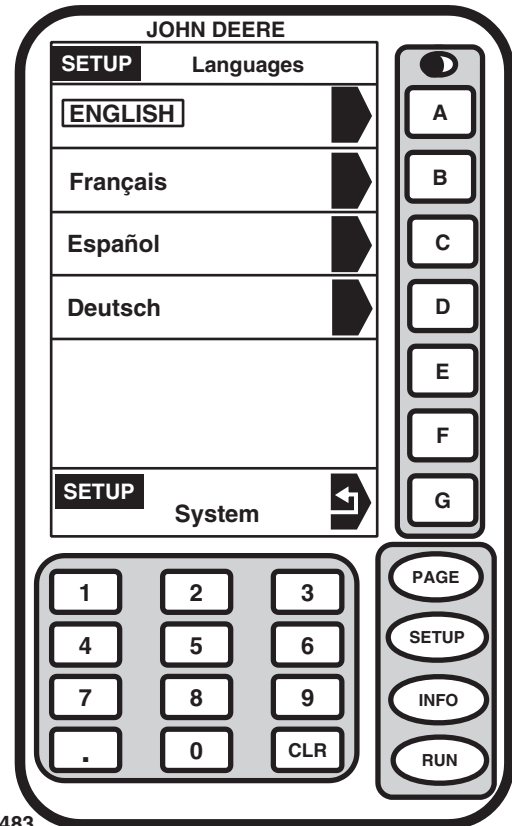
Continued on next page

OOU1035,0000112 -19-06NOV02-9/10



ZX026891

ZX026891 -19-20DEC01



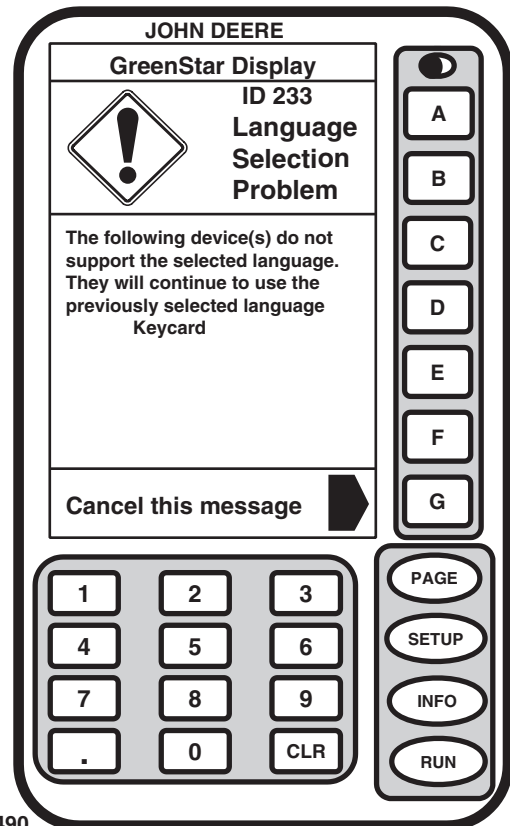
ZX027483

ZX027483 -19-20DEC01

11. Press B to select the desired system language. Then press letter key next to the desired language.

If you choose a language that has not been loaded on component(s), a warning message (i.e. ID233) will be displayed. Press G to cancel the message than load the desired language to the relevant component(s) as previously described in this procedure.

NOTE: In this example of warning message KeyCard means: mobile processor, GREENSTAR display and STARFIRE receiver shall be reprogrammed.



ZX027490

ZX027490 -19-20DEC01

SETUP Functions

SETUP Functions

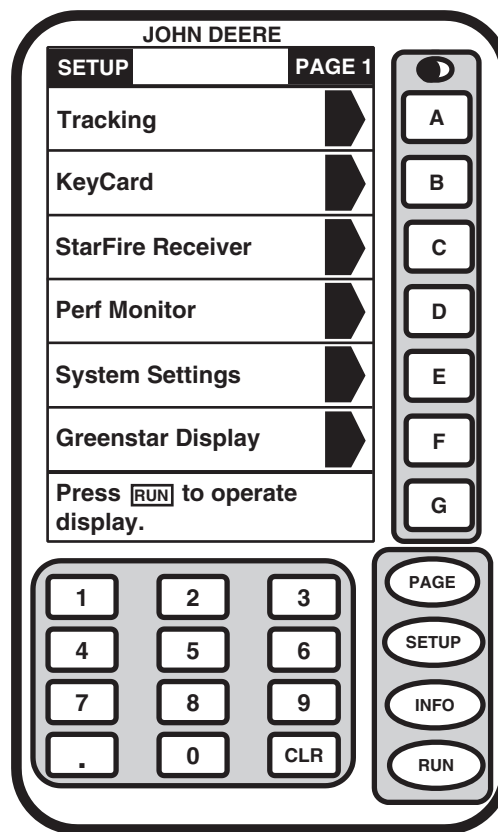
NOTE: Depending on the number of programs loaded on the KeyCard some selections may not appear on the current page. Press the PAGE button to access additional screens.

This chart shows SETUP screens and data displayed in each screen.

The SETUP mode is used to select screens for changing specific information. To select SETUP, press SETUP key.

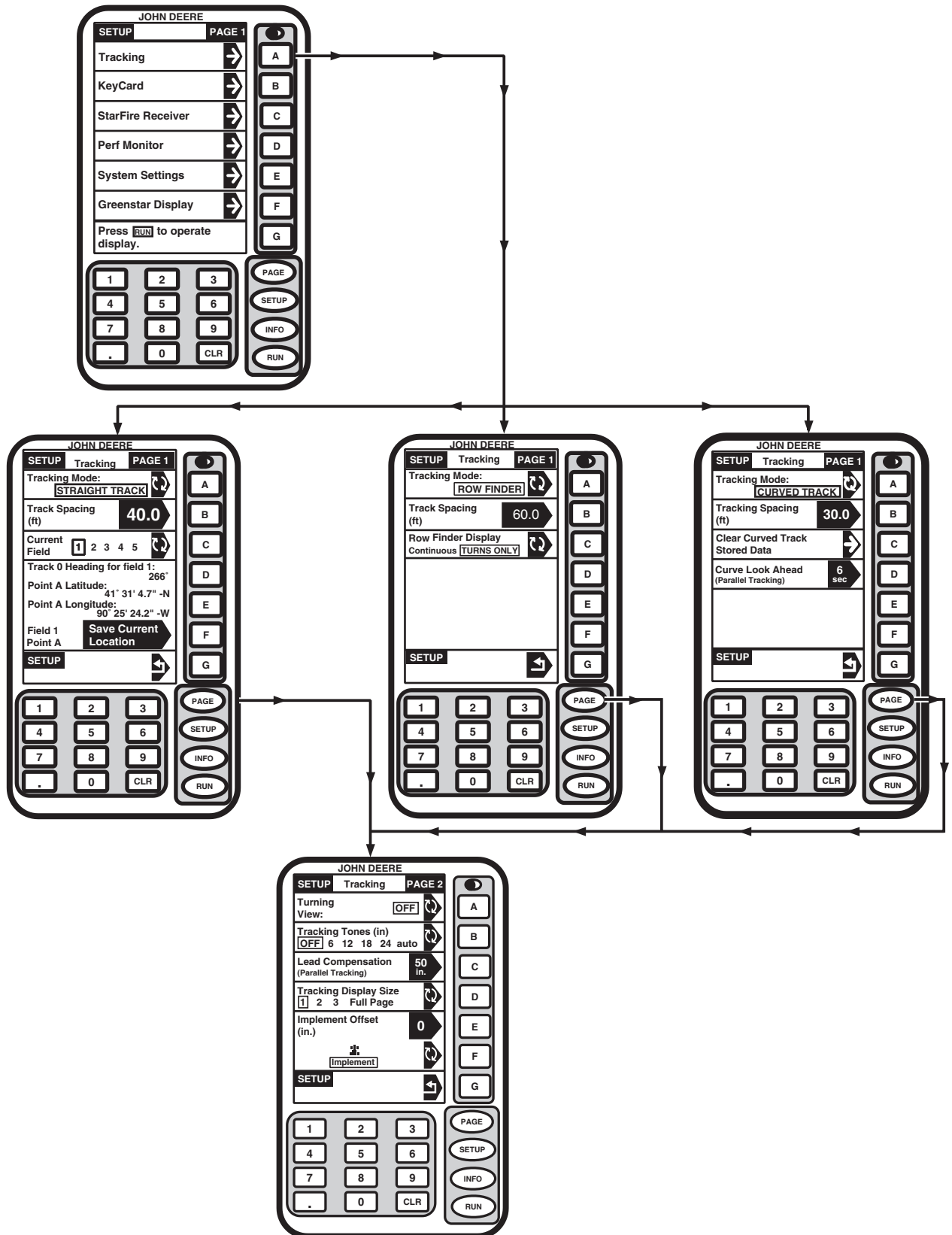
NOTE: *If software version PF303140X or higher is loaded to the GREENSTAR display, tracking will not be displayed on this screen if an AutoTrac/Parallel Tracking KeyCard is not inserted in the mobile processor or system has not been reprogrammed to AutoTrac/Parallel tracking. If the AutoTrac/Parallel tracking KeyCard is inserted and tracking still does not appear on the Setup page, please wait a few moments and it should appear.*

First screen displayed will be SETUP. From SETUP screen, KeyCard, STARFIRE receiver (see STARFIRE Receiver section), Perf Monitor, GREENSTAR Display, RUN Page Layout, and Tracking screens can be selected. Refer to the following pages for setup of each of these screens.



PC:6793 -19-27A1IG01

SETUP Screens

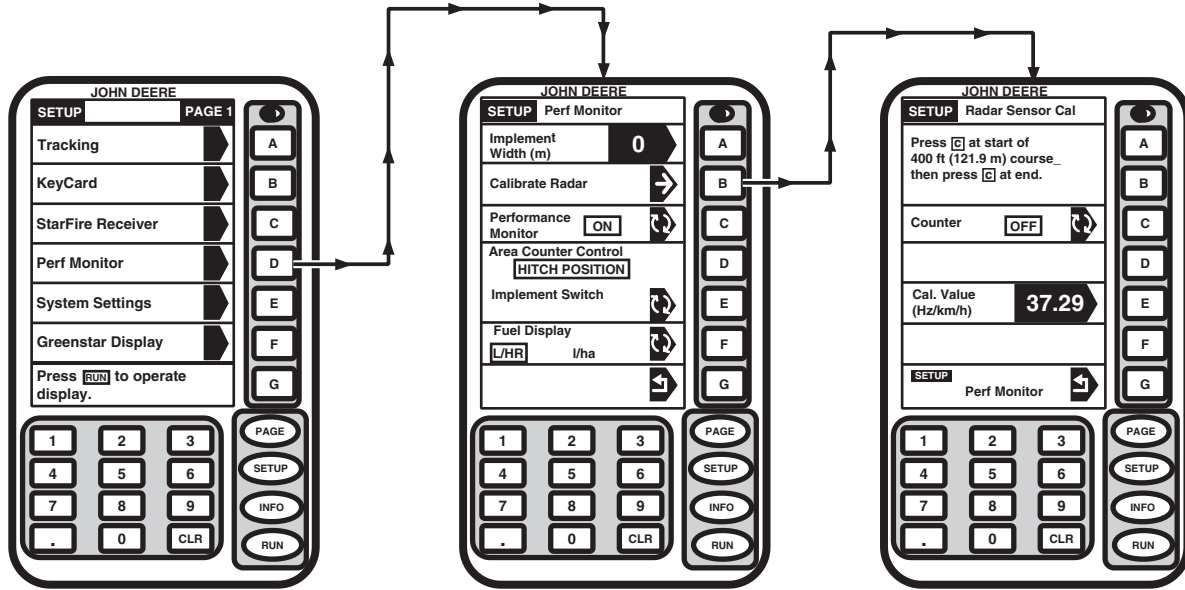


SETUP Tracking Screens

Continued on next page

OUO1035,000010B -19-07OCT02-1/5

SETUP Functions



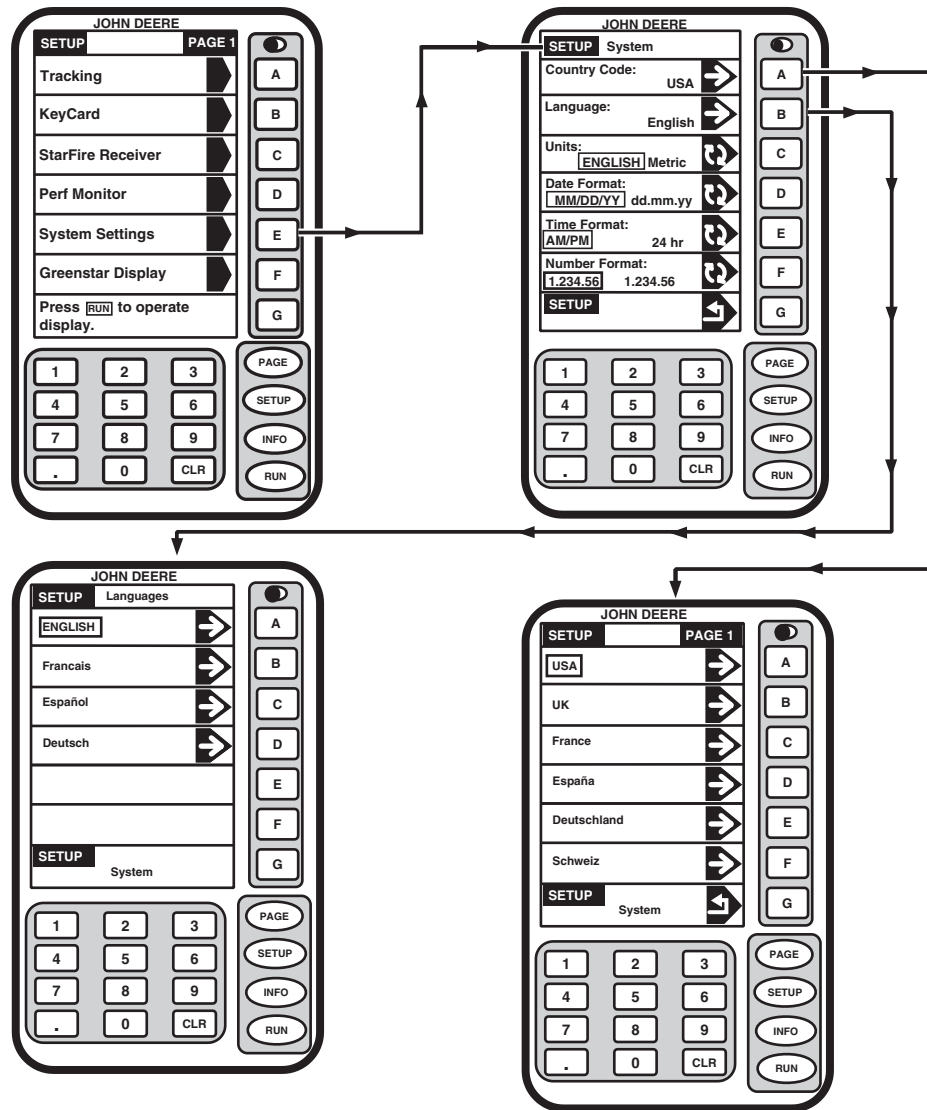
Perf Monitor Screens

Continued on next page

OUO1035.000010B -19-07OCT02-2/5

PC6993 -19-10JAN02

SETUP Functions



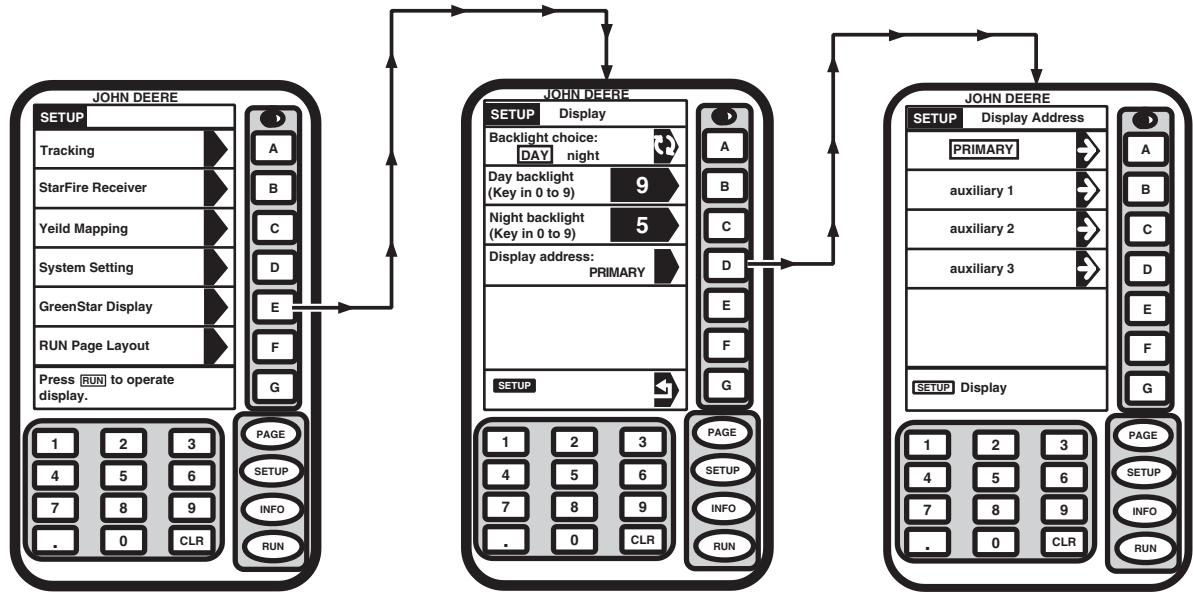
System Settings Screens

Continued on next page

OUO1035,000010B -19-07OCT02-3/5

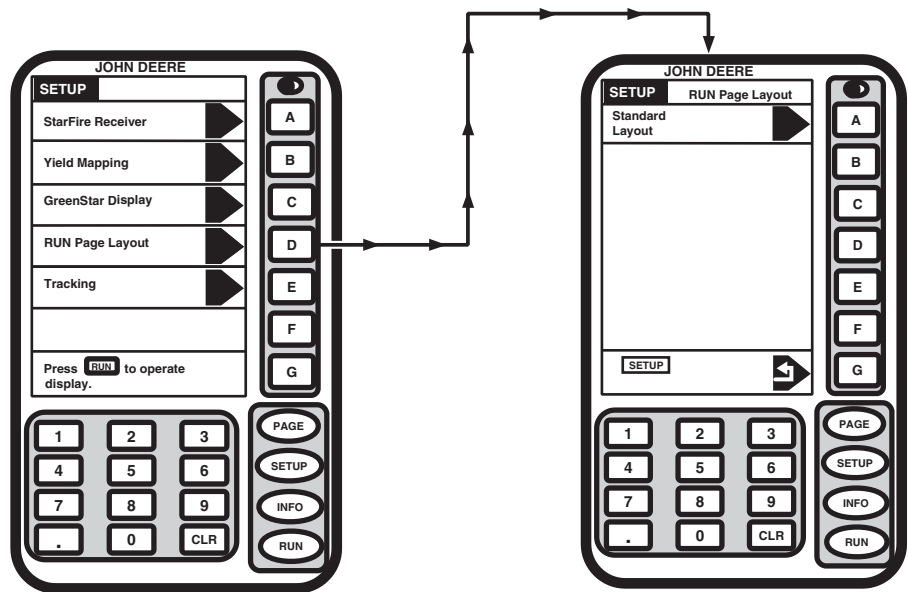
PC7412 -19-06NOV02

SETUP Functions



GREENSTAR Display Screens

OUO1035,000010B -19-07OCT02-4/5



RUN Layout Screen

OUO1035,000010B -19-07OCT02-5/5

SETUP - Tracking - PAGE 1

General Information:

SETUP - TRACKING - PAGE 1 allows the operator to prepare AutoTrac for operation in the field. From this screen the operator can select straight track, RowFinder, Curved Track or tracking off. They are described on the following pages.

To exit SETUP - Tracking screens press G.

JOHN DEERE

SETUP Tracking **PAGE 1**

Tracking Mode: **STRAIGHT TRACK**

Track Spacing (ft) **40.0**

Current Field **1** 2 3 4 5

Track 0 Heading: 0.0000°

Point A Latitude: 41° 31' 4.7" -N

Point A Longitude: 90° 25' 24.2" -W

Field 1 Point A **Save Current Location**

SETUP

1 **2** **3**
4 **5** **6**
7 **8** **9**
. **0** **CLR**

A
B
C
D
E
F
G

PAGE
SETUP
INFO
RUN

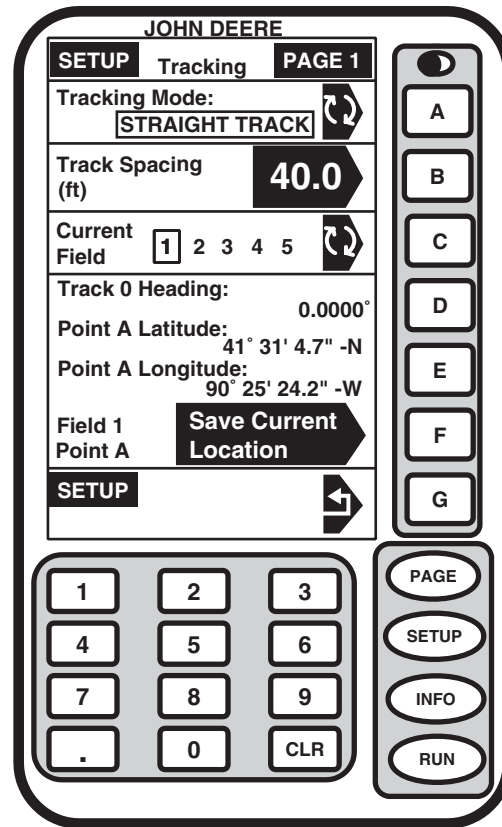
PC7414 -19-11NOV02

OUO1035,0000115 -19-07NOV02-1/1

Setup Straight Track

NOTE: *Straight Track must be selected in order to use AutoTrac.*

Press A until straight track is selected for straight track mode. Track spacing and track 0 must be set for operation in this mode. Track 0 is the pass from which all parallel passes in the field are based. Use the following procedures to setup track spacing and track 0.



PC7414 -19-11NOV02

OUO1035,0000160 -19-01FEB02-1/1

Set Track Spacing

Track spacing is the desired distance between each pass. Operator and GPS error must be considered when setting this parameter. Track spacing may need to be less than the actual implement width.

NOTE: The minimum setting for track spacing is 2.0 meters (6 feet). The default setting for tracking spacing is 9.0 m (30 ft). Maximum track spacing is 92.0 m (300 ft).

To set track spacing press B. This will open a window highlighting the current value. To change the width press numeric keys to enter track spacing widths from 2—92 in meters or 6—300 feet depending on the units selected on SETUP - Display - PAGE 1. The “CLR” key may be used while the value is highlighted in order to correct the number. Once the desired width has been entered press B to store new value.

JOHN DEERE

SETUP Tracking **PAGE 1**

Tracking Mode: **STRAIGHT TRACK**

Track Spacing (ft) **40.0**

Current Field **1** 2 3 4 5

Track 0 Heading: 0.0000°

Point A Latitude: 41° 31' 4.7" -N

Point A Longitude: 90° 25' 24.2" -W

Field 1 **Save Current Location**

SETUP

1 2 3

4 5 6

7 8 9

. 0 CLR

PAGE

SETUP

INFO

RUN

A

B

C

D

E

F

G

PC7414 -19-11NOV02

OUO1035,000011B -19-21OCT02-1/1

Set Current Field

Current field specifies which field the AutoTrac/Parallel Tracking system is providing navigation information on. Press C to change current field.

The current field cell allows the operator to define and store information for up to 250 fields. The stored information is the point A latitude/longitude and the heading for each field. Field 1—5 will be stored internally on the display. If a PC Card is inserted into the mobile processor, field 6—250 will be stored on the PC Card.

If no PC Card is installed in the mobile processor press C until required field is boxed in.

If a PC Card is installed in the mobile processor press C then enter the desired field number by using the numeric keypad. Press C again to save the selection.

Information for the selected field will be displayed.

The image shows a handheld device screen displaying the 'JOHN DEERE' logo at the top. Below the logo, the screen is divided into several sections. The top section has 'SETUP', 'Tracking', and 'PAGE 1' buttons. The 'Tracking Mode' is set to 'STRAIGHT TRACK'. The 'Track Spacing (ft)' is set to '40.0'. The 'Current Field' is set to '1'. Below this, 'Track 0 Heading' is '0.0000°'. 'Point A Latitude' is '41° 31' 4.7" -N' and 'Point A Longitude' is '90° 25' 24.2" -W'. At the bottom of the screen, there is a 'Field 1 Point A' section with a 'Save Current Location' button. To the right of the screen is a vertical column of buttons labeled A, B, C, D, E, F, and G. Below the screen is a numeric keypad with buttons for digits 1-9, 0, and CLR. To the right of the keypad are buttons for PAGE, SETUP, INFO, and RUN.

PC7414 -19-11NOV02

OUO1035,00001E3 -19-07OCT02-1/1

Set Track 0

This screen is used to define Track 0 for the field selected.

Current field information is shown at (A). Information provided includes track heading, latitude and longitude of Point A. All values will be shown as not defined if the track has not been previously defined.

After entering the field, drive to the starting point for your first pass and press F to record point A and begin setting Track 0.

A—Current Field Information

JOHN DEERE

SETUP Tracking **PAGE 1**

Tracking Mode: **STRAIGHT TRACK**

Track Spacing (ft) **40.0**

Current Field **1** 2 3 4 5

Track 0 Heading: 0.0000°

Point A Latitude: 41° 31' 4.7" -N

Point A Longitude: 90° 25' 24.2" -W

Field 1 Point A **Save Current Location**

SETUP

A (Callout pointing to Current Field)

Buttons: A, B, C, D, E, F, G, PAGE, SETUP, INFO, RUN, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, CLR, .

PC7404 -19-05NOV02

Continued on next page

OUO1035,000011D -19-17JAN02-1/2

Method 1:

NOTE: It is better to drive a longer distance than 3 m (10 ft) to accurately set Track 0.

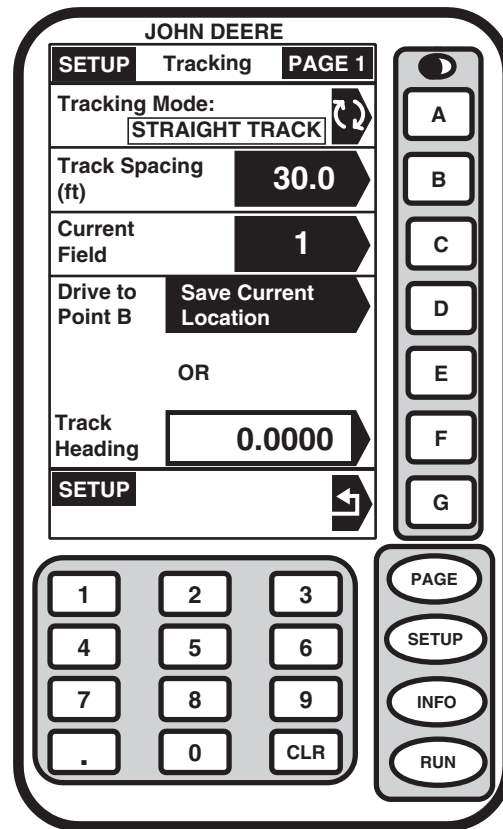
Drive a minimum of 3 m (10 ft). Press D to set Point B. A straight line is then defined through points A and B.

Method 2:

NOTE: This method for defining track 0 is effective when more than one tractor is in the field and the same track 0 is desired. Both tractors can use the same heading and use Shift Track (see Shift Track) to adjust the track position.

The operator can manually enter the direction/heading of Track 0. The direction can be any number from 0.000 to 360.000. For example 0.000 and 360.000 indicates north, 90.000 east, 180.000 south, and 270.000 west. Press F and using the numeric keypad enter the desired heading. Save the value by pressing F again.

Press PAGE key to go to next page of options.



PC7316 -19-15OCT02

OUO1035,000011D -19-17JAN02-2/2

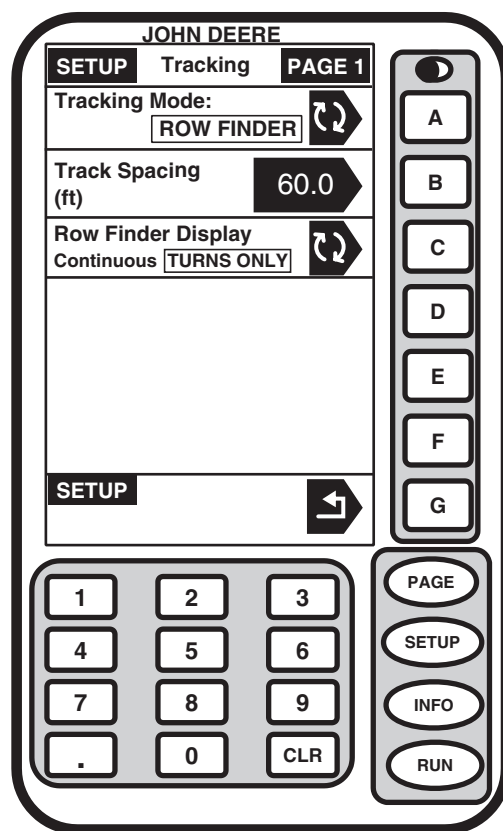
Setup RowFinder

NOTE: Only parallel tracking will operate in the RowFinder mode.

To select RowFinder, press A until RowFinder is shown boxed in capital letters. To operate RowFinder, track spacing must be set. (See Setup Track Spacing earlier in this section).

NOTE: RowFinder is only available when using full page view.

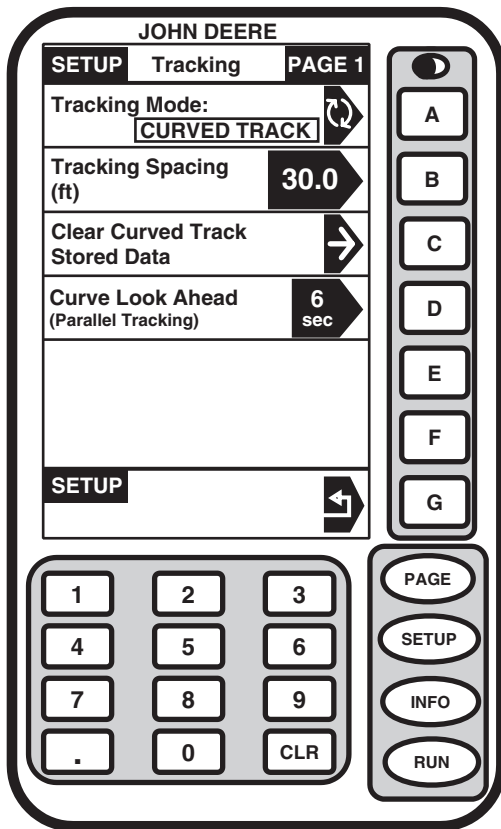
Press C to toggle between continuous and turns only. Selection will appear boxed in capital letters. When continuous mode is selected, the navigation line will remain visible on the display. If turns only is selected, the navigation line will remain on the display for a distance of four times the track spacing from where the Set Row button was pressed on RUN - PAGE.



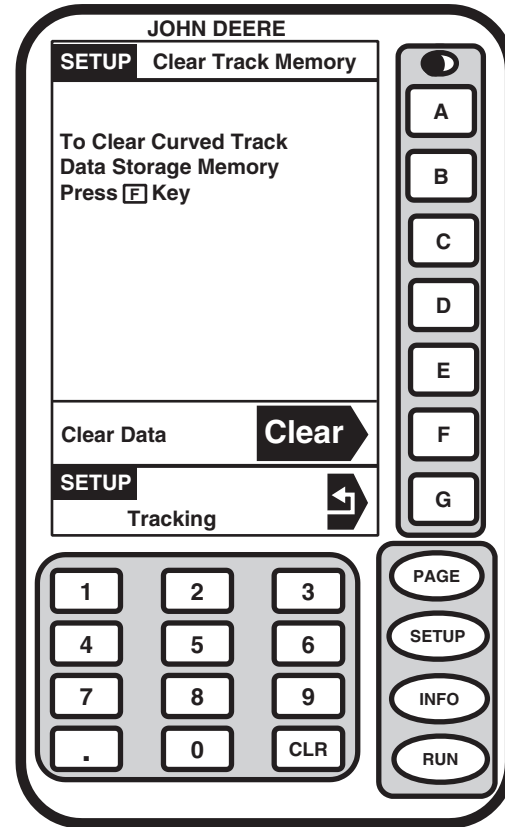
PC6983 -19-07JAN02

OUO1035,000011E -19-17JAN02-1/1

Setup Curved Track



PC7280 -19-09OCT02



PC7411 -19-06NOV02

NOTE: To set track spacing (see Track Spacing earlier in this section).

Curved Track is only available when using full page mode.

To select Curved Track press A until Curved Track is shown boxed in capital letters. To operate Curved Track, track spacing must be setup.

IMPORTANT: The operator must stop the machine before clearing Curved Track stored data.

When operating Curved Track with ACCUDEPTH, after the operator presses Clear Curved Track Stored Data, the system prompts the user to cycle power to clear memory.

NOTE: The amount of free memory will be displayed in RUN - Tracking page.

Clear the curved track memory when beginning a new field.

When beginning a new field the contents of the stored data must be cleared. To clear stored data press C on SETUP - Tracking - PAGE 1. SETUP - Clear Track Memory screen will appear. Press F to clear memory or G to cancel.

Curved Track Look Ahead

This option allows the operator to change how far ahead the system looks (in seconds) when operating in the curved track mode. The default setting is 6 seconds.

This option is used when the operating at higher speeds and the operator desires the system to search further ahead for line segments.

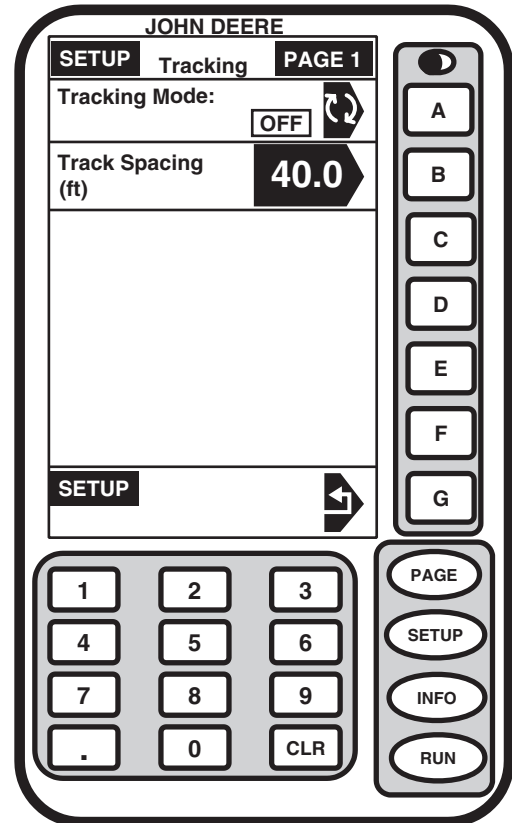
When operating in the curved track mode, curved look ahead can be changed from 0—9 seconds. Press C then enter desired selection using numeric key pad.

OUO1035,00001E4 -19-08OCT02-2/2

Turn Tracking OFF

Press A to turn Parallel Tracking ON and OFF.

When tracking is OFF, it will be removed from the RUN PAGE screens and the display can be fully utilized by other GREENSTAR devices.



PC6996 -19-10JAN02

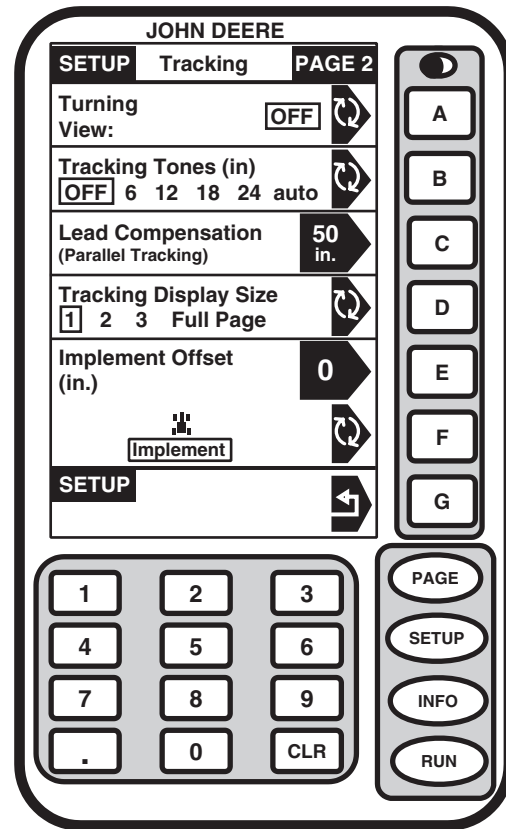
OUO1035,0000146 -19-23JAN02-1/1

SETUP - Tracking - PAGE 2

General Information:

To access SETUP - Tracking - PAGE 2 press PAGE button.

SETUP - Tracking - PAGE 2 allows the operator to turn turning view ON/OFF, set tracking tone, insert lead compensation, change tracking display size and set implement offset.



PC7289 -19-09OCT02

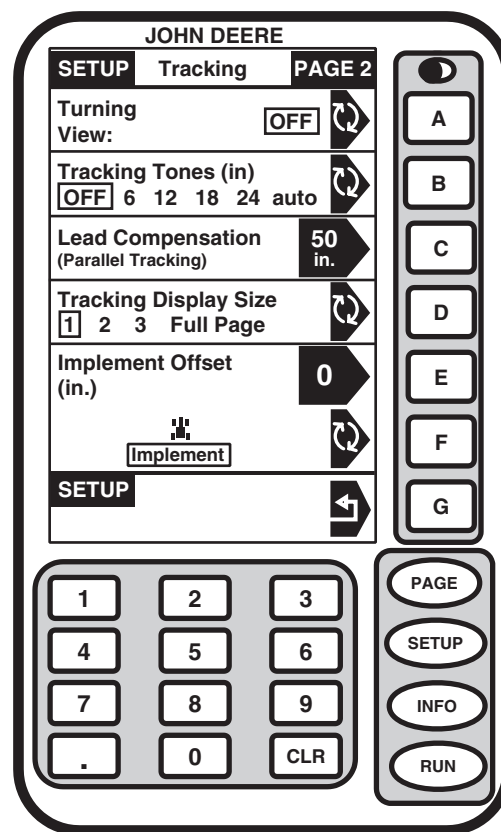
OUO1035,0000122 -19-08OCT02-1/1

Turning View

NOTE: Track 0 must be established for the current field for turning view to be active.

Press A to turn turning view ON and OFF.

The turning view provides a visual indicator of the machine in relationship to the closest track as the machine turns. This view can be used as a guide when turning into the next track. The operator can “see” the relationship between the machine and the track.



PC7289 -19-09OCT02

OUO1035,0000123 -19-08OCT02-1/1

Tracking Tones

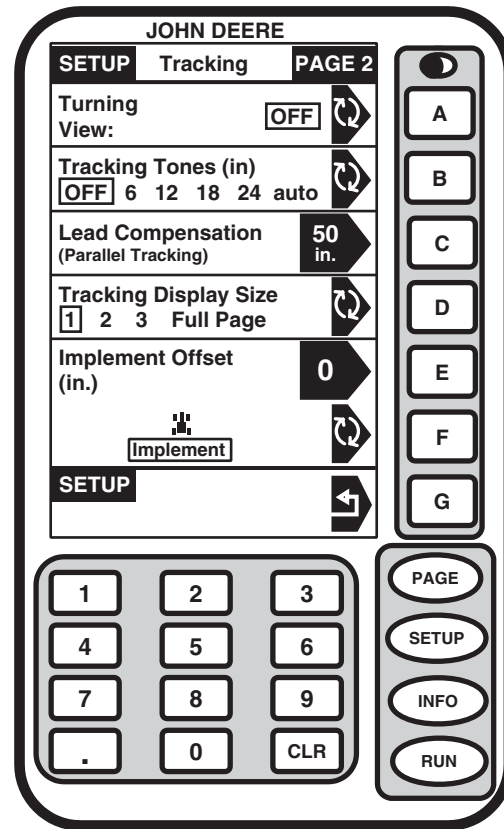
Press B to toggle between tracking tone selections. Tones can be set to sound when a desired off track error is reached. This selection also allows tracking tones to be turned off.

Tracking tones can be used as an audible indication of steering direction. If track is to the right of machine, two low beeps will sound, if to the left of the machine a single high beep will sound. The alarm will repeat twice a second until the off-track error between the machine and the desired track is outside the threshold as described below.

The following shows the off track error thresholds, at which the tones can be set to turn on and off.

- 15 cm (6 in) on = 30 cm (12 in) off
- 30 cm (12 in) on = 102 cm (40 in) off
- 45 cm (18 in) on = 152 cm (60 in) off
- 60 cm (24 in) on = 203 cm (80 in) off
- Auto 15 cm (6 in) on = 203 cm (80 in) off

When auto mode is selected the frequency of the tone increases as the off track error increases.



PC7289 -19-09OCT02

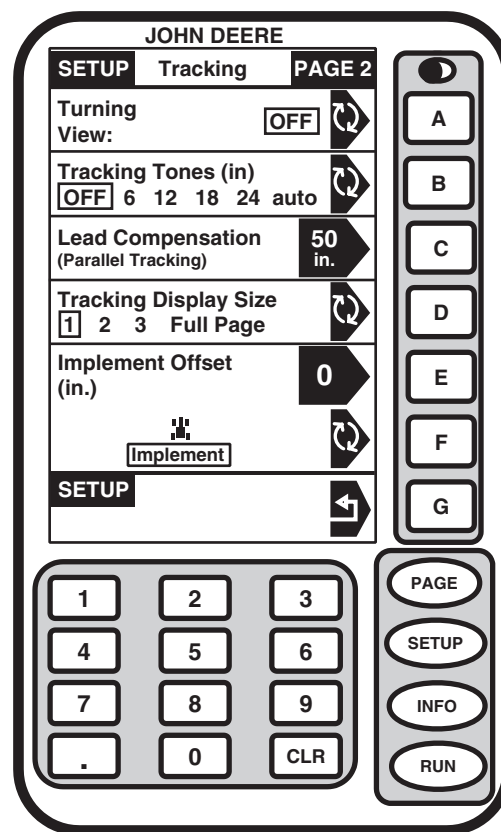
OUO1035,0000124 -19-08OCT02-1/1

Tracking Lead Compensation

NOTE: This feature is disabled when working in Curved Track or AutoTrac modes.

Tracking lead compensation is used to calculate a position in front of the receiver more closely associated with the front of the machine. Tracking lead compensation helps minimize over steering when lining up with track and position delays observed when making a turn. The value entered will depend on the speed of travel, type of machine, and user preference. The default setting for lead compensation is 127 cm (50 in.). Settings range from 0—250 cm (0—100 in.).

Recommended Tracking Lead Compensation	
Machine Type	Lead Compensation
Sprayer	1829 mm (72 in.)
Row Crop Tractor	711 mm (28 in.)
4WD Tractor	2032 mm (80 in.)



PC7289 -19-09OCT02

OUO1035,0000125 -19-06NOV02-1/1

Tracking Display Size

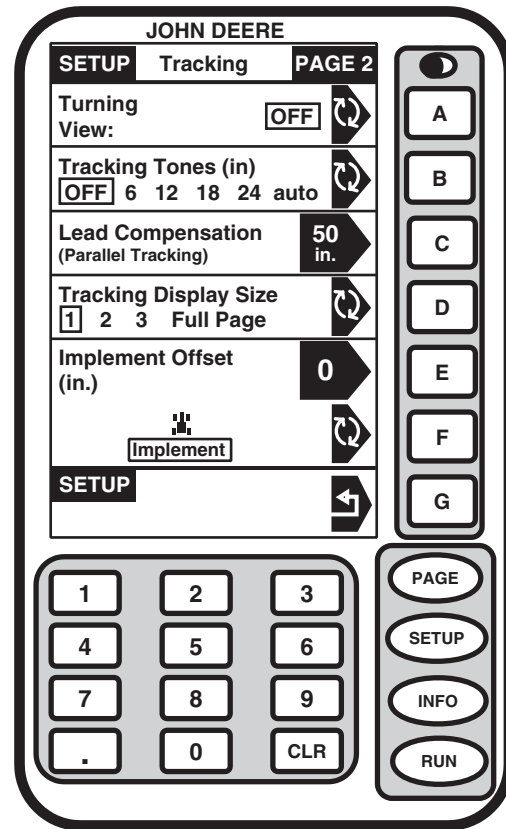
NOTE: When the tracking display size is changed, performance monitor information will not be displayed on RUN - PAGE 1 until the power is cycled.

When full page mode is selected tracking information will be displayed on RUN - Tracking - PAGE 3.

Aerial view (curved track mode only) can only be accessed from the full page mode. Full page mode can either be selected on SETUP - Tracking - PAGE 2 or by pressing letter key next to Full Page on RUN - PAGE 1.

Press D to change tracking display size. Tracking display size will specify number of sections that will be used on RUN - PAGE 1. Tracking display size allows the operator to choose the appropriate size of RUN - PAGE 1 display based on what other GREENSTAR applications are using the display.

Tracking Display Size	
Setting	Size of Display
1	1 Cell Displayed
2	2 Cells Displayed
3	3 Cells Displayed
Full Page	0 Cells Page 1 and 2; All Cells Page 3



PC7289 -19-09OCT02

OUO1035,0000126 -19-08OCT02-1/1

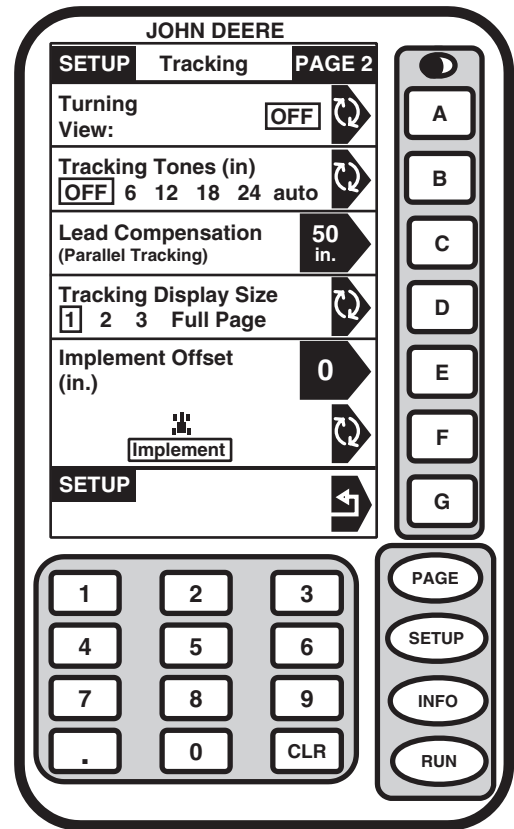
Implement Offset

This feature is used to eliminate skips or overlaps due to an offset implement or an implement that does not track directly behind the machine.

NOTE: In this example the implement position is shown at the center.

If no implement offset is required, then cell E should read 0. If an offset is required, press letter button E to highlight the cell, enter the amount of offset in centimeters/inches using the numeric keypad, then press letter button E again to save the offset amount. Press button F to select the direction of the offset.

There are two scenarios where implement offset is used.



PC7289 -19-09OCT02

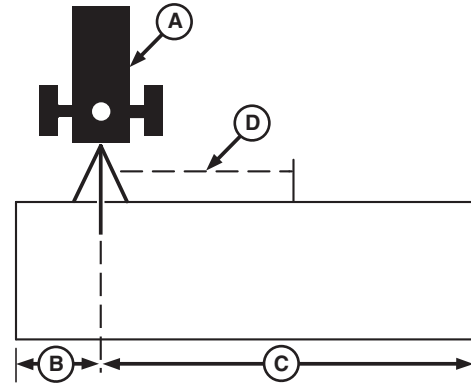
Continued on next page

OUO1035,00001E5 -19-08OCT02-1/4

Scenario 1 Offset Implement: When an offset implement is used (such as an offset disk), enter the distance required to move the “position” of the receiver (A) to the center of the implement. For example, if you are using an 20’ offset disc with 12’ to the right of the hitch and 8’ to the left of the hitch, enter 24 inches in cell E and press F button until the implement is displayed to the right side of the machine icon. This will position the receiver 24 inches to the right, so it is in the center of the implement.

The following steps are used to set the implement offset.

1. Measure total width of the implement and enter this amount in SETUP - Tracking - PAGE 1 cell B.
2. Measure distance from center of hitch to left-end of implement (B).
3. Measure distance from center of hitch to right-end of implement (C).
4. Subtract the smaller number from the larger number and divide by 2. This is the amount of offset (D) that needs to be entered in cell E.
5. Press E and enter the amount from step 4 in centimeters (inches).
6. Press E again to save the setting.
7. Press F to select the direction of the offset.
8. Set Track 0 (See Set Track 0).



A—Position Receiver
 B—Distance to Left-End of Implement
 C—Distance to Right-End of Implement
 D—Amount of Offset

PC7369 -UN-28OCT02

Continued on next page

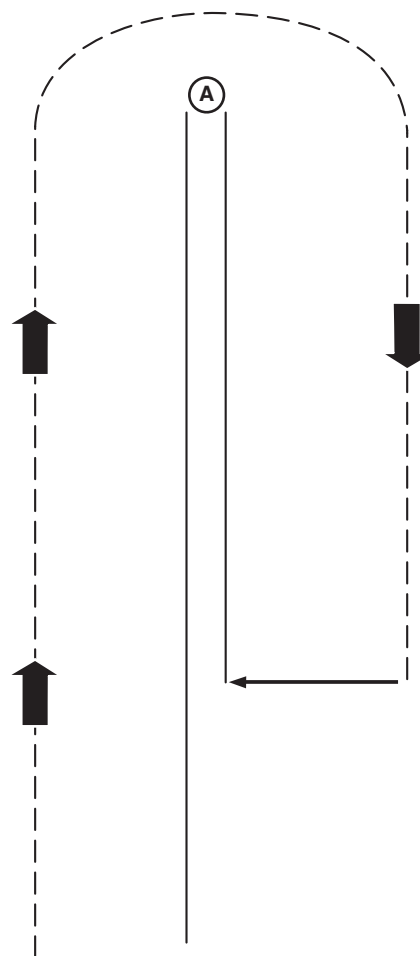
OUC1035,00001E5 -19-08OCT02-2/4

Scenario 2 Implement always pulls to one side (right or left) during field operation: This scenario typically results from improper implement setup or operation. Check the implement operator's manual to ensure the implement is setup and operating correctly. Before setting implement offset make sure the appropriate track spacing is entered on SETUP - Tracking screen. If there still is skip or overlap then use the following procedures. This may help eliminate or lessen the effect of skips or overlaps.

NOTE: Implement offset will not compensate for side draft resulting from operating on sloped or uneven terrain.

To determine how much and which direction to set the implement offset, use the following procedures.

1. Set offset in Cell E to 0 (unless operating an offset implement as described in Scenario 1).
2. Set track spacing and Track 0 (See SETUP section).
3. Make a complete pass up one track and back down a consecutive track. Stop before completing the second pass. There are three possible results:
 1. One pass overlapping the other.
 2. The two passes do not meet resulting in a skip.
 3. No overlap or skip (no further action required).
4. Measure the amount of overlap or skip (A) and divide by 2. This is the amount of offset that needs to be entered in cell E.
5. Press E and enter the amount of offset in centimeters (inches).
6. Press E again to save this value.
7. Press F to move the direction of the offset.
 1. If the passes result in an overlap press F to move the implement icon towards the overlap. If the overlap is on the right side of the implement, press F until the icon is to the right, if the overlap is on the left, press F until the icon is to the left.



A—Amount of Skip

PC7370 -UN-28OCT02

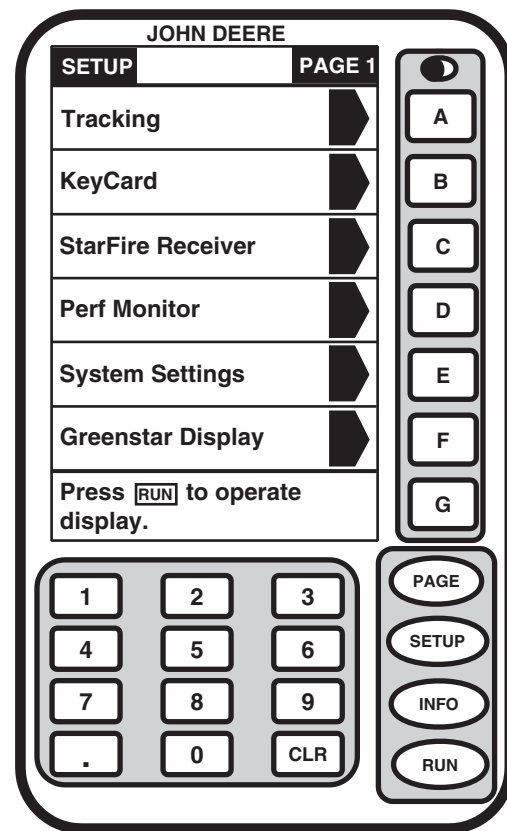
2. If the two passes result in a skip, press F to move the implement icon away from the skip. If the skip is on the right side of the implement, press F until the icon is on the left. If the skip is on the left side of the implement press F until the icon is on the right.

OUO1035,00001E5 -19-08OCT02-4/4

SETUP KeyCard

This screen is used to load new software for Parallel Tracking. (See Load Software section).

Press button next to KeyCard to access screen.

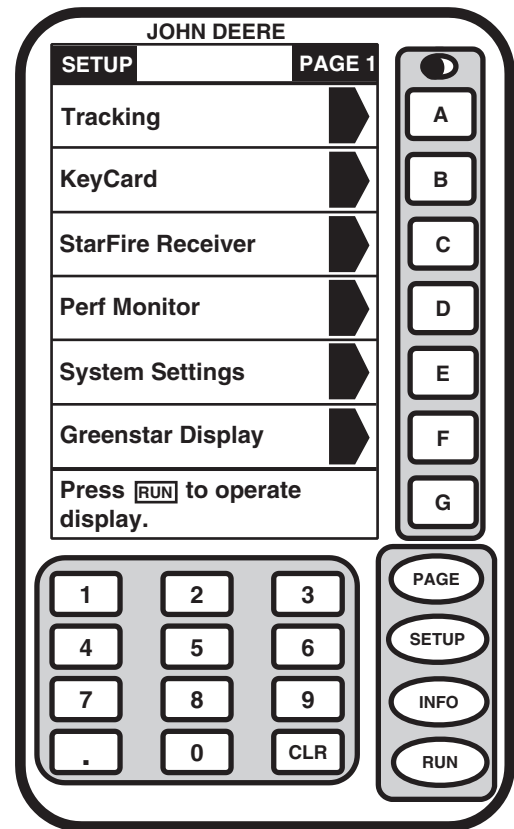


PC6793 -19-27AUG01

AG,OUO1035,2186 -19-16JUN00-1/1

SETUP STARFIRE Receiver

See STARFIRE Receiver section for setup procedures.
Press button next to STARFIRE Receiver to access screen.

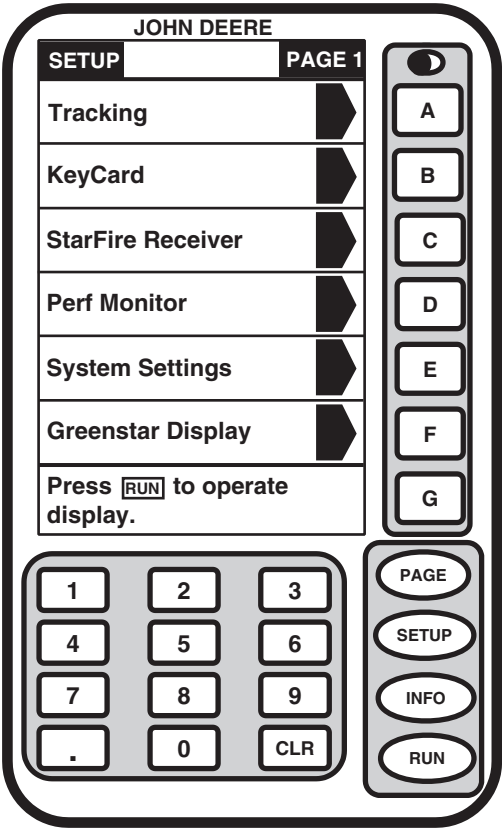


PC6793 -19-27AUG01

AG,OUO1035,2198 -19-21JUN00-1/1

SETUP Perf Monitor

Press button next to Perf Monitor to access setup screens.



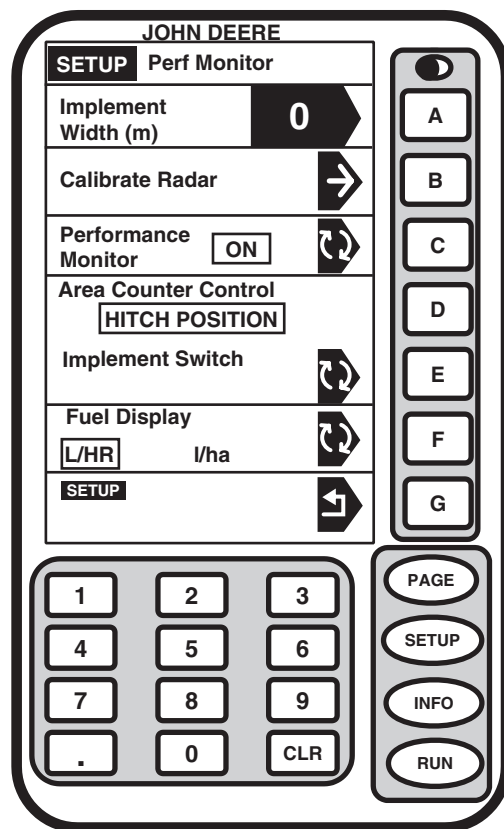
PC6793 -19-27AUG01

Implement Width

NOTE: Implement width used for the performance monitor is separate from track spacing used with AutoTrac/Parallel Tracking.

Press A and using numeric keypad enter width of implement.

Press A to ENTER value.



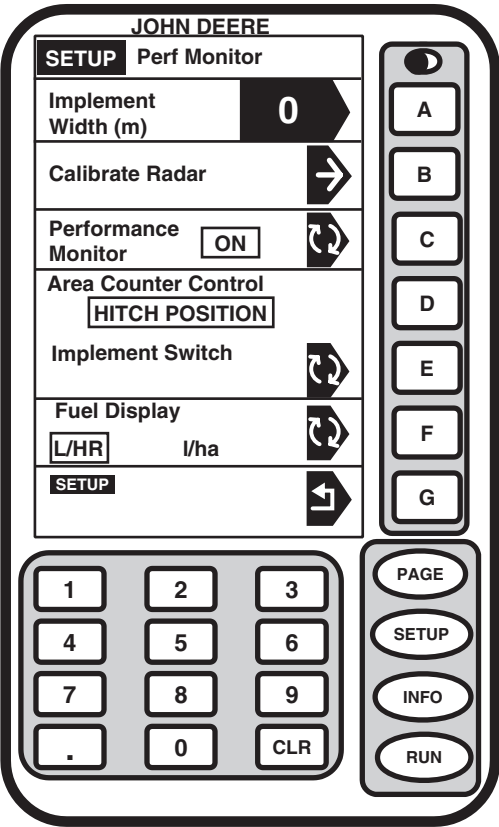
PC6428 -19-19JUN00

Continued on next page

OUC1035,0000113 -19-22OCT02-2/8

Radar Sensor Direct Entry Calibration

Press B to access SETUP - Radar Sensor Cal.



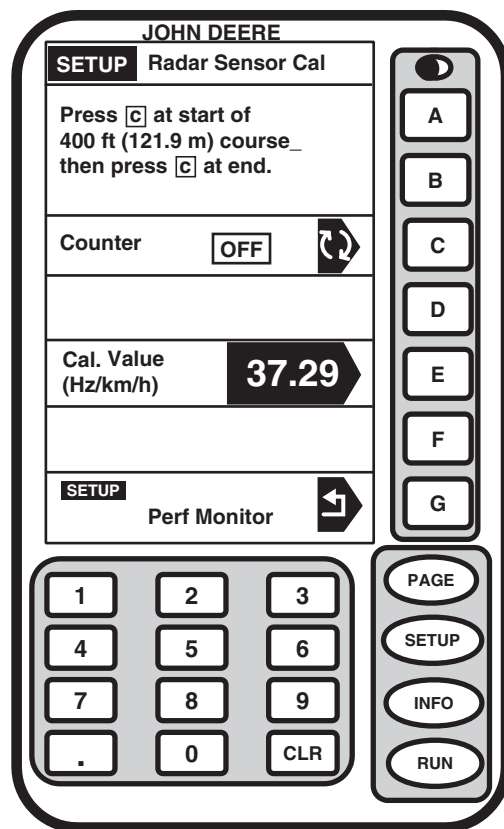
PC6428 -19-19JUN00

NOTE: Factors can range from 1.0 to 150.0 Hz/mph.

Press E and using numeric keypad enter predetermined factor.

If factor is not within range, section G will show “Radar Calibration Error”. Enter factor within acceptable range.

Press E to ENTER value.



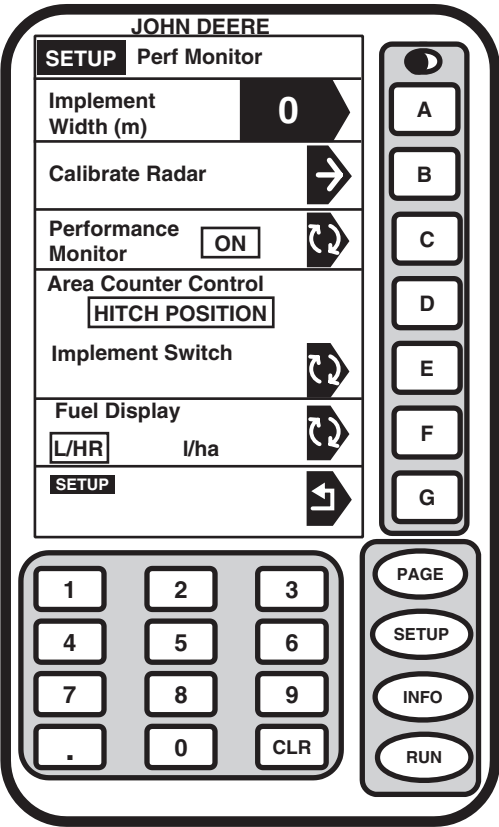
PC6429 -19-19JUN00

Continued on next page

OUO1035,0000113 -19-22OCT02-4/8

Radar Sensor Manual Calibration

Press B to access SETUP - Radar Sensor Cal.



PC6428 -19-19JUN00

Before beginning calibration layout a straight line course 122 m (400 ft) long.

Press C to start counter. Display will change to ON boxed in.

NOTE: Do not backup if the end of the course is passed. Return to the starting point and repeat calibration procedure.

Drive machine approximately 3.2 km/h (2 mph) along the straight line course 122 m (400 ft).

Press C to stop counter. Display will change to OFF boxed in.

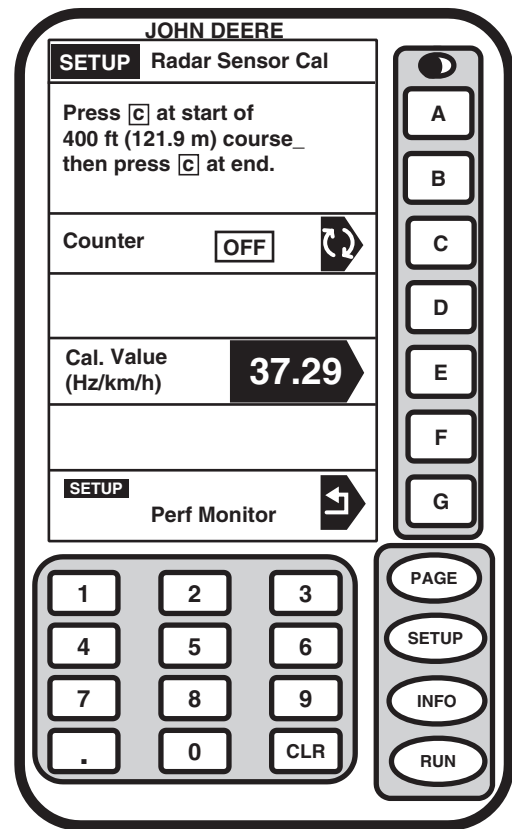
A new calibration factor will appear on black arrow in section E.

If factor is within range, section G will show "Radar Sensor Calibration Finished".

If factor is not within range section G will show "Radar Sensor Calibration Error".

Repeat calibration procedure at a slightly faster speed, but less than 11.3 km/h (7 mph).

When radar calibration is successful section G will show "Radar Sensor Calibration Finished".



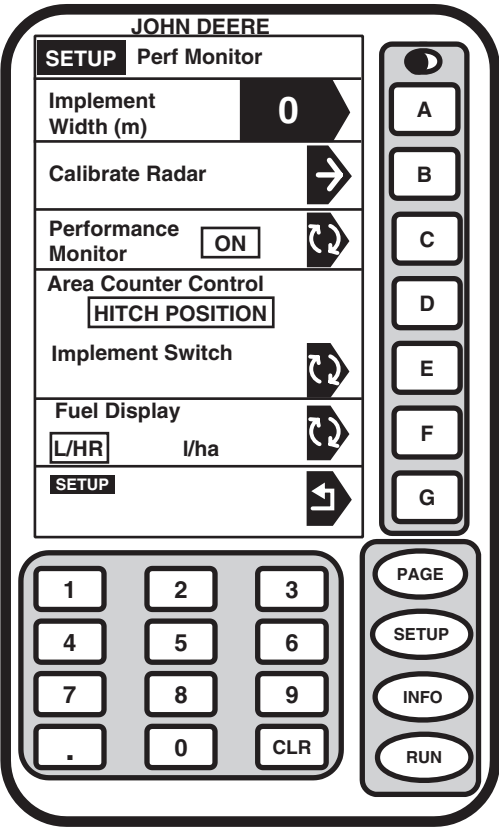
PC6429 -19-19JUN00

Continued on next page

OUO1035,0000113 -19-22OCT02-6/8

Area Counter Control

Press E to select either Hitch Position (for tractors equipped with HCU) or Implement Switch for area counter control. Selection will be displayed as boxed in capital letters.

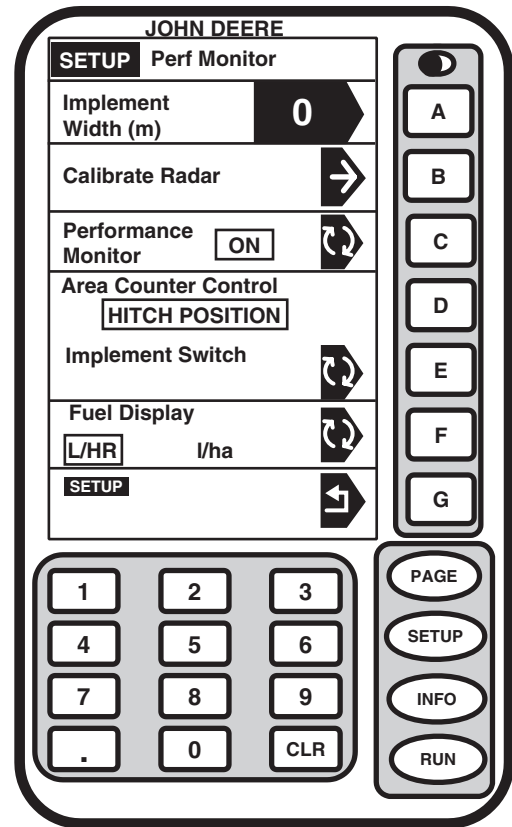


PC6428 -19-19JUN00

Fuel Display

NOTE: English or Metric units are selected under *GREENSTAR Display*. (See *Setup System Settings* later in this section).

Press F to select desired units of measure. Select either unit of measure per hour or unit of measure per area. Selected units will display as boxed in capital letters.



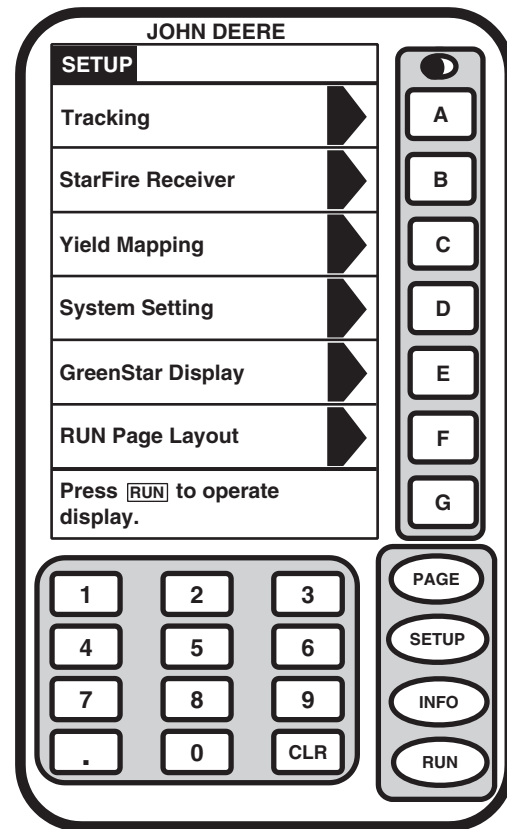
PC6428 -19-19JUN00

OUO1035,0000113 -19-22OCT02-8/8

System Settings

System settings screen is used to select the country code, language, unit of measure (English or Metric), date, time and number format desired by the operator.

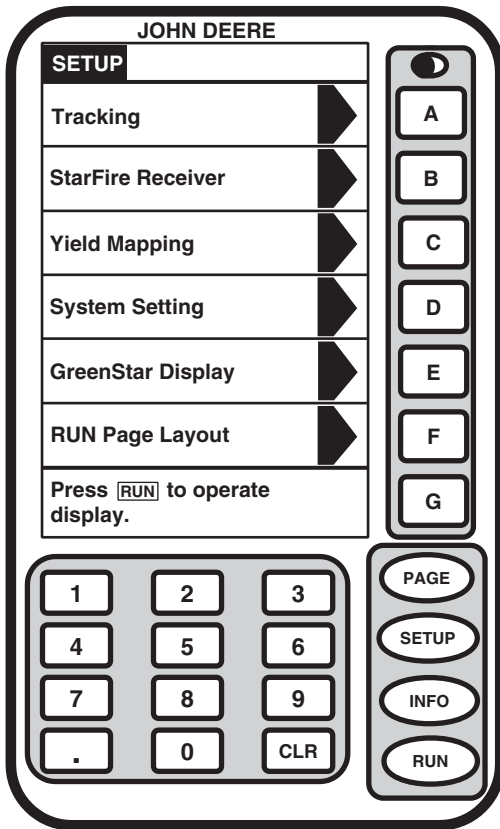
Each of these settings can be set as a group using the country code or individually.



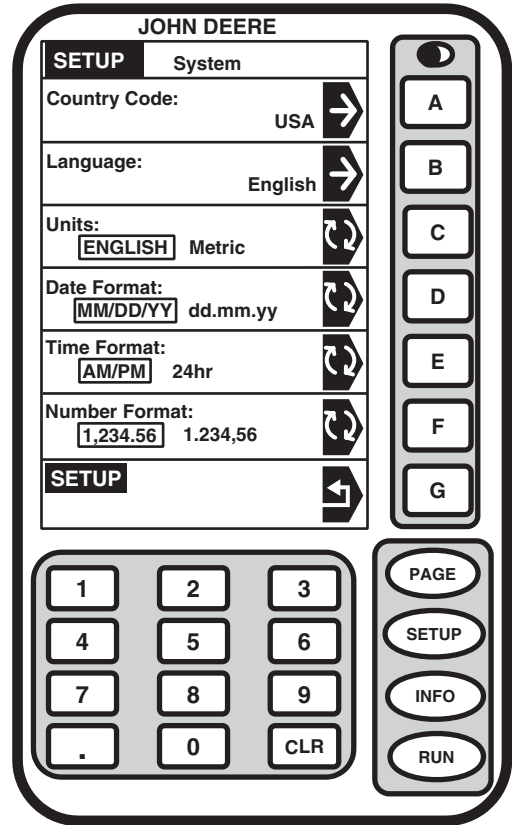
PC7356 -19-21OCT02

OUO1035,00000E2 -19-22OCT02-1/1

Country Code



PC7356 -19-21OCT02



H70321 -19-16NOV01

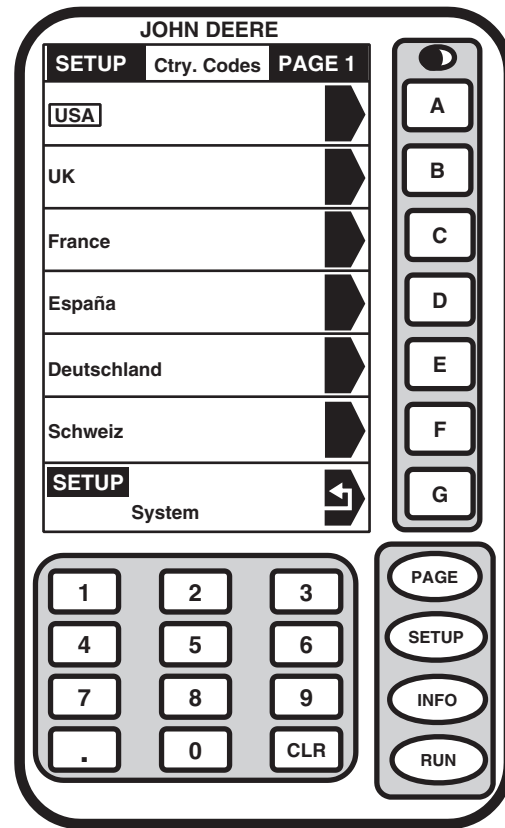
Press button next to System Settings and SETUP - System screen will appear.

Continued on next page

OUO1035,0000105 -19-22OCT02-1/2

Press A and SETUP - Ctry Codes - PAGE 1 will appear.

The following countries are currently available (with their default settings):



H70323 -19-15NOV01

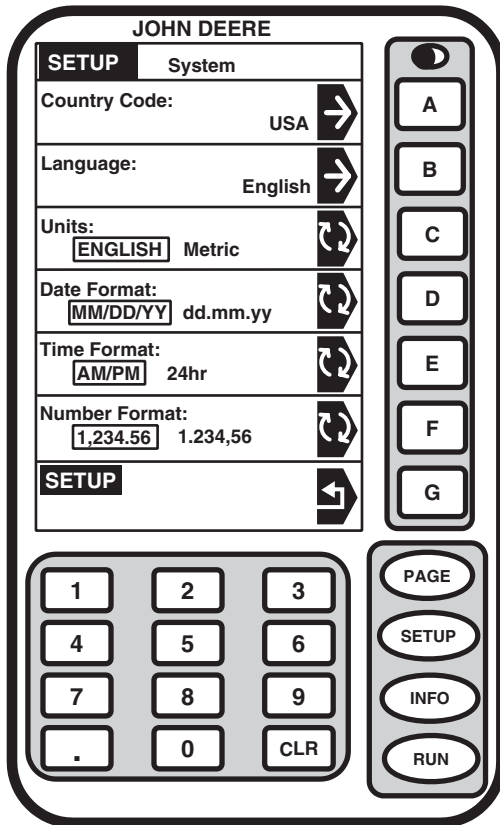
Country	Language	Units	Date Format	Time Format	Number Format
USA	English	English	MM/DD/YY	AM/PM	1,234.56
UK	English	Metric	DD.MM.YY	AM/PM	1,234.56
France	French	Metric	JJ.MM.AA	24HR	1.234,56
Espana	Spanish	Metric	DD.MM.AA	24HR	1.234.56
Deutschland	German	Metric	TT.MM.JJ	24STD	1.234,56
Schweiz	German	Metric	TT.MM.JJ	24STD	1.234,56
Osterreich	German	Metric	TT.MM.JJ	24STD	1.234,56

If desired country does not appear press PAGE button to see additional countries.

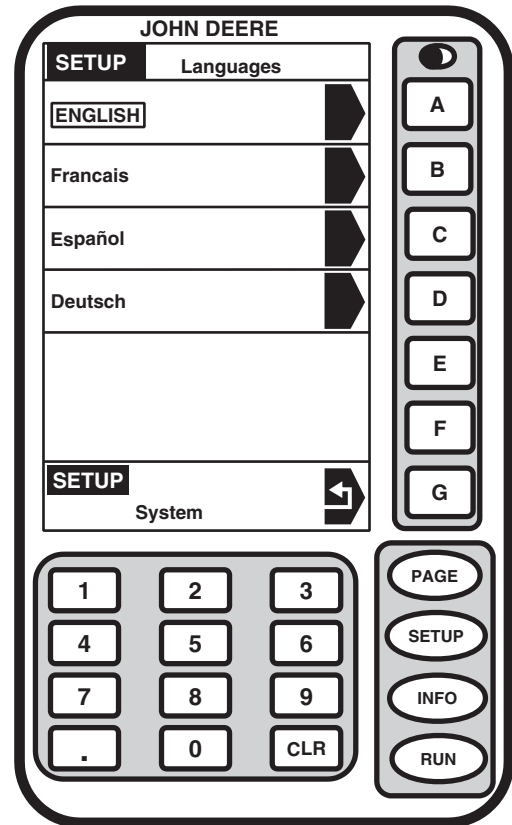
Press letter button next to desired country.

Depending on which country is selected the SETUP - system page will display default settings for each of the cells.

Language



H70321 -19-16NOV01



H70322 -19-15NOV01

NOTE: To select different language they must be first loaded on the system. To load languages see Setup and Load A Language.

Press B and SETUP - Language will appear.

Currently only English, French, Spanish and German languages are available.

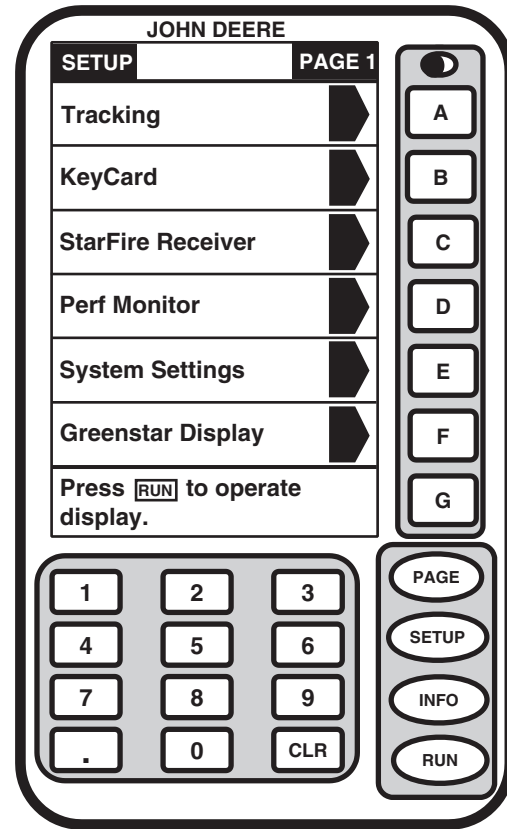
Press letter button next to desired language.

OUC1035,0000106 -19-20NOV01-1/1

GREENSTAR Display

The GREENSTAR Display is used to select the backlight level and display address.

Press button next to GREENSTAR Display. SETUP - Display - PAGE 1 screen will appear.



PC6793 -19-27AUG01

Continued on next page

OUC1035,0000114 -19-17JAN02-1/2

Backlight Choice

To select DAY backlight or NIGHT backlight, press A. The choice will appear boxed in and in capital letters.

Day Backlight

Press B to change DAY backlighting level intensity. Using numeric keypad, enter any number from 0 to 9 for intensity level. The higher the number the brighter the screen.

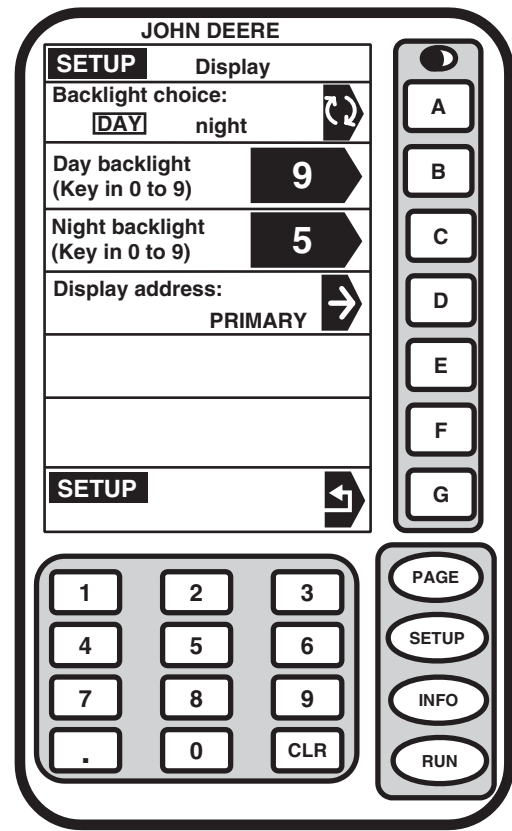
Night Backlight

Press C to change NIGHT backlighting level intensity. Using numeric keypad, enter any number from 0 to 9 for intensity level. The higher the number the brighter the screen.

Display Address

IMPORTANT: When using AutoTrac/Parallel Tracking with either SPRAYSTAR™ or SEEDSTAR™ systems SPRAYSTAR and SEEDSTAR systems must be set to primary display. AutoTrac/Parallel Tracking must be set to auxiliary 1.

This cell shows the current address of the display. To change display address (See Changing Display Address later in this section).

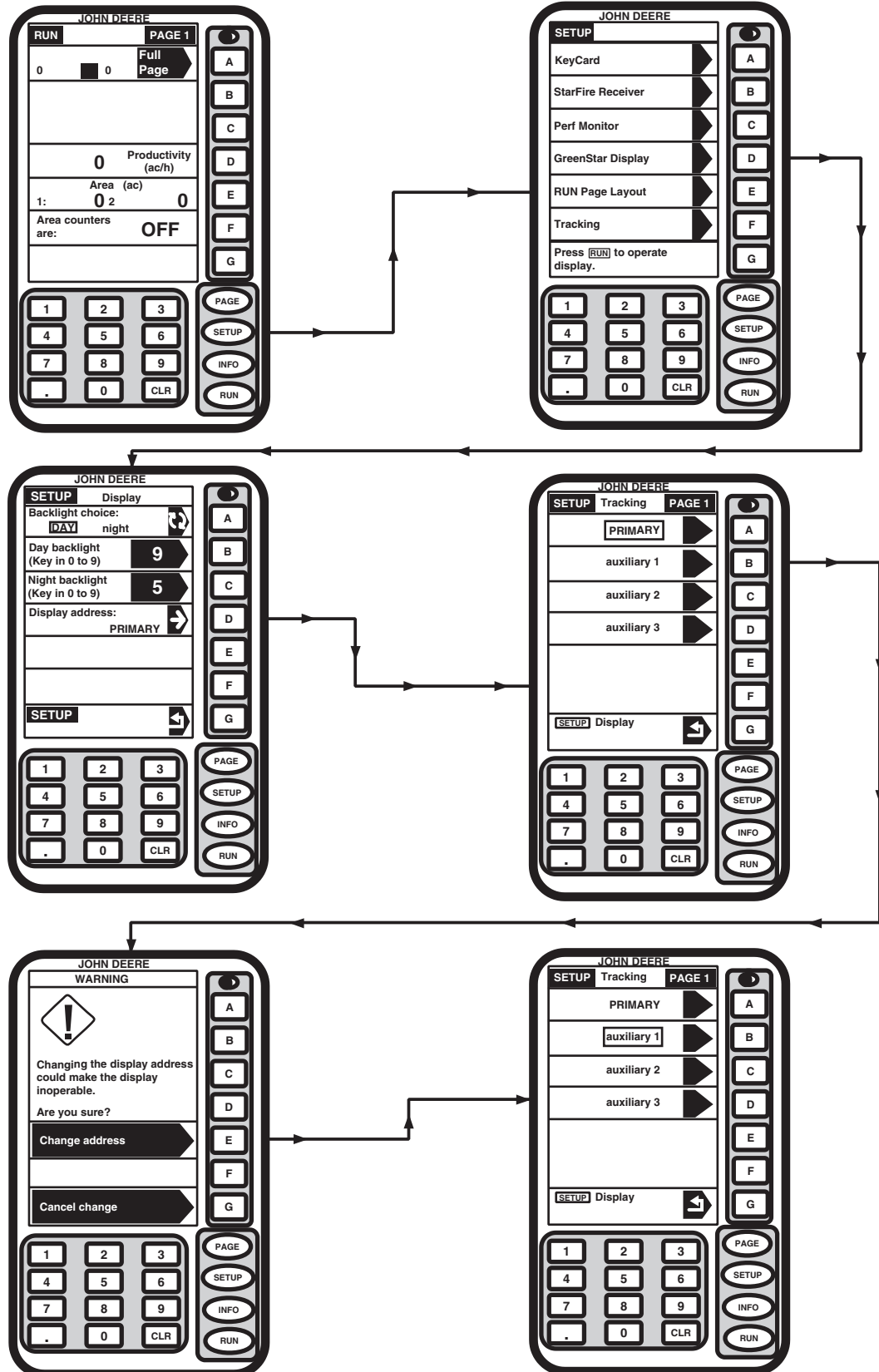


PC6792 -19-27AUG01

SPRAYSTAR is a trademark of Deere & Company.
SEEDSTAR is a trademark of Deere & Company.

OUO1035,0000114 -19-17JAN02-2/2

Changing Display Address Screens



PC6786 -19-07SEP01

OUO6092,000025D -19-27AUG01-1/1

Changing Display Address

It is possible to operate the GREENSTAR system with more than one display. In order to use multiple displays, each display must have a different name.

The main display for the system is called the primary display. The secondary display (Parallel Tracking) is set to auxiliary.

AG,OUO1035,2114 -19-23OCT02-1/7

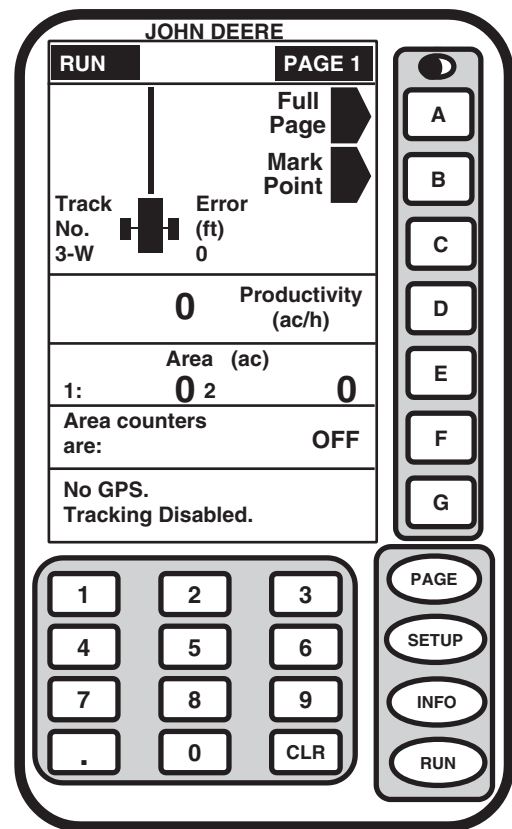
NOTE: The AutoTrac/Parallel Tracking display must be changed back to primary when operating as a stand alone display.

The primary display (when operating dual displays) must be connected to the CCD Bus in order for the system to operate correctly.

Make sure the auxiliary display is attached to the auxiliary harness.

AutoTrac and Parallel Tracking can be operated on either the primary or auxiliary display. If tracking is ON on one display then turned ON on the other display the original display will be turned OFF. Information (i.e, Curved Track or Track 0) will not be transferred between displays.

1. To change the display address press SETUP button.

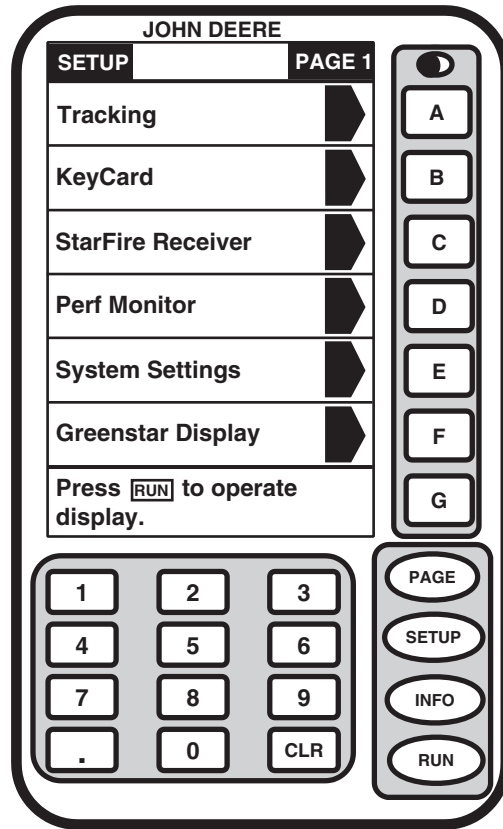


PC6795 -19-27/AUG01

Continued on next page

AG,OUO1035,2114 -19-23OCT02-2/7

2. Press button next to GREENSTAR Display.

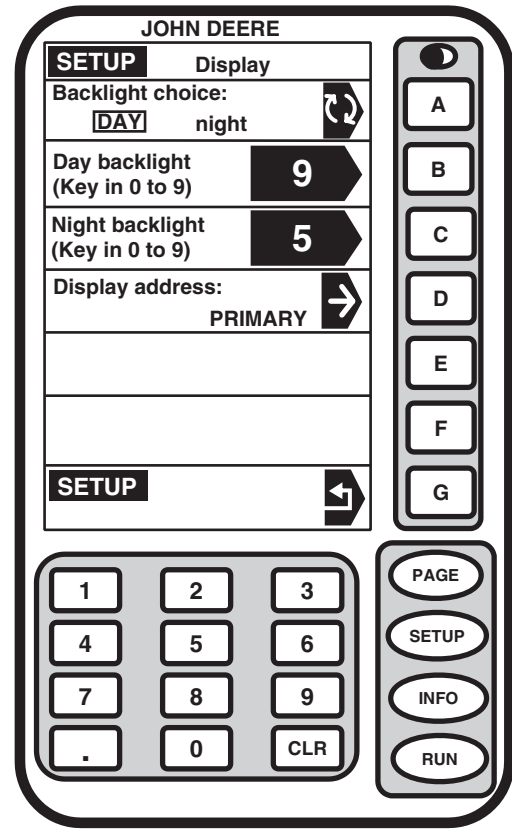


PC6793 -19-27AUG01

Continued on next page

AG,OUO1035,2114 -19-23OCT02-3/7

3. To change address press D.

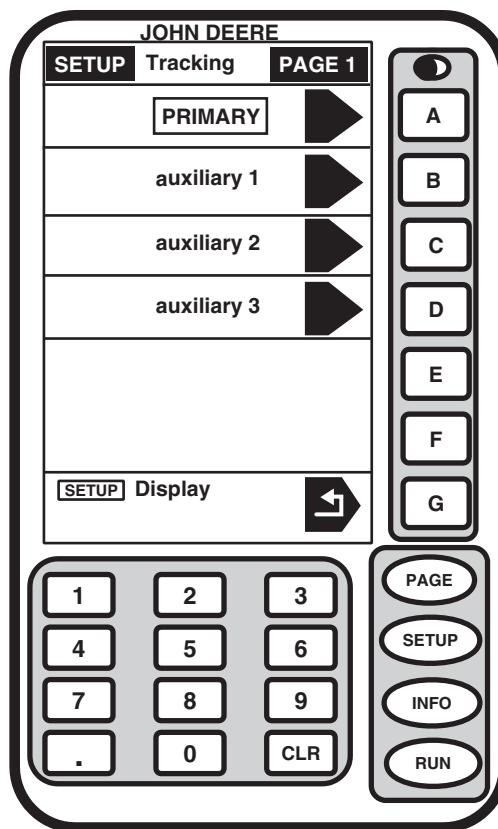


PC6792 -19-27AUG01

Continued on next page

AG,OUO1035,2114 -19-23OCT02-4/7

4. Press B to select auxiliary 1.

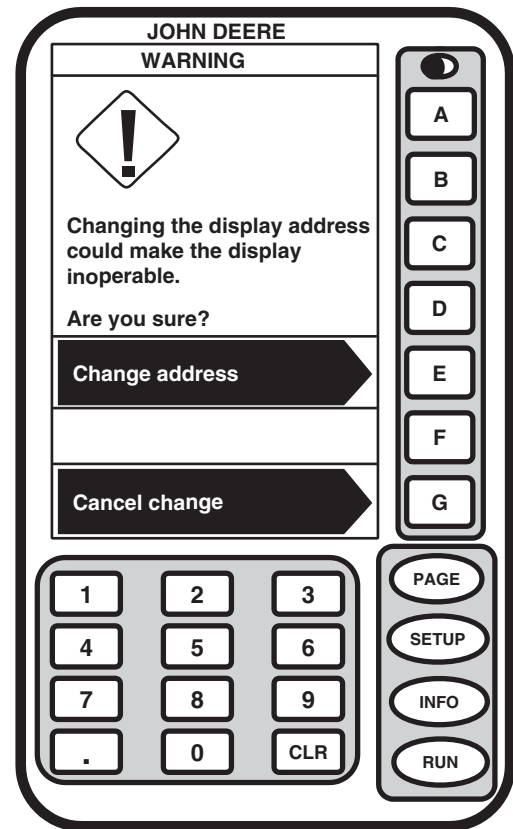


PC6817 -19-07SEP01

Continued on next page

AG,OUO1035,2114 -19-23OCT02-5/7

5. Press E to change address or G to cancel change.

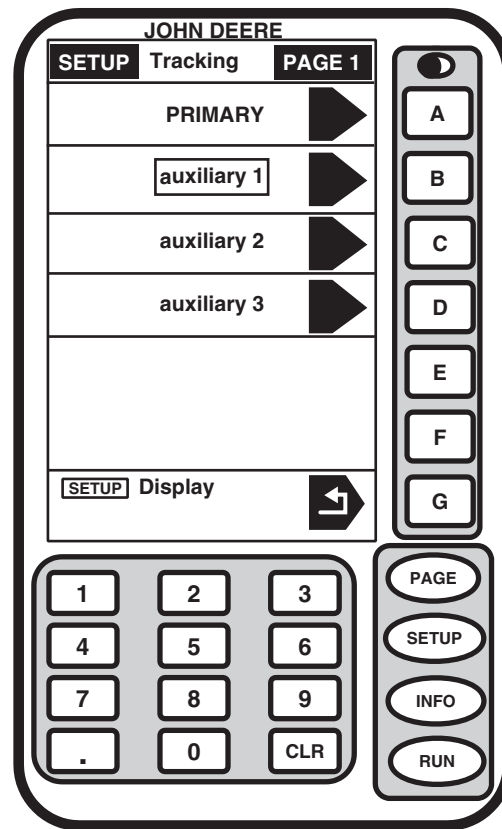


PC6390 -19-19MAY00

Continued on next page

AG,OUO1035,2114 -19-23OCT02-6/7

6. Press G to exit and return to SETUP screen or RUN to return to RUN - PAGE 1.



PC6389 -19-14JUN00

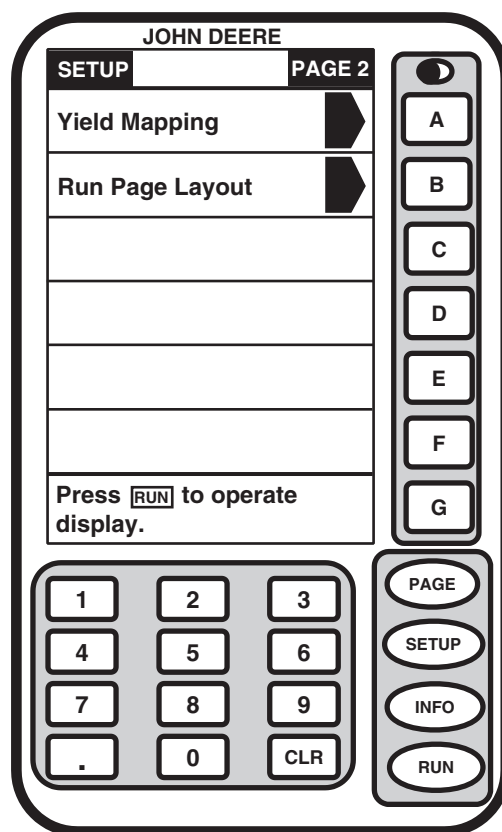
AG,OUO1035,2114 -19-23OCT02-7/7

Run Page Layout

NOTE: Depending on the number of programs loaded on the KeyCard some selections may not appear on the current page. Press the PAGE button to access additional screens.

Run Page Layout screen allows the mobile processor and other implement controllers to negotiate for GREENSTAR Display screen space. When implements are connected and disconnected it may be necessary to repeat RUN Page Layout procedures.

1. Press button corresponding to RUN Page Layout on SETUP screen. SETUP - RUN Page Layout will appear.

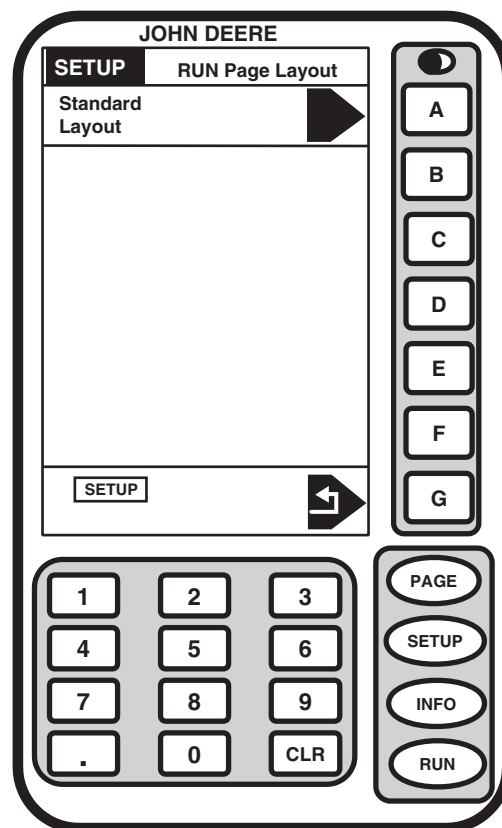


PC6813 -19-28AUG01

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OUC6092,0000261 -19-29AUG01-1/3

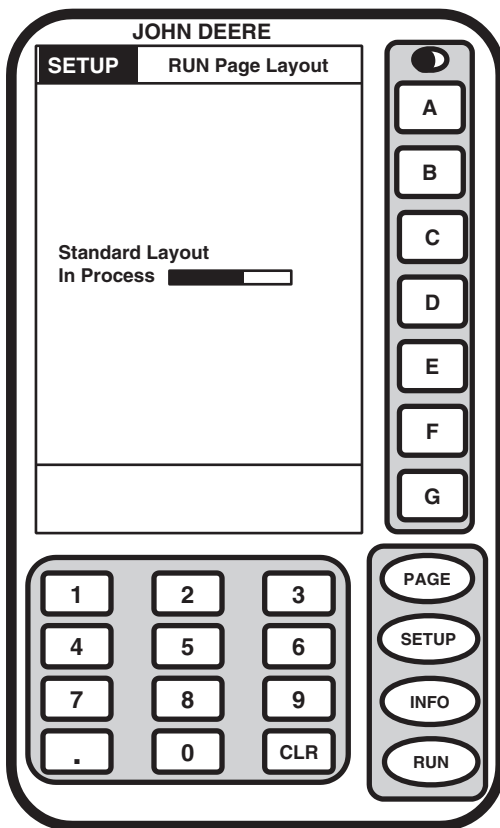
2. Press A on SETUP - RUN Page Layout screen.
3. Press G to return to SETUP screen.



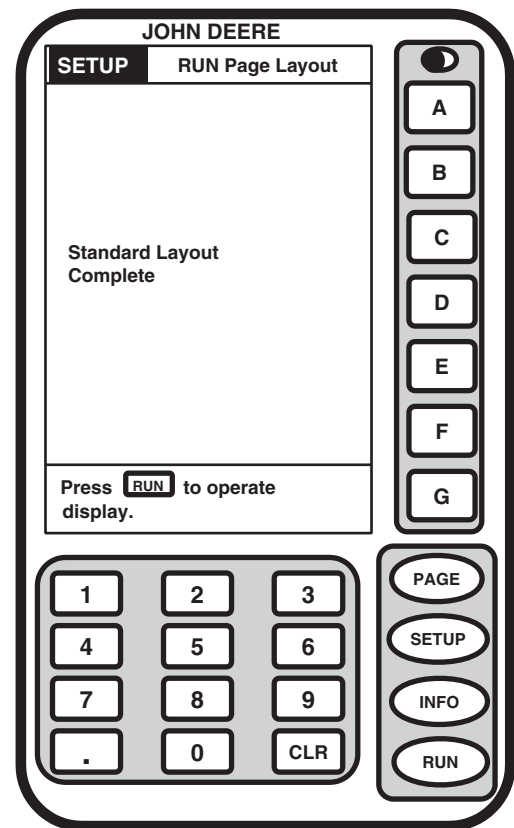
H63042 -19-15MAR00

Continued on next page

OUC6092,0000261 -19-29AUG01-2/3



H63043 -19-15MAR00



H63044 -19-15MAR00

SETUP - RUN Page Layout screen will indicate that Standard Layout is complete.

OUO6092,0000261 -19-29AUG01-3/3

Operating AutoTrac Guidance System

General Information

IMPORTANT: The AutoTrac system is intended to aid the operator to perform field operations more efficiently. The operator is always responsible for the machine path and must continue to pay attention to the surrounding environment while operating the machine. Stop operation if poor visibility conditions impair your ability to identify people or obstacles in the machine path.

Always operate tractor from the seat.

Not for use on roadways. Verify system is deactivated before traveling on roadways.

The AutoTrac system relies on the GPS system operated by the government of the United States, which is solely responsible for its accuracy and maintenance. The system is subject to changes that could affect the accuracy and performance of all GPS equipment.

The operator must maintain responsibility for the machine and must turn at the end of each track. This system will not turn at the end of a track.

The AutoTrac basic system is intended to be used as an assistance tool to mechanical markers. The operator must evaluate the overall system accuracy to determine the specific field operations where assisted steering may be used. This evaluation is necessary because the accuracy required for various field operations may differ depending on the farming operation. Because AutoTrac uses STARFIRE differential correction network along with the Global Positioning System (GPS), slight shifts in position may occur over time.

To operate AutoTrac the operator must set track 0 (similar to parallel tracking) and all tracks are drawn parallel to track 0 using track spacing. (See SETUP section for details on setting up and operating parallel tracking).

The AutoTrac system operating status can exist at three levels: ENABLED, ACTIVE, and INACTIVE.

After enabling AutoTrac (see Enabling AutoTrac), AutoTrac is activated by pressing the resume switch on the armrest (see Activating AutoTrac). To return to manual steering, the operator must deactivate the system (see Deactivating System).

If required the track can be shifted left, right or centered using the shift track feature on the GREENSTAR display. (See Shift Track).

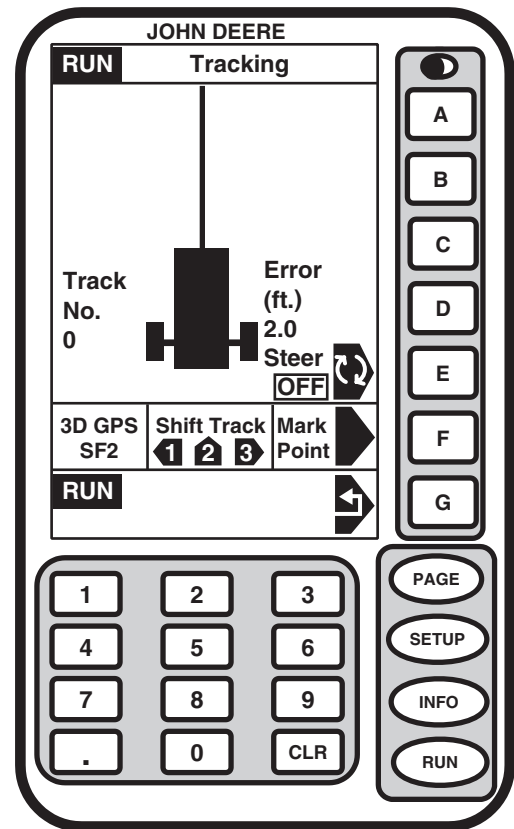
OUO1035,0000163 -19-13NOV02-1/1

Enabling System

The system is enabled when ON is shown under steer. Press button “E” to enable/disable AutoTrac.

To enable the system, all of the following criteria must be met:

- AutoTrac KeyCard has been inserted into mobile processor.
- Tracking has been setup (see Setup Tracking).
- Tracking is ON.
- SF1 or SF2 signal status is present.
- SSU is in normal operating mode.



PC7416 -19-13NOV02

OUO1035,0000164 -19-13NOV02-1/1

Activating System

IMPORTANT: Although the AutoTrac system can be activated when SF2 (SF2) correction signal is confirmed on RUN Page 1, system accuracy may continue to increase after powering up the system.

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

NOTE: Activating AutoTrac will activate automatic power shift if it has been set. In 8020T and 9020T tractors, automatic power shift (APS) must be set up after enabling AutoTrac. If AutoTrac is enabled after automatic power shift has been set, APS must be reset.

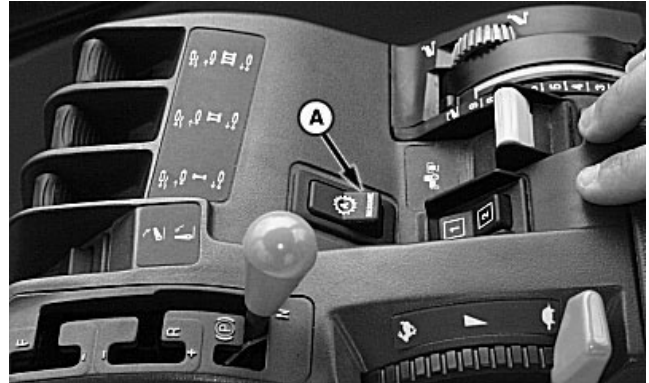
APS can be set either before or after enabling AutoTrac in 8010T tractors.

Press resume switch (A) to activate AutoTrac. This will initiate assisted steering.

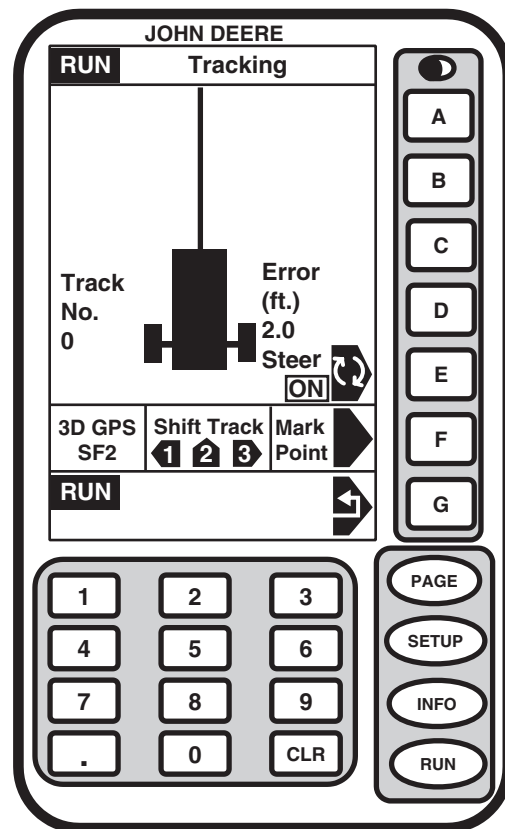
In order to activate the system the following criteria must be met:

- SF2 signal status is present.
- Tractor transmission is in forward gear.
- Vehicle speed is greater than 1.5 km/h (0.9 mph).
- Vehicle speed is less than 20 km/h (12.0 mph).
- Vehicle heading within 80 degrees of desired track.
- Operator is seated.

A—Resume Switch



PC6816 -JUN-29AUG01



PC7417 -19-13NOV02

OUO6092,000027C -19-13NOV02-1/1

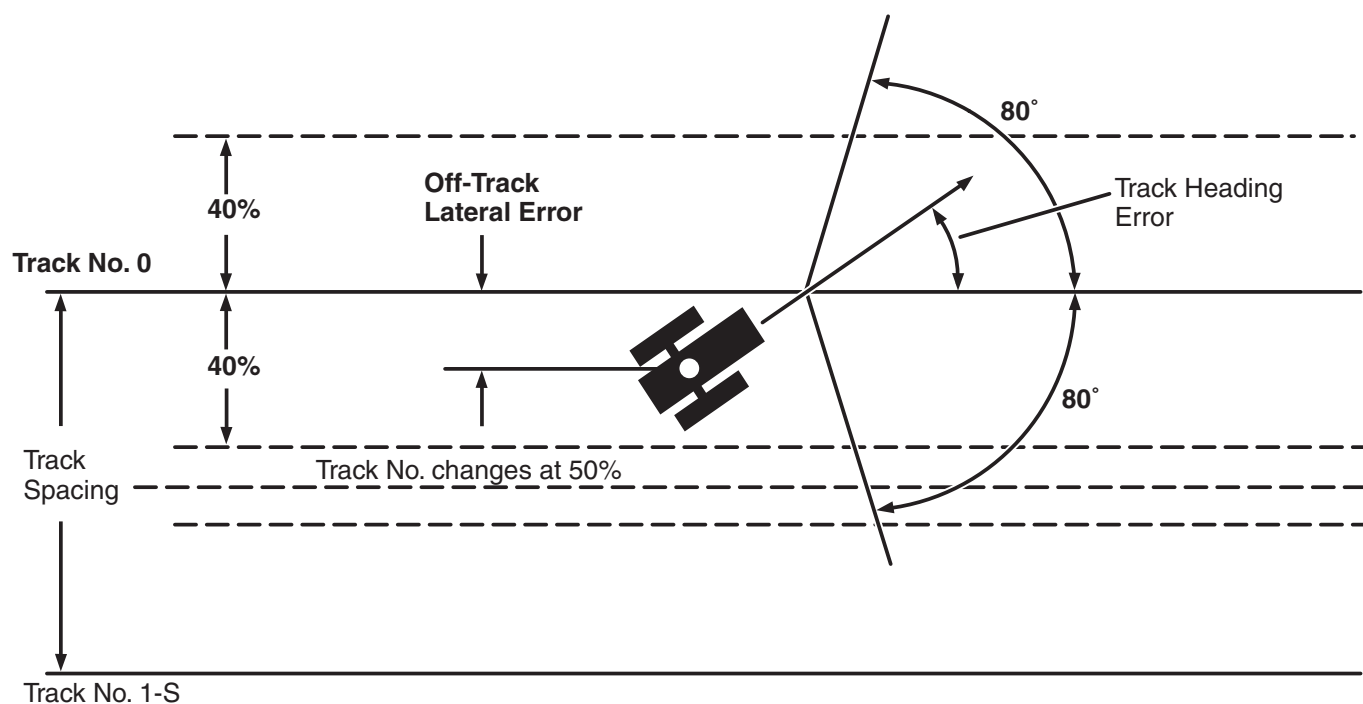
Deactivating System

AutoTrac system can be made DEACTIVE by following methods:

- Turning steering wheel more than 10 degrees.
- By placing transmission in neutral or reverse.
- Slowing to speeds less than 1.0 km/h (0.6 mph).
- Exceeding speed of 20 km/h (12.0 mph).
- Degradation of differential correction signal from SF2 to SF1 for longer than 3 minutes.
- Pressing button next to STEER on Run - Page 1.
- Operator out of seat for more than seven seconds.

OUO1035,0000166 -19-06FEB02-1/1

Necessary Conditions for Activating AutoTrac



PC7051 -19-04FEB02

Once the tractor is at the end of the row the operator must turn the system to the next pass. By turning the steering wheel, AutoTrac is deactivated. The operator must turn onto the next track.

1. System is enabled (steering ON on RUN - PAGE 1).
2. The tractor is within 40% of track spacing.
3. Track heading is within 80° of track error.

AutoTrac can be activated by pressing the resume switch only after the following conditions are met:

OUO1035,0000167 -19-13NOV02-1/1

Shift Track

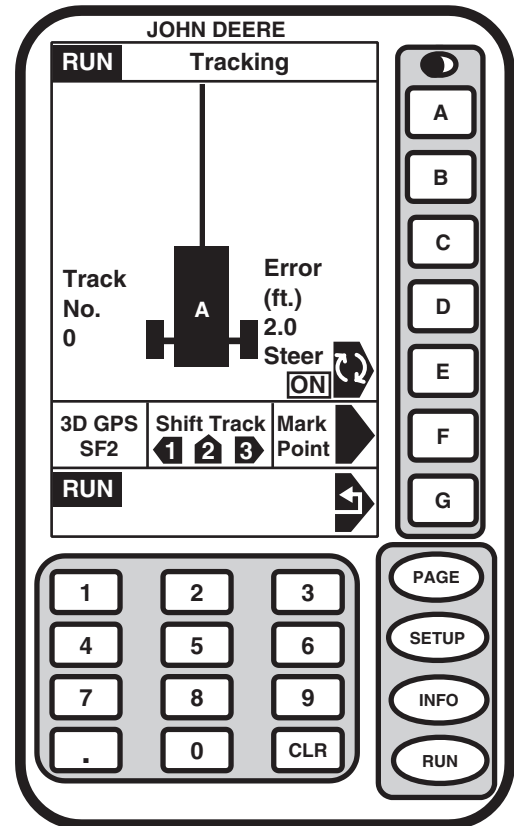
NOTE: *Shift Track is only available in Full Page Mode. Since all tracks are based on the original track 0, all tracks will be shifted by using this feature.*

Shift track is used to adjust the position of the machine left, center or right of the set track. Shift track can be used to compensate for GPS drift. Drift is inherent to any satellite-based, differentially corrected GPS system.

Shift Track allows an operator to move the A-B line to the right or left in hundredths of a meter (0.03) or one tenth of a foot (0.1) depending on selection of unit standard. An operator may also “re-center” the displayed line on the icon.

To move the line to the left, press the “1” button on the numeric keypad. To move line to the right, press the “3” button on the numeric keyboard. Each time button is pressed, the line will move three hundredths (0.03) of a meter or one tenth (0.1) of a foot to the left or right. To re-center the line on the vehicle’s current location press “2” button on numeric keypad.

Shift Track can be used to compensate for GPS drift that occurs over time.



PC7418 -19-13NOV02

OUC1035,00001EB -19-13NOV02-1/1

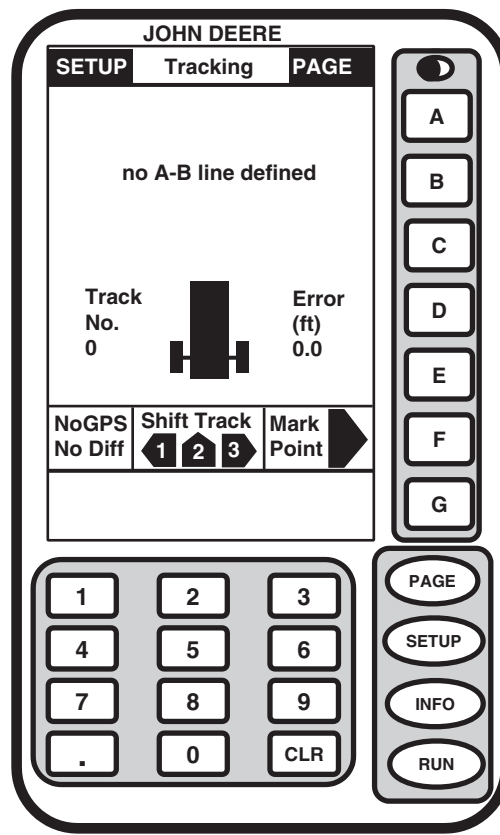
RUN Functions

RUN - PAGE 1

NOTE: If full page is selected on SETUP - Tracking - PAGE 2 all Parallel Tracking information will be displayed on RUN - Tracking - PAGE 3.

At power up the display will show RUN - PAGE 1 screen if that mode was active when the machine was powered down.

If full page mode was in use when the machine was powered down, when the machine is powered up it will return to full page mode. The user can select the number of sections (one, two, three, or full page) allotted to Parallel Tracking. (See SETUP section to change display size).



PC7012 -19-18JAN02

OUO1035,0000127 -19-17JAN02-1/1

Straight Track

NOTE: When operating in straight track it is not necessary to drive tracks in a specific order, the display will always show the closest track.

Track number (A) is displayed in the lower left-hand corner of the Parallel Tracking display. The track number displayed is the track number closest to the machine and is automatically updated by the system as a new track is approached. The track number changes when the machine is half way between two tracks. Each track number has a N, S, E, or W displayed. This indicates to the operator that the current track is north, south, east or west of Track 0.

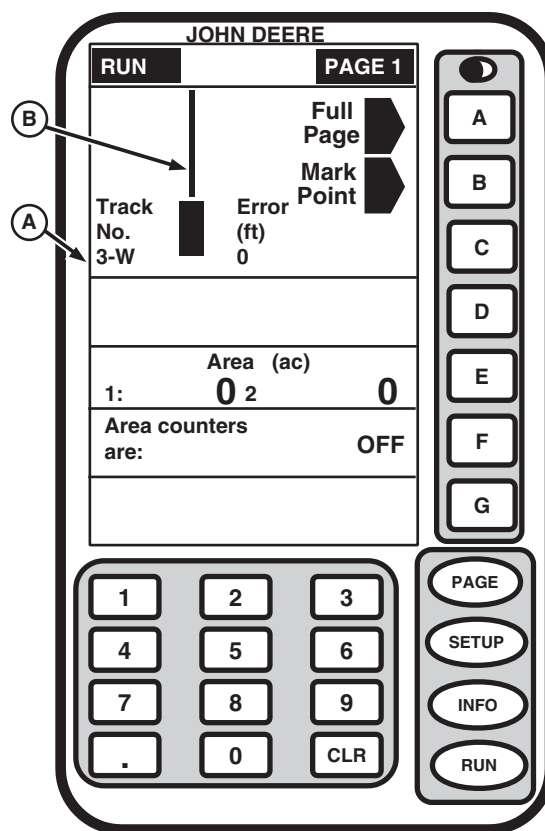
Error distance is shown in the lower right-hand corner of the Parallel Tracking display. This number shows how far from the closest track the machine is. Error number will count up until the machine reaches the point halfway between two tracks. After reaching the mid-point the error number will count down. If turning view is OFF, the operator, by watching the error value approach 0, will know where to turn to line up with the next row.

If track 0 has not been set RUN - Tracking - PAGE 1 will display "No A—B Line Defined".

If differential correction is not available, both the track number and error number will be 0 and navigation bar (B) will be missing.

Navigation bar indicates the relative position of the machine to the closest track. The bar will move either left or right as the machine moves through the field.

If the bar moves to the right steer right and the bar will move to the center. If the bar moves to the left steer left and the bar will move to the center. When the bar is centered on the screen, the machine is running on the closest track. When making a turn the screen will change to the turning view (if turning view is active) (See Turning View later in this section) when the machine is 45 degrees from the current track. The screen will change back to the RUN - PAGE 1 screen when the machine is 5 degrees from parallel to the closest track.



RUN - PAGE 1 Straight Track Shown

A—Track Number
B—Navigation Bar

PC7296 -19-14OCT02

If turning view is not active the screen will not change and the navigation bar will move all the way to one side as you drive away from the current track. When the machine is halfway between tracks the bar will appear on the opposite side of the display then move towards the center of the display as the machine approaches the closest track.

OOU1035,0000128 -19-17JAN02-2/2

RowFinder

NOTE: Full page mode must be selected to use RowFinder.

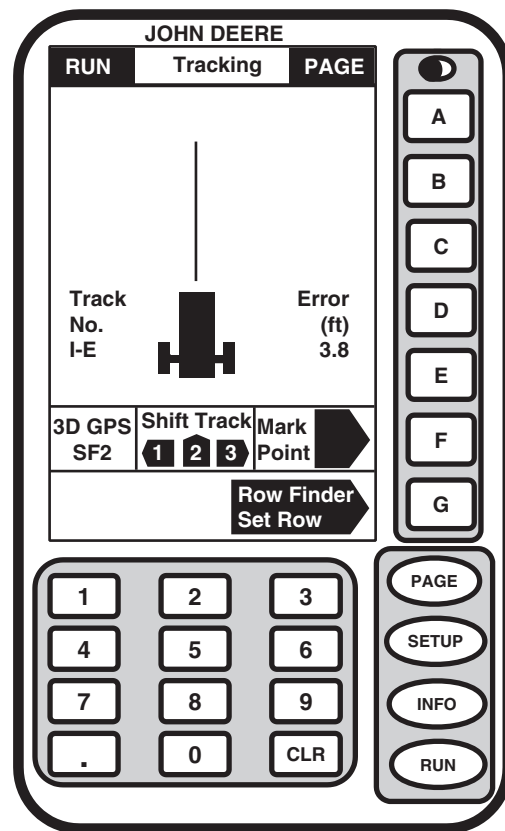
If RowFinder Set Row is pressed when the machine is stopped the system will reset track 0 based on a 0° heading.

It is important that the Set Row button is pressed before the machine begins making the turn at the end of the pass. To use RowFinder press button next to RowFinder Set Row at the end of the pass before starting the turn.

Track 0 will be reset based on the current track spacing, position and heading. After starting the turn, turning view will guide the operator into the next pass.

If turns only mode is selected (see SETUP - Tracking), the navigation bar will disappear after the machine has traveled four times the track spacing from where Set Row was pressed.

If continuous mode is selected, the navigation bar will remain visible the entire pass.



PC6986 -19-10JAN02

OOU1035,0000129 -19-23OCT02-1/1

Curved Track

IMPORTANT: The machine must be stopped in order to clear Curved Track memory.

When operating Curved Track with ACCUDEPTH, after the operator presses Clear Curved Track Stored Data, the system prompts the user to cycle power to clear memory.

NOTE: Clear the curved track memory before beginning a new field (see Setup Curved Track).

All passes are recorded and the amount of memory left is displayed in the lower left hand corner of the Run Page. If the memory becomes full, the memory must be cleared (see Setup Curved Track).

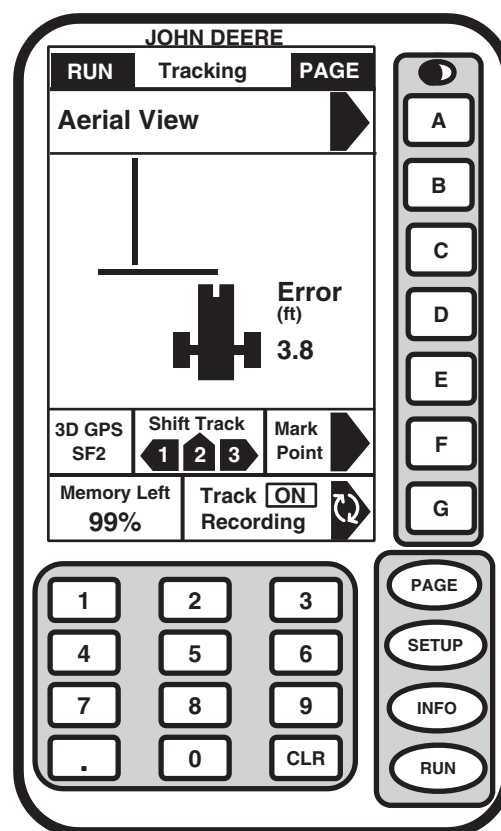
To start using curved tracking, press G to start recording. Recording only needs to be turned off if the machine is driven outside of the normal field pattern (i.e. to refill the sprayer, etc.). Recording can be left on when turning at the end of each pass.

NOTE: A slight delay in the appearance of the navigation and driving indicator maybe noticed when a large number of line segments have been recorded.

Drive initial pass, no navigation line will appear until the end of the pass is reached. Make the turn at end of pass and system will begin searching it's memory. During this operation the system is searching through all recorded line segments to determine the path to guide on. It then locates a line segment that is parallel and within 1 implement width (as determined by track spacing) of the machine.

The navigation line and steering indicator will appear and direct the operator to the next line segment.

This method of searching all line segments allows an operator to drive and be guided along a variety of fields patterns: back and forth curved track, center pivot, or race track, without an operator input other than turning recording on.



Aerial View

Press A on RUN - Tracking - PAGE will allow the operator to access the aerial view navigation screen.

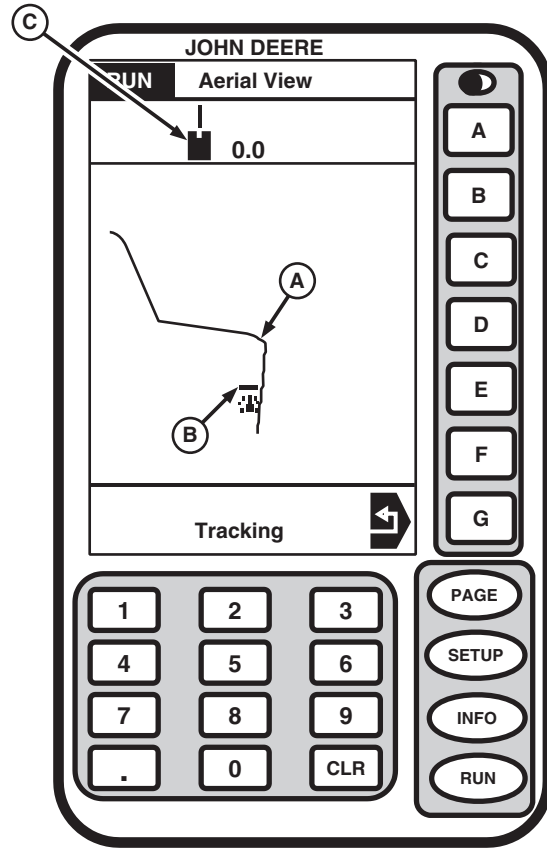
This screen allows the operator an additional view of the machine moving through the field. The screen will show navigation bar and track error in cell A. The line on the display (A) shows the path the system is using to guide the machine as recorded by the system. The thicker portion of the line represents how far ahead the system is looking as determined on SETUP - Tracking - PAGE 1.

Line (B) represents the implement width as selected in on SETUP - Tracking screen.

By pressing 0—9 on the numeric keypad the operator can zoom in or out.

The aerial view is designed as an aid to help the operator “see” what path the system is following. For precise guidance, continue to use the vehicle icon and navigation bar in cell A (C).

Press G to return to RUN - Tracking full page. Pressing RUN button will take you to RUN - PAGE 1.



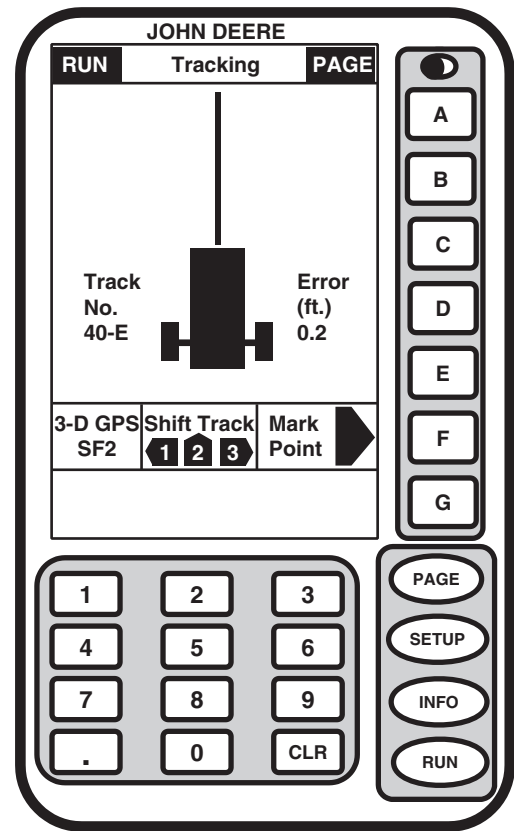
A—Curved Track Line
B—Implement Width Line
C—Navigation Bar

PC7287 -19-05NOV02

OUO1035,000012A -19-06NOV02-2/2

Full Page Mode

Full page mode is accessed by pressing button next to Full Page on RUN - PAGE 1 or by selecting it on SETUP - Tracking - PAGE 2.



Full Page Mode

PC7419 -19-14NOV02

OUO1035,000012B -19-21OCT02-1/1

Shift Track

NOTE: Shift Track is only available in Full Page Mode. Since all tracks are based on the original track 0, all tracks will be shifted by using this feature.

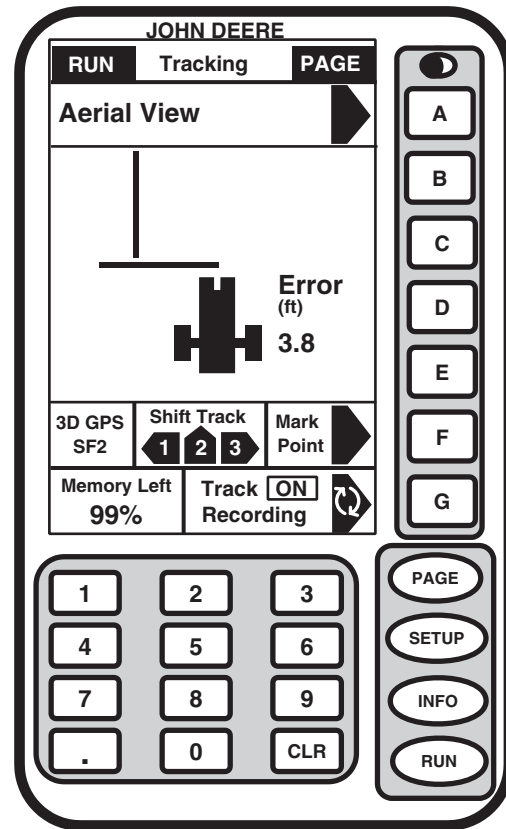
Shift Track will work in all 3 modes: Straight Track, Curved Track, and RowFinder.

Shift track is used to adjust the position of the machine left, center or right of the set track. Shift track can be used to compensate for GPS drift. Drift is inherent to any satellite-based, differentially corrected GPS system.

Shift Track allows an operator to move the A-B line to the right or left in hundredths of a meter (0.03) or tenths of a foot (0.1) depending on selection of unit standard. An operator may also “re-center” the displayed line on the icon.

To move the line to the left, press the “1” button on the numeric keypad. To move line to the right, press the “3” button on the numeric keypad. Each time button is pressed, the line will move three hundredths (0.03) of a meter or one tenth (0.1) of a foot to the left or right. To re-center the line on the vehicle’s current location press “2” button on numeric keypad.

Shift Track can be used to compensate for GPS drift that occurs over time.



PC7297 -19-14OCT02

OUO1035,000012C -19-21OCT02-1/1

Marker Page

Press B on RUN - PAGE 1 or F on FULL PAGE to select marker mode.

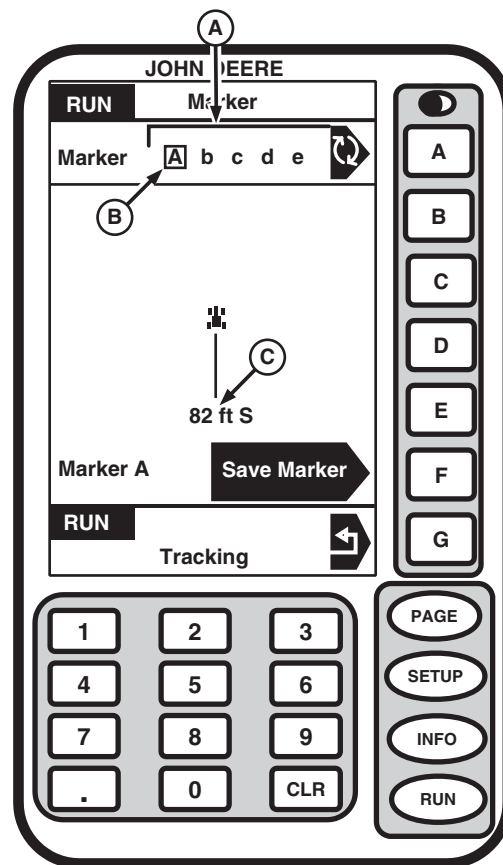
This page allows the operator to save the location of up to five points called markers. The letters A through E (A) are used to identify each marker. Markers are independent of the field number. Markers may be located in one field or split between multiple fields. The user may scroll through the choices by pressing A. Markers selected (B) are shown inside the clear box. The distance (C) to the selected marker is displayed below the navigation section. Markers will be stored until written over.

NOTE: Due to the nature of the GPS satellite system, position drift can occur. As time passes the marker shown on the GREENSTAR display may be different from the location originally marked.

The center of page is used to provide navigation information. The box in the center of the screen represents the machine. The line points in the direction of travel to reach the marker. For example if the marker is behind the direction of travel, the line will point down. When driving towards the mark point the line will point up. As the machine gets closer to the marker the line will shorten until it disappears. The distance and direction given (C) is the distance and direction the machine must travel to return to the selected marker. The distance will be displayed in meters/feet until the machine reaches a point beyond 1000 meters or 5280 feet then it will switch to kilometers/miles.

Travel direction is accurate only when the machine is in motion. The system always assumes that the machine is moving forward.

Pressing G will return the display to previous RUN - PAGE. If RUN button is pressed the display will return to RUN - PAGE 1.



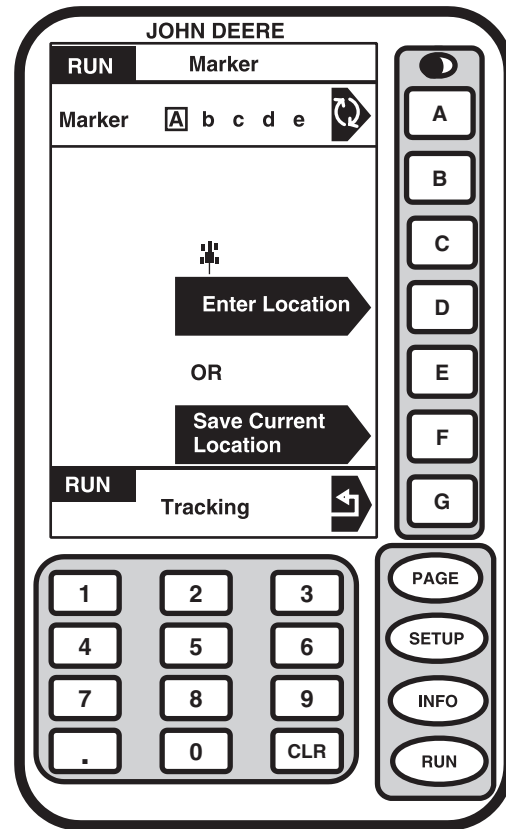
A—Mark Point Letters
B—Selected Mark Point
C—Distance

PC7292 -19-14NOV02

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OUC1035,000012D -19-16OCT02-1/3

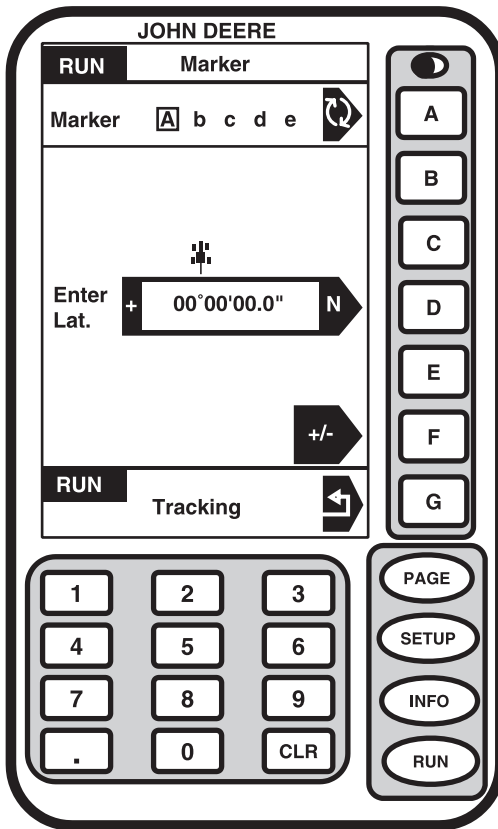
The selected marker can be set to the current location by pressing F or by manually entering latitude and longitude by pressing E.



PC7301 -19-17OCT02

Continued on next page

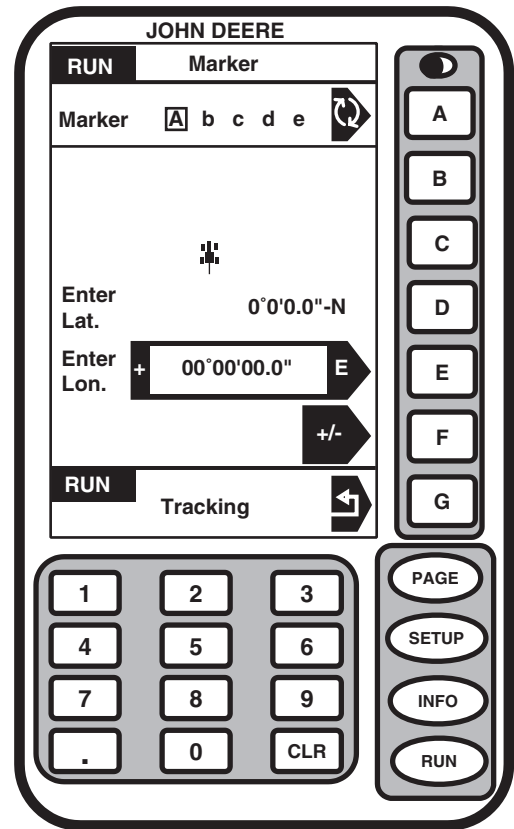
OUO1035,000012D -19-16OCT02-2/3



PC7343 -19-17OCT02

NOTE: *Tenths of seconds will have a resolution of 3 m (10 ft).*

Latitude point must be entered having 2 digits for degrees, 2 digits for minutes, and optional decimal seconds. Longitude point must be entered using 3



PC7344 -19-17OCT02

digits for degrees, 2 digits for minutes and optional decimal seconds. Press F to toggle between positive or negative.

Markers are stored in the system memory until overwritten by a new marker for that field.

Turning View

The turning view provides a visual indicator of the machine in relationship to closest track as the machine turns. This view can be used as a guide when turning onto a pass. The operator can “see” the relationship between the machine and the track. Once the machine is almost parallel with the track, the display will automatically return to the RUN - PAGE from which it started.

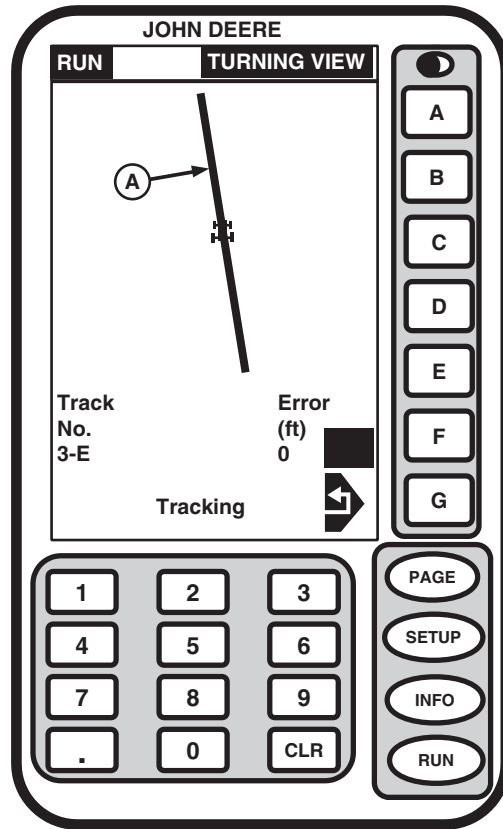
The AutoTrac active icon will appear at cell F on this page, when AutoTrac is activated.

When turning view is activated the display will automatically change to the turning view screen as the machine begins to turn.

On the turning screen the machine is located on the center of the screen. The closest track (A) is shown as a bar across the screen. Track number and error indications at the bottom of the screen are identical to those on the RUN - PAGE.

To exit turning view before completing a turn press G.

A—Track



PC7360 -19-23OCT02

OUO1035,000012E -19-23OCT02-1/1

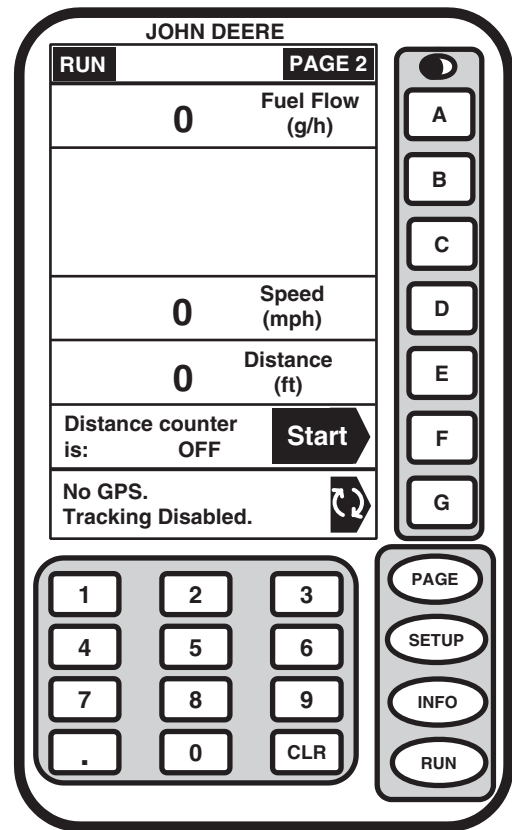
RUN - PAGE 2

NOTE: This screen can only be accessed if Perf Monitor is ON. If other applications are running with Perf Monitor ON some items will appear on RUN - PAGE 1 and RUN - PAGE 2.

RUN - PAGE 2 is a continuation of the RUN - PAGE 1 screen. Press PAGE to access this screen.

When connected to machine CCD Bus this screen will display machine productivity information on fuel flow, speed and distance traveled.

To turn distance counter ON/OFF press F.



PC6415 -19-13JUN00

OUO1035,000012F -19-17JAN02-1/1

INFO Functions

INFO

The INFO screen is used to view general information screens of data on the GREENSTAR system. To access INFO screens, press INFO key.

Tracking

Information on Parallel Tracking can be accessed through this screen. Press button next to Tracking to access screen.

STARFIRE Receiver

This selection shows information on the STARFIRE receiver. For detailed information see STARFIRE Receiver section. Press button next to STARFIRE Receiver to select screen.

Perf Monitor

This screen shows detailed information on the performance monitor. Press button next to Perf Monitor to select screen.

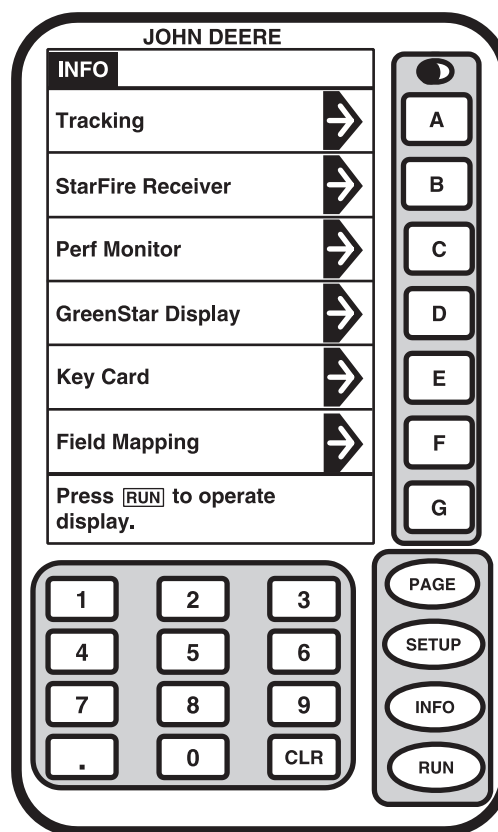
GREENSTAR Display

Information on this display is for factory use.

KeyCard

This selection shows information on KeyCard programs. Press button next to KeyCard to select screen.

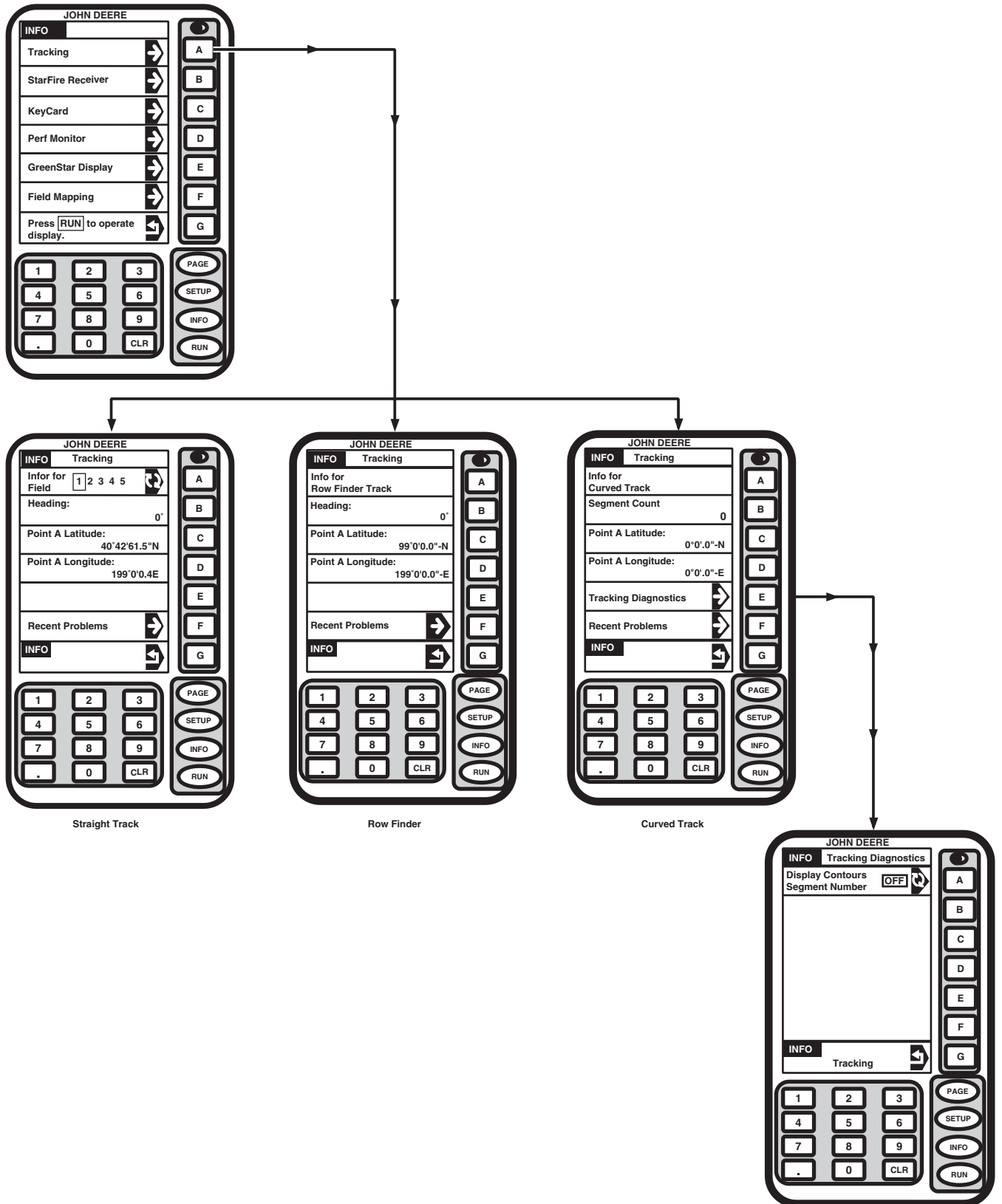
If s/w PF303140x or higher is loaded to the GREENSTAR Display, Tracking will not be displayed on this screen if a Parallel Tracking KeyCard is not inserted into the mobile processor.



PC7008 -19-10JAN02

OUO1035,0000130 -19-17JAN02-1/1

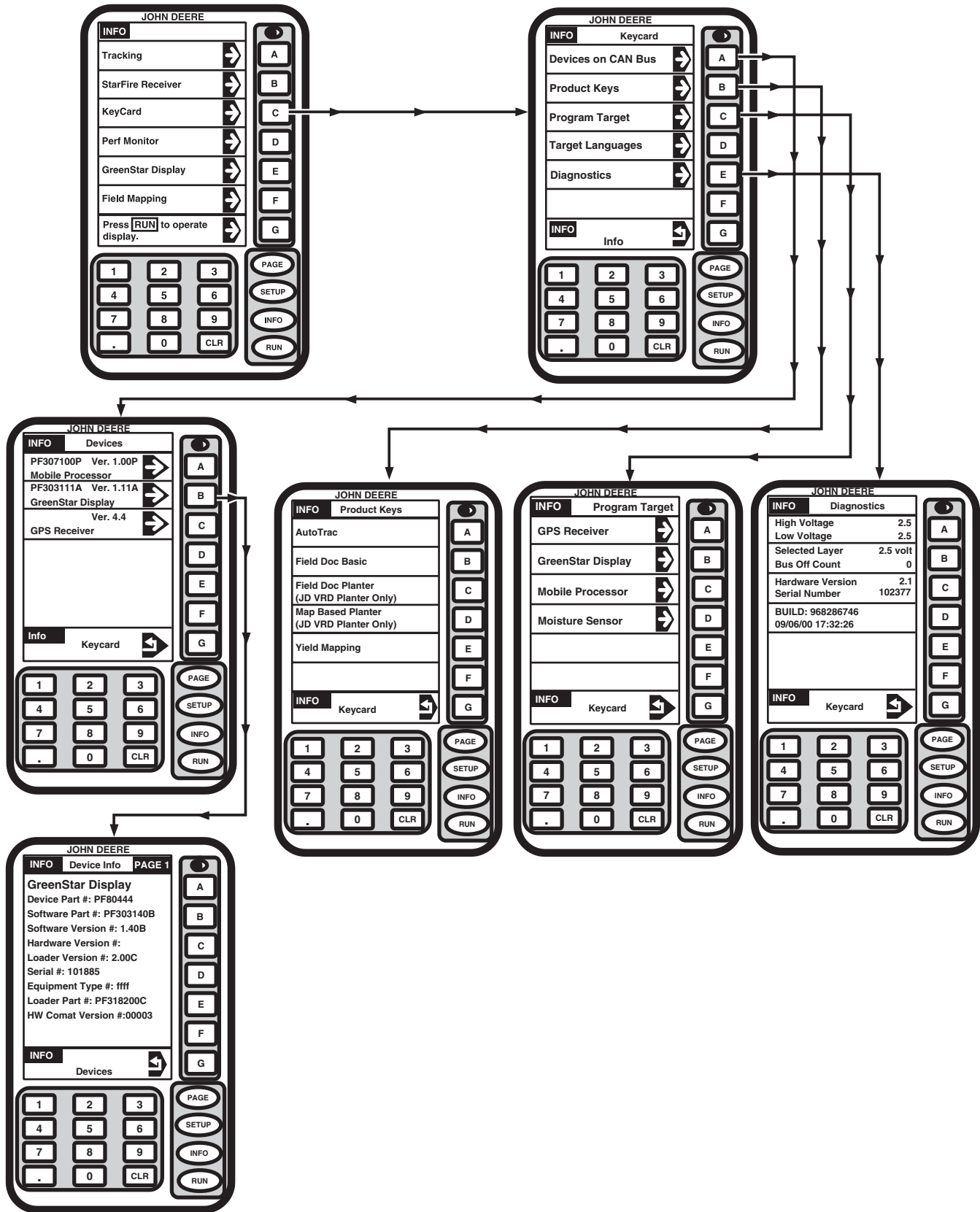
INFO Screens



Tracking Screens

Continued on next page

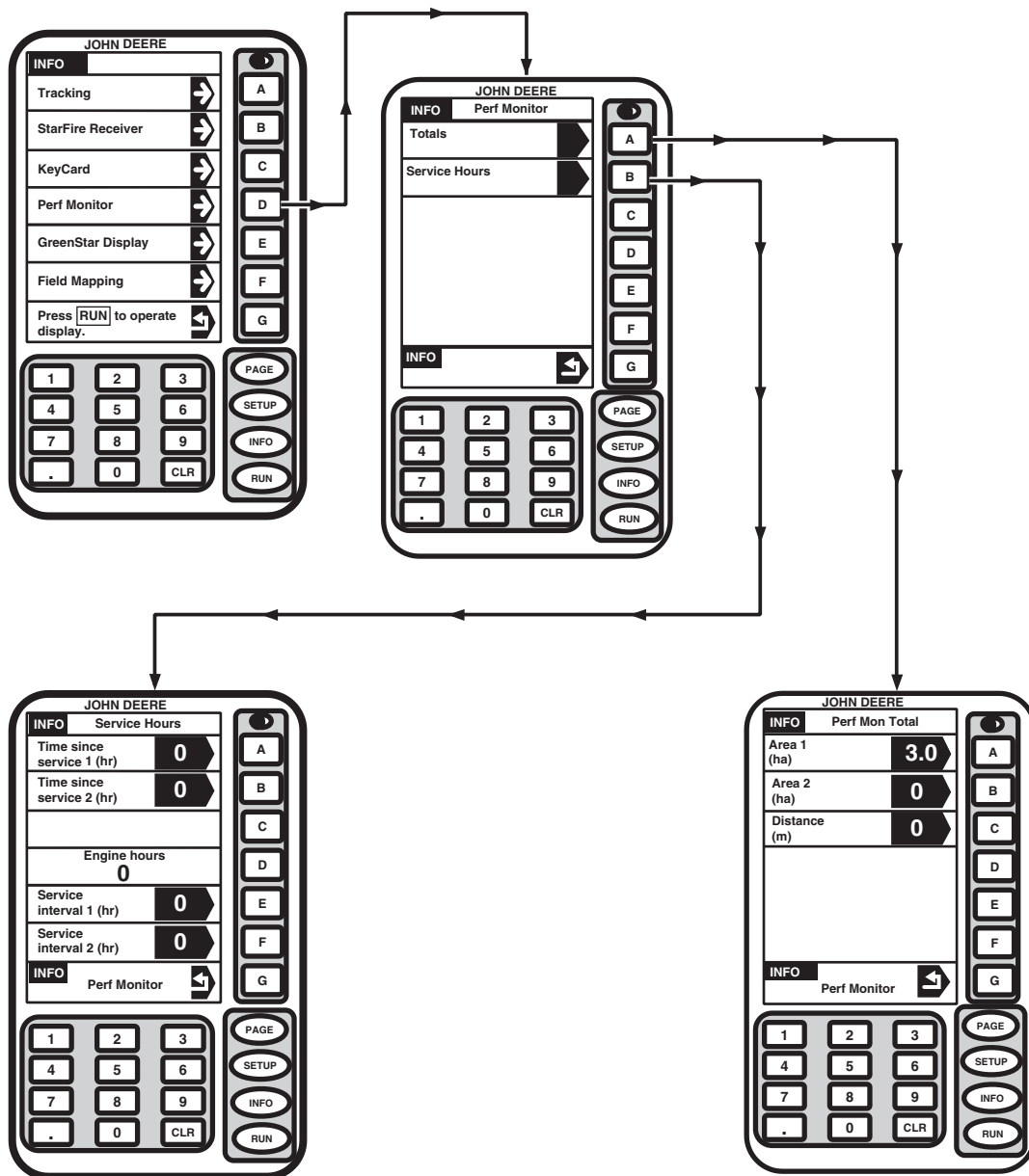
OUO1035,000010C -19-09OCT02-1/4



KeyCard Screens

Continued on next page

OUO1035,000010C -19-09OCT02-2/4

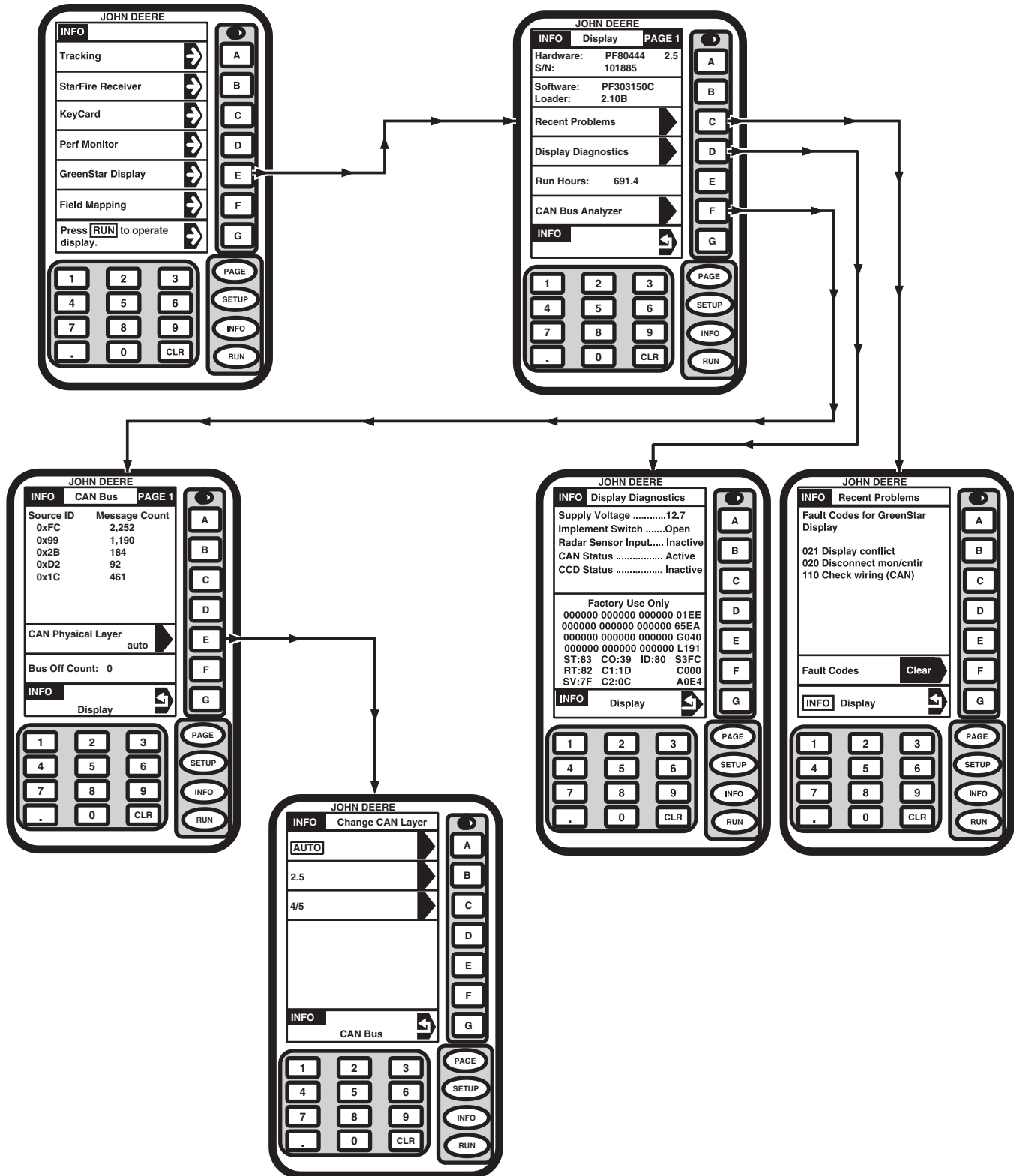


Perf Monitor Screens

Continued on next page

OUC1035.000010C -19-09OCT02-3/4

PC7005 -19-10JAN02



GREENSTAR Display Screens

PC7306 -19-17OCT02

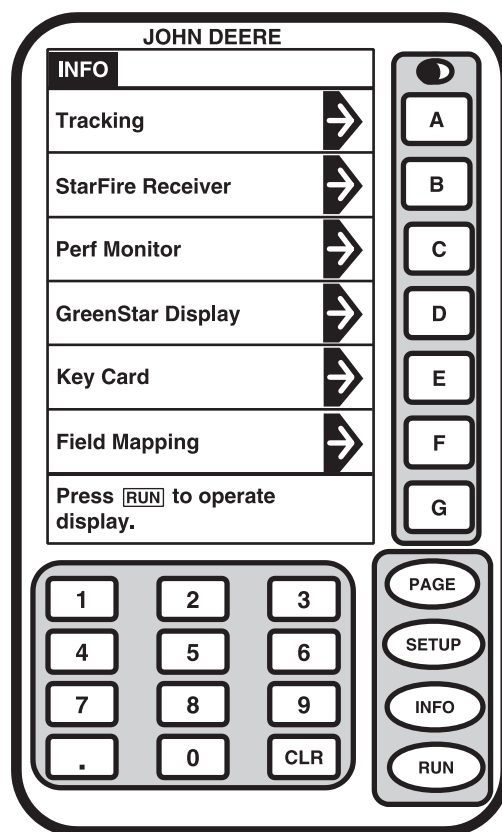
OUO1035,000010C -19-09OCT02-4/4

INFO - Tracking

Press button next to Tracking to access INFO - Tracking.

Each mode (straight, RowFinder and Curved Track) that can be selected in SETUP - Tracking different information is provided

Also a recent problem selection is provided for diagnostic purposes. Press F to access recent problems. This selection is available in all modes.



PC7008 -19-10JAN02

Continued on next page

OUC1035,0000131 -19-09OCT02-1/4

INFO - Tracking Straight Track

INFO - TRACKING page allows the operator to view basic data about Track 0.

NOTE: This is the same information presented on the SETUP - PAGE 1.

Information on different fields can be viewed by pressing A. When field number is changed in INFO - PAGE the current field is not changed on the RUN and SETUP pages. Press A to view information on heading and point A latitude and longitude for the selected field.

JOHN DEERE	
INFO	Tracking
Info for Field	1 2 3 4 5 ↺
Heading:	0°
Point A Latitude:	40°42'61.5"N
Point A Longitude:	199°0'0.4E
Recent Problems	
INFO	↻

Navigation buttons: A, B, C, D, E, F, G, PAGE, SETUP, INFO, RUN.

Keypad: 1, 2, 3, 4, 5, 6, 7, 8, 9, ., 0, CLR.

PC6988 -19-07JAN02

Continued on next page

OUC1035,0000131 -19-09OCT02-2/4

INFO - Tracking RowFinder

This page shows the current heading, point A latitude and longitude. This information shows what heading is in use after Set Row has been pressed on the RUN page.

JOHN DEERE

INFO **Tracking**

Info for Row Finder Track

Heading: 0°

Point A Latitude: 99°0'0.0"-N

Point A Longitude: 199°0'0.0"-E

Recent Problems

INFO

1 2 3

4 5 6

7 8 9

. 0 CLR

PAGE

SETUP

INFO

RUN

A

B

C

D

E

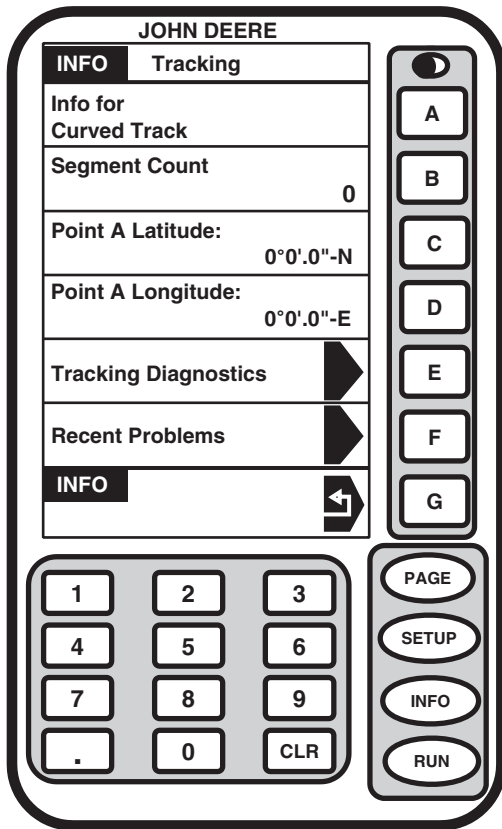
F

G

PC6989 -19-07JAN02

Continued on next page

OUO1035,0000131 -19-09OCT02-3/4



PC7282 -19-09OCT02

INFO - Tracking Curved Track

Cell B on this screen shows how many segments are being used to determine the direction and location of Curved Track. This cell can display up to 53,000 line segments. Cell C shows the current latitude and longitude for point A.



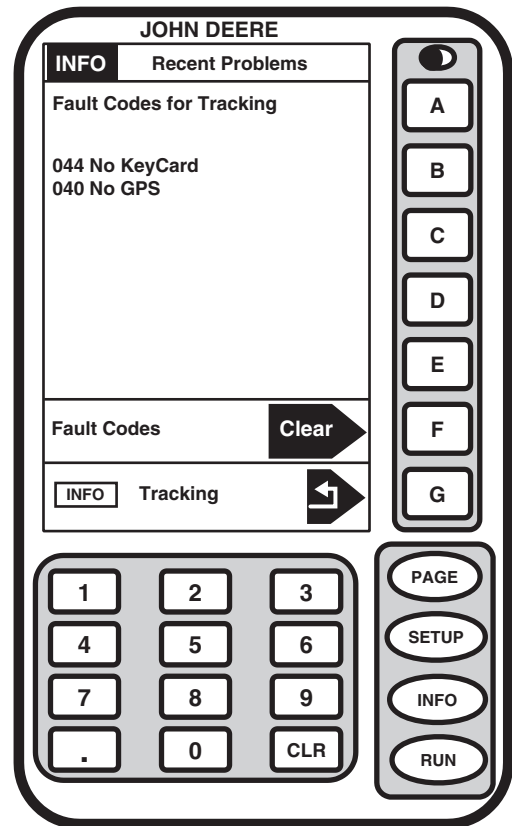
PC7283 -19-09OCT02

To access tracking diagnostics press letter button next to Tracking Diagnostics. INFO - Tracking Diagnostics screen will appear. Press A to toggle between ON/OFF to display line segment count on RUN - PAGE 1. This function is used to help diagnosis problems while operating in the curved track mode.

OUC1035,0000131 -19-09OCT02-4/4

INFO - Tracking Recent Problems

Press F on INFO - Tracking to access INFO - Recent Problems. This screen displays the last few fault codes encountered by the processor. Press F to clear codes or G to return to INFO - Tracking screen.

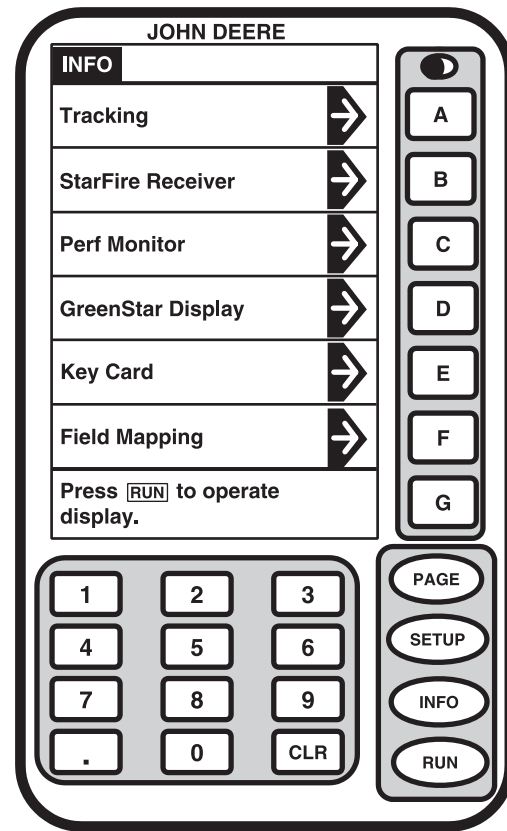


PC6410 -19-01JUN00

AG,OUO1035,2123 -19-25MAY00-1/1

INFO - Perf Monitor

To access Performance Monitor INFO screens press button next to Perf Monitor.



PC7008 -19-10JAN02

Continued on next page

OUO1035,0000132 -19-17JAN02-1/4

To select Totals or Service Hours press button next to desired selection.



PC6425 -19-19JUN00

Totals

This screen shows the accumulated total machine area for counters 1 and 2 and accumulated distance.

To change total area for Area 1 press A.

Using numeric keypad, enter new area information.

Press A to ENTER and save information.

Press B to change total area for Area 2.

Using numeric keypad, enter new area information.

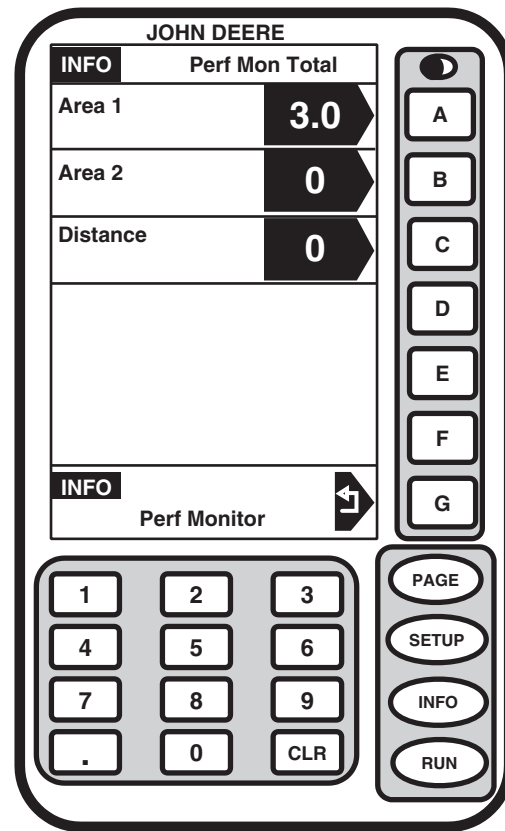
Press B to ENTER and save information.

Press C to change distance.

Using numeric keypad, enter new information.

Press C to ENTER and save information.

Press G to return to INFO - Perf Monitor.



PC7047 -19-22JAN02

Continued on next page

OUC1035,0000132 -19-17JAN02-3/4

Service Hours

This screen shows the time elapsed and interval time between machine services.

This screen is used to setup predetermined service intervals for the machine. Two service intervals can be entered.

EXAMPLE: 50 hours is interval time required between services.

Set Service Interval 1 to 50 and Time Since Service 1 to 0. As hours are accumulated, Time Since Service 1 will increase. Once Time Since Service 1 is greater than Service Interval 1 a caution will appear.

Time Service 1:

Press A and using numeric keypad enter desired amount of time.

Press A to ENTER and save information.

Time Service 2:

Press B and using numeric keypad enter desired amount of time.

Press B to ENTER and save information.

Service Interval 1

Press E and using numeric keypad enter desired amount of time between services.

Press E to ENTER and save information.

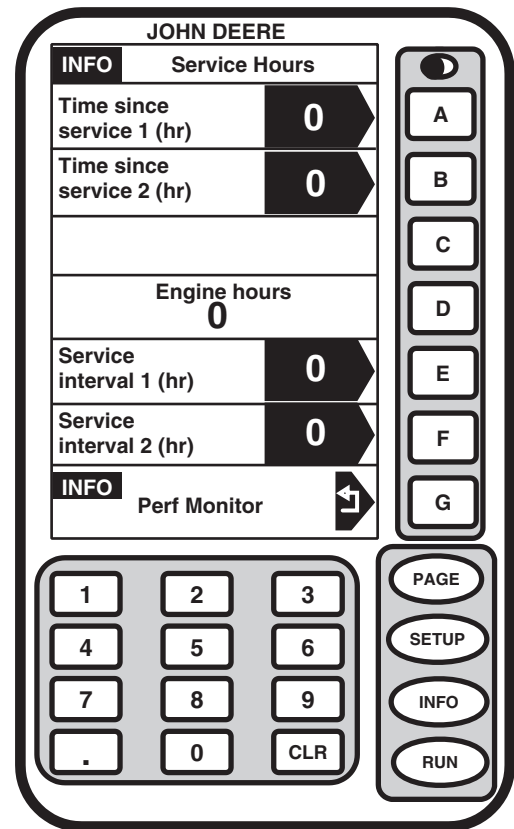
Service Interval 2

Press F and using numeric keypad enter desired amount of time between services.

Press F to ENTER and save information.

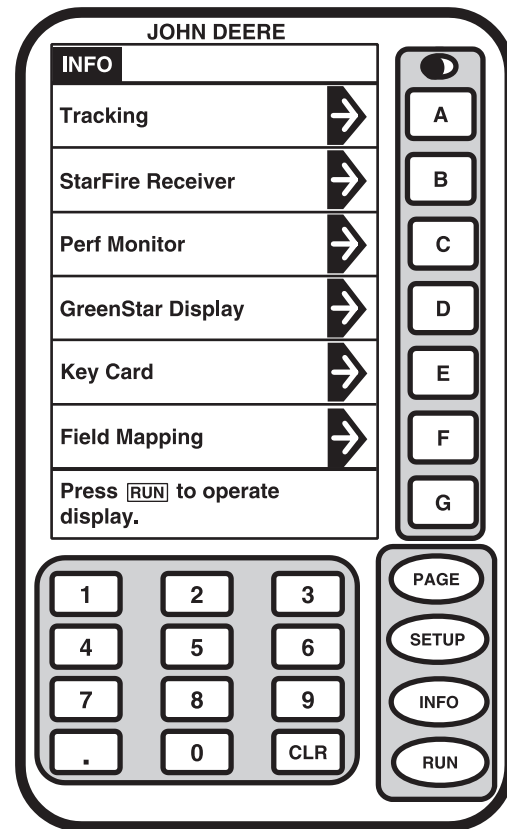
Engine Hours

This section shows the accumulated engine hours of the machine as determined by the CCD bus.



INFO - KeyCard

To access INFO - KeyCard screen press button next to KeyCard.



PC7008 -19-10JAN02

Continued on next page

OUO1035,0000133 -19-18JAN02-1/2

The INFO - KeyCard page shows general information about the KeyCard. Press button next to desired selection.



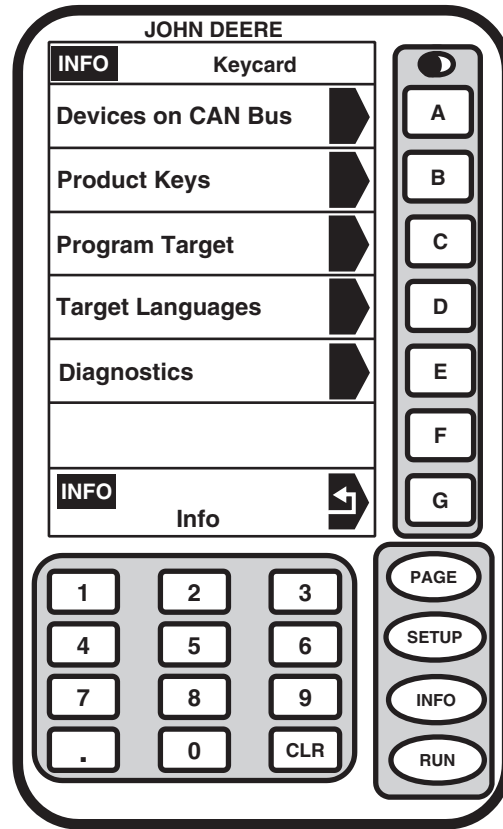
PC6804 -19-28AUG01

OUO1035,0000133 -19-18JAN02-2/2

INFO - Devices

Press button next to Devices on CAN Bus.

The devices listed are currently connected to CAN bus.

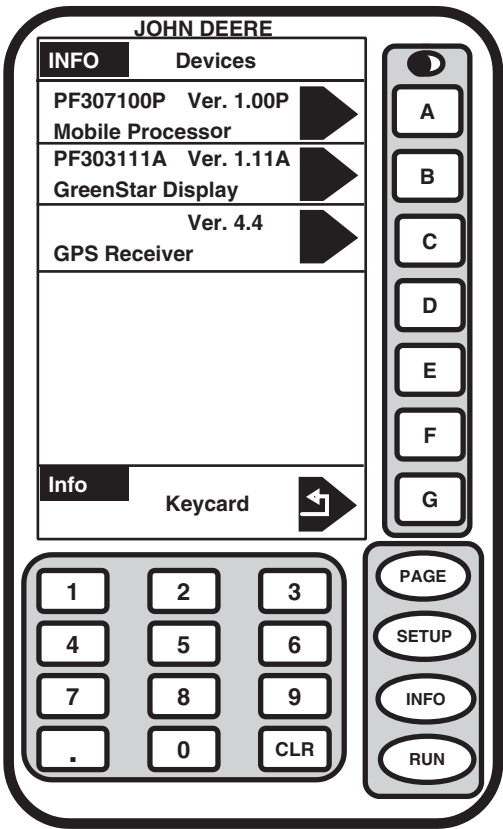


PC6804 -19-28AUG01

Continued on next page

OUO1035,0000134 -19-23OCT02-1/5

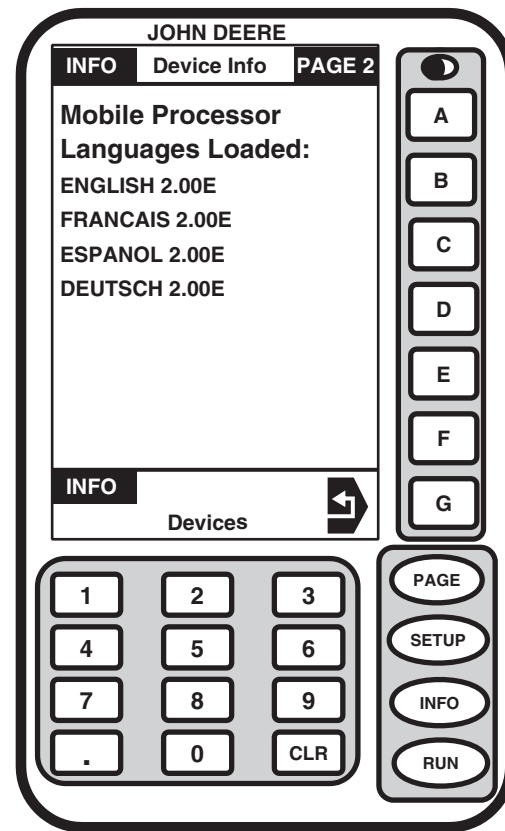
To access information on mobile processor, GREENSTAR display or GPS Receiver press button next to desired selection.



PC6442 -19-12SEP00



PC7039 -19-22JAN02



PC7040 -19-22JAN02

Mobile Processor

This screen shows detailed information on the mobile processor. Press PAGE to access additional information.

Device Part Number shows the current part number for the mobile processor.

Software Part Number shows the current software part number for the mobile processor.

Software Version shows the current software version being used by the mobile processor.

Hardware Version shows the current hardware version being used by the mobile processor.

Loader Version shows the current loader software being used by the mobile processor.

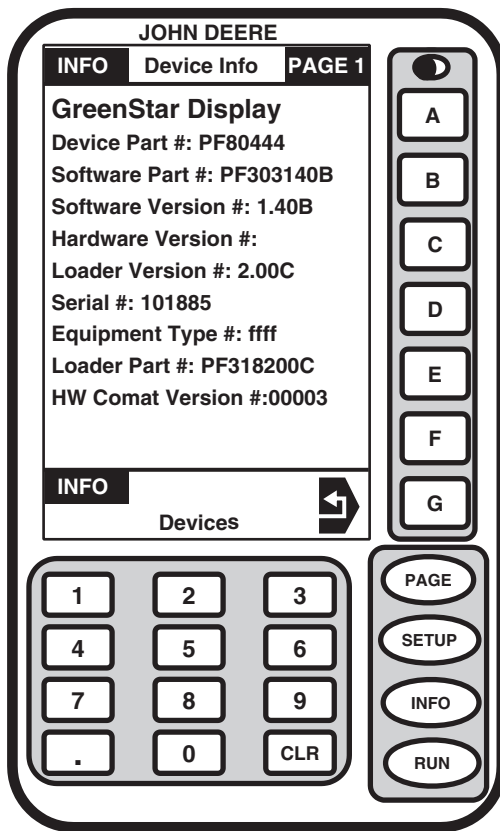
Serial Number shows the current serial number of the mobile processor.

Equipment Type (ffff) shows a unique identifier for the application and is for factory use only.

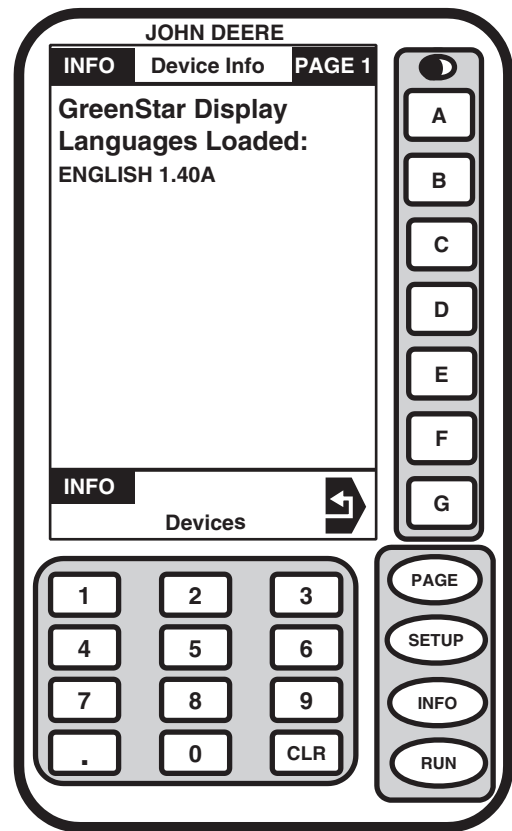
Loader Part Number shows current loader software part number.

HW Compat Version for factory use only.

Languages Loaded shows languages and version number currently loaded on the processor.



PC7043 -19-22JAN02



PC7044 -19-22JAN02

GREENSTAR Display

This screen shows detailed information on the GREENSTAR display.

Display Part Number shows the current part number for the processor.

Software Part Number shows the current software part number being used by the display.

Software Version shows the current software version being used by the display.

Hardware Version shows current hardware version being used.

Loader Version shows the current loader software being used by the display.

Serial Number shows the current serial number of the display.

Equipment Type (ffff) shows a unique identifier for the application and is for factory use only.

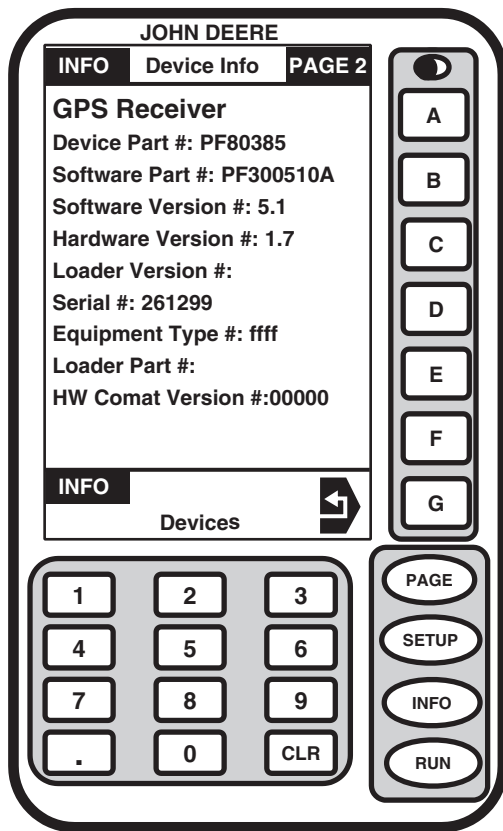
Loader Part Number shows current loader software part number.

HW Compat Version for factory use only.

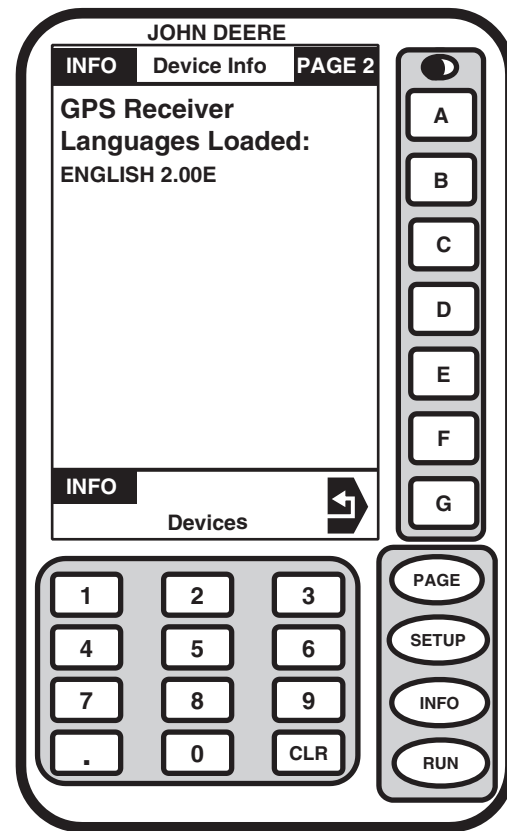
Languages Loaded shows languages and version number currently loaded on the display.

Continued on next page

OUC1035,0000134 -19-23OCT02-4/5



PC7041 -19-22JAN02



PC7042 -19-22JAN02

GPS Receiver

Device Part Number Part number of the GPS receiver.

Software Part Number shows the current software part number for the GPS receiver.

Software Version shows the current software version being used by the GPS receiver.

Hardware Version shows the current hardware version being used by the GPS receiver.

Serial Number shows the current serial number of the GPS receiver.

Equipment Type (ffff) shows a unique identifier for the application and is for factory use only.

Loader Part Number shows current loader software part number.

HW Compat Version for factory use only.

Languages Loaded shows languages and version number currently loaded on the processor.

OUO1035,0000134 -19-23OCT02-5/5

INFO - Product Keys

Press button next to Product Keys.



PC6804 -19-28AUG01

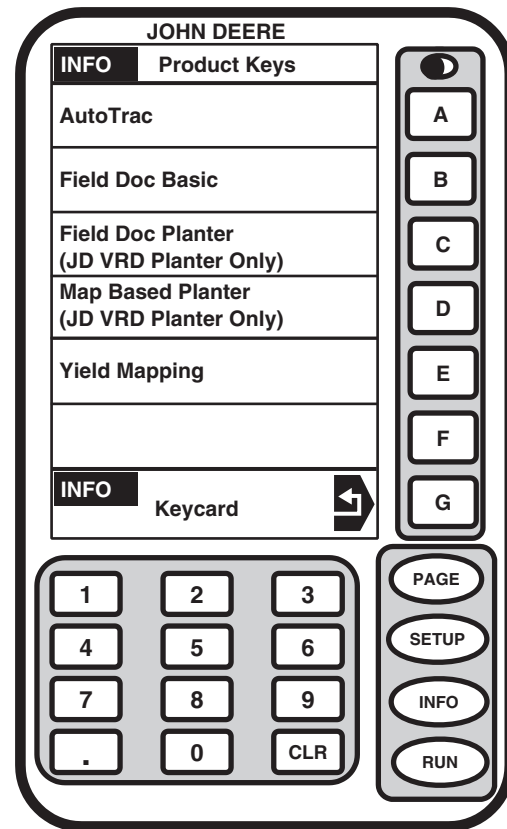
Continued on next page

OUC1035,0000135 -19-09OCT02-1/2

NOTE: The number of programs displayed on the program target screen depends upon how many programs are loaded on the KeyCard.

This screen shows the current programs loaded on the KeyCard.

Press G to return to INFO - KeyCard screen.



PC7302 -19-15OCT02

OUO1035,0000135 -19-09OCT02-2/2

INFO - Program Target

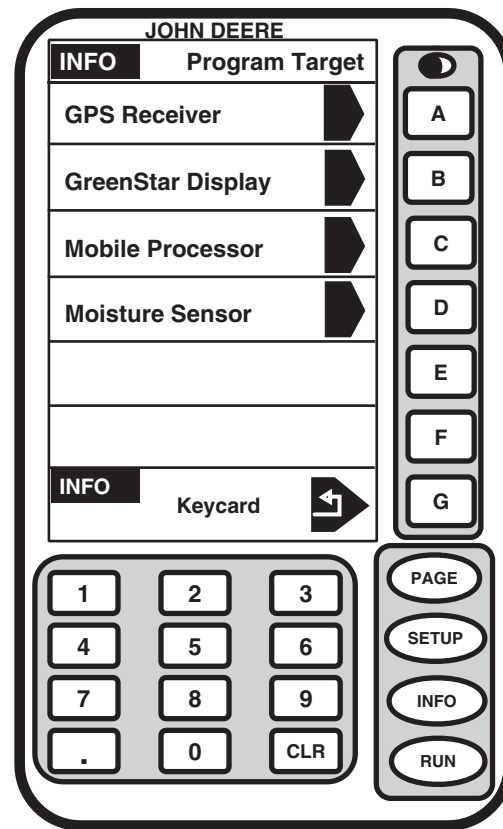
Press button next to Program Target to access INFO - Program target screen.



PC6804 -19-28AUG01

NOTE: The number of programs displayed on the program target screen depends upon how many programs are loaded on the KeyCard.

The INFO - Program Target screen allows operator to update software for the mobile processor, display, GPS receiver, or moisture sensor. (See Load Software section for detailed information on programming software).



PC7045 -19-22JAN02

OUC1035,0000136 -19-18JAN02-2/2

INFO - Target Language

This selection is used to load additional languages to the GREENSTAR system. (See Setup and Load A Language).

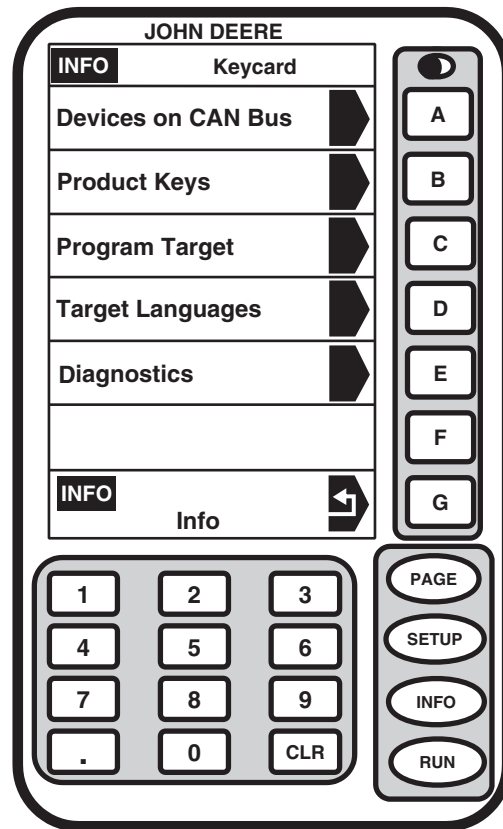


PC6804 -19-28AUG01

OUO1035,0000137 -19-04NOV02-1/1

INFO - Diagnostics

Press button next to Diagnostics.



PC6804 -19-28AUG01

Continued on next page

OUO1035,0000016 -19-11SEP00-1/2

This screen can be used to help troubleshoot the system if a problem occurs.

High Voltage/Low Voltage

This cell shows the high and low voltage as recorded by the CAN bus.

Selected Layer/Bus Off Count

This cell shows the selected CAN bus layer.

Hardware Version/Serial Number

This cell shows the current hardware version and serial number of the mobile processor.

Build

This cell shows the build number and build date of the mobile processor software.

The screenshot shows the 'JOHN DEERE' INFO Diagnostics screen. It features a table with system parameters, a numeric keypad, and several function buttons.

INFO Diagnostics	
High Voltage	2.5
Low Voltage	2.5
Selected Layer	2.5 volt
Bus Off Count	0
Hardware Version	2.1
Serial Number	102377
BUILD: 968286746	
09/06/00 17:32:26	

Below the table, there is a section with 'INFO' and 'Keycard' labels, and a right arrow button. To the right of the screen is a vertical column of buttons labeled A, B, C, D, E, F, and G. At the bottom, there is a numeric keypad with buttons 1-9, 0, and CLR, along with PAGE, SETUP, INFO, and RUN buttons.

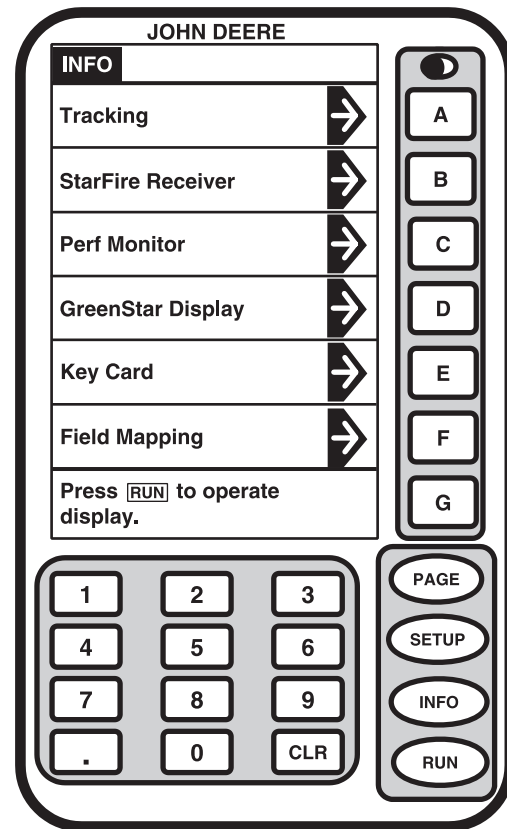
PC6448 -19-12SEP00

OUO1035,0000016 -19-11SEP00-2/2

INFO - Display

INFO - Display screen shows detailed information about GREENSTAR Display. This information will help troubleshoot GREENSTAR Display if a problem occurs.

Press button next to GREENSTAR Display to access INFO Display screen.



PC7008 -19-10JAN02

Continued on next page

OUO1035,0000138 -19-16OCT02-1/8

Hardware/Serial Number

This cell shows part number of GREENSTAR Display and serial number of GREENSTAR Display. It also shows the CAN Bus Voltage being used by the system (either 2.5 or 4.5).

Software/Loader

This cell shows the software part number being used by GREENSTAR Display. This cell also shows the version number of the loader program being used by the system.

Run Hours

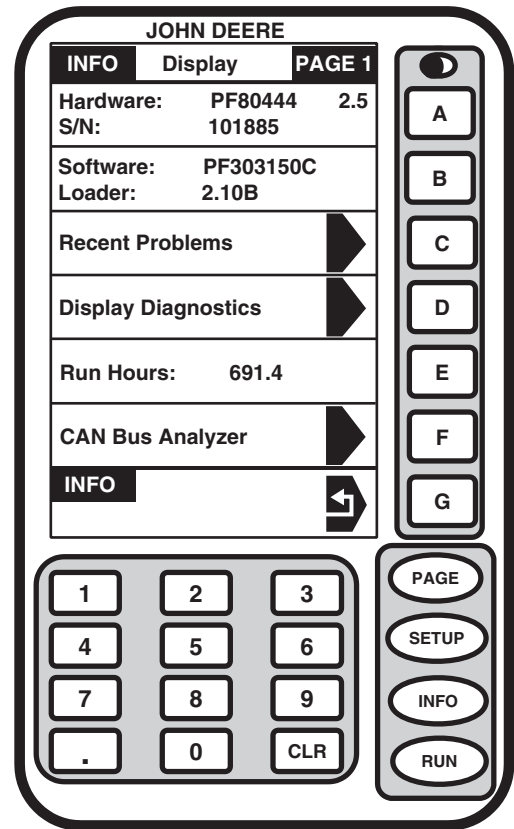
This block shows the current usage hours for the GREENSTAR display.

Recent Problems

This cell shows recent problems encountered by the GREENSTAR Display.

To view cell :

1. Press C to view listing of recent problems.

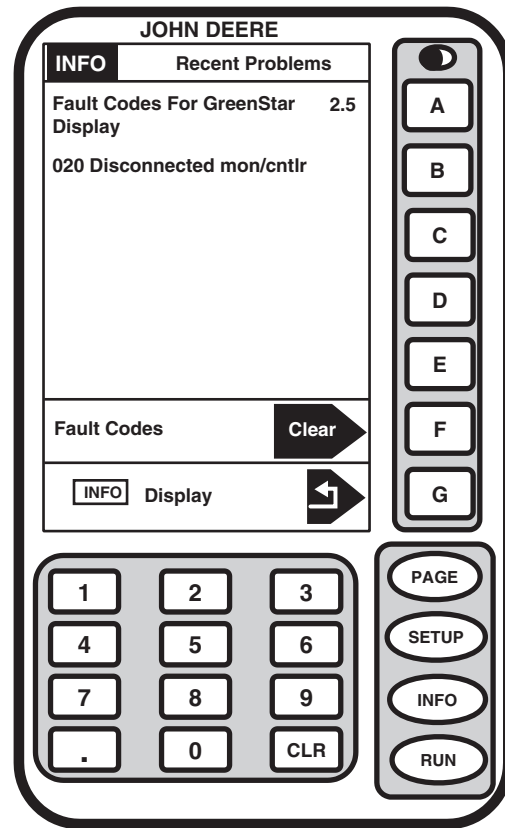


PC7317 -19-14OCT02

Continued on next page

OUO1035,0000138 -19-16OCT02-2/8

2. Press F to clear all fault codes.
3. Press G to return to INFO - Display screen.



H63052 -19-15MAR00

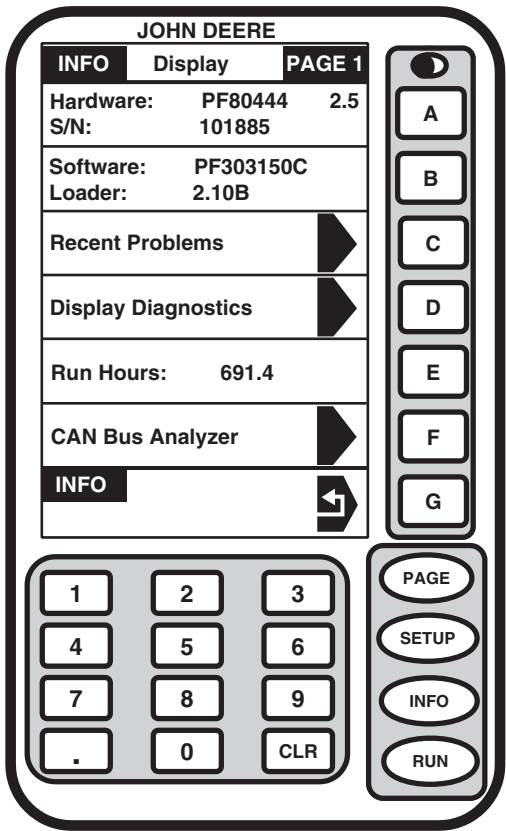
Continued on next page

OUO1035,0000138 -19-16OCT02-3/8

Display Diagnostics

This cell shows a listing of display diagnostics.

Press D to view list.

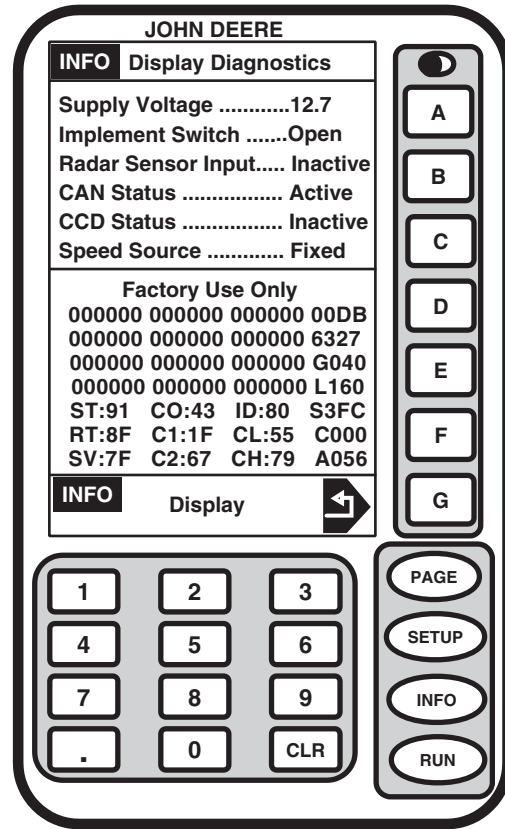


PC7317 -19-14OCT02

Continued on next page

OUO1035,0000138 -19-16OCT02-4/8

This screen shows detailed information about the system.
This information can be used to help troubleshoot the system if a problem occurs.



PC6440 -19-12SEP00

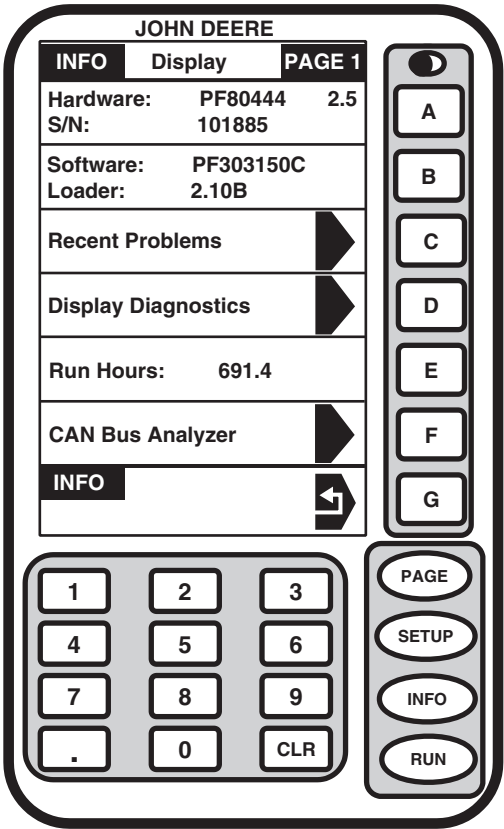
Continued on next page

OUC1035,0000138 -19-16OCT02-5/8

CAN Bus Analyzer

IMPORTANT: If the CAN Bus voltage is manually changed it will automatically be reset to **AUTO** at system power up.

This function is used by the factory in order to help with diagnosing the system.



PC7317 -19-14OCT02

Continued on next page

OUO1035,0000138 -19-16OCT02-6/8

JOHN DEERE

INFO	CAN Bus	PAGE 1
Source ID	Message Count	
0xFC	2,252	
0x99	1,190	
0x2B	184	
0xD2	92	
0x1C	461	
CAN Physical Layer		auto
Bus Off Count: 0		
INFO		Display

PC7293 -19-14NOV02

JOHN DEERE

INFO	Change CAN Layer
AUTO	
2.5	
4/5	
INFO	
CAN Bus	

PC7294 -19-09OCT02

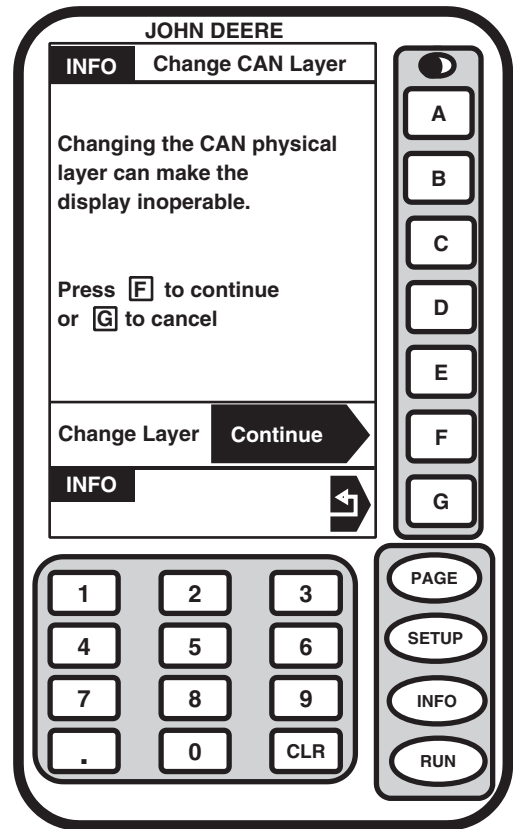
If directed by factory personnel press F to access INFO - CAN Bus - PAGE 1 screen. Press E to access

INFO - Change CAN Layer screen. To change CAN Bus layer press letter button next to desired selection.

Continued on next page

OUO1035,0000138 -19-16OCT02-7/8

A warning screen will be displayed. Press F to continue or G to cancel.



PC7295 -19-09OCT02

OUO1035,0000138 -19-16OCT02-8/8

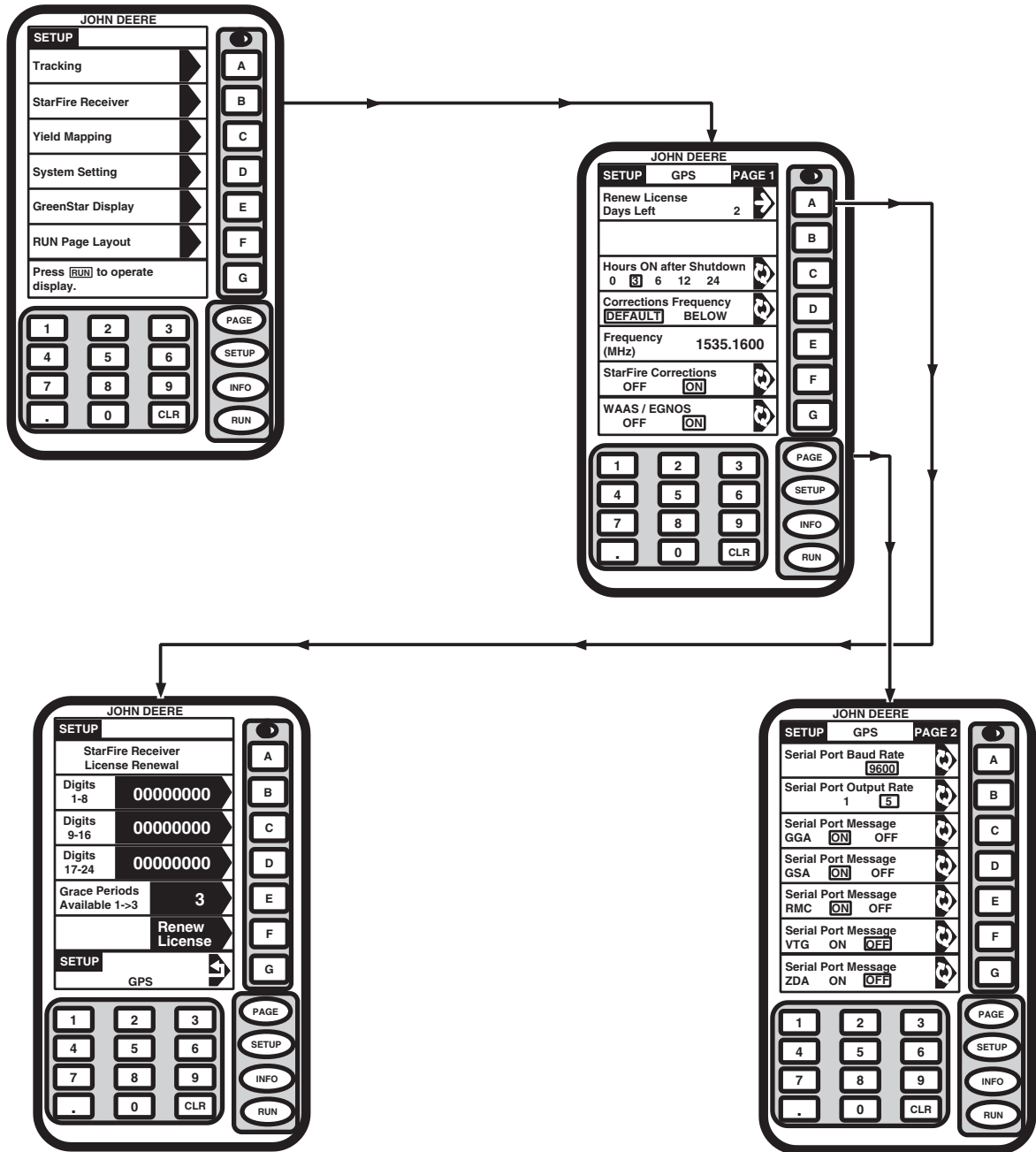
STARFIRE Receiver

STARFIRE Receiver

IMPORTANT: If a SF2 correction signal is being used, accuracy of the system may continue to increase after SF2 is verified on the screen. When the STARFIRE Receiver powers up, it is in the SF1 differential mode. It takes approximately 10 minutes for the receiver to switch to SF2 mode. There may be a slight shift in position between the two modes. If the machine was receiving SF2 frequency when it is shut down, the 10 minute delay will not occur unless it has been shut down or loses unswitched power for longer than three hours.

OUO1035,0000386 -19-23OCT02-1/1

Setup Receiver Screens

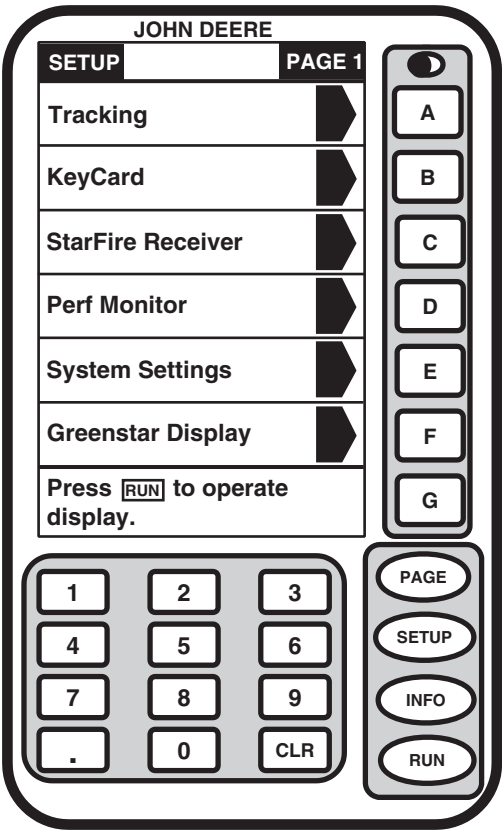


PC7408 -19-14NOV02

OUO1035,0000139 -19-18JAN02-1/1

SETUP - STARFIRE or Position Receiver

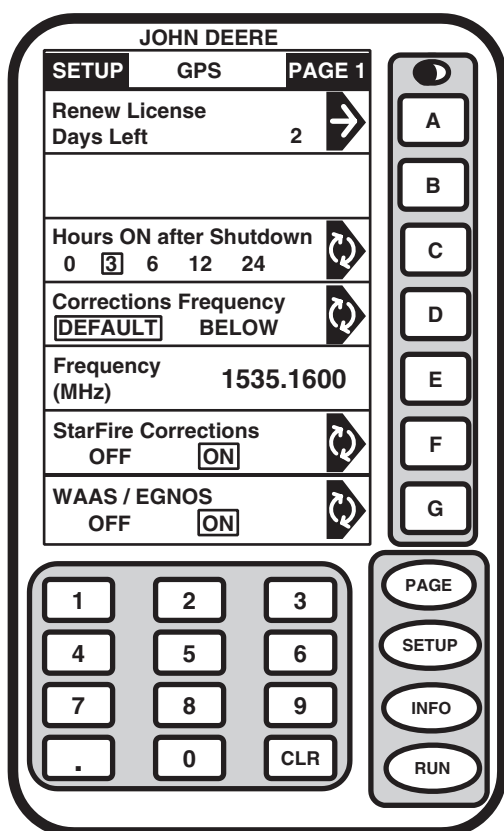
Press button next to STARFIRE to access the GPS
SETUP screens.



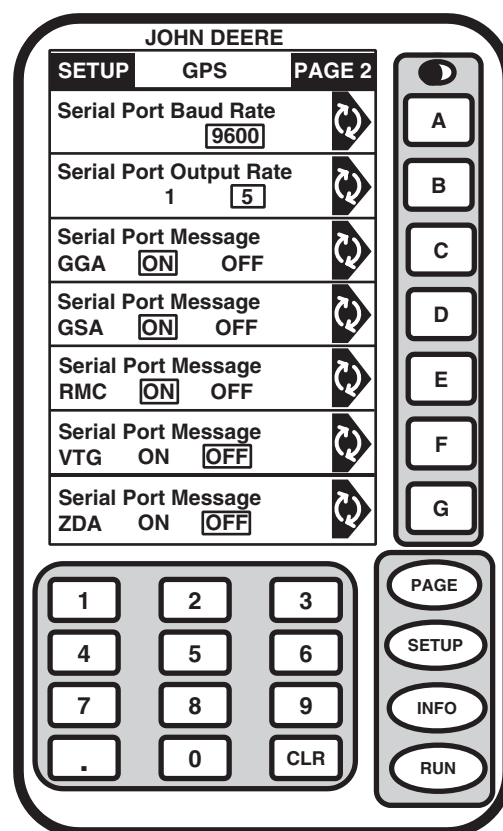
PC6793 -19-27AUG01

Continued on next page

OUO1035,000013A -19-23OCT02-1/2



PC7405 -19-14NOV02



PC7406 -19-05NOV02

The setup GPS screens are used for the following.

- Renew license if using STARFIRE differential correction signal.
- Hours on after shutdown.
- Change default channel.
- Change STARFIRE corrections status.
- Change WAAS/EGNOS status.

- Change serial port baud rate.
- Change output rate.
- Change serial port messages

Press the corresponding button to access the option being changed. Press PAGE button to view SETUP - GPS - PAGE 2.

OUO1035,000013A -19-23OCT02-2/2

License Left

The license left screen indicates the number of days remaining before the receiver license needs to be renewed.

Renew Position Receiver License

NOTE: To receive updated license contact www.stellarsupport.com on the Internet, call 1-888GRNSTAR, or contact your John Deere dealer.

Press A to manually enter 24-digit position receiver subscription license.

JOHN DEERE

SETUP GPS PAGE 1

Renew License Days Left 2 →

Hours ON after Shutdown 0 3 6 12 24

Corrections Frequency DEFAULT BELOW

Frequency (MHz) 1535.1600

StarFire Corrections OFF ON

WAAS / EGNOS OFF ON

A B C D E F G

PAGE SETUP INFO RUN

1 2 3 4 5 6 7 8 9 . 0 CLR

PC7405 -19-14NOV02

Continued on next page

OUC1035,000013B -19-18JAN02-1/3

To enter subscription license number manually:

NOTE: Two 48 hour grace periods are available when the license expires. This is provided to allow sufficient time for the customer to renew the license. Grace period signal will be SF 2 differential correction signal.

1. Press B and enter first eight digits. Press B again to enter this value.
2. Press C and enter next eight digits. Press C again to enter this value.
3. Press D and enter next eight digits. Press D again to enter this value.
4. Press F to accept all of the numbers and send.

JOHN DEERE

SETUP

StarFire Receiver License Renewal

Digits 1-8 00000000

Digits 9-16 00000000

Digits 17-24 00000000

Grace Periods Available 1->3 3

Renew License

SETUP GPS

1 2 3

4 5 6

7 8 9

. 0 CLR

A B C D E F G

PAGE SETUP INFO RUN

PC7407 -19-05NOV02

Continued on next page

OUO1035,000013B -19-18JAN02-2/3

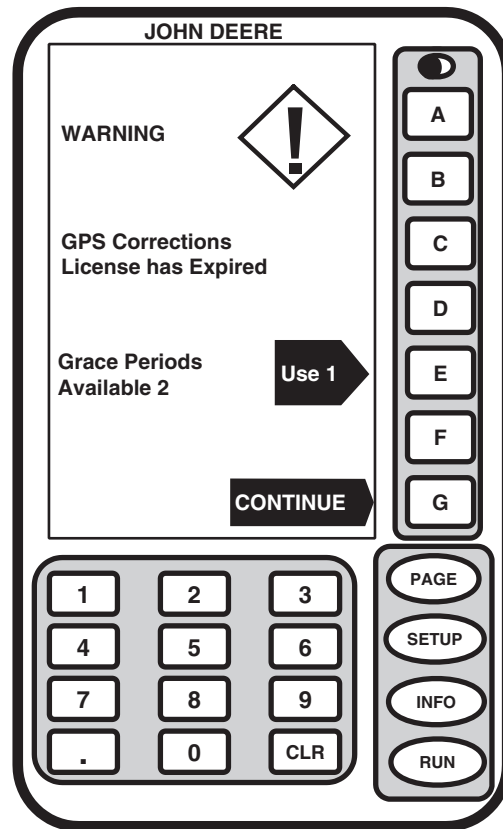
License Expired Warning

NOTE: Two 48 hour grace periods are available when the license expires. This is provided to allow sufficient time for the customer to renew the license. Grace period signal will be SF 2 differential correction signal.

Press E to activate a grace period if needed.

If the license expires while operating or since last operated, a warning screen will appear.

The warning screen can be cleared by pressing G or a grace period can be activated by pressing E.



H63061 -19-17MAR00

OUO1035,000013B -19-18JAN02-3/3

Time On After Shutdown

This cell shows how long the GREENSTAR system is on after switched power is turned off. The operator can select the amount time in hours the system will stay on. Press C to toggle between settings. The default setting is 3 hours.

The image shows a handheld GPS device screen with the title "JOHN DEERE" at the top. Below the title are three tabs: "SETUP", "GPS", and "PAGE 1". The "SETUP" tab is selected. The screen displays several settings:

- Renew License Days Left:** 2 (with a right arrow icon)
- Hours ON after Shutdown:** 0, 3, 6, 12, 24 (with a circular arrow icon). The number 3 is highlighted with a box.
- Corrections Frequency:** DEFAULT, BELOW (with a circular arrow icon).
- Frequency (MHz):** 1535.1600
- StarFire Corrections:** OFF, ON (with a circular arrow icon). The word "ON" is highlighted with a box.
- WAAS / EGNOS:** OFF, ON (with a circular arrow icon). The word "ON" is highlighted with a box.

At the bottom of the screen is a numeric keypad with buttons for digits 1-9, 0, and a CLR button. To the right of the keypad are four oval buttons labeled "PAGE", "SETUP", "INFO", and "RUN". On the far right edge of the device frame, there are seven rectangular buttons labeled A, B, C, D, E, F, and G.

PC7405 -19-14NOV02

OUO1035,00001F0 -19-05NOV02-1/1

Default Channel

IMPORTANT: DO NOT change default channel unless instructed to do so by your John Deere dealer.

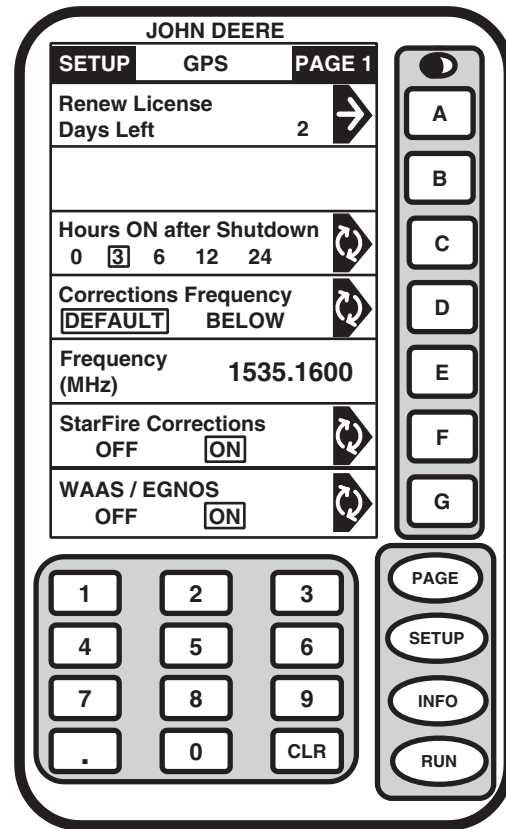
Default Channel

Cell D indicates the Default Channel frequency.

Channel Below

This cell allows the operator to change the Channel Frequency.

Press E to change Channel Frequency.



PC7405 -19-14NOV02

Continued on next page

OUC1035,000038B -19-12OCT00-1/2

STARFIRE Corrections

NOTE: This information will only appear when the receiver has a license.

This cell allows the operator to simulate no license after the receiver has already been licensed.

WAAS/EGNOS

This cell allows the operator to use WAAS/EGNOS signal.

The image shows a handheld device screen with the title "JOHN DEERE" at the top. Below the title are three tabs: "SETUP", "GPS", and "PAGE 1". The "SETUP" tab is selected. The screen displays several configuration options:

- Renew License Days Left:** 2. To the right is a right-pointing arrow button.
- Hours ON after Shutdown:** 0, 3, 6, 12, 24. To the right is a circular arrow button.
- Corrections Frequency:** DEFAULT, BELOW. To the right is a circular arrow button.
- Frequency (MHz):** 1535.1600.
- StarFire Corrections:** OFF, ON. To the right is a circular arrow button.
- WAAS / EGNOS:** OFF, ON. To the right is a circular arrow button.

On the right side of the screen is a vertical column of buttons labeled A, B, C, D, E, F, and G. Below these are four larger buttons labeled PAGE, SETUP, INFO, and RUN. At the bottom of the screen is a numeric keypad with buttons for digits 1-9, 0, a decimal point, and a CLR button.

PC7405 -19-14NOV02

OUO1035,000038B -19-12OCT00-2/2

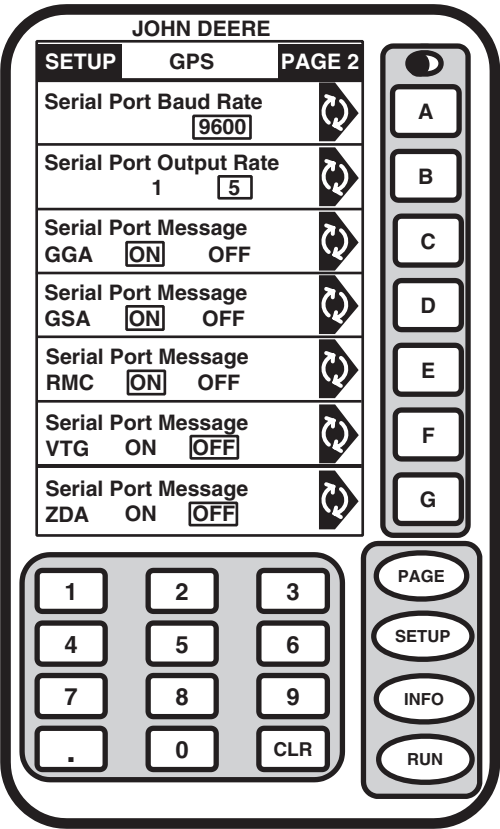
Serial Port Baud Rate/Serial Port Messages

NOTE: Output rates are: 4800, 9600, 19200 and 38400.

The STARFIRE receiver is capable of sending NMEA messages on a serial port. This allows the receiver to be used for applications other than GREENSTAR system.

Press A to change the serial baud rate.

Press letter button next to desired serial port message to toggle between ON/OFF.



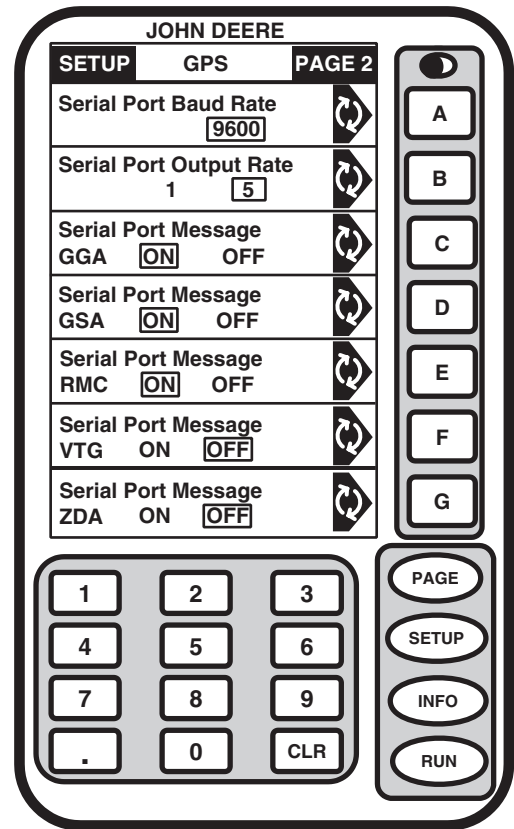
PC7406 -19-05NOV02

OUC1035,000038A -19-12OCT00-1/1

Changing Output Rate

IMPORTANT: It is important that the output rate be set to 5 Hz for Parallel Tracking.

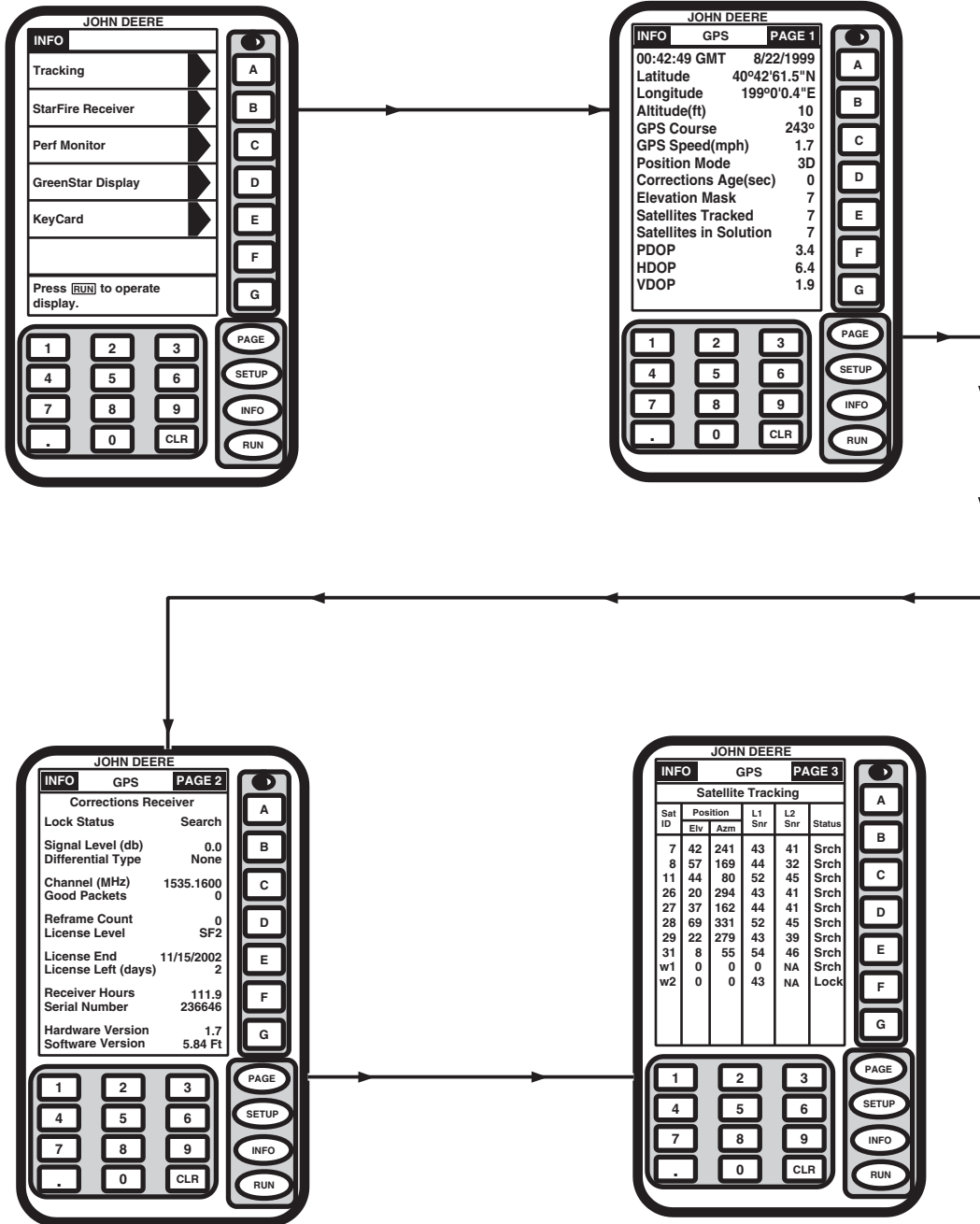
Press B and output rate will toggle from 1 to 5 Hz.



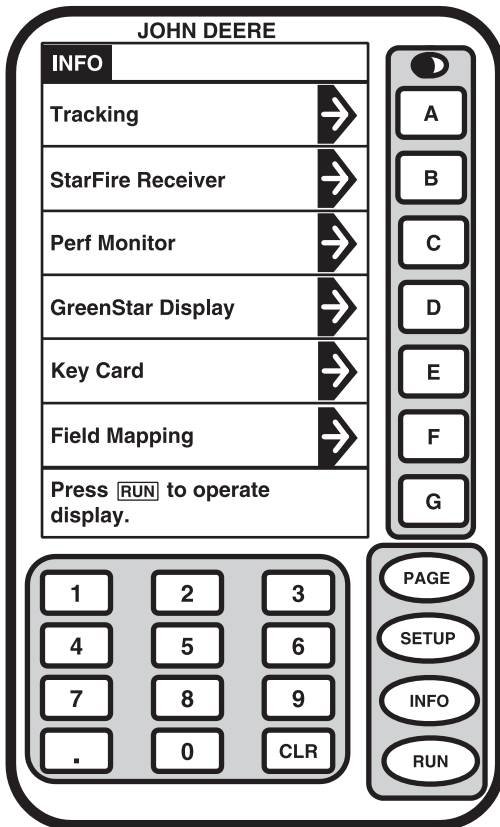
PC7406 -19-05NOV02

OUO1035,000013C -19-18JAN02-1/1

INFO - GPS - Screens



INFO - GPS - Page 1



PC7008 -19-10JAN02

Press button next to STARFIRE Receiver to access INFO - GPS - PAGE 1.

Press PAGE button to access additional pages.

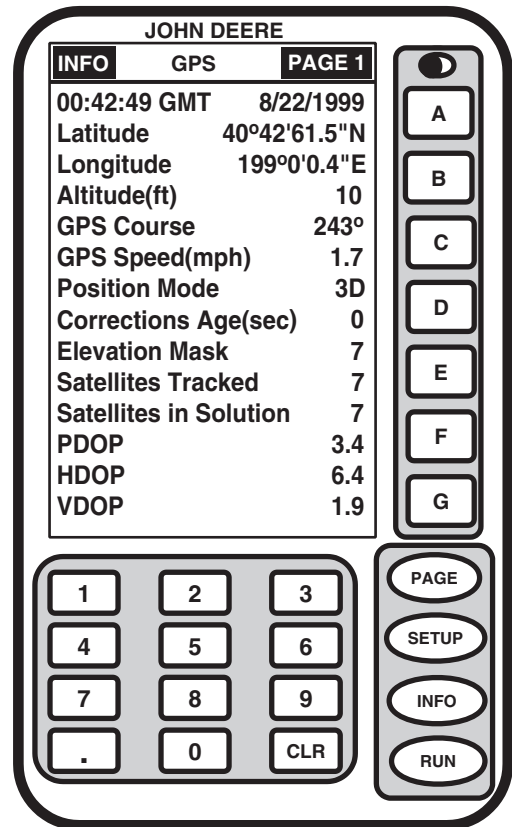
This screen shows the information and status of the incoming GPS and differential correction signals. No information on this screen can be changed. It is for viewing only.

Date and Time

This cell shows date and time for Greenwich Mean time.

Latitude

This cell displays vehicle location coordinates with respect to Equator (north or south).



PC6404 -19-25JUL00

Longitude

This cell shows vehicle location coordinates with respect to Prime Meridian (east or west).

Altitude

This cell shows height of receiver in meters (feet) above sea level.

GPS Course

NOTE: The course and speed normally show small speeds and various courses when the machine is not moving.

This cell displays direction of travel, in degrees, relative to true north (zero degrees) as measured by the receiver. Angle is measured in clockwise direction.

GPS Speed

This cell shows ground speed of machine in kilometers per hour (mile per hour) as measured by the receiver.

Position Mode

This cell shows status of GPS signal: 2-D (two dimensional with latitude and longitude of vehicle) or 3-D (three dimensional with altitude, latitude, and longitude of vehicle).

The position mode cell also shows status of differential signal: JDdiff (L-Band differential) SF 1 (SFire 1 differential), SF 2 (SFire 2 differential), and WAAS (differential from WAAS).

Corrections Age (SEC)

This cell shows the age of the differential correction signal to the GPS (normally less than 10 seconds).

Elevation Mask

This cell shows the angle above the horizon below which GPS satellites are not used for positioning. Low

elevation satellites produce less accurate positioning. This elevation mask may drop if there are too few satellites above 10° for a good position.

Satellites Tracked

This cell displays number of satellites being tracked by the GPS receiver.

Satellites in Solution

This cell shows number of satellites actively used to compute position.

PDOP, HDOP and VDOP

This cell shows precision of GPS position signal. Precision of signal is affected by geometry of satellites being used.

- PDOP - position dilution of precision
- HDOP - horizontal dilution precision
- VDOP - vertical dilution of precision

OUO1035,000013E -19-18JAN02-2/2

INFO - GPS - PAGE 2

Correction Receiver

This page shows detailed information about the position receiver. This information will help troubleshoot the position receiver if a problem occurs.

Lock Status

This cell shows the status of the L-Band differential correction signal acquisition (search, locked).

Signal Level

This cell shows the signal strength of the L-Band differential correction signal in dB. A good signal is 6 dB or higher.

Differential Type

This cell displays type of corrections signal being received.

Channel

This cell shows the frequency which the receiver is using for L-Band differential corrections.

Good Packets

Packets are information data strings received from the differential satellite. Good packets contain differential correction information.

Reframe Count

This cell shows the number of times the receiver has acquired the differential corrections signal.

License Level

This cell shows the type of license currently authorized for differential corrections. JDdiff for L-Band receivers and SF 1 or SF 2 for STARFIRE receiver.

License End

This cell shows the date the license ends.

JOHN DEERE

INFO GPS PAGE 2

Corrections Receiver

Lock Status	Search
Signal Level (db)	0.0
Differential Type	None
Channel (MHz)	1535.1600
Good Packets	0
Reframe Count	0
License Level	SF2
License End	11/15/2002
License Left (days)	2
Receiver Hours	111.9
Serial Number	236646
Hardware Version	1.7
Software Version	5.84 Ft

Navigation buttons: A, B, C, D, E, F, G, PAGE, SETUP, INFO, RUN.

Numeric keypad: 1, 2, 3, 4, 5, 6, 7, 8, 9, ., 0, CLR.

PC7421 -19-14NOV02

License Left

This cell shows the number of days left until L-Band differential correction license expires.

Receiver Hours

This cell displays the number of hours on the receiver.

Serial Number

This cell shows the position receiver serial number. This is required to obtain an L-Band signal license.

Hardware Version

This cell shows the part number of the position receiver.

Software Version

NOTE: To acquire the latest version of software call 1-888GRNSTAR, or via the Internet at www.stellarsupport.com or contact your John Deere dealer.

This cell displays the version of software being used by the position receiver.

OUO1035,000013F -19-18JAN02-2/2

INFO - GPS - PAGE 3

Satellite Tracking

This page shows the satellites being tracked by the GPS receiver and associated information.

SAT ID

This cell shows the identification number for the GPS or WAAS satellite.

ELEV

This cell displays the elevation in degree above horizon for the GPS satellite position.

AZM

This cell shows the azimuth in degree from true North for the GPS satellite.

L1 SNR

This cell shows the signal strength for the L1 GPS signal (signal to noise ratio).

L2 SNR

This cell shows the signal strength for the L2 GPS signal (signal to noise ratio).

Status

This cell shows the status of the GPS signal.

- Search - Searching for the satellite signal.
- Track - tracking the satellite signal and using it for positioning.
- OK - Tracking satellite signal and using it for positioning.
- OK DIFF - Appears for JD L-Band receiver. Tracking the satellite signal and using it for positioning.
- OK SF1 - Tracking satellite signal and using it for positioning with STARFIRE signal frequency.
- OK SF2 - Tracking satellite signal and using it for positioning with STARFIRE dual frequency.

The screenshot shows a handheld GPS device screen. At the top, it says 'JOHN DEERE'. Below that, there are three tabs: 'INFO', 'GPS', and 'PAGE 3'. The 'GPS' tab is selected. Underneath, it says 'Satellite Tracking'. The main display area is a table with the following data:

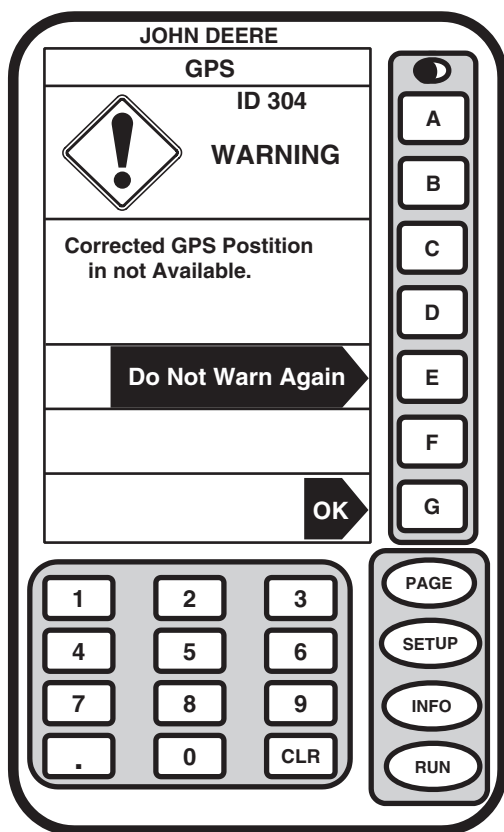
Sat ID	Position		L1 Snr	L2 Snr	Status
	Elev	Azm			
7	42	241	43	41	Srch
8	57	169	44	32	Srch
11	44	80	52	45	Srch
26	20	294	43	41	Srch
27	37	162	44	41	Srch
28	69	331	52	45	Srch
29	22	279	43	39	Srch
31	8	55	54	46	Srch
w1	0	0	0	NA	Srch
w2	0	0	43	NA	Lock

Below the table, there is a numeric keypad with buttons 1-9, 0, and CLR. To the right of the keypad are four function buttons: PAGE, SETUP, INFO, and RUN. On the far right, there are seven buttons labeled A through G, and a small circular icon at the top right.

- Tracking the WAAS satellite for WAAS correction information.

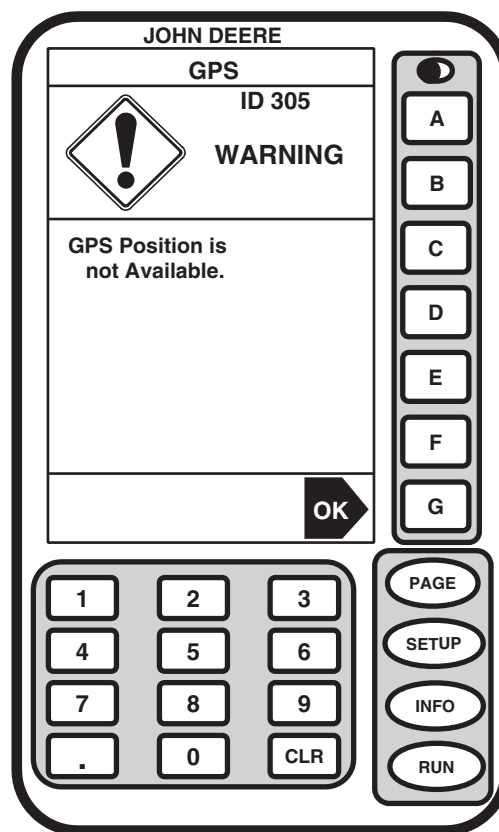
OUO1035,0000140 -19-23OCT02-2/2

Warning Screens



ID 304

PC6790 -19-27AUG01



ID 305

PC6800 -19-27AUG01

NOTE: Pressing E will suppress the warning screen until the power is cycled.

Warning screen ID 304 will appear if differential correction has been lost. Warning screen ID 305 appears if the signal is lost.

Press E to turn warning off.

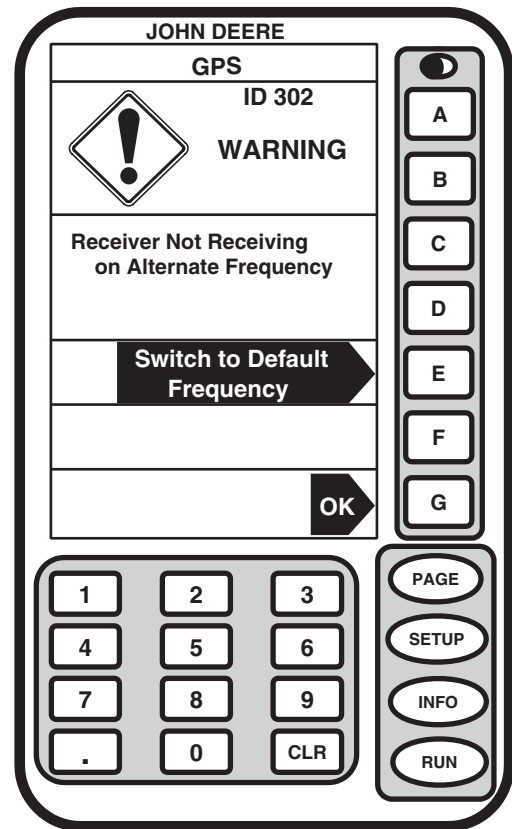
Press G to continue. Warning will repeat every 5—10 minutes.

Continued on next page

OUO1035,000038F -19-12OCT00-1/3

There are three differential correction frequencies in the US. The receiver looks at the receiver location and then determines which frequency should be the default; the other two are the alternate frequencies.

This warning is to alert the user that the receiver is not locked onto a differential signal and that it should be locked onto a different signal.



ID 302

PC6798 -19-27AUG01

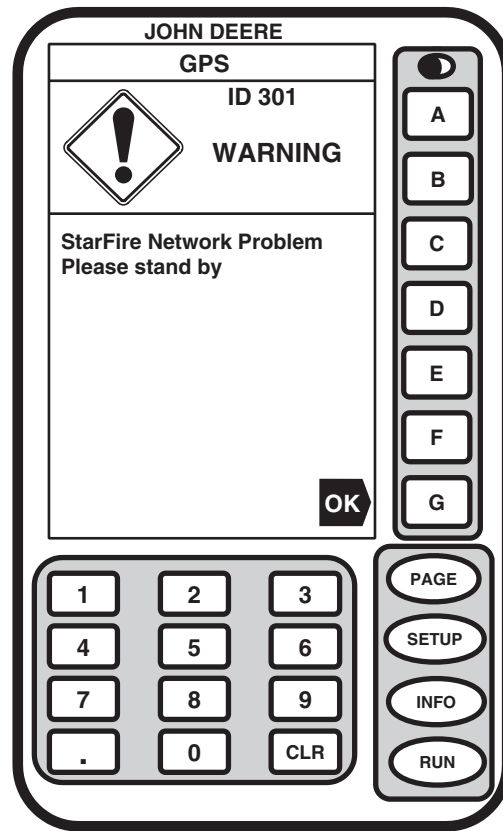
Continued on next page

OUO1035,000038F -19-12OCT00-2/3

IMPORTANT: This warning screen indicates a problem with the STARFIRE satellite network. No action needs to be taken by the operator.

Warning screen will appear if receiver is not receiving corrections messages from the STARFIRE network (idle packets only). The position receiver will not function properly if it is not receiving correction messages from the STARFIRE network. This condition will be corrected as soon as possible by the STARFIRE network personnel.

Press G to continue.



ID 301

PC6789 -19-27AUG01

OUO1035,000038F -19-12OCT00-3/3

Update Software

Load Software

IMPORTANT: When updating a system with two displays, only one display can be connected to the wiring harness at a time. Disconnect the wiring harness connector from the display not being updated then reconnect after programming is completed. Repeat procedure on second display.

NOTE: To acquire the latest version of software on the Internet at www.stellarsupport.com, call 1-888GRNSTAR, or contact your John Deere dealer.

When the KeyCard is installed in the mobile processor and the power is ON, the system will check the version of software on the mobile processor, display and position receiver. If the KeyCard contains a more recent version of the software, the system will ask if the operator wants to update with the most recent version. Follow the on screen procedures to update the software. (See Automatic Software Load).

Software for the system can be updated either as individual components or as a system. Software is updated either through the INFO - Program Target screen (individual component) or the SETUP - Products screen (system).

OUO1035,0000141 -19-18JAN02-1/1

Load New Software (Products)

NOTE: Use this procedure if the automatic software load does not work. This procedure will update all software for the Parallel Tracking system, (including mobile processor, GREENSTAR display and position receiver).

To acquire the latest version of software call 1-888GRNSTAR, or via the Internet at www.stellarsupport.com or contact your John Deere dealer.

Whenever new or revised software programs are available, it will be necessary to load new software to the system.

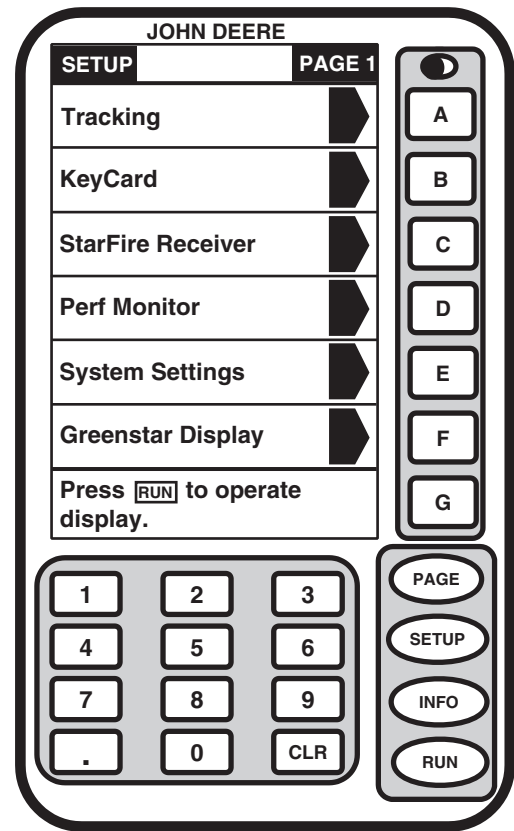
To load new software:

1. Install KeyCard containing new software into top slot of mobile processor.
2. Turn ignition key to RUN position.
3. Press SETUP button.

Continued on next page

OUO1035,0000391 -19-12OCT00-1/5

4. Press button next to KeyCard.



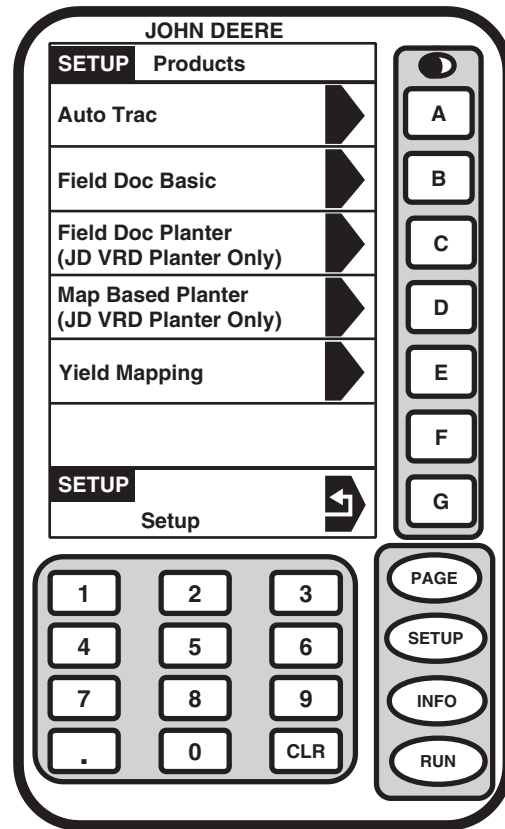
PC6793 -19-27AUG01

Continued on next page

OUO1035,0000391 -19-12OCT00-2/5

NOTE: To cancel new software load press G.

5. Press letter button next to desired selection on SETUP - Products screen.



PC7413 -19-11NOV02

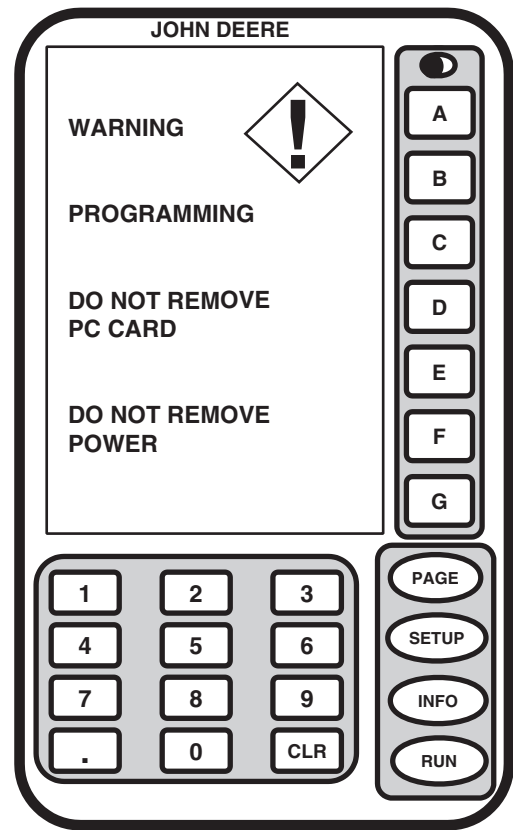
Continued on next page

OUO1035,0000391 -19-12OCT00-3/5

6. Wait until WARNING PROGRAMMING screen appears and follow directions on screen.

DO NOT REMOVE PC CARD

DO NOT REMOVE POWER

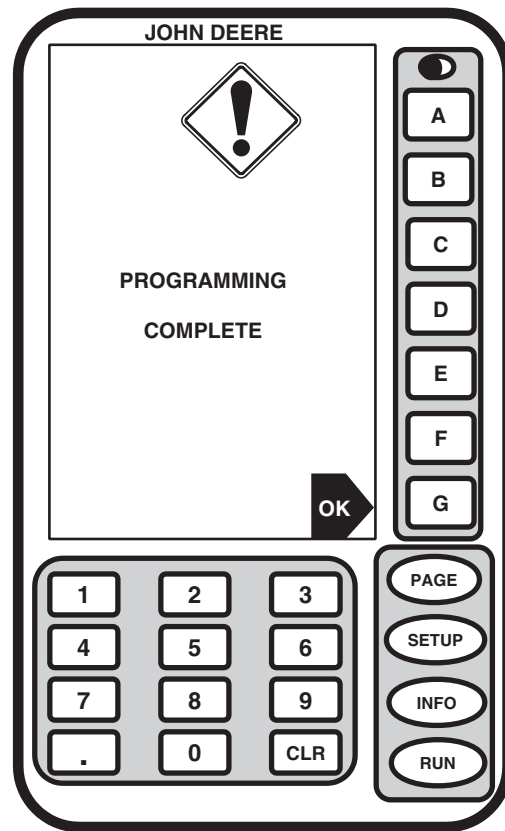


H63113 -19-17MAR00

Continued on next page

OUO1035,0000391 -19-12OCT00-4/5

7. Press letter button next to OK.
8. You may proceed as usual.



PC7310 -19-14OCT02

OUO1035,0000391 -19-12OCT00-5/5

Load New Software (Individual Components)

NOTE: All software programs, (mobile processor, GREENSTAR display and position receiver) are installed using the same procedures.

To acquire the latest version of software on the Internet at www.stellarsupport.com, call 1-888GRNSTAR, or contact your John Deere dealer.

Whenever new or revised software programs are available, it will be necessary to load new software to the system.

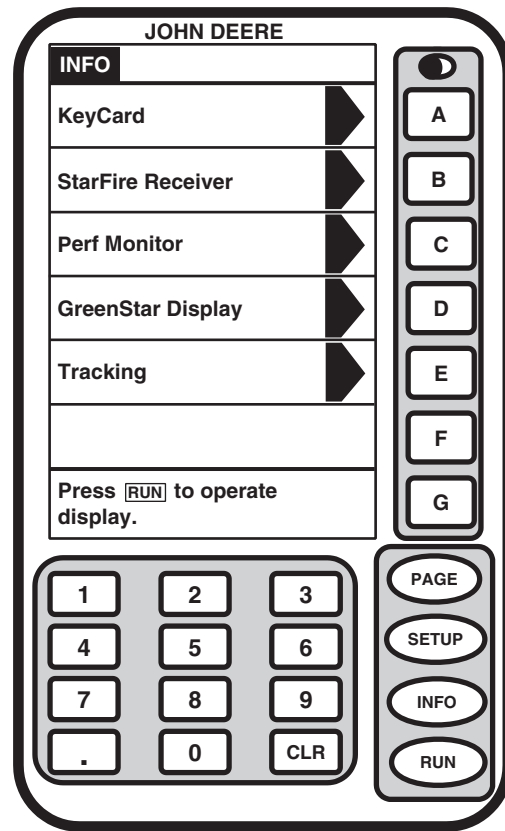
To load new software for individual components:

1. Install KeyCard containing new software into top slot of mobile processor.
2. Turn ignition key to RUN position.
3. Press INFO button.

Continued on next page

OUO1035,0000142 -19-18JAN02-1/7

4. To begin loading software, press button next to KeyCard. Press G to cancel programming and return to INFO - Software screen.

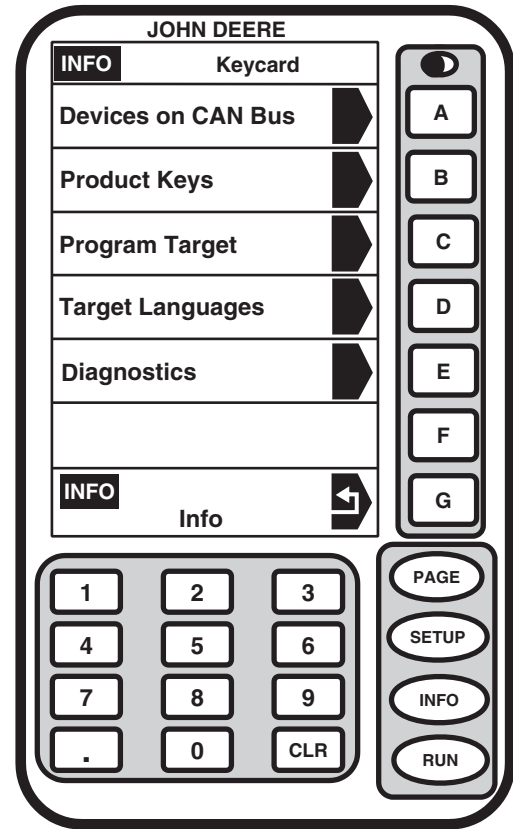


PC6397 -19-26MAY00

Continued on next page

OUO1035,0000142 -19-18JAN02-2/7

5. Press button next to Program Target.

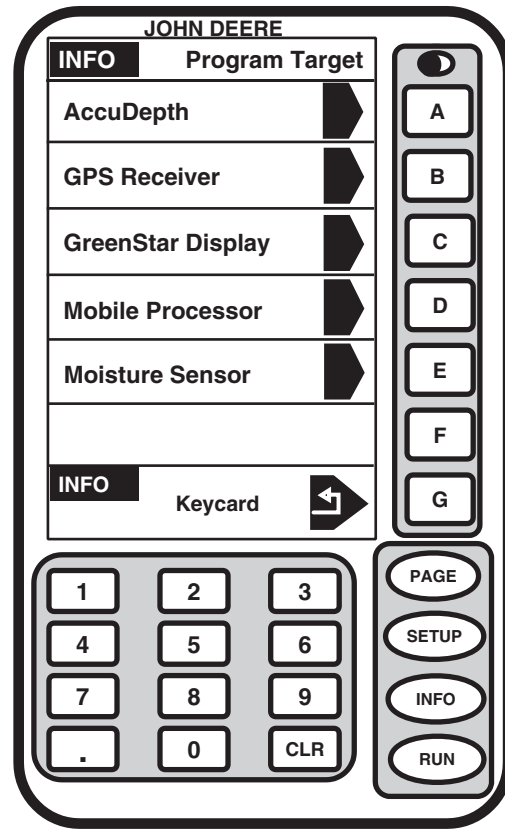


PC6804 -19-28AUG01

Continued on next page

OUO1035,0000142 -19-18JAN02-3/7

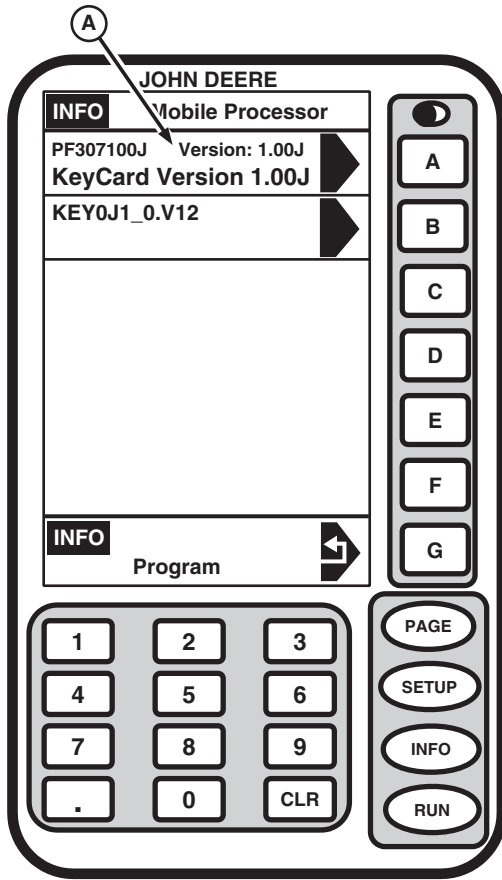
6. Press button next to desired target component or press G to cancel programming.



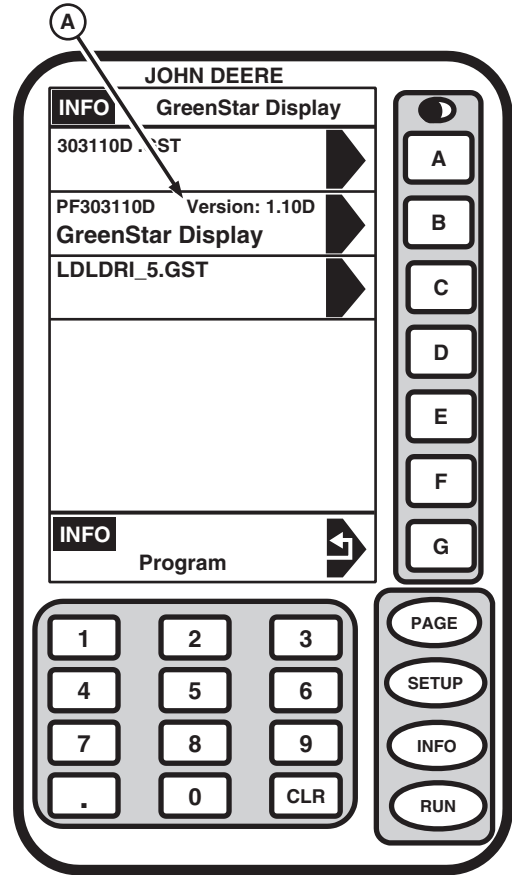
PC6791 -19-27AUG01

Continued on next page

OUC1035,0000142 -19-18JAN02-4/7



INFO Mobile Processor Shown



INFO - GREENSTAR Display Shown

A—Software Version

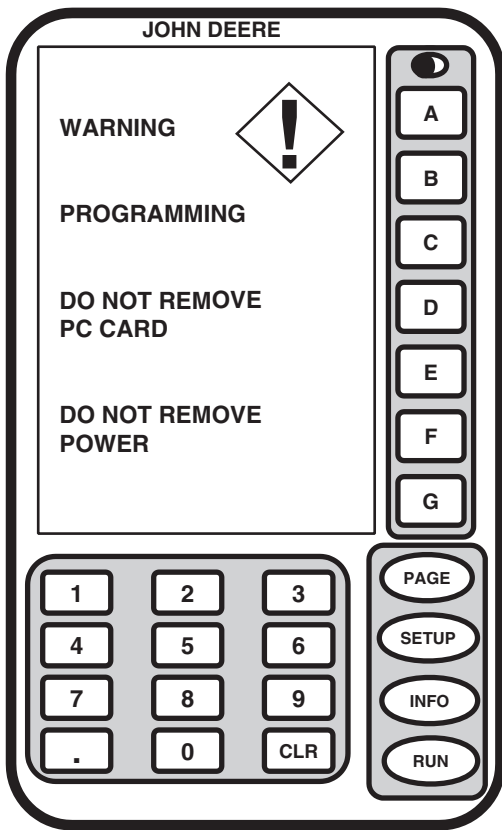
NOTE: To return to INFO - Program screen and cancel new software load press G.

To select the most recent version of software, select the highest number/letter version.

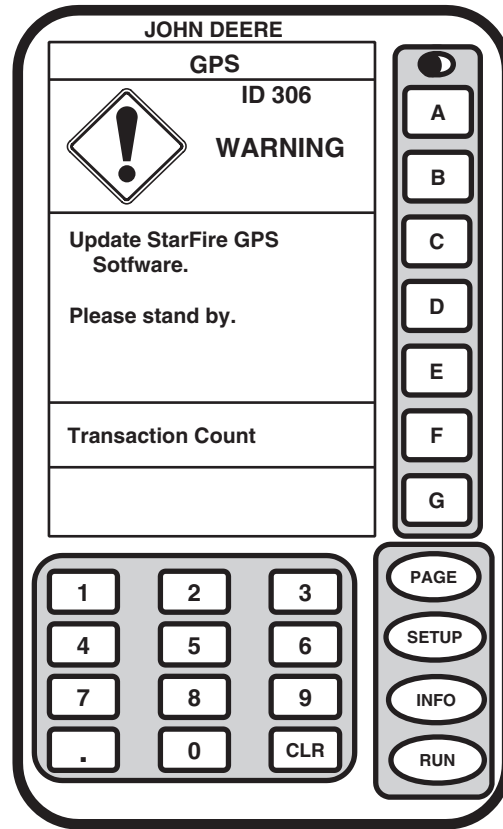
7. Press button next to cell with software version (A).

Continued on next page

OUC1035,0000142 -19-18JAN02-5/7



H63113 -19-17MAR00



PC6799 -19-27AUG01

8. Wait until WARNING PROGRAMMING screen appears and follow directions on screen.

DO NOT REMOVE PC CARD

DO NOT REMOVE POWER

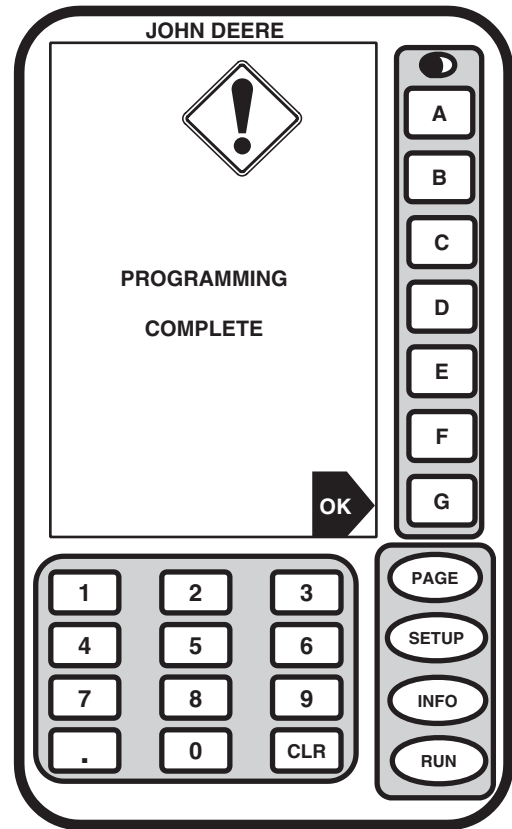
9. Please stand by.

Continued on next page

OOU01035,0000142 -19-18JAN02-6/7

10. When programming is complete, the PROGRAMMING COMPLETE screen will appear. Press letter button next to OK.

11. You may proceed as usual.



PC7310 -19-14OCT02

OUO1035,0000142 -19-18JAN02-7/7

Troubleshooting

Warning Screens

Warning screens and alarms provide operator alerts to monitor system operational problems. Each screen displays a Diagnostic Trouble Code (DTC) on upper right corner (D), keyword strings (E) and text strings (F). Refer to the “Diagnostic Trouble Code Lists” hereafter to get specific operational problem and recommended corrective action.

Each diagnostic trouble code has a priority. The priority of the diagnostic trouble code is given by the relevant icon (A), (B) or (C) displayed:

- Icon (A) belongs to **FULL PAGE CAUTION** screens. Cautions are displayed at the bottom of **RUN** pages or as a **FULL** screen display if the GREENSTAR Display is NOT on a **RUN** page. The audible alarm will sound at the highest level.

NOTE: When the caution screen appears, corrective action must be taken before continuing operation.

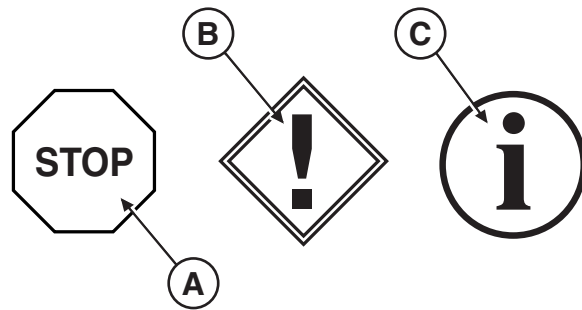
- Icon (B) belongs to **FULL PAGE WARNING** screens. A full page warning will override any other display function in progress.

NOTE: The RUN, SETUP and INFO keys will NOT be active during this display.

If a **CAUTION** or **ADVISORY** alarm is in progress when a **FULL PAGE WARNING** occurs, that alarm will be interrupted and the **FULL PAGE WARNING** alarm will sound.

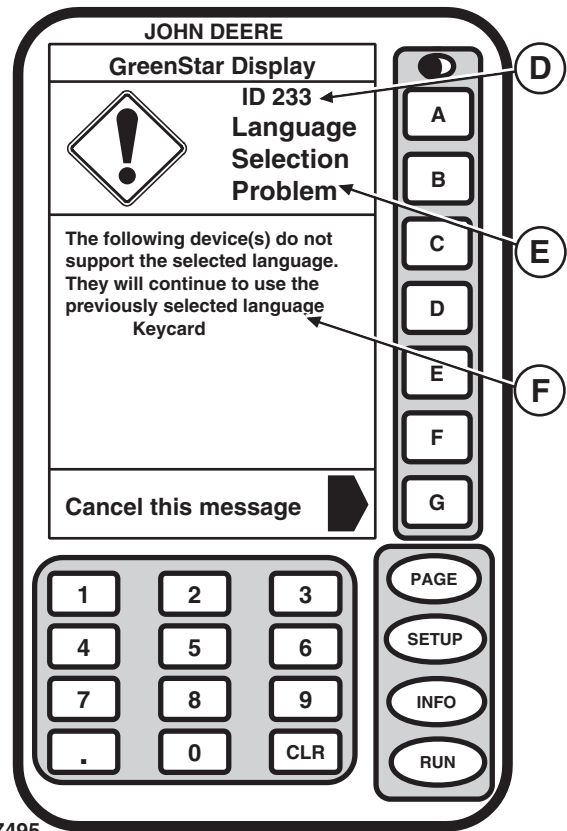
NOTE: When the warning screen appears, corrective action should be taken before continuing operation.

- Icon (C) belongs to **FULL PAGE INFO** screens.



ZX026095

ZX026095 -JUN-19JUN01



ZX027495

ZX027495 -19-26DEC01

- A—Full page caution icon
- B—Full page warning icon
- C—Full page info icon
- D—Diagnostic Trouble Code (DTC)
- E—Keyword strings
- F—Text strings

OUZXMAG,0001385 -19-22DEC01-1/1

Parallel Tracking Diagnostic Trouble Code List

Trouble Code	Key Word Strings	Text Strings	Description/Reason	Comments
100	PC Card Error	PC Data Card Error. An error has been detected. The error code is 02-02-00. Please check the PC Card.	PC Data Card or KeyCard has a problem	Cycle power. If trouble code 100 appears again then contact your dealer
155	PC Card Warning	KeyCard has been removed. Please re-insert KeyCard.	KeyCard cannot be accessed by the Mobile Processor	Check KeyCard insertion
200	CAN Bus Problem	The following Device(s) are no longer communicating with the GREENSTAR Display. Check the indicated device(s) and CAN bus wiring.	Communication problem between the display and one or several other devices.	Contact your dealer
201	CAN Bus Problem	Two Devices are requesting the same Run Page section. Perform Run Page Layout to correct the conflict.	Display conflict.	Perform Run Page Layout
210	CAN Bus Problem	Too many devices are attempting to communicate with the GREENSTAR Display. Remove 1 or more devices.	Attempted to logon more than 8 devices to the CAN bus.	Disconnect unnecessary device
211	CAN Bus Problem	CAN bus communications overload. Reset the display or turn the power off and then back on.	Display keys pushed too rapidly.	Cycle power
213	Internal error	A failure has been detected in the display's internal memory.	Internal problem with display.	Cycle power. If trouble code 213 appears again then replace display.
220	Parallel Tracking Problem	Parallel tracking is not receiving data from the GPS receiver. Check: 1. Position Receiver Connection 2. Wiring Harness	Loss of communication with position receiver.	Follow screen recommendations
221	Parallel Tracking Problem	The GPS is not able to acquire a differential correction signal.	Loss of differential.	Cycle power. If trouble code 221 appears again then contact your dealer
224	Parallel Tracking Problem	No Parallel Tracking key on KeyCard or no KeyCard present. Install KeyCard with Parallel Tracking key in Mobile Processor.	No KeyCard installed.	Follow screen recommendations
225	Parallel Tracking Problem	The GPS receiver must be set to report at the 5Hz. rate. Confirm: 1. STARFIRE Receiver 2. License Level SFire2	Tracking inaccurate	Follow screen recommendations
226	Parallel Tracking Problem	The GPS receiver has no GPS signal.	Loss of GPS.	Cycle power. If trouble code 226 appears again then contact your dealer

Troubleshooting

Trouble Code	Key Word Strings	Text Strings	Description/Reason	Comments
230	Display Address Change	You are about to change the address of the GREENSTAR Display. Selection of the wrong address will cause loss of communication with implements.	Device address change.	Make sure to set Display to PRIMARY display address
232	CAN Bus Problem	No Primary GREENSTAR Display detected. All systems require a primary display.	Wrong Display address used (i.e. AUX1).	Set Display to PRIMARY display address
233	Language Selection Problem	The following device(s) do not support the selected language. They will continue to use the previously selected language.	The system shows which component(s) do not have the language loaded that is selected.	Load all necessary languages to each component of the system, then select the desired system language
259	KeyCard Warning	Product Reprogramming Error. A PRP file specified in a BIN file is missing on the card.	Programming error while programming from Parallel Tracking system to Yield Mapping System using SETUP/KEYCARD/YIELD MAPPING sequence.	Use INFO/KEYCARD/PROG. TARGET sequence to reprogrammed the system to Yield Mapping
301	Warning	STARFIRE Network Problem. Please stand by.	Receiver is not receiving correction messages from the STARFIRE network.	Contact your dealer
302	Warning	Receiver Not Receiving on Alternate Frequency.	The receiver is not locked onto a differential signal	Switch to default frequency
303	Warning	GPS Corrections License has Expired.	License should be renewed	Renew license or use grace periods, if available
304	Warning	Corrected GPS Position is not Available.	Differential correction has been lost	Wait until differential correction has been recovered
305	Warning	GPS Position is not Available.	Signal is lost	Wait until signal has been recovered
306	Warning	Update STARFIRE GPS Software. Please stand by.	New STARFIRE software loading process	Wait until programming has completed

OUZXMAG,0001386 -19-22DEC01-2/2

Display Diagnostic Trouble Code List

Trouble Code	Problem	Description/Reason	Comments
20	Implement disconnected.	A previously logged on implement has been disconnected from the CAN bus.	Check all component connectors for proper engagement.
21	Display conflict.	An implement has attempted to write to a run page display section it has not previously been allocated.	Make a Run Page Layout
30	Too many devices on CAN bus.	Attempted to logon more than 8 implements to the CAN bus.	Disconnect unnecessary implements.
31	Display overload.	Display keys pushed too rapidly.	Cycle power.
33	Memory failure.	Internal problem with display.	Cycle power. If trouble code 33 appears again then replace display.
40	No GPS Communication	Loss of communication with the position receiver.	Check connection with position receiver. Contact your dealer.
41	No GPS Differential	Loss of differential signal.	Contact you dealer.
44	No KeyCard Installed	No KeyCard installed in mobile processor	Insert a KeyCard in the mobile processor.
45	1 Hz GPS Operation	1 Hz GPS Operation	
46	No GPS Signal	Position receiver is not receiving a GPS signal.	Signal has been lost or position receiver is not functioning. Make sure the position receiver is not blocked.
47	Display is not functioning	Device address has been changed.	See you dealer.
48		Device Address changed	Set device address to auto.
49		No primary display address on CAN Bus.	Set display address to primary.
50	No SSU Communication	Loss of CCD Communication to steering controller	See you dealer.
51		Operator alertness check.	
52		More than one display with a primary address on bus.	Set parallel tracking display to auxiliary.
53		An AUX address detected CCD active. CCD should only be active on primary display.	See your dealer.
54		Auto-detect layer disagrees with the user selected CAN layer.	Set display CAN Bus layer to auto.
60	Flash Erase failed.	An erase of curved track memory failed	See your dealer.
61	Flash write failed	A write to curved track memory failed	See your dealer.
110	CAN bus problem.	Communication problem with CAN bus.	Check CAN bus wiring harness and terminators. Contact your dealer.
111	CCD bus problem.	CCD bus hardware/wiring errors.	Check CCD wiring between digital tach and display. Contact your dealer

Troubleshooting

Trouble Code	Problem	Description/Reason	Comments
112	Display conflict Run Page Layout.	Two or more devices are requesting the same screen allocation.	Make a Run Page Layout
126	AutoTrac disabled.	Using a version of mobile processor application code that is not using secure CAN.	See your dealer.

OUZXMAG,0001102 -19-08AUG01-2/2

GREENSTAR Display

Symptom	Problem	Solution
Display is blank.	No power.	Check harness connections at the display.
	Out of contrast or insufficient backlighting.	Adjust the contrast.
		Change backlighting level.
Display audible alarm does not sound.	Possible failed alarm.	See your John Deere dealer.
Display is locked up on a certain page.	Communication problem.	Turn key switch OFF and ON.
Dual display will not operate properly.	Incorrect display address.	Make sure Parallel Tracking display is set to auxiliary 1 and main display is set to primary.
		If using a single display make sure the address is set to primary.
Parallel Tracking system is slow or sluggish.	Incorrect update rate.	Make sure STARFIRE receiver is set to 5 Hz.
Display does not work properly.	Incorrect GREENSTAR display software.	See your John Deere dealer for display upgrade kit PF90091.

OUO1035,0000393 -19-12OCT00-1/1

Mobile Processor

Symptom	Problem	Solution
KeyCard will not fit in slot.	KeyCard is backward.	Align arrow on KeyCard with arrow on mobile processor.
System locks up during reprogramming.	Incorrect message from display.	Turn key switch off. Disconnect wiring harness from mobile processor. Turn key switch on and reconnect mobile processor wiring harness. Reprogramming should continue.

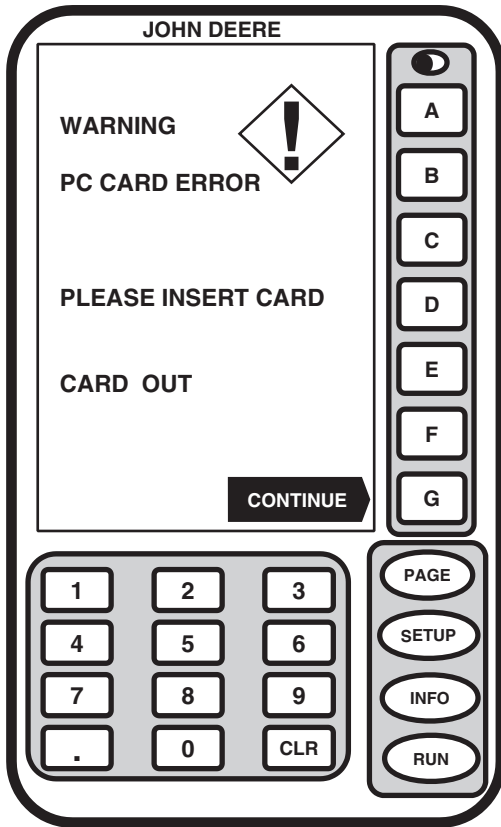
OUO1035,0000394 -19-12OCT00-1/1

Position Receiver

Symptom	Problem	Solution
No differential correction.	Differential license has expired.	Contact GREENSTAR software support. To acquire the latest version of software call 1-888GRNSTAR, or via the Internet at www.stellarsupport.com or contact your John Deere dealer.
	Interference with two-way radio.	Relocate two-way radio antenna at least 2 meters (6.5 ft.) from position receiver.

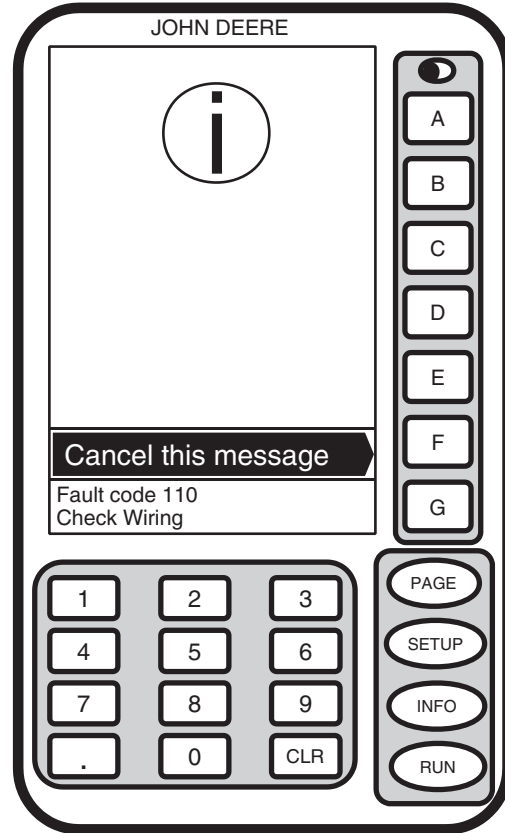
OUO1035,0000395 -19-12OCT00-1/1

Display Screen Troubleshooting Illustrations



A-KeyCard Error Warning Screen

H62563 -19-07FEB00

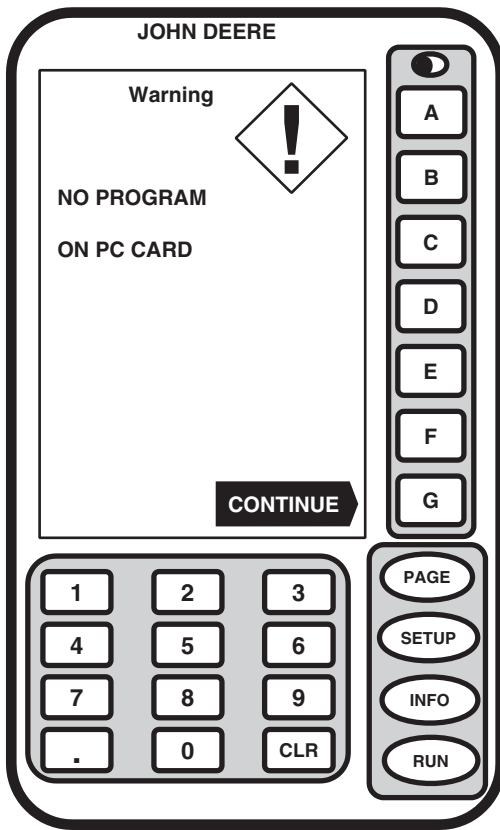


B-Communication Problem Screen

H62565 -19-07FEB00

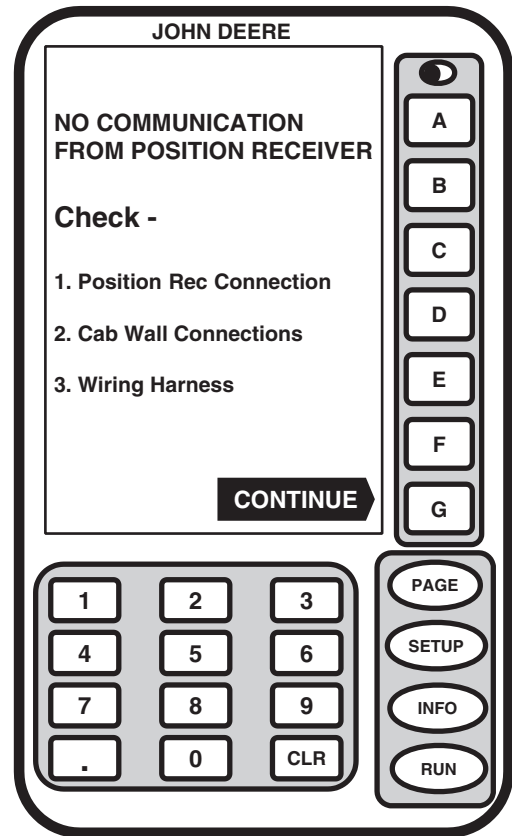
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OUO1035,0000396 -19-12OCT00-1/3



C-Program Not Found Warning Screen

H62568 -19-07FEB00

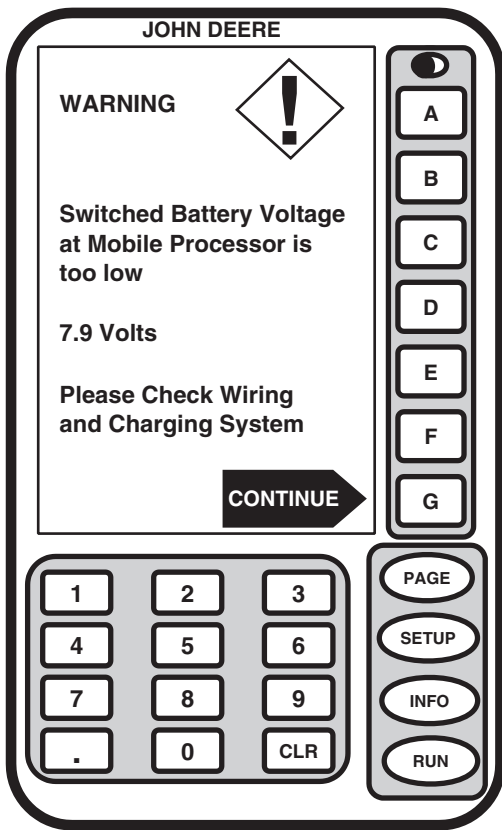


D-No Communication Screen

H62569 -19-07FEB00

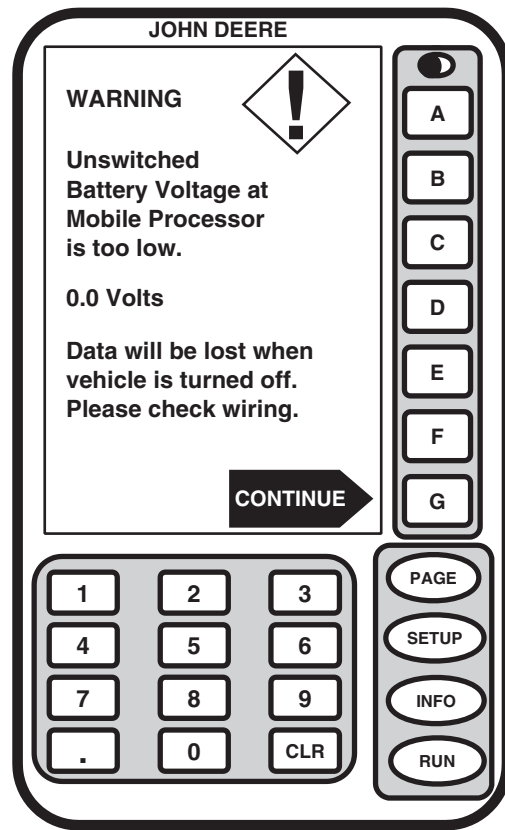
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OUO1035,0000396 -19-12OCT00-2/3



E- Battery Voltage too Low

H63116 -19-17MAR00



F- Battery Voltage too Low

H63117 -19-17MAR00

OUO1035,0000396 -19-12OCT00-3/3

Display Screens

Warning Screens

Warning screens and alarms alert operator to monitor system operational problems.

NOTE: When the warning screen appears, corrective action should be taken before continuing operation.

Warning and alarms will NOT prevent the machine from starting, operating or recording data.

Each warning screen displays a specific operational problem and recommended corrective action.

Full Page Warning Screens

NOTE: The RUN, SETUP, and INFO keys will not be active during this display.

Full page warning will override any other display function in progress.

The audible alarm will sound at the highest level. If a CAUTION or ADVISORY alarm is in progress when a full page warning occurs, that alarm will be interrupted and the full page warning alarm will sound.

Full Page Caution Screens

Cautions are displayed at the bottom of RUN pages or as a full screen display of the GREENSTAR display is not a RUN page.

NOTE: Display screen "Symptoms" refer to illustration labeled with a letter. See Display Screen Illustrations in this section to view each specific Symptom.

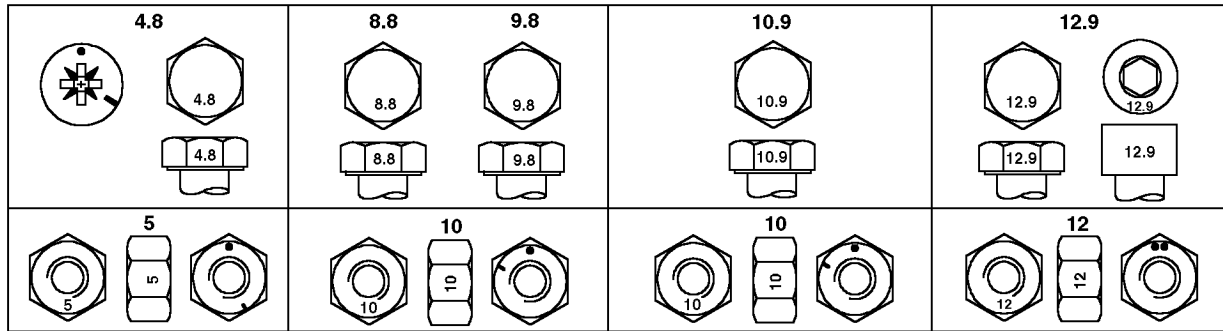
Symptom	Problem	Solution
KeyCard error warning screen (refer to illustration A).	Mobile processor does not recognize KeyCard in slot.	Verify that KeyCard is securely in slot (black eject button should be popped up).

Symptom	Problem	Solution
Communication problem warning screen (refer to illustration B).	Data network communication problem.	Cycle power, if problem persists see your John Deere dealer.
Program not found warning screen (refer to illustration C).	Programs are not found on KeyCard.	Verify that programs are in correct directory on KeyCard.
No communication screen (refer to illustration D).	Position receiver communication problem.	Check all connections indicated on screen. Cycle power, if problem persists see your John Deere dealer.
Battery voltage low (refer to illustration E).	Battery voltage too low at mobile processor.	Check battery voltage. Check machine fuses. Replace as needed. If problem persists, see your John Deere dealer.
Battery voltage low at mobile processor (refer to illustration F).	Battery voltage too low.	Check battery voltage. Check machine fuses. Replace as needed. Check system ground. If problem persists, see your John Deere dealer.

OUC6092,0000262 -19-30AUG01-2/2

Specifications

Metric Bolt and Cap Screw Torque Values



Top, Property Class and Head Markings; Bottom, Property Class and Nut Markings

	Class 4.8		Class 8.8 or 9.8		Class 10.9		Class 12.9	
Size	Lubricated ^a N•m(lb-ft)	Dry ^b N•m(lb-ft)	Lubricated ^a N•m(lb-ft)	Dry ^b N•m(lb-ft)	Lubricated ^a N•m(lb-ft)	Dry ^b N•m(lb-ft)	Lubricated ^a N•m(lb-ft)	Dry ^b N•m(lb-ft)
M6	4.7 (3.5)	6 (4.4)	9 (6.6)	11.5 (8.5)	13 (9.5)	16.5 (12.2)	15.5 (11.5)	19.5 (14.5)
M8	11.5 (8.5)	14.5 (10.7)	22 (16)	28 (20.5)	32 (23.5)	40 (29.5)	37 (27.5)	47 (35)
M10	23 (17)	29 (21)	43 (32)	55 (40)	63 (46)	80 (59)	75 (55)	95 (70)
M12	40 (29.5)	50 (37)	75 (55)	95 (70)	110 (80)	140 (105)	130 (95)	165 (120)
M14	63 (46)	80 (59)	120 (88)	150 (110)	175 (130)	220 (165)	205 (150)	260 (190)
M16	100 (74)	125 (92)	190 (140)	240 (175)	275 (200)	350 (255)	320 (235)	400 (300)
M18	135 (100)	170 (125)	265 (195)	330 (245)	375 (275)	475 (350)	440 (325)	560 (410)
M20	190 (140)	245 (180)	375 (275)	475 (350)	530 (390)	675 (500)	625 (460)	790 (580)
M22	265 (195)	330 (245)	510 (375)	650 (480)	725 (535)	920 (680)	850 (625)	1080 (800)
M24	330 (245)	425 (315)	650 (480)	820 (600)	920 (680)	1150 (850)	1080 (800)	1350 (1000)
M27	490 (360)	625 (460)	950 (700)	1200 (885)	1350 (1000)	1700 (1250)	1580 (1160)	2000 (1475)
M30	660 (490)	850 (625)	1290 (950)	1630 (1200)	1850 (1350)	2300 (1700)	2140 (1580)	2700 (2000)
M33	900 (665)	1150 (850)	1750 (1300)	2200 (1625)	2500 (1850)	3150 (2325)	2900 (2150)	3700 (2730)
M36	1150 (850)	1450 (1075)	2250 (1650)	2850 (2100)	3200 (2350)	4050 (3000)	3750 (2770)	4750 (3500)

^a "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

^b "Dry" means plain or zinc plated without any lubrication.

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

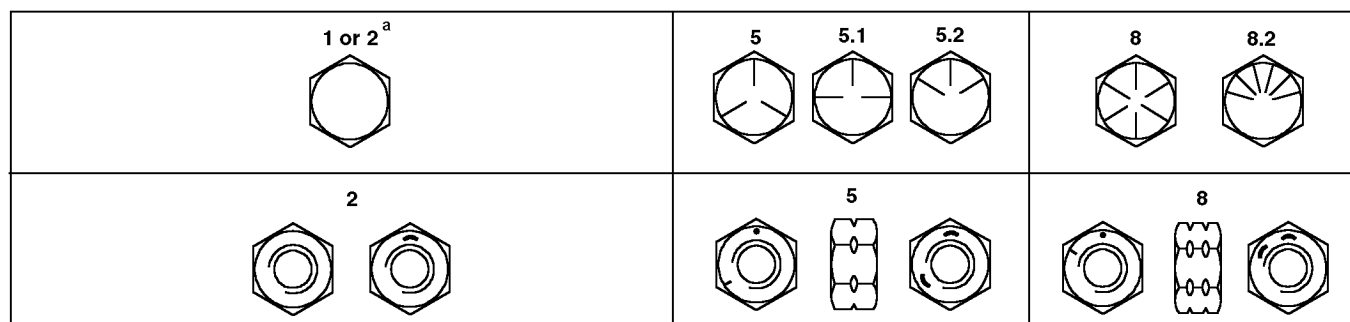
Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

TORQ2 -UN-07SEP99

Unified Inch Bolt and Cap Screw Torque Values



Top, SAE Grade and Head Markings; Bottom, SAE Grade and Nut Markings

Size	Grade 1 (No Mark)		Grade 2 ^a (No Mark)		Grade 5, 5.1 or 5.2		Grade 8 or 8.2	
	Lubricated ^b N•m(lb-ft)	Dry ^c N•m(lb-ft)	Lubricated ^b N•m(lb-ft)	Dry ^c N•m(lb-ft)	Lubricated ^b N•m(lb-ft)	Dry ^c N•m(lb-ft)	Lubricated ^b N•m(lb-ft)	Dry ^c N•m(lb-ft)
1/4	3.8 (2.8)	4.7 (3.5)	6 (4.4)	7.5 (5.5)	9.5 (7)	12 (9)	13.5 (10)	17 (12.5)
5/16	7.7 (5.7)	9.8 (7.2)	12 (9)	15.5 (11.5)	19.5 (14.5)	25 (18.5)	28 (20.5)	35 (26)
3/8	13.5 (10)	17.5 (13)	22 (16)	27.5 (20)	35 (26)	44 (32.5)	49 (36)	63 (46)
7/16	22 (16)	28 (20.5)	35 (26)	44 (32.5)	56 (41)	70 (52)	80 (59)	100 (74)
1/2	34 (25)	42 (31)	53 (39)	67 (49)	85 (63)	110 (80)	120 (88)	155 (115)
9/16	48 (35.5)	60 (45)	76 (56)	95 (70)	125 (92)	155 (115)	175 (130)	220 (165)
5/8	67 (49)	85 (63)	105 (77)	135 (100)	170 (125)	215 (160)	240 (175)	305 (225)
3/4	120 (88)	150 (110)	190 (140)	240 (175)	300 (220)	380 (280)	425 (315)	540 (400)
7/8	190 (140)	240 (175)	190 (140)	240 (175)	490 (360)	615 (455)	690 (510)	870 (640)
1	285 (210)	360 (265)	285 (210)	360 (265)	730 (540)	920 (680)	1030 (760)	1300 (960)
1-1/8	400 (300)	510 (375)	400 (300)	510 (375)	910 (670)	1150 (850)	1450 (1075)	1850 (1350)
1-1/4	570 (420)	725 (535)	570 (420)	725 (535)	1280 (945)	1630 (1200)	2050 (1500)	2600 (1920)
1-3/8	750 (550)	950 (700)	750 (550)	950 (700)	1700 (1250)	2140 (1580)	2700 (2000)	3400 (2500)
1-1/2	990 (730)	1250 (930)	990 (730)	1250 (930)	2250 (1650)	2850 (2100)	3600 (2650)	4550 (3350)

^a Grade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

^b "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

^c "Dry" means plain or zinc plated without any lubrication.

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

Crime Prevention Tips

Help Prevent Crime

You can help take a bite out of crime by properly documenting ownership and discouraging theft.

**TAKE A BITE OUT OF
CRIME**
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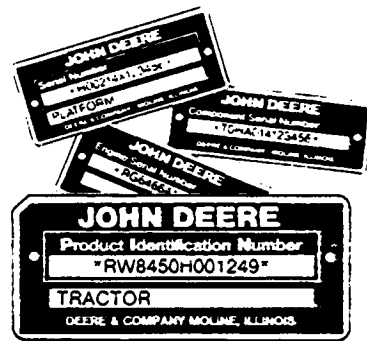


TS140 -19-07OCT88

DX,CRPRV,A -19-03MAR93-1/1

Record AG Identification Numbers

1. Mark your machines with your own unique numbering system.
2. Record the Product Identification Number (PIN) of the unit and also individual component identification numbers for engines, axles, pumps, etc. Include the PIN numbers on all documentation, such as insurance, financial, and warranty papers.

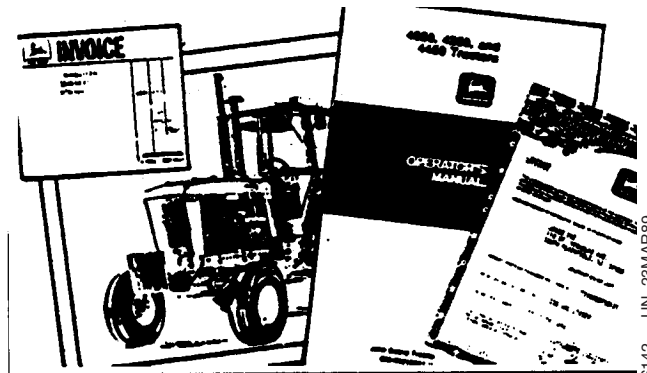


TS161 -UN-23MAR89

DX,CRPRV,B -19-03MAR93-1/1

Keep Proof of Ownership

1. Take color photographs from several angles of each machine.
2. Maintain an up-to-date inventory of all your machines.
3. Keep your documented identification numbers, color photographs, and inventory in a safe, secure location.



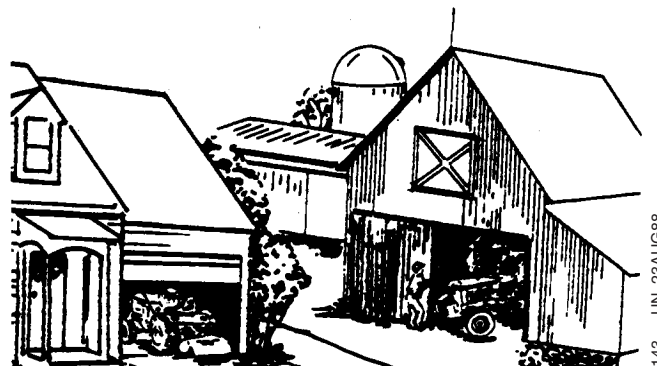
TS142 -UN-23MAR89

DX,CRPRV,C -19-03MAR93-1/1

Park Indoors Out of Sight

Make machines hard to move:

- Park large equipment in front of exits.
- Lower equipment to the ground. Remove key.
- Remove battery when unit is in storage.
- Lock cab doors, windows, and vandal-proof devices.
- Set wheels in widest position making loading more difficult. Lock building.



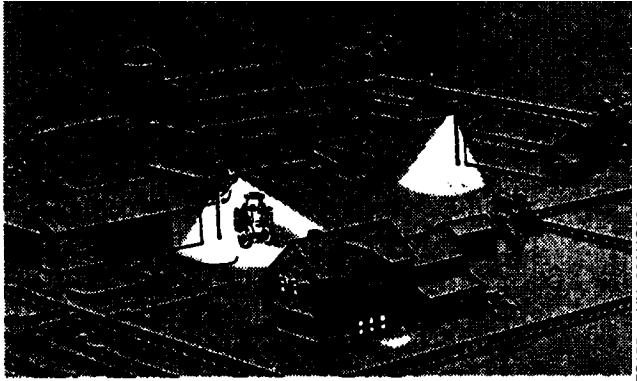
TS143 -UN-23AUG88

DX,CRPRV,D -19-03MAR93-1/1

When Parking Outdoors

Make machines hard to move:

- Park in a well-lighted, fenced area.
- Lower all equipment to the ground.
- Remove ignition key. Remove battery when unit is in storage.
- Lock cab doors, windows, and vandal-proof devices.
- Set wheels in widest position making loading more difficult.

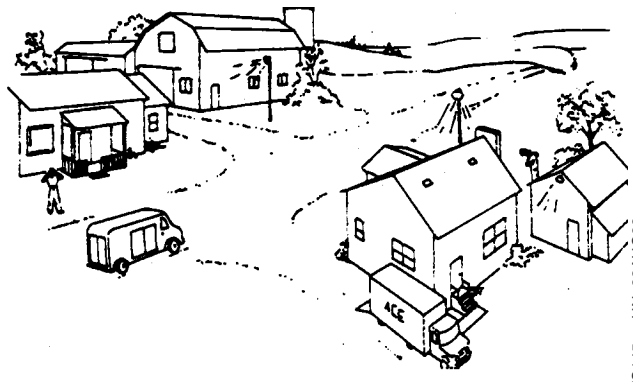


TS155 -UN-23AUG88

DX,CRPRV,E -19-03MAR93-1/1

Reduce Vandalism

1. Install vandal-proof devices.
2. Participate in a neighborhood watch program. Take written notes of suspicious vehicles or persons and report your findings to law enforcement agency.
3. Regularly verify that identification plates have not been removed. If they have, notify law enforcement agency. Order duplicate plates from your dealer.



TS145 -UN-23AUG88

DX,CRPRV,F -19-03MAR93-1/1

Report Thefts Immediately

1. Immediately notify your local law enforcement agency and insurance agent.
2. Provide a complete description of the machine, all of the documented identification numbers and color photographs.
3. Request verification of the identification numbers after they have been entered with any regional or national crime information center. Double check the numbers to be sure they are correct.
4. Notify your John Deere dealer of the theft and request that its loss be posted with full description and identification numbers.



TS146 -UN-09JAN89

DX,CRPRV,G -19-03MAR93-1/1

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John Deere Service Literature Available

Technical Information

Technical information is available from John Deere. Some of this information is available in electronic as well as printed form. Order from your John Deere dealer or call **1-800-522-7448**. 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



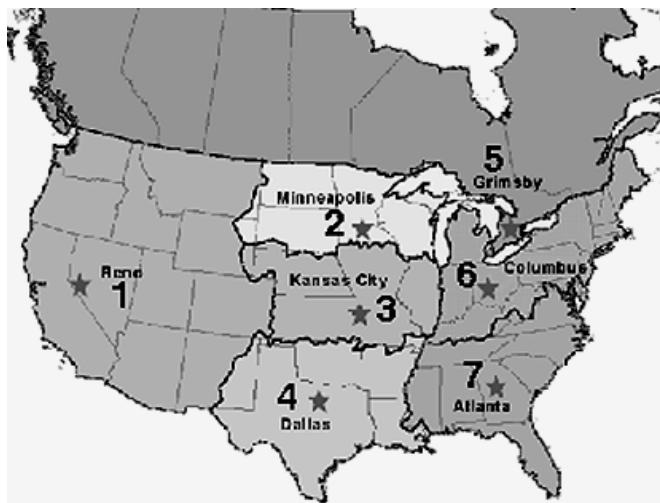
TS224 -UN-17JAN89



TS1663 -UN-10OCT97

John Deere Service Keeps You On The Job

John Deere Is At Your Service When You Need It



1. JOHN DEERE COMPANY
1450 Ridgeview Drive Suite 200
Reno, NV 89509
Phone: 775-824-5520
Fax: 775-824-5559

3. JOHN DEERE COMPANY
3210 East 85th Street
Kansas City, MO 64132-2586
Phone: 816-361-4000
Fax: 816-995-9380

5. JOHN DEERE LIMITED
P.O. Box 1000
Grimsby, ON L3M 4H5
Phone: 905-945-9281
Fax: 905-945-0341

7. JOHN DEERE COMPANY
2001 Deere Drive
Conyers, GA 30013-1598
Phone: 770-922-7040
Fax: 770-388-2103

2. JOHN DEERE COMPANY
2001 West 94th Street
Bloomington, MN 55431-3211
Phone: 612-887-6200
Fax: 612-887-6244

4. JOHN DEERE COMPANY
4040 McEwen, Suite 200
Dallas, TX 75244
Phone: 972-385-1701
Fax: 972-663-2390

6. JOHN DEERE COMPANY
701 Georgesville Road
Columbus, OH 43228-2499
Phone: 614-275-1500
Fax: 614-275-1450

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.

5. If a problem is not resolved to your satisfaction, contact the appropriate John Deere sales location for your area shown in map and ask to speak with customer service.

