

SeedStar™ Generation 2 Monitor With Variable Rate Drive and Variable Rate Fertilizer



OPERATOR'S MANUAL SeedStar™ Generation 2 Monitor With Variable Rate Drive and Variable Rate Fertilizer

OMA84086 Issue F6 (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 Seeding Group
(This manual replaces OMA82908 J5)
North American Edition
LITHO IN U.S.A.



Introduction

Foreword

READ THIS MANUAL carefully to learn how to operate and service your machine 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 machine and should remain with the machine when you sell it.

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

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction the implement will travel when going forward.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Specification section. Accurately record

all the numbers to help in tracing the machine 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. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

DX,IFC2A -19-17SEP92-1/1

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Previous Editions
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Identification Views

Identification Views



A37501 -UN-06SEP95

GREENSTAR™ Monitor Display



A58141 -UN-02JUN06

GREENSTAR™ 2100 and 2600 Monitor Displays



A44952 -UN-17JUL98

Motion Sensor and Disk



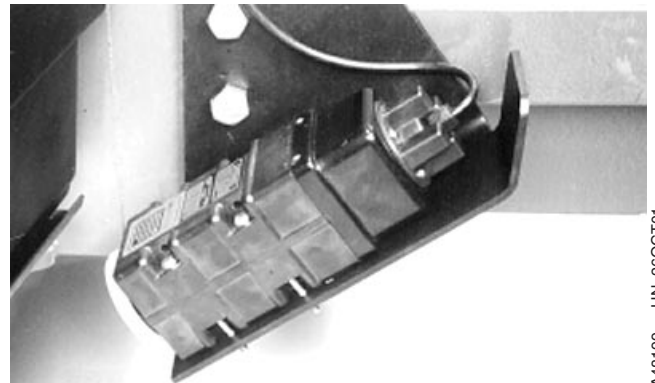
Variable Rate Fertilizer Wedgebox

A48278 -UN-04DEC02



Seed Monitor/Variable Rate Drive Wedgebox

A50167 -UN-09SEP02

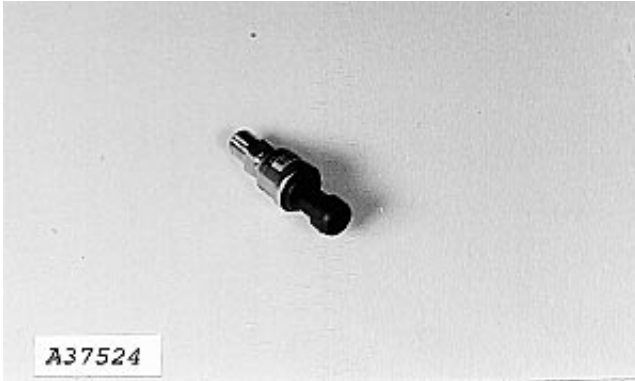


Radar

A48199 -UN-26OCT01

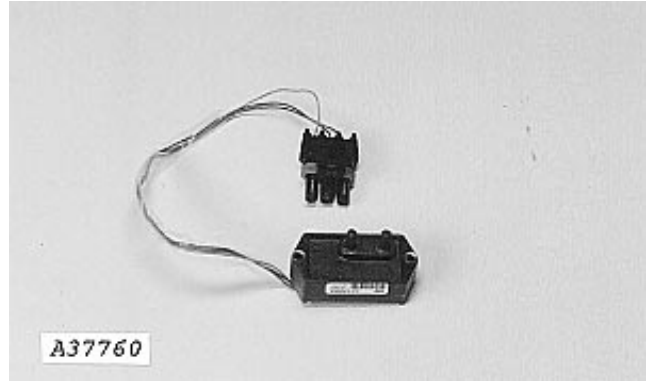
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OOU6074,0000C03 -19-02JUN06-1/4



A37524 -UN-13SEP95

Liquid Fertilizer Sensors



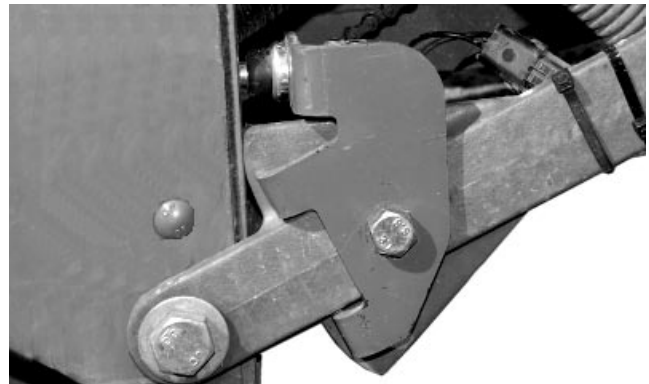
A37760 -UN-06SEP95

Vacuum Sensor



A45210 -UN-27NOV98

Height Switch for Drawn Planters and 1720 16RN Integral Planter



A48170 -UN-19OCT01

Height Switch for Integral Planters

A50243 -UN-12SEP02



Seed Sensor



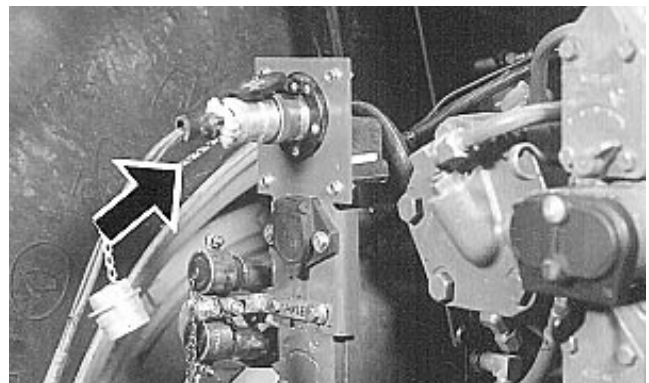
A50244 -UN-12SEP02

Drill Seed Sensor



A48171 -UN-19OCT01

Motor Speed Sensor



A38010 -UN-06SEP95

CAN Implement/Tractor Harness Connection



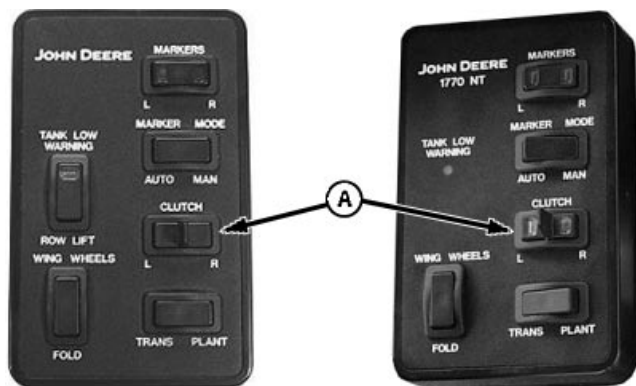
A52138 -UN-15APR03

Dual VRD Motor—Half-Width Switch Box



A52135 -UN-07APR03

Triple VRD Motor—Switch Box



A52161 -UN-15APR03

Planters With Frame Control



A44950 -UN-17JUL98

Variable Rate Drive Motor/Valve

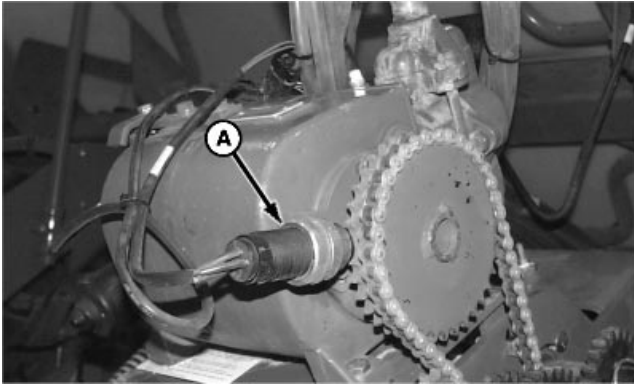
A—Clutch Switch

The 1790 and 1770NT machines use the frame control box clutch switch (A) to turn variable rate drive motors

on and off for half-width control. These machines do not require a separate box.

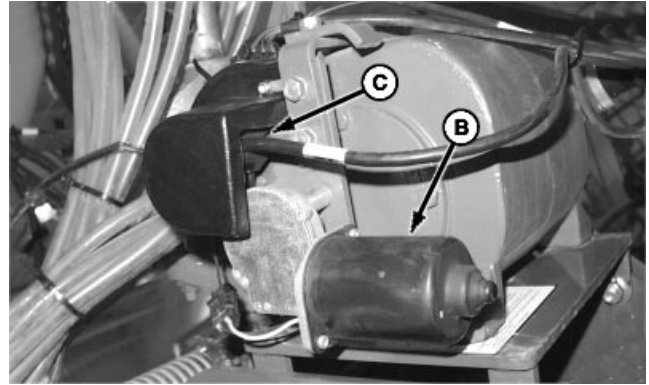
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OUO6074,0000C03 -19-02JUN06-3/4



A50523 -UN-01OCT02

VRF RPM Sensor



A50522 -UN-01OCT02

VRF Motor and Position Sensor

A—RPM Sensor

B—Motor

C—Position Sensor

Variable rate fertilizer pump is equipped with a pump RPM sensor (A), motor (B) and pump stroke position sensor (C).

OUO6074,0000C03 -19-02JUN06-4/4

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

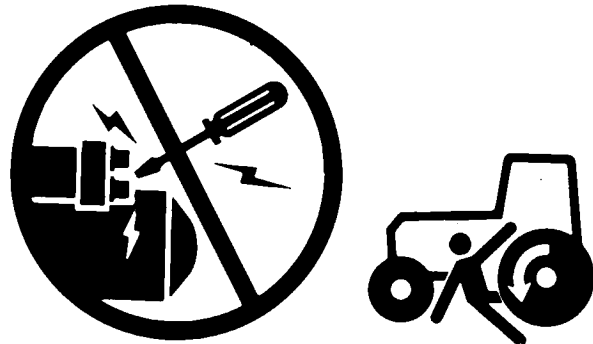
TS201 -UN-23AUG88

Prevent Machine Runaway

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



DX,BYPAS1 -19-29SEP98-1/1

TS177 -UN-11JAN89

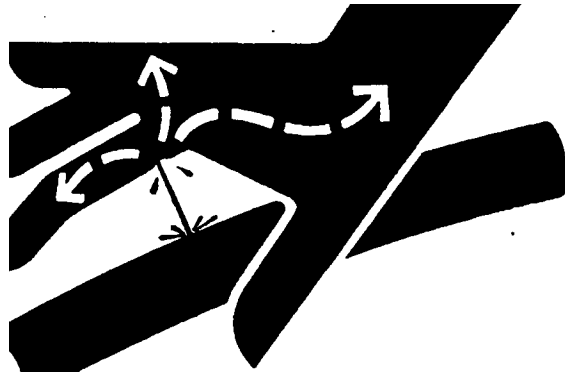
Avoid High-Pressure Fluids

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

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

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

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 -UN-23AUG88

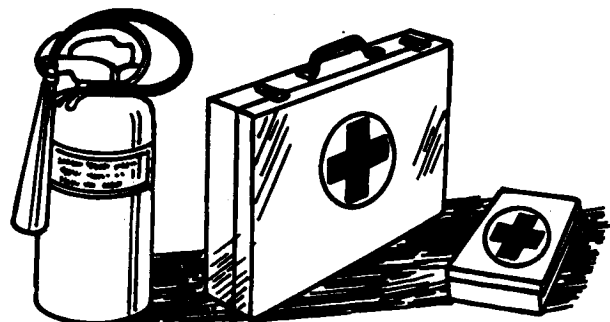
DX,FLUID -19-03MAR93-1/1

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.



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

TS291 -UN-23AUG88

Electrical Connections

Keep all sparks and flames away from battery, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first.

AG,OUO1074,1484 -19-24APR00-1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



TS204 -UN-23AUG88

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

Do Not Modify Monitor or Radar Sensor

Doing so could nullify the warranty. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

AG,OUO1074,1485 -19-24APR00-1/1

Safety Signs

Safety Signs

Warning: To avoid possible eye damage from microwave signals emitted by this radar sensor, DO NOT look directly into sensor face.



Radar Sensor

OUO6074,000057E -19-11MAY04-1/1

Overview

Variable Rate Drive Overview

Operation of the hydraulic drive requires the tractor to have either a load sensing hydraulic system or a closed center hydraulic system with flow control. These types of hydraulic systems usually have large oil reservoirs and increased oil cooling capacity and deliver only the oil flow needed for the motors to maintain a constant speed.

Each variable drive motor requires a nominal hydraulic oil flow of 3.79 to 30.28 L/min (1.0 to 8.0 gpm) at 3447 to 10 342 kPa (500 to 1500 psi).

Tractors with open center hydraulic systems are not recommended for the following reasons:

- No means to control volume of oil flow.
- Excessive oil temperature.
- Decreased oil flow to motor during operation of other tractor control valves.
- Reduced oil flow to tractor power steering.

The operating system is comprised of three major components:

- GREENSTAR™ tractor display system which displays information from seed monitor and variable drive system.
- SEEDSTAR™ Generation 2 seed monitor/variable rate drive wedgebox mounted on the planter frame. The seed monitor/variable rate drive wedgebox monitors the operation of seed sensors, vacuum levels, liquid fertilizer pressure, VRD motors, frame height, frame motion and sends information over the CAN communications lines to be displayed on the monitor.
- SEEDSTAR™ Variable Drive system uses motors to provide an electrical/hydraulic, versus a ground driven, means of driving the seed meters. The system uses radar to obtain planter speed

information, a height sensor to monitor frame height, a wheel motion sensor to verify planter motion, a motor speed sensor to monitor motor rotation and electrically controlled valves to adjust motor speed. With SEEDSTAR™ variable drive, the operator can manually change seeding rate, 'on-the-go', right from the tractor cab.

- Operator can match seed population to differing soil types or to irrigated versus dry land soils.
- Operator can program up to five different seed rates in the system. During the planting operation, the operator can select any programmed rate to change seed rates.
- Operator can apply separate rates on each hydraulic drive motor or select the same rate for all motors.
- With addition of Map Based Planter FIELDDOC™, the planting rate can be automatically changed based on a prescription plan designated in JD Office or Apex software.

Hydraulic oil flow from a closed-center tractor SCV (selective control valve) or power beyond goes to the hydraulic motor through a pressure compensated proportional flow control valve controlling the motor speed. When a programmed rate is selected, the microprocessor energizes the valve changing the oil flow rate. The hydraulic motor speed sensor provides a signal to the microprocessor of the motors speed ensuring the system is delivering the correct seed rate.

Meter speed is determined by rate selected, input of radar speed, disk chosen, type of meter, row spacing and motor sprocket combination. If this is correct, the proper planting rate will be attained.

The amount of seed counted by the seed sensors is not an input to the variable rate drive system.

Variable drive system performance is marginal at motor speeds less than 18 rpm (usually around two miles per hour at low population rates). With motors operating at low rpm or low oil flow, drive may be erratic, resulting in inaccurate population and will stop at 11.5 rpm (usually planting speed below one mph). Planter monitor will not provide a warning when system is operated below two mph.

With drawn planters, there is an adjustable height sensor switch located on the planter to start and stop seeding as the planter is lowered and raised. The start and stop points may be adjusted with the GREENSTAR™ display for planter height required to turn seeding on or off.

NOTE: Integral planters do not have adjustable start and stop heights, except for 1720 16 Row planters which utilize an adjustable height sensor switch similar to drawn planters.

With integral planters, there are two switches mounted on the planter row unit parallel arms (one on the far left side of the machine, and one on the first row unit to the right of center). The switches are mounted in such a way that when the planter is raised, the row unit parallel arm will “trip” the switch. When BOTH switches are tripped, the planter will stop seeding. If only one switch is tripped, the drives will continue to

turn until BOTH switches are tripped. This helps when planting in uneven ground.

The following components must be active for system operation:

- Hydraulic oil flow—oil must be flowing to motors.
- Radar—Ground speed input must be greater than 1.6 km/h (1 mph).
- Wheel motion sensor—planter must be moving with sensor active.
- Height switch—planter must be in down position.
- Half Width Disconnect—Planter must have the motor disconnects “closed”.

Verification of these inputs are shown on INFO—Planter—Diagnostics—Performance Data screen.

To avoid a 3 m (10 ft) skip after stopping in the field while planting, perform one of the following;

- With Quick Start in Auto mode, press “Quick Start Reset” button on RUN page and begin planting before 6 second countdown expires.
- With Quick Start in Auto mode, raise then lower planter and begin planting before 6 second countdown expires.
- If Quick Start mode is OFF, raise planter, back up 3 m (10 ft), lower planter and resume planting.

Quick Start Overview—Variable Rate Drive

The Quick Start feature allows the operator to reduce the skip left in the field when the planter starts from a stop. Quick Start will reduce the skip to approximately 0.3—1.2 m (1—4 ft).

The Quick Start function can be positioned on either run page. See RUN PAGE CONFIGURATION in Setup Planter Configuration And Seed Monitor section.

NOTE: *With Quick Start engaged, the planter assumes a minimum ground speed required to turn motors at 18 rpm and will be overpopulating until actual ground speed reaches the minimum ground speed. Minimum ground speed is determined by application rate and seed meter/disk. Minimum ground speed can be seen on INFO—Planter—Configuration Summary page.*

When using Quick Start, begin forward travel in a low gear to take off slower. By taking off slow and then “gearing up” to speed, the skip will be smaller. For instance, with an 8000 series tractor, skips were attained between one and two feet when taking off in fourth gear. When taking off in a higher gear, tractor will lunge forward and travel further before seed falls through seed tube into the ground.

Conditions necessary to activate Quick Start:

1. Actual measured radar speed must be below minimum ground speed.
2. Planter wheel motion must be detected.
3. Planter must be lowered to the “down” position.

“QS 6” will be displayed below “Seed Rate” and begin counting down when machine is lowered.

Once conditions are met, the control system engages drives at 18 rpm. The variable drive will continue at 18 rpm until the ground speed and selected planting rate take the motor speed above 18 rpm or six seconds expire.

If the wheel sensor fails to detect motion, Quick Start will automatically disable after initial six second interval. If “Quick Start has timed out” a caution is displayed. Press “Quick Start Reset” button to reset the 6 second timer or lower planter.

When the measured radar speed exceeds minimum ground speed the variable drive will discontinue the Quick Start mode. The system will then be in a normal operating mode. When planter is in normal planting operation, a visual indicator is on a RUN Page showing that motors are operational. This indicator is a small (*) asterisk next to seed rate and the seed rate line with invert from a dark background to white with black text. The (*) asterisk will disappear whenever the motors stop and the rate selection line will turn black with white lettering.

The Quick Start system engages the drives at 18 rpm. It is not recommended to operate the system at a motor speed below 18 rpm once the radar exceeds minimum ground speed and Quick Start mode converts to normal mode. The minimum required ground speed to attain 18 rpm (at the selected rate) will vary with planting rate and row width.

NOTE: *Planter must be configured, Quick Start must be set to Auto and desired application rate turned on for minimum ground speed to be displayed.*

Press INFO—Planter—Configuration Summary—Planter on display for the minimum ground speed required to operate the motor at 18 rpm. For example, a 4.8 kPh (3 mph) speed would be necessary to reach a motor speed of 18 rpm when planting corn with a vacuum planter at 15 000 seeds/acre on 30 in. rows. The threshold speed would be three mph. A vacuum planter planting corn at 30 000 seeds/acre on 30 in. rows would have a threshold speed of 1.5 mph.

Rotate Seed Meters Overview

CAUTION: Avoid injury from rotating drive components. Make sure everyone is clear of drive components before activating variable rate drive.

The Rotate Seed Meters feature allows an operator to activate the variable rate drive motors, while stationary, to fill seed meters before planting.

The command line (A) that appears on screen can be positioned on either run page. See RUN PAGE CONFIGURATION in Setup Planter Configuration And Seed Monitor section.

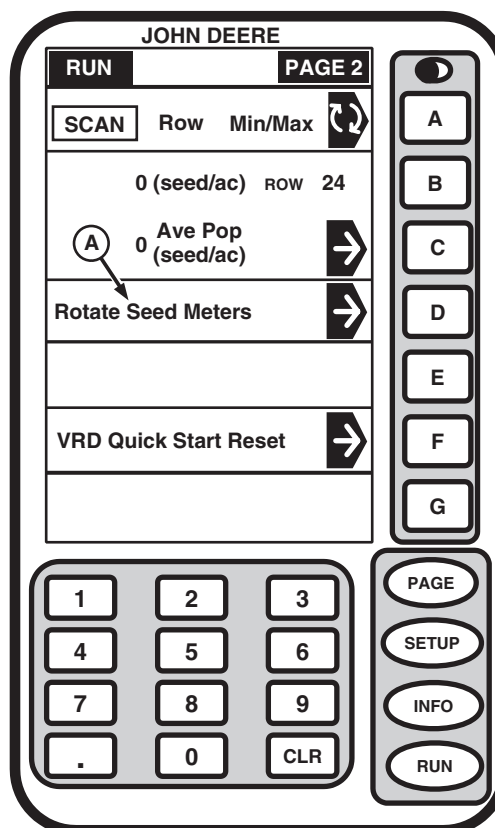
For feature to operate;

- Planter must be unfolded
- Planter must be in raised position
- Planter must be stationary
- Variable rate hydraulics must be activated
- If equipped with vacuum, vacuum must be running and remain running to hold seed on meter disks

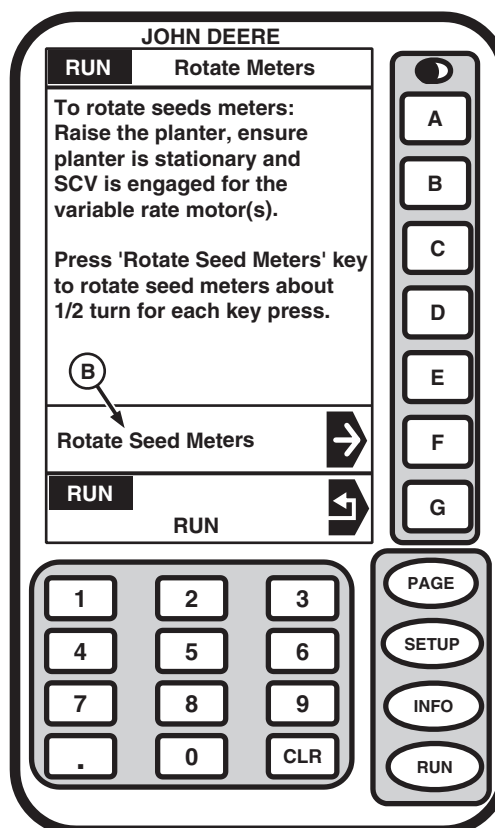
This feature is operated from a run page selection. When all conditions are met, each press of the activation key (B) will rotate meters one half a revolution. Press the activation key at least three times to completely fill seed meters. An audible tone will sound when meters turn after each keypress. If meters fail to move, a warning screen will appear.

This feature may also be used as a diagnostic tool for the variable rate drive. See ROTATE SEED METER DIAGNOSTIC in Diagnostics section.

A—Command Line
B—Activation Key



A56209 -19-22APR05



A56210 -19-22APR05

Variable Rate Fertilizer Overview

Although commonly used along with SEEDSTAR™ seed monitors and variable rate drive, the SEEDSTAR™ Variable Rate Fertilizer system can be used independently. SEEDSTAR™ Variable Rate Fertilizer is comprised of two basic components.

- A GREENSTAR™ display which displays the messages sent from the seed monitor/variable rate drive, and variable rate fertilizer controller wedgeboxes.
- A SEEDSTAR™ Variable Rate Fertilizer controller wedgebox mounted on the implement frame. This controller monitors pump rotational speed, piston stroke, implement speed and distance traveled (obtained from radar input).

Using SEEDSTAR™ Variable Rate Fertilizer allows an operator to manually change the application rate 'on-the-go' right from the cab.

- Operator can match fertilizer rates to different soil types or to irrigated versus dry land soils.
- Operator can program up to five different fertilizer rates. During planting operation, the operator can select any of the program rates to change the application.
- Operator can program rates for two separate pumps.

A ground driven mechanism (whether contact or hub drive) provides the power to rotate the pump. Once set, the application rate is constant regardless of varying ground speeds.

Two pump output ranges are available. High and low ranges are determined by different sprocket combinations. Output rate is variable over either range.

When a rate is selected, the controller wedgebox monitors pump rotational speed, piston stroke and distance traveled to calculate actual application rate. If calculated rate differs from selected rate, the controller wedgebox is capable of adjusting piston stroke to match selected rate. True ground speed is obtained

with radar and implement speed is obtained indirectly from pump rotational speed. The wedgebox calculates percent slippage from the different obtained speeds and changes the pump stroke to compensate. If slippage exceeds a predetermined value, a warning is issued.

The following components must be active or engaged for proper system operation:

- Contact Drive or Hub Drive
- Radar
- Pump RPM Sensor
- Pump Stroke Position Sensor

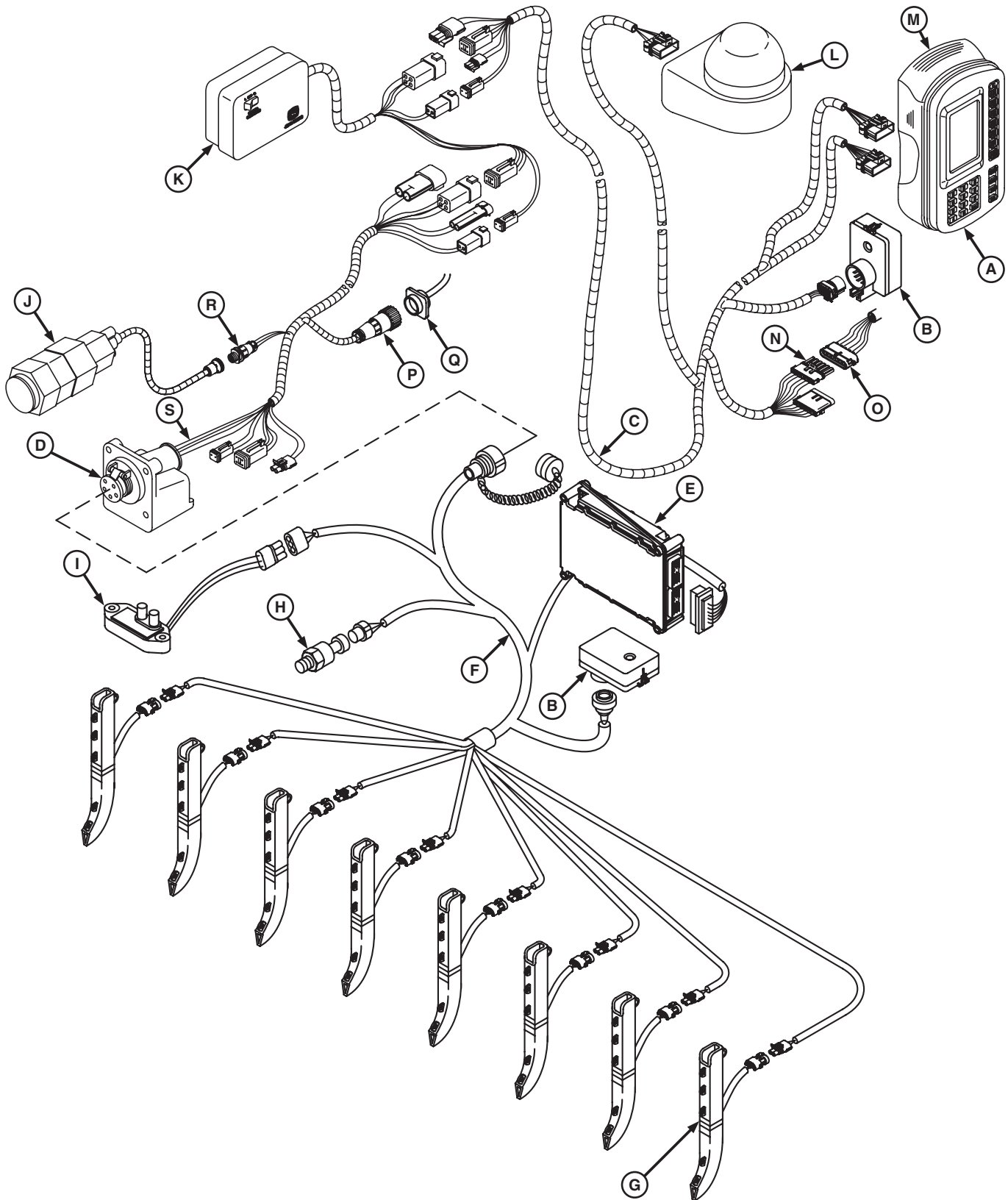
Variable rate fertilizer is available in two configurations; flow divider and central manifold.

- The flow divider is a device that controls flow of product while maintaining constant pressure. This allows for maximum flexibility when changing application rates.
- The central manifold system allows some adjustment, but is limited by overall system pressure. Product flow is controlled by orifices at the entry of each row. As rate is increased, using one orifice, pressure increases. Once pressure reaches a certain level, flow cannot be increased any further without damage to the system.

A variety of warnings and cautions are provided for customer assurance. Some examples are:

- No power detected on motor drive
- Over/under application!
- Pump position sensor not detected
- Pump 1 no response to control
- V.R. fert system problem detected pump # 2 calculated rates may not be accurate
- V.R. fert system sprocket change detected. Pump # 1 recalibrated
- Lost communications with mobile processor
- Battery voltage out of range

Seed Monitor Connection Drawing—GREENSTAR™ Field Installed Harness



Continued on next page

MH81805,00007F3 -19-25APR05-1/2

A—GREENSTAR™ Display	J—Radar	N—6-Pin Connector	R—Radar Connector (Hookup
B—Terminator	K—Half-Width Disconnect	O—6-Pin Program Connector	Not Required On
C—Wiring Harness	(Variable Rate Drive - Non	(Located On Tractor)	7000/8000/9000 Series
D—Implement Connector	Front-Folding planter)	(7000/8000/9000 Series	Tractors With Factory
E—Wedgebox	L—Global Position Receiver	Tractors Only)	Installed Radar)
F—Wiring Harness	(Optional - For Use With	P—3-Pin Connector	S—ECU Ground and Battery
G—Seed Tube	Field Doc and Map Based	Q—Convenience Outlet	Terminals
H—Liquid Fertilizer Pressure	Seeding)	(Located On Tractor)	
Sensor	M—Mapping Processor		
I—Vacuum Sensor	(Optional - For Use With		
	Field Doc and Map Based		
	Seeding)		

If tractor is not equipped with a convenience outlet (Q) or 6-pin program connector (O), order BA28418, Voltage Suppression bundle.

Voltage Suppression bundle is needed on John Deere 60 Series or prior row-crop tractors and 70 Series and prior four-wheel drive tractors. Suppression Bundle can also be used to install a voltage protected convenience outlet in tractors built by other manufacturers.

Refer to instructions included with bundle for wiring details.

Machines with 24 rows or less, use a single wedgebox (E).

Machines with 25 rows or more, use two wedgeboxes. Wedgebox connectors are identical on both boxes. If harnesses are removed for any reason, they must be returned to original positions or rows will be identified out of sequence by monitor.

RUN Page Layout

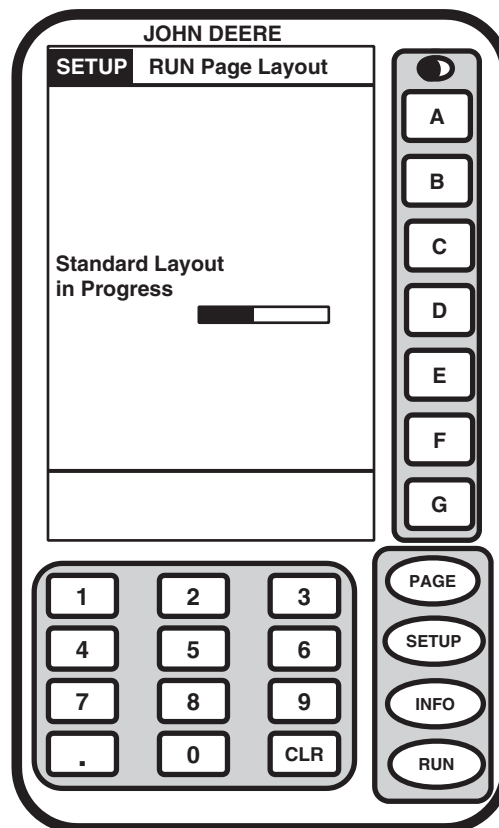
Performing RUN Page Layout

Any time a run page layout is requested or configuration changes are made, perform a run page layout.

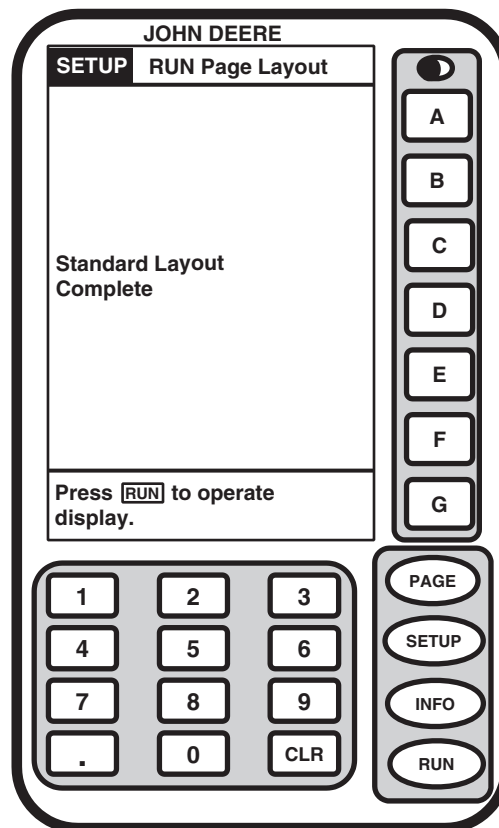
A run page layout is necessary any time information is added or removed from Run Page.

Press SETUP—RUN Page Layout—Standard Layout.

A “Standard Layout in Progress” page will appear. Wait until progress is complete and screen displays “Standard Layout Complete” before cycling power or pressing any other keys.



A49486 -19-08JUL02



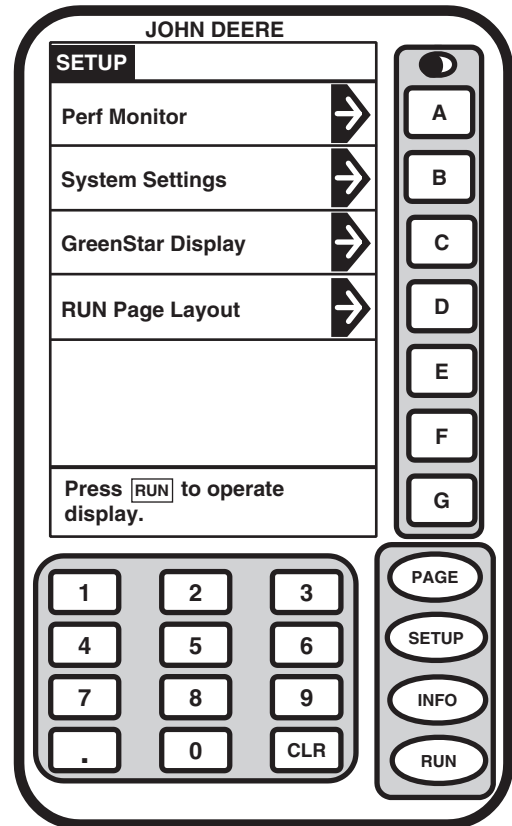
A49487 -19-08JUL02

SETUP GREENSTAR™ Display

Country Code, Language, Number Formats and Units of Measure

NOTE: Operator entries must be made in the same units of measure as display readout.

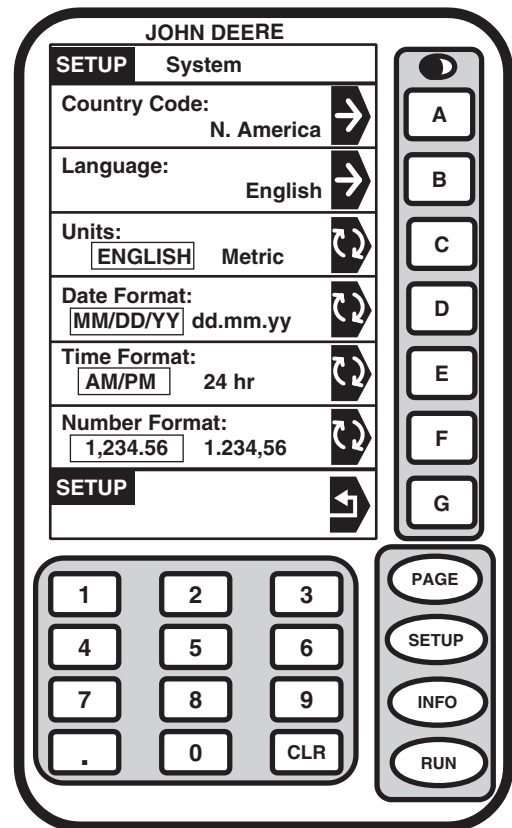
Press SETUP—System Settings.



A49519 -19-12SEP02

OUO6074,00005AB -19-11MAY04-1/2

- Press key A to select a Country Code.
- Press key B to enter display Language.
- Press key C to highlight desired Units to be displayed.
- Press key D to highlight preferred Date Format.
- Press key E to highlight preferred Time Format.
- Press key F to highlight preferred Number Format.



A49520 -19-12SEP02

OUO6074,00005AB -19-11MAY04-2/2

Adjusting Display Contrast and Backlight

1. Adjust both contrast and backlight to obtain best screen readability.

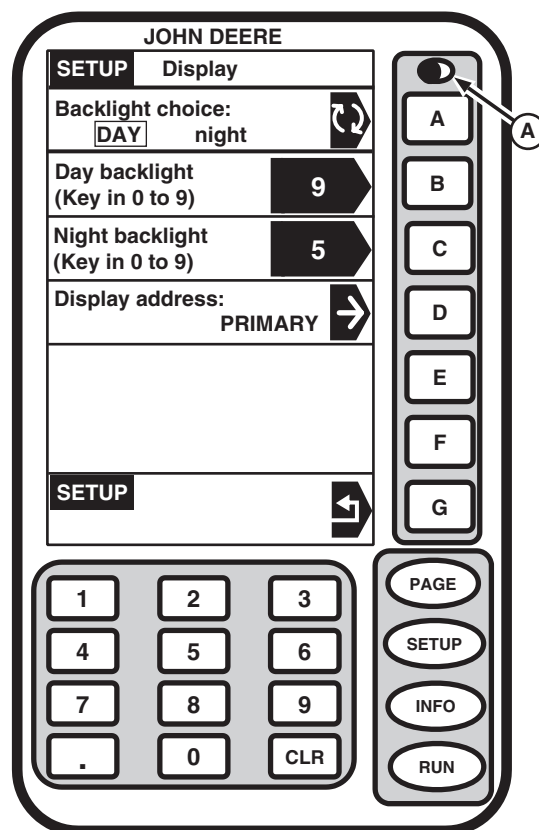
CONTRAST ADJUSTMENT: Depress and hold contrast button (A) to darken or lighten screen display. Release button when desired contrast is achieved.

2. **BACKLIGHT ADJUSTMENT:** Press SETUP—GreenStar Display.
3. Press key A to highlight DAY or NIGHT as needed.
4. Press key B to enter backlighting level for daytime.
5. Press key C to enter backlighting level for nighttime.

Newer displays (RE150184 or PF80162) can be set between 0 (Darkest) and 9 (Brightest).

IMPORTANT: Full bright setting 9 should not be used on older displays as the circuit draws too much current, resulting in light circuit shutdown.

Older displays (RE67542) can be set between 0 and 8.



A—Contrast Button

A49523 -19-12SEP02

OUC6074,0000596 -19-11MAY04-1/1

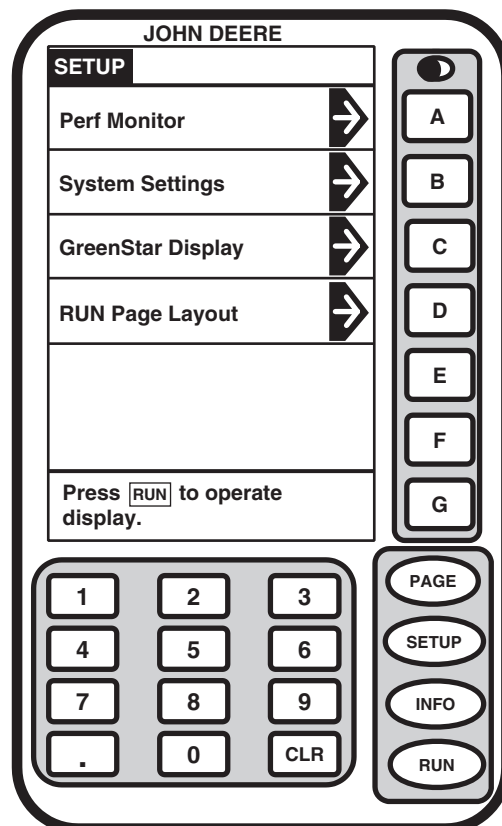
Performance Monitor

Performance Monitor

IMPORTANT: The implement harness must be disconnected from tractor for these options to be displayed correctly.

NOTE: Display screens illustrated on the following pages are provided for reference only. Actual screens may appear differently due to connection of optional devices and/or software versions in use.

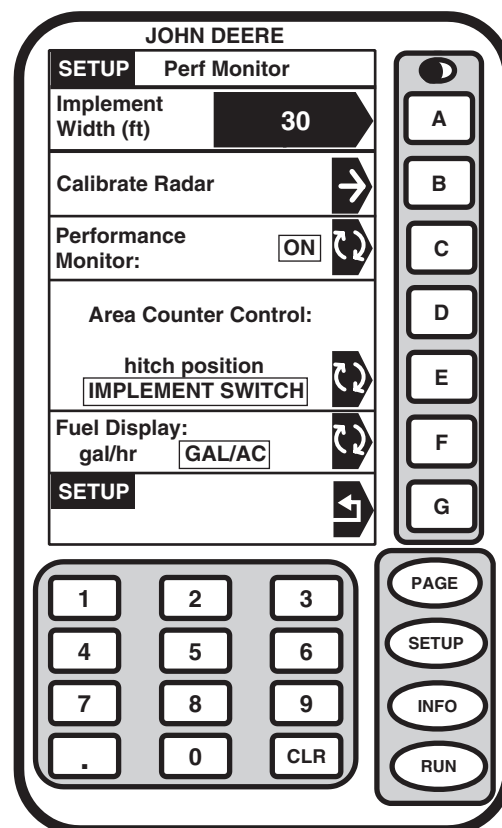
Perf (Performance) Monitor keeps track of its own records on implement and tractor operations once monitor is set up for the current configuration.



A49519 -19-12SEP02

OUO6074,00005FA -19-11MAY04-1/3

1. Press SETUP—Perf Monitor.
2. Enter implement width on line A.
3. A radar calibration can be performed here or in planter configuration. Entries made in one area are entered automatically in the other.
4. Toggle performance monitor on and off with key C.
5. If equipped with a position sensor, select option on line E.
6. Choose desired fuel display with key F.



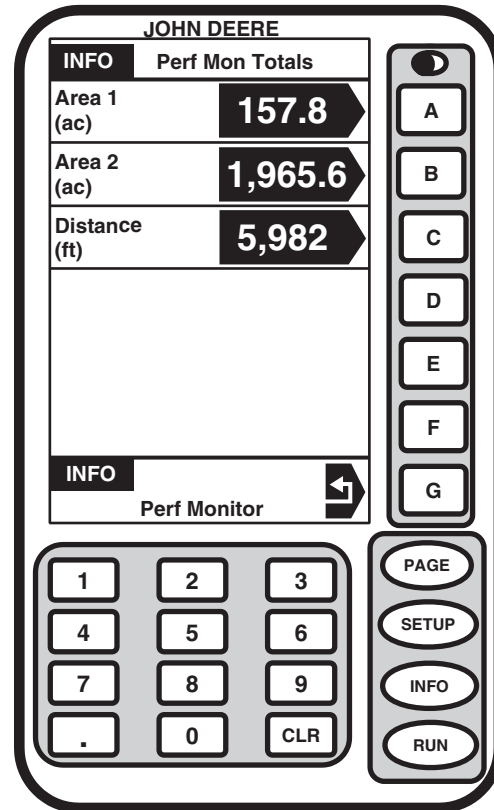
A49521 -19-12SEP02

Continued on next page

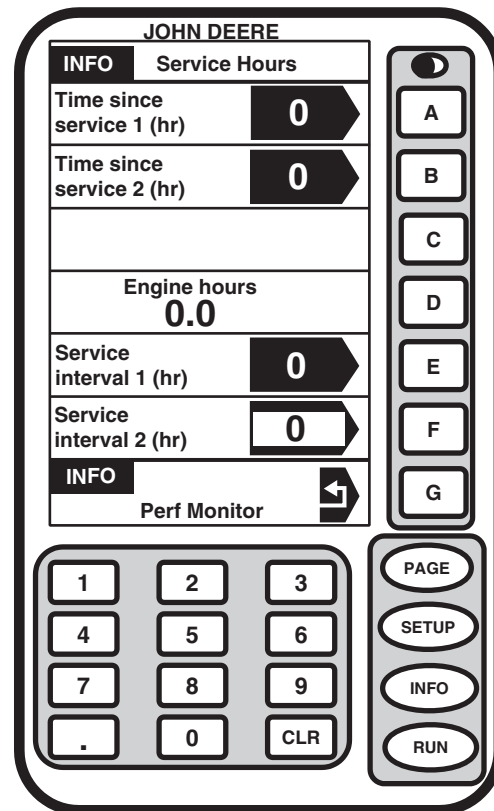
OUO6074,00005FA -19-11MAY04-2/3

7. Press INFO—Perf Monitor.
8. Press Totals to view two separate hour meters and a distance traveled meter. To clear, press key next to any entry and press “CLR” key.

Press Service to view service hour intervals.



A50260 -19-19SEP02



A50259 -19-19SEP02

Radar Calibration

IMPORTANT: For best results and most accurate setting, radar calibration should be done in the field (in the type of soil to be planted) with planter attached and all tires inflated to proper pressure.

Hard, smooth surfaces are not acceptable for calibration and may produce a “Radar Sensor Calibration Error” message.

NOTE: On 7000/8000/9000 Series and newer tractors with factory installed radar, the Radar Calibration Value is not available on the display. The SEEDSTAR™ monitor receives radar signal through tractor harness at the six pin diagnostic connector. To calibrate the radar, see your Tractor operator's manual.

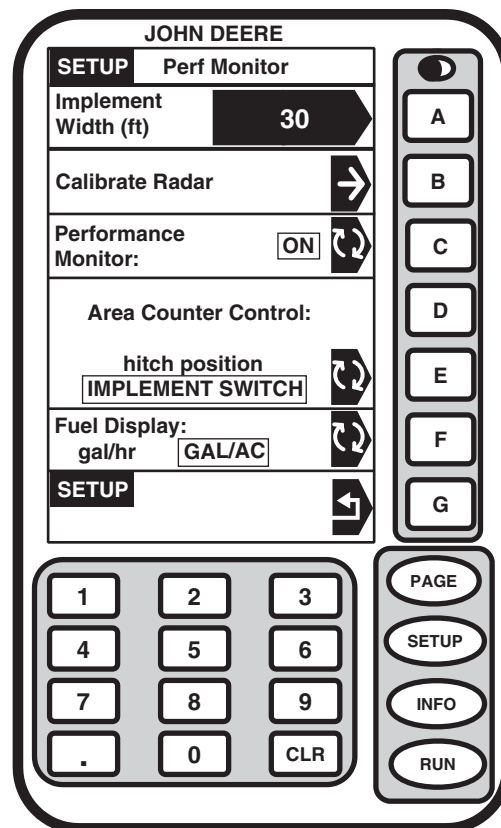
NOTE: The radar can be calibrated with the Standard Display menu when implement harness is not connected or with Planter SETUP menu when implement harness is connected. Changes made in one area will automatically update information in the other.

Radar calibration is used to determine the true ground speed of the tractor and implement. Radar speed value is approximate and should be calibrated to ensure accuracy.

Radar Calibration Values		
Radar Unit	Hz per km/h	Hz per mph
Dickey John™	35.7	57.5
Dual-Beam Radar	35.66	57.42

If radar calibration value is already known, it can be manually placed into memory.

1. Press SETUP—Perf Monitor.
2. Press key A to highlight selection and enter the machine width in M (Ft).
3. Press key B to enter calibration mode.



A49521 -19-12SEP02

4. Lay out a 122 m (400 ft) straight line course.

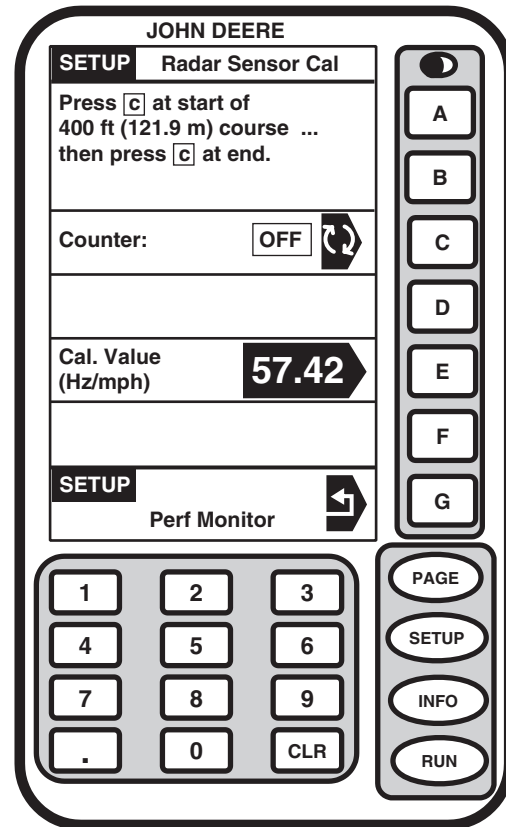
OUO6074,0000595 -19-31MAY06-2/3

5. Driving at approximately 3.2 km/h (2 mph), press key C to start counter as front tractor tires pass the opening marker of the course. Calibration window will show number count during travel.
6. Press key C to stop counter as front tractor tires pass the closing marker of the course to end calibration. "Radar Sensor Calibration Finished" should be displayed along with the radar calibration value. This value is automatically entered into the monitor's memory.

Pressing the stop key before the closing marker may produce a "Radar Sensor Calibration Error" message if more feedback signals are needed for calibration.

Error message can also display when feedback signal is outside the normal range of 1 Hz to 150 Hz.

7. Write down calibration value, perform calibration two more times, average the three numbers and manually enter the average value in the Calibration Value window.
8. If "Radar Sensor Calibration Error" interrupts the active procedure, check that sensor lens is clean and cable connections are tight; then run test.



A49522 -19-13AUG02

OUO6074,0000595 -19-31MAY06-3/3

SETUP Planter Configuration and Seed Monitor

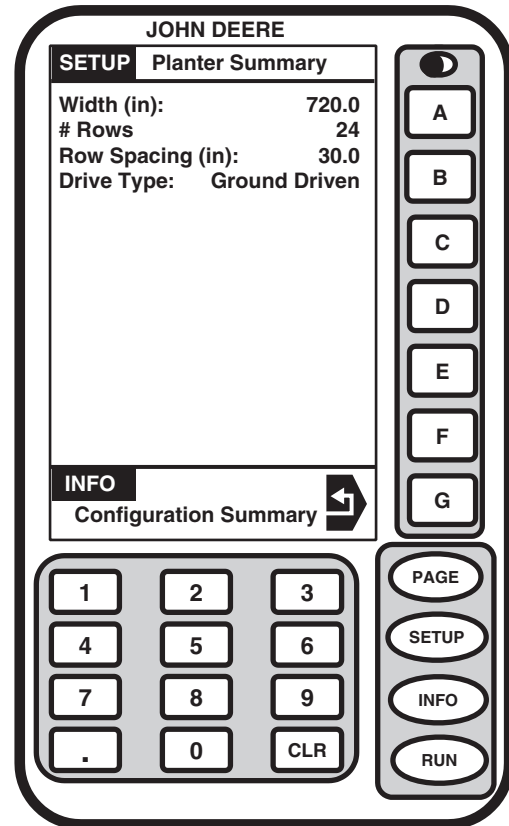
Checking Current Configuration

IMPORTANT: A Drive Type change will reset all personal settings to default values. Always configure Drive Type before entering personal settings.

NOTE: Although initial setup should be complete on new planters shipped from the factory, verify the planter configuration before each season to minimize down time.

1. Press INFO—Planter—Configuration Summary—Planter.
2. View configuration to determine if any changes are required.

NOTE: If this screen contains information about the Planter Height Sensor, the system is configured for Variable Rate Drive Type.



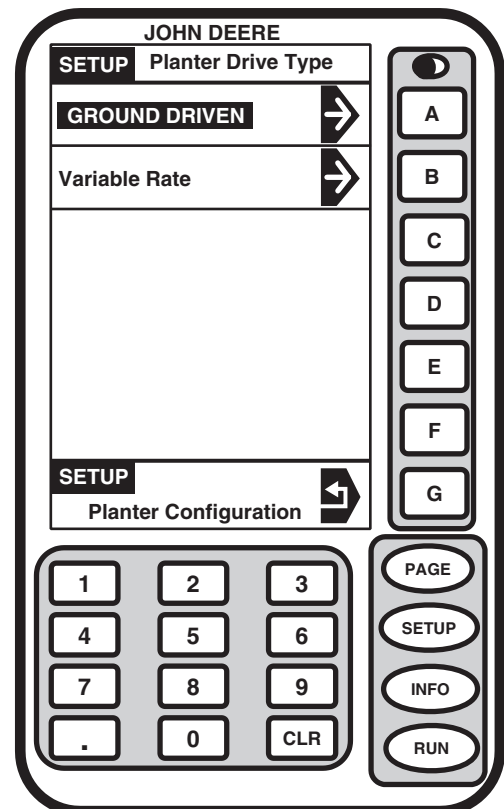
A57257 -19-30NOV05

MH81805.00007F4 -19-09JUN06-1/1

Configure Planter Drive Type in Planter Setup

NOTE: Newer software allows changing the Planter Drive Type in setup pages. If this option is not present, refer to SETUP PLANTER DRIVE TYPE BY DIAGNOSTIC CODE in this section.

1. Press SETUP—Planter—Planter Configuration—Planter Drive Type.
2. The highlighted item is the current selected Drive Type.
3. Press the non-highlighted option to change Drive Type.

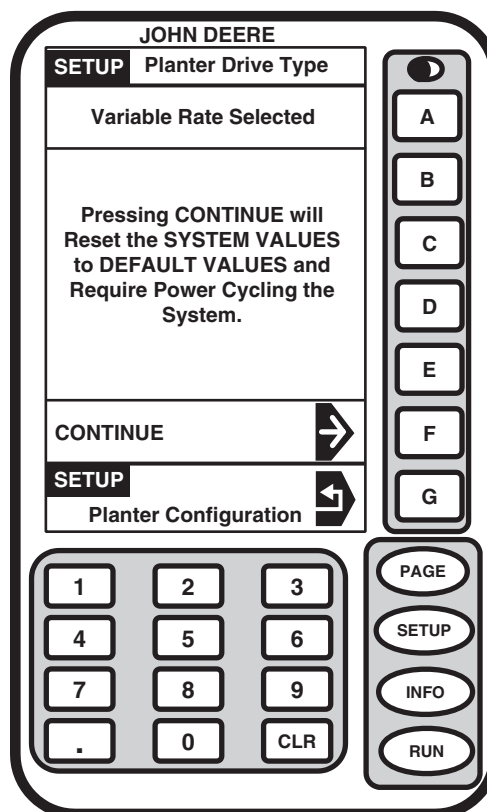


A57264 -19-01DEC05

Continued on next page

OUO6045.00006C6 -19-23NOV05-1/2

4. Press "CONTINUE" to Setup Planter for selected Drive Type option.
5. Cycle power.



A57258 -19-30NOV05

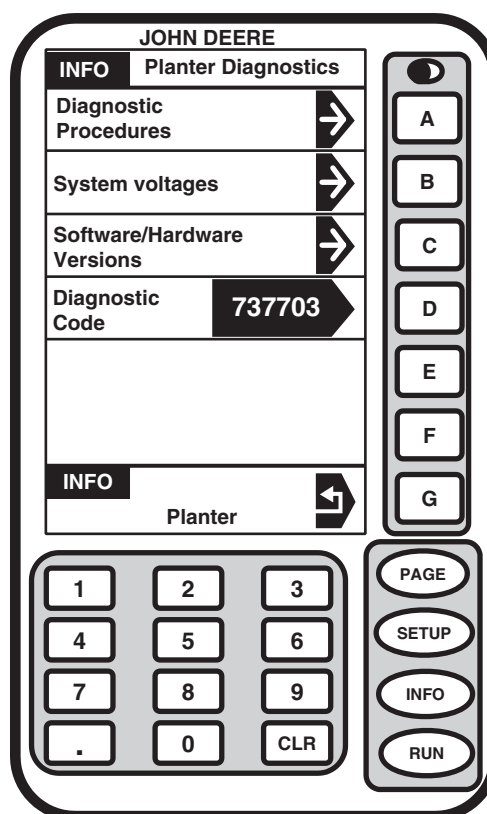
OUO6045,00006C6 -19-23NOV05-2/2

Configure Planter Drive type By Diagnostic Code

1. Press INFO—Planter—Diagnostics—Diagnostic Code
 2. Press letter key next to diagnostic Code.
 3. Use keypad to enter diagnostic code for Drive Type.

Ground Driven: 737701

Variable Rate Drive: 737703
 4. Press letter key next to Diagnostic Code to save value.
- NOTE: After power is cycled the Diagnostic code will return to 0. This is normal.*
5. Cycle monitor power to enable Drive Type change.



A57259 -19-30NOV05

OUO6045,00006C7 -19-01DEC05-1/1

Machine Configuration

1. Press SETUP—Planter—Planter Configuration—Planter Frame.

NOTE: When split row option is chosen, the number of rows, spacing and machine width are automatically calculated for monitoring purposes and displayed on bottom line.

2. Press key A to choose if machine is a split row model or not. Once entered, this option should not be changed for this machine.

If split row model is entered, toggling between split rows and all rows is done on SETUP—Planter PAGE 1. The monitor automatically determines number of rows, spacing and machine width for option selected.

IMPORTANT: The total number of rows equipped **WITH** sensors must be entered, even on split row machines when half the rows are locked up. The monitor detects every sensor from left to right including locked up rows on split row machines. If only 12 rows are being used on a 12/23 machine **AND** only 12 rows are entered into monitor, the monitor will only count the first 12 rows on the left-hand side of machine. Total number of rows **WITH** sensors must be entered.

NOTE: Pressing the CLR key when a selection is highlighted will clear the value to zero.

3. Press “Number of Rows” to highlight selection and enter the total number of rows equipped WITH sensors with numeric keypad.

JOHN DEERE

SETUP Planter Frame

Split Row Planter ☐ NO ☐ Yes

Number of Rows 24

Row Spacing (in) 30.0

Planter Width (in) 720.0

SETUP Planter Configuration

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

PAGE
SETUP
INFO
RUN

Display For Ground Driven Machine

JOHN DEERE

SETUP Planter Frame

Split Row Planter ☐ No ☒ YES

Number of Rows 23

Row Spacing (in) 15.0

Planter Width (in) 345.0

Assign rows to motors →

Split Row: # of Rows 12 Spacing 30.0 Width 360.0

SETUP Planter Configuration

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

PAGE
SETUP
INFO
RUN

Display For VRD Machine

A49480 -19-13AUG02

A49827 -19-03SEP02

IMPORTANT: The row spacing entered should be as if **ALL rows are actively planting. Split/All row spacing is automatically determined by monitor when split row option is selected.**

NOTE: The monitor will only accept row spacings between 0.1 cm to 635 cm (0 in. to 250 in.).

4. Press "Row Spacing" to highlight selection and enter spacing between every row with numeric keypad.

IMPORTANT: When entering width for box drills, **multiply TOTAL number of rows times row spacing and manually enter into Planter Width section.**

5. Planter width is automatically calculated.

On box drills with fewer sensors than rows, the width will have to be manually entered. Multiply TOTAL number of rows with and without sensors by row spacing to determine drill width. Press "Planter Width" to highlight selection and enter drill width with numeric keypad.

OUO6074,0000DE9 -19-20APR05-2/2

Target Population and High/Low Warnings— Ground Driven Machines

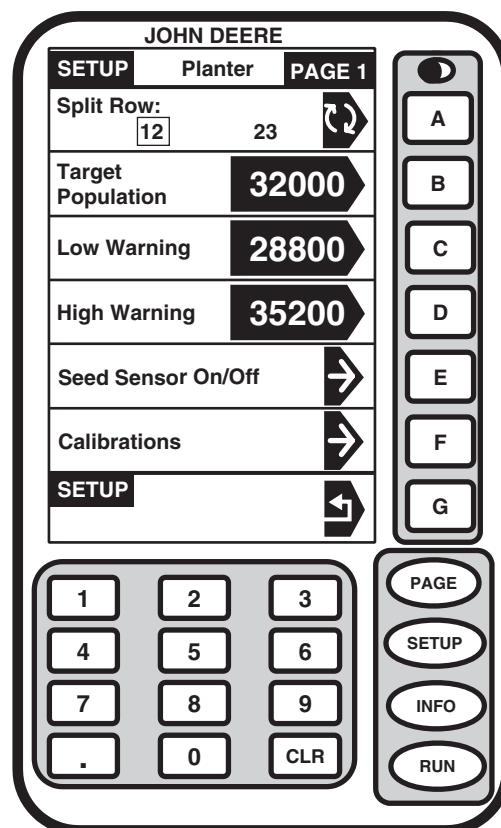
IMPORTANT: Population and High/Low warnings are entered differently for variable rate drive machines. See application rates in **SETUP Planter—Variable Rate Drive Specific** section.

NOTE: Split Row Planter option will only be visible if Planter Frame is configured as a split row machine.

1. Press SETUP—Planter.

NOTE: Pressing the CLR key when a selection is highlighted will clear the value to zero.

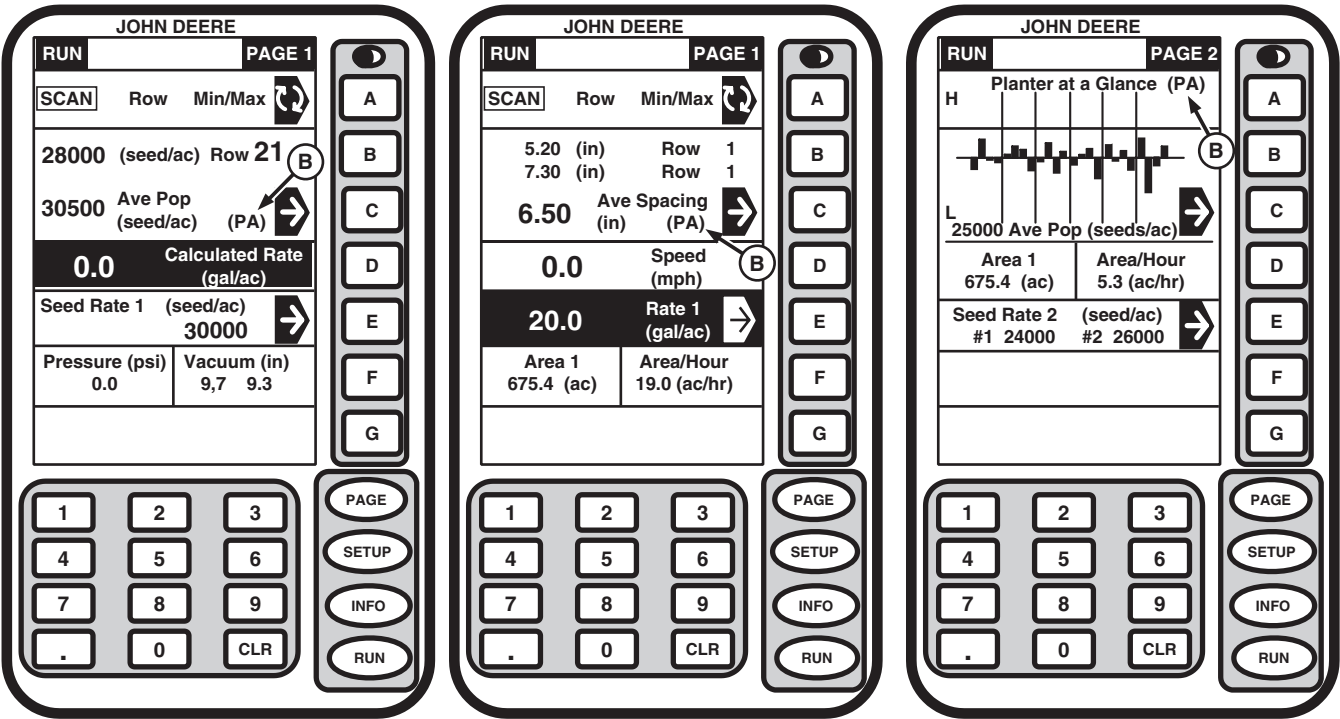
2. Press “Target Population” to highlight selection and enter desired population with numeric keypad. Values can be entered from 0 to 999,999. High and low warning limits are automatically set.
3. Press “Low Warning” and “High Warning” to highlight selection and enter new high and low warning limits, if desired.



A49478 -19-13AUG02

OUC6074,0000DEA -19-20APR05-1/1

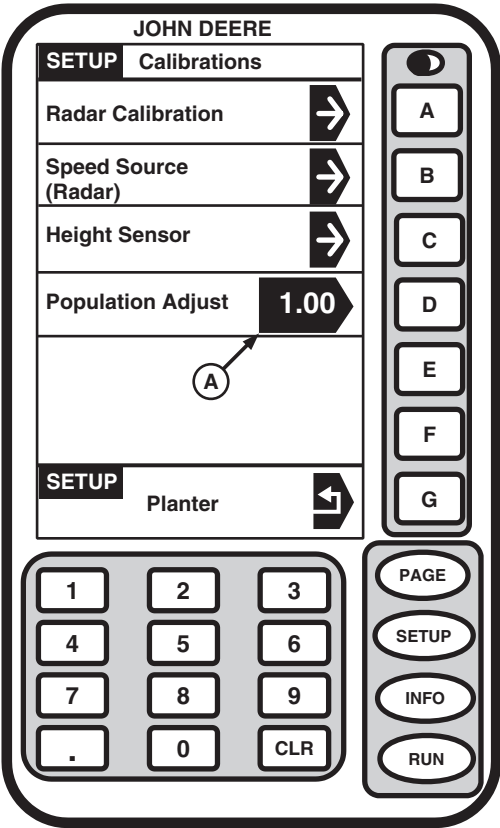
Population Adjust (PA)



PA (POPULATION ADJUST) is best used with high delivery rates or small seeds when the sensors are not able to count every seed.

PA represents a “correction factor” by which Population readings are multiplied, prior to being displayed. A “PA” number of 1.00 causes no change in the population readings. A “PA” number of 2.00 causes population numbers to double before being displayed.

- A—Population Adjust Value
- B—Population Adjust Indicator



NOTE: Initial PA setting should always be 1.0 for planters. ACCUCOUNT™ seed tube sensors will negate the need for PA when planting soybeans.

NOTE: The minimum number allowed is 0.1 and the maximum number allowed is 2.50. Any number less than 0.1 or greater than 2.50 will not allow the SETUP function to be exited until a number within this range is entered.

Press Setup—Planter—Calibrations and press key D to enter a population adjust value (A). Whenever the PA is a value other than 1.00, the letters PA (B) will be displayed on Run pages to indicate population readings have been adjusted.

Example:

If 100 000 seeds/acre is displayed on monitor but 150 000 are actually being planted, a PA value of 1.5 should be entered. This will cause the monitor to multiply each seed detected by 1.5 and display an adjusted population of 150 000.

PA Chart — Small Soybeans — 8972 seeds/kg (4070 seeds/lb) - Standard Seed Tube Sensor

Population = 296 500 seeds/ha (120 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.04	1.06	1.09	1.12
8.05 (5)	1.06	1.07	1.11	1.13
9.66 (6)	1.06	1.09	1.13	1.15
11.27 (7)	1.08	1.10	1.14	1.17
12.87 (8)	1.09	1.12	1.15	1.19
14.48 (9)	1.10	1.13	1.16	1.22
16.1 (10)	1.11	1.13	1.18	1.25

Population = 321 200 seeds/ha (130 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.06	1.09	1.12
8.05 (5)	1.06	1.08	1.12	1.14
9.66 (6)	1.07	1.09	1.13	1.16
11.27 (7)	1.08	1.11	1.14	1.18
12.87 (8)	1.09	1.12	1.16	1.21
14.48 (9)	1.11	1.13	1.17	1.24
16.1 (10)	1.12	1.14	1.20	1.27

Population = 345 900 seeds/ha (140 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.07	1.10	1.13
8.05 (5)	1.06	1.09	1.13	1.15
9.66 (6)	1.08	1.10	1.14	1.17
11.27 (7)	1.09	1.12	1.15	1.20
12.87 (8)	1.10	1.13	1.17	1.23
14.48 (9)	1.12	1.14	1.18	1.26
16.1 (10)	1.13	1.15	1.21	1.29

Population = 370 600 seeds/ha (150 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.07	1.11	1.13
8.05 (5)	1.07	1.09	1.13	1.15
9.66 (6)	1.08	1.11	1.14	1.18
11.27 (7)	1.09	1.13	1.16	1.21
12.87 (8)	1.11	1.13	1.18	1.25
14.48 (9)	1.12	1.14	1.21	1.28
16.1 (10)	1.13	1.15	1.23	1.31

Population = 395 300 seeds/ha (160 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.08	1.12	1.14
8.05 (5)	1.07	1.09	1.13	1.16
9.66 (6)	1.09	1.12	1.15	1.19
11.27 (7)	1.10	1.13	1.17	1.23
12.87 (8)	1.12	1.14	1.19	1.27
14.48 (9)	1.13	1.15	1.22	1.30
16.1 (10)	1.13	1.16	1.25	1.31

Population = 420 100 seeds/ha (170 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.08	1.12	1.14
8.05 (5)	1.08	1.10	1.14	1.17
9.66 (6)	1.09	1.12	1.16	1.21
11.27 (7)	1.11	1.13	1.17	1.25
12.87 (8)	1.12	1.14	1.21	1.28
14.48 (9)	1.13	1.16	1.23	1.31
16.1 (10)	1.14	1.17	1.27	1.31

SETUP Planter Configuration and Seed Monitor

Population = 444 800 seeds/ha (180 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.09	1.13	1.15
8.05 (5)	1.08	1.11	1.14	1.18
9.66 (6)	1.10	1.13	1.16	1.22
11.27 (7)	1.12	1.14	1.18	1.26
12.87 (8)	1.13	1.15	1.22	1.30
14.48 (9)	1.13	1.16	1.25	1.31
16.1 (10)	1.14	1.18	1.28	1.31

Population = 518 900 seeds/ha (210 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.08	1.10	1.14	1.17
8.05 (5)	1.09	1.13	1.16	1.21
9.66 (6)	1.12	1.14	1.18	1.26
11.27 (7)	1.13	1.15	1.23	1.31
12.87 (8)	1.14	1.17	1.26	1.31
14.48 (9)	1.15	1.18	1.30	1.32
16.1 (10)	1.16	1.21	1.31	1.35

Population = 469 500 seeds/ha (190 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.07	1.09	1.13	1.16
8.05 (5)	1.09	1.12	1.15	1.18
9.66 (6)	1.10	1.13	1.17	1.23
11.27 (7)	1.12	1.14	1.20	1.28
12.87 (8)	1.13	1.16	1.23	1.31
14.48 (9)	1.14	1.17	1.27	1.31
16.1 (10)	1.15	1.18	1.30	1.32

Population = 543 600 seeds/ha (220 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.08	1.11	1.14	1.17
8.05 (5)	1.10	1.13	1.16	1.23
9.66 (6)	1.12	1.14	1.20	1.27
11.27 (7)	1.13	1.16	1.24	1.31
12.87 (8)	1.14	1.17	1.27	1.31
14.48 (9)	1.15	1.20	1.31	1.32
16.1 (10)	1.16	1.23	1.31	1.38

Population = 494 200 seeds/ha (200 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.07	1.09	1.13	1.16
8.05 (5)	1.09	1.12	1.15	1.20
9.66 (6)	1.11	1.13	1.18	1.25
11.27 (7)	1.13	1.15	1.21	1.29
12.87 (8)	1.13	1.16	1.25	1.31
14.48 (9)	1.14	1.18	1.28	1.31
16.1 (10)	1.15	1.21	1.31	1.32

Population = 568 300 seeds/ha (230 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.08	1.11	1.15	1.18
8.05 (5)	1.10	1.13	1.17	1.24
9.66 (6)	1.12	1.15	1.21	1.29
11.27 (7)	1.13	1.16	1.21	1.31
12.87 (8)	1.15	1.18	1.29	1.32
14.48 (9)	1.16	1.21	1.31	1.34
16.1 (10)	1.17	1.24	1.31	1.40

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MH81805.00007F8 -19-31MAR05-2/3

SETUP Planter Configuration and Seed Monitor

Population = 593 100 seeds/ha (240 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.09	1.12	1.15	1.19
8.05 (5)	1.11	1.13	1.18	1.25
9.66 (6)	1.13	1.15	1.22	1.30
11.27 (7)	1.14	1.17	1.26	1.31
12.87 (8)	1.15	1.19	1.30	1.32
14.48 (9)	1.16	1.22	1.31	1.37
16.1 (10)	1.18	1.25	1.31	1.43

Population = 667 200 seeds/ha (270 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.10	1.13	1.16	1.22
8.05 (5)	1.12	1.14	1.21	1.28
9.66 (6)	1.13	1.16	1.25	1.31
11.27 (7)	1.15	1.18	1.30	1.32
12.87 (8)	1.16	1.22	1.31	1.37
14.48 (9)	1.18	1.25	1.32	1.44
16.1 (10)	1.21	1.28	1.33	1.51

Population = 617 761 seeds/ha (250 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.09	1.12	1.15	1.20
8.05 (5)	1.11	1.14	1.18	1.26
9.66 (6)	1.13	1.15	1.23	1.31
11.27 (7)	1.14	1.17	1.27	1.31
12.87 (8)	1.15	1.20	1.31	1.32
14.48 (9)	1.17	1.23	1.31	1.39
16.1 (10)	1.18	1.26	1.32	1.46

Population = 691 900 seeds/ha (280 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.10	1.13	1.17	1.23
8.05 (5)	1.12	1.15	1.21	1.29
9.66 (6)	1.14	1.17	1.26	1.31
11.27 (7)	1.15	1.20	1.31	1.32
12.87 (8)	1.17	1.23	1.31	1.39
14.48 (9)	1.18	1.26	1.32	1.46
16.1 (10)	1.21	1.29	1.35	1.53

Population = 642 500 seeds/ha (260 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.09	1.12	1.16	1.21
8.05 (5)	1.12	1.14	1.20	1.27
9.66 (6)	1.13	1.16	1.24	1.31
11.27 (7)	1.14	1.18	1.29	1.32
12.87 (8)	1.16	1.21	1.31	1.35
14.48 (9)	1.17	1.24	1.31	1.41
16.1 (10)	1.20	1.27	1.32	1.48

PA Chart — Large Soybeans — 4564 seeds/kg (2070 seeds/lb) - Standard Seed Tube Sensor

Population = 296 500 seeds/ha (120 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.03	1.05	1.07	1.09
8.05 (5)	1.04	1.06	1.08	1.12
9.66 (6)	1.05	1.07	1.10	1.14
11.27 (7)	1.06	1.08	1.12	1.17
12.87 (8)	1.07	1.09	1.14	1.20
14.48 (9)	1.08	1.10	1.17	1.23
16.1 (10)	1.08	1.12	1.19	1.26

Population = 370 600 seeds/ha (150 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.04	1.06	1.08	1.12
8.05 (5)	1.05	1.07	1.11	1.15
9.66 (6)	1.06	1.08	1.13	1.19
11.27 (7)	1.07	1.10	1.16	1.22
12.87 (8)	1.08	1.12	1.19	1.26
14.48 (9)	1.09	1.13	1.21	1.30
16.1 (10)	1.11	1.15	1.24	1.33

Population = 321 200 seeds/ha (130 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.04	1.05	1.07	1.10
8.05 (5)	1.05	1.06	1.09	1.13
9.66 (6)	1.05	1.07	1.11	1.16
11.27 (7)	1.06	1.09	1.13	1.19
12.87 (8)	1.07	1.10	1.16	1.22
14.48 (9)	1.08	1.11	1.18	1.25
16.1 (10)	1.09	1.13	1.20	1.28

Population = 395 300 seeds/ha (160 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.06	1.09	1.13
8.05 (5)	1.06	1.07	1.12	1.16
9.66 (6)	1.07	1.09	1.14	1.20
11.27 (7)	1.08	1.10	1.17	1.24
12.87 (8)	1.09	1.13	1.20	1.28
14.48 (9)	1.10	1.14	1.23	1.32
16.1 (10)	1.12	1.16	1.26	1.35

Population = 345 900 seeds/ha (140 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.04	1.05	1.08	1.10
8.05 (5)	1.05	1.07	1.10	1.14
9.66 (6)	1.06	1.08	1.12	1.17
11.27 (7)	1.07	1.09	1.15	1.20
12.87 (8)	1.08	1.10	1.17	1.24
14.48 (9)	1.09	1.12	1.20	1.27
16.1 (10)	1.10	1.14	1.22	1.31

Population = 420 100 seeds/ha (170 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.06	1.10	1.13
8.05 (5)	1.06	1.08	1.13	1.18
9.66 (6)	1.07	1.10	1.16	1.21
11.27 (7)	1.08	1.11	1.18	1.26
12.87 (8)	1.10	1.13	1.21	1.30
14.48 (9)	1.11	1.15	1.24	1.34
16.1 (10)	1.13	1.18	1.28	1.36

SETUP Planter Configuration and Seed Monitor

Population = 444 800 seeds/ha (180 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.07	1.10	1.14
8.05 (5)	1.06	1.08	1.13	1.19
9.66 (6)	1.08	1.10	1.17	1.23
11.27 (7)	1.09	1.12	1.20	1.27
12.87 (8)	1.10	1.14	1.23	1.32
14.48 (9)	1.12	1.17	1.26	1.35
16.1 (10)	1.13	1.19	1.30	1.38

Population = 518 900 seeds/ha (210 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.08	1.12	1.17
8.05 (5)	1.07	1.10	1.16	1.22
9.66 (6)	1.09	1.12	1.20	1.27
11.27 (7)	1.10	1.15	1.23	1.33
12.87 (8)	1.12	1.17	1.27	1.36
14.48 (9)	1.14	1.20	1.32	1.39
16.1 (10)	1.16	1.22	1.34	1.44

Population = 469 500 seeds/ha (190 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.05	1.07	1.11	1.16
8.05 (5)	1.07	1.09	1.14	1.20
9.66 (6)	1.08	1.11	1.18	1.24
11.27 (7)	1.09	1.13	1.21	1.29
12.87 (8)	1.11	1.16	1.24	1.33
14.48 (9)	1.13	1.18	1.27	1.36
16.1 (10)	1.14	1.20	1.32	1.39

Population = 543 600 seeds/ha (220 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.08	1.13	1.18
8.05 (5)	1.08	1.10	1.17	1.23
9.66 (6)	1.09	1.13	1.21	1.29
11.27 (7)	1.11	1.16	1.25	1.34
12.87 (8)	1.13	1.18	1.29	1.37
14.48 (9)	1.15	1.21	2.00	1.40
16.1 (10)	1.17	1.23	1.35	1.47

Population = 494 200 seeds/ha (200 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.07	1.12	1.16
8.05 (5)	1.07	1.09	1.15	1.21
9.66 (6)	1.08	1.12	1.19	1.26
11.27 (7)	1.10	1.14	1.22	1.31
12.87 (8)	1.12	1.16	1.26	1.35
14.48 (9)	1.13	1.19	1.30	1.38
16.1 (10)	1.15	1.21	1.33	1.41

Population = 568 300 seeds/ha (230 000 seeds/acre)

Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.06	1.09	1.14	1.19
8.05 (5)	1.08	1.11	1.18	1.25
9.66 (6)	1.10	1.14	1.22	1.30
11.27 (7)	1.12	1.16	1.26	1.35
12.87 (8)	1.14	1.19	1.30	1.38
14.48 (9)	1.16	1.22	1.34	1.43
16.1 (10)	1.18	1.25	1.37	1.50

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MH81805,00007F9 -19-31MAR05-2/3

SETUP Planter Configuration and Seed Monitor

Population = 593 100 seeds/ha (240 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.07	1.09	1.14	1.20
8.05 (5)	1.08	1.12	1.19	1.26
9.66 (6)	1.10	1.14	1.23	1.32
11.27 (7)	1.12	1.17	1.27	1.36
12.87 (8)	1.14	1.20	1.32	1.40
14.48 (9)	1.17	1.23	1.35	1.45
16.1 (10)	1.19	1.26	1.38	1.29

Population = 667 200 seeds/ha (270 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.08	1.10	1.17	1.23
8.05 (5)	1.09	1.13	1.21	1.30
9.66 (6)	1.12	1.17	1.26	1.35
11.27 (7)	1.15	1.20	1.32	1.39
12.87 (8)	1.17	1.23	1.35	1.45
14.48 (9)	1.19	1.26	1.38	1.53
16.1 (10)	1.21	1.30	1.42	1.61

Population = 617 761 seeds/ha (250 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.07	1.09	1.15	1.21
8.05 (5)	1.09	1.12	1.20	1.27
9.66 (6)	1.11	1.15	1.24	1.33
11.27 (7)	1.13	1.18	1.29	1.37
12.87 (8)	1.15	1.21	1.33	1.41
14.48 (9)	1.17	1.24	1.36	1.48
16.1 (10)	1.20	1.27	1.39	1.55

Population = 691 900 seeds/ha (280 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.08	1.10	1.17	1.24
8.05 (5)	1.10	1.14	1.22	1.31
9.66 (6)	1.12	1.17	1.27	1.36
11.27 (7)	1.15	1.20	1.33	1.40
12.87 (8)	1.17	1.24	1.36	1.48
14.48 (9)	1.20	1.27	1.39	1.56
16.1 (10)	1.22	1.31	1.44	1.63

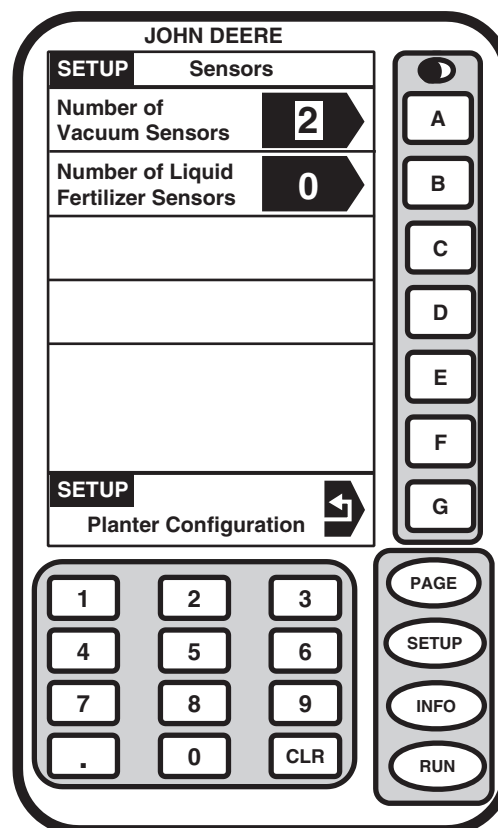
Population = 642 500 seeds/ha (260 000 seeds/acre)				
Ground Speed km/h (m/h)	Population Adjust Value for Row Spacing			
	191 mm (7.5 in.)	254 mm (10 in.)	381 mm (15 in.)	508 mm (20 in.)
6.44 (4)	1.07	1.10	1.16	1.22
8.05 (5)	1.09	1.13	1.20	1.28
9.66 (6)	1.11	1.16	1.25	1.34
11.27 (7)	1.13	1.19	1.30	1.38
12.87 (8)	1.16	1.25	1.34	1.43
14.48 (9)	1.18	1.25	1.37	1.51
16.1 (10)	1.20	1.28	1.40	1.58

Vacuum and Liquid Fertilizer Sensors

1. Press SETUP—Planter—Planter Configuration—Sensors.

NOTE: Pressing the CLR key when a selection is highlighted will clear the value to zero.

2. Press key A to highlight selection and enter number of vacuum sensors with numeric keypad.
3. Press key B to highlight selection and enter number of liquid fertilizer sensors with numeric keypad.



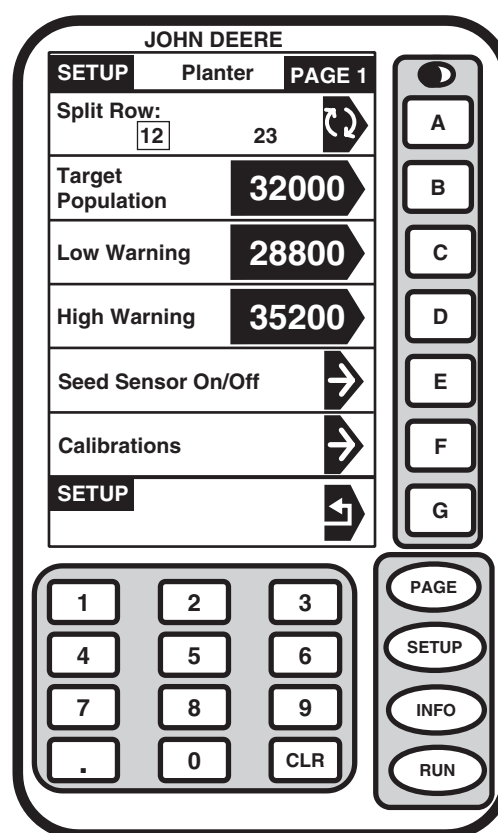
A49481 -19-08JUL02

MH81805.00007FA -19-31MAR05-1/1

Seed Sensors On/Off and Selecting Split Rows

IMPORTANT: When Planter Frame is configured for a split row machine, there is no need to manually turn sensors on and off. The monitor automatically counts either all rows or split rows when key A is toggled between configurations.

1. Press SETUP—Planter.
2. If frame is configured as a split row machine, choose row option with key A. Rows, spacing and machine width are automatically calculated. There is no need to manually reconfigure monitor each time split rows are locked and unlocked.
3. Press "Seed Sensor On/Off".



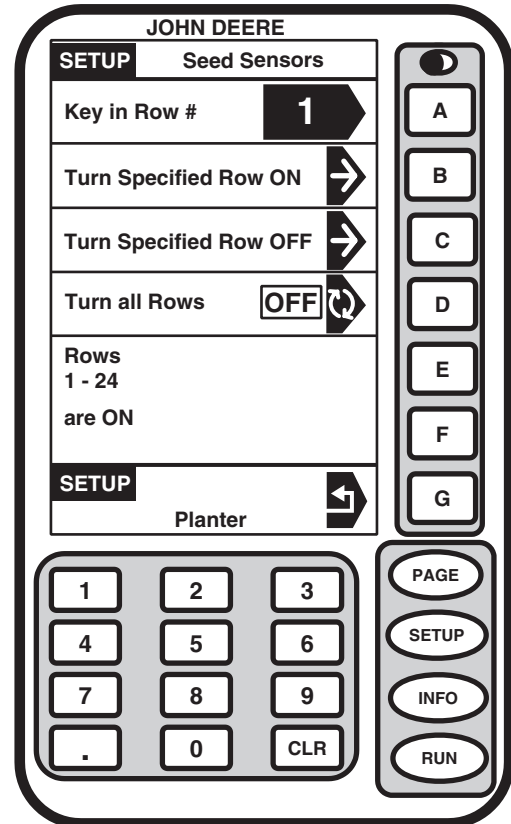
A49478 -19-13AUG02

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OUC6074.0000DEB -19-20APR05-1/2

IMPORTANT: Machine configuration must be completed before setting up seed sensors or values will be different than what is on the machine.

4. Press key A to select desired row.
5. Press key B or C to turn selected row on or off.
6. Press key D to turn all rows on or off.



A49492 -19-08JUL02

OUO6074,0000DEB -19-20APR05-2/2

Radar Calibration

IMPORTANT: For best results and most accurate setting, radar calibration should be done in the field (in the type of soil to be planted) with planter attached and all tires inflated to proper pressure.

Hard, smooth surfaces are not acceptable for calibration and may produce a “Radar Sensor Calibration Error” message.

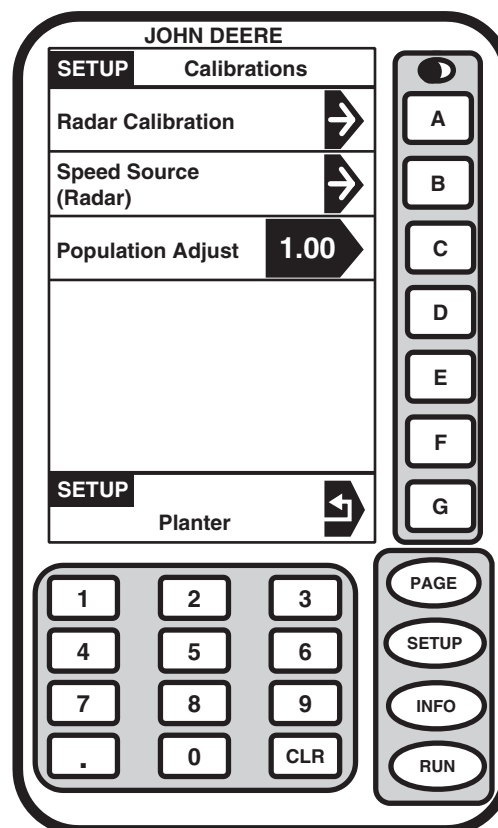
NOTE: On John Deere 7000/8000/9000 Series and newer tractors with factory installed radar, the Radar Calibration Value is not available on the display. The SEEDSTAR™ monitor receives radar signal through tractor harness at the six pin diagnostic connector. To calibrate the radar, see your Tractor operator's manual.

NOTE: The radar can be calibrated with the Standard Display menu when implement harness is not connected or with Planter SETUP menu when implement harness is connected. Changes made in one area will automatically update information in the other.

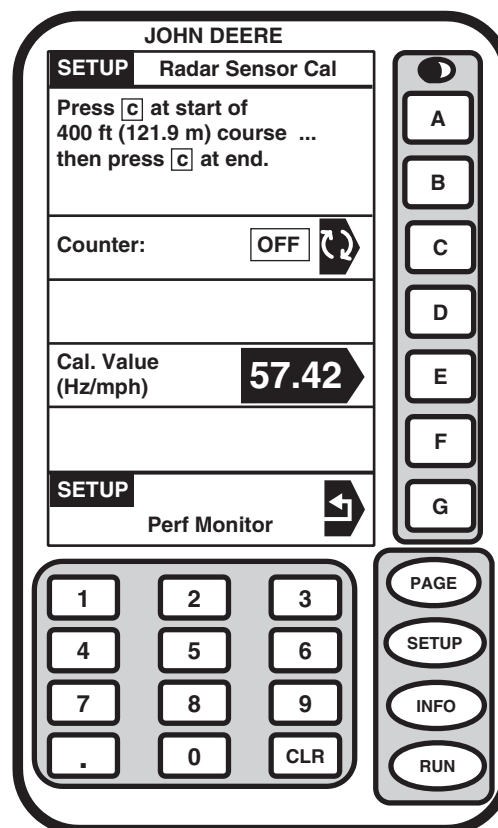
Radar calibration is used to determine the true ground speed of the tractor and planter. The radar calibration values listed in the following table are approximate. The Radar calibration procedure should be performed to ensure accuracy.

Radar Calibration Values		
Radar Unit	Hz per km/h	Hz per mph
Dickey John™	35.7	57.5
Dual Beam Radar	35.66	57.42

If radar calibration value is already known, it can be manually placed into memory.



A54305 -19-10MAY04



A49522 -19-13AUG02

IMPORTANT: GPS speed sources used as radar input must be calibrated using the below procedure to ensure accuracy. GPS speed STARFIRE™ ITC used for Variable Rate Drive planters may only be used on a John Deere 7000/7010/8000/9000 Series tractor. These tractors have a backup speed source that will automatically switch if GPS speed becomes erratic or lost.

GPS cannot be used as a speed source on tractors built by other manufacturers.

1. Press SETUP—Planter—Calibrations—Radar Calibration.
2. Lay out a 122 m (400 ft) straight line course.
3. Driving at approximately 3.2 km/h (2 mph), press key C to start counter as front tractor tires pass the opening marker of the course. Calibration window will show number count during travel.
4. Press key C to stop counter as front tractor tires pass the closing marker of the course to end calibration. “Radar Sensor Calibration Finished” should be displayed along with the radar calibration value. This value is automatically entered into the monitor’s memory.

Pressing the stop key before the closing marker may produce a “Radar Sensor Calibration Error” message if more feedback signals are needed for calibration.

Error message can also display when feedback signal is outside the normal range of 1 Hz to 150 Hz.

5. Write down calibration value, perform calibration two more times, average the three numbers and manually enter the average value in the Calibration Value window.

6. If “Radar Sensor Calibration Error” interrupts the active procedure, check that sensor lens is clean and cable connections are tight; then run test.

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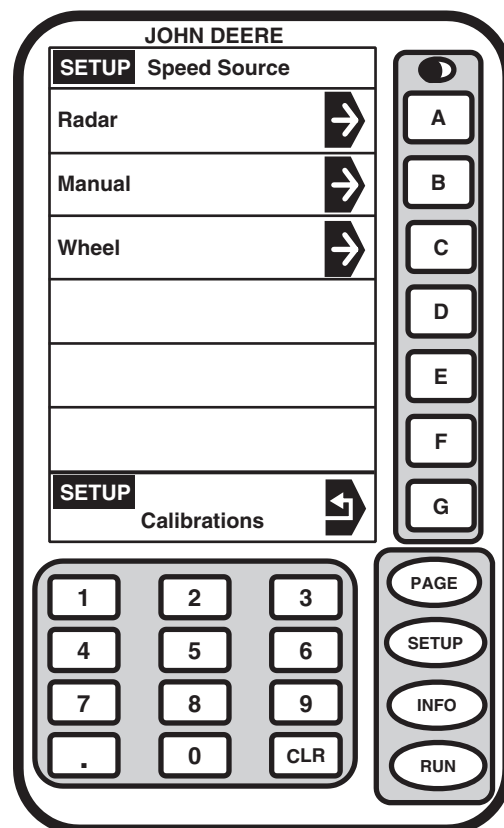
7. Press SETUP—Planter—Calibrations—Speed Source.

IMPORTANT: When a speed is entered manually, the monitor believes the planter is traveling at that speed at all times. If the actual speed varies, false population warnings may appear and the area counter will not be accurate. Use the radar whenever possible.

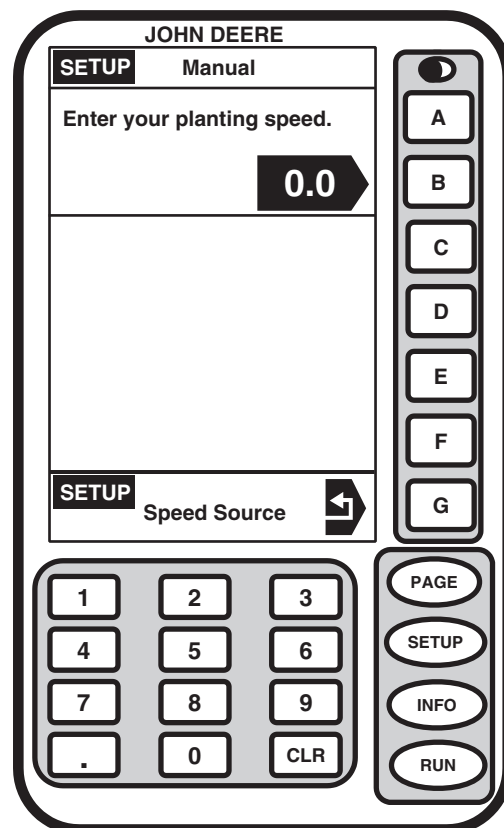
IMPORTANT: Radar unit must be plugged into harness for manual input to function. If radar is disconnected, speed will read zero in all cases and monitor will not function properly.

8. When the radar will be used as a speed source, press “Radar”. If the radar malfunctions or is not used, a planting speed can be entered manually by pressing “Manual” and entering an intended planting speed.

“Wheel” option will be available on 8000 and 9000 series tractors. Select this option to use tractor wheel as speed source (even if tractor has radar). This option can be used in very windy or dusty conditions when radar is affected by objects passing in front of beam.



A49799 -19-03DEC02

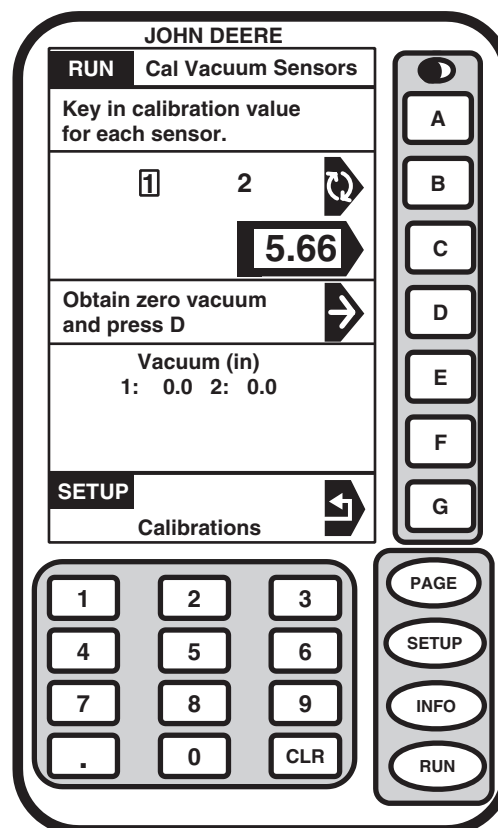


A49800 -19-03SEP02

Vacuum Sensor Calibration

NOTE: Planter Configuration must be set up for vacuum sensors or the option will not show up on the menu.

1. Press SETUP—Planter—Calibrations—Vacuum Sensor.
2. Select each sensor, one at a time, with key B.
3. Enter calibration value. This is the number of inches of water vacuum that will be displayed per volt on the vacuum transducer sensor signal line. John Deere planters with factory equipped sensors have a calibration value of 5.66.
4. Shut off vacuum motor.
5. Press key D to adjust the sensor voltage to zero for the altitude at which the vacuum will be operated.



A49489 -19-08JUL02

MH81805,00007FD -19-31MAR05-1/1

Liquid Fertilizer Sensor Calibration

NOTE: Planter Configuration must be set up for fertilizer sensors or the option will not show up on the menu.

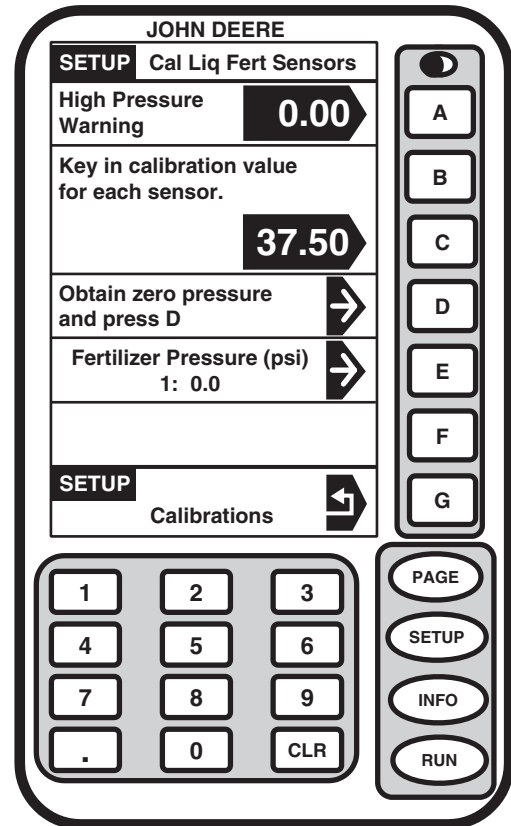
1. Press SETUP—Planter—Calibrations—Liquid Fert Sensor.

NOTE: Setting value to zero will disable alarm.

2. Enter a high pressure warning if desired.
3. Select each sensor, one at a time.
4. Enter the calibration value. This is the psi per volt on the pressure sensor signal line for the sensor used. John Deere planters with factory equipped sensors have a calibration value of 37.5.

NOTE: Before performing zeroing function, make certain pressure is released from system. Up to 69 kPa (0.7 bar) (10 psi) can remain trapped in the system after being shut down.

5. Shut off fertilizer system and release all pressure from hoses and manifold system.
6. Press key D to adjust the sensor voltage to zero for the altitude at which the planter will be operated.



A49490 -19-08JUL02

Run Page Configuration

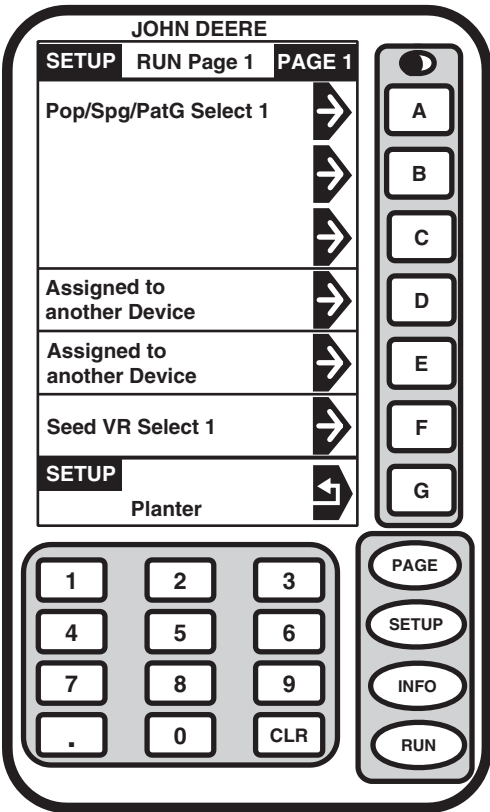
Press SETUP—Planter—Run Pages.

NOTE: If equipped with variable rate fertilizer, some lines may already be assigned to that device. Seed monitor and variable rate drive options can be placed over the already assigned lines, but this will change the way fertilizer options are displayed.

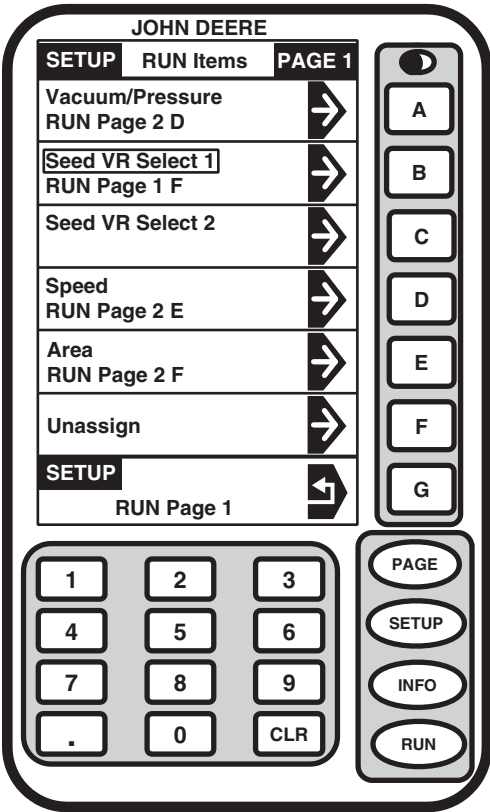
Press the PAGE key to view both current RUN Page configurations.

Choose a line to be entered or changed. Once chosen, the “Run items” page(s) will be displayed. Use the “Unassign” key to remove an option from a line or press any selection to assign it to that line. A Run Page Layout will be required to make the change active and viewable.

If a line is already assigned to another device, it can only be unassigned through that devices run page configuration screen. See RUN PAGE CONFIGURATION in Setup Variable Rate Liquid Fertilizer section or field doc manual.



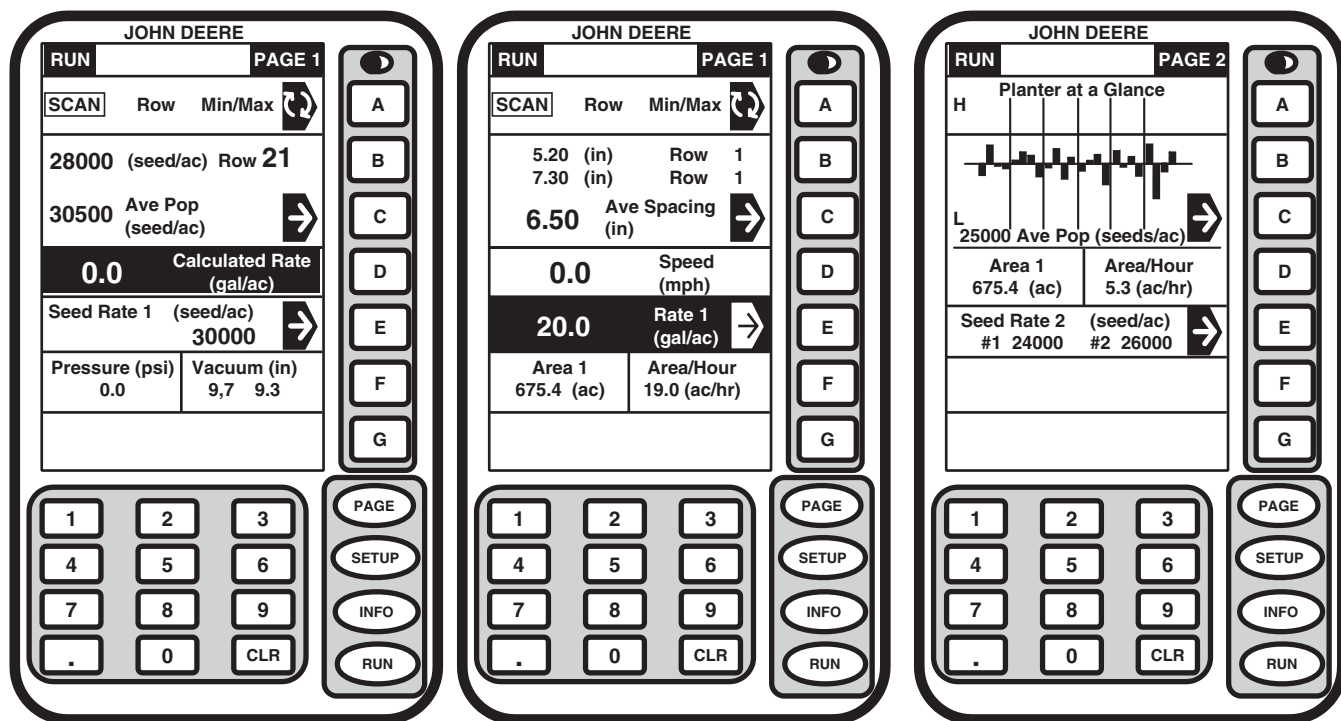
A50257 -19-19SEP02



A50258 -19-19SEP02

RUN Page Functions

RUN Pages



A50207 -19-12SEP02

With power on and planter operating, the monitor can perform many operations at once.

The run page configurations can be setup to appear as the operator chooses. Pages may look different than the ones shown, but the options and functionality are identical. To reconfigure run pages, see RUN PAGE CONFIGURATION in SETUP Planter Configuration and Seed Monitor section and SETUP Variable Rate Liquid Fertilizer section.

SEED MONITORING:

NOTE: When ground speed drops below four km/h (two mph), the monitor will not count seeds. When this occurs, the display will read zero.

Depending on target populations, the display will update every one to three seconds.

NOTE: The following three options are shown on line A in the first two images.

Scan: When this selection is highlighted, each row is scanned for four seconds.

Row: When this selection is highlighted, a row number can be entered to be monitored.

Min/Max: When this selection is highlighted, each row is scanned and the minimum and maximum values are displayed for that row.

Line C on all three images shown, allow one of three options to be selected.

Population: Average population for all rows is displayed.

Spacing: Average seed spacing for all rows is displayed.

Planter at a glance: As shown in third image, a constantly changing bar graph is displayed showing the amount of over and under population for each row. Average population is also shown. A row planting exactly the target population will show no bar. Rows planting higher and lower than the target will show bars either higher or lower than the centerline, respectively. The SET high and low limits are ALWAYS at the top and bottom of the graph screen. If a high limit is set for 40,000, a bar for a row will reach the top of the screen when it plants 40,000. If a high limit is set for 28,000, a bar for a row will reach the top of the screen when it plants 28,000. The value of the limit does not matter. The set high and low limits will always be displayed as the top and bottom of the graph screen.

APPLICATION RATES:

When only two rates are setup, rates can be instantly changed by pressing the key next to rate line. When more than two rates are entered, a rate selection screen will be displayed by pressing the key next to rate line. From this screen, one of several predetermined rates can be selected.

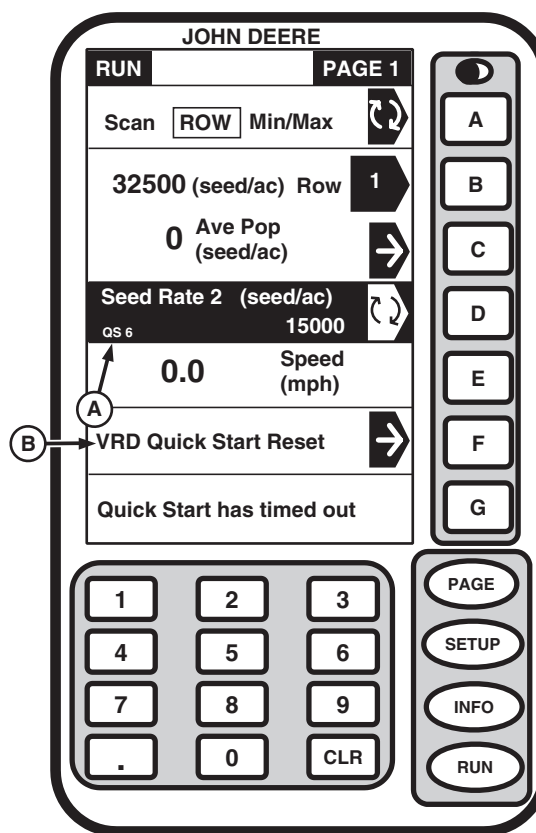
The rate lines are displayed with black lettering on a white background when operational. An asterisk (*) also appears next to the rate when operational. If a drive is turned off or becomes disabled, the background will become black with white lettering.

OUO6074,0000DE8 -19-20APR05-2/3

NOTE: For operational overview of quick start, see **QUICK START OVERVIEW—VARIABLE RATE DRIVE** in Overview section.

With quick start in auto mode (see VARIABLE RATE SETUP in SETUP Variable Rate Drive section), whenever machine is lowered, "QS 6" (A) will appear in the lower left corner of rate selection line and begin counting down to zero. If the quick start requirements are not met within six seconds, it will deactivate and a warning will appear in line "G" stating "Quick Start has timed out". Quick Start can be re-enabled by raising and lowering planter again or by pressing VRD Quick Start Reset key (B).

A—QS 6, Quick Start Timer
B—Reset Key

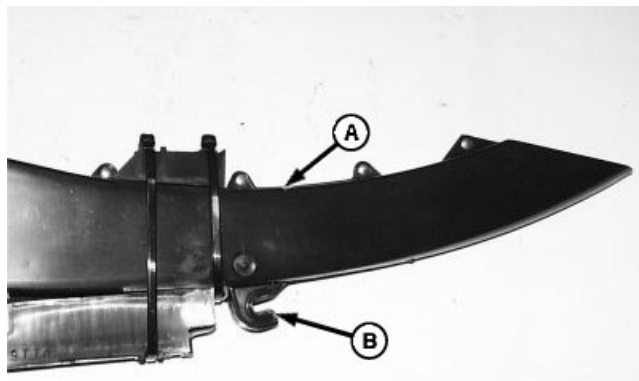


A56214 -19-25APR05

OUO6074,0000DE8 -19-20APR05-3/3

Seed Tube Sensors

Installing and Removing Seed Tubes



A53216 -UN-27OCT03



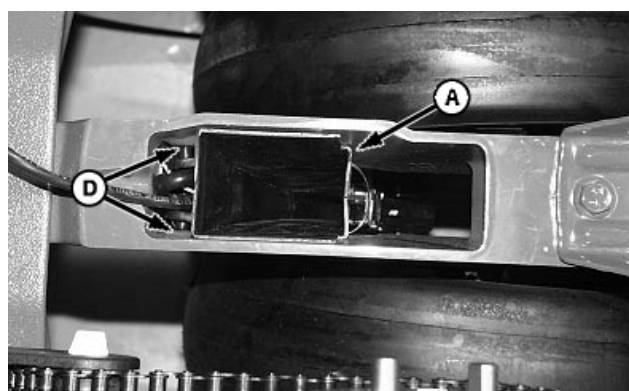
A53298 -UN-03NOV03

1. Connect monitor harness to sensor harness.

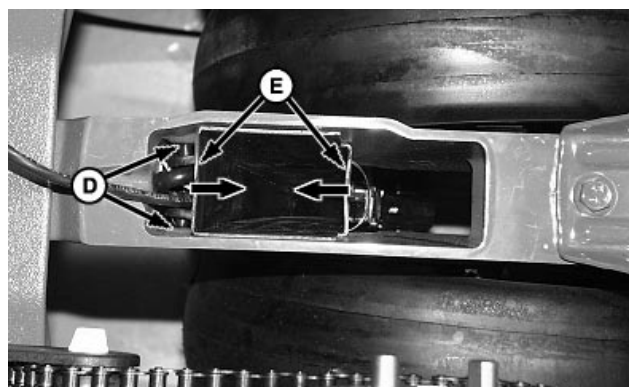
NOTE: Place harness connector inside planting unit at same time as seed tube.

2. Insert seed tube (A) into planting unit so the hook (B) locks on alignment pin (C).
3. Position seed tube so tabs (D) lock into holes.
4. To remove seed tube, squeeze front and rear (E) of tube with fingers until tabs (D) release from casting and pull upward.

A—Seed Tube
B—Hook
C—Pin
D—Tabs
E—Front and Rear



A53218 -UN-27OCT03



A54328 -UN-12MAY04

OUC6074,0000C7F -19-12JUN06-1/1

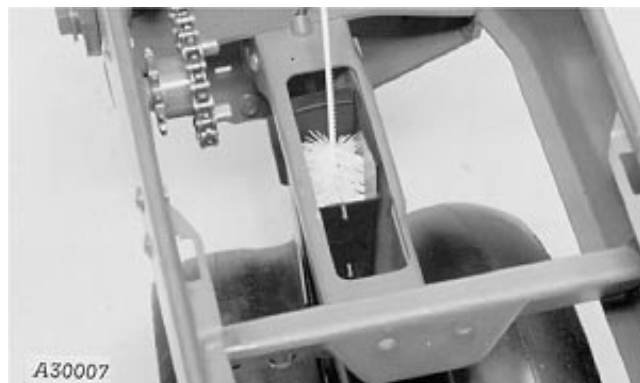
Cleaning Seed Sensor

In extremely dusty operating conditions, dust can build up on the seed sensor. Even in normal operating conditions, seed treatments can build up on the sensor. Eventually this buildup may become sufficient to disturb the sensor signal light, causing low population counts or low warnings to be indicated.

Periodically clean the seed sensor with the brush (dry) provided.

The sensor may also be cleaned with the brush, using mild detergent and water.

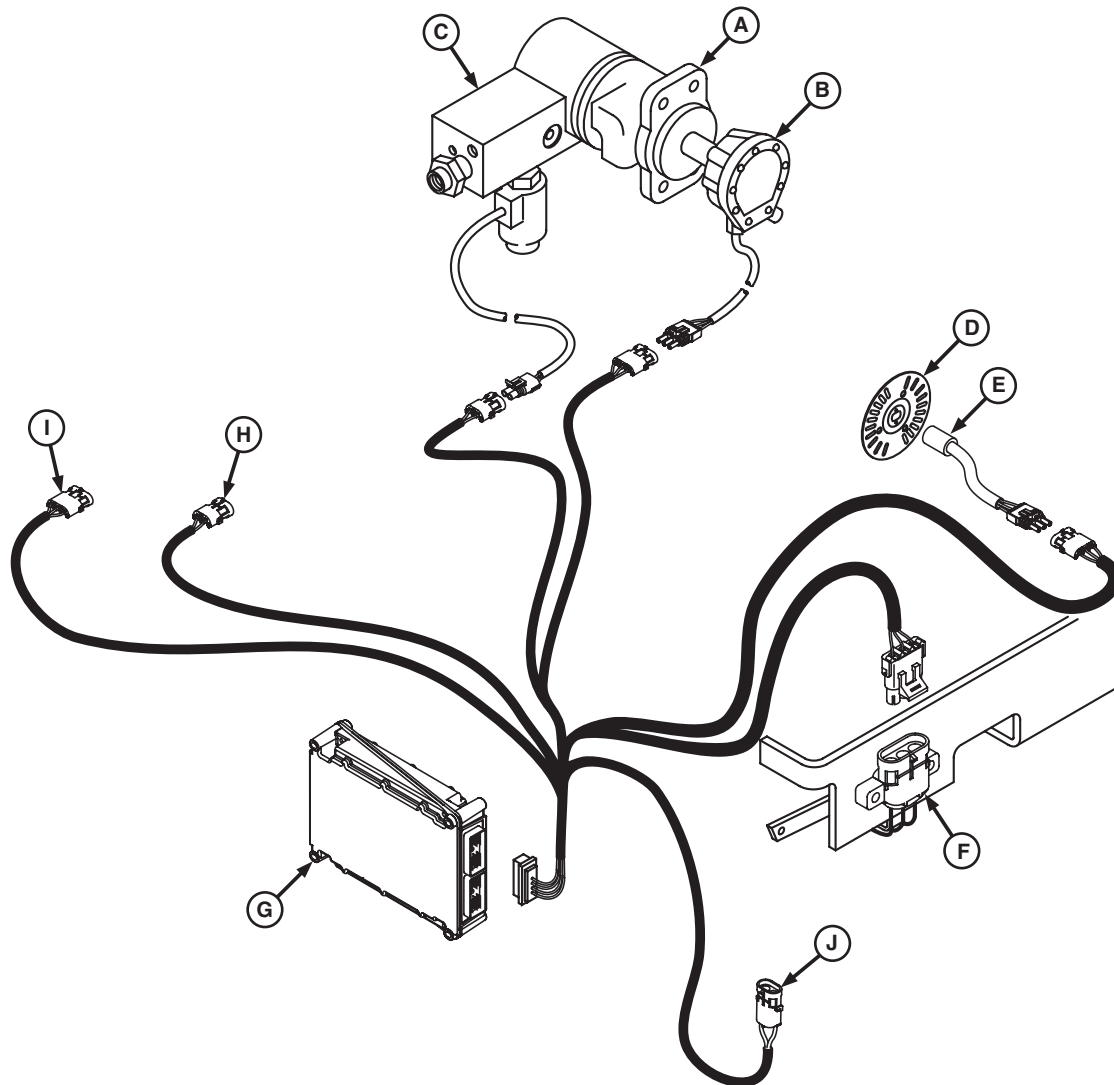
IMPORTANT: Do not plant again until the entire seed tube and sensor surfaces are dry.



AG,OUO1074,849 -19-01MAR00-1/1

Variable Rate Drive Components

Variable Rate Drive Single Motor System—Drawn Planters

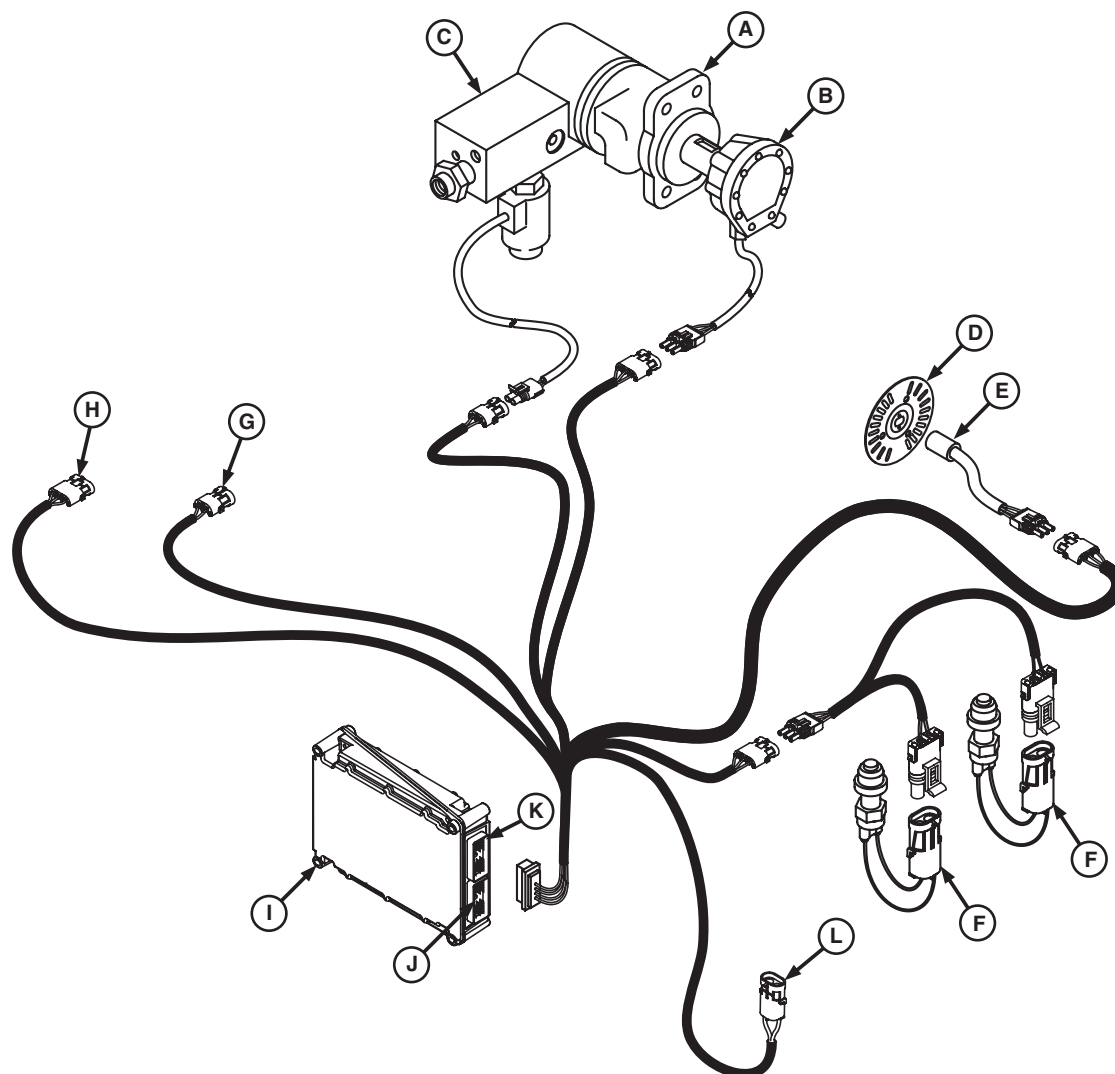


- | | | | |
|--------------------------|-----------------------|---|-----------------|
| A—Motor | D—Sensor Disk | G—Seed Monitor/Variable Rate Drive Wedgebox | I—RPM Connector |
| B—Speed Sensor | E—Wheel Motion Sensor | H—ECU Connector | J—Mod Power |
| C—Speed Controller Valve | F—Height Sensor | | |

OUO6089,0000491 -19-12AUG03-1/1

A52535 -UN-14AUG03

Variable Rate Drive Single Motor System—Integral Planters



A—Motor
B—Speed Sensor
C—Speed Controller Valve

D—Sensor Disk
E—Wheel Motion Sensor
F—Height Sensor

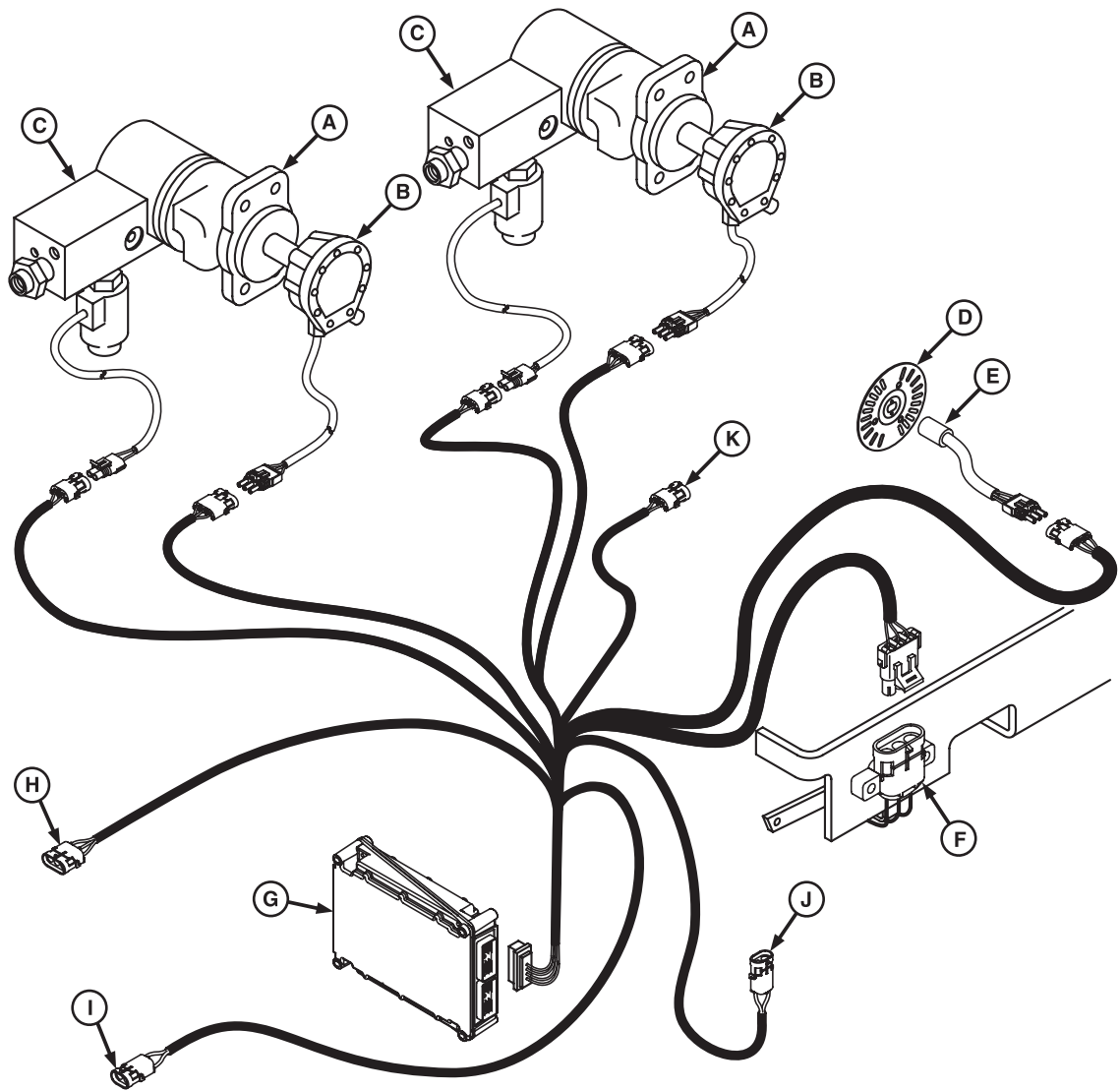
G—ECU Connector
H—RPM Connector (

J—Seed Monitor Connector
K—VRD Connector
L—Mod Power

A52536 -UN-14AUG03

OUO6089,0000492 -19-03OCT03-1/1

Variable Rate Drive Dual Motor System—16 Rows and Less Drawn Planters (And 1720 16-RN Integral Planter)

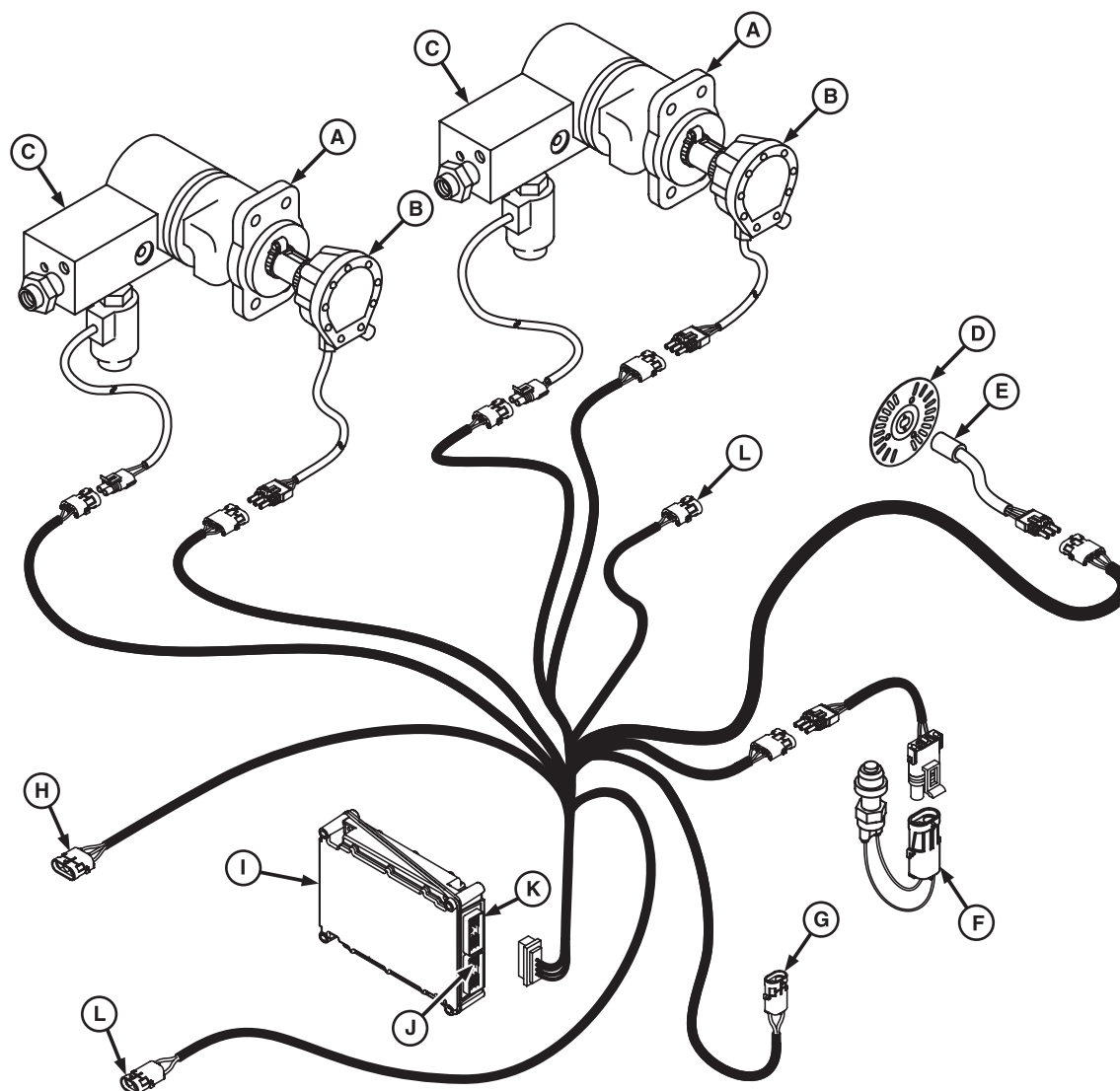


- | | | | |
|--------------------------|-----------------------|---|-----------------|
| A—Motor | D—Sensor Disk | G—Seed Monitor/Variable Rate Drive Wedgebox | I—ECU Connector |
| B—Speed Sensor | E—Wheel Motion Sensor | H—RPM Connector | J—Mod Power |
| C—Speed Controller Valve | F—Height Sensor | K—Right Disconnect | |

OUO6046,0001BD8 -19-09JAN04-1/1

A52537 -UN-05APR04

Variable Rate Drive Dual Motor System—Integral Planters (Except 1720 16-RN)



A—Motor
B—Speed Sensor
C—Speed Controller Valve

D—Sensor Disk
E—Wheel Motion Sensor
F—Height Sensor

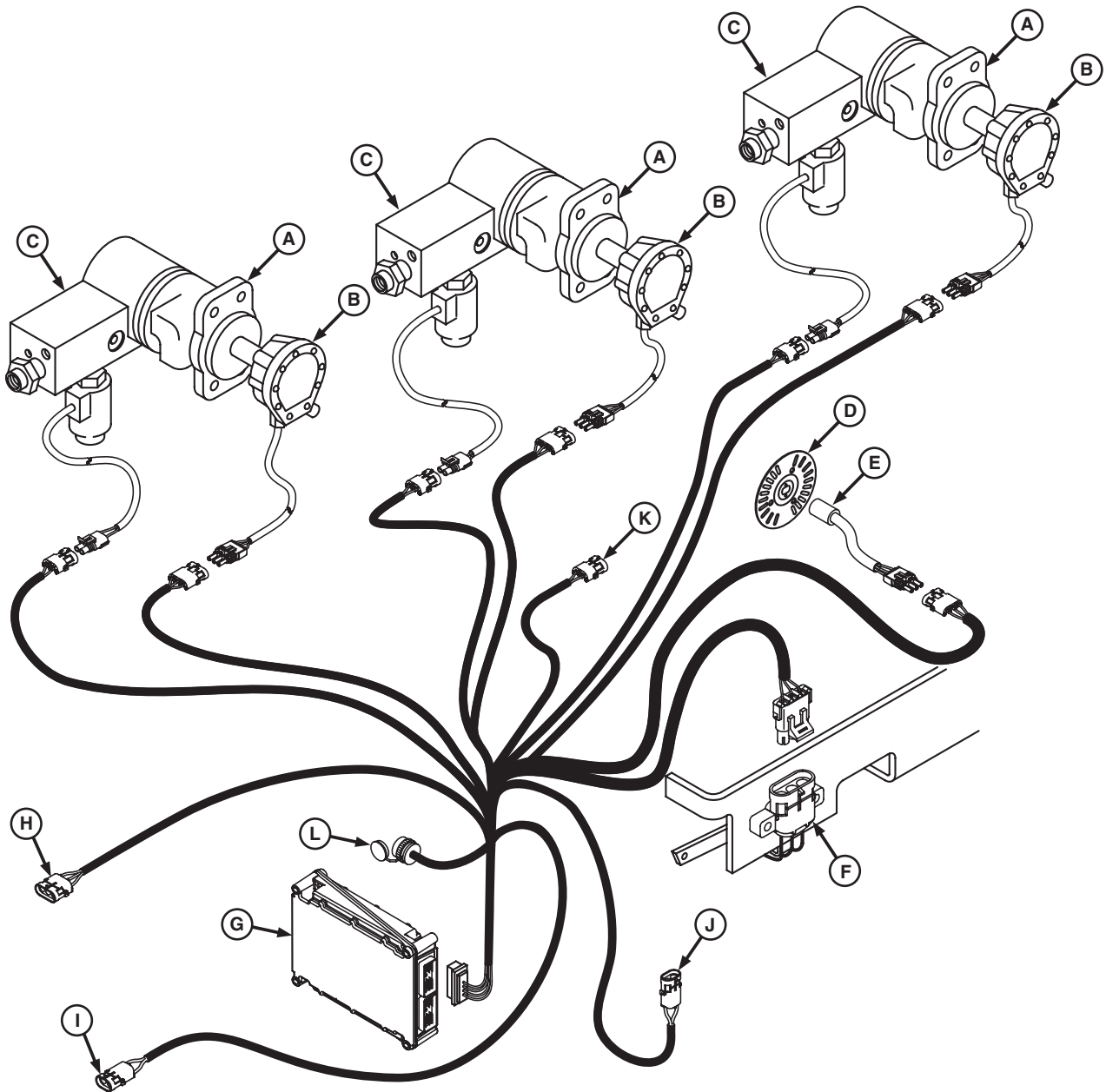
G—Mod Power
H—RPM Connector
I—Wedgebox

J—Seed Monitor Connector
K—VRD Connector
L—Right Disconnect

A52538 -UN-05APR04

OUC6089,0000494 -19-12AUG03-1/1

Variable Rate Drive Triple Motor System—1720 16RN



A—Motor
B—Speed Sensor
C—Speed Controller Valve

D—Sensor Disk
E—Wheel Motion Sensor
F—Height Sensor

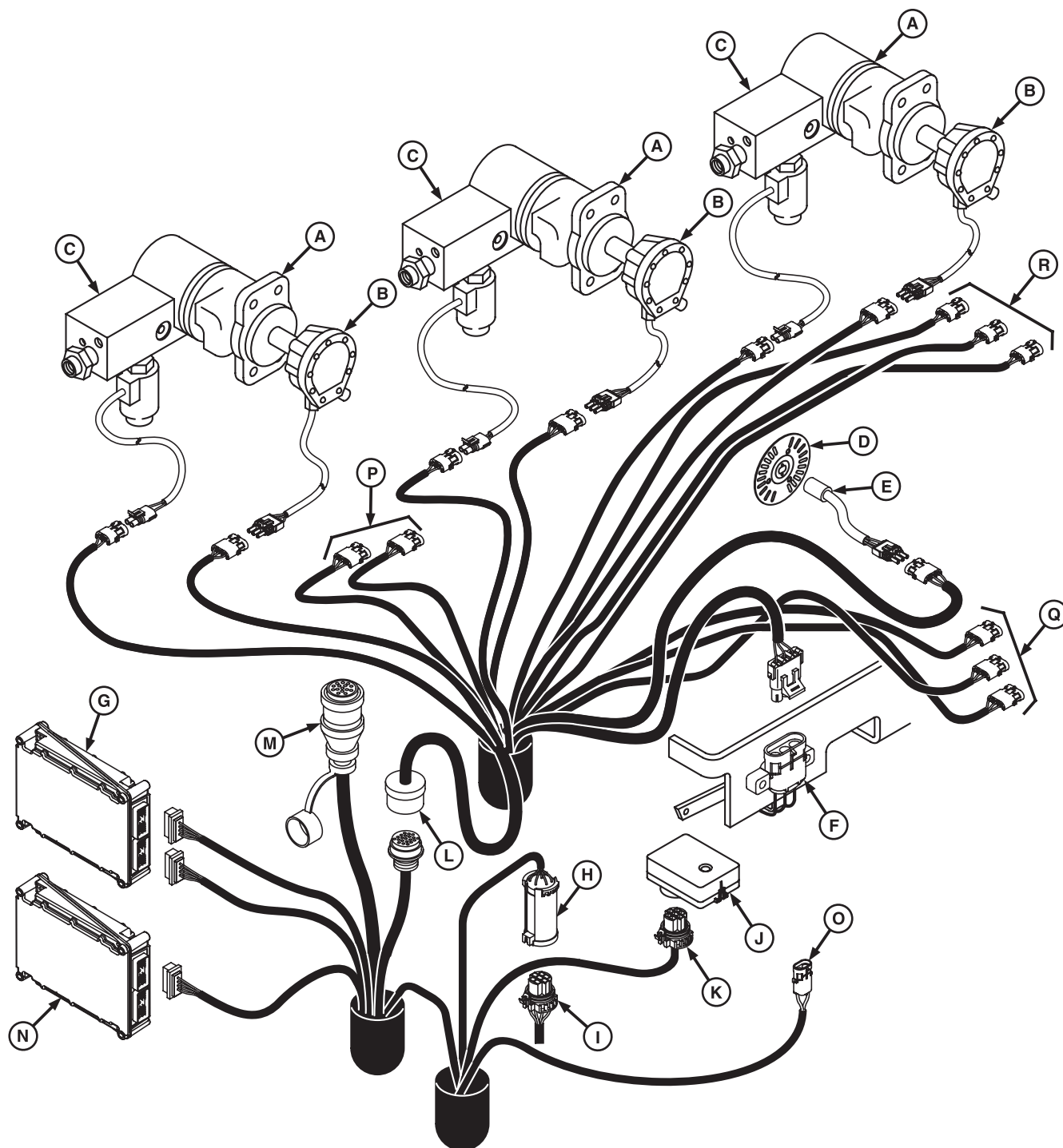
G—Mod Power
H—RPM Connector
I—Wedgebox

J—Seed Monitor Connector
K—Left Clutch Jumper
L—18-Pin Connector

OUO6045,000088C -19-16JUN06-1/1

A58157 -UN-16JUN06

Variable Rate Drive Triple Motor System—DB60, DB66 and DB90



A—Motor
B—Speed Sensor
C—Speed Controller Valve
D—Sensor Disk
E—Wheel Motion Sensor

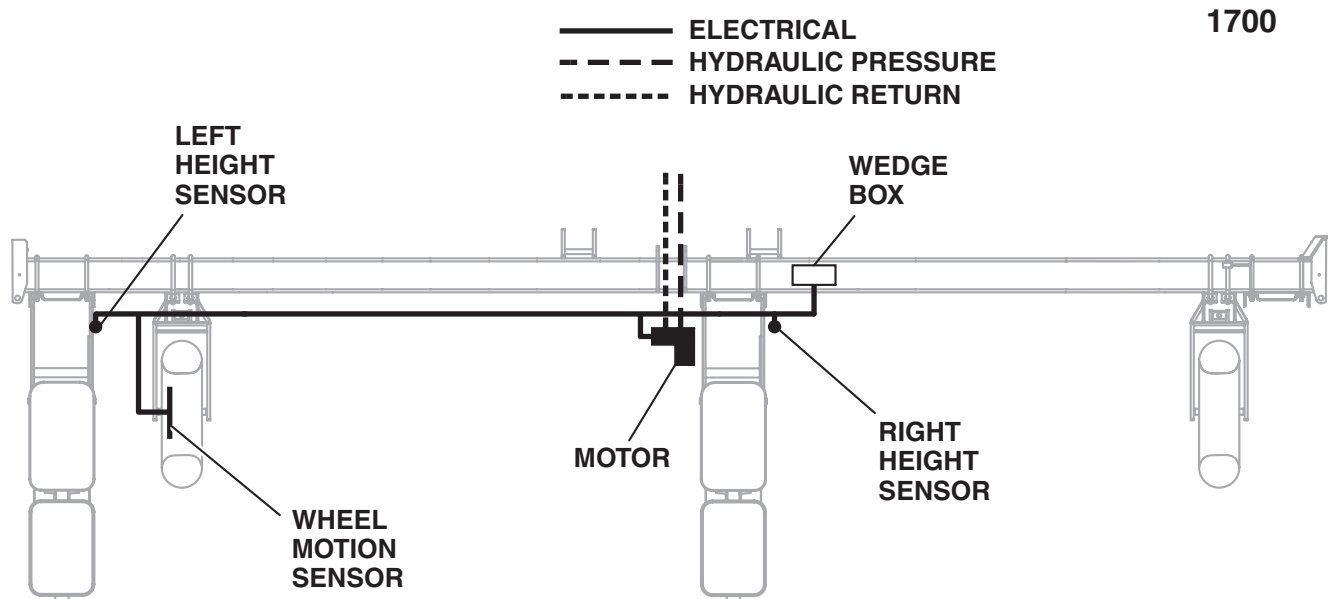
F—Height Sensor
G—Master Wedgebox
H—CAN IN
I—CAN Extension Harness
J—Terminator

K—CAN OUT
L—37-Pin Connector
M—57-Pin connector
N—Slave Wedge Box

O—Mod Power
P—Fertilizer Pressure
Q—Half-Width
R—Vacuum Sensors

A52539 -JUN-05APR04

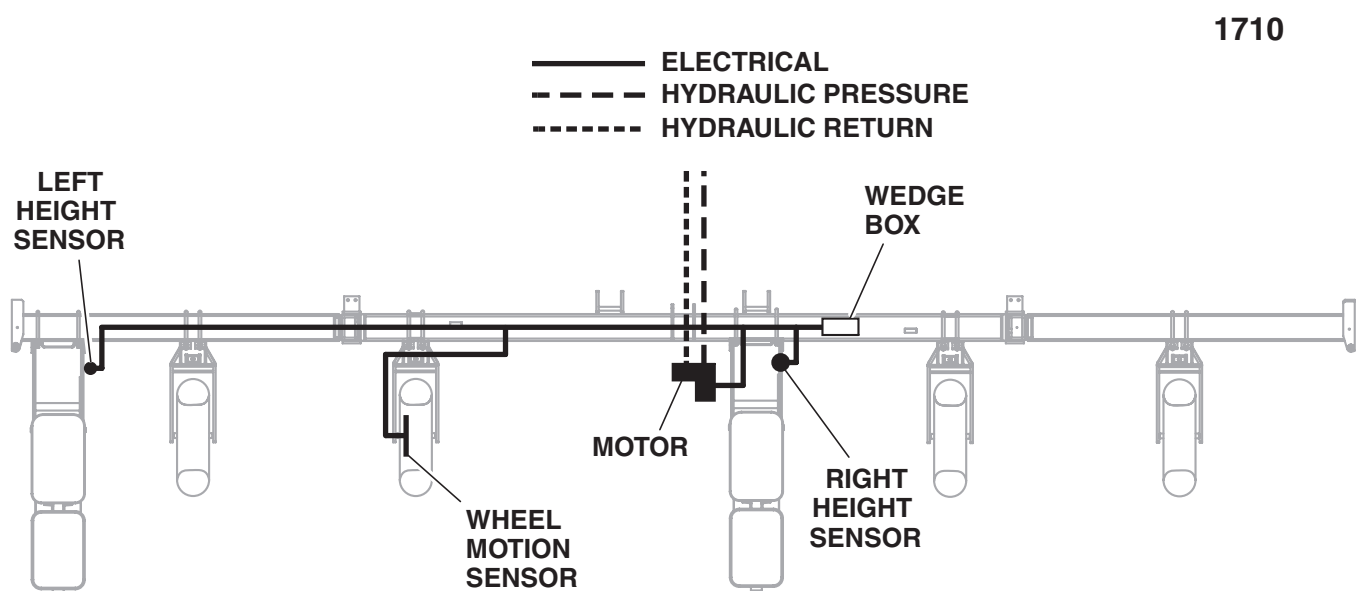
Variable Rate Drive Location Drawing—1700 Planter



A51900 -19-13MAR03

OUO1074,00001D3 -19-30APR01-1/1

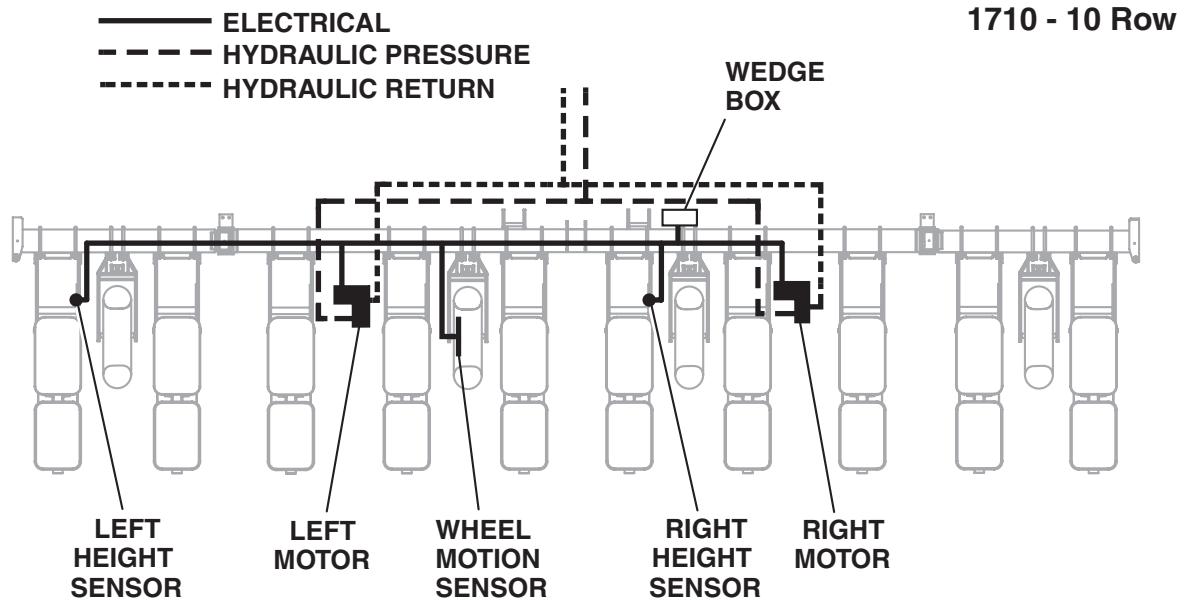
Variable Rate Drive Location Drawing—1710 Planter with Single Motor



A51899 -19-13MAR03

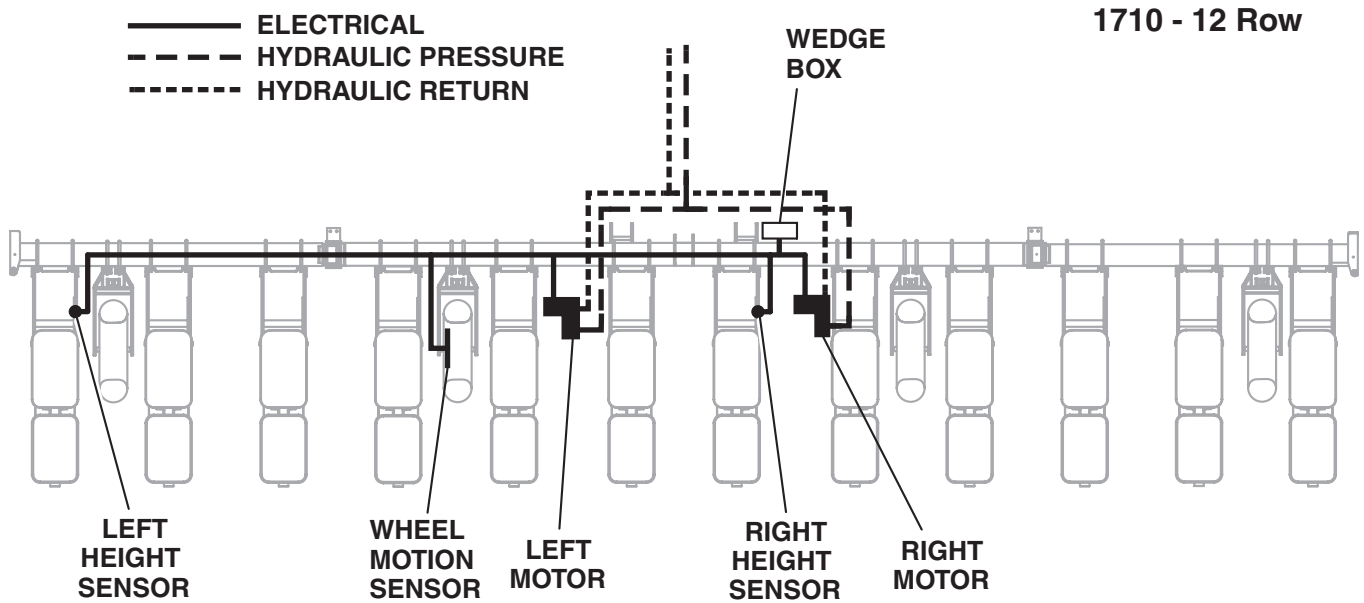
OUO1074,00001D4 -19-30APR01-1/1

Variable Rate Drive Location Drawing—1710 Planter with Dual Motors



A51893 -19-21MAR03

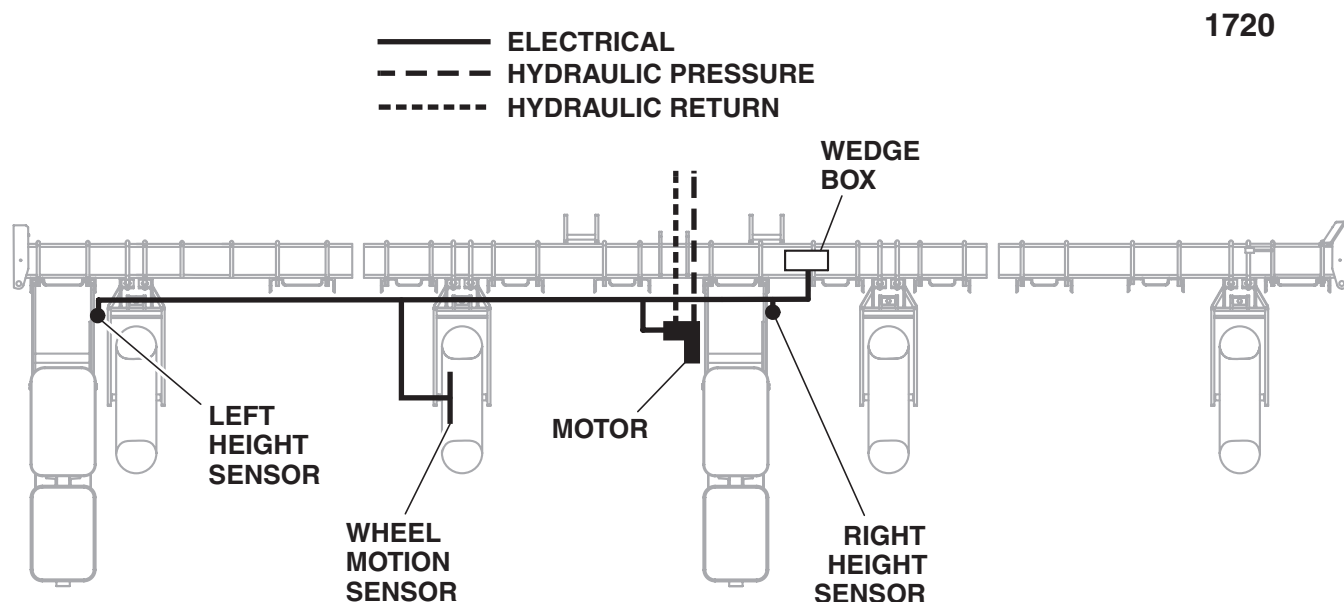
OUO1074,00001D9 -19-02MAY01-1/2



A51894 -19-21MAR03

OUO1074,00001D9 -19-02MAY01-2/2

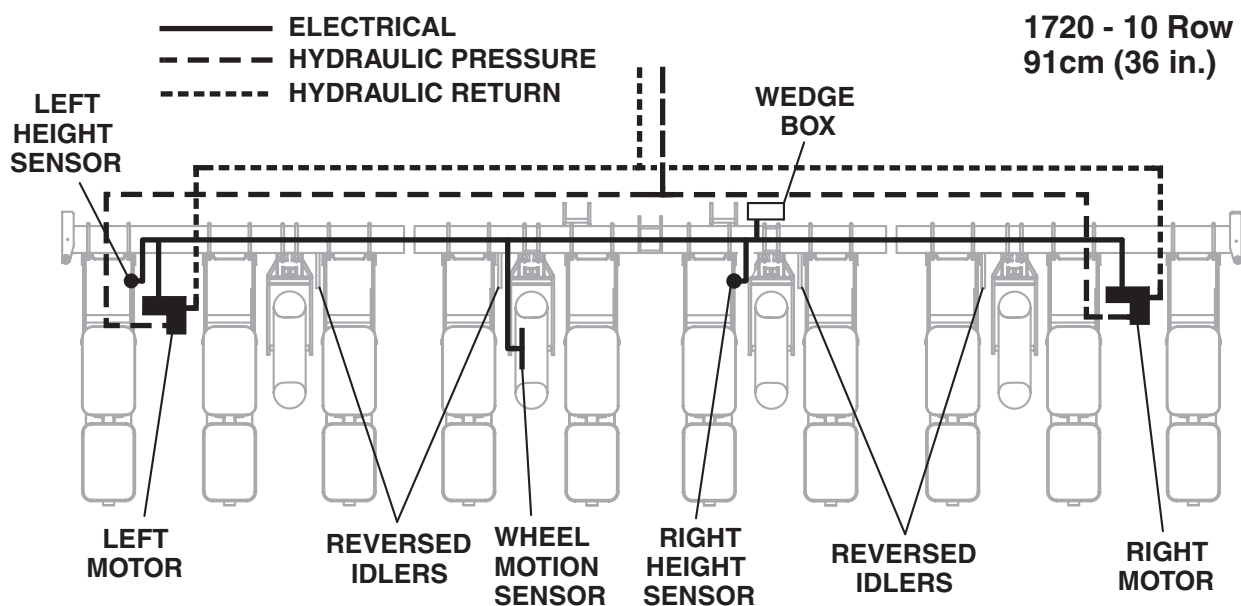
Variable Rate Drive Location Drawing—1720 Planter with Single Motor



A51898 -19-13MAR03

OOU1074,00001D5 -19-30APR01-1/1

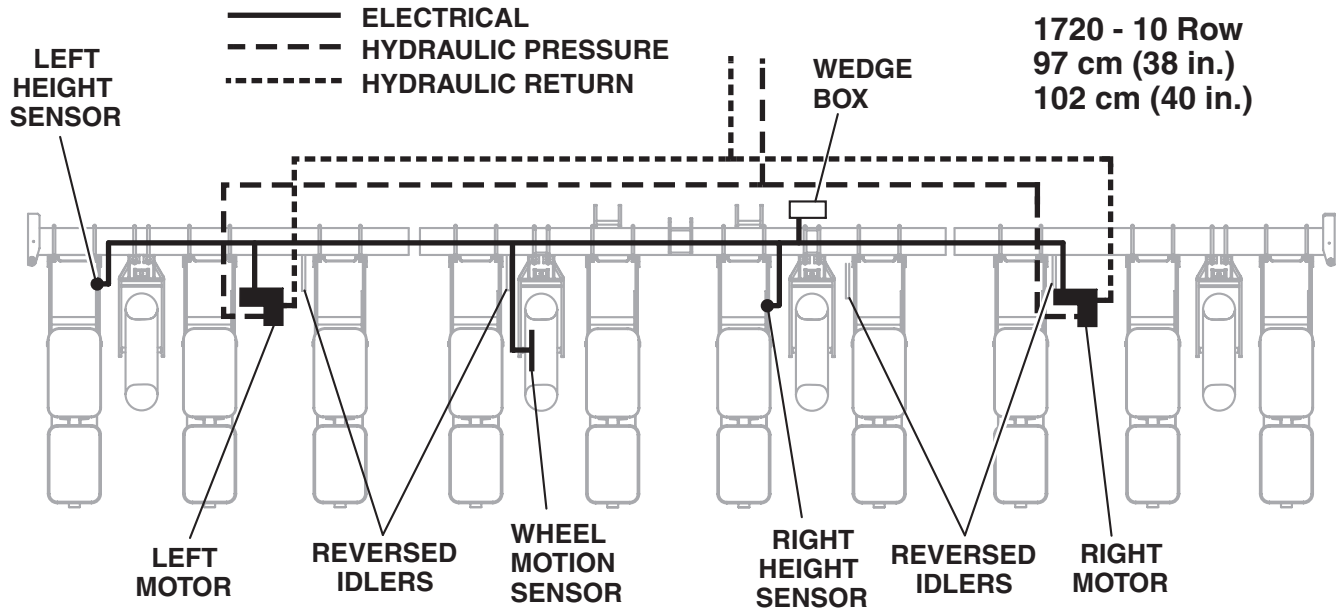
Variable Rate Drive Location Drawing—1720 10-Row and 12-Row Planters with Dual Motors



A51895 -19-21MAR03

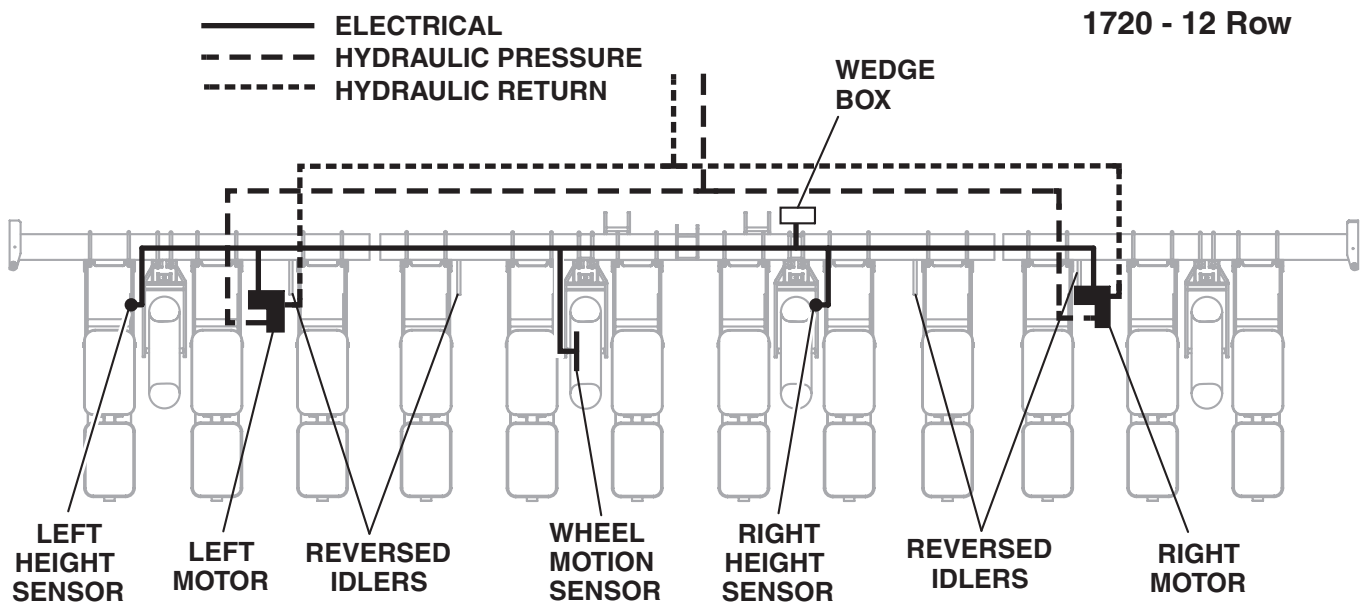
Continued on next page

OOU1074,00001E6 -19-06OCT03-1/3



A51896 -19-21MAR03

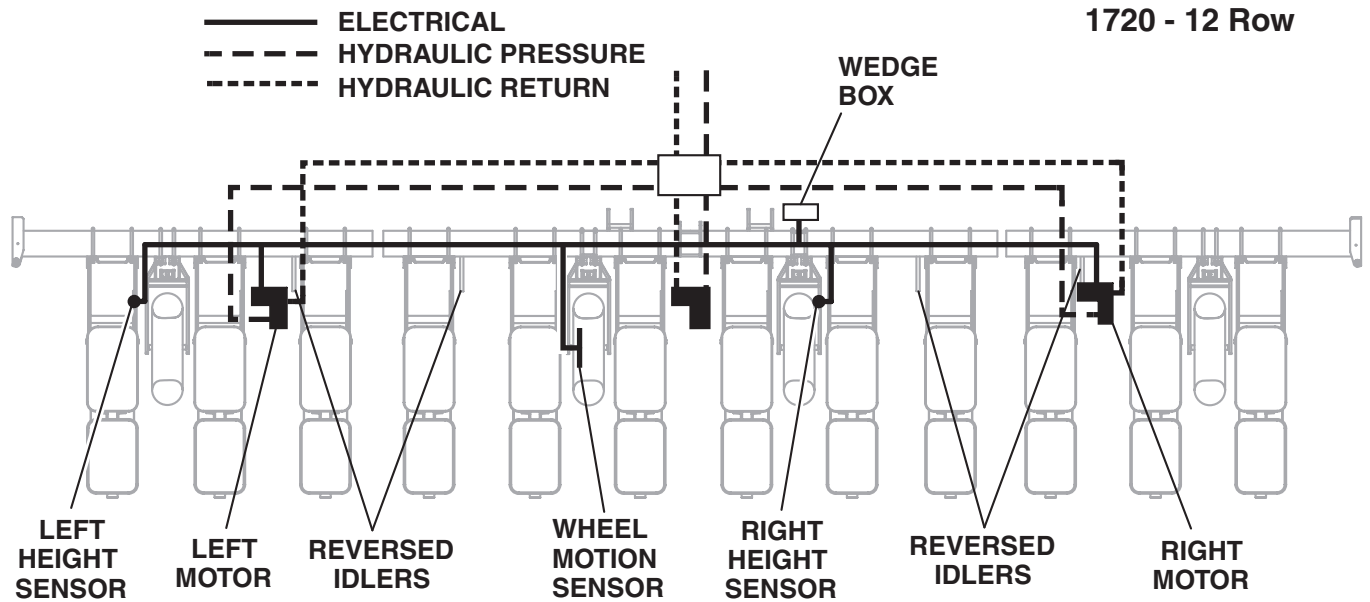
OUO1074,00001E6 -19-06OCT03-2/3



A51897 -19-21MAR03

OUO1074,00001E6 -19-06OCT03-3/3

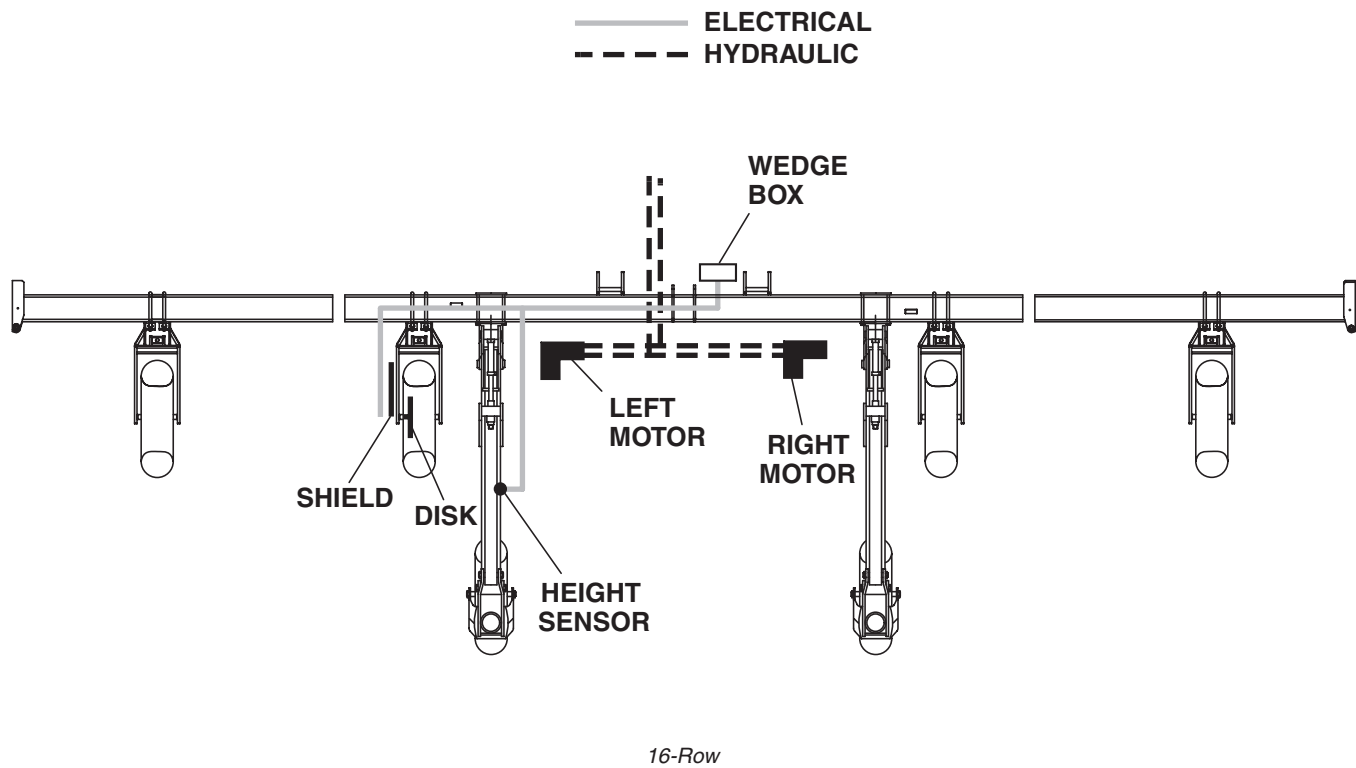
Variable Rate Drive Location Drawing—1720 12-Row Planters with Three Motors



A56213 -19-21APR05

OUO6074,0000DE6 -19-20APR05-1/1

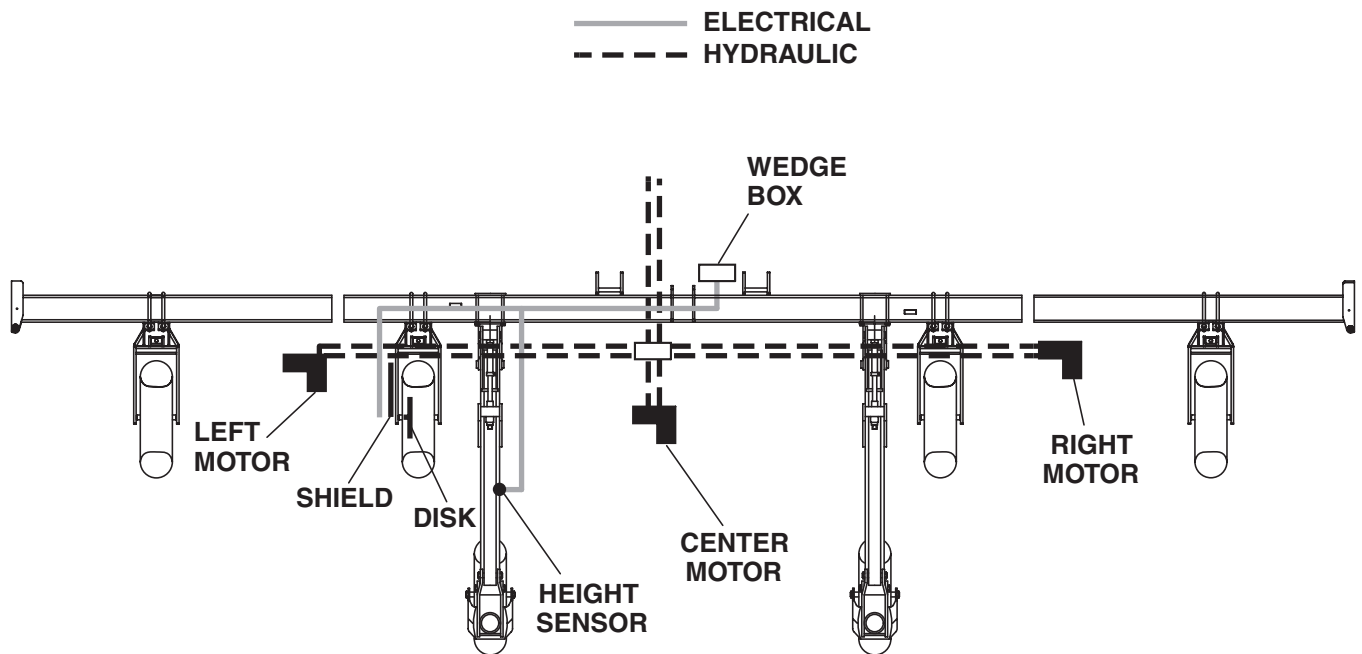
Variable Rate Drive Location Drawing—1720 16-Row Planter with Dual Motors



A47383 -19-21APR05

OUO1074,00001DA -19-02MAY01-1/1

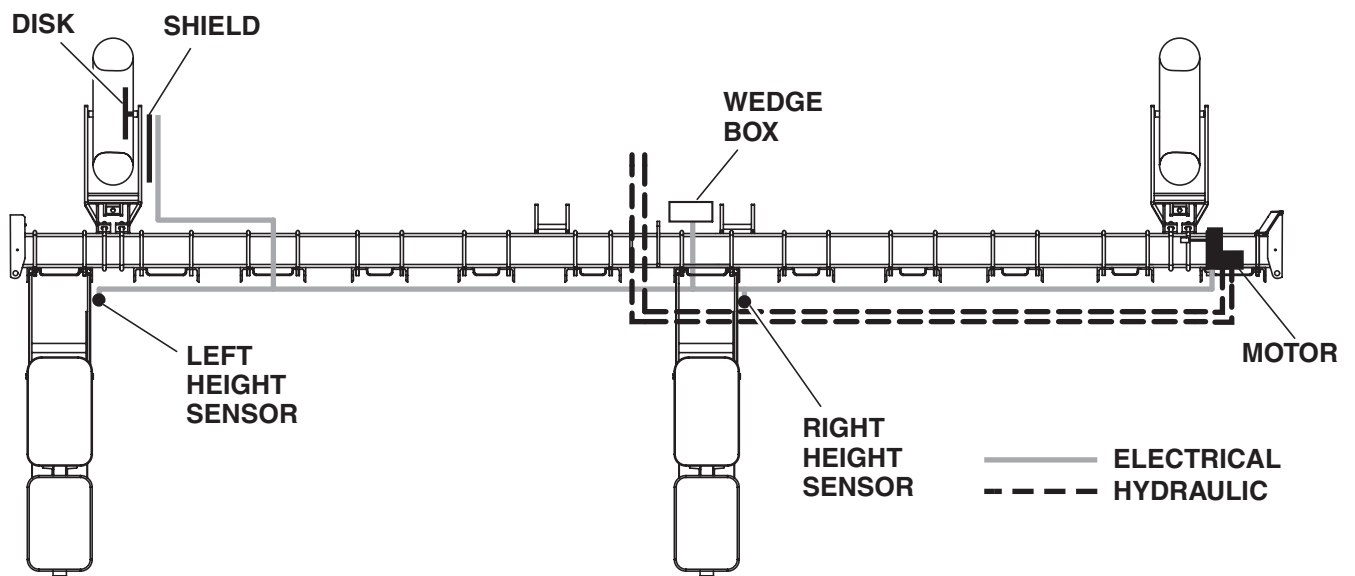
Variable Rate Drive Location Drawing—1720 16-Row Planter with Three Motors



OUO6074,0000DE4 -19-19APR05-1/1

A56193 -19-21APR05

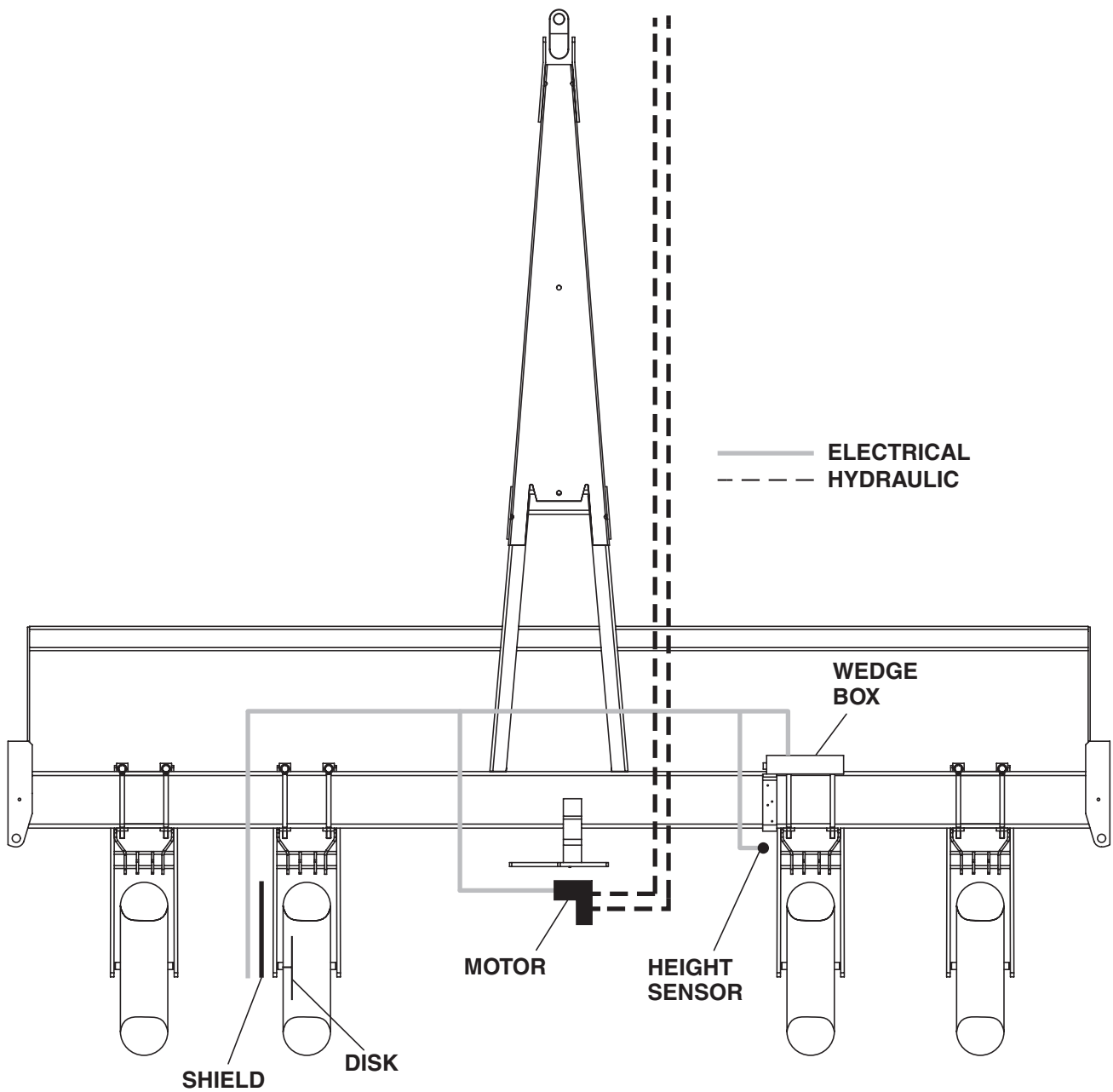
Variable Rate Drive Location Drawing—1730 Planter



OUO1074,00001D6 -19-30APR01-1/1

A47367 -19-25OCT01

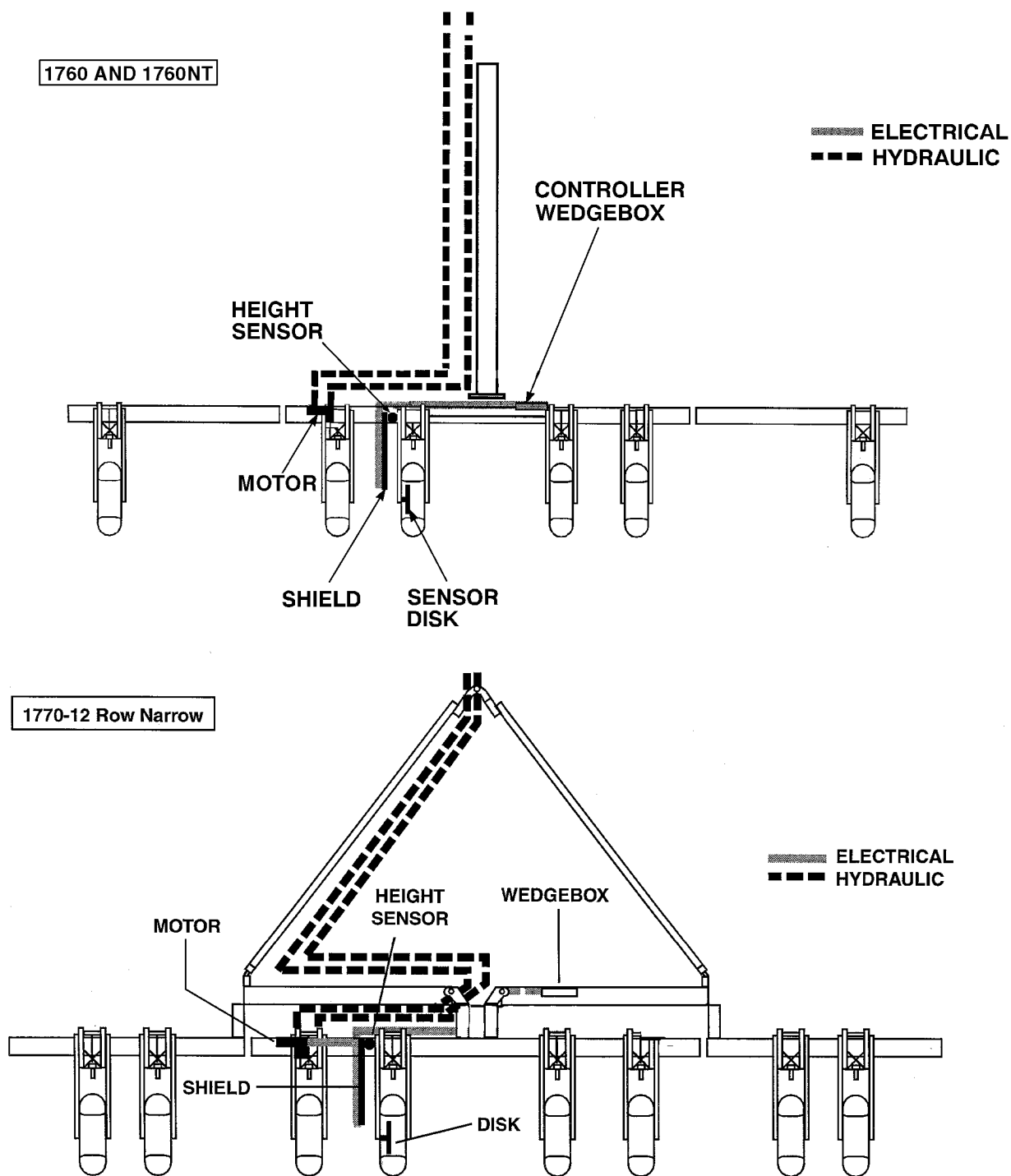
Variable Rate Drive Location Drawing—1750 Conservation Planter



A47374 -19-14MAY01

OUO1074.00001D7 -19-30APR01-1/1

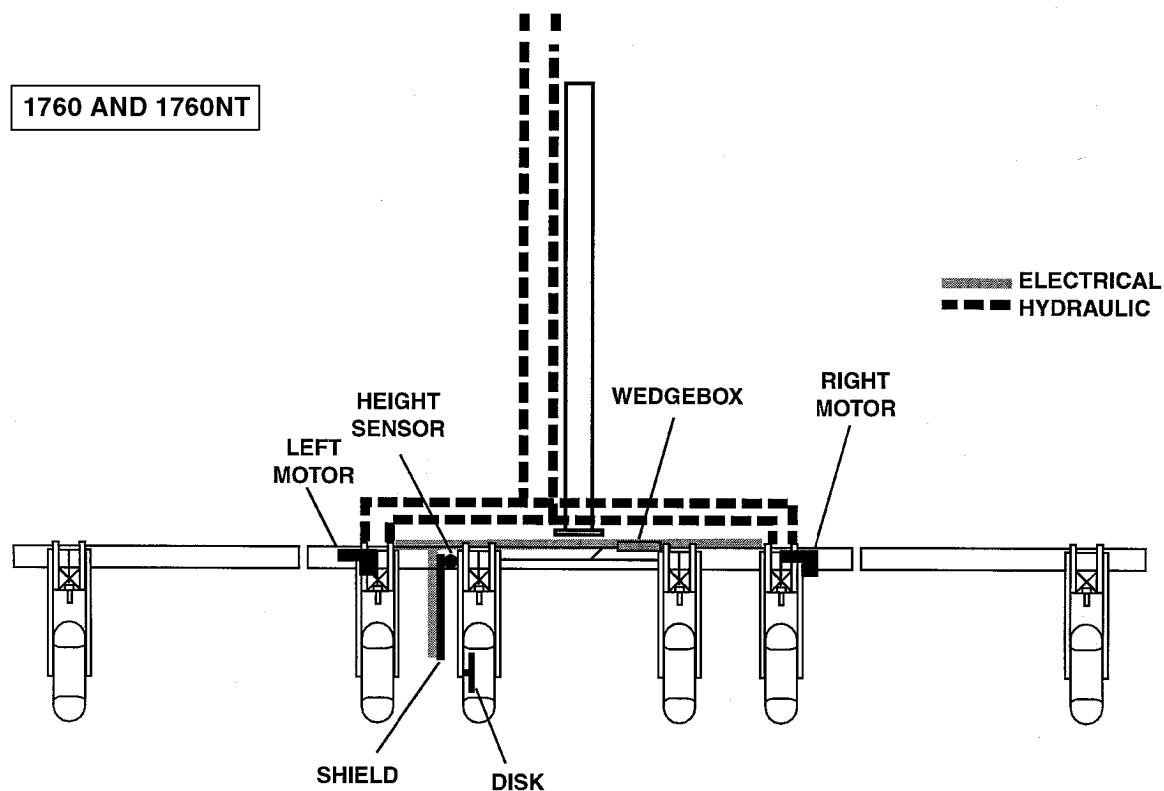
Variable Rate Drive Location Drawing—1760/1760NT and 1770 12-RN Planters with Single Motors



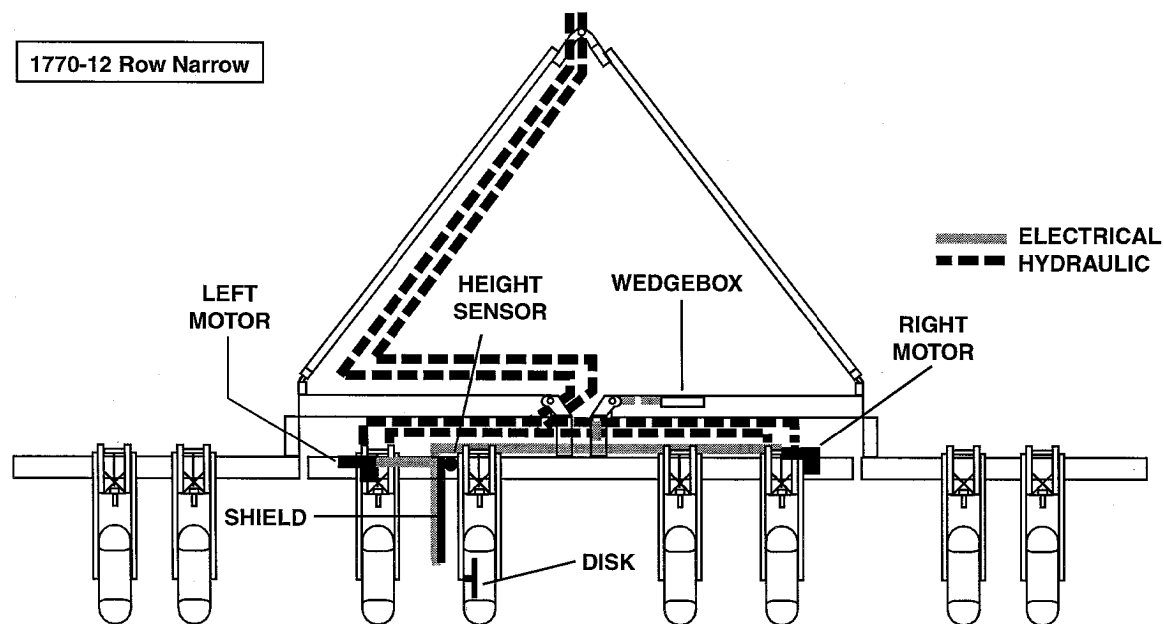
A47897 -19-12SEP01

Variable Rate Drive Location Drawing—1760 /1760NT and 1770 12-RN Planters with Dual Motors

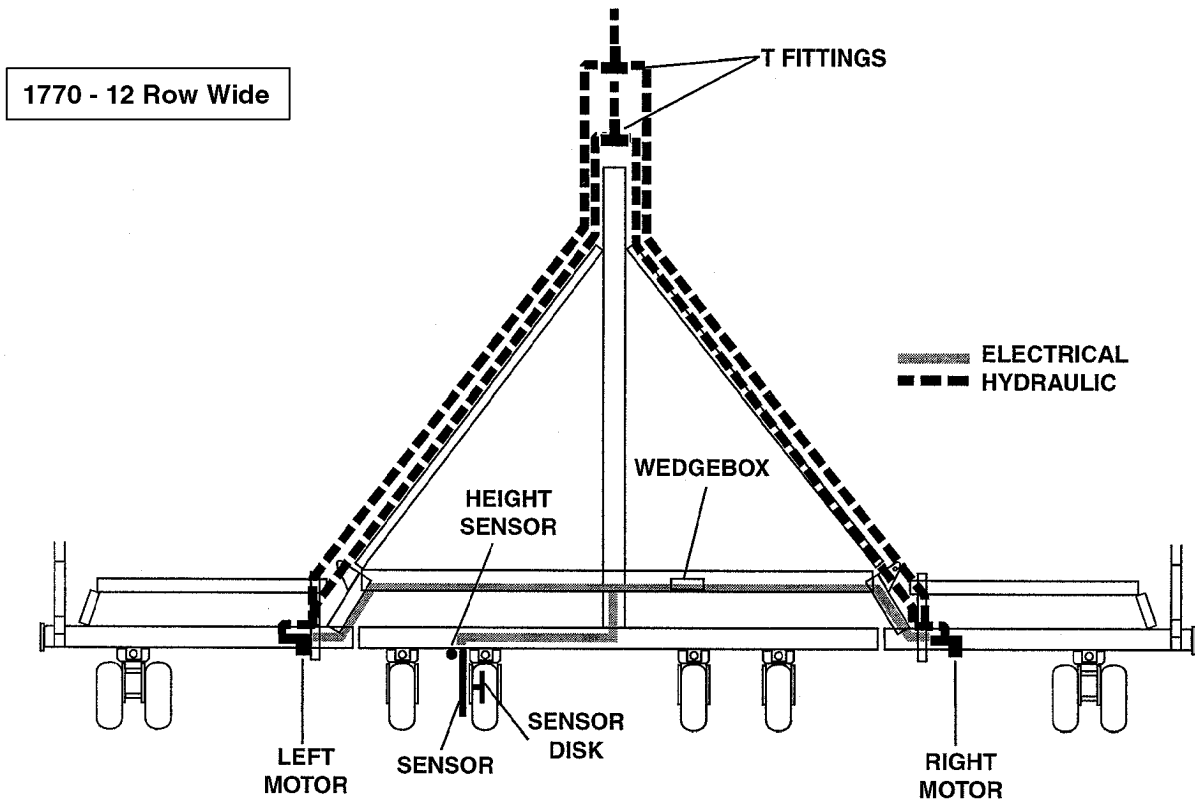
1760 AND 1760NT



1770-12 Row Narrow



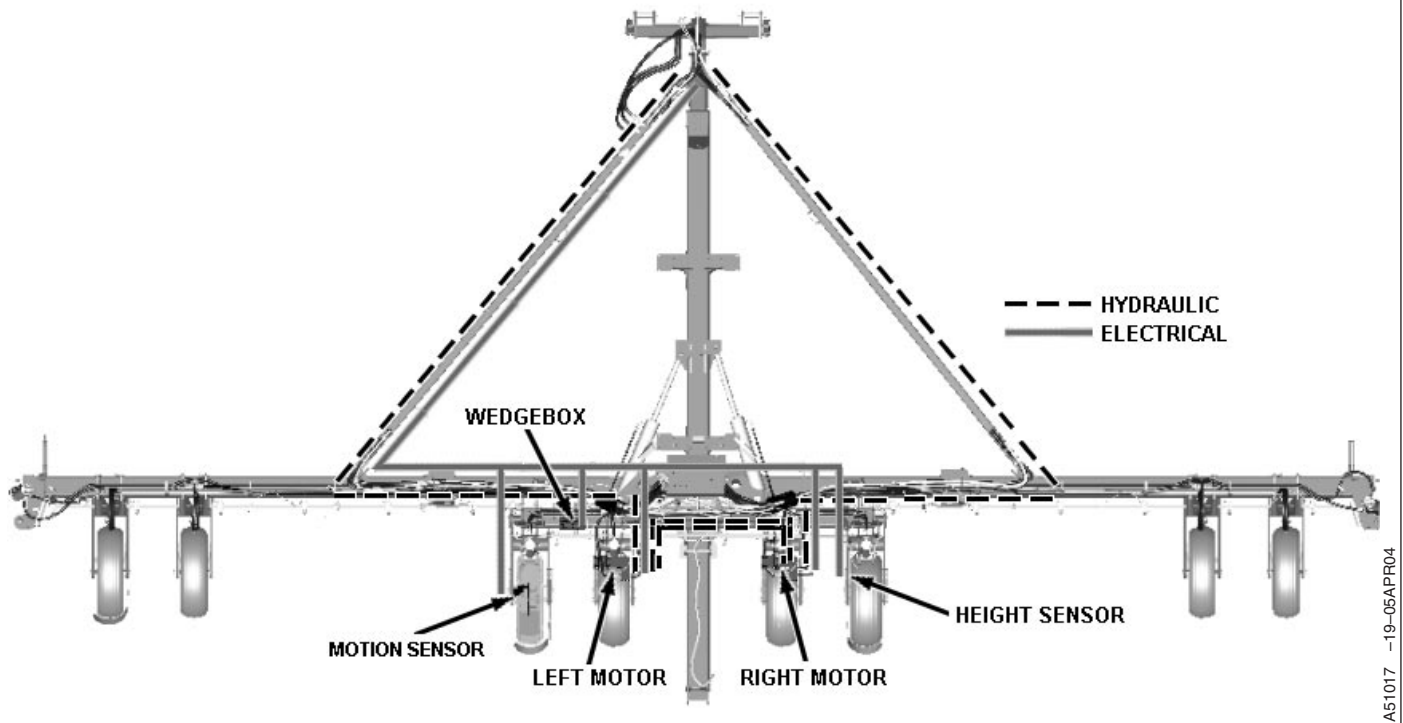
Variable Rate Drive Location Drawing—1770 12-RW



OUO6074,0000C0B -19-02APR04-1/1

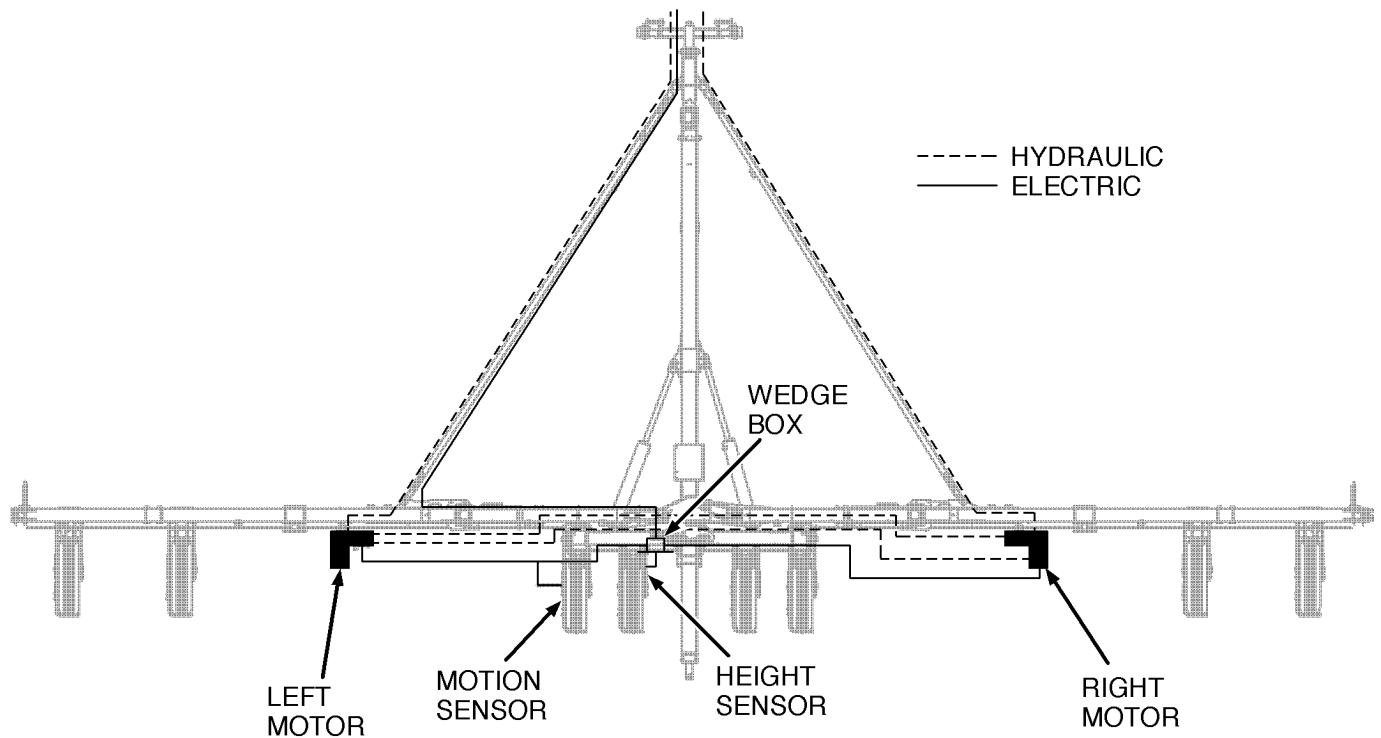
A54207 -19-05APR04

Variable Rate Drive Location Drawing—1770NT 12 Row and 16 Row



OUO6074,0000C09 -19-02APR04-1/1

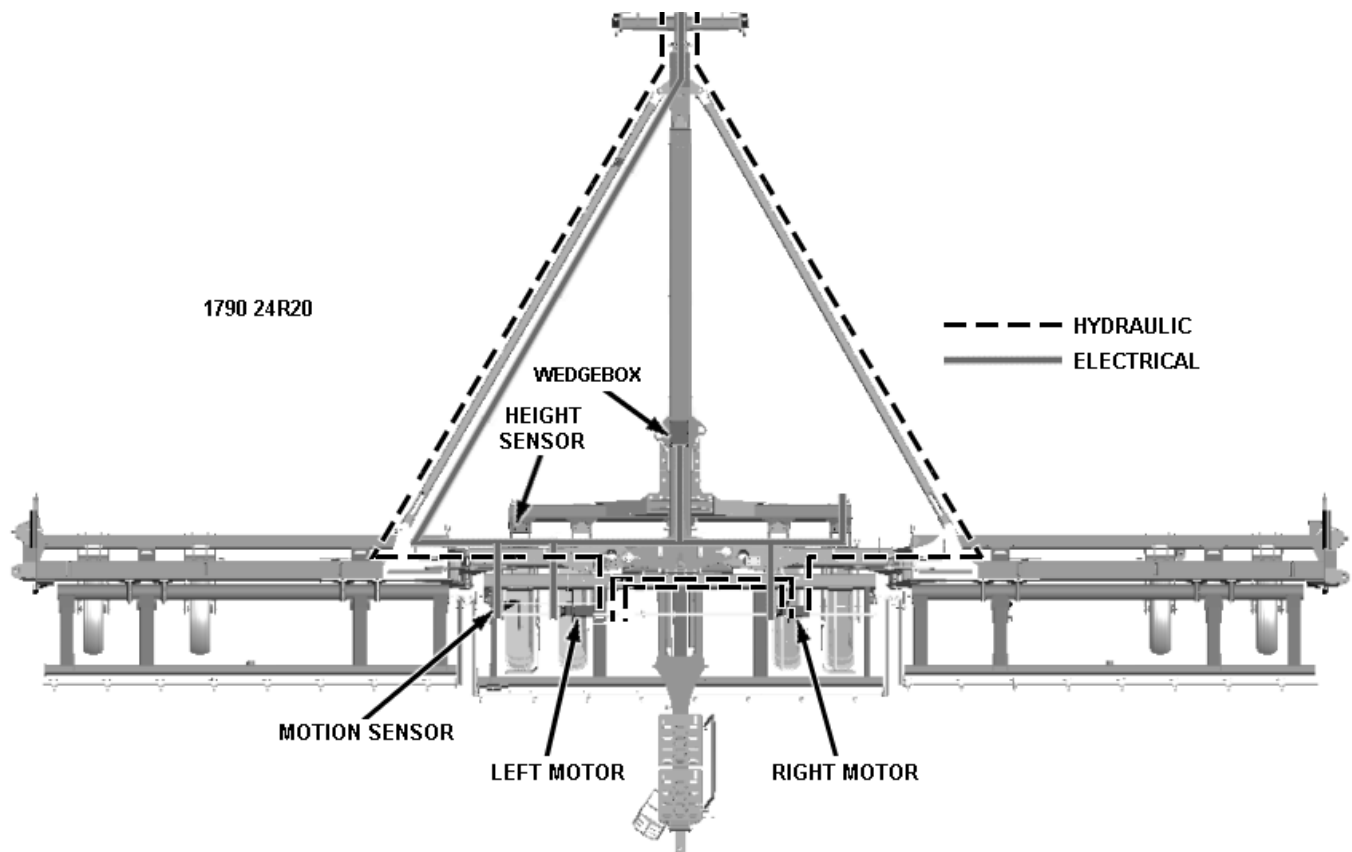
Variable Rate Drive Location Drawing—1770NT 24 Row



A54208 -19-07APR04

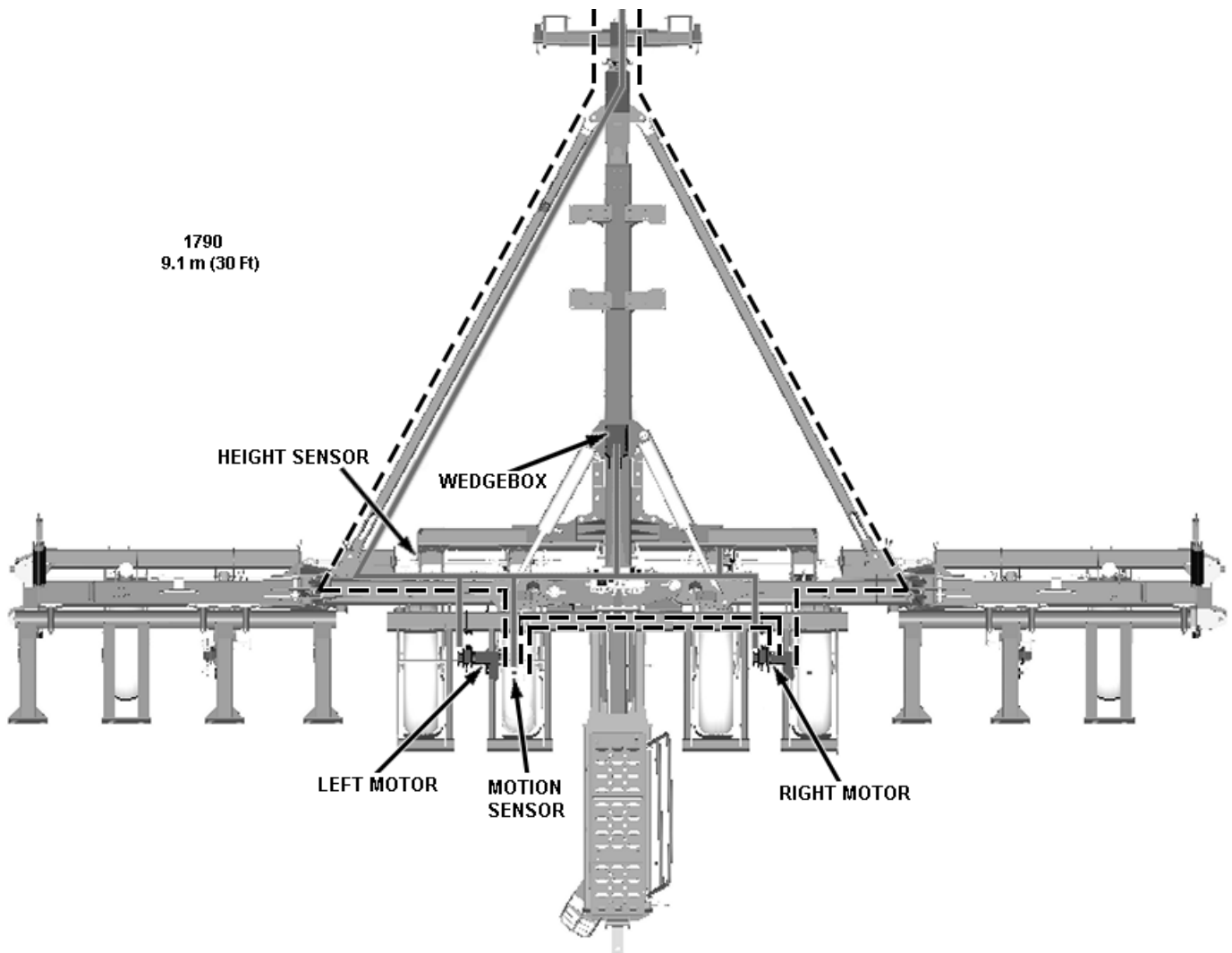
OUO6074,0000C0A -19-02APR04-1/1

Variable Rate Drive Location Drawing—1790 24R20



OUO6074,0000696 -19-08JUL03-1/1

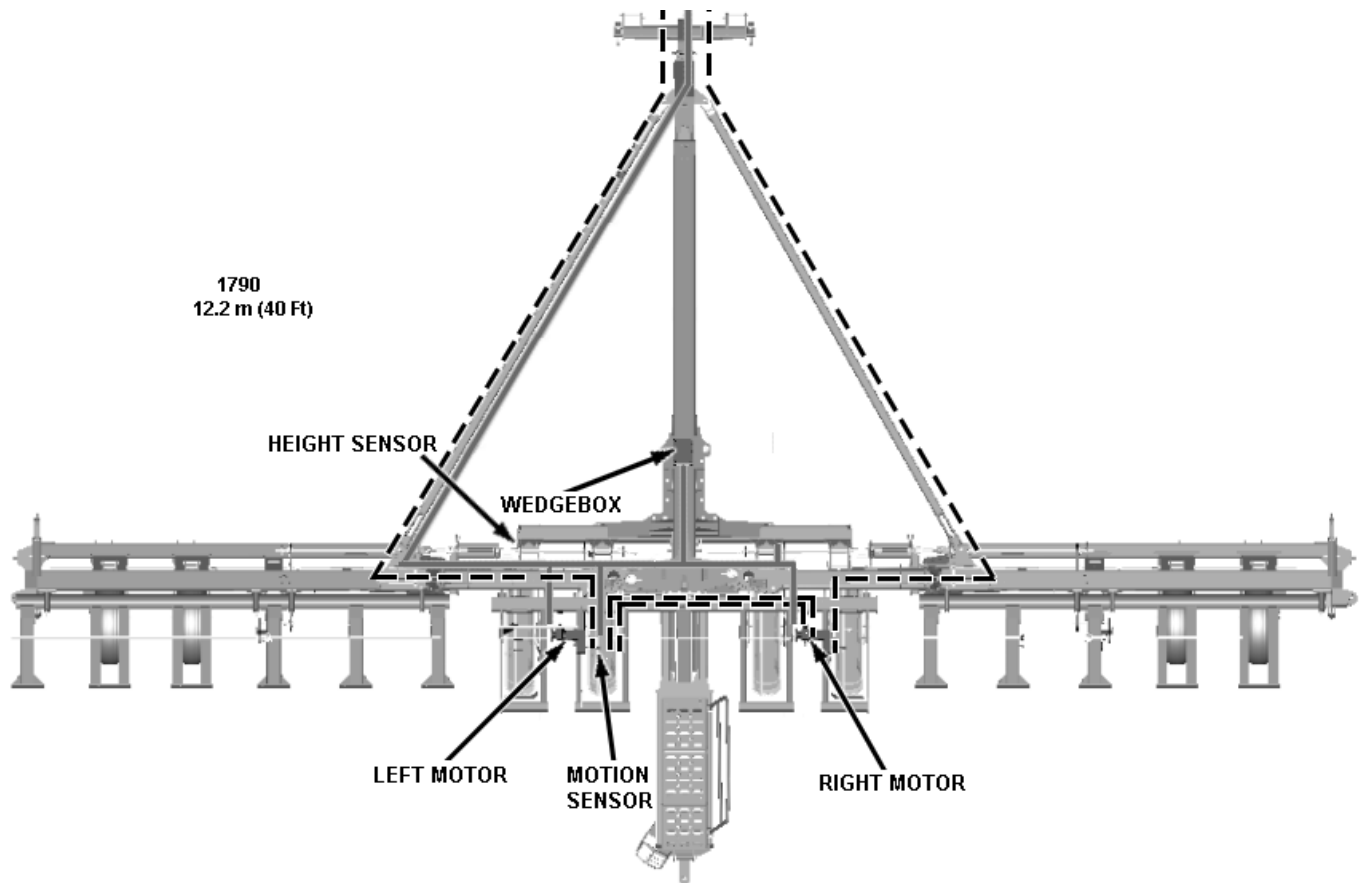
Variable Rate Drive Location Drawing—1790 9.1 m (30 Ft)



A51019 -19-04DEC02

OUO6074,0000698 -19-07NOV02-1/1

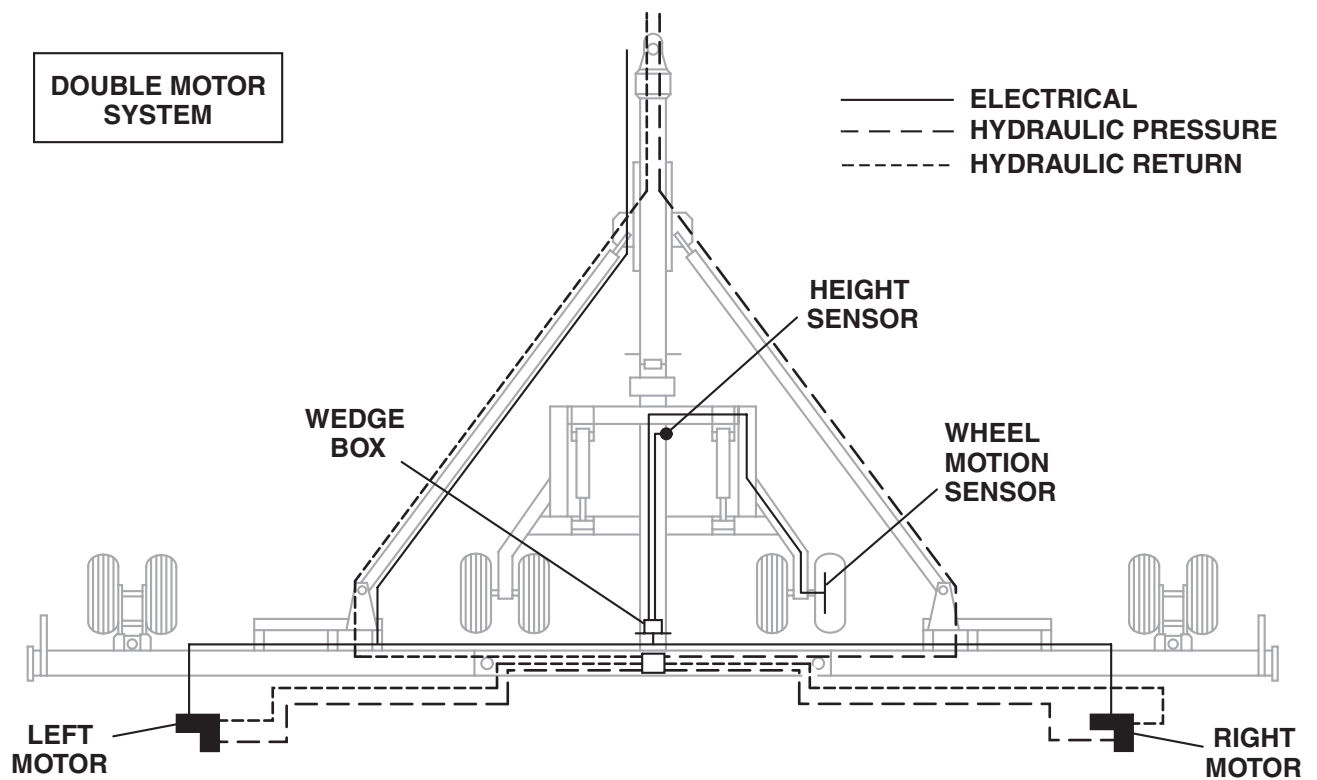
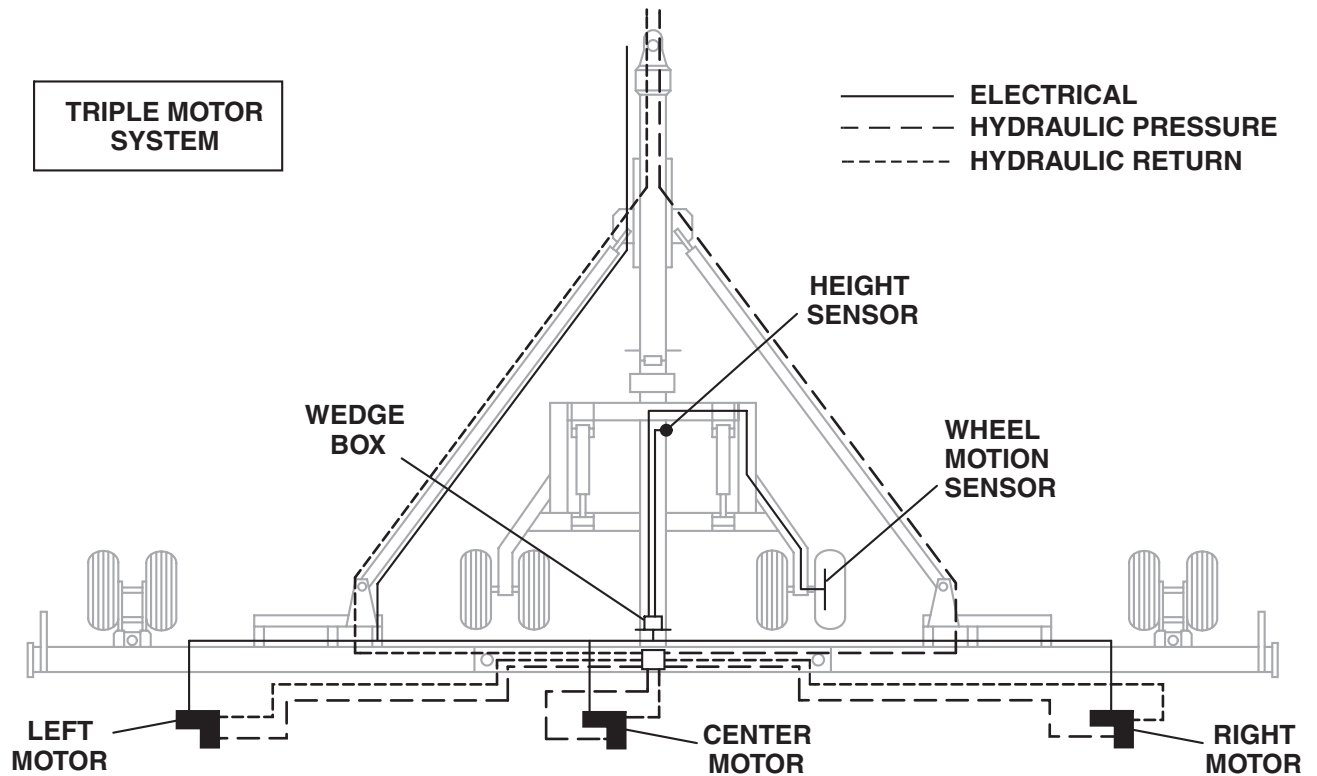
Variable Rate Drive Location Drawing—1790 12.2 m (40 Ft)



A51020 -19-04DEC02

OUC6074,0000697 -19-07NOV02-1/1

Variable Rate Drive Location Drawing—Deere/Bauer



A52128 -19-04APR03

Attaching and Detaching Variable Rate Drive

Use Your Tractor and Machine Operator's Manuals

Always refer to YOUR tractor and machine Operator's Manuals for specific attaching and detaching information.



TS190 -UN-17JAN89

OUC6074,0000580 -19-09AUG02-1/1

Making Proper Hose Connections



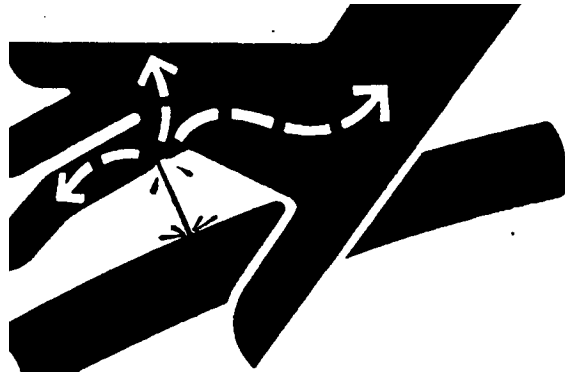
CAUTION: Escaping fluid under pressure can penetrate the skin, causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours for gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



CAUTION: Hydraulic hoses can fail due to physical damage, kinks, age and exposure. Check hoses regularly. Replace damaged hoses.

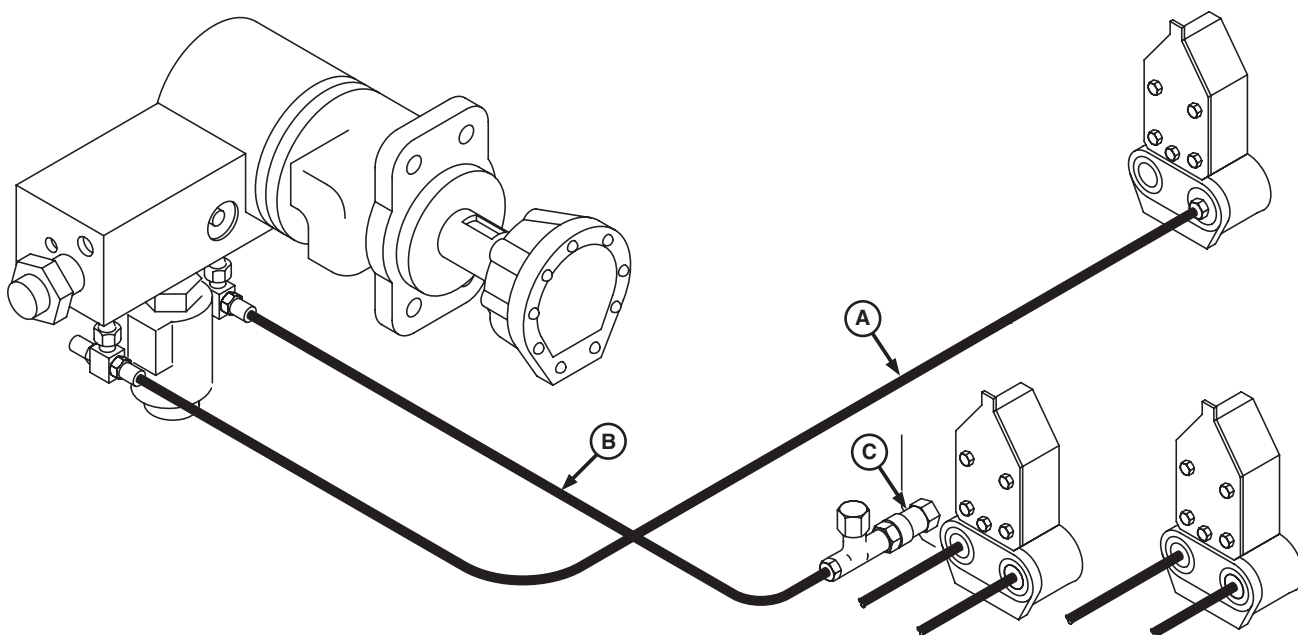
IMPORTANT: All hydraulic couplers must be clear of debris, dust, and sand. Use protective caps on fluid openings until ready to make connection. Foreign material can damage the hydraulic system.



X9811 -UN-23AUG88

OUC6074,0000581 -19-09AUG02-1/1

30—40 Series Tractors Without Power Beyond—Single Motor



**A—Variable Drive Pressure
Hose**

B—Variable Drive Return Hose

C—Auxiliary Return Port

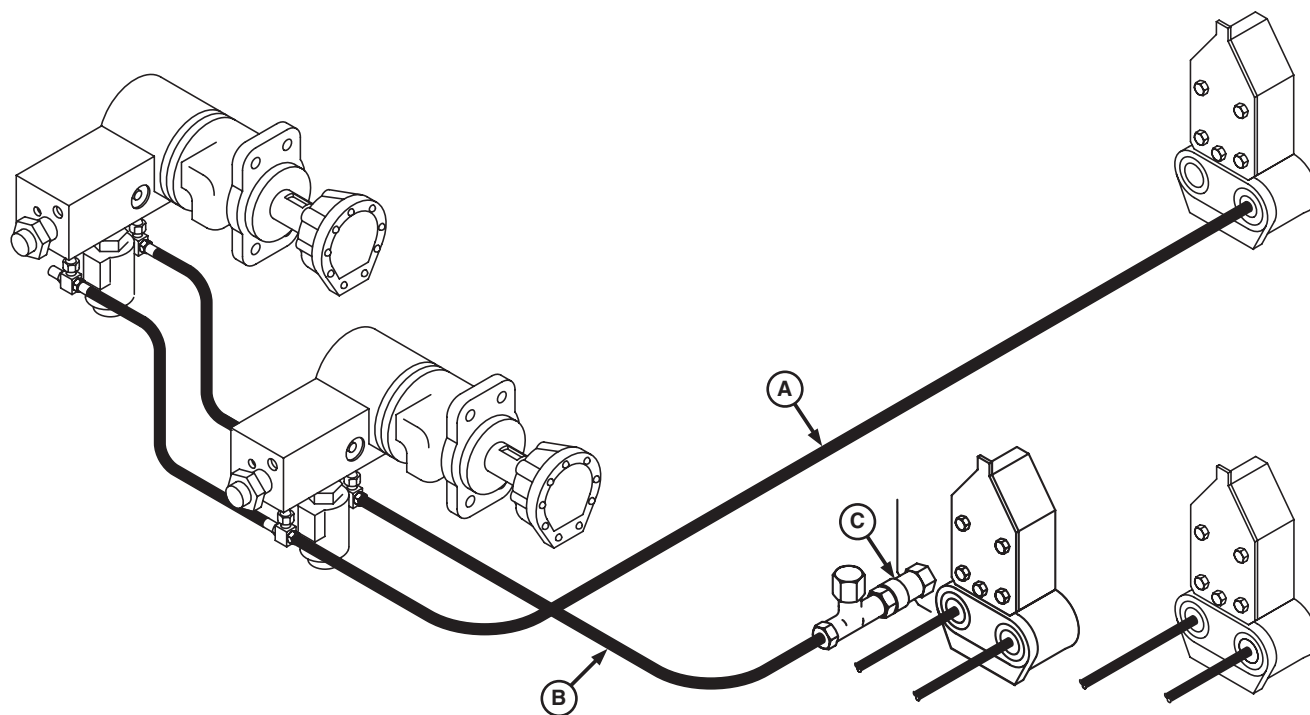
1. Attach variable drive pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.

2. Attach variable drive return hose (B) into auxiliary return port (C).

OUO6074,0000582 -19-09AUG02-1/1

A48279 -UN-12NOV01

30—40 Series Tractors Without Power Beyond—Dual Motor



A—Variable Drive Pressure
Hose

B—Variable Drive Return Hose

C—Auxiliary Return Port

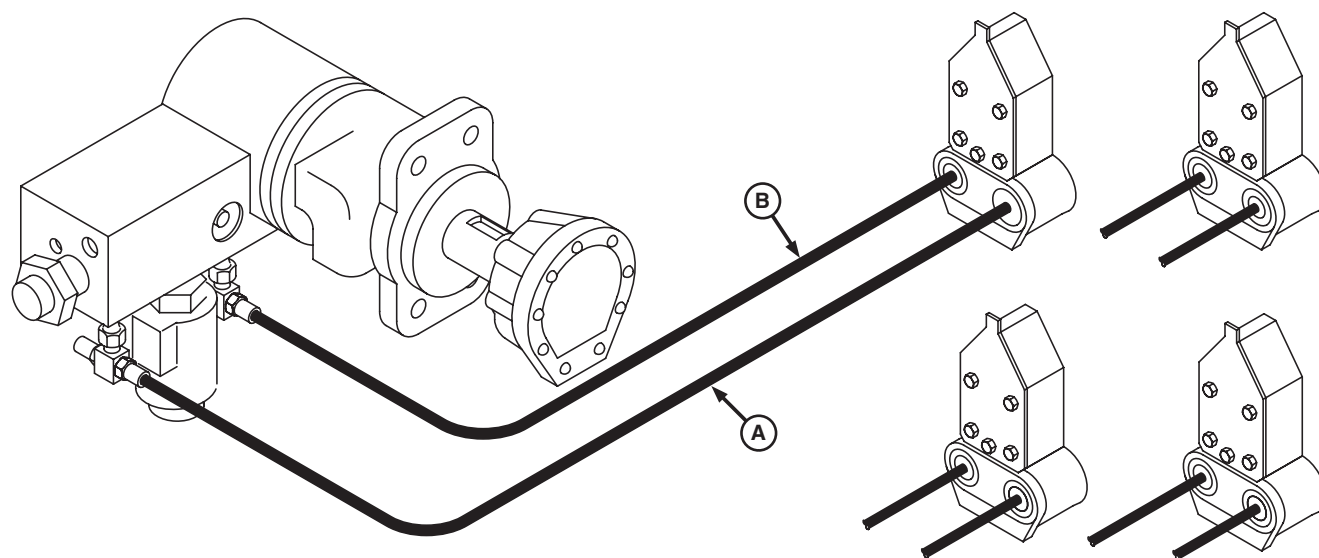
1. Attach variable drive pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.

2. Attach variable drive return hose (B) into auxiliary return port (C).

OUC6074,0000583 -19-09AUG02-1/1

A47217 -UN-26MAR01

50—70 Series Tractors Without Power Beyond—Single Motor



**A—Variable Drive Pressure
Hose**

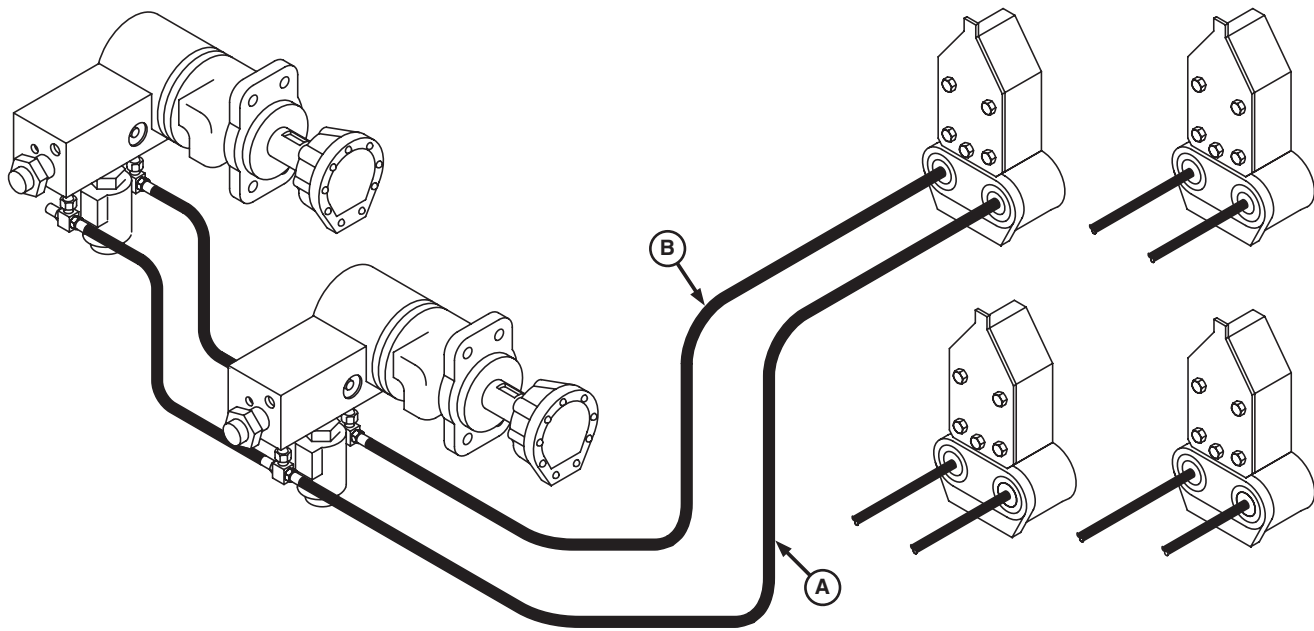
B—Variable Drive Return Hose

1. Attach variable drive pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.
2. Attach variable drive return hose (B) from variable rate motor to left-hand (cylinder extend) side of SCV.

OUO6074,0000584 -19-09AUG02-1/1

A47215 -UN-26MAR01

50—70 Series Tractors Without Power Beyond—Dual Motor



A—Variable Drive Pressure
Hose

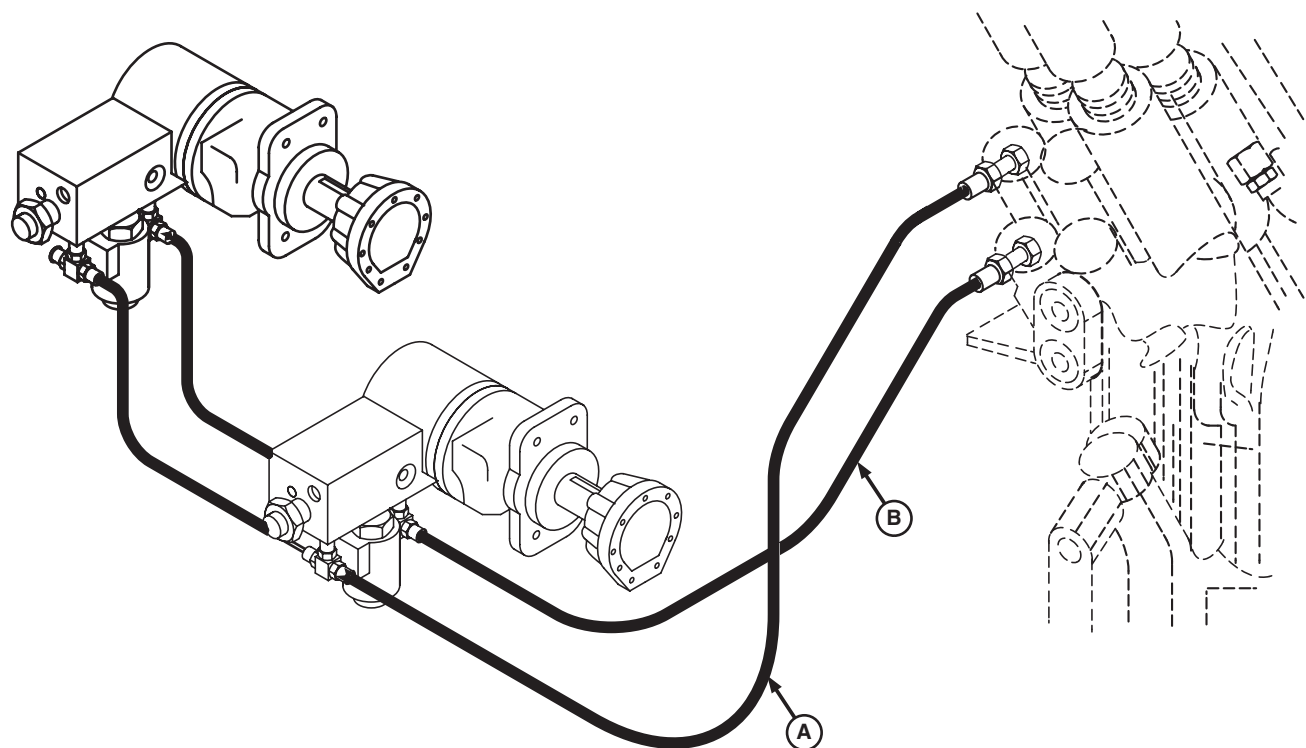
B—Variable Drive Return Hose

1. Attach variable drive pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.
2. Attach variable drive return hose (B) from variable rate motor to left-hand (cylinder extend) side of SCV.

A47216 —UN—26MAR01

OUC6074,0000585 —19—09AUG02—1/1

6000 Series Tractors Without Power Beyond—Single Motor



A—Variable Drive Pressure
Hose

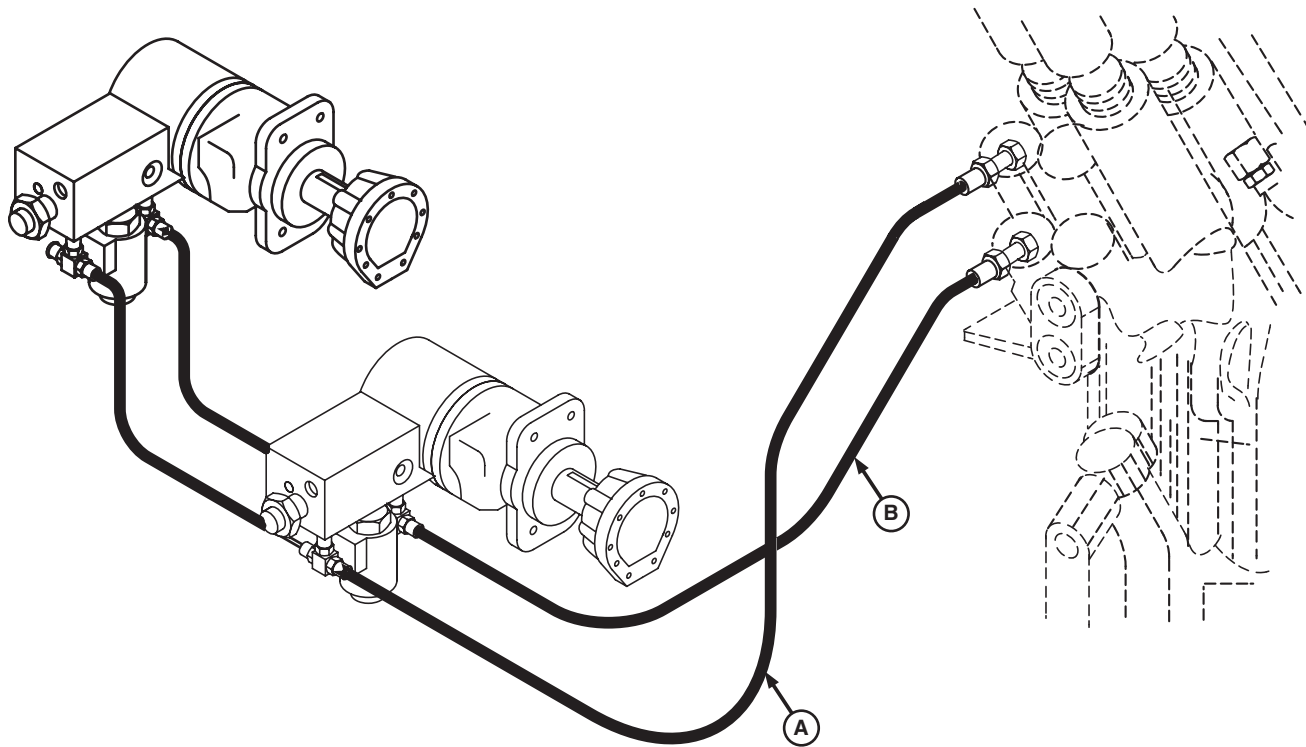
B—Variable Drive Return Hose

1. Attach variable drive pressure hose (A) from variable rate motor to top (cylinder retract) port of SCV.
2. Attach variable drive return hose (B) from variable rate motor to bottom (cylinder extend) port of SCV.

OUC6074,0000586 -19-09AUG02-1/1

A47212 -UN-26MAR01

6000 Series Tractors Without Power Beyond—Dual Motor



A—Variable Drive Pressure
Hose

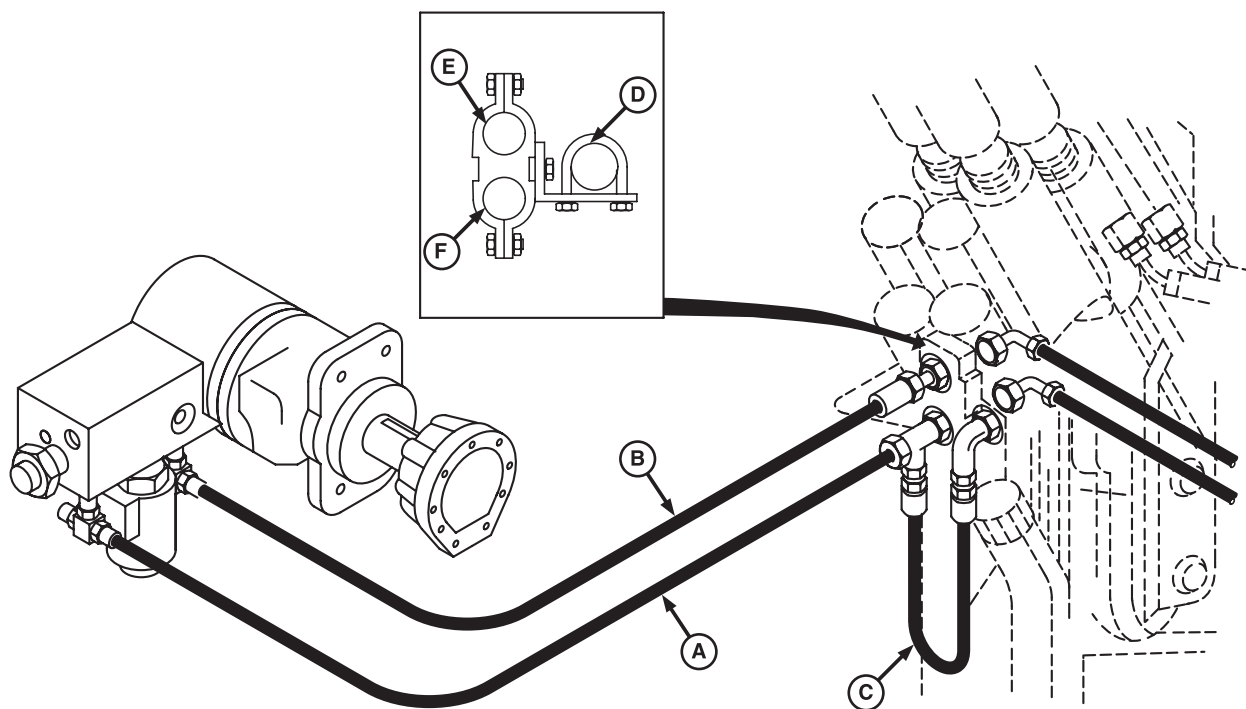
B—Variable Drive Return Hose

1. Attach pressure hose (A) from variable rate motor to top (cylinder retract) port of SCV.
2. Attach return hose (B) from variable rate motor to bottom (cylinder extend) port of SCV.

OUC6074,0000587 -19-09AUG02-1/1

A47213 -UN-26MAR01

6000 Series Tractors With Power Beyond Load Sense—Single Motor



A—Variable Drive Pressure
Hose
B—Variable Drive Return Hose

C—Jumper Hose
D—Power Beyond Load
Sensing Port

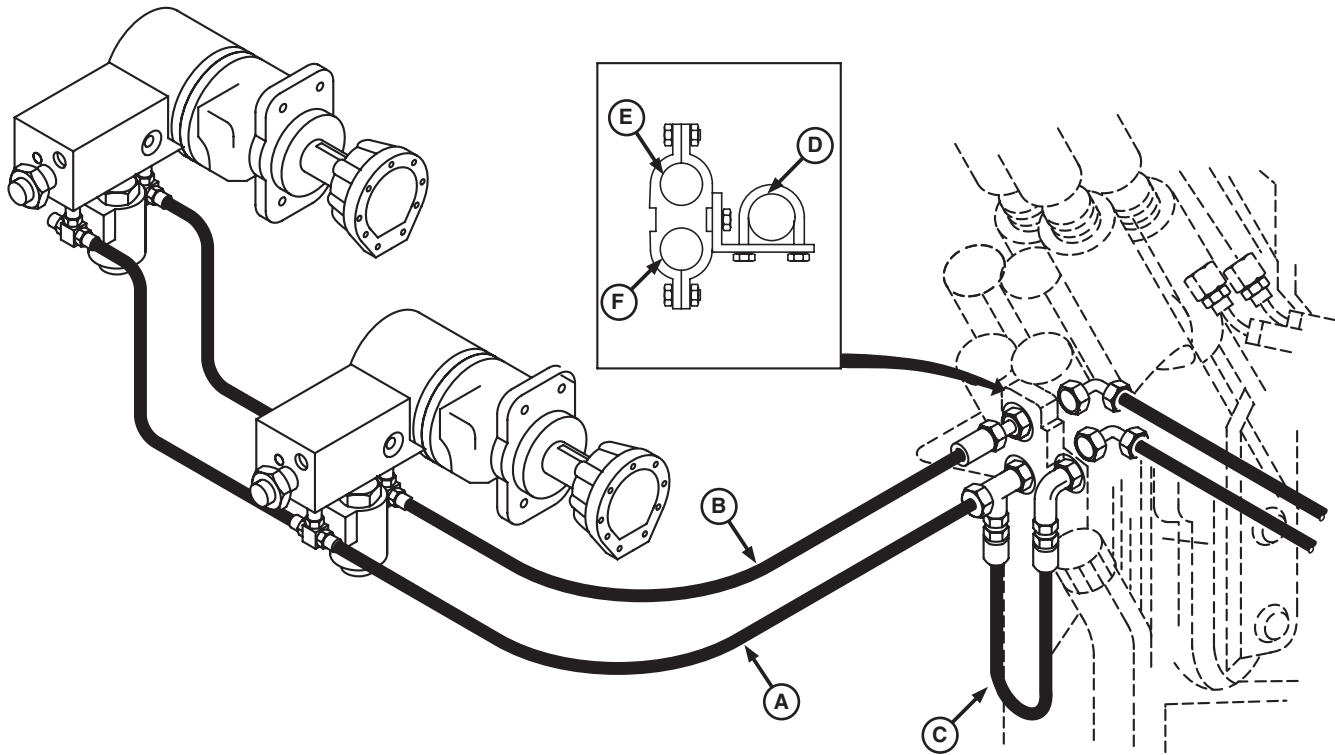
E—Power Beyond Return Port F—Power Beyond Pressure
Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (F).
2. Attach variable drive return hose (B) to power beyond return port (E).
3. Attach jumper hose (C) to power beyond load sensing port (D) and pressure hose tee fitting.

OUO6074,0000588 -19-09AUG02-1/1

A47210 -UN-26MAR01

6000 Series Tractors With Power Beyond Load Sense—Dual Motor



A—Variable Drive Pressure
Hose
B—Variable Drive Return Hose

C—Jumper Hose
D—Power Beyond Load
Sensing Port

E—Power Beyond Return Port

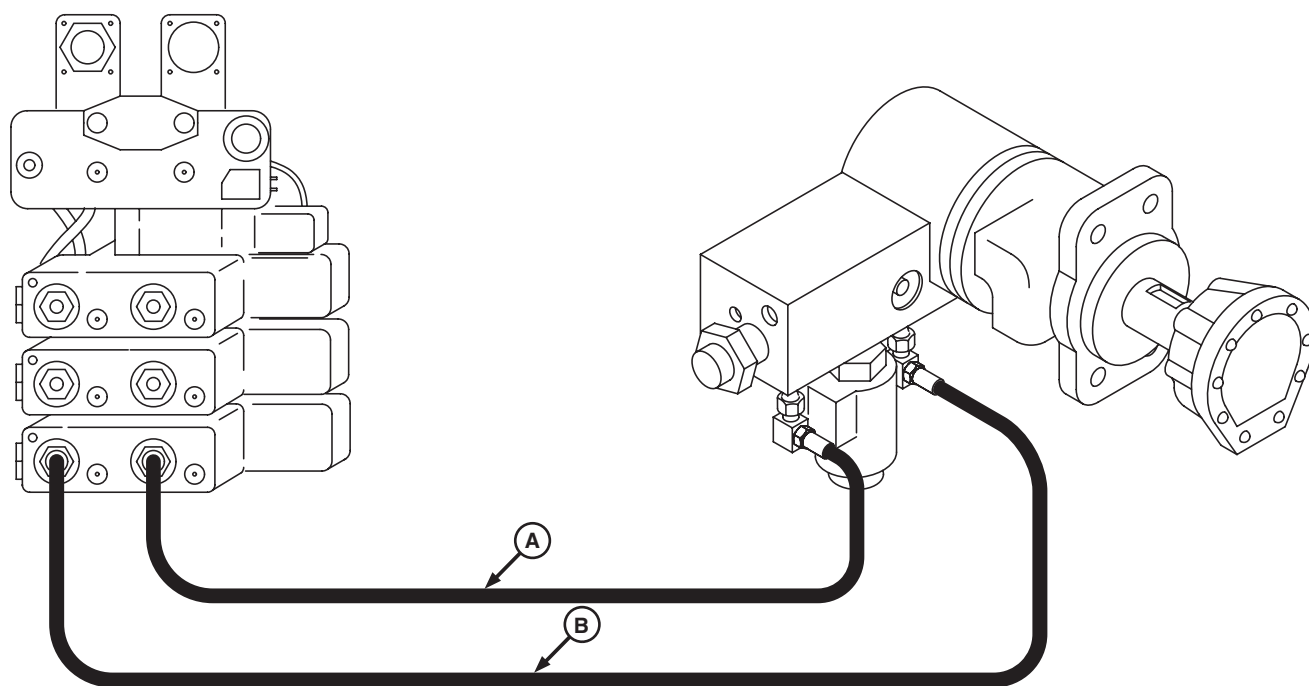
F—Power Beyond Pressure
Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (F).
2. Attach variable drive return hose (B) to power beyond return port (E).
3. Attach jumper hose (C) to power beyond load sensing port (D) and pressure hose tee fitting.

OUO6074,0000589 -19-09AUG02-1/1

A47211 -JUN-26MAR01

7000, 8000, 9000 Series Tractors Without Power Beyond—Single Motor



A—Variable Drive Pressure
Hose

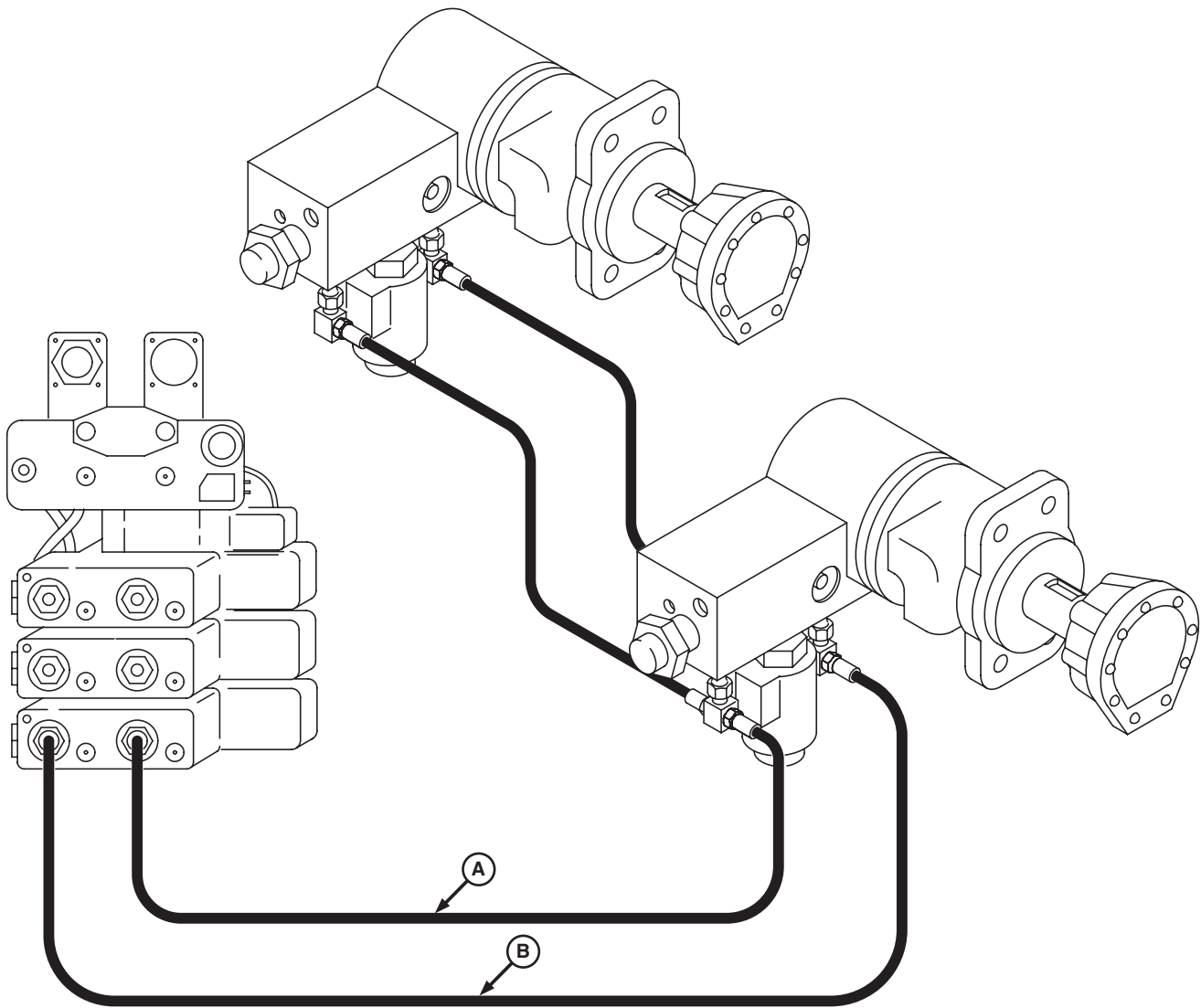
B—Variable Drive Return Hose

1. Attach variable drive pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.
2. Attach variable drive return hose (B) from variable rate motor to left-hand (cylinder extend) side of SCV.

A46895 -UN-14NOV00

OUC6074,000058A -19-09AUG02-1/1

7000, 8000, 9000 Series Tractors Without Power Beyond—Multiple Motor



A—Variable Drive Pressure
Hose

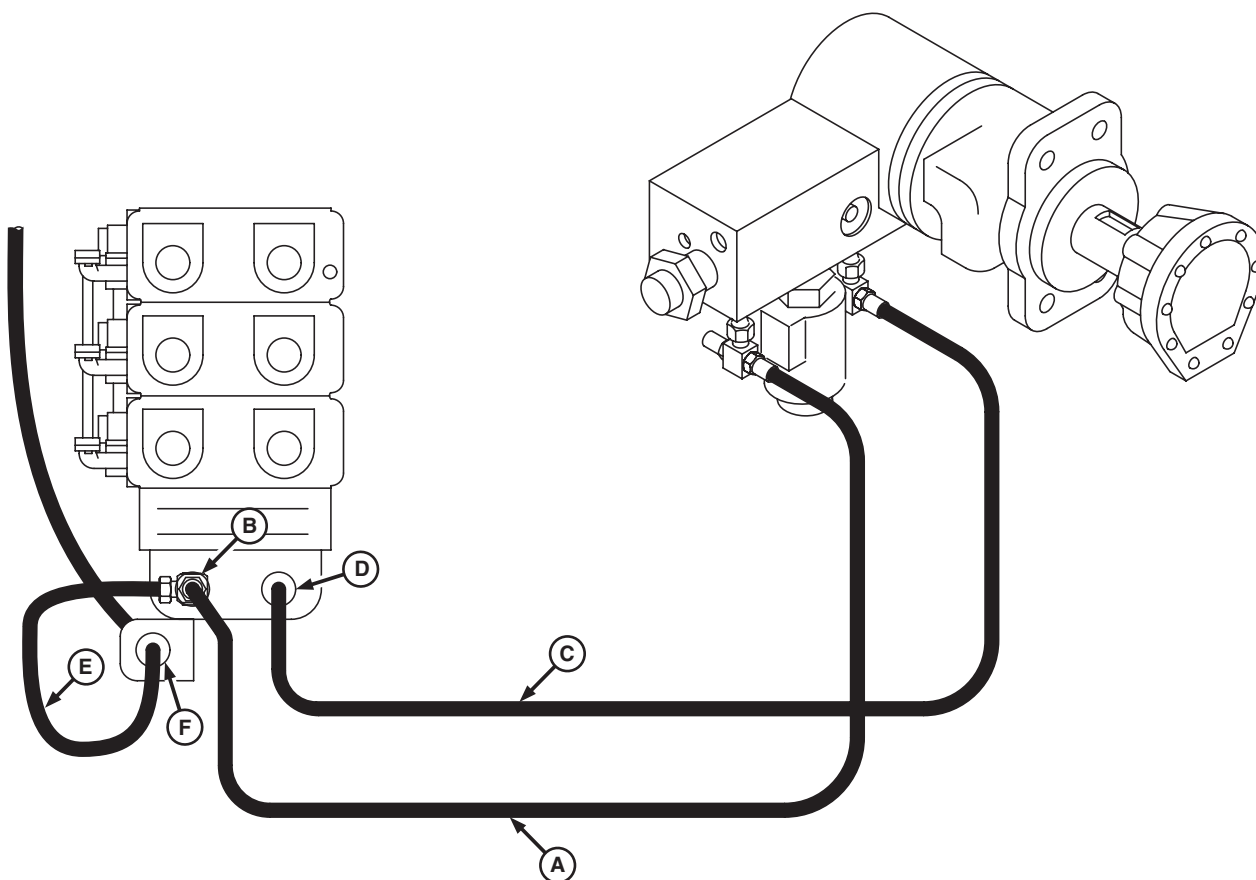
B—Variable Drive Return Hose

1. Attach pressure hose (A) from variable rate motor to right-hand (cylinder retract) side of SCV.
2. Attach return hose (B) from variable rate motor to left-hand (cylinder extend) side of SCV.

A46896 -UN-14NOV00

OUO6074,000058B -19-09AUG02-1/1

7000 Series Tractors With Power Beyond Load Sense—Single Motor



A—Variable Drive Pressure Hose
B—Power Beyond Pressure Port

C—Variable Drive Return Hose
D—Power Beyond Return Port

E—Jumper Hose

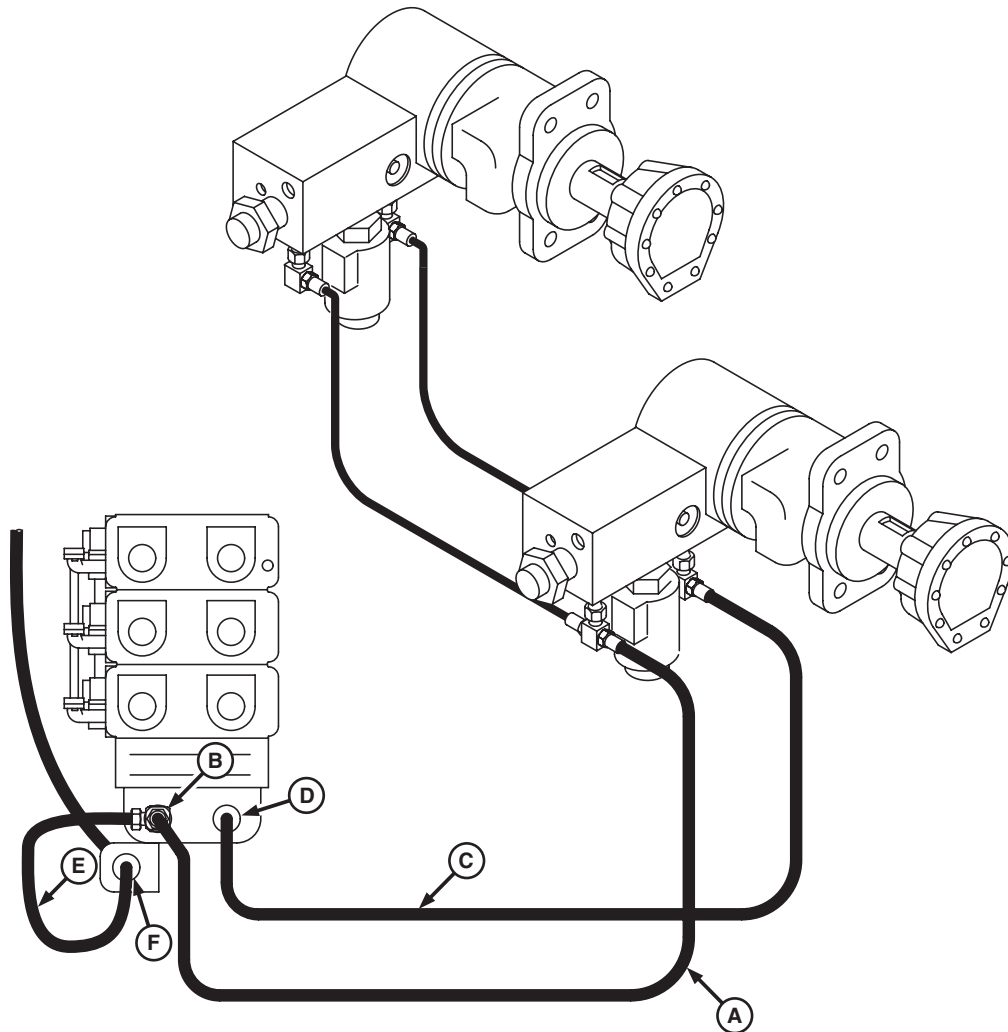
F—Power Beyond Load Sense Port

IMPORTANT: Power beyond can not be used on 7000 series when attached to a 1770NT with CCS, because CCS fan is routed to motor return. Do not “T” other functions to CCS fan hoses or motor seal damage will occur.

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B) on tractor SCV.
2. Attach variable drive return hose (C) to power beyond return port (D).
3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

A46897 -UN-14NOV00

7000 Series Tractors With Power Beyond Load Sense—Dual Motor



A—Variable Drive Pressure
Hose
B—Power Beyond Pressure
Port

C—Return Hose
D—Power Beyond Return Port

E—Jumper Hose

F—Power Beyond Load Sense
Port

IMPORTANT: Power beyond can not be used on 7000 series when attached to a 1770NT with CCS, because CCS fan is routed to motor return. Do not “T” other functions to CCS fan hoses or motor seal damage will occur.

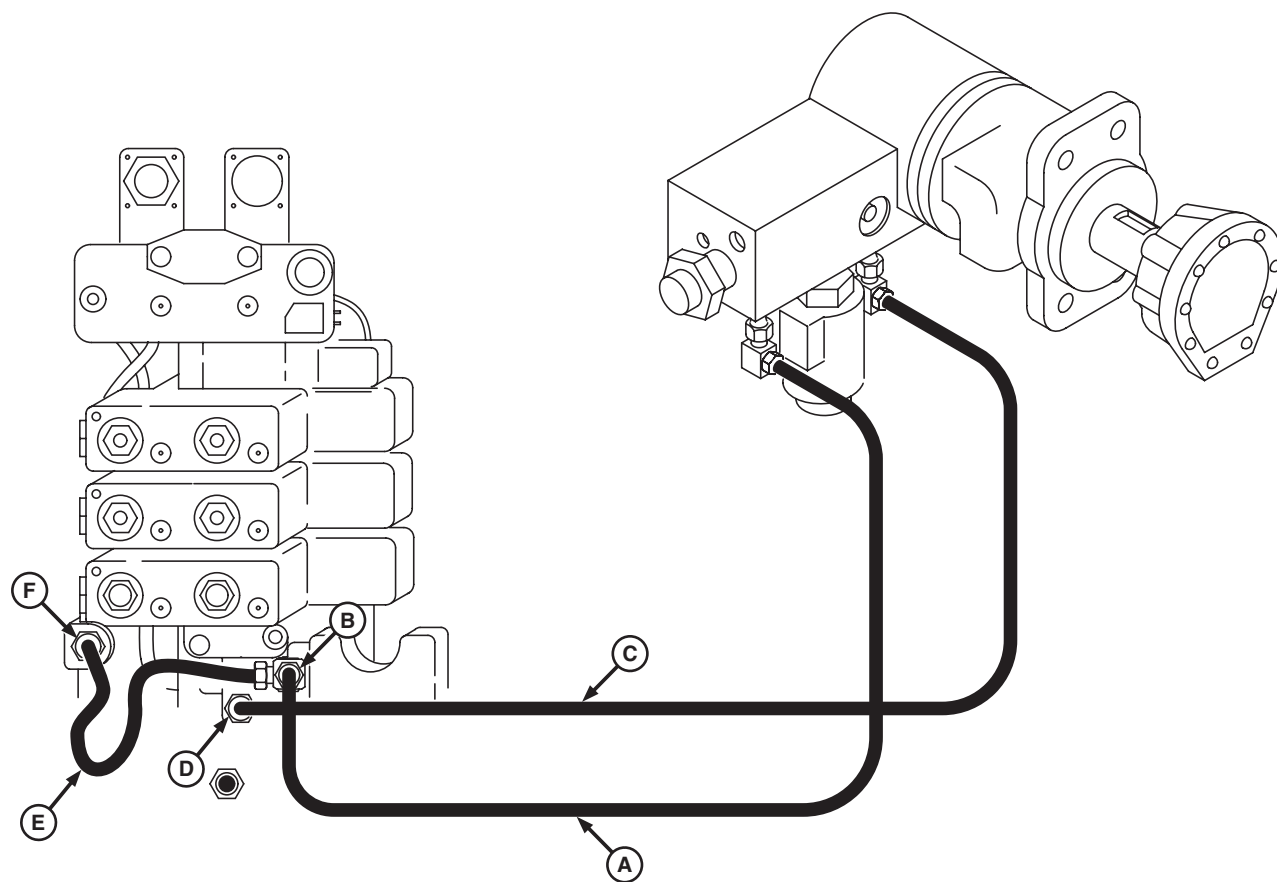
1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).

2. Attach variable drive return hose (C) to power beyond return port (D).

3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

A46916 -UN-16NOV00

8000 Series Tractors With Power Beyond Load Sense—Single Motor



A—Variable Drive Pressure
Hose
B—Power Beyond Pressure
Port

C—Variable Drive Return Hose
D—Power Beyond Return Port

E—Jumper Hose

F—Power Beyond Load Sense
Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).

3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

A46898 -UN-14NOV00

OUO6074.000058E -19-09AUG02-1/1

8000 Series Tractors With Power Beyond Load Sense—Multiple Motor

A—Variable Drive Pressure Hose
B—Power Beyond Pressure Port
C—Variable Drive Return Hose
D—Power Beyond Return Port
E—Jumper Hose
F—Power Beyond Load Sense Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).
3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

QUO6074,000058F -19-09AUG02-1/1

8000 Series Tractors With Power Beyond Load Sense—Multiple Motor

A—Variable Drive Pressure Hose
B—Power Beyond Pressure Port
C—Variable Drive Return Hose
D—Power Beyond Return Port
E—Jumper Hose
F—Power Beyond Load Sense Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).
3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

QU06074,000058F -19-09AUG02-1/1

- ### 8000 Series Tractors With Power Beyond Load Sense—Multiple Motor
-
- A—Variable Drive Pressure Hose**
B—Power Beyond Pressure Port
C—Variable Drive Return Hose
D—Power Beyond Return Port
E—Jumper Hose
F—Power Beyond Load Sense Port
1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
 2. Attach variable drive return hose (C) to power beyond return port (D).
 3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.
- QU06074,000058F -19-09AUG02-1/1

8000 Series Tractors With Power Beyond Load Sense—Multiple Motor

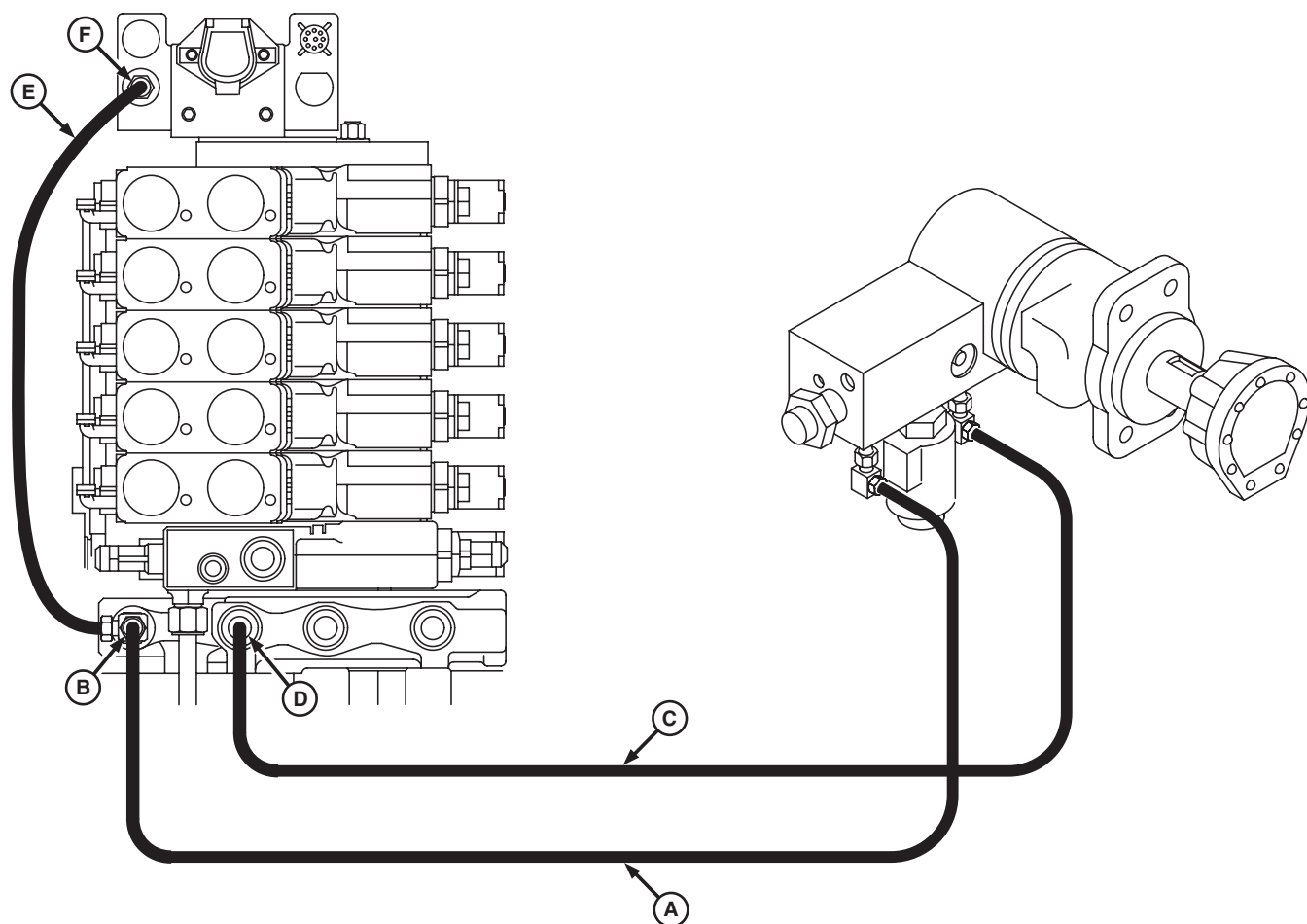
A—Variable Drive Pressure Hose
B—Power Beyond Pressure Port
C—Variable Drive Return Hose
D—Power Beyond Return Port
E—Jumper Hose
F—Power Beyond Load Sense Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).
3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

A46917 UN-16NOV00

QUO6074,000058F -19-09AUG02-1/1

9000 Series Tractors With Power Beyond Load Sense—Single Motor



A—Variable Drive Pressure
Hose
B—Power Beyond Pressure
Port

C—Variable Drive Return Hose
D—Power Beyond Return Port

E—Jumper Hose

F—Power Beyond Load Sense
Port

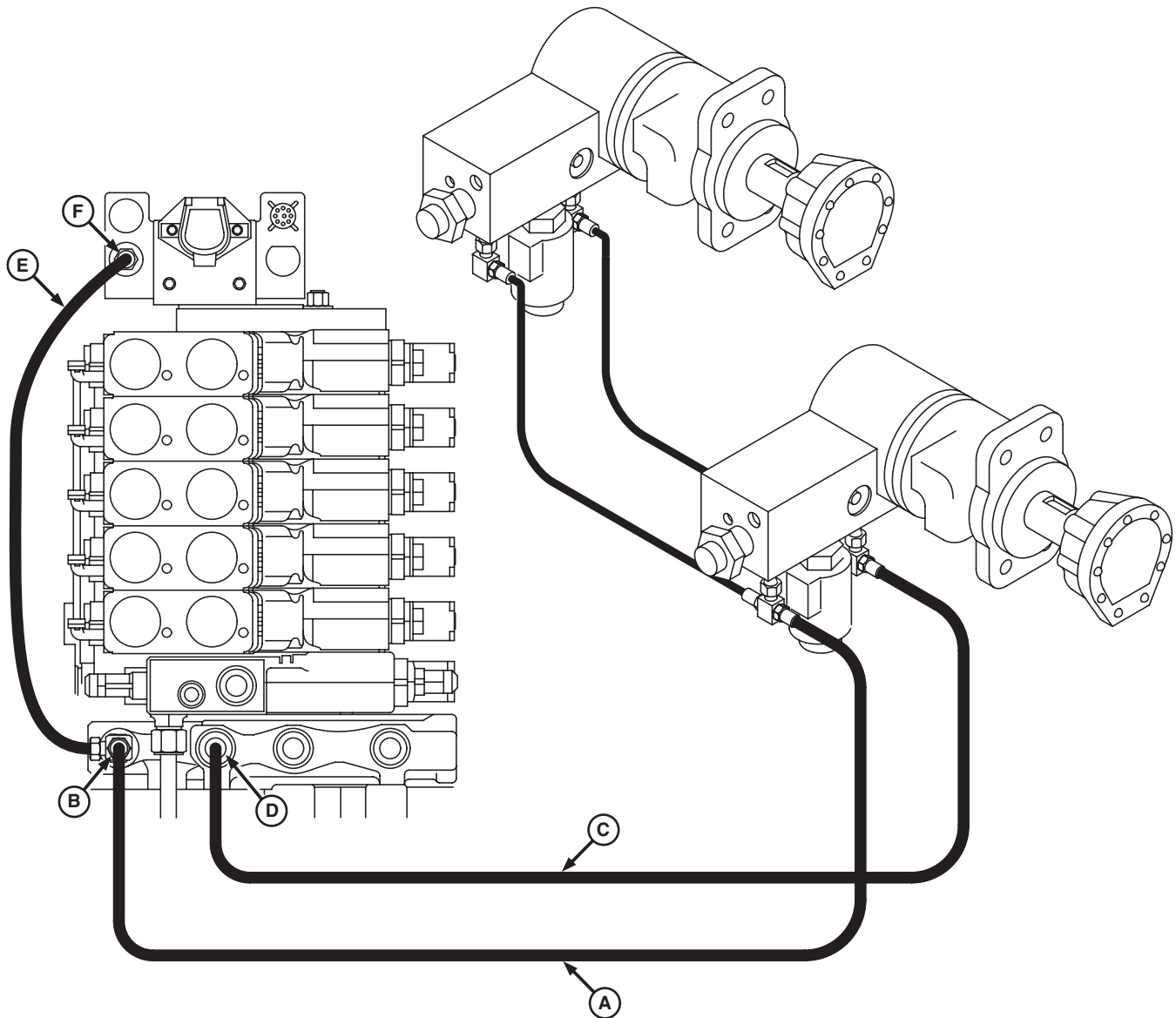
1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).

3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

OUC6074,0000590 -19-09AUG02-1/1

A46899 -UN-14NOV00

9000 Series Tractors With Power Beyond Load Sense—Multiple Motor



A—Variable Drive Pressure
Hose
B—Power Beyond Pressure
Port

C—Variable Drive Return Hose
D—Power Beyond Return Port

E—Jumper Hose

F—Power Beyond Load Sense
Port

1. Attach variable drive pressure hose (A) and tee fitting to power beyond pressure port (B).
2. Attach variable drive return hose (C) to power beyond return port (D).
3. Attach jumper hose (E) to power beyond load sense port (F) and pressure hose tee fitting.

A46900 -UN-14NOV00

SETUP Variable Rate Drive

Enable Variable Rate Drive Software

NOTE: Planters are configured with the appropriate setup settings from the factory. Only the height sensor and rates need to be defined before operation.

Ensure the Planter Drive Type is setup for Variable Rate operation. Refer to SETUP Planter Configuration and Seed Monitor.

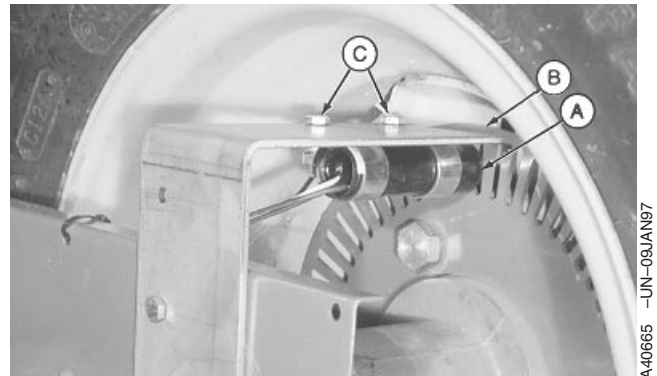
MH81805,0000801 -19-30NOV05-1/1

Adjusting Motion Sensor Gap—All Planters Except 1770NT, 1790 and Deere/Bauer

IMPORTANT: Avoid damage to sensor. Rotate wheel to ensure no contact between disk (B) and end of sensor (A).

Adjust position of wheel motion sensor (A) in clamps so space between end of sensor and disk (B) is 2—4 mm (0.08—0.16 in.). Tighten two cap screws (C) holding sensor.

A—Motion Sensor
B—Disk
C—Cap Screws



A40665 -UN-09JAN97

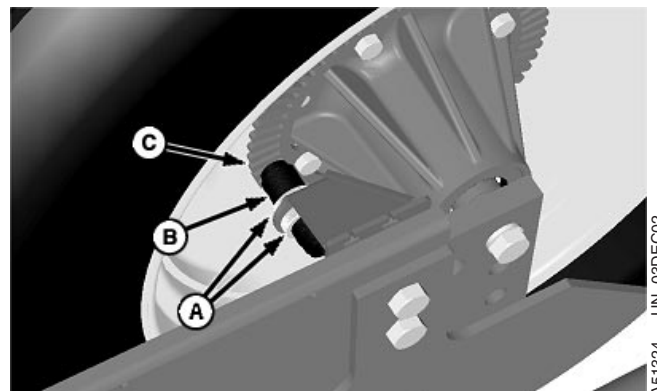
OUO1074,00013AA -19-19OCT01-1/1

Adjusting Motion Sensor Gap—1770NT, 1790 and Deere/Bauer

IMPORTANT: Avoid damage to sensor. Rotate wheel to ensure no contact between disk (C) and end of sensor (B).

Loosen lock nuts (A) and adjust position of wheel motion sensor (B) so space between end of sensor and disk (C) is 2—4 mm (0.08—0.16 in.). Tighten lock nuts holding sensor.

A—Lock Nuts
B—Sensor
C—Disk

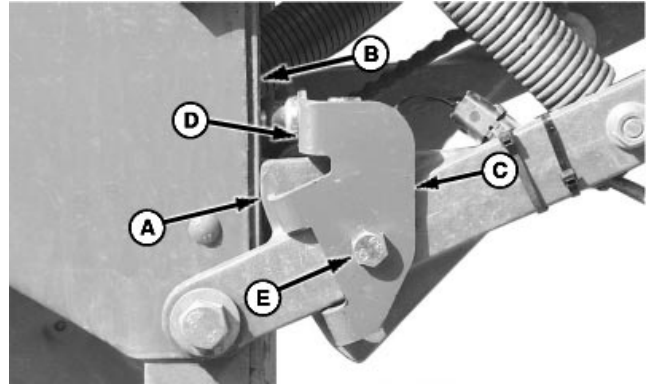


A51324 -UN-03DEC02

OUO6074,00006AB -19-03DEC02-1/1

Adjusting Height Switch for Integral Machines

1. Raise machine so lower parallel arm stop (A) touches planting unit frame (B).
2. Rotate sensor bracket (C) until flat surface (D) is 20 mm (3/4 in.) from planting unit frame.
3. Tighten cap screw (E).
4. Repeat for other height sensor.



A—Stop
B—Frame
C—Bracket
D—Flat Surface
E—Cap Screw

OUO6074,0000C32 -19-15APR04-1/1

Check Current Configuration

1. Press INFO—Planter—Configuration Summary.
2. Press either “Planter” or “Seed Motors” to see current configuration.
3. View configuration to determine if any changes are required.

JOHN DEERE

INFO Planter Summary

Width (in): 720.0
 # Rows 24
 Row Spacing (in): 30.0
 Drive Type: Ground Driven
 Height Sensor Start/Stop:
 COMMON
 Height Sensor Calibration
 Cal Value Sensor %
 Frame Up: (100) 0
 Start: 0 0
 Stop: 0 0
 Frame Down: (0) 0
 Quick Start: AUTO
 Minimum Ground Speed:
 0.0

INFO Configuration Summary

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

PAGE
 SETUP
 INFO
 RUN

JOHN DEERE

INFO Seed Motor

Disk Corn A50617
 Type: Standard
 Rate (seed/ac)
 SEPARATE
 Motor Rows
 #1 1 - 11 32000
 #2 12 - 23 28000

Motor Sprocket Ratio
 #1 18/29
 #2 18/29

INFO Configuration Summary

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

PAGE
 SETUP
 INFO
 RUN

A57260 -19-30NOV05

A49857 -19-03SEP02

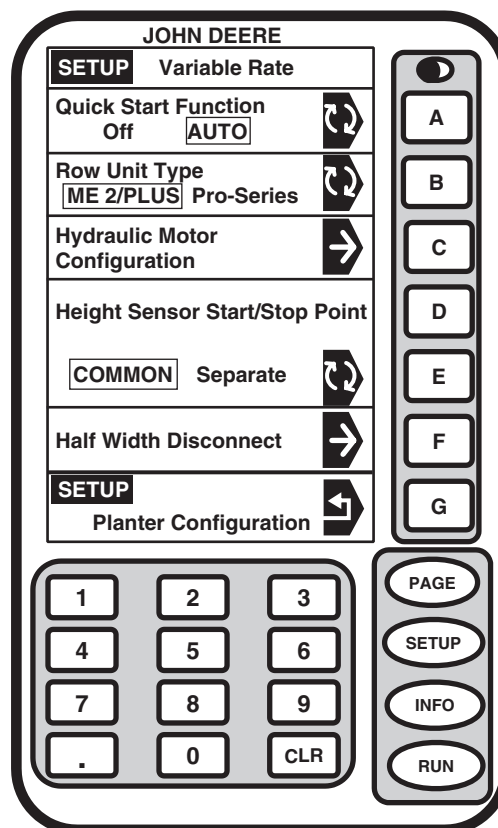
Variable Rate Setup

1. Press SETUP—Planter—Planter Configuration—Variable Rate.

NOTE: For operational overview of quick start, see QUICK START OVERVIEW—VARIABLE RATE DRIVE in Overview section.

2. Press key A to activate or deactivate Quick Start Function.
3. Press key B to select type of row unit on frame.
4. Press key C to configure hydraulic motor(s). See HYDRAULIC MOTOR CONFIGURATION in this section.
5. Press key E to select common or separate frame height start and stop points. To set precise start and stop points, see CALIBRATING HEIGHT SENSOR START AND STOP POINTS in this section.
6. Press key F to select half width disconnect configuration. See HALF WIDTH DISCONNECT in this section.

NOTE: If machine is equipped with three motors, monitor will read Third Width Disconnect on line F.



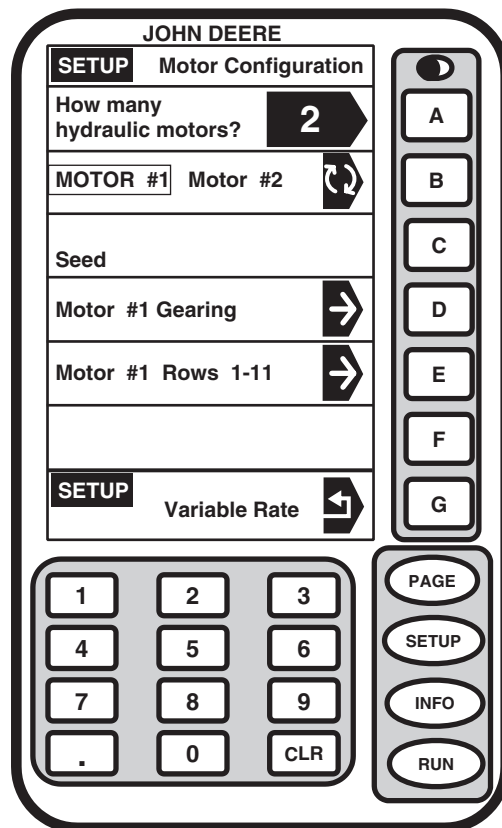
A49829 -19-03SEP02

OUO6074,0000C2A -19-13APR04-1/1

Hydraulic Motor Configuration

NOTE: Row selection will only be accurate if planter frame has been configured first.

1. Press SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration.
2. Press key A to enter total number of hydraulic motors. Up to four may be entered.
3. Press key B to select each motor for gearing and row determination.
4. Press key D to adjust motor and drills shaft gearing.
5. Press key E to assign rows to each motor. See ASSIGN ROWS TO MOTORS in this section.



A49828 -19-03SEP02

OUO6074,0000C20 -19-12APR04-1/1

Assign Motors to Rows

NOTE: Be certain hydraulic motors are configured first, see *HYDRAULIC MOTOR CONFIGURATION* in this section.

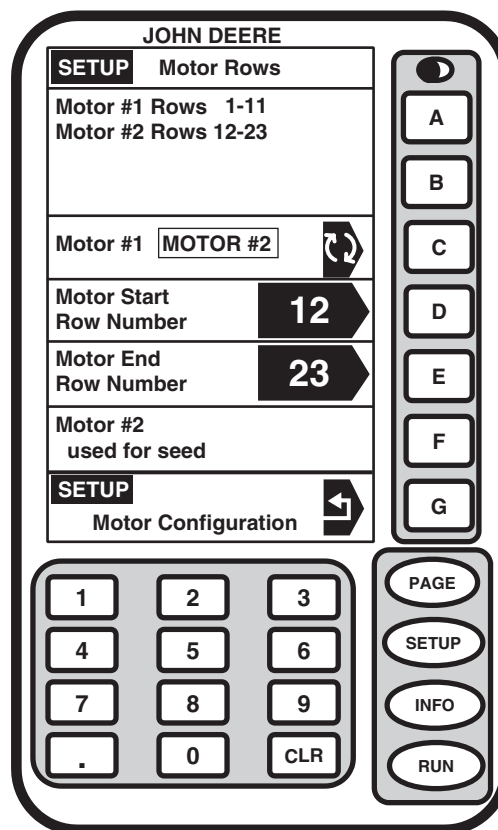
1. Two different locations are available to assign rows to motors. Changing values in one location automatically updates the other. Press **SETUP**—**Planter**—**Planter Configuration**—**Variable Rate**—**Hydraulic Motor Configuration** or press **SETUP**—**Planter**—**Planter Configuration**—**Planter Frame**—**Assign Rows To Motors**.

2. Press key **C** to select each motor (one at a time) for row assignment.

IMPORTANT: Total number of rows driven by each motor must be entered. The number remains the same even if half the rows are locked up on split row machines.

3. Press key **D** to highlight selection and enter beginning row with numeric keypad.

4. Press key **E** to highlight selection and enter ending row with numeric keypad.



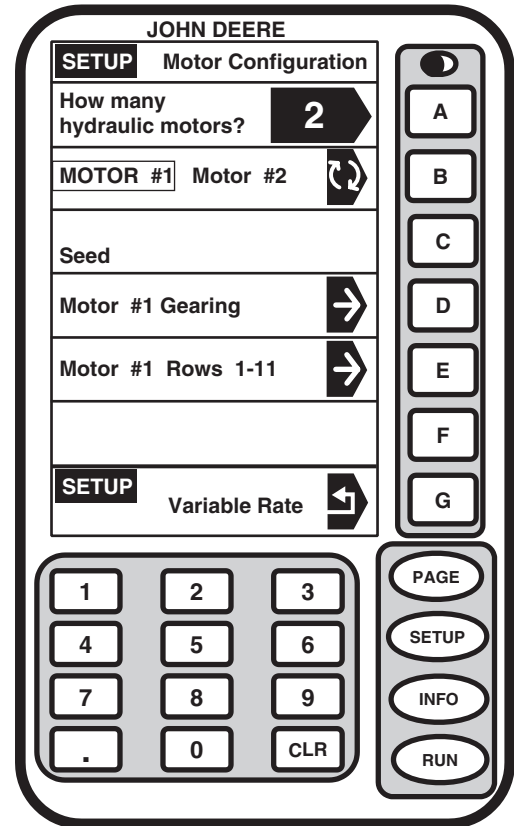
A49831 -19-03SEP02

OUO6074,00005EE -19-04SEP02-1/1

Motor Gearing

MAXEMERGE™XP and PRO-SERIES™XP row units require different sprocket setups.

1. Press SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration.
2. Press key B to select motor.
3. Press key D to select Motor Gearing.



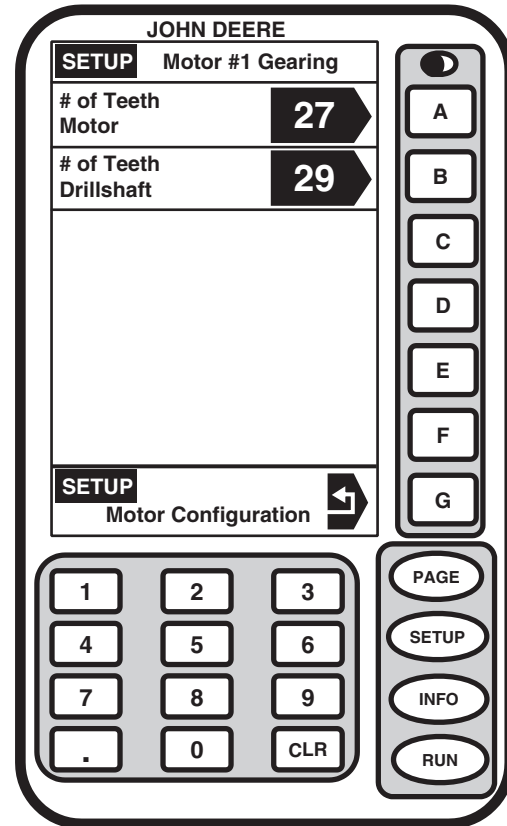
MAXEMERGE is a trademark of Deere & Company
PRO-SERIES is a trademark of Deere & Company

Continued on next page

OUC6074,0000C0C -19-05APR04-1/2

A49828 -19-03SEP02

4. Press key A and B to highlight selections and enter number of teeth with numeric keypad.



A52282 -19-28MAY03

Machine	Motor Sprocket	Drillshaft Sprocket
All 1790 Machines	18	36
Cable Drive Row Units With Mechanical Meters	27	29
Cable Drive Row Units With Vacuum Meters	18	29
All Chain Drive MaxEmerge™XP Row Units	18	29

5. Press key G to return to Motor Configuration screen and repeat steps for remaining motors.

OUO6074.0000C0C -19-05APR04-2/2

Calibrating Height Sensor Start and Stop Points—Common

Use a "Common" start/stop point to cause drives to start and stop at the same planter frame height. A "Separate" start and stop point will allow drives to start and stop at different frame heights. See CALIBRATING HEIGHT SENSOR START AND STOP POINTS--SEPARATE in this section.

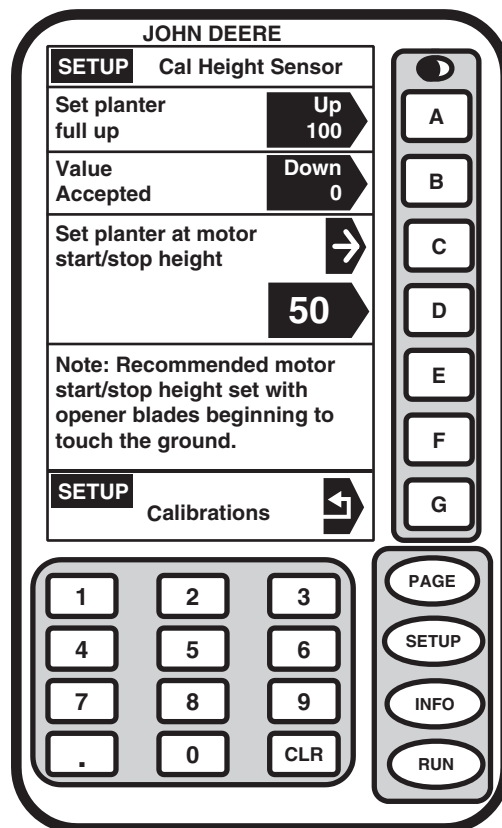
IMPORTANT: Start/stop point must be manually set to 50 for integral planters.

NOTE: For this screen to be displayed, the start/stop point must be set to common in variable rate planter configuration. See SELECTING HEIGHT SENSOR START/STOP POINT.

1. Press SETUP—Planter—Calibrations—Height Sensor.
2. Completely raise machine in field raised position.
3. Press "Set planter full up". Value Accepted will appear.
4. Lower machine completely while driving forward under seeding conditions.
5. Press "Set planter full down". Value Accepted will appear.

NOTE: A Stop point less than 20 is not recommended. If stop point is set below 20 percent, a warning will be issued followed by a "Stop point set too low" caution on line "G".

6. From the fully lowered position, raise machine until the desired start/stop point is achieved and press "Set planter at motor start/stop height".
7. Press key D to manually set start/stop point. Integral machines must be set to 50.



A49841 -19-03SEP02

Calibrating Height Sensor Start and Stop Points—Separate

Use a "Separate" start and stop point to cause drives to start and stop at different frame heights. A "Common" start/stop point will cause drives to start and stop at the same planter frame height. See CALIBRATING HEIGHT SENSOR START AND STOP POINTS--COMMON in this section.

IMPORTANT: Start and stop points must both be manually set to 50 for integral planters.

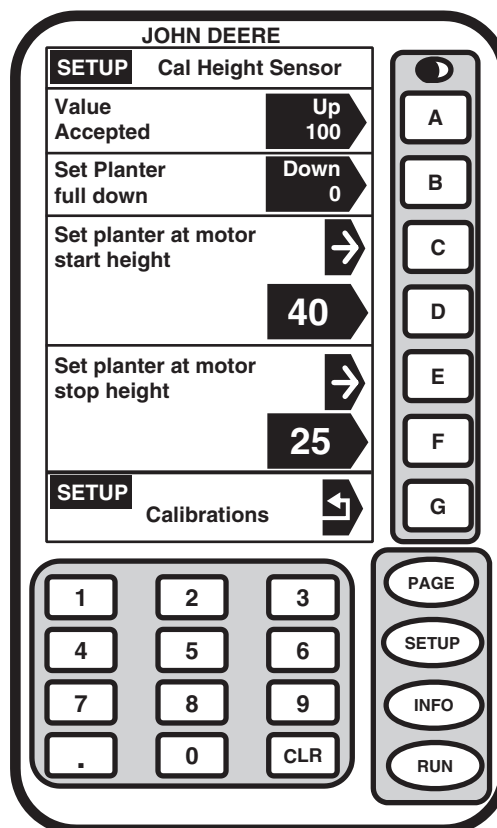
NOTE: For this screen to be displayed, the start/stop point must be set to separate in variable rate planter configuration. See SELECTING HEIGHT SENSOR START/STOP POINT.

1. Press SETUP—Planter—Calibrations—Height Sensor.
2. Completely raise machine in field raised position.
3. Press "Set planter full up". Value Accepted will appear.
4. Lower machine completely while driving forward under seeding conditions.
5. Press "Set planter full down". Value Accepted will appear.

NOTE: A Stop point less than 20 is not recommended. If stop point is set below 20 percent, a warning will be issued followed by a "Stop point set too low" caution on line "G".

NOTE: Planter Motor start height must be higher than the motor stop height.

6. From the fully lowered position, raise machine until the desired stop point is achieved and press "Set planter at motor stop height".
7. Fully raise machine.
8. From the fully raised position, lower machine until the desired start point is achieved and press "Set planter at motor start height".

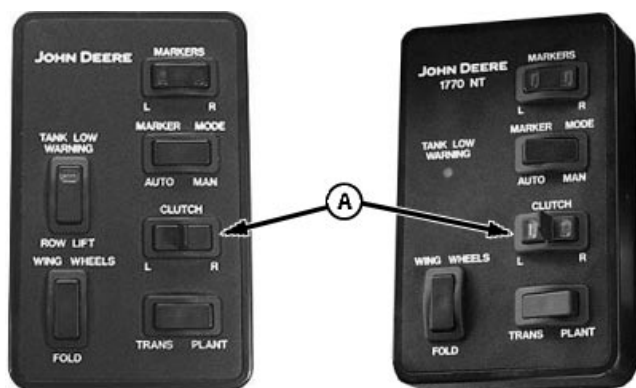


A49840 -19-03SEP02

- Press key D to manually set start/stop point. Integral machines must be set to 50.

MH81805,0000803 -19-23NOV05-2/2

Half Width Disconnect—Dual Motor



Planters with Frame Control

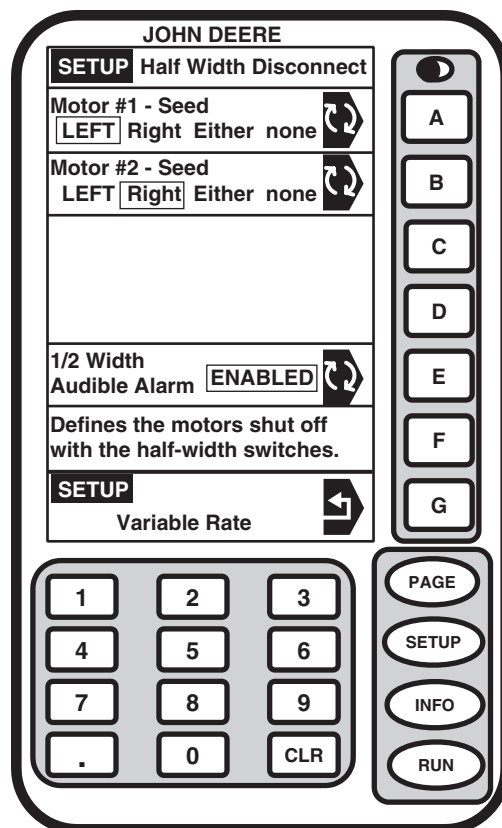


Planters without Frame Control

IMPORTANT: For accurate disconnect screen options, perform hydraulic motor configuration set-up first.

- Press SETUP—Planter—Planter Configuration—Variable Rate—Half Width Disconnect.
- Press motor keys to highlight the desired switch direction that will shut motor (section of planter) off. Screen shows motor number one will shut off when the left clutch switch is pressed and motor number two will shut off when the right clutch switch is pressed.
- Press key E to enable or disable the half-width alarm. Once enabled, a full page warning will be displayed whenever half-width is activated. After 5 seconds of this warning the planter controller will activate the auto half-width disconnect. A caution will be displayed in section G. Monitor will beep every 15 seconds as a reminder that half-width is still activated.

A—Half Width Switch



OUC6074,0000C12 -19-23NOV05-1/1

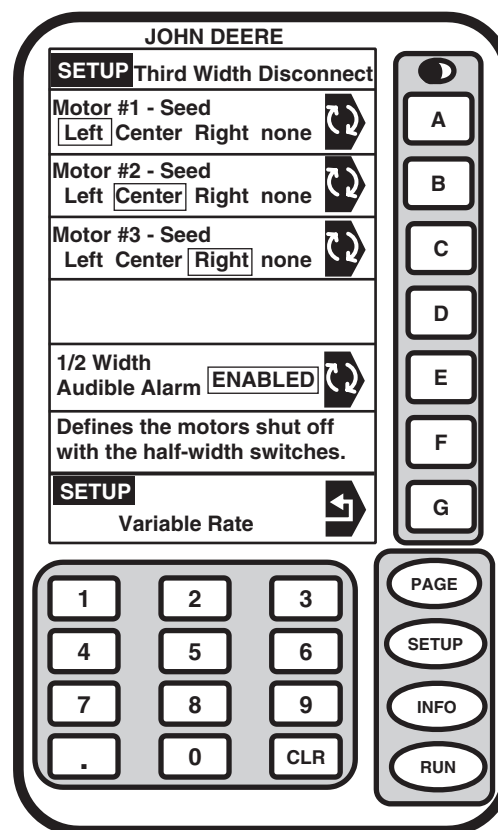
Third Width Disconnect—Triple Motor

IMPORTANT: For accurate disconnect screen options, perform hydraulic motor configuration set-up first.

1. Press SETUP—Planter—Planter Configuration—Variable Rate—Third Width Disconnect.
2. Press motor keys to highlight the desired switch which will shut motor (section of planter) off. Screen shows motor number one will shut off when the left clutch switch is turned “OFF”, motor number two will shut off when center switch is turned “OFF” and motor number three will shut off when the right clutch switch is turned “OFF”.
3. Press key E to enable or disable the half-width alarm. Once enabled, a full page warning will be displayed whenever half-width is activated. After 5 seconds of this warning the planter controller will activate the auto half-width disconnect. A caution will be displayed in section G. Monitor will beep every 15 seconds as a reminder that half-width is still activated.



Three Motor—VRD Switch Box



A52135 -UN-07APR03

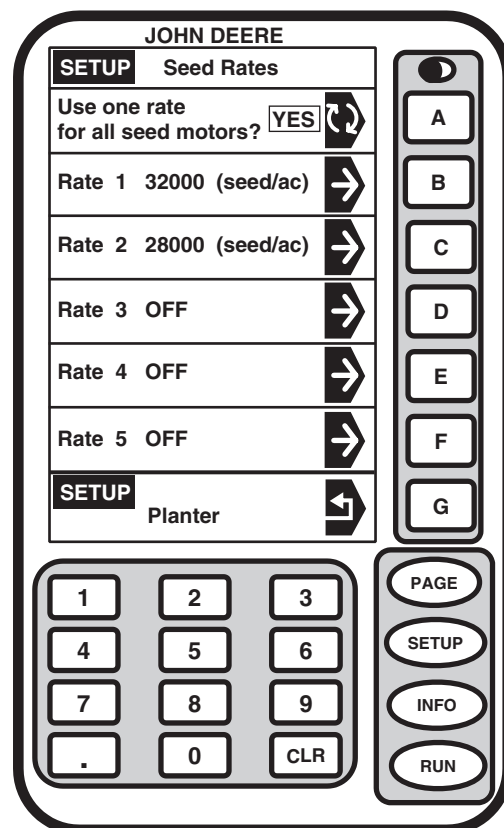
A52136 -19-15APR04

OUO6074,0000C21 -19-23NOV05-1/1

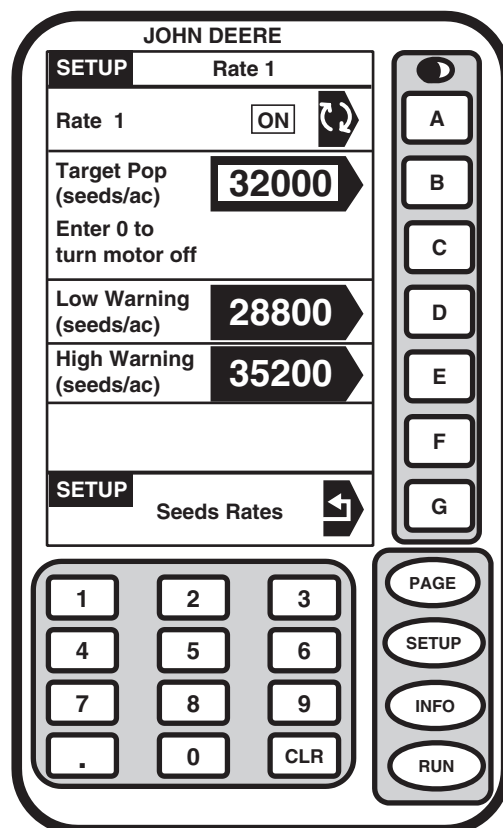
Application Rates—All Motors Applying Identical Rates

NOTE: Pressing key G will return monitor to Seed Rates screen.

1. Press SETUP—Planter—Application Rates.
2. Toggle key A until “YES” is displayed.
3. Press rate keys to input rates.
4. Press key A to turn rate on or off as one of the options displayed on RUN PAGE.
5. Press key B to enter target population.
6. Press keys D and E to manually enter high and low warnings.



A49843 -19-04SEP02



A49844 -19-13AUG02

Application Rates—Each Motor Applying Different Rates

IMPORTANT: Frame and motor configuration must be completed first or motor and row options will not be accurate.

NOTE: Pressing key G will return monitor to preview screen.

1. Press SETUP—Planter—Application Rates.
2. Toggle key A until “NO” is displayed.
3. Press rate keys to input rates for each motor.

JOHN DEERE

SETUP Seed Rates

Use one rate for all seed motors? **NO**

Rate 1
#1 32000 #2 28000

Rate 2
#1 26000 #2 33000

Rate 3
OFF

Rate 4
OFF

Rate 5
OFF

SETUP Planter

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

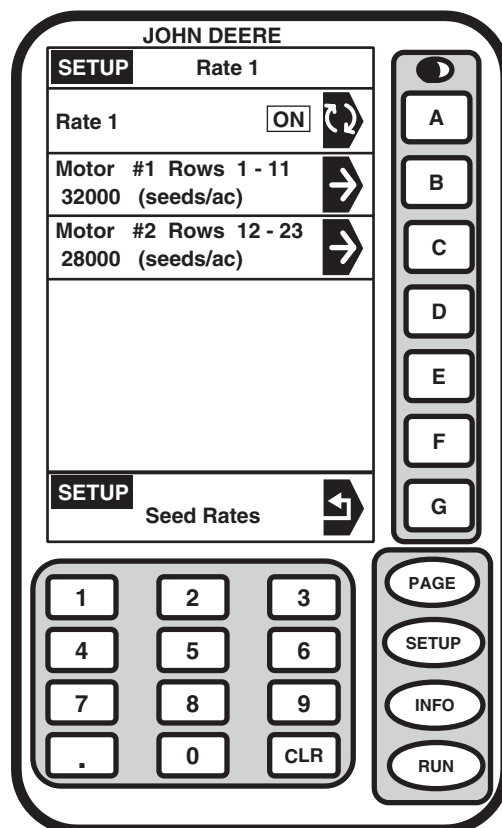
PAGE
SETUP
INFO
RUN

A49845 -19-03SEP02

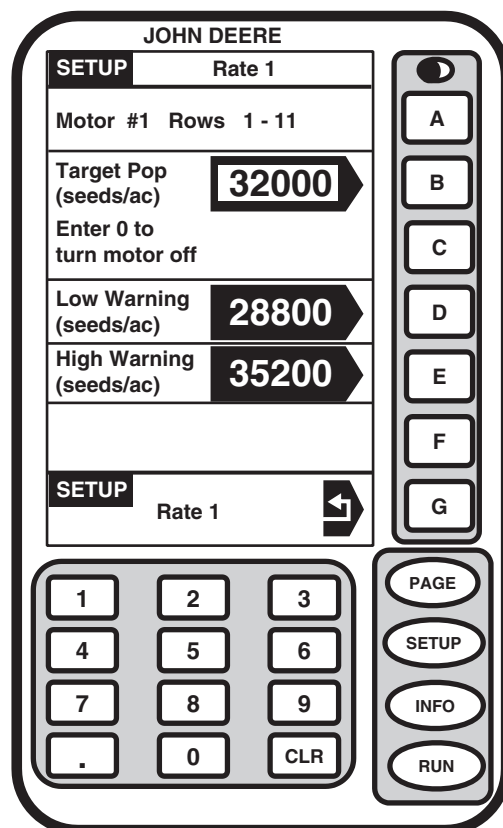
Continued on next page

OUO6074,00005A9 -19-09AUG02-1/2

4. Press key A to turn rate on or off as one of the options displayed on RUN PAGE.
5. Select motors one at a time to enter target population and high/low warnings.



A49846 -19-03SEP02

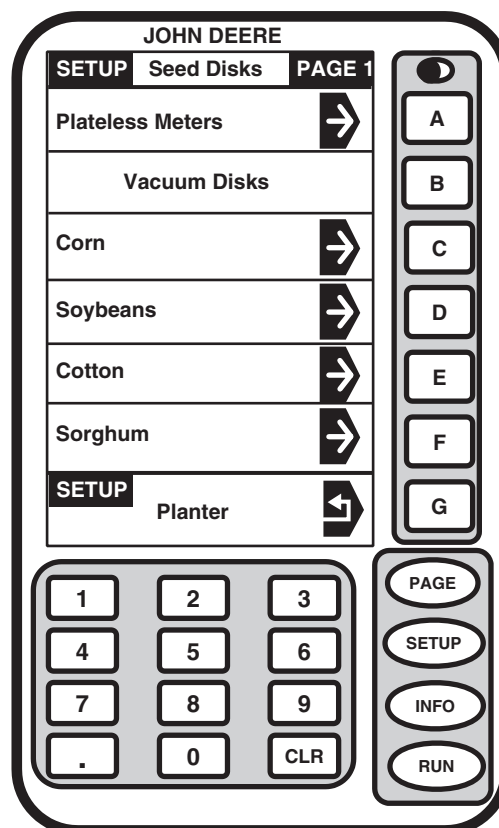


A49847 -19-13AUG02

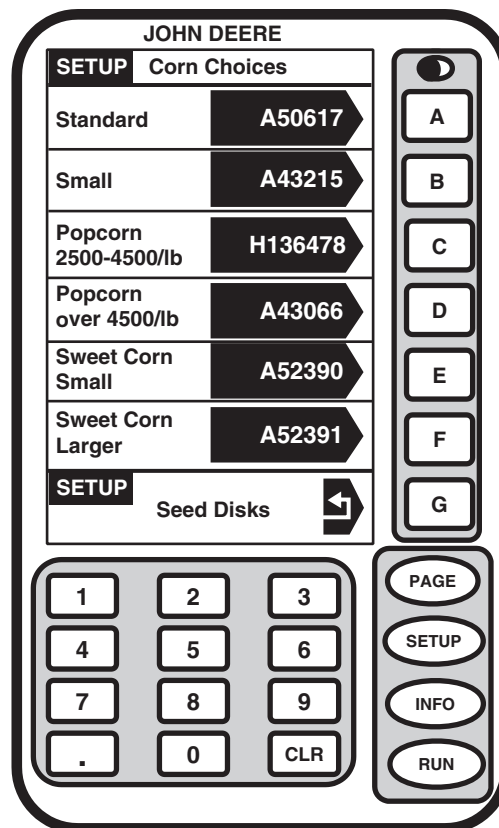
Selecting Seed Disk/Meter

1. Press SETUP—Planter—Seed Disk/Meter.
2. Use PAGE key to view all options.
3. Press key A to choose a plateless meter or a key next to a crop for vacuum seed disk selection.

When using vacuum, choose a disk after selecting a crop.



Plateless or Vacuum Crop Selections



Disk Selections

A54256 -19-15APR04

A49852 -19-13AUG02

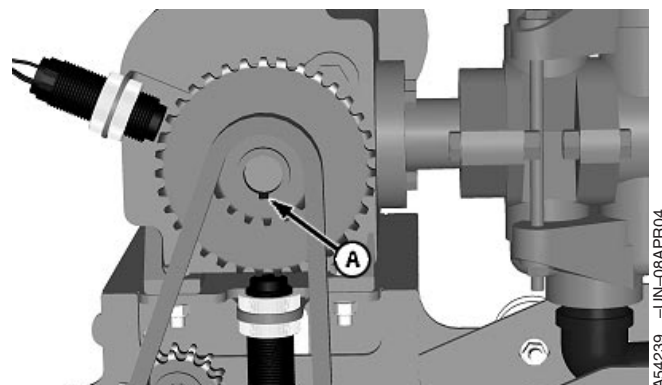
SETUP Variable Rate Liquid Fertilizer

Disabling When Not In Use

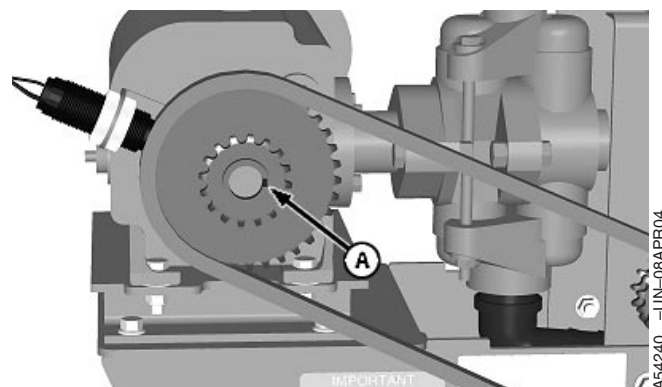
IMPORTANT: Double pump systems, such as the 1770NT 24 row planter, must have keyways (A) timed 90 degrees to each other when pump chains are reinstalled or machine damage will result.

Remove drive chain from pump whenever fertilizer system is not being used.

A—Keyway



Front Pump



Rear Pump

OUO6074,0000C1A -19-08APR04-1/1

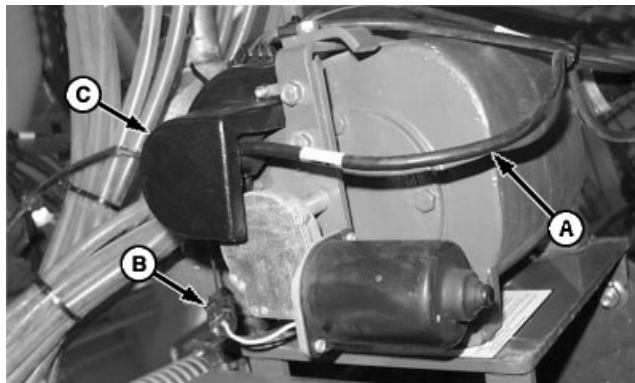
Manual Override

In the event of an electronic system failure, the pump may be manually set and locked to provide a fixed application rate. This feature allows the operator to continue applying product at a fixed rate.

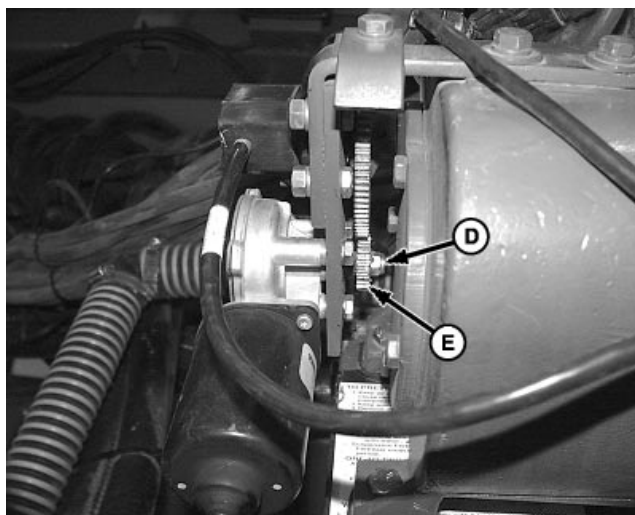
1. Determine pump setting from fertilizer rate chart in implement operator's manual.
2. Disconnect position sensor harness (A) and motor harness (B).
3. Remove cover (C).
4. Remove lock nut (D) and small sprocket (E).
5. Store cover, lock nut and small sprocket in a safe place until repairs can be made and parts reinstalled.

NOTE: If pump is already in lock down mode, lock down bracket (F) will have to be loosened.

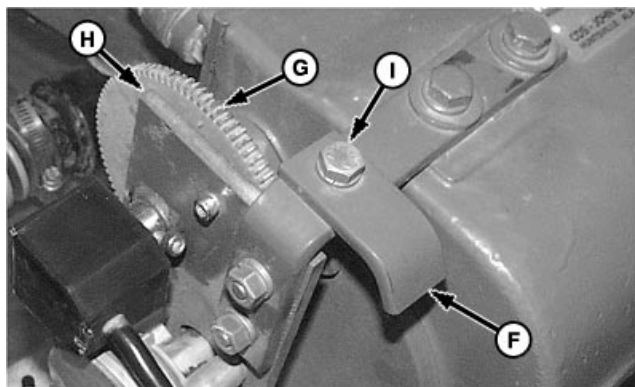
6. Rotate large gear (G) fully counter clockwise. Full counter clockwise position is pump setting "2".
7. Sight along bracket corner (H) and mark the tooth in closest alignment with a "2".
8. Count the number of teeth that pass bracket corner (H) as sprocket is rotated clockwise. See table for the number of teeth which represent pump setting numbers. The numbers may be marked on the sprocket, if desired.
9. Once setting is achieved, loosen cap screw (I) on lock down bracket (F) and rotate bracket into position so it engages sprocket teeth and locks sprocket into position. Tighten lock down bracket.



A54226 -UN-07APR04



A54227 -UN-07APR04



A54228 -UN-07APR04

- A—Position Sensor Harness
- B—Motor Harness
- C—Cover
- D—Lock Nut
- E—Small Sprocket
- F—Lock Down Bracket
- G—Large Gear
- H—Bracket Corner
- I—Cap Screw

SETUP Variable Rate Liquid Fertilizer

Pump Settings Represented by Number of Teeth Past the Zero Alignment Point

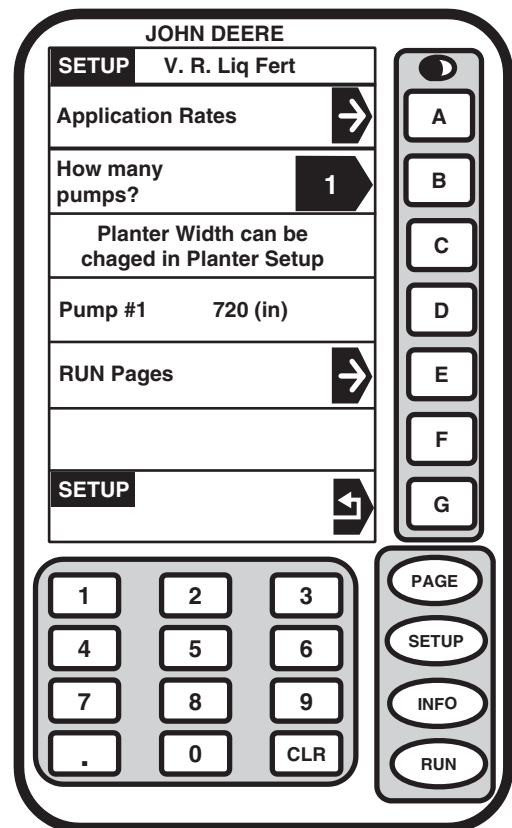
Pump Setting Number	Number of Teeth
Pump Setting 2	0 Teeth Fully Counterclockwise
Pump Setting 3	7 Teeth
Pump Setting 4	14 Teeth
Pump Setting 5	21 Teeth
Pump Setting 6	28 Teeth
Pump Setting 7	36 Teeth
Pump Setting 8	45 Teeth
Pump Setting 9	56 Teeth
Pump Setting 10	Fully Clockwise

- Verify rate after first ten minutes of use after lock down to assure lock down held and rate is as desired.

OUC6074.0000608 -19-16SEP02-2/2

Application Rates

- Press SETUP—V.R. Liq Fert.
- Press key B and enter number of pumps on machine.
- Press “Application Rates”.



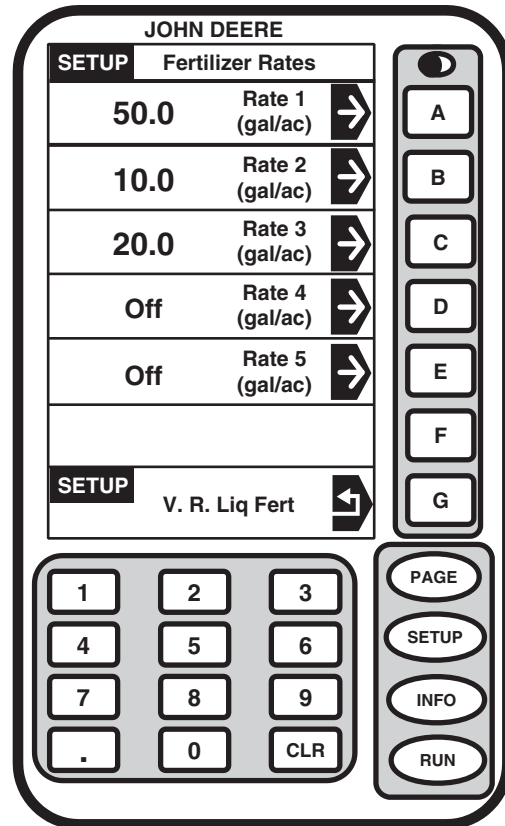
A50168 -19-12SEP02

Continued on next page

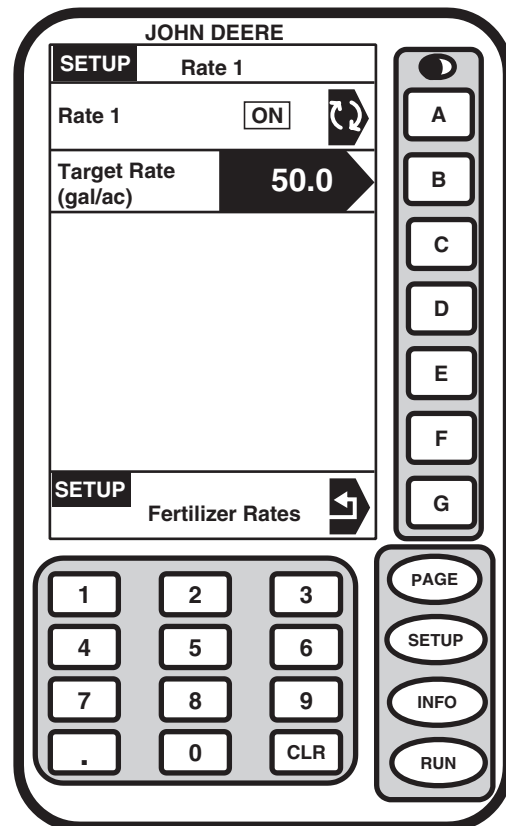
OUC6074.00005FD -19-09SEP02-1/2

NOTE: If two pumps are entered, pumps can apply identical rates or be setup for different rates.

4. Select rate with keys.
5. Press key A to toggle rate On and Off. The rate is only available as an option on the RUN page if it is turned on.
6. Press key B to enter the desired rate with numeric keypad.



A50169 -19-24SEP02



A50173 -19-12SEP02

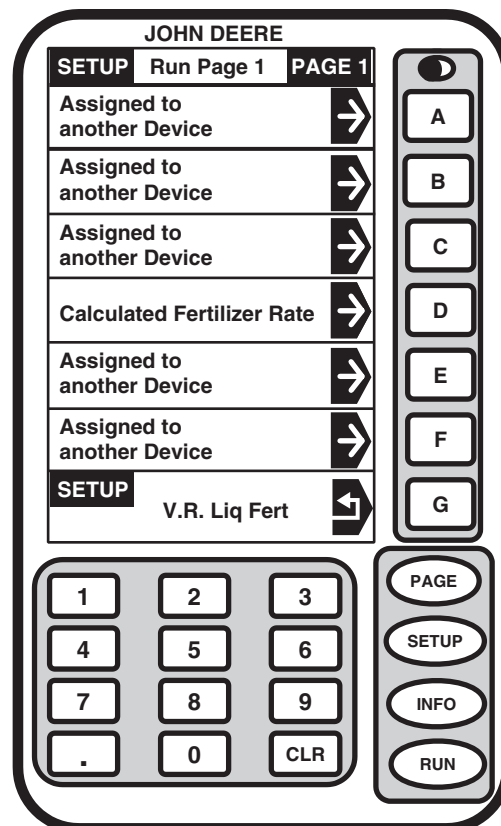
Run Page Configuration

Press SETUP—V.R. Liq Fert—Run Pages.

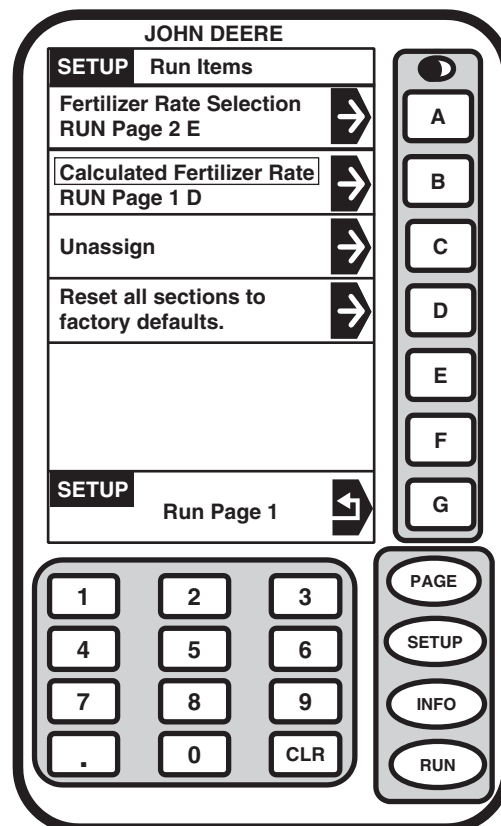
NOTE: Depending on how seed monitoring and variable rate drive (if equipped) are configured, many lines may already be assigned to the seed monitor/variable rate drive device. Fertilizer options can be placed over the already assigned lines, but this will change the way seed monitor and variable rate drive options are displayed.

Press the PAGE key to view both current RUN Page configurations.

Choose a line to be entered or changed. Once chosen, the “Run items” page(s) will be displayed. Use the “Unassign” key to remove an option from a line or press any selection to assign it that line. A Run Page Layout will be required to make the change active and viewable.



A50171 -19-12SEP02



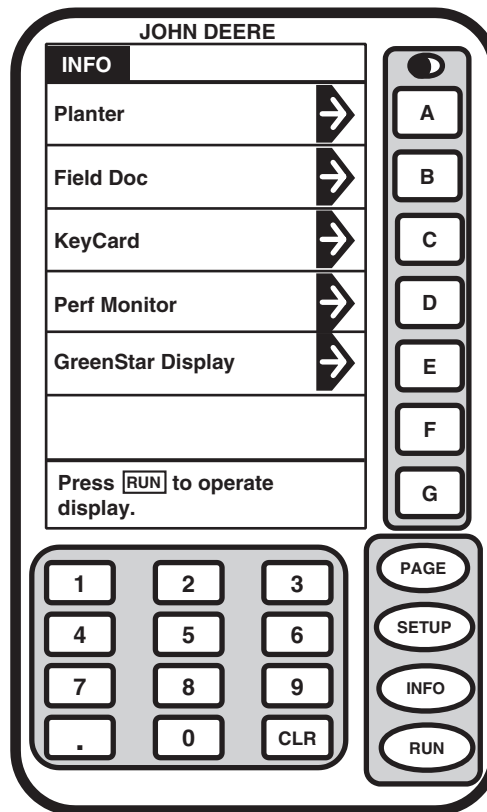
A50172 -19-12SEP02

INFO Functions

Main Menu

Press INFO for initial menu screen.

Press key next to desired component for information.



A54309 -19-11MAY04

OUO6074,00005B0 -19-12MAY04-1/1

Planter Area

Press INFO—Planter—Totals to display this screen.

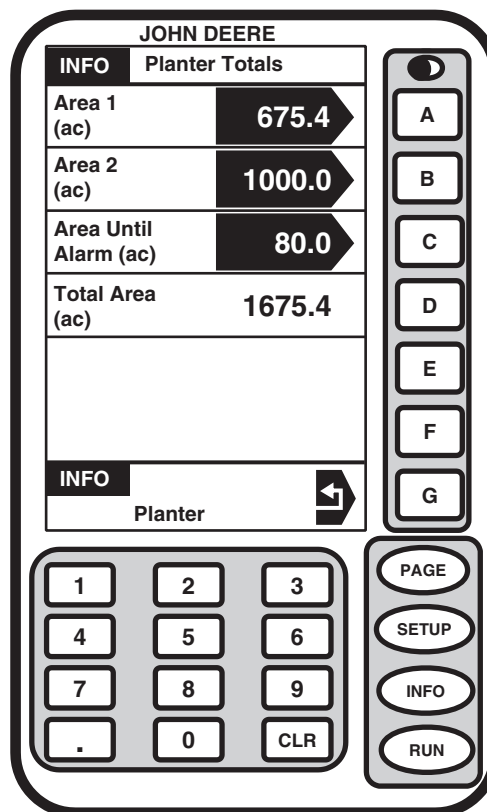
Areas shown are what has accumulated since last reset. To reset area counters, highlight desired area with key A or B and press "CLR" key.

"Area 1" total is what is displayed on "RUN Page" readout.

Press C to highlight countdown selection and enter a value to count down from.

Press C again to save entry.

A full page warning will display when counter reaches zero.



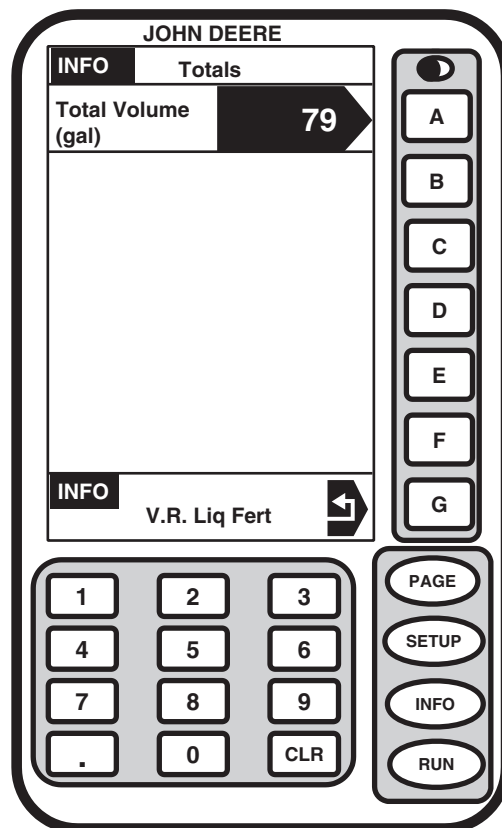
A54213 -19-06APR04

OUO6074,0000C0D -19-06APR04-1/1

VRF Area Totals

Press INFO—V.R. Liq Fert—Totals.

The total volume is shown. Press key A and the “CLR” key to zero.



A50170 -19-12SEP02

OUO6074,00005FF -19-09SEP02-1/1

Seed Estimator

IMPORTANT: For accurate results, Planter—SETUP must be configured properly before using seed estimator.

NOTE: Left-hand section on line F shows estimated seed spacing along each row.

1. Press INFO—Planter—Calculators—Total Seed Estimator.
2. Enter field area by highlighting selection with key A and entering number with numeric keypad.
3. Select BAGS with key B.
4. Enter desired population on line C.

NOTE: If using bulk seed, proceed to step 8.

5. Enter number of seeds per bag on line E.
6. Enter bag weight on line F. The estimated number of bags for the conditions entered will be displayed on line D.
7. Select WEIGHT with key B.
8. Displayed on line D is the seeds per kg (lb) automatically calculated from values previously entered.

If using bulk seed instead of bags, manually enter seed size on this line. An estimated Total Seed Weight needed to plant the given number of acres at the given population will be displayed on line E.

Seed weight per area is displayed on line F.

JOHN DEERE

INFO		Total Seed Estimator
Field Area (ac)		80
Calculated By:	BAGS	Weight
Population (seed/ac)		30000
Number of BAGS		30
seeds/bag		80000
7.0 in/seed 1.7 seed/ft 30.0 in rows	lbs/bag	50
INFO		Calculators

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

PAGE
SETUP
INFO
RUN

JOHN DEERE

INFO		Total Seed Estimator
Field Area (ac)		80
Calculated By:	Bags	WEIGHT
Population (seed/ac)		30000
Seed Size (seed/lb)		1480
Total Seed Weight (lb)		1622
7.0 in/seed 1.7 seed/ft 30.0 in rows	20.3 lb/ac	
INFO		Calculators

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

PAGE
SETUP
INFO
RUN

A50058 -19-09SEP02

A50059 -19-09SEP02

Planter Vacuum Level Calculator

1. Press INFO—Planter—Calculators—Vacuum.
2. Press key A and enter Seed Size with numeric keypad.

NOTE: The second page can be viewed by pressing the PAGE key.

3. Press key B and choose seed type and vacuum disk used.

Suggested vacuum is displayed on line C.

IMPORTANT: For actual vacuum reading to be accurate, vacuum disk cells must be covered with seed. With seed in hoppers and vacuum running, use Rotate Seed Meters function on RUN page or plant a short distance until cells become covered with seed.

When vacuum hydraulics are running, actual vacuum is displayed on line D.

JOHN DEERE

INFO Vacuum

Seed Size (seed/lb) 1450

Seed Disk A50617 (Corn Standard)

Suggested Vacuum (in): 9.4

Actual Vacuum (in): 0.0

INFO Calculators

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

PAGE SETUP INFO RUN

A50060 -19-09SEP02

JOHN DEERE

SETUP Corn Choices

Standard A50617

Small A43215

Popcorn 2500-4500/lb H136478

Popcorn over 4500/lb A43066

Sweet Corn Small A52390

Sweet Corn Larger A52391

SETUP Seed Disks

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

PAGE SETUP INFO RUN

A49852 -19-13AUG02

Disk Selection Screen

Planter Transmission Setting Calculator

IMPORTANT: Planter **SETUP** must be completed for this calculator to be accurate.

NOTE: All populations are approximate and should be verified with in-field checks. See planter operator's manual for more information on transmission settings.

1. Press INFO—Planter—Calculators—Transmission.
2. Enter seed population on line A.
3. Press key B and choose a plateless meter or seed type and seed disk.

Four transmission settings near chosen population will be displayed. All populations are approximate and should be verified with in-field checks. See planter operator's manual for more information on transmission settings.

JOHN DEERE

INFO Transmission

Trans Pop (seed/ac) **30000**

Seed Disk A50617

Driver	Driven	Trans Range	Trans Pop
29	25	LO	28415
29	24	LO	29620
35	28	LO	30610
35	27	LO	31782

30.0 in rows

INFO Calculators

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

PAGE
SETUP
INFO
RUN

A50061 -19-09SEP02

JOHN DEERE

SETUP Seed Disks **PAGE 1**

Plateless Meters

Vacuum Disks

Corn

Soybeans **A42586**

Cotton

Sorghum

SETUP Planter

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

PAGE
SETUP
INFO
RUN

A49851 -19-13AUG02

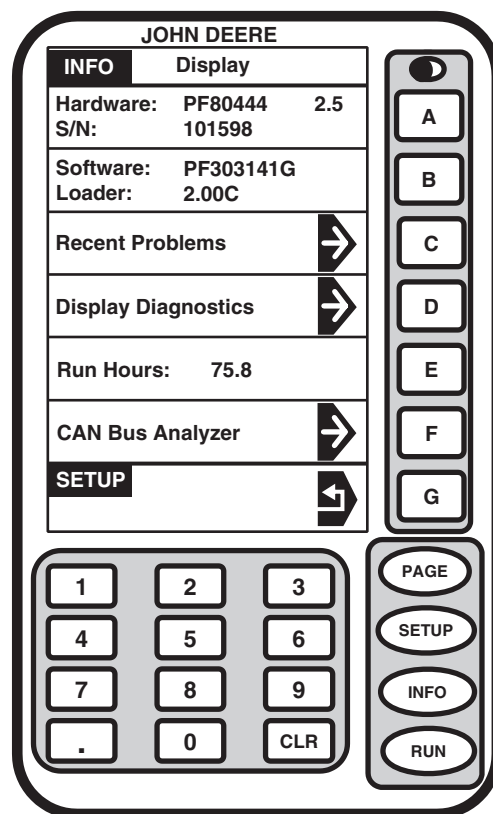
Meter Choices

Hour Meters

There are multiple hour meters recording control box and display hours individually. The number of hours given in any instance is not how long the planter or any system has been operated. The number of hours given are how long power has been supplied to the display or control box.

Press INFO—Planter—Hour Meter to see the total hours the main wedgebox has been powered.

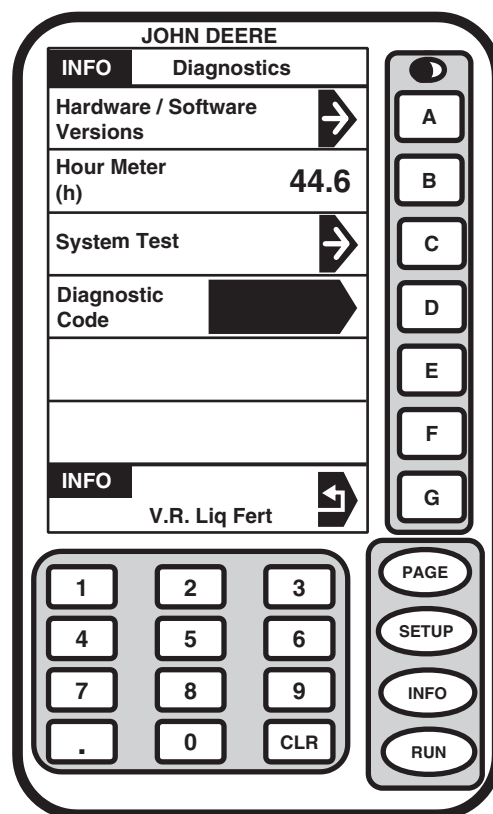
Press INFO—GreenStar Display. The number of hours the GREENSTAR™ display has been powered up is displayed on line E.



A50113 -19-09SEP02

OUO6074,00005E4 -19-13APR04-1/2

Press INFO—V.R. Liq Fert—Diagnostics. The number of hours the variable rate fertilizer control box has been powered up is displayed on line B.



A50115 -19-19SEP02

OUO6074,00005E4 -19-13APR04-2/2

Planter Configuration Summary

JOHN DEERE

INFO	Planter Summary
Width (in):	720.0
# Rows	24
Row Spacing (in):	30.0
Drive Type:	Ground Driven

INFO Configuration Summary

1 2 3
4 5 6
7 8 9
0 CLR

PAGE
SETUP
INFO
RUN

A B C D E F G

Ground Driven Configuration

JOHN DEERE

INFO	Planter Summary
Width (in):	720.0
# Rows	24
Row Spacing (in):	30.0
Drive Type:	Variable Rate
Height Sensor Start/Stop:	COMMON
Height Sensor Calibration	
Cal Value Sensor %	
Frame Up: (100)	0
Start: 0	0
Stop: 0	0
Frame Down: (0)	0
Quick Start:	AUTO
Minimum Ground Speed:	1.8

INFO Configuration Summary

1 2 3
4 5 6
7 8 9
0 CLR

PAGE
SETUP
INFO
RUN

A B C D E F G

Variable Rate Drive Configuration

A57261 -19-30NOV05

A57262 -19-30NOV05

Press INFO—Planter—Configuration Summary—
Planter to view current planter configuration.

OUO6074,0000C28 -19-01DEC05-1/1

VRD Motor Configuration Summary

Press INFO—Planter—Configuration Summary—Seed Motors to view current motor configuration.

JOHN DEERE

INFO

Seed Motor

Disk Type:

Soybeans A42586

Motor	Rows	Rate (seed/ac)
#1	1 - 8	0
#2	9 - 16	0
#3	17 - 24	0

Motor	Sprocket Ratio
#1	18/29
#2	18/29
#3	18/29

INFO

Configuration Summary

1

2

3

4

5

6

7

8

9

.

0

CLR

A

B

C

D

E

F

G

PAGE

SETUP

INFO

RUN

A54250 -19-13APR04

OUO6074,0000C29 -19-13APR04-1/1

VRF System Test

This test will verify the operation of the position sensor and RPM sensor for variable rate fertilizer.

1. Press INFO—V.R. Liq Fert—Diagnostics—System Test.

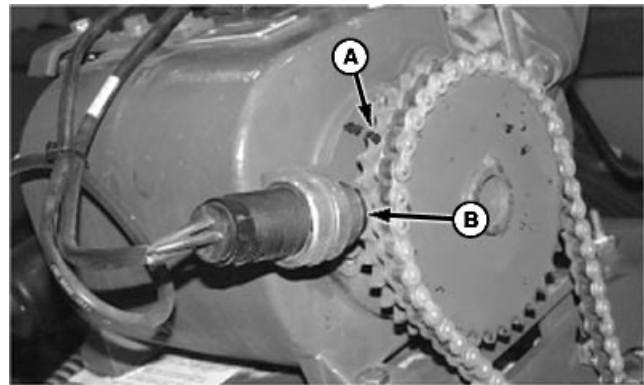
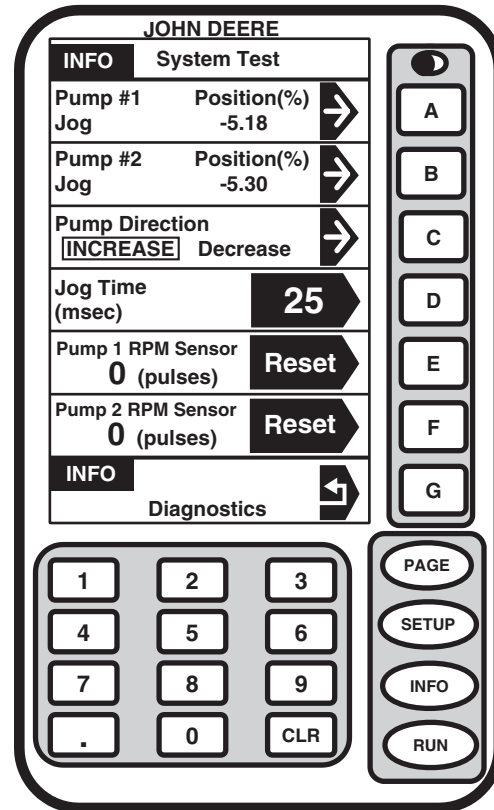
2. Press “Pump Direction” key so “INCREASE” is highlighted.

NOTE: Jog time is measured in milliseconds. 999 milliseconds is approximately one second.

3. Set “Jog Time” to 999.

NOTE: Each time the jog button is pressed the motor will activate for one second.

4. Press key next to “Pump Jog” repeatedly until motor reaches upper limit and stops. Pump Jog position percentage should read 100 percent.
5. Press “Pump Direction” key so “DECREASE” is highlighted.
6. Press key next to “Pump Jog” repeatedly until motor reaches lower limit and stops. Pump Jog position percentage should read zero percent.
7. Set pump direction to increase and press “Pump RPM Sensor” reset key.
8. Mark a position sensor sprocket tooth (A) and pump housing for reference.
9. Rotate tire contact drive until pump rotates 1 revolution (black line). 35 pulses should be recorded on the display.
10. If RPM sensor is not recording 35 pulses per sprocket revolution, adjust sensor (B) to within 2 mm (5/64 in.) of sprocket teeth. Perform the test again. If sensor will not record 35 pulses per revolution, replace sensor.



A—Sprocket Tooth
B—Sensor

A50291 -19-19SEP02

A50532 -UN-01OCT02

Fertilizer Setting Calculator

1. Press INFO—PLANTER—Calculators—Liquid Fertilizer.
2. Press key A to select planter model.
3. Press key B to enter coverage amount.
4. Press key C to enter ground speed.

Recommended fertilizer settings will appear on screen.

JOHN DEERE

INFO Liquid Fertilizer

Planter Model 1790 **OTHER**

Coverage (gal/ac) **4.0**

Speed (mph) **6.0**

Pump Drive Range: Low
Pump Setting: 5.0
Orifice: 31 Nozzle: 1.5
Row Spacing: 30.0 in
*Expected Pres: 59.3 psi

*Not valid if using Flow Divider

INFO Calculators

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

PAGE
SETUP
INFO
RUN

A B C D E F G

OUO6074,0000C27 -19-13APR04-1/1

A54251 -19-13APR04

Seed Monitor Warnings

Warning Messages

WARNINGS are generated by the individual modules and Green Star Display alerting the operator to a serious condition or "situation" which has occurred of which the operator needs to be informed. Typically the operator should stop and rectify the "condition or situation" causing the WARNING before proceeding. WARNINGS are displayed as full page displays. The title displayed in the top display section is "WARNING". Examples of WARNINGS would be the indication of planter row(s) not planting. WARNINGS are the highest level of visual alarms presented to the operator. When a WARNING is cancelled without the "condition or situation" causing it being corrected, a caution is displayed on the bottom line of the display as a continued alert to the "situation". If more than one is occurring at the same time, key G can be used to toggle between WARNING alerts.

CAUTIONs are generated by the individual modules and Green Star Display alerting the operator to a

function which is out of limits or a "situation" is or has occurred of which the operator needs to be informed. The caution message is displayed on line "G". Examples of CAUTIONs would be the indication of a planter row's population outside of the HI/LO range specified, or a "WARNING" for which the operator has acknowledged the "WARNING" reducing it to a CAUTION message, which is then displayed on line "G". CAUTIONs are the middle level of visual alarms presented to the operator.

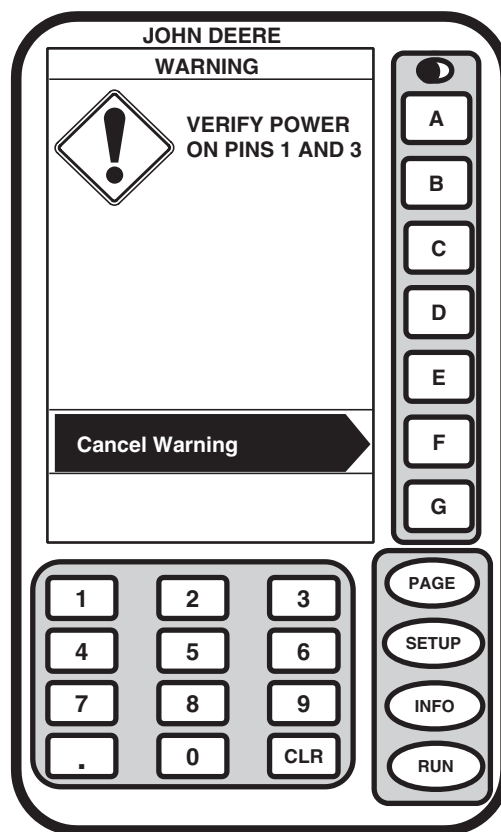
Advisories are operator error messages displayed on line "G" telling the operator that an incorrect "action" has occurred such as entering a value which is out of the acceptable range for that constant. They are the lowest level of visual alarms presented to the operator.

MH81805,0000805 -19-20APR05-1/1

Seed Monitor Warnings

WARNING: Verify Power On Pins 1 and 3

Variable rate drive motors require use of pins 1 and 3 on 9 pin ISO connector. If machine does NOT have variable rate drive and this warning appears, disable VRD software. Press INFO—PLANTER—DIAGNOSTICS—ENTER CODE. Use keypad to enter 737701 to deactivate VRD software. Cycle monitor power to enable software change.



A52208 -19-30APR03

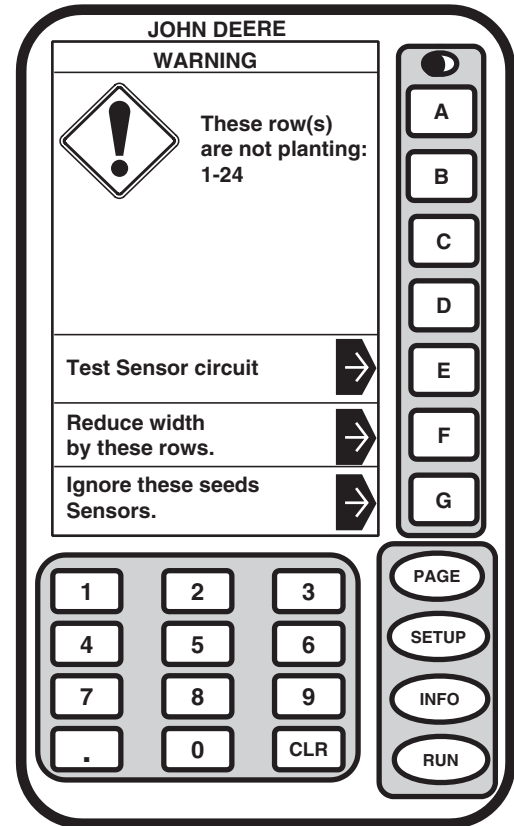
Continued on next page

OUC06074,0000DED -19-12APR06-1/1

WARNING: These row(s) are not planting

NOTE: *It is normal to see this warning when transporting. When clearing the warning, make sure to press "Ignore These Seed Sensors" and the display will not issue a warning again until multiple seeds fall through at least one fourth of the rows or speed drops below 4 km/h (2 mph) and then increases above 4 km/h (2 mph).*

This warning is used to alarm the user anytime a row has stopped planting. This warning is issued anytime the control module does not see at least two seeds per second from any given row sensor. If one side (half the rows) fail and no option is selected, monitor will automatically assume half-width disconnect has been activated for those rows. There are cautions associated with this warning. When the warning is cleared there is a caution issued on line "G". The option selected will produce different results described as follows:



Warning Screen Rows Not Planting

A50749A -UN-18OCT04

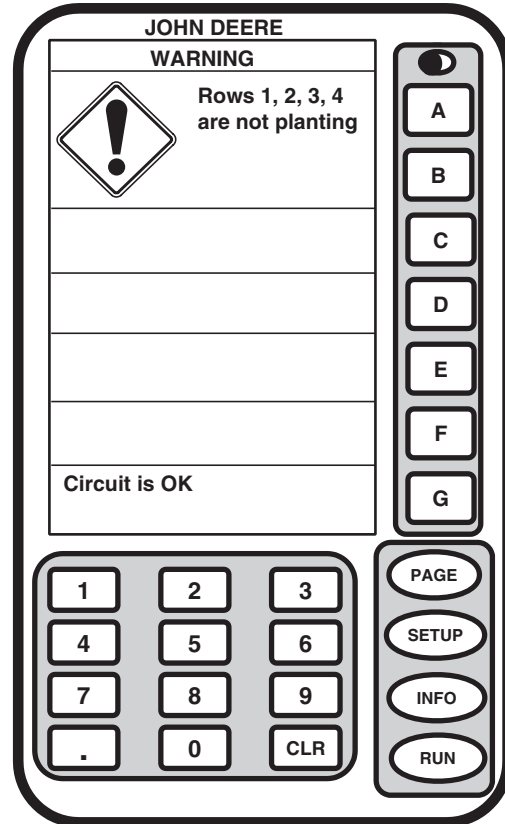
Continued on next page

OUO6074,0000DED -19-12APR06-2/11

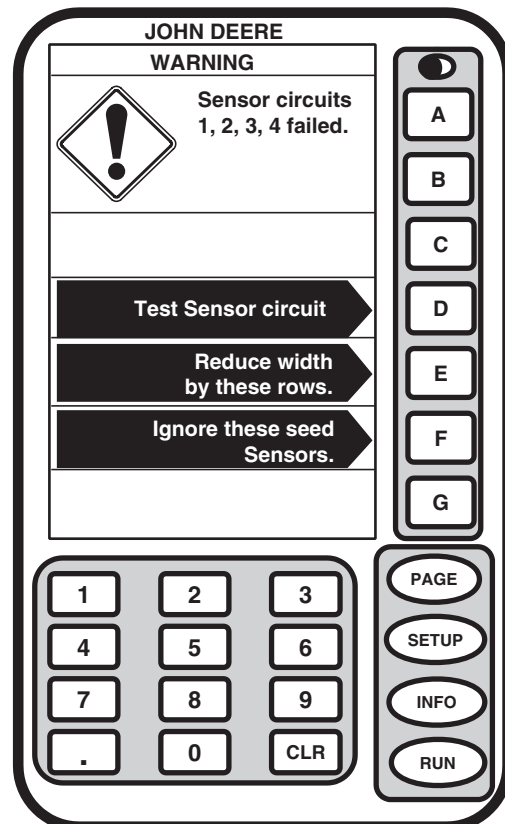
Test Sensor Circuit—This selection will perform a system check on the seed sensors.

If “Test Sensor Circuit” is pressed, the sensors are tested. If circuits test OK, “Circuit is OK” will appear on the bottom line.

If circuits fail the test, the circuits that failed will appear on the top of screen.



A50750 -19-30OCT02



A50751 -19-30OCT02

Automatic Half-Width Reduction— If the row failure warning is active for five seconds when half the machine is not planting, the auto half-width reduction is enabled. The row warning is removed and a caution is displayed on line “G”.

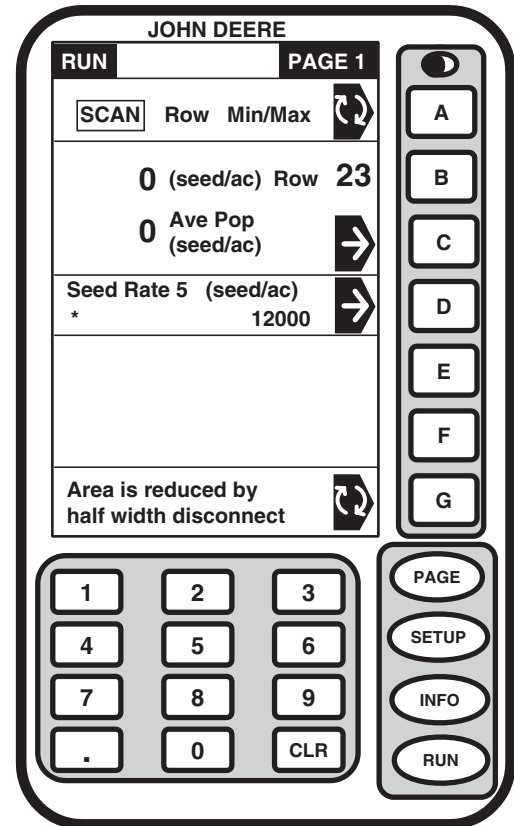
If the half-width audible alarm is enabled, an alarm will sound every 15 seconds as long as half-width condition remains. Monitor accurately calculates reduced area during this option.

Reduce Width by These Rows—This is used when planting point rows (when half-width disconnect is used) or when some seed meters are disconnected. This selection allows observation of rows still planting and provides proper calculation of area planted.

When using half-width disconnect:

- Allow auto half-width reduction by waiting 5 seconds
- OR
- Press “Reduce width by these rows”

If the half-width audible alarm is enabled, an alarm will sound every 15 seconds as long as half-width condition remains.



Auto Half-Width Disconnect Screen

A57686 -UN-24MAR06

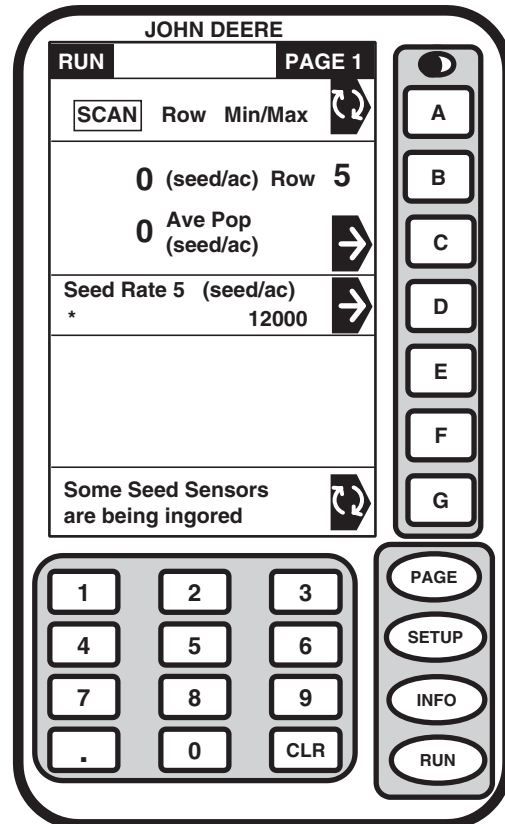
Continued on next page

OUC6074,0000DED -19-12APR06-4/11

Ignore these Seed Sensors—If “Ignore these seed Sensors” is pressed, a screen appears stating that “Some seed sensors are being ignored”. Another warning will not be issued on these ignored rows, unless one of the following things happen:

NOTE: This warning will be followed by a caution on line “G” stating “Some Seed Sensors are being ignored” and “Area is being reduced by ignored sensors”.

- Seeds start flowing on the ignored rows
- OR
- Operator goes below 4 km/h (2 mph), and then back above 4 km/h (2 mph)



A50752A -UN-18OCT04

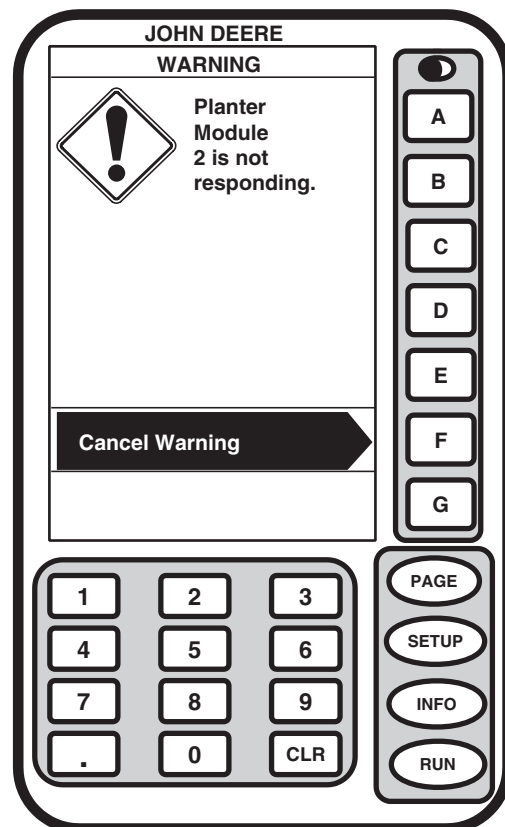
OUO6074,0000DED -19-12APR06-5/11

WARNING: Planter Module 2 is not responding

NOTE: This warning will be followed by a “Planter Monitor Module 2 is missing” caution on line “G”.

This warning is generated when a message is not received from the second processor for a period of three seconds on planters with more than 24 rows.

Planter module 2 refers to the second wedgebox processor that houses the seed monitor board for planters larger than 24 rows.



A50758 -19-30OCT02

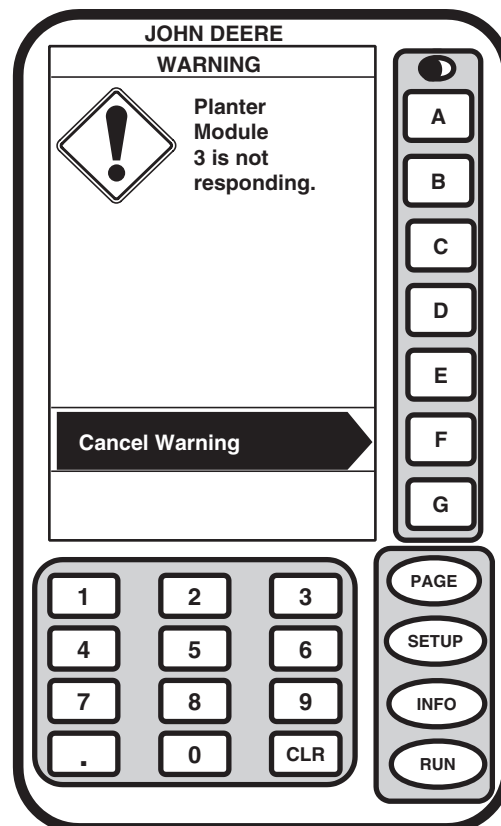
Continued on next page

OUO6074,0000DED -19-12APR06-6/11

WARNING: Planter Module 3 is not responding

NOTE: This warning will be followed by a "Planter Monitor Module 3 is missing" caution on line "G".

This warning is issued if the control module is setup for more than forty eight rows and the third module is not detected (second auxiliary). There is a caution associated with this warning. When the warning is cleared there is a caution issued.

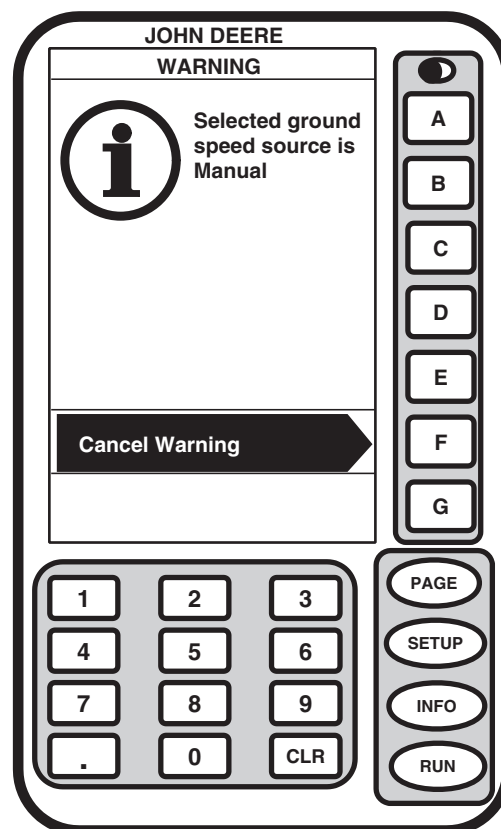


A50760 -19-30OCT02

OUO6074,0000DED -19-12APR06-7/11

WARNING: Selected ground speed source is Manual

This warning is issued by the control module on power up. If the operator has selected to not use the radar for ground speed, this warning will be issued as a reminder.



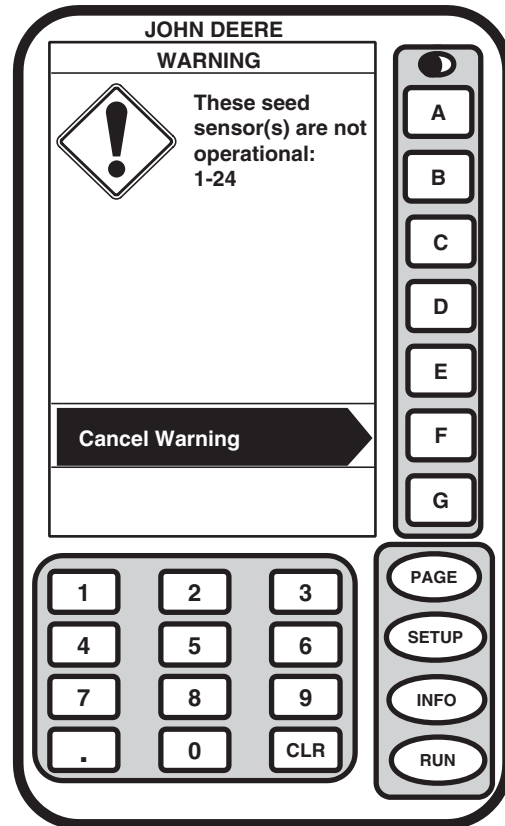
A50760 -19-30OCT02

Continued on next page

OUO6074,0000DED -19-12APR06-8/11

WARNING: These seed sensor(s) are not operational

This warning is issued if the control module does not detect a specific seed sensor on power up. If the control module does not detect this signal on all of the sensors the control module will display which sensor(s) were not seen.



A50763 -19-30OCT02

Continued on next page

OUO6074,0000DED -19-12APR06-9/11

CAUTION: Row Population High/Low

These cautions are issued if the average population is higher or lower than the limits set by the operator.

JOHN DEERE			
RUN			PAGE 1
SCAN	Row	Min/Max	↺↻
31000 (seed/ac) Row 21			
30000	Ave Pop	(seed/ac)	→
0.0	Calculated Rate		
	(gal/ac)		
Seed Rate 1	(seed/ac)		→
	30000		
Pressure (psi)	Vacuum (in)		
0.0	9.7	9.3	
High Warn Row 5			

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

○
A
B
C
D
E
F
G
PAGE
SETUP
INFO
RUN

High Warn

JOHN DEERE			
RUN			PAGE 1
SCAN	Row	Min/Max	↺↻
31000 (seed/ac) Row 21			
30000	Ave Pop	(seed/ac)	→
0.0	Calculated Rate		
	(gal/ac)		
Seed Rate 1	(seed/ac)		→
	30000		
Pressure (psi)	Vacuum (in)		
0.0	9.7	9.3	
Low Warn Row 7			

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

○
A
B
C
D
E
F
G
PAGE
SETUP
INFO
RUN

Low Warn

Continued on next page

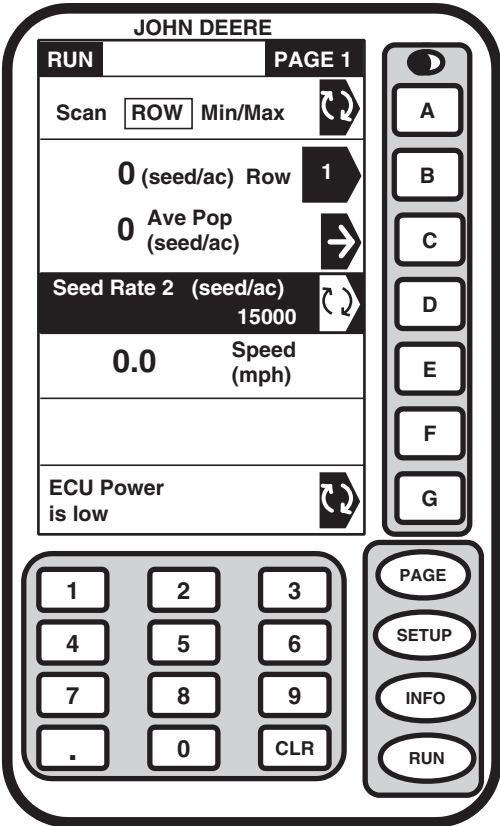
OUO6074,0000DED -19-12APR06-10/11

A50222 -19-12SEP02

A50223 -19-12SEP02

CAUTION: ECU Power is low

This caution is issued if the ECU voltage drops below 11.0 VDC.



A50771 -19-30OCT02

OUO6074,0000DED -19-12APR06-11/11

Variable Rate Drive Warnings

Warning Messages

WARNINGS are generated by the individual modules and Green Star Display alerting the operator to a serious condition or "situation" which has occurred of which the operator needs to be informed. Typically the operator should stop and rectify the "condition or situation" causing the WARNING before proceeding. WARNINGS are displayed as full page displays. The title displayed in the top display section is "WARNING". Examples of WARNINGS would be the indication of a planter row(s) not planting or ground speed at zero when planter is still planting (ground speed sensor failure detection). WARNINGS are the highest level of visual alarms presented to the operator. When a WARNING is cancelled without the "condition or situation" causing it being corrected, a caution is displayed on the bottom line of the display as a continued alert to the "situation". If more than one is occurring at the same time, key G can be used to toggle between WARNING alerts.

CAUTIONS are generated by the individual modules and Green Star Display alerting the operator to a function which is out of limits or a "situation" is or has occurred of which the operator needs to be informed. The caution message is displayed on line "G". Examples of CAUTIONS would be the indication of a planter row's population outside of the HI/LO range specified, or a low Hopper Level indication, or a "WARNING" for which the operator has acknowledged the "WARNING" reducing it to a CAUTION message, which is then displayed on line "G". CAUTIONS are the middle level of visual alarms presented to the operator.

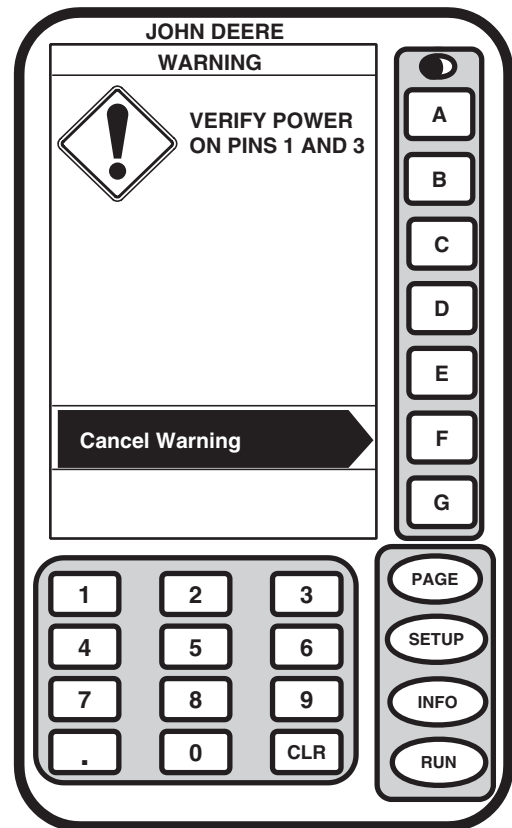
Advisories are operator error messages displayed on line "G" telling the operator that an incorrect "action" has occurred such as entering a value which is out of the acceptable range for that constant. They are the lowest level of visual alarms presented to the operator.

OUC6074.0000723 -19-09APR03-1/1

Variable Rate Drive Warnings

WARNING: Verify Power On Pins 1 and 3

This warning is issued if wedgebox does not detect 12 volts on 9 pin ISO coupler pins 1 and 3.

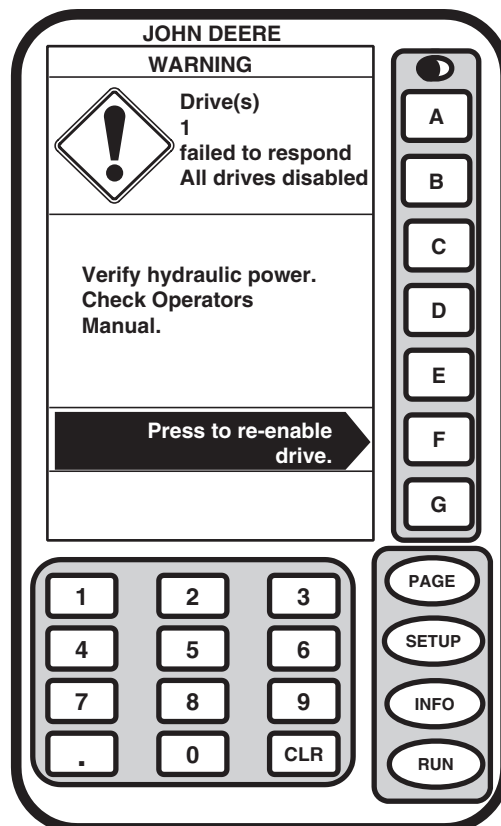


Continued on next page

AG,OUC1074.1587 -19-29NOV05-1/10

WARNING: Drive Not Turning

This warning is issued if the control module fails to see a feedback signal from a drive motor while the control module is trying to drive it. After four seconds the control module will disable the drive that has no signal.

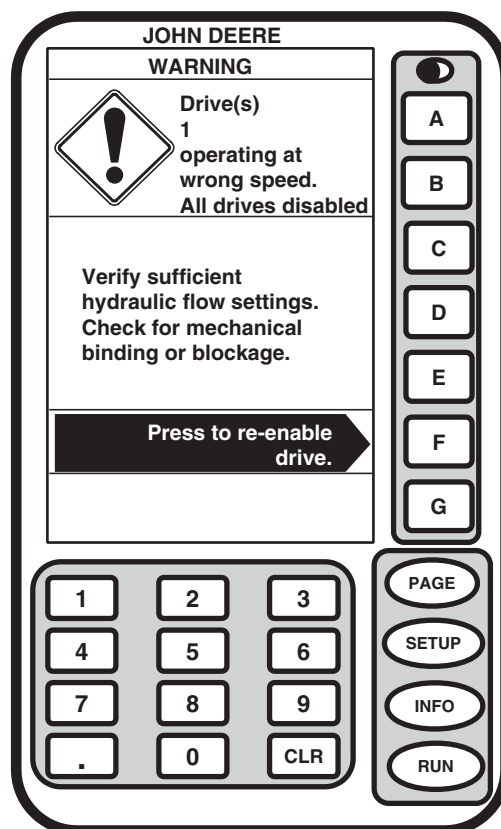


A50754 -19-30OCT02

AG,OUO1074,1587 -19-29NOV05-2/10

WARNING: Drive Wrong Speed

This warning is issued if the control module detects the actual motor RPM is below 70 percent or above 125 percent of the target RPM.



A50756 -19-30OCT02

Continued on next page

AG,OUO1074,1587 -19-29NOV05-3/10

WARNING: No Tractor Speed, Planter Moving

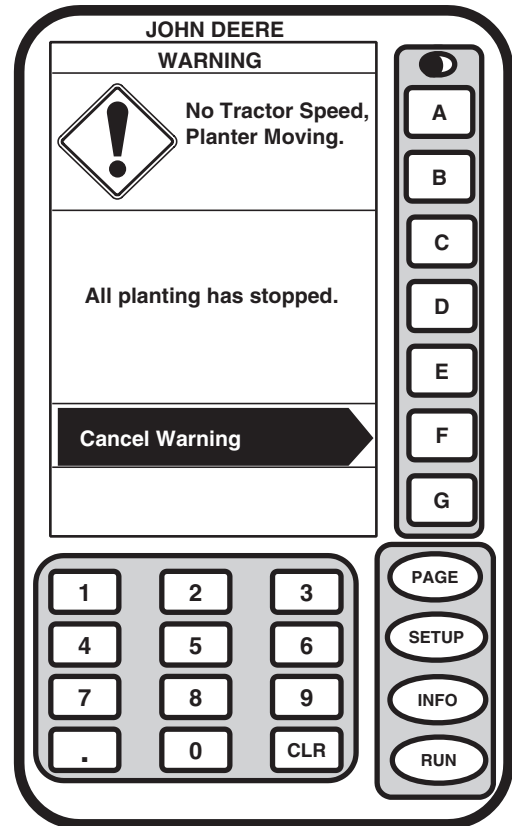
NOTE: This warning will be followed by a “No Tractor Speed with planter wheel turning.” caution on line “G”.

This warning is issued if the control module detects no tractor speed while the wheel motion signal is present for three seconds. There is a caution associated with this warning. When the warning is cleared a “No tractor speed with planter wheel turning.” caution issued on line “G”.

WARNING: Tractor/Planter Speed Error

NOTE: This warning will be followed by a “Tractor/Planter Speeds do not agree” caution on line “G”.

This warning is issued if the radar and wheel motion speed are not within 300 percent of each other. There is a caution associated with this warning. When the warning is cleared there is a caution issued.

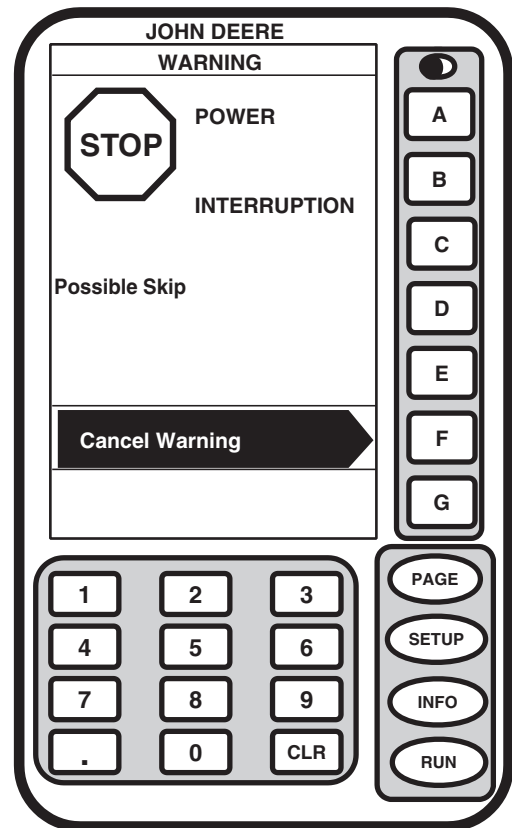


A57263 -19-30NOV05

AG,OUO1074,1587 -19-29NOV05-4/10

WARNING: (STOP) Power Interruption. Possible skip

This full page warning will occur if wedgebox recognizes it has briefly lost power. This will cause a skip in the field. It can be caused by an intermittent harness connection.



A50765 -19-30OCT02

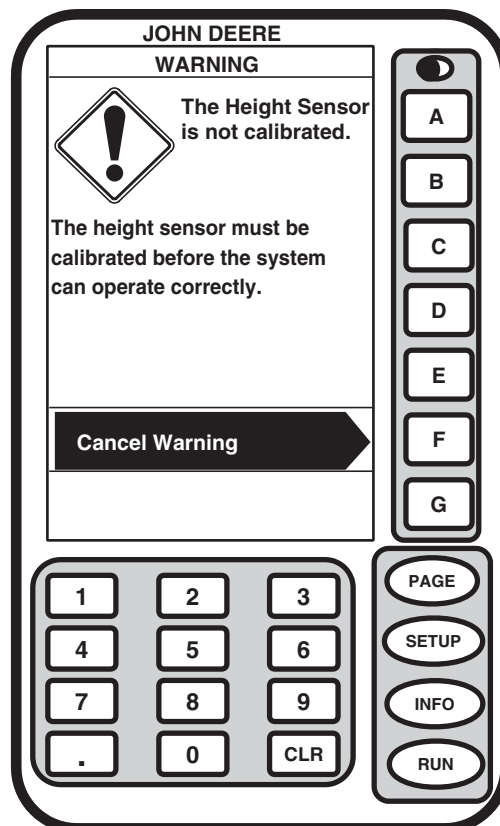
Continued on next page

AG,OUO1074,1587 -19-29NOV05-5/10

WARNING: The Height Sensor is not calibrated.

NOTE: This warning will be followed by a "Height Sensor Not Calibrated" caution on line "G".

This warning is issued on power up if the height sensor needs calibration. There is a caution associated with this warning. When the warning is cleared there is a caution issued.

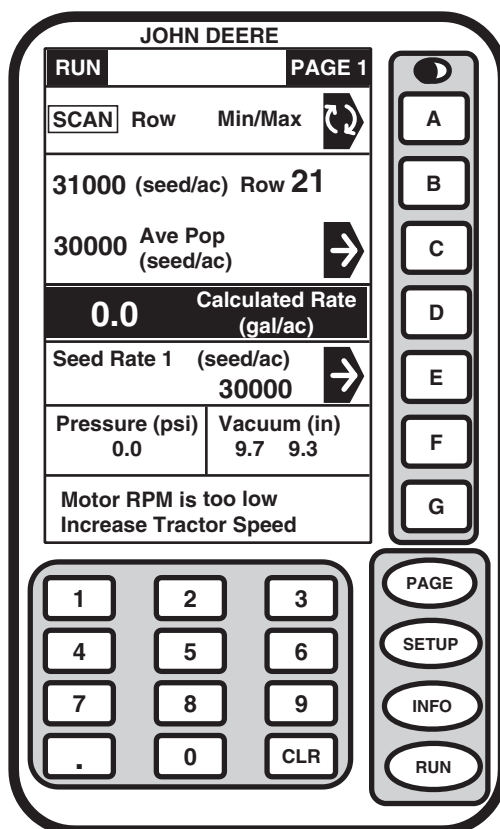


A50767 -19-30OCT02

AG,OUO1074,1587 -19-29NOV05-6/10

WARNING: Motor rpm too low. Increase tractor speed.

The variable rate drive motors do not operate well at speeds below 18 rpm. A warning is displayed when motor RPM drops below 18 rpm, motors shut off when rpm drops below 11.5 rpm.



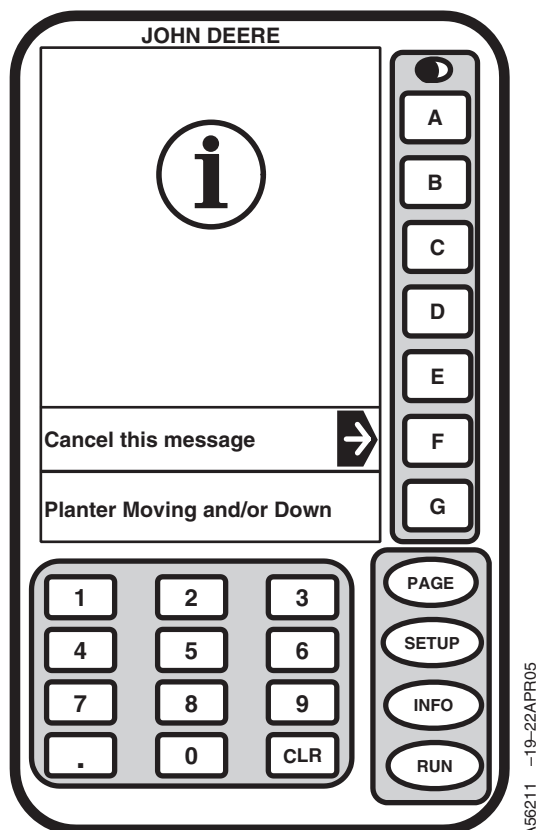
A50224 -19-12SEP02

Continued on next page

AG,OUO1074,1587 -19-29NOV05-7/10

WARNING: Planter Moving and/or Down

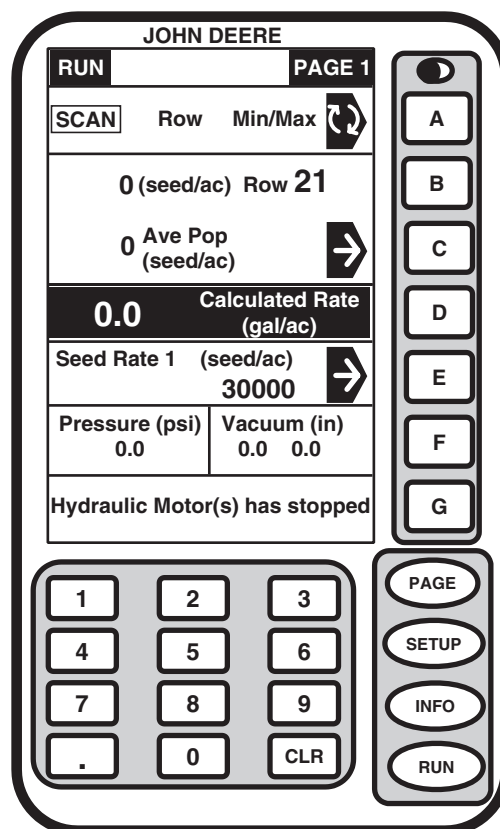
This warning is issued when the Rotate Seed Meters command is entered, but the planter is still in the down position or is moving.



AG,OUO1074,1587 -19-29NOV05-8/10

CAUTION: Hydraulic motor(s) stopped

This caution is issued when a motor stops turning.

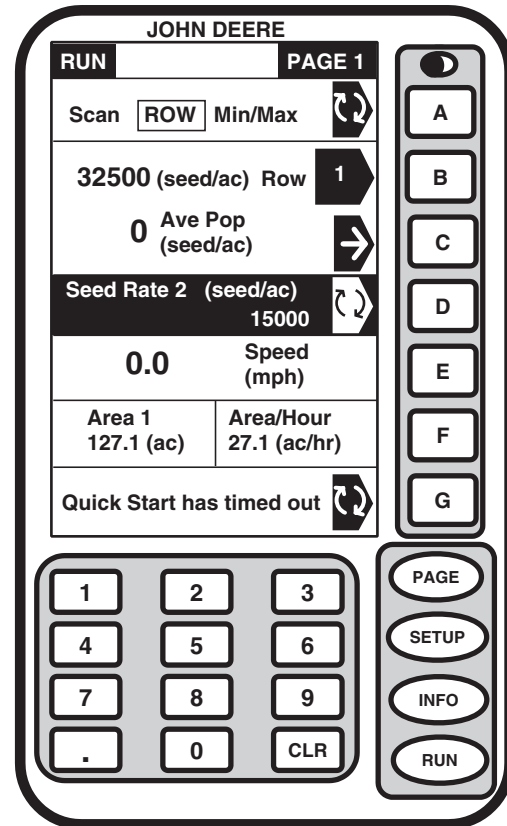


Continued on next page

AG,OUO1074,1587 -19-29NOV05-9/10

CAUTION: Quick Start has timed out

This caution is issued if there is no motion detected six seconds after the height sensor has gone to the down position.



A50770 -19-30OCT02

AG,OUO1074,1587 -19-29NOV05-10/10

Variable Rate Fertilizer Warnings

Warning Messages

WARNINGS are generated by the individual modules and Green Star Display alerting the operator to a serious condition or "situation" which has occurred of which the operator needs to be informed. Typically the operator should stop and rectify the "condition or situation" causing the WARNING before proceeding. WARNINGS are displayed as full page displays. The title displayed in the top display section is "WARNING". Examples of WARNINGS would be the indication of a planter row(s) not planting or ground speed at zero when planter is still planting (ground speed sensor failure detection). WARNINGS are the highest level of visual alarms presented to the operator. When a WARNING is cancelled without the "condition or situation" causing it being corrected, a caution is displayed on the bottom line of the display as a continued alert to the "situation". If more than one is occurring at the same time, key G can be used to toggle between WARNING alerts.

CAUTIONS are generated by the individual modules and Green Star Display alerting the operator to a function which is out of limits or a "situation" is or has occurred of which the operator needs to be informed. The caution message is displayed on line "G". Examples of CAUTIONS would be the indication of a planter row's population outside of the HI/LO range specified, or a low Hopper Level indication, or a "WARNING" for which the operator has acknowledged the "WARNING" reducing it to a CAUTION message, which is then displayed on line "G". CAUTIONS are the middle level of visual alarms presented to the operator.

Advisories are operator error messages displayed on line "G" telling the operator that an incorrect "action" has occurred such as entering a value which is out of the acceptable range for that constant. They are the lowest level of visual alarms presented to the operator.

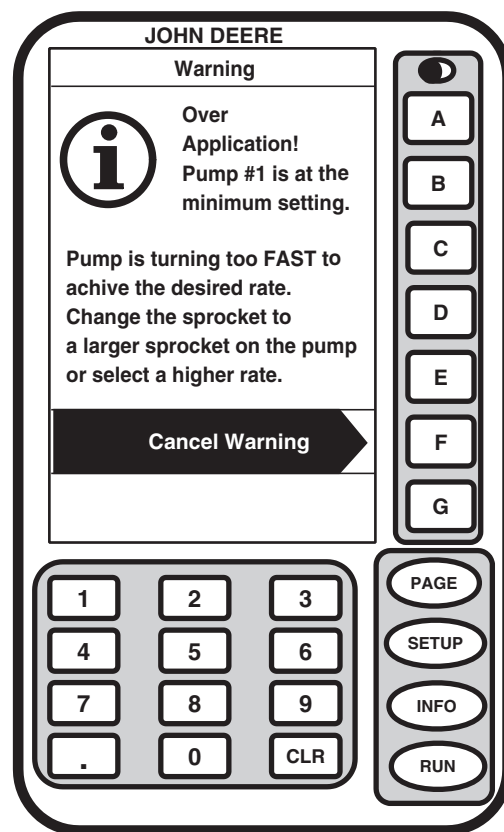
OUO6074,0000688 -19-23OCT02-1/1

Variable Rate Fertilizer Warnings

WARNING: Over Application!

NOTE: This warning will be followed by a "Over Application! Pump #1 at min. setting." caution on line "G".

This warning is issued if the pump adjusts to its lowest setting and is still overapplying. The large sprocket should be installed to change the pump speed range or a higher rate should be selected. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



Continued on next page

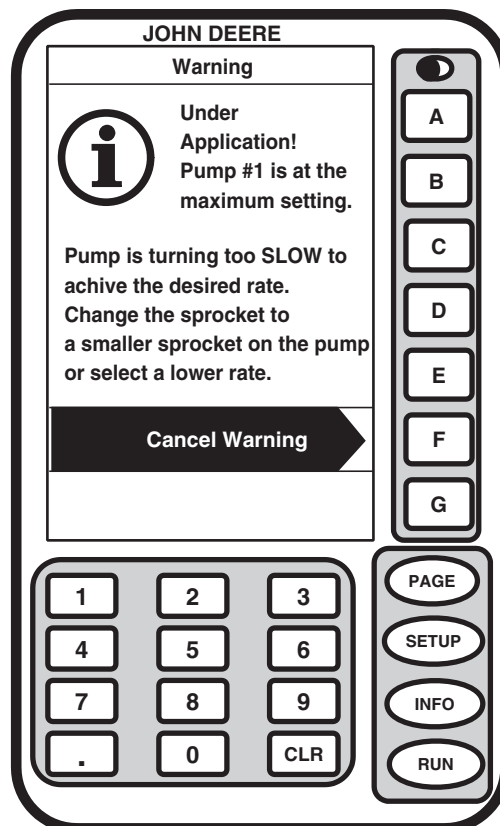
OUO6074,0000688 -19-25OCT02-1/7

A50791 -19-30OCT02

WARNING: Under Application!

NOTE: This warning will be followed by a "Under Application! Pump #1 at max. setting." caution on line "G".

This warning is issued if the pump adjusts to its highest setting and is still underapplying. The small sprocket should be installed to change the pump speed range or a lower rate should be selected. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



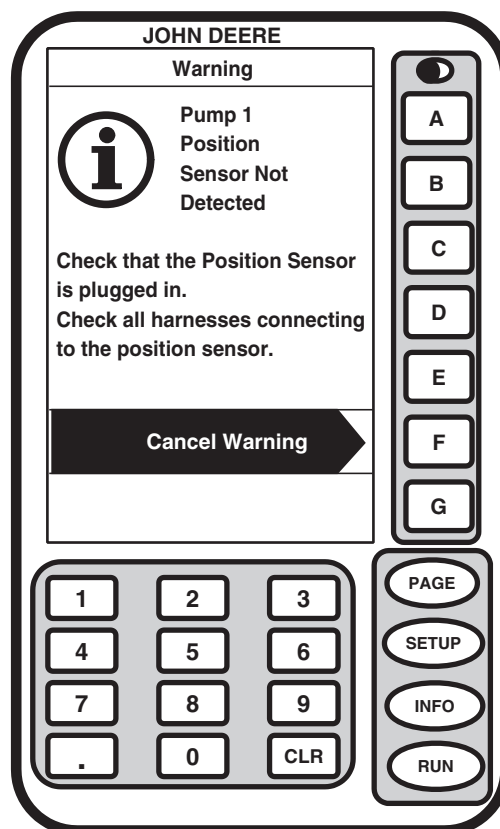
A50792 -19-30OCT02

OUO6074,000068C -19-25OCT02-2/7

WARNING: Pump Position Sensor Not Detected

NOTE: This warning will be followed by a "Pump Sensor Fail." caution on line "G".

This warning is issued if no signal is received from the pump position sensor. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



A50793 -19-30OCT02

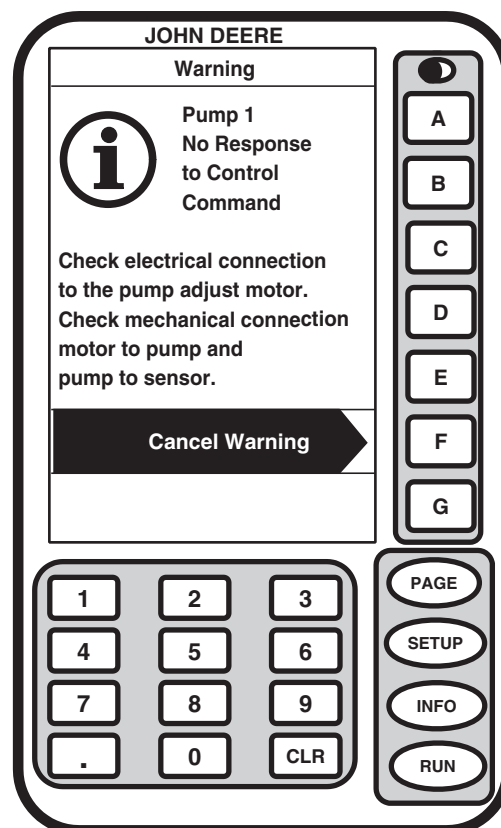
Continued on next page

OUO6074,000068C -19-25OCT02-3/7

WARNING: No Pump Response To Control Command

NOTE: This warning will be followed by a "Pump not responding. Check System." caution on line "G".

This warning is issued if no signal is received from the pump adjustment motor. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



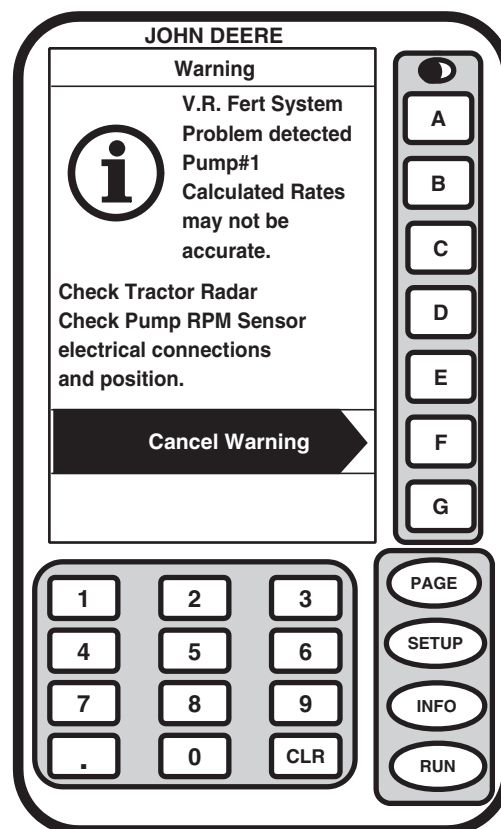
A50794 -19-30OCT02

OUO6074,000068C -19-25OCT02-4/7

WARNING: V.R. Fert System Problem. Calculated rates may not be accurate.

NOTE: This warning will be followed by a "Pump #1 Calculated Rate more than 10% off Target." caution on line "G".

This warning is issued if calculated rate is more than 10 percent off target rate. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



A50795 -19-30OCT02

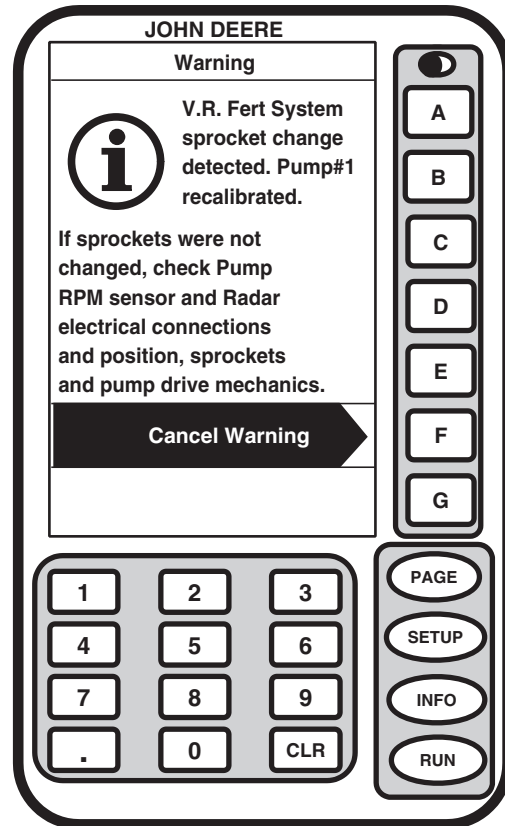
Continued on next page

OUO6074,000068C -19-25OCT02-5/7

WARNING: V.R. Fert. System sprocket change detected.

NOTE: This warning will be followed by a "Pump #1 sprocket change detected" caution on line "G".

This warning is issued if the pump application changes without a sensor detecting motor adjustment. There is a caution associated with this warning. When the warning is cleared there is a caution issued.



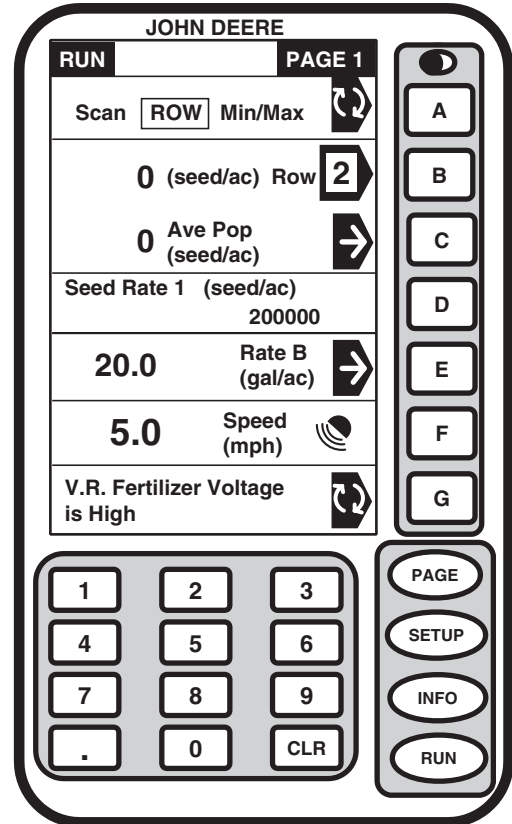
Continued on next page

OUO6074,000068C -19-25OCT02-6/7

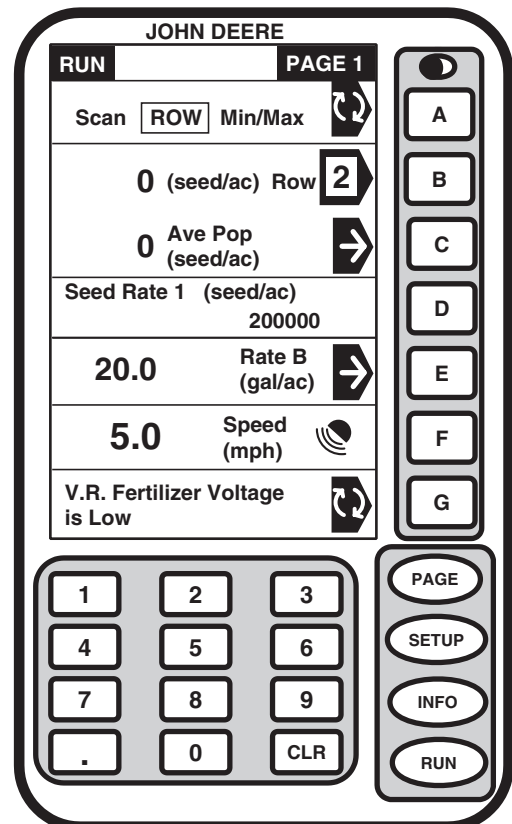
A50796 -19-30OCT02

CAUTION: V.R. Fertilizer High/Low Voltage

This caution is issued if variable rate fertilizer voltage is too high or too low.



A50797 -19-30OCT02



A50798 -19-30OCT02

Diagnostics

Hardware and Software Version Identification

There are different hardware and software versions for the display and each control wedgebox.

GREENSTAR™ Display

Press INFO—GREENSTAR™ Display

- Serial number, hardware and software versions are displayed.
- Serial number is also located on back of display unit.

SEEDSTAR™ Seed Monitor/Variable Rate Drive Wedgebox

Press INFO—Planter—Diagnostics—Hardware/Software Versions.

- Serial number, hardware and software versions are displayed.
- Serial number is also on a decal attached to wedgebox.

SEEDSTAR™ Variable Rate Fertilizer Wedgebox

Press INFO—V.R. Liq Fert—Diagnostics—Hardware/Software Versions.

- Serial number, hardware and software versions are displayed.
- Serial number is also on a decal attached to wedgebox.

SEEDSTAR™ Electrical Frame Control Box

NOTE: Only appears when planters are equipped with SEEDSTAR™ frame control.

INFO—Plant Control Box

- Hardware and software versions are displayed.

OUO6074.0000DEE -19-21APR05-1/1

Performance Data

Use this for diagnosing variable rate drive.

Press INFO—Planter—Diagnostics—Performance Data to view the performance of various components on the machine.

JOHN DEERE

INFO Performance Data

Ground Speed (mph): 0.0
 Wheel Sensor: INACTIVE
 Planter Position: UP (0)

	Command Speed (rpm)	Speed (rpm)	PWM (percent)
Motor #1	0.0	0.0	0.0
Motor #2	0.0	0.0	0.0

Halfwidth Disconnect
 LEFT CLOSED RIGHT CLOSED

INFO Planter Diagnostics

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.

A50188 -19-12SEP02

OUO6074,0000DEF -19-21APR05-1/1

Seed Tube Sensor Test

Press INFO—Planter—Diagnostics—Diagnostic Procedures—Seed Tube Sensor Test to see which sensors are operational.

JOHN DEERE

INFO Seed Tube Sensor Test

These seed sensor(s) are operational:
 1 - 24

INFO Diagnostic Procedures

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.

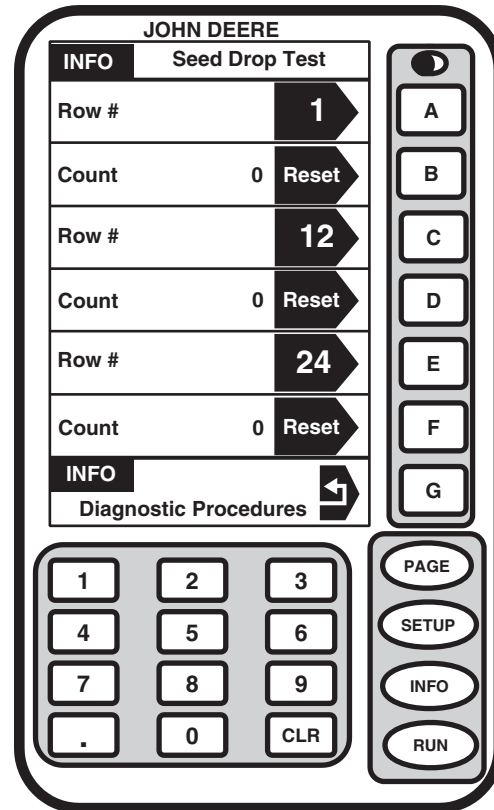
A50062 -19-09SEP02

OUO6074,00005E5 -19-12MAY04-1/1

Seed Drop Test

1. Press INFO—Planter—Diagnostics—Diagnostic Procedures—Seed Drop Test.
2. Press keys A, C or E and enter rows being tested.
3. Press keys B, D and F to reset counters to zero.
4. Drop a predetermined amount of seed through sensors being tested and view monitor to see if the count is identical.

If count is significantly different, sensors may need to be cleaned or replaced.

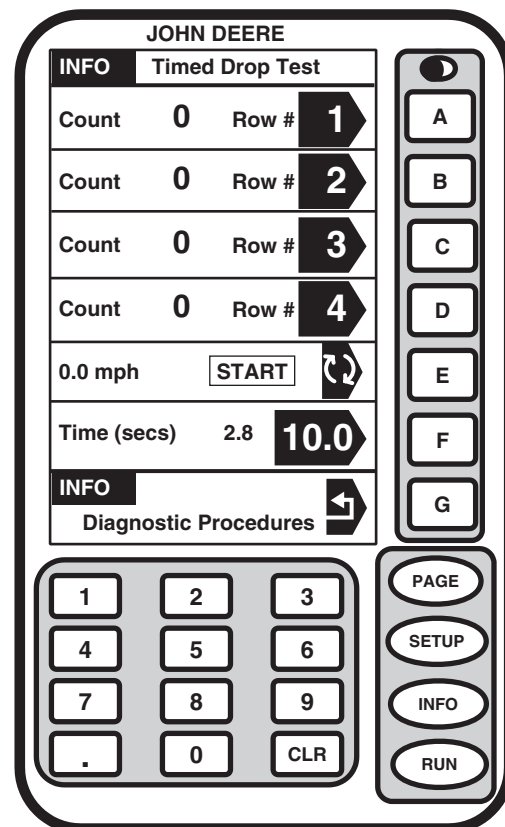


A50063 -19-09SEP02

OUO6074,00005E6 -19-30AUG02-1/1

Timed Drop Test

1. Press INFO—Planter—Diagnostics—Diagnostic Procedures—Timed Drop Test.
2. Press keys A—D and enter rows being tested.
3. Press key F to enter time span to test.
4. Begin planting at preferred speed. Speed is displayed on line E.
5. Press key E to begin timed count. Line F will show elapsed time. Key E can be pressed to stop timing. Lines A—D will display seed counts.



A54257 -19-15APR04

OUO6074,0000C34 -19-15APR04-1/1

Rotate Meters Test

Press INFO—Planter—Diagnostics—Diagnostic Procedures—Rotate Seed Meters. This screen will display Wheel Sensor input, Planter Position, and command speed versus actual speed of motors. The number of motors diagnosed can be selected with Motor Selection key. Values will appear/change each time Rotate Seed Meters key is pressed.

JOHN DEERE

INFO Rotate Meters Test

Wheel Sensor: INACTIVE
Planter Position: UP (0)

Motor	Command Speed (rpm)	Speed (rpm)	PWM (percent)
#1	0.0	0.0	0.0
#2	0.0	0.0	0.0

Motor Selection **ALL** →

Rotate Seed Meters →

INFO Diagnostic Procedures ↩

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

A56212 -19-22APR05

OUO6074,0000DE7 -19-20APR05-1/1

VRD Event Logs

Event logs are helpful for dealer troubleshooting. They can be accessed by pressing INFO—Planter—Diagnostics—Diagnostic Procedures—VRD Event Logs.

JOHN DEERE

INFO Event Log

Clear all Event logs →

Initiate Event log save →

Display saved logs →

INFO Diagnostic Procedures ↩

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

A51400 -19-04DEC02

OUO6074,0000C23 -19-12APR04-1/1

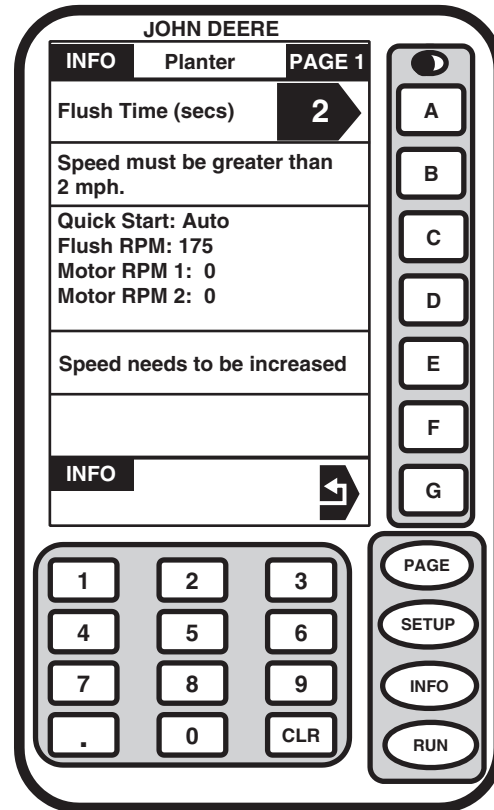
VRD Motor/Valve Flush

If variable rate motors do not shut off when in transport or on end turns, it is more than likely due to valve contamination. The Motor/Valve Flush procedure will evacuate any contamination.

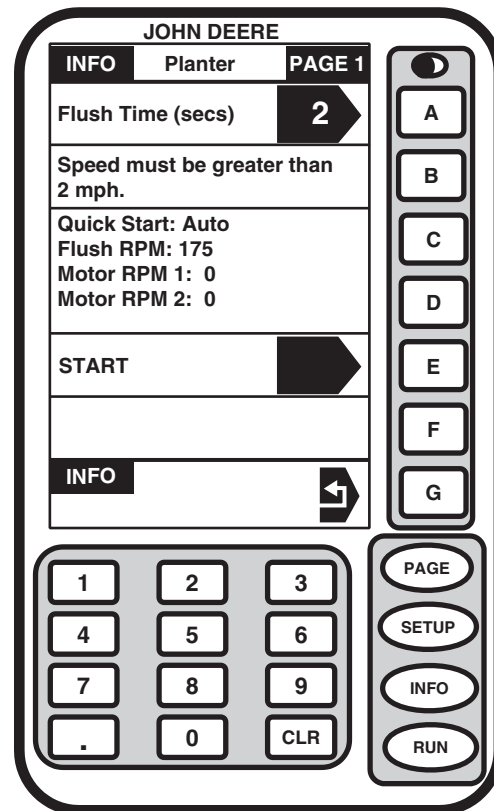
1. Press INFO—Planter—Diagnostics—Diagnostic Procedures—Motor/Valve Flush.
2. Press key A and enter a flush duration time from 1 to 3 seconds.
3. With planter fully connected and unfolded, lower planter while driving through field.

NOTE: Line E may display “Speed needs to be increased”. The planter must be traveling above 4 km/h (2 mph) for the flush to be performed.

4. Press key E to START the motor/valve flush.



A50064 -19-09SEP02

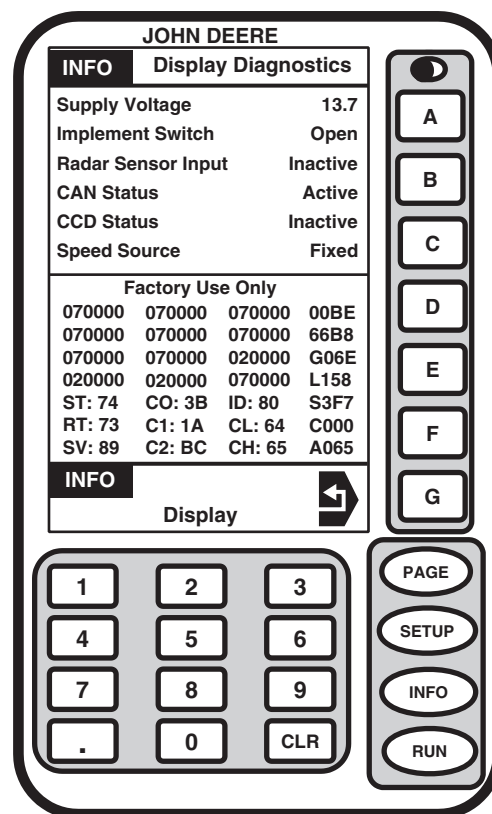


A50065 -19-09SEP02

System Voltages

NOTE: Expected values are determined with tractor engine OFF, key turned to ACC, and all sensors properly zeroed.

Press INFO—GreenStar Display—Display Diagnostics to view the supply voltage on line one. Expected voltage is 11 or higher.



A50112 -19-09SEP02

OUO6074,0000DF0 -19-21APR05-1/2

NOTE: Expected values are determined with tractor engine OFF, key turned to ACC, and all sensors properly zeroed.

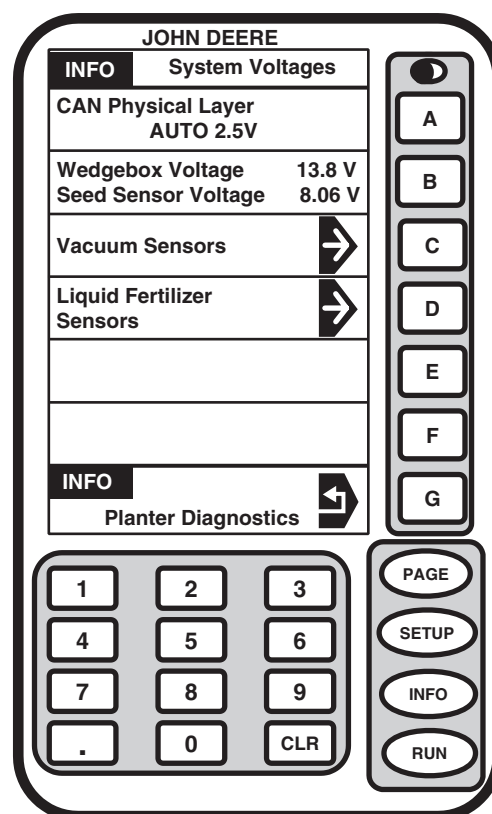
Press INFO—Planter—Diagnostics—System Voltages.

Line A shows CAN Physical Layer voltage.

Line B shows Wedgebox and Seed Sensor Voltage. Expected wedgebox voltage is 11 or higher. Expected seed sensor voltage is 8.

Press “Vacuum Sensors” to view voltage values. With vacuum properly zeroed, the expected voltage is 0.5v to 1v nominal.

Press “Liquid Fertilizer Sensors” to view voltage values. With trapped pressure released from both hoses and manifold and sensors properly zeroed, the expected voltage is 0.5 nominal.



A50114 -19-09SEP02

OUO6074,0000DF0 -19-21APR05-2/2

Vacuum Sensor Diagnostics

1. Ensure vacuum wiring is properly connected.

If only one vacuum sensor is used, it **MUST** be connected to LEFT VAC wire.

2. Ensure vacuum hose is properly connected.

Connect hose to P2 port (A).

3. Check for air leaks in hose between sensor and vacuum meter.

4. Turn tractor OFF. Turn key to ACC.

5. Ensure correct number of vacuum sensors are selected.

SETUP—Planter—Planter Configuration—Sensors—
Number of Vacuum Sensors.

6. Ensure vacuum is calibrated and zeroed correctly.

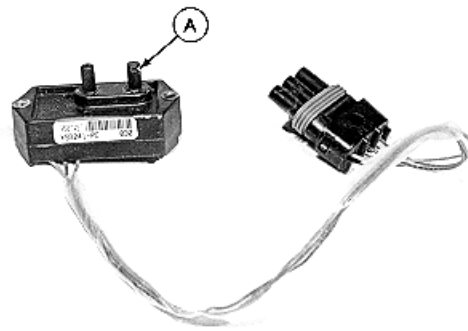
SETUP—Planter—Calibrations—Vacuum Sensor.

- Each vacuum calibration number should be 5.66.
- ZERO each vacuum when vacuum pump is NOT operating.

7. Ensure voltages are correct.

INFO—Planter—Diagnostics—System Voltages—
Vacuum Sensors.

- Wedgebox voltage **MUST** be 11 volts or higher.
- Vacuum sensor voltage should be approximately 0.5v to 1v when vacuum pump is NOT operating.
- If voltage is ZERO, check wiring.



A—P2 Port

A40613 -UN-30DEC96

QUO6074,00005F4 -19-05SEP02-1/1

Liquid Fertilizer Sensor Diagnostics

1. Turn tractor OFF. Turn key to ACC.

2. Ensure sensor wiring is properly connected.

If only one sensor is used, it MUST be connected to LEFT FERT wire.

3. Ensure correct number of sensors are selected.

SETUP—Planter—Planter Configuration—Sensors—
Number of Liquid Fert. Sensors.

4. Ensure sensors are calibrated and zeroed correctly.

SETUP—Planter—Calibrations—Liquid Fert. Sensor.

- Calibration number should be 37.5 for each sensor.
- Release trapped pressure in fertilizer manifold, then press ZERO for each sensor.

5. Ensure voltages are correct.

INFO—Planter—Diagnostics—System Voltages—
Liquid Fertilizer Sensors.

- Wedgebox voltage MUST be 11 volts or higher.
- Sensor voltage should be approximately 0.5 volts. If voltage is 0, check wiring.

OUO6074,0000601 -19-09SEP02-1/1

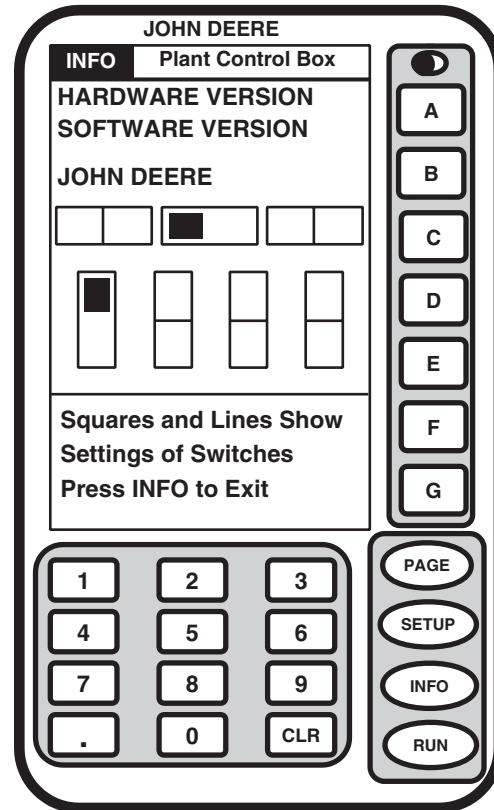
Frame Control Box Functionality

If planter is equipped with SeedStar™ frame control or SeedStar™ half width disconnect, this selection is available on the INFO page.

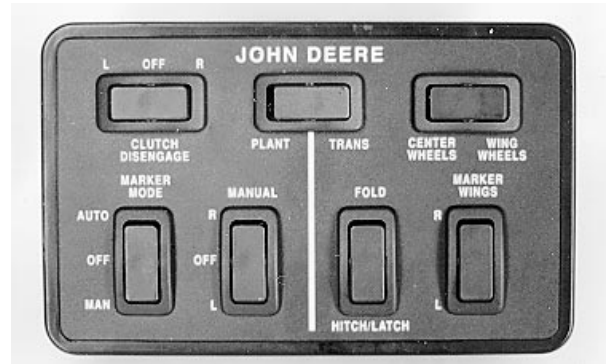
This screen displays switch operation of frame control box. This function is a diagnostic function. It only tests the function of the frame control box switches. Full page warnings will overwrite this page if used during operation of the field functions with tractor running.

1. Press INFO—Plant Control Box to display this screen.
2. Press any switch and observe if a black square appears on screen in the location of activated switch.

The images show the top middle frame control box switch in the plant position and the bottom left switch in the auto position.



A50118 -19-09SEP02



Frame Control Box

A40374 -UN-15OCT96

OUO6074,0000DF1 -19-21APR05-1/1

Troubleshooting

General Note

When trying to diagnose a problem with the variable drive system, use the following tools to help locate problems:

Reference variable drive Setup Summary page to identify setup errors. The Setup Summary page can be located by pressing INFO—Planter—Configuration Summary on the GREENSTAR™ display. Note, there are two pages in the setup summary. To view the second page, press PAGE on the GREENSTAR™ display.

Reference the variable drive Performance Data page to identify performance problems. The Performance Data page can be located by pressing INFO—Planter—Diagnostics—Performance Data on the

GREENSTAR™ display. If row failed warnings are interfering with diagnosing variable drive problems, turn all of the seed sensors off. To diagnose problems while running without actually metering seed/chemical, disconnect the seed/chemical meters using the disconnect. To diagnose problems without engaging the row unit in the ground, set the frame height start position to start the motors with the row units off the ground (drawn machines only).

A warning tone will sound each time a motor starts or stops. An asterisk (*) will also appear next to the population rate selection and the rate screen background will turn from black to white on the RUN Page whenever there is at least (ONE) motor turning.

OUO6074,0000DF2 -19-21APR05-1/1

Error and Fault Codes

WARNING Fault Codes

- **020 Implement Disconnected**

One or more Monitor Controller Wedgeboxes disconnected. This fault code happens when an implement fails to respond to the GREENSTAR™ Displays roll call, every eight seconds. It is often accompanied by fault code 110 due to the brief intermittent connection/transient that occurs as an implement is disconnected.

This fault code could be the expected result of an operator disconnecting an implement, or could be caused by an intermittent CAN connection. It can also occur if an implement stops communicating on the CAN bus, such as from power loss or internal faults.

- **021 Display Conflict**

This fault code occurs when a Monitor Controller Wedgebox asks for a display allocation that is already part of an existing allocation. The fault code indicates that some controller did not get to display information as it intended.

The proper response to this fault code is to run a Standard Layout with all CAN subsystems connected that will be used in the application. This function is found on the SETUP—Run Page Layout screen.

- **030 Too Many Devices on CAN Bus**

This fault code appears when more than eight CAN ID's (implements) attempt to log in to the GREENSTAR™ Display.

- **031 GREENSTAR™ Display Overload**

This fault code can occur when an unusually high amount of CAN messages are sent to the display in a short period of time, such as from pressing the PAGE key repeatedly in very quick succession. When this fault code occurs, the display has missed receiving some messages and is, therefore out of synchronization with the implements; thus cycling of power is required to re-synchronize the entire display system.

This fault code can also occur when a CAN node is sending out messages that are properly received by the display, but the transmitting node does not see

the acknowledge signal and endlessly re-sends the original message.

- **033 Memory Failure**

This fault code occurs when a stored parameter is not stored after three consecutive write attempts, and indicates a probably-permanent memory failure.

Caution Fault Codes

- **110 CAN Bus Communications Problem**

This fault code is the one most likely seen. Any type of problem with the CAN bus (wiring harness, electrical interface in each CAN node, terminators, etc.) will likely cause a Fault Code 110. Some of the potential problems include: faulty terminators, electrical wiring intermittent short or open, damaged CAN interface in a controller, loose connector, or connection.

A miswired CAN cable will also produce a 110 fault code.

In addition, this fault code can be caused by out-of-sequence or missing CAN messages, or improper commands (related to cursor positioning).

- **111 CAN to CCD Queue Overflow**

This fault code occurs when the CCD transmit queue overflows, usually as a result of a CCD bus problem.

- **112 Display Conflict**

This fault code occurs when a controller asks for a display allocation that is already part of an existing allocation. The fault code indicates that some controller did not get to display information on the RUN page as it intended.

The proper response to this fault code is to run a Standard Layout with all CAN subsystems connected that will be used in the application. This function is found on the SETUP—Run Page Layout screen.

- **113 Incompatible Monitor/Controller**

This fault code occurs when a CAN command is received that the display does not know how to process. This could be because of a mismatch between controller and display software revisions.

Troubleshooting GREENSTAR™ Display

Symptom	Problem	Solution
Screen not readable.	Contrast incorrectly set.	Adjust contrast.
	Screen backlighting set too low.	Increase backlight setting.
Display wrong speed.	Wrong calibration.	Enter correct calibration value in SETUP or recalibrate on 122 m (400 ft) course. Change setup to English units.
	Set for Metric units.	Go to SETUP—System Settings and select correct units.
	Speed reading erratic.	Radar mount loose or vibrates.
No radar speed reading.	No calibration value entered.	Calibrate radar.
	Windy or dusty conditions.	Change to a different speed source.
No radar calibration value.	Display installed on 7000/8000/9000 Series or newer tractor with factory installed radar.	Calibrate radar per tractor operator's manual.

AG,OUO1074,1527 -19-12MAY04-1/1

Troubleshooting SEEDSTAR™

Symptom	Problem	Solution
Warning: Verify power on pins 1 and 3.	Machine not equipped with variable rate drive.	If machine is not equipped with VRD, change software code. See SEED MONITOR WARNINGS in Seed Monitor Warnings section.
	Machine is equipped with variable rate drive.	Check pins 1 and 3 for 12 volt power at ISO coupler.
No vacuum reading.	Faulty wire connection.	Check wiring harness and repair.
	Blower not running.	Start blower motor.
	Vacuum line on wrong fitting on sensor.	Install vacuum line to sensor P2 fitting.
	Incorrect planter configuration.	See SETUP—Planter—Planter Configuration—Sensors. Enter correct number of vacuum sensors.
	Vacuum section not displayed on RUN page.	Select SETUP—Run Page Layout to reformat items displayed on RUN page.
	Sensor connected to wrong wire harness lead.	If only one vacuum sensor is used, correct to wire labeled LEFT VACUUM.
Wrong vacuum reading.	Erroneous zero value.	Stop blower motor and zero in SETUP—Planter—Calibrations—Vacuum Sensor.
	Wrong calibration value.	Enter correct calibration value (5.66) in SETUP—Planter—Calibrations—Vacuum Sensor.
	Faulty vacuum sensor.	Replace sensor.

Continued on next page

OUO6074.0000C24 -19-08MAR06-1/4

Symptom	Problem	Solution
No high or low population reading.	Dirty seed tube sensors.	Clean sensors. See CLEANING SEED SENSOR in Seed Tube Sensors section.
	No radar speed.	
	Seed sensors turned off.	See SEED SENSORS ON/OFF AND SELECTING SPLIT ROWS to turn seed sensors on.
	Faulty wire harness connection. Incorrect voltage to sensors.	Correct wire harness connection. See Technical Manual TM1601.
Wrong population reading.	Dirty seed tube sensors.	Clean sensors. See CLEANING SEED SENSOR in Seed Tube Sensors section.
	Row spacing incorrect.	Correct row spacing in SETUP.
	Speed reading incorrect.	Correct radar calibration or troubleshoot radar.
	Windy or dusty conditions.	Change to a different speed source.
	Set for metric units.	Go to SETUP—System Settings, and select correct units.
	Speed reading too high.	See wrong speed reading above.
	Planting seed at a rate exceeding sensor capability.	Install AccuCount™ sensors or use Population Adjust.
	Planting Hill-Drop cotton.	Multiple seeds pass seed sensor at one time.
Row failure warning.	Meter not planting.	Seed hopper empty, fill with seed.
	Harness problem.	Inspect harness and connections.
	Planting in rocky conditions.	Seeds knocked off disk, adjust row unit down force.
	Dirty seed tube sensors.	Clean sensors. See CLEANING SEED SENSOR in Seed Tube Sensors section.

Continued on next page

OUO6074,0000C24 -19-08MAR06-2/4

Symptom	Problem	Solution
Wrong area reading.	Planter width incorrect.	Enter correct planter width in SETUP—Planter—Planter Configuration—Planter Width.
	Half-width or third-width disconnect on.	Select “Reduce Area by these Rows” when using disconnect feature.
	Radar problem.	Correct radar calibration or troubleshoot radar.
No planter monitor reading.	Electrical connections not correct.	Check fuses in tractor. Check connections on back of rear tractor connector. C and D connections must be tight (C-red, D-black). Remove splash-shield by inserting finger and prying up on front of cover to remove. Insert wires in C and D until tight. Pin removal tool will be required if wires are in wrong position.
No liquid fertilizer reading.	There is no pressure.	Drive planter forward and verify pump is primed.
	Incorrect planter options.	SETUP—Planter Configuration—Sensors and select correct number of liquid sensors.
	Fertilizer section not displayed on RUN page.	Select—Run Page Layout to reformat items displayed on RUN page.
	Sensor connected to wrong wire harness lead.	If only one liquid sensor is used, it must be connected to wire labeled LEFT FERT.
	Faulty wire connection.	Check wiring harness and repair.

Continued on next page

OUO6074.0000C24 -19-08MAR06-3/4

Symptom	Problem	Solution
Wrong liquid fertilizer reading.	Wrong calibration valve.	Enter calibration value (37.5) in SETUP—Planter—Calibrations—Liquid Fert. Sensor.
	Erroneous ZERO valve.	Relieve trapped pressure in fertilizer manifold. ZERO sensor in SETUP—Planter—Calibrations—Liquid Fert. Sensor. See LIQUID FERTILIZER SENSOR CALIBRATION in SETUP Planter Configuration and Seed Monitor section.
	Faulty liquid fertilizer sensor.	Replace sensor.
	Sensor plugged.	Remove sensor and flush with warm water. Do NOT insert hard object into sensor when cleaning. Sensing unit may be damaged.
Seedstar™ disconnect control box not functional.	Control box in tractor cab not functional.	INFO—Planter—Plant Control Box. With tractor engine off and key in on position, press switches and verify response on screen.
	Frame functions not operating.	Properly insert SCV hose tips into tractor. See planter tech manual to diagnose remainder of planter control system.

OUO6074,0000C24 -19-08MAR06-4/4

Troubleshooting Variable Rate Drive

Symptom	Problem	Solution
Warning: Verify power on pins 1 and 3.	No 12 volt power on ISO coupler pins 1 and 3.	Check pins 1 and 3 for 12 volt power.

Continued on next page

AG,OUO1074,1589 -19-30NOV05-1/15

Symptom	Problem	Solution
WARNING SCREEN: Motor 1, 2 disabled. Drive failed to respond. Verify hydraulic power. Check operator's manual. <i>NOTE: This warning occurs when motor speed should be greater than 18 rpm and the motors are currently not turning.</i>	System not enabled to clear warning screen.	Press key F on the GREENSTAR™ display to enable system.
	No hydraulic pressure/flow. Low hydraulic pressure/flow to variable drive motors.	Make sure hoses are plugged into tractor SCV or power beyond. Verify correct location of pressure and return lines. A one way check valve is installed in the return line hose tip. Set tractor SCV to continuous detent/flow. Activate tractor SCV. Maintain full tractor engine rpm. Increase tractor SCV flow setting. Minimize flow to other hydraulic functions. Verify tractor hydraulic system performance.
Continued on next page		AG,OUO1074,1589 –19–30NOV05–2/15

Symptom	Problem	Solution
	No motor speed detected by variable drive controller.	Verify motor speed sensor electrical connections. Note: If this condition exists, the motor without any speed sensor feedback will rotate at a very high rpm for several seconds before full page warning is issued. Verify set screw in motor coupler is tightened to motor speed shaft. Verify hydraulic valve electrical connection.
	Mechanical binding causing high torque.	Wing to mainframe drive shaft couplers misaligned. Align drive shaft couplers. Failed drive shaft support bearings. Replace failed bearings. Misaligned seed meter and/or chemical hopper disconnects. Inspect and adjust seed meter and/or chemical hopper disconnects. Identify and repair any other sources of mechanical binding.
	A one hydraulic motor system is setup for two hydraulic motors.	Set number of hydraulic motors to one on SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration. Verify setup on INFO—Planter—Configuration Summary.

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AG_OUO1074,1589 -19-30NOV05-3/15

Symptom	Problem	Solution
WARNING SCREEN: Motor 1,2 disabled. Drive failed to respond. Verify hydraulic power. Check operators manual. Minimum ground speed xx mph. <i>NOTE: This warning occurs when motor speed should be between 11.5 rpm and 18 rpm and the motors are currently not turning.</i>	System not re-enabled to clear warning screen.	Press key F on the GREENSTAR™ display to enable system.
	Motors are not designed to operate less than 18 rpm. For motors to operate above 18 rpm, the ground speed must be above the minimum. The minimum ground speed varies depending on SETUP.	Operate planter above minimum ground speed. See INFO—Planter—Configuration Summary to view minimum ground speed for current setup.
	No hydraulic pressure/flow.	Make sure hoses are plugged into tractor SCV or power beyond. Verify correct location of pressure and return lines. A one way check valve is installed in the return line hose tip. Set tractor SCV to continuous detent/flow. Activate tractor SCV.
	Low hydraulic pressure/flow to variable drive motors.	Maintain full tractor engine rpm. Increase tractor SCV flow setting. Minimize flow to other hydraulic functions. Verify tractor hydraulic system performance.

Symptom	Problem	Solution
	No motor speed detected by variable drive controller.	Verify motor speed sensor electrical connection. Note: If this condition exists, the motor without any speed sensor feedback will rotate at a very high rpm for several seconds before a full page warning is issued. Verify set screw in motor coupler is tightened to motor speed shaft. Verify hydraulic valve electrical connection.
	Mechanical binding causing high torque.	Wing to mainframe drive shaft couplers misaligned. Align drive shaft couplers. Failed drive shaft support bearings. Replace failed bearings. Misaligned seed meter and/or chemical hopper disconnects. Inspect and adjust seed meter and/or chemical hopper disconnects. Identify and repair any other sources of mechanical binding.
	A one hydraulic motor system is setup for two hydraulic motors.	Set number of hydraulic motors to one on SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration. Verify setup on INFO—Planter—Configuration Summary.

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AG_OUO1074,1589 -19-30NOV05-5/15

Symptom	Problem	Solution
WARNING SCREEN: Motor 1,2 is operating at wrong speed. <i>NOTE: This warning occurs when the motor speed is less than 70 percent or 120 percent of the correct motor speed for the selected population rate.</i>	Proportional valve contaminated.	Perform hydraulic motor/valve flush. Press INFO—Planter—Diagnostics—Diagnostic Procedures—Motor/Valve Flush and see VRD MOTOR/VALVE FLUSH in Diagnostic section.
	Motors are not designed to operate less than 18 rpm. For motors to operate above 18 rpm, the ground speed must be above mph shown in Configuration Summary. The minimum ground speed varies depending on variable setup.	Operate planter above minimum ground speed. See INFO—Planter—Configuration Summary to view minimum ground speed for current setup.
	Mechanical binding causing torque/speed fluctuations.	Loose chain on drive system causing chain to jump sprocket teeth. Tighten chain idler. Misaligned chains causing chain to jump sprocket teeth. Align drive and driven sprockets. Align chain idler. Wing to mainframe drive shaft couplers misaligned. Align drive shaft couplers. Failed drive shaft support bearings. Replace failed bearings. Misaligned seed meter and/or chemical hopper disconnects. Inspect and adjust seed meter and/or chemical hopper disconnects. Identify and repair any other sources of mechanical binding.

Troubleshooting

Symptom	Problem	Solution
Seed rate selection line appears black with white lettering.	Motor speed sensor detects no motion/motors are not turning.	Check connection to speed sensor.
	Faulty motor speed sensor.	Replace motor speed sensor.
	Seal blown in motor.	See your John Deere dealer.
	Hose clamps on motor speed sensor coupler loose.	Tighten clamps.
	Valve on hydraulic motor not getting any power.	Check connection to valve.
WARNING SCREEN: STOP. Power Interruption. Possible skip.	Power lost to controller.	Check connection of 30-way METRAPAK™ connector on wedgebox.
		Check 9-pin connector.
		Check 3-pin convenience outlet connector.
		See your John Deere dealer.
WARNING SCREEN: No Tractor Speed, Planter Moving.	The radar signal has been lost for a period of three seconds.	Verify radar connection.

Continued on next page

AG,OUO1074,1589 -19-30NOV05-7/15

Symptom	Problem	Solution
WARNING SCREEN: Tractor/Planter Speed Error. <i>NOTE: This warning occurs when radar speed is significantly different from motion sensor speed.</i> <i>Extremely windy, dusty conditions will give radar false readings and cause this warning.</i> <i>Excessive wheel slippage on tire with motion sensor mounted to it, will cause this warning.</i>	Faulty radar.	Verify radar connection.
		Consult dealer or technical manual for further diagnostics.
	Faulty motion sensor.	Verify motion sensor connection.
		Verify motion sensor-to-disk clearance is 2—4 mm (0.08—0.16 in.) and wheel bearing is tight. Verify wheel is turning.
		Consult dealer or technical manual for further diagnostics.
No row failed warnings from planter monitor when drive motors stop.	Normal condition for planter monitor not to issue row failed warning below two mph.	Operate planter above two mph.

Continued on next page

AG,OUO1074,1589 -19-30NOV05-8/15

Symptom	Problem	Solution
Hydraulic motor(s) will not turn or stop turning.	Normal condition when ground speed is less than one mph under all conditions/setup. Depending on variable drive setup, the minimum speed the system will function at may be higher. Note: Planter monitor will not provide row failure warning under two mph.	Operate planter at ground speeds greater than minimum ground speed listed in INFO—Planter—Configuration Summary.
	System not enabled after warning screen is displayed.	Enable system by pressing key F on the GREENSTAR™ display.
	A population of zero has been selected.	Population set rate must be greater than zero.
	No hydraulic pressure/flow.	Make sure hoses are plugged into tractor SCV or power beyond.
		Verify correct location of pressure and return lines. A one way check valve is installed in the return line hose tip.
		Set tractor SCV to continuous detent/flow.
		Activate tractor SCV.
	Low hydraulic pressure/flow to variable drive motors.	Maintain full tractor engine rpm.
		Increase tractor SCV flow setting.
		Minimize flow to other hydraulic functions.
	Height sensor not calibrated (drawn machines).	Verify tractor hydraulic system performance.
		Calibrate height sensor. Press SETUP—Planter—Calibrations—Height Sensor. See calibrating height sensors in SETUP Planter—Variable Rate Drive Specific section.

Symptom	Problem	Solution
	Height sensor STOP position set too low (drawn machines).	Set height sensor STOP position at a frame height that allows the row unit opener blades to just touch the ground. If the stop position is set too low, the drive motors may turn on/off while planting due to wheel module float over rough ground conditions.
	Height sensor bracket not adjusted to specification (integral machines).	Adjust dimmer switches. Refer to ADJUSTING DIMMER SWITCH (HEIGHT SWITCH) FOR INTEGRAL MACHINES in Variable Rate Drive Machine Setup section.
	Planter not in DOWN position.	Lower planter below the start position. Verify planter is in down position by pressing INFO—Planter—Diagnostics—Performance Data.
	Planter motion sensor not active when planter is moving.	Verify motion sensor is active when planter is moving by pressing INFO—Planter—Diagnostics—Performance Data. Verify electrical connections to motion sensor. Check 2 mm (0.08 in.) gap between motion sensor and tone wheel bolted to the wheel. Wheel bearings may be loose or failed causing an increasing/decreasing gap on wheel motion sensor.

Continued on next page

AG.OUO1074,1589 -19-30NOV05-10/15

Symptom	Problem	Solution
	Mechanical binding causing high torque.	Wing to mainframe drive shaft couplers misaligned. Align drive shaft couplers. Failed drive shaft support bearings. Replace failed bearings. Misaligned seed meter and/or chemical hopper disconnects. Inspect and adjust seed meter and/or chemical hopper disconnects. Identify and repair any other sources of mechanical binding.
Hydraulic motor(s) continue to turn when planter is raised.	Motor proportional valve stuck from hydraulic oil contamination.	Perform flush motor procedure. Consult dealer or Technical Manual TM1601 for proportional valve cleaning procedure. Replace hydraulic oil and oil filter(s) in tractor.
Only one hydraulic motor of a two hydraulic motor system is turning.	Half width disconnect OPEN on either left or right side. Variable drive setup for only one motor. This condition will only engage the right hand side of the machine.	Close half width disconnect switch. Set number of hydraulic motors to two on SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration. Verify setup on INFO—Planter—Configuration Summary.
Motors turning backwards.	Full tractor pressure is being applied to the “T” port on the hydraulic valve manifold. Motor orientation on planter backwards. Valve manifold orientation on motor backwards.	Plumb hydraulic lines so hydraulic pressure is applied to the port labeled “P”. See installation instructions for correct orientation. See installation instructions for correct orientation.

Symptom	Problem	Solution
Hydraulic motor(s) turn at an erratic speed.	Proportional valve contaminated.	Perform hydraulic motor/valve flush. Press INFO—Planter—Diagnostics—Diagnostic Procedures—Motor/Valve Flush and see VRD MOTOR/VALVE FLUSH in Diagnostic section.
	Low hydraulic pressure/flow to variable drive motors.	Maintain full tractor engine rpm. Increase tractor SCV flow setting. Minimize flow to other hydraulic functions. Verify tractor hydraulic system performance.
	Mechanical binding causing torque/speed fluctuations.	Loose chain on drive system causing chain to jump sprocket teeth. Tighten chain idler. Misaligned chains causing chain to jump sprocket teeth. Align drive and driven sprockets. Align chain idler. Wing to mainframe drive shaft couplers misaligned. Align drive shaft couplers. Failed drive shaft support bearings. Replace failed bearings. Misaligned seed meter and/or chemical hopper disconnects. Inspect and adjust seed meter and/or chemical hopper disconnects. Identify and repair any other sources of mechanical binding.

Continued on next page

AG.OUO1074,1589 -19-30NOV05-12/15

Symptom	Problem	Solution
	Motors are not designed to operate less than 18 rpm. For motors to operate above 18 rpm, the ground speed must be above the minimum. The minimum ground speed varies depending on SETUP.	Operate planter above minimum ground speed. See INFO—Planter—Configuration Summary to view minimum ground speed for current setup.
When starting to plant from a stopped position, hydraulic motor(s) do not turn for a brief period. This creates a seeding gap in the field.	Normal operation to have an approximate 0.9 m (3 ft) seeding gap using Quick Start or a 9 m (10 ft) skip without Quick Start. <i>NOTE: These approximate distances will be longer if seed is not loaded on the seed meter disk.</i>	Lower planter a short distance ahead of where seed must reach the ground. This may require backing up, if planter is stopped in the middle of the field. Do Not back up while planter is lowered. Use Quick Start feature to minimize skip. Load seed on the seed meter disk prior to the start of productive seeding by lowering the planter into the DOWN position and driving forward with the vacuum on if required. When using Quick Start, begin forward travel in a low gear to take off slower. By taking off slow and then “gearing up” to speed, the skip will be smaller.
Many seeds on end of row when stopping abruptly.	VRD system requires a brief delay to shut off.	Start downshifting prior to end of row to reduce forward travel speed prior to stopping at end. This will allow VRD system more time to slow down and reduce the amount of seeds dropped at end when planter is stopped.

Continued on next page

AG,OUO1074,1589 –19–30NOV05–13/15

Symptom	Problem	Solution
Set population does not match monitored population.	Vacuum set too low/high.	Adjust vacuum to appropriate level.
	Problem with seed meter.	See operator manual for troubleshooting solutions.
	Wrong seed disk selected in variable drive setup.	Enter correct seed disk or meter in SETUP—Planter—Seed Disk/Meter. Verify disk selected in INFO—Planter—Configuration Summary.
	Wrong sprocket combination selected in variable drive setup.	Enter correct sprocket combination in SETUP—Planter—Planter Configuration—Variable Rate—Hydraulic Motor Configuration—Motor Gearing. Verify sprocket combination selected on INFO—Planter—Configuration Summary.
	Wrong row spacing selected in variable drive setup.	Enter correct row spacing in SETUP—Planter—Planter Configuration—Planter Frame—Row Spacing. Verify row spacing selected in INFO—Planter—Configuration Summary.
		Verify units used to setup row spacing (English/Metric). Change units on SETUP—System Settings page.
	Wrong row unit type selected.	Select correct row unit type (see VARIABLE RATE SETUP in SETUP Variable Rate Drive section).
Wrong seed population based on seed used/acre but selected rate and planter monitor agree.	Seed sensors can not count seeds passing through sensors at high rates.	Normal operation of planter monitor.
	Radar not calibrated.	Calibrate radar in SETUP—Planter—Calibrations—Radar Calibration. See RADAR CALIBRATION in SETUP Planter Configuration and Seed Monitor section.

Symptom	Problem	Solution
Planter monitor calculated acres does not match actual acreage.	Machine width not correct in planter monitor setup.	Enter correct machine width in SETUP—Planter—Planter Configuration—Planter Frame—Planter Width.
	When row failed warning was issued, seed sensors were ignored and machine width reduced.	This is a normal planter monitor mode selected by the operator. This is a temporary condition that will be reset when ground speed is reduced below two mph and then accelerated above two mph.
	Radar not calibrated.	Calibrate radar in SETUP—Planter—Calibrations—Radar Calibration. See RADAR CALIBRATION in SETUP Planter Configuration and Seed Monitor section.
Radar speed displayed on GREENSTAR™ display different than tractor performance monitor/corner post display.	Either the GREENSTAR™ display or tractor performance monitor/corner post display not calibrated with radar.	Calibrate radar in GREENSTAR™ by pressing SETUP—Planter—Calibrations—Radar Calibration. See RADAR CALIBRATION in SETUP Planter Configuration and Seed Monitor section. See tractor operators manual to calibrate tractor performance monitor/corner post display.

AG,QUO1074,1589 -19-30NOV05-15/15

Troubleshooting Variable Rate Fertilizer

Symptom	Problem	Solution
WARNING Screen: Pump Motor Drive Power is not detected. Turn off all power. Connect the 7-pin connector. Restart.	Power lost to motor.	Ensure 7-pin connector is plugged into tractor.
	Loose connector or pin.	Check 7-pin connector for proper voltage and inspect pins. See TM1601 or your John Deere dealer.
	Pinched wires in harness.	Inspect harness for damage. See TM1601 or your John Deere dealer.
	Blown fuse.	Check tractor fuses.
WARNING Screen: Pump # Position Sensor not detected. Unable to adjust rate/ calculated rate goes to zero.	Pump position sensor harness lead has an open or short.	Inspect position sensor leads for damage and proper connection.
		Check position sensor circuit on wiring harness. See TM1601 or your John Deere dealer for sensor diagnostics.
Unable to adjust rate. Calculated rate goes to zero.	Pump RPM sensor harness has an open or short.	Inspect pump RPM sensor leads for damage and proper connection.
		Check pump RPM sensor lead wiring harness. See TM1601 or your John Deere dealer.

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OUO6074,000068D -19-25OCT02-1/2

Symptom	Problem	Solution
WARNING Screen: Pump # No Response to Control Command. Unable to adjust rate.	Pump position sensor harness has an open or short.	Check pump position sensor leads for damage and proper connection.
		Check pump position sensor circuit on wiring harness. See TM1601 or your John Deere dealer.
	Loose set screw on sensor.	Check motor set screw for tightness.
	Motor does not turn.	See TM1601 or your John Deere dealer for motor diagnostics. Check motor wiring harness for damage.
GreenStar™ display shows “Controller Disconnected”.	Signal lost after power up.	Perform CAN diagnostics. See TM1601 or your John Deere dealer.
WARNING Screen: All Devices Unable to Communicate.	CAN signal lead short to power or ground.	Perform CAN diagnostics. See TM1601 or your John Deere dealer.
Motor does not adjust or blown fuse.	Pinched wires.	Inspect for pinched wires and repair.
	Damaged connector pin.	Inspect connector pins and repair.
	Stretched wires due to improper routing.	Inspect for damaged wires and repair.
WARNING Screen: Over Application.	Small rate sprocket used on pump.	Use large sprocket.
WARNING Screen: Under Application.	Large rate sprocket used on pump.	Use small sprocket.
WARNING Screen: V.R. Fert System Problem. Calculated rates may not be accurate.	Drive wheel slippage.	Increase pressure in variable rate fertilizer pneumatic contact wheel spring.
	Incorrect RPM sensor signal.	Adjust sensor for correct gap. If gap is correct, replace sensor.

Storage

Beginning of the Season Service

Before using the monitor after it has been stored, inspect for cleanliness and damage.

Thoroughly inspect monitor display, controller wedgebox, harnesses, radar and sensors for loose parts and adjust as necessary.

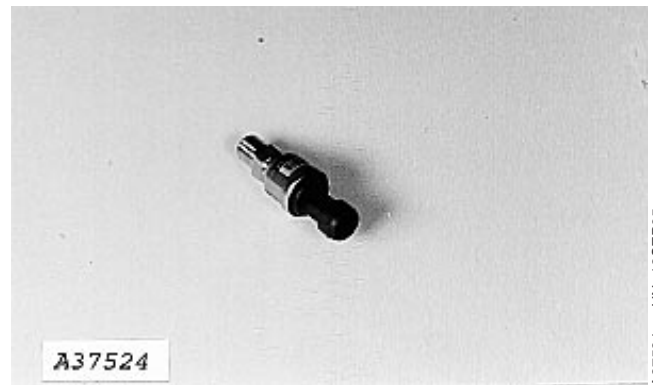
Clean any dirt or grease that may have accumulated before operating.

AG,OUO1074,1591 -19-12MAY04-1/1

Liquid Fertilizer Sensor

Remove sensor and flush with clean water.

Do not insert any object or tool into fluid port.



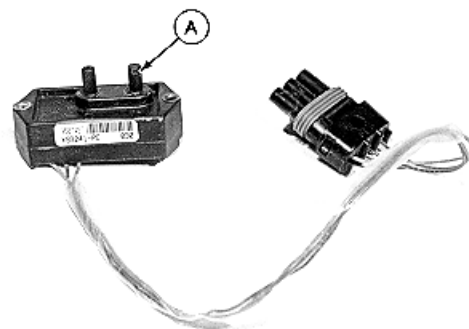
AG,OUO1074,1592 -19-24APR00-1/1

Vacuum Sensor

NOTE: P2 port (A) used for hose connection.

Protect when using water to wash planter.

A—P2 Port



AG,OUO1074,1593 -19-24APR00-1/1

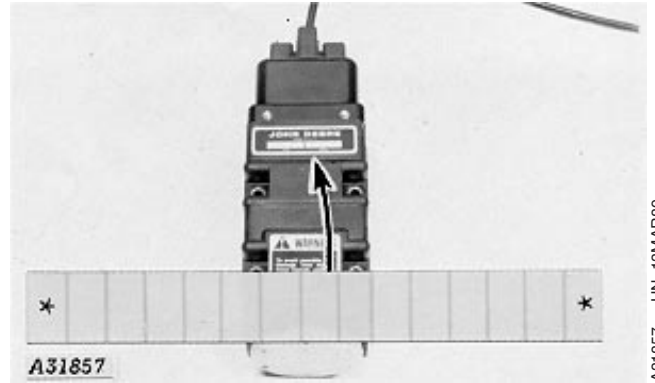
Specifications

Record Serial Numbers



A37529 -UN-06SEP95

Monitor Display Serial Number



A31857 -UN-13MAR89

Radar Serial Number



A50245 -UN-12SEP02

Seed Monitor/Variable Rate Drive Wedgebox



A50245 -UN-12SEP02

Second Seed Monitor/Variable Rate Drive Wedgebox on Machines Over 24 Rows



A50246 -UN-04DEC02

Variable Rate Fertilizer Controller Wedgebox

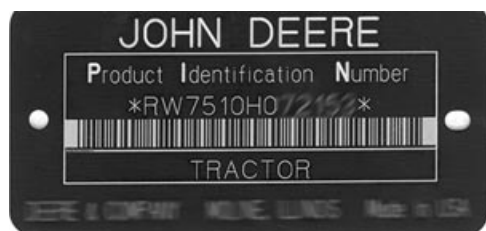
Record Planter Options

Number of Rows	_____
Row Spacing	_____
Planter Width	_____
Radar Calibration Number	_____
Number of Seed Sensors	_____
Turned Off	_____
Display Software Version	_____
Planter Controller Software	_____
Version	_____

AG,OUO1074,1631 -19-12MAY04-1/1

Keep Proof of Ownership

1. Maintain in a secure location an up-to-date inventory of all product and component serial numbers.
2. Regularly verify that identification plates have not been removed. Report any evidence of tampering to law enforcement agencies and order duplicate plates.
3. Other steps you can take:
 - Mark your machine with your own numbering system
 - Take color photographs from several angles of each machine

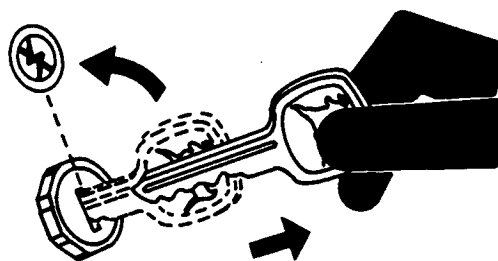


TS1680 -UN-09DEC03

DX,SECURE1 -19-18NOV03-1/1

Keep Machines Secure

1. Install vandal-proof devices.
2. When machine is in storage:
 - Lower equipment to the ground
 - Set wheels to widest position to make loading more difficult
 - Remove any keys and batteries
3. When parking indoors, put large equipment in front of exits and lock your storage buildings.
4. When parking outdoors, store in a well-lighted and fenced area.
5. Make note of suspicious activity and report any thefts immediately to law enforcement agencies.
6. Notify your John Deere dealer of any losses.



TS230 -UN-24MAY89

DX,SECURE2 -19-18NOV03-1/1

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Zeroing

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John Deere Service Literature Available

Technical Information

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

Available information includes:

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



TS189 -UN-17JAN89



TS191 -UN-02DEC88



TS224 -UN-17JAN89



TS1663 -UN-10OCT97

- Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.

DX,SERVLIT –19–31JUL03–2/2

John Deere Service Keeps You On The Job

John Deere Is At Your Service

CUSTOMER SATISFACTION is important to John Deere.

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

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

CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

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

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

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

2. Discuss problem with dealer service manager.

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

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



TS201 –UN–23AUG88

DX,IBC,2 –19–01MAR06–1/1

