

MATRIX™

USER MANUAL

MATRIX™840G



MATRIX™570G



TeeJet®
TECHNOLOGIES

A Subsidiary of  Spraying Systems Co.®

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AUTO STEERING SAFETY NOTICE

When your Matrix system is connected for FieldPilot auto steering (“assisted steering” mode), you must observe some common-sense precautions, including:





1. The FieldPilot system must remain OFF whenever the vehicle is operated on a public roadway. If the system were ON, it could possibly interfere with steering and generate a potentially hazardous situation.
2. Activating setup and test functions may cause the vehicle’s steering mechanism to move, even when the vehicle is stationary and no guide line is active. All personnel must be a safe distance from pinch points in the steering mechanism whenever the FieldPilot system is ON.
3. Activating the autosteer mode at high speeds may cause the vehicle to change direction suddenly as it aligns with the guideline. The system must not be activated when the operator is not securely seated and in control of the vehicle.
4. The FieldPilot system will accurately follow its path and help reduce operator fatigue; but it is NEVER a substitute for an alert operator. The vehicle operator must be seated, alert, and aware of potential hazards in the path of the vehicle at all times when it is moving.
5. Do not operate the system without the seat switch and steering wheel sensor properly connected.
6. The installation of the FieldPilot hydraulic steering valve includes high-pressure hydraulic system connections. These must be done in accordance with proper safety procedures including materials, tools, hose routing, system testing, and routine maintenance / inspection.



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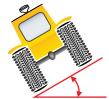


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CHAPTER 1 – PRODUCT OVERVIEW

The MatrixTM allows the management of multiple connected modules plus GPS mapping, guidance, FieldPilot[®], BoomPilot[®], and data collection in a single console using CAN bus technology. This replaces multiple consoles in the cab with one robust system.

SYSTEM FEATURES

- RealViewTM Guidance Over Video
Guidance information and video displayed simultaneously with up to eight cameras connections
- BoomPilot[®] (automated boom section control) can switch off sprayer or spreader sections automatically reducing overlaps and eliminating skips
- FieldPilot[®] (assisted steering) can perform on straight or contour paths.
- Easy-to-use, color 3-D graphical guidance that is precise and accurate in all terrain
- Lightbar Guidance for vehicle or swath, plus a graphical display for complete guidance information
- Coverage mapping/data export in PDF, KML or SHP
- Bright, daylight readable screen in either 14.5 cm (5.7”) or 21.3 cm (8.4”) size.
- Product upgrades include:
 - FieldPilot Assisted Steering
 - BoomPilot Automatic Boom Section Control
 - Tilt Gyro Module
 - Video Selection Modules for up to 8 cameras
 - External GPS receiver or antenna upgrades
- Handles up to 15 individual sections
- Color 3-D Guidance in Four Modes – Straight A-B, Curved A-B, Circle Pivot and Last Pass
- 13 languages for international use
- Simplified operation of product control and GPS record keeping
- Clear visual icons guide user through the menu selection process
- High-quality internal GPS engine with small external antenna
- Two applied area counters

SYSTEM COMPONENTS

Matrix 570G Console

The Matrix 570G is designed to provide years of service under typical agricultural operating conditions. A tight fitting enclosure, combined with rubber covers for all connectors mean that typical dusty environments will not cause operational problems. While occasional splashing of water will not damage the unit, the Matrix 570G is not designed for direct exposure to rain. Take care not to operate the Matrix in wet conditions.

Figure 1-1: Console Front & Back



Matrix 840G Console

The Matrix 840G is designed to provide years of service under typical agricultural operating conditions. A tight fitting enclosure, combined with rubber covers for all connectors mean that typical dusty environments will not cause operational problems. While occasional splashing of water will not damage the unit, the Matrix 840G is not designed for direct exposure to rain. Take care not to operate the Matrix in wet conditions.

Figure 1-2: Console Front & Back



RealView Camera

The TeeJet Technologies RealView camera allows video images to be displayed on the Matrix screen. The camera can be pointed forward to enable RealView guidance over video, or it can be positioned to view other operational aspects of your equipment. The camera is equipped with a flexible RAM mount, integral sun shade and provides infrared illumination, allowing clear video images even in dark conditions.

Figure 1-3: Video Camera



Matrix console connection is compatible with AgCam cameras.

Video Selector Modules

A Video Selector Module (VSM) allows connection of up to 8 video cameras to your Matrix console. The module is compact and robust, and can be mounted in any convenient location. No interaction is required after installation.

Figure 1-4: Video Select Module - 4 Channel



Figure 1-5: Video Select Module - 8 Channel



GPS Antennas

TeeJet offers a full range of high-quality GPS receivers to fit your precision farming needs.

The RXA-25 or RXA-30 GPS antenna provides a higher quality GPS receiver that can improve GPS performance in areas of sub-optimal GPS reception.

Figure 1-6: GPS RXA-25 Antenna



Figure 1-7: GPS RXA-30 Antenna



The Patch Antenna II provides strong performance in standard operating conditions. The small size of the patch antenna makes it easy to mount, and unlikely to be damaged.

Figure 1-8: GPS Antenna



FieldPilot Steering Control Module

The FieldPilot Steering Control Module performs assisted steering on straight and contour paths. The Matrix system can link with the FieldPilot system to take precise control of the vehicle position. The operator manages the automatic steering system with the Matrix – a benefit of a single, in-cab console. Automatic steering drives a vehicle with tremendous, repeatable accuracy in both straight and curved patterns. The ability to operate in fog or dust, day or night with high levels of accuracy means a better return on capital investment for equipment, a more effective application and more attentive, alert operation.

Figure 1-9: FieldPilot Steering Control Module



Foot Switch

TeeJet Foot Switch is a convenient method of engaging FieldPilot. It is connected to the system via the SCM Harness.

Figure 1-10: Foot Switch



BoomPilot Section Driver Module

Combined with software built into the Matrix console, the Section Driver Module (SDM) makes BoomPilot (automatic boom section control) possible. The SDM should be combined with the appropriate cable to interface with your BoomPilot system, spray controller and/or spraying machine for quick and easy installation. Section Driver Modules and their related cables are designed to control as many boom sections as the spray controller to which they are connect, up to a maximum of 15 boom sections.

Figure 1-11: Sections Driver Module



Tilt Gyro Module

If your GPS antenna is mounted 12 feet (4 meters) above the ground, a 10% side slope can cause 2 feet (0.6 meter) of position error. The new TeeJet Tilt Gyro Compensation Module corrects GPS position errors caused by side slope conditions. Mounted on a solid structure on your vehicle, the Tilt Gyro Compensation Module will intercept GPS signals from your receiver and provide corrected position data to your guidance device.

- Diagnostic LEDs indicate status of TCM (Power status, operating status, and status of incoming GPS data)
- Weatherproof electrical connector for trouble-free operation
- Mounting holes built into housing
- Automatically detects GPS sensor baud rate and adjusts output accordingly
- Compatible with Matrix guidance systems

NOTE: If FieldPilot is being used, a TCM is built into the system.

Figure 1-12: Tilt Gyro Module



Harnesses

TeeJet harnesses are designed for reliable operation in harsh environments. Shielding and weatherproof connections ensure that the cables and electrical connections are reliable and trouble free.

Figure 1-13: Harness



Cable Extensions

Cable extensions or extended length cables are available for special applications. Contact your TeeJet dealer for details if the standard cables provided with your system are not long enough.

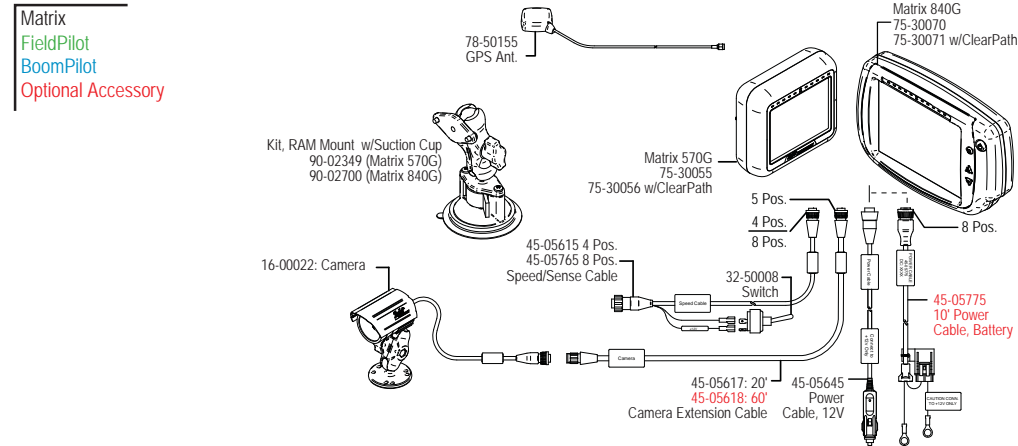
Extended Warranty

TeeJet offers an extended warranty for many guidance products. Not available in all markets. Contact your TeeJet dealer for details.

CONFIGURATIONS

The following diagrams are reflective of typical Matrix configurations. Due to the variety of possible configurations, these should be used for reference purposes only.

Figure 1-14: Matrix w/RealView Camera



Speed Out / Sense In Cable

The Speed Out / Sense In Cable assists the Matrix with two additional connections that::

- ▶ Send a radar speed signal to an external device
- ▶ Allow the user to operate the area applied function of the Matrix in series with a remote master connection or existing apply on/off toggle in a single swath manner. However if the previous connections are not available the supplied toggle switch allows area applied functionality without the need to connect to a functional application implement.

Connecting to different consoles requires different adapters and calibrations.

- If connecting to TeeJet consoles use speed adapter 45-20042
 - ◀enter calibration # 914 (#1000 in Europe) for 8xx series in RAD mode,
 - ◀enter calibration # 9140 (#10000 in Europe) for below LH 70 Series, LH 85, 500 series, 5000, 6000, IC 24 and IC 34
- If connecting to Mid-Tech consoles no adapter is required,
 - ◀enter calibration # 1000
- If connecting to Raven consoles use speed adapter 45-05508 (do not connect the 12v red wire from 45-05508)
 - ◀enter calibration # 730 in SP 2

If sensing boom shut-off for applied mapping from an existing console, attach the green wire to the valve side of the master switch on the console. The red wire is not used.

Figure 1-15: Matrix w/8 Channel or 4 Channel VSM & Multiple RealView Cameras

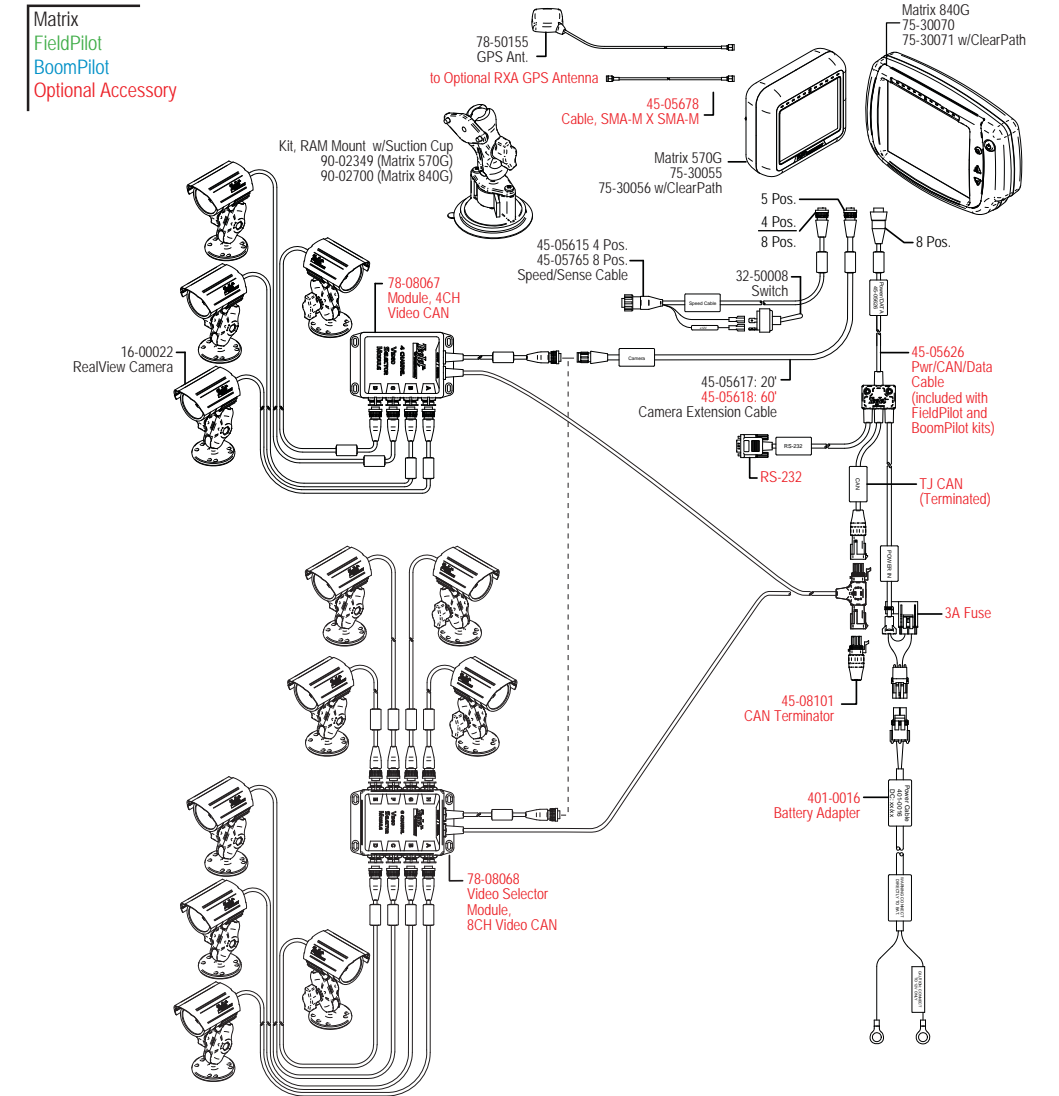


Figure 1-16: Matrix w/VSM & Multiple RealView Cameras, FieldPilot and BoomPilot

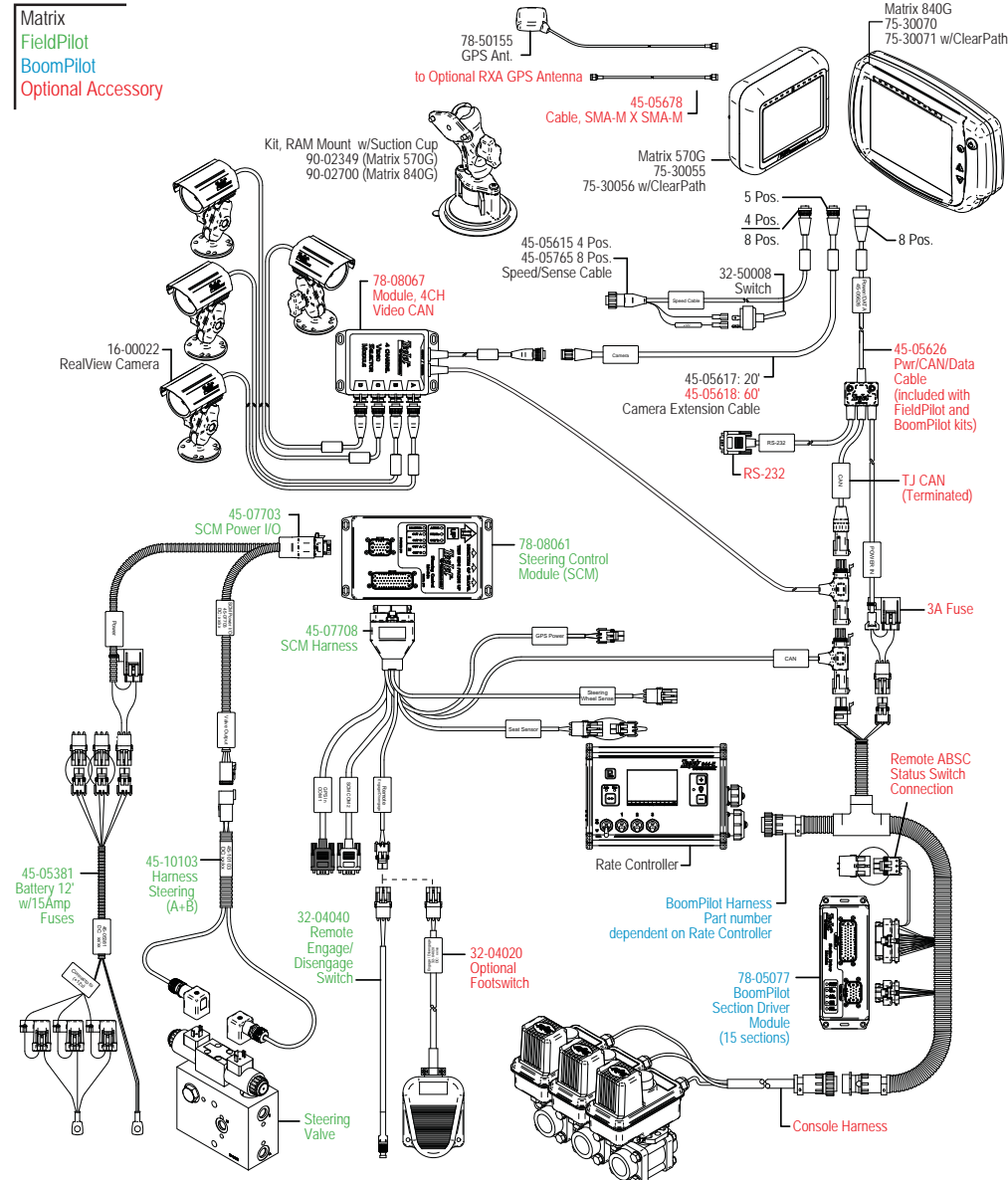


Figure 1-17: Matrix w/VSM & Multiple RealView Cameras and FieldPilot

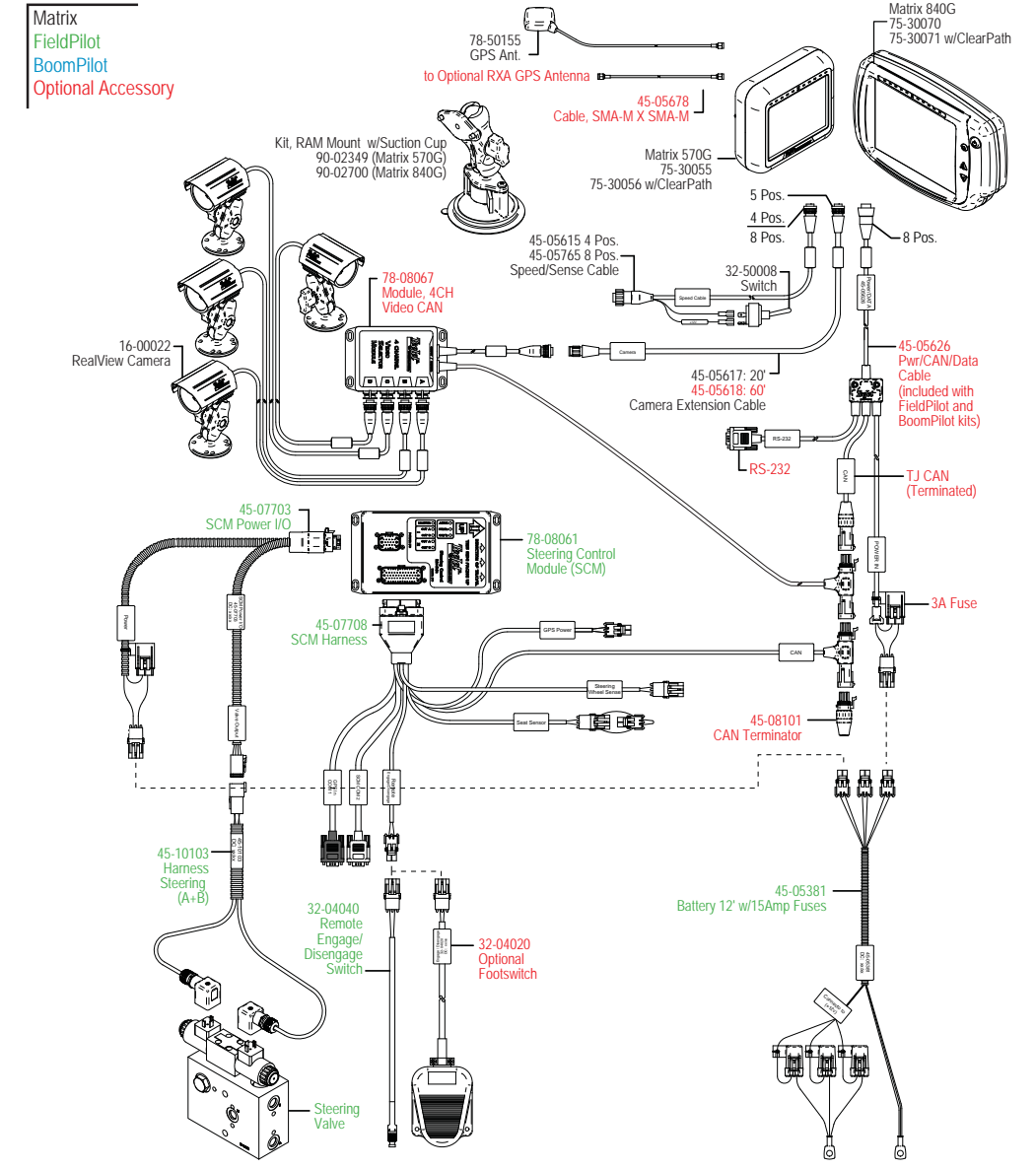
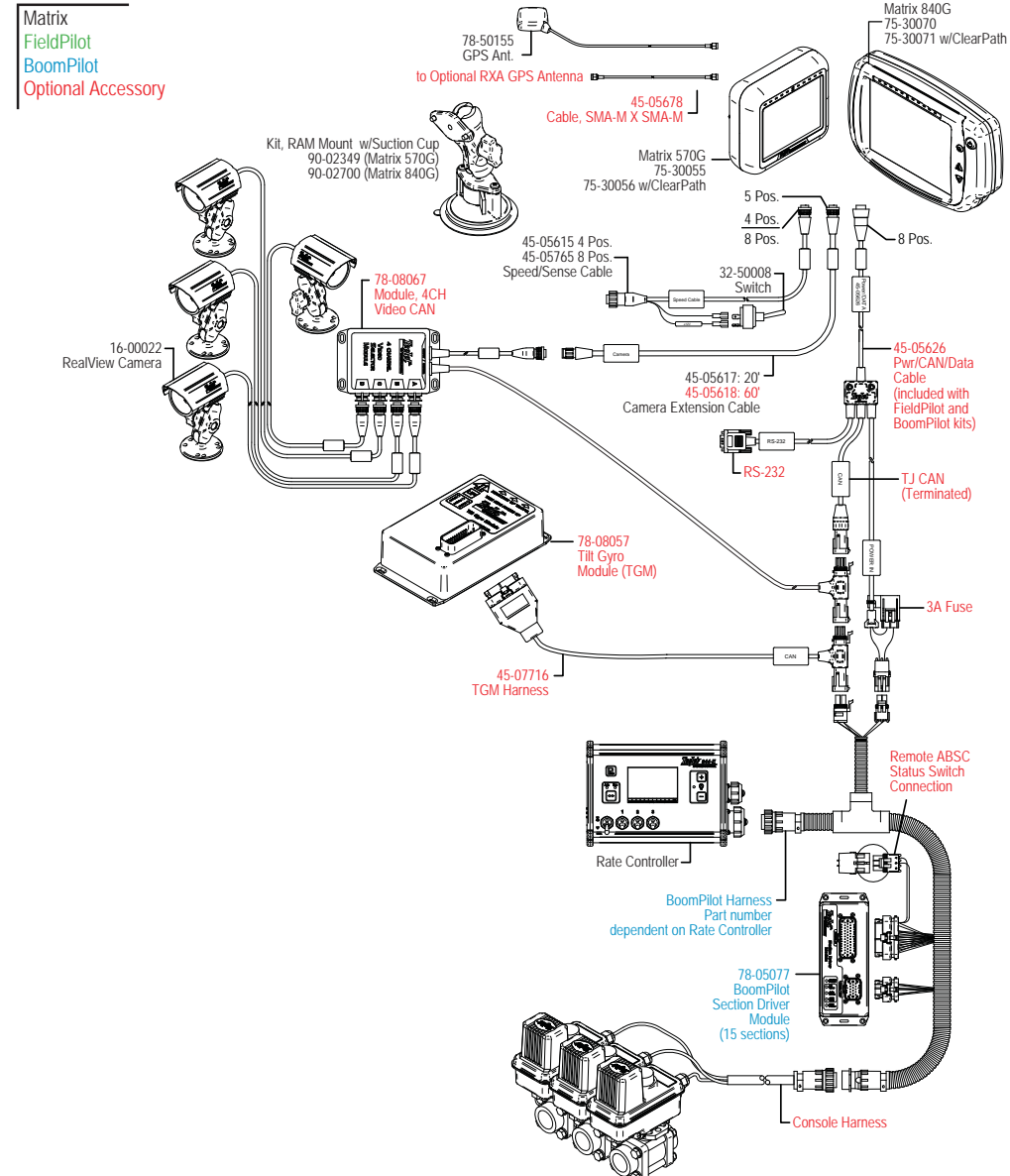


Figure 1-18: Matrix 570G w/VSM, Tilt Gyro and BoomPilot



POWER ON/OFF

Press the power button to power on the console. Upon power up, the Matrix will begin its Start Up Sequence. Press and briefly hold the power button (until the screen turns black) to power off the console.

Figure 1-19: Power Button



Start Up Sequence

The console takes approximately 40 seconds to power up. During this time the TeeJet Technologies logo will be displayed (LEDs will power on and off and brightness levels will fluctuate.)

Figure 1-20: Power Up Screen



Once the power up sequence has cycled, the following message is displayed:

“Would you like to clear the job data and begin a new job?”

1. Press
 - ▶ No – The previous job will resume.
 - ▶ Yes – A new job will be established and all data from previous jobs will be cleared. The message “All job data cleared” is displayed. Select “OK” to continue.

The splash screen will be displayed for approximately one minute.

The splash screen lists the module’s current software version. The information is also available on the About screen.

NOTE: A firm touch is required when selecting or acknowledging a screen option.

Figure 1-21: Clear Job Data Screens



Figure 1-22: Splash Screen



GENERAL OPERATION INFORMATION

A firm touch is required when selecting a screen icon.

On initial startup, the console will load the Vehicle View screen as a default. All subsequent power cycles will return to the last page viewed before powering down.

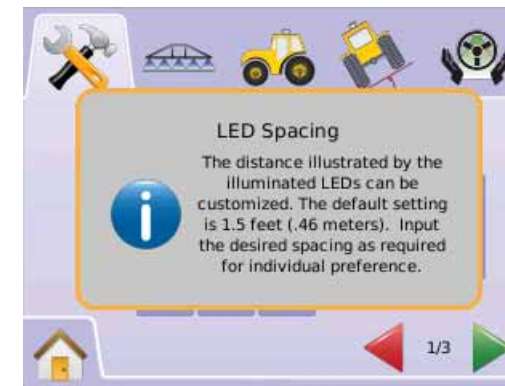
Icons on guidance screens will be displayed and will fade from the window after 6 seconds of inactivity. To regain these icons, touch the screen in any location.

Figure 1-23: With and Without Icons On Screen



Press the icon of any menu item to display a definition of that item. To remove the information box, press anywhere on the screen.

Figure 1-24: Example of Information Text Box

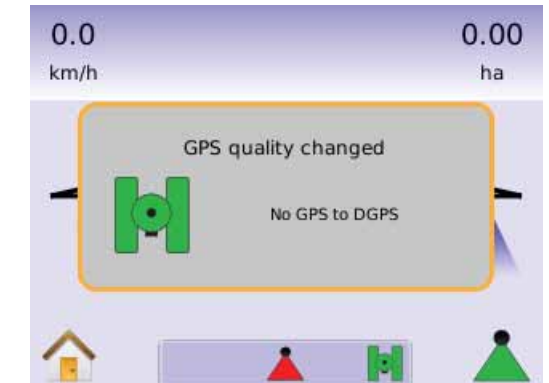


For rapid adjustment of a setting, press and hold the
 ▶ PLUS/MINUS ICONS + −,
 ▶ UP/DOWN ARROW ICONS ▲ ▼,
 ▶ ZOOM IN/OUT ICONS 🔍 🔍,
 ▶ ZOOM IN/OUT BUTTONS ▲ ▼ (Matrix 840G only).

The Zoom In/Out Buttons ▲ ▼ on the Matrix 840G will not adjust Plus/Minus or Up/Down settings.

GPS Status Change – a pop-up warning will be displayed for approximately 2.5 seconds. To remove a pop-up sooner, press anywhere on the screen.

Figure 1-25: Example of GPS Status Change



FieldPilot Disengaged – a pop-up warning will be displayed for approximately 2.5 seconds. To remove a pop-up sooner, press anywhere on the screen.

Figure 1-26: FieldPilot Disengaged Screen



All changes are saved automatically.

The Matrix is a current job system. Previous jobs cannot be recalled.

The console needs to be cycled off and back on when changing or attaching equipment to the Matrix system.

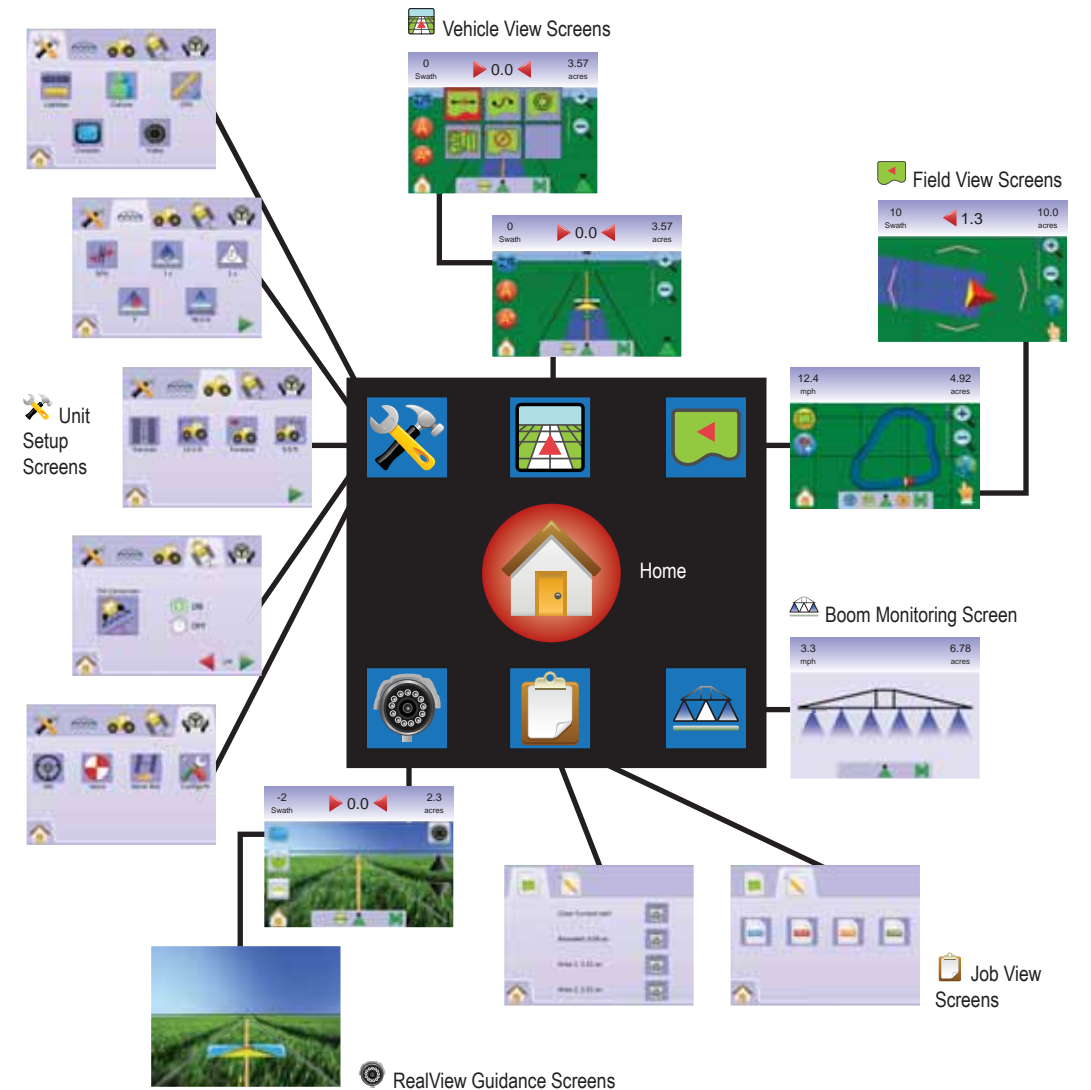
Cleaning suggestions – Matrix consoles should be cleaned with mild cleaners, such as glass cleaner, and a soft cloth. Take care not to rub dust or other abrasive materials into the touch screen surface.

- Use a soft lint-free cloth.
- The cloth may be used dry, or lightly dampened with a mild cleaner or Ethanol.
- Be sure the cloth is only lightly dampened, not wet. Never apply cleaner directly to touch panel surface; if cleaner is spilled onto touch panel, soak it up immediately with absorbent cloth.
- Cleaner must be neither acid nor alkali (neutral pH).

- Wipe the surface gently; if there is a directional surface texture, wipe in the same direction as the texture.
- Never use acidic or alkaline cleaners, or organic chemicals such as: paint thinner, acetone, toluene, xylene, propyl or isopropyl alcohol, or kerosene.
- Suitable cleaning products are commercially available pre-packaged for use; one example of such a product is Klear ScreenTM, or commercially available off-the-shelf retail brands such as Glass Plus® Glass and Surface Cleaner made by Reckitt-Benckiser.
- Use of incorrect cleaners can result in optical impairment of touch panel and/or damage to functionality.

Page Layout and Navigation

The Matrix is very simple to navigate. The HOME BUTTON or HOME ICON gives you access to the unit's 3 functions: Setup, Guidance and Monitoring. The 6 touch screen Menu Options (Unit Setup , Vehicle View , Field View , RealView Guidance , Job View and Boom Monitoring) quickly access all aspects of the unit.



CHAPTER 2 – UNIT SETUP



Unit Setup is used to configure System Setup, BoomPilot/Single Boom Setup, Vehicle Setup, Tilt Gyro Module Setup, and FieldPilot Setup.

NOTE: All settings are automatically saved when selected.

To access the Unit Setup screens:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Select UNIT SETUP from Home Menu .
3. Select from:

- ▶ System Setup – used to configure:
 - ◀ Lightbar – used to configure LED Spacing , Display/Swath Mode and LED Brightness settings.
 - ◀ Culture – used to configure Units , Language and Time Zone .
 - ◀ GPS – used to configure GPS Type and the GPS Port , as well as view GPS Status information .
 - ◀ Console – used to configure Volume , LCD Brightness , Screen Calibrate and Screenshot settings, as well as view About information and Save system software information .
 - ◀ Video – used to set up individual cameras .
- ▶ BoomPilot/Single Boom Setup – used to configure Overlap , Delay On , Delay Off , Number of Boom Sections and Boom Section Width settings.
- ▶ Vehicle Setup – used to configure Vehicle Type , Antenna Height , Direction to Boom and Boom Offset Distance settings.

- ▶ Tilt Gyro Module Setup – used to calibrate the Tilt Gyro Module, allowing for tilt correction for application on hilly or sloped terrain.
- ▶ FieldPilot Setup – used to configure:
 - ◀ Enable/Disable FieldPilot .
 - ◀ Valve Setup – used to configure Valve Frequency, Minimum Duty Cycle Left, Minimum Duty Cycle Right and Maximum Duty Cycle settings.
 - ◀ Valve Test – verifies steering is directed correctly and is used to fine tune the oil flow.
 - ◀ Configure FieldPilot – used to configure Coarse Steering Adjustment, Fine Steering Adjustment, Deadband, and Lookahead settings.









General Information

Press the icon of any menu item to display a definition of that item. To remove the information box, press anywhere on the screen.

Figure 2-1: Example of Information Text Box



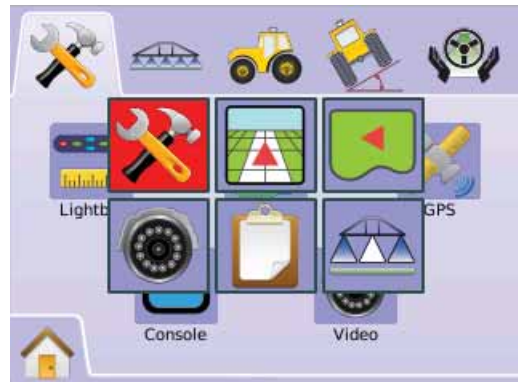
Home Menu

The Home Button  or Home Icon  gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup , Vehicle View , Field View , RealView Guidance , Job View  and Boom Monitoring ) quickly access all aspects of the unit.

To view the Home Menu options:

1. Press HOME BUTTON  or select HOME ICON  in bottom left corner of screen.

Figure 2-2: Home Menu - Unit Setup



SYSTEM SETUP

System Setup is used to configure Lightbar, Culture, GPS, Console and Video settings.















1. Select UNIT SETUP  from Home Menu .
2. Press SYSTEM SETUP TAB .
3. Select from:
 - ▶ Lightbar  – used to configure LED Spacing, Display Mode and LED Brightness
 - ▶ Culture  – used to configure Units, Language and Time Zone
 - ▶ GPS  – used to configure GPS Type and the GPS Port, as well as view GPS Status information
 - ▶ Console  – used to configure Volume, LCD Brightness, Screen Calibrate and Screenshot settings, as well as view About information and Save system software information
 - ▶ Video  – used to set up individual cameras

Figure 2-3: System Setup



Lightbar

Lightbar Setup is used to configure LED Spacing, Display/Swath Mode and LED Brightness.

1. Press SYSTEM SETUP TAB .
2. Press LIGHTBAR ICON .
3. Select from:
 - ▶ LED Spacing  – sets the distance illustrated by the illuminated LEDs
 - ▶ Display Mode  – determine whether the lightbar represents the swath or vehicle
 - ▶ LED Brightness  – adjust LED brightness
 OR
 Press PAGE RIGHT ARROW  to cycle through all settings.

NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-4: Lightbar Options



LED Spacing

LED Spacing sets the distance illustrated by the illuminated LEDs. Range is 0.04 - 9.8 feet / 0.01 - 3.0 meters.





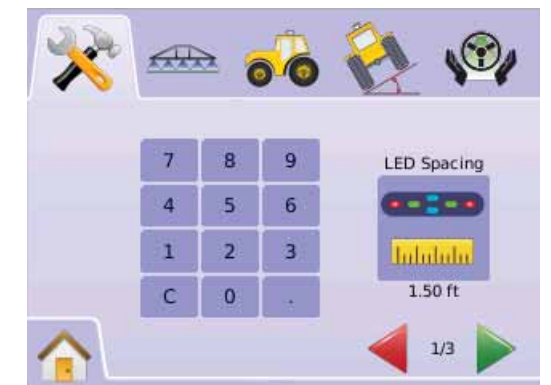
1. Press LIGHTBAR ICON .
2. Press LED SPACING ICON .
3. Use the entry screen to establish LED Spacing.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Display Mode.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

Figure 2-5: LED Spacing



Display Mode

Display/Swath Mode determines whether the lightbar represents the swath or vehicle.







1. Press LIGHTBAR ICON .
2. Press DISPLAY ICON .
3. Press UP/DOWN ARROW ICONS   to change between:
 - ▶ Swath – the LEDs represent the guideline location and the moving LED represents the vehicle.
 - ▶ Vehicle – the center LED represents vehicle location and the moving LED represents the guideline.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to LED Brightness.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

Figure 2-6: Display Mode - Swath

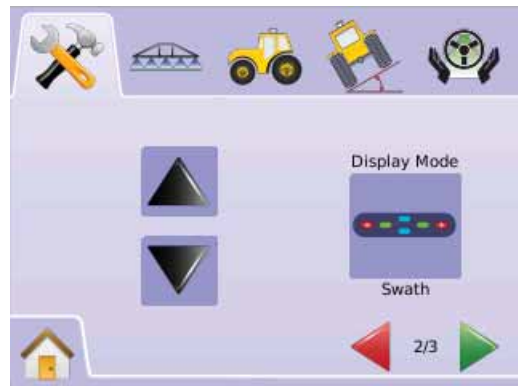
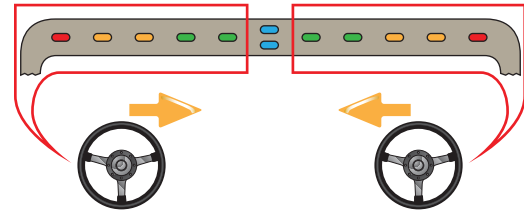


Figure 2-7: Swath Lightbar



Lights illuminated on the left of the Lightbar require a steering adjustment to the right.

Lights illuminated on the right of the Lightbar require a steering adjustment to the left.

Figure 2-8: Display Mode - Vehicle

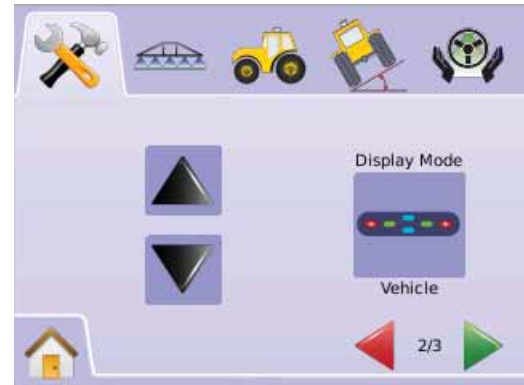
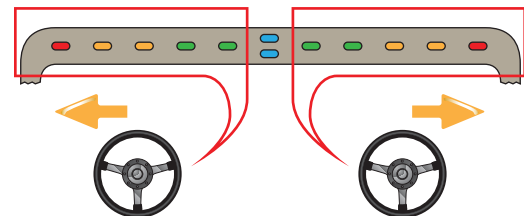


Figure 2-9: Vehicle Lightbar









Lights illuminated on the left of the Lightbar require a steering adjustment to the left.

Lights illuminated on the right of the Lightbar require a steering adjustment to the right.

LED Brightness

LED Brightness adjusts the brightness of the lightbar LEDs. Range is 0 - 100.

1. Press LIGHTBAR ICON .
2. Press LED BRIGHTNESS ICON .
3. Press the PLUS/MINUS ICONS   to adjust LED brightness.
 - ◀ Higher the number, the brighter the LEDs.
 - ◀ Lower the number, the dimmer the LEDs.
4. Press
 - ▶ CHECKERED FLAG  to complete Lightbar Setup.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.


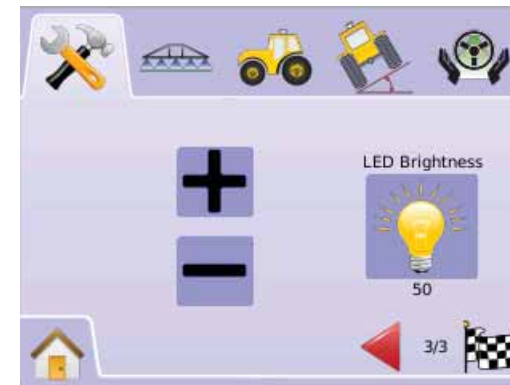






NOTE: Press & hold PLUS/MINUS ICONS   to quickly adjust settings.

Figure 2-10: LED Brightness



Culture

Culture is used to configure Units, Language and Time Zone settings.

1. Press SYSTEM SETUP TAB .
2. Press CULTURE ICON .
3. Select from:
 - ▶ Units  – defines the system measurements
 - ▶ Language  – defines the system language
 - ▶ Time Zone  – establishes the local time zone
 OR
 Press PAGE RIGHT ARROW  to cycle through all settings.







NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-11: Culture



Units

Units defines the system measurements (U.S. or Metric).

1. Press CULTURE ICON .
2. Press UNITS ICON .
3. Press UP/DOWN ARROW ICONS   to change between:
 - ▶ U.S.
 - ▶ Metric.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Language.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.







NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-12: Units



Language

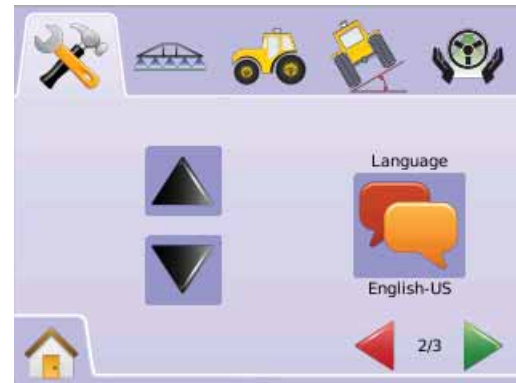
Languages defines the system language. Options include Czech, Danish, Dutch, English, French, German, Hungarian, Italian, Polish, Portuguese, Russian, Spanish and Swedish.

1. Press CULTURE ICON .
2. Press LANGUAGE ICON .
3. Press UP/DOWN ARROW ICONS   to change between languages.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Time Zone.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

NOTE: Press & hold UP/DOWN ARROW ICONS   to quickly adjust settings.







NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-13: Language



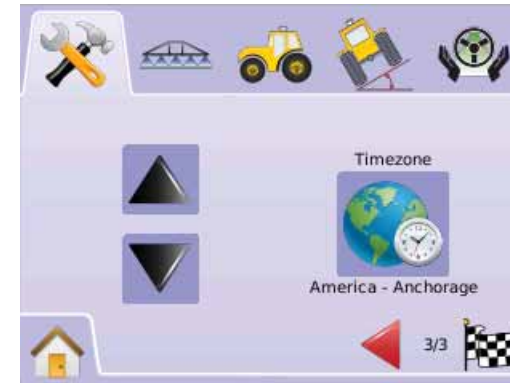
Time Zone

Time zone establishes the local time zone.

1. Press CULTURE ICON .
2. Press TIME ZONE ICON .
3. Press UP/DOWN ARROW ICONS   to select the appropriate time zone.
4. Press
 - ▶ CHECKERED FLAG  to complete Culture Setup.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

NOTE: Press & hold UP/DOWN ARROW ICONS   to quickly adjust settings.







Figure 2-14: Time Zone



Time zones are listed alphabetically by continent then city. A list of the continents and cities is in Appendix B.

GPS

GPS is used to configure GPS Type and the GPS Port, as well as view GPS Status information.

1. Press SYSTEM SETUP TAB .
 2. Press GPS ICON .
 3. Select from:
 - ▶ GPS Type  – select GPS source transmissions
 - ▶ GPS Port  – sets (D)GPS COM port
 - ▶ GPS Status  – displays information on GGA/VTG (Data Rates), Num Sat, HDOP, PRN and Quality.
- OR
- Press PAGE RIGHT ARROW  to cycle through all settings.





NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-15: GPS



✂ GPS Type

GPS Type customizes system to accept GPS source or DGPS source transmissions.

1. Press GPS ICON .
2. Press GPS TYPE ICON .
3. Select
 - ▶ GPS Only – uncorrected signals
 - ▶ DGPS Only – differentially corrected signals
 - ▶ GPS/DGPS – either type of signal
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to GPS Port.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.





NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-16: GPS Type



🔌 GPS Port

GPS Port sets port transmission to Internal or External.

1. Press GPS ICON .
2. Press GPS PORT ICON .
3. Select
 - ▶ Internal – use the internal (D)GPS (if equipped) and transmit out
 - ▶ External – receive external (D)GPS data
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to GPS Status.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-17: GPS Port



NOTE: Working with GPS signals such as Omnistar HP/XP or RTK will require GPS port to be set to External.

External Receiver Minimum Configuration Requirements

Before the Matrix will connect and work with an external GPS receiver, these minimum configuration requirements must be met.

Serial Port Settings	
Baud rate:	19,200
Data Bits:	8
Parity:	None
Stop Bits:	1

Serial Port connection requirements





Male 9 pin RS-232 serial cable

NOTE: May require Null modem adapter depending on pin out of receiver.

NMEA Strings	
GGA	5 Hz
VTG	5 Hz
ZDA	0.2 Hz

✂ GPS Status

GPS Status displays information regarding data rates, number of satellites in view, and satellite quality and ID.

1. Press GPS ICON .
2. Press GPS PORT ICON  to view data including:
 - ◀ GGA/VTG (Data Rates) – the number of GPS positions per second.
 - ◀ Num Sats – the number of GPS satellites in view (minimum of 4 are required for DGPS)
 - ◀ HDOP – a measure of satellite geometry strength in the horizontal plane. A HDOP value of less than 2 is preferred.
 - ◀ PRN – the current DGPS satellite ID. (see PRN chart)
 - ◀ GGA Quality – the current quality indicator of the GPS signal. (see GGA chart)
3. Press
 - ▶ CHECKERED FLAG  to complete GPS Setup.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

NOTE: If GPS is not available, all entries will be "Invalid"

Figure 2-18: GPS Status



PRN

Location	PRN
Western US	135
Eastern US	138
Central US	135 or 138
South America	N/A
Europe	120 or 124









GGA Requirements

GGA Quality required to be able to work with various types of signal can vary. See table below for requirements.

Service	GGA Quality	Accuracy
Omnistar HP/XP	5	10 cm
RTK	4	4 cm
Glide	9	<1 m
WAAS/EGNOS/Beacon	2	<1 m
GPS only	1	<3 m

 Console

Console Setup is used to configure Volume, LCD Brightness, Screen Calibrate and Screenshot settings, as well as view About information and Save system software information.

1. Press SYSTEM SETUP TAB 
 2. Press CONSOLE ICON 
 3. Select from:
 - ▶ Volume  – adjusts the volume level of the audio speaker
 - ▶ LCD Brightness  – adjusts the brightness of the console display
 - ▶ Touch Screen Calibration  – used to force a touch screen calibration
 - ▶ Screenshot  – allows screen images to be saved a USB drive
 - ▶ About/Save  – displays the system software version as well as the software versions of modules connected to the CAN bus
- OR
- Press PAGE RIGHT ARROW  to cycle through all settings.







NOTE: While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-19: Console



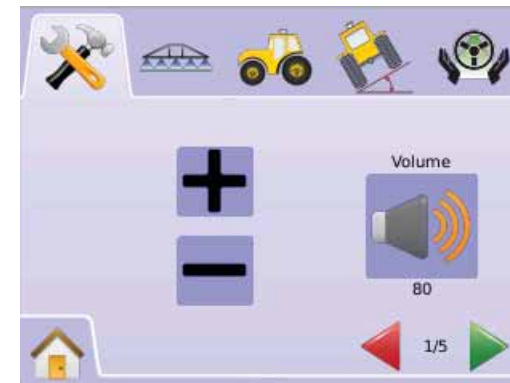
 Volume


Volume adjusts the volume level of the audio speaker. Range is 0 - 100.

1. Press CONSOLE ICON 
2. Press VOLUME ICON 
3. Press the PLUS/MINUS ICONS   to adjust volume level.
 - ◀Higher the number, the louder the sound.
 - ◀Lower the number, the softer the sound.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to LCD Brightness.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.







NOTE: Press & hold PLUS/MINUS ICONS   to quickly adjust settings.



Figure 2-20: Volume



 LCD Brightness

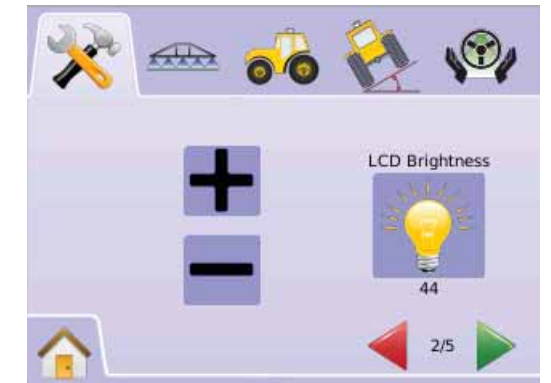
LCD Brightness adjusts the brightness of the console display. Range is 0 - 100.

1. Press CONSOLE ICON 
2. Press LCD BRIGHTNESS ICON 
3. Press the PLUS/MINUS ICONS   to adjust LED brightness.
 - ◀Higher the number, the brighter the LCD.
 - ◀Lower the number, the dimmer the LCD.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Touch Screen Calibration.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

NOTE: Press & hold PLUS/MINUS ICONS   to quickly adjust settings.

WARNING!: In hot conditions, settings above 50 may cause a High Temperature Warning. The console will automatically dim the screen to reduce the console temperature.

Figure 2-21: LCD Brightness



Touch Screen Calibration with Software Version 1.00 to 1.02

Touch Screen Calibration is used to force a touch screen calibration the next time a power cycle occurs.






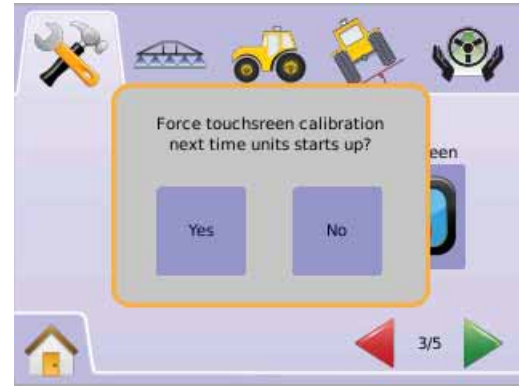
1. Press CONSOLE ICON .
2. Press CALIBRATE TOUCH SCREEN ICON .
3. Press HAND ICON  to enable the touch screen calibration process.
4. "Force touch screen calibration next time unit starts up?"
Press
 - ▶ Yes – to return to the Touch Screen Calibration screen. The calibration will be performed when power to the console is cycled.
 - ▶ No – to return to the Touch Screen Calibration screen
5. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Screenshot.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

Figure 2-22: Touch Screen Calibration




Figure 2-23: Touch Screen Calibration



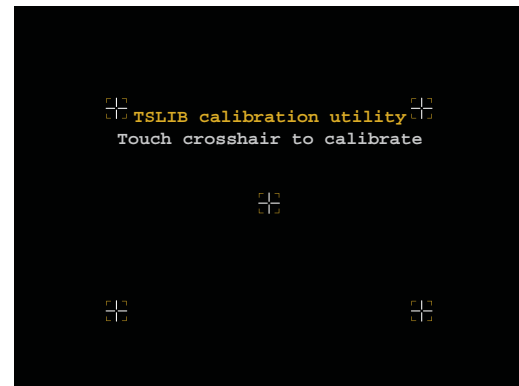
Next Power Cycle

The calibration screen will be displayed before the console boots.

1. "TSLIB calibration utility Touch crosshair to calibrate"
Press series of 5 crosshairs .
2. Console will resume booting.

After the fifth (5th) crosshair is pressed, the calibration process takes approximately 30 - 45 seconds to complete.

Figure 2-24: Touch Screen Calibration Process



Touch Screen Calibration with Software Version 1.03

Touch Screen Calibration is used to activate a touch screen calibration.







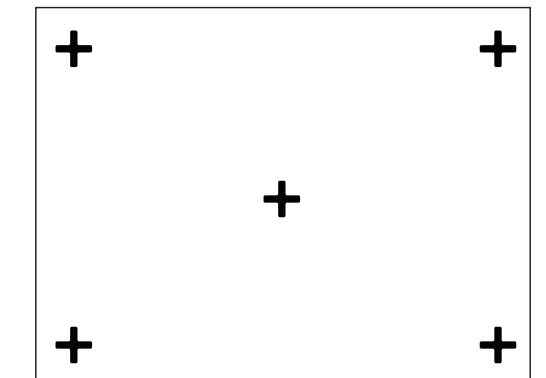
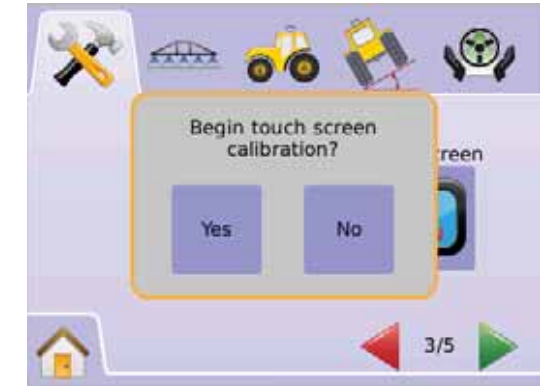
1. Press CONSOLE ICON .
2. Press CALIBRATE TOUCH SCREEN ICON .
3. Press HAND ICON  to enable the touch screen calibration process.
4. "Begin touch screen calibration?"
Press
 - ▶ Yes – to begin the Touch Screen Calibration.
 - ▶ No – to return to the Touch Screen Calibration screen
5. Press series of 5 crosshairs .
6. Press OK to complete the touch screen calibration.
7. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Screenshot.
 - ▶ SYSTEM SETUP TAB  to return to main System Setup screen.

Figure 2-25: Touch Screen Calibration



Figure 2-26: Touch Screen Calibration Process



📷 Screenshot

To aid when troubleshooting problems in the field, an end user can use Screenshot to save a screen to a USB drive, then e-mail the image to support personnel.

When Screenshot is enabled, a SCREENSHOT ICON 📷 is displayed on the upper right of each screen.

Enable/Disable

1. Press CONSOLE ICON 🏠.
2. Press SCREENSHOT ICON 📷.
3. Select
 - ▶ Enable
 - ▶ Disable
4. Press
 - ▶ PAGE RIGHT ARROW ▶ to proceed to About/Save.
 - ▶ SYSTEM SETUP TAB 🛠️ to return to main System Setup screen.

Figure 2-27: Screenshot



Capture an Image

1. Insert a USB drive into the USB port.
2. Press the SCREENSHOT ICON 📷.

NOTE: Screenshot does not capture live feed from video.

Figure 2-28: Example of Screenshot on Screen



? About/Save

About/Save screen displays the system software version as well as the software versions of modules connected to the CAN bus.

To view system information:

1. Press CONSOLE ICON 🏠.
2. Press ABOUT ICON ? to view data including:
 - ◀ Unit Model Number
 - ◀ Software Version
 - ◀ Connected Modules
3. Press
 - ▶ CHECKERED FLAG 🚩 to complete Console Setup.
 - ▶ SYSTEM SETUP TAB 🛠️ to return to main System Setup screen.

Figure 2-29: About Matrix 570G



Figure 2-30: About Matrix 840G



Save About Information

To aid when troubleshooting problems in the field, an end user can use Save to download a text file containing current software information to a USB drive, then e-mail the file to support personnel.

1. Press CONSOLE ICON 🏠.
2. Press ABOUT ICON ?.
3. Insert a USB drive in the USB port.
4. Press the SAVE ICON 📁. "Saved version information to USB drive" will confirm save.
5. Press
 - ▶ CHECKERED FLAG 🚩 to complete Console Setup.
 - ▶ SYSTEM SETUP TAB 🛠️ to return to main System Setup screen.

NOTE: The SAVE ICON 📁 is not available for selection (grayed out) until a USB drive is inserted properly.

Figure 2-31: About Verification



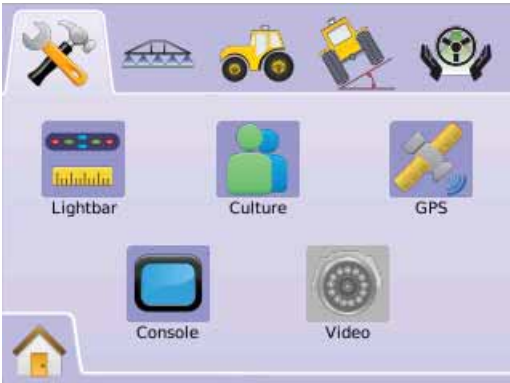


Video

Video Setup is used to set up individual cameras while using a Eight (8) Channel or Four (4) Channel Video Selector Module (VSM). Up to 8 cameras can be configured if a VSM is installed.

NOTE If a VSM is not installed, VIDEO SETUP is not available for selection (grayed out).

Figure 2-32: Video Unavailable



NOTE: Video Setup will not change the setting of a directly connected camera even when a VSM is on the system. Adjusting options will not affect a direct camera attachment.

Eight Channel VSM

When a eight (8) channel VSM is on the system, up to eight (8) cameras can be installed and configured.

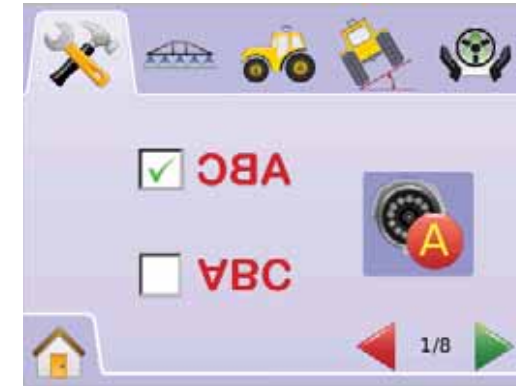
1. Press SYSTEM SETUP TAB .
2. Press VIDEO ICON .

3. Select
 - ▶ Camera A
 - ▶ Camera B
 - ▶ Camera C
 - ▶ Camera D
 - ▶ Camera E
 - ▶ Camera F
 - ▶ Camera G
 - ▶ Camera H
 OR
 Press PAGE RIGHT ARROW to cycle through all cameras.
4. Select the appropriate check box(s):
 - ▶ Normal – **ABC**
 - ▶ Reverse – **ABC**
 - ▶ Upside Down – **ABC**
 - ▶ Reverse & Upside Down – **ABC**
5. Press PAGE RIGHT ARROW to cycle through remaining cameras.
6. Press
 - ▶ CHECKERED FLAG to complete Video Setup.
 - ▶ SYSTEM SETUP TAB to return to main System Setup screen.

Figure 2-33: Video w/Eight Channel VSM



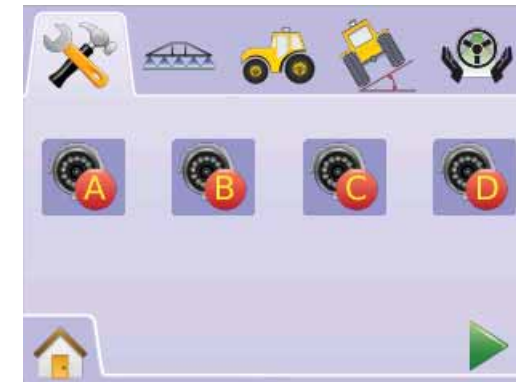
Figure 2-34: Camera Configuration



8 Channel VMS w/Only A, B, C & D

If cameras are only installed in ports A, B, C and D, cameras E, F, G and H will not be available for configuring.

Figure 2-35: Camera Configuration



Four Channel VSM

When a four (4) channel VSM is on the system, up to four (4) cameras can be installed. Only Cameras A, B, C and D will be available for setup.

1. Press SYSTEM SETUP TAB .
2. Press VIDEO ICON .
3. Select
 - ▶ Camera A
 - ▶ Camera B
 - ▶ Camera C
 - ▶ Camera D
 OR
 Press PAGE RIGHT ARROW to cycle through all cameras.
4. Select the appropriate check box(s):
 - ▶ Normal – **ABC**
 - ▶ Reverse – **ABC**
 - ▶ Upside Down – **ABC**
 - ▶ Reverse & Upside Down – **ABC**
5. Press PAGE RIGHT ARROW to cycle through remaining cameras.
6. Press
 - ▶ CHECKERED FLAG to complete Video Setup.
 - ▶ SYSTEM SETUP TAB to return to main System Setup screen.

Figure 2-36: Video w/Four Channel VSM

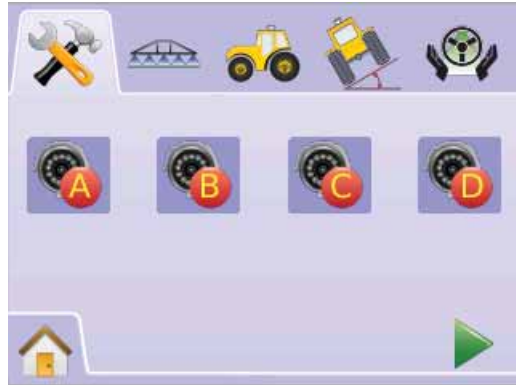


Figure 2-37: Camera Configuration



BOOMPILOT/SINGLE BOOM SETUP

BoomPilot Setup is used to configure Overlap, Delay On, Delay Off, Number of Boom Sections, and Boom Section Width settings.

Single Boom Setup is available when a SmartCable or Section Driver Module (SDM) is not present. Configurations for Overlap, Delay On, Delay Off, Number of Boom Sections will not be available, and only one boom section width can be entered.

BoomPilot Setup

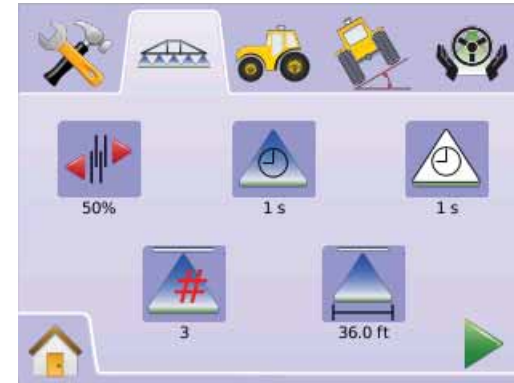
If a SmartCable or Section Driver Module (SDM) is present, up to 15 boom section widths can be entered.

1. Select UNIT SETUP from Home Menu .
 2. Press BOOMPILOT/SINGLE BOOM SETUP TAB .
 3. Select from:
 - ▶ Overlap – determines the amount of overlap allowed
 - ▶ Delay On – establishes the timing for the boom section valves to switch on
 - ▶ Delay Off – establishes the timing for the boom section valves to switch off
 - ▶ Number of Boom Sections – establishes the number of available boom sections
 - ▶ Boom Section Width – establishes the width of each boom section
- OR
- Press PAGE RIGHT ARROW to cycle through all settings.

NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

NOTE: BoomPilot settings are only visible and necessary if a SmartCable or SDM is present. If neither is present, see Single Boom Setup section.

Figure 2-38: Boom Section Setup (SDM detected)



Overlap

Overlap determines the amount of overlap allowed when the boom sections are turned on and off using BoomPilot.

1. Press OVERLAP ICON .
2. Press UP/DOWN ARROW ICONS to change between:
 - ▶ 0%
 - ▶ 50%
 - ▶ 100%
3. Press
 - ▶ PAGE RIGHT ARROW to proceed to Delay On.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB to return to main Boom Section Setup screen.

Figure 2-39: Overlap

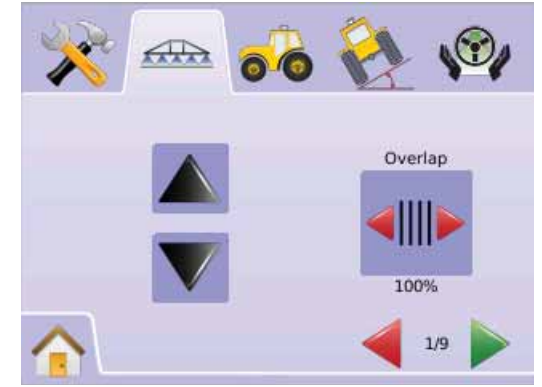
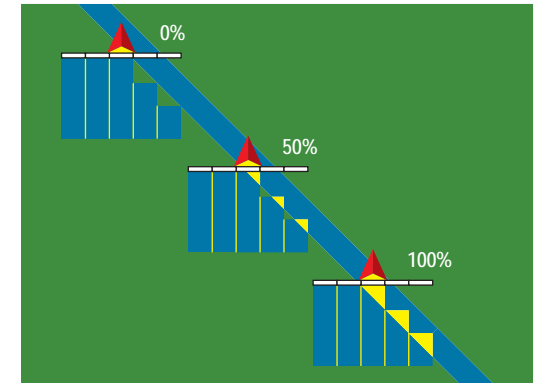


Figure 2-40: Examples of Overlap



Delay On

Delay On functions as a “look ahead” for establishing the timing for the boom section valves to switch on exactly when entering an area that has not been applied. If the boom turns on too soon when entering a non-applied area, decrease the Delay On setting. If the boom turns on too late when entering a non-applied area, increase the Delay On setting. Range is 0.0 - 10.0 seconds.




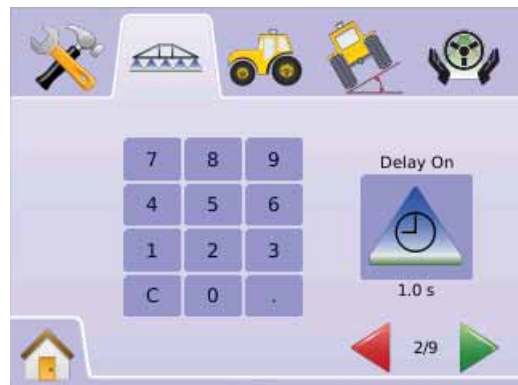
1. Press DELAY ON ICON .
2. Use the entry screen to establish delay time.
3. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Delay Off.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB  to return to main Boom Section Setup screen.

Figure 2-41: Delay On



Delay Off

Delay Off functions as a “look ahead” for establishing the timing for the boom section valves to switch off exactly when entering an area that has been applied. If the boom turns off too soon when entering an applied area, decrease the Delay Off setting. If the boom turns off too late when entering an applied area, increase the Delay Off setting. Range is 0.0 - 10.0 seconds




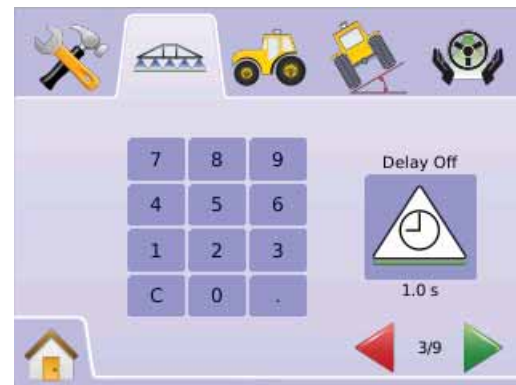





1. Press DELAY OFF ICON .
2. Use the entry screen to establish delay time.
3. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Number of Boom Sections.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB  to return to main Boom Section Setup screen.

Figure 2-42: Delay Off



Number of Boom Sections

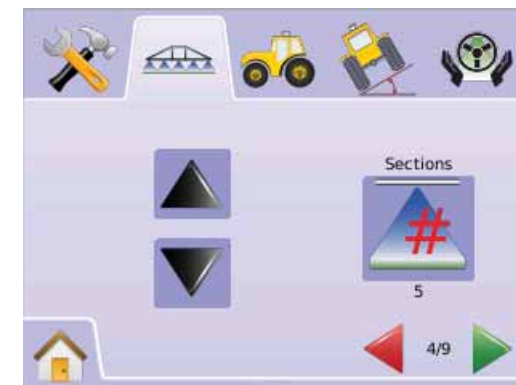
Number of Boom Sections establishes the number of available boom sections, 1 to 15 depending upon which SmartCable or Section Driver Module (SDM) is detected.

1. Press NUMBER OF BOOMS ICON .
2. Press UP/DOWN ARROW ICONS   to establish appropriate number of boom sections.
3. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Boom Section Width.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB  to return to main Boom Section Setup screen.

NOTE: Press & hold UP/DOWN ARROW ICONS   to quickly adjust settings.






NOTE: A section of more than one boom will change the total steps to complete the BoomPilot setup respectively.

Figure 2-43: Number of Boom Sections



Boom Section Width

Boom Section Width establishes the width of each boom section. Range is 0.0 - 1968.5 inches / 0.0 - 50.0 meters. When facing forward, boom sections are ordered from left to right along the boom.

1. Press BOOMPILOT/SINGLE BOOM SETUP TAB .
2. Press BOOM SECTION WIDTH ICON .
3. Use the entry screen to establish boom section width.
4. Press
 - ▶ PAGE RIGHT ARROW  to proceed to the remaining individual boom section widths.
 - ▶ CHECKERED FLAG  to complete Boom Section Setup.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB  to return to main Boom Section Setup screen.

NOTE: When entering Boom Section Width, the total of all sections must be greater than 34 inches / 0.9 meters.

NOTE: Individual boom sections can be set to different widths.

NOTE: This setting is required for FieldPilot Operation.

Figure 2-44: Boom Section Width



Single Boom Setup

Single Boom Setup is available when a SmartCable or Section Driver Module (SDM) is not present. Configurations for Overlap, Delay On, Delay Off, Number of Boom Sections will not be available, and only one boom section width can be entered.

Boom Section Width

Boom Section Width establishes the width of entire swath. Range is 34.0 - 1968.5 inches / 0.9 - 50.0 meters.

1. Select UNIT SETUP from Home Menu .
2. Press BOOMPILOT/SINGLE BOOM SETUP TAB .
3. Press
 - ▶ BOOM SECTION WIDTH ICON .
 - ▶ PAGE RIGHT ARROW .
4. Use the entry screen to establish swath width.
5. Press
 - ▶ CHECKERED FLAG to complete Boom Section Setup.
 - ▶ BOOMPILOT/SINGLE BOOM SETUP TAB to return to main Boom Section Setup screen.

NOTE: Options label is current setting. While in a setting screen, press icon to view available factory settings and setting ranges.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation.

Figure 2-45: Single Boom Section Width (No SDM)

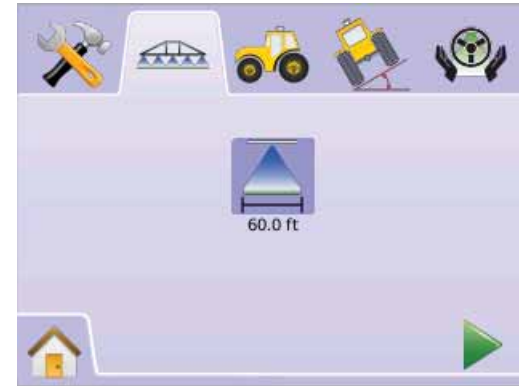
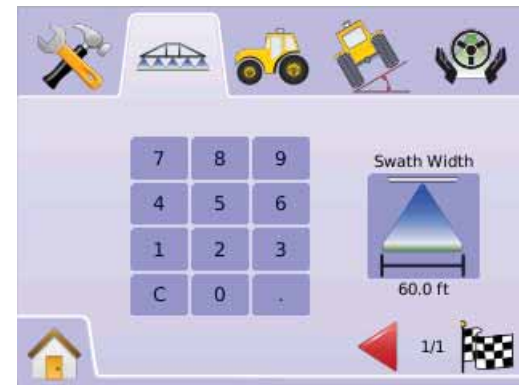


Figure 2-46: Single Boom Section Width Entry



VEHICLE SETUP

Vehicle Setup is used to configure Vehicle Type, Antenna Height, Direction to Boom, and Boom Offset Distance.

1. Select UNIT SETUP from Home Menu .
 2. Press VEHICLE SETUP TAB .
 3. Select from:
 - ▶ Vehicle Type – selects the type of vehicle that most closely represents your vehicle
 - ▶ Antenna Height – sets the height of the antenna from the ground
 - ▶ Direction to Boom – sets whether the boom is located behind or in front of the GPS antenna
 - ▶ Boom Offset Distance – defines the distance from the GPS antenna to the boom
- OR
- Press PAGE RIGHT ARROW to cycle through all settings.

NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-47: Vehicle Setup



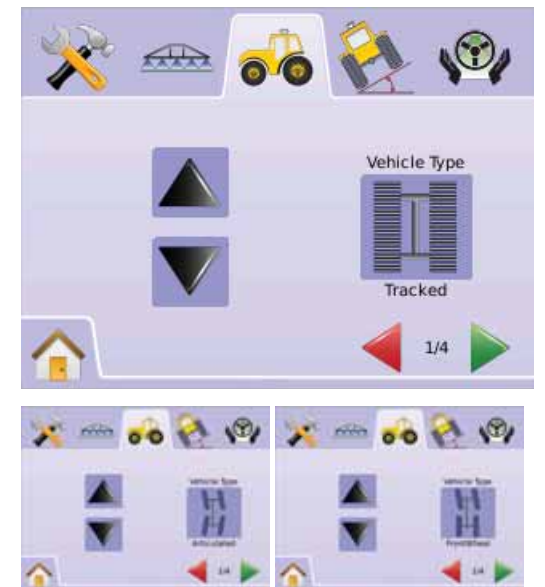
Vehicle Type

Vehicle Type selects the type of vehicle steering that most closely represents your vehicle.

1. Press VEHICLE TYPE ICON .
2. Press UP/DOWN ARROW ICONS to change between:
 - ▶ Front Wheel Steer (also used for Combines)
 - ▶ Articulated
 - ▶ Tracked
3. Press
 - ▶ PAGE RIGHT ARROW to proceed to Antenna Height.
 - ▶ VEHICLE SETUP TAB to return to main Vehicle Setup screen.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-48: Vehicle Type



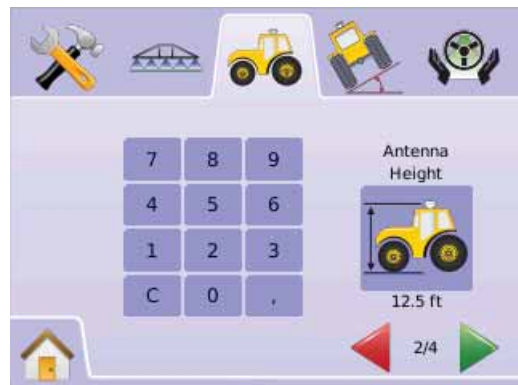
📡 Antenna Height

Antenna Height sets the height of the antenna from the ground. Range is 0.0 - 32.8 feet / 0.0 - 10.0 meters.

1. Press ANTENNA HEIGHT ICON 📡 .
2. Use the entry screen to establish the antenna height.
3. Press
 - ▶ PAGE RIGHT ARROW ➡ to proceed to Direction to Boom.
 - ▶ VEHICLE SETUP TAB 🚛 to return to main Vehicle Setup screen.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-49: Antenna Height



🚛 Direction to Boom

Direction to Boom sets whether the boom is located behind or in front of the GPS antenna as the vehicle moves in a forward direction.

1. Press DIRECTION TO BOOM ICON 🚛 .
2. Press UP/DOWN ARROW ICONS ▲ ▼ to change between:
 - ▶ Backward 🚛 – indicates the boom is located behind the GPS antenna
 - ▶ Forward 🚛 – indicates the boom is located in front of the GPS antenna
3. Press
 - ▶ PAGE RIGHT ARROW ➡ to proceed to Boom Offset Distance.
 - ▶ VEHICLE SETUP TAB 🚛 to return to main Vehicle Setup screen.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-50: Direction to Boom



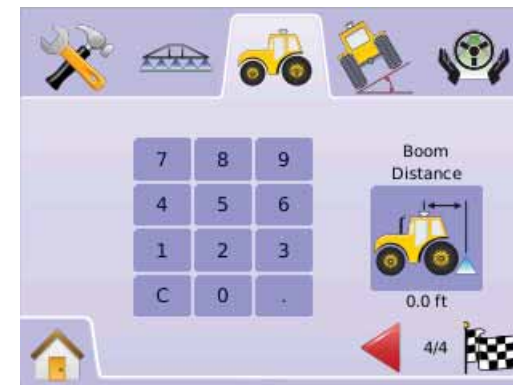
🚛 Boom Offset Distance

Boom Offset Distance defines the distance from the GPS antenna to the boom. Range is 0.0 - 164.0 feet / 0.0 - 50.0 meters.

1. Press BOOM OFFSET DISTANCE ICON 🚛 .
2. Use the entry screen to establish the offset distance.
3. Press
 - ▶ CHECKERED FLAG 🚩 to complete Vehicle Setup.
 - ▶ VEHICLE SETUP TAB 🚛 to return to main Vehicle Setup screen.

NOTE: This setting is required for FieldPilot and Tilt Sensor Operation, as well as proper BoomPilot operation.

Figure 2-51: Boom Offset Distance



📡 TILT GYRO MODULE SETUP

The Tilt Gyro Module (TGM) is used to calibrate the gyro, allowing for tilt correction for application on hilly or sloped terrain.

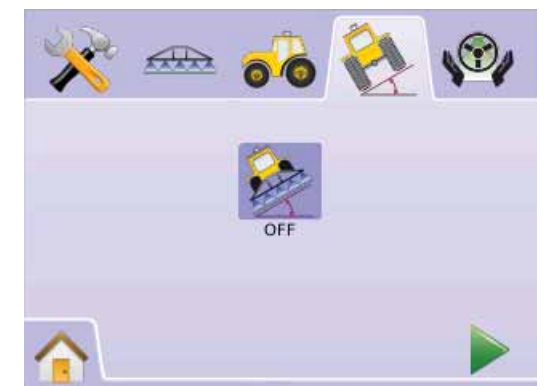
1. Select UNIT SETUP 🏠 from Home Menu 🏠 .
2. Press TILT GYRO MODULE SETUP TAB 📡 .
3. Press TILT CORRECTION ICON 📡 .
4. Select
 - ▶ On – tilt correction will be applied to the GPS antenna position
 - ▶ Off – tilt correction will not be applied
 OR
 Press PAGE RIGHT ARROW ➡ to cycle through all settings.

NOTE: If FieldPilot is being used, a Tilt Gyro Module is built into the system.

NOTE: Antenna Height must be entered prior to Tilt Calibration.

NOTE: Option label is current setting.

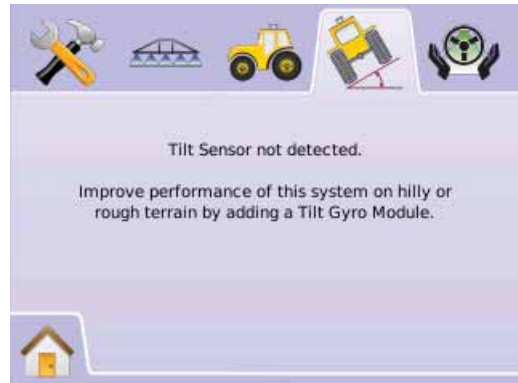
Figure 2-52: Tilt Correction



Tilt Correction Unavailable

If a TGM or SCM is not connected, calibration options will not be available.

Figure 2-53: Tilt Gyro Module Not Detected

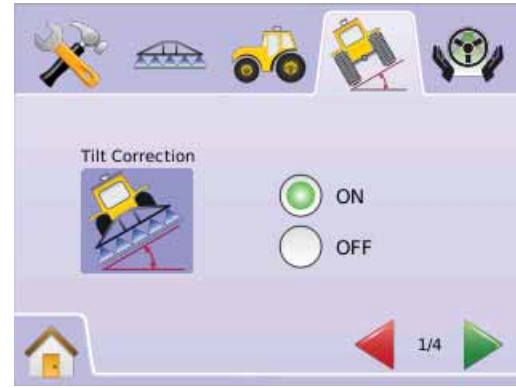


Tilt Correction On and Calibrate

Tilt Correction On and calibration is used to turn on/off Tilt Gyro Module (TGM) and to calibrate the gyro. On/Off

1. Press TILT CORRECTION ICON
2. Select "On"
3. Press
 - ▶ PAGE RIGHT ARROW to Level Tilt Position 1.
 - ▶ TILT GYRO MODULE SETUP TAB to return to main Tilt Gyro Module Setup screen.

Figure 2-54: Tilt Correction On



Level Tilt Position 1

4. Position the vehicle on a level surface.
5. Press
 - ▶ OK ICON to Level Tilt Position 2.
 - ▶ PAGE RIGHT ARROW to Level Tilt Position 2.
 - ▶ TILT GYRO MODULE SETUP TAB to return to main Tilt Gyro Module Setup screen.

Figure 2-55: Level Tilt Position 1



Level Tilt Position 2

6. Turn the vehicle 180 degrees and reposition the vehicle in the same location.
7. Press
 - ▶ OK ICON to Tilt Calibration Complete.
 - ▶ PAGE RIGHT ARROW to Tilt Calibration Complete.
 - ▶ TILT GYRO MODULE SETUP TAB to return to main Tilt Gyro Module Setup screen.

Figure 2-56: Level Tilt Position 2



Tilt Calibration Complete

8. Press
 - ▶ OK ICON
 - ▶ CHECKERED FLAG to complete Tilt Gyro Module Setup.
 - ▶ TILT GYRO MODULE SETUP TAB to return to main Tilt Gyro Module Setup screen.

Figure 2-57: Tilt Calibration Completion

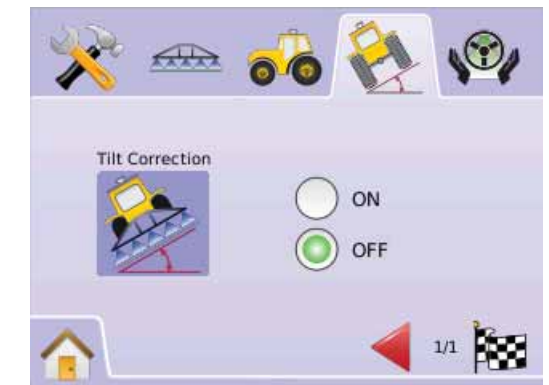


Tilt Correction Off

Tilt Correction is used to turn on/off Tilt Gyro Module (TGM).

1. Press TILT CORRECTION ICON
2. Select "Off"
3. Press
 - ▶ CHECKERED FLAG to complete Tilt Gyro Module Setup.
 - ▶ TILT GYRO MODULE SETUP TAB to return to main Tilt Gyro Module Setup screen.

Figure 2-58: Tilt Correction Off



FIELDPILOT SETUP

FieldPilot Setup is used to Enable/ Disable FieldPilot and configure Valve Setup, Valve Test and Configure FieldPilot.







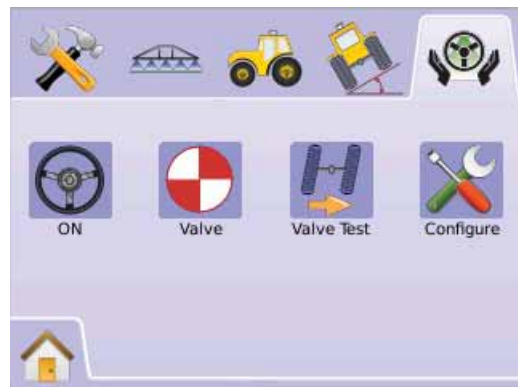
1. Select UNIT SETUP  from Home Menu .
2. Press FIELDPILOT SETUP TAB .
3. Select from:
 - ▶ Autosteer  – sets FieldPilot to on or off
 - ▶ Valve  – used to configure Valve Frequency, Minimum Duty Cycle Left, Minimum Duty Cycle Right and Maximum Duty Cycle
 - ▶ Valve Test  – verifies steering is directed correctly and is used to fine tune the oil flow
 - ▶ Configure  – used to configure Coarse Adjustment, Fine Adjustment, Deadband and Lookahead

Figure 2-59: FieldPilot



FieldPilot Unavailable

If a FieldPilot system is not installed, calibration options will not be available.

Figure 2-60: Assisted Steering Not Detected



Autosteer

Autosteer sets FieldPilot to on or off.



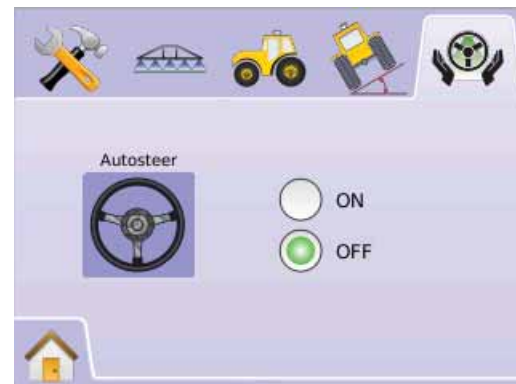
1. Press AUTOSTEER ICON .
2. Select
 - ▶ On
 - ▶ Off
3. Press FIELDPILOT SETUP TAB  to return to FieldPilot Setup.

Figure 2-61: Autosteer On/Off









If “Off” is selected, no FieldPilot capabilities or setup functions will be enabled (icons will be grayed out).

Figure 2-62: FieldPilot with Autosteer Off



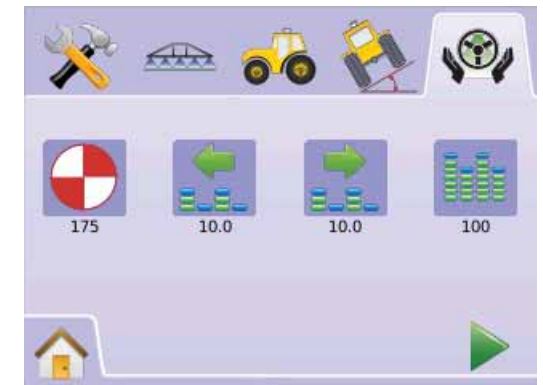
Valve Setup

Valve Setup is used to configure Valve Frequency, Minimum Duty Cycle Left, Minimum Duty Cycle Right and Maximum Duty Cycle.

1. Press VALVE SETUP ICON .
 2. Select from:
 - ▶ Valve Frequency  – used to drive the steering valve
 - ▶ Minimum Duty Cycle Left  – sets the minimum amount of drive required to begin steering the vehicle left
 - ▶ Minimum Duty Cycle Right  – sets the minimum amount of drive required to begin steering the vehicle right
 - ▶ Maximum Duty Cycle  – sets the maximum speed that the wheels will steer from left to right/ right to left (lock to lock)
- OR
- Press PAGE RIGHT ARROW  to cycle through all settings.

NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-63: Valve Setup



Valve Frequency

Valve frequency is used to drive the steering valve. The type of valve being used determines the frequency. Range is 1 - 5000.




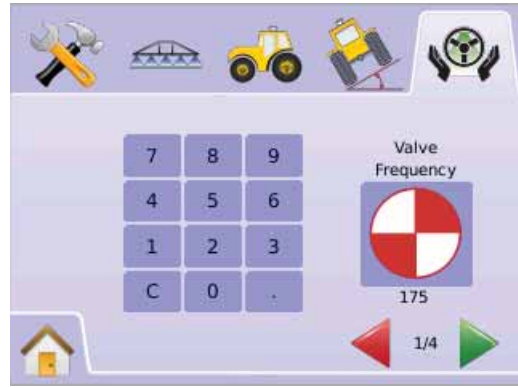
1. Press FREQUENCY ICON .
2. Use the entry screen to establish the valve frequency.
3. Press
 - ▶ PAGE RIGHT ARROW  to proceed to Minimum Duty Cycle Left.
 - ▶ FIELDPILOT SETUP TAB  to return to main FieldPilot Setup.

Figure 2-64: Valve Frequency



The following are common frequencies/valves:

TeeJet Technologies		
Part #	Valve	Frequency
35-02151	FP, CC, NP	2 hz
35-02152	FP, OC, HF, NP	2 hz
35-02153	FP, OC, NP	2 hz
35-02173	FP, PC, LS, NP	2 hz
35-02172	FP, PC, PWM, LS	175 hz
35-02179	FP, PC, PWM, LS	175 hz
35-02180	FP, CC, PWM	110 hz
35-02181	FP, CC, PWM, LS	110 hz
35-02182	FP, CC, PWM	175 hz
35-02183	FP, CC, PWM 1.1 OC	110 hz
35-02184	FP, CC, PWM 7.9 OC	175 hz
35-02185	FP, CC, PWM 2.1 OC	110 hz
35-02186	FP, CC, PWM 4.0 CC	110 hz
35-02187	FP, CC, PWM 7.9 CC	175 hz

For valves manufactured by sources other than TeeJet Technologies, refer to manufacturer's specifications for appropriate valve frequency.

Minimum Duty Cycle

Minimum Duty Cycle sets the minimum amount of drive required to begin steering the vehicle left or right. Range is 0.0 - 50.0.

RECOMMENDATION – Have a large area of clear space available to perform test cycles.

NOTE: If the valve frequency is set below 15 Hz (non proportional), set the amount of drive to "25.0". Cycle test is not necessary.

WARNING: PINCH POINT HAZARD!

To prevent serious injury or death, avoid unsafe practice while manually operating hydraulic steering circuits. Keep others away and stay clear of mechanical linkages.

Cycle Left

Cycle Left sets the minimum amount of drive required to begin steering the vehicle to the left.

1. Press MINIMUM DUTY CYCLE LEFT ICON
2. While the vehicle is moving in a slow forward straight line motion, press the GREEN STOPLIGHT .
3. Slowly increase the duty cycle number using the PLUS BUTTON **+** until the vehicle begins to turn left.
4. Press the RED STOPLIGHT to complete the left test.
5. Press
▶ PAGE RIGHT ARROW to proceed to Minimum Duty Cycle Right.
▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.

Figure 2-65: Minimum Duty Cycle Left



Cycle Right

Cycle Right sets the minimum amount of drive required to begin steering the vehicle to the right.

1. Press MINIMUM DUTY CYCLE RIGHT ICON
2. While the vehicle is moving in a slow forward straight line motion, press the GREEN STOPLIGHT .
3. Slowly increase the duty cycle number using the PLUS BUTTON **+** until the vehicle begins to turn right.
4. Press the RED STOPLIGHT to complete the right test.
5. Press
▶ PAGE RIGHT ARROW to proceed to Maximum Duty Cycle.
▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.

Figure 2-66: Minimum Duty Cycle Right



Maximum Duty Cycle

Maximum Duty Cycle sets the maximum speed that the wheels will steer from left to right / right to left (lock to lock). Range is 25 - 100.

NOTE: If the valve frequency is below 15 Hz (non proportional), set the value to 100. Speed will be established during the Valve Test.

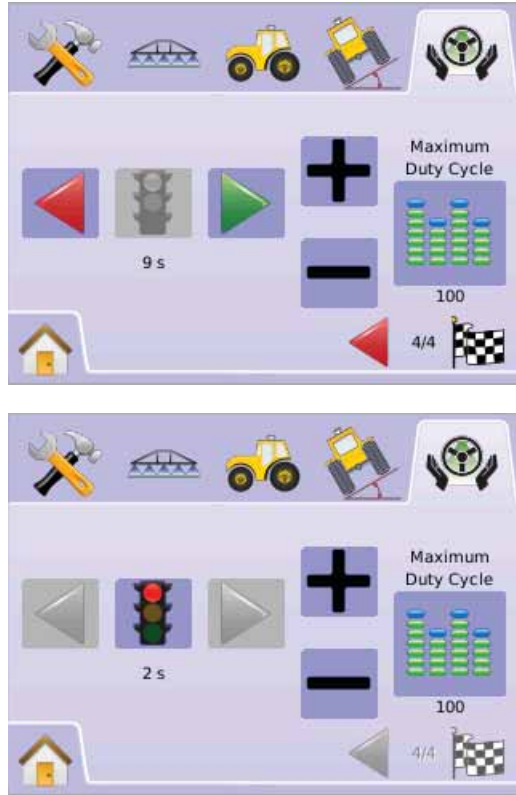
WARNING: PINCH POINT HAZARD!

To prevent serious injury or death, avoid unsafe practice while manually operating hydraulic steering circuits. Keep others away and stay clear of mechanical linkages.

1. Press MAXIMUM DUTY CYCLE ICON
2. Set Max Duty Cycle value to approximately 60 (or refer to FieldPilot manual for desired lock to lock times).
3. Turn the wheels all the way to the left (or right).
4. Press the GREEN ARROW (or RED ARROW). This will start a timer below the STOPLIGHT as well as turn the vehicle to the right (or left).
5. Press the RED STOPLIGHT when the wheels are all the way to the right (or left). The time displayed under the STOPLIGHT is the lock to lock time.
6. Press the PLUS/MINUS ICONS **+** **-** to adjust the Max Duty Cycle value.
7. Repeat steps 3 through 6.
8. When the time from left to right / right to left (lock to lock) begins increasing (it takes longer to turn the tires) press
▶ CHECKERED FLAG to complete Valve Setup.
▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.

Figure 2-67: Maximum Duty Cycle



H Valve Test

The Valve Test verifies steering is directed correctly and is typically used to fine tune the oil flow to properly calibrate the amount of time to steer the wheels from full left to full right (lock to lock) for non-proportional valves.

NOTE: For non-proportional valves, the amount of time for left to right / right to left (lock to lock) will be established by mechanically adjusting oil flow through the valve. Refer to your vehicle user manual for specific instructions.







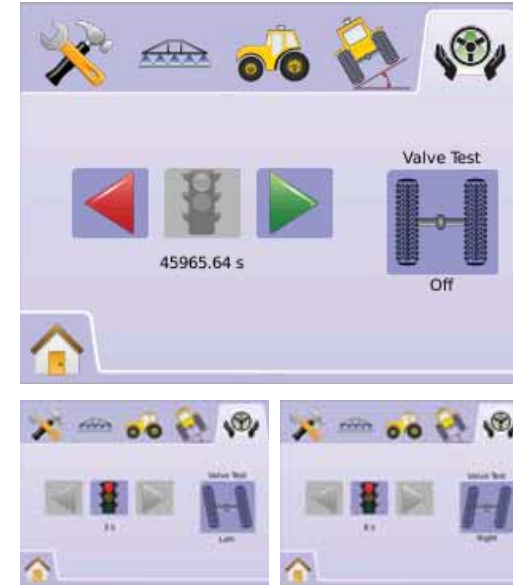






1. Press VALVE TEST ICON .
2. Turn the wheels all the way to the left.
3. Press the GREEN ARROW . This will start a timer below the STOPLIGHT as well as turn the vehicle to the right.
4. Press the RED STOPLIGHT  when the wheels are all the way to the right. The time displayed under the STOPLIGHT is the lock to lock time.
5. Turn the wheels all the way to the right.
6. Press the RED ARROW . This will start a timer below the STOPLIGHT as well as turn the vehicle to the left.
7. Press the RED STOPLIGHT  when the wheels are all the way to the left. The time displayed under the STOPLIGHT is the lock to lock time.
8. Press FIELDPILOT SETUP TAB  to return to main FieldPilot Setup.

Figure 2-68: Valve Test



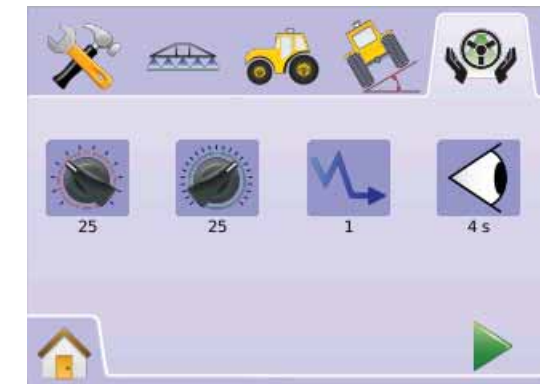
Configure FieldPilot

Configure is used to configure Coarse Adjustment, Fine Adjustment, Deadband and Lookahead settings.

1. Press CONFIGURE ICON .
 2. Select from:
 - ▶ Coarse Steering Adjustment  – adjusts how rapidly the vehicle approaches a guideline in Straight A-B
 - ▶ Fine Steering Adjustment  – adjusts how rapidly the vehicle approaches a guideline in Curved A-B
 - ▶ Deadband  – adjusts if steering is too choppy/responsive or remains consistently off the guideline
 - ▶ Lookahead  – used during Straight A-B Guidance mode to adjust the vehicle's approach to the guideline
- OR
- Press PAGE RIGHT ARROW  to cycle through all settings.

NOTE: Options labels are current settings. While in a setting screen, press icon to view available factory settings and setting ranges.

Figure 2-69: Configure Screen



☀ Coarse Steering Adjustment

Coarse Steering Adjustment adjusts how aggressively the vehicle maintains a guideline in Straight A-B Guidance mode. Range is 1.0 - 100.0.

1. Press COARSE STEERING ADJUSTMENT ICON ☀.
2. Press
 - ▶ PLUS ICON **+** if the vehicle is drifting away from the guideline or not approaching it fast enough.
 - ▶ MINUS ICON **-** if the vehicle is oscillating rapidly or overshooting the guideline.
3. Press
 - ▶ PAGE RIGHT ARROW **▶** to proceed to Fine Adjustment.
 - ▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

*NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.*

Figure 2-70: Coarse Adjustment

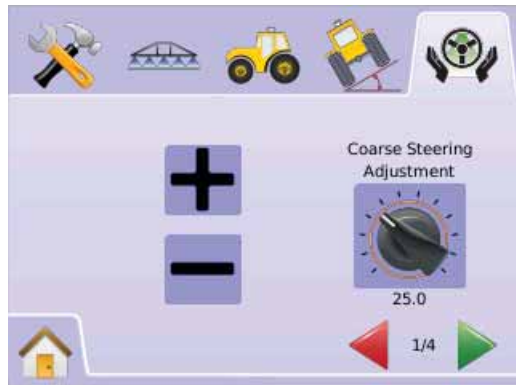
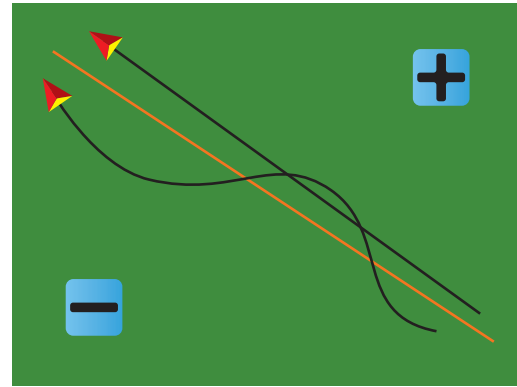


Figure 2-71: Example of Coarse Adjustment



☀ Fine Steering Adjustment

Fine Steering Adjustment adjusts how aggressively the vehicle maintains a guideline in Curved A-B Guidance mode. Range is 1.0 - 100.0.

1. Press FINE STEERING ADJUSTMENT ICON ☀.
2. Press
 - ▶ PLUS ICON **+** if the vehicle drives outside of corners.
 - ▶ MINUS ICON **-** if the vehicle cuts corners.
3. Press
 - ▶ PAGE RIGHT ARROW **▶** to proceed to Deadband.
 - ▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

*NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.*

Figure 2-72: Fine Steering Adjustment

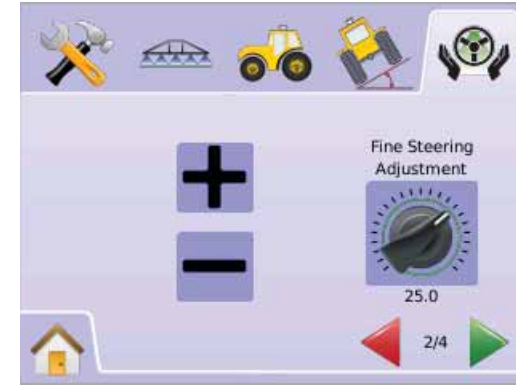
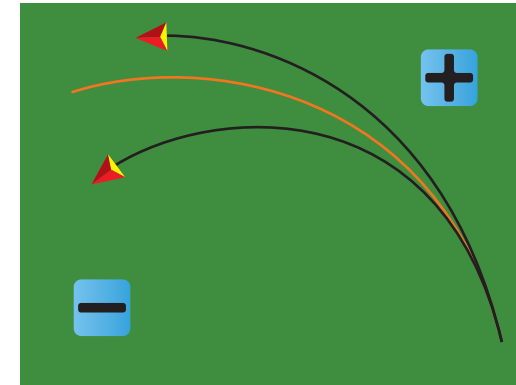


Figure 2-73: Example of Fine Steering Adjustment



↘ Deadband

Deadband adjusts if steering is too choppy/ responsive or remains consistently off the guideline. As the value is increased, stability will increase but so will steady state error. Range is 1 - 10.

1. Press DEADBAND ICON ↘.
2. Press
 - ▶ PLUS ICON **+** if steering is too choppy or too responsive.
 - ▶ MINUS ICON **-** if the vehicle remains consistently off the guideline.
3. Press
 - ▶ PAGE RIGHT ARROW **▶** to proceed to Lookahead.
 - ▶ FIELDPILOT SETUP TAB to return to main FieldPilot Setup.

*NOTE: Press & hold PLUS/MINUS ICONS **+** **-** to quickly adjust settings.*

Figure 2-74: Deadband

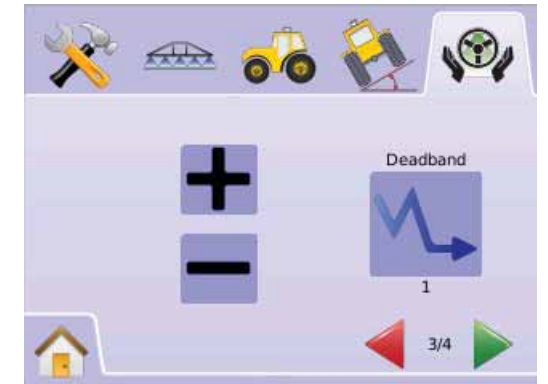


Figure 2-75: Example of Deadband Adjustment

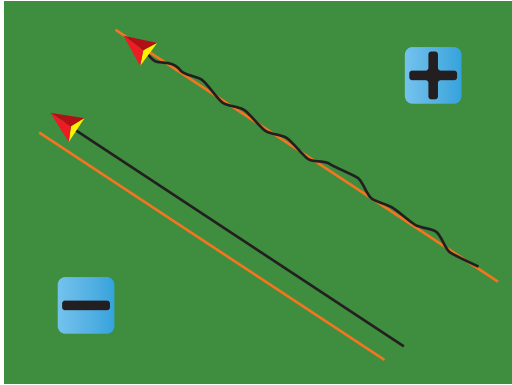
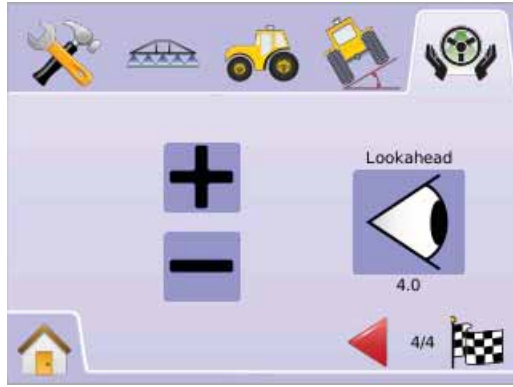


Figure 2-76: Lookahead



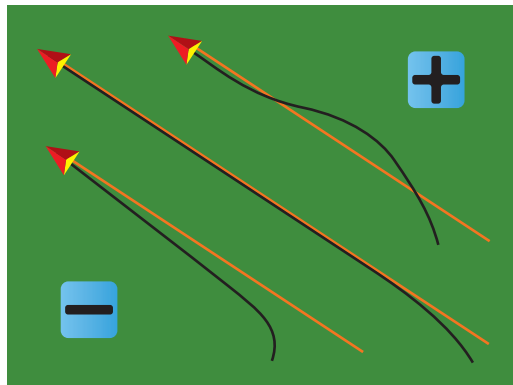
◀ Lookahead

Lookahead is used during Straight A-B Guidance mode to adjust the vehicle's approach to the guideline. Fine tune the Lookahead by conducting several approaches to the guideline. Range is 0.0 - 10.0 seconds.








1. Press LOOKAHEAD ICON ◀.
2. Press
 - ▶ PLUS ICON + if the vehicle is overshooting the guideline when approaching.
 - ▶ MINUS ICON - if the vehicle takes too long to get to the guideline.
3. Press
 - ▶ CHECKERED FLAG 🏁 to complete Configure Setup.
 - ▶ FIELDPILOT SETUP TAB 🏠 to return to main FieldPilot Setup.

NOTE: Press & hold PLUS/MINUS ICONS + - to quickly adjust settings.

Figure 2-77: Example of Lookahead Adjustment



CHAPTER 3 – GUIDANCE






The Matrix allows product application and vehicle guidance to be performed simultaneously. Once Unit Setup is complete, guidance can begin. Providing four guidance modes, Straight A-B , Curved A-B , Circle Pivot , and Last Pass  as well as boundary application , Return to Point  guidance and RealView Guidance Over Video , gives the user options to conform to the project requirements.



Three guidance screens keep the user informed.

- Vehicle View creates a computer-generated image of the vehicle position displayed in the application area. From this screen one can access options for guidance modes, boundary areas and BoomPilot.
- Field View creates a computer-generated image of the vehicle position and application area from an aerial perspective. From this screen one can access options for boundary areas and a marked point or enter World View and Pan modes.
- RealView Guidance allows live video input to be displayed instead of a computer-generated image. If a Video Selection Module (VSM) is installed on the system, two video options are available:
 - ▶ One Camera View - one of up to eight camera inputs can be selected to change the view of the video input.
 - ▶ Split Camera View - one of two sets of four camera inputs (A/B/C/D or E/F/G/H) can be selected to divide the screen into four separate video feeds.
 From this screen one can enter guidance over video and steering angle modes.



GUIDANCE OPERATION MODES

Guidance Modes  include Straight A-B , Curved A-B , Circle Pivot , and Last Pass .

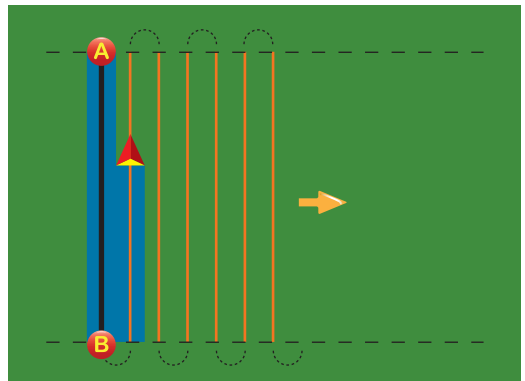
Field boundaries establish application area and determine the no apply zone. A Boundary can be established in Last Pass  or Field View .



Straight A-B Guidance

Straight A-B guidance provides straight line guidance based on A and B reference points. The original A and B point are used to calculate all other parallel guidelines.

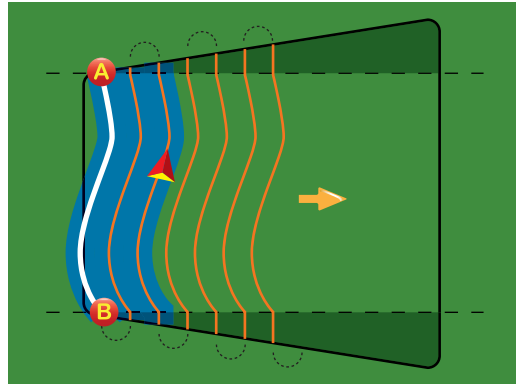
Figure 3-1: Straight A-B Guidance



Curved A-B Guidance

Curved A-B Guidance provides guidance along curved lines based on an initial A-B reference line. This initial baseline is used to calculate all other guidelines.

Figure 3-2: Curved A-B Guidance



NOTE: Curved guidance is recommended not to exceed 30° within the A-B guideline.

HINT: Start on the longest curve of the field. While working in a bounded area, the guidance pattern extending beyond the established A-B points will be straight line guidance.

Circle Pivot Guidance

Circle Pivot guidance provides guidance around a central location that radiates inward or outward. It is used for product application in a center pivot field while being guided along a circular guideline that matches a center pivot irrigation system radius.

Figure 3-3: Inward Circle Pivot Guidance

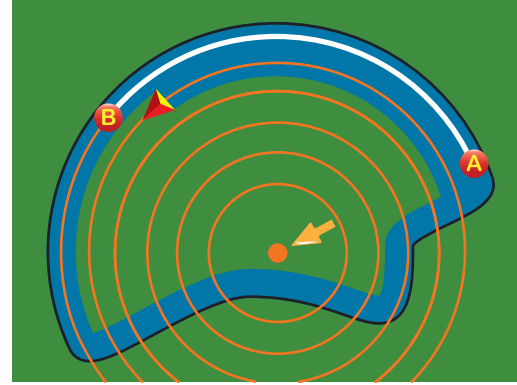
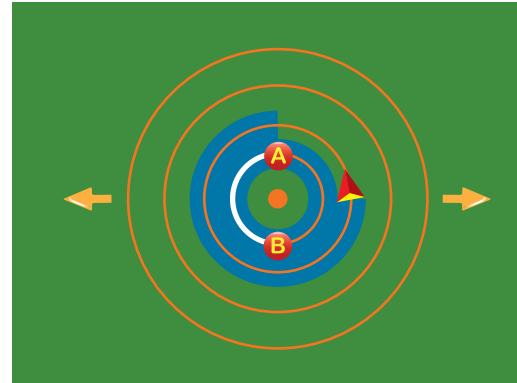


Figure 3-4: Outward Circle Pivot Guidance



Last Pass Guidance

Last Pass Guidance offers true last pass navigation. The console will automatically detect the nearest "applied" guideline and establish parallel pass based on that guideline.

NOTE: If a boundary is established but no application occurred during the boundary process, guidance will not initiate.

Figure 3-5: Inward Last Pass Guidance

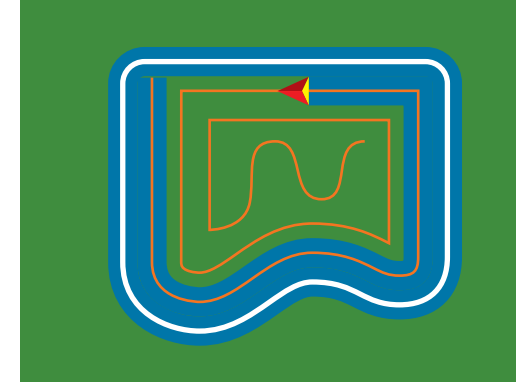


Figure 3-6: Outward Last Pass Guidance

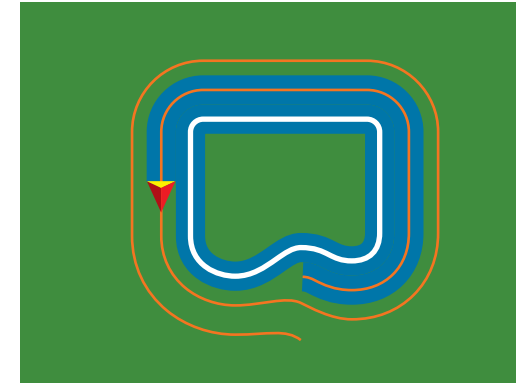


Figure 3-7: Last Pass Guidance with Boundary



GUIDANCE BAR & STATUS BAR

The Guidance Bar and Status Bar give you a quick reference to the current guidance information and unit settings.

Guidance Bar

Informs you of your Current Speed, Swath Number (positive number = to the right of the A-B baseline, negative number = to the left of the A-B baseline), Navigation Activity (Cross Track Error (feet/meters), Current Activity and GPS Status) and Accumulated Area.

Figure 3-8: Guidance Bar Examples

0 Swath	No GPS	0.00 acres
14.4 mph	8.9	1.35 acres
2.5 kph	Mark A	1.20 ha
Current Speed or Swath Number	Navigation Activity GPS Status Cross Track Error Current Activity	Accumulated Area

Status Bar

Informs you of the status of FieldPilot Engagement, Guidance Mode, BoomPilot, Boundary Area and GPS.

Figure 3-9: Status Bar

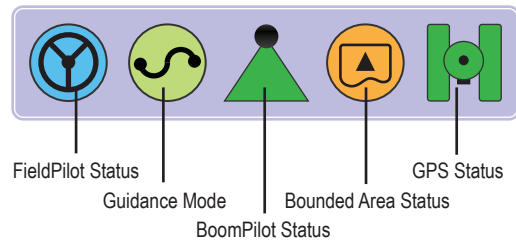


Figure 3-10: Status Bar Icons

Icon	Description
	FieldPilot Status. Icon = engaged. No icon = disengaged.
	Guidance Mode. Straight A-B Guidance. Provides straight line guidance based on A and B reference points. Curved A-B Guidance. Provides curved guidance based on a reference (A-B) line. Circle Pivot Guidance. Provides guidance around a central location that radiates inward or outward. Last Pass Guidance. The console will detect the nearest adjacent applied swath and establish guidance based on it. No Guidance. Turns off guidance. No icon will be displayed.

Icon	Description
	BoomPilot Status. Red = Off/Manual
	Green = Automatic
	Yellow = All On
	No icon = Single Boom Section (no SmartCable or SDM installed on system).
	Bounded Area Status. Outside Boundary = Currently traveling outside bounded area. Inside Boundary = Currently traveling inside bounded area. No icon = No boundary established
	GPS Status. Red = no GPS
	Yellow = GPS only
	Green = DGPS, WAAS/RTK
	Peach = Glide/ClearPath



VEHICLE VIEW

Vehicle View creates a computer-generated image of the vehicle position displayed in the application area. From this screen one can access options for guidance modes, boundary areas and BoomPilot.

On Screen Guidance

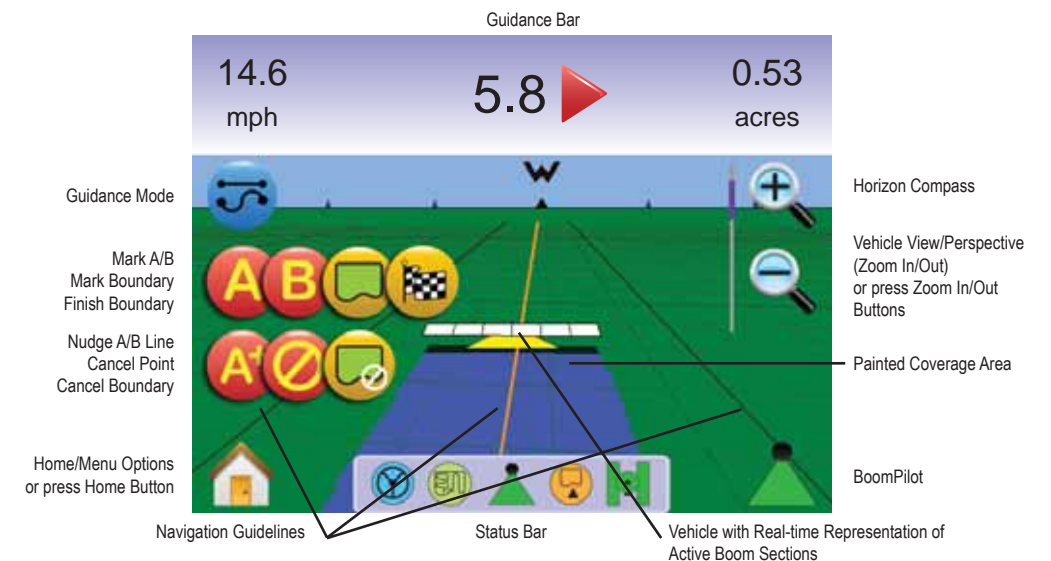
- Guidelines
 - ▶ Orange Line – active guidance line
 - ▶ Black Lines – adjacent guidance lines
- Points - markers for established points
 - ▶ Red Point – Return to Point
 - ▶ Blue Point – Mark A
 - ▶ Green Point – Mark B
- Horizon Compass – general heading can be displayed on horizon (when zoomed in)
- Coverage Area – illustrates applied area and overlap:
 - ▶ Blue – one application
 - ▶ Red – two or more applications

- Zoom In/Out & Perspective – adjust the vehicle's view or perspective to the horizon from vehicle view to bird's eye view.
- Boom Sections
 - ▶ Hollow boxes – inactive booms
 - ▶ White boxes – active booms.

Button Assistance

- Zoom In/Out & Perspective – adjust the vehicle's view or perspective to the horizon from vehicle view to bird's eye view.

Figure 3-11: Overview of Vehicle View

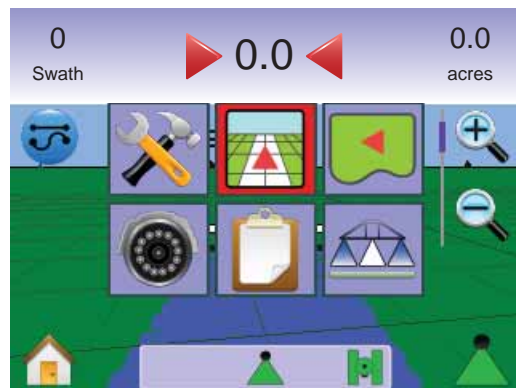


Vehicle View

To access the Vehicle View screen.

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Select VEHICLE VIEW from Home Menu .

Figure 3-12: Home Menu



Guidance Mode Select

Guidance Modes include Straight A-B , Curved A-B , Circle Pivot , Last Pass , and No Guidance Mode .

Guidance with SmartCable or SDM

- Turn the controller master switch to the “On” position. The individual boom section switches should remain in the “Off” position.
- Activate BoomPilot. See BoomPilot section for details.
- In areas where application is not desired, manually turn “off” the rate controller master switch to shut off the booms. Turn the master switch “on” to resume application.

NOTE: This does not apply unless a SmartCable or SDM is installed on the system.

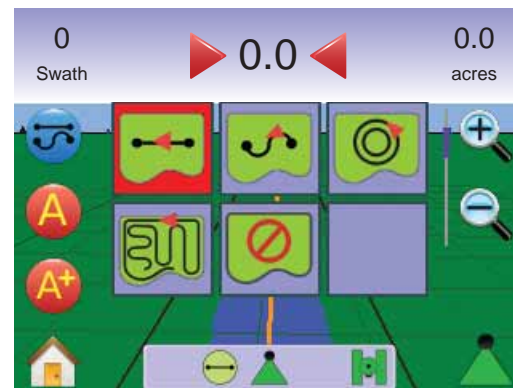
Straight A-B Guidance

Straight A-B guidance provides straight line guidance based on A and B reference points. The original A and B points are used to calculate all other parallel guidelines.

Activate Straight A-B Guidance

1. Press the screen to activate the icons and select the GUIDANCE MODE ICON .
2. Select STRAIGHT A-B GUIDANCE .
 - ◀ Status Bar Icon will change to .

Figure 3-13: Guidance Mode Selection



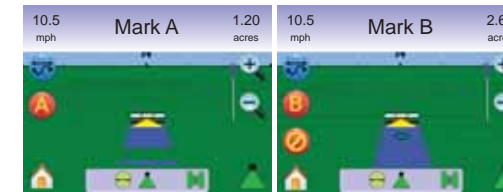
Marking A and B Points

1. Drive to the desired location of Point A .
2. While the vehicle is in motion, press MARK A ICON .
3. Drive to the desired location of Point B .
4. Press the MARK B ICON to establish the A-B line.

NOTE: The MARK B ICON is not available for selection (grayed out) until the minimum distance is traveled (9.84 ft / 3.0 m).

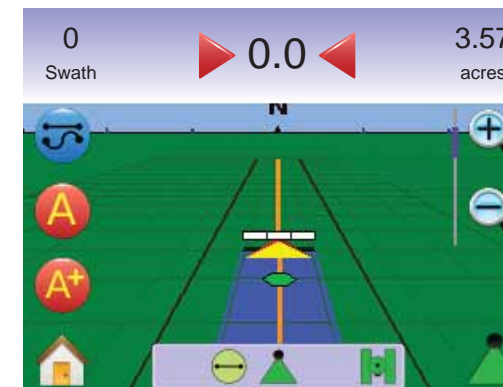
Use CANCEL MARK ICON to cancel the Mark A command and revert to the previous A-B guideline (when established).

Figure 3-14: Mark A and B Points



The console will begin providing navigation information.

Figure 3-15: Straight A-B Guidance



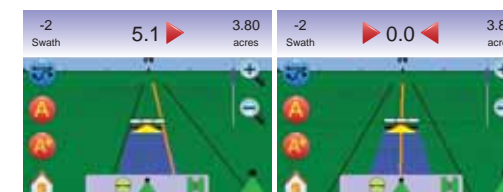
NOTE: A compass is displayed during perspective view (the ZOOM IN BUTTON or ZOOM IN ICON is used to display the horizon).

A+ Nudge Feature

The A+ Nudge feature allows the existing A-B guideline to be shifted to the vehicle's current location.

1. Press A+ NUDGE ICON to establish the new guideline.

Figure 3-16: A+ Nudge



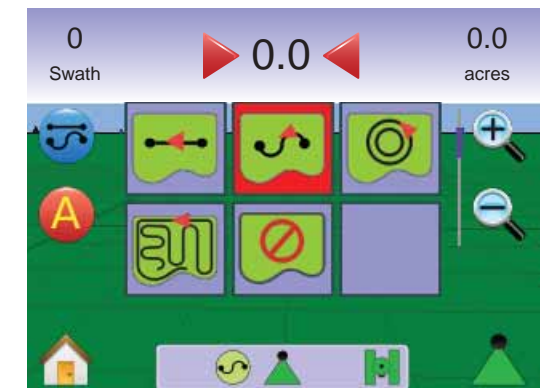
Curved A-B Guidance

Curved A-B Guidance provides guidance along curved lines based on an initial A-B reference line. This initial baseline is used to calculate all other guidelines.

Activate Curved A-B Guidance

1. Press the screen to activate the icons and select the GUIDANCE MODE ICON .
2. Select CURVED A-B GUIDANCE .
 - ◀ Status Bar Icon will change to .

Figure 3-17: Guidance Mode Selection



Marking A and B Points

1. Drive to the desired location of Point A .
2. While the vehicle is in motion, press MARK A ICON .
3. Drive to the desired location of Point B .
4. Press the MARK B ICON to establish the A-B line.

NOTE: The MARK B ICON is not available for selection (grayed out) until the minimum distance is traveled (9.84 ft / 3.0 m).

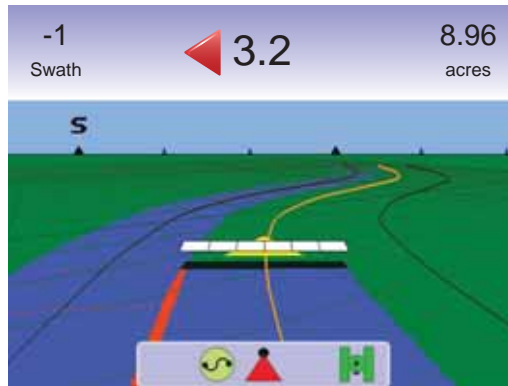
Use CANCEL MARK ICON to cancel the Mark A command and revert to the previous A-B guideline (when established).

Figure 3-18: Mark A and B Points



The console will begin providing navigation information.

Figure 3-19: Curved A-B Guidance

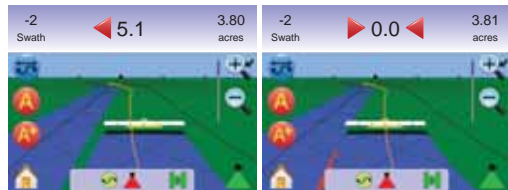


A+ Nudge Feature

The A+ Nudge feature allows the existing A-B guideline to be shifted to the vehicle's current location.

1. Press A+ NUDGE ICON  to establish the new guideline.

Figure 3-20: A+ Nudge



Circle Pivot Guidance

Circle Pivot guidance provides guidance around a central location that radiates inward or outward. It is used for product application in a center pivot field while being guided along a circular guideline that matches a center pivot irrigation system radius.

Activate Circle Pivot Guidance




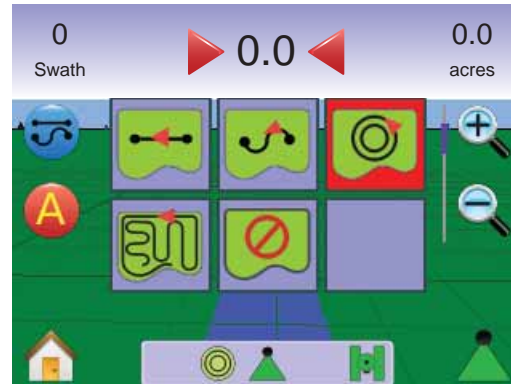





1. Press the screen to activate the icons and select the GUIDANCE MODE ICON .
2. Select CIRCLE PIVOT GUIDANCE .
◀ Status Bar Icon will change to .

Figure 3-21: Guidance Mode Selection



Marking A and B Points

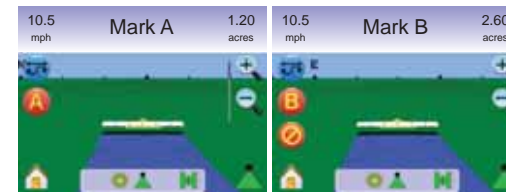
1. Drive to the desired location of Point A .
2. While the vehicle is in motion, press MARK A ICON .
3. Drive along the arc that the pivot would create (a wheel track is a good guide) to the desired location of Point B .
4. Press the MARK B ICON  to establish the A-B arc.

NOTE: The MARK B ICON  is not available for selection (grayed out) until the minimum distance is traveled (164 ft / 50.0 m) or if driving in a straight line.

Use CANCEL MARK ICON  to cancel the Mark A command and revert to the previous A-B guideline (when established).

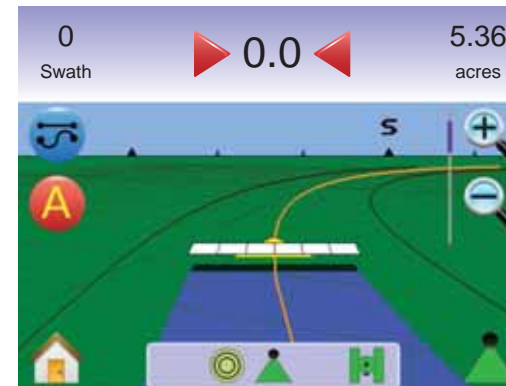
NOTE: It is not necessary to drive the entire circumference of the center pivot in order to initiate guidance.

Figure 3-22: Mark A and B Points



The console will begin providing navigation information.

Figure 3-23: Circle Pivot Guidance



Last Pass Guidance

Last Pass Guidance offers true last pass navigation. The console will automatically detect the nearest applied area and establish parallel guideline based on that area.

NOTE: If a boundary is established but no application occurred during the boundary process, guidance will not initiate.

Activate Last Pass Guidance




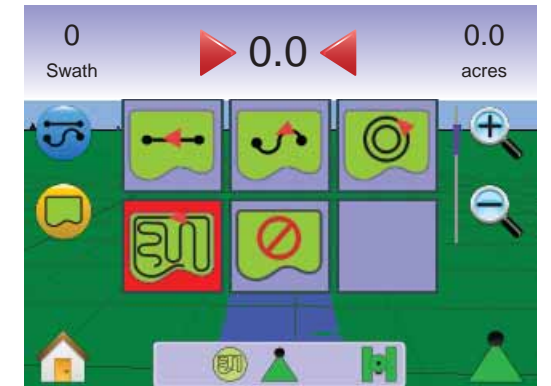
1. Press the screen to activate the icons and select the GUIDANCE MODE ICON .
2. Select LAST PASS GUIDANCE .
◀ Status Bar Icon will change to .

Figure 3-24: Guidance Mode Selection



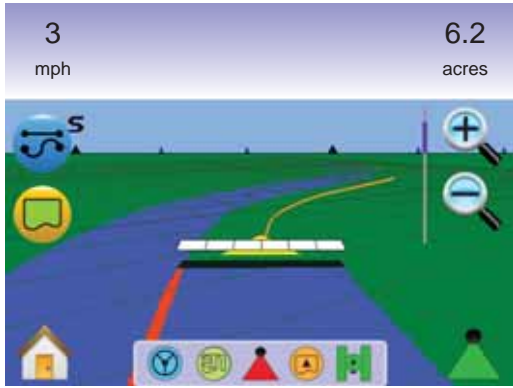
Last Pass

1. Drive to a desired location to apply the first pass.
2. Travel next to the applied area.

The console will begin providing navigation information.

NOTE: If a boundary is established but no application occurred during the boundary process, guidance will not initiate.

Figure 3-25: Last Pass Guidance





Create Field Boundary


Field boundaries establish application area and determine the no apply zone.

NOTE: A Field Boundary can be created in either Last Pass Guidance while in Vehicle View or during any guidance while in Field View.

To create a field boundary:

1. Drive to a desired location at the perimeter of the field/area.
2. While the vehicle is in motion, press BOUNDARY ICON .
3. Travel the perimeter of the field/area.
4. Finish boundary:
 - ▶ Travel to within a swath width of the starting point. The boundary will close automatically (the white guideline will turn black).
 - ▶ Press BOUNDARY FINISH ICON . A straight line will complete the boundary between your current location and the starting point.

NOTE: If a swath was applied while creating a boundary, the boundary line will be to the exterior of the applied swath.

NOTE: The BOUNDARY FINISH ICON  is not available for selection (grayed out) until the minimum distance is traveled (five-times the swath width).


Use CANCEL BOUNDARY ICON  to cancel the new field boundary process and revert to the previous boundary (when established).

Figure 3-26: Boundary in Progress



Figure 3-27: Boundary Complete













NOTE: In correspondence to your current location, the IN BOUNDARY ICON  or OUT BOUNDARY ICON  is displayed on the Status Bar once the boundary is established.

Figure 3-29: Job Information



Home Menu

The Home Button  or Home Icon  gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup , Vehicle View , Field View , RealView Guidance , Job View  and Boom Monitoring ) quickly access all aspects of the unit.

To view the Home Menu options:



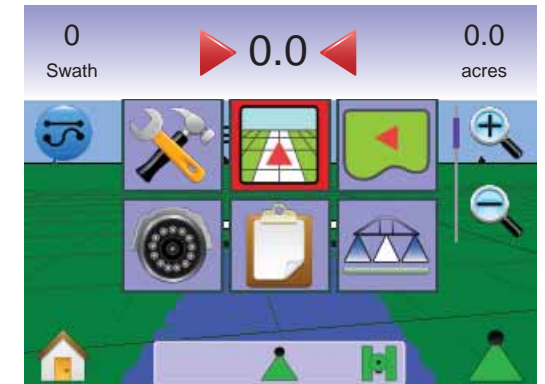




1. Press HOME BUTTON  or press the screen to activate the icons and select HOME ICON  in bottom left corner of screen.

Figure 3-30: Home Menu



No Guidance Mode

No Guidance Mode turns off Straight A-B , Curved A-B , Circle Pivot  and Last Pass  guidance. Established points and guidelines can be turned on by selecting the appropriate guidance.

To turn off all guidance:



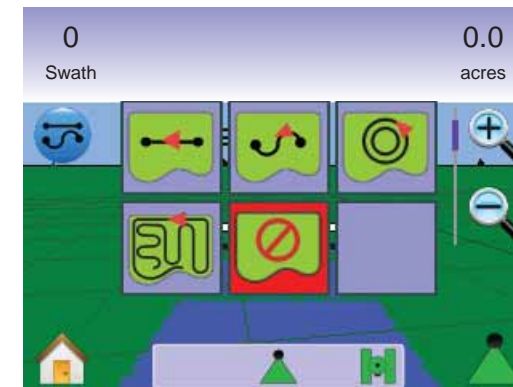
1. Press the screen to activate the icons and select the GUIDANCE MODE ICON .
2. Select NO GUIDANCE .
 - ◀ Status Bar will have no icon.






Figure 3-28: Guidance Off



NOTE: No Guidance Mode does not delete established guide lines or points from the console.

Clear Guidance Modes

To clear all guidance points, lines, boundaries and totals:

1. Press HOME BUTTON  or press the screen to activate the icons and select HOME ICON  in bottom left corner of screen.
2. Press JOB VIEW .
3. Press JOB INFORMATION TAB .
4. Press TRASH CAN ICON  to delete the associated data.

Zoom In/Out & Perspective

Zoom In/Out & Perspective is used to adjust the vehicle's view or perspective to the horizon from vehicle view to bird's eye view.

To adjust the view or perspective:

- Press
 - ▶ ZOOM IN/OUT BUTTONS ▲ ▼
 - ▶ the screen to activate the icons and select the ZOOM IN/OUT ICONS 🔍 🔍.
 - ◀ Zoom In 🔍 ▲ will adjust view to vehicle view displaying a compass on the horizon
 - ◀ Zoom Out 🔍 ▼ will adjust view to bird's eye view

NOTE: Press & hold ZOOM IN/OUT BUTTONS ▲ ▼ or ZOOM IN/OUT ICONS 🔍 🔍 to quickly adjust settings.

Figure 3-31: Zoom In to Out



BoomPilot

BoomPilot is used to set BoomPilot to Off/Manual ▲, Automatic ▲ or All On ▲.

NOTE: GPS is unavailable when the BOOMPILOT ICON is gray ▲. BoomPilot status bar icon will be Off/Manual ▲.

NOTE: The BOOMPILOT ICON ▲ is unavailable if a SmartCable or Section Driver Module (SDM) is not present. To activate the boom, a status switch must be used. Only one Boom Section width will be illustrated and the Status Bar will have no icon.

Guidance with SmartCable or SDM

- Turn the controller master switch to the "On" position. The individual boom section switches should remain in the "Off" position.
- In areas where application is not desired, manually turn "off" the rate controller master switch to shut off the booms. Turn the master switch "on" to resume application.

NOTE: This does not apply unless a SmartCable or SDM is installed on the system.

Off/Manual & Automatic

To switch BoomPilot between Off/Manual ▲ and Automatic ▲

- Press BOOMPILOT ICON ▲.
 - ◀ Off/Manual – Status Bar Icon will change to Red ▲
 - ◀ Automatic – Status Bar Icon will change to Green ▲.

All Booms On Mode

To turn all booms on ▲

- Press and hold BOOMPILOT ICON ▲.
 - ◀ All On – Status Bar Icon will change to Yellow ▲.

Figure 3-32: Automatic to All Booms On Mode





FIELD VIEW

Field View creates a computer-generated image of the vehicle position and application area from an aerial perspective. From this screen one can access options for boundary areas and a marked point or enter World View and Pan modes.

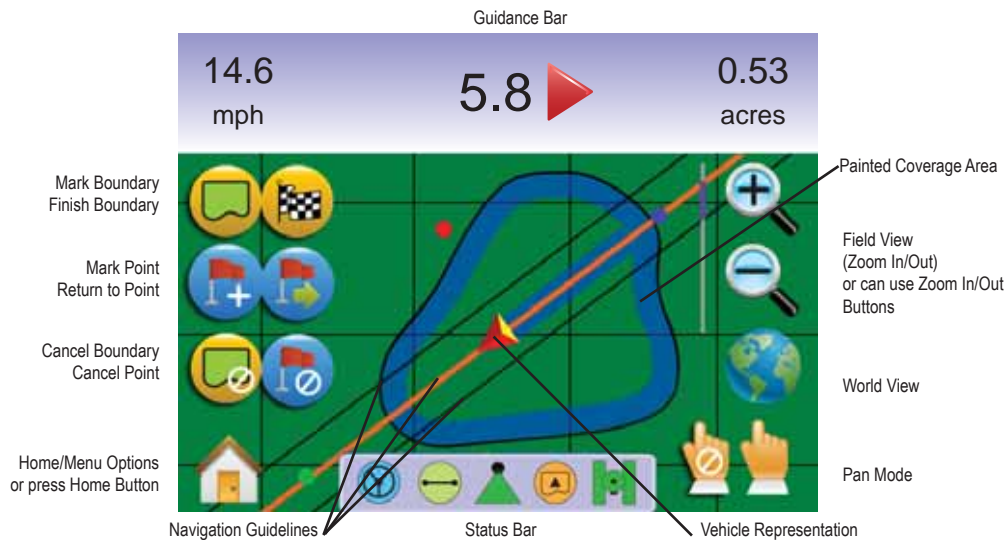
On Screen Guidance

- Guidelines
 - ▶ Orange – active guidance line
 - ▶ Black – boundary line
- Points - markers for established points
 - ▶ Red Point – Return to Point
 - ▶ Blue Point – Mark A
 - ▶ Green Point – Mark B
- Coverage Area – illustrates applied area and overlap:
 - ▶ Blue – one application
 - ▶ Red – two or more applications
- Zoom In/Out – adjust the map's visible area.

Button Assistance

- Zoom In/Out & Perspective – adjust the map's visible area.

Figure 3-33: Overview of Field View



Field View

To access the Field View screen.

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Select FIELD VIEW from Home Menu .

Figure 3-34: Home Menu - Field View



Field Boundary

Field boundaries establish application area and determine the no apply zone.

NOTE: A Field Boundary can be created in either Last Pass Guidance while in Vehicle View or during any guidance while in Field View.

To create a field boundary:

1. Drive to a desired location at the perimeter of the field/area.
2. While the vehicle is in motion, press BOUNDARY ICON .
3. Travel the perimeter of the field/area.
4. Finish boundary:
 - ▶ Travel to within a swath width of the starting point. The boundary will close automatically (the white guideline will turn black).
 - ▶ Press BOUNDARY FINISH ICON . A

straight line will complete the boundary between your current location and the starting point.

NOTE: If a swath was applied while creating a boundary, the boundary line will be to the exterior of the applied swath.

NOTE: The BOUNDARY FINISH ICON is not available for selection (grayed out) until the minimum distance is traveled (five-times the swath width).

Use CANCEL BOUNDARY ICON to cancel the new field boundary process and revert to the previous boundary (when established).

Figure 3-35: Boundary in Progress



Figure 3-36: Boundary Established



NOTE: In correspondence to your current location, the IN BOUNDARY ICON or OUT BOUNDARY ICON is displayed on the Status Bar once the boundary is established.

Return to Point

Return to Point guidance in Field View provides a straight line distance back to an established point. While in Vehicle View, Return to Point Guidance also provides navigation back to an established point.

Marking Return Point

1. Drive to the desired location of Return Point.
2. Press ADD POINT ICON.

Figure 3-37: Mark Return Point

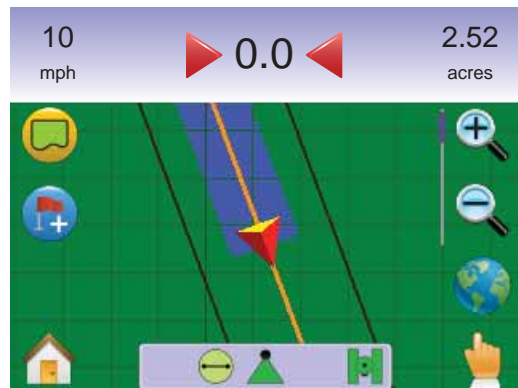
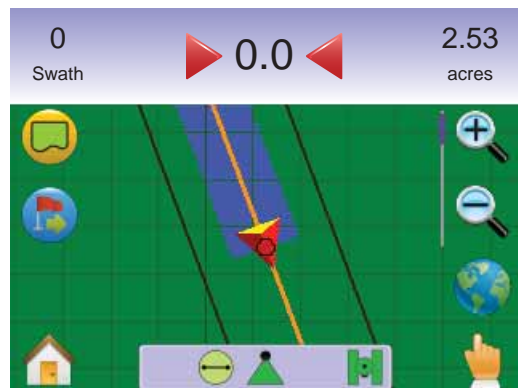


Figure 3-38: Return Point Established

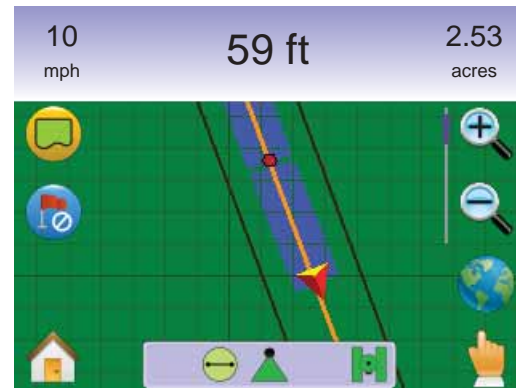


Distance to Established Point

1. Press the RETURN TO POINT ICON. The console will begin providing the distance information on the Guidance Bar from the vehicle to the established point.

Use CANCEL RETURN TO POINT ICON to delete the established point.

Figure 3-39: Return to Point Guidance



Guidance Back to Established Point in Vehicle View

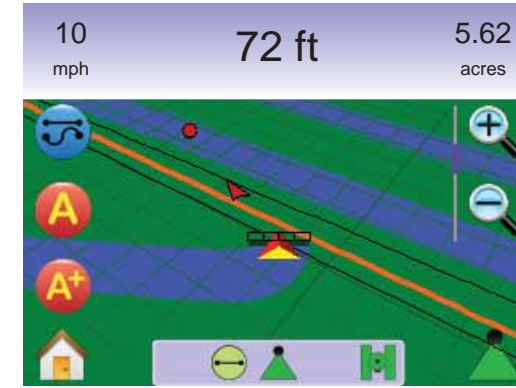
Return to Point Guidance can be followed in Vehicle View.

To follow guidance in Vehicle View:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Press VEHICLE VIEW.

The console will begin providing navigation information. Distance to the established point is shown on the Guidance Bar.

Figure 3-40: Return to Point In Vehicle View



To Cancel Return to Point guidance and delete the established point (CANCEL RETURN TO POINT ICON), return to Field View.

To return to Field View:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Press FIELD VIEW.

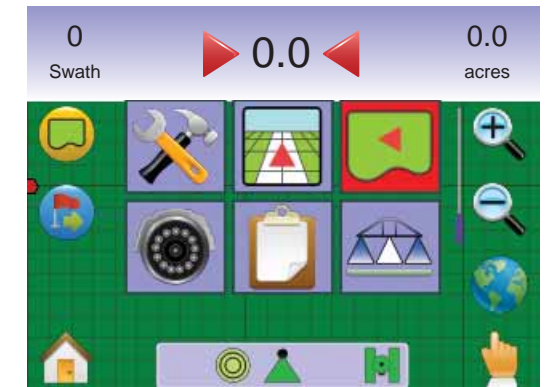
Home Menu

The Home Button or Home Icon gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup, Vehicle View, Field View, RealView Guidance, Job View and Boom Monitoring) quickly access all aspects of the unit.

To view the Home Menu options:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.

Figure 3-41: Home Menu



Zoom In/Out

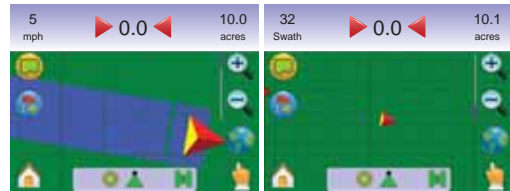
Zoom In/Out is used to adjust the map's visible area.

To adjust the view:

- Press
 - ▶ ZOOM IN/OUT BUTTONS ▲ ▼
 - ▶ the screen to activate the icons and select the ZOOM IN/OUT ICONS 🔍 🔍.
 - ◀Zoom In 🔍 ▲ will decrease the amount of map area visible
 - ◀Zoom Out 🔍 ▼ will increase the amount of map area visible

NOTE: Press & hold ZOOM IN/OUT BUTTONS ▲ ▼ or ZOOM IN/OUT ICONS 🔍 🔍 to quickly adjust settings.

Figure 3-42: 100% Zoom In to Out

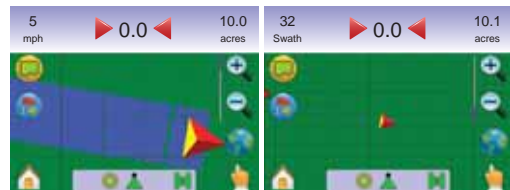


World View

World View is a one press option to zoom out as far as possible.

- Press the screen to activate the icons and select WORLD VIEW ICON 🌐.

Figure 3-43: World View



To zoom in:

- Press the ZOOM IN BUTTON ▲ or ZOOM IN ICON 🔍.

Pan Mode

Pan Mode allows the screen to be positioned manually as desired.

To enter Pan Mode and pan across the screen:

- Press the screen to activate the icons and select PAN ICON 🖱️ to manually adjust the view on the screen.
- Press ARROWS ⏴ ⏵ in the corresponding direction to move the view on screen (down, left, right, up).

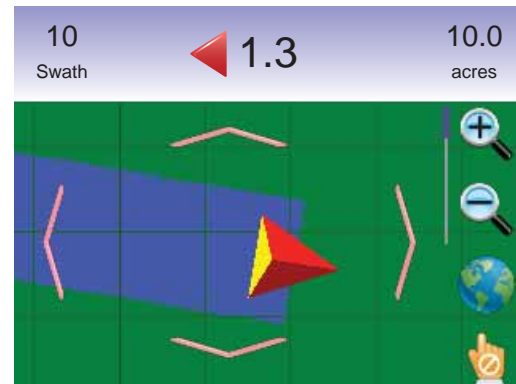
NOTE: Press & hold ARROWS ⏴ ⏵ to quickly adjust settings.

To exit Pan Mode:

- Press the EXIT PAN ICON 🖱️.

NOTE: Press WORLD VIEW ICON 🌐 to center vehicle on screen.

Figure 3-44: Pan Mode



NOTE: Pan Mode must be exited in order to return to any other screen views.



REALVIEW GUIDANCE

RealView Guidance allows live video input to be displayed instead of a computer-generated image.

If a Video Selection Module (VSM) is installed on the system, two video options are available:

- One Camera View - one of up to eight camera inputs can be selected to change the view of the video input.
- Split Camera View - one of two sets of four camera inputs (A/B/C/D or E/F/G/H) can be selected to divide the screen into four separate video feeds.

From this screen one can enter guidance over video and steering angle modes.

On Screen Guidance

Guidelines





- ▶ Orange Line – active guidance line
- ▶ Black Lines – adjacent guidance lines

Figure 3-45: Overview of RealView Guidance



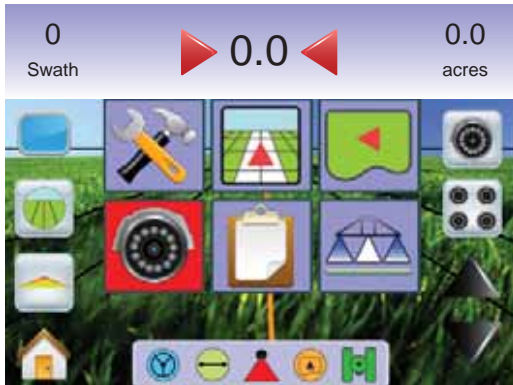
RealView Guidance

To access the RealView Guidance screen.

1. Press HOME BUTTON  or press the screen to activate the icons and select HOME ICON  in bottom left corner of screen.
2. Select REALVIEW GUIDANCE  from Home Menu .

NOTE If a VSM or single camera is not installed, RealView Guidance  will be unavailable from the Home Menu


Figure 3-46: Home Menu - RealView Guidance



Full Screen

Full Screen mode allows the video feeds to be broadcast across the entire screen. Guidelines and Steering Angle will be displayed. Guidance Bar and Status Bar will not be displayed.

To activate Full Screen mode:

1. Press the screen to activate the icons and select the FULL SCREEN ICON .

To exit Full Screen mode:

1. Press anywhere on the screen.

Figure 3-47: Full Screen w/Guidance & Steering

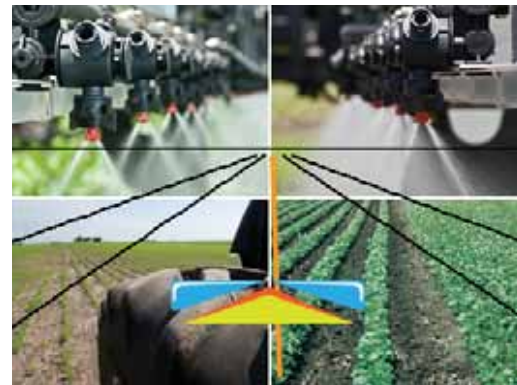
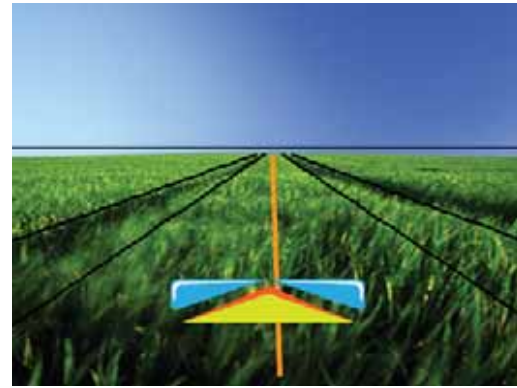


Figure 3-48: Full Split Screen






Guidance Over Video

Guidance Over Video places three dimensional guidelines over the video feed for navigation assistance.

NOTE: Guidance (Straight A-B, Curved A-B, Circle Pivot or Last Pass) is setup in Vehicle View or Field View. No guidelines will be visible when guidance is unavailable.

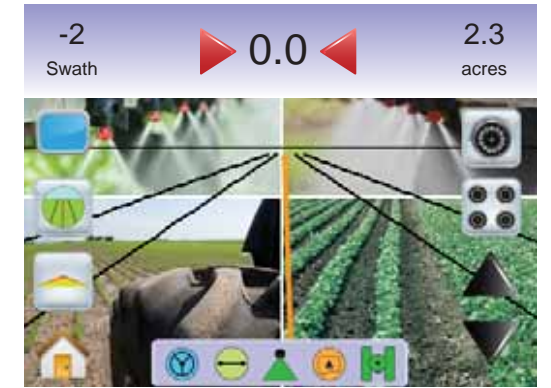
To activate Guidance Over Video:

1. Press the screen to activate the icons and select the GUIDANCE OVER VIDEO ICON .

The UP/DOWN ARROW ICONS   are used to adjust the guidelines to the horizon.

NOTE: Press & hold UP/DOWN ARROW ICONS   to quickly adjust settings.

Figure 3-49: Guidance Over Video



To exit Guidance Over Video:


1. Press the screen to activate the icons and select the GUIDANCE OVER VIDEO ICON .

Figure 3-50: Guidance Unavailable



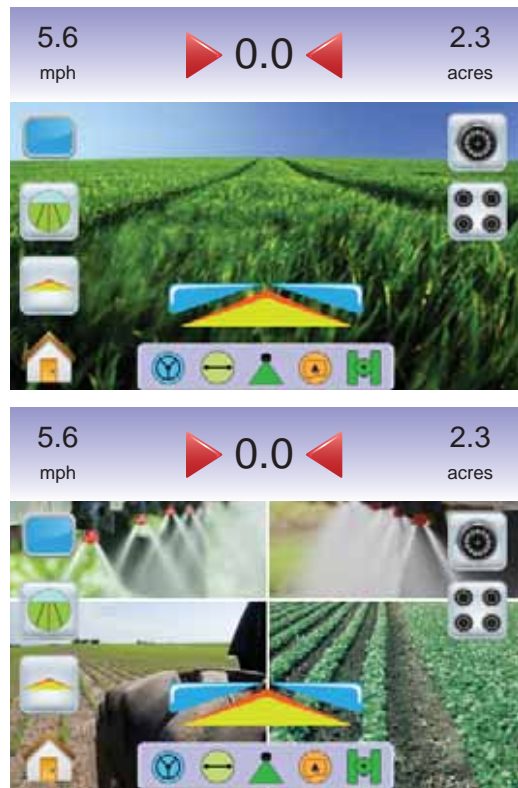
Steering Angle Indicator

Steering Angle Indicator displays the direction in which the steering wheel needs to be adjusted.

To activate Steering Angle Indicator:

1. Press the screen to activate the icons and select the STEERING ANGLE ICON.

Figure 3-51: Steering Angle Indicator



To turn off the Steering Angle Indicator:

1. Press the screen to activate the icons and select the STEERING ANGLE ICON.

Home Menu

The Home Button or Home Icon gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup, Vehicle View, Field View, RealView Guidance, Job View and Boom Monitoring) quickly access all aspects of the unit.

To view the Home Menu options:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.

Figure 3-52: Home Menu



Single Camera Selection

One of up to eight camera views can be activated in RealView Guidance if a Video Selection Module (VSM) is attached.

No VSM

If a VSM is not installed, the VIDEO ICON is not available and only one (1) video feed will be available.

Figure 3-53: VSM Not Installed



Eight Channel VSM

When a eight (8) channel VSM is on the system, up to eight (8) cameras can be installed.

NOTE: If installing four or less cameras, all in ports A, B, C or D, setup screens will follow Four Channel VSM instructions.

To change active a single camera view:

1. Press the screen to activate the icons and select the VIDEO ICON.
2. Press the desired CAMERA icon to change the video view.

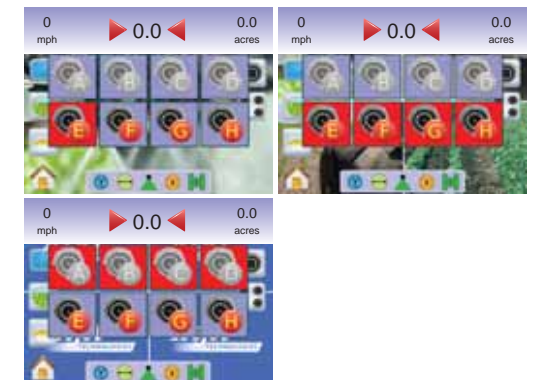
NOTE: A camera is not available for selection (grayed out) when unavailable. If no icons are available, a VSM is installed, but a single camera is directly attached.

NOTE: If a VSM is not installed, the VIDEO ICON is not available.

Figure 3-54: Camera Selection








Figure 3-55: Cameras A/B/C/D Unavailable




Four Channel VSM

When a four (4) channel VSM is on the system, up to four (4) cameras can be installed. Only Cameras A, B, C and D will be available for setup.

To change active a single camera view:

1. Press the screen to activate the icons and select the VIDEO ICON .
2. Press the desired CAMERA , ,  or  to change the video view.

NOTE: A camera  is not available for selection (grayed out) when unavailable. If no icons are available, a VSM is installed, but a single camera is directly attached.

NOTE: If a VSM is not installed, the VIDEO ICON  is not available.

Figure 3-56: Camera Selection



Figure 3-57: Only One Camera Available



Split Camera View

Split Camera View allows one of two sets of four camera inputs (A/B/C/D or E/F/G/H) to be selected to divide the screen into four separate video feeds while in RealView Guidance if a Video Selection Module (VSM) is attached.

If a VSM port does not have a camera installed, a blue screen with the TeeJet logo will fill that port's screen quarter.

Figure 3-58: Inactive Camera Ports



No VSM


If a VSM is not installed, the SPLIT VIEW ICON  is not available and only one (1) video feed will be available.


Figure 3-59: VSM Not Installed












Eight Channel VSM

When a eight (8) channel VSM is on the system, up to eight (8) cameras can be installed. Two sets of four camera inputs (A/B/C/D or E/F/G/H) can be selected.

NOTE: If installing four or less cameras, all in ports A, B, C or D, setup screens will follow Four Channel VSM instructions.

NOTE: If a VSM is not installed, the SPLIT VIEW ICON  is not available.

To change active a set of split camera views:

1. Press the screen to activate the icons and select the SPLIT VIEW ICON .
2. Select
 - ▶ CAMERAS A/B/C/D    
 - ▶ CAMERAS E/F/G/H    

NOTE: If only set A/B/C/D is available, cameras are only installed on ports A, B, C and D.

Figure 3-60: Split View

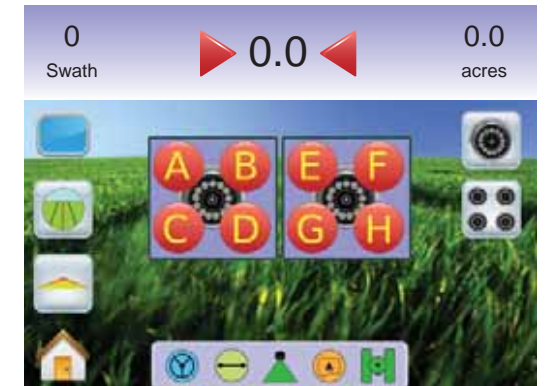


Figure 3-61: Split View Selection A/B/C/D

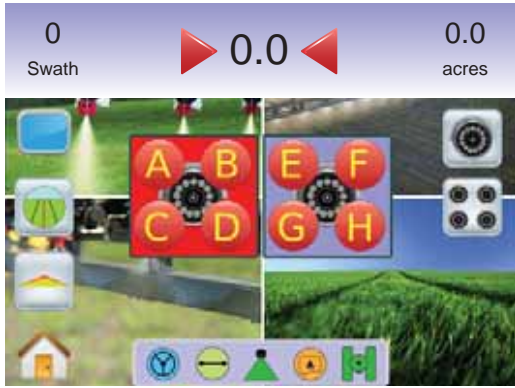
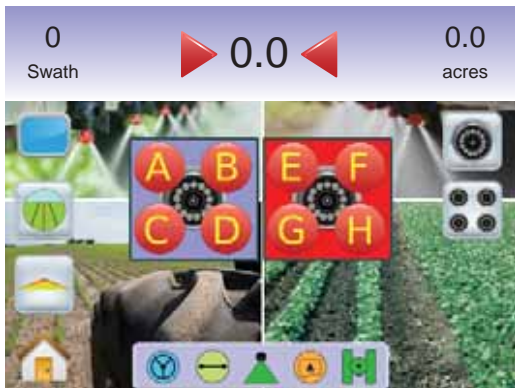




Figure 3-62: Split View Selection E/F/G/H



Four Channel VSM

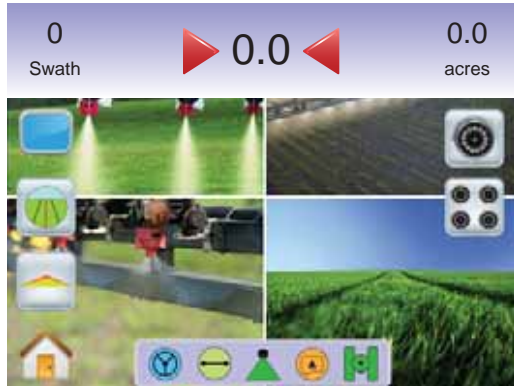
When a four (4) channel VSM is on the system, up to four (4) cameras can be installed. One set of four camera inputs (Cameras A/B/C/D ) can be activated.

NOTE: If a VSM is not installed, the SPLIT VIEW ICON  is not available.

To change to split camera view:

1. Press the screen to activate the icons and select the SPLIT VIEW ICON .



Figure 3-63: Split View Selection A/B/C/D



Guideline Adjustment

Guideline Adjustment is used to adjust the guidelines to match the camera's view.

To adjust the guidelines:

1. Press the screen to activate the icons and select the UP/DOWN ARROW ICONS  .
 - ◀ Up Arrow will move the horizon line up
 - ◀ Down Arrow will move the horizon line down


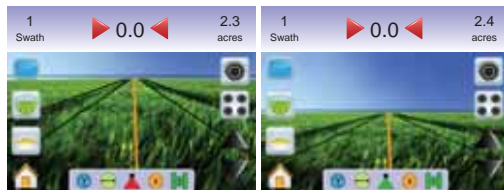
NOTE: The ZOOM IN/OUT BUTTONS   will not adjust the horizon line up or down.

Figure 3-64: Guideline Adjustment




NOTE: Press & hold UP/DOWN ARROW ICONS   to quickly adjust settings.

CHAPTER 4 – MONITORING

Along with guiding you through the field, the Matrix monitors your current job information and the boom sections.

 Job View is used to clear current job information or to save current job information to a USB drive.

 Boom Monitoring displays boom sections activity, Guidance activity and Status Bar activity. BoomPilot can also be enabled or disabled from this screen.



JOB VIEW

Job View is used to clear current job information or to save current job information to a USB drive.

To access the Job View screens.









1. Press HOME BUTTON  or press the screen to activate the icons and select HOME ICON  in bottom left corner of screen.
2. Select JOB VIEW  from Home Menu .

Figure 4-1: Home Menu - Job View



Job Information

The Job Information options clear current job information, current bounded area, Area 1 or Area 2 totals:

1. Select JOB VIEW  from Home Menu .
2. Press JOB INFORMATION TAB .
3. Press TRASH CAN ICON  to delete the associated data.
4. "Okay to erase all job data?"

Press

▶ Yes – a "All job data cleared." confirmation will be displayed. Select "OK" to return to the Job Information screen

▶ No – to return to the Job Information screen

Figure 4-2: Job Information



NOTE: Clear Current Job? does not clear Area 1 or Area 2.

Save Information

To back up the job and store information to a USB drive:

1. Select JOB VIEW from Home Menu.
2. Press SAVE INFORMATION TAB.
3. Select from:
 - ▶ ALL – all available file types
 - ▶ PDF – report for print
 - ▶ KML – Google Earth Map
 - ▶ SHP – ESRI shape data
4. Press
 - ▶ Yes – a “Saved report/data to USB drive.” message will be displayed for approximately 10 seconds. To remove a pop-up sooner, press anywhere on the screen.
 - ▶ No – to return to the Save Information screen

NOTE: The INFORMATION ICONS are not available for selection (grayed out) until a USB drive is inserted properly.

Figure 4-3: Save Information



Figure 4-4: Save All



PDF Report

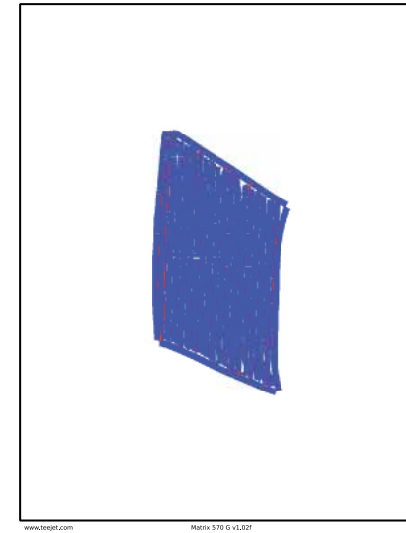
Selecting to save a PDF report will create a pre-built PDF report with associated coverage map. Customer information, weather data and field data will have to be entered manually.

Figure 4-5: Save PDF



Figure 4-6: PDF Report Example

TeeJet TECHNOLOGIES		Application Report			
		Job ID: Report Created: 3/16/10 at 11:15 AM			
Customer:	Applicator:	Supervisor:			
Application Statistics					
Start Date: 3/16/10	Total Run Time: 24 (minutes)	Implement Width: 18.42 ft			
Start Time: 4:59 PM	Total App Time: 18 (minutes)	Area of Field: 5.0 (ac)			
End Date: 3/16/10	Latitude: 39.7829	AreaIn: 12.73 (ac)			
End Time: 5:13 PM	Longitude: -89.6121	Num. Products:			
Product Name	SPW Range	Target Rate	Area Applied	Total Amount	Acc. Distance
Weather		Temp	Soil Conditions		
Wind Speed:	Name:	Moisture:			
Wind Dir:	Growth:	Texture:			
Temp/Humidity:	Tillage:				
Day:	Condition:				
Additional Notes					



NOTE: The PDF report is available in all languages and generated in the current language selection.

KML Data

Selecting to save a KML file will create a Google Earth file. A KML file can be overlaid on top of Google Maps to view application areas on a map.

KML, or Keyhole Markup Language, is an XML grammar and file format for modeling and storing geographic features such as points, lines, images, polygons, and models for display in Google Earth, Google Maps and other applications. You can use KML to share places and information with other users of these applications.

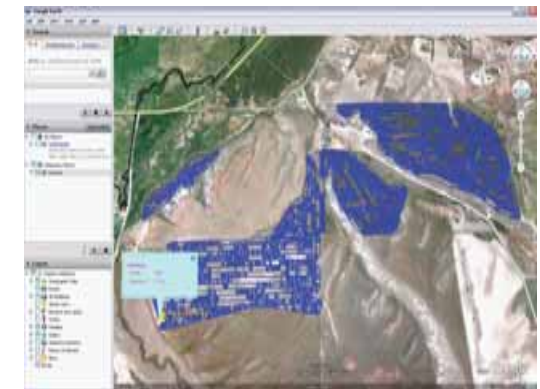
A KML file is processed by Google Earth in a similar way that HTML and XML files are processed by web browsers. Like HTML, KML has a tag-based structure with names and attributes used for specific display purposes. Thus, Google Earth acts as a browser of KML files.

Please visit Google.com for more details and viewing instructions.

Figure 4-7: Save KML



Figure 4-8: KML Google Data Overlay Example



ESRI Data

Selecting to save a SHP file will create a GIS (Geographic Information System) or shapefile. Shape files are a useful tool as many customers use third party GIS software to plot, store and analyze data collected by the Matrix 570G.

"Balancing the inputs and outputs on a farm is fundamental to its success and profitability. The ability of GIS to analyze and visualize agricultural environments and workflows has proven to be very beneficial to those involved in the farming industry.

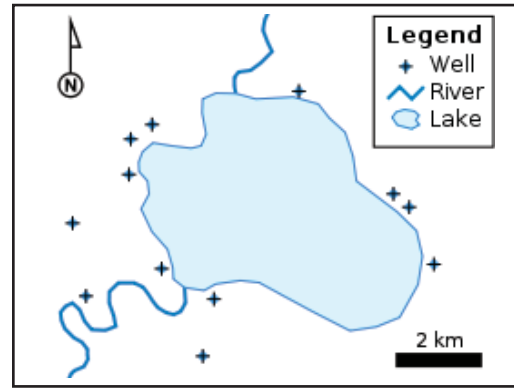
From mobile GIS in the field to the scientific analysis of production data at the farm manager's office, GIS is playing an increasing role in agriculture production throughout the world by helping farmers increase production, reduce costs, and manage their land more efficiently."
 – ESRI.com

A shapefile is a digital vector storage format for storing geometric location and associated attribute information.

Figure 4-9: Save SHP



Figure 4-10: ESRI Data Example



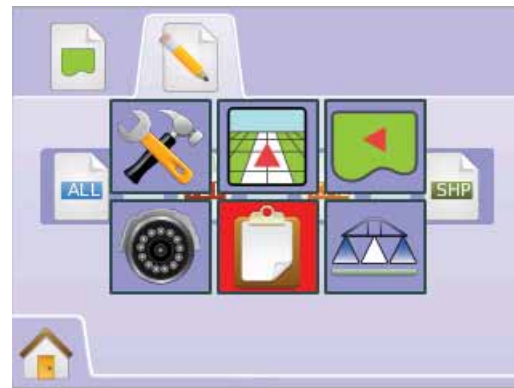
Home Menu

The Home Button or Home Icon gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup, Vehicle View, Field View, RealView Guidance, Job View and Boom Monitoring) quickly access all aspects of the unit.

To view the Home Menu options:

1. Press HOME BUTTON or select HOME ICON in bottom left corner of either screen.

Figure 4-11: Home Menu



BOOM MONITORING

Boom Monitoring displays boom sections activity, Guidance activity and Status Bar activity. BoomPilot can be set from this screen.

Boom Monitor

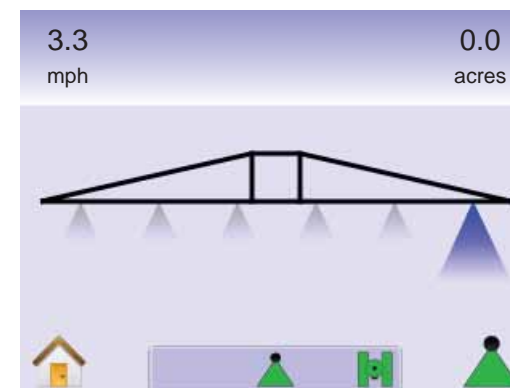
To view the Boom Monitoring screen:

1. Press HOME BUTTON or press the screen to activate the icons and select HOME ICON in bottom left corner of screen.
2. Select BOOM MONITORING from Home Menu

Figure 4-12: Home Menu - Boom Monitoring



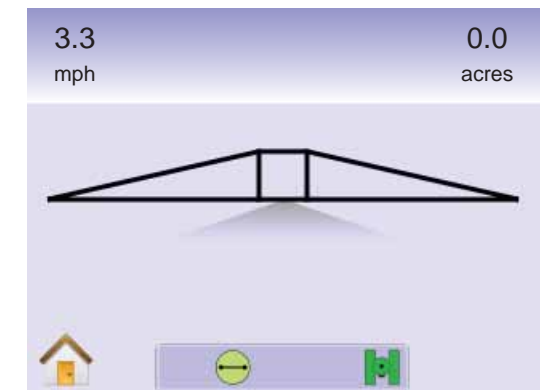
Figure 4-13: Boom Monitoring











BoomPilot is Unavailable

If a SmartCable or Section Driver Module (SDM) is not present, a status switch must be used. Only one section will be illustrated, the BOOMPILOT ICON will be unavailable and the Status Bar will have no icon.

Figure 4-14: Boom Unavailable



Home Menu

The Home Button  or Home Icon  gives you access to the unit's three functions: Setup, Guidance and Monitoring. The six touch screen Menu Options (Unit Setup , Vehicle View , Field View , RealView Guidance , Job View  and Boom Monitoring ) quickly access all aspects of the unit.

To view the Home Menu options:



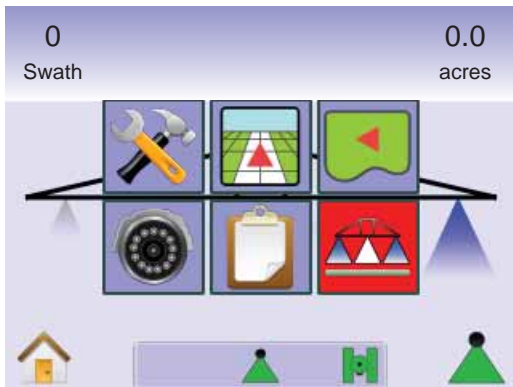
1. Press HOME BUTTON  or press the screen to activate the icons and select HOME ICON  in bottom left corner of screen.


Figure 4-15: Home Menu



BoomPilot

BoomPilot is used to set BoomPilot to Off/Manual , Automatic  or All On .

NOTE: GPS is unavailable when the BOOMPILOT ICON is gray . BoomPilot status bar icon will be Off/Manual .



NOTE: The BOOMPILOT ICON  is unavailable if a SmartCable or Section Driver Module (SDM) is not present. To activate the boom, a status switch must be used. Only one Boom Section width will be illustrated and the Status Bar will have no icon.




Guidance with SmartCable or SDM

- Turn the controller master switch to the “On” position. The individual boom section switches should remain in the “Off” position.
- In areas where application is not desired, manually turn “off” the rate controller master switch to shut off the booms. Turn the master switch “on” to resume application.

NOTE: This does not apply unless a SmartCable or SDM is installed on the system.

Off/Manual & Automatic

To switch BoomPilot between Off/Manual  and Automatic 

1. Press BOOMPILOT ICON  .
 - ◀ Off/Manual – Status Bar Icon will change to Red 
 - ◀ Automatic – Status Bar Icon will change to Green 

All Booms On Mode

To turn all booms on 



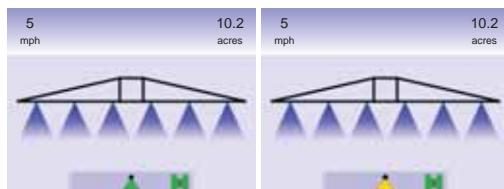
1. Press and hold BOOMPILOT ICON  .
 - ◀ All On – Status Bar Icon will change to Yellow 









Figure 4-16: Automatic to All Booms On Mode








CHAPTER 5 – APPENDIX

APPENDIX A - ICON REFERENCE

Menu Options

Icon	Description
 	Home – Displays Menu Options including Unit Setup, Vehicle View, Field View, RealView Guidance, Job View and Boom Monitoring.
	Unit Setup – Allows System, BoomPilot/Single Boom, Vehicle, Tilt Correction and FieldPilot setups.
	System Setup. Sets options for lightbar, culture (units, language & time zone), GPS, console (volume, display brightness, touch screen calibration, screenshot & about/save) and video cameras.
	BoomPilot/Single Boom Setup. Sets swath overlap, delay on/off, number of boom sections and associated boom section widths.
	Vehicle Setup. Sets vehicle type, antenna height, boom direction and boom distance from antenna.
	Tilt Gyro Module Setup. Sets on/off and calibrates tilt correction.
	FieldPilot Setup. Sets autosteer on/off, options for valve setup (frequency and minimum & maximum duty cycles), valve testing and FieldPilot configuration (coarse steering adjustment, fine steering adjustment, deadband & look ahead).

Icon	Description
	Vehicle View – Allows a computer-generated image of the vehicle position displayed in the application area. Access options for guidance modes, boundary areas and BoomPilot.
	Field View – Allows a computer-generated image of the vehicle position and application area from an aerial perspective. Access options for boundary areas and marked point. Enter World View and Pan modes.
	RealView Guidance – Allows a single live video input or a set of four live inputs to be displayed instead of a computer-generated image. Enter guidance over video and steering angle modes.
	Job View – Allows saving of information to a USB drive or clearing of information from unit.
	Boom Monitoring – Allows a computer generated view of active/inactive boom sections. Enable/disable BoomPilot.

Unit Setup

System Setup

Icon	Description
	Lightbar Setup – LED Spacing, Display Mode and LED Brightness.
	LED Spacing. Sets the distance illustrated by the illuminated LEDs.
	Display Mode. Determines whether the lightbar represents the swath position or vehicle position.
	LED Brightness. Adjusts brightness of the lightbar LEDs.
	Culture Setup – Units, Language and Time Zone.
	Units. Defines the system measurements.
	Language. Defines the system language.
	Time Zone. Establishes the local time zone.
	GPS Setup – GPS Type, GPS Port and GPS Status Information
	GPS Type. Customizes system to accept GPS, DGPS, or either type of signal.
	GPS Port. Sets COM port transmission to Internal or External.
	GPS Status. Displays information regarding data rates, number of satellites in view, and satellite quality and ID.
	Console Setup – Volume, LCD Brightness, Touch-screen Calibration, Screenshot and About/Save.
	Volume. Adjusts volume level of audio speaker.
	LCD Brightness. Adjusts brightness of the console display.

Icon	Description
	Touch Screen Calibration. Used to initiate a touch screen calibration.
	Screenshot. Allows screen images to be saved to a USB drive.
	About. Displays information regarding system software as well as the software versions of modules connected to the CAN bus.
	Save. Saves console setup data to a USB drive.
	Video Setup. Used to configure up to 8 cameras with the use of a Video Selection Module. Gray = VSM unavailable.
	Cameras. Configure cameras to normal, reverse, upside down or reverse upside down.

BoomPilot/Single Boom Setup

Icon	Description
	Overlap. Determines the amount of overlap allowed when the boom sections are turned on and off using BoomPilot.
	0% Overlap
	50% Overlap
	100% Overlap
	Delay Off/On. Functions as a look ahead for timing the boom section valves to switch off or on when entering or exiting an area that has already been applied.
	Number of Boom Sections. Sets the number of boom sections (1 to 15 depending on SmartCable or SDM).
	Boom Section Width(s). Designates the width for the entire swath or individual boom sections (depending on SmartCable or SDM availability on the system).

Vehicle Setup

Icon	Description
	Vehicle Type. Selects type of vehicle steering that most closely represents your vehicle.
	Antenna Height. Sets the height of the GPS antenna from the ground.
	Direction to Boom. Sets if the boom is located behind or in front of the GPS antenna.
	Boom Offset Distance. Defines the horizontal distance from GPS Antenna to the boom.

Tilt Gyro Module Setup

Icon	Description
	Tilt Correction On/Off. Turns tilt correction on or off.
	Level Tilt Positions. Calibrates Tilt Correction.

FieldPilot Setup

Icon	Description
	Autosteer. Sets FieldPilot to on or off.
	Valve Setup – Valve Frequency, Minimum Duty Cycle Left/Right and Maximum Duty Cycle.
	Valve Frequency. Used to drive the steering valve.
	Minimum Duty Cycle. Sets minimum amount of drive required to begin steering vehicle left/right.
	Maximum Duty Cycle. Sets the maximum speed that the wheels will steer from left to right/right to left (lock to lock).

Icon	Description
	Valve Test Left/Right. Verifies steering is directed properly. Used to fine tune oil flow to calibrate wheel timing.
	Configure FieldPilot – Coarse Steering Adjustment, Fine Steering Adjustment, Deadband and Look Ahead.
	Coarse Steering Adjustment. Adjusts how aggressively the vehicle maintains the guideline in Straight A-B Guidance mode.
	Fine Steering Adjustment. Adjusts how aggressively the vehicle maintains the guideline in Curved A-B Guidance mode.
	Deadband. Adjusts steering if it is too choppy/responsive or vehicle remains consistently off the guideline.
	Look Ahead. Used during Straight A-B Guidance mode to adjust the vehicle's approach to the guideline.

Commandes générales

Icon	Description
	Home Button. Access Home Menu options including Unit Setup, Vehicle View, Field View, RealView Guidance, Job View and Boom Monitoring.
	Zoom In/Out Buttons. Adjust zoom settings in Vehicle View and Field View.
	Plus & Minus Icons. Used to increase or decrease a setting.
	Red = Page Left or Start Test Left. Green = Page Right or Start Test Right.
	Up & Down Icons. Used to change a setting or increase or decrease the setting.
	Stop Light. Green Light = Start Testing, Red Light = Stop Testing, Grayed = Testing off.
	Finish and OK. Both are used to complete a task.

Guidance Screens

Vehicle View Options

Field View Options

RealView Guidance Options

Status Bar Icons

Icon	Description
	FieldPilot Status. Icon = engaged. No icon = disengaged.
	Guidance Mode.
	Straight A-B Guidance. Provides straight line guidance based on A and B reference points.
	Curved A-B Guidance. Provides curved guidance based on a reference (A-B) line.
	Circle Pivot Guidance. Provides guidance around a central location that radiates inward or outward.
	Last Pass Guidance. The console will detect the nearest adjacent applied swath and establish guidance based on it.
	No Guidance. Turns off guidance. No Icon will be displayed.
	BoomPilot Status. Red = Off/Manual Green = Automatic Yellow = All On No icon = Single Boom Section (no SmartCable or SDM installed on system).
	Bounded Area Status. Outside Boundary = Currently traveling outside bounded area. Inside Boundary = Currently traveling inside bounded area. No icon = No boundary established
	GPS Status. Red = no GPS Yellow = GPS only Green = DGPS, WAAS/RTK Peach = Glide/ClearPath

Icon	Description
	Guidance Mode. Press to select a guidance mode. Modes include Straight A-B , Curved A-B , Circle Pivot and Last Pass or No Guidance Mode .
	Mark A . Press to mark the first point of the initial guideline.
	Mark B . Press to mark the end point of the initial guideline. Grayed = minimum distance has not been traveled.
	Cancel Mark A. Cancels the Mark A process. Reverts to previous A-B guideline (when established).
	A+ Nudge. Shifts the existing guideline to the vehicle's current position.
	Mark Boundary. During Last Pass Guidance, establishes application area and determines the no apply zone. Boundary is established to the outside of an applied pass. Grayed = GPS is unavailable
	Finish Boundary. Finalizes boundary process. Boundaries can also be closed by travelling to within a swath width of the starting point. Grayed = minimum distance has not been traveled.
	Cancel Boundary. Cancels the new map boundary process. Reverts to previous boundary (when established).
	Zoom In/Out. Icons or buttons adjust the vehicle's view or perspective to the horizon from vehicle view to bird's eye view.
	BoomPilot. Selects BoomPilot mode. Grayed = GPS is unavailable

Icon	Description
	Mark Boundary. Establishes application area and determines the no apply zone. Boundary is established to the outside of an applied pass. Grayed = GPS is unavailable
	Finish Boundary. Finalizes boundary process. Boundaries can also be closed by travelling to within a swath width of the starting point. Grayed = minimum distance has not been traveled.
	Cancel Boundary. Cancels the new map boundary process. Reverts to previous boundary (when established).
	Mark Point . Establishes a point at the vehicle location. Grayed = GPS is unavailable.
	Return to Point. Provides distance back to an established point. (Switch to Vehicle View to provide navigation back to an established point.)
	Cancel Point. Deletes the Marked Point.
	Zoom In. Icon or button decreases the area displayed on the screen.
	Zoom Out. Icon or button increases the area displayed on the screen.
	World View. Extends screen view to the widest area available.
	Pan. Allows operator to focus on specific map areas without moving the vehicle. Arrows on screen move the view (down, left, right, up) in the corresponding direction.
	Cancel Pan. Cancels the focal area and returns to normal viewing.

Icon	Description
	Full Screen. Removes the icons and status bars from the screen. Guidance Over Video and Steering Angle will still be visible.
	Guidance Over Video. Places three-dimensional guidelines over the video feed for navigational assistance.
	Steering Angle. Displays the direction in which the steering wheel needs to be adjusted.
	Video Camera Select. Selects one of up to eight camera views if a Video Selection Module (VSM) is attached.
	Split Camera View. Selects one of two sets of four camera inputs (A/B/C/D or E/F/G/H) to divide the screen into four separate video feeds.
	Up & Down Icons. Used to adjust the guidance lines to match the camera's view. Zoom In/Out Buttons will not adjust the guidance lines.

Job View

Icon	Description
	Job Information. Gives options to clear all current job information, bounded areas information or area counters. Press the trash can to delete selected information.
	Save Information. Saves all data including PDF , KML (Google Earth) and SHP (ESRI) files or each individual type to USB drive.

APPENDIX B - TIME ZONES

Africa

Abidjan
 Accra
 Addis Ababa
 Algiers
 Asmara
 Bamako
 Bangui
 Banjul
 Bissau
 Blantyre
 Brazzaville
 Bujumbura
 Cairo
 Casablanca
 Ceuta
 Conakry
 Dakar
 Dar es Salaam
 Djibouti
 Douala
 El Aaiun
 Freetown
 Gaborone
 Harare
 Johannesburg
 Kampala
 Khartoum
 Kigali
 Kinshasa
 Lagos
 Libreville
 Lome
 Luanda
 Lubumbashi
 Lusaka
 Malabo
 Maputo
 Maseru
 Mbabane
 Mogadishu
 Monrovia
 Nairobi
 Ndjamena
 Niamey
 Nouakchott
 Ouagadougou
 Porto-Novo

Sao Tome
 Tripoli
 Tunis
 Windhoek

America

Adak
 Anchorage
 Anguilla
 Antigua
 Araguaina
 Argentina - Buenos Aires
 Argentina - Catamarca
 Argentina - Cordoba
 Argentina - Jujuy
 Argentina - La Rioja
 Argentina - Mendoza
 Argentina - Rio Gallegos
 Argentina - San Juan
 Argentina - Tucuman
 Argentina - Ushuaia
 Aruba
 Asuncion
 Atikokan
 Bahia
 Barbados
 Belem
 Belize
 Blanc-Sablon
 Boa Vista
 Bogota
 Boise
 Cambridge Bay
 Campo Grande
 Cancun
 Caracas
 Cayenne
 Cayman
 Chicago
 Chihuahua
 Costa Rica
 Cuiaba
 Curacao
 Danmarkshavn
 Dawson
 Dawson Creek

Denver
 Detroit
 Dominica
 Edmonton
 Eirunepe
 El Salvador
 Fortaleza
 Glace Bay
 Godthab
 Goose Bay
 Grand Turk
 Grenada
 Guadeloupe
 Guatemala
 Guayaquil
 Guyana
 Halifax
 Havana
 Hermosillo
 Indiana - Indianapolis
 Indiana - Knox
 Indiana - Marengo
 Indiana - Petersburg
 Indiana - Vevay
 Indiana - Vincennes
 Indiana - Winamac
 Inuvik
 Iqaluit
 Jamaica
 Juneau
 Kentucky - Louisville
 Kentucky - Monticello
 La Paz
 Lima
 Los Angeles
 Maceio
 Managua
 Manaus
 Martinique
 Mazatlan
 Menominee
 Merida
 Mexico City
 Miquelon
 Moncton
 Monterrey
 Montevideo
 Montreal
 Montserrat

Nassau
 New York
 Nipigon
 Nome
 Noronha
 North Dakota - Center
 North Dakota - New
 Salem
 Panama
 Pangnirtung
 Paramaribo
 Phoenix
 Port-au-Prince
 Port of Spain
 Porto Velho
 Puerto Rico
 Rainy River
 Rankin Inlet
 Recife
 Regina
 Resolute
 Rio Branco
 Santiago
 Santo Domingo
 Sao Paulo
 Scoresbysund
 Shiprock
 St Johns
 St Kitts
 St Lucia
 St Thomas
 St Vincent
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 Tegucigalpa
 Thule
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 Tijuana
 Toronto
 Tortola
 Vancouver
 Whitehorse
 Winnipeg
 Yakutat
 Yellowknife

Antarctica

Casey
 Davis

DumontDUrville
 Mawson
 McMurdo
 Palmer
 Rothera
 South Pole
 Syowa
 Vostok

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 Kuching
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 Macau
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 Manila
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 Oral
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 Pyongyang
 Qatar
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 Saigon
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 Shanghai
 Singapore
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 Zagreb
 Zaporozhye
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Indian

Antananarivo
 Chagos
 Christmas
 Cocos
 Comoro
 Kerguelen
 Mahe
 Maldives
 Mauritius
 Mayotte
 Reunion

Pacific










Apia
 Auckland
 Chatham
 Easter
 Efate
 Enderbury
 Fakaofu
 Fiji

Funafuti
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 Guam
 Honolulu
 Johnston
 Kiritimati
 Kosrae
 Kwajalein
 Majuro
 Marquesas
 Midway
 Nauru
 Niue
 Norfolk
 Noumea
 Pago Pago
 Palau
 Pitcairn
 Ponape
 Port Moresby
 Rarotonga
 Saipan
 Tahiti
 Tarawa
 Tongatapu
 Truk
 Wake
 Wallis






APPENDIX C - FACTORY SETTINGS & RANGES

 **Unit Setup**




 **System Setup**

Icon	Description	Factory Setting	Range
	LED Spacing.	1.5 ft 0.46 m	0.04 - 9.8 ft 0.01 - 3.0 m
	Display Mode.	Vehicle	
	LED Brightness.	50	0 - 100
	Units.	US	
	Language.	English	
	Time Zone.	America - Chicago	
	GPS Type.	GPS Only	
	GPS Port.	Internal	
	Volume.	50	0 - 100
	LCD Brightness.	50	0 - 100
	Screenshot.	Disabled	
	Cameras.	Normal	


 **BoomPilot/Single Boom Setup**

Icon	Description	Factory Setting	Range
	Overlap.	100%	
	Delay Off.	1.0 s	0.0 - 10.0 seconds
	Delay On.	1.0 s	0.0 - 10.0 seconds
	Number of Boom Sections.	1	1-15
	Boom Section Width(s).	34.0 in 0.9 m	34.0 - 2952.7 in 0.9 - 75.0 m










 **Vehicle Setup**

Icon	Description	Factory Setting	Range
	Vehicle Type.	Front Wheel	
	Antenna Height.	12.47 ft 3.8 m	0.0 - 32.8 ft 0.0 - 10.0 m
	Direction to Boom.	Forward	
	Boom Offset Distance.	0.0 ft 0.0 m	0.0 - 164.0 ft 0.0 - 50.0 m

 **Tilt Gyro Module Setup**

Icon	Description	Factory Setting	Range
	Tilt Correction On/Off.	On	

 **FieldPilot Setup**

Icon	Description	Factory Setting	Range
	Autosteer.	On	
	Valve Frequency.	175	1 - 5000
	Minimum Duty Cycle Left.	0.0	0.0 - 50.0
	Minimum Duty Cycle Right.	0.0	0.0 - 50.0
	Maximum Duty Cycle.	100	25 - 100
	Coarse Steering Adjustment.	25.0	1.0 - 100.0
	Fine Steering Adjustment.	25.0	1.0 - 100.0
	Deadband.	1	1 - 10
	Lookahead.	4.0	0.0 - 10.0

APPENDIX D - UNIT SPECIFICATIONS

Dimensions	Matrix 570G	6.36 in. x 5.87 in. x 2.3 in. 161.5 mm x 149.1 mm x 58.4 mm
	Matrix 840G	10.6 x 7.1 x 2.4 in. 27.0 x 18.0 x 6.0 cm
Weight	Matrix 570G	1.75 lbs.. 0.794 kg
	Matrix 840G	2.35 lbs. 1.06 kg
Connector	PWR/CAN	8 pin Conxall
	Camera	5 pin Conxall
	Speed/Status	4 or 8 pin Conxall
Environmental	Storage	-10 to +70°C
	Operating	0 to +50°C
	Humidity	90% non-condensing
Display	Matrix 570G	320 x 240 resolution 5.7 in. 14.5 cm
	Matrix 840G	800 x 600 resolution 8.4 in. 21.3 cm
Input/Output	USB 2.0	
Power Requirement	< 9 watts @ 12 VDC	

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Tel: (217) 753-8424 • Fax: (217) 753-8426
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