



Software Version 1.07

Guidance Only

CENTERLINE 230BP

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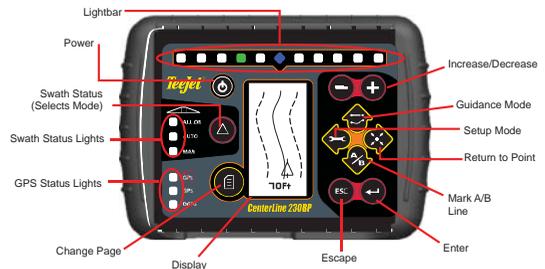
CHAPTER 1 - INTRODUCTION

This User Guide provides information for software version 1.07.

The CenterLine 230BP (CL230BP) software 1.07 provides the following enhancements to the system:

- Applied area now includes only the area under the active boom sections and acre counters will accurately represent applied area. Prior calculations counted all area under the entire boom, regardless of whether individual sections were on or off.
- Unapplied area is now considered “untreated” and can be treated at a later time.
- Boundary area is calculated and displayed as a result of a headland perimeter pass in headland circuit mode. This value is held in memory through the next power cycle and is erased when the user chooses to clear the memory and begin application of a new area.
- When a field boundary is created in headland circuit mode, a “No Spray” zone is created outside of that field boundary. This boundary and “No Spray” zone is held in memory through the next power cycle.
- Area information and as-applied data are now updated and saved with greater frequency.
- Drive Sensitivity (LED spacing on the lightbar) can now be changed in the system Setup menu.
- A section width of “0.0” can now be entered.
- Contrast is now adjustable with the +/- keys during the startup splash screen. Once GPS is attained, the +/- revert back to adjustment of screen Brightness.
- A system setting for “GPS Source” allowing a devoted external source has been added. The default GPS source is the internal GPS receiver.
- DGPS LED activation will now cycle through a 2 minute delay for the purpose of stabilizing DGPS performance. It is recommended guidance mode operation begin after the DGPS LED is active.

- Tilt Gyro compensation is now available as an upgrade to the CenterLine 230 BP. For part numbers and pricing, please consult your regional TeeJet Technologies representative.
- The upgrade includes the support of FieldPilot Assisted Steering. Connection to the SCM is now via CAN. Existing FieldPilot 220 customers upgrading to FieldPilot 230 must arrange to exchange their SCM.



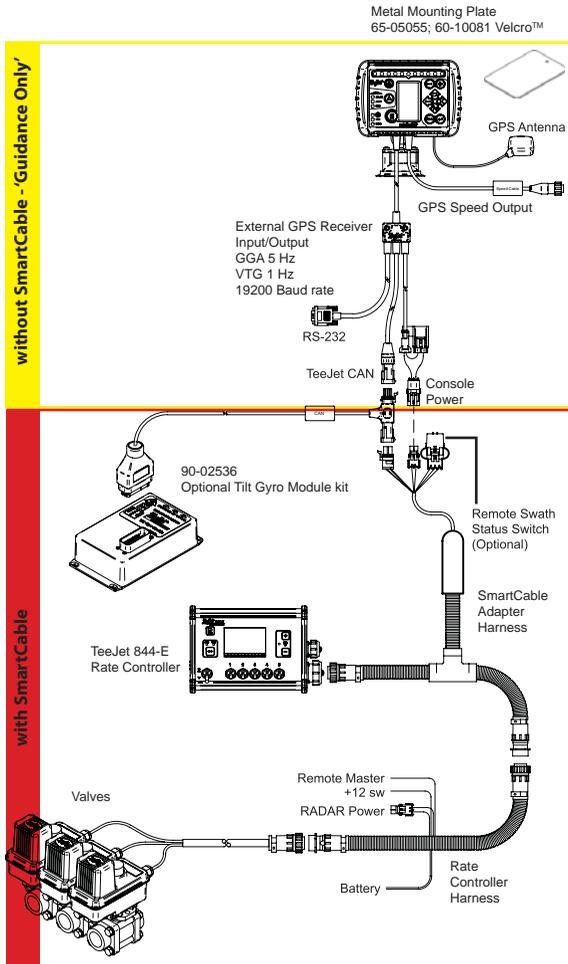
NOTE: The swath status bar is only active if a smartcable is installed.



SMART CABLE - The Smart Cable is the link between the CL230BP, the existing rate controller, and the boom section valves. It allows the CL230BP to control the boom sections automatically and is necessary to allow for Automatic Boom Section Control. For the user guide covering the additional features with an added SmartCable, please refer to CL230BP User Guide 020-034-UK R3.

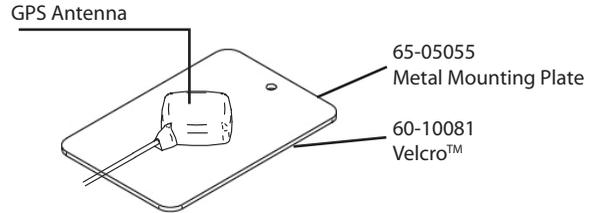


System Configuration

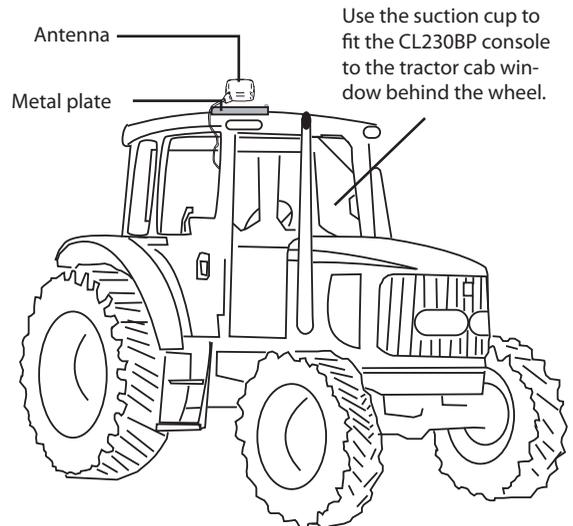


Installation - Guidance

Position the GPS antenna in the center of the vehicle at the highest point with a clear view of the sky. If the tractor cab is non-metallic, mount the metal plate in the center of the vehicle at the highest point with the Velcro™ strips and place the antenna on the plate. Route the antenna cable carefully to avoid damage and possible electrical interference.



Avoid mounting the antenna close to other electrical installations (air conditioning equipment, radio antennas, etc.). Avoid coiling excess antenna cable - configure it in a "figure 8" shape and keep the cable at least 30 cm (1 ft) from possible sources of electrical interference.



CHAPTER 2 - SETUP

Power Up Sequence

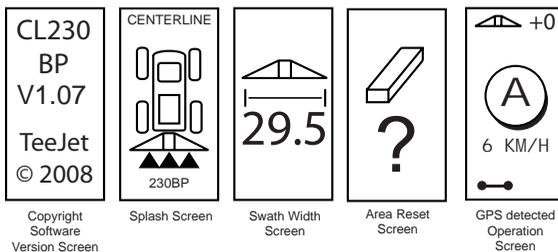
Before starting the CL230BP, make sure the spray controller is powered up, the Master Switch is set to the “On” position, and the individual boom section switches are turned “Off”.

Power up the system by pressing the Power button. Power down the system by pressing and holding the Power button for approximately four (4) seconds. At power up, the CL230BP will perform the following steps:

- Display copyright and software version screen for three (3) seconds.
- Display the splash screen for two (2) seconds.
- Detect if GPS data are present (this occurs simultaneously within the display screen sequence).
- Display the current swath width for three (3) seconds.
- The Area Reset screen will be displayed.
- The splash screen is displayed until the GPS LED is illuminated or Setup mode is entered. Once the console begins receiving GPS positions, the Operation screen will be displayed.



If the DGPS light is blinking, communication has been established with the GPS source; however, NMEA output rate is too slow. Ensure proper NMEA message settings of 5 Hz GGA in the GPS device. Application cannot occur until proper communication is established.



Area Reset

At the end of the CL230BP power up sequence, the Area Reset window will be displayed:



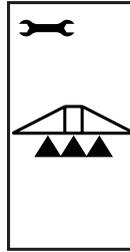
Area Reset retains existing bounded and applied areas and A-B guidelines. This option allows the bounded and applied areas and guidelines to be reset before starting on a new field or continuing an existing field. To reset the bounded and applied areas and guidelines, press the Enter key. If the previous application is being resumed, press the Escape key to continue to Operation or Setup mode. This screen is only available upon CL230BP power up. It cannot be accessed during normal operation.

Setup Mode

Press the Setup Mode key to enter into CL230BP Setup Mode. The initial CL230BP Setup Mode Screen will be displayed.

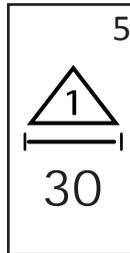
- Press the Enter key to save the setting and advance the screen.
- Press the Escape key to exit from Setup Mode without saving any changes.
- After 10 seconds of inactivity, Setup Screens will time out (changes will be saved). The CL230BP will return to Operation Mode.

INITIAL SETUP SCREEN



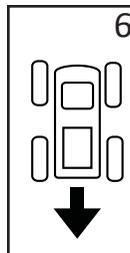
This is the initial CL230BP Setup Screen. Press the Enter key to advance to the Boom Width screen. Setup screens will time out after 10 seconds of inactivity (changes will be saved). After time out, the screen will go back to Operation Mode. Press the Escape key to exit from Setup Mode without saving any changes.

BOOM WIDTH



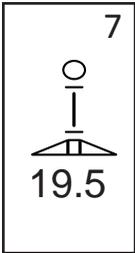
Encode the total width of the boom. Use the Plus and Minus keys to adjust the value. The boom section width range is 0 cm to 50 m (0 to 1969 inches). The minimum recommended width is 1 m (39 inches). Press the Enter key to accept the changes to the last boom section and advance to the Boom Offset Direction setting.

BOOM OFFSET DIRECTION



A BACKWARD selection (as shown) indicates the boom is located behind the GPS antenna as the vehicle moves in a forward direction. A FORWARD selection indicates the boom is located in front of the GPS antenna as the vehicle moves in a forward direction. Use the Plus and Minus keys to adjust between Forward or Backward. Press the Enter key to accept the changes and advance to the Boom Offset Distance setting.

BOOM OFFSET DISTANCE



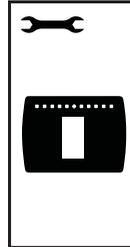
Define the distance from the GPS antenna to the boom in decimal feet (decimal meters). The boom offset distance range is 0 to 50 meters (0 to 164 decimal feet). Use the Plus **+** and Minus **-** keys to change the value. Press the Enter **↵** key to accept the changes.

Once the final setting has been entered and saved, the screen will return to the initial CL230BP Setup Screen. If no additional changes are required, press the Escape **ESC** key to exit to Operation Mode.

Display Setup Mode

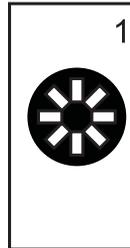
Press the Setup Mode **↵** key until the initial Display Setup Mode screen appears.

DISPLAY SETUP SCREEN



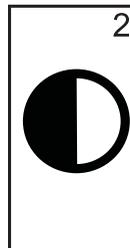
This is the initial Display Setup Screen. Setup screens will time out after 10 seconds of inactivity (changes will be saved). After time out, the screen will go back to Operation Mode. Pressing the Escape **ESC** key will also exit the user from Setup Mode without saving any changes. Press the Enter **↵** key to advance to the Display Brightness setting.

DISPLAY BRIGHTNESS



The Plus **+** and Minus **-** keys can be used to change the brightness levels of the display screen. Press the keys until the desired brightness is established. Press the Enter **↵** key to advance to the Display Contrast setting.

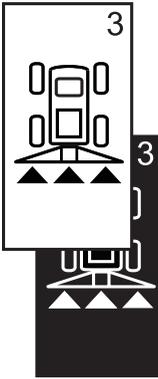
DISPLAY CONTRAST



The Plus **+** and Minus **-** keys can be used to change the contrast levels of the display's background. Press the Enter **↵** key to advance to the Display Background setting.

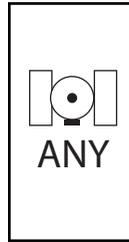
NOTE: The Plus **+** and Minus **-** keys control console brightness levels during Operations modes. However, if GPS signal is not being received, the Plus **+** and Minus **-** keys will control the contrast level.

DISPLAY BACKGROUND



The Plus and Minus keys toggle between light and dark backgrounds. Press the keys until the desired background is established. Press the Enter key to accept the changes.

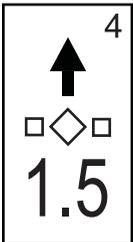
GPS SETUP



GPS Setup can be customized to accept “ANY” available source transmission (either uncorrected or differential), “GPS” source transmissions (only uncorrected signals), or “DGPS” source transmissions (only differentially corrected signals). Use the Plus key to select “ANY,” “GPS,” or “DGPS” and the Minus key to revert backward. Press the Enter key to accept the changes.

NOTE: Power must be cycled to the console if this setting is changed.

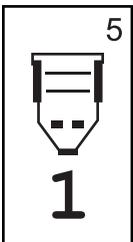
LED SPACING



The distance illustrated by the illuminated LEDs can be customized. The default setting is 30 cm (1 ft). Use the Plus and Minus keys to adjust the spacing as required for individual preference. Press the Enter key to accept the changes.

Once the final setting has been entered, the screen will return to the initial Display Setup Mode screen. If no additional changes are required, press the Escape key and exit to Operation Mode or press the Set-up Mode key again to enter into CL230BP Setup Mode.

COM PORT SETUP



The COM Port can be customized to send DGPS data out or accept external DGPS. “0” means the console is accepting external DGPS data. “1” means the console is using internal DGPS and is transmitting out. Use the Plus and Minus keys to toggle the COM Port number. Press the Enter key to accept the changes.

NOTE: Power must be cycled to the console if this setting is changed.

CHAPTER 3 - OPERATION

Power Up Sequence

Power up the system by pressing the Power  button.

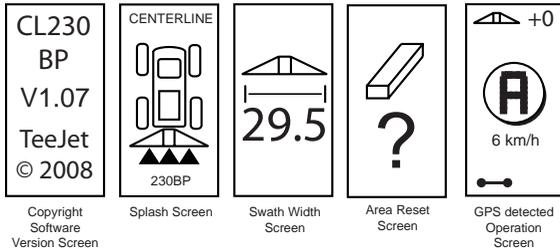
Power down the system by pressing and holding the Power  button approximately four (4) seconds.

At power up, the CL230BP will perform the following steps:

- Display copyright and software version screen for three (3) seconds.
- Display the splash screen for two (2) seconds.
- Detect if GPS data are present (this occurs simultaneously within the display screen sequence).
- Display the current swath width for three (3) seconds.
- The Area Reset screen will be displayed.
- The splash screen is displayed until the DGPS LED is illuminated or Setup mode is entered. Once DGPS is locked, the Operation screen will be displayed.

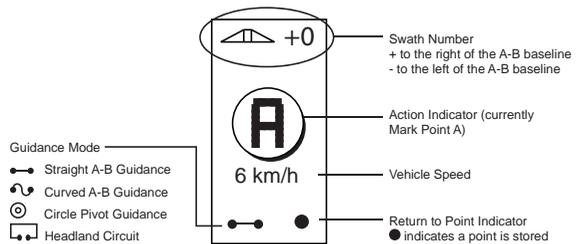


If the DGPS light is flashing, communication has been established with the GPS source; however, NMEA output rate is too slow. Ensure proper NMEA message settings of 5 GGA in the GPS device. Application cannot occur until proper communication is established.

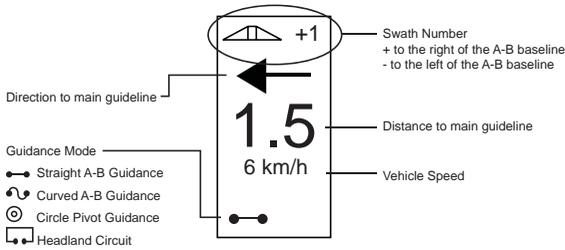


CL230BP Operation Reference Screens

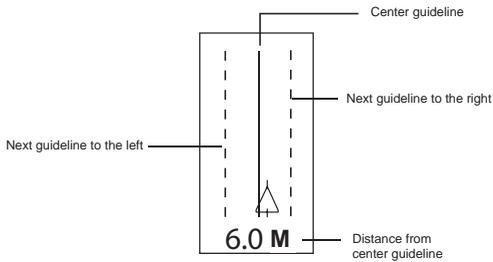
Navigation Screen - Mark A-B



Navigation Screen - Operation

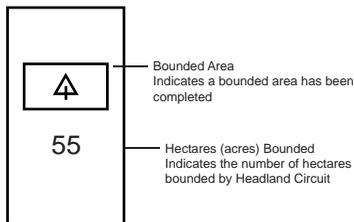


Guidance Screen - Map Page



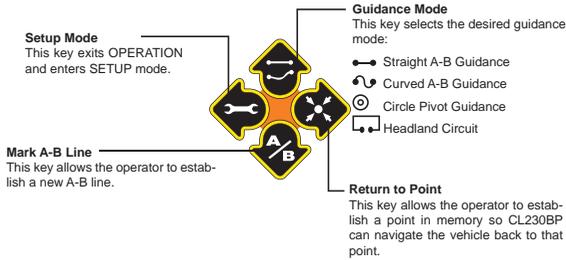
Bounded Area Screen

NOTE: If a SmartCable is not connected to the system, the console cannot be placed in "Auto" mode. However, acreage can be bounded.



Operation Function Keys

There are several functions that can be performed during operation. Most of these functions are initiated by the four arrow keys, located on the keypad.

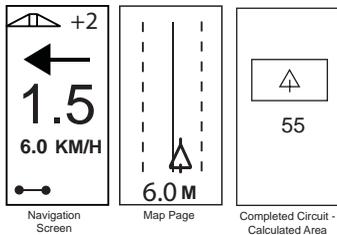


NOTE: The Plus \oplus and Minus \ominus keys control console brightness levels during Operations modes. However, if GPS is not being received, the Plus \oplus and Minus \ominus keys will control the contrast level.

Operations Screens

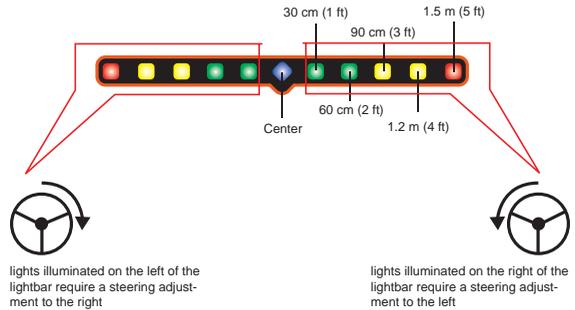
Several screens are displayed during vehicle operation. They are consistent throughout the application and appear as follows.

To change the view of any screen during Operations mode, press the Change Page key.



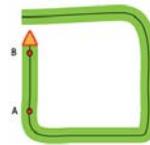
Guidance Operation - Modes

Guidance capabilities include Straight A-B, Curved A-B, Circle Pivot, and Headland Circuit.



Headland Circuit Guidance

Headland Circuit guidance is used to establish a perimeter around the application area. The CL230BP will collect and store bounded area once the Headland Circuit is closed. The CL230BP will allow two passes around the perimeter of the field - the original perimeter pass and one additional pass. Guidance is applied during the second pass, after the first pass has been completed.



NOTE: Booms will not operate outside of the bounded area once it is established.

1. Use the Guidance Mode key to select Headland Circuit guidance.
2. Drive to the desired headland location of Point A. With the vehicle in motion, press the Mark A/B key to establish Point A. Drive around the perimeter of the field. The CL230BP will auto-

matically close the boundary when the vehicle is within one boom width of Point A. The Completed Circuit (hourglass) will be briefly displayed as the perimeter is closed.

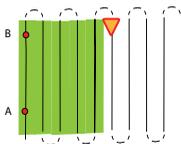
Guidance Points A and B can be established at any time during Headland Circuit mode. These points can be used as reference for Straight or Curved A-B guidance (used during interior application). To mark Points A and B, press the Guidance Mode key to select either Straight, or Curved A-B mode and mark the points at the desired locations using the Mark A/B key. The points will be stored for future reference.

The CL230BP will provide navigation information to complete a second headland circuit pass. If Guidance Points A and B were not marked during Headland Circuit, select a new Guidance Mode and establish an A-B line to complete the interior application.

3. Use the Change Page key to advance the screen views as illustrated above.

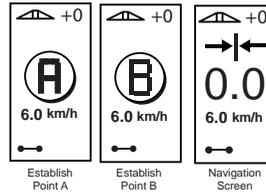
Straight A-B Guidance

Straight A-B guidance provides straight line guidance based on a reference (A-B) line. The original A-B line is used to calculate all other parallel guidelines.



1. Use the Guidance Mode key to select Straight A-B guidance.
2. Drive to the desired location of Point A. While the vehicle is in motion, press the Mark A/B key to establish Point A. Point B will be displayed on

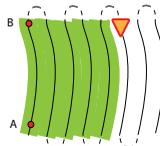
the screen. Drive to the location of Point B and press the Mark A/B key again to establish the A-B line. The CL230BP will immediately begin providing navigation information with the lightbar and Navigation Screen.



3. Use the Change Page key to advance the screen views.

Curved A-B Guidance

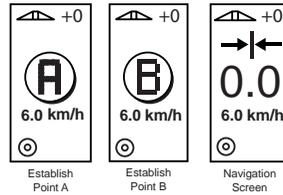
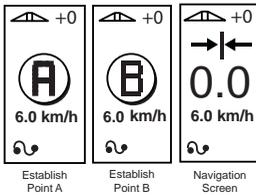
Curved A-B Guidance is similar to Straight A-B Guidance except that the reference line is curved.



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

1. Use the Guidance Mode key to select Curved A-B guidance.
2. Drive to the desired location of Point A. While the vehicle is in motion, press the Mark A/B key to establish Point A. Point B will be displayed on the screen. Drive to the location of Point B and press the Mark A/B key again to establish the

A-B line. The CL230BP will immediately begin providing navigation information with the lightbar and Navigation Screen.

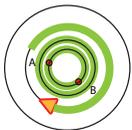


3. Use the Change Page key to advance the screen views.

3. Use the Change Page key to advance the screen views.

Circle Pivot Guidance

Circle Pivot guidance provides guidance around a central location that radiates outward.



1. Use the Guidance Mode key to select Circle Pivot guidance.
2. Drive to the desired location of Point A. With the vehicle in motion, press the Mark A/B key to establish Point A. Point B will be displayed on the screen. Drive to the location of Point B and press the Mark A/B key again to establish the A-B line. Point B must be at least 1/2 of the way around the circle to complete the circle pivot. Once Point B has been established, the CL230BP will immediately begin providing navigation information with the lightbar and Navigation Screens.

Compass View/Return to Point



Press the Return to Point key to establish a point in memory. Normal guidance will continue uninterrupted during this process.

To navigate back to the established point, press the Return to Point key again. The Compass View screen will be displayed and will provide navigation assistance to return to the established point.

Push the Return to Point key a third time to erase the stored point and return to the navigation screens.

A+ Nudge Feature

The A+ Nudge feature allows the existing A-B guideline to be shifted to the vehicle's current location. Press the Mark A/B key immediately followed by pressing the Plus key.

Pressing the Minus key after pressing the Plus key will abort the nudge feature and the guideline will remain the same.

