LINCS II Navigation

Section 06-04-05

Komatsu has made every effort to make this manual as accurate as possible based on the information available at the time of publication and printing. Continuous improvement and advancement of product design may cause changes to machines which may not have been included in this publication. Komatsu reserves the right to make changes and improvements at any time. To ensure the most current information, please contact your service center.

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Scope of This Publication

This document provides a general software navigation process for navigating menus used in operation and routine maintenance of the machine.

Safety

This publication contains special instructions that pertain to safety, operation, maintenance, and repair of the machine. Listed below are the signal words and symbols that precede these instructions and their meanings:

⚠ DANGER

- **The danger label indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

⚠ WARNING

- **The warning label indicates a hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ CAUTION

- **The caution label, used with the safety alert symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury (includes the safety alert symbol ⚠).**

CAUTION

- **The caution label (without safety alert symbol) is used to address practices not related to personal injury – only equipment damage.**

NOTICE

The NOTICE graphic is to indicate areas of importance to the reader that are not related to personal injury or machine damage.

Safety, Warnings and Cautions

⚠ WARNING

CRUSH HAZARD

- **Crush hazards exist from unexpected machine movement if settings are changed during actual loading operation cycle. DO NOT set or change any settings during an actual loading operation or cycle. Before entering any information, or making/changing any settings on any screen in the LINCS system, ensure the machine is in an area clear of ALL hazards and personnel. Failure to do so could cause crush hazards from unexpected machine movement, resulting in serious injury or death.**
- **Crush hazards exist while calibrations are being performed on the machine. This is an automated calibration process that involves moving the lift arms up and down, rolling the bucket back and**

forward, and dumping the bucket. The machine MUST be in an open area that provides adequate clearance. Keep all personnel clear of the area and in safe positions prior to doing calibration procedure. Place signs to alert personnel to keep a safe distance from the machine. Failure to prevent personnel from entering the area during calibrations can cause crush hazards resulting in serious injury or death.

- **Crush hazards exist while calibrations are being performed on the machine. This is an automated calibration process that involves steering full right and full left (articulation of the machine). The machine MUST be in an open area that provides adequate clearance on both sides. Keep all personnel clear of the area and in safe positions prior to doing calibration procedure. Place signs to alert personnel to keep a safe distance from the machine. Failure to prevent personnel from entering the area during calibrations can cause crush hazards resulting in serious injury or death.**
- **Crush hazards exist if performing normal production with limits bypassed. Bypassing the limits removes protections. Loss of machine control is possible if limits are bypassed during normal production. Failure to remove limit bypasses before using the machine for normal production can cause crush hazards resulting in serious injury or death.**
- **Crush hazards exist if the VCU is not properly configured. Incorrectly configuring the VCU can cause loss of machine or machine component movement control. Always verify the VCU settings for the specific machine components before and after configuring the VCU. Always check the machine component movement after configuring a VCU. Failure to correctly configure the VCU can cause uncontrolled or undesired machine movement causing serious equipment damage or crush hazards resulting in serious injury or death.**

Operator Level Access

Log On

Log On is the way a user can apply their individual preferences in LINCS II. Log On is done with the User Access Key. The User Access Key contains information about the user preferences and security level. The machine can be operated without a User Access Key. However, without it, the user preferences must be manually entered into the machine.

When a machine is turned on, it operates with a set of default preferences until they are changed. (Default preferences are set by a Maintenance Level User.). User preferences can be changed at any time by using a User Access Key or by accessing the User Preferences Screen. Changed preferences are active until LINCS II is restarted or until a new User Access Key is used. When a User Access Key is used, an event is stored in the Event Log with the User Name and time.

The following are the user preferences stored in the User Access Key:

1. Language

2. Unit System

3. Clock Format

4. Access Level

The different User Access Levels (i.e. Operator, Maintenance, etc.) allow access to different menus and different LINCS II functions.

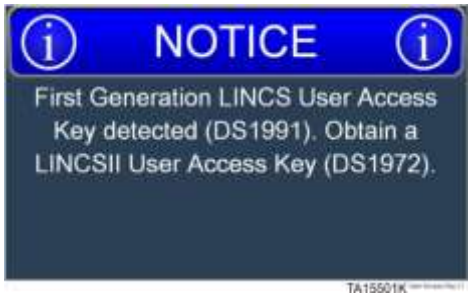
User Access Key

User Access Key Reader

Figure 1. User access key and reader

Using the User Access Key

To use a User Access Key, press and hold the key into the reader. The Password Entry Screen should appear within three seconds. If the Password Entry Screen does not appear, remove the key and try again. If an older generation key (LINCS I-Button) or a blank key is used, a notice will appear on the screen.



Password Entry Screen

The Password Entry Screen appears after the User Access Key is pressed in the reader. It is used to select the User Access Level and the User Preferences. Each User Access Level allows that user access to various levels of machine component function. The onscreen menu is used to type in the password, by touching numbers. After entering the password, touch the Accept Button (green check box).

⚠ WARNING

Crush hazards exist from unexpected machine movement if settings are changed during actual loading operation cycle. DO NOT set or change any settings during an actual loading operation or cycle. Before entering any information, or making/changing any settings on any screen in the LINCS system, ensure the machine is in an area clear of ALL hazards and personnel. Failure to do so could result in unexpected machine movement, resulting in serious injury or death to personnel.

1. Displays the name stored in the User Access Key.

2. Displays a masked password entered from the onscreen keypad.

3. The Backspace Button is used to backspace a character when entering the password.

4. The Cancel Button is used to exit the screen and reset the User Access Level to Operator.

5. The Accept Button is used after the password is entered.

Alarm, Warning, and Notice Screens

LINCS II notifies the operator with a message on the display when significant events occur.

Red Alarms

An ALARM is a serious event that means immediate danger to equipment or personnel. The red light on the console turns on, the beeper sounds, and an ALARM message is displayed. The machine should be safely shut down immediately.

Alarms may result in automatic functions to assist the operator in shutting down the machine. When some alarms occur, the Engine automatically goes to low throttle. Typically, a timer appears at the top of the display that gives the minutes until the engine is stopped and the Park Brakes are set. The timer can be manually cleared (and the Engine stopped) by pushing in the Park Brake switch.

The operator can acknowledge the Alarm by pressing the Acknowledge Switch on the left joystick.

Pressing and holding the acknowledge button for two (2) seconds will bypass the engine shutdown timer.

Yellow Warnings

A Yellow WARNING means the equipment has experienced a fault that affects the standard operation and requires an immediate shut down. The yellow light on the console turns on, the beeper sounds, and a WARNING message is displayed. The machine should be safely moved to a safe location and then shut down.

Some Warnings result in automatic changes in machine operation. As examples, over-temperature conditions in the Traction Drive System may result in reduced Motor Torque.

Blue Notices

A NOTICE provides information to the operator as an aid to normal operation. The Notice message will automatically clear after a few seconds. The operator can clear the display early by pressing the Acknowledge Switch on the left joystick.

“Stacked” Alarms, Warnings, and Notices

It is possible to have multiple Red Alarm, Yellow Warning, or Blue Notice screens stacked on top of each other.

“Stacked” Counter Number (Alarms, Warnings, or Notices)

When multiple screens are stacked on top of each other, there is a number in the lower right hand bottom of the screen that counts the total number of screens stacked.

- Each screen must be acknowledged.
- As each screen is acknowledged, the counter number counts downward until all the screens are acknowledged.

In the following example, a Red Alarm was artificially generated and acknowledged.

- Acknowledging the Red Alarm leaves a red “banner” at the top of the screen.
- This particular Red Alarm has a 15 minute countdown as shown by the numbers in the middle of the banner.
- When the counter reaches 00, a sequence of actions occurs and the engine shuts down.

In the following example illustration screen, a combination of 33 Warnings and Notices were artificially created to demonstrate the displayed number (33).

- As the acknowledge button is pressed, the number counts downward until all screens are acknowledged.

NOTICE

The touch screen is deactivated to touch when a Yellow Warning is being displayed on the screen. ALL Red Alarms, Yellow Warnings or Blue Notices must be acknowledged, by using the Acknowledge Button, before the screen becomes active to touch again.

Blue Notices will eventually remove themselves from the monitor screen. They have a timed delay before automatic removal. They can also be manually removed by using the Acknowledge Button.

Figure 2. Countdown number on screen (alarms, warnings, notices)

Main Operator Screen (Menu Navigation)

When LINCS II is started the Main Operator Screen is displayed at the Operator level. Operator, Maintenance or Service personnel can log onto the system with the use of their personalized User Access Key. A User Access Key is not required to operate the machine. While LINCS II is initializing, various information screens will appear.

1. Left and Right Turn Signal Indicators

2. Bucket and Lift arm Data

3. Loading Cycle Timer

4. Production Detail

5. Machine Status Indicator Icons and Menu Navigation Buttons

6. Gauges (GEN 2 and GEN 3 gauges might appear different).

7. Speedometer

Figure 3. Main operator screen

Left and Right Turn Signal Indicators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The left and right turn signal indicators blink when the turn signal is active. The turn signal buttons are located at the top of the left joystick. The turn signal will cancel when the machine is steered straight.

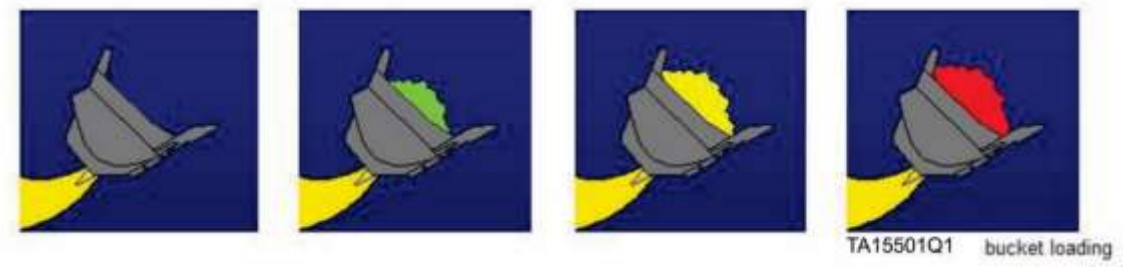
Bucket and Lift Arm Data

Provides current bucket angle, lift arm angle, and weight in the bucket.

The bucket and lift arms are shown in an image that mimics the actual machine angles. The image changes continually as the machine angles change. The indicator moves up and down to indicate the up and down movement and angle of the machine bucket and lift arms.

The bucket image is calibrated with the Zero Tooth to Ground button located on the User Preferences Screen.

TA15501P Bucket and Liftarm Data



UNDERLOADED NORMAL LOAD OVERLOADED CRITICAL OVERLOAD

The bucket picture changes with the amount of weight loaded. Increasing quantity is represented by an enlarging representation of the loaded material. The material color changes according to weight. No colored load indicates an empty bucket. Green indicates a NORMAL LOAD. Yellow indicates the machine is OVERLOADED. Red indicates a CRITICAL OVERLOAD. The CRITICAL OVERLOAD material flashes from light to dark red color.

- A Lift arm Angle measurement indicates the angle of the lift arms as compared to the machine frame.
- The Lift arm Angle is zero (0.0°) when the lift arms are horizontal. A positive angle (+°) is shown when the lift arms are above the zero position and a negative angle (-°) is shown when the lift arms are below the zero position.

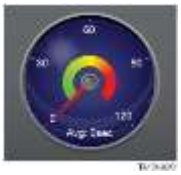
- The Bucket Angle measurement shows angle of the bucket as compared to the machine frame.
- The Bucket Angle is usually near zero (0.0°) when the bucket is flat and level with the ground. But the actual “zero” of the Bucket Angle can be changed by the operator. So, Bucket Angle measurement may show zero even when the bucket is not horizontal.
- The Bucket Angle zero (0.0°) is set with the “ZERO TOOTH TO GROUND” setting located on the User Preferences Screen.
- A positive angle (+°) is shown when the bucket teeth are above the zero position and a negative angle (-°) is shown when the bucket teeth are below the zero position.
- Refer to “ZERO TOOTH TO GROUND” for more information.

- The Weight measurement shows the current material weight in the bucket. The data can also be displayed in metric units by navigating to the User Preferences Screen and selecting metric units.
- The Weight measurement resets when the bucket is dumped after a completed dump cycle.

Load Weight

- A load weight will be registered during a load cycle if the following parameters are met:
  - The lift arms are below horizontal.
  - The lift arm height and bucket angle meet predetermined height and angle requirements.
  - The bucket contains at least the minimum load needed to register a load weight.
  - No commanded movement (by the right joystick) to the lift arms or bucket.
- A load weight will also be registered if the lift arms are hoisted above horizontal and a previous load weight has not been registered during this load cycle.

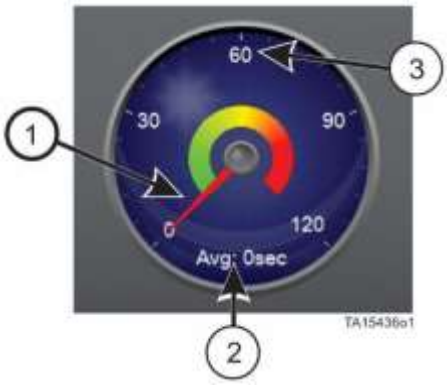
Loading Cycle Timer



The Loading Cycle Timer indicates the length of a loading cycle. A loading cycle is the time recorded between two bucket dumps. A bucket dump is defined as a loaded bucket being rolled forward past 10 degrees down of the machine frame angle.

Load Cycle Times

- The current and average cycle times are displayed on an analog and digital gauge, which resembles a stop watch.
- The Loading Cycle Timer provides, in analog format (1. gauge needle), data for the current load cycle.
- The timer provides, in digital format (2. Avg:), the average time based on previous load cycles.
- The Ideal Cycle Time (3) is located at the top center of the analog gauge. This value can be changed by selecting Ideal Cycle Time on the User Preferences Screen.
- Current cycle times can be quickly identified as adequate or inadequate because the gauge has a colored indicator bar for; fast (green), adequate (yellow) and slow loading cycle time (red).
- Average cycle times are based on previous cycle times. This average can be reset by selecting the Reset Shift Production button on the User Preferences Screen.



1. Analog Format Current Cycle Times

2. Digital Format Average Cycle Times

3. Ideal Loading Cycle Time

Shift Production Data

Provides information about the operator's and loader's productivity.

The Shift Production Data is displayed in four indicators:

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- **Shift** – displays the weight of the material loaded during the shift (tons).
- **Productivity** – displays the number of tons loaded per hour during the shift.
- **Trucks Filled** – indicates the number of trucks loaded during the shift.
- **Truck** – displays current weight of truck being loaded (tons). This value is reset by pressing the horn button on the right joystick.
- The size of the truck is set on the User Preferences Screen by selecting Truck Capacity.
- The unit system (Imperial or Metric) for indicating weight is set on the User Preferences Screen by selecting Unit System.

NOTICE

Selecting Reset Production Data on the User Preference screen will set the Shift Production Data to zero. The size of the truck selected will not be changed.

Machine Status Indicator Icons and Menu Navigation Buttons

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Some of these icons only appear if the machine is operating in an abnormal mode.

Main Menu Button

Provides access to various options.

1) Operator/User Preferences
2) Data Logging
3) Machine Summary
4) Main Operator
5) Located in the left corner of the touch screen

Backward and Forward Button

Moves the user selection forward or backward one screen to the Next or Previous screen.

DEF System Level (Equipment with DEF systems only)

This icon lit up Indicates that some part of the engine exhaust system is in an abnormal state.

Torque Limited (Equipment with DEF systems only)

The presence of this icon Indicates that some part of the traction system in an abnormal state.

Check Engine (Equipment with DEF systems only)

The presence of this icon Indicates that some part of the engine system in an abnormal state.

Stop Engine (Equipment with DEF systems only)

The presence of this icon Indicates that some part of the engine system in an abnormal state.

Alarm

The red Alarm Icon appears on the screen when an Alarm occurs and the Alarm Message is displayed. The Red Lamp on the dash illuminates and an audible alarm sounds at the same time. Touching the Alarm Icon selects the Event Screen and displays the list of the most recent alarms. The Alarm Icon remains on the screen after the Alarm Message is acknowledged until the condition that caused the alarm is corrected

Warning

The yellow Warning Icon appears on the screen when a Warning occurs and the Warning Message is displayed. The Yellow Lamp on the dash illuminates and an audible alarm sounds at the same time. Touching the Warning Icon selects the Event Screen and displays the list of the most recent warnings. The Warning Icon remains on the screen after the Warning Message is acknowledged until the condition that caused the warning is corrected.

Channel Forced

The presence of the Forced Channel Icon indicates that at least one of the LINCS II channels has been manually changed.

Drive System Abnormal

The presence of this icon Indicates that some part of the traction system is in an abnormal state.

Drive Programming

The presence of this icon Indicates that the Drive Control Boards are being programmed.

Limits Bypassed

The Limits Bypassed Icon appears on the screen when any limits are bypassed such as the Hoist Up Limit. Touching the Limits Bypassed Icon will display the Machine Settings Screen if the user has adequate access.

Load Bank

The Load Bank Icon appears on the screen when the machine has been placed in the Load Bank testing mode.

User-Defined Event Button

This button generates a User Defined Event that is recorded in the Event Log.

Database

When this icon appears, the database is not actively downloading channel and event files.

Database Downloading Files

When this icon appears, this database is downloading channel and event files.

Database Caught Up

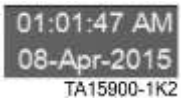
When this icon appears, the database is caught up on all channel and event files.

Connection Status LED Icon

Light Green: Indicates a working connection between the HMI and VCU.

Yellow: Indicates a disrupted connection between the HMI and VCU.

Dark Green: Indicates the HMI and VCU are disconnected.



Date/Time

Displays the current date and time.

Machine Hours

Indicates the total engine run time.

Gauges (6)

System Air Pressure Gauge

The System Air Pressure Gauge provides an analog and digital display of the compressed air system pressure. The System Air is used for operation of the Service Brakes, KLENZ™, Air Horn, etc.

The digital display's unit system (Imperial or Metric) is set on the User Preferences Screen by selecting Unit System.

Coolant Temperature Gauge

- The Coolant Temperature Gauge provides analog and digital display of the engine's coolant fluid.
- The digital display's unit system (Imperial or Metric) is set on the User Preferences Screen by selecting Unit System.

Oil Pressure Gauge

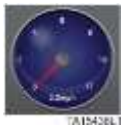
- The Oil Pressure Gauge provides analog and digital display of the engine's oil pressure.
- The digital display's unit system (Imperial or Metric) is set on the User Preferences Screen by selecting Unit System.

NOTICE

When operating in cold climates, the oil pressure indicator will be higher after starting during engine warm-up. In cold climates, it takes longer for the oil to warm-up and for the oil pressure to reach normal operating range.

Fuel Gauge

- The Fuel Gauge provides analog and digital display of the amount of fuel in the fuel reservoir.
- The digital display indicates the percent (%) full. For example, if the reservoir can hold 500 gallons of fuel, 50% indicates that the reservoir contains 250 gallons of fuel.



Speedometer (7)

- The Speedometer provides analog and digital display of the machine speed.
- The Speedometer indicates the speed in both forward and reverse directions.
- The display's unit system (Imperial or Metric) is set on the User Preferences Screen by selecting Unit System

Menu Selections

- Touching the Main Menu Button displays the Main Menu Selections. Touch a Main Menu item to select the screen or function. The list of menu items varies depending on the security level of the User Access Key. Menu items containing a red arrow have sub-selections. Touch the menu item to display the submenu.

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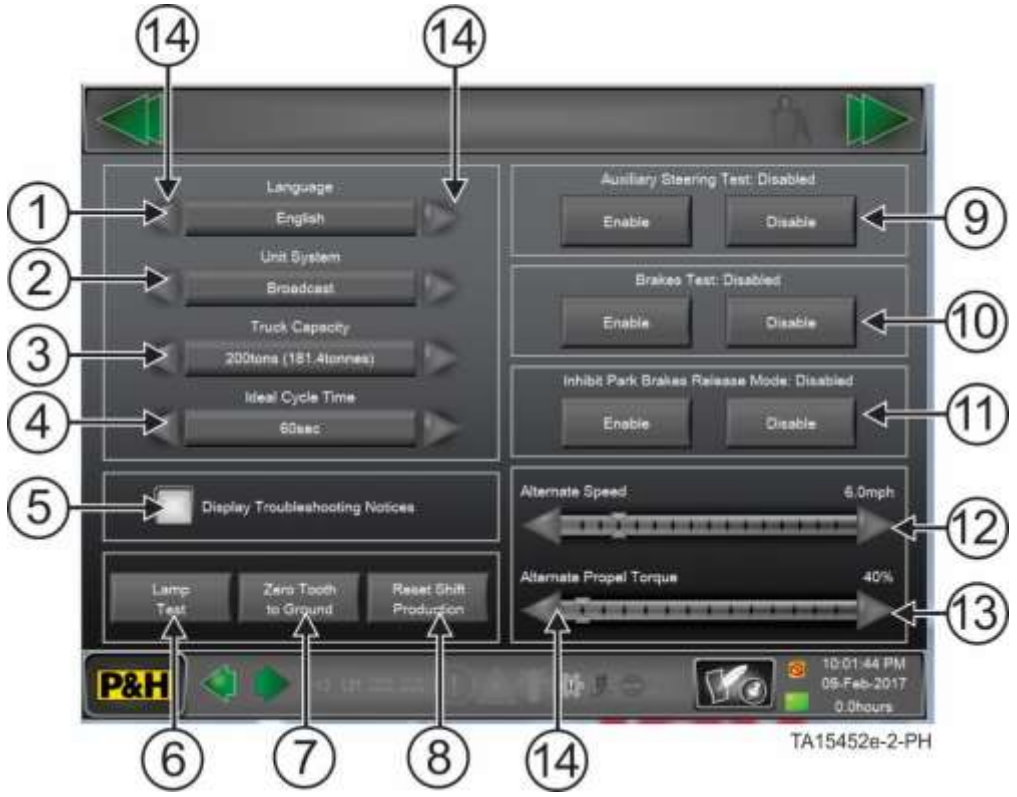
Main Menu Sub-Selection

Touch the Main Menu Button to display the Main Menu. The top item in the list contains the name of the user who is currently logged on. Touching the user's name displays the submenu where the user can select either the User Preferences Screen or Log Off. Selecting Log Off will set the User Access to the default Operator level.

User Preferences Screen

The User Preferences Screen allows the user to change LINCS II screens are displayed, test machine functions and adjust the Alternate Speed and Torque settings.

Items 1- 4, 12 & 13 have arrows at each end of the selector that are used to change the selection.



1. Language	**8.** Reset Shift Production
2. Unit System	**9.** Auxiliary Steering Test
3. Truck Capacity	**10.** Brakes Test
4. Ideal Cycle Time	**11.** Inhibit Park Brakes Release Mode
5. Display Troubleshooting Notice	**12.** Alternate Speed
6. Lamp Test	**13.** Alternate Propel Torque
7. Zero Tooth to Ground	**14.** Typical selection arrows

USER PREFERENCES SCREEN

For numbers in parenthesis, refer to illustration “User Preferences screen”.

Language (1)

- Touch the arrows to select the Language used for displaying information on the LINCS II screens.

Unit System (2)

- Touch the arrows to select the Unit System used for displaying values (Metric, Imperial, or Broadcast).
- Broadcast units are a mixture of unit systems that is preferred by the factory.

Truck Capacity (3)

- Touch the arrows to decrease or increase the Truck Capacity as displayed on the Main Operator Screen.

Ideal Cycle Time (4)

- Touch the arrows to change the Ideal Cycle Time which is used as the center value of the Loading Cycle Timer displayed on the Main Operator Screen.
- Touch the arrows to decrease or increase the time value.

Display Troubleshooting Notices (5)

- Touch the box to place a checkmark and select Display Troubleshooting Notices.
- This activates notices not normally displayed such as when the machine stops moving because it has reached a limit.

Lamp Test (6)

- Touching the Lamp Test button turns on the dash Red Alarm light, Yellow Warning lights, and the Cab Audible Alarm.
- The screen button is momentary so the lights and alarm stay on as long as the button is touched.

Zero Tooth to Ground (7)

- Touch the Zero Tooth to Ground button to set the bucket-to-ground angle to zero (0.0°).
- Typically, the bucket is set flat on the ground before setting the angle.
- Set the bucket to the desired angle and press the button to set the angle.

Reset Shift Production (8)

- Touch the Reset Shift Production button to reset the shift production to zeros on the Main Operator screen.

Auxiliary Steering Test (9)

- Touch the Auxiliary Steering Test Enable button to engage the Auxiliary Steering System test mode.
- When left or right steering is commanded, the electric motors that power the steering hydraulics will turn on.
- The motors only operate while the Left Joystick is being used to steer left or right.
- Touch the Disable button to return the Auxiliary Steering System to normal operation.

Brakes Test (10)

- Touch the Brakes Test button to allow the wheel motors to run with the brakes set.
- Forward direction must be selected with the engine running and the drive system enabled.
- The Traction System will engage and the vehicle may move even though the Service and/or Park brakes remain set.
- Touch the Disable button to return the traction system to normal operation.
- Brakes Test is cancelled if the user selects Neutral, selects Reverse, or exceeds low machine speed.

Inhibit Park Brakes Release Mode (11)

- Touch the Inhibit Park Brakes Release Mode Enable button to allow the Park Brakes Switch to be pulled OUT without actually releasing the park brakes.
- If the Park Brake Switch is pulled OUT, the Park Brake Switch Light will flash and hydraulic operations are allowed (steering, etc.).
- Propel is prevented because the park brakes do not release.
- Touch the Disable button to return the Park Brake switch to normal operation.

Alternate Speed (12)

- Touch the arrows to set the machine Alternate Speed.
- The Alternate Speed is the speed limit used when the Alternate Speed function is engaged.
- Use the overhead control console “Alternate Machine Speed” button to engage the Alternate Speed function

Alternate Propel Torque (13)

- Touch the arrows to set the machine Alternate Propel Torque percent.
- The Alternate Propel Torque is the wheel motor torque percent limit used when the Alternate Torque function is engaged.
- Use the overhead control console “Alternate Propel Torque” button to engage the Alternate Torque function.
- Alternate Torque is used to help prevent the wheels from slipping when operating on a slick surface.
- This feature only reduces propel torque. Full braking torque is unchanged.

Data Logging Menu

Provides access to the Logging/Monitoring and Production Reports screens.

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1. Logging/Monitoring

The Logging/Monitoring menu selection provides access to the Charting Screen and the Event Logging Screen.

2. Production Reports

The Production Reports menu selection provides access to the production reports such as Loads, Cycle Times, Loader Activity, etc.

Channel Selection Screen

The Channel Selection Screen provides a means to select data channels for viewing on charts.

NOTICE

A red arrow is normally seen only by Factory rep level; however, it is shown at operator level in some channels.

1. Touch a scroll button to move the group list.
2. Drag the scroll button to scan the group list.
3. Touch a group name to expand the group and show the channels. Touch the group name again to collapse the list. Drag the group name to the right side of the screen to select all the channels in the group. Drag a single channel name to select just one channel. To remove a channel from the selection list, drag the name out of the selected channels box.

NOTICE

The selected channel list can be rearranged by dragging the channel name to a new location.

Channel Types

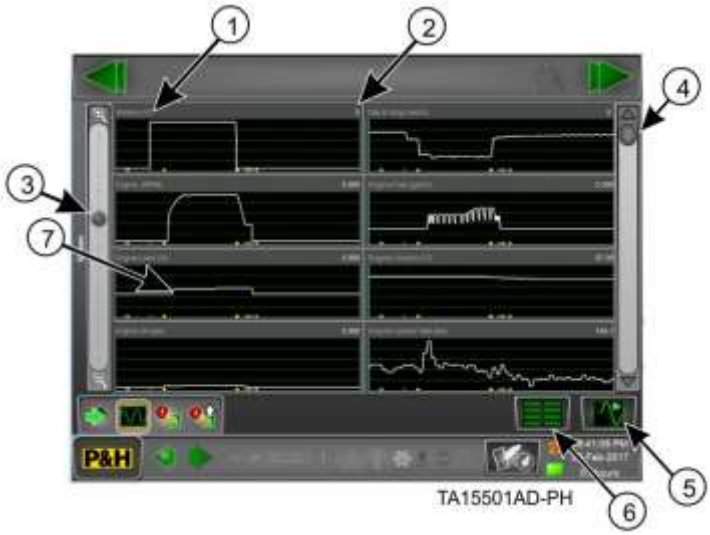
1. Calculated (derived from other data) shown as a calculator.
2. Input (Analog, Digital, or CAN) shown by a green “in” arrow.
3. Touch the Channel Selection Screen Button to display this screen.
4. Touch the Channel Charting Screen Button to display the selected channels in a chart or plot format.
5. Touch the Event Logging Screen Button to display a list of event records.
6. Touch the Remove All Channels Button to clear the list of selected channels.
7. Touch the Filtering Button to select the amount of noise filtering to be applied to the channel values on the Channel Selection Screen. Selecting “Rabbit” gives light filtering that removes a minimal amount of noise. Selecting “Turtle” gives heavy filtering so the values are more stable.

Logging/Monitoring

Charting Screen

The Charting Screen provides a way to view channel data in a plot or strip chart form. Multiple channels can be displayed showing data “live” (as it occurs) or “history” (from previous time).

Live Data



1. Channel Name

The Channel Name is displayed at the top left of a trace.

2. Channel Value

The Channel Value is displayed at the top right of a trace. For live data, the number shows the most recent data. For history data, the number shows the value of the channel measurement based on the position of the orange or blue cursor, or on the selected channel type as described in item #14 below. The vertical scale of the charts is automatically set to fit the selected data.

3. Time Zoom Scroll Bar

The amount of time shown on the display can be changed by dragging the zoom slider button. Drag the button left to zoom out and display more time. Drag the button right to display less time. The amount of data shown in the display will be the data stored in a download. Only 6.97 days is available. By default, the amount of time in the display is 60 seconds.

4. Selection List Scroll Bar

The list of selected channels can exceed the number that is displayed on the screen. Drag the scroll button to sweep through the entire list of selected channels. Touch the arrows at the ends of the scroll bar to move the channel traces one row at a time.

5. Live/History Data Button

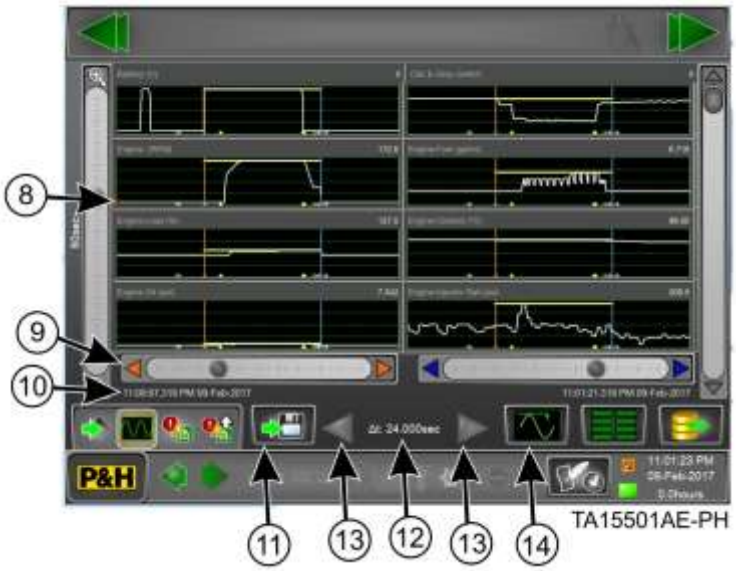
Touch the Live/History Data Button to change the display between live (real-time) data and history (recorded) data. Live data is shown as soon as it happens. As time progresses, the trace will advance so that the most recent data is always shown. History data shows a selection of past time.

6. Chart Layout Buttons
The charts can be displayed in a variety of layouts. A single channel can fill the entire view area (1x1) or as many as 16 channels can be displayed at the same time (4x4).

7. Channel Plot

The channel is displayed as a curve plot that varies in height proportionally to the data value. The channels are shown in the same order as listed on the Channel Selection Screen.

History Data



8. Event Markers

Events are indicated at the bottom of a trace. The event type is indicated by the color of the marker (i.e. Red – Alarm, Yellow – Warning). A circle indicates when the event was set (i.e. when the Alarm occurred). A solid dot indicates that the event cleared.

9. Cursor Position Bars

The Cursor Position Bars allow adjustment of the two cursors. The left bar is used for the orange cursor and the right bar is used for the blue cursor. Touch the arrows to adjust the cursors in small steps. Drag the cursor button to pan the time setting.

10. Cursor Timestamps

The Timestamps show the time and date of the two cursors.

11. Download Button
Touch the Download Log Button to display the Download Dialog. (See DOWNLOAD DIALOG.)

12. The Cursor Delta Time (Δt)

The Delta Time is the amount of time between the two cursors.

13. Data Selection Buttons

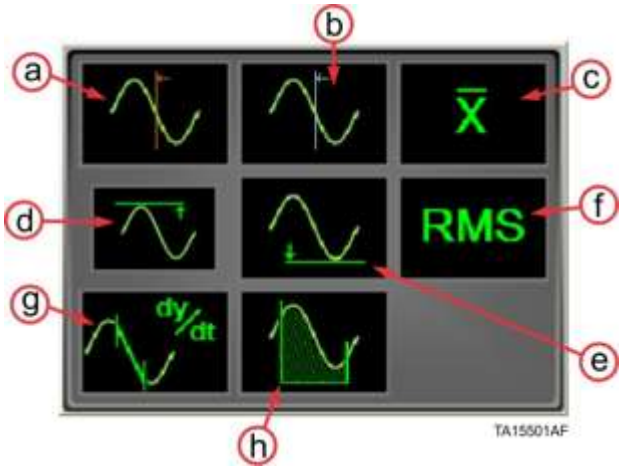
When the user is viewing history data, they can change the displayed section of data. Touching the left arrow moves the selection to show data earlier in time. Touching the right arrow shows data later in time.

NOTICE

The time selection can also be changed by dragging a trace to the left or the right.

14. Measurement Type Button

Touch the Measurement Type Button to select the type of measurement used for the history data. The value of the measurement is shown as the channel value and by a yellow line on the chart.



Measurement type

a. **Cursor 1** is the value of the data at the point where the orange cursor crosses the plot.

b. **Cursor 2** is the value of the data at the point where the blue cursor crosses the plot.

c. **Average** is the average of the values between the two cursors.

d. **Maximum** is peak value of the data between the two cursors.

e. **Minimum** is the valley value of the data between the two cursors.

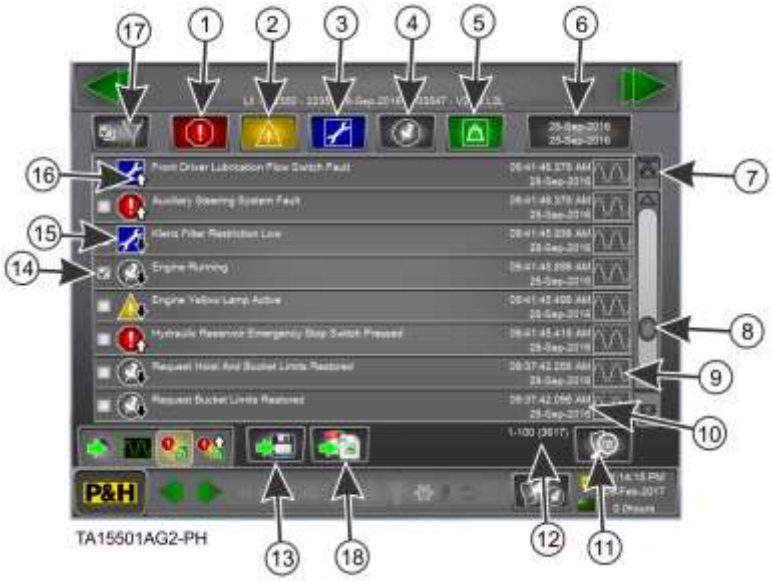
f. **RMS** is the root-mean-squared value of the data between the two cursors.

g. **dy/dt** is the slope of a line between the two data points that are marked by the two cursors. The slope is a measure of the change in amplitude of the data divided by the time between the two points.

h. **Area Under Plot** is the sum of all the data values between the two cursors times the time (the integral). It could be used to determine the total fuel used in a load cycle by measuring Engine: Fuel Rate.

Event Logging Screen (Detailed)

Event logging provides a method for viewing events such as Alarms, Warnings, and Alerts.



1. Select Alarms Button

Touch the Alarms Button to show Alarms in the list. The button will be bright red when Alarms are displayed and faded grey when alarms are not included. The five Select buttons can be applied separately or together.

2. Select Warnings Button

Touch the Warnings Button to show Warnings in the list. The button will be bright yellow when Warnings are displayed and faded grey when they are not included.

3. Select Alerts Button

Touch the Alerts Button to show Alerts in the list. The button will be bright blue when Alerts are displayed and faded grey when they are not included.

4. Select Events Button

Touch the Events Button to show Events in the list. The button will be bright grey when Events are displayed and faded when they are not included.

5. Select Production Data Button

Touch the Production Data Button to show Production Data in the list. The button will be bright green when Production Data is displayed and faded grey when not.

6. Date Range Button

Touch the Date Range Button to change the date range used for the event list. The range is selectable by day, month, and year.

7. Page Button

The Page Buttons allow the user to navigate through sections of 100 events at a time. Touch the bottom Page Button to display the next page of older events, going back in time. Touch the top Page Button return to the next page of more recent events.

8. Scroll Buttons

Use the Scroll Buttons to navigate the event list.

9. Chart Select Button

Touch the Chart Select Button to select the event and navigate to the Charting Screen. The selected event will be centered in the chart. Events that do not have associated charting data are shown with a grey Chart Select Button.

10. Date and Time Stamp

The Date and Time Stamp show when the event happens. If multiple events have the same time stamp, they are logged in the order they occurred.

11. Detailed/Summary View Button

Touch the Detailed/Summery View Button to switch between the detailed and summary views. The Detailed View shows the occurrence each event with the Date and Time Stamp.

12. Event Group (Total Events) Maximum of 2000

The Event Group is the event numbers that are currently available with the scroll buttons. The Total Events (in parentheses) is the total events available for viewing.

13. Download Button

Touch the Download Log Button to display the Download Dialog. (See DOWNLOAD DIALOG.)

14. Event Select Box

Touch the Event Select Box to select event types for focused viewing. The event list becomes reduced to only the selected events when the Filter Button is touched.

15. Set Event Indicator

A white up arrow on the event type image shows that this is a Set Event. The Set Event time is when the event occurred.

16. Cleared Event Indicator

A black down arrow on the event type image shows that this is a Cleared Event. The Cleared Event occurs when the triggering condition is resolved. For example, this happens when a fault is corrected.

17. Filter Button

Touch the Filter Button to limit the list of events to the event types that have been selected. All other events are filtered out of the list.

TA15501AH2-PH

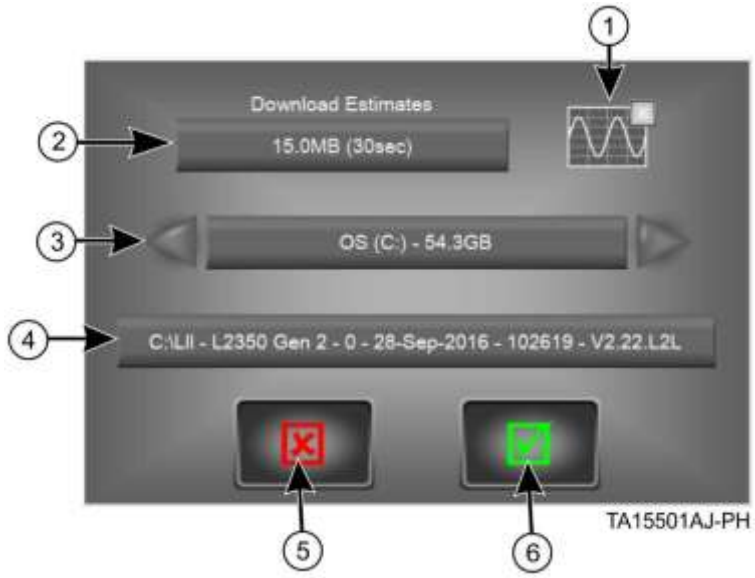
Event Logging Screen (Summary)

The Summary View shows a summary that gives the total occurrences of each event type in the history log. The numbers indicate only the amount of events that occurred within the selected Date Range. The Summary View is sorted with the most frequent event listed at the top.

TA15501AI2-PH

Download Dialog

History logs can be downloaded (copied) to a USB memory device (flash drive only) plugged into the USB port in the cab. The log will contain a copy of all of the events currently recorded by LINCS II. The log can optionally contain a section of channel data recorded.



1. Include Channel Log button
2. Download Estimates indicator
3. Drive Selector (flash drives only)
4. Download Filename indicator
5. Cancel button
6. Download Log button

1. Include Channel Log button

Touch the Include Channel Log button to include the channel data in the log. The time span of the channel data will be the time previously viewed on the Channel Charting screen. A zoomed-in chart (less time) will result in a smaller log file.

2. Download Estimates indicator

This displays the approximate size of the download and the approximate time it will take to send the file to the USB device.

3. Drive Selector (flash drives only)

Touch the Drive Selection arrows to pick the target USB device. LINCS II automatically recognizes USB devices when they are plugged into the USB port in the cab. The bar shows the USB device's name and the amount of empty space.

4. Download Filename indicator

The path and filename are automatically provided.

5. Cancel button

Touch the Cancel button to close the dialog box and cancel the download.

6. Download Log button

Touch the Download Log button to start the download. A progress bar will appear on the screen. Do not disturb the USB memory device while the download is in process.

NOTICE

When the progress bar disappears, the USB device can be removed.

Download Procedure

Insert a USB flash drive into the USB port in the cab. The USB port will either be located under the dash on the left hand side above the service brake panel, or it will be located on the front of the dash on the left hand side.

1. Determine if channel data is required. If no channel data is required, go to “Log File Downloads”.

2. Navigate to the Data Logging menu.

3. Select Logging/Monitoring.

TA15878-17-PH

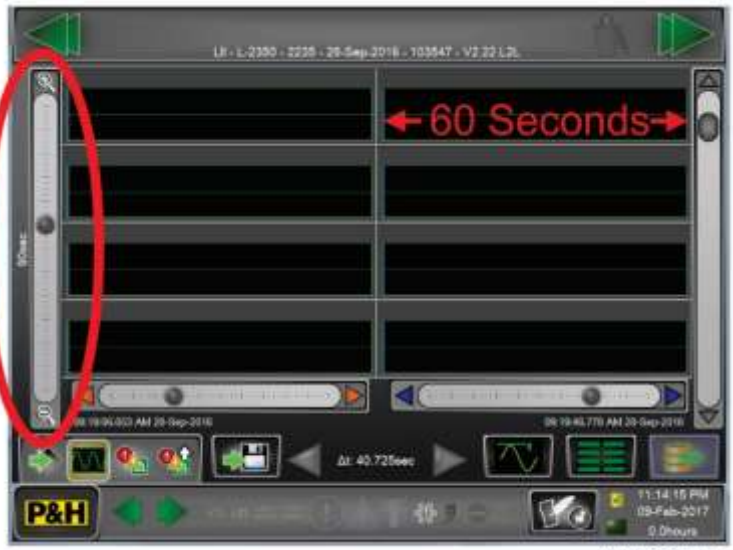
4. Select at least one channel and drag it to the Channel Selection screen on the right side of the screen.

TA15501BB-PH

5. Touch the Channel Charting screen button to display the selected channel(s) in a chart or plot format.

6. Touch the Live/History Data button to display history (recorded) data.

7. Adjust the Time Zoom scroll bar to the required time setting. Only data on the screen will be downloaded. Example; if the Time Zoom is set at 60 seconds, the channel data downloaded will only be 60 seconds.



TA15501BE-PH

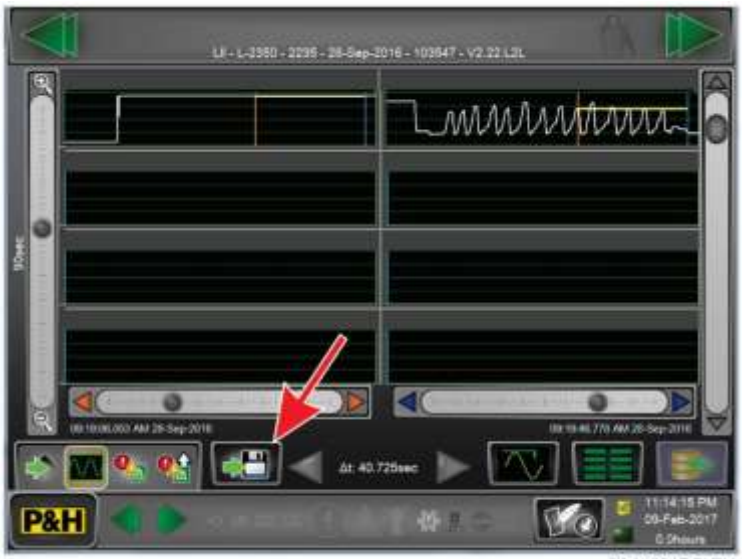
8. Locate the data that is desired to be downloaded. To locate the data, scroll the charts until the desired chart information is displayed. If an exact time and date of the data is known, watch the cursor time and date change as the chart is scrolled.

TA15501BF-PH

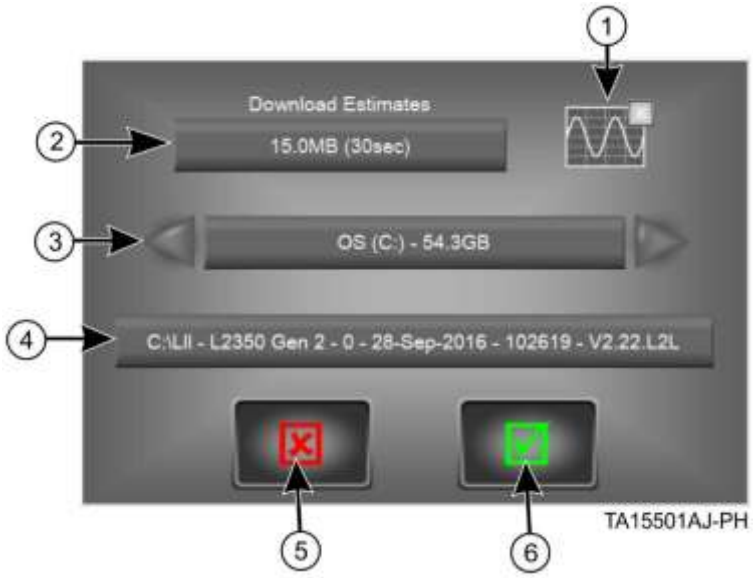
NOTICE

In the example above, the time zoom is set at 15 minutes, the channel data downloaded will be the 15 minutes shown on the screen.

9. Touch the Download button.



10. Once the Download Dialog box is open, touch the box to include channel data. A check mark (Item #1) will appear if channel data will be included.



1. Include Channel Log Button

2. Download Estimates

3. Drive Selection (flash drives only)

4. Download Filename

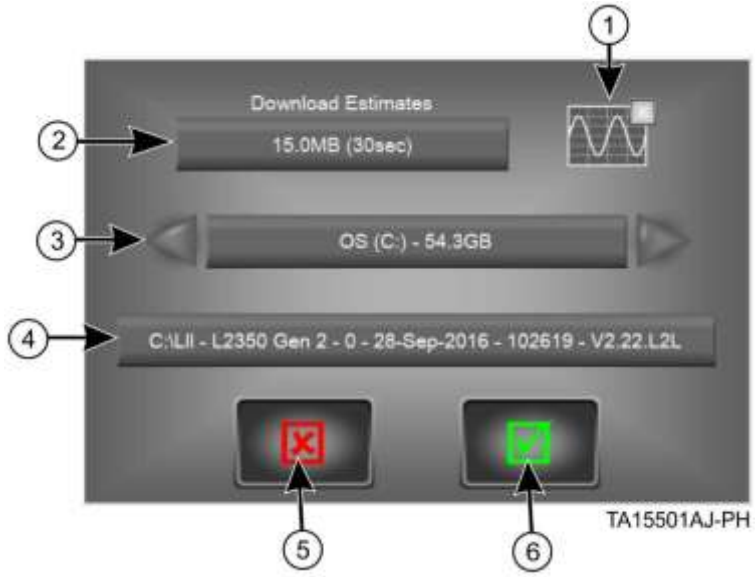
5. Cancel Button

6. Download Log Button

NOTICE

IF NO channels have been previously chosen (steps 4 thru 8), and the download dialog box is opened and the box is checked to have channel data included, the download WILL NOT have any data associated with it. If this download file is opened, the date on the channel data will read the year 1903 or 1904.

11. Select the destination drive letter (Item #3). The file name is automatically generated and cannot be changed prior to the download. After the download is done, the file name may be changed following standard file renaming perimeters (Item #4).



1. Include Channel Log Button
2. Download Estimates
3. Drive Selection (flash drives only)
4. Download Filename
5. Cancel Button
6. Download Log Button

12. Select the green check mark to start the download (Item #6).

NOTICE

If the selected time zoom setting is at maximum (4 hours) and the download has channel data selected, the download may take up to an hour to complete. An estimated file size and download time is automatically generated (Item #2).

Log File Downloads

1. Navigate to the Data Logging menu.

2. Select Logging/Monitoring

TA15878-17-PH

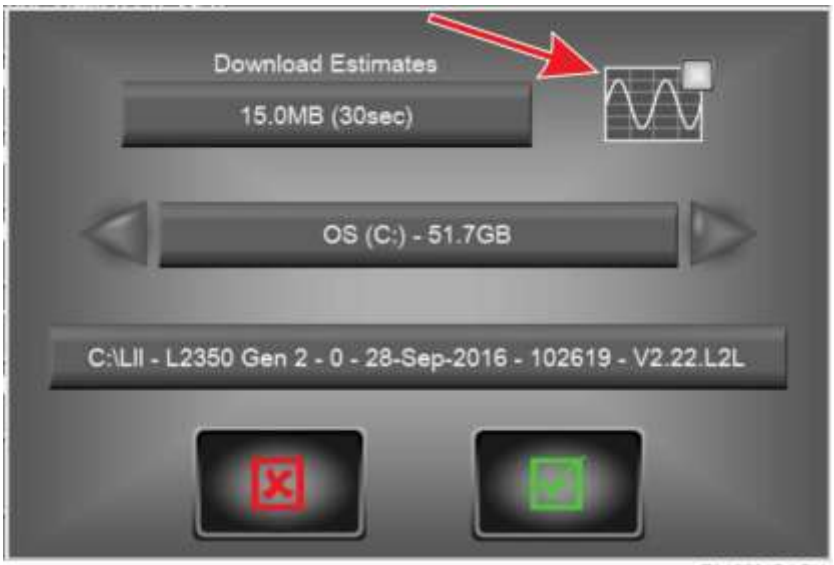
3. Touch the Event Logging screen button.

TA15501BH-PH

4. Touch the Download button.

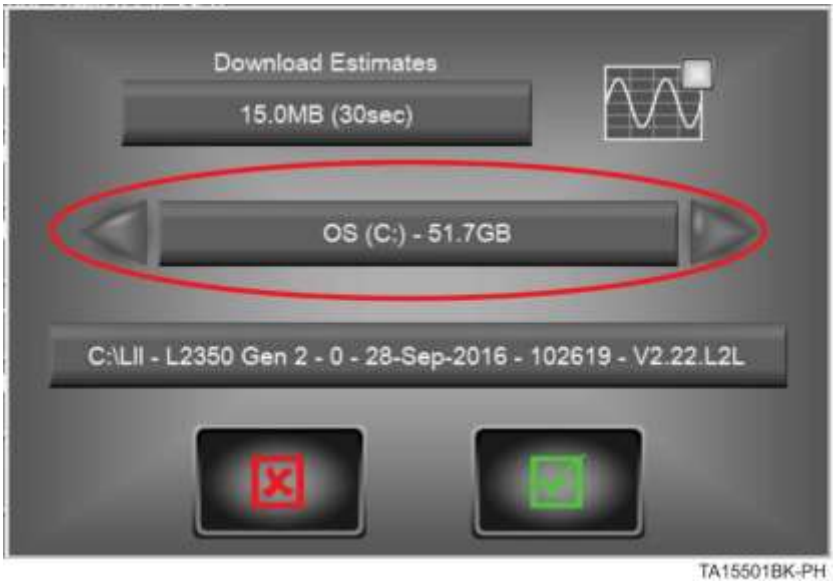
TA15501BI-PH

5. Verify that the Chart Data button is grayed out with no check mark.

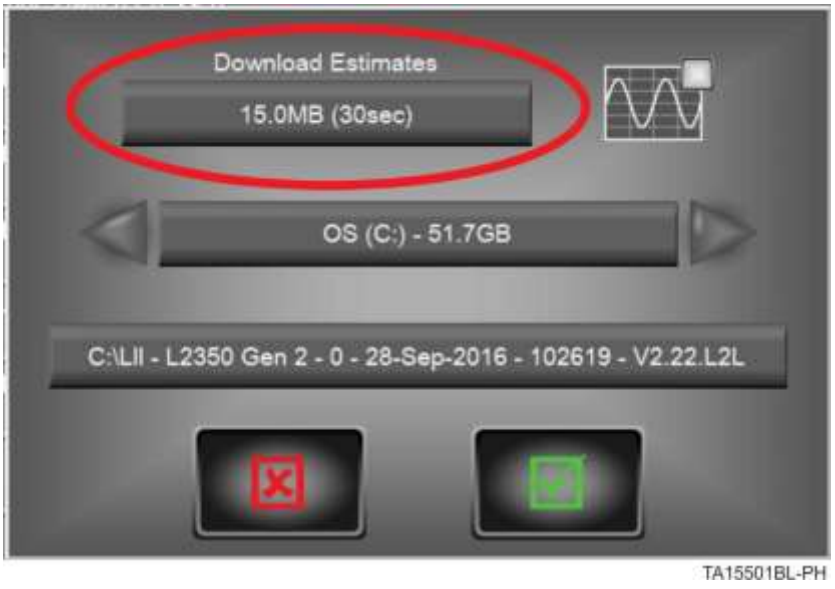


TA15501BJ-PH

6. Select the destination drive letter.



7. Select the green check mark to start the down load.

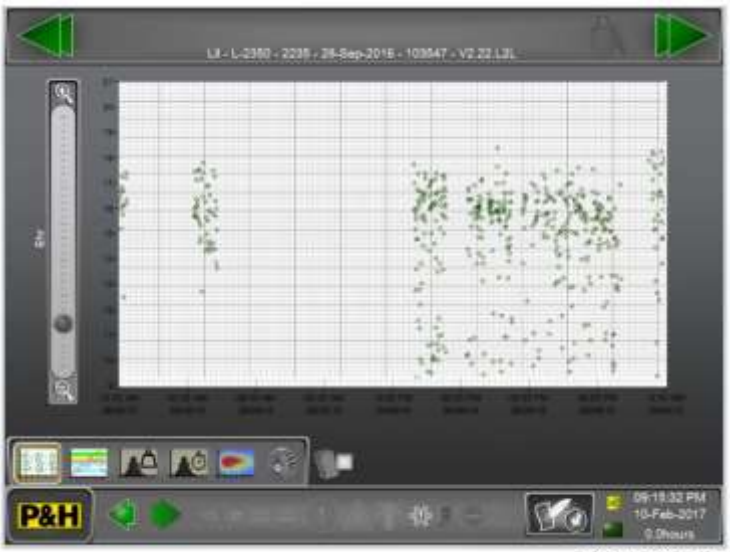


8. Because no channel data is being downloaded, the download should complete in under 10 minutes.

Production Reports

Loads

The Loads report shows the value and time of each load. The left scroll bar selects the time width of the display window. The bottom scroll bar selects the window position in time.



TA15501AK-PH

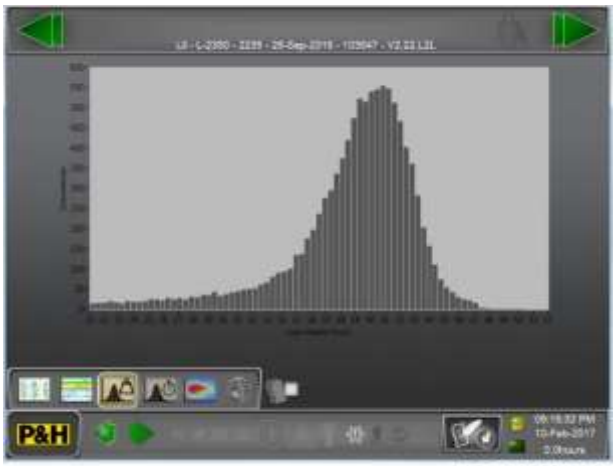
Profile

The Profile report provides a summary of loader activity. The left scroll bar selects the time width of the display window. The bottom scroll bar selects the window position in time.

TA15501AL2-PH

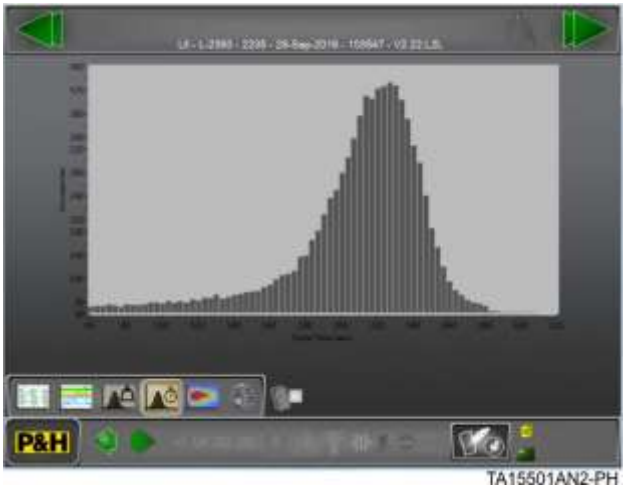
Tons Per Load

The Tons Per Load report provides a bar chart that shows the number of loads by the load weight value. The data range is selected by touching the Setup Button.

	 TA15501AM2-PH

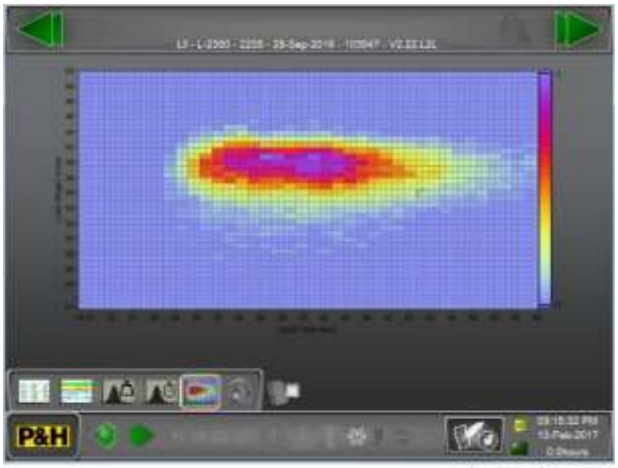
Cycle Times

The Cycle Times report provides a bar chart that shows the number of cycles by the cycle time value. The data range is selected by touching the Setup Button.

	 TA15501AN2-PH

Cycle Time/Load Sweet Spot

The Cycle Time/Load Sweet Spot report provides a 3D bar chart that combines the load and cycle time values. The color chart indicates the number of occurrences for each combination. The data range is selected by touching the Setup Button.



TA15501AO2-PH

Production Reports Setup

The Production Reports Setup screen allows filtering of the production data to remove spurious values. For example, the Load Weight Minimum can be set to a value that allows the reports to ignore weights recorded when the loader is cleaning up the work site. The Date Range for the reports can be selected by touching the Date Range Button.

TA15501AP2-PH

Machine Summary

Touch Machine Summary to display a list of general information about the machine. This list includes the Machine Serial Number and the installed options.

TA15501AQ2-PH

Machine Summary Screen

The Machine Summary Screen gives a list of machine settings and options. This screen is for information only. The list contains the following:

TA15501AR2-PH

1. Machine id **(L-1150 - 2001)**	**8.** Lift arm **(Standard Lift or High Lift)**
2. Engine type **(Cummins, Detroit, etc.)**	**9.** Auxiliary steering **(Installed or Not Installed)**
3. Language **(English, Spanish, etc.)**	**10.** Driver filtration **(Installed or Not Installed)**
4. Unit system **(Imperial, Metric, or Broadcast)**	**11.** Bucket **(Standard or Clamshell)**
5. Clock format **(12 hour or 24 hour)**	**12.** Isolation monitor **(External or Internal)**
6. Time zone (Local time zone offset from gmt)	**13.** Software version **(LINCS II Software Version)**
7. Time zone locale (Time zone location such as central time – us)	**14.** Data source version **(Data version)**

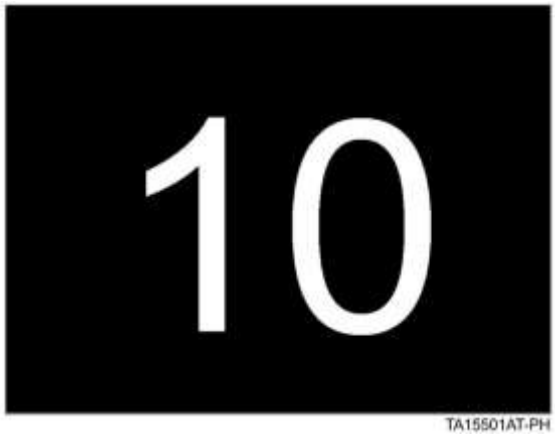
Clean Screen

The LINCS II screen is a touch screen and must be periodically cleaned.

- Clean Screen prevents LINCS II from responding to a display touch so that the screen can be cleaned.
- Clean Screen should be selected before attempting to physically wipe the screen.
- Once Clean Screen has been selected, a countdown displays showing the number of seconds remaining before the screen returns to normal operation.

The Acknowledge Button on the Left Joystick cancels the countdown.

TA15501AS2-PH



TA15501AT-PH

Figure 4. Clean screen

CAUTION

Damage to the display is possible if it is wetted during operation. NEVER wet clean the screen Turn the display off to clean with a wet process.

Maintenance Level Access

System Settings Menu

This menu is available to users with Maintenance Level Access or higher.

The System Settings Menu provides access to:

1. Change software
2. Calibrations
3. Configure (HMI, drive)
4. Load bank
5. Machine settings
6. User access key

TA15501AU-PH

Change Software

This feature is available to users with Maintenance Level Access or higher.

Change Software allows the user to load new system control software (LINCS II). The software package includes all files needed for the HMI, VCU, and Drive computers.

TA15501AV2-PH

1) Put the USB device that contains the new software into the USB port in the cab.
2) Select Load New Software.
3) Select the desired software version on the Select Software Update dialog box.
4) Touch the Accept button to start the software update process.
5) The update can take several minutes and includes rebooting of all of the computers. Do not remove the USB device until the process is complete.

Calibrations

This menu is available to users with Maintenance Level Access or higher.

LINCS II Calibrations are performed semi-automatically. Minimal input is required from the user. Once a user has initiated a calibration, LINCS II automatically powers hydraulics and reads inputs to gather the required information.

Calibration procedures are for: **1.** Speed control pedal **2.** Hoist/bucket **3.** Steering **4.** Load weight	 TA15501AW2-PH

Calibration Procedure

The calibration procedures are step by step processes and are displayed on consecutive screens. Each calibration has requirements that must be met before the calibration can be performed.

1) Select desired calibration.
2) Comply with the requirements for this calibration.
3) Touch continue to proceed, or exit to cancel.

TA15501AX2-PH

1. A progress bar appears at the bottom of the screen.
2. Follow the instructions on each screen.
3. Touch “Continue” to proceed.
4. Touch “Cancel” or “Exit” to end the calibration**.**

TA15501AY2-PH

Speed control pedal (1)

The Speed Control Pedal Calibration ensures that the operator has use of the full travel range of the pedal. The user actions include pressing the pedal fully to the floor. Requirements are:

1) Engine NOT running

Hoist/bucket (2)

The Hoist/Bucket Calibration sets the values for:

- Bellcrank to Lift arm Position Sensor
- Lift arm Position Sensor
- Bucket and Lift arm hydraulic responses
- Bucket and Lift arm limits

⚠ WARNING

Crush hazards exist while calibrations are being performed on the machine. This is an automated calibration process that involves moving the lift arms up and down, rolling the bucket back and forward, and dumping the bucket. The machine MUST be in an open area that provides adequate clearance. Keep all personnel clear of the area and in safe positions prior to doing calibration procedure. Place signs to alert personnel to keep a safe distance from the machine. Failure to prevent personnel from entering the area during calibrations can cause crush hazards resulting in serious injury or death.

Requirements are:

1) Engine at high throttle
2) Pilot Supply Pressure at 450psi (3100kPa)
3) Bucket empty
4) Bucket level and on the ground
5) Park Brake set
6) Lift arm Position Sensor properly installed
7) Bellcrank Position Sensor properly installed

Steering (3)

The Steering Calibration sets the values for:

- Steering Position Sensor
- Steering hydraulic responses
- Steering limits

⚠ WARNING

Crush hazards exist while calibrations are being performed on the machine. This is an automated calibration process that involves steering full right and full left (articulation of the machine). The machine MUST be in an open area that provides adequate clearance on both sides. Keep all personnel clear of the area and in safe positions prior to doing calibration procedure. Place signs to alert personnel to keep a safe distance from the machine. Failure to prevent personnel from entering the area during calibrations can cause crush hazards resulting in serious injury or death.

Requirements are:

1) Bucket OFF the ground
2) Engine running
3) Park Brake released
4) Steering Position Sensor properly installed

Load weight (4)

The Load Weight Calibration gets the values of the Hoist Base Pressure needed to accurately weigh the material in the bucket. This procedure does not use a calibrated load.

⚠ WARNING

Crush hazards exist while calibrations are being performed on the machine. This is an automated calibration process that involves moving the lift arms up and down, rolling the bucket back and forward, and dumping the bucket. The machine MUST be in an open area that provides adequate clearance. Keep all personnel clear of the area and in safe positions prior to doing calibration procedure. Place signs to alert personnel to keep a safe distance from the machine. Failure to prevent personnel from entering the area during calibrations can cause crush hazards resulting in serious injury or death.

Requirements are:

1) Engine at high throttle
2) Pilot Supply Pressure at 450psi (3100kPa)
3) Hydraulic Oil Temperature greater than 120°F (49°C)
4) Bucket empty
5) Bucket level and on the ground
6) Park Brake set
7) Lift arm Position Sensor properly installed
8) Bellcrank Position Sensor properly installed
9) Lift arm and Bucket positions calibrated

Configure HMI

This menu is available to users with Maintenance Level Access or higher.

Select the defaults for Language, Unit System, and Clock Format. Touch the Accept Button to save selections.

Configure Drives

This menu is available to users with Maintenance Level Access or higher.

TA15501B2-PH

The Configure Drives Screen allows the user to notify LINCS II of changes to the SR Drive Converters. The screen is used when a converter or motor is disabled. It also used to change the RPT sensors. Changes to this screen must be combined with wiring changes in the High-Voltage Cabinet. Reference the Service Manual Section 6 “Electrical Systems”, “SR Drive Procedures”, “Wheel Motor Isolation” for wheel motor isolation procedure.

1) Make selections by touching the number or letter desired.
2) Touch “Apply Changes” to save selections.

Load Bank

This feature is available to users with Maintenance Level Access or higher.

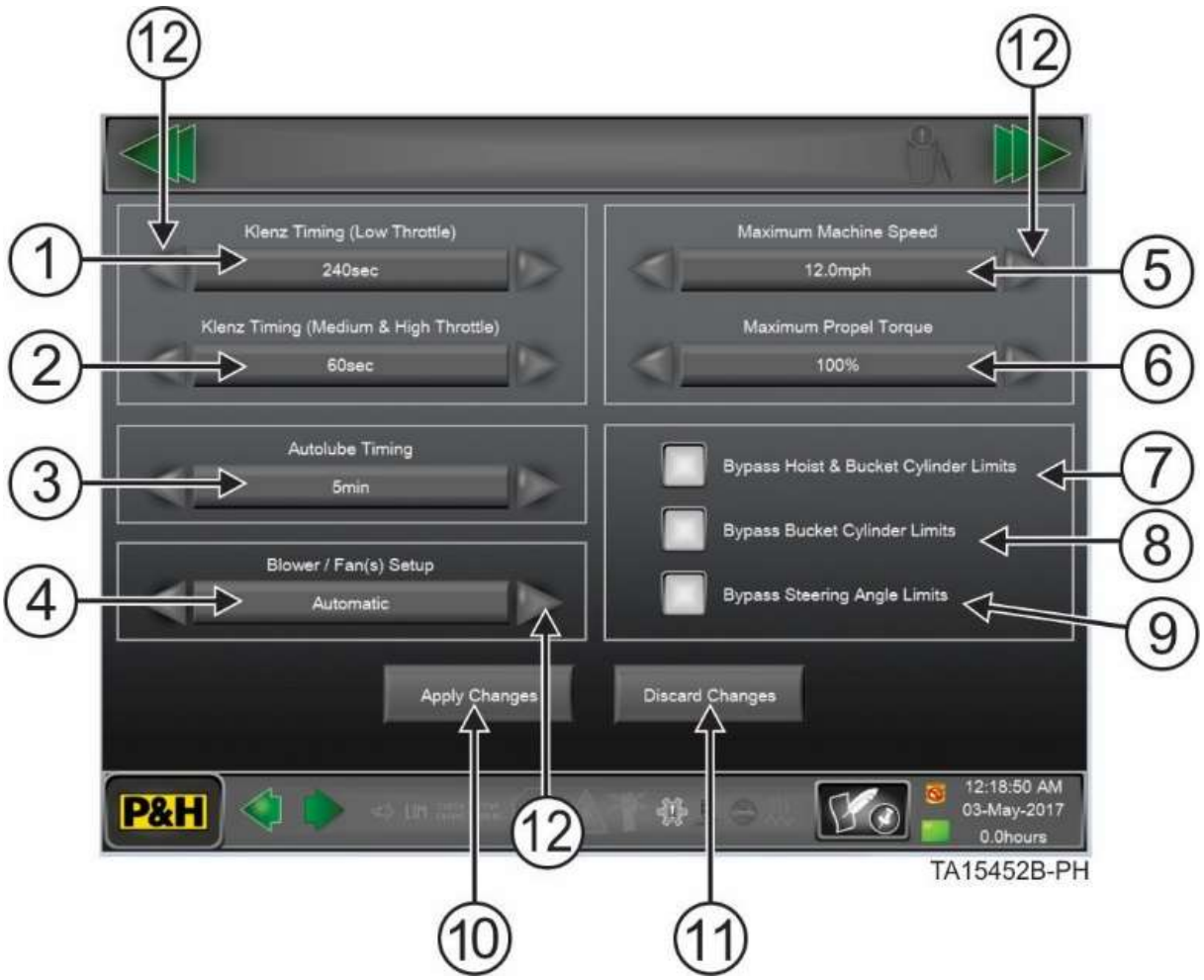
Load Bank is a machine feature that allows a user to exercise the Engine by sending power to the Braking Grids.

- Touch Turn On to engage the Load Bank mode.
- The Load Bank Icon appears at the bottom of the display.
- The Engine Radiator Fan and Blower are set to full speed.
- Press the Speed Control Pedal to control the amount of load on the engine.
- The Generator uses energy from the Engine to transfer power to the Braking Grids.
- View the channel group Load bank for key channels.
- Touch “Turn Off” to stop Load Bank and return the machine to normal operation.

Load Bank icon

Machine Settings Screen

This feature is available to users with Maintenance Level Access or higher.



The Machine Settings Screen allows the user to make changes to:

1. KLENZ™ timing (low throttle)	**7.** Bypass hoist & bucket cylinder limits
2. KLENZ™ timing (medium & high throttle)	**8.** Bypass bucket cylinder limits
3. Auto lube timing	**9.** Bypass steering angle limits
4. Blower/fan(s) setup	**10.** Apply changes
5. Maximum machine speed	**11.** Discard changes
6. Maximum propel torque	**12.** Selection arrows

KLENZ™ Timing (Low Throttle) (1)

KLENZ™ Timing (Low Throttle) is the number of seconds between the firings of a KLENZ™ System Solenoid when the engine is at idle. There are separate settings for the engine at Low Throttle and High Throttle. Touch the arrows (12) to cycle through the choices.

KLENZ™ Timing (High Throttle) (2)

KLENZ™ Timing (High Throttle) is the number of seconds between the firings of a KLENZ™ System Solenoid when the Engine is not at idle. Touch the arrows (12) to cycle through the choices.

Auto lube Timing (3)

Auto lube Timing is the number of minutes between the lubrication cycles. Touch the arrows (12) to cycle through the choices.

Blower/Fan(s) Setup (4)

The Blower/Fan(s) Setup selection allows the user to force the Cooling Blower, Radiator Fan, and Auxiliary Cooling Fan to maximum or minimum speeds. These selections also force the engine to 1950 RPM. Touch the arrows (12) to cycle through the choices.

a) Automatic: This is the normal mode for safe operation.

b) Standby Pressures: This is used for setting the standing pressures with the Blower and Radiator Fan at minimum.

c) Max Blower Speed: This sets the Cooling Blower to its maximum speed.

d) Max Fan Speed: This sets the Radiator Fan to its maximum speed.

e) Max Aux Fan Speed: This sets the Auxiliary Cooler Fan to its maximum speed.

Maximum Machine Speed (5)

The Maximum Machine Speed is the maximum speed that the user can command the machine to travel. Touch the arrows (12) to decrease or increase the maximum speed.

Maximum Propel Torque (6)

The Maximum Propel Torque is the maximum torque that the user can command the machine in propel. This setting only affects propel. Full braking is always available. Touch the arrows (12) to decrease or increase the maximum propel torque.

Bypass Hoist & Bucket Cylinder Limits (7)

Touch the box to bypass the Hoist and Bucket Cylinder Limits. A check mark will appear when the limits are bypassed. The Bypassed Limits Icon will be displayed on the bottom of the screen. This bypass is automatically selected when the Bellcrank to Lift arm Sensor is malfunctioning.

⚠ WARNING

Crush hazards exist if performing normal production with limits bypassed. Bypassing the limits removes protections. Loss of machine control is possible if limits are bypassed during normal production. Failure to remove limit bypasses before using the machine for normal production can cause crush hazards resulting in serious injury or death.

Bypass Bucket Cylinder Limits (8)

Touch the box to bypass the Bucket Cylinder Limits. A check mark will appear when the limits are bypassed. The Bypassed Limits Icon will be displayed on the bottom of the screen. This bypass is automatically selected when the Lift arm Position Sensor is malfunctioning.

⚠ WARNING

Crush hazards exist if performing normal production with limits bypassed. Bypassing the limits removes protections. Loss of machine control is possible if limits are bypassed during normal production. Failure to remove limit bypasses before using the machine for normal production can cause crush hazards resulting in serious injury or death.

Bypass Steering Angle Limits (9)

Touch the box to bypass the Steering Angle Limits. A check mark will appear when the limits are bypassed. The Bypassed Limits Icon will be displayed on the bottom of the screen. This bypass is automatically selected when the Steering Position Sensor is malfunctioning.

⚠ WARNING

Crush hazards exist if performing normal production with limits bypassed. Bypassing the limits removes protections. Loss of machine control is possible if limits are bypassed during normal production. Failure to remove limit bypasses before using the machine for normal production can cause crush hazards resulting in serious injury or death.

Apply Changes (10)

The selections on the Machine Settings Screen are not active until the “Apply Changes” button (10) is touched. When a selection is changed but not applied, its name color becomes yellow and an asterisk (*) appears.

Discard Changes (11)

If the selections are not to be applied, touch the “Discard Changes” button (11). Machine Settings are stored in the VCU and do not change when the LINCS II system is restarted.

Selection Arrows (12)

Selection arrows are present when selections are available. Pressing the right side arrow moves the selection forward. Pressing the left arrow moves the selection backward.

User Access Key

This feature is available to users with Maintenance Level Access or higher.

User Access Key is used to create or change the contents of a User Access Key.

- The right side of the screen reads the User Security Key that is presently in the “reader”:
- The left side is used to make selection changes.
- The center icon is used to transfer the new settings to the right and “set” the key to those settings.
- Maintenance level can only create or change an Operator Level User Security Key.
- Service level can create or change Maintenance and Operator Level User Security Keys.
- The Password and Username are entered manually by using the pop-up screens displayed when the selection is touched.
- The following can be changed by touching the arrows on either end.
    - Security Level
    - Language
    - Unit System
    - Clock Format

NOTICE

The User Security Key must be in the “reader” (mounted on the console) before the software can read, create, or change any settings.

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User Access Key Password

The PASSWORD must be entered manually by using the pop-up screen displayed when that selection is touched.

- Minimum 4 characters
- Maximum 9 characters
- Touch the green Accept Button when completed.
- Touch the red Cancel Button to discard the changes.

User Access Key Username

- The USERNAME must be entered manually by using the pop up screen displayed when that selection is touched.
  - Minimum 4 characters
  - Maximum 9 characters

1. User name entry box
2. Backspace button
3. Space button
4. Language/symbol selection window
5. Red cancel button
6. Green accept button
7. Scrollbar for displaying more selections on the keypad.

Remote Server IP

This feature is available to users with Maintenance Level Access or higher.

Remote Server IP allows the user to set the Internet Address to be used on the secondary Ethernet port. This is the port that is used for connecting to remote clients through the Ethernet hub.

Service Level Access

Configure VCU Screen

This feature is available to users with Service Level Access or higher.

Gather all machine model/serial# specific component information before configuring a VCU. The area should be cleared of all unnecessary personnel before running the machine after configuring a VCU. All components shown on the “Configure VCU screen” should be checked for correct operation after configuring a VCU.

⚠ WARNING

Crush hazards exist if the VCU is not properly configured. Incorrectly configuring the VCU can cause loss of machine or machine component movement control. Always verify the VCU settings for the specific machine components before and after configuring the VCU. Always check the machine component movement after configuring a VCU. Failure to correctly configure the VCU can cause uncontrolled or undesired machine movement causing serious equipment damage or crush hazards resulting in serious injury or death.

CAUTION

Component damage is possible if the VCU is incorrectly configured. Excessive component movement during operation can cause severe equipment/component damage if the wrong components are selected.

The selections on the Configure VCU Screen are not active until the Apply Changes Button (10) is touched. When a selection is changed but not applied, its name color becomes yellow and an asterisk (*) appears. If the selections are not to be applied, touch the Discard Changes Button (11). VCU Settings are stored in the VCU and do not change when the LINCS II system is restarted.

1. Serial Number	**7.** Power Ladder
2. Lift Arm	**8.** Driver Filtration
3. Bucket	**9.** Seat Belt Monitor
4. Fan Type	**10.** Apply changes
5. Engine Type	**11.** Discard changes
6. Auxiliary Steering	

Serial Number (1)

Select the numeric Serial Number of the machine with the pop-up touch pad. The serial number can contain digits 0 to 9 and a decimal (‘.’). For example, use “2001” for L1150-2001. Touch the green Accept Button when done,

Lift Arm (2)

Select the type of Lift Arm from the list (i.e. “High Lift”). Touch the arrows to scroll through the selections.

Bucket (3)

Select the type of Bucket from the list (“Clamshell” or “Standard”). Touch the arrows to scroll through the selections.

Engine Type (4)

Select the Engine Type for list (i.e. “Cummins”). Touch the arrows to scroll through the selections.

Fan Type (5)

Select the type of fan from the list (“8 blade”, “11 blade”, “D950/L950/L1150”). Touch the arrows to scroll through the selections.

Auxiliary Steering (6)

Touch the box to set the Auxiliary Steering option. The box contains a checkmark when Auxiliary Steering is enabled.

Power Ladder (7)

Touch the box to indicate that a Power Ladder is installed on the vehicle.

Driver Filtration (8)

Touch the box to set the Driver Filtration option. The box contains a checkmark when Driver Filtration is enabled.

Seat Belt Monitor (9)

Touch the box to enable or disable the seat belt monitor. The box contains a checkmark when the seat belt monitor is enabled.

Channel Forcing

This feature is available to users with Service Level Access or higher.

The channel information can be “forced” (manually changed) from actual readings. Touch “Data Logging”, Logging/Monitoring to access the Channel Selection Screen.

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- Touching the Input, Output, or Calculated buttons displays a value selection screen where the channel is “forced”.
- Numeric channel values are entered by using the onscreen keypad.
- Discrete channel values are selected by touching the arrows.
- Touch the green Accept Button to save the value.
- Touch the red Cancel Button to discard the value. This will also return a previously forced channel to normal operation.

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Field Access

This feature is available to users with Service Level Access or higher.

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Field Access provides a method for Komatsu Mining Products Engineering to obtain diagnostic information from LINCS II. Field Access puts the HMI in a temporary state.

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1) Log on with a Service Access Level key.
2) Select Field Access.
3) Call Engineering in Longview, TX.
4) Give the engineer the 9-digit number that is shown in the dialog box.
5) Enter the number provided by the engineer.
6) Touch the Accept Button.

Support Software

Offline HMI

The software that runs on the HMI computer of LINCS II can be installed on a laptop. This installation allows the user to view downloaded logs from a machine. A laptop can also be used to temporarily replace the machine's HMI computer when needed for troubleshooting. The normal features of the HMI software are also available such as Log On and Data Logging.

When the HMI software runs on a laptop, it appears as a Windows application and has a menu bar for additional features.

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File

1.1 Open Log File (Crtl+O)

The Offline HMI can be used to view logs that have been retrieved from a machine. These logs contain event data and optionally channel data. Click Open Log File to display a file select dialog box. Navigate to the LINCS II log file desired and click OK. Log files have an "l2l" extension. The channel data can be viewed on the Logging/Monitoring Screen. A subset of the channel data can be saved with the Download Log feature. This allows the user to focus on a problem area and create a smaller log file that can be more easily distributed.

1.2 Screen Capture

Screen Capture makes a screenshot of the display as a PNG file. Click Screen Capture… to display a dialog box and enter the name of the file.

1.3 Exit (Ctrl+Q)

Vehicle

2.1 Connect\

2.1.1 Demo Loader

The Offline HMI can be used to demonstrate a loader's HMI features. The Demo Loader mode contains access to the same screens that would appear on an actual loader.

2.1.2 Remote

The Offline HMI can be connected remotely to an HMI that is on a machine. Click Vehicle\Connect\Remote and enter the address that will link to the remote HMI. The HMI's remote port address is 192.168.0.1 but a different address may be needed depending on the method used to connect. Once connected, the Offline HMI will receive the channel data from the machine HMI as happens in real time.

2.1.3 Direct

The Offline HMI can be connected directly to a VCU on a machine. Click Vehicle\Connect\Direct. For this purpose the Offline HMI replaces the machine.

2.2 Disconnect

Click Vehicle\Disconnect to break the connection previously made to a machine HMI or a VCU.

Help

3.1 About LINCSII

Click Help\About LINCSII to display the Machine Settings Screen. If a downloaded log is being viewed the screen shows data from the Offline HMI (including Software Version). When the Offline HMI is remotely connected to a machine, the screen will show the settings stored in the VCU.

Log On

On the Offline HMI, a user can Log On with their User Access Key. A USB Access Key Reader is required. Touch and hold the User Access Key the reader. A Password Entry Screen will be displayed. Click the numbers on the display to enter the password. Logging on to the Offline HMI provides access to additional menus.

PDF files

The Offline HMI can save PDF files of Data Logs and Production Reports.

5.1 Data Log

The PDF/Excel Button appears on the Event Logging Screen. Touching the button displays a file dialog. Enter the desired filename. Note: If the Channel Log is included, the file may be very large. A PDF file and a .CSV file will be created with the same name (example: test.pdf and test.csv will be created).


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5.2 Production Reports

The PDF/Excel button appears on the Production Reports Setup screen. Touching the button displays a file dialog. Enter the desired filename. The PDF/Excel file contains all of the production reports. A PDF file and a .CSV file will be created with the same name (example: test.pdf and test.csv will be created).

The Select Button appears on Production Reports Screens.

Reports that have the box checked are included in the PDF file.

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