X30 CONSOLE

BOURGAULT SRC 6000 & 7000A/S

OPERATOR'S MANUAL

MONITOR VERSION: 3.18.50BG
REVISED OCTOBER 2014
0252-90-72

Note:

Use this manual as well as the Topcon Operator's Manual, and the Bourgault Air Seeder Operator's Manual for operational information.

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1 SYSTEM COMPONENTS

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1.1 INTRODUCTION

This manual is intended for use with the Bourgault 7000 A/S SRC (Seed Rate Control) with X30 console.

The system is a powerful tool that will provide a wide range of options to the operator.

Seed & Fertilizer Rate Controller

- Control and monitoring of up to six product applications including 5 granular, and NH3 or liquid
- Variable Rate

Guidance System

- Parallel and Contour guidance software standard (Optional DGPS receivers required for operation)
- Use any compatible DGPS
- Save field maps ("where applied")

VRC/Maplink

- Log “as applied” maps
- Use prescription maps for variable rate applications

Liquid/NH3 Control (Spray Rate Control)

- Up to 3 products controlled
- Liquid Control
- Liquid Fertilizer
- Use in a completely separate unit (sprayer, liquid applicator, etc)
- Adjustable audible and visual alarms
- Bin Levels count down as product is used

Auto Steering (Topcon systems ONLY)

ANY REFERENCE TO AUTO STEERING THROUGHOUT THE MANUAL IS APPLICABLE ONLY WHEN THE USER'S TRACTOR IS CONFIGURED WITH TOPCON GUIDANCE EQUIPMENT (ANTENNA, RECEIVER, CONTROLLER, ETC.) AND IS INCLUDED AS REFERENCE ONLY. IF YOUR TRACTOR IS EQUIPPED WITH NON-TOPCON GUIDANCE EQUIPMENT THEN THE AUTO STEERING WILL BE A PART OF THAT SYSTEM AND THE X30 CONSOLE WILL BE USED FOR MAPPING PURPOSE ONLY.

IMPORTANT

IT IS IMPORTANT THAT YOU SHOULD NOT CHANGE SETTINGS OR OPERATE BUTTONS ON THE X30 CONSOLE WITH ANYONE WORKING ON OR BEING AROUND THE SEEDING UNIT. CERTAIN FUNCTIONS OF THE CONSOLE OPERATE COMPONENTS ON THE MACHINE WHICH CAN CAUSE SERIOUS INJURY OR DEATH TO THE CLOSE BY PERSON.

X30_MONITOR.JPG

Figure 1.1 - X30 Console

1.1.1 SOFTWARE VERSION

The system can be upgraded as new features are added. To check what version of the software is installed, select About button on the left side of the screen, refer to *Figure 1.2.* Check with the dealer if a new version is available for update.

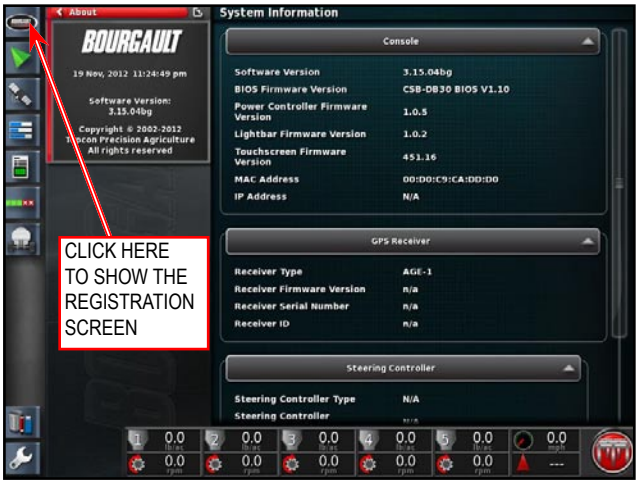


Figure 1.2 - System Information Screen

1.2 X30 CONSOLE

The X30 console is a Linux based computer system contained within an ABS housing. The console has no internal moving parts and the housing is designed to ensure long life in even the toughest conditions.

The console has a 13.5" LCD touch screen display.

The back panel of the X30 console has a few connection ports, refer to *Figure 1.4.*

- Two CAN ports are used for harness connections.
- Ethernet port allows connection to the internet, computer.
- Two USB ports can be used to connect a thumbdrive or any other USB devices. Using USB memory you can transfer files from your console to your USB memory, or import specific files from USB memory to your console.

Figure 1.3 - X30 Console

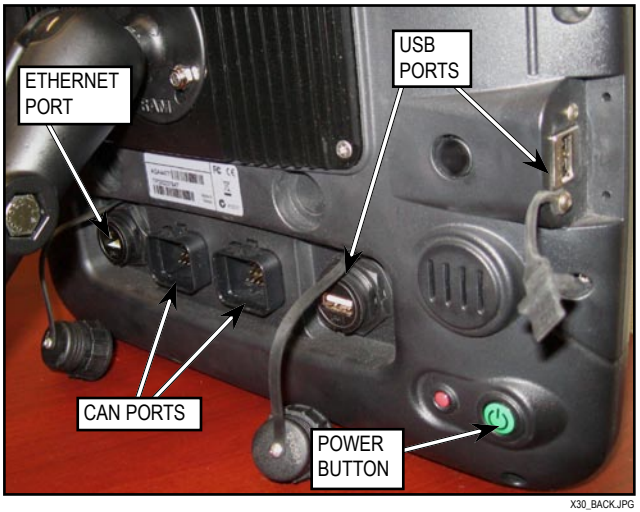


Figure 1.4 - X30 Console - Back View

1.4 SWITCHBOX

The same switchbox is used in-cab and on the frame of the air seeder.

In-cab switchbox connects to 9-pin AMP connection in the tractor cab.

The on-frame switchbox is installed on the frame to control the meters in calibration mode. It is also used to run meters to check runs when the unit is stationary.

- will control up to 8 tanks;
- alternate means of controlling the air seeder to the console touch screen;
- in-cab switchbox can be placed near tractor controls for easy access;
- functions include: master on/off, tank on/off, and guidance lock;
- must be enabled through the X30 console.

Figure 1.5 - In-Cab Switchbox

1.5 HARNESSES

Refer to *Section 11 - Wiring Schematics* for the wiring harness layouts.

1.5.1 X30 MAIN HARNESS

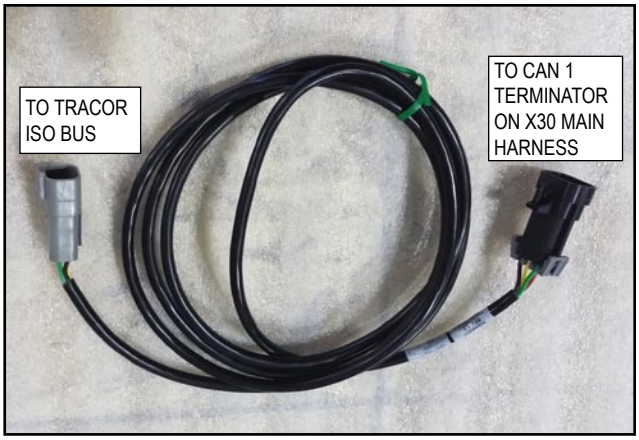
Refer to *Figure 1.6*. This harness connects X30 console to power source, ISOBUS, GPS signal, remote steer engage (if unit is equipped with Topcon autosteer).

31321201_MAINX30HARNESS.JPG

Figure 1.6 - X30 Main Harness

1.5.2 X30 ISO ADAPTER HARNESS

Refer to *Figure 1.*7. This harness connects X30 main harness to tractor ISOBUS system.



X30_ISO_ADAPTERHARNESS_313262.JPG

Figure 1.7 - X30 ISOBUS Adapter Harness (3132-62)

1.5.3 POWER EXTENSION HARNESS

Refer to *Figure 1.8*. This harness connects X30 main harness to the battery. If power connector is available in the cab, this harness is not used.

POWERCABLE.JPG

Figure 1.8 - Power Extension Harness

1.5.4 IN-CAB SWITCH BOX HARNESS

Refer to *Figure 1.10*. This harness connects in-cab switch box to 9 pin AMP connection in the tractor cab.

If the 9-pin AMP ISOBUS connection does not exist in the tractor cab, use switchbox ISOBUS adapter harness (3132-42) to connect into the ISOBUS in the same location as the X30 console. Also use the switchbox power harness (3132-76) to power up the switchbox from the X30 harness.

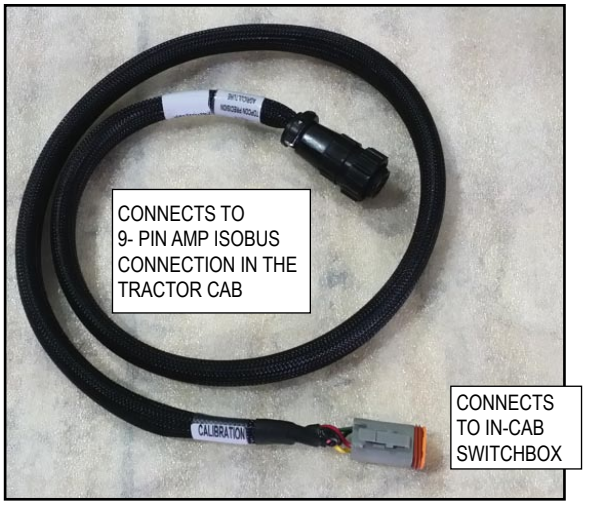


Figure 1.10- In-Cab Switchbox Harness (3132-41)

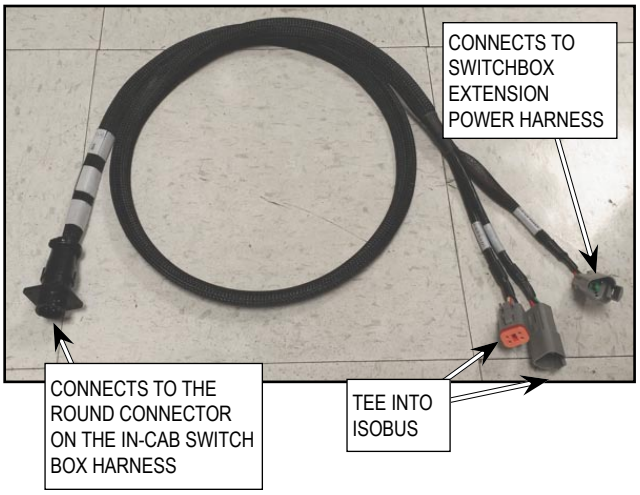


Figure 1.9- Switchbox ISOBUS Adapter Harness (3132-42)

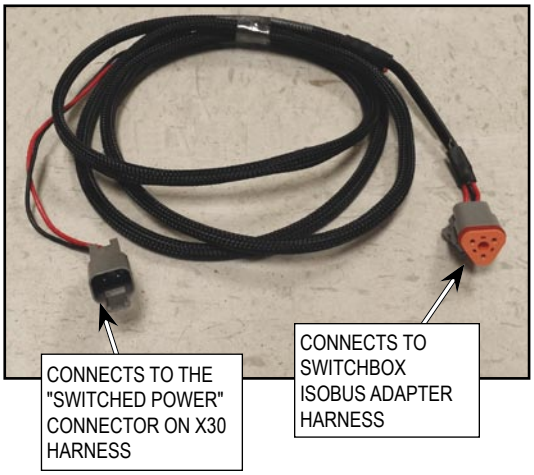


Figure 1.11 - Switchbox Power Extension Harness (3132-76)

1.5.5 GPS ADAPTER HARNESS

Refer to *Figure 1.12*. The X30 GPS serial cable has RS232-D connector that connects to the RS232-D connector on the X30 main harness. Two connectors on the other end of the adapter are used to connect either to the Topcon receiver on non-Topcon receiver. Gender change end and null modem end are included. This allows for X30 guidance to use the GPS signal. The X30 GPS adapter harness is always used regardless of the cables included with the GPS receiver.

Refer to *Section 4.2 - GPS* for changes in the monitor settings, and *Section 11 - Wiring Schematics*.

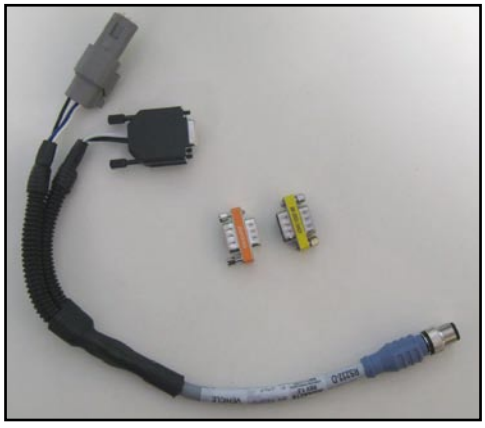


Figure 1.12 - GPS Adapter Harness

1.6 ELECTRONIC CONTROL UNIT (ECU)

1.6.1 MASTER ECU (CM-40)

The Master ECU is located on the hopper panel of the air seeder. It is capable of:

- controlling up to four tanks;
- monitoring and transmitting signals from the various air seeder sensors to the console for display;
- second ECU (CM-40) will be installed if there are more than 4 tanks used.

Refer to *Section 11 - Wiring Schematics* for the wiring harness layouts.

Figure 1.13 - Master ECU (CM-40)

1.6.2 I/O ECU (EM-24) (OPTIONAL)

The I/O ECU is located on the back side of the same mount as the Master ECU. It is capable of:

- controlling granular and NH3/liquid Auto Section Control systems, up to 10 sections each
- can be installed on the drill to control blockage head sensors.

Figure 1.14 - I/O ECU (EM-24)

1.8 SPEED SENSORS

There are speed sensors in several locations on the air seeder. These include fan speed, ground speed, and metering auger speed. All of these sensors are proximity style and send a signal to the ECU.

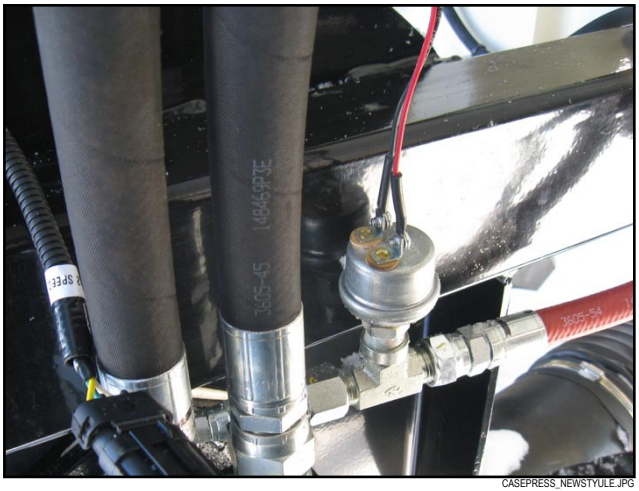
- the **fan speed sensor** picks up from a target bolt on the fan hub (one pulse per revolution).
- the **ground speed sensor** is located on the rear left wheel mount or drive. It picks up a signal from a sprocket.
- the **metering auger sensors** are on the metering auger housing and pick up the signal from a sprocket on the metering auger shaft (32 pulses per revolution for 7000AS, and 16 pulses per revolution for 6000AS).

SPEEDSENSOR.JPG

Figure 1.15 - Speed Sensor

1.9 CASE DRAIN PRESSURE SWITCH

A pressure switch is installed in the fan hydraulic motor case drain line. This controls an alarm that will activate if the case drain pressure is too high (greater than 65psi). High case drain pressure may result in damage to the hydraulic motor.



CASEPRESS_NEWSTYULE.JPG

Figure 1.16 - Case Drain Pressure Switch

1.10 LOW BIN LEVEL SENSORS

Each air seeder compartment contains a single bin level sensor installed near the bottom. The sensor will trigger an alarm when there is no product in front of it.

The X30 provides a ***calculated*** (not actual) method of reporting the product remaining in the tank. This value is based on the metering auger output in relation to the product amount entered at time of fill. This value should be used as reference only.

BINSENSOR.TIF

Figure 1.17 - Bin Level Sensor

1.11 BHECU (BLOCKED HEAD ELECTRONIC CONTROL UNIT)

A I/O ECU (EM-24) and BH Sensor are available to use with the X30/Bourgault SRC programs.

The I/O ECU is installed on the secondary manifold stand and communicates with the BH sensor. The sensor is installed "in-line" on one tertiary line per secondary manifold. There is a maximum of 20 BH sensors per unit.

The information from this BH sensor is then sent back to the X30 monitor and is displayed on the Bourgault SRC program. Refer to *Section 13.2 - X30 Blockage Monitoring* for more installation information.

1.12 GRANULAR SECTIONAL CONTROL HARNESSES

There are 2 harnesses that run from the I/O ECU to control up to 10 sections. One harnes controls the section valves and the other harness sends the section sensor feedback to the ECU.

1.13 SECTION CONTROL VALVE PROXIMITY SENSOR

Refer to *Figure 1.20*. A proximity sensor is used to determine position of the valve. The sensor provides an alarm in the monitor when a valve should be open (seeding), but is partially or completely closed.

Figure 1.18 - I/O ECU (EM-24)

Figure 1.19 - Blocked Head Sensor (DICKEY-john Style)

Figure 1.20 - Proximity Sensor

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2.1 STARTING THE X30 CONSOLE

Ensure all harnesses and other components are connected properly on the air seeder, across the tillage implement, and in the tractor cab. Refer to *Section 11 - Wiring Schematics* for more details.

Ensure that the X30 is connected to a stable power supply; direct battery connection is best however many newer model tractors have direct to battery connections available in a cab.

Turning On

To turn on the X30 console, press and hold green power button (approximately 3 sec), located on the back of the console in the lower left corner, refer to *Figure 2.1*.

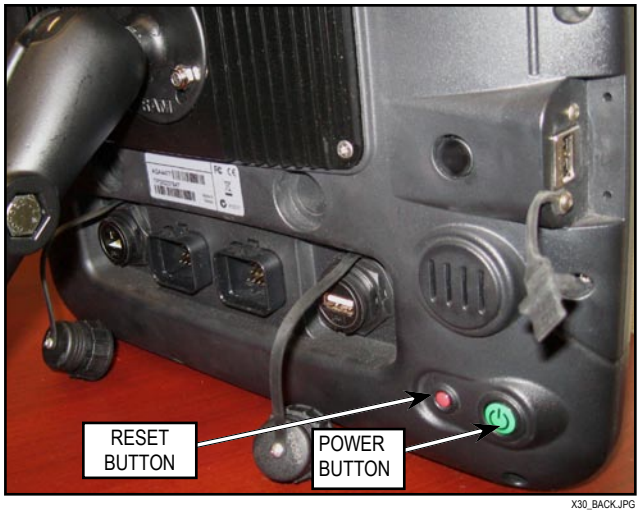


Figure 2.1 - X30 Console - Power Button

Shutting Down

To shut down the console, briefly press the green ON/OFF button, refer to *Figure 2.1*. The system will ask if you want to power down. Select YES to turn off or No to continue working

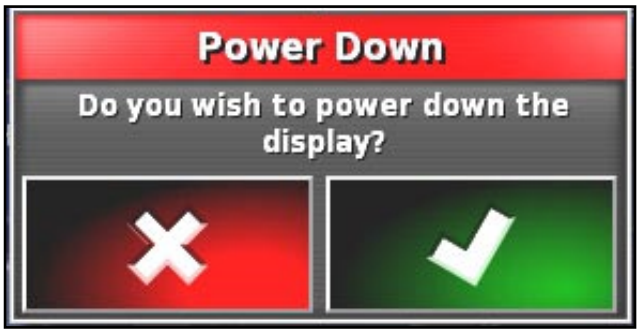


Figure 2.2 - Power Down Confirmation

IMPORTANT

Pressing and holding the green ON/OFF button will also shut down the console, however data may be lost and this method is **NOT RECOMMENDED**.

Reset Button

Next to the green power button there is a red button, that is used to reset the console when it freezes or can not be turned on in the normal way.

IMPORTANT

Resetting is not recommended. If you have problem starting up your console please contact your dealer.
In the unlikely event that your X30 freezes (white screen is displayed) it will go through a shutdown process attempting to save all user data; this process may take up to 5 minutes. Please wait for 5 minutes and contact your dealer prior to using the red reset button.

Through the booting up process several screens will appear on the console. The Bourgault logo image will appear on the console screen, indicating that the start up completed successfully, refer to *Figure 2.3*.

Next screen will be the legal Warning Screen, refer to *Figure 2.4*. In the right bottom corner of the this screen there are two buttons:

Button with flags will allow you to change language for the warning screen and the console. Selecting this button will bring up the scroll list. Use up/down arrows or scroll bar to see more languages. Choose (touch) language and confirm by touching green button with the check mark. Note, that changing language will require rebooting of the console.

Read the Warning Screen. Select up or down arrows if necessary to read more. Select Yes button to confirm your understanding and acceptance of your responsibility for liabilities described in the Warning Screen.

The console may display a No GPS warning, if a GPS signal is not detected. Drag down anywhere on the alarm window to show the information and drag up to hide the information. Refer to *Figure 2.5*.

By selecting wrench button you can go to the alarm configuration screen. To close warning window touch anywhere on the main area.

If the message appears again, this should be remedied during setup process, refer to *Section 4.2 - GPS*. Also ensure that all harnessing is correct and properly connected. You may also verify the X30 is receiving GPS signal, refer to *Section 10.1.2 - Dashboard Items & Section 10.3 - GPS Details*.

NOTE

GUIDANCE WILL NOT BE ACTIVATED UNTIL A GPS SIGNAL HAS BEEN DETECTED.

X30_BOURGAULTLOGO.JPG

Figure 2.3 - X30 - Bourgault Screen

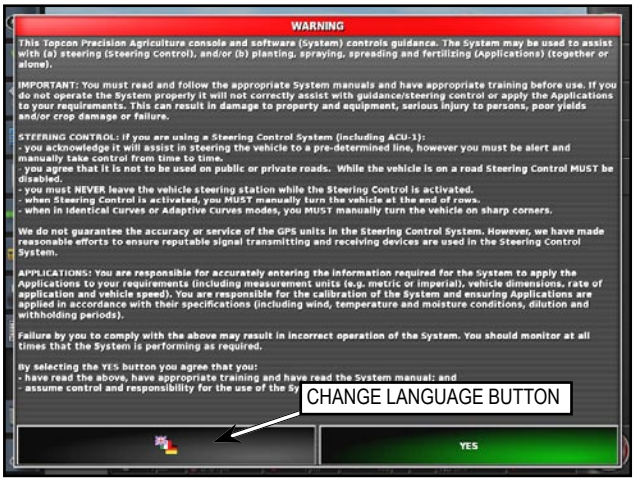
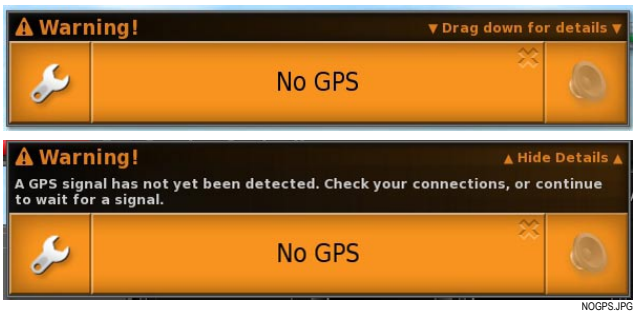


Figure 2.4 - Warning Screen



NOGPS.JPG
NOGPS_DETAILS.JPG

Figure 2.5 - No GPS Message

2.2 CONSOLE BASE BUTTONS

X30 console touch screen has a few dedicated buttons/controls.

The Help Screen feature provides short descriptions of the user interface elements on the screen.

Touch the Help icon on the base of the console. Question marks appear on the screen next to the icons. Select the screen element showing a question mark to view the description.

USB Eject control should be used any time before removing any USB devices that are connected to your console to minimize the chances of damage to the USB device. A message will display that it is safe to remove the USB.

Depending on the "Multi-Function Region Mode" setting, refer to *Section 3.2.5 - Environment,* this icon can perform one of the following functions: take a screen shot or save/load global home screen. For instructions on how to work with global home screens refer to *Section 2.8 - Working with Global Home Screens*.

NOTE: *There are two types of the console. First one has yellow Topcon logo on the black part of the screen, that functions as a button. Second type has white Topcon logo, that is located on the hard plastic case of the console. In this case space on the black part of the screen right above the white Topcon logo functions as a button.*

Increase/Decrease brightness controls will change brightness of the display in increments of 5%.

Day/Night mode will change brightness of the display to one of the preset modes: Day, Night, Auto. The Auto light mode will set the mode automatically depending on light conditions.

2.3 INTERPRETING LED LIGHTS

2.3.1 STATUS LEDS

Status LEDs will flash for a few minutes as the system powers up.

Battery Status LEDs colours:

Green - Battery fully charged

Yellow - Battery partly charged

Red - Battery depleted

Blue - Charging (flashing),

Note, that if the battery is depleted this may take some time to recharge.

Supply Status LEDs colours:

Green - Good Supply

Yellow - Low Supply

Red - Very Low Supply or no Connection

2.3.2 LED LIGHT BAR

An LED light bar is displayed at the top of the console. These lights can be used to monitor the accuracy of Topcon Auto Steering to the set way lines. Refer to *Section 3.2.4 - Light Bar.*

Figure 2.6 - X30 Console - LED Lights

2.4 UNDERSTANDING MAIN SCREENS

2.4.1 OPERATIONS SCREEN

The operations screen will allow you to access all the controls available on the X30 Console. Refer to *Figure 2.7.*

The functions on the screen are separated into several main areas:

1. **Mini-View Menu** - displays buttons for enabled features.
2. **Job/Guidance Menu** - provides tools to control guidance; set auto steering options; set client, farm, field, boundaries, flag points, exclusion zones; select or setup specific job information associated with the chosen field.
3. **Map Menu** - provides tools to control what is displayed on the guidance map.
4. **Dash Board** - allows user to choose items that are preferred to monitor.
5. **Virtual Master Switch** - turns master switch ON/OFF and/or displays the state of the master switch, depending on the settings, refer to *Section 6.6 - Switch Box Setup.*
6. **Auto Steering Engage** - turns auto steering ON/OFF if auto steering feature is enabled, refer to *Section 4.1.2 - Guidance*.
7. **Inventory Manager** - allows user to view, rename, delete, transfer to USB or import from USB all files, that keep information related to vehicles, implements, fields, jobs, guidance and so on.
8. **Setup** - provides access to the Main Setup screen.

Figure 2.7 - Main Operator's Screen

2.4.2 MANIPULATING MAIN VIEWING AREA

Selecting any feature on the Mini-View menu will open a mini-view window, refer to *Figure 2.9*.

Some mini-views have a maximize arrow and will expand to display more information.

To view more information select the top right maximize arrow or touch the mini-view and slide towards the main screen.

To close the mini-view, select the minimize arrow or touch the mini-view window and slide towards the mini-view menu bar or also press the mini-view icon on the menu again. To slide the mini-view window up or down, select and slide.

Full screen modes cannot be minimized back to a mini-view. Always expand another mini-view to replace the information on the main screen.

Figure 2.8 - Seeder Controller Window Expanded

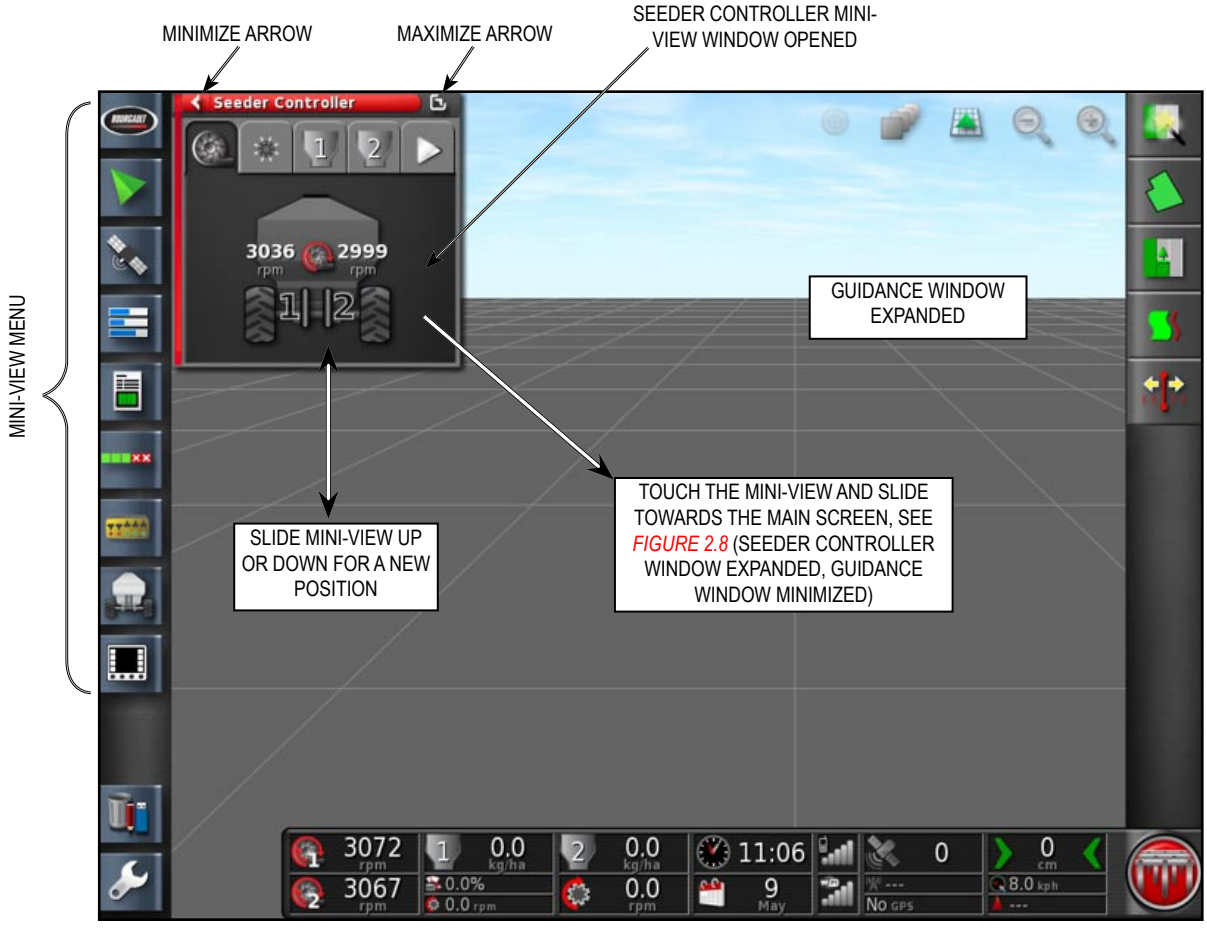


Figure 2.9 - Manipulating Mini-View Windows

2.5 COMMON FUNCTIONS

There are several common functions that are used in X30 console.

1. **Cancel Button**

Cancel button will cancel the selection/ action and return to previous screen.

2. **Confirm (OK) Button**

Confirm/Ok button will confirm the selection/action to continue.

3. **Numeric Keypad**

Refer to *Figure 2.10*.

Numeric keypad will appear when it is required to enter or adjust numeric value during setup or in operational mode.

This button is used when it is required to enter negative value.

4. **Increase/Decrease Buttons**

These buttons will appear when it is required to change or enter a numeric value. Value will be changing by increments. Increments can vary depend on parameter being adjusted and are related to it settings.

These buttons can be used in conjunction with numeric keypad.

4. **Selection List**

Selection list are used where multiple choice selection provided, example selecting language, metering auger type or selecting items for the dashboard, refer to *Figure 2.11*.

Use up and down arrows to navigate through the list. With extensive lists scroll bar may appear to allow fast scrolling.

Selection of an item(s) done by touching. Selected item(s) will have a white background.

Figure 2.10 - Numeric Keypad

Figure 2.11 - Selection List Examples

5. **QWERTY Keyboard**

Refer to *Figure 2.12*.

When it is required to enter text, example entering tank or implement name, QWERTY keyboard will appear. You can enter text using small and large caps, can use backspace to delete last symbol, position cursor anywhere in the text line and use special symbols.

Figure 2.12 - QWERTY Keyboard

2.6 GUIDANCE/COVERAGE MAP

The full Guidance screen opens as default when the Operations screen is accessed for the first time. In addition to full screen mode it can be viewed in a mini-view.

Select this icon to open the secondary guidance window, refer to *Figure 2.13*.

The purpose of this window is to allow you to have a secondary view of your tractor path other than your main guidance screen (for instance, you may have an overhead view on your main guidance screen but have a perspective view on your secondary guidance window).

Both main and secondary guidance screens display following viewing control buttons (refer to *Figure 2.13*):

A - **Zoom In** - helps you to get a closer view of your implement and map on your guidance screen.

B - **Zoom Out** - helps to get a wider view of your implement and map on your guidance screen.

C - **Change viewing perspective** - allows you to change perspective view. The available viewing perspectives are:

Perspective view - view of your virtual map as you might see your path from behind the implement.

Overhead view - top down view of your implement and map.

North up view - is similar to overhead, except that your implement is always facing North relative to the screen.

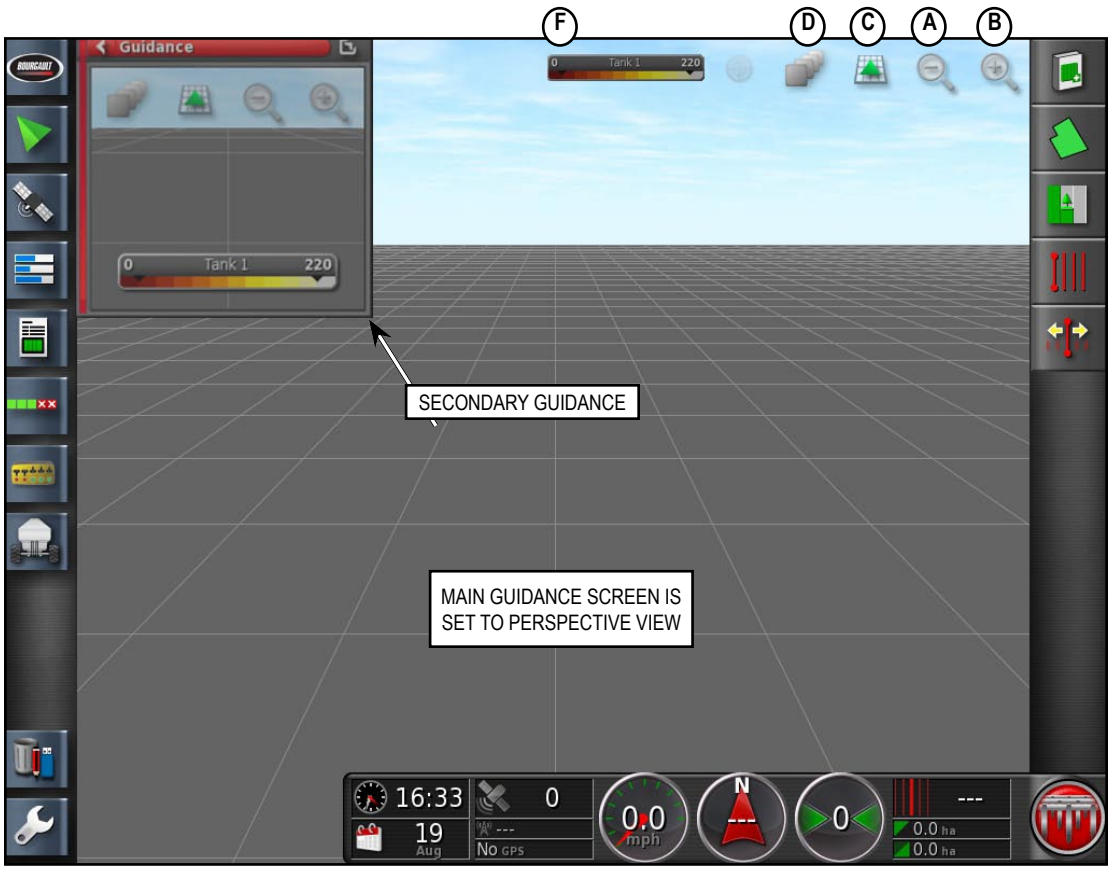


Figure 2.13 - Main Guidance Screen and Secondary Guidance Window

D - **Map Layers** - in this window you can select what will be displayed in the main area of the guidance screen, refer to *Figure 2.14*.

a) Layers - selected for viewing layers will have white background. Several layers available:

Grid Lines - will display grid lines on the guidance screen.

Exclusion Zones - will display zones, where product will not be applied.

All Fields - will display boundaries of the fields, that are adjacent to the field being worked on.

Flag Points - will display obstacles and other items on the field.

Line Numbers - will display all steering guidelines.

b) Coverage Map - allows to select which coverage will appear on the guidance screen. If Applied Rate Map selected for a specific tank, the legend will be displayed as well (refer to item F).

Not all types will appear in the window, depending on your implement setup.

c) VRC map - will display VRC map (if Variable Rate Control has been set up with a X30 controller and has been enabled. VRC map for a specific tank can be selected using left and right arrows.

Figure 2.14 - Map Layers

F - Applied Rate Map Legend - shows the range of product rate values indicated by the colour intensity or different colour scheme. Refer to *Figure 2.16*.

Selecting legend will bring up a window showing rates range and corresponding colours, that can be edited, refer to *Figure 2.16*.

Selecting "Edit" button will open up edit window. Refer to *Figure 2.15*. Using Up/Down arrows you can switch between different colour schemes. Selecting Set Range will allow to set the range by entering minimum and maximum values, and number of ranges between 1-10. Selecting Auto Applied will display range based on actual applied minimum and maximum rates.

You also can change background colour intensity for prescription map.

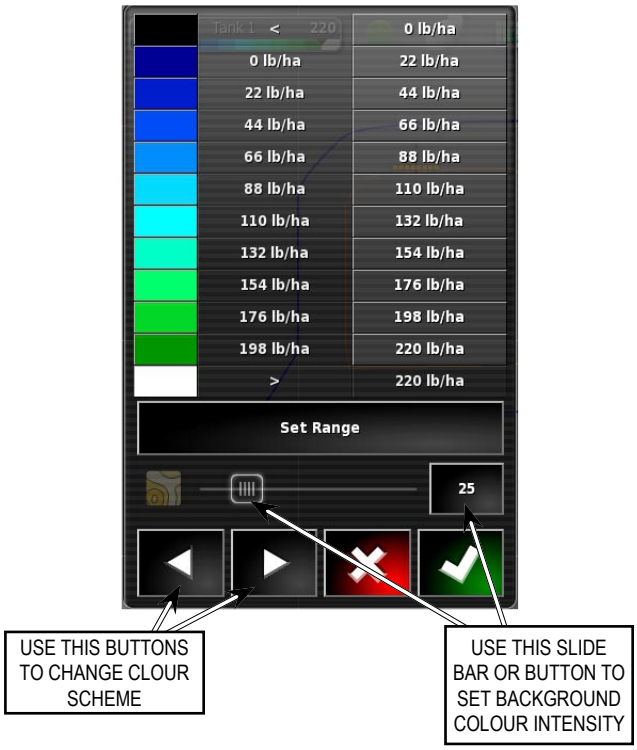


Figure 2.15 - Applied Rate Map Settings

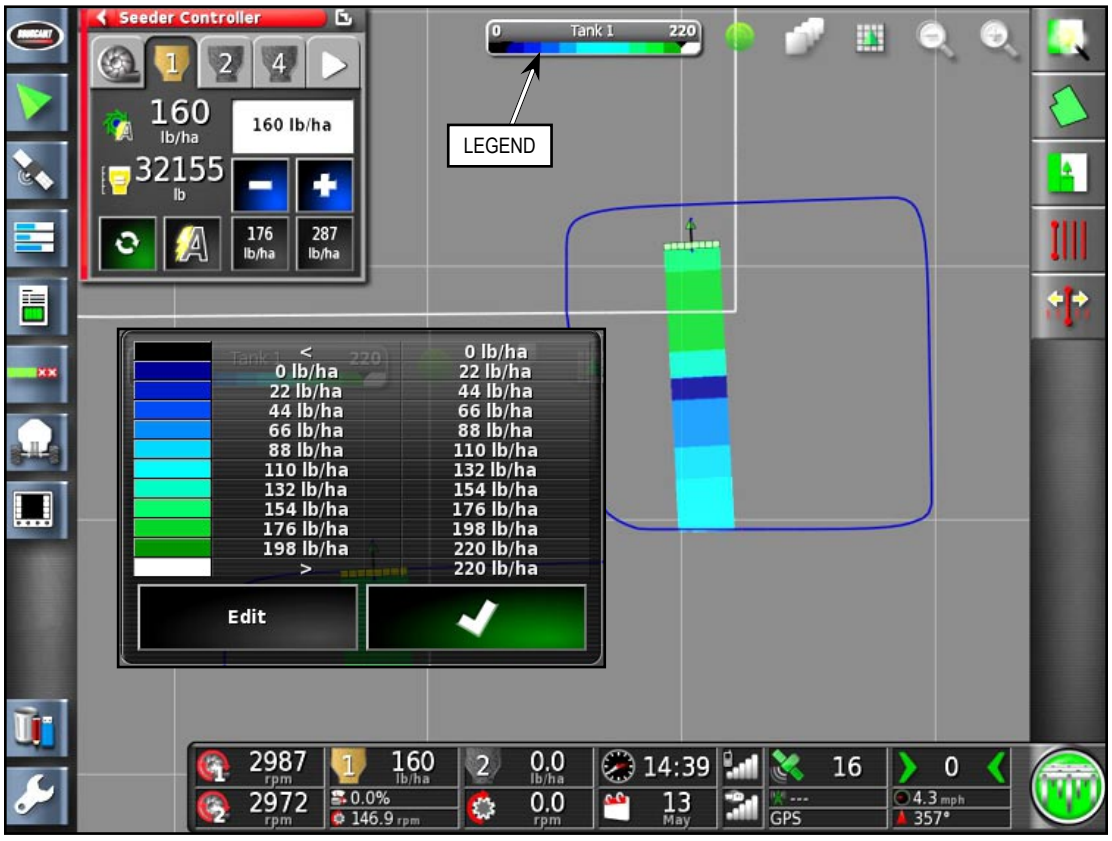


Figure 2.16 - Applied Rate Legend

2.7 SEEDER CONTROLLER

Refer to *Figure 2.17*.

 - Seeder Controller Icon, located in Mini-View menu.

Selecting this icon will open Seeder Controller mini-view window.

Seeder Controller mini-view window can be expanded into a main screen. To expand Seeder Controller select the top right maximize arrow or touch the mini-view window and slide towards the main screen, refer to *Figure 2.18*.

Seeder Controller in full screen mode provides extra functions like selecting product, filling tank, calibration and etc., that are not available in mini-view window.

Seeder Controller can be viewed in both modes at the same time. While Seeder Controller is in the full screen mode, selecting Seeder Controller icon from the Mini-View menu again will open secondary Seeder Controller mini-view window, refer to *Figure 2.19*.

The purpose of this window is to allow an operator to have a secondary view of your air seeder functions and controls (for instance, you can set full screen to show four granular tanks and on mini-view select NH3 tab for viewing or you may want to set mini-view tank tabs to display different parameters compare to a tank panel in full screen mode).

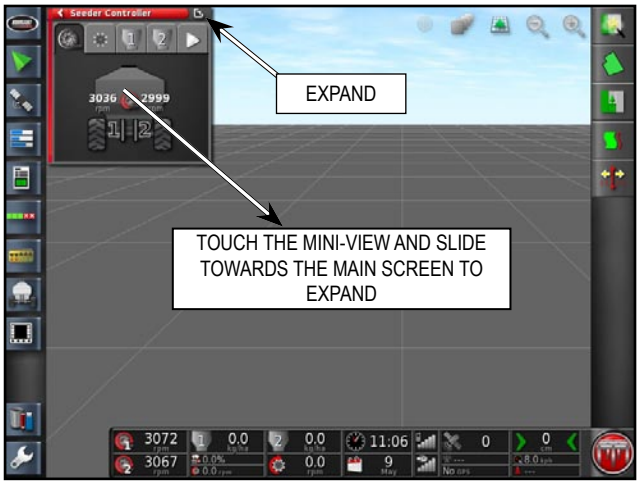


Figure 2.17 - Seeder Controller Mini-View

Figure 2.18 - Seeder Controller in Full Screen Mode

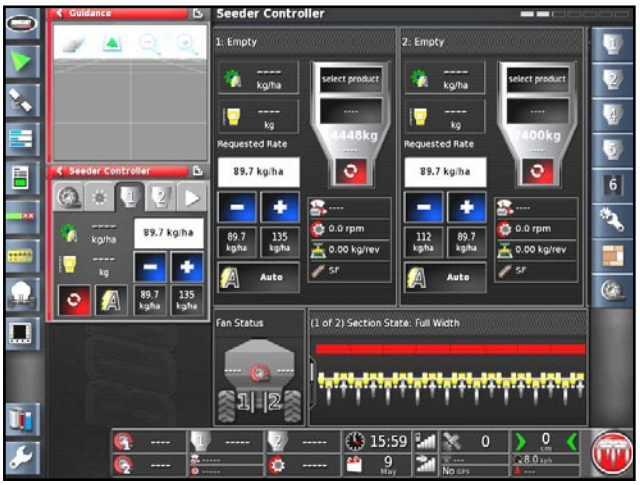


Figure 2.19 - Seeder Controller - Full Screen Mode & Mini-View

2.7.1 SEEDER CONTROLLER MINI-VIEW WINDOW

Refer to *Figure 2.20*.

Mini-view Seeder Control window has several tabs at the top that display information for different air seeder features. Only enabled features and tanks will be displayed.

When there are more than five features available, tab with arrow will appear to allow to move to the next page.

A - Fan(s). This tab will display fan(s) speed for enabled fan(s), for disabled fan it will show "----" in place of fan speed.

B - Blockage Monitoring. This tab displays status of blockage monitoring system (if present).

C - Granular Tank. This tab will display parameters and controls related to the operation of a granular tank. Number in the icon will indicate the tank on the air seeder. For detailed information refer to *Section 2.7.3 - Tank Tab/ Panel Explained*.

D - NH3/Liquid tank. This tab will display parameters and controls related to the operation of a NH3/Liquid tank. Number in the icon indicates number of the tank. For detail information refer to *Section 2.7.3 - Tank Tab/ Panel Explained*.

E - Next page, will open next page to view more features.

F - Previous page, returns to the previous page.

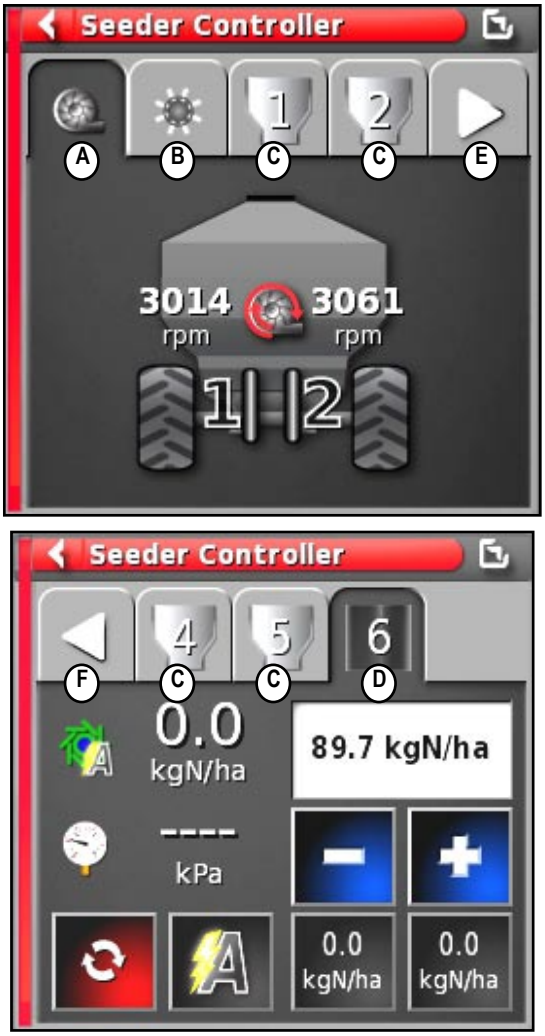


Figure 2.20 - Seeder Controller - Navigation

2.7.2 SEEDER CONTROLLER FULL SCREEN MODE

Refer to *Figure 2.21.*

Seeder Controller menu, located on the right side, has icons, that if selected will open up panels for enabled granular/liquid or NH3 tanks, configuration panel, area counters panel (if enabled), and fan panel. All the panels can be open at once. To view hidden panels, if not all visible, touch anywhere in the main viewing are and slide to the left or right. There is a position status bar in the upper right corner that will show you what location the slider is in. Selected icons will have blue background not selected icons will have gray background.

A - opens Granular Tank panel. This panel will display parameters and controls related to the operation of a granular tank. Number in the icon will indicate the tank on the air seeder. For detailed information refer to *Section 2.7.3 - Tank Tab/Panel Explained*.

B - opens NH3/Liquid panel. This panel will display parameters and controls related to the operation of a NH3/Liquid tank. Number in the icon indicates number of the tank. For detailed information refer to *Section 2.7.3 - Tank Tab/Panel Explained*.

Granular, NH3 and Liquid tank panels can be expanded to show more information and provide access to more functions. To expand or collapse panel tap the title bar of that panel. Refer to *Figure 2.21*, tank2 panel expanded vs tank1 not expanded.

C - opens Configuration panel. This panel provides functions such as calibration, selecting speed source and etc. For detailed information refer to *Section 2.7.4 - Configuration Panel*.

D - opens Area Counters panel. For detail information refer to *Section 2.7.5 - Area Counters Panel*.

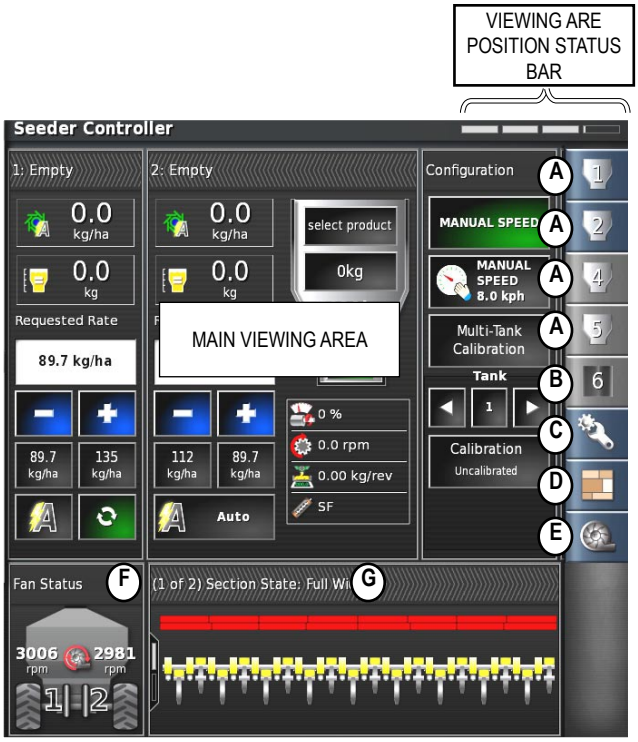


Figure 2.21 - Seeder Controller - Full Screen Mode

Figure 2.22 - Section Sate Panel

E - this icon works like a toggle switch, making Fan Status panel (F) visible or not.

F - Fan Status panel displays fan(s) speed for enabled fan(s), for disabled fan it will show "----" in place of fan speed.

G - Section State panel displays state of granular, liquid/NH3 sectional booms or full width boom if there is no sectional control, and state of the blockage monitoring system (if enabled). To switch what information displayed, touch viewing area of the panel and slide up or down. There is a position status bar at the left side that will show you what location the slider is in.
When fan panel set to be visible, refer to *Figure 2.21*, to expand section state panel for entire width of the viewing area touch the title bar, the fan panel will be hidden, refer to *Figure 2.22*. Touch the title bar again to collapse section state panel return to previous state.

Figure 2.22 - Section Sate Panel

2.7.3 TANK TAB/PANEL EXPLAINED

A - Requested Application Rate. Used to enter and display the application rate. The control system will use the calibration factor to adjust the metering auger speed for the given product. If the actual rate is changed from this value, a warning message will come up with an optional audio alarm (if enabled, refer to *Section 3.2.5 - Environment Setup*) to alert the operator that an alternate rate is being used.

B - Decrease requested application rate by preset increment.

C - Increase requested application rate by preset increment.

Increase and Decrease functions use the same Rate Increment, that can be set in Product Setup (refer to *Section 7 - Product Setup*) or when setting up product details for the tank (refer to *Section 8.1 - Selecting The Product*).

D - Requested Application Rate Preset 1. This is the user-defined default application rate. Selecting this icon will immediately adjust the application rate to that value.

E - Requested Application Rate Preset 2. This is the user-defined default application rate. Selecting this icon will immediately adjust the application rate to that value.

Rate preset 1 and 2 can be set in Product Setup (refer to *Section 7 - Product Setup*) or when setting up product details for the tank (refer to *Section 8.1 - Selecting The Product*).

F - Tank Metering On/Off toggle. Green when tank is On (metering auger running), Red when tank is Off (metering auger stopped).

G - Rate Control Mode selector. Appears only when Variable Rate Control is enabled in Setup/System/Features/Implement Allows to select VRC or Auto control for specific tank or all products. Refer to *Figure 2.25*.

Figure 2.23 - Tank Panel - Mini-View

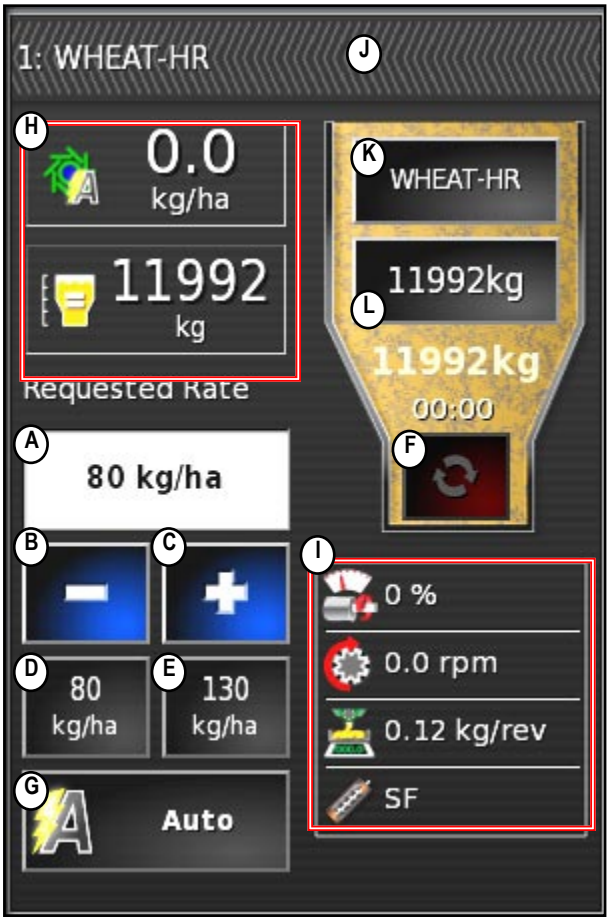


Figure 2.24 - Expanded Tank Panel - Full Screen Mode

H - Viewing Area 1. Displays data related to the specific tank. Can be customized to display up to two parameters. When selected, will open up Customize Data window with a list of available parameters to be displayed, refer to *Figure 2.26* and *Section 2.7.3.1 - Tank Parameters*. Selected items will have white background.

I - Viewing Area 2. Displays data related to the specific tank. Can be customized to display up to five parameters. When selected, will open up Customize Data window with a list of available parameters to be displayed, refer to *Figure 2.26* and *Section 2.7.3.1 - Tank Parameters*. Selected items will have white background.

NOTE

Refer to *Figure 2.26*. DEPENDING ON THE TANK (GRANULAR, LIQUID OR NH3), LIST OF PARAMETERS IN CUSTOMIZE DATA WINDOW WILL BE DIFFERENT.

Figure 2.25 - Rate Control Mode Window

J - Tank Panel Title Bar. Displays name of the tank (Bin # or Tank #, product name or empty, or custom name) depend on the settings, refer to *Section 6.7.1 - Granular Setup* and *6.7.2 - NH3/Liquid Setup.*

K - Product Selection. When selected it will open up product setup window for the tank, where you can select product for the tank and adjust details. Refer to *Section 8.1 - Selecting Product.*

L - Tank Fill. When selected it will open Tank Fill Window that is used to add weight/volume of the used in the tank product. Refer to *Section 8.2 - Filling The Tank.*

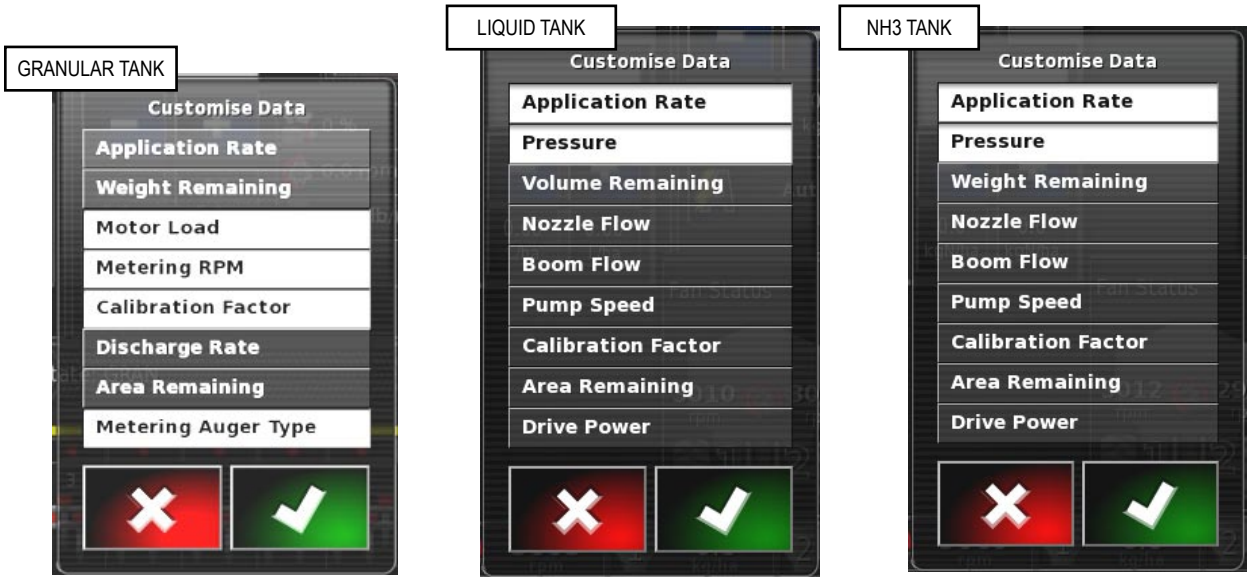


Figure 2.26 - Customize Data Window

2.7.3.1 TANK PARAMETERS

Refer to *Figure 2.26*.

 Application Rate - This is the current application rate for the product in the specific tank. The control system will use the calibration factor to adjust the metering auger speed for the given product.

 or  Weight/Volume Remaining - This is the calculated weight of product remaining in the tank. It is based on the initial entry when the tank was filled and calculates down from that initial value depending on the tank output.

IMPORTANT

REMAINING WEIGHT/VOLUME VALUE SHOULD BE USED FOR REFERENCE ONLY AS ITS ACCURACY DEPENDS ON THE ACCURACY OF THE INITIAL FILL ENTRY. THERE IS A BIN LEVEL SENSOR INSIDE EACH AIR SEEDER TANK THAT PROVIDES A EMPTY TANK WARNING WHEN THE ACTUAL PRODUCT LEVEL IS UNDER THE SENSOR.

 Motor Load or Drive power - It is the range the drive is operating at from 0% being off to 100% working at full speed.

 Metering RPM - This is metering auger RPM.

 Calibration Factor - This is a calibration factor for the specific product in the specific tank in unit weight per revolution of metering auger. Calibration factors are used with metering auger RPM to determine application rate.

 Discharge Rate - Displays the amount of product being metered per minute from the tank.

 Area Remaining - The area remaining is theoretical and is based on the product weight/volume remaining value and current application rate.

 Metering Auger Type - Displays metering auger type for the specific tank as set during the air seeder tank set up (refer to *Section 6.7.1.3 - Drive Setup*).

 Pressure - This is the pressure in the Liquid/or NH3 product line. An electric pressure sensor must be installed and pressure sensing feature must be enabled (refer to *Section 6.7.2.4 - Pressure Settings*).

 Nozzle Flow - Displays amount of NH3/Liquid being applied through each nozzle per minute.

 Boom Flow - Displays amount of NH3/Liquid being applied through entire boom per minute.

 Pump Speed - This is the speed of the pump. For this value to be displayed pump speed sensor must be installed and Pump Speed sensing enabled (refer to *Section 6.7.4 - Pump Settings*).

2.7.4 CONFIGURATION PANEL

Refer to *Figure 2.27*.

A. Manual Speed - allows user to enable or disable manual speed control. When enabled, button will have green background.

IMPORTANT

THE SET MANUAL SPEED MUST BE MAINTAINED TO ACHIEVE THE RATES THAT HAVE BEEN SET.

Manual speed is also used to activate a manual speed in the simulation mode and for stationary calibration.

B - This button can be used:

i. To enter value for the manual speed, if Manual Speed is enabled (see item A above), or if alternative speed source (Fallback Type) is set to use manual speed, refer to *Section 6.7.7 - Speed Source*.

When selected will bring up numeric key pad to enter manual speed value.

ii. To perform wheel sensor calibration, if Speed Source or alternative speed source (Fallback Type) is set to use wheel sensor for speed, refer to *Section 6.7.7 - Speed Source*.

When selected will bring up wheel sensor calibration wizard. For additional information refer to *Section 8.7 - Wheel Sensor Calibration*.

C - Multi-Tank Calibration. Opens up Calibration Method window, that is used to access calibration functions, tank optimizer, etc. For calibration procedures refer to *Section 8 - General Operations*.

D - Single Tank Calibration. Can be used to calibrate NH3 or Liquid tank, or single granular tank if recalibration required.

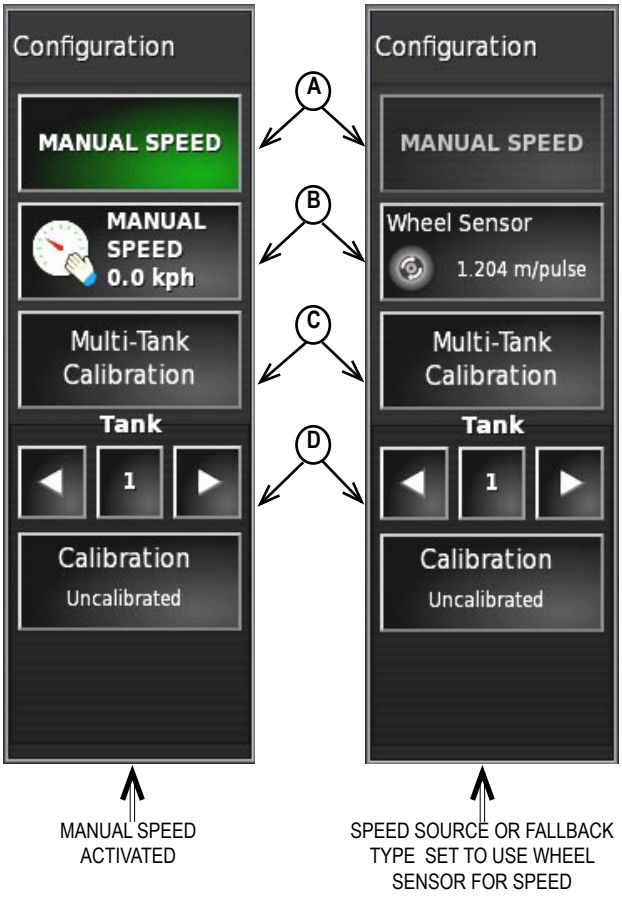


Figure 2.27 - Configuration Panel

Title bar displays the tank to be calibrated. Selecting (touching) the title bar will allow to choose different tank from the scroll list of available tanks (disabled tanks will not be displayed in the list).

Calibration button underneath the title bar will open up Calibration Method window, that is used to access calibration functions, tank optimizer, etc. For calibration procedures refer to *Section 8 - General Operations*.

NOTE

PRODUCT MUST BE ASSIGNED TO THE TANK THAT WILL BE CALIBRATED. IF NO PRODUCT ASSIGNED, CALIBRATION BUTTON WILL BE DISABLED.

2.7.5 AREA COUNTERS PANEL

Refer to *Figure 2.28*.

Area counters section have a total of 10 possible areas. For each tank and each area X30 console will record: treated area, product used, operating time, average rate and productivity rate. These accumulate whenever the master switch and the particular tank switch are on.

A Will allow to set active area counter number, for which data will be accumulated. When new active area number selected data accumulation for previously selected active area will stop.

B Will allow to select area for viewing and resetting data. Use left and right arrows to switch between areas.

C Will allow to select specific tank for viewing and resetting data. Use left and right arrows to switch between tanks.

D Viewing area - will display treated area, product used, operating time, average rate and productivity rate for a selected area and tank (items B & C, *Figure 2.28*).

Selecting anywhere in the display area will bring up Customize Data menu, that will allow to select items for viewing. Selected items will have white background.

E Opens Reset Area Counter window, refer to *Figure 2.29*.

1. Resets statistics for selected tank in selected area *Figure 2.28* (items B & C, *Figure 2.28*)
2. Resets statistics for all tanks in selected area (items B, *Figure 2.28*).
3. Resets statistics for all tanks in all areas.

Figure 2.28 - Area Counters Panel

Figure 2.29 - Reset Area Counter

2.8 WORKING WITH GLOBAL HOME SCREENS

Operation screen can be set up in many ways. Once screen is set up it can be saved as home screen for quick access in the future without going through the process of opening and closing multiple windows and panels.

The X30 console can be setup to use "Topcon" logo icon to save, load and manage multiple home screens, refer to *Section 3.2.5 - Environment*.

1. Saving Global Home Screen

   Once operational screen is set up to display desired information, touch and hold the "Topcon" logo icon until "Manage Global Home Screens" window will appear.

   Select "Save Home Screen" icon. When keypad appears enter screen name and confirm.

2. Overwriting Home Screen

   Set up operational screen to display required information. Touch and hold the "Topcon" logo icon until "Manage Global Home Screens" window will appear.

   Select the icon of the home screen you would like to overwrite by touching it. Window with question if you want to overwrite the global home screen will appear. Select yes to overwrite the screen. Keypad will appear. If desired enter new name for that screen, or cancel to keep the previously given name.

3. Managing Screens

   Touch and hold the "Topcon" logo icon until "Manage Global Home Screens" window will appear. On the icon of the screen that you would like to delete, activate or deactivate select home screen setting button.

   Window with options to change the status of the home screen or delete it will appear.

   i. Active - screen is active and can be loaded. Colour of the home symbol on the home screen setting button will be green.

   ii. Inactive - screen is not active (not available to be selected and loaded). Colour of the home symbol on the home screen setting button will be red.

   iii. Delete - allows to delete the screen. Confirmation question if you would like to delete selected home screen will appear. Selecting yes will delete the screen.

4. Loading (Selecting) Global Home Screen

   - If "Global Home Screen Load Mode" set to **Select, refer to** *Section 3.2.5 - Environment*, touching the "Topcon" logo icon will bring up the Load a Global Home Screen window that displays active screens icons, refer to *Figure 3.31*. From that window select desired screen to be loaded and displayed on the console.

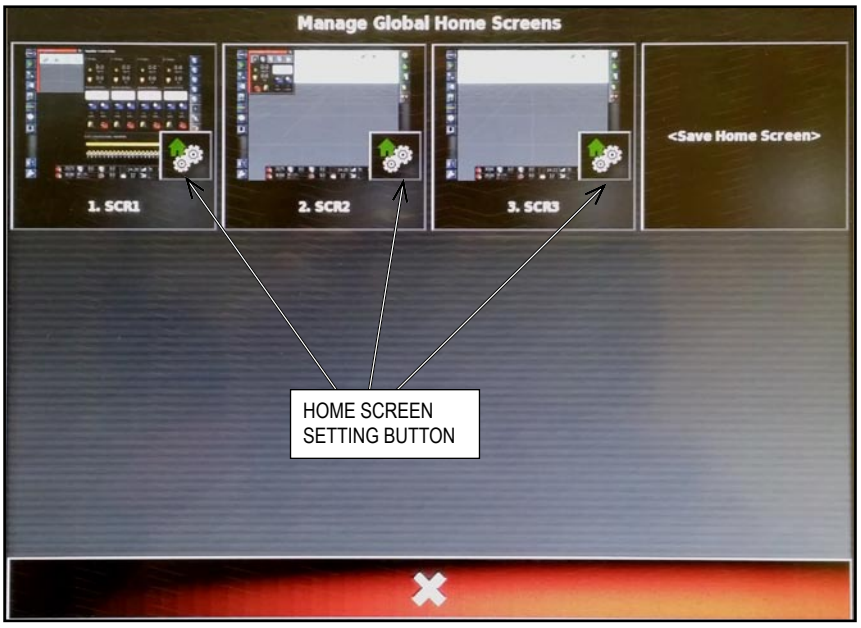


Figure 2.30 - Manage Global home Screens

- If "Global Home Screen Load Mode" set to **Toggle** - touching "Topcon" logo icon will toggle between saved **active** home screens. Keep touching the "Topcon" logo icon until required screen is loaded.

Figure 2.31 - Load a Global Home Screen

3 SETUP

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3.1 SETUP MENU EXPLAINED

 - On the main operator's screen select this icon (left lower corner) to access setup screen.

This is where you can setup and configure your X30 console environment, vehicle, implement and air seeder, enable the additional features such as auto steering, section control and etc.

Refer to *Figure 3.1*.

Setup screen divided into two main areas: bottom part of the screen will display setup menu and upper portion of the screen will display parameters, features and functions to be set for the selected item of the menu.

Arrows on the side of the screen will move between tree menu options.

- This button provides return access to the Main Operator's Screen.

The setup menu is presented in a tree structure with many levels.

The main level has the following items:

User - allows to select language, set date/time, units, lightbar, console working environment, map options and user access level (refer to *Section 3.2 - User*)

System options - allows to enable/disable selected features, such as auto section control, variable rate control guidance, cameras, area counter and others. Also set GPS parameters, enable/disable and set threshold for alarms, flag point presets (refer to *Section 4 - System*)

Vehicle options - allows to select vehicle profile from existing or create new vehicle type, set geometry for your vehicle (refer to *Section 5 - Vehicle*)

Implement options - allows to select implement from existing, create new implement type, configure/modify your implement (refer to *Section 6 - Implement Setup*)

Product options - allows to create product list, set product density, preset rates, calibration factors (refer to *Section 7 - Product Setup*)

Selecting one of the items in the main level of the menu will unfold next level of options. Selecting further will unfold more levels, down to the level of parameters, features and functions to be set.

Figure 3.1 - Setup Screen

To direct to specific setup screen following format is used in the following sections and throughout the manual:

Main Level / Level1 / Leve2 /...

Examples:

a. To open screen for the fan settings it will be required to select in the setup menu Implement/Seeder/Fans, refer to *Figure 3.2*.

b. To open screen for the air seeder tank setup it will be required to select in the setup menu Implement/Seeder/Granular/Tank, refer to *Figure 3.3*.

Figure 3.2 - Fans Settings Screen

Figure 3.3 - Air Seeder Tank Drive Settings Screen

3.2 USER

User settings allow the user to setup the console work environment, regional settings, and map options.

To access user settings select User icon in the main setup screen. Refer to *Figure 3.4*.

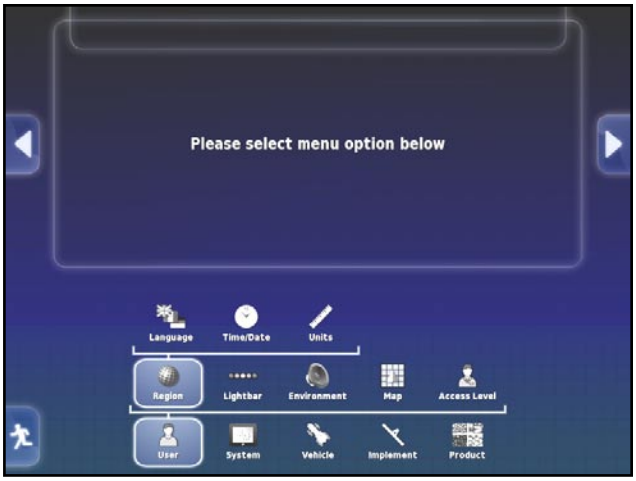

Figure 3.4 - User Setup Menu

3.2.1 REGION

Region settings include language settings, time and units.

To access region settings select User/Region. Refer to *Figure 3.4*.

3.2.1.1 LANGUAGE

From the Main Setup menu select User/Region/ Language. There are two settings:

1. **Language** - select the language for the console. When Language button selected, scroll list with available languages will appear, refer to *Figure 3.5.* Make your selection and confirm.
2. **Decimal Point Format** - select "." or "," to be used as a decimal divider, refer to *Figure 3.6*.

Figure 3.5 - Language Setting

Figure 3.6 - Decimal Point Format Setting

3.2.1.2 TIME/DATE

From the Main Setup menu select User/Region/ Time/Date. There are three settings:

1. **Date format** - select format, how you would like the date to appear on the console:
   - 15 Dec, 2012 (Day Month, Year)

     or

   - Dec 15, 2012 (Month Day, Year).

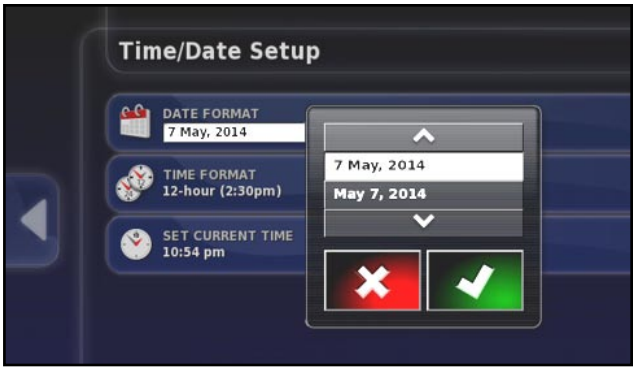

Figure 3.7 - Date Format Setting

2. **Time Format** - select:
   - 12-hour format (ex. 2:30 pm)

     or

   - 24-hour format (ex. 14:30).

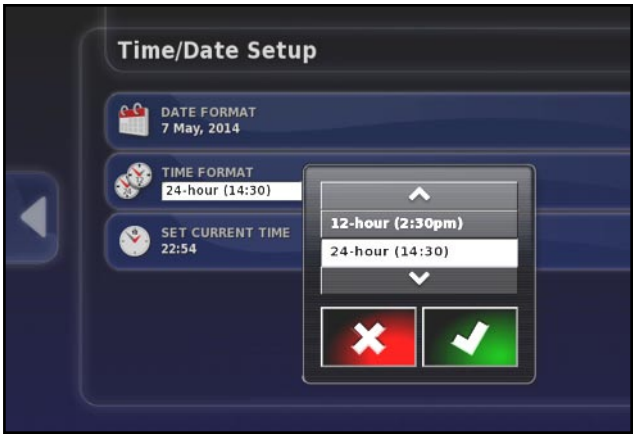

Figure 3.8 - Time Format Setting

3. **Set Current Time** - using numeric keypad enter time as hh:mm in the format you selected in the previous step. If 12-hour format was selected on the previous step, am/pm button will appear on the keypad. Use this button to set am or pm.

NOTE

GPS signal required to keep set time/date.

Figure 3.9 - Current Time Setting

3.2.1.3 UNITS

From the Main Setup menu select User/Region/ Units. There are several settings:

1. **Units** - select desired units system for display and entry of different items: Metric, Imperial US, Imperial UK.
2. **Latitude/Longitude Format** - select:
   - Standard format (displays as decimal, ex. 45.54) or
   - Degrees Minutes Seconds (DMS) (displays as 45^0, 23' 36").
3. **Pressure Units** - select: kPa, psi, bar, or Default (depend on what Units were set to).
4. **Short Distance Units** - select: Meters, Inches, Feet, or Default (depend on what Units were set to).
4. **Area Units** - select: hectare (ha), acres (ac) or Default (depend on what Units were set to).
5. **Dry Product Volume Units**

   Units set to Imperial: select Gallons, Pounds, Cubic Feet or Bushels.

   Units set to Metric: select Litres, Kilograms, Cubic Meters, US Bushels or UK Bushels.

6. **Dry Density Units**

   Units set to Imperial: select Pounds per Gallon, Pounds per Cubic Foot or pounds per Bushel.

   Units set to Metric: select Kilograms per Litre, Kilograms per Cubic Meter, Kilograms per US Bushel, Kilograms per UK Bushel.

7. **Liquid Product Units**

   Units set to Imperial: select Gallons, Cubic Feet or Pounds.

   Units set to Metric: select Litres, Cubic Meters or Tonnes.

8. **Application Rate Increment Type** - select how you would like to change rate during the seeding operation:
   - Fixed Rate
   - Percentage of Preset Value

3.2.2 LIGHTBAR

When equipped with Topcon Guidance and Auto Steering system the lightbar on top of the X30 console can be used to visually indicate the position of the centre of your vehicle from the centre of a guide line. For detailed information refer to *TOPCON X30 Guidance and Auto Steering Operator's manual*.

Figure 3.10 - Units Setup Menu

3.2.3 ENVIRONMENT

From the Main Setup menu select User/ Environment. There are several settings:

1. **Audio Volume** - set the volume for all audio alarms from 0 (no audio signal) to 100% (the loudest). Using plus/minus buttons will change volume in increments of 10%.
2. **Button Clicks** - when Enabled there will be a click with every button selection on the console. For this to work Audio Volume must be set to a value different than 0%. When Disabled, button selection on the console will be silent.
3. **Alarm Audio** - enables or disables audio warning when an alarm condition occurs and an alarm information is displayed in a pop-up text screen.
4. **Recalibrate Touchscreen** - this option allows you to recalibrate the touchscreen. When selected the system will prompt you for a restart in order for the recalibration to take place.
5. **Touchscreen Sensitivity** - this option will allow the touchscreen sensitivity to be set to Low, Medium, High. Sensitivity relates to how "hard" the screen needs to be pressed for a selection to occur. When selected the system will prompt you for a restart in order for the change to take place. It is highly recommended to keep touchscreen sensitivity **set to High.**
6. **Multi-Function Region Mode** - assignes the function to the "Topcon" icon button on the screen.

Note: *There are two types of the console. First one has yellow Topcon logo on the black part of the screen, that functions as a button. Second type has white Topcon logo, that is located on the hard plastic case of the console. In this case space on the black part of the screen right above the white Topcon logo functions as a button.*

There are two options: Take Screen Shot and Save/Load Global Home Screen.

a) **Take Screen Shot** - when selected, will allow to capture an image of the screen by pressing "Topcon" logo icon on the bottom of the console. Image(s) will be saved on the thumbdrive in the directory "screenshots".

Note: *A USB memory device must be connected to the console for this feature to work. Before removing the USB from the console, press the USB icon (to the left of Topcon logo), to properly save files and avoid damage to the USB device.*

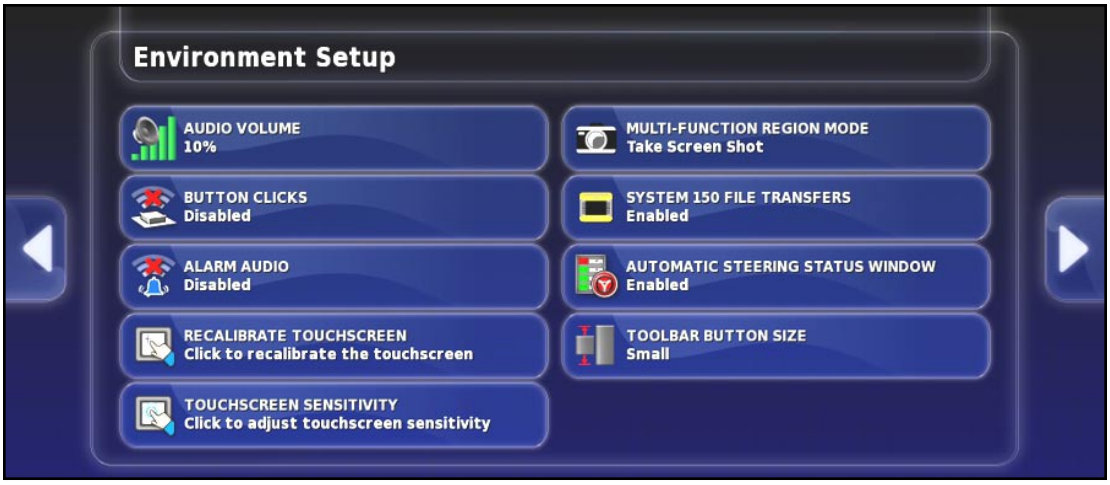

Figure 3.11 - Console Environment Settings

b) **Save/Load Global Home Screen** - will allow to use "Topcon" logo icon to save, manage and quickly change between the global home screens. When selected the additional setting "Global Home Screen Load Mode" will appear on the Environment Setup screen. Refer to *Figure 3.12*.

Global Home Screen Load Mode can be set to:

i. **Select** - the touching of "Topcon" logo icon will bring up the Load a Global Home Screen window, where desired home screen can be selected.

ii. **Toggle** - touching "Topcon" logo icon will toggle between previously saved home screens.

For detailed instructions on how to work with global home screens refer to *Section 2.8 - Working with Global Home Screens*.

7. System 150 File Transfers - enable or disable file transfer from earlier Topcon systems (110/150).
8. Automatic Steering Status Window - enable or disable the view of the steering status window during operation.
9. Toolbar Button Size - allows to select button size for mini-view and job/guidance menu options that appear on the right and left sides of the operating screen. Available options: small, medium, large.

Figure 3.12 - Console Environment Settings

3.2.4 MAP

From the Main Setup menu select User/Map. The following settings will allow set up of how the console screen will work with maps during operation:

1. **Point of Focus** - set the point of focus of the vehicle icon to either the vehicle body or the implement. Depend on what the point of focus is set to, the vehicle or implement will be centred on the map.
2. **Map Panning** - enable or disable the map panning. When enabled, you will be able to pan along the guidance screen by placing your finger on the screen and dragging it in the direction you wish to pan. This is useful if you would like to view a section of your field that is not visible due to the auto-centering of the vehicle icon on the guidance screen. When enabled, this icon  will appear in the map menu at the top of the screen. It is green when map panning in use, and grey when map panning is not in use.
3. **Map Focus Auto-Shift** - enable or disable the map focus auto-shift. When enabled, map will automatically refit in the main viewing area when opening a mini-view window on the left side of the screen. When disabled, map will be partially covered with mini-view windows while they are opened.
4. **Highlight Loaded Coverage** - allows to enable or disable the highlighting of the previously and newly covered areas in different colours. When enabled, as product is being applied, covered areas will be highlighted in green, and previously covered areas will be shaded yellow (if past job information has been saved).
5. **Pause Boundary Recording With Master** - allows to enable or disable pausing of boundary recording with master switch. When enabled, you can use master switch to pause recording when establishing boundaries.
6. **Visual Reference Line Length** - allows to set a length for a visual reference line that extends out of the front of the tractor/implement icon (on the map viewing area) for projecting direction.

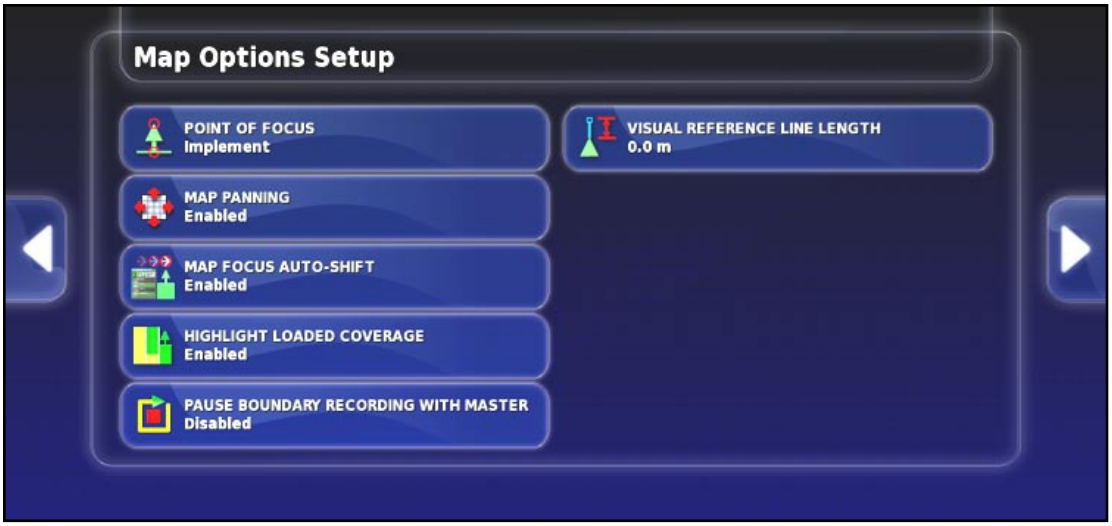

Figure 3.13 - Map Options Settings

3.2.5 ACCESS LEVEL

- Access Level - setting the access level is a restricted activity. "Operator" is the only available option for all operators and owners. Other levels of password protected access ("dealer' and "technician") are only used by qualified and fully trained technical and support staff.

IMPORTANT

DO NOT ATTEMPT TO CHANGE THE ACCESS LEVEL.

- Provision USB for Upgrade - this will unlock thumbdrive to prepare for software upgrade.

Figure 3.14 - User Access Level

4 SYSTEM

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This section explains how to set up system elements such as GPS, auxiliary connections, alarms and others.

Select System icon from the main menu to access system setup menu (*Figure 4.1*).

NOTE

ONLY FEATURES THAT ARE REGISTERED FOR THE PRODUCT PURCHASED CAN BE ENABLED. GUIDANCE IS ALWAYS ENABLED AS IT IS A STANDARD FEATURE.

Figure 4.1 - System Elements Setup

4.1 FEATURES

To access features setup menu from the Main Setup menu select System/Features, refer to *Figure 4.2*.

This option will allow you to setup different features related to the console, guidance system and implement.

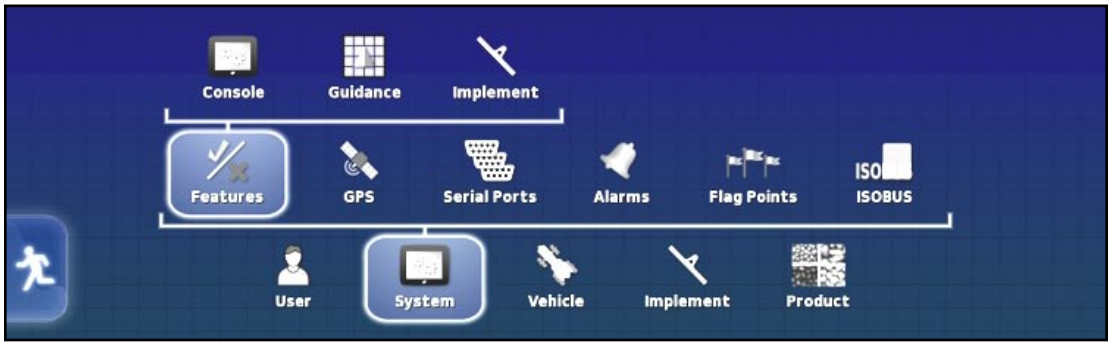


Figure 4.2 - Features Setup Menu

4.1.1 CONSOLE

To access console features settings from the Main Setup menu select System/Features/Console, refer to *Figure 4.3*.

1. **Universal Terminal** - enables or disables the ISOBUS Universal Terminal server that allows interaction with ISOBUS compliant ECUs.
2. **File Server** - Files for an ISOBUS ECU can be stored on the file server. This setting enables or disables the file server, if ECU has file server capability.

IMPORTANT

FILE SERVER SETTING NEED TO BE ENABLED IN THE ORDER TO PERFORM UPDATE TO THE ECUS.

3. **Cameras** - enables or disables monitoring by cameras, if digital cameras are connected. Refer to the manual, supplied with the camera system installed on your seeding unit.

   ***Note**: At the current time this is not a Bourgault supported feature.*
4. **Per-Point Data Logging** - not used
5. **Wireless Network** - enables or disables wireless network connection to access remote support. For this feature to work wireless USB adaptor must be installed.
6. **Remote Assistance** - enable or disables team viewer for remote support.
7. **Cloud Based Services** - allows to disable or select one of the two cloud base service such AgJunction or Magnet. AgJunction or Magnet customers can download prescription maps from the cloud servers to the console and upload as-applied maps from the console back to servers for future use.
8. **VDC Support** - enables or disables VDC support. Console navigator currently not offered.

Figure 4.3 - Console Features

4.1.2 GUIDANCE

To access guidance features settings from the Main Setup menu select System/Features/Guidance, refer to *Figure 4.4*.

1. **Guidance** - guidance is a standard feature. It is always enabled.
2. **Auto Steer** - enables or disables auto steer feature, if vehicle outfitted with a Topcon auto steering system such as AES-25.
3. **Reverse detection** - enables or disables detection of vehicle moving in reverse direction.
4. **Controlled Traffic** - at the current time this setting is not applicable.
5. **Job Helper Mode** - allows to disable or select one of the two job helper modes: Job Assist or Quick Start. An icon for quick start mode will be displayed on the guidance/coverage map screen on the right side above job/guidance menu.

   i. Job Assist - when job assist icon on the guidance/coverage map screen selected, it will bring up a window, that will automatically display some brief instructions as different job and field related menus are selected.

   ii. Quick Start - when quick start icon on the guidance/coverage map screen selected, it will prompt the operator to perform an action or enter information that is required to start/ continue with a job. The quick start help is customizable on the Quick Start setup screen, refer to *Section 4.7 - Quick Start*.

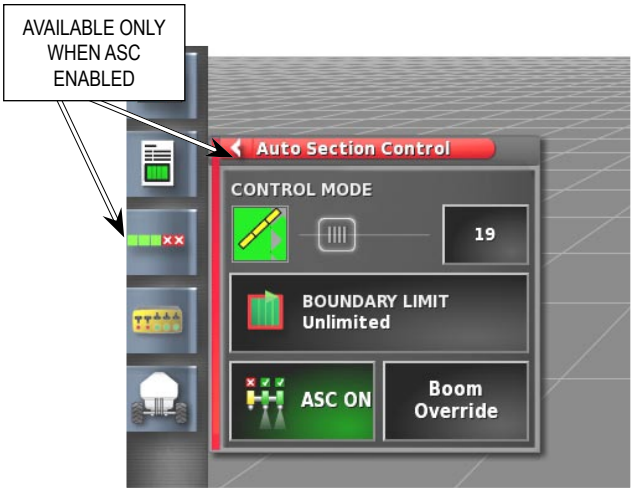
Figure 4.4 - Guidance Features

4.1.3 IMPLEMENT

To access implement features settings from the Main Setup menu select System/Features/ Implement, refer to *Figure 4.5*.

1. **Auto Section Control (ASC)** - enables/ disables auto section control. When ASC disabled, the ASC mini-view window (located in the menu on the left side of the operational screen) will not be available.

   Auto section control allows you to automatically turn the boom/sections on and off. The system will turn on when it detects an area that has not been covered and it will turn off when it detects areas that have already been passed over.



NOTE

ASC APPLIES TO FULL WIDTH OR MULTISECTION CONFIGURATIONS.

NOTE

BOOM IS A TERM DERIVED FROM SPRAYERS AND MORE GENERALLY APPLIES TO A PRODUCT BEING APPLIED. IN SEEDING SCENARIOS, YOUR MACHINE WILL HAVE ONE FULL-WIDTH GRANULAR PRODUCT "BOOM" AND MIGHT ALSO HAVE ONE MULTI-SECTION NH3/LIQUID "BOOM" AND/OR ONE MULTI-SECTION GRANULAR "BOOM".

Figure 4.5 - Implement Features

2. **Variable Rate Control** - enables or disables use of VRC feature in conjunction with seed rate control of X30 console. If enabled this feature will allow use of prescription maps to vary application rates over the mapped areas.
3. **Task Data** - allows import/export and use of ISOBUS task data XML files. The Task Data mode can only be used with ISOBUS ECUs. Enabling this feature will disable many job menu items during operations, because the ISOXML task data file will contain all the job control information and interact directly with the ECU.

   Look for the Task Data icon on the Job Menu on the operation screens. If it is not showing, Task Data is not enabled. Task Data must be enabled each time the feature is used.
4. **Area Counters** - this will enable or disable area counting. When enabled, Area Counters icon will be displayed in Seeder Controller expanded window in operational mode.
5. **Reset Job Area Counters** - this setting determines how area counters will be reset. Only applies within a job. Areas are not carried over between jobs. There are three options:
   - Never - never reset area counters
   - Prompt - prompt before resetting area counters
   - Auto - automatically reset area counters.
6. **Water Management** - Feature available for land leveling/drainage.

Figure 4.6 - Reset Area Counter Setting

4.1.4 QUICK START

When Job Helper mode set to Quick Start (refer to *Section 4.1.2 - Guidance*), prompts for specific jobs that will be carried out, can be customized under System/Features/Quick Start. There are several options that can be enabled or disabled. Green checkmark beside the option indicates that option is enabled, red cross indicates that option is disabled.

1. **Export Job Report for Previous job** - will automatically export job report for previous job to the inserted thumbdrive.
2. **Change Field** - will prompt to Select or create field or will select closest field to a current location.

Figure 4.7 - Quick Start - Change Field

Figure 4.8 - Quick Start Settings

3. **Record Boundary** - will prompt to record boundary.
4. **Change Job** - will prompt to select or create job with Default, Custom or Entered name.

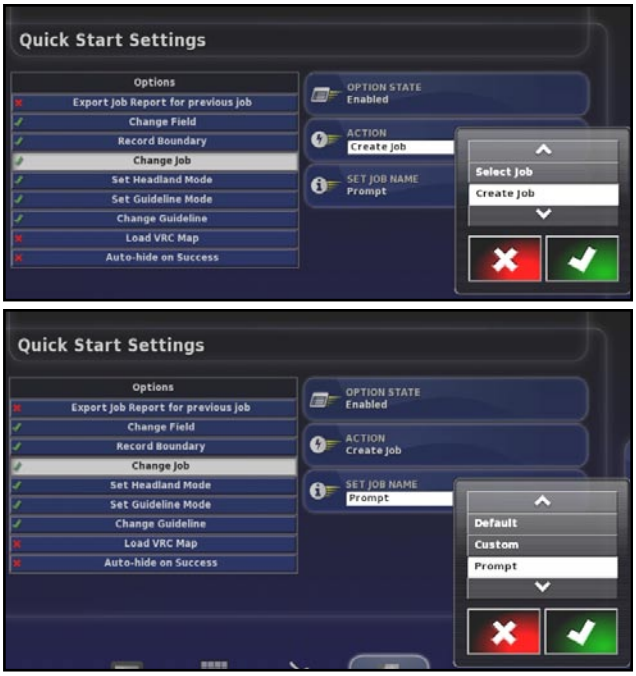


Figure 4.9 - Quick Start - Change Job

5. **Set Headland Mode** - allows you automatically set to control Headland with number of headland swathes.

Figure 4.10 - Quick Start - Headland Mode

6. **Set Guideline Mode** - set to whatever guideline type will be used.

Figure 4.11 - Quick Start - Guideline Mode

7. **Change Guideline** - prompts to select or create guideline with default, custom or entered name.
8. **Load VRC Map** - will prompt to automatically load VRC map from inserted thumbdrive.
9. **Auto Hide on Success** - will hide Quick Start window automatically once job successfully started.

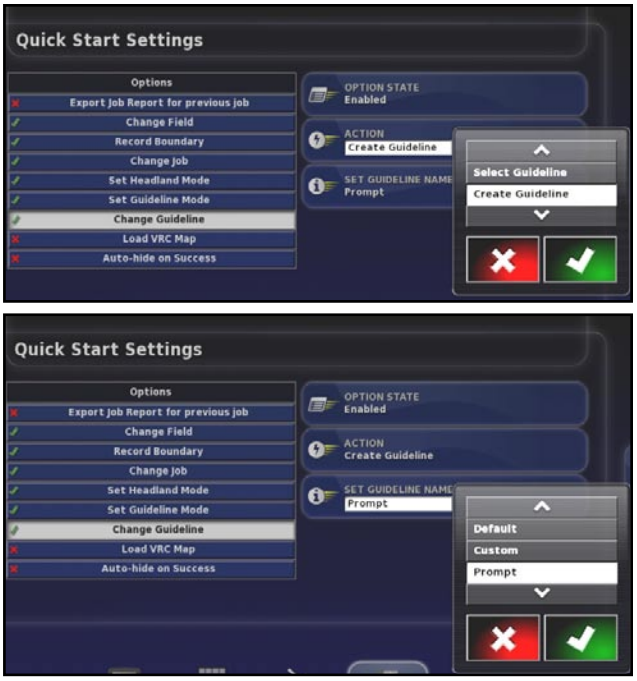


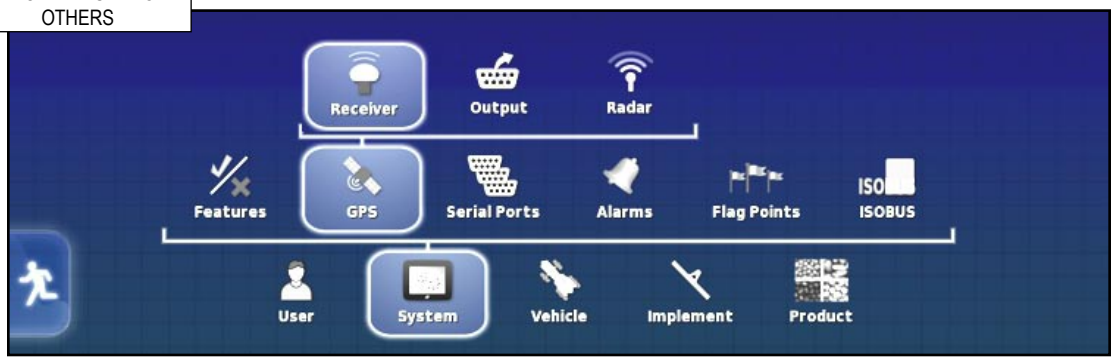
Figure 4.12 - Quick Start - Change Guideline

4.2 GPS

X30 console can interact with GPS that is used in the following applications: guidance, variable rate control, and mapping. The GPS signal is also used to determine ground speed (preferred method). To access GPS settings from the Main Setup menu select System/GPS.

Depending on what receiver is being used, the main GPS menu may have slightly different options, refer to *Figure 4.13*. Topcon systems AGE-1, AGE-2 and SGR-1 do not have options for Antenna displayed.

RECEIVER SET TO OTHERS



RECEIVER SET TO: AGE-1, AGE-2, SGR-1, AGI-3, OR AGI-4

Figure 4.13 - GPS Setup Menu

4.2.1 RECEIVER

To select a GPS receiver select System/GPS/ Receiver.

1. **GPS Receiver** - allows to select type of the receiver from the provided list.

   Choosing a different receiver from the one that was currently selected will require system restart.

Figure 4.14 - Receiver Selection

NOTE

PLEASE REFERENCE THE MANUALS THAT CAME WITH YOUR GPS SYSTEM TO PROPERLY CONFIGURE IT TO OUTPUT THE NECESSARY GPS NMEA STRINGS (GGA, VTG, ZDA, AND ETC.) TO PROPERLY COMMUNICATE WITH THE X30 CONSOLE. ADDITIONAL HARNESSES MAY BE REQUIRED; PLEASE DISCUSS WITH THE DEALER OF YOUR GPS SYSTEM. NOTE THE BAUD RATE AND COM PORT SETTINGS OF YOUR SYSTEM AS THEY ARE REQUIRED TO PROPERLY CONFIGURE THE X30 CONSOLE.

For non-Topcon receivers select Other.

NOTE

IF ONE OF THE TOPCON RECEIVERS WAS SELECTED, FOR DETAILED INFORMATION ON SETTING UP TOPCON GPS RECEIVERS REFER TO THE *TOPCON X30 GUIDANCE AND AUTO STEERING OPERATOR'S MANUAL*.

FOLLOWING SECTIONS WILL EXPLAIN GPS SET UP FOR RECEIVER TYPE SET AS OTHER.

GPS RECEIVER NEEDS TO BE OUTPUTTING GGA, VTG & ZDA STRINGS FOR X30 CONSOLE. REFER TO THE MANUAL FOR YOUR GPS EQUIPMENT.

2. **Baud Rate** - Baud rate refers to the speed of data transfer and depends on the equipment being used.

   Default baud rate is 19200, 8N1 (8 data bits, No parity, 1 Stop bit).

   Confirm with the manual for your GPS receiver what is outputting baud rate. Select the Baud Rate from the list (refer to *Figure 4.15*) to match your GPS outputting baud rate.

Figure 4.15 - Baud Rate Selection

4.2.2. OUTPUT

Devices that use GPS, but are not directly connected to one, can be connected to the X30 console to receive required data. The device can be connected to the COM2 port on the X30 main harness.

This section explains settings related to GPS data transfer from the X30 console to receiving device.

To access GPS output settings select System/GPS/ Output, refer to *Figure 4.16*.

1. **GPS Output** - enable or disable the output of the GPS data from the X30 console to other devices.

The data strings are exported in NMEA format that is understood by most devices that work with real time positioning information. NMEA data sentences contain codes that define types of data. The devices recognize the relevant codes and respond to those sentences. Refer to the device's manual for the codes needed for that device.

Refer to *Figure 4.16*. Select the State next to each sentence code to enable that code if it is required by your device. Green check mark indicates that sentence code enabled, red cross means it is disabled.

GGA (position) and VTG (velocity and heading) are the most common sentence codes.

2. **Baud Rate** - refers to the amount of data transferred per second.

   Default baud rate is 19200.

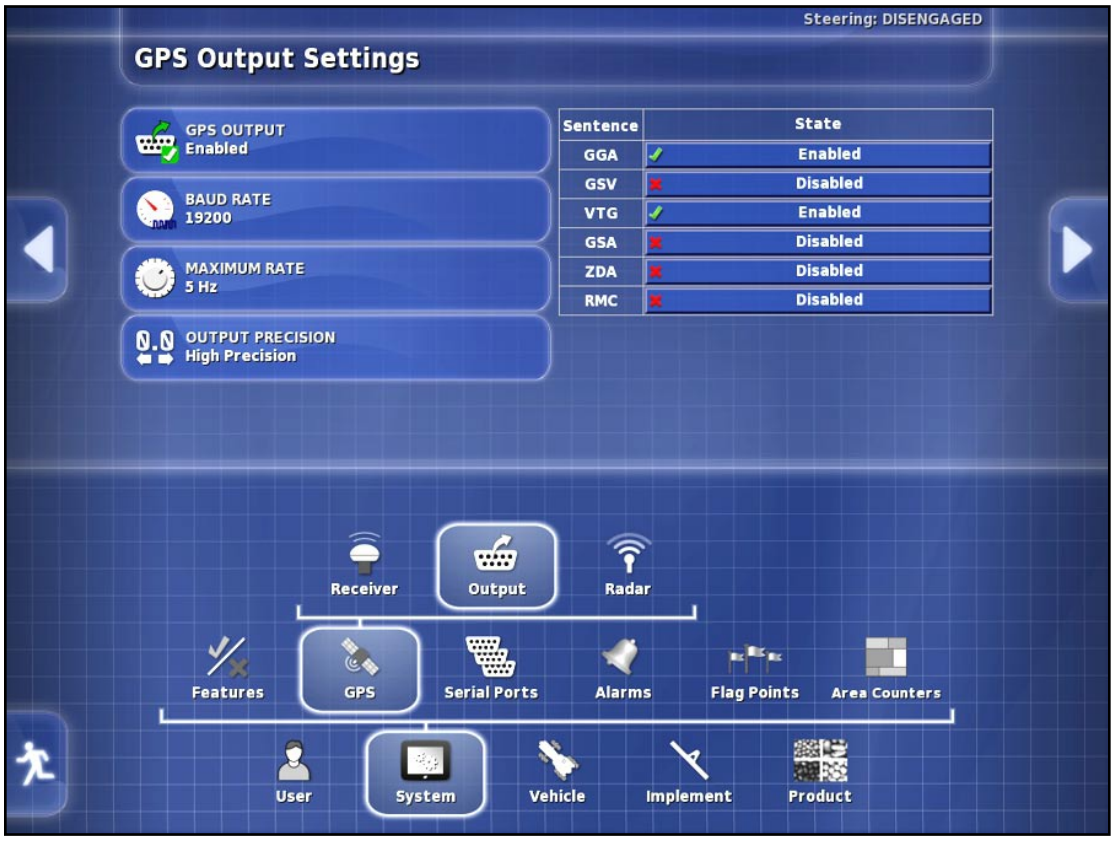


Figure 4.16 - GPS Output Settings

IMPORTANT

BAUD RATE DEPENDS ON THE EQUIPMENT THAT GPS DATA WILL BE TRANSFERRED TO. REFER TO THE OPERATOR'S MANUAL FOR THAT SPECIFIC DEVICE REQUIREMENT.

Choose correct baud rate from the list and confirm, refer to *Figure 4.17*.

3. **Maximum Rate** - refers to the rate that GPS updates information.

   Default rate is 5Hz.

   Choose from the list maximum GPS rate for the given receiver, refer to *Figure 4.18*.

4. **Output Precision** - select Low Precision or High Precision and confirm, refer to *Figure 4.19*.

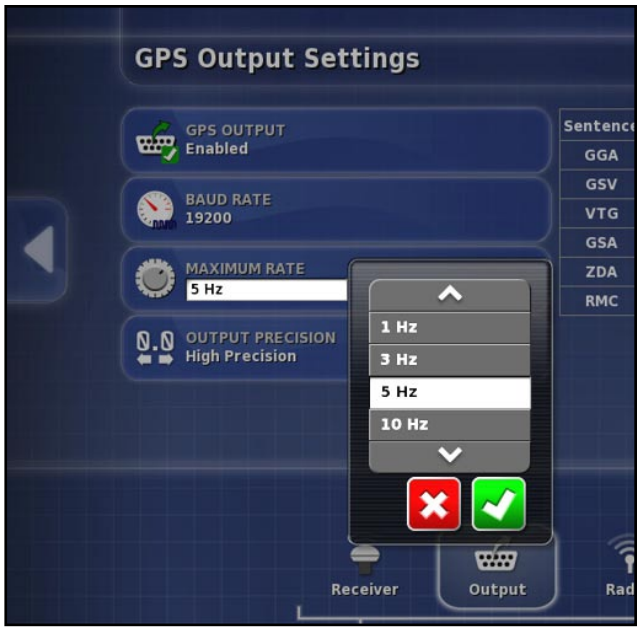


Figure 4.18 - GPS Output - Maximum Rate

Figure 4.17 - GPS Output - Baud Rate

Figure 4.19 - GPS Output - Precision

4.2.3. RADAR

The X30 console can provide radar output to external devices. To access Radar output settings select System/GPS/Radar, refer to *Figure 4.20*.

1. **Radar Output** - enable or disable radar output and confirm your selection.
2. **Calibration Factor** - enter calibration factor, refer to your radar equipment manuals for correct factor.

Figure 4.20 - Radar Output Settings

4.3 SERIAL PORTS

To set which port on your X30 console will receive GPS signal and which will send the signal to other devices, that are not directly connected to GPS select System/Serial Ports.

NOTE

COM1 IS USED FOR GPS INPUT, COM2 FOR OUTPUT.

1. **GPS Receiver COM** - select 1.
2. **GPS Output COM** - select 2.

Figure 4.21 - Serial Ports

4.4 ALARMS

Alarms are provided for warning if any components or functions of the seeding system, steering, or GPS are not functioning properly. All alarms are separated into two groups: general alarms and seeder alarms.

4.4.1 GENERAL

To access general alarms setup select System/ Alarms/General.

All general alarms are displayed on the left side of the setup screen in a scroll down list. Green check mark next to the alarm name indicates that this alarm is enabled; red cross indicates that alarm is disabled.

1. **Enabling/Disabling Alarms** - All general alarms can be enabled/disabled all at once or individually.

   - to enable or disable all general alarms select All General Alarms (first item in the list).

   - to enable or disable individual alarm, select that alarm from list.

   - on the right side of the setup screen select Alarm State button to disable or enable alarm(s).

Figure 4.22 - General Alarms

2. **End of Row** - this alarm will sound and display when the vehicle is approaching the boundary at the end of the row, notifying the operator should slow down and prepare for manual control. For the End of Row alarm to sound auto steering must be enabled (Topcon systems only). If there is no auto steering, Look Ahead Distance can be used to set distance in front of the vehicle icon on the console screen.

   - First distance - enter the distance where you want first alarm to sound. This is a distance where there is enough time to get ready for the turn.

   - Second Distance - enter the distance where you want second alarm to sound. This is a distance where you have to immediately take control of the vehicle.

Figure 4.23 - End of Row Alarms

NOTE

DISTANCE IS MEASURED FROM THE TRACTOR TO THE BOUNDARY ALONG THE WAYLINE.

- Look Ahead Distance - this provides a display line in front of the vehicle icon on the guidance screen when auto steering is not in use.

  This visual indicator is designed to assist you in estimating the distance on the console screen for improved manual steering performance.

3. The remainder of the alarms only have one setting Alarm State, it is used to enable or disable that alarm.

4.4.2 SEEDER

To access seeder alarms setup select System/ Alarms/Seeder.

All seeder alarms displayed on the left side of the setup screen in a scroll down list. Green check mark next to the alarm name indicates that this alarm is enabled, red cross indicates that alarm is disabled.

Enabling/Disabling Alarms - All seeder alarms can be enabled/disabled all at once or individually.

- to enable or disable all seeder alarms select All Seeder Alarms (first item in the list).

- to enable or disable individual alarm, select that alarm from list.

- on the right side of the setup screen select Alarm State button to disable or enable alarm(s).

Figure 4.24 - Seeder Alarms

1. **Incorrect Rate** - the actual application rate is higher or lower than acceptable application rate range.

   - select the Threshold button to set percentage value that will be used to calculate upper and lower application rate range limits.

2. **No Comms** - no communication between the X30 and the ECU(s) on the seeder.

3. **Tank Empty (Sensor)** - there is no product in front of that tank's bin level sensor. The bin level sensors are set so that there is a minimal amount of product remaining in the tank after this warning.

   ***Note**: 7000AS comes equipped with an in-tank camera system to monitor the product level.*

4. **Tank Low (Calculated)** - the theoretical weight of product remaining in the tank is low.

   This value is based on the initial tank fill entry, metering auger output, product density and the set threshold. Threshold is set for each tank individually.

   - Select Bin/Tank button, when scroll list appears, select the tank you would like to set threshold for and confirm.

   - Select Threshold button, when numeric keypad appears, enter threshold value in percentage and confirm.

5. **Blocked Distribution Head** - if equipped, sensors detect one or more blocked runs.

6. **Shaft Moving Tank OFF** - signals that a meter is still turning even though the respective tank switch, the master, or both are off.

7. **No Ground Speed** - no ground speed detected.

8. **Case Drain** - Fan motor case drain pressure is too high (>65psi).

9. **Ladder Down** - not used

10. **Section Switching Problem** - This alarm is for granular ASC only. Signals when a section valve should be open, but it is partially or completely closed.

Figure 4.25 - Incorrect Rate Alarm

Figure 4.26 - Tank Low Alarm

11. **Gear Ratio** - not used
12. **Stopped Shaft** - That metering auger shaft has stopped while the tank switch and master switch are still both on.
13. **Tank Active, No Rate** - tank is on but has no application rate entered.
14. **Tank Off** - tank enabled, but tank switch OFF with master ON.
15. **High Auxiliary RPM Speed** - not used
16. **Low Auxiliary RPM Speed** - not used
17. **Down Force Off** - down force control is OFF with master ON (future Drill Control feature).
18. **Drill Raised** - drill up with master switch ON (future Drill Control feature).
19. **Hydraulic Pressure Low** - down force pressure low (future Drill Control feature).
20. **Flow Sensor Failure** - no signal from blocked run sensor (future Drill Control feature).
21. **Pressure High** - liquid/NH3 pressure is higher than high pressure setpoint. This alarm is for liquid systems if there is an electric pressure sensor in the product line. (not supported)

22 **Pressure Low** - liquid pressure is lower than low pressure setpoint. This alarm is for liquid systems if there is an electric pressure sensor in the product line. (not supported)

23. **High Pump Speed** - liquid/NH3 pump speed is higher than the maximum pump RPM setpoint. (not supported)
24. **Low Pump Speed** - liquid/NH3 pump speed is lower than the minimum pump RPM setpoint. (not supported)
25. **No Liquid Flow** - the in-line liquid/NH3 flow meter is not registering a signal when the tank and master switches are on.

26 **High Fan Speed** - fan RPM is more than the high RPM setpoint.

- select Fan 1 Maximum RPM button to enter the Fan1 high RPM setpoint.

- select Fan 2 Maximum RPM button to enter the Fan2 high RPM setpoint.

NOTE

REFER TO THE *AIR SEEDER OPERATOR'S MANUAL* FOR RECOMMENDED FAN SPEED DEPENDING ON APPLICATION RATE, TILLAGE UNIT WIDTH, AND GROUND SPEED. REMEMBER THAT THE FAN SPEED WILL INCREASE WHEN PRODUCT ENTERS THE AIR STREAM. ALSO REMEMBER NOT TO EXCEED 5000 RPM WITH A STANDARD FAN OR 6000 RPM WITH AN OPTIONAL HIGH-SPEED FAN.

Figure 4.27 - High Fan Speed Alarm

27. **Low Fan Speed** - fan RPM is less than the low RPM setpoint.

    This prevents the possibility of running meters with very low fan speed and subsequent plugging of the distribution pipes.

    - select Fan 1 Minimum RPM button to enter the Fan1 minimum RPM setpoint.

    - select Fan 2 Minimum RPM button to enter the Fan 2 minimum RPM setpoint.

28. **High Fan Pressure** - Not supported.

29. **Low Fan Pressure** - Not supported.

30. **Speed Source Fallback** - GPS signal lost, Fallback speed source in use.

31. **Cabin Keypad Not Communicating** - lost communication with cabin keypad (switchbox).

32. **Frame Keypad Not Communicating** - lost communication with frame keypad (switchbox).

33. **Moving with QDA raised** - QDA raised with ground speed (future Drill Control feature).

34. **Implement Raised** - master on with secondary Tillage/Implement/autoclutch switch off.

Figure 4.28 - Low Fan Speed Alarm

4.5 FLAG POINTS

Operator can set flag points on the guidance map to show obstacles or other land features for a field on the Operations Screen.

Here operator can view flag points presets and change the preset symbols and names as desired.

Select System/FlagPoints from the main setup menu to access the flag points setup screen.

1. Select Flag Point that you would like to change. Change Flag Point Preset window will appear, refer to *Figure 4.29*.
2. Choose a flag point icon.
3. Select Flag Point Name button to enter the name for that flag point.
4. Repeat steps 1 through 3 for other flag points presets as needed.

Figure 4.29 - Flag Points Preset

Figure 4.30 - Flag Points Setup

4.6 ISOBUS

Settings in Sytem/ISOBUS used to configure universal Terminal display to control ISO programs.

1. **Universal Terminal** - can be set to online or offline mode.
2. **UT Number** - set to desired UT number if multiple displays on the same ISOBUS (#1 is the primary display).
3. **Soft Keys Per Column** - configure for desired size of keys on UT display.
4. **Soft Keys Location - s**elect position for the soft keys as desired.
5. **Working Set Key Location** - **s**elect position for the working keys as desired.

Figure 4.31 - ISOBUS Settings

5 VEHICLE

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5.1 Selecting an Existing Vehicle 5.2
5.2 Setting Up a New Vehicle 5.3
5.3 Setting Up Vehicle Geometry 5.7

This section explains how to set up and access profile information about the vehicle on which the X30 console is mounted. If the console is to be used on more than one vehicle then more than one vehicle profile will need to be set.

NOTE

X30 CONSOLE IS INTENDED FOR A MULTITUDE OF APPLICATIONS. EQUIPMENT SET-UP INVOLVES A " VEHICLES" AND "IMPLEMENTS" WHICH THEN ALLOW THE USER TO MOVE X30 CONSOLE BETWEEN MACHINES TO MAXIMIZE ITS VALUE.

IN SEEDING APPLICATION:
VEHICLE REFERS TO A TRACTOR THAT IS USED TO PULL THE SEEDING IMPLEMENT.
IMPLEMENT REFERS TO A SEEDING DRILL AND THE AIR SEEDER THAT ARE SET IN A SINGLE COMBINED IMPLEMENT.

5.1 SELECTING AN EXISTING VEHICLE

Once vehicle profiles are set in the X30 console (refer to *Section 5.2 - Setting Up a New Vehicle*), these can be accessed easily.

Select Vehicle/Select to access vehicle profiles that are set in the X30 Console.

Refer to *Figure 5.1*.

List of vehicles profiles from the X30 console memory displayed in the upper portion of the screen. Choose your vehicle from that list and confirm your selection.

You also can select vehicle from the USB device. If not connected, connect USB device to the X30 console, it will also enables the USB button. Select USB button. Window title "Select Vehicle" will change to "Select Vehicle (USB)" and the list of vehicles from the USB device will be displayed. To return to the vehicle list in the console memory, select USB button again.

Also you can copy one of the existing profiles and make required changes. To do that:

- Select vehicle profile you would like to copy (it will have white background). Copy button will appear, refer to *Figure 5.1*.
- Select copy button.
- "+ New vehicle as Copy" window will appear. Select vehicle name button to give a new name and confirm.
- If required, make changes to the vehicle geometry settings. Steering and antenna settings can be changed as well (only if Topcon guidance and auto steering equipment used).

Figure 5.1 - Copy Vehicle Profile

5.2 SETTING UP A NEW VEHICLE

To setup a new vehicle select Vehicle/New.

Refer to *Figure 5.2*.

A list with vehicle manufacturers will appear. Use up/down arrows or scroll bar to see all options.

If you find the make for your vehicle, or can choose one that is most like the vehicle being used, proceed to Step 1, otherwise proceed to Step 2.

1. Make of the vehicle present or can be closely matched

    a. Choose vehicle make and confirm.

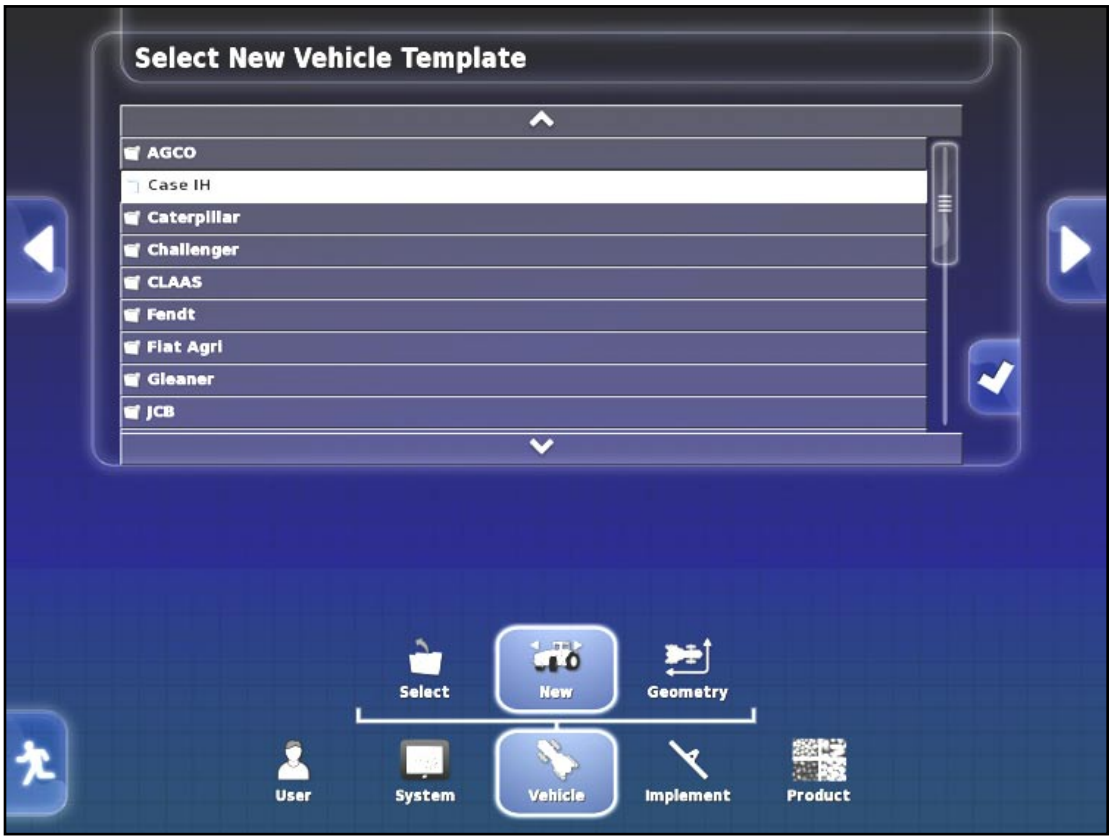

Figure 5.2 - New Vehicle Setup

b. Next model list for chosen make will appear. Use up/down arrows or scroll bar to see all options. Choose your model and confirm.

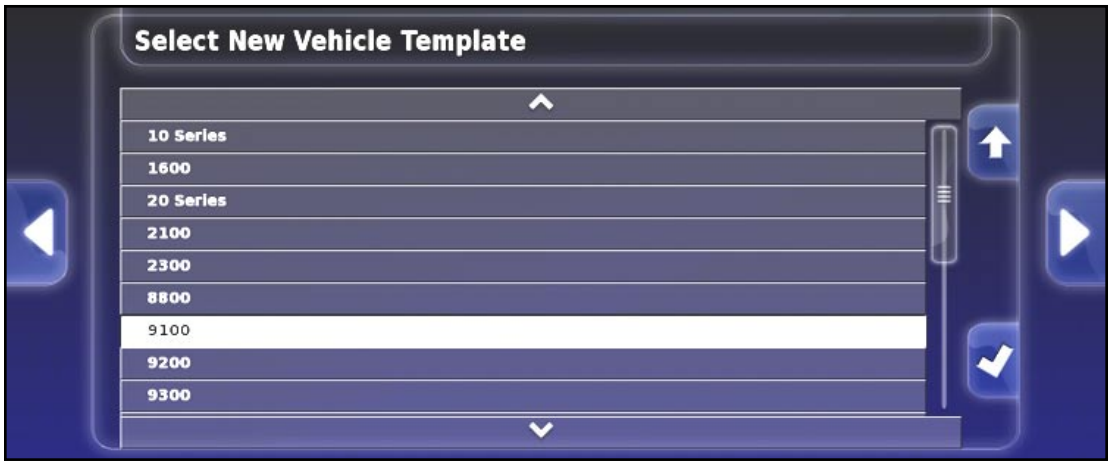

Figure 5.3 - Vehicle Model Selection

c. "+ New Vehicle" window will appear. Select Vehicle name button, keyboard window will appear. Enter a name for the vehicle and confirm.

d. You will return back to "+ New Vehicle" window. Just entered name will be displayed in Vehicle name button. Confirm again to finish process.

Figure 5.4 - Vehicle Name Entry

2. If your vehicle make is not present, or can not be closely matched

   a. Choose "Other" as your vehicle make and confirm.

Figure 5.5- Vehicle Make Selection - Other

   b. Next list with auto steering systems will appear. Choose one that is installed on your vehicle or Other, if you cannot find your auto steering system and there is no close match in the list.

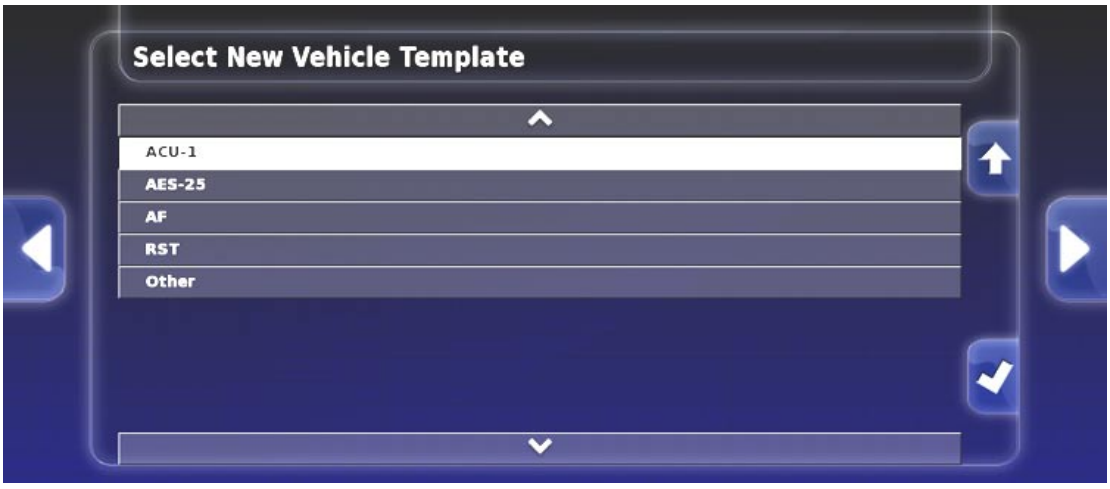

Figure 5.6 - Vehicle Model Selection - Other

c. Next a range of generic vehicle templates will be displayed. You can select from: tracked, articulated, front steerable, harvester, sprayer, or swather.

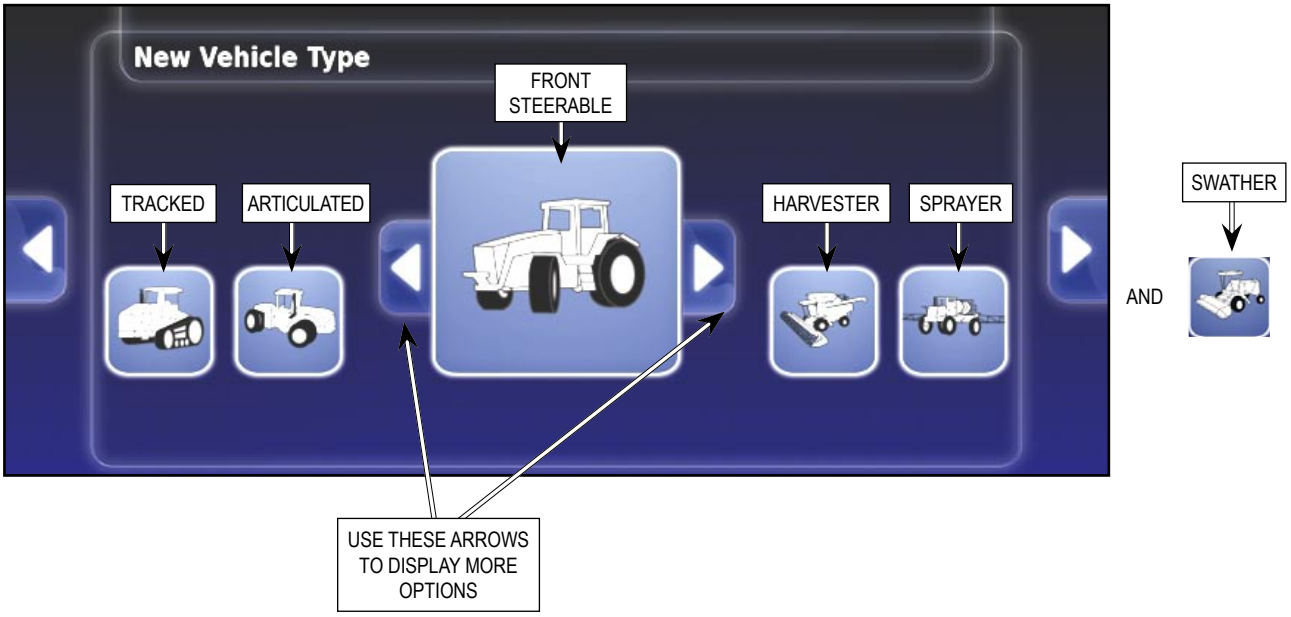

Figure 5.7 - New Vehicle Type

d. "+ New Vehicle" window will appear. Select Vehicle name button, keyboard window will appear. Enter a name for the vehicle and confirm.

e. You will return back to "+ New Vehicle" window. Just entered name will be displayed in Vehicle name button. Confirm again to finish process.

3. Next, the vehicle geometry screen will be displayed. Refer to *Section 5.3 - Setting Up Vehicle Geometry*.

5.3 SETTING UP VEHICLE GEOMETRY

Pre-defined factory vehicle templates contain standard measurements. Measurements can be adjusted to correct for the particular vehicle, tire size and other factors.

To adjust vehicle geometry select Vehicle/ Geometry, refer to *Figure 5.8*.

IMPORTANT

FOR GUIDANCE SYSTEMS TO WORK ACCURATELY, MEASURE THE VEHICLE DIMENSIONS AS ACCURATELY AS POSSIBLE. THE RECOMMENDED TOLERANCE IS +/- 2" (5 CM).

Select a vehicle dimension. The name of the dimension will appear in the title bar. Add or adjust dimensions where needed.

NOTE

DIMENSIONS WILL VARY DEPENDING ON THE TYPE OF VEHICLE SELECTED.

Following is a list of commonly used measurements:

- **Wheelbase** is the distance from the centre of the front axle to the centre of the rear axle.
- **Implement Tow Point** is the distance from the centre of the rear axle to the tow point.
- **GPS Steer** is the offset left or right from the middle of the axles to the GPS Receiver. This is positive number if the receiver is to the right of the middle of the axle and negative if the receiver is to the left.

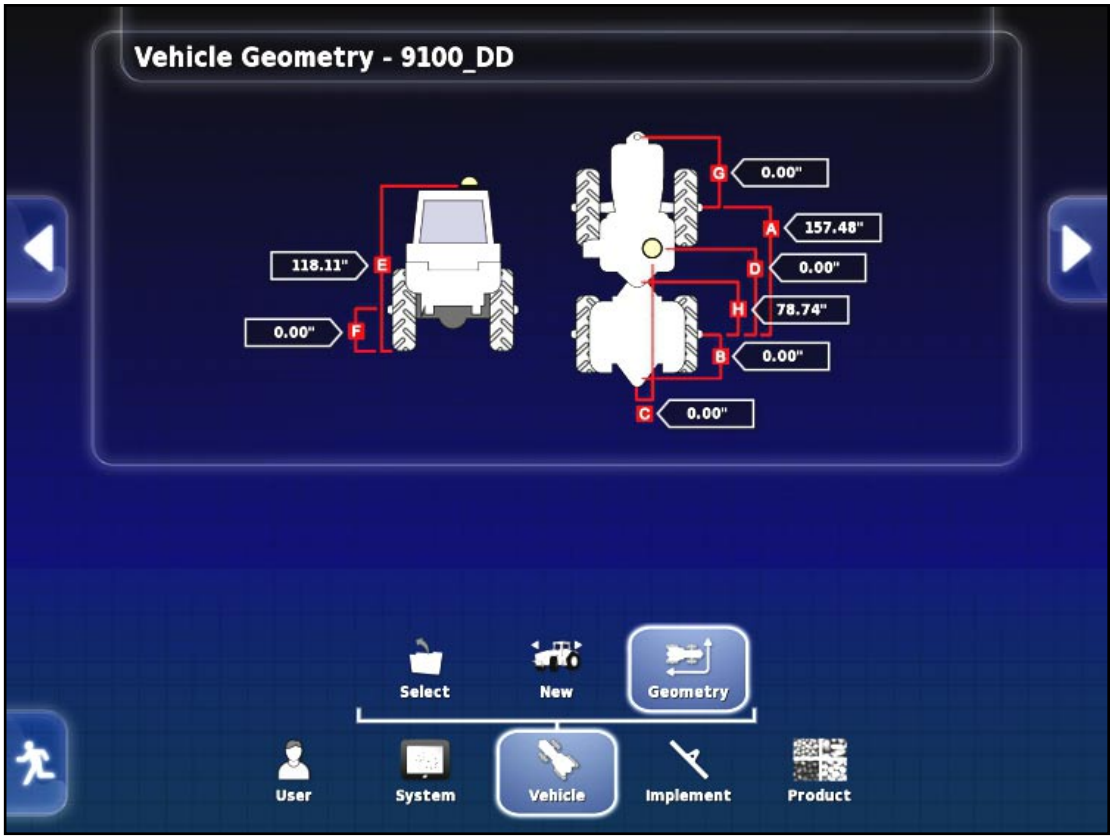

Figure 5.8 - Vehicle Geometry (Articulated Shown)

- **GPS Antenna** is the horizontal distance of the receiver from the centre of the rear axle. The number is positive when the receiver is in front of the rear axle and negative if it is behind the rear axle.
- **GPS Height** is the height of the top of the GPS Receiver above the ground.
- **Axle Height** is the height of the axle above ground.
- **Front Hitch** is the distance from the centre of the front axle to the front hitch position.
- ***Track Spacing*** measures from the left hand side of the left track to the left hand side of the right track.
- **Articulation Point** measures from the articulation point to the rear axle.

6 IMPLEMENT SETUP

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NOTE

X30 CONSOLE IS INTENDED FOR A MULTITUDE OF APPLICATIONS. EQUIPMENT SET-UP INVOLVES " VEHICLES" AND "IMPLEMENTS" WHICH THEN ALLOW THE USER TO MOVE X30 CONSOLE BETWEEN MACHINES TO MAXIMIZE ITS VALUE.

IN SEEDING APPLICATION:
VEHICLE REFERS TO A TRACTOR THAT IS USED TO PULL THE SEEDING IMPLEMENT.
IMPLEMENT REFERS TO A SEEDING SYSTEM THAT CONSISTS OF THE SEEDING DRILL AND THE AIR SEEDER.

6.1 SELECTING AN EXISTING IMPLEMENT

This is used when implement profiles (air seeder and seeding drill) have been already setup on the X30 console or will be imported from a USB device.

1. Selecting from the X30 console list:

   To select an existing implement profile select **Implement/Select**, refer to *Figure 6.1*. List of implement profiles from the X30 console memory are displayed in the upper portion of the screen. Choose your implement from that list and confirm your selection.

2. Selecting from the USB list:

   To select implement from the USB list, the USB device must me connected to the X30 console, it will enable the USB button. Select USB button. Window title "Select Implement" will change to "Select Implement (USB)" and the list of implements from the USB device will be displayed. To return to the list in the console memory, select USB button again.

Figure 6.1 - Select Air Seeder

3. Copying existing profile:

   You can copy one of the existing profiles and make required changes. To do that:

   - Select implement you would like to copy (it will have white background). Copy button will appear, refer to *Figure 6.2*.
   - Select copy button. Window informing you that this operation will require restart will appear. Click ok to continue or cancel operation.
   - If continuing with creating a copy, "New Implement as Copy" window will appear. Select implement name button to give a new name and confirm.
   - If required make changes to the settings like implement geometry, sectional control (if applicable), operator inputs, seeder (granular tank, NH3/Liquid tank, fans, etc).

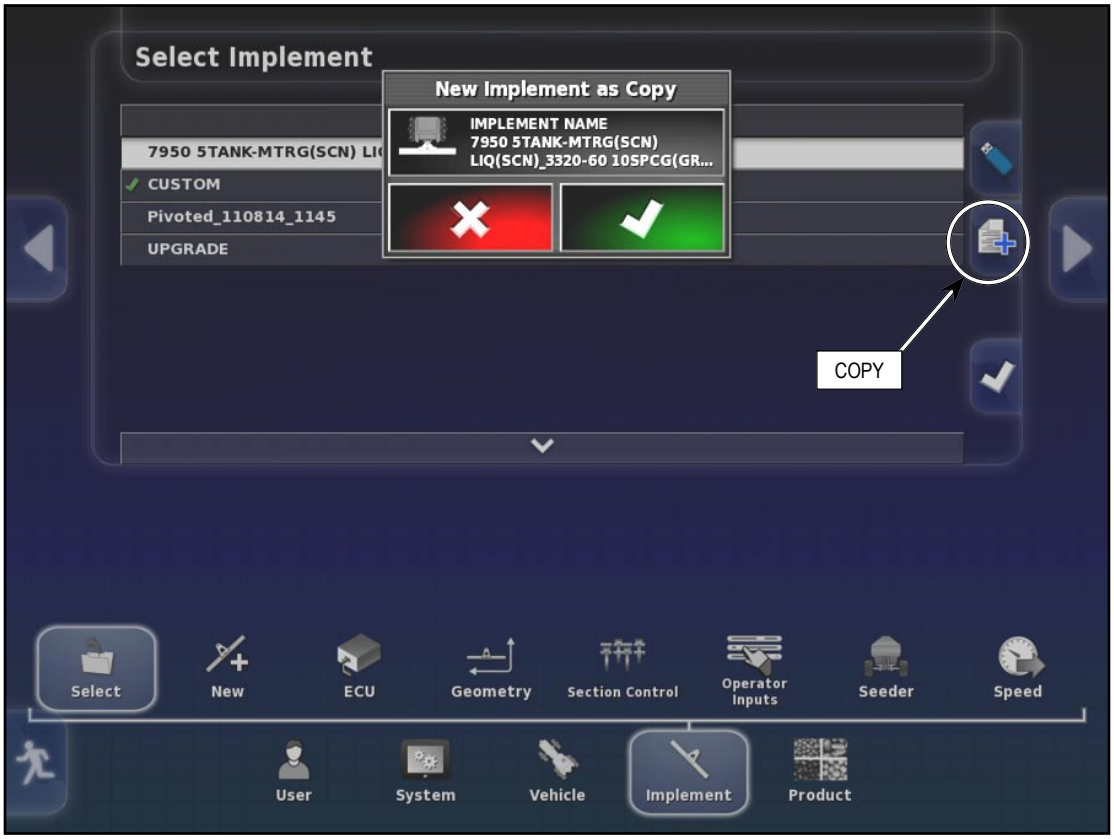


Figure 6.2 - Copy Implement

6.2 CREATING NEW IMPLEMENT PROFILE

6.2.1 BASED ON FACTORY TEMPLATES

To create new implement profile based on the factory templates select Implement/New/Factory and follow instructions below:

1. Select Air Seeder Tank Series: 6000 or 7000.
2. Select tank model from the list. Refer to *Figure 6.3*.

Figure 6.3 - New Implement Based on Factory Template

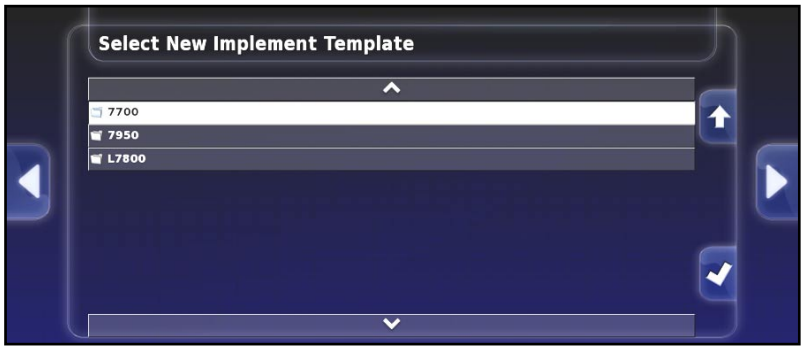


Figure 6.4 - Selecting Tank Model

3. Select specific tank configuration from the list

   A naming convention is used to help easily identify required configuration.

   Following examples explain naming convention:

   i. 7950 4 TANK-MTRG-T3 LIQ(SCN) - Model 7950 with 4 tank metering with optional auger in tank #3, plus liquid sectional control system.

   ii. 7950 3 TANK-MTRG NH3(SCN) - Model 7950 with 3 tank metering plus NH3 sectional control system

   iii. 7700 3 TANK-MTRG(SCN) - Model 7700 with 3 tank metering plus granular section control system

   iv. 7700 4 TANK-MTRG-T3(SCN) LIQ(SCN) - Model 7700 with 4 tank metering with optional auger in tank #3, plus plus granular section control system and liquid sectional control system.

   v. 7950 5 TANK-MTRG - Model 7950 with 5 tank metering without granular, liquid or NH3 sectional control systems.

   vi. 6450 3 TANK-MTRG-T2 NH3(SCN) 2 FAN - Model 6450 with 3 tank metering with optional auger in tank #2, plus NH3 sectional control, 2 fans

   vii. 6450 3 TANK-MTRG-T3 1 FAN - Model 6450 with 3 tank metering with optional auger in tank #3, 1 fan

   If configuration you require does not appear on the list, custom setting up of the implement profile is required, refer to *Section 6.2.2 - Custom Implement Profile.*

Note: please note, that (SCN) behind tank description (examples iii & iv) identifies granular ASC system, and (SCN) behind LIQ or NH3 (examples i, ii, iv & vi) identifies liquid or NH3 sectional control system.

SELECT TEMPL

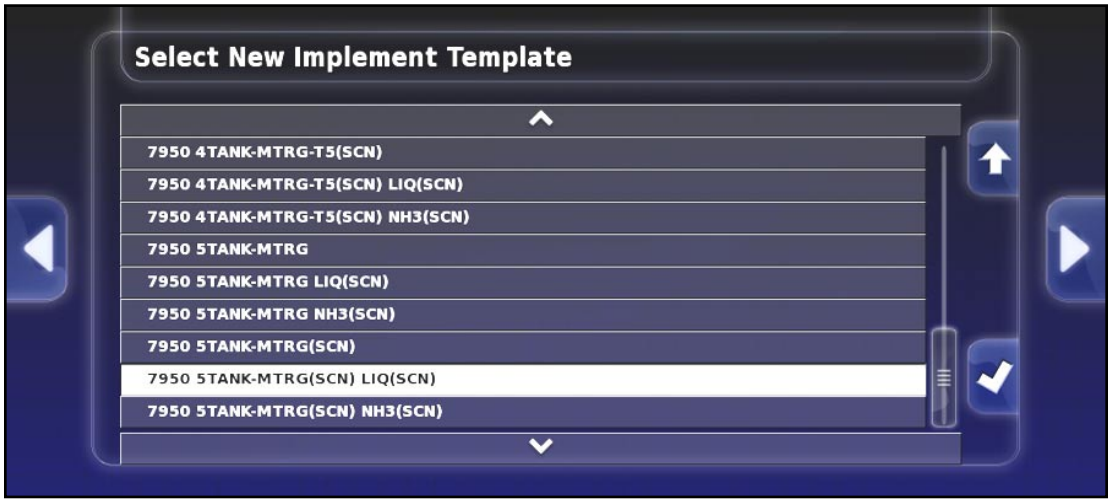
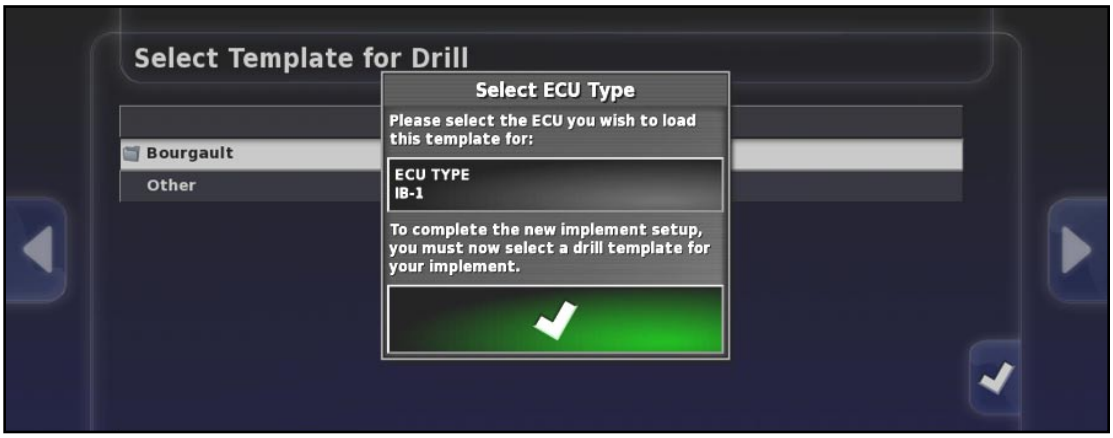


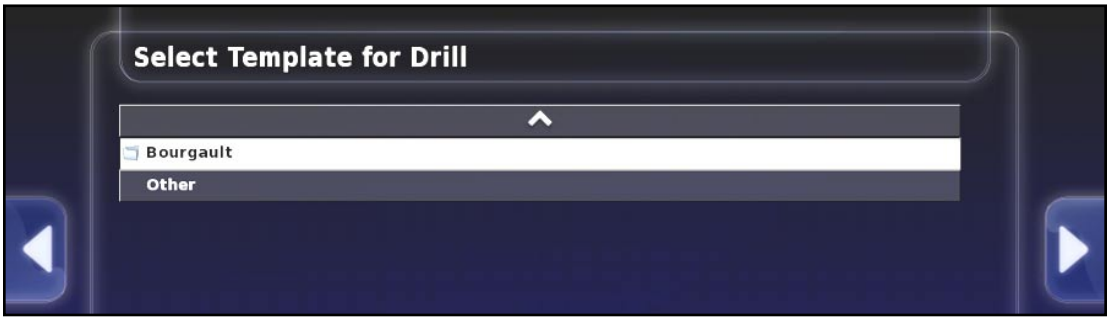
Figure 6.5 - Selecting Tank Configuration (7000AS)

4. Select ECU Type button. From the list select Apollo and confirm, and again confirm on the next screen.



5. Select Template for a Drill

Bourgault - select this for Bourgault units.
Other - select this for non-Bourgault drills or alternatively select a similar Bourgault drill and edit necessary settings.



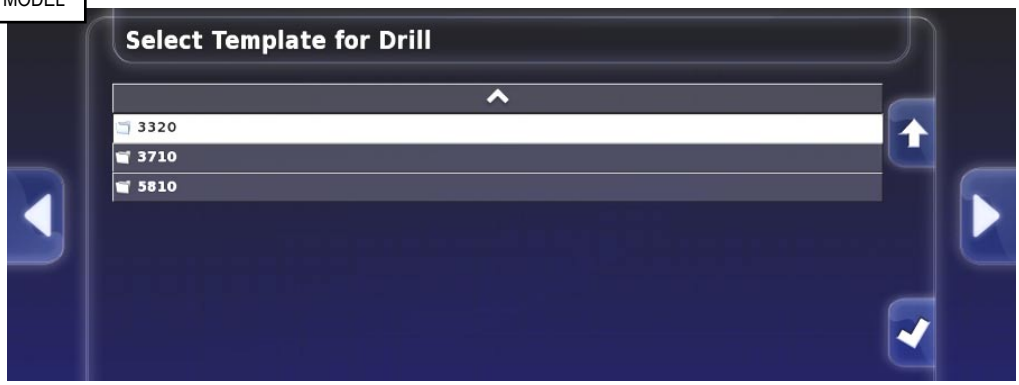
6. If Bourgault were selected, next screen will show models list. Once model selected, list of drill sizes will be displayed. Select your drill size. Then list of configurations (spacing, presence of granular sectional control, optional high flotation) for the selected size will appear. Select your drill configuration.

IMPORTANT

IF ON STEP #3 YOU SELECTED TANK WITH GRANULAR SECTIONAL CONTROL, YOU MUST SELECT DRILL CONFIGURATION WITH SECTIONAL CONTROL AS WELL, TO BE ABLE TO PROPERLY SETUP THIS FEATURE.

On any step, if your model, size, or configuration is not present on displayed lists, use the UP arrow button in the right upper corner to go to very first screen of selecting template for the drill and select Other, refer to *Figure 6.6*. Alternatively select a similar drill and edit the necessary settings.

SELECT DRILL MODEL



SELECT DRILL SIZE

SELECT DRILL CONFIGURATION

Figure 6.6 - Selecting Drill

A naming convention is used to help easily identify required configuration.

Following examples explain naming convention:

i. 3320-76 10SPCG - Model 3320, 76' width, 10" spacing

ii 3320-76 12SPCG HF - Model 3320, 76 width, 12" spacing, High flotation frame

iii. 3320-66 10SPCG(GRAN SCN) HF - Model 3320, width 66', 10" spacing, granular sectional control, High flotation frame

iv. 5810-62 9.8SPCG(GRAN SCN) - Model 5810, width 62', 9.8" spacing, granular sectional control

7. Enter Implement Name

Refer to *Figure 6.7*.

You can enter specific name or accept automatically generated name.

To enter a name select "Implement name" button, keyboard will appear. Type desired name and select OK to accept it.

NOTE

IT IS RECOMMENDED YOU NAME THE IMPLEMENT SOMETHING THAT SPECIFICALLY IDENTIFIES IT, TO ALLOW YOU TO EASILY SELECT BETWEEN IMPLEMENT PROFILES AT A LATER DATE.

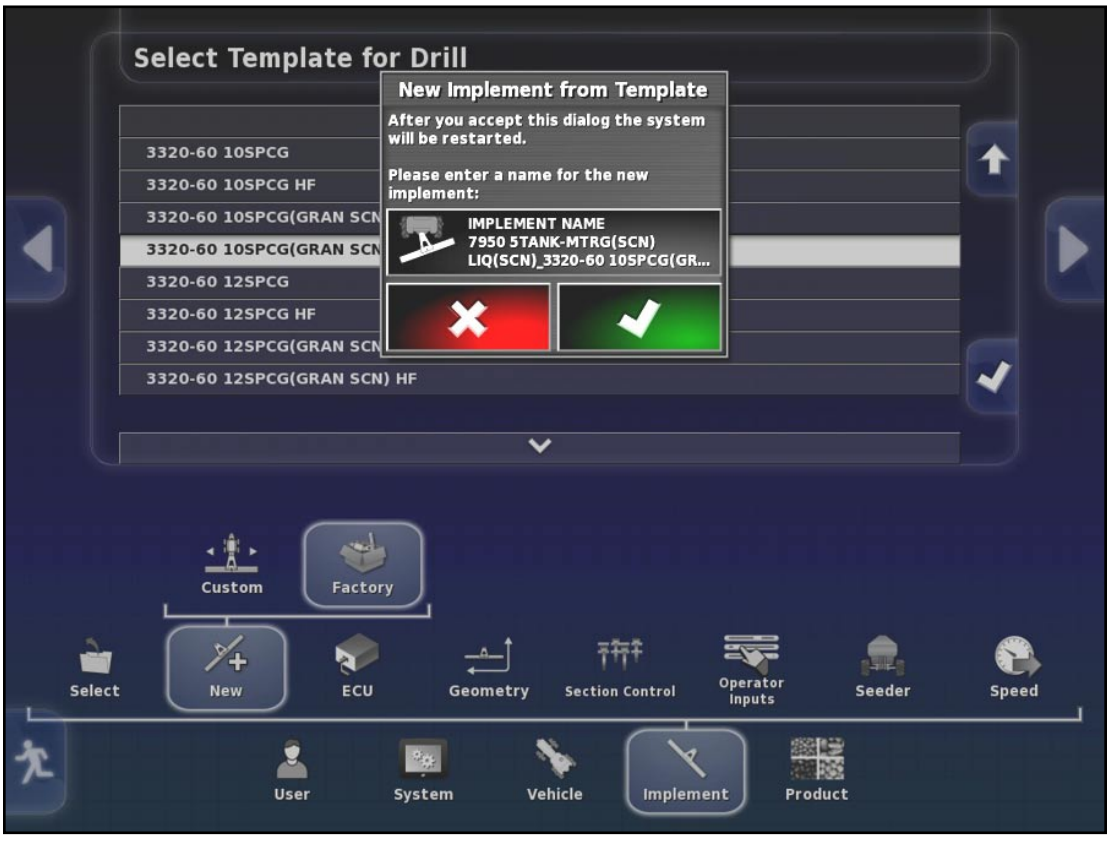


Figure 6.7 - New Implement Name

After implement name entered and confirmed X30 console will restart and come back to ECU Setup page, refer to *Figure 6.8*.

IMPORTANT

NEXT STEP WILL BE TO GET X30 TO RECOGNIZE ALL ECUS THAT ARE INSTALLED FOR YOUR CONFIGURATION. REFER TO *SECTION 6.3.2 - ADD/REPLACE ECU*.

Figure 6.8 - ECU Setup

6.2.2 CUSTOM IMPLEMENT PROFILE

To create new custom implement profile select Implement/New/Custom and follow instructions below:

1. ***Air Seeder type***

   Refer to *Figure 6.10.*

   There are four types available: rigid, header, pivoted (trailing) and double pivoted (leading).

   - For trailing air seeder select PIVOT icon
   - For leading air seeder select DOUBLE PIVOT icon

   Use the arrows to choose the type. Press on the appropriate icon.

A window will appear informing you that the system will restart once your air seeder has been configured, refer to *Figure 6.9*. Select OK to continue.

Figure 6.9 - Restart Required

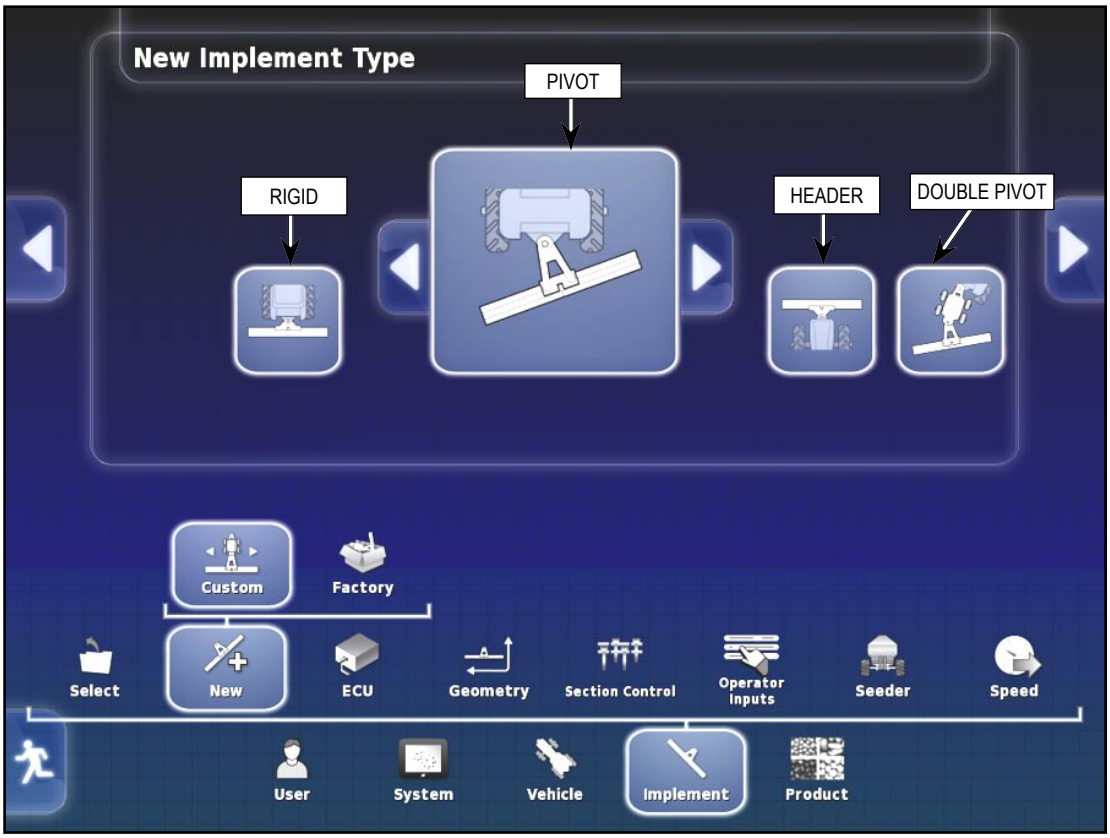


Figure 6.10 - Air Seeder Type

2. ***Implement Name***

Once the air seeder type is picked, the next window will appear asking you to enter air seeder name. Refer to *Figure 6.11*.

You can enter specific name or accept automatically generated name, that will consist of the picked type, date and time stamp in formats ddmmyy and hhmm. (example: pivoted_191212_0043).

To enter a name select "Implement name" button, keyboard will appear. Type desired name and select OK to accept it. X30 console will advance to the next step.

NOTE

IT IS RECOMMENDED YOU NAME THE IMPLEMENT SOMETHING THAT SPECIFICALLY IDENTIFIES IT, TO ALLOW YOU TO EASILY SELECT BETWEEN IMPLEMENT PROFILES AT A LATER DATE.

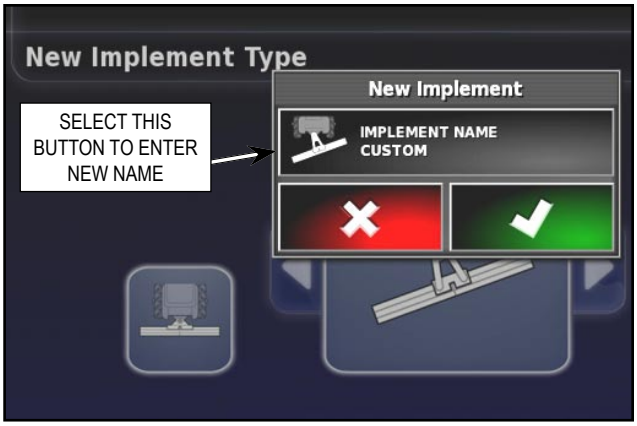


Figure 6.11 - Air Seeder Name

3. ***Implement control***

Here you can select the type of control, that the X30 console will be responsible for.

Select "Implement control" button to open up drop down list:

i. None - not applicable.

ii. Section Control Only - not applicable.

iii. Section Control and Rate Control - unit equipped with granular sectional control or NH3/liquid sectional control.

iv. Rate Control Only - unit does not have granular or NH3/liquid sectional control.

Select appropriate option and select OK. Press right arrow to advance to the next step.

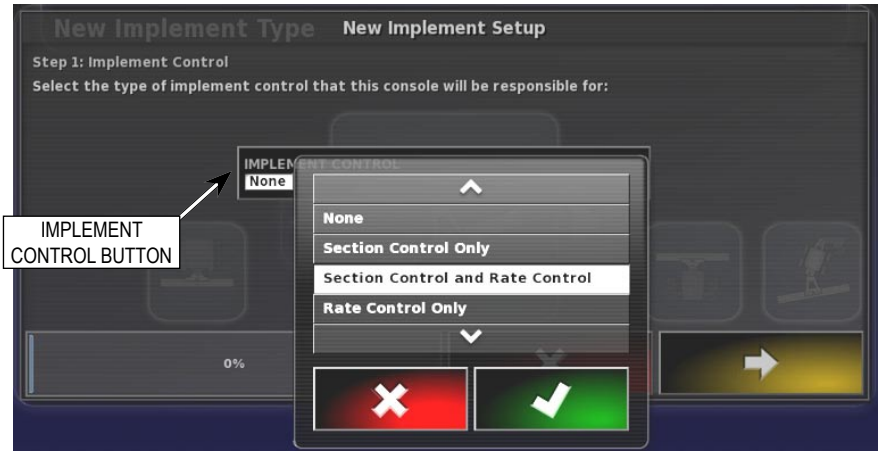


Figure 6.12 - Control Type

4. ***ECU Type***

   Select "ECU Type" button to open drop down list. Refer to *Figure 6.13*.

   Always select Apollo for Bourgault air seeder with X30 console.

Figure 6.13 - ECU Type

5. ***Implement Function***

   Refer to *Figure 6.14*. Select the function performed by the implement.

   Selecting "Implement Type" button will open drop down list.

   Select "Seeder".

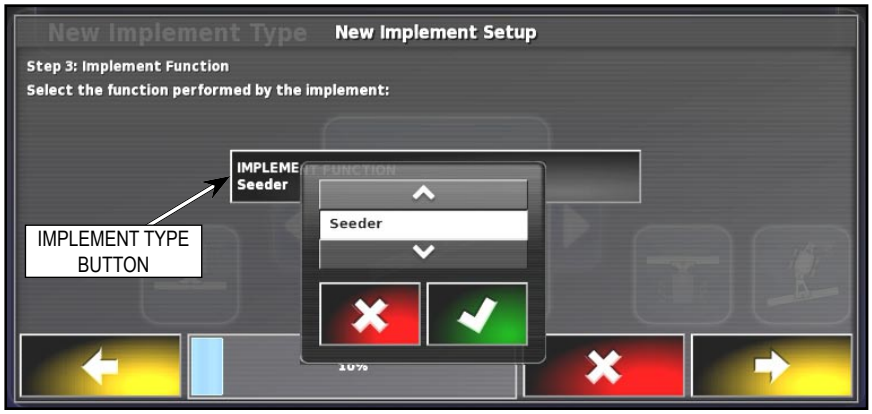


Figure 6.14 - Function

6. ***Connecting ECU(s)***

   a. Make sure that only main ECU's COMMS connector is connected to the harness. The rest of the ECU's that are required for the systems with more than 4 tanks, ASC or blockage monitoring (if these options installed) must be disconnected. Refer to *Figure 6.15*.

MPORTANT

REFER TO THE FOLLOWING TABLE, WHEN CONNECTING ECUS TO MAKE SURE THAT TTHE RIGHT ECU IS CONNECTED WHEN PROMPTED BY THE X30 CONSOLE.

ECU connections	Identification of ECU by X30 console
Tanks #1-4	Apollo CM-40 1
Tanks #5-6	Apollo CM-40 2
Auto Section Control	Apollo EM-24 1
Blockage monitoring system	Apollo EM-24 2, or EM-24 1 if there is no ASC

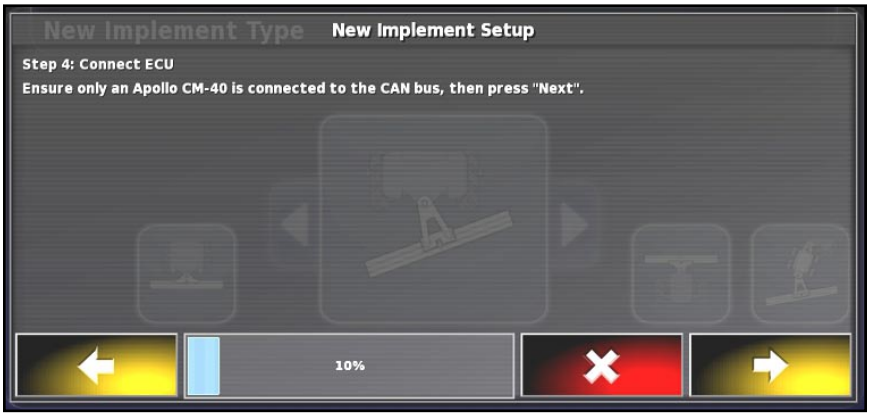


Figure 6.15 - Connect Apollo CM-40 #1

   b. Press the right arrow and the X30 will try to detect main ECU. Refer to *Figure 6.*16.

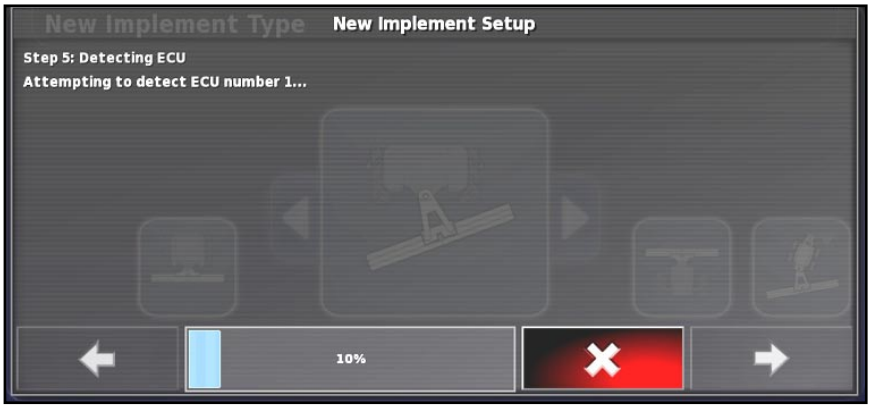


Figure 6.16 - Detecting ECU #1

c. Once detected, X30 will confirm that in the new window. Refer to *Figure 6.17*. Press next to continue.

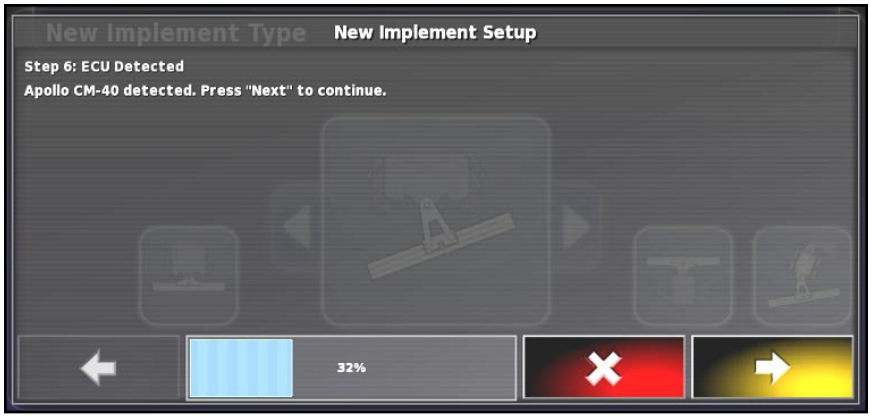


Figure 6.17 - ECU Detected

d. Next window will display Apollo system configuration summary. Refer to *Figure 6.18*.

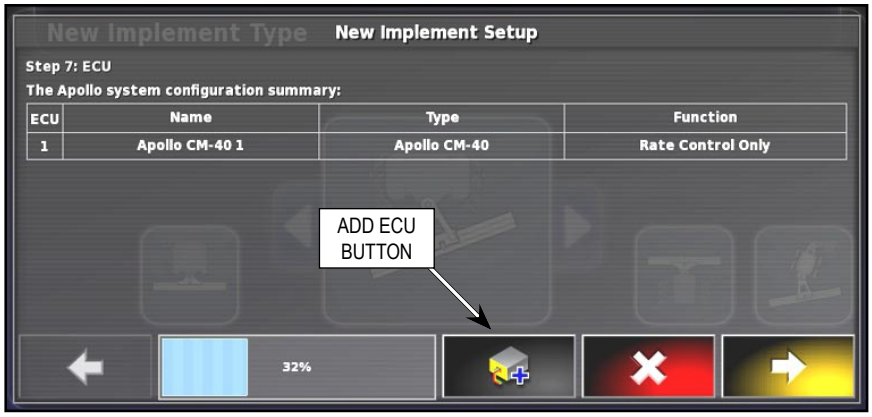


Figure 6.18 - Apollo System Configuration Summary

e. If there are additional ECUs present for this system, select add ECU button on the Apollo system configuration summary window.

X30 will prompt you to connect next ECU, refer to *Figure 6.19*. Connect ECU connector and select Next.

X30 will try to detect connected ECU and will display confirmation once ECU detected. Then updated Apollo system configuration summary will be displayed.

Repeat this step until all ECUs are connected and detected.

MPORTANT

REFER TO THE FOLLOWING TABLE, WHEN CONNECTING ECUS TO MAKE SURE THAT TTHE RIGHT ECU IS CONNECTED WHEN PROMPTED BY THE X30 CONSOLE.

ECU connections	Identification of ECU by X30 console
Tanks #1-4	Apollo CM-40 1
Tanks #5-6	Apollo CM-40 2
Auto Section Control	Apollo EM-24 1
Blockage monitoring system	Apollo EM-24 2, or EM-24 1 if there is no ASC

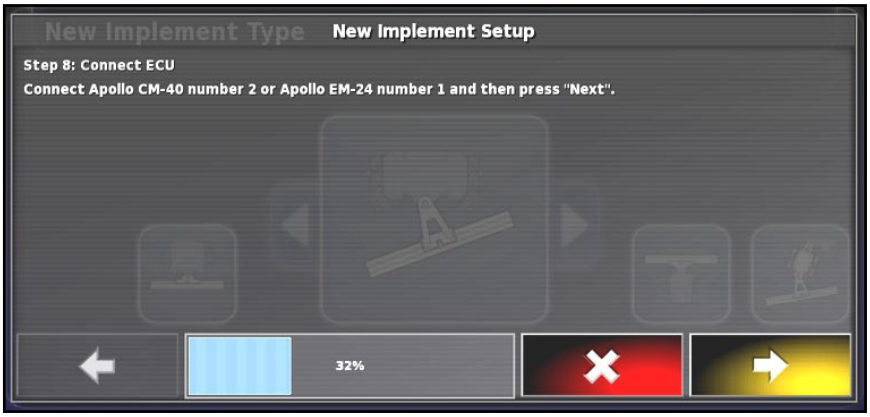


Figure 6.19 - Connect next ECU

f. Auto Section control and Blockage Monitoring are connected to the same type of ECU: Apollo EM-24. For these ECUs functions need to be set.

Refer to *Figure 6.20*. For each Apollo EM-24 ECU select cell in the Function column. Pop up menu will be displayed. For ASC select Section Control/Monitoring. For Blockage Monitoring select Monitoring Only.

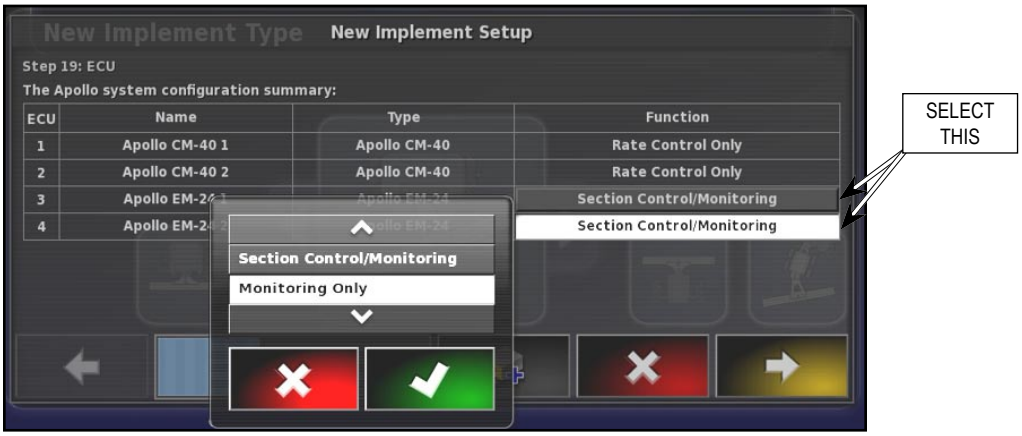


Figure 6.20 - ECU Functions

7. ***Selecting Seeder Manufacturer***

On this step from the pop menu select seeder manufacturer. Refer to Figure 6.21. Select Bourgault.

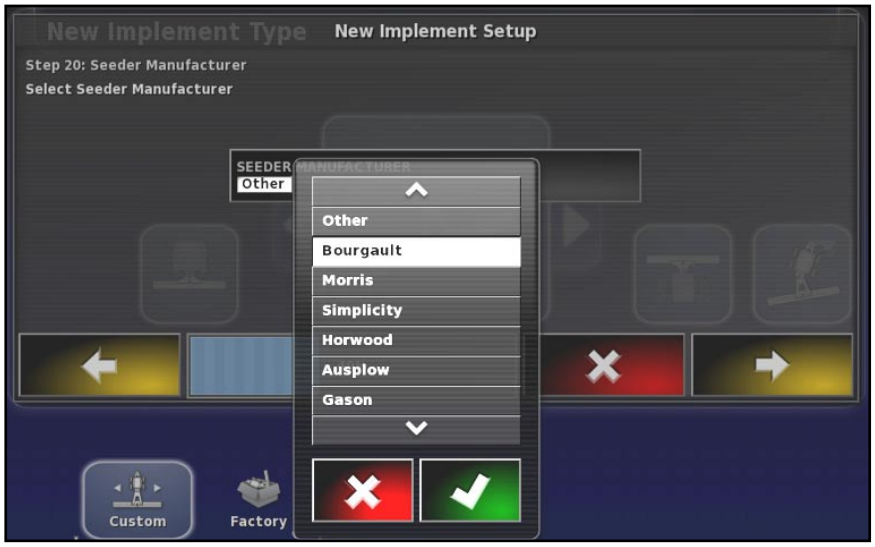


Figure 6.21 - Selecting Seeder Manufacturer

8. ***Selecting number of Booms***

On this step select the number of **multi-section booms** for granular and liquid/NH3 applications. **Note**: *There will always be a full width boom created by default. The boom is set up to control the application of products assigned to it.*

Number of multi-section granular booms:

- leave at 0, if no granular sectional control.

- set to 1, if there is granular sectional control.

Number of multi-section Liquid/NH3 booms:

- leave at 0, if no NH3/liquid sectional control.

- set to 1 if you using liquid or NH3 sectional control.

Granular Sectional Relay Mode appears if there is granular section control and should be set to 1 wire for the type of section valves used.

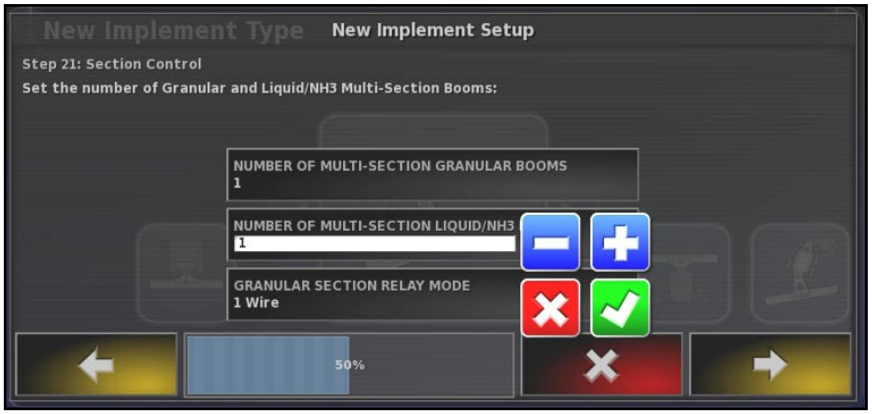


Figure 6.22 - Selecting Number of Booms

9. **Number of Fans** - enter number of fans installed on your air seeder tank.

   If one entered, fan setup screen will have settings only for one fan (refer to *Section 6.7.3 - Fan Settings*).

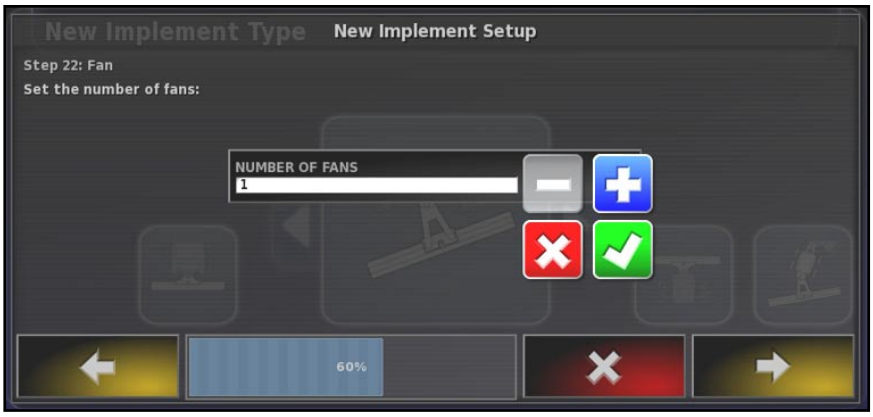


Figure 6.23 - Number of Funs

10. **Boom Summary** - here you can rename each boom. As a default there is a boom named "Full Width".

    To rename granular or liquid/NH3 boom select corresponding button and using keypad enter desired name. Example, for clarity granular/ NH3/liquid booms can be named "GRAN", "NH3", and "LIQ" respectively (that is what they are named in the factory profile).

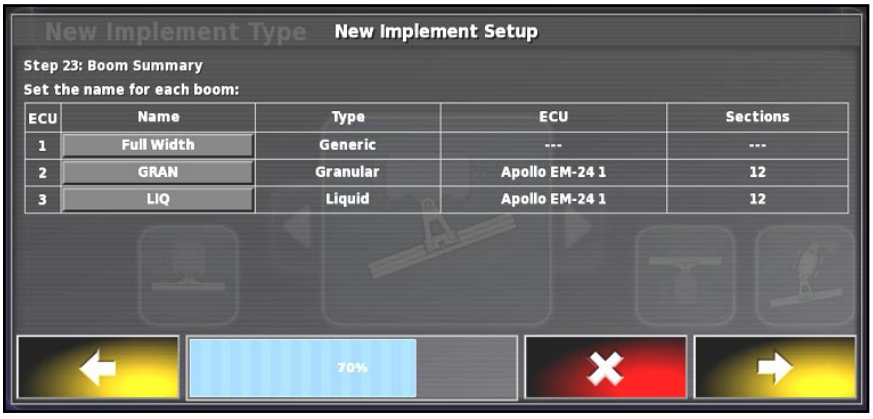


Figure 6.24 - Boom Summary

11. **Tanks** - here you can enter number of tanks on you air seeder and whether it has a Flex tank or not.

NOTE

TANKS WITHOUT METERING AUGERS STILL COUNT AS A TANK (OTHER THEN A FLEX TANK).

7000 Series - select "Yes" if it has Flex tank.

6000 Series - always select "No" for Flex Tank.

Examples: for 7950 with 4 tank plus NH3 tank you would enter 5; for 7950 with 4 tanks plus optional saddle tank and liquid tank you would enter 6.

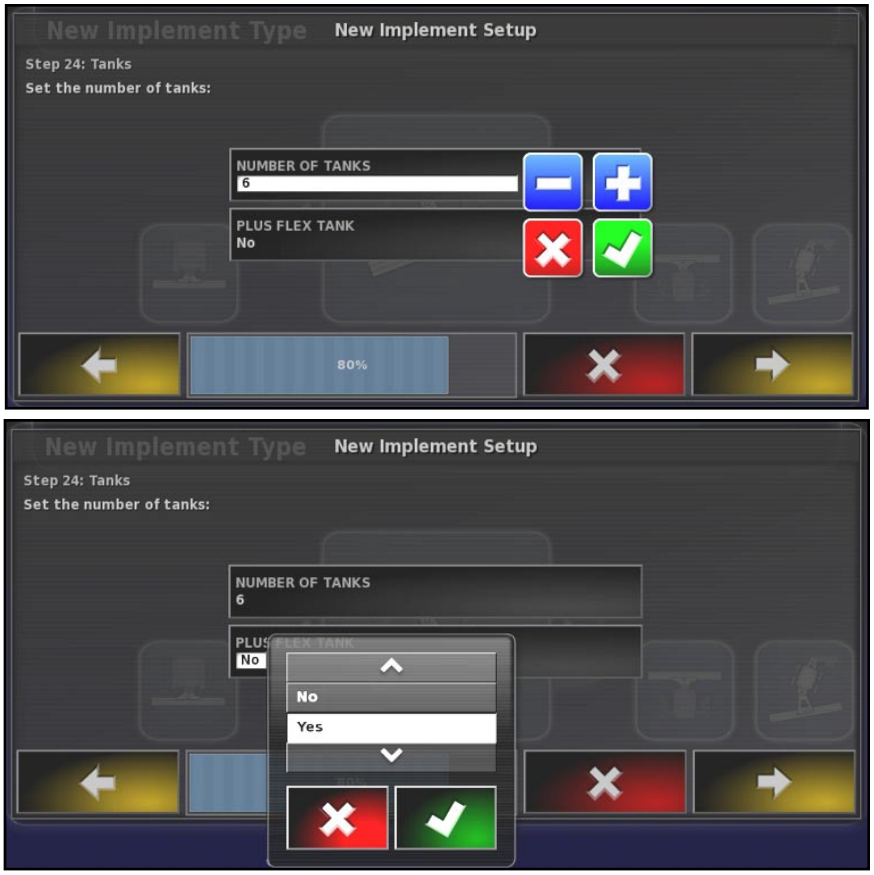


Figure 6.25 - Tanks

12. **Tank Summary** - list of tanks, product type for each tank and assigned ECU channel will be displayed. Here you can perform following functions:

- Rename tank(s)
- Change product type for the tank from Granular (assigned by default) to liquid or NH3. Refer to *Figure 6.26*.

IMPORTANT

IF USING LIQUID OR NH3 ENSURE THAT TANK TYPE IS CHANGED.

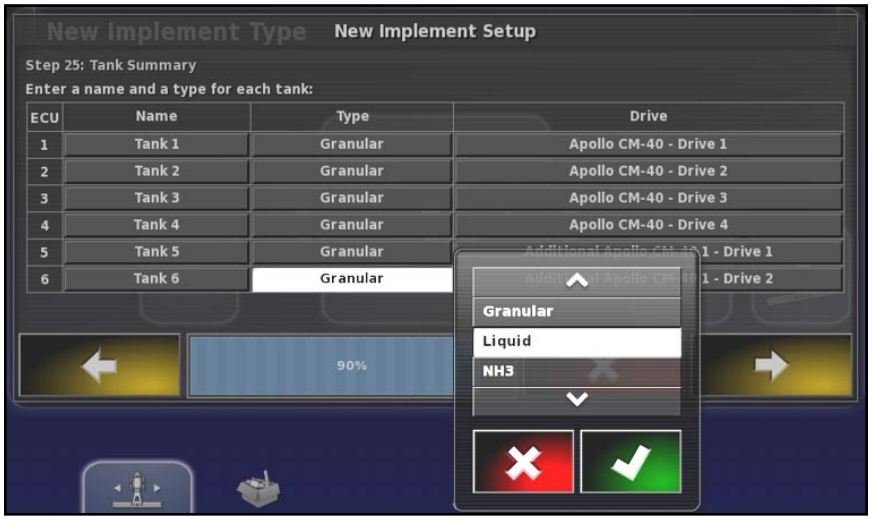


Figure 6.26 - Changing Tank Type

- Assign ECU drive for each tank.

First 4 tanks are controlled by Apollo CM-40 1, and others controlled by Apollo CM-40 2.

"No Drive" should be selected for the tank(s) where there is no metering auger installed. Status button will not be available for this tank in the tank setup screen (refer to *Section 6.7.1.1.2 - Individual Tank Setup*).

Figure 6.27 demonstrates example of the air seeder with 6 granular tanks, where tank 6 is a liquid tank.

IMPORTANT

ENSURE DRIVES CORRESPOND TO CORRECT TANKS AND PHYSICAL HARNESSING MATCHES IN ORDER TO BE CONTROLLED PROPERLY THROUGH THE MONITOR AND TANK SWITCHES.

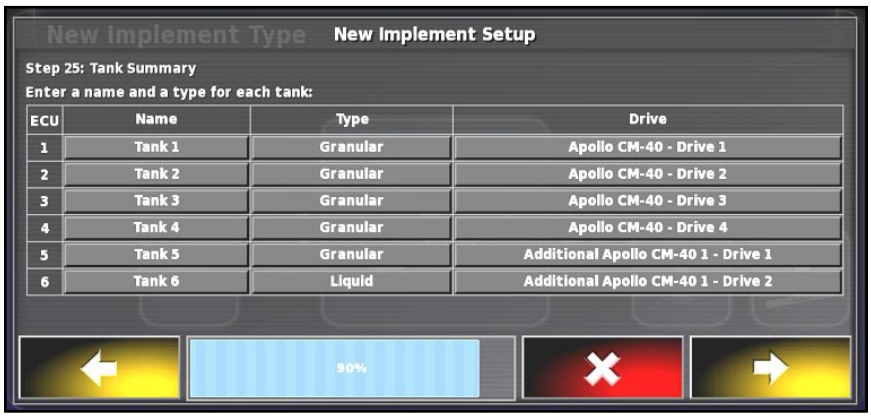


Figure 6.27 - Tank Smmary - Example

13. The custom profile setup is complete. Confirm to apply settings and restart X30 console.

Figure 6.28 - Custom Implement Profile Complete

6.3 ECU

6.3.1 ECU SETUP

After creating a new implement profile or changing implements, the new implement will be loaded and ECU Display window will be displayed.

This window displays a summary of all tanks, type of each tank (granular, liquid or NH3), ECU and drive channel for each tank, as well as ECU firmware version. Refer to *Figure 6.29*.

Selecting Show Booms button will display boom summary. Refer to *Figure 6.*30.

Most of the air seeder related settings will be loaded from the profile.

1. Refresh ECU Settings - will synchronise connected ECUs. Note, this may take a few minutes.
2. Clear ECU Errors - this will clear previous ECU errors.

   When ECU errors occur, alarm messages will be displayed. After issues resolved select this button to clear memory to avoid popping up of previous error messages.

Figure 6.29 - ECU Display - Tank Summary

Figure 6.30 - ECU Display - Boom Summary

3. Add Tank - this will allow you to add tank in situations when Saddle tank or liquid/NH3 system added to the existing tank.

   When selected, message, that this operation requires restart will be displayed. Click yes to proceed with adding the tank cancel to exit.

   Edit Implement setup wizard will start, if yes was selected. Refer to *Figure 6.31*.

   a. First step - adjust number of tanks and confirm.

   b. Second step - change name, type and drive for the added tank.

   c. Third step - confirm changes to apply new settings and restart the console.

NOTE

ADDITION OF AN EXTRA TANK MAY REQUIRE EXTRA SETUP PROCEDURES TO BE COMPLETED. DEPENDING ON YOUR CURRENT IMPLEMENT TEMPLATE, NOT ALL SETUP STEPS CAN BE DONE. WHEN SIGNIFICANT CHANGES TO THE IMPLEMENT CONFIGURATION REQUIRED, IT IS HIGHLY RECOMMENDED TO CREATE NEW IMPLEMENT TEMPLATE USING CUSTOM OR FACTORY FUNCTION FROM IMPLEMENT/NEW MENU, REFER TO *SECTION 6.2 - CREATING NEW IMPLEMENT PROFILE*.

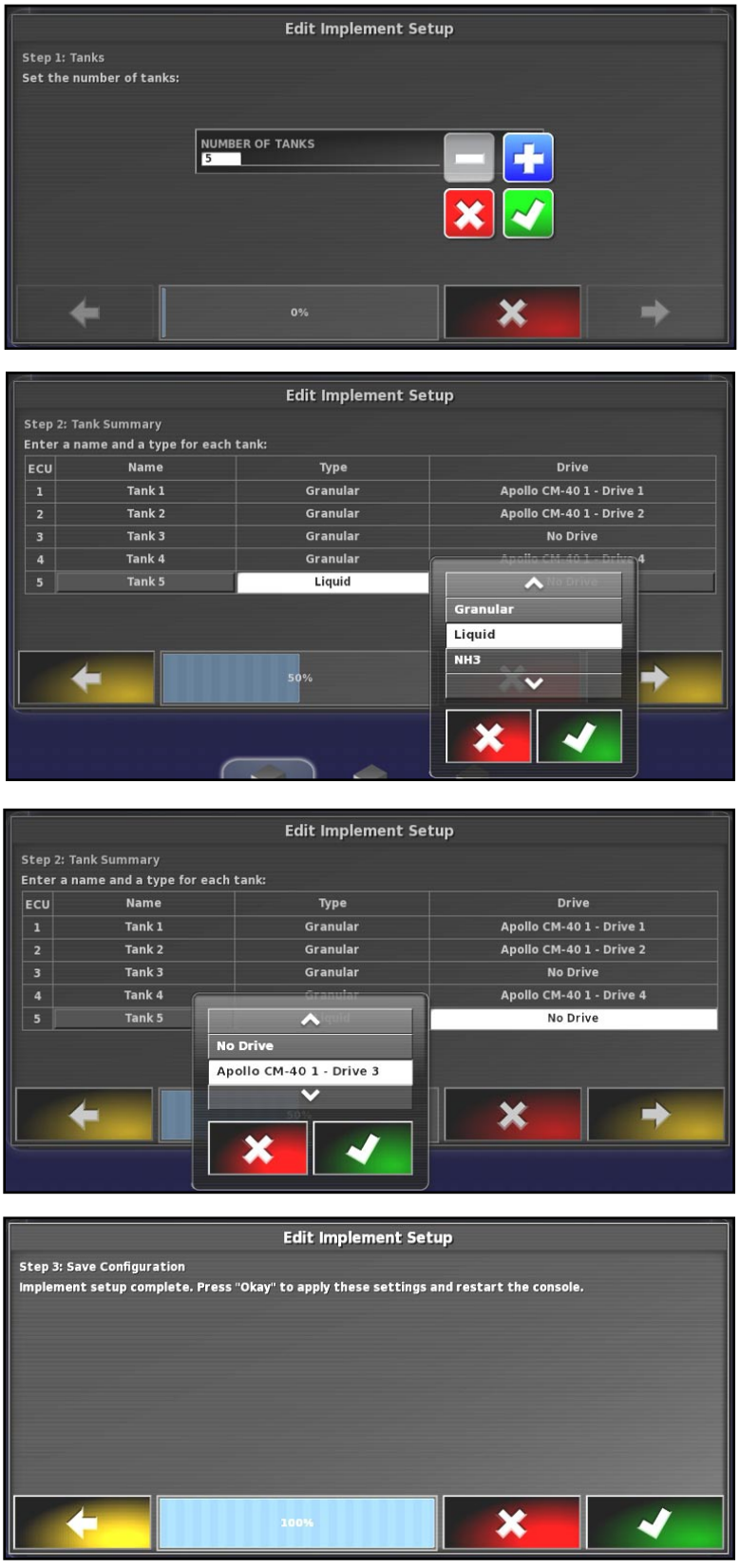


Figure 6.31 - Edit Implement Setup

6.3.2 ADD/REPLACE ECU

To detect, add or replace an ECU select Implement/ECU/Add/replace ECU.

Refer to *Figure 6.32*.

IMPORTANT

WHEN CREATING A NEW FACTORY PROFILE ALL OF THE ECU'S NEED TO BE DETECTED INDIVIDUALLY.

Figure 6.32. - Add / Replace ECU

Select button in the Status column for the ECU that needs to be detected or replaced. Refer to *Figure 6.33*. Menu window will appear.

Select Replace to start the wizard.

Figure 6.33. - Add / Replace ECU - Status

Step1 - Connect ECU

Follow instructions on the screen. *Refer to Figure 6.*34.

*Note: If **detecting** ECUs for the first time, when prompted by the console to disconnect the ECU and connect new one, it is not required, as ECUs will be detected for the first time.*

Connect ECU and select next.

IMPORTANT

IF **DETECTING** ECUS FOR THE FIRST TIME, MAKE SURE THAT ONLY THE MAIN ECU'S COMMS CONNECTOR IS PLUGGED IN, OTHER ECUS MUST BE DISCONNECTED. ONCE AND ECU HAS BEEN DETECTED, THE COMMS CONNECTOR FOR IT CAN REMAIN PLUGGED IN. IF **REPLACING** ECU, ALL ECU'S CAN STAY CONNECTED.

IF AN ECU IS NOT DETECTED BY THE CONSOLE, IN THE ECU ISO NAME COLUMN "PLEASE REPLACE ECU" WILL BE DISPLAYED INSTEAD OF THE IDENTIFICATION NUMBER.

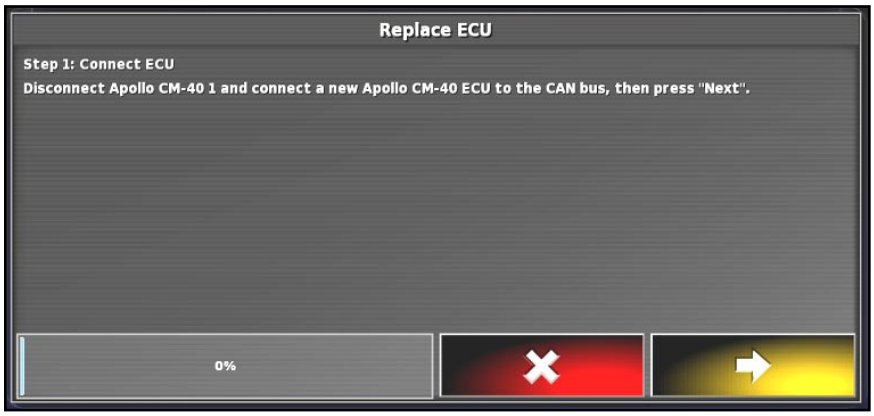


Figure 6.34 - Connect ECU

Step 2 - X30 console will attempt to detect ECU.

Step 3 - Once ECU detected, confirmation message will be displayed. Select NEXT to continue.

Step 4 - The Apollo system configuration summary will be displayed. Select "yes" to apply settings. *Refer to Figure 6.*35.

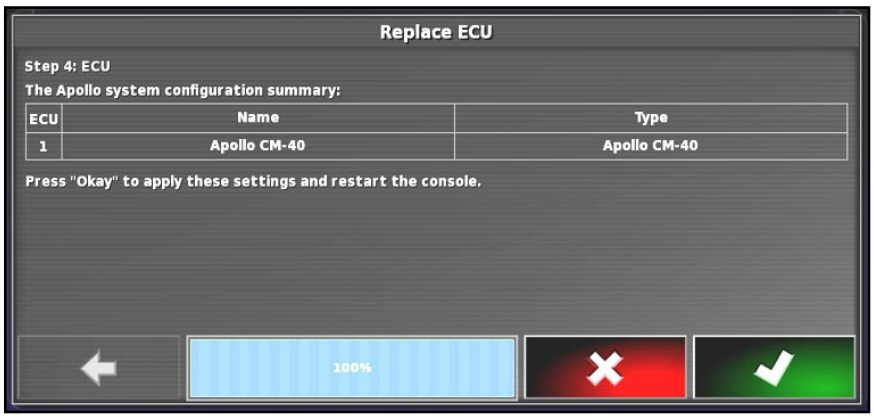


Figure 6.35 - Apollo System Configuration Summary

If main ECU was connected, console will restart. In the ECU summary table the identification number for the connected ECU will be displayed in the ECU ISO Name column. After ECU configured and synchronized, the firmware version will be displayed as well. *Refer to Figure 6.*36.

If detecting ECUs for the first time, repeat whole procedure for the rest of the ECUs. At the end all ECUs should have ECU ISO Name, and firmware version identified and displayed in the summary table.

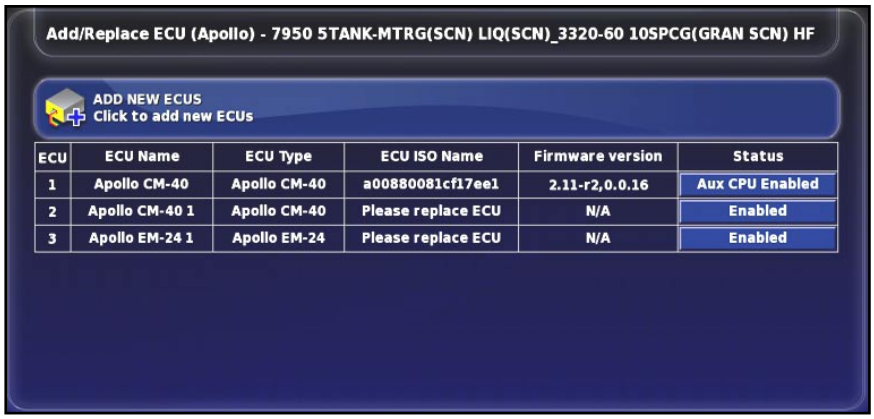


Figure 6.36 - ECU summary Table

6.3.3 ADD NEW ECUS

To add new ECU select Implement/ECU/Add/ Replace ECU and then select Add New ECUs button, refer to *Figure 6.37*. The wizard will start.

Step 1 - Connect ECU

Connect ECU's COMMS connector and press next.

Step 2 - Console will attempt to detect new ECU.

Step 3 - Once detected, confirmation message will be displayed. Select next to continue.

Figure 6.37 - Add New ECU

Step 4 - The Apollo system configuration summary will display detected ECU, refer to *Figure 6.*38.

If more ECUs need to be added, select add ECU button, refer to *Figure 6.*38. Repeat steps 1-4.

When done select "yes" button to finish and return to the Add/Replace ECU main screen. In the ECU summary table newly added ECUs will be displayed at the bottom.

The firmware for each ECU should come up once everything is detected and loaded up. There should be no ECU communication alarms popping up on the screen.

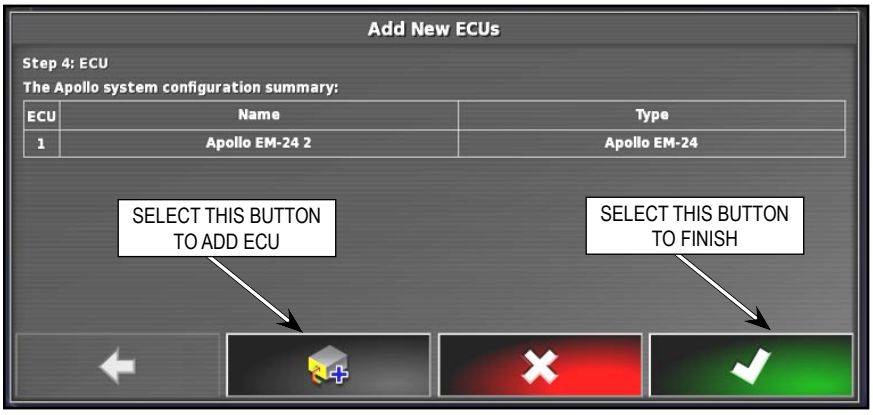


Figure 6.38 - Apollo System Configuration Summary

6.3.4 DISABLE ECUS

To disable ECUs not being used, select disabled under the status column. This will prevent any false ECU communication alarms from popping up.

6.3.5 UPGRADE ECU

This function is designed to upgrade ECU(s) firmware. Please contact your dealer for the availability of the new versions of firmware and request an upgrade.

6.4 GEOMETRY

To set implement geometry select Implement/ Geometry.

1. ***Boom for Guidance***

This setting can be left at default Full Width.

This setting is designed for Topcon Auto Steer Control and will let you select what boom should be used for guidance. For more information refer to Topcon Auto Steer operators manual.

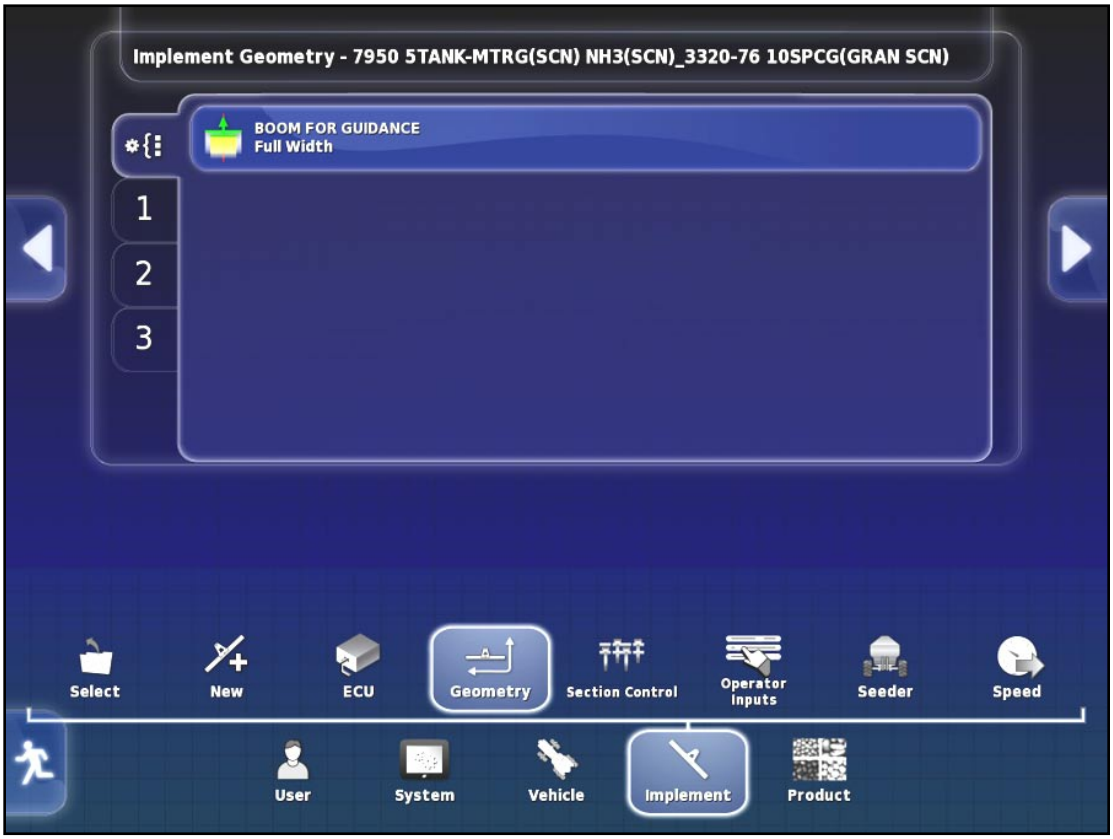


Figure 6.39 - Implement Geometry

If a Factory profile was selected, most of the following settings will be preset, but there are some that still need to be set that depend on your specific tank configuration.

If Custom profile was selected then most of the settings need to be entered.

There is a dimension setup page for each boom. They maybe set differently, depending how the unit is configured.

When the dimension to be set is selected, the name of the dimension will appear in the title bar. Also numerical keypad will appear. Enter the dimension value and confirm.

Refer to *Figure 6.40 & 6.41*.

A - **Swath Width** - working width of the implement.

No multi-section control: enter the full width boom working width of the implement here.

Multi-section control: Here you only will be able to view the dimension. If dimension selected "Operation Not Permitted" message will be displayed. Swath width will be set by the combination of boom section widths which are set in the Implement/Section Control/ Sections setup screen, refer to *Section 6.5 - Section Control*.

B - **Overlap** - the width of the overlap between two adjacent swathes. It is mostly used for auto steer and guidance. This value is typically set to 0.

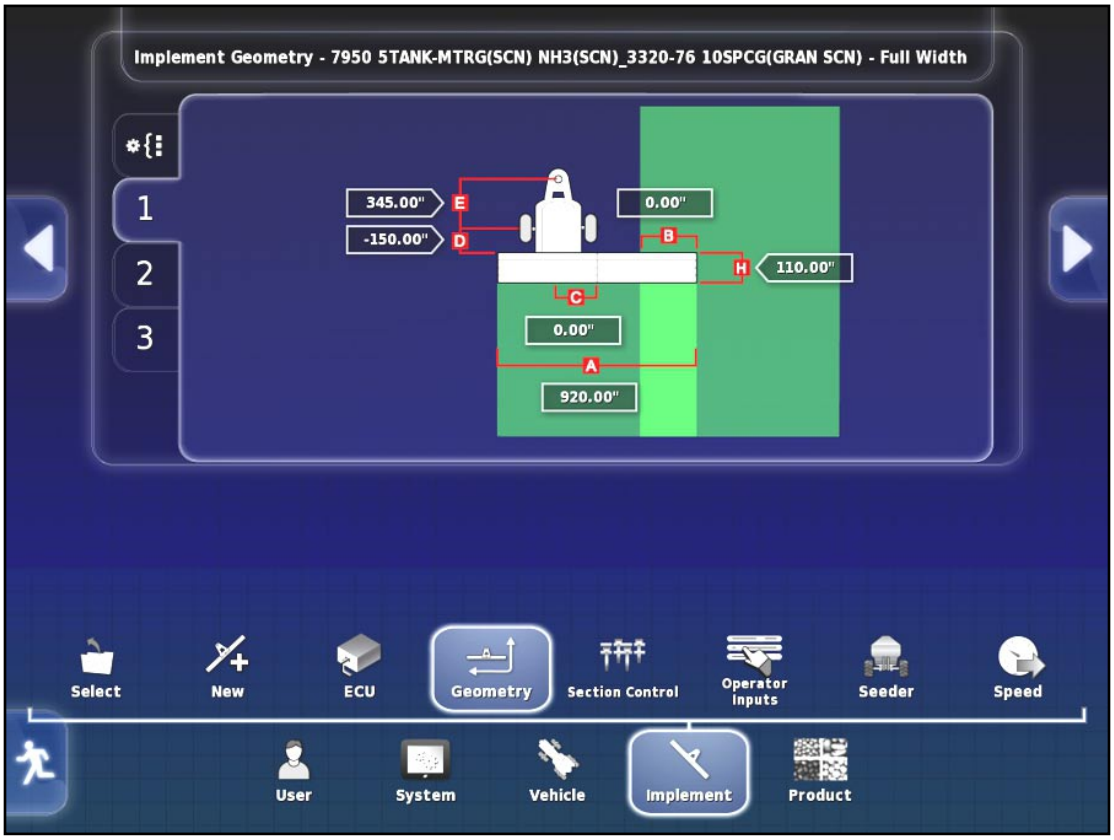


Figure 6.40 - Implement Geometry (TBHD)

C - Inline Offset - off-centre offset of the implement relative to the hitch point. Enter a positive number if the implement is shifted to the right and a negative number if it is shifted to the left.

Note: *this value is always '0" for a Bourgault seeding implement.*

D - Implement Wheels Offset - distance from pivot point of the drill to front row of openers. Enter:

- negative number for standard machine as pivot point is back tires.
- positive number for High Flotation machine as pivot point is front tires.

E - Implement Offset - distance from the front hitch to pivot point of the drill.

- regular drill, pivot point is back tires.
- high flotation drill, pivot point is front tires.

F - Trailer Wheels Offset (Leading Air Seeders ONLY) - distance from seeder tires to rear hitch pin.

G - Trailer Offset (Leading Air Seeders ONLY) - distance from airseeder tires to front hitch pin.

H - Working Length - depth of boom (distance from the front row of openers to the back row of openers).

NOTE

IF YOU ARE USING AUTO SECTION CONTROL (ASC) TO CONTROL THE PRODUCT, THESE DIMENSIONS ARE EXTREMELY IMPORTANT FOR GUIDANCE TO PERFORM ACCURATE COVERAGE.

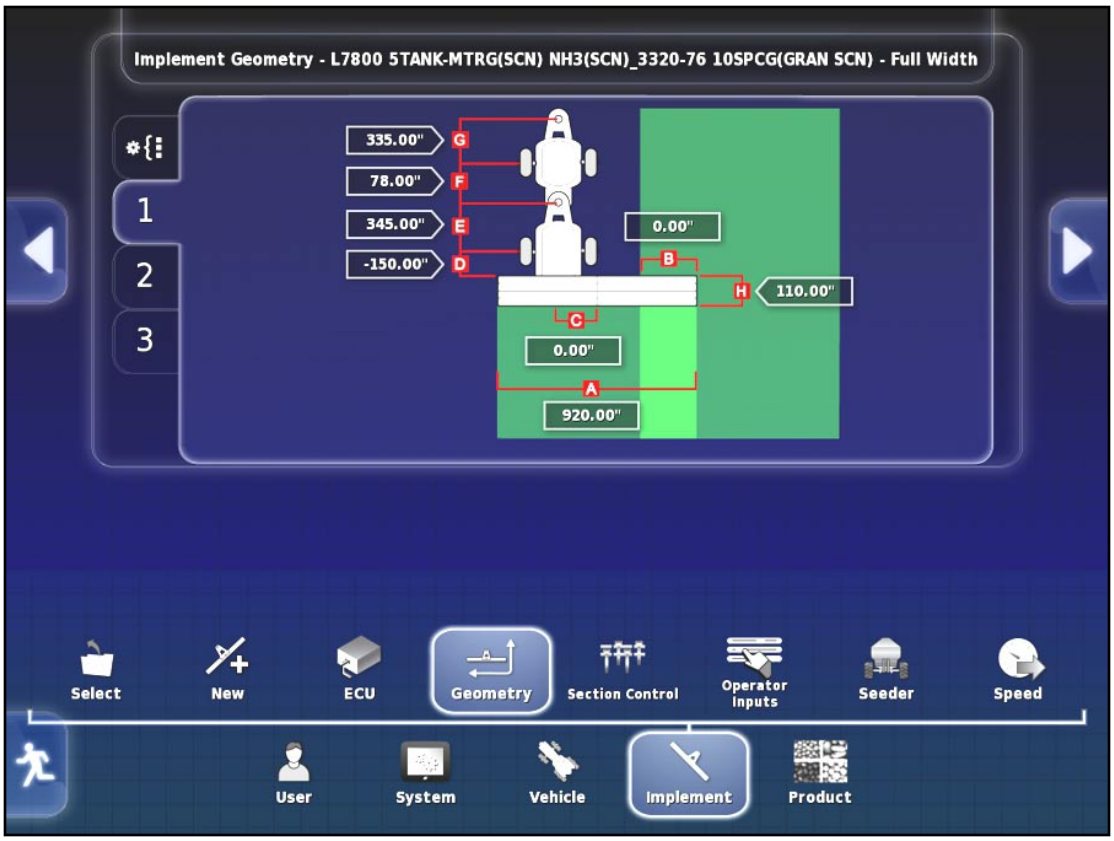


Figure 6.41 - Implement Geometry (LDG)

6.5 SECTION CONTROL

NOTE

SECTION CONTROL ICON ONLY APPEARS IF IMPLEMENT WAS SETUP WITH SECTION CONTROL (SECTION CONTROL AND RATE CONTROL SELECTED FOR IMPLEMENT CONTROL SETTING, FACTORY PROFILE SELECTED WITH ASC).

To access sectional control settings select Implement/ Section Control. Refer to *Figure 6.42*.

6.5.1 SECTIONS

Here you can enter number of sections and width of each multi-section boom.

NOTE

BOOM IS A TERM DERIVED FROM SPRAYERS AND MORE GENERALLY APPLIES TO A PRODUCT BEING APPLIED. IN SEEDING SCENARIOS, YOUR MACHINE WILL HAVE ONE FULL-WIDTH GRANULAR PRODUCT "BOOM" AND MIGHT ALSO HAVE ONE MULTI-SECTION NH3/LIQUID "BOOM" AND/OR ONE MULTI-SECTION GRANULAR "BOOM".

1. Select boom from the tabs on the left side, the name of that boom will be shown in the title bar.
2. Select Sections button to enter number of sections. Use plus/minus buttons to increase/ decrease value.

NOTE

BOURGAULT HARNESSING CAN CONTROL UP TO 10 SECTIONS.

3. The are two set of 12 relays on the ECUs that control ASC for granular and/or liquid boom. First set is #1-12. Second set is #13-24. The First Section Relay will set the first number of the relay to which that boom is connected.

   - it should be set to 1 for 1st boom and 13 for 2nd boom.

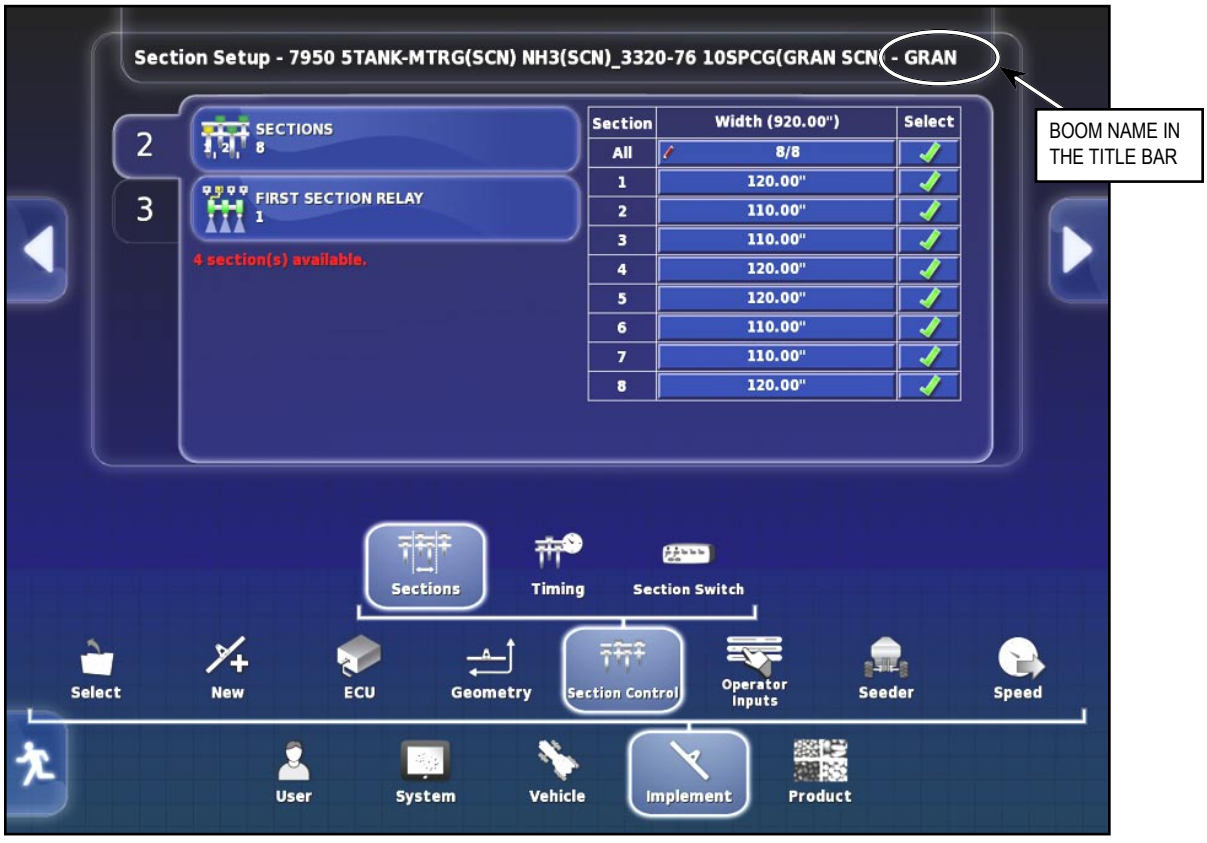


Figure 6.42 - Section Control - Granular Boom Settings

4. The width and number of nozzles for each section can be entered individually by selecting Width button and Nozzles button for desired section. This will calculate the total width of the implement and enter it into the Geometry settings.

Note: Nozzle column applies to NH3/liquid booms only. Section width determined as number of openers/nozzles multiplied by spacing.

IMPORTANT

TOTAL WIDTH SHOULD MATCH FOR ALL BOOMS UNLESS YOU HAVE A UNIQUE IMPLEMENT SETUP.

Alternatively you can set width and number of nozzles for several or all sections at once:

- In the Select column checkmark desired sections or check mark "All" to select all sections. Note, that number of selected section out of all sections will be displayed in the width and number of nozzles column for "All". Refer *Figure 6.44*.

Figure 6.43 - Section Control - NH3 Boom Settings

Figure 6.44 - Selecting Sections

- Select Width button for "All". Keypad will appear. Keypad will have an additional button, that shows currently used units and if selected will allow to changes units used for the width. Enter the value and confirm by selecting green check mark. Refer *Figure 6.*45.

- Select Nozzles button for "All". Keyapd will appear. Enter the value and confirm by selecting green check mark. Refer *Figure 6.*46.

Figure 6.45 - Entering Width

Figure 6.46 - Entering Number of Nozzles

6.5.2 TIMING

This will set times for product to get from the section control valves to the openers.

1. Select boom from the tabs on the left side, the name of that boom will be shown in the title bar.
2. ON time - it should be the time from when the section control valve opens until product is flowing at the exit of the opener.
3. OFF time - it should be the time from when the section control valve closes until product stops flowing at the exit of the opener.

All sections can be set to have the same on/off time (the worst case) or they can have individual times for granular sections to have even less overlap. Since the product for the inner sections has less distance to travel they don't need to start as soon or stop as late so can have a shorter on/off time.

IMPORTANT

ALWAYS MEASURE TIMES. ACCURATE TIMES ARE CRITICAL TO THE PROPER FUNCTION OF THE ASC SYSTEM.
WHEN MEASURING TIMES, MAKE SURE THAT:
- FAN SPEED SET TO THE SPEED THAT WILL BE USED DURING SEEDING,
- START TIMING WHEN SECTION CONTROL VALVE OPENS/CLOSES.

The On/Off time can be set for several or all sections at once (ex. Pick 2 inner sections and set the same as drill is symmetrical). In the Select column checkmark desired sections or check mark "All" to select all sections. Note, that number of selected section out of all sections will be displayed in the On Time and Off Time column for "All".

Select On Time or Off Time button for "All". keypad will appear. Enter the value and confirm by selecting green check mark.

Alternatively you can enter on/off time for each section individually by selecting on/off time button for desired section.

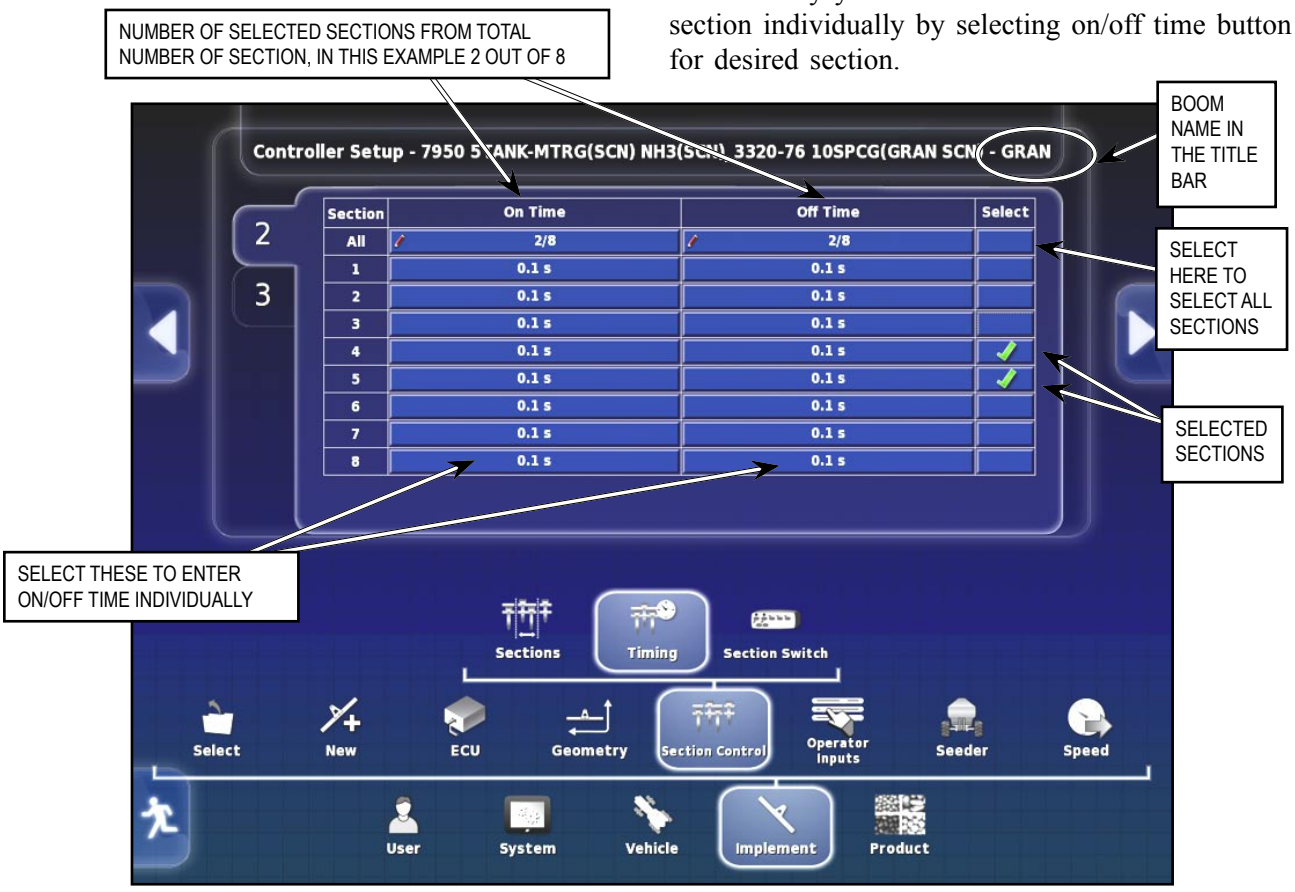


Figure 6.47 - Section Control - Timing Settings

6.5.3 SECTION SWITCH

Here you can enable and configure a virtual section switchbox, that allows manual override control of the sections for each boom. If left disabled the sections will always stay on, unless the ASC shuts them corresponding to the coverage map.

1. Refer to *Figure 6.48*. Select Virtual Section Switchbox button to enable or disable virtual switchbox. When enabled it will display tab for each boom, that will allow you to configure the switchbox.

2. Select boom and then select Switches button to set number of switches. In the table assign switches to the sections. Refer to *Figure 6.49*.

   Note: Normally you would match the number of switches to the number of sections to have a switch for each section.

Once the virtual section control switch is enabled and setup, a virtual switchbox icon will be displayed in the mini-view menu, refer to *Figure 6.50*. Selecting the virtual switchbox icon will open up the mini-view window. There will be a tab for each boom. You can also access the section switches from the guidance screen or the seeder controller screen.

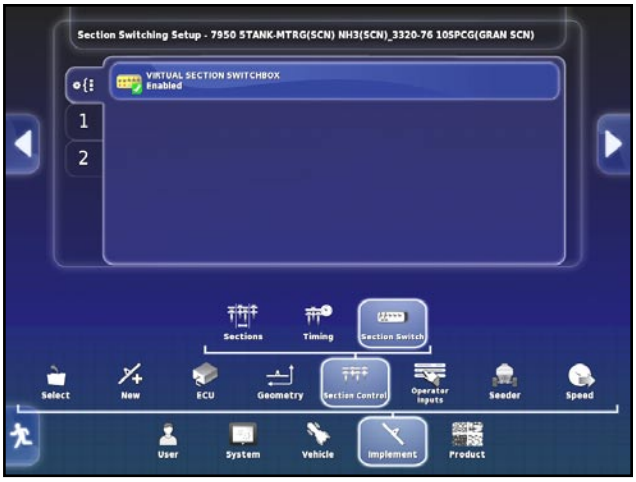


Figure 6.48 - Section Control - Switch Settings

Figure 6.49 - Section Control Switch Setup

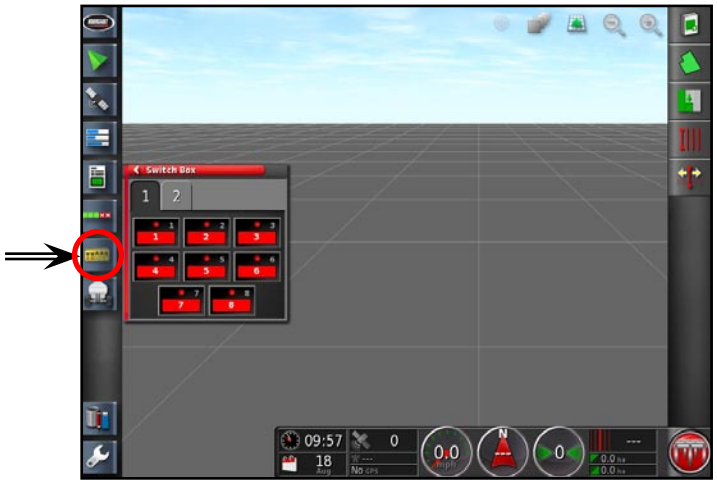


Figure 6.50 - Virtual Switchbox

6.6 OPERATOR INPUTS

6.6.1 MASTER SWITCH

a. **Source -** available selections:

- **Virtual** - use this selection if you do not have a cabin switchbox connected and only want the master switch to be controlled from the X30 console screen.
- **External Console Input** - allows use of remote mapping connector on the X30 harness as an alternative master signal.
- **Apollo CM-40** - not used
- **Implement** - use this selection if you want the auto clutch switch on your drill to act as the master switch.

IMPORTANT

FOR OPERATIONAL INSTRUCTIONS USING AUTO CLUTCH SWITCH REFER TO *SECTION 13.1 - AUTO CLUTCH SWITCH*.

- **Keypad** - use this selection if a cabin switchbox connected and you want to use the master switch on the switchbox. ***Note: Refer to Section 6.6.2 - Keypad for in-cab and on frame switchbox settings.***
- **Keypad and Virtual** - use this selection if you want to control master switch from the X30 console as well as the in-cab switchbox.

b. **Implement Master Switch** - allows use of auto clutch as a secondary along with the other Master switch selection.

Figure 6.51 - Switches Setup

6.6.2 KEYPAD

This menu option will allow you to identify and assign the right in-cab and on-frame switchbox, assign functions to the buttons that have no functions assigned to them (A, B & C buttons), select how you prefer to control tanks.

There are two tabs, one for the in-cab switchbox and the other for the switchbox on the frame of the air seeder. Refer to *Figure 6.53*.

In-Cab SwitchBox

1. **Keypad ID** - allows you to select the in-cab switchbox. When selected, it will display a drop down list with switchbox IDs. If there is no switchbox used, select none. You can confirm you have the right keypad assigned in the cab as the LED lights will stop flashing. There is also an Identify Keypad button that changes the flash sequence to confirm you have the right one selected for the appropriate location.
2. **Identify Keypad** - When selected, led lights on the switch box will flash green, yellow, red. Refer to *Figure 6.52*. Select this button again to stop flashing.

Figure 6.52 - Identifying Keypad

Figure 6.53 - Keypad - In-Cab

3. **Button A** - will allow you to choose the function for this button from some of the following options, depending on other features that are enabled:

   Not Assigned - button will have no function

   Increase Tank Rate - will increase tank rate by the preset. When selected, additional setting **Tank Rate Change Mode**, that allows to select for which tank rate will be increased, will become available, refer to *Steps 7 & 8*.

   Liquid/NH3 Manual Override - changes between VRC, auto and manual mode for Liquid/NH3 tank.

   Fill All Tanks - Will add product weight to each tank, based on 100% tank volume used and density of the product in that specific tank.

4. **Button B** - will allow you to choose the function for this button from the following options:

   Not Assigned - button will have no function

   Decrease Tank Rate - will decrease tank rate by the preset. When selected, additional setting **Tank Rate Change Mode**, that allows to select for which tank rate will be decreased, will become available, refer to *Figure 6.54*, *Steps 7 & 8*.

   Liquid/NH3 Manual Override - changes between VRC, auto and manual mode for Liquid/NH3 tank.

   Fill All Tanks - Will add product weight to each tank, based on 100% tank volume used and density of the product in that specific tank.

Figure 6.54 - Keypad - Tank Rate Change Mode

5. **Button C** - will allow you to choose the function for this button from the following options:

   Not Assigned - button will have no function

   Prime - can be used to run meters for preload time or as long a button is held to check runs.

   Fill All Tanks - Will add product weight to each tank, based on 100% tank volume used and density of the product in that specific tank.

6. **Tank Keys** - will allow you to select tank controls:

   Virtual - X30 console only will be used to control tank switches.

   Keypad - switchbox will be used to control tank switches.

   Keypad and Virtual - both, X30 console and in-cab switchbox will be used to control tank switches.

7. **Tank Rate Change Mode** - will allow you to select which tanks will be controlled when increase/decrease tank rate button is used. Available options are:

   - All Tanks - all enabled tanks.
   - Active Tanks - only tanks that have the switch turned on.
   - Selected Tanks - will bring up another tab that allows you to pick specific tank(s), refer to *Step 8*.

8. Select Tank - will allow you to select specific tank(s) that will be controlled when increase/decrease tank rate button is used.

On Frame (calibration) SwitchBox

1. **Keypad ID** - allows you to select the on frame switchbox. When selected, it will display a drop down list with switchbox IDs. If there is no switchbox used, select none.

2. **Button A** - will allow to choose the function for this button from the following options:

   Not Assigned - button will have no function

   Calibration Mode On/Off - will enter/exit calibration mode. When in calibration mode, on frame switchbox can be used to control metering augers, as well as to run meters to check runs when the unit is stationary.

3. **Button B** - at present this button is disabled, reserved for the future drill functions.

4. **Button C** - on the on frame (calibration) switchbox this button always functions as prime/reset button.

NOTE

UNUSED TANK BUTTONS AND UNASSIGNED BUTTONS WILL HAVE NO LEDS LIT UP.

6.7 SEEDER

6.7.1 GRANULAR SETUP

6.7.1.1 GRANULAR TANK SETUP

To access tank setup select Implement/Seeder/ Granular/Tank from the settings menu.

6.7.1.1.1 GENERAL TANK SETUP

To access general tank setup select the top tab that is located above the individual tank # in the main settings area, refer to *Figure 6.55 & 6.56*.

a. **Name as Bin or Tank** - select Bin or Tank, depending on how you would like the individual compartments of your air seeder to be referred to.

b. **Use Product as Name** - if enabled, name of the product that is assigned to the tank will be used as a name for that Bin/Tank. If no product assigned to the tank, the tank name will correspond to the tank number.

c. **ON time To Ground (Full width configuration)** – it is the time from when meter starts until product is flowing at exit of opener on longest run (outer wing opener). Time the rear tank (for TBHD) and front tank (for LDG) to get the longest time (worst case).

d. **OFF time To Ground (Full width configuration)** – it is a time from when meter stops turning until product stop flowing at shortest run (main frame opener). Time the front tank (for TBHD) and rear tank (for LDG) to get the shortest time (worst case).

IMPORTANT

ALWAYS MEASURE TIMES. ACCURATE TIMES ARE CRITICAL FOR PROPER FUNCTION OF THE SYSTEM. WHEN MEASURING TIMES, MAKE SURE THAT:
- FAN SPEED SET TO THE SPEED THAT WILL BE USED DURING SEEDING,
- START TIMING WHEN METER STARTS TURNING, NOT WHEN PRIME BUTTON IS PUSHED.

Figure 6.55 - General Tank Setup (7000 AS)

EXAMPLE: IF GRANULAR TANKS ARE SET TO 4 SECONDS ON AND 3 SECONDS OFF, THEN THE METERS WILL TURN ON 4 SECONDS BEFORE EXITING HEADLANDS AND WILL TURN OFF 3 SECONDS BEFORE ENTERING HEADLANDS AT THE END OF THE PASS.

e. **Preload time** – this setting only effective for 7000 AS with hydraulic drive. This is time that meters will run when master is switched on while stationary (no ground speed). When starting a seeding pass from a stop it allows for product to be at the openers before moving. Preload time is also the length of time that the meters will run when the "prime" button on the on-frame switchbox is pushed momentarily. Typically set as the longest on time to ensure product is at all openers before starting.

Note: It is not necessary to enter a preload time to check runs. The prime button just needs to be held for meters to turn, refer to *Section 8.9 - Checking Distribution Runs and ASC Valves*.

f. **Fan Speed to Start** – Enter the minimum fan speed at which meters may be activated. This prevents the possibility of running meters without fans engaged and subsequent plugging of the distribution pipes.

g. **Master Clutch** - this setting displayed **ONLY for 6000 AS with linear actuators** and needs to be enabled to control master clutch.

h. **Calibration Drive** - this setting displayed only for 6000 A/S with linear actuators. It is not used and should remain disabled.

Figure 6.56 - General Tank Setup (6000 AS)

6.7.1.1.2 INDIVIDUAL TANK SETUP

To access individual tank setup select the numbered tab that corresponds to the tank that you would like to change settings for, refer to *Figure 6.57.*

a. **Name** - here you can enter the name for the specific tank of the air seeder. This name will be used for that tank only if "use product as name" is disabled. By default the name will consist of word "bin" or "tank", depending on the naming convention you chose, and the number of that tank.

b. **Capacity** - tank volume is factory preset and loaded from the implement profiles.

c. **Status** - this setting will be shown only for the tanks which have drive assigned to them according to the air seeder tank model that was selected during the implement setup. Set status to "enable" if this tank will be metered from. If tank is not being metered from set status to "disabled", otherwise system will not allow you to start applying product, as all enabled tanks must have calibration factors even if switched off.

   This setting will be greyed out for the tanks that are grouped with others as grouping takes care of disabling tanks.

d. **Section Control (7000AS)** - these settings appear only if granular section control is enabled in the profile.

   - can set each tank to be controlled by Full Width boom or by granular sectional boom. If tank product is routed through distribution pipe with section valves that will be operating it needs to be set to the granular boom in order to have correct amount of product to each section.

Note: On/Off time tabs will have different meaning and wording depending if boom is sectional or full width. If ASC is shut off and disabled, and all tanks are switched back to full width boom then each tank timing needs to be adjusted accordingly.

The system combines this time with the section control timing to know when to turn the tank on or shut it off.

Figure 6.57 - Individual Bin/Tank Setup

Sectional Boom:

e. **On Time to SC location** - it should be the time from when meter starts until product is at the section valve.

f. **Off Time to SC location** - it should be the time from when meter stops turning until product stop flowing through section valve.

Note: These times can be set to 1 sec for a tow-behind configuration. This should be measured for a leading configuration since it is longer time and may vary more significantly.

Full Width Boom:

e. **On Time to Ground** - it should be the time from when meter starts until product is at the opener on longest run.

f. **Off Time to Ground** - it should be the time from when meter stops turning until product stop flowing through the opener at shortest run.

IMPORTANT

ALWAYS MEASURE TIMES. ACCURATE TIMES ARE CRITICAL TO THE PROPER FUNCTION OF THE SYSTEM. WHEN MEASURING TIMES, MAKE SURE THAT:
- FAN SPEED SET TO THE SPEED THAT WILL BE USED DURING SEEDING,
- START TIMING WHEN METER STARTS TURNING, NOT WHEN PRIME BUTTON IS PUSHED.

6.7.1.2 TANK GROUPING

Depending on how the implement profile was created, using Bourgault factory profiles or if it was a custom one (refer to *Section 6.2 - Creating New Implement Profile*), selection of the tank grouping will be done differently.

6.7.1.2.1 SELECTING FROM FACTORY GROUPINGS

This section applies when an implement profile was created based on a Bourgault factory profile.

Using arrow buttons, refer to *Figure 6.58*, select the correct tank grouping if multiple tanks are being combined and metered from one auger. Confirm your selection.

IMPORTANT

REMEMBER THAT SELECTING A TANK GROUPING ONLY SETS THE MONITOR UP THAT WAY AND THE INTERCONNECT COVERS ON THE AIR SEEDER TANKS WILL NEED TO BE PHYSICALLY CONFIGURED THE SAME WAY. SELECTING A GROUPING WILL AUTOMATICALLY DISABLE THE TANKS THAT WILL NOT BE METERED FROM.

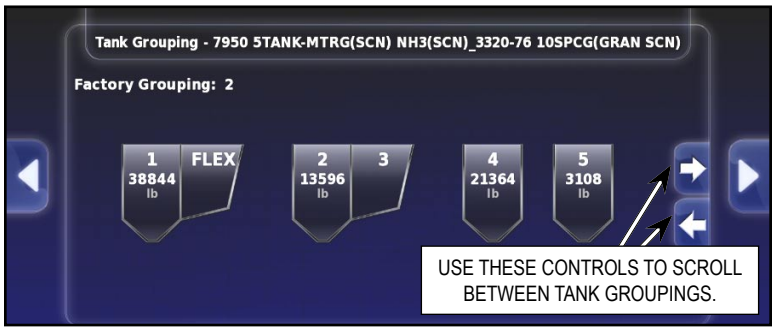


Figure 6.58 - Tank Groupings

6.7.1.2.2 CREATING CUSTOM GROUPING

This section applies when a custom implement profile was created.

Refer to *Figure 6.59*. The configuration where all tanks are independent (not combined) will be used as the default tank grouping.

To add a custom configuration select "+" sign button. "+ New Grouping" window will appear. Refer to *Figure 6.60*.

Select Grouping Name button. Keypad will appear. Enter desired name for the new tank grouping. Confirm the new name and then confirm the adding of the new grouping.

Refer to *Figure 6.61*.

Figure 6.59 - Creating Custom Tank Grouping

Figure 6.60 - Add New Grouping Window

Select the tank that you would like to add to another tank (combine them using interconnect covers). While holding it drag it to the tank to combine with. Release when two tanks are touching. These two tanks will appear connected. Using drag and drop method create your custom tank configuration. Ensure to drag the tank that will have its meter disabled. If it is required to separate tanks (ex. connected by mistake or in case of not supported combination) select one of the tanks and while holding it drag it away until they are clearly separated and release.

Once you are satisfied with the new configuration confirm it by selecting green checkmark button.

You can create additional tank groupings for the future use with this implement profile.

Refer to *Figure 6.62*.

When more than one grouping is available, left/right scroll buttons and delete buttons will become enabled.

Use left/right scroll buttons to move between different tank groupings.

If particular tank grouping is not been used or required it can be deleted. Using arrows bring up the grouping you would like to delete and then select delete button.

IMPORTANT

- ONLY TANKS THAT HAVE INTERCONNECT COVERS BETWEEN THEM CAN BE COMBINED. DO NOT CREATE GROUPINGS THAT ARE NOT PYSICALLY POSSIBLE ON THE TANK.
- SADDLE TANK (#5) CAN NOT BE COMBINED WITH ANY TANKS.

Figure 6.61 - Custom Tank Grouping

Figure 6.62 - Custom Tank Grouping - Additional Controls

6.7.1.3 DRIVE SETUP

Here you will be able to configure settings related to the metering drive for each tank that has a metering auger installed. On the left side there are several tabs:

- First tab will allow you to set if each tank will have custom settings or use (copy) settings from specified tank, refer to *Figure 6.63*.
- Tabs with numbers correspond to a specific tank (bin) and will have drive settings for that tank(bin), refer to *Figure 6.64*. Please note, that there are some differences in drive settings between 6000 Series and 7000 Series air seeders.

a. **Drive Type** - select drive type, that is used on your air seeder:

7000 Series - Proportional Valve (an electric PWM valve on each motor controls the ON/OFF and speed of the metering auger hydraulic motors).

6000 Series - Linear Actuator (an electric actuator that adjusts the transmission which controls the speed of the metering auger).

b. **Encoder pulses/revolution** - select number of pulses for each revolution of the metering auger:

7000 Series - 32 (metering auger sensor picks up the signal from the 32 tooth sprocket on the metering auger shaft).

6000 Series - 16 (metering auger sensor picks up the signal from the 16 tooth sprocket on the metering auger shaft).

Figure 6.63 - Drive Setup

c. **Minimum shaft RPM (7000 Series ONLY)** - should be set at 10 rpm.

d. **Maximum shaft RPM (7000 Series ONLY)** - should be set at 1000 rpm.

e. **Metering Auger** - select the style of metering auger used in that particular tank. Compared to previous settings, that are loaded with the factory implement profile, this setting needs to be entered by the operator.

Each auger is stamped with an identification code on the exposed end of the auger shaft on the right side of the tank. Check the code on each shaft if you are not sure and make the correct selection.

Note (7000 Series) - saddle tank comes standard with LO auger and is Factory Default.

LO - LOW OUTPUT RIGHT HAND AUGER (UHMW ONLY)

2X - DOUBLE FLIGHT RIGHT HAND AUGER

1X - SINGLE FLIGHT RIGHT HAND AUGER

HX - HIGH OUTPUT SINGLE FLIGHT RIGHT HAND AUGER

e. **Tank Clutch (6000 Series ONLY)** - this setting needs to be enabled for each tank to allow control of tank clutches and turn tanks on/off.

7000 SERIES

6000 SERIES

Figure 6.64 - Drive Setup - Specific Tank