SATLOC FALCON

SATLOC FALCON PRO

USER MANUAL

WHAT'S INSIDE!

PN 875-3010-000, Rev B1

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

Read and Follow Safety Messages

Satloc GPS systems are intended for VFR (visual flight rules) use only. Information provided is intended solely for recording aerial application activities and enhancing application guidance. Satloc is not a replacement for best pilot practices. Follow required procedures, flight rules, and regulations during use.

- In these instructions, you may see the heading 

and/or the safety alert symbol  . They indicate a hazardous situation that, if not avoided, could result in death or serious injury. The safety messages provide information to identify a hazard associated with potential injury.
- Read and understand this manual and all the warnings below before installing, operating, or performing maintenance or service. FAILURE TO DO SO MAY CAUSE IRREVERSIBLE DAMAGE TO YOUR SYSTEM.
- Keep this manual and all related safety information with the manuals for your aircraft.

Latest Version of the Falcon Installation Guide

Satloc is dedicated to providing updated versions of installation guidebooks for its customers. For the latest version of the Falcon User Manual, visit www.Satloc.com.

Notice to Customers
Contact your local dealer for technical assistance. To find an authorized dealer near you, visit www.Satloc.com.

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WARNINGS, CAUTIONS & NOTES

Warning: Satloc GPS systems are intended for VFR (visual flight rules) use only. Information provided is intended solely for recording aerial application activities and enhancing application guidance. Satloc is not a replacement for best pilot practices. Follow required procedures, flight rules, and regulations during use.

Warning: The altitude calculated by GPS receivers is a geometric height above Mean Sea Level and could vary significantly from the altitude displayed by pressure altimeters. Always use the pressure altitude displayed by the aircraft altimeter when determining or selecting aircraft altitude.

Warning: To reduce the risk of unsafe operation, carefully review and understand all aspects of the Falcon's User Guide and the Pilot's Operating Handbook of the aircraft. Thoroughly practice basic functions before actual use. During flight operations, carefully compare indications from the Falcon to all available navigation sources, including the information for other NAVAIDs, visual sightings, charts, etc. For safety purposes, always resolve any discrepancies before continuing navigation.

Warning: The screenshots in this User Manual are for informational purposes only and intended to help users navigate to the correct areas. The number values shown in these screenshots are not necessarily recommendations. Ultimately, it is the responsibility of the pilot/user to input values and information that are suitable for the product they are applying or for the specific job requirements. Always refer to product labels, job specifications, and industry guidelines to ensure proper application.

Warning: For safety reasons, Falcon operational procedures must be learned on the ground.

Warning: The United States government operates the Global Positioning System and is solely responsible for its accuracy and maintenance. The GPS system is subject to changes that could affect the accuracy and performance of all GPS equipment.

Warning: Do not use background maps for primary navigation. Basemap data is intended only to supplement other approved navigation data sources and should be considered as an aid to enhance situational awareness.

Caution: Avoid using any chemical or abrasive cleaners on the touchscreen and/or plastic casing. Clean the touchscreen with a soft, clean, lint-free cloth. Use water, isopropyl alcohol, or eyeglass cleaner if needed.

Caution: The Falcon GPS does not contain any user-serviceable parts. Repairs should only be made by an authorized Satloc Dealer. Unauthorized repairs or modifications could void the warranty and the pilot's authority to operate this device under FAA/FCC regulations.

Note: All visual depictions in this document, including screen images of the GPS panel and displays, are subject to change and may not reflect the most current GPS system and aviation databases. Depictions of equipment may differ slightly from the actual equipment.

Note: Interference from GPS repeaters operating inside nearby hangars can cause an intermittent loss of attitude and heading displays while the aircraft is on the ground. Moving the aircraft more than 100 yards away from the source of the interference should alleviate the condition.

Note: Polarized eyewear may cause the flight displays to appear dim or blank.

CHAPTER 1: OVERVIEW

WHAT'S INSIDE!

1.1 OVERVIEW OF MODELS

Satloc offers two versions of the next generation GPS system — Satloc® Falcon™ and Satloc Falcon Pro™. These aerial guidance GPS systems provide precise and flexible guidance technology for today's aerial spray market.

SATLOC® FALCON™

SATLOC® FALCON™ PRO

BASIC MODEL

Satloc Falcon GPS system will meet all your liquid application needs. Features include WiFi connection capability, basic patterns, log files, guidance modes, real-time background maps, Satloc Cloud connection, and optional upgrade unlock codes for enhanced features.

PRO MODEL

Satloc Falcon Pro GPS system is equipped with all the right tools and ready for all liquid and dry jobs! The Falcon Pro includes all the basics and more. The additional features are enhanced patterns, enhanced guidance modes, top hat control, hopper fill meter, boom control, all the unlocks, auto dispersal, PMAPs ,and dry controller.

Technical Specifications

Wireless Data Communications: WiFi, 802.11 AC, 2.4 GHz or 5 GHz	**Memory (RAM):** 4 GB @ DDR4 SO DIMM	**Mount Style:** Horizontal or Rack
Main CPU: Intel Core i5-8365UE, 8th generation @ 1.60 GHz with Turbo up to 4.1 GHz	**Power Input:** 12-30 VDC, reverse input, fault output and surge protection	**Footprint:** Rack Mount - 6" x 3.9" (23.3 sq in) Horizontal Mount - 6" x 6" (36 sq in)
Solid State Drive: 256 GB for Falcon (M.2 NVMe PCIe Gen3) 512 GB for Falcon Pro (M.2 NVMe PCIe Gen3)	**Screen:** 7" or 9" Touchscreen with multi-function display	20Hz SBAS GPS with optional GLONASS Falcon Pro (Only) -enhanced by 100 Hz inertial measurement

Quick Comparison Chart

Below is a quick comparison of the two models as of July 2023.

System Features	SATLOC FALCON	SATLOC FALCON PRO
CPU with 2 Mounting Options	✓	✓
Multi-Language (English, Spanish, Portuguese)	✓	✓
7" & 9" Screen Options	✓	✓
ADS-B In	✓	✓
Solid State Hard Drive	256 GB	512 GB
Built In WiFi Connection	✓	✓
Satloc Cloud Connection (With 3rd Party Options)	✓	✓
Real Time Background Maps	✓	✓
Offline Background Maps (Additional Charges Apply)	✓	✓
Shape File Support	✓	✓
Cockpit Encoder Knob (Option to Upgrade)	Single	Dual
Ag Laser Connection (Plug & Fly, No Additional Cabling)	✓	✓
Guidance Modes (Enhanced Features in the Falcon Pro)	✓	✓
PMAP's	Unlock Required -$	✓
Auto Dispersal (Formerly Spray Off)	Unlock Required -$	✓
Boom Control Input (With Enhanced Patterns)	Unlock Required -$	✓
Controls & Monitors 4 Valves		✓
Dry Controller / Variable Rate		✓
Transland Meterate		✓
External CAN		✓
Flow Meter Input		✓
Inertial Measurement Unit (IMU)		✓
Top Hat Control Inputs (Additional Hardware Required)		✓
Integrated AIMMS Capability		Optional Upgrade

Satloc Cloud

Both Falcon models are compatible with Satloc Cloud. Satloc Cloud is a Satloc software product that can be used in conjunction with Falcon and Falcon Pro to perform more advanced tasks. Satloc Cloud is a real-time web-based asset tracking tool that enables companies to track the position and position-related data of aircraft and other assets, such as spotter vehicles and loader trucks.

The Satloc Cloud symbol will appear in this user manual when there is a function that requires integration with the Falcon Models and Satloc Cloud.

Visit www.Satloc.com for more information about Satloc Cloud, or contact your local Satloc dealer.

1.2 A NEW WAY OF DOING 'JOBS'

Jobs Are Everything

In the Falcon system, all your data is contained in a Job. This means that all that data is contained in the Job no matter what day you applied, how many patterns you used during an application, or how many times or even days you returned to apply.

Jobs can be created in real-time. Additionally, Jobs can be made from a polygon(s) or prescription maps and then loaded into the Falcon through USB or the Cloud. They all behave the same.

A Job and all the related paint and swathing data are opened on the Falcon by 1) loading the Job (through the menu or a Hotkey) or 2) by returning to a Mark (created while that Job was previously open).

If the user creates a new job on the Falcon, a default job name is suggested with the Falcon's serial number, date of application, and daily job counter as the job name. The user could instead name the Job something meaningful: "Farmer Brown Field."

BENEFITS OF ALL DATA **CONTAINED IN JOBS**

01 Pilots do not need to remember all the logs that make a whole application together.

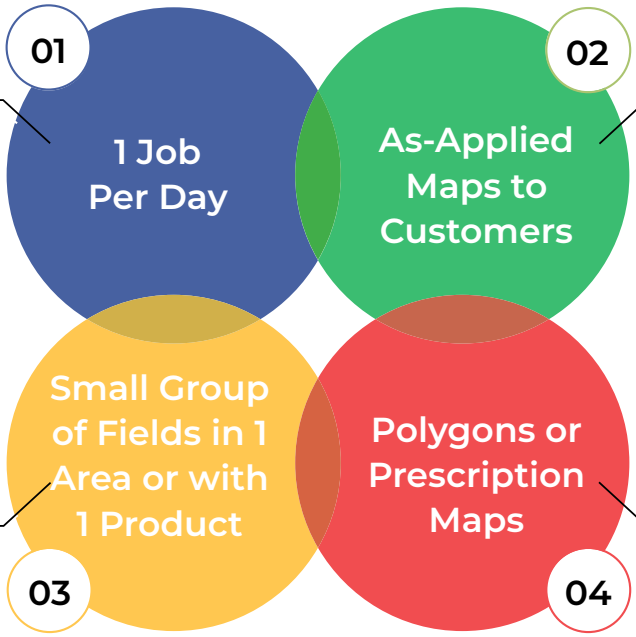
02 All paint and swathing data is loaded each time a Job is loaded.

03 All Job data is exported as one log file from the Falcon. Within the Satloc Cloud, all Job data has a common log name for a group export. Any export can then be loaded in MapStar or other programs.

04 The Falcon contains all swathing data (pattern, swath number, A-B Line, etc.) within the Job even when a Mark is not set. So, any swathing can be restored as active to continue.

When to start a new Job?

The answer is based on how much data you want to be grouped.



If you use the same material and fly all over your area, applying to multiple fields back and forth all day, then maybe one Job per day makes sense. This will retain all the paint data for all that application on the screen.

When sending as-applied maps to your customers, a new job for each customer might make the export and as-applied generation easier since you won't have to sort through multiple fields.

When applying to a small group of fields in one area or one product, consider placing all the data in one Job.

The Job is already set when you start with polygons or prescription maps.

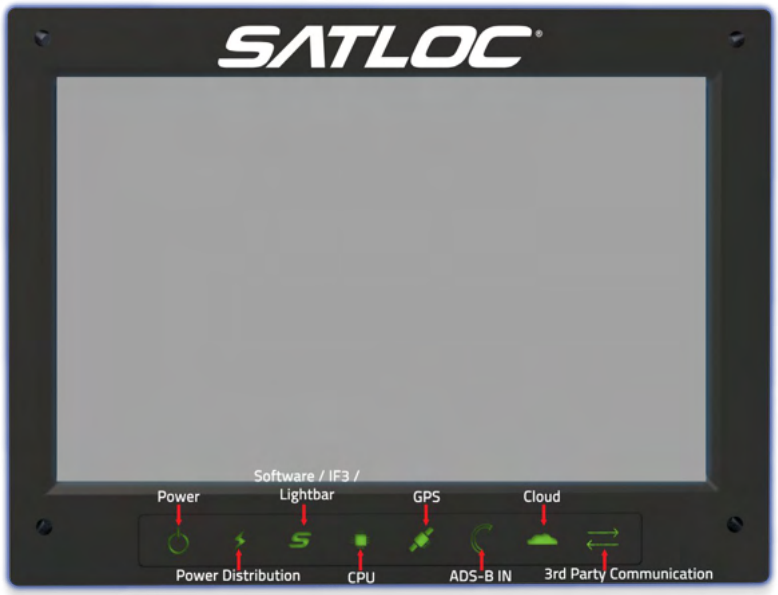
Jobs are also how data is shared between Falcons. When released, this feature will allow two or more Falcons (within the same Cloud company) to open the same Job and apply synchronously, sharing all the paint and swathing data.

1.3 TOUCHSCREEN DISPLAY OVERVIEW

LED Light Indicators

Every Satloc Falcon/Falcon Pro touchscreen display features LED light indicators to give the user information about the current state of the Falcon/Falcon Pro and the systems it communicates with. The LED lights represent power, power distribution, software, CPU / IF3, GPS, ADS-B In, Cloud, and 3rd party connections.

- Red LED indicates – system error
- Green LED indicates - no system error
- Orange LED indicates – system warning



1.4 NAVIGATING THE FALCON MODELS

Using the Touchscreen

Use your finger(s) or a stylus to touch the screen and interact with all Falcon models.

Zooming refers to increasing or decreasing (zooming in or zooming out) the magnification of the screen. Use two fingers on the screen, and move them apart to move in, or together to zoom out.

ZOOM IN

ZOOM OUT

Scrolling refers to moving or shifting the screen in a specific direction (such as up or down) so you can see detail that may not be currently visible.

SWIPE UP

SWIPE DOWN

The Falcon/Falcon Pro software has on/off slider buttons. Single tap to turn the function on or off. If the button is green, the function is ON. When the button is greyed out, the function is OFF.

SINGLE TAP

Using the Encoder Knob

The Falcon model has a single encoder knob that performs the basic functions of dimming, brightening, and zooming. A duel encoder knob comes with the Falco Pro model, which gives pilots more options to customize and use to their preferences. Quick profiles can be created for both encoder knobs to perform a selected function. Examples of the dual encoder knob are application rate, center map, swath width, open menu, open setup, etc. Click here to view a video on how-to use and customize the encoder knob. Also, how-to use and customize the encoder knob is explained later in this manual.

1.5 STARTUP SCREENS FOR FALCON SYSTEMS

Startup Screens

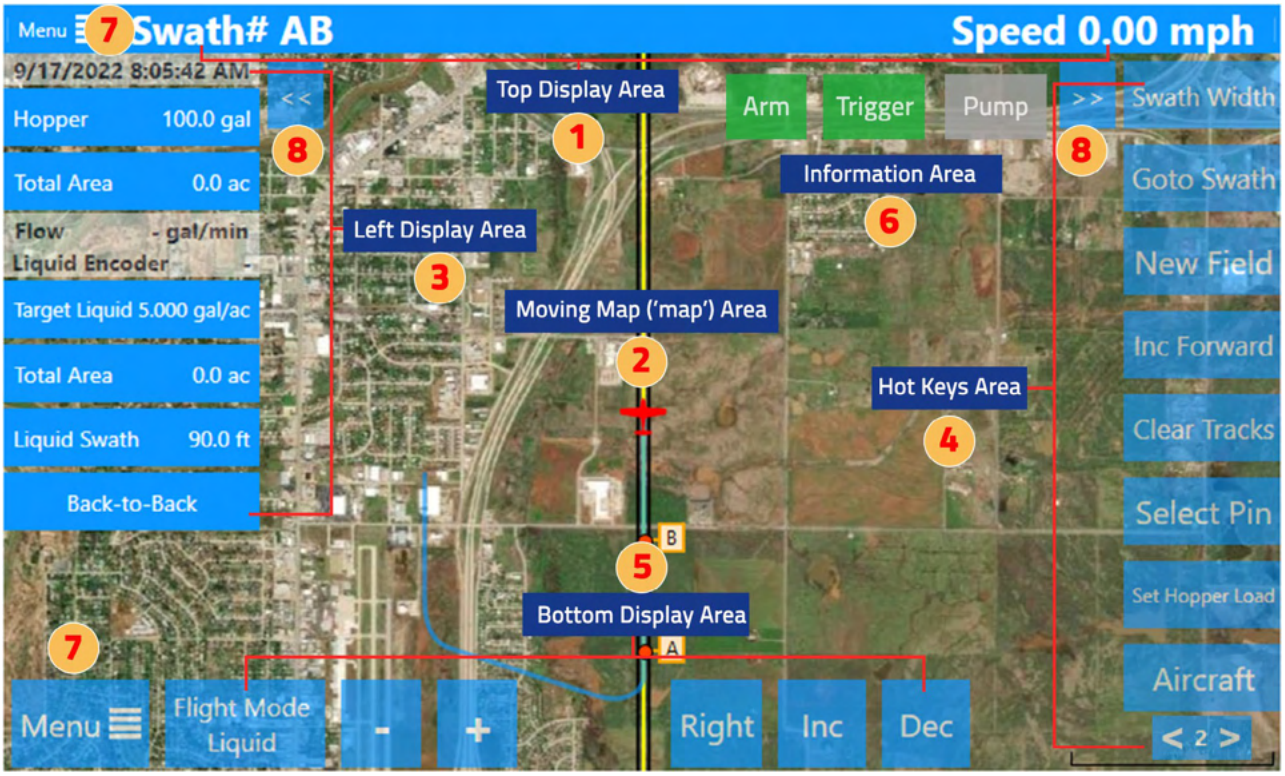
Every time a Falcon system initially starts, a warning is displayed. Select 'OK' to acknowledge the statement.

Upon launch or when changing flow modes, the Falcon needs direction on how to handle the new data. This startup menu displays for the pilot to have a quick pick of the next step.

1. Opens a menu to load an existing job.
2. Opens a menu to select a previous mark.
3. Returns to Mark Zero. (Mark Zero is the last time you stopped applying.)
4. Opens a menu to create a new Job and name it.
5. Automatically creates a new Job with a default name based on the serial number, date, and daily job counter.
6. Opens a menu to import a Job from a USB.
7. Opens up the main menu.

1.6 MOVING MAP SCREEN OVERVIEW

After startup or a Job is loaded or created, the touchscreen displays the moving map screen. The moving map screen is the main display in Falcon/Falcon Pro. Chapter 2 details setting up display areas on the moving map screen.



1 Top Display Area

In the Top Display Area, three fields contain user-selected information. This is editable from the screen display menu and is part of the areas automatically updated when Guidance Modes change. The information presented is as large of a font as possible and is usually visible, regardless of user interaction. This is the best location to put key information needed to be read quickly and easily. Appendix B shows options of what can be shown in the Top Display Area and Left Display Area.

2 Moving Map Area

The moving map area ('moving map') shows a GIS-generated map of the field showing the flight track, swathing lines, application areas "paint," any job polygons, Marks, and other relevant information. Satellite or street-map backgrounds are available when the Falcon is connected to the internet.

A distinct capability of the Falcon/Falcon Pro is the ability to upload offline background maps. Offline background maps are helpful for aircraft with slow or reduced internet capabilities. When there is a poor or limited internet connection, online background maps might not appear, which is why offline background maps are beneficial. They are easy to load and can provide peace of mind. Because of additional costs, additional fees apply for offline background maps.

3 Left Display Area

At the left is a collapsible panel that contains user-selected information and buttons. This is editable from the screen display menu and is part of the areas automatically updated when Guidance Modes change. Selections that are buttons have a blue background and typically allow the user to make quick edits to that information.

4 Hotkeys Area

Hotkeys are quick actions the user can take with a single click. The Falcon has multiple pages of Hotkeys (7 buttons per page). Think of this as pages of apps on a smartphone. The whole set of Hotkeys (all pages) is editable from the Hotkey menu and is part of the areas automatically updated when Guidance Modes change. Satloc recommends setting the most used Hotkeys on the first page and lesser used Hotkeys on subsequent pages. Appendix C shows options of what can be shown in the Hotkeys Area.

5 Bottom Display Area

Various buttons will appear in the Bottom Display Area, depending on the functions used.

The Setup Button opens a concise page with common information and user settings.

These buttons zoom in and out. Also, a user can use his/her fingers to zoom in and out by pinching fingers in and out.

The plane will remain at the center of the map unless the user drags the map to see something off screen. The recenter button will restore the aircraft to the center.

This area shows multiple buttons with various functions at different times, depending on the Guidance Mode and the current swathing state. For example, what is shown on the Moving Map image on the previous page is different from what is displayed to the left of this paragraph.

6 Information Area

This area display various information, depending upon the mode selected. Dry display information only displays when Falcon Pro is in 'Dry Mode.' When in Liquid mode, auto dispersal will appear. This area is also for warnings and notifications. When a function is in use, its box will turn green. For example, when the arm is activated, the Arm box's light will be green.

7 Menu Buttons

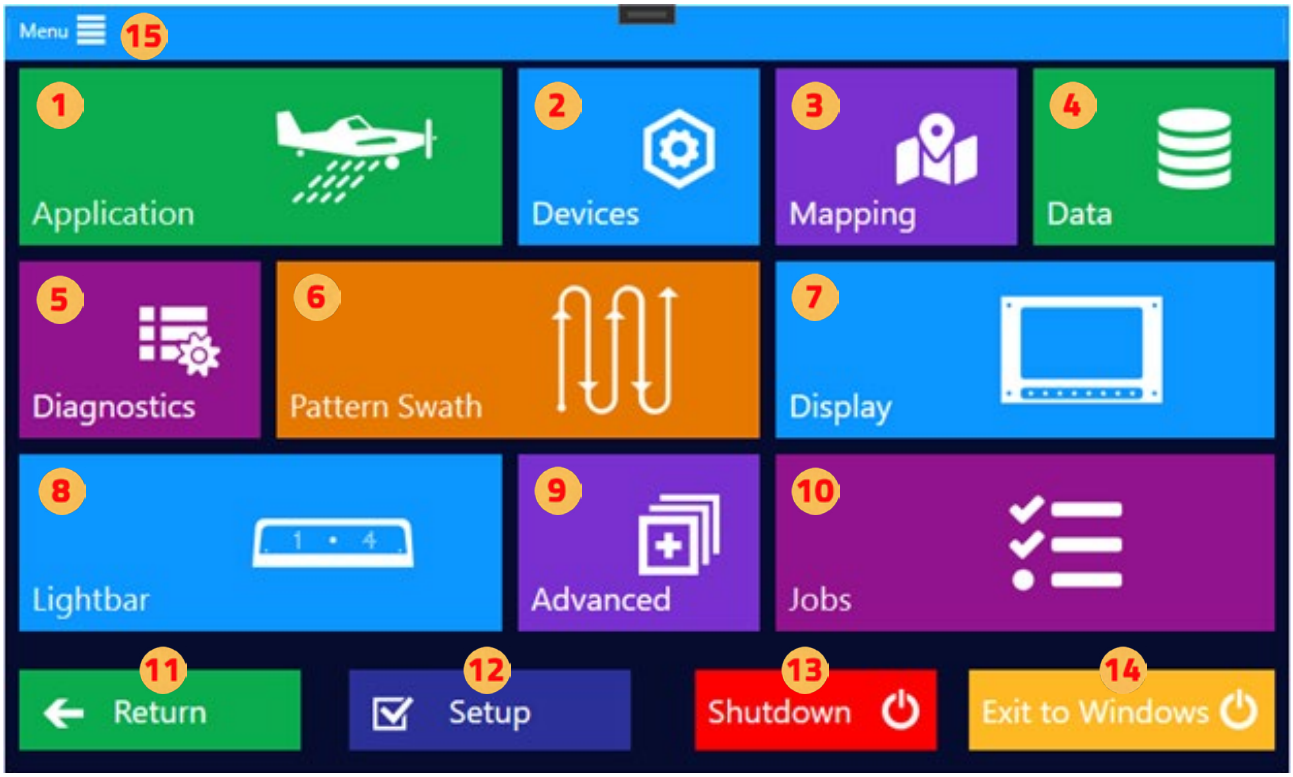
The menu button on the top left-hand side will take a user back to the moving map screen. The menu in the bottom will lead a user to the main menu screen. HOWEVER, if you are on the moving map screen, it will take you to the Main Menu Screen.

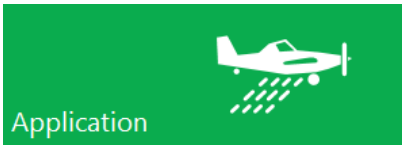
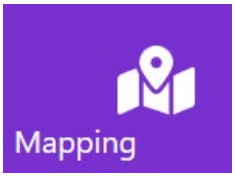
8 Expand and Collapse Menus

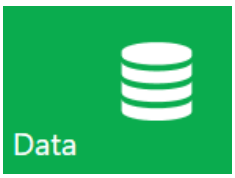
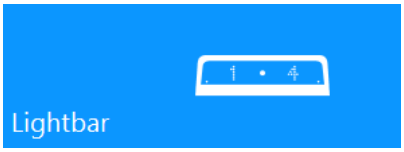
When these icons appear, the menu can expand and collapse.

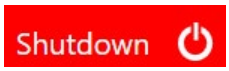
1.7 MAIN MENU OVERVIEW

From the Moving Map screen, touch the 'Menu' button to navigate to the Main Menu.



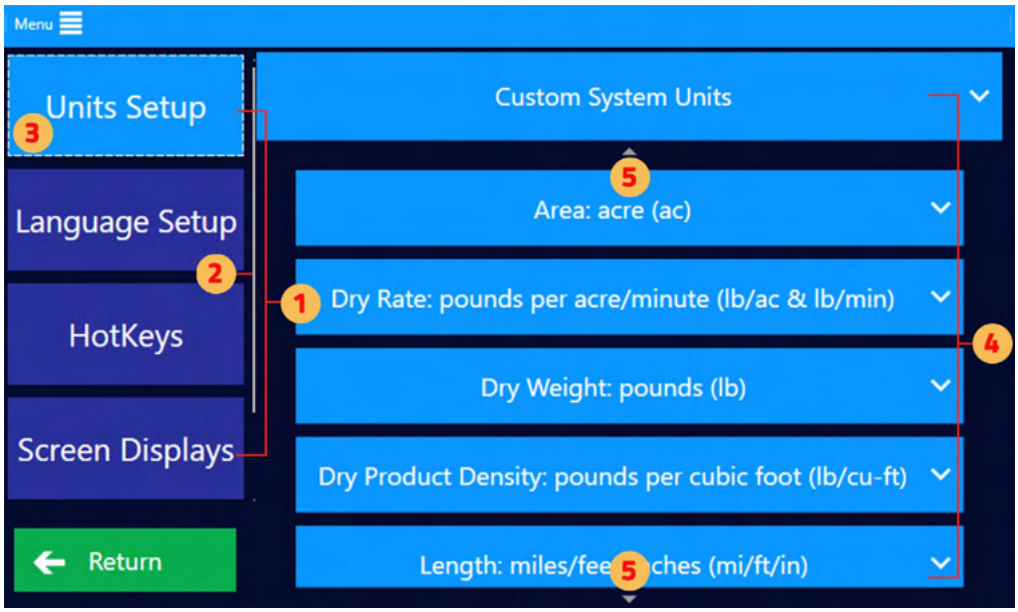
Menu Name	Menu Button Image	Associated Function
1 **Application**		The 'Application' button takes the user to settings for the particular application mode selected. This button will lead a user to the following functions. Liquid 2nd Level Menu 1. Flow Control 2. Boom Dispersal 3. Hopper Dry 2nd Level Menu 1. Flow Control 2. Gate Dispersal 3. Hopper
2 **Devices**		The 'Devices' menu is where the user can initially set up the Falcon system hardware. This menu sets the details of how hardware connects and functions. Additionally, this includes setting how the inputs function for various Guidance Modes. Information in this menu is not often changed once set. This button will lead a user to the following functions. 1. Booms 2. Liquid Advanced 3. Liquid Accessories 4. Liquid Controller 5. Falcon Advanced 6. Aircraft Setup 7. Spreader Setup 8. Input 9. Output
3 **Mapping**		The Mapping menu sets the Falcon's interaction with the world around it. This button will lead a user to the following functions. 1. Map Setup 2. Guidance Modes 3. Waypoints 4. GPS/IMU Setup 5. ADS-B In Setup

4 Data		The Data button provides the Cloud connection status and tools to export log files to USB. This button will lead a user to the following functions. 1. Satloc Cloud 2. External Data 3. Log Export
5 Diagnositics		The Diagnostics menu is one menu to check the status of every system. Also, there is a list of all software and firmware versions in the system and a quick way to check the status of every system input. This button will lead a user to the following diagnostic functions. 1. Software 2. CPU Diagnostics 3. Display Diagnostics 4. Communications 5. Cloud 6. GPS 7. ADS-B In 8. Flow Diagnostics 9. Lightbar Diagnostics 10. Software Versions 11. IO Diagnostics
6 Pattern Swath		Users can pick specific patterns, related settings, and the current swath width using the Pattern Swath menu. This button will lead a user to the following functions. 1. Pattern 2. Swath
7 Display		The Display menu is where the user picks system-wide settings like unit system and language. Here also is the setup for HotKeys and the screen display information for various Guidance Modes. Finally, the user can set the colors and behavior for items on the map and overall display settings like dimming and night mode. This button will lead a user to the following functions. 1. Units Setup 2. Language Setup 3. Hotkeys 4. Screen Displays 5. Screen Control
8 Lightbar		The Lightbar menu is where the user sets the data to be displayed on the lightbar. Other overall settings, like dimming are set here too. This button will lead a user to the following functions. 1. Lightbar Display 2. Lightbar Setup
9 Advanced		Advanced Menu contains some less often used settings and functions. One menu of note here is visibility. The Falcon attempts to show only information pertinent to each user. For instance, all Falcon Pros can operate a Transland Meterate, but turning off the visibility for Meterate will hide that setting everywhere, thereby reducing unnecessary information. Otherwise, a Satloc technician will help you pick options here as the need arises. 1. Setup Profiles 2. Software Settings 3. Visibility 4. Authorize Unlocks 5. DB Maintenance
10 Jobs		The Jobs menu allows loading of Jobs, selection of polygons and automatic pattern swathing selection through the Poly Pattern function. This is also the menu that imports job files from an external USB. This button will lead a user to the following functions. 1. Job Selection 2. Import Job(s)

11 **Return**		The return button in any menu steps back to the higher-level menu or from the Main Menu to the map screen.
12 **Setup**		This Setup button and a complementary "Menu" button on the Setup page swap back and forth for quick access.
13 **Shutdown**		This shutdown button is the best way to power off the Falcon. After confirmation, it will shut down the software, Windows, and gently power off all Falcon components. Once the Lightbar and Display go dark, it is safe to turn off the main power to the Falcon. **Note:** The left-most LED on the display will remain green as long as power is supplied to the Falcon; the rest will turn off during this power-down routine. Once shutdown has started, the only way to start the Falcon is through a complete power-off and power-on cycle.
14 **Exit to Windows**		Occasionally, the user may need to interact with Windows. After confirmation, this will shut down the Falcon software. Falcon can be relaunched through an icon on the main Windows screen.
15 **Menu** (takes to Moving Map Screen)		This menu button will take a user straight to the Moving Map Screen

1.8 NAVIGATING SUBMENUS

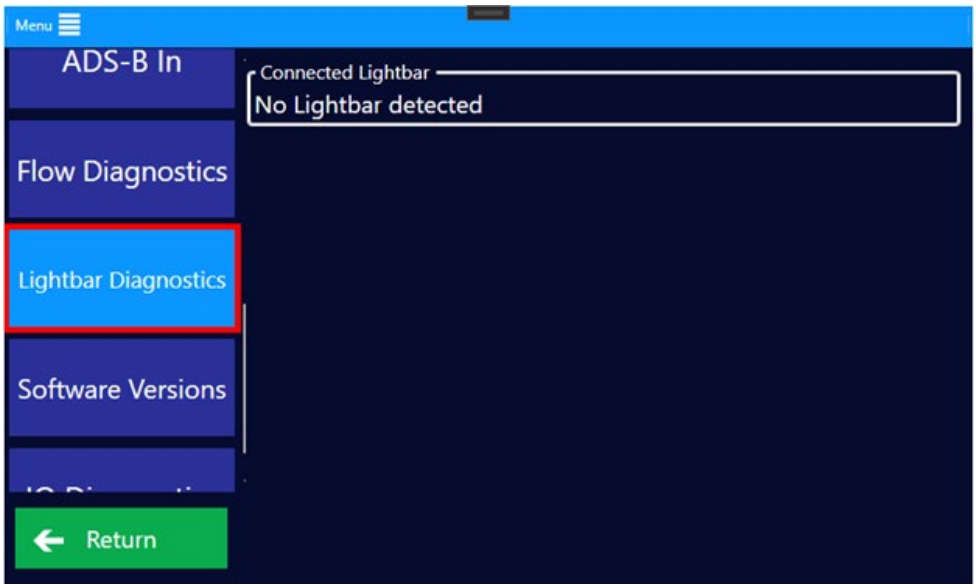
From the Main Menu, submenus will appear when menu buttons are selected. The different submenus display a context-sensitive list of options for the function selected.



1. The left-hand side of the screen represents second level menu choices.
2. A gray bar will appear when there are more second level menu choices that need to be scrolled through to view.
3. The highlighted button (button that is a lighter blue), indicates which second level menu is currently selected.
4. Third level menu buttons appear based upon the second level menu button that is selected on the left-hand column.
5. Small triangles at top and bottom indicate third level menu choices that need to be scrolled through to view.

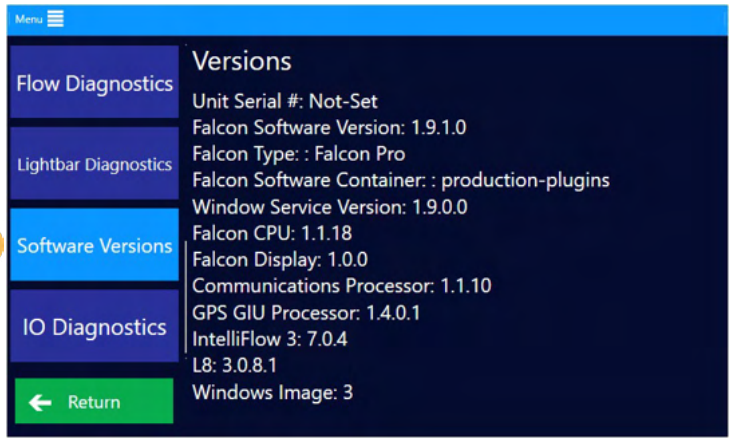
1.9 SYSTEM DIAGNOSTICS

On the Main Menu, a red box will surround the Diagnostics Menu button when there is a system error. Inside the Diagnostics submenu, red boxes again indicate which system is experiencing a problem. Clicking on the button with the red box will reveal the error's details. This information will help troubleshoot and resolve the issue.



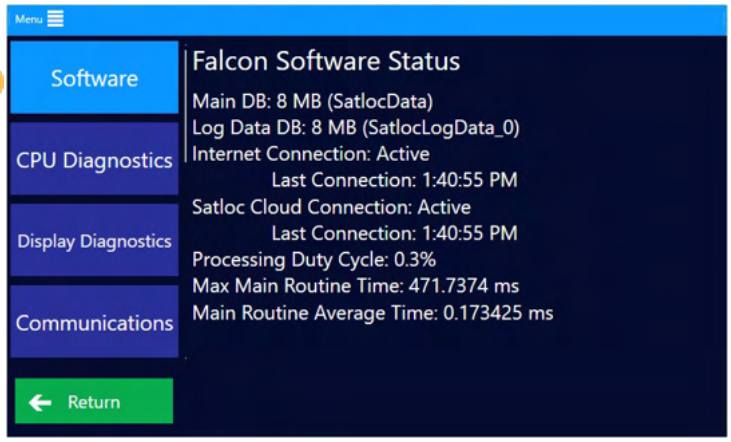
1 Software Versions

The Software Versions submenu lists all the software and firmware versions of the Falcon's components. This includes the versions for the Falcon software, CPU's LPC, Display, FTDI Communications, connected flow controllers, and connected lightbars. A Satloc technician often asks for this menu when troubleshooting a pilot's unit.



2 Software

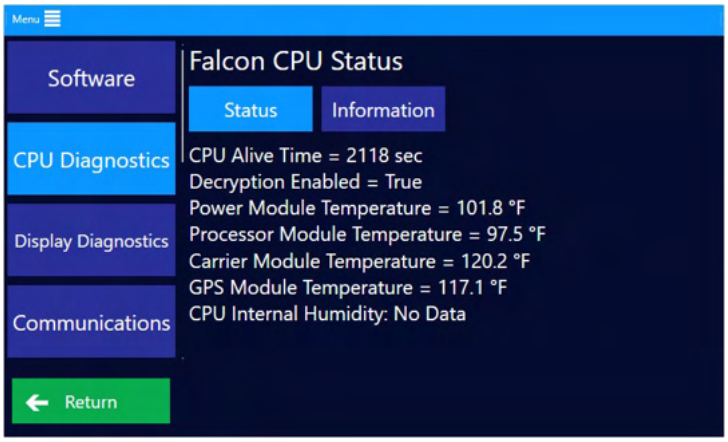
The Software submenu shows the Falcon software status and health. This information is more for a Satloc technician.



3 CPU Diagnostics

The CPU Diagnostics submenu, through the 'Status' button, shows the temperature data and health of the Falcon CPU. If it is not properly connected or running, the screen displays what is shown as "No Heartbeat." If there is no heartbeat, Satloc recommends contacting your local dealer.

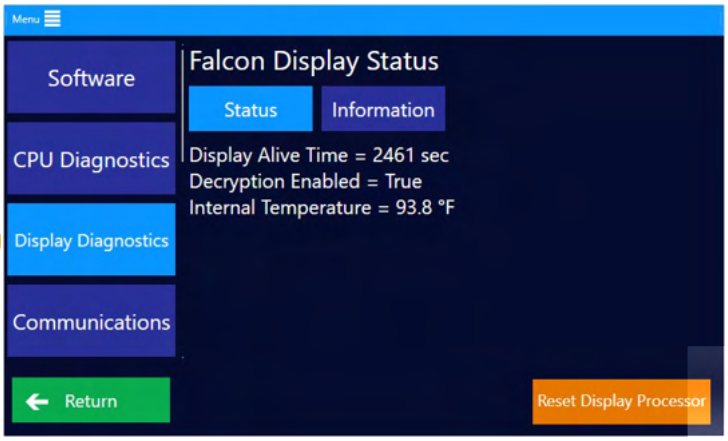
The 'Information' button displays the CPU's LPC firmware and hardware versions.



4 Display Diagnostics

The Display Diagnostics submenu, through the 'Status' button, shows the status and health of the connected Falcon display.

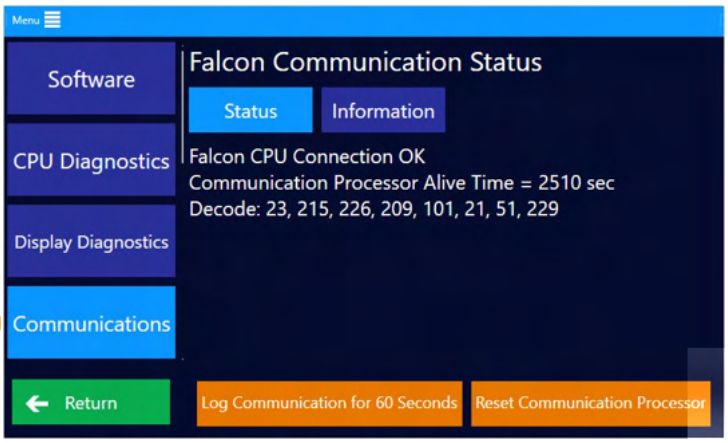
The 'Information' button shows the Falcon display firmware and hardware versions. Under the 'Information' area, the 'Reset Display Processor' button can reset the display if an error occurs.



5 Communications

The Communications submenu, through the 'Status' button, shows the status and health of the Falcon's FTDI communication processor.

The 'Information' button displays the FTDI's firmware and driver versions. The Log Communication for 60 Seconds can be used to save the FTDI's processing information to a log file. A Satloc technician may ask you to log this information for troubleshooting purposes. The Reset Communication Processor button can be used to reset the FTDI processor if an error has occurred.



6 Cloud

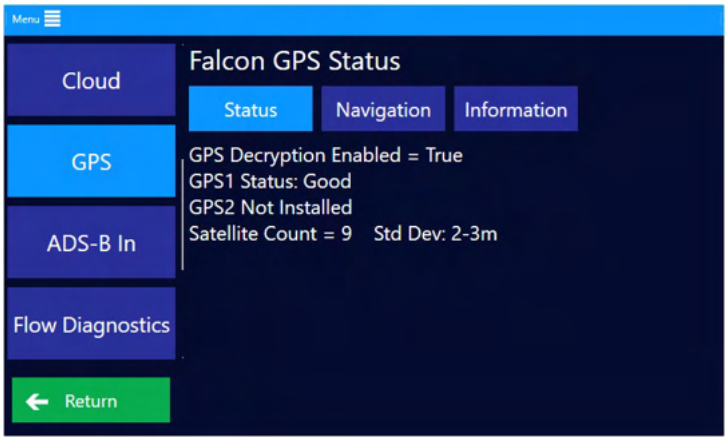
The Cloud submenu shows the status of the Falcon's connection to the internet and the Satloc Cloud. This submenu box may be highlighted in orange if the unit has lost internet connection.

7 GPS

The GPS submenu, through the 'Status' button, shows the status and connection of the Falcon's GPS.

The 'Navigation' button shows more details, such as if the Falcon navigation is running on GPS Only or GPS with IMU data.

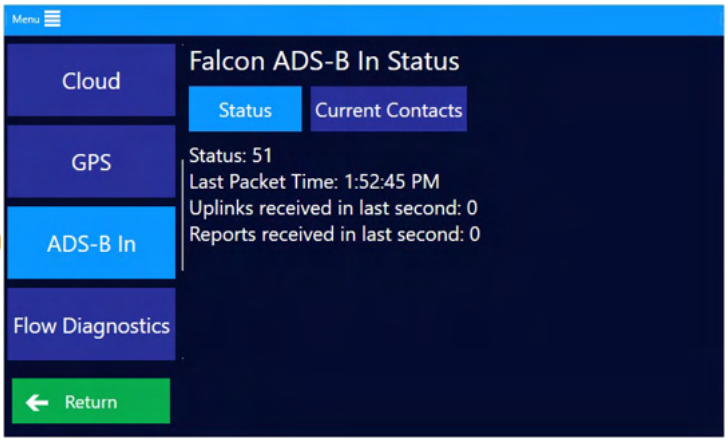
The 'Information' button displays the GPS's GIU firmware version and the CPS and IRS firmware versions if an IMU is connected.



8 ADS-B In

The ADS-B In submenu, through the 'Status' button, shows the status and packet information for the Falcon's received ADS-B signals.

The 'Current Contacts' button displays all contacts currently being received and their information. It will also show if there are no current ADS-B contacts.



9 Flow Diagnostics

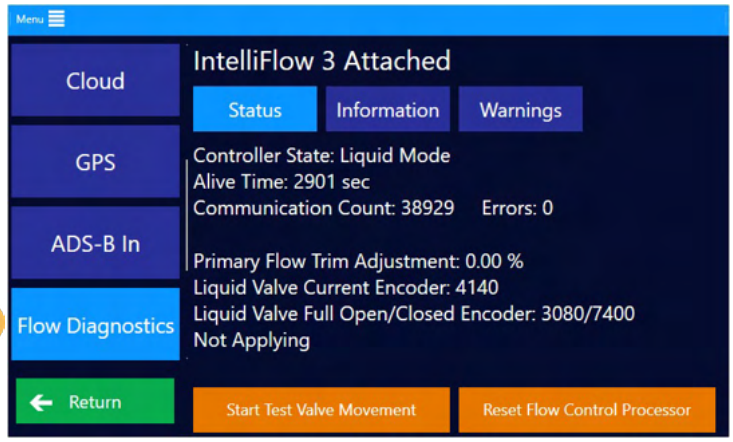
Through the 'Status' button, the Flow Diagnostics submenu shows the status and state of the connected flow control system, such as an IF3. This includes states such as Liquid Mode or Dry Mode and valve encoder position values.

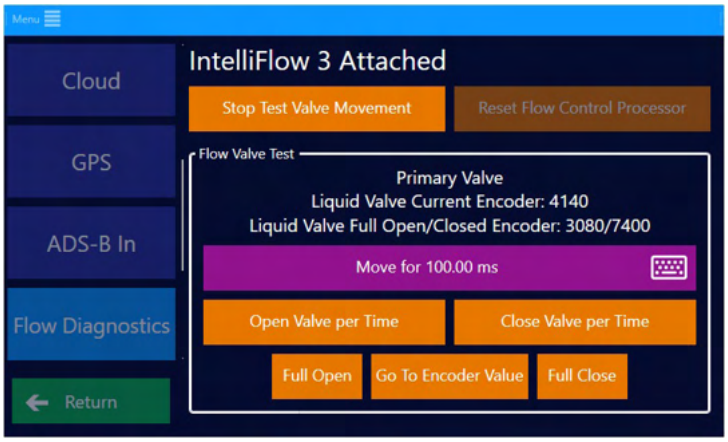
The 'Start Test Valve Movement' button can be used to open a test menu and actuate the connection flow controller's valve. Press the Reset Flow Control Processor button to reset the connected flow controller if an error has occurred.

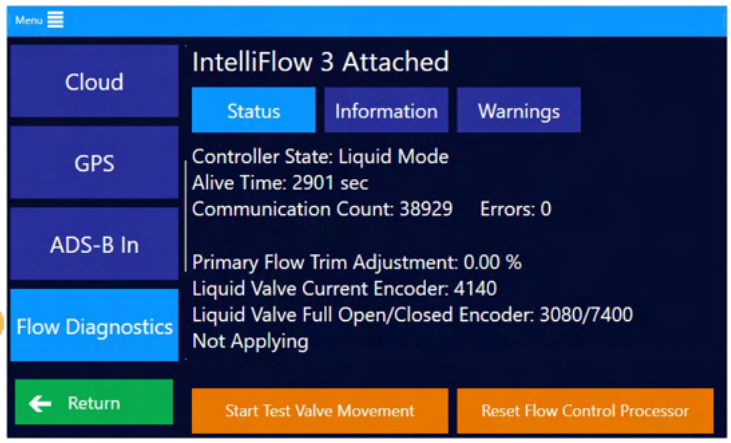
Press the 'Move for (X) ms' button to change how long the valve will move for each test. Press the Open or Close Valve per Time buttons to actuate the value open or close by the amount of time specified above. Press Full Open or Full Close to open or close the valve fully. Press the Go To Encoder Value button to specify a specific encoder value and move the valve to that position. When testing is finished, press Stop Test Valve Movement. (Other menu options will be disabled until testing is stopped.)

Through the 'Information' button, the Flow Diagnostics submenu shows the firmware and hardware versions of the connected flow controllers and their temperature and voltage data.

The 'Warnings' button displays the current errors and warnings from the connected flow controller.

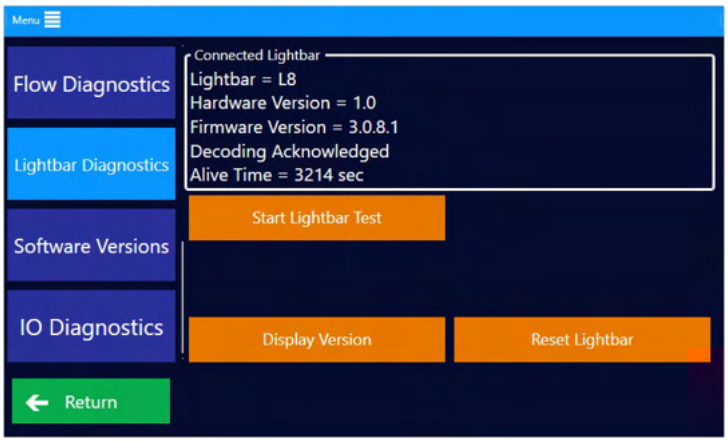






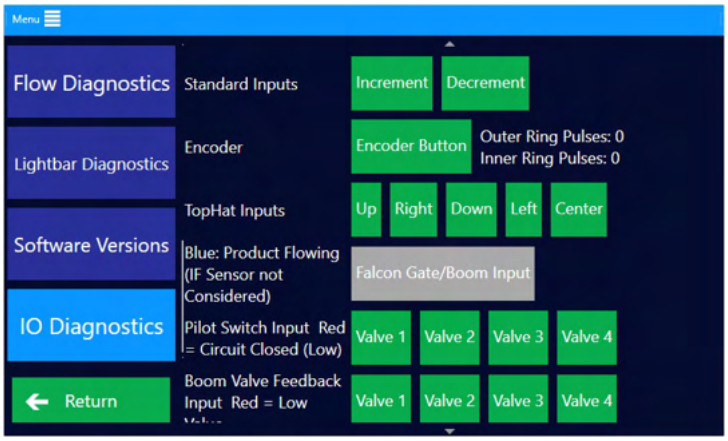
10 Lightbar Diagnostics

The Lightbar Diagnostics submenu shows the status and information of the connected lightbar. This includes the hardware and firmware versions. The 'Start Lightbar Test' button can start an LED test on the connected lightbar, which will run through a cycling pattern. Press Stop Lightbar Test at any time to stop the test. The Display Version button can be used to have the current lightbar firmware version display itself on the connected lightbar. The Reset Lightbar button can be used to reset the lightbar if an error has occurred.



11 IO Diagnostics

The IO Diagnostics submenu is where a pilot can test their connected switches and TopHat controls without affecting the physical valves or components. When a switch is pressed or flipped, the corresponding box in this menu will change color (to red, for instance). For example, a pilot can flip their Gate/Boom switch, see the corresponding box change color, and flip it back without actually applying or "painting." This is a helpful menu when installing a Falcon onto an airplane to test the proper connections that are being made.



WARNING

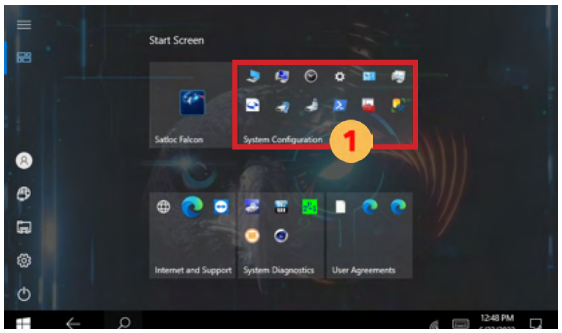
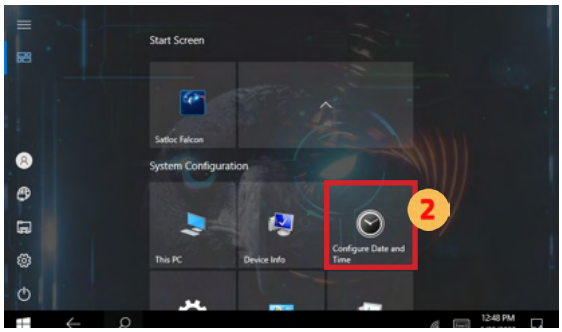
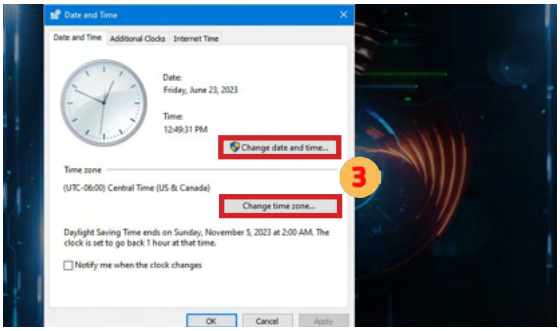
The screenshots in this User Manual are for informational purposes only and intended to help users navigate to the correct areas. The number values shown in these screenshots are not necessarily recommendations. Ultimately, it is the responsibility of the pilot/user to input values and information that are suitable for the product they are applying or for the specific job requirements. Always refer to product labels, job specifications, and industry guidelines to ensure proper application.

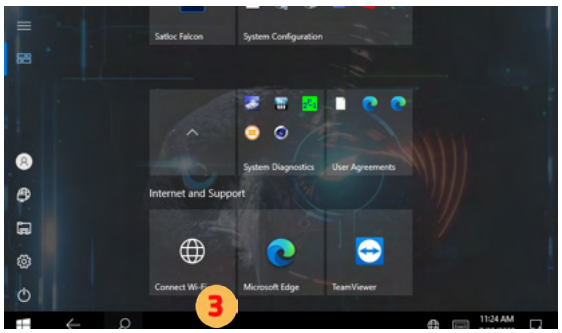
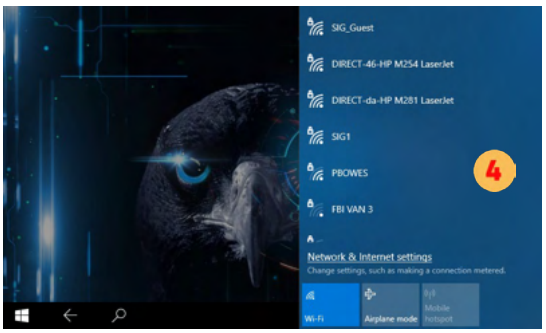
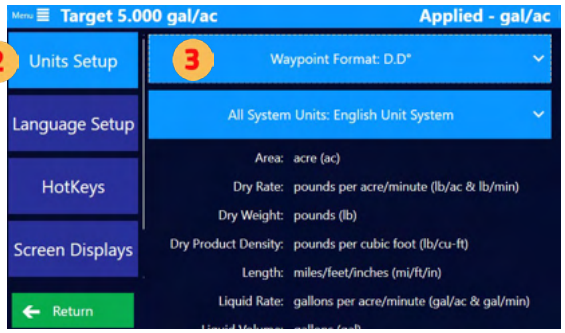
CHAPTER 2: GENERAL SETUP

Complete these various tasks before you start working.

WHAT'S IN THIS CHAPTER!

2.1 ADJUSTING REGIONAL SETTINGS & PREFERENCES

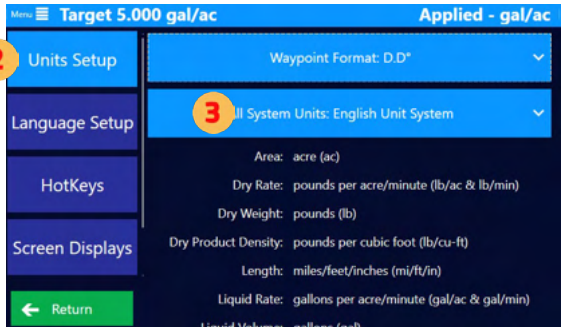
Field	Description and Navigation Path
Date, Time, & Time Zone	Falcon/Falcon Pro is set to the default date and time in the Windows operating software. Setting the time is different than other systemwide settings. Please pay attention to the details. 1 On the Windows screen ("Exit to Windows" if the Falcon software is up), tap on the "System Configuration" group. If the screen for Step 1 doesn't appear, tap the display to make it appear. 2 Tap "Configure Date and Time." 3 On the Date and Time window, press 'Change date and time' button and/or 'Change time zone.' 4 Make the changes to the date, time and time zone for user preferences.   
Connecting WiFi	1 On the Main Menu of the Falcon software, select "Exit to Windows." There is a "Minimize" option in addition to selecting "Yes" to exit.) 2 On the Windows menu, select "Internet and Support." 3 Scroll down and select "Connect WiFi." This will open Windows's WiFi menu. 4 Select a WiFi network and connect.  

Field	Description and Navigation Path
	 
Language English Português Español	There are three language options in the different Falcon models. • English • Portuguese • Spanish Set the desired language format by navigating this path: *Main Menu > Display > Language Setup*   *NOTE: If changing to a language other than English, it is recommended to restart the Falcon so that the text will format within the different spaces. After the initial restart, the wording will properly fit.*
Coordinate	You can display GPS coordinates as one of the following: D.D° - decimal degrees (default) D° M.M - decimal minutes D° M' S.S - decimal seconds Set the desired coordinate format by navigating this path: *Main Menu > Display > Units Setup*  

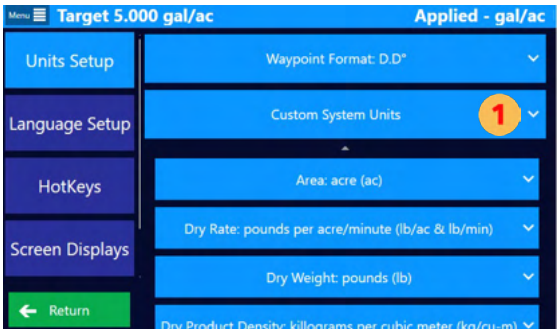
Global Unit

Falcon/Falcon Pro uses U.S. standard units (such as feet and pounds) as the default. Use the Global Units field to change this setting to Metric or Nautical. You can also assign units to individual data types (such as speed and area) in the Units Advanced Setup window.

Set the desired coordinate format by navigating this path: *Main Menu > Display > Units Setup*



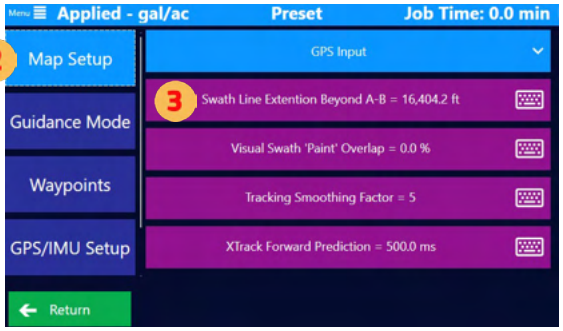
If 'Custom System Units' is selected, press the drop down for a specific unit and choose desired unit type.



Choose a specific unit and select desired unit type.

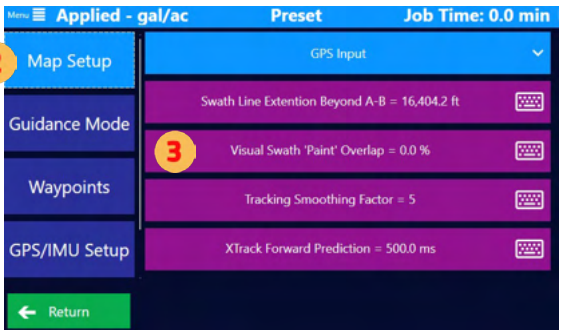
Swath Line Extension Beyond A|B

For rectangular fields where every pass is the same length as the A|B line, an extension of 0 is perfect. However, for odd-shaped fields and wind conditions where subsequent passes need to be longer than the A|B line, the Falcon can extend the drawn swath lines on both sides by this length. Set this by navigating this path: *Main Menu > Mapping > Map Setup > Swath Line Extension Beyond A|B*



Visual Swath 'Paint' Overlap

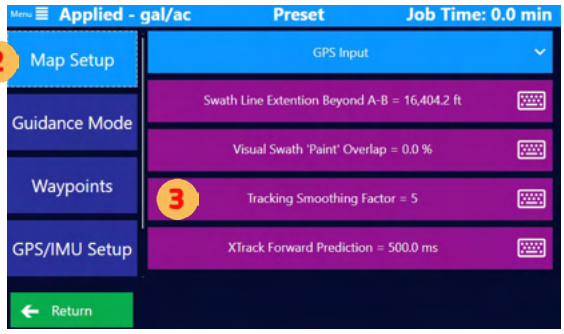
The Visual Swath 'Paint' Overlap is only a visual increase in width of swath paint on the screen. Users may increase this to remove the normal narrow swath gaps and only expose larger unintentional gaps. The logged data is not impacted by this setting. Only the paint on the Falcon display is altered. Set this by navigating this path: *Main Menu > Mapping > Map Setup > Visual Swath 'Paint' Overlap*



Tracking Smoothing Factor

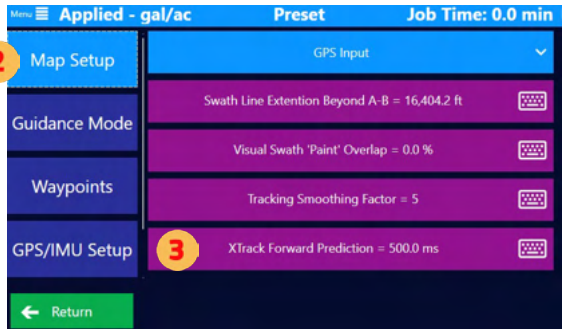
(1 to 10, which is smooth to aggressive)

The Tracking Smoothing Factor is the quantity of points in a moving average of Tracking points to identify heading and ground speed. The balance should be specified here. Too few, and the Crosstrack and AOI indicators will be volatile due to natural variances in the GPS data. Too many, and the Crosstrack and AOI will be very smooth but will lag and not be as responsive to pilot correction. This impacts the "feel" of the GPS guidance. Set this by navigating this path: *Main Menu* > *Mapping* > *Map Setup* > *Tracking Smoothing Factor.*



XTrack Forward Prediction

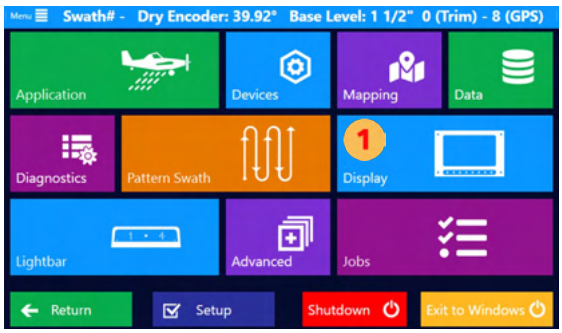
The XTrack Forward Prediction is a distance directly ahead of the current heading based on the Crosstrack indication. This means the XTrack indicator leads the actual plane by this value. This allows the pilot to respond timely. This impacts the "feel" of the GPS guidance also. Set this by navigating this path: *Main Menu* > *Mapping* > *Map Setup* > *XTrack Forward Prediction.*

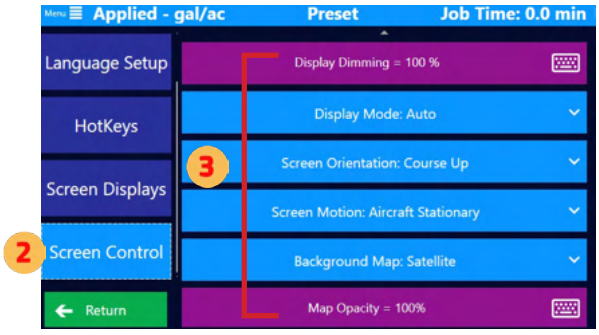


Screen Controls & Colors

In the Screen Control submenu, set the following. Set this by navigating this path: *Main Menu* > *Display* > *Screen Control.*

- Display Dimming
- Display Mode
- Screen Orientation
- Screen Motion
- Background Map
- Map Opacity
- Button Opacity
- My Plane Color
- Paint Color
- Partner Plane Color
- Guidance Line Color
- ADS-B Planes Color
- ADS-B Text Color
- Show Nearest Swath Line
- Clear Plane Track





2.2 VISIBILITY

The Falcon is designed to present to the user just what is needed therefore hiding options and settings the user never expects to need. Some of this visibility is through the distinction between Falcon and Falcon Pro and some of the extra unlocks. But the user should check the visibility menu to verify only what is important to them is enabled to be visible. These settings can be changed at any time.

From the Main Menu, navigate to ***Advanced*** > ***Visibility*** and check the boxes for features and devices you want to make visible in other menus.

2.3 AIRCRAFT SETUP

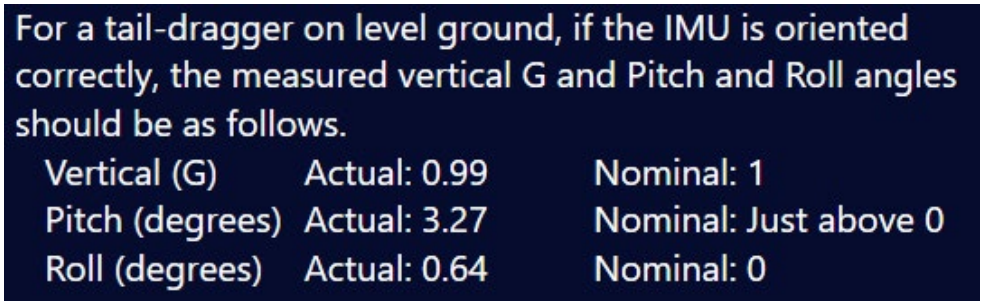
Hopper Size

From the Main Menu, navigate to ***Devices*** > ***Aircraft Setup*** to specify the hopper size for this aircraft. These values can be used for hopper calculations.

Falcon Pro IMU Setup

Falcon Pros have an internal Inertial Measurement Unit (IMU) that "feels" the flight dynamics and helps smooth tracking when GPS is spotty. To perform, the IMU must know its orientation relative to the aircraft.

From the Main Menu, navigate to ***Mapping*** > ***GPS IMU Setup***. Select the IMU orientation wizard and answer the questions. After the required power cycle to initialize the IMU with the new orientation information, the proper orientation can be verified. Below is an image of verifying the proper orientation.



WARNING Failure to set the orientation or failure to answer the questions correctly will result in incorrect flight tracking information.

2.4 EXPLANATION OF GUIDANCE MODES

The Falcon allows the user to specify what information is displayed on the screen and lightbar, what buttons are available on the screen, and how to handle systems inputs specific to the immediate mode of flying. These modes are called Guidance Modes.

1. Liquid
2. Dry Gate
3. Dry Metered
4. Ferrying

When guiding to a polygon or waypoint, the system automatically switches to Ferrying Guidance Mode, updating the display, buttons, lightbar, and inputs accordingly. As the plane approaches the destination or upon pilot action, the Guidance Mode is switched to the current application mode: Liquid, Dry Gate, etc.

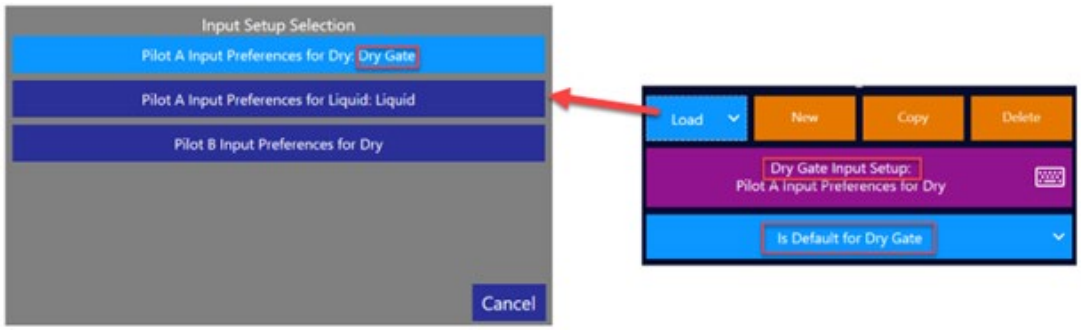
Specifically, there are four user setup areas that the Guidance Mode impacts. These are discussed in more detail later, but understanding the Guidance Mode concept is important initially.

- Screen Display (Information and Buttons at top and left)
- Lightbar Display
- Hotkeys
- Inputs (Encoder, Extra GPIO, TopHat, etc.)

In each area, the user can create any number of setups naming them whatever they want. From these, one setup can be designated as the "default" for each possible guidance mode.

In this example, the pilots have created three setups for the Input. The names below are extra-long to explain this example better:

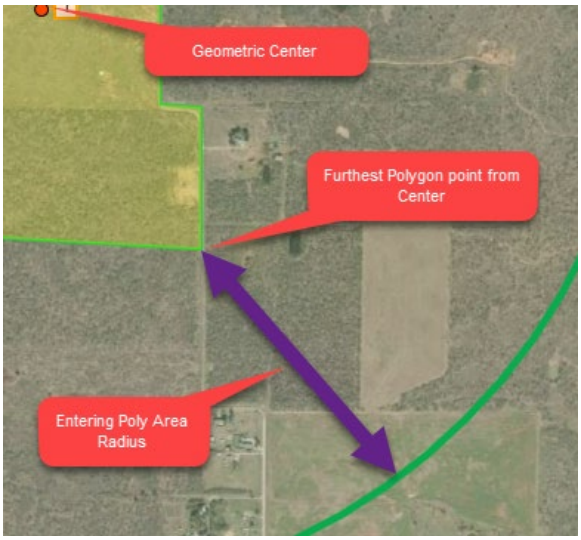
- Pilot A Input Preferences for Dry
- Pilot B Input Preferences for Dry
- Pilot A Input Preferences for Liquid



Here the two pilots have different preferences on how the inputs should be treated in Dry Gate mode, so they have saved unique Input setups. Currently the Pilot A version is set to the Dry Gate default. When the Falcon's Guidance Mode switches to Dry Gate, the Pilot A Input Preferences for Dry will be loaded automatically.

Pilot B could load his dry setup manually, or set his to default instead. **Note:** there is no default selected for Ferrying. When switching to Ferrying Guidance Mode, the Input settings will remain unchanged from their current state.

Satloc recommends setting up a default for Ferrying and each likely application mode.



When the Falcon guides the pilot to a waypoint or polygon, the user can manually switch the Lightbar, Display, Hotkeys, and Inputs to the proper application mode, by an on screen button or increment. The Falcon will also make this switch automatically at a specific radius from the waypoint or polygon.

From the Main Menu, navigate to ***Mapping*** > ***Guidance Mode***. Inside the Automatic Guidance Settings box, set the two Radii.

NOTE

For the Polygon radius, this is a radial distance beyond the furthest poly point from the geometric poly center.

2.5 DISPLAY SCREEN SETUP

Custom Displays for All Application Types

TIP

Satloc recommends setting up custom Display Settings for all likely application types (Liquid, Dry Gate, etc.) and a Display Setting for Ferrying.

Navigate to custom displays: ***Main Menu*** > ***Display*** > ***Screen Displays***.

A pilot can enter and save multiple setups, so your name could be specific. For example, "Bob's Liquid" or "Liquid for Forestry."

NOTE

It is ideal for each Guidance Mode to have its own Display Setup.

To have a particular setup loaded upon a specific Guidance Mode, select it to be that mode's default.

Is Default for Liquid

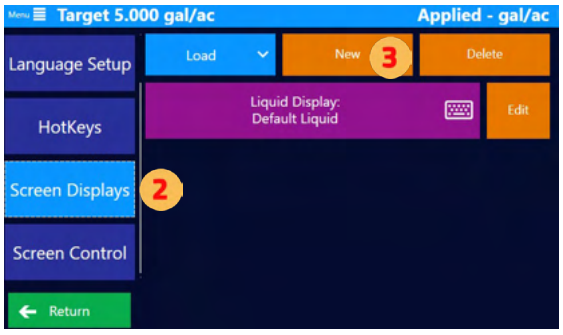
Detailed instructions are located later in this section.

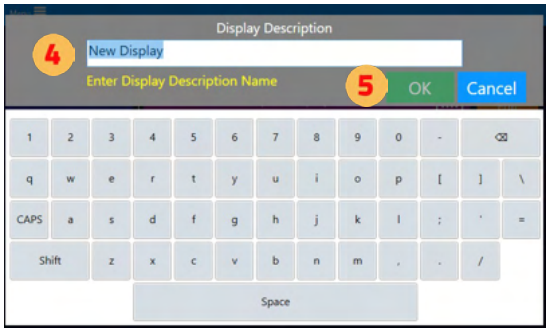
Top Display Customization

In the Top Display Area, three fields contain user-selected information. This is editable from the screen display menu and is part of the areas automatically updated when Guidance Modes change. See right-hand image to view an example of what the three fields in the Top Display area might look like.

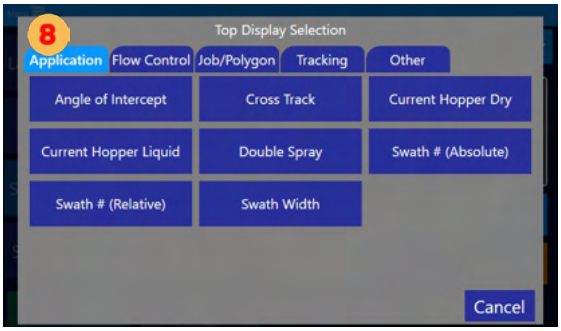
Note: Once in 'Edit' mode, navigation back to the menus is disabled until clicking 'Done Editing.'

1. Tap 'Display'
2. Tap 'Screen Displays'
3. Tap 'New'
4. Enter a display description name.
5. Press 'Ok.'
6. Tap 'Edit'





7 There are three buttons across the top labeled 'Blank' and have dropdown menus. Select one of the dropdown buttons to select a setting/ function that you want displayed. These settings/ functions will appear across the top of map screen (left, center, right).



8 Choose the desired function/setting that you want to appear on the top dislplay.

Left Display Customization

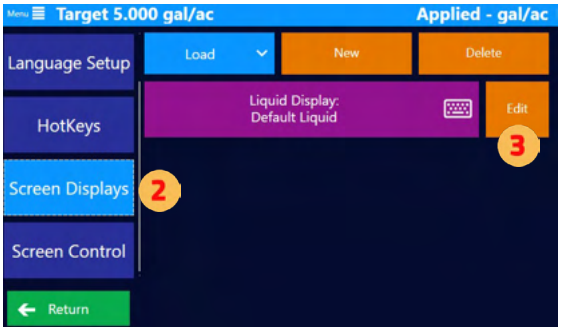
As explained earlier, at the left of the Moving Map Screen is a collapsible panel that contains user-selected information and buttons. This is editable from the screen display and is part of the areas automatically updated when Guidance Modes change.

The image below shows what will appear on the Moving Map Screen based upon what Left Display functions/settings were chosen. Notice how the image on the left shows some functions as simple text while others are have a blue button. Selections that are buttons typically allow the user to make quick edits to that information.

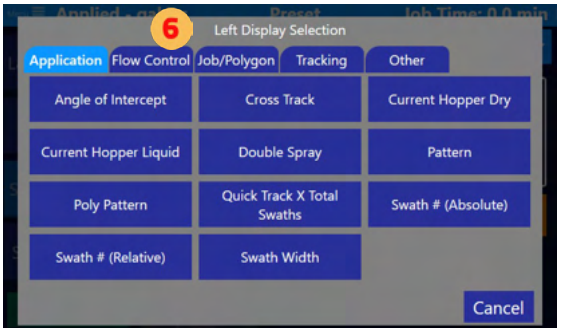
NOTE

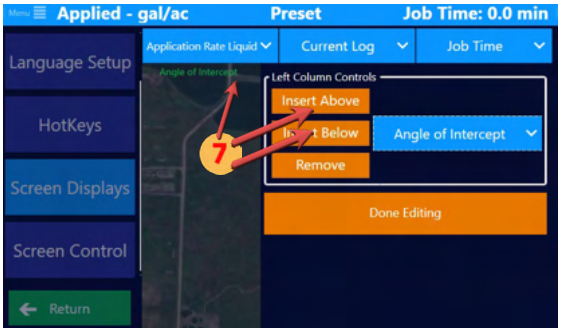
Appendix B lists the functions and the definitions of what can be displayed on the top and left displays.

1. Tap 'Display'
2. Tap 'Screen Displays'
3. Tap 'Edit'
4. Tap 'Add'
5. Select 'Blank'
6. Choose Setting/ Function
7. Select 'Insert Above' or Insert Below' to add a new setting/ function. (The green list is the order of what will appear on the moving map screen.)
8. Select 'Blank'
9. Choose Setting/ Function
10. Tap 'Done Editing' when finished. (Once in edit mode, navigation back to the menus is disabled until selecting 'Done Editing'.)

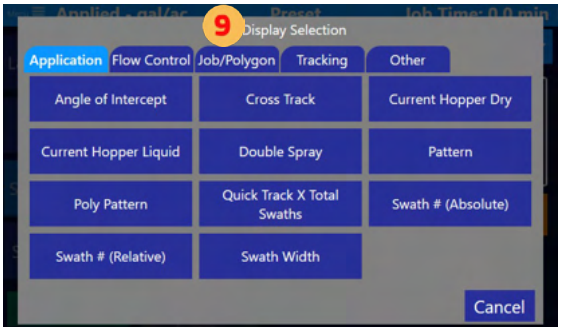


If you edit a current display, the add button will not appear. The screen will look more like the image in Step 7.





The green text is what will be edited when 'Blank' is selected.



NOTE

If the quantity of settings/ functions for the Left Display extends beyond the available space on the Moving Map Screen, that area can scroll with a finger swipe.

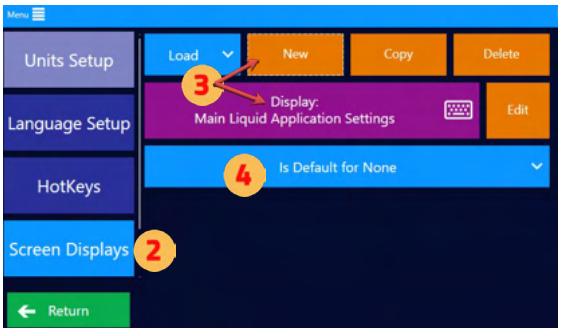
Setup Display to a Guidance Mode

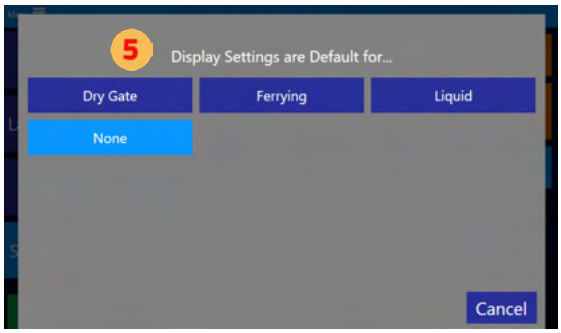
As explained earlier in Section 2.4, all Falcon models allow the user to specify what information is displayed on the screen and lightbar, what buttons are available on the screen, and how to handle systems inputs specific to the immediate mode of flying. These modes are called Guidance Modes.

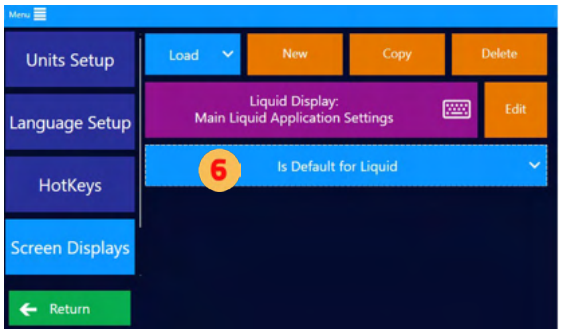
The benefit of this is whatever Guidance Mode is set for a particular application, those display settings will load when selected. For example, if a default is set for liquid application, whenever the Falcon is in Liquid Application Guidance Mode, this specific Screen Display will load.

Follow the steps below to set a particular setup to be loaded with a specific Guidance Mode.

1. Tap 'Display'
2. Tap 'Screen Displays'
3. Load the preferred display for a particular guidance mode
4. Select "Is Default for ..." button
5. Tap the desired application for the default display
6. Verify that the correct default is set to the loaded display







Custom Hotkeys for All Application Types

Satloc recommends setting up custom Hotkeys for all likely application types (Liquid, Dry Gate, etc.) and a Display Setting for Ferrying. These should be common actions required while in this particular mode.

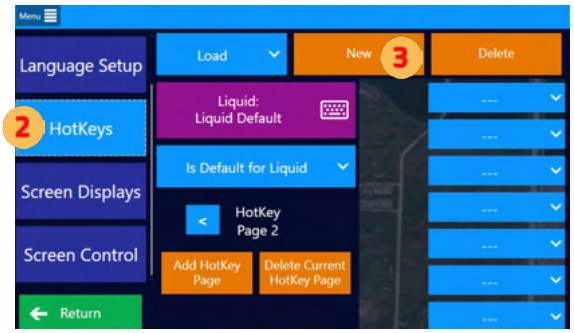
From the Main Menu, navigate to ***Display*** > ***Hotkeys***.

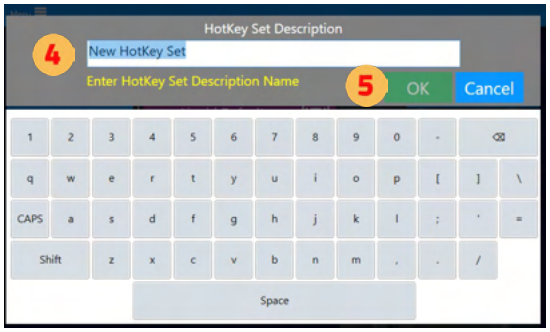
Tap 'New' and enter a name for this hotkey setup. A pilot can enter and save multiple setups, so your name could be specific: "Bob's Liquid" or "Liquid for Forestry."

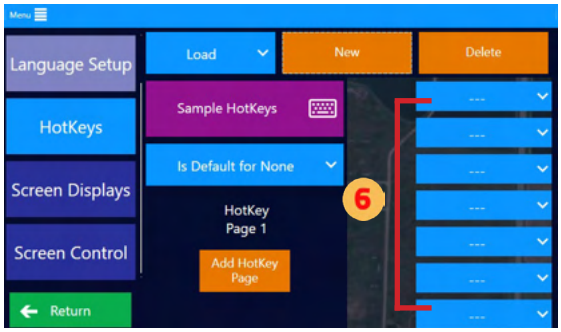
Note: To have a particular setup loaded upon a specific Guidance Mode, select it to be that mode's default.

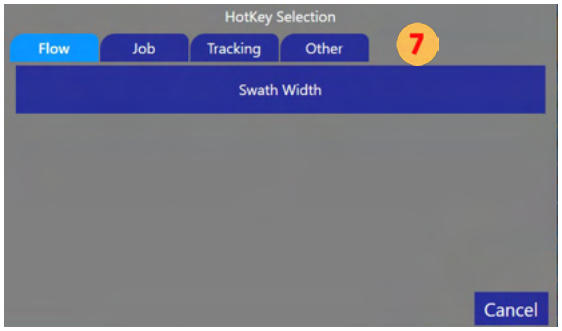
If the default is set for liquid applications, whenever the Falcon is in Liquid Application Guidance Mode, this specific Hotkey Setup will load. Creating a Hotkey Setup for each likely Guidance Mode is ideal.

1. Tap 'Display'
2. Tap 'Hotkeys'
3. Tap 'New'
4. Enter a hotkey set description name.
5. Press 'Ok.'
6. Select a hotkey slot dropdown menu.
7. Select one of the four main tabs at the top of the HotKey Selection screen and then choose an option for the slot.









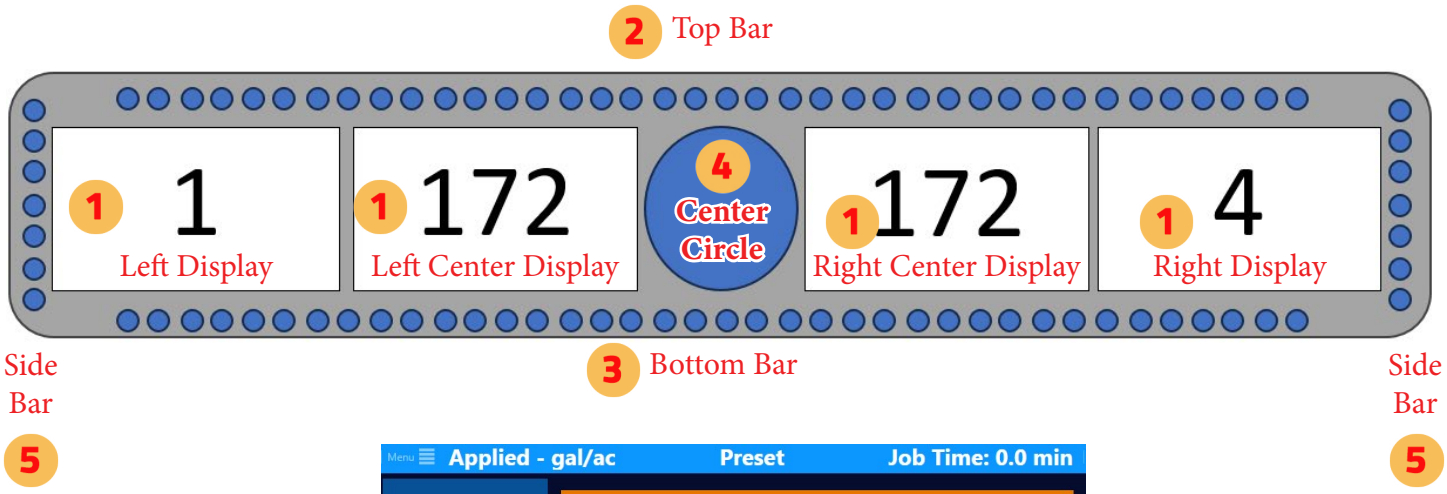
NOTE

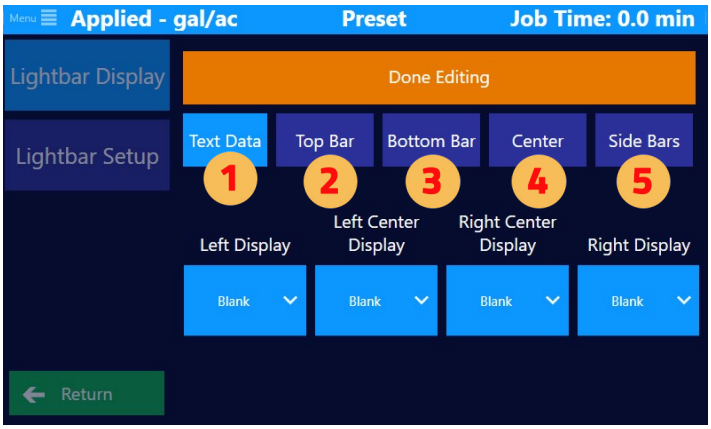
Up to seven HotKeys can be displayed at a time; however, any number of HotKey pages can be created. Like smart devices, users can set up multiple pages of hotkeys and navigate between them as needed. Typically, the most commonly used buttons are grouped on page one of the HotKeys area, and less common buttons are on subsequent pages.

2.6 LIGHTBAR SETUP

Lightbar Display Fields Overview

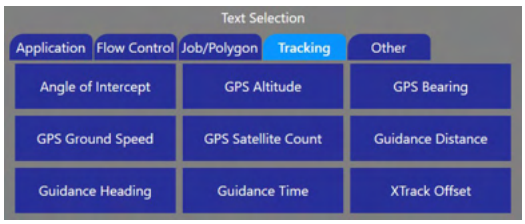
The lightbar is composed of five (5) sets of lights, which are called display fields. These lights are highly customizable. When the lightbar starts, a blue chasing circle will appear in the middle of the lightbar screen, indicating it is searching for Falcon/Falcon Pro. The chasing circle stops when the lightbar is connected to Falcon/Falcon Pro software.





1 Display Fields & Text Data

The 'Text Data' area allows a user to customize the following display fields: 1) Left Display, 2) Left Center Display, 3) Right Center Display and 4) Right Display on the L8 Lightbar. The selection menu has tabs that help group the selection options. To the right is an image of what the screen looks like when choosing 'Text Selection.'



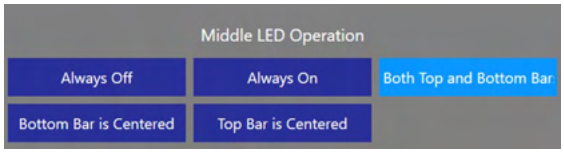
2 Top Bar

The 'Top Bar' consists of 45 colorful LEDs across the top of the Lightbar. Typically for application, this is set to XTrack Offset. For guidance, it is set to Guidance Offset. Users can specify what offset for each LED. Note: The Offset must be increasing in value from the center out. Click on a green or red box to edit the complementary pair of distances or angles.

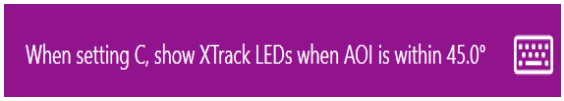
On the right are images of what the screen looks like when editing the 'Top Bar' in a Falcon unit.

Also in the 'Top Bar' editing menu:

1. Whether offset is displayed as a solid bar extending from center or a single LED
2. Behavior of the vertical three LEDs at center, this in conjunction with the 'Bottom Bar'



There is also an option for Xtrack Offset in cases where the user has picked a C pattern, sets an A|B, and is traversing over multiple swaths to set a C. This setting will prevent the XTrack Offset from swiping back and forth when it is not needed until the plane turns into a possible C swath. The default is 45 degrees meaning the XTrack will remain off until the AOI is within 45 degrees of parallel. At that point, the Xtrack LEDs will resume guiding the pilot into the nearest C Swath.



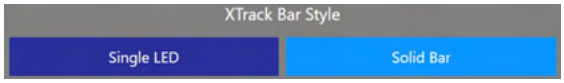
3 Bottom Bar

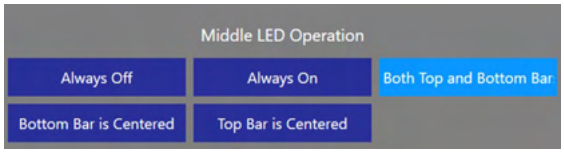
The 'Bottom Bar' is typically for application, set to the Angle of Intercept (AOI). During Guidance, it can be used in addition to or in place of the Top Bar Guidance Offset. Thirty-seven (37) colorful LEDs run across the bottom bar.

Users can specify what degree/offset for each LED. The LEDs are measured in degrees for AOI and Guidance. Note: the degrees must increase value from the center out. Click on a green or red box to edit the complementary pair of angles.

Also in the 'Bottom Bar' editing menu:

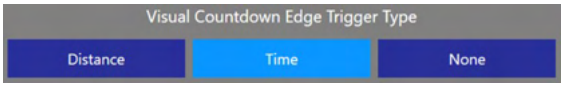
1. Whether offset is displayed as a solid bar extending from center or a single LED
2. Behavior of the vertical three LEDs at center, this in conjunction with the 'Top Bar'





4 Center Circle

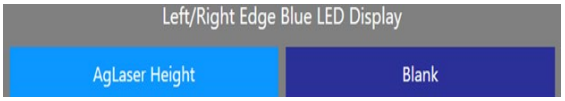
The Center Circle of colorful LEDs displays two kinds of information: trigger and obstacles. Here in the Lightbar settings, only the Trigger information is set. A user can set the type of visual trigger to 'Distance,' 'Time,' or 'None.'



Distance and Time triggers cause a half-circle "smile" to visibly change, allowing the pilot to anticipate events. For the smile to work, it must be on Constant Rate Poly or Variable Rate Polygon. The smile starts with the side-most LEDs and continues to light LEDs to the middle so that the very Center LED lights at the precise trigger moment. For Distance, the Start and Stop triggers are set in length. For Time, the Start and Stop triggers are set in seconds.

5 Side Bars

The vertical blue LEDs at the extreme right and left can be used as visual guidance for vertical offset from an AgLaser Input. If AgLaser is selected, the user should enter the ideal application height and a smaller acceptable tolerance above or below that height. Within that tolerance, the blue LEDs will track similarly to a bubble level (only vertical). Outside that tolerance, the LEDs will scroll at increasing rates as the actual AgLaser height moves further from the ideal application height.



Lightbar Display

TIP

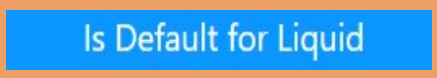
Satloc recommends setting up custom Lightbar Settings for all likely application types (Liquid, Dry Gate, etc.) and a Display Setting for Ferrying.

Navigate to custom displays: ***Main Menu*** > ***Lightbar*** > ***Lightbar Display***.

A pilot can enter and save multiple setups, so your name could be specific. For example, "Bob's Liquid" or "Liquid for Forestry."

NOTE

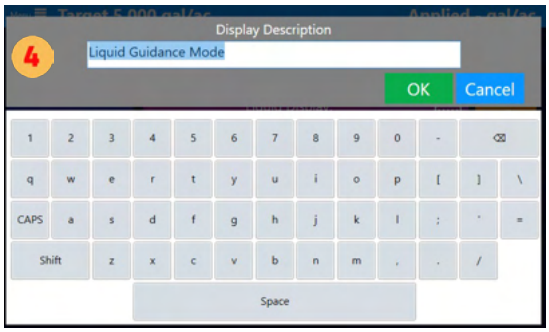
Creating a Lightbar Display Setup for each Guidance Mode is ideal. To have a particular setup loaded upon a specific Guidance Mode, select it to be that mode's default.

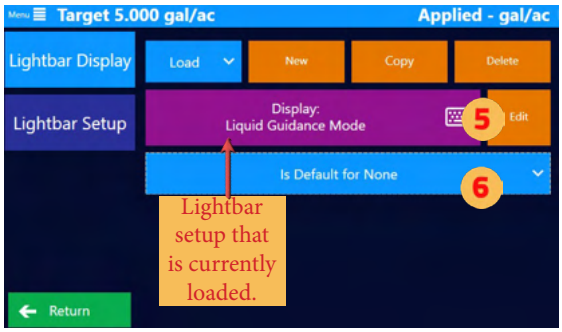


Detailed instructions are located later in this section.

Setup Guidance Mode for Liquid

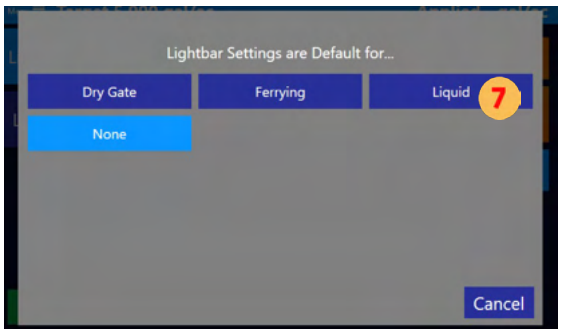
1. Tap the 'Lightbar'
2. Tap 'Lightbar Display'
3. Tap 'New'
4. Type a name for the lightbar setup. Then, tap 'OK.'
5. Verify that the Lightbar Display Setup is loaded for editing
6. When loaded, Tap 'Is Default for Liquid'
7. Tap 'Liquid'





TEXT DATA FIELDS

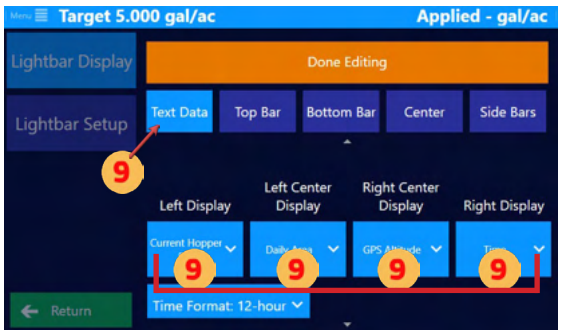
8. Tap 'Edit
9. Tap 'Text Data.' Then, tap to edit displays.

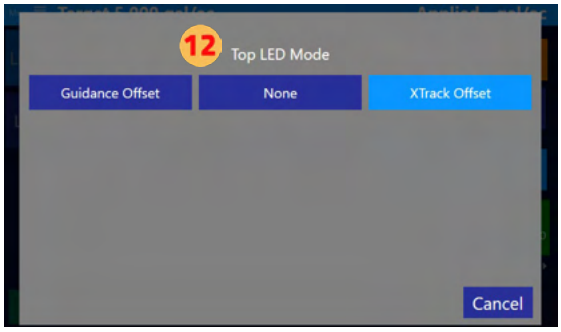


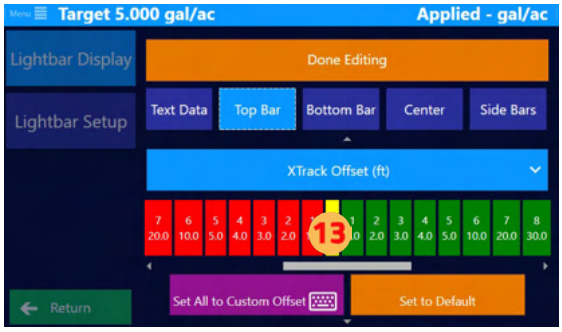
TOP BAR

10. Tap 'Top Bar'
11. Tap the long blue bar Tap blue selection button, often seen as the default 'Angle of Intercept'
12. Select a Top LED mode
13. Tap on the colored bar to change distance

    Set the distance from the center for LED. This automatically sets both sides. Then, tap 'OK.'







13 (Finishing up Step 13)

14 Tap 'Set All to Custom Offset' to set a distance between each LED. This distance will be applied to all LEDs.

Tap 'Set to Default' to reset the distance between each LED back to default

15 Tap 'Single LED' or 'Solid Bar' to choose a bar style

16 Tap 'Center LED' to choose the middle LED operation

17 Tap 'When setting C, Show XTrack LEDs when AOI' to set degrees

BOTTOM BAR

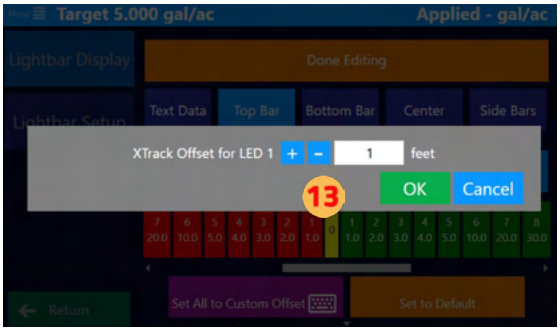
18 Tap 'Bottom Bar'

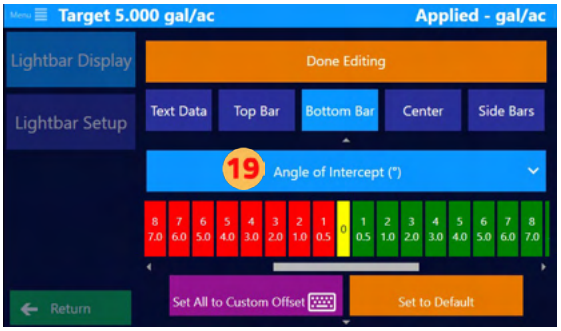
19 Tap blue selection button, often seen as the default 'Angle of Intercept'

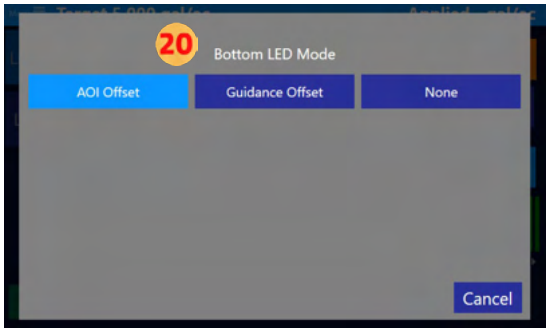
20 Choose Bottom LED Mode

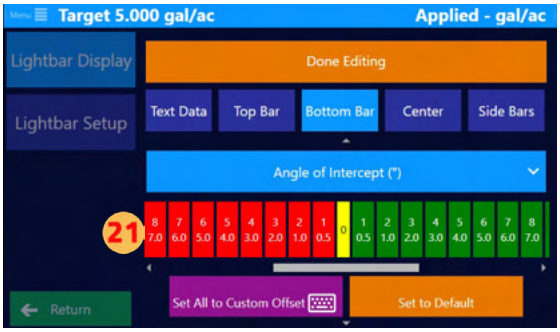
21 Tap on the colored bar to set specific offsets for certain areas.

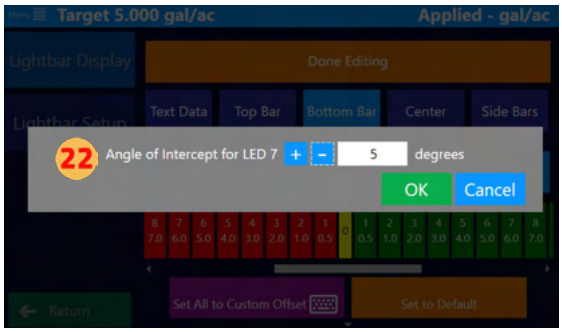
22 Set the distance from the center for LED. This automatically sets both sides. Then, tap 'OK.'



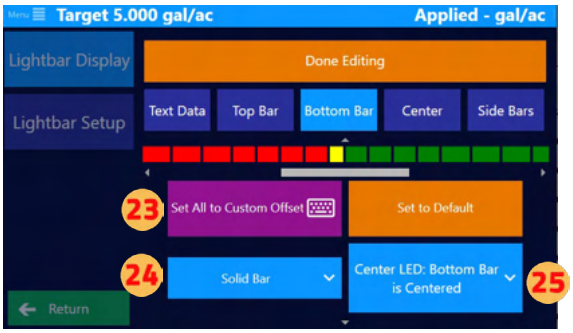


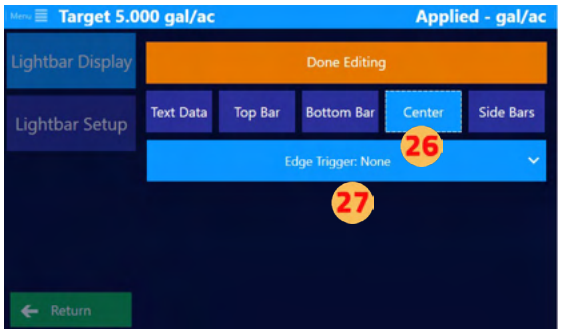






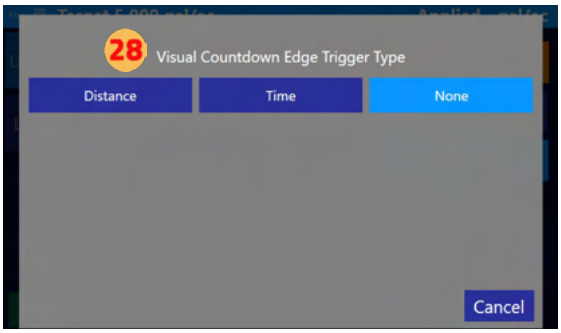
23 Tap 'Set All to Custom Offset' to set a distance between each LED. This distance will be applied to all LEDs.





24 Tap 'Single LED' or 'Solid Bar' to choose a bar style

25 Tap 'Center LED' to choose the Bottom Bar LED operation



CENTER

26 Tap 'Center'

27 Tap 'Edge Trigger: None'

Choose 'Distance' or 'Time' for the visual edge countdown

28 The next steps/settings will depend upon which type was chosen for the visual edge.

Side Bars

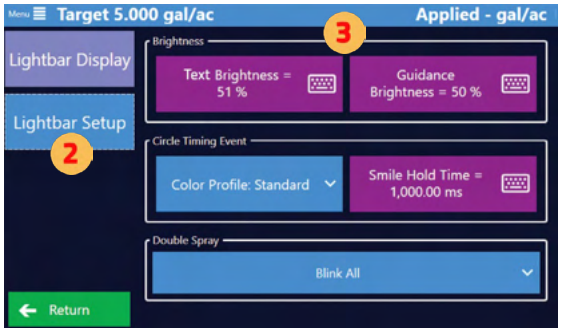
29 Tap 'Side Bars'

30 Tap the long blue button to set left/right edge for AgLaser Height

Note: Set the target application height and tolerance per application type (Liquid, Dry Gate, etc.) in ***Application > Flow Control***

Lightbar Dimming & Warning Settings Setup

1. Tap the 'Lightbar'
2. Tap 'Lightbar Setup'
3. Tap on the following buttons to edit settings:
   - Text Brightness
   - Guidance Brightness
   - Color Profile for Center Circle
   - "Smile" Hold Time
   - Double Spray Blink Style



NOTE

A double-spray warning appears (if set to ON) when you apply on a previously sprayed area. It also appears when you come into contact with your previous swath width.

2.7 INPUT SETUP

Input Overview

Difference Between the Falcon & Falcon Pro

Falcon models only come with an outer encoder knob, which is often referred to as a single or basic encoder. Falcon models do not have the inner knob (no smaller knob) with a button. Thus, in the Falcon Basic Software there is only one (1) option to set the encoder.

Falcon Pro models come with a dual encoder knob, also referred to as a multi-function, encoder knob.

TIP

The various inputs on the Falcon are programmable and settable per Guidance Mode (like the Lightbar, Display, and Hotkeys.)

NOTE

A user can choose to upgrade the Falcon Encoder Knob to the Falcon Pro Encoder Knob. First, contact your dealer to purchase the hardware upgrade equipment (cable, inner knob, button). Second, connect the software by following this path: ***Main Menu*** > ***Advanced*** > ***Visibility***. Then, click on the 'Dual Encoder Cable' box.

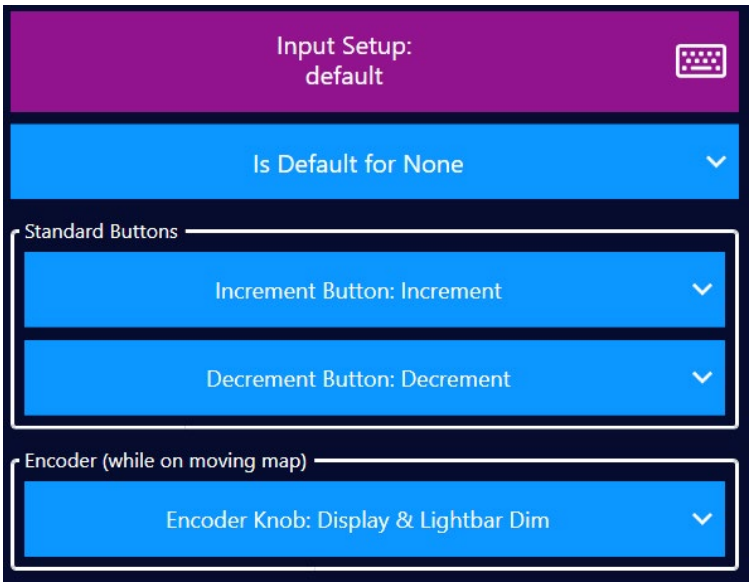
NOTE

Chapter Four of this manual explains basic functions of the single and dual encoder knobs.

Falcon Input Setup

The Falcon models, which come with a single encoder knob, have three default input signals: Increment, Decrement, and Encoder Knob. With only these three inputs, a Falcon user will most likely not have different settings for different Guidance modes. Due to the limited capabilities, the increment Button is set to Increment and Decrement Button to Decrement. The single Encoder knob should probably be set to dim both the display and Lightbar.

Follow this path to set up the single encoder knob: Main Menu > Devices > Input. Then, scroll to the 'Standard Buttons' and 'Encoder (while on moving map)' section. Below is an image of the recommended setup.



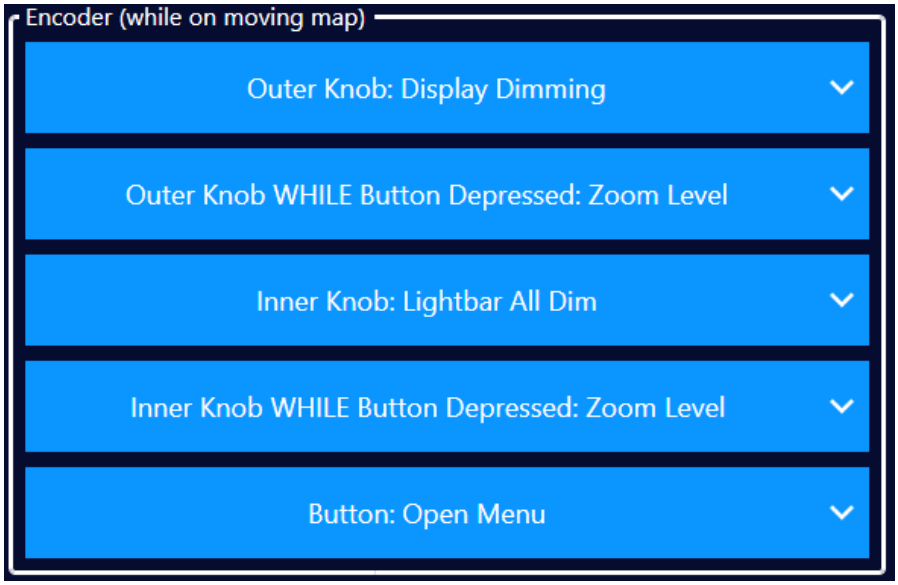
Falcon Pro Input Setup

The Falcon Pro models have Increment, Decrement, a multi-purpose Encoder Knob, and top hat inputs. The dual encoder knob allows five (5) different selections. The dual encoder has a button attached to the smaller inner knob. Spinning either knob while this button is pressed down (depressed) or simply clicking this button has unique actions in addition to simply spinning the outer and inner knobs. All of these settings only apply while on the moving map screen.

Follow this path to setup the dual encoder knob: Main Menu > Devices > Input. Below is an image of the five (5) programmable selections for the dual encoder knob.

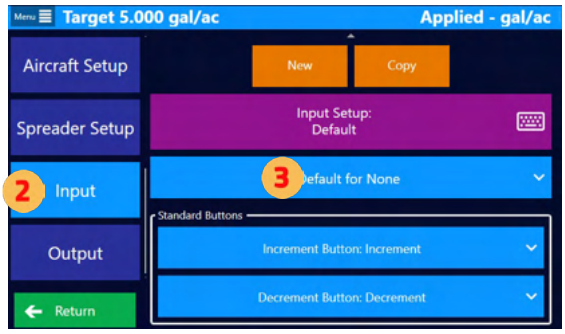
TIP

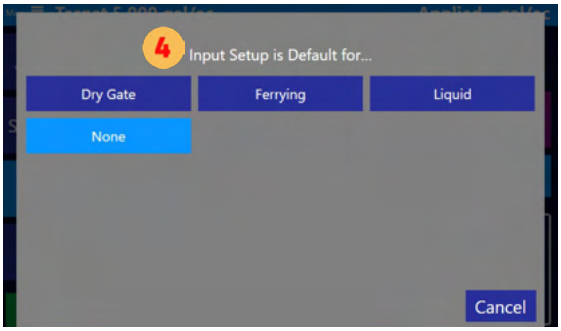
For a visual of how-to use and customize the Falcon Dual Encoder knob, visit Satloc's YouTube channel or click this link to take you directly to the video.

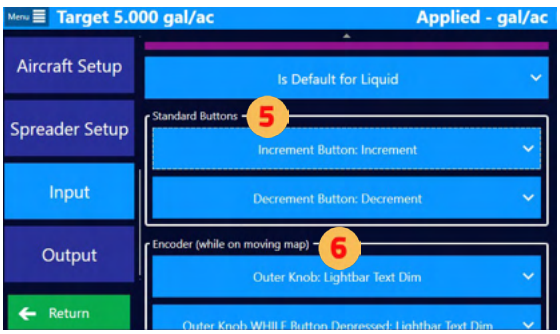


Setup Encoder Knob as a Default for Different Guidance Modes

1. Tap 'Devices'
2. Tap 'Input'
3. Select 'Is Default for None'
4. Choose a Guidance Mode for the Input
5. Choose settings for 'Standard Buttons'
6. Choose settings for 'Encoder'







2.8 ADS-B IN SETUP & TESTING

The Falcon models are equipped to give on-screen and Lightbar indications of nearby contacts.

WARNING Not every nearby aircraft is equipped with ADS-B Out. ADS-B In provides information to pilots that help prevent accidents. HOWEVER, ADS-B In does not replace pilot best practices, pilot situational awareness, and properly functioning equipment.

ADS-B In Setup

Navigate to ADS-B In settings by follwing this path: ***Main Menu > Mapping > ADS-B In Setup***

1. If your plane is equipped with ADS-B Out, select 'Ignore My Call Sign' and enter your transmitted call sign in the text field.
2. Tap 'Contact Limit' to set contact distance limit. The ADS-B device will receive air-to-air contacts in your immediate area and rebroadcast contacts from nearby ground stations for an extensive area. The Contact Limit input limits the On-Screen contacts to a square extending this distance from your location.
3. Tap 'Lightar Alert Radius' to set distance alert on lightbar.
4. Tap 'Contact Maximum Altitude Differential' to set altitude distance alert on lightbar.

Note: Alerts on the Lightbar are even further restricted. The Falcon creates a cylinder with your aircraft in the center. Any contact within the Lightbar Alert Radius and the Contact Maximum Altitude Differential (above and below your current altitude) will show on the Lightbar circle.

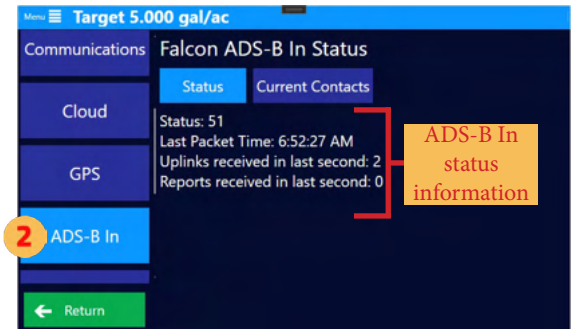
5. Choose whether you want the Circle Warning Light to be chasing (standard) or no chasing.
6. Toggle On or Off the 'Alert for Ground Contacts.' In the ADS-B data, this indicates contact is on the ground (not airborne). Turning this off would then ignore such contacts.

NOTE

On the Lightbar, a contact is identified with a single white LED in the relative direction to your heading. There are 18 such LEDs, so each represents 20 degrees. The chasing LEDs surrounding the contact LED indicate the urgency of the perceived threat based on the rate of change in distance. Contacts that are getting further away are slow blue-chasing LEDs. A contact whose distance is converging quickly results in fast red-chasing LEDs. The urgency colors change from Blue, Purple, Orange, and then to Red.

Testing ADS-B In

1. Tap 'Diagnostics'
2. Tap 'ADS-B In'
3. Tap 'Current Contacts'
4. Tap 'Return' twice to go to Moving Map
5. ADS-B contacts should appear on the screen. Zoom in and out of the screen to see more or less.



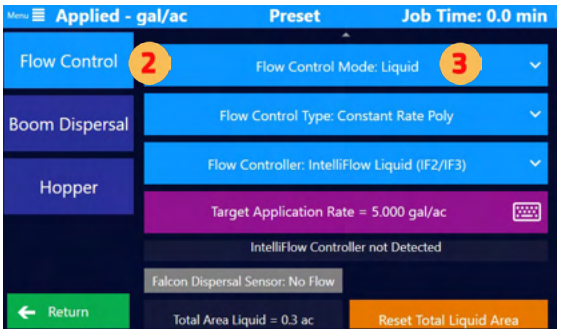
2.9 FLOW CONTROL SETUP & TESTING

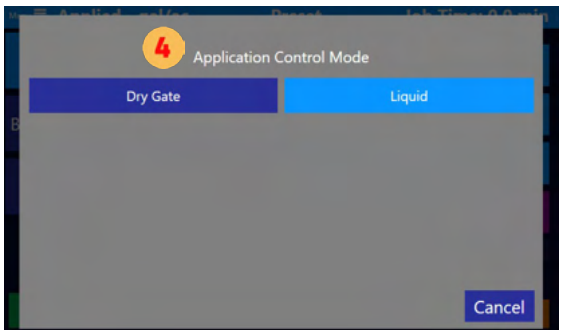
Setting Up Flow Control for Liquid

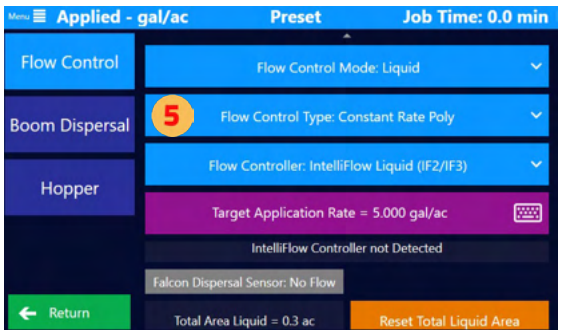
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap the 'Flow Control Mode' (This might have the words "None", "Liquid", or "Dry Gate" after the colon in the button name.)
4. Select Application Mode
5. Tap 'Flow Control Type'
6. Select Application Type
7. Tap 'Flow Controller'
8. Select a Controller
9. Tap 'Target Application Rate'
10. Set a Target Rate. Then, tap 'Ok.'
11. Tap 'Return'

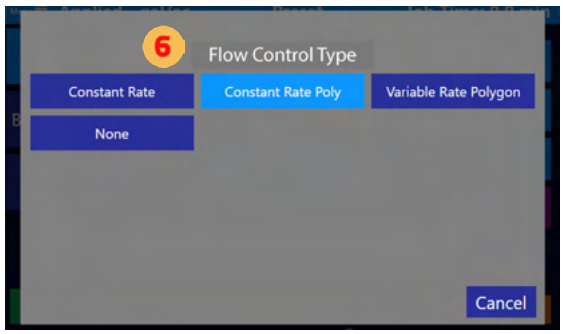
NOTE

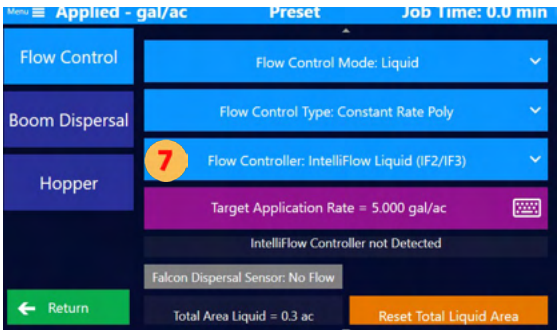
The buttons to reset 'Total Liquid Area', 'Total Liquid Volume', and 'Total Liquid Time' are located in the lower part of the screen seen in Step 11.

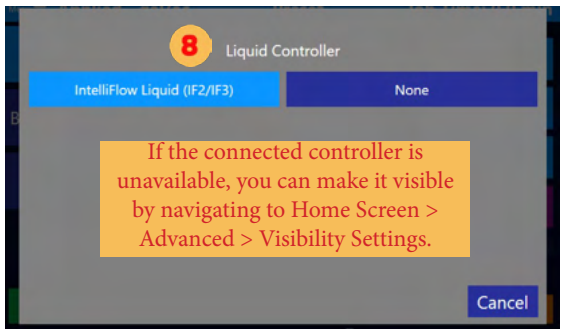


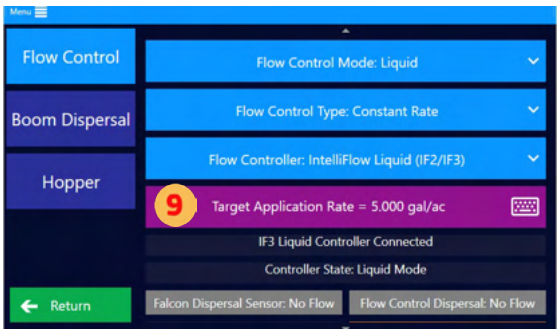


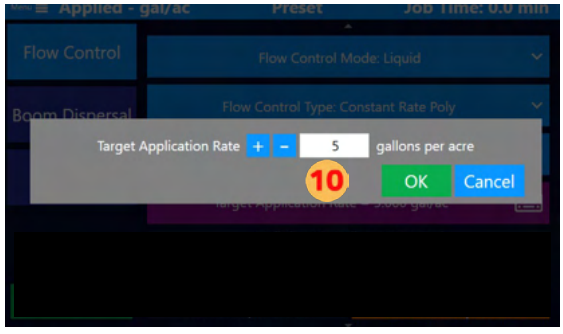


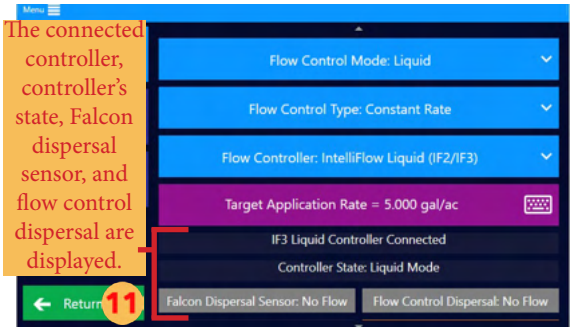












The connected controller, controller's state, Falcon dispersal sensor, and flow control dispersal are displayed.

12 Tap 'Devices'

13 Tap 'Liquid Accessories

14 If auto dispersal, tap 'Primary Boom Relay'

15 Select flow input requirements

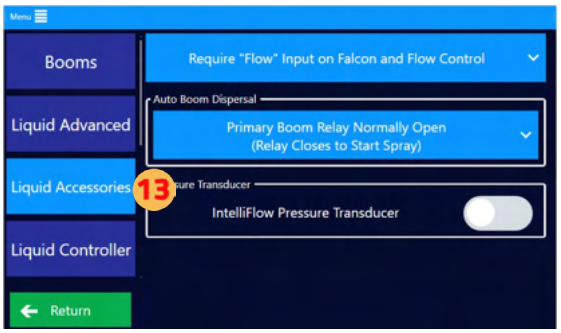
16 Tap toggle button to set pressure transducer on or off

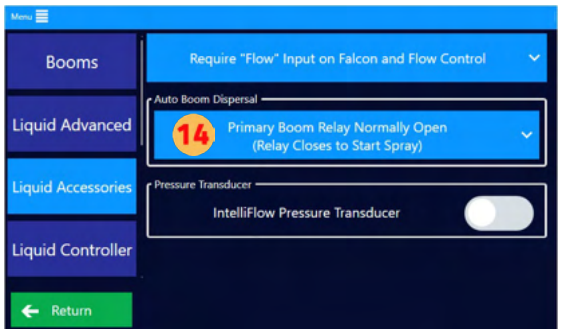
17 Tap 'Liquid Controller'

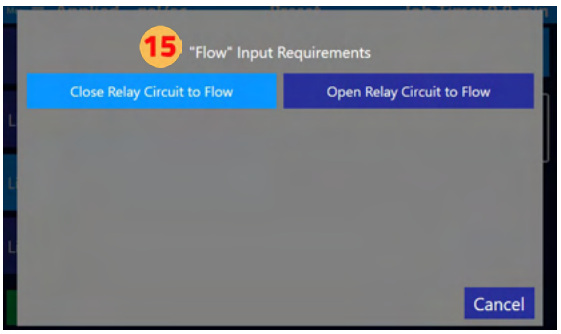
18 Tap buttons on the screen to set desired preferences

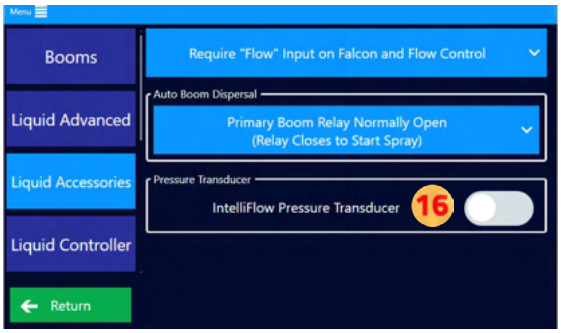
19 Tap 'Liquid Advanced'

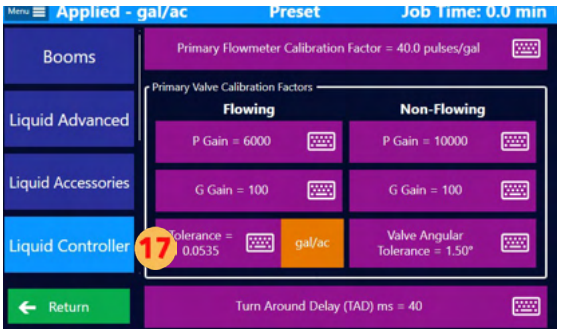
20 Tap the buttons on the screen to set desired preferences.

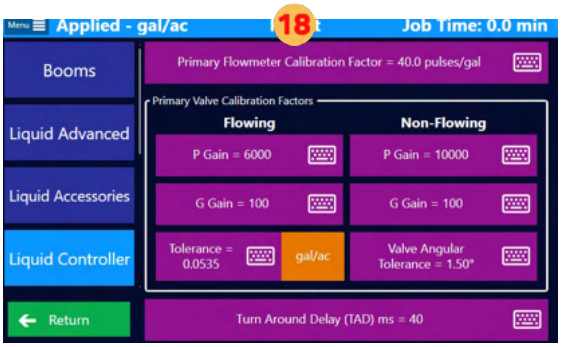






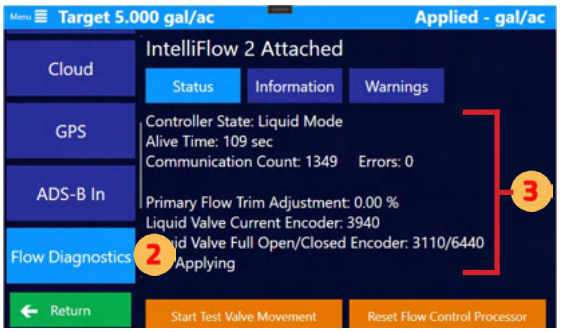


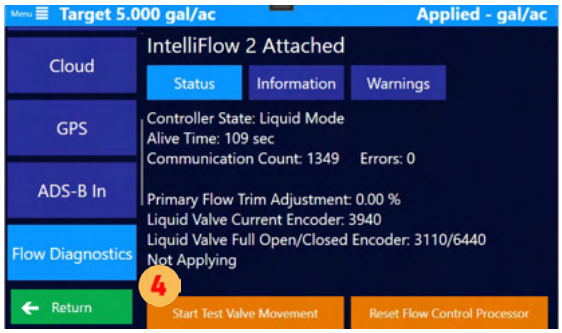


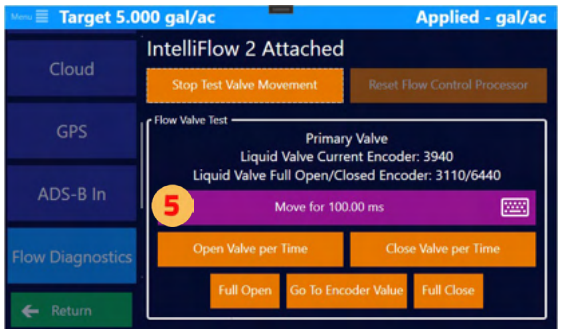


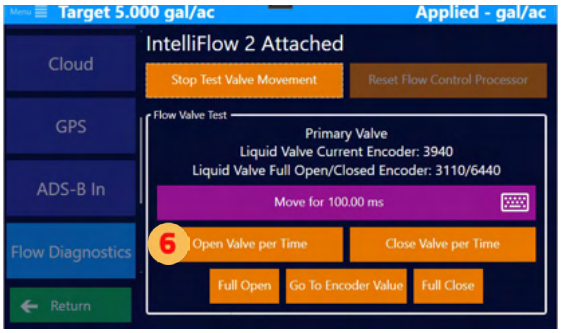
Test Flow Control for Liquid

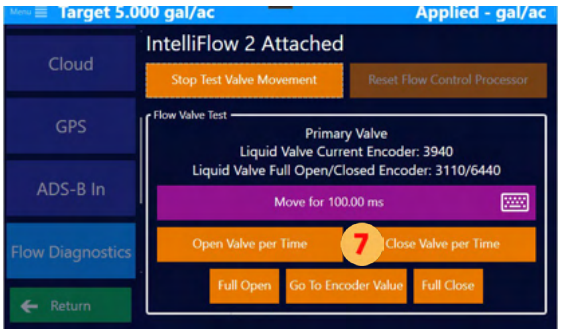
1. Tap the 'Diagnostics'
2. Scroll down to 'Flow Diagnostics.' Then, tap 'Flow Diagnostics'
3. The flow status information will appear on the screen.
4. Tap 'Start Test Valve Movement' to run valve test.
5. Tap 'Move' button to set movement amount
6. Tap 'Open Valve per Time' to open valve by set amount
7. Tap 'Close Valve per Time' to close valve by set amount
8. Tap 'Full Open' to fully open valve
9. Tap 'Full Close' to fully close valve
10. Tap 'Go To Encoder Value' to set encoder value
11. Enter desired encoder value. Then, tap 'Ok.'

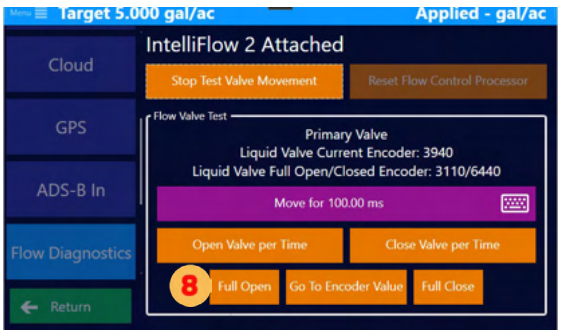


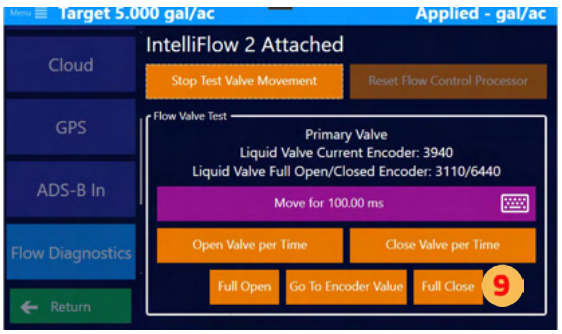


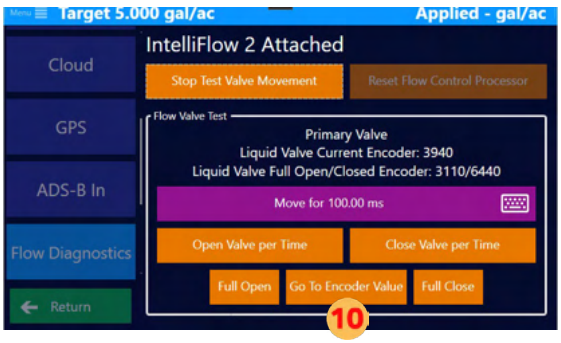


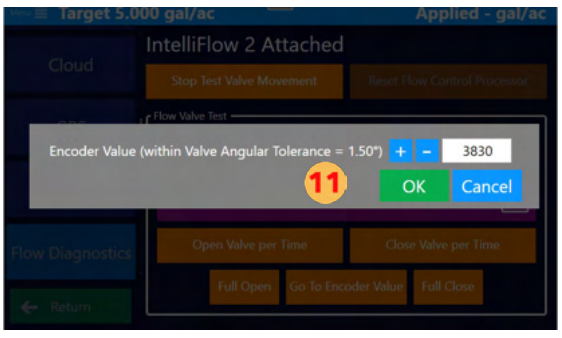










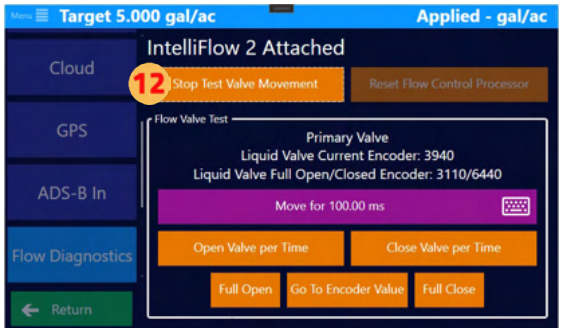


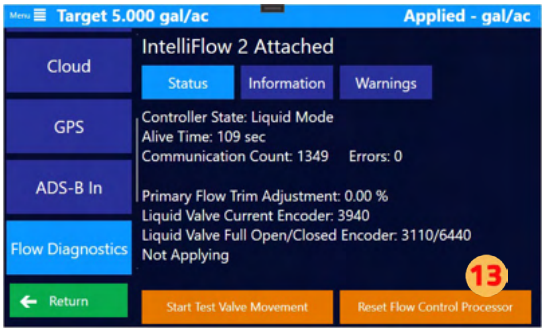
12 The valve will go to value within tolerance and the flow diagnostics screen appears. Tap 'Stop Test Valve Movement' button to exit test menu.

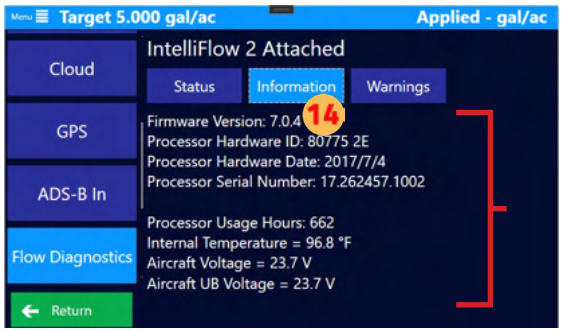
13 Tap 'Reset Flow Control Processor' to reset flow controller

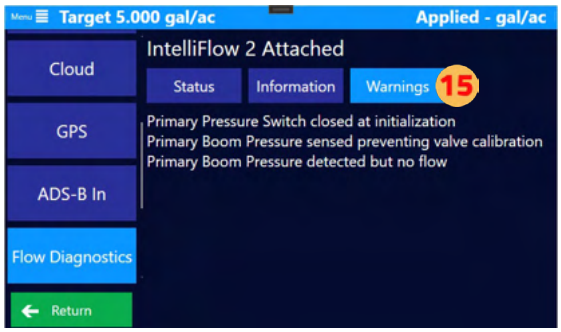
14 The flow status information will appear on the screen. Tap 'Information.' The flow controller information is displayed.

15 Tap 'Warnings' to display flow warnings.









WARNING

The screenshots in this User Manual are for informational purposes only and intended to help users navigate to the correct areas. The number values shown in these screenshots are not necessarily recommendations. Ultimately, it is the responsibility of the pilot/user to input values and information that are suitable for the product they are applying or for the specific job requirements. Always refer to product labels, job specifications, and industry guidelines to ensure proper application.

CHAPTER 3: BASIC TASKS

This chapter overviews aerial guidance terms, Falcon swath pattern selections, and basic task instructions.

WHAT'S IN THIS CHAPTER!

3.1 AERIAL GUIDANCE TERMS

Before using Falcon/Falcon Pro, make sure you clearly understand the aerial guidance terms used within Falcon/Falcon Pro, this user guide, and the automatic guidance features Falcon/Falcon Pro provides. These are covered in the first two chapters of this manual. This chapter provides basic information on how to start using Falcon/Falcon Pro to perform common tasks such as setting up a job and logging data.

Term	Definition
Auto Dispersal	This is a feature of the Falcon Pro and is available as an unlock to the Falcon. When a polygon or PMAP is loaded, this setting is turned on, and the application is set to constant rate poly or variable rate, the Falcon provides an output that can control an external device such as a fan brake that automatically starts and stops application when entering and exiting the polygon or PMAP area.
Crosstrack	The perpendicular distance between you and your target swath.
Heading Angle	The 'heading error' is the angular difference between your current heading and the heading of the target swath line in the direction of travel. When the heading angle is zero, you are on or parallel to the target swath (the cross-track will also be zero if you are on the target swath).
Increment/ Decrement	Increment (known as 'Advance' in previous Satloc systems) advances to the next prescribed pass in a pattern, and Decrement moves to the previous prescribed pass in a pattern. These functions are available through Falcon inputs (wired into the stick) or buttons on the Falcon Display. There is a Hotkey that will swap the function of Increment and Decrement for the stick inputs only when a pilot wants to reverse the function based on the current pattern direction. Such a reversal will automatically be canceled when the user restarts or loads the same or different job.
Job	In the Falcon, a Job is the container for all the data associated with an application. All the applied paint and associated data, all patterns, all swathing, all polygons and PMAP (if applicable) are all contained within a job. New jobs can be created in real-time or jobs with pre-defined polygons and patterns can be imported. During application all associated data is automatically saved to the job. When returning to complete the application, simply open the job or return to a mark created during that job and all the associated data is automatically loaded and applied. Since jobs can contain multiple application patterns, returning to a particular pattern within a job can be done by returning to the mark applied during that pattern or selecting one of the patterns applied during the job through the hotkey: Logged Pattern.
Log	A set of position-specific data that always includes exact positioning and rate of spray application, precise time and date record, flight speed, altitude, patterns flown, and GPS position quality. Falcon/Falcon Pro logs this data while you are at or above a preset airspeed (default or user-set). Logs are contained within Jobs and exported (by default) as one Log file for review after flight.
Mark	A point to which you want to return, such as a last sprayed point. When you create a mark, Falcon/Falcon Pro saves the swath number, pattern, A|B line, direction, Job, acreage, swath width, and spray information.
Mark '0'	Mark '0' is the last time you stopped applying. In the system, it is shown as 'M0.'
Pattern	The order (the sequence) in which, on demand, Falcon/Falcon Pro guides you to the swaths that make up the area to be sprayed. Guidance comprises heading and cross-track as well as a visual display of your aircraft (in its current position) and your target (start of swath). The swath array to which Falcon/Falcon Pro applies the pattern's sequence is generated by either the auto-application of an array to a polygon or the creation of an A|B line.

Term	Definition
Polygon	Saved with 'boundary-defined' jobs, polygons are the shapes of a field (or other area, such as a forest plot) that you define. You can create two types of polygons in Falcon/Falcon Pro—inclusion polygons (enclosed areas you spray) and exclusion polygons (enclosed areas you do not spray). Inclusion and exclusion polygons visually show you the borders of your spray/no-spray areas in the map.

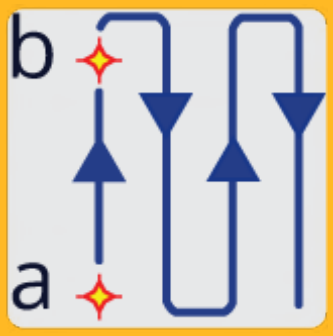
Poly Pattern	A pilot can analyze one polygon or more than one polygon at the same time. The Falcon/Falcon Pro automatically computes the A|B line and required passes for all the polygon lines. Users can then select the most efficient or any other based on their application needs. Here are ways to view your Best A|B line:
	• Sort by Passes, Length, or Heading with Background Maps
	  • Passes - View the fewest turns first
	  • Length - View by increasing poly line length
	  • Heading - Rotate around left or right to analyze with external factors, such as wind direction

Swath	A strip or row of a field that you fly.
Waypoint	A point that represents the GPS coordinates of a significant location you want to record (that is, save). You can create/save waypoints while flying or in a dedicated waypoints window.

3.2 AVAILABLE PATTERN TYPES

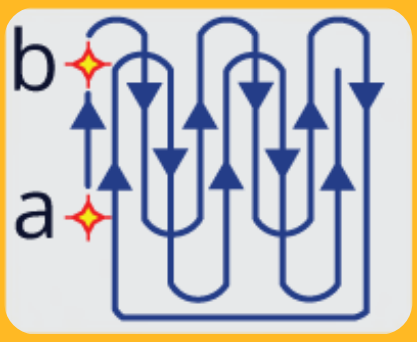
Falcon and Falcon Pro systems support nine pattern types (both open and closed), providing the flexibility to fly any field shape. Below are images and descriptions that describe available patterns in Falcon software and how to fly them.

1



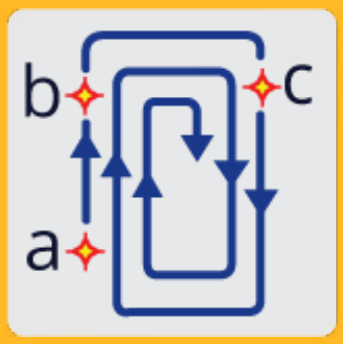
Back-to-Back
Fly consecutive swaths parallel to the A|B line.

2



Back-to-Back Skip
Fly the odd-numbered swaths first, then the even-numbered swaths.

3

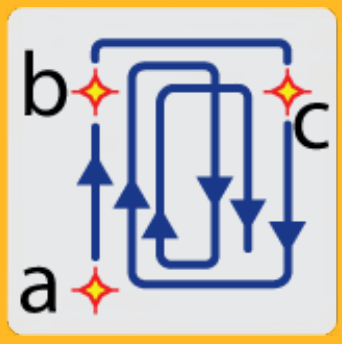


Squeeze
Fly loops of decreasing size from the outside of the field to the middle of the field. This pattern allows you to make wide turns at the beginning of a job when carrying a heavy load and narrower turns as your load becomes lighter.

4

Expand
Fly successive swaths outward from the center of the field. This pattern is useful for fields with a visible center line or a long, irregular shape.

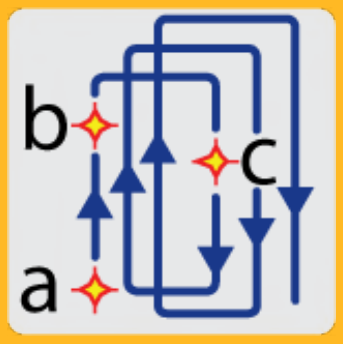
5



Racetrack

Fly each side of a field, then alternately work from swath #2 to the middle and from the middle toward the other end of the field. This pattern is useful for flying wide, smooth turns.

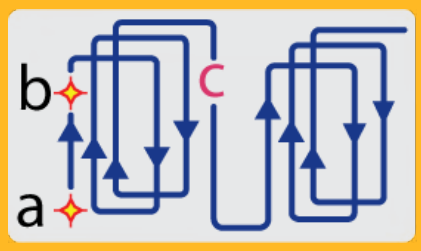
6



Quick Racetrack

Fly a pattern similar to the racetrack, but set your C point in the middle of the field.

7



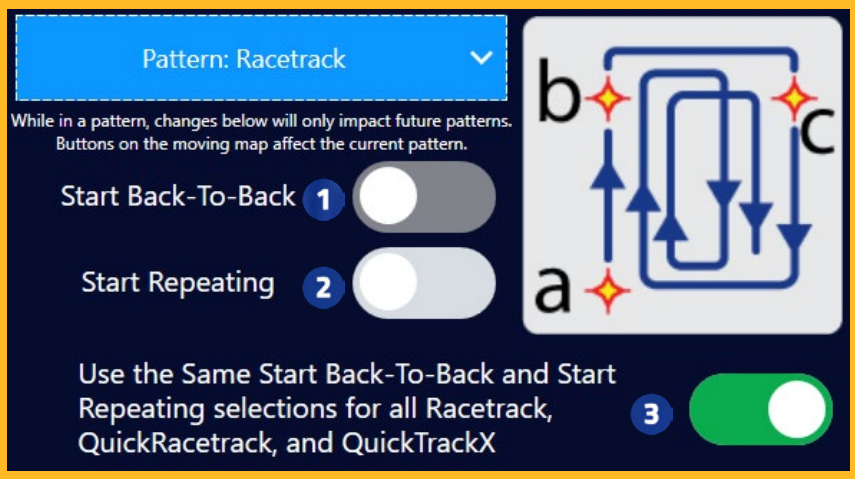
QuickTrack X

Fly a pattern similar to the quick racetrack. You specify the 'C' point for QuickTrack X patterns by the number of swaths or the distance from A|B to the furthest swath in the pattern. After you have set the A and B points, fly the pattern like a quick racetrack: the second swath is in the middle of the field, the third is swath #2, and so forth.

8

Reverse Racetrack

Fly a pattern similar to the racetrack. This is called the "reverse" racetrack because you are flying in one direction, but swaths are incrementing in the opposite direction. In this pattern, you set your A|B line in the center of the field. This pattern is useful for flying circular fields or other fields where the center line is clearly visible.



The following functions are only available for Racetrack, QuickRacetrack, and QuickTraxX.

1 Start Back-To-Back

Purpose: To allow any number of back-to-back passes at the beginning of a pattern. This is especially useful when using reduced swath width around sensitive areas. The Falcon manages each swath with its own width, allowing, for instance, four passes at 50% boom and then continuing with a racetrack pattern at full boom width.

Instructions when feature is enabled:

A. Set A|B Line: Begin by establishing an A|B line. This line serves as a reference or baseline for your pattern.

B. Fly Back-To-Back passes.

C. When ready to switch to the next pattern type, click the button on the screen that says "Start Racetrack" or whatever pattern is coming. For Racetrack or Quick Racetrack, the Falcon will then guide to set the 'C' point. Continue flying the new pattern as usual.

2 Start Repeating

Purpose: To allow for the continuous repetition of a selected pattern across the entire field. Repeating patterns can be switched to finish back-to-back by user command.

When feature is disabled: After the last swath of the pattern, then pattern will switch to back-to-back for the completion of the field.

When feature is enabled: After the last swath of the pattern, the same pattern will commence again. Fly copies of the patten as many times as desired. If back-to-back is needed to complete the field, click the button on the moving map that says "End Rpt." A confirmation to end the repeat after completing this pattern group will appear. Finish the current pattern, then the pattern will switch to back-to-back.

3 Use the Same

Purpose: To provide consistency in settings across different pattern types or allow for individual customization.

When feature is disabled: If you prefer different settings for each pattern type, adjust them individually as needed.

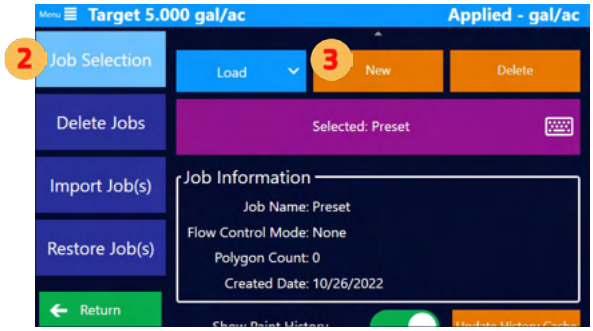
When feature is enabled: If you want the same settings (like Start Back-To-Back and Start Repeating) applied across all three pattern types, select the "Use the Same" option.

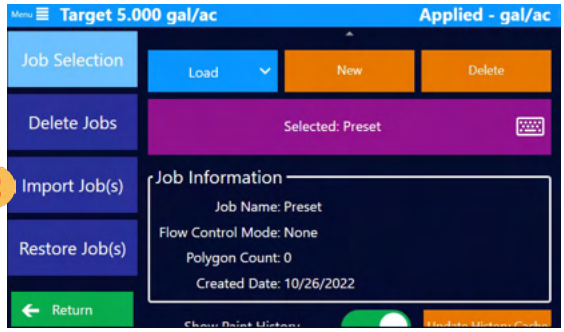
3.3 BASIC TASKS

Usage of the Falcon is greatly dependent on the pilot's preferences and often by the application type. These subsections explain general actions for basic application tasks.

New Jobs and Predefined Jobs

As explained in Section 1.2, everything in the Satloc Falcon is contained in a Job: application data, swathing, patterns, optional polygons, etc. Jobs start as blank canvases with no particular application type (dry or liquid), no swathing (current swath number and swath widths), etc. Once application begins, things begin to solidify in the Job. This will alert the pilot if they have switched flow types upon a Job reload or have a different swath width than was last used when returning to a mark.

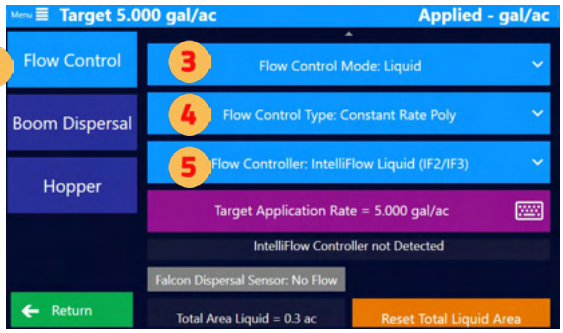
Action	Navigation Path
Start a New Job from the Startup Menu **Note:** If the user creates a new job on the Falcon, a default job name is suggested with the Falcon's serial number, date of application, and daily job counter as the job name. The user could instead name the Job something else.	 1 Opens a menu to load an existing job. 2 Opens a menu to select a previous mark. 3 Returns to Mark '0', seen as MO in the system. (M0 is the last time you stopped applying.) 4 Opens a menu to create a new Job and name it. 5 Automatically creates a new Job with a default name based on the serial number, date, and daily job counter. 6 Opens a menu to import a Job from a USB.
Start a New Job through Main Menu	*Main Menu > Jobs > Job Selection > New* 1 Jobs 2 Job Selection 3 New  

Action	Navigation Path
Start a Job from a HotKey	*Moving Map > New Job*  1 New Job
Start a Pre-defined Job from Satloc Cloud	Predefined Jobs are those generated by MapStar or other programs that include polygons or prescription maps. These files (.job, .pmd, .pmh, etc.) can be uploaded to the Satloc Cloud and sent directly to the Falcon or imported on a Falcon directly through a thumb drive. Those sent through the Satloc Cloud simply appear on the Falcon as jobs ready to be loaded. No further action is required.
Start a Job from a Thumb Drive	*Main Menu > Jobs > Import Job(s)* 1 Jobs 2 Import Job(s)   3 A Windows dialog box will appear. Navigate to your thumb drive, select the files, and click open. Start a predefined job by loading it.

Application Settings for New Job

Before starting to apply, specific settings are required to be set.

Action	Navigation Path
Set Application Type	*Main Menu > Application > Flow Control* 1 Application 2 Flow Control 3 Select Flow Control Mode



4 Select Flow Control Type (See Note on side). If choosing a Flow Control Type other than 'None,' select Flow Control Type button and choose either Constant Rate or Constant Poly Rate. Both types expect a controller to provide this constant rate, and the Poly option will enable Lightbar triggering indication in the center circle per the Lightbar Setup.

5 If choosing a Flow Control Type other than 'None,' select Flow Controller button and choose a controller. NOTE: If you have a controller for a particular type of application, that setup and use is covered in another section. However, an estimated flow rate is shown when there is no control type or controller. This rate is used while applying to estimate volume and pounds applied and related hopper status.

Estimated Flow Rate = 5.000 gal/min

NOTE

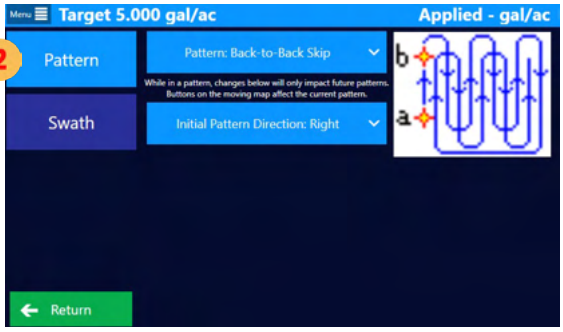
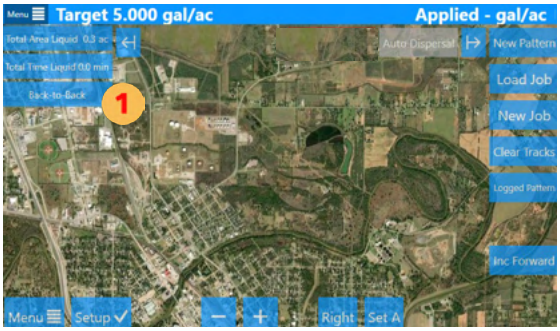
The most basic type of application is Flow Control Type: None. In this type of application, the Falcon will simply record application areas ("paint") without any rates, and the pilot strictly controls the start and stop of application.

Pattern Settings for New Job

Action	Navigation Path
Start a New Pattern through HotKey	*Moving Map > New Pattern* 1 New Pattern

TIP

Section 3.2 describes available pattern types in the Falcon/Falcon Pro.

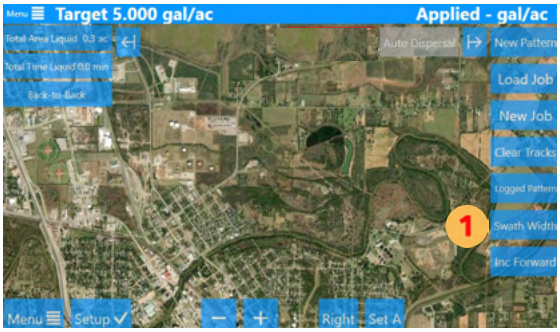
Action	Navigation Path
Set Pattern through Main Menu	*Main Menu > Pattern Swath > Pattern* 1 Pattern Swath Pattern  
Set Pattern through Setup Menu	*Moving Map > Setup*  1 Setup
Set Pattern through Left Display Pattern Button	*Moving Map > Pattern*  1 Pattern *(The text on this button is the current, or next, pattern name.)* **TIP** To edit the Left Display Area, follow this path Main Menu > Display > Screen Displays. For more information, go to Section 2.5.

NOTE

The pattern selected will be retained and any new pattern will initialize to this selected pattern. Once a pattern has started, changes to the pattern will affect only the next new pattern; the current pattern will not change.

Swath Width for New Job

The Falcon retains a unique Swath Width per Application Type. For instance, dry and liquid modes can have different widths, and the pilot does not need to remember to update the swath width when switching application modes.

Action	Navigation Path
Set Swath Width through HotKey	*Moving Map > Swath Width*  1 Swath Width **NOTE** Once a particular pass has been applied, that pass's Swath Width is set. Likewise, any passes between that pass and the A|B line will also be set. Only future, unapplied passes can have their Swath Width changed.
Set Swath Width through Main Menu	*Main Menu > Swath Width* 1 Pattern Swath 2 Swath  
Set Swath Width through Left Display Pattern Button	*Moving Map > Swath Width*  1 Pattern

NOTE

The swath width can also be set through a selected TopHat or Encoder Input. Also, it can be set by following this path Main Menu > Application > Dispersal (dispersal button will depend upon application type).

Starting Application & Pattern

Fly the initial A|B pass selecting Increment on the stick input or on the screen to set the A and B marks. Depending on the chosen Pattern and if Pre-Pattern Back-to-Back is enabled, the C mark may be required next.

Applying product ("Painting") will display on the screen, and the Lightbar will indicate with Blue LEDs in the bottom left corners. Stopping the application will drop a Mark 0 indicator.

Once the product is applied in this Pattern, the Pattern is added to the Job. This is important to remember as it allows the user to return to any pattern within a Job regardless of saved Marks.

Starting a New Pattern

There are multiple reasons to start a new Pattern within a Job. It could be a different field, the wind changed, the shape of the field, etc. While a job is loaded, click the HotKey 'New Pattern.' The selected Pattern will initialize and be ready for a new A|B line.

Note: The previous Pattern and its Swathing information and this new Pattern and its Swathing information can be reloaded (while the current job is loaded) by clicking the HotKey 'Logged Pattern.'

TIP

To edit the HotKeys, follow this path Main Menu > Display > HotKeys. For more information, go to Section 2.5. More information about HotKeys is included later in this chapter.

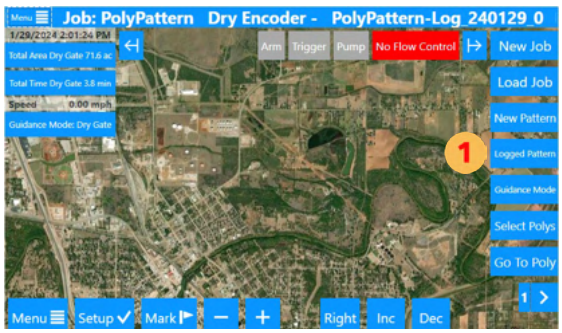
Logged Patterns

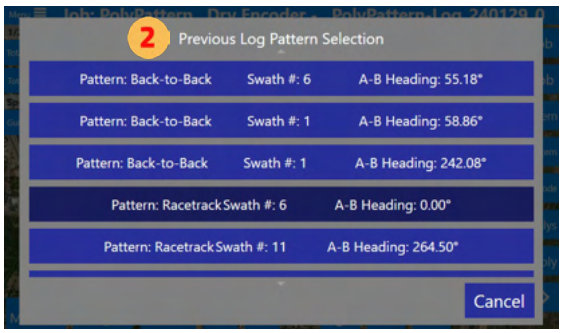
All patterns and swathing information are contained within a job. This means that simply by loading a job, the user has access to all defined patterns. The Logged Pattern Hotkey will show a list of all patterns flown in a job, giving Pattern Type, Swath #, and Swath Heading to allow ease of selection. Clicking one of these logged patterns restores the Falcon to that pattern, similar to returning to a Mark.

The benefit of Logged Pattern is that the pilot doesn't have to drop a mark for each pattern in a job and remember which mark to return to later; simply loading the same job and clicking logged pattern allows returning to any pattern without any marks.

Note: Setting and Returning to a Mark still functions as previous Satloc GPS systems (with some improvements mentioned in the Marks section).

Make sure you've set 'Logged Pattern' as a hotkey. Then, use the following path: *Logged Pattern > (Select a Log Pattern).*



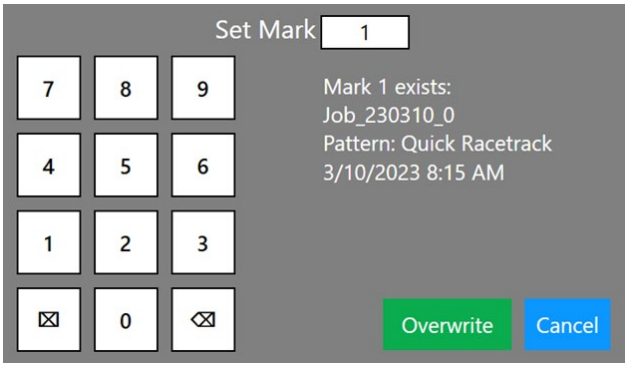


Marks

A user can save a mark by clicking the 

button on the screen.

The user can type up to 4 digits as an identifier for a mark (1 – 9999). If that mark was already saved, the mark information is presented to give the user an option to overwrite or pick a different mark.



Marks contain information on the Job and the specific pattern/swathing inside that Job. Clicking to return to a Mark will load that Job and all its paint and restore the particular pattern and swathing information.

Mark 0 is set every time a pilot stops applying (painting). The user sets the remaining marks (1 – 9999) at will. Returning to a Mark can be done through a HotKey, the Setup Menu, or the Startup Menu. If the Job associated with a saved Mark has been deleted, a notice will be shown, and the current Job will remain loaded.

3.4 POLYGONS

Some jobs created outside the Falcon may contain polygons. When loaded, these polygons will automatically be enabled and displayed. The Lightbar will indicate edge triggering when the Application Flow Type is set to Constant Rate Poly or Variable Rate Poly. Additionally, the Auto Dispersal output can automatically control dispersal for Falcon Pro or a Falcon with Auto Dispersal Unlock.

Users can elect to select only specific polygons. This selection can be made through navigating to ***Menu*** > ***Jobs*** > ***Polygon Selection*** or a HotKey.

There are two sets of timing for Polygon triggering:

1. On the Lightbar Settings, the Center section for visual edge Trigger can be set for Time or Distance.

2. Auto Dispersal Enabled and the Auto Dispersal Timing are set per application type (this can differ for Liquid, Dry, etc.). These are set by navigating to ***Menu*** > ***Application*** and then selecting the appropriate tab: Boom Dispersal, Gate Dispersal, etc.

Polygon Pattern Analysis

A pilot can analyze one polygon or more than one polygon at the same time. The Falcon/Falcon Pro automatically computes the A|B line and required passes for all the polygon lines. Users can then select the most efficient or any other based on their application needs. Here are ways to view your best A|B line:

Sort by Passes, Length, or Heading with Background Maps

- Passes - View the fewest passes first
- Length - View by increasing A|B poly line length
- Heading - Rotate around left or right to analyze with external factors, such as wind direction

Analyze One Poly

The image to the right shows a single poly. The purple line represents the poly line from which the A|B line has been derived. Notice the orange arrow points in the direction of the pattern. Falcon/Falcon Pro shows an initial result of most efficient at 20 passes. After that, it identifies the least efficient at the top as 33 passes.

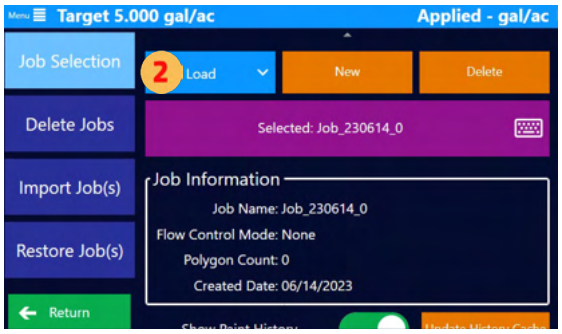
Analyze ALL Polys in a Job

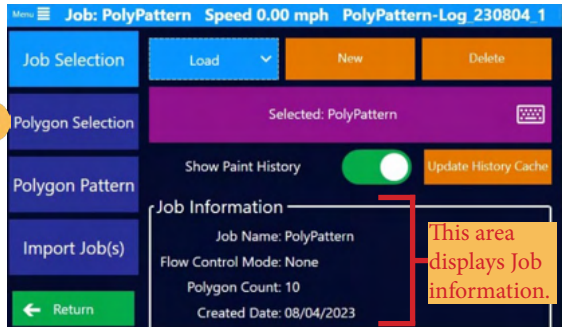
The image to the left shows all the polys in a job. The Falcon/Falcon Pro software can analyze all the polygons and then sort by least amount of passes and most passes based upon the data.

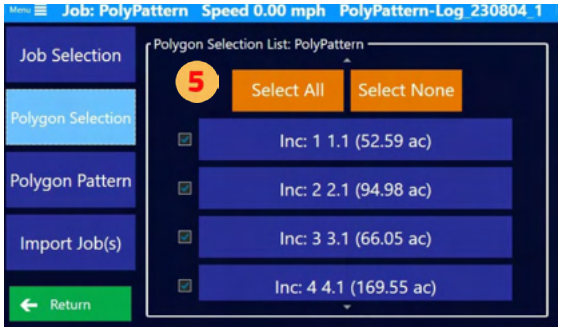
Sort by Heading

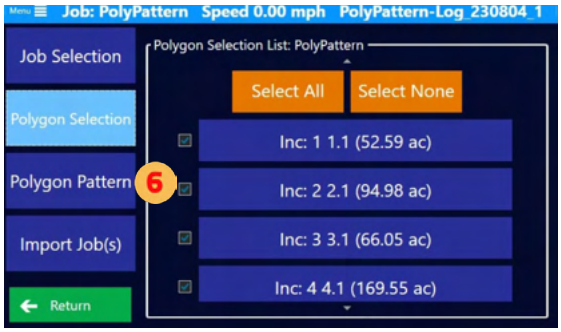
The image to the right shows the heading rotated to a less efficient direction. The A|B line is parallel to the inset purple line. The aircraft started back a few swaths to hit the extremity of the field.

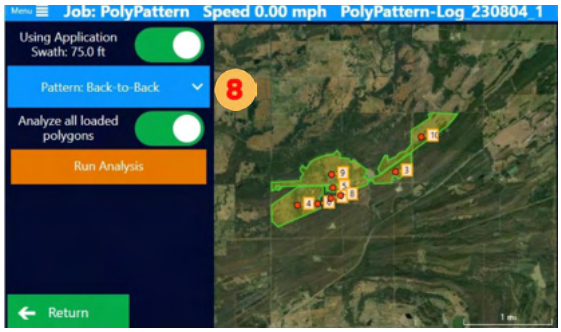
1. Tap 'Jobs'
2. Tap 'Load'
3. Select a Job
4. Tap 'Polygon Selection'
5. Select the Polygons you Want Visible
6. Tap 'Polygon Pattern'
7. Toggle On 'Using Application Swath' if you want to use Swath Width in Application or Toggle Off to Specify a Swath Width
8. Tap 'Pattern'
9. Select a Pattern
10. Toggle On 'Analyze all loaded polygons' to Analyze all Polygons. Toggle Off to analyze a Specific Polygon.
11. Tap 'Run Analysis'

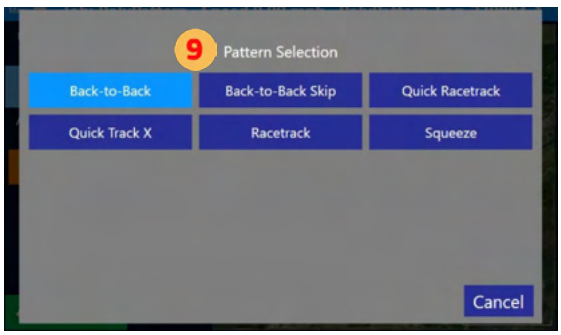


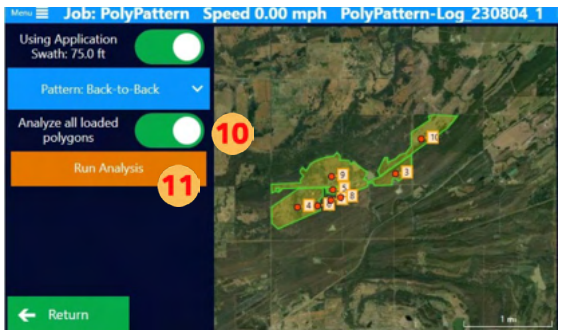








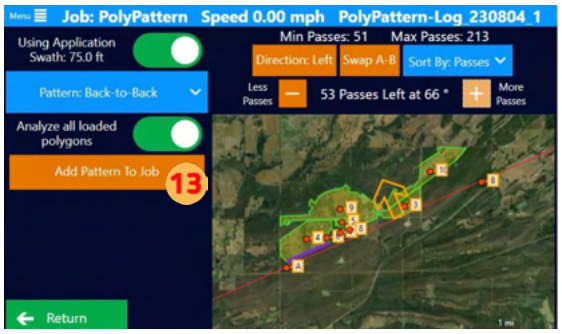


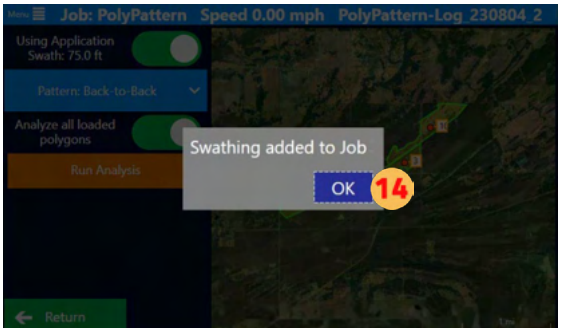


12 Polygon(s) are Analyzed

13 Tap 'Add Pattern to Job'

14 Tap 'OK.' Pattern is now added to Job.



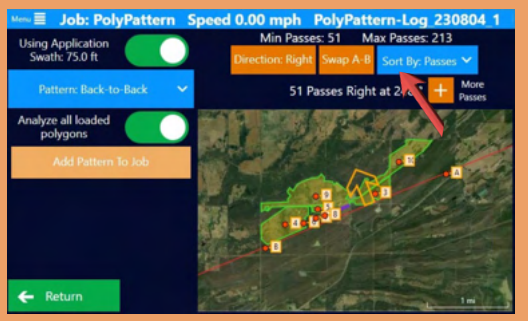


TIP

For a visual of how to run polygon pattern analysis, visit Satloc's YouTube channel or click this link to take you directly to the video.

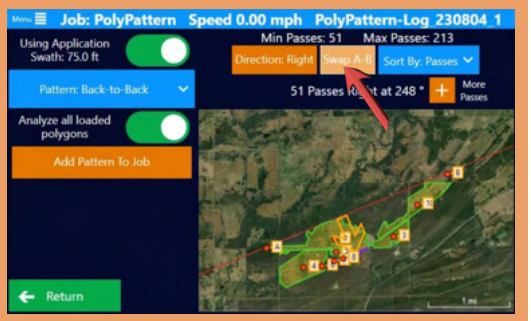
NOTE

There are three 'Sort By:' options - 1) Heading, 2) Length, and 3) Passes. This is chosen by the 'Sort By:' Button.



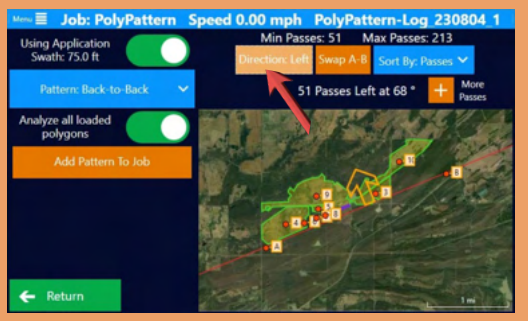
NOTE

Select 'Swap A-B' button to switch polygon start.



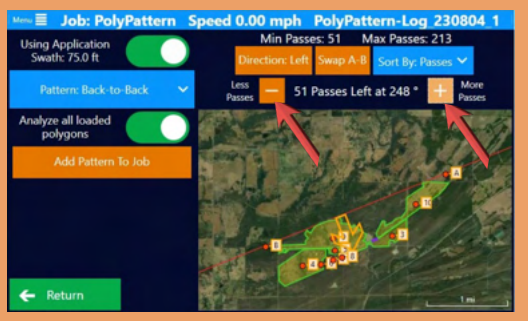
NOTE

The 'Direction' button switches the direction a pilot travels after the A|B Line.



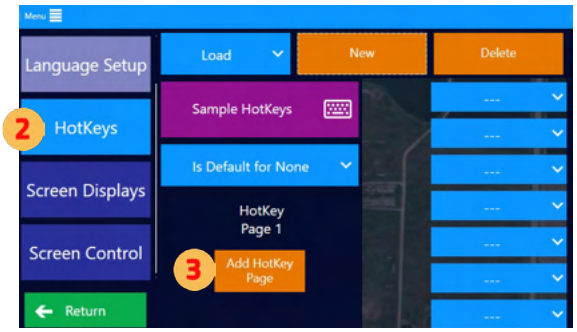
NOTE

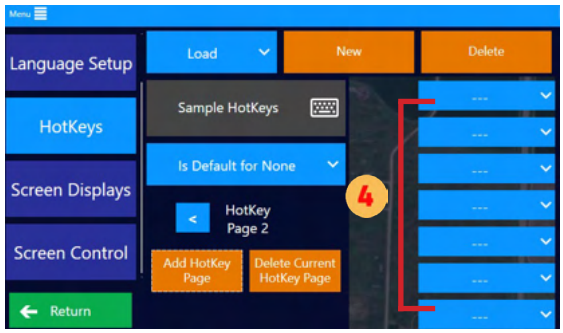
The 'Less Passes' and 'More Passes' buttons change swath lines.

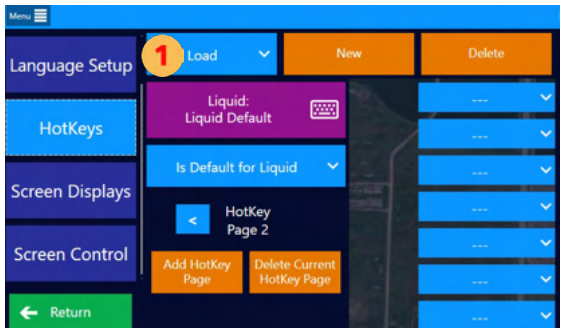


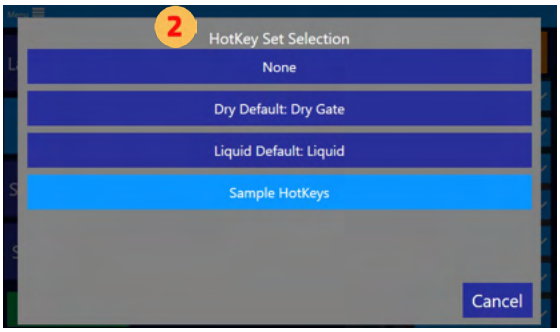
3.5 BASIC HOTKEY TASKS

Action	Navigation Path
Adding a HotKey Page	*Main Menu > Display > HotKeys > Add HotKey Page* 1 Display 2 HotKeys 3 Add HotKey Page 4 Select a HotKey Slot on Dropdown Menu 5 Select one of the four (sometimes there are five or more, depending upon unlocks) main tabs at the top of the HotKey Selection screen and then choose an option for the slot.
Load a HotKey Set	*Main Menu > Display > HotKeys > Load* 1 Load 2 Select a HotKey Set









WARNING

The screenshots in this User Manual are for informational purposes only and intended to help users navigate to the correct areas. The number values shown in these screenshots are not necessarily recommendations. Ultimately, it is the responsibility of the pilot/user to input values and information that are suitable for the product they are applying or for the specific job requirements. Always refer to product labels, job specifications, and industry guidelines to ensure proper application.

CHAPTER 4: ADVANCED SETUP

This chapter goes over setups that aerial applicators do not typically use a lot.

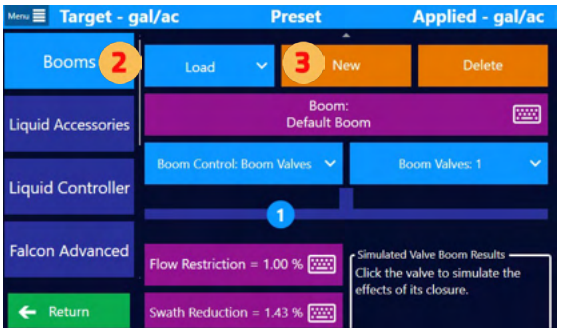
WHAT'S IN THIS CHAPTER!

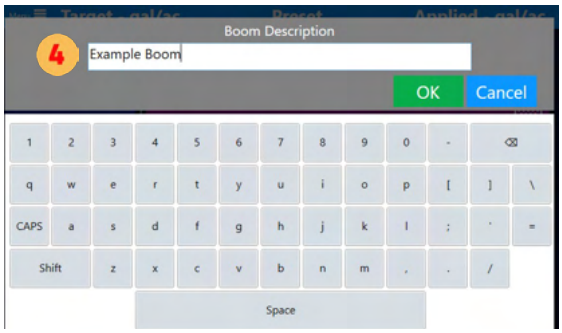
4.1 BOOM VALVES SETUP

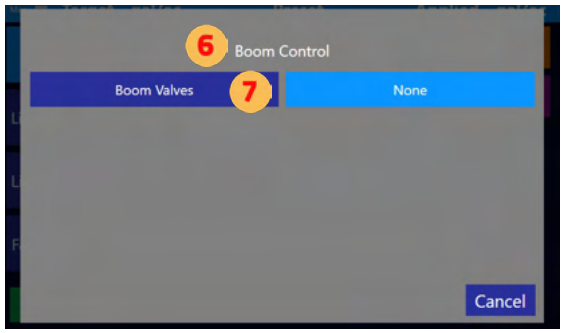
Setting Up Valve Control without Wizard

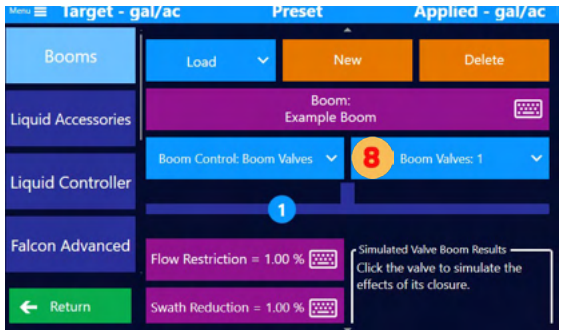
1. Tap 'Devices'
2. Tap 'Booms'
3. Tap the 'New'
4. Enter Boom Name. Then, tap 'Ok.'
5. Tap 'Boom Control'
6. Select the Type of Boom Control. A user must have 'Partial Boom' option enabled under *Main Menu > Advanced > Unlocks >Boom Control.*

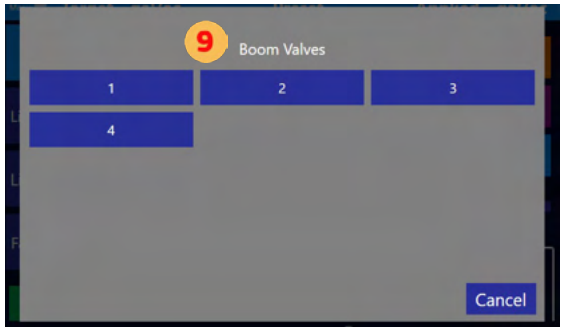
   If selecting 'Boom Valves' option, complete the following steps.
7. Tap 'Boom Valves'
8. Tap 'Boom Valves' (that is followed by a number)
9. Select the number of boom valves present on aircraft
10. Press on the valve number to select that valve and set its properties

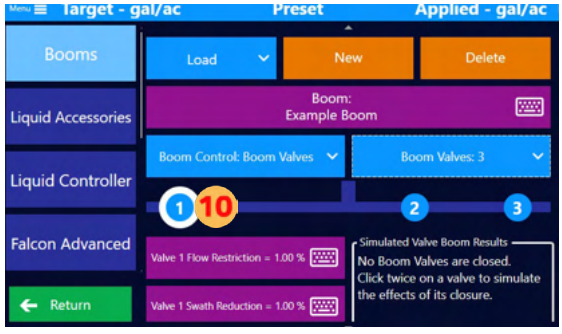












TIP

There is a Valve Control Setup Wizard.

11 Tap 'Valve Cut Off' to select which way the valve cuts off

12 Tap 'Flow Restriction'

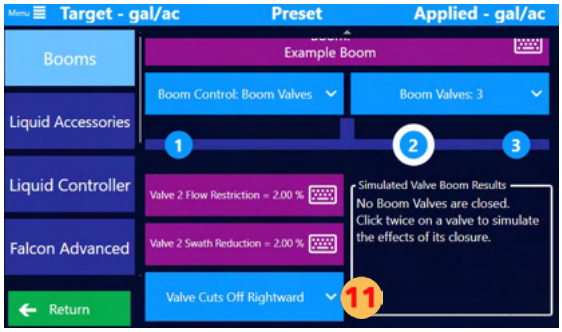
13 Set flow restriction percentage. Then, tap 'OK.'

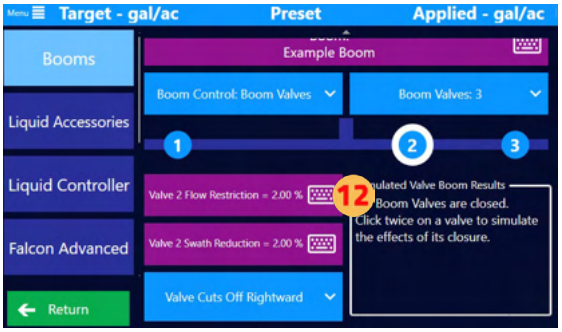
14 Tap 'Swath Reduction'

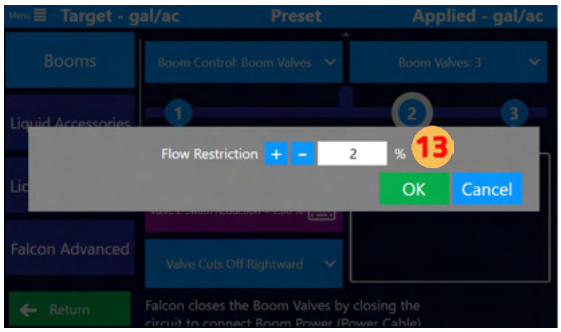
15 Set swath reduction percentage. Then, tap 'OK.'

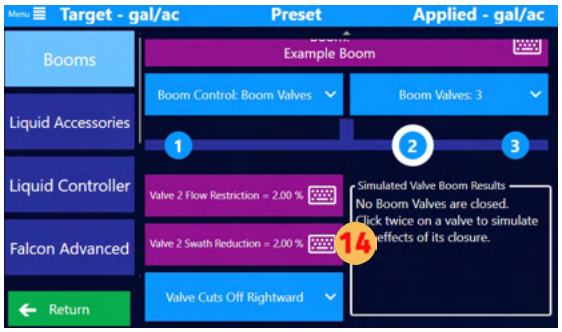
16 Tap on a valve to simulate that valve closing. This does not close the actual valve, this is just to show the calculated changes that will happen when a valve does close.

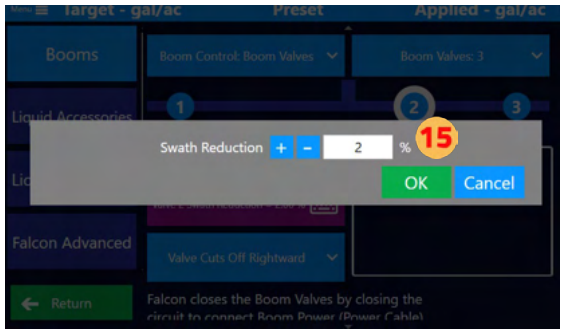
17 Press the again to simulate that valve is open.

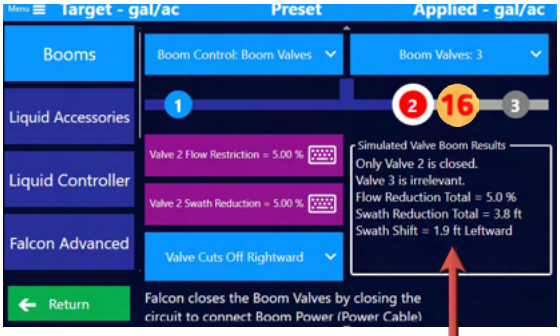


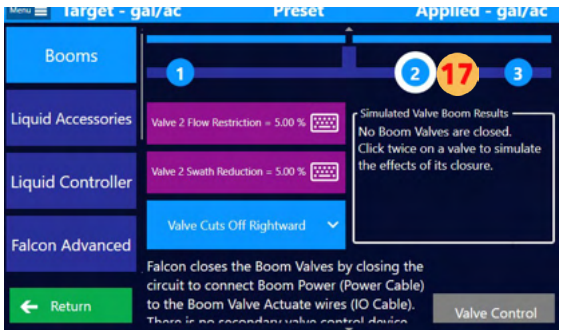










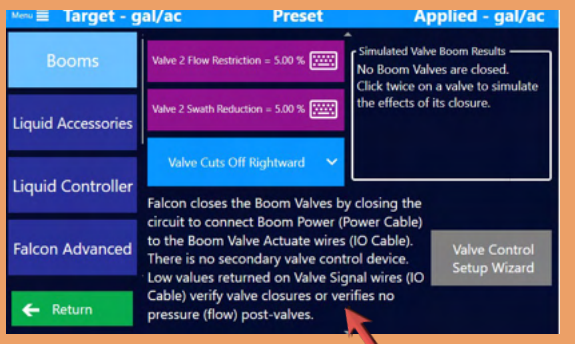


When a valve is closed, calculated results will show under 'Simulated Valve Boom Results' and display the following:

1. Which valves are closed
2. Whether a valve is irrelevant due to another valve's closure
3. Flow Reduction Total – the percent amount the overall flow has been reduced
4. Swath Reduction Total – the amount the swath width has been reduced
5. Swath Shift – the distance the swath's center has shifted

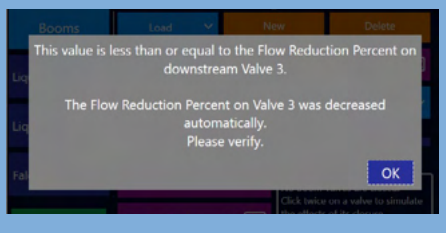
NOTE

Valve control settings are displayed at the bottom of the screen. Scroll down to view the settings.



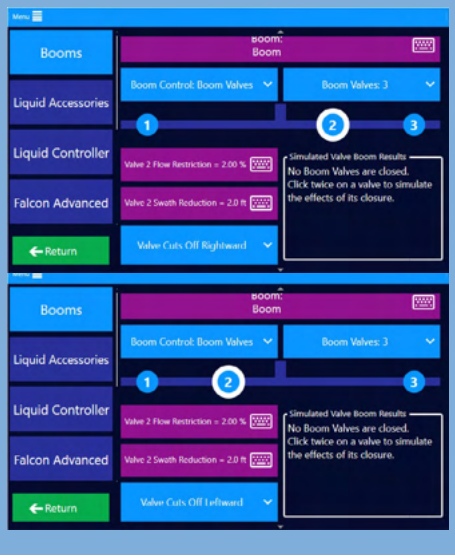
TIP

Suppose a valve's flow reduction or swath reduction is set to a value greater than or equal to an upstream valve. In that case, that value will be automatically increased, and a popup message will appear.



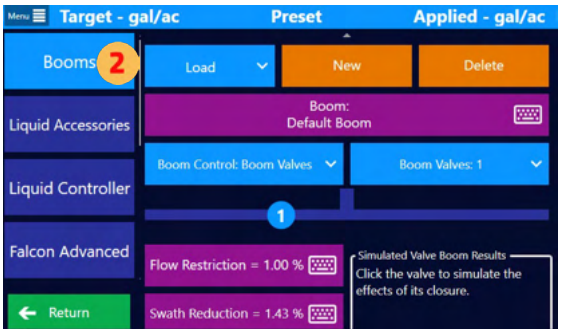
TIP

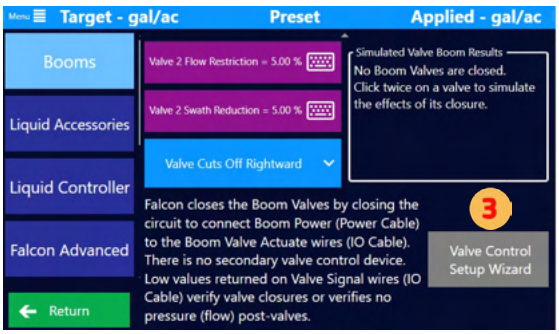
To move a valve to match the setup of the plane, select a valve in the middle, and the Valve Cuts Off option will appear. Press this option to specify if the valve cuts off leftward or rightward.

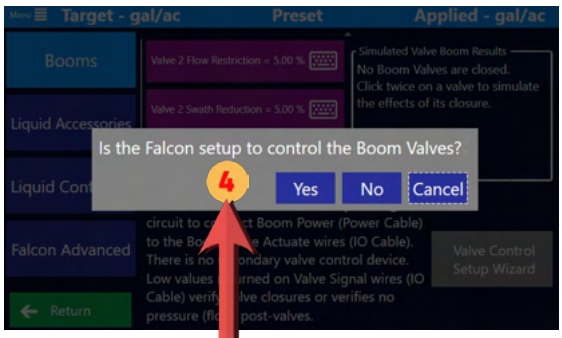


Setting Up Valve Control with Wizard

1. Tap 'Devices'
2. Tap 'Booms'
3. Scroll down to find setup wizard. Tap the 'Valve Control Setup Wizard.'
4. Follow the prompts to setup the system to control and receive proper signals.







Below are the popup prompts.

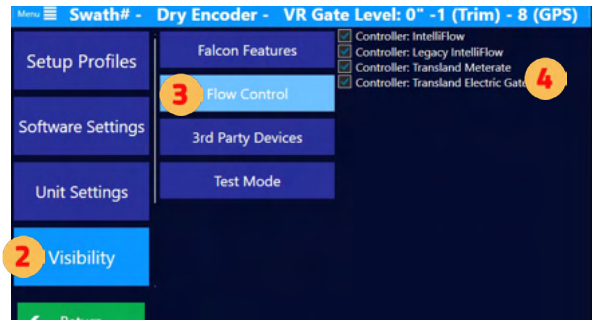
1. Is the Falcon set up to control the Boom Valves?
2. Are there other switches, a controller, or handles to actuate the Boom Valves?
3. Are there other switches, controller, or handles providing signals on the Pilot Boom Inputs on the IO Cable to indicate Valve actuations?
4. On the signals from the other switches, controller, or handles, do HIGH values indicate the Valves are energized to CLOSE? (Yes=HIGH to close; No=LOW to close)
5. Are there return signals from the Boom to verify the Boom Valves are closed?
6. HIGH signals returned on the Falcon IO cable verify Valve closures or no flow post-Valves? (Yes=HIGH; No=LOW)

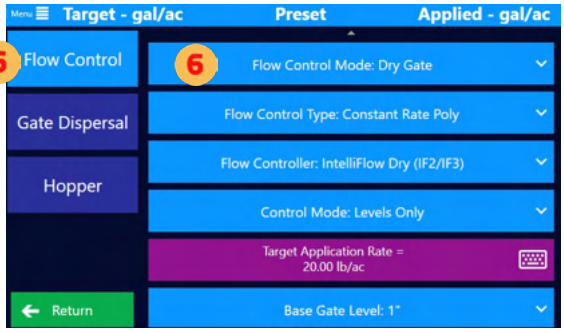
4.2 TRANSLAND ELECTRIC GATE BOX INITIAL SETUP

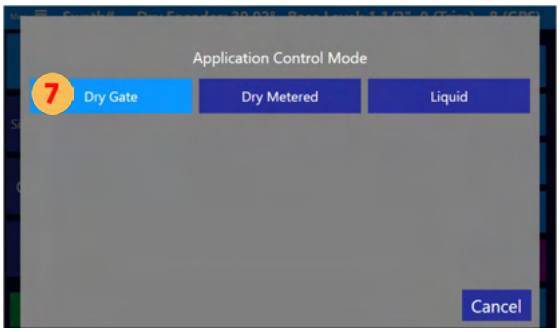
Selecting Flow Control Mode

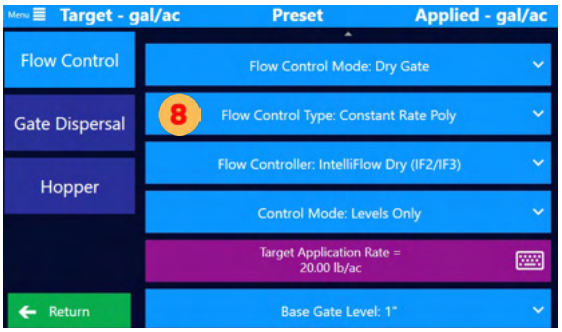
Note: This section only applies to Falcon Pro systems.

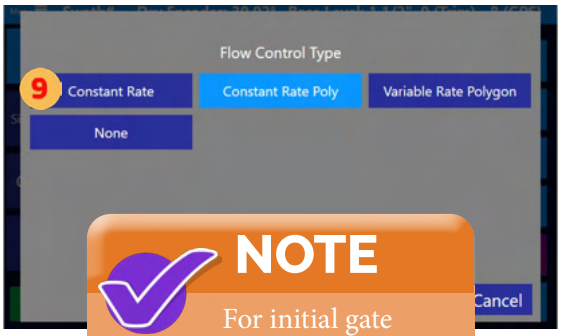
1. Tap 'Advanced'
2. Tap 'Visibility'
3. Tap 'Flow Control'
4. Click the box for 'Controller Transland Electric Gate'
5. Go to Main Menu and tap 'Applications'
6. Tap 'Flow Control Mode'
7. Tap 'Dry Gate'
8. Tap 'Flow Control Type'
9. Tap 'Constant Rate'
10. Tap 'Flow Controller'
11. Tap 'Transland Electric Gate'

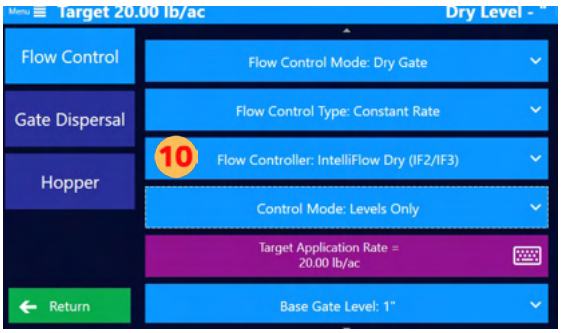






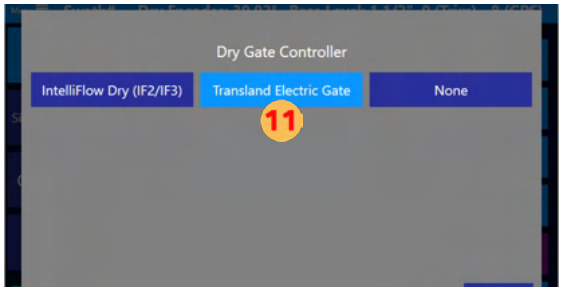






NOTE

For initial gate setup, select "Constant Rate." If your jobs contain polys, after initial setup, please change to "Constant Rate Poly."



Dry Gate Input Setup

12 To verify all inputs and all top hat switches are mapped correctly, go to the Main Menu and tap 'Diagnostics.'

13 Tap 'IO Diagnostics' and verify all inputs and top hat selections are correct. Refer back to the top hat wiring during installation so that you'll know the mapping of the stick.

14 Go to Main Menu and tap 'Devices'

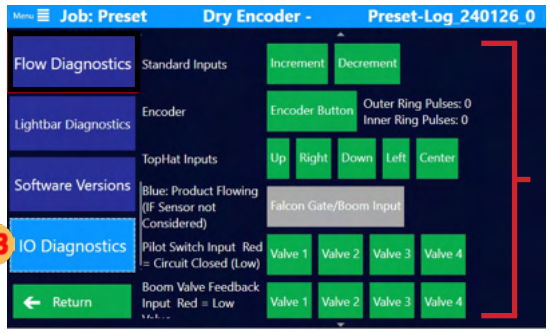
15 Tap 'Input'

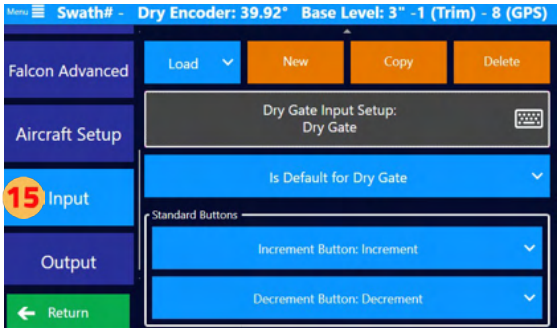
16 There are two Standard Buttons - Set Choices for those buttons. **Note:** Increment - Means Advance

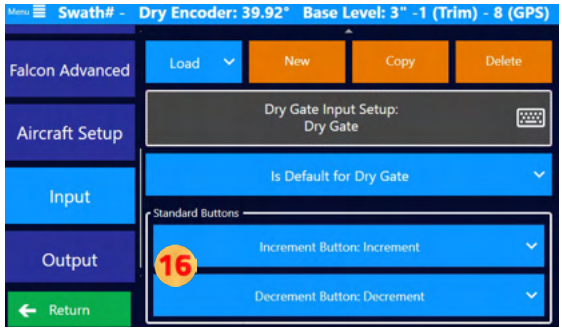
17 Set your choices for the Dry Gate Top Hat by tapping on the appropriate button. **Note: Be sure that you did** Steps 12 and 13 to verify the mapping.

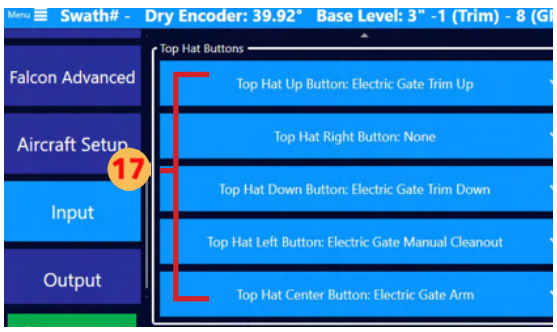
18 Select the desired function for the button.

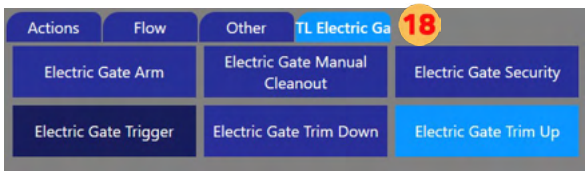
19 Set your Dry Gate COMs choices.

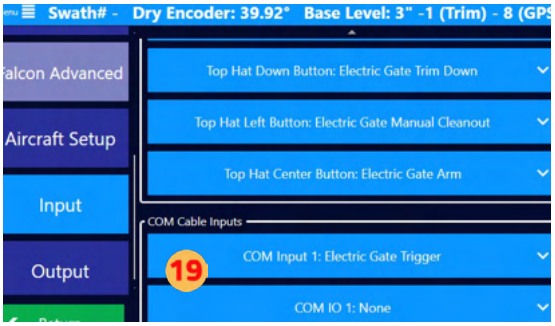












TIP

Satloc recommends setting up custom Display Settings (inputs, displays, hotkeys, & Lightbar) for all likely Guidance Modes (Liquid, Dry Gate, etc.) and a Display Setting for Ferrying. This information is covered in Chapter 2 of this manual.

Dry Gate Calibration

20 Go to Main Menu and tap 'Devices'

21 Tap 'Gate Closed Position'

22 Tap 'Latched'

23 Ensure the gate door is physically latched shut.

24 Remove gear cover.

25 Loosen jettison so it can rotate freely on shaft.

26 Remove the aft gear (attached to actuator ouput)

Warning: Keep hands clear of gear during operation.

NOTE

The usable range of the encoder is 0°- 500°.

27 Go to calibration page to be able to rotate motor shaft freely and read encoder.

28 Rotate actuator shaft either clockwise or counter clockwise, until reaching 40° position, shown on calibration page encoder value. The usable range of the encoder is 0°- 500°.

29 Reinstall aft gear at nearest tooth for final at 40° + or - 2°. Ensure gate is latched when installing gear. Reinstall gear cover.

30 With gate latched and aft gear reinstalled, read the encoder value and record it.
Note: The range for the Latched value is 20°-40°.

31 You'll need to set the encoder value. Tap 'Latched.'

32 Enter encoder value. Then, tap 'OK.'

33 Reposition jettision arm and tighten it.

34 Tap 'Electric Gate Setup'

35 Tap 'Transland' Gate Type

36 Select 'Gate Type'

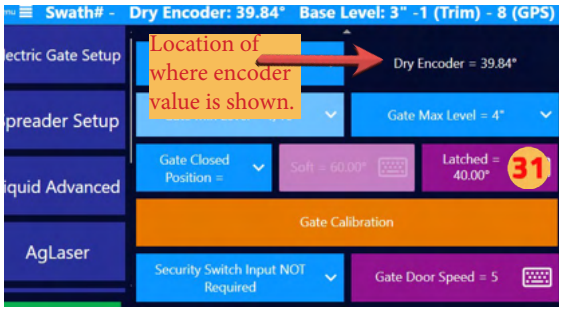
37 Tap 'Gate Min Level'

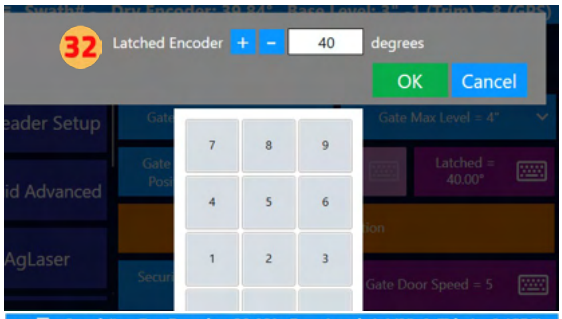
38 Set Minimum Operating Gate Levels

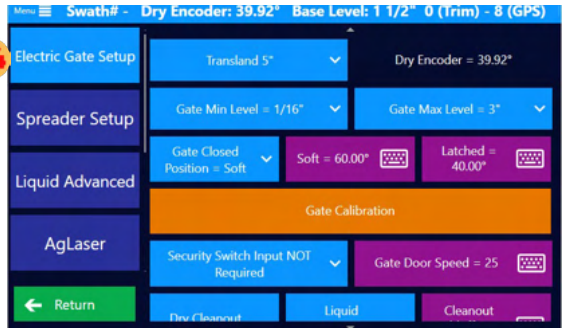
39 Tap 'Gate Max Level'

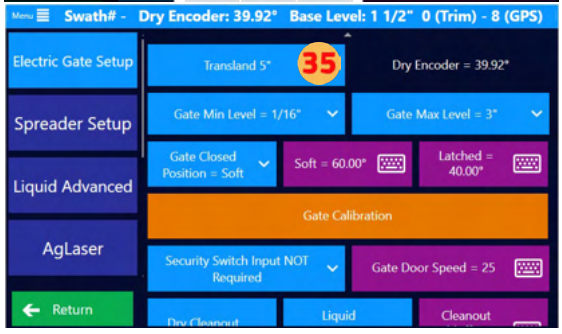
40 Set Maximum Operating Gate Levels

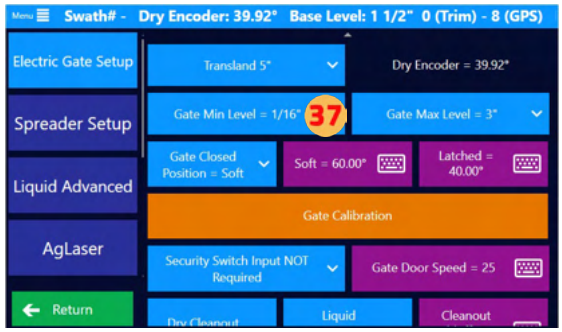
41 Tap 'Gate Closed Position'

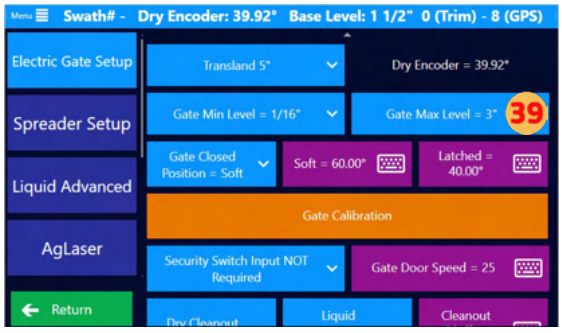


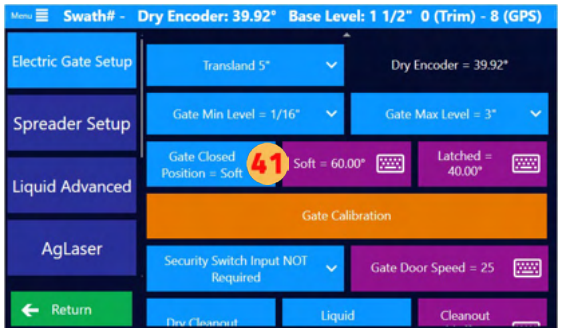












42 Select Gate Closed Position

43 Tap 'Gate Calibration'

NOTE: You will use Step 43 **OR** Step 44 to set gate openings.

44 Tap 'Change' to Edit Calibration Numbers. With the gate unarmed, move gate to match opening and save encoder value at each step.

Remember: If you did Step 43, then skip Step 44. OR skip Step 43 if you choose to do Step 44.

45 To use the Arrow Button, the gate must be armed. Use the arrow buttons to Select the Gate Openings. Edit to your own preferences. Gate is Armed.

46 Tap 'Soft'

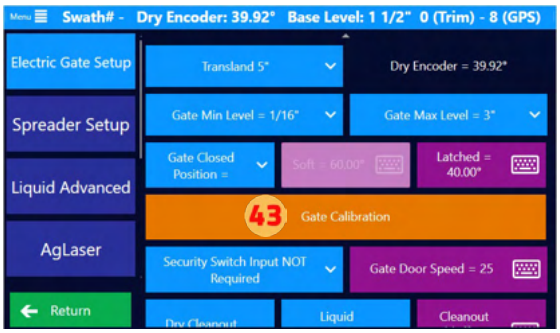
47 Set Soft Encoder

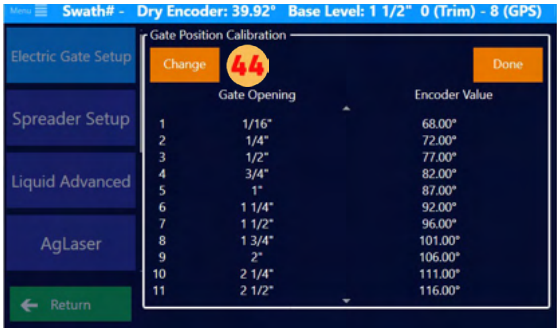
48 Tap 'Security Switch Input' button

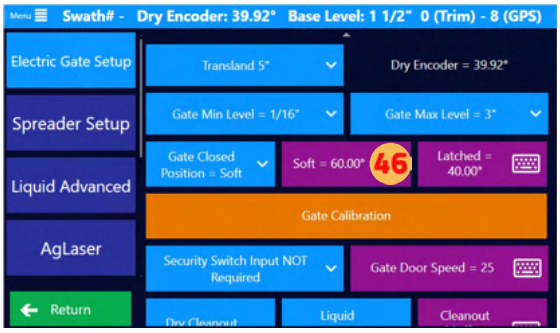
49 Choose Security Switch Usage

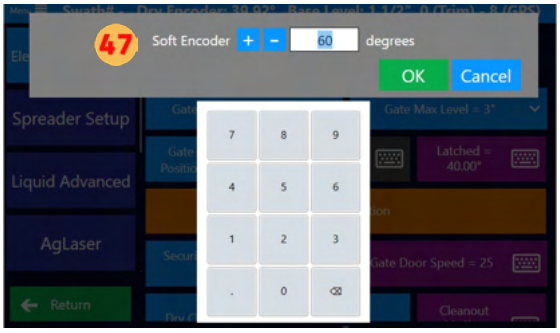
50 Tap 'Gate Door Speed'

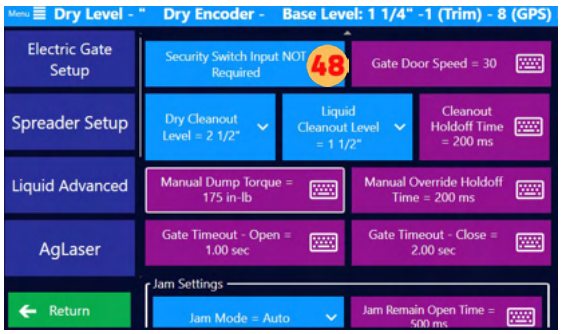
51 Set Gate Door Speed. Then, click 'OK.'

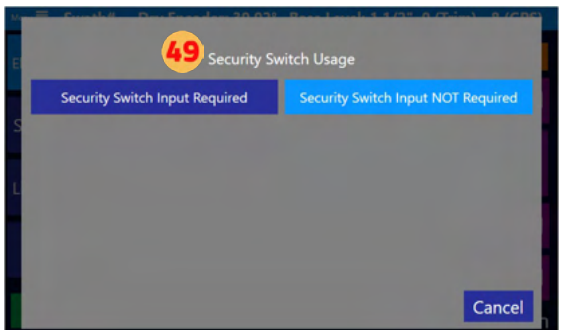


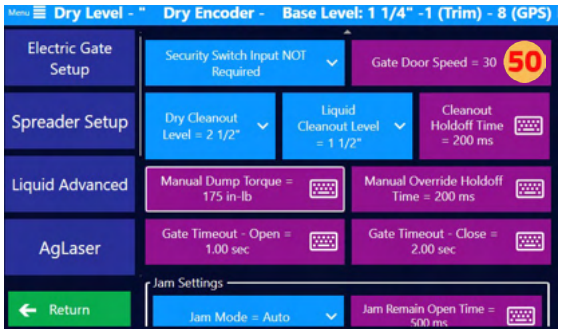


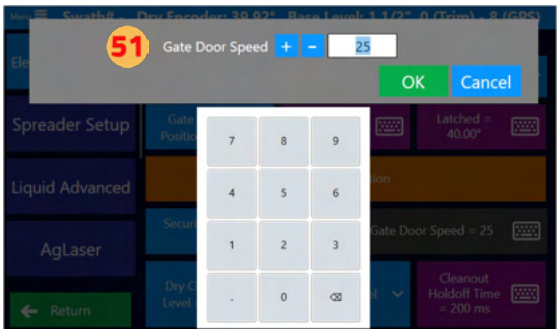












52 Tap 'Dry Cleanout Level'

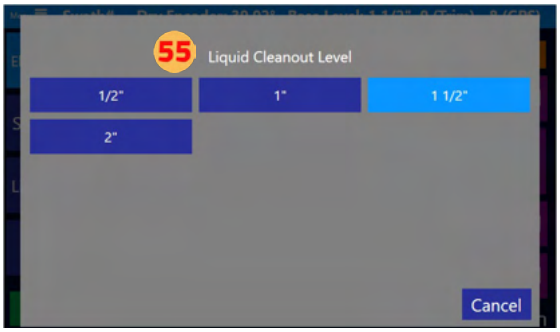
53 Set Dry Cleanout Level

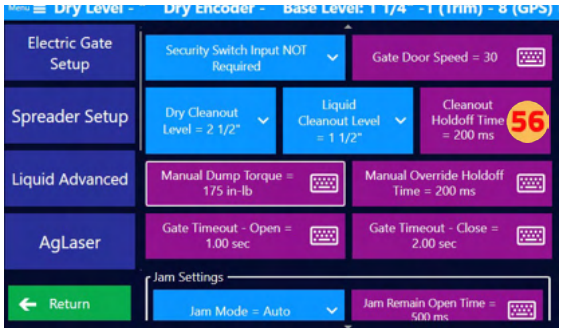
54 Tap 'Liquid Cleanout Level'

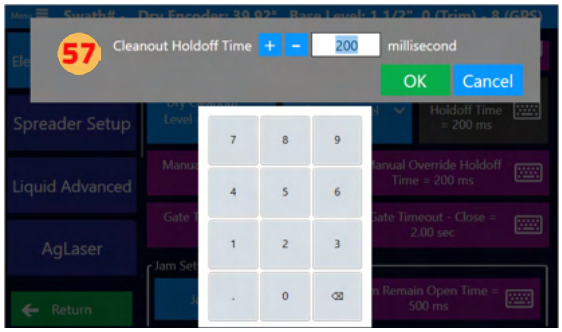
55 Set Liquid Cleanout Level'

56 Tap 'Cleanout Holdoff Time'

57 Set Cleanout Holdoff Time. Then, tap 'OK.'







NOTE

Falcon must be turned on to use the clean-out switch.

NOTE

The terms and definitions below will help explain some of the functions of the Transland Electric Gate. If you have questions during the next steps of the initial Transland Electric Gate setup, please refer to these terms and definitions.

Term	Customer Benefit & Explanation
Manual Dump Torque **&** **Manual Override Holdoff**	**Customer Benefit:** Gain direct control over emergency material release with customizable torque settings, ensuring operations are both safe and precise. Both Manual Dump Torque & Manual Override Holdoff features offer direct control over emergency material release, emphasizing safety and precision. They are designed to work in tandem: 1. The torque setting (Manual Dump Torque) establishes the force needed for activation. 2. The holdoff time (Manual Override Holdoff) ensures this force is applied intentionally and not by unintentional contact. **Manual Dump Torque Explanation:** This is the threshold torque value that releases the electric actuator. The "Manual Dump Torque" is the result of the applied force to the jettison (emergency) handle inside the cockpit. This interacts with the electric motor and applies torque to the input shaft of the electric actuator. The range is 50 – 250 in-lb. **Manual Override Holdoff Explanation:** When you apply the force through the jettison handle, this is a time period called the "Manual Override Holdoff." This prevents unintended jettison by requiring the manual dump torque to be applied consistently for this hold off time. The range is 50 to 2500 milliseconds.

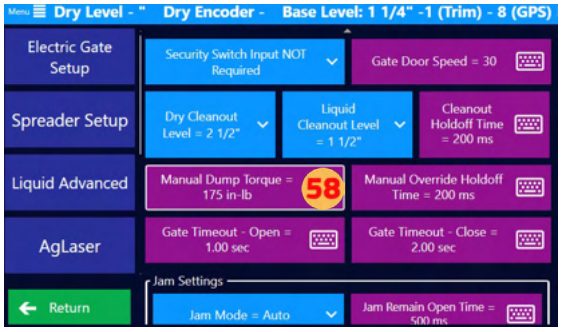
Term	Customer Benefit & Explanation
Gate Timeout – Close	**Customer Benefit:** Avoid gate, motor or seal damage with intelligent gate timeout features, preventing gate closure beyond 1.0 to 2.5 seconds if the target position isn't achieved. **Explanation:** The time at which the gate will stop trying to close if the target value has not been reached. The range is 1.0 to 2.5 seconds. WARNING The gate will overheat if an obstruction is not resolved.
Jam Mode	**Customer Benefit:** Helps ensure continuous operation. **Explanation:** There are two jam modes: 1) automatic and 2) manual.
Jam Remain Open Time **&** **Jam Open to Level**	**Customer Benefit:** Facilitates quick resolution of jams and continuous operation. **Explanation:** For auto mode - When the gate jams, it will open to a pre-determined level and for a pre-determined time The range is 0.0 to 2.0 seconds. For manual mode - An alert will pop up on the screen when the gate jams. The user can touch an onscreen button, and the gate will open to the predetermined level.
No Jam Deadband before Soft-Position	**Customer Benefit:** This feature offers precise control from the selected opening to the gate latched level, minimizing the risk of jams and aiding in smooth operation. **Explanation:** This is a safety zone before the gate reaches the "Gate Soft Position." It's set to a precise tolerance (e.g., 1/32 inch) to prevent the gate from thinking it is jammed as it moves towards the soft position into the latched position. When latching the gate, the No Jam Deadband is a zone where a jam will not be detected so that the actuator can apply full torque to latch the gate. The width of this zone is adjustable in the settings. A more detailed explanation is available later in this chapter.
Jammed Gate Torque	**Customer Benefit:** Helps to safeguard against equipment damage and loss of materials. **Explanation:** A precautionary measure that automatically enters into jam mode if closure torque exceeds the preset range of 200 to 530 in-lb.

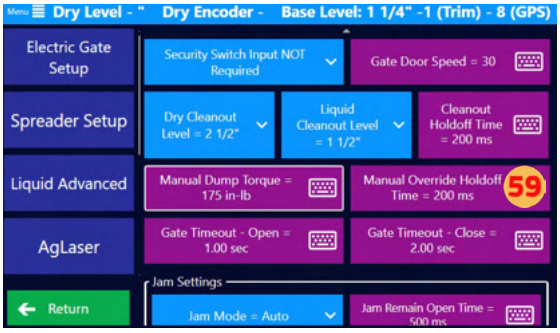
58 Tap 'Manual Dump Torque.' Set Manual Dump Torque. Then, tap 'OK.'

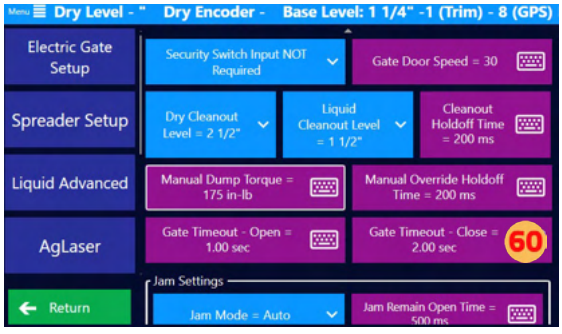
59 Tap 'Manual Override Holdoff Time.' Set Manual Override Holdoff Time. Then, tap 'OK.'

60 Tap 'Gate Timeout - Close.' Set Gate Timeout - Close. Then, tap 'OK.'

61 Select and Set all Jam Settings







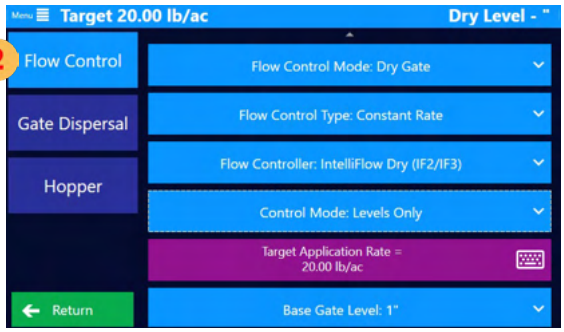
4.3 LEVELS SETUP FOR ELECTRIC GATE

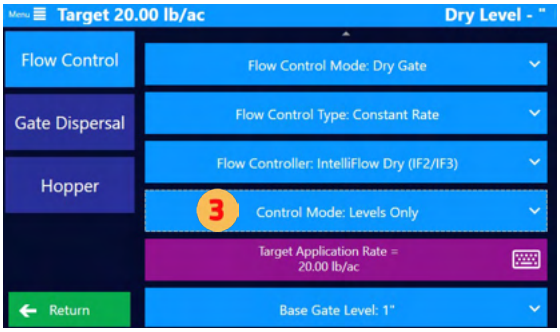
Key Differences in Levels vs. Single Profiles

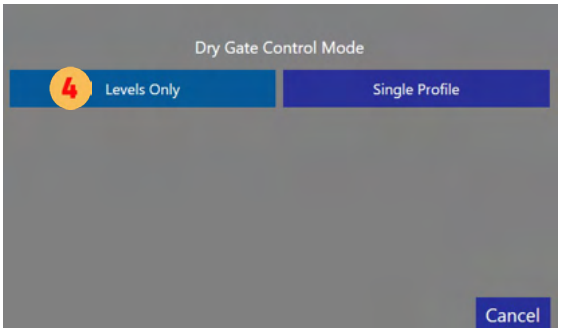
- Standardization vs. Customization: Levels are more about standard, preset options, while single profiles offer more room for customization and fine-tuning.
- Ease of Use vs. Precision: Levels provide ease of use and quick selection, useful in general or less sensitive applications. Single profiles, on the other hand, offer greater precision, which is beneficial in more specialized or sensitive applications.
- Application Scope: Levels might be sufficient for general agricultural needs, while single profiles could be necessary for tasks requiring more precise control over material distribution, such as in areas near sensitive ecosystems or when applying high-value or highly potent materials. There are multiple single profiles built within the Falcon software that can be used or edited to a pilot's preferences.

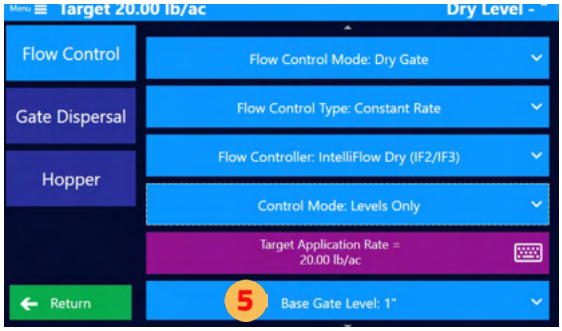
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Levels Only'
5. Tap 'Base Gate Level' and set it
6. Select the 'Target Application Rate'

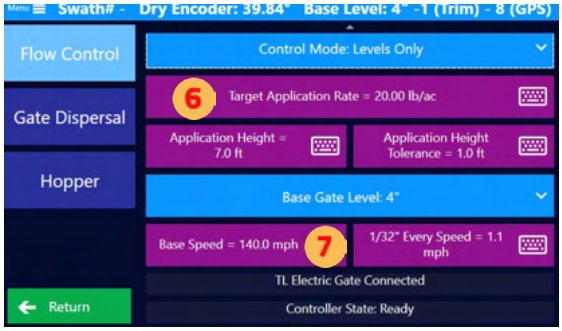
   Selecting the target gate level will automatically set a 'default every speed.'
7. If you want to change the Base Speed, Tap 'Base Speed' and set it.











NOTE

Target Application Rate
The target application rate is the input to the hopper calculation for the remaining product.

Reset Dry Gate Area & Total Dry Gate Time
At the bottom of the dry gate flow control screen, a pilot can reset the total dry gate area and the total dry gate time.

TIP

If Ag Laser and Wind Offset are turned on in your aircraft, you can set 'Application Height' and 'Application Height Tolerance.'

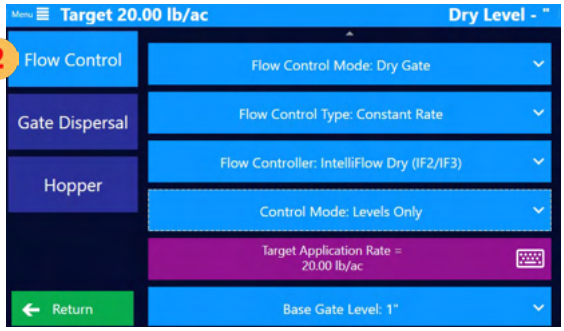
4.4 SINGLE PROFILE SETUP FOR ELECTRIC GATE

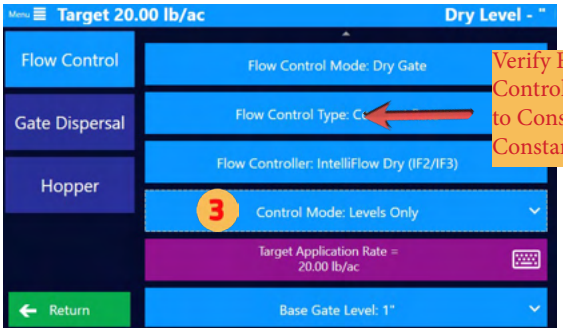
Key Differences in Levels vs. Single Profiles

- Standardization vs. Customization: Levels are more about standard, preset options, while single profiles offer more room for customization and fine-tuning.
- Ease of Use vs. Precision: Levels provide ease of use and quick selection, useful in general or less sensitive applications. Single profiles, on the other hand, offer greater precision, which is beneficial in more specialized or sensitive applications.
- Application Scope: Levels might be sufficient for general agricultural needs, while single profiles could be necessary for tasks requiring more precise control over material distribution, such as in areas near sensitive ecosystems or when applying high-value or highly potent materials. There are multiple single profiles built within the Falcon software that can be used or edited to a pilot's preferences.

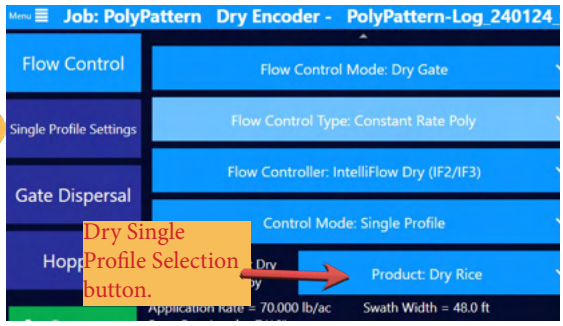
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Single Profile'
5. If you want to alter the product that is selected for the single profile in any way, tap 'Single Profile Settings.'

   You will need to copy a default dry profile into an editable profile.
6. Tap 'Edit Profiles'
7. Tap 'Copy'
8. Name the Dry Product Profile and tap 'OK.'

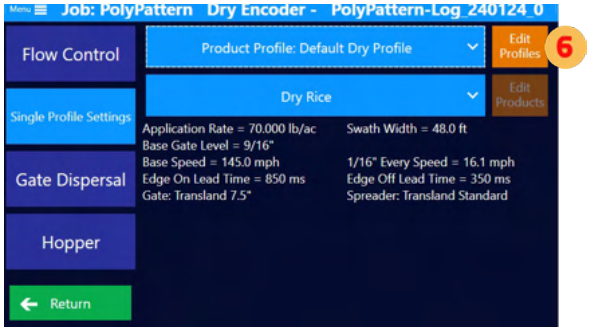


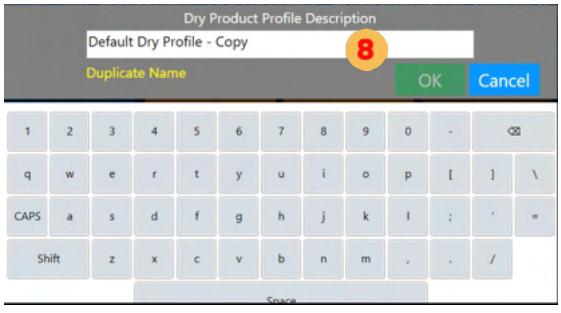


Verify Flow Control Type is set to Constant Rate or Constant Rate Poly.



5 Dry Single Profile Selection button.



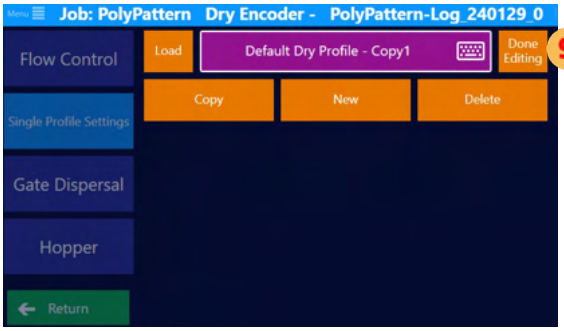


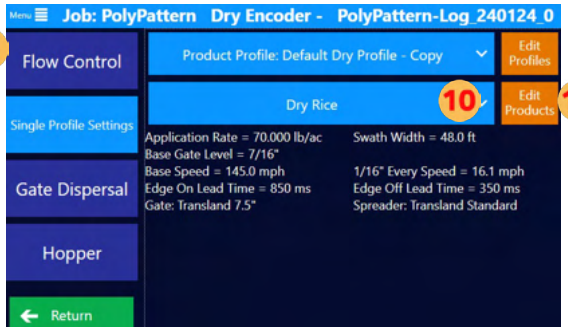
9 Tap 'Done Editing'

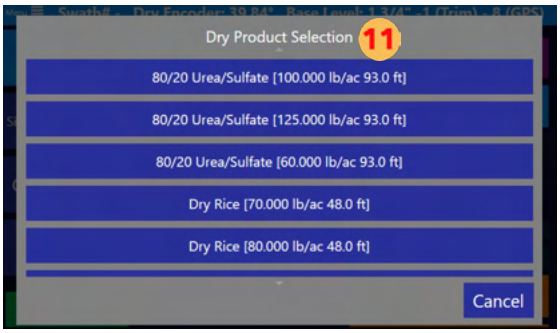
10 Tap 'Edit Products'

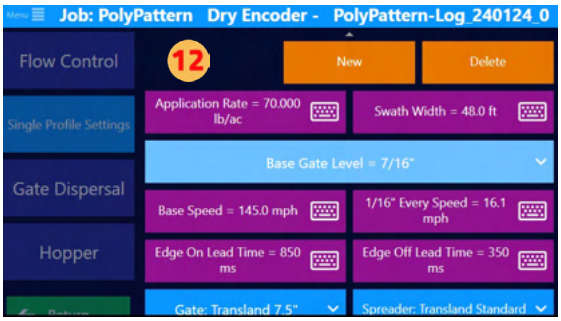
11 Load the Product you want

12 Edit the various settings per usage preferences



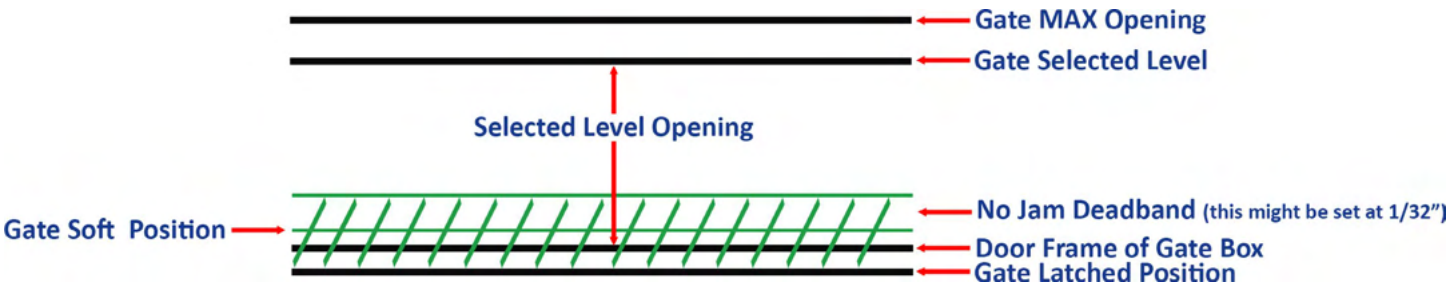






4.5 ADDITIONAL ELECTRIC GATE INFORMATION

Explanation of Transland Electric Gate Box Openings, Gate Positions, & No Jam Deadband



Gate Box Openings and Gate Positions

- **Gate MAX Opening:** This is a user-defined level MAX gate opening.
- **Gate Selected Level:** This is the desired position that the gate will open to. It's determined according to the rate required.
- **No Jam Deadband:** This is a small zone before the gate reaches the "Gate Soft Position." It's set to a precise tolerance (e.g., 1/32 inch) to prevent the gate from thinking it is jammed as it moves towards the soft position into the latched position. When latching the gate, the No Jam Deadband is a zone where a jam will not be detected so that the actuator can apply full torque to latch the gate. The width of this zone is adjustable in the settings.
- **Gate Soft Position:** This position, is an unlatched position that creates an opening of approximately 1/64". This position is used for dry applications where a complete seal isn't necessary, thus preventing unnecessary wear on the seal. In dry application scenarios, the soft-latched position is commonly preferred because it lessens the actuator travel, making the gate box ready for operation sooner than the fully latched position. This arrangement is crucial for optimizing the speed at which the door opens in relation to the velocity of the aircraft.
- **Gate Latched Position:** This is the fully closed and sealed position of the gate, critical for liquid applications where no leakage can be tolerated. When in this position for liquid applications, the gate acts as a pump sump, maintaining the integrity of liquid

containment and application. For electric gate boxes, the latched position is the default gate position when not in the area of operations and dispersing material. This latched position removes the load from the electric actuator that would cause it to overheat.

- **Door Frame of Gate Box:** The physical boundary of the gate's movement, indicating the fully closed position within the housing or frame of the gate mechanism.

Operational Sequence

- **From Open at the Selected Level:** The gate closes from the "Gate Opening Level" towards the "Gate Soft Position," which is where the gate is optionally intended to stop for operational use.
- **Engaging No Jam Deadband:** As the gate approaches the "Gate Soft Position," it enters the "No Jam Deadband." The "No Jam Deadband" is instrumental in providing a buffer to prevent jamming during transitions between these positions, ensuring smooth and reliable gate operation for both solid and liquid applications, while also protecting the integrity of the gate's sealing mechanism.
- **Reaching Gate Soft Position:** The gate achieves the "Gate Soft Position" which is suitable for quick operations, especially in applications where a fast response is needed.
- **Transition to Gate Latched Position:** If a full seal is required for liquid applications, the gate moves beyond the "Gate Soft Position" to the "Gate Latched Position," ensuring complete closure. The "No Jam Deadband" plays a critical role here as well, preventing jamming during this final closure.

Notes on Usage of Transland Electric Gate with Satloc Falcon Pro

- The gate must be unarmed when shut down.
- If the gate is left on when shut down, when you reboot, you will have to unarm and rearm for the gate to work.
- While flying, the gate will latch when airspeed goes below 45 mph and unlatch when airspeed goes above 45 mph.

Polygon Control in Gate Setup

- When running constant rate polygon with auto dispersal or variable rate, the gate will only open inside of polygons.
- The gate will automatically unlatch to the soft position when you are within a specified distance to any polygon.

4.6 ELECTRIC GATE TROUBLESHOOTING

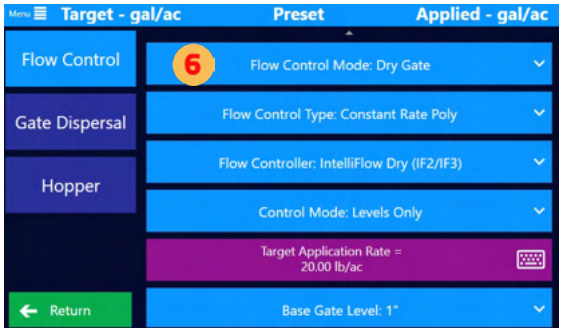
- Se a comporta não se mover com o Interruptor de braço ou com o Interruptor de acionamento, navegue até *Diagnósticos* > *Controle de Fluxo* para verificar se há problemas de comunicação.
- If no communications are shown, check the 2-amp fuse on the red wire from the 12-volt power supply. This circuit turns on communications from the gate to the Falcon Pro.
- Check the other fuse on the ground circuit from the Zener diode to the 12-volt post.
- Check for 12 volts at the actuator two-wire plug.
- Check plug-in on the communications side for connections.

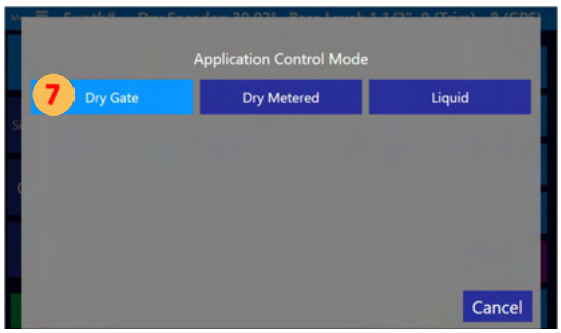
4.7 HYDRAULIC GATE BOX INITIAL SETUP

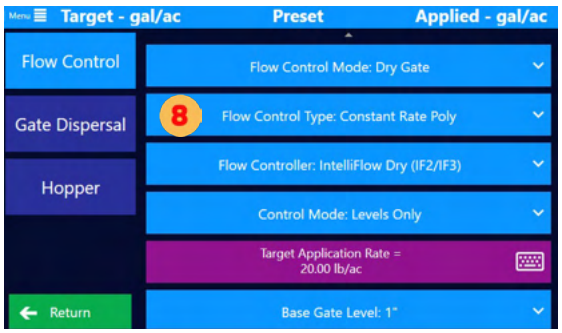
Selecting Flow Control Mode

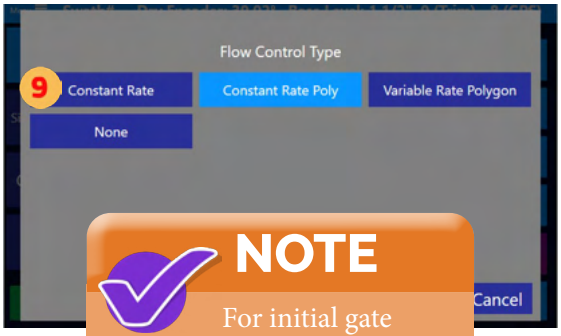
Note: This section only applies to Falcon Pro systems.

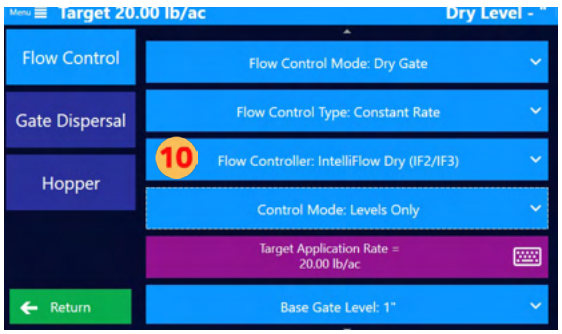
1. Tap 'Advanced'
2. Tap 'Visibility'
3. Tap 'Falcon Features'
4. Click the box for 'Control Mode: Dry Gate'
5. Go to Main Menu and tap 'Applications'
6. Tap 'Flow Control Mode'
7. Tap 'Dry Gate'
8. Tap 'Flow Control Type'
9. Tap 'Constant Rate'
10. Tap 'Flow Controller'
11. Tap 'IntelliFlow Dry (IF2/IF3)'





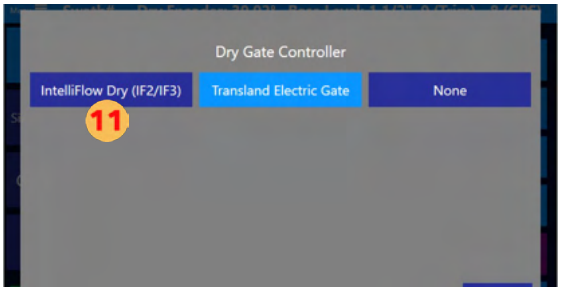






NOTE

For initial gate setup, select "Constant Rate." If your jobs contain polys, after initial setup, please change to "Constant Rate Poly."



Calibration

Note: This section requires two people.

12 Go to Main Menu and tap 'Devices'

13 Tap 'Gate Setup'

14 Tap 'Latched Encoder'

15 With the gate latched/locked closed, adjust encoder on the gate until the encoder range for the min value is 130-145. If value is not in that range, adjust position sensor to be within that range. The encoder value is adjusted by loosening the screws on the position sensor and rotating it until it is in the min value range.

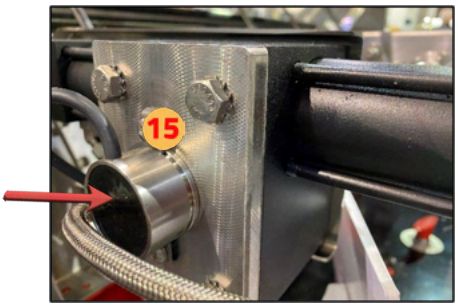
16 Set Latched Encoder number to match actual encoder value. Then, tap 'OK.'

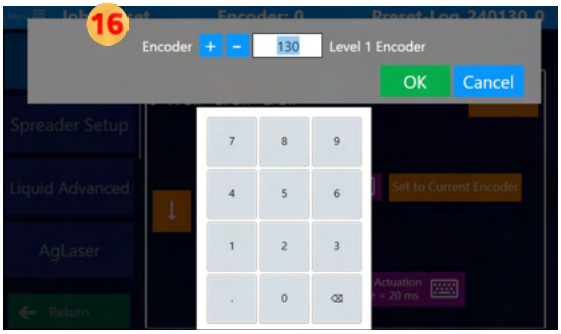
17 Tap 'Gate Calibration'

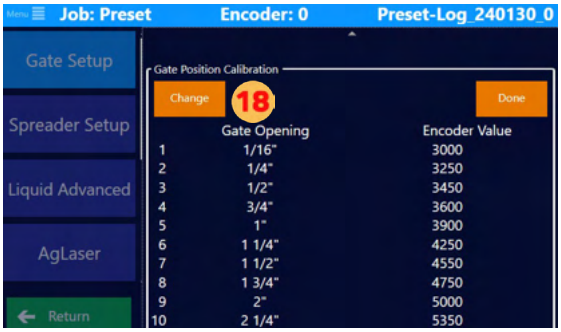
18 Tap 'Change'

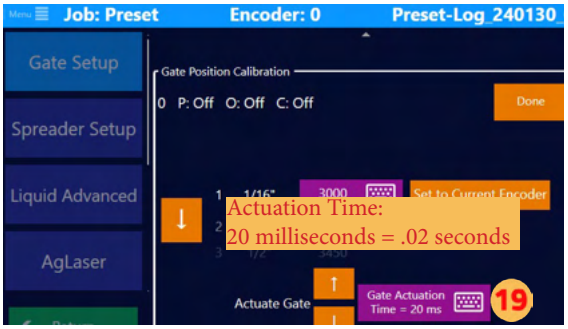
19 Tap 'Gate Actuation Time'

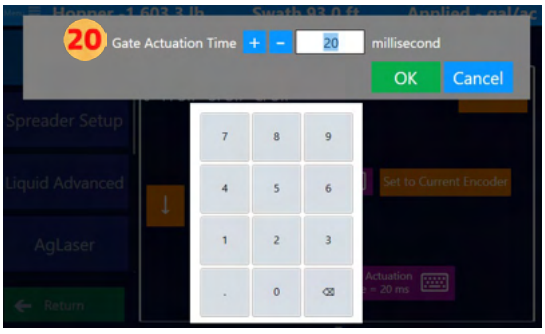
20 Set gate actuation time. Then, tap 'OK.'











NOTE

The "Gate Actuation Time' button can decrease or increase the amount of time sending the command to the pump. Adjusting the time will allow less or more time to get the correct position.

21 In the cockpit, flip on the arm and pump switches.

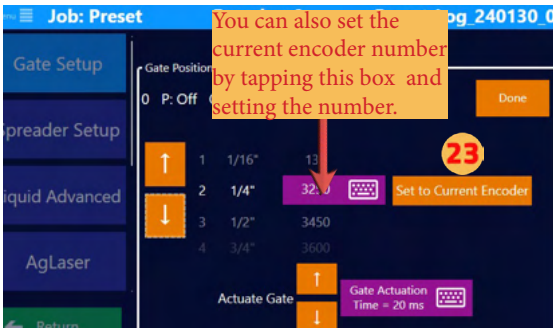
22 Tap the actuate arrows to actuate the gate box.

23 Set the gate box to match the current openings. To apply, tap 'Set to Current Encoder.'

Tap side arrows to change openings or tap the encoder value button to make changes. Note: Repeat for each opening.

24 Tap 'Done' when each position is set.

25 Tap 'Done'



NOTE

It is optional to disconnect hydraulics and then manually adjust the gate. There is a hydraulic disconnect in the cockpit, which is usually a red knob.

NOTE

There are two ways to tune hydraulic gate: Auto Tuning and Manual Tuning.

Auto Tuning

WARNING Gate will move automatically and without warning during this process. All people need to stay clear of the gate during this process.

26 Tap 'Gate Tuning'

27 Tap 'Auto Tune'

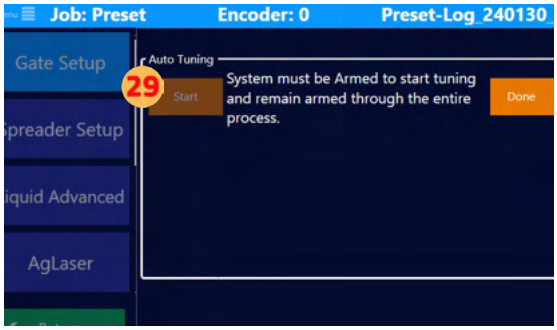
28 In the cockpit, flip on the arm and pump switches.

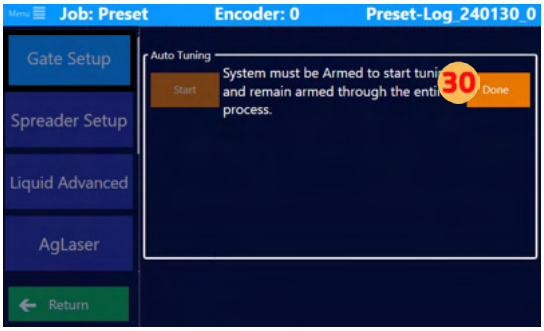
29 Tap 'Start

This will take a few minutes. When a bar is complete, it will turn completely blue.

30 Tap 'Done'

31 Unarm Gate





Manual Tuning

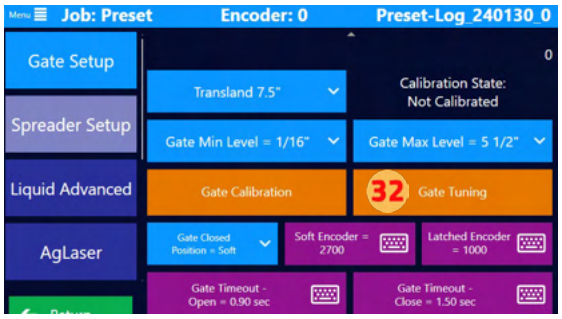
32 Tap 'Gate Tuning'

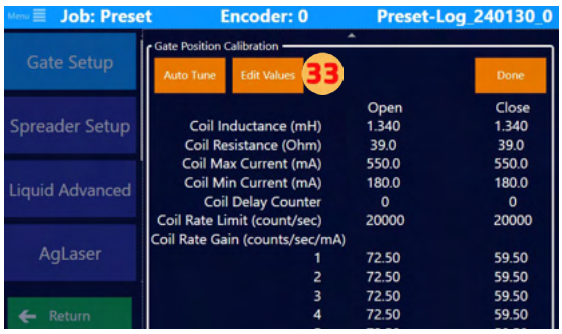
33 Tap 'Edit Values'

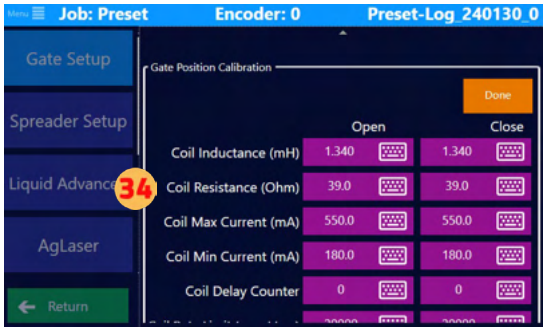
34 Manually set coil values by tapping a value and then editing it.

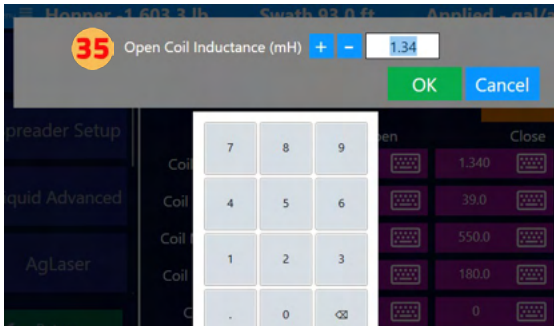
35 Input value. Then, tap 'OK.'

Note: Repeat Steps 35 and 36 for every value you want to set.









36 Tap 'Done' when all values are set

37 Tap 'Done'

4.8 LEVELS SETUP FOR HYDRAULIC GATE

Key Differences in Levels vs. Single Profiles

- Standardization vs. Customization: Levels are more about standard, preset options, while single profiles offer more room for customization and fine-tuning.
- Ease of Use vs. Precision: Levels provide ease of use and quick selection, useful in general or less sensitive applications. Single profiles, on the other hand, offer greater precision, which is beneficial in more specialized or sensitive applications.
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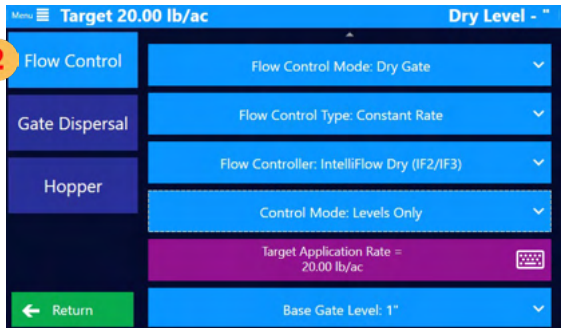
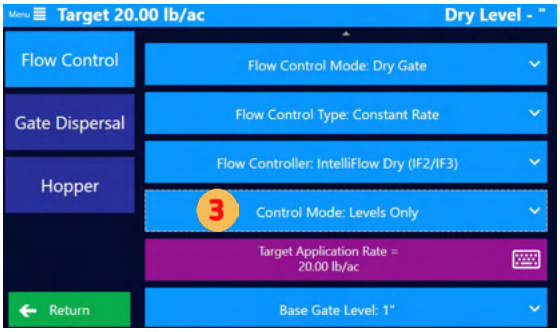
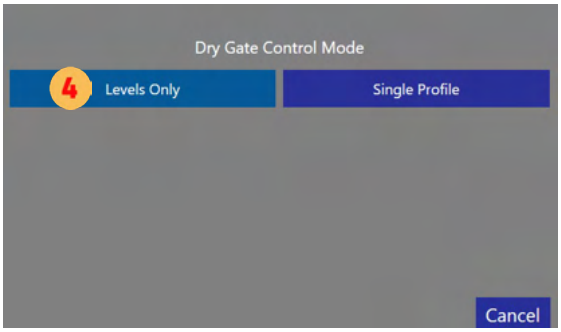
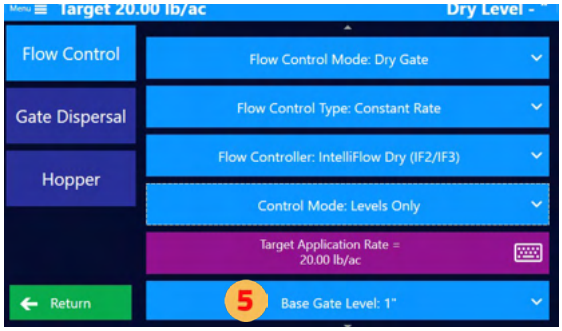
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Levels Only'
5. Tap 'Base Gate Level' and set it
6. Select the 'Target Application Rate'

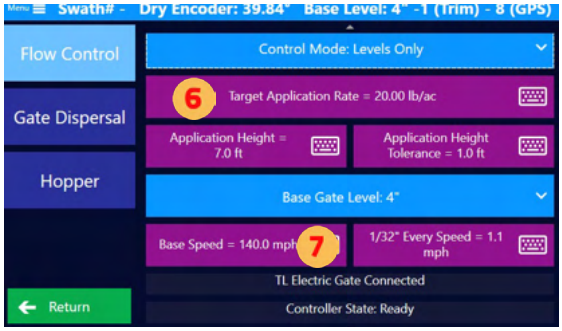
   Selecting the target gate level will automatically set a 'default every speed.'
7. If you want to change the base speed, Tap 'Base Speed' and set it.











NOTE

Target Application Rate
The target application rate is the input to the hopper calculation for the remaining product.

Reset Dry Gate Area & Total Dry Gate Time
At the bottom of the dry gate flow control screen, a pilot can reset the total dry gate area and the total dry gate time.

TIP

If Ag Laser and Wind Offset are turned on in your aircraft, you can set 'Application Height' and 'Application Height Tolerance.'

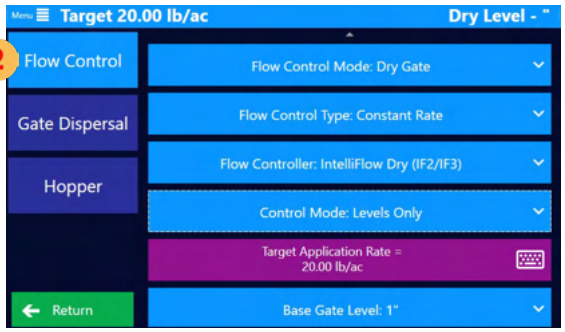
4.9 SINGLE PROFILE SETUP FOR HYDRAULIC GATE

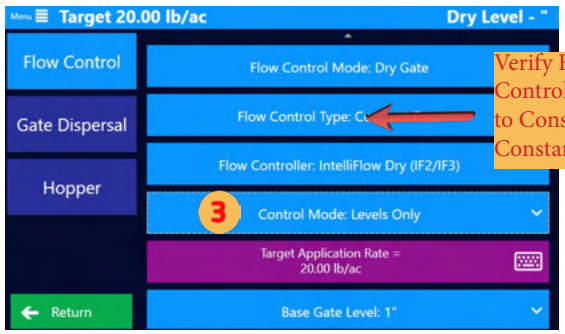
Key Differences in Levels vs. Single Profiles

- Standardization vs. Customization: Levels are more about standard, preset options, while single profiles offer more room for customization and fine-tuning.
- Ease of Use vs. Precision: Levels provide ease of use and quick selection, useful in general or less sensitive applications. Single profiles, on the other hand, offer greater precision, which is beneficial in more specialized or sensitive applications.
- Application Scope: Levels might be sufficient for general agricultural needs, while single profiles could be necessary for tasks requiring more precise control over material distribution, such as in areas near sensitive ecosystems or when applying high-value or highly potent materials. There are multiple single profiles built within the Falcon software that can be used or edited to a pilot's preferences.

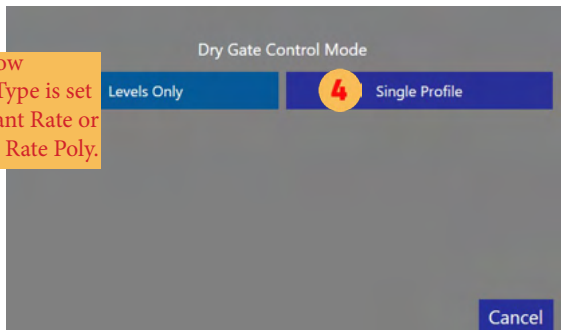
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Single Profile'
5. If you want to alter the product that is selected for the single profile in any way, tap 'Single Profile Settings.'

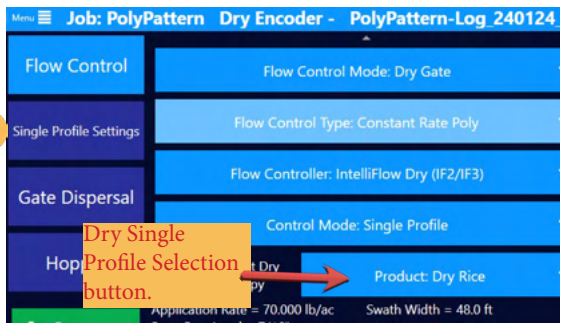
   You will need to copy a default dry profile into an editable profile.
6. Tap 'Edit Profiles'
7. Tap 'Copy'
8. Name the Dry Product Profile and tap 'OK.'



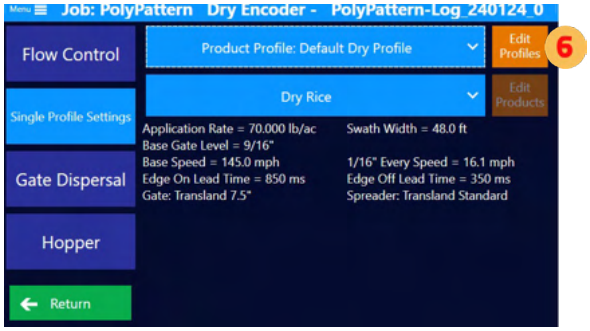


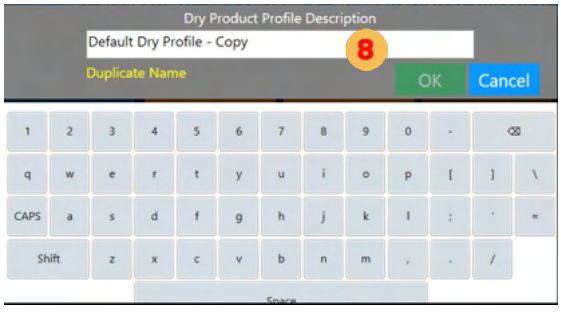
Verify Flow Control Type is set to Constant Rate or Constant Rate Poly.





5 Dry Single Profile Selection button.



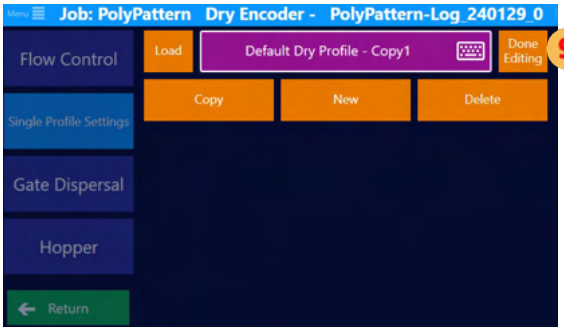


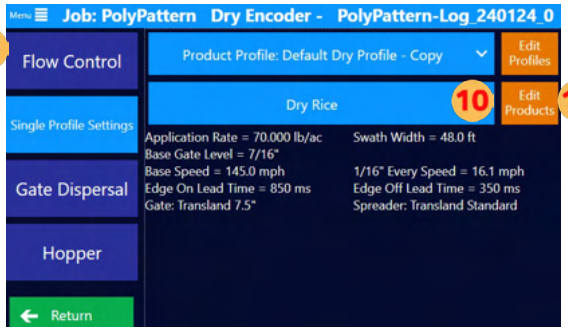
9 Tap 'Done Editing'

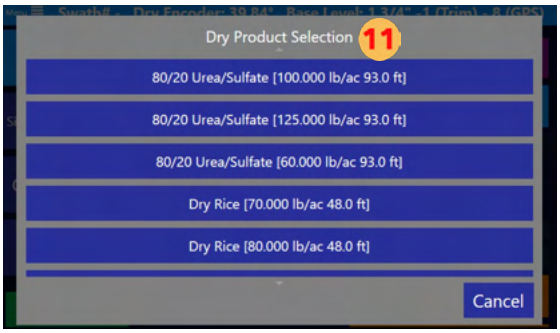
10 Tap 'Edit Products'

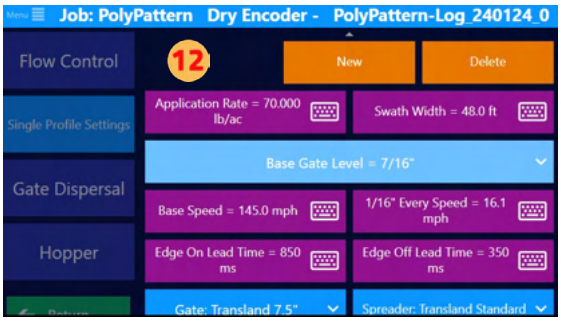
11 Load the Product you want

12 Edit the various settings per usage preferences



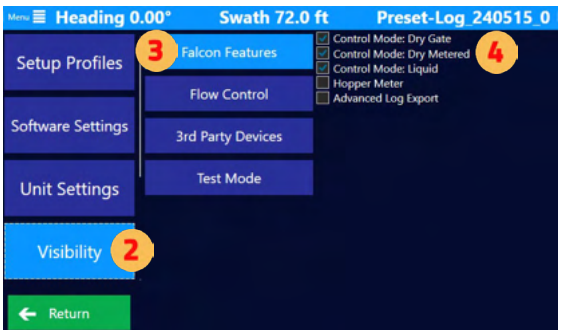


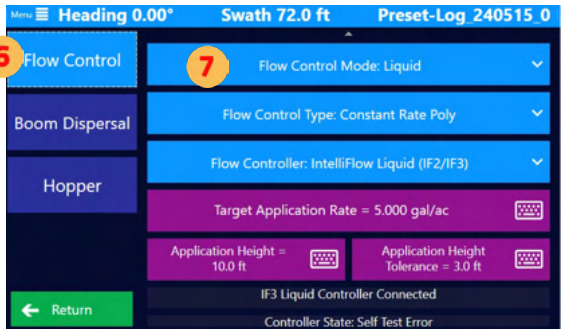


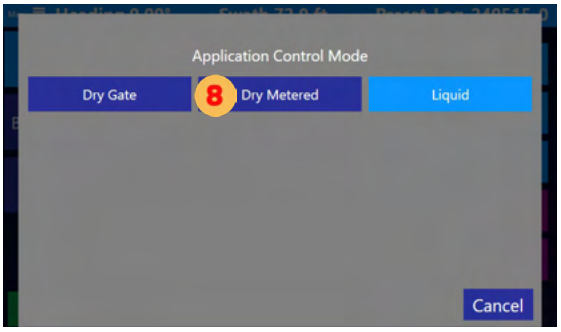


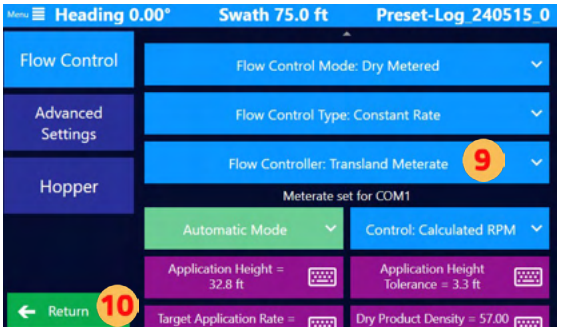
4.10 TRANSLAND METERATE INITIAL SETUP

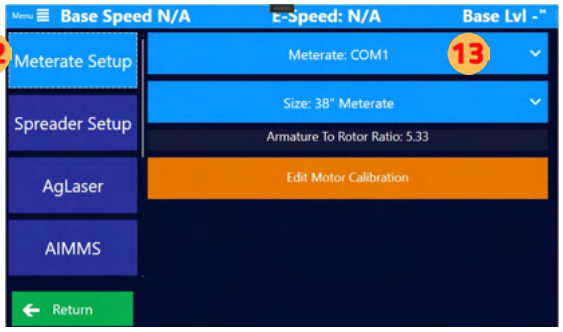
1. Tap 'Advanced'
2. Tap 'Visibility'
3. Tap 'Falcon Features'
4. Click the box for 'Control Mode: Dry Metered'
5. Go to Main Menu and tap 'Applications'
6. Tap 'Flow Control'
7. Tap 'Flow Control Mode'
8. Tap 'Dry Metered'
9. Verify the Flow Controller is the 'Transland Meterate'
10. Tap 'Return'
11. Tap 'Devices'
12. Tap 'Meterate Setup'
13. Tap 'Meterate COM'
14. Select the COM port connected to the Meterate
15. Select the correct Meterate size

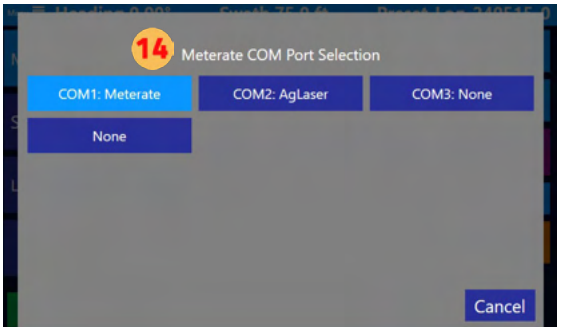


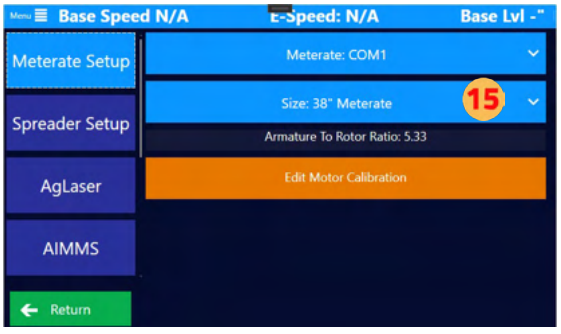












Calibration

16 Tap 'Edit Motor Calibration'

17 Voltages and RPMs are displayed. Tap a test voltage button.

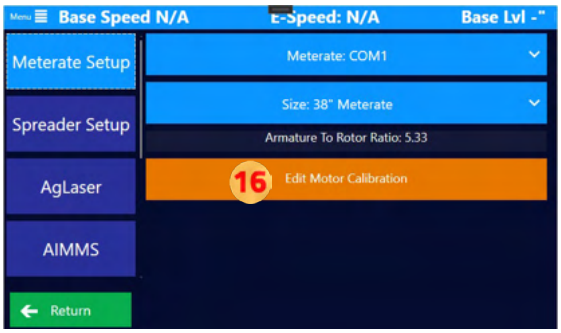
18 In the cockpit, look at the Meterate Controller. Look at what number appears on the tachometer window.

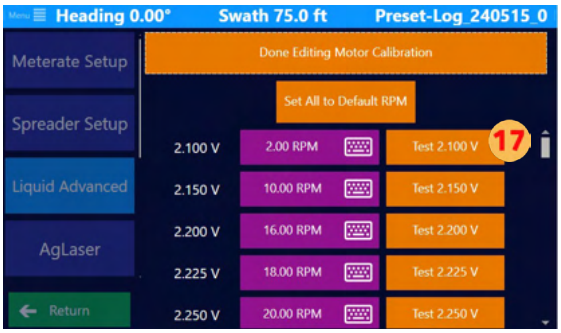
19 Tap the corresponding 'RPM' button with what test voltage button is being tested.

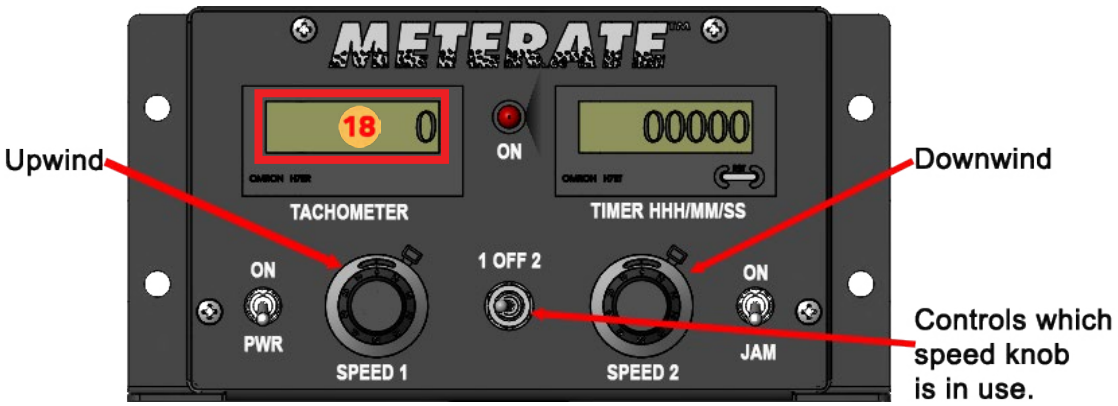
20 Input the tachometer value from the Meterate Controller. Then, tap 'OK.'

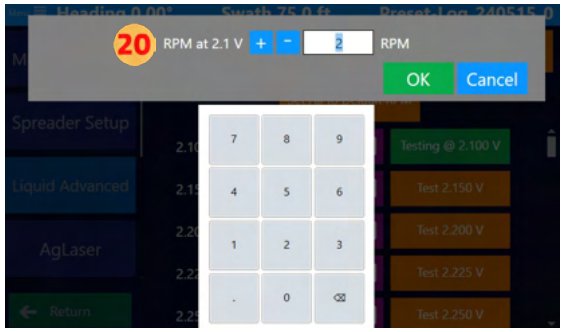
Note: Repeat Steps 17 through 19 for all voltages.

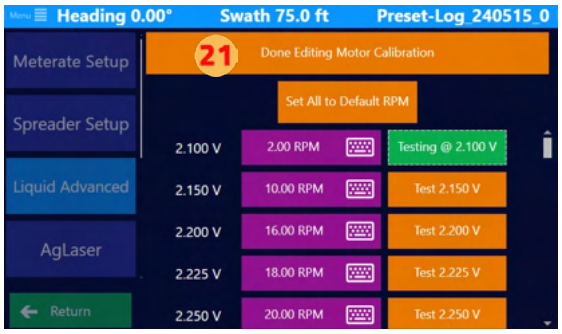
21 Tap 'Done Editing Motor Calibration' when all voltages are complete.









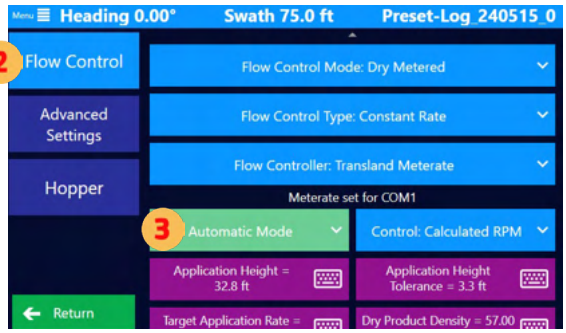


NOTE

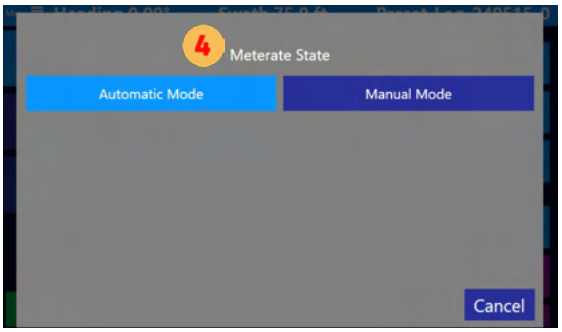
Communication from the Falcon to the Meterate is in one direction. Therefore, the Falcon cannot detect connection or performance issues, nor can any other GPS system. There is a way to check if the Meterate connection to the Falcon is working and all cables are connected. In the Falcon software, switch from auto mode to manual mode in the Meterate section (Application > Flow Control > Automatic or Manual Mode). You should see the tachometer numbers on the Meterate Controller change when switching to auto mode. The change in RPM indicates the connection to the Falcon is working, and the cables are connected.

Advanced Settings for Meterate

1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Automatic Mode'
4. Choose 'Automatic Mode' or 'Manual Mode.'

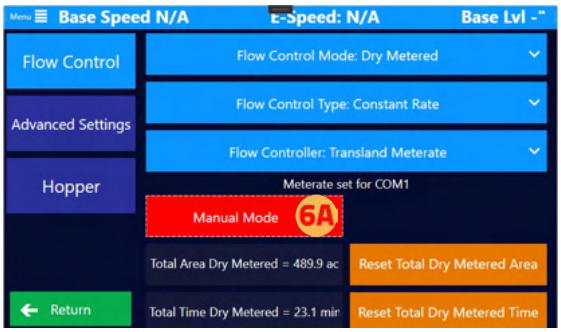


Note: Which Meterate State you select determines what values you will need to input .

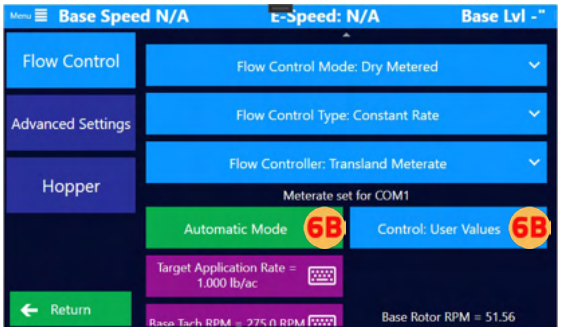


There are three options for calculating how to disperse product. These options are described as 6A, 6B, and 6C.

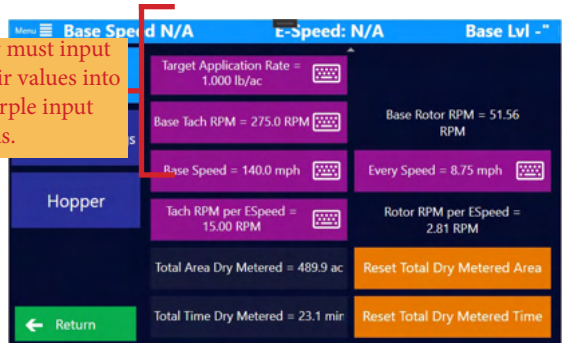
6A **Manual Mode** (The Transland Meterate Calculator is **NOT** being used.) The 'Upwind' and 'Downwind' knobs on the Meterate Controller set the RPMs in Manual Mode.



6B **Auto Mode with the control as user values.** (The Transland Meterate Calculator is **NOT** being used.) This option should be used if you do not know the product density.

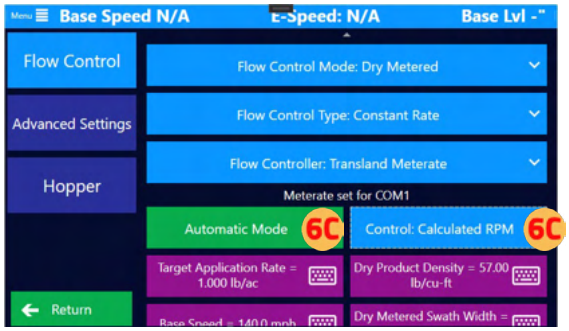


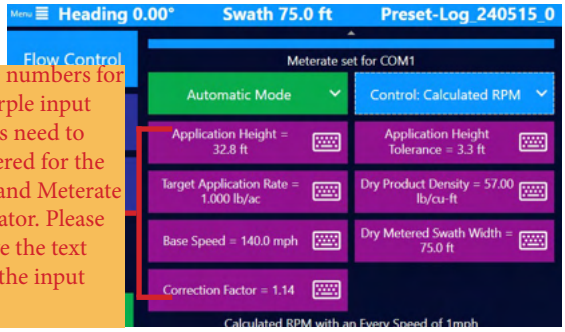
6B A user must input all their values into the purple input buttons.



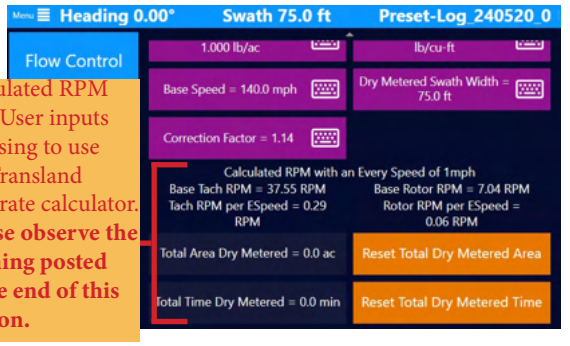
6C Automatic Mode with Calculated RPM.

WARNING This option should only be used if you know the product density.





All the numbers for the purple input buttons need to be entered for the Transland Meterate Calculator. Please observe the text below the input values.



Calculated RPM with User inputs choosing to use the Transland Meterate calculator. **Please observe the warning posted at the end of this section.**

WARNING If using "Automatic Mode" with "Control: Calculated RPM', all the calculations are based on the information you provide. Always verify your application rate before entering the field, as variables within your system can cause differences between calculated rates and actual output rates. Various dry products may have a higher or lower density, and adjustments must be made to account for the difference.

By using Transland's Meterate Calculator, I understand the supplied warning above and agree that by using this calculator, I am doing so at my own risk. As such, I agree to hold Texas Transland, LLC harmless for any and all damages.

WARNING

The screenshots in this User Manual are for informational purposes only and intended to help users navigate to the correct areas. The number values shown in these screenshots are not necessarily recommendations. Ultimately, it is the responsibility of the pilot/user to input values and information that are suitable for the product they are applying or for the specific job requirements. Always refer to product labels, job specifications, and industry guidelines to ensure proper application.

CHAPTER 5: USER TIPS

This chapter offers tips to help users make the most of their Falcon experience.

WHAT'S IN THIS CHAPTER!

5.1 DISPLAY PERSONALIZATION

Display Mode/Adjustability Settings

Navigate to this feature by clicking the following: *Main Menu* > *Display* > *Screen Control*

- **Display Dimming** – Adjust the screen brightness for comfortable viewing in various lighting conditions.
- **Brightness Mode** – Allows users to choose Day Mode, which provides maximum visibility in bright conditions, with standard lighting. A user can also choose Night Mode, which Reduces glare and is easier on the eyes during night or low-light flying conditions.
- **Map Opacity** – Change the opacity of the background map to balance between map visibility and overlay readability.
- **Button Opacity** – Adjust the opacity of on-screen buttons to reduce screen clutter while retaining functionality.

Screen Motion

Navigate to this feature by clicking the following: *Main Menu* > *Display* > *Screen Control*

- **Aircraft Stationary** – The aircraft's icon remains fixed, and the map moves.
- **Aircraft Stationary with Auto Zoom** – Similar to Aircraft Stationary, but with automatic zoom adjustments based on speed or other criteria.
- **Background Stationary** – The map stays fixed, and the aircraft's icon moves across it.

Background Map

Navigate to this feature by clicking the following: *Main Menu* > *Display* > *Screen Control*

- **Download Data** – Allows for pre-downloaded map data to be used as the background.
- **None** – No background map, focusing on the guidance and navigation overlays.
- **Satellite** – A satellite imagery background provides a detailed view of the terrain.
- **Street Map** – Uses a street map overlay for navigation and orientation.

Color Customization

Navigate to this feature by clicking the following: *Main Menu* > *Display* > *Screen Control*

- **Your Plane** – Customize the color to easily identify your aircraft on the display.
- **Paint** – Adjust the color used for marking the application.
- **Partner's Plane** – Set a distinct color for your partner's aircraft for easy identification.
- **Guidance Line** – Choose a color that stands out for the guidance line for better visibility.
- **ADS-B Planes** – Select a color for aircraft transmitting ADS-B signals to differentiate them.
- **ADS-B Text** – Customize the text color for information displayed from ADS-B signals.
- **A|B Line** – Pick a color for the A|B line to distinguish it from other navigation lines.
- **Current Swath Line** – Choose a color for the current swath line for clarity during operations.
- **Swath Lines** – Set a color for previous swath lines for better tracking of covered areas.

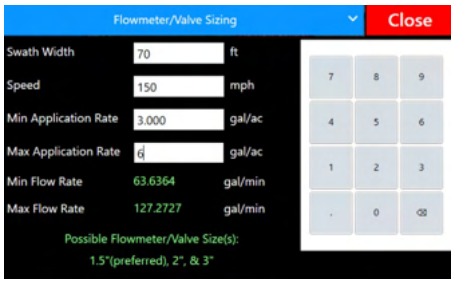
Screen Orientation

Navigate to this feature by clicking the following: *Main Menu* > *Display* > *Screen Control*

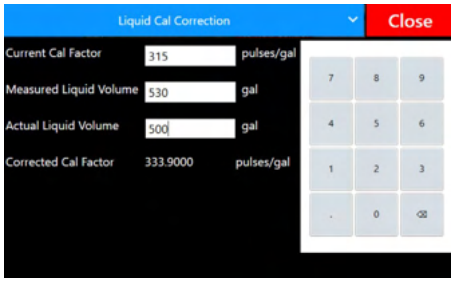
- **Course Up** – The display rotates so that the current course or direction of travel is always at the top.
- **North Up** – The map is fixed with North at the top of the display, regardless of the aircraft's direction.
- **A|B Line** is set by navigating to *Main Menu* > *Mapping* > *Map Setup* – Orientation based on the current or selected A|B line for guidance.

5.2 MULTI-FUNCTIONAL CALCULATOR

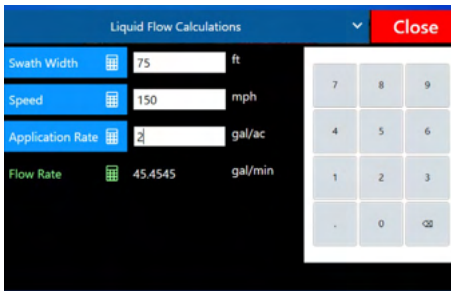
The multi-functional calculator contains:



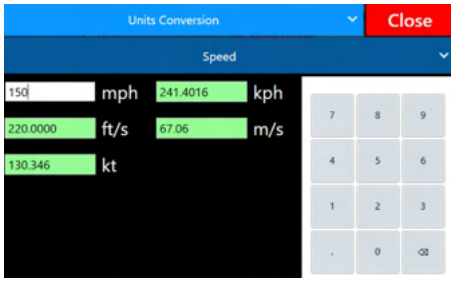
Flowmeter/Valve Sizing - There is NOT a one-size-fits-all flowmeter. To ensure accuracy, you need the right-sized meter. Properly sized valves allow for precise flow rate control, which is essential for achieving the desired application rate. For more information on the importance of flowmeter and valve sizing, visit https://www.satloc.com/flow-meter-sizing-calculator/.

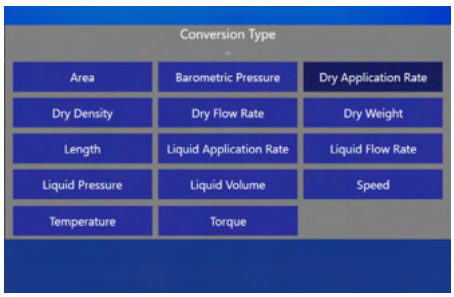


Liquid Cal Correction - This does all the hard work by telling you what you need to change your (K Factor) Primary Flowmeter Calibration Factor number to in order to get a more precise application.



Liquid Flow Calculations - Tired of doing all the hand calcs for your flow rate? Use this calculator to find your flow rate easily.





Unit Conversions - Satloc realizes many applicators interchange the type of units based on their need. This Units Conversions Calculator does Area, Barometric Pressure, Dry Application Rate, Dry Density, Dry Flow Rate, Dry Weight, Length, Liquid Application Rate, Liquid Flow Rate, Liquid Pressure, Liquid Volume, Speed, Temperature, and Torque.

When a Falcon ships out from Satloc, the 'Calculator' HotKey is set as a default setting on the third page of HotKeys. If for some reason the Calculator is not set as a hotkey, navigate to this feature by clicking *Main Menu* > *Display* > *HotKeys*. Then, select where you want the hotkey to appear on your hotkey pages. Next, click the 'Other' tab and choose 'Calculator'.

5.3 LOGGING SETTINGS OVERVIEW

Navigate to this feature by clicking the following: *Main Menu* > *Mapping* > *Map Setup*

A. Logging Rate: Pilots can set different intervals for logging data during spray operations and non-spraying flights using the Satloc Falcon GPS system. This allows for customized data capture based on the activity.

- **Spray Logging Rate** and **No Spray Logging Rate** settings determine how often the system logs data, allowing pilots to control the density of the log data during different flight operations.

Data Points per Second	Seconds Between Logged Points
20	0.05
10	0.1
5	0.2
2.5	0.4
1.666	0.6
1.25	0.8
1	1
0.5	2

B. Logging Speed: This setting specifies the minimum speed at which the aircraft must be traveling for the system to log data. The default threshold is 45 mph. If the aircraft's speed drops below this value, logging pauses until the minimum speed is reached again.

WARNING

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APPENDIX A: FALCON & FALCON PRO SIMULATOR

Minimum system requirement for installing the Satloc Falcon & Falcon Pro Simulator:

- Windows 8 OS and above
- 2 G RAM memory
- 32 G Hard drive

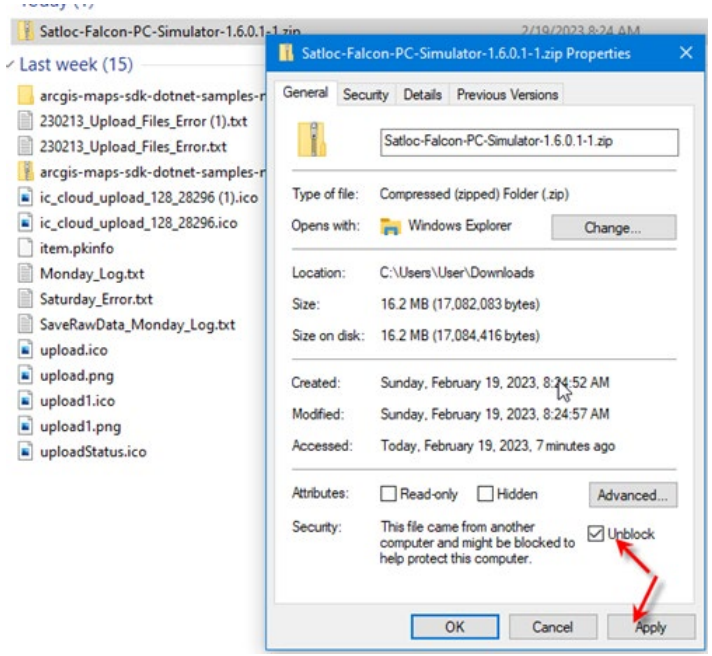
How-To Download the Satloc Falcon & Falcon Pro Simulator:

- Visit the Resources page on Satloc's website - https://satloc.com/resources/
- Scroll down to the Falcon & Falcon Pro Simulator area
- When you click the "Click Here to Download the Simulator," the files will automatically download onto your computer.
- Open the zipped file and follow your computer prompts.

Troubleshooting the Install for the Satloc Falcon & Falcon Pro Simulator:

There are a couple of scenarios that might cause installation difficulties. So, here are some troubleshooting steps.

1. Downloaded zip file needed to be unlocked prior to unzipping and installing.
    a. Once the zip file is downloaded. Right-click on the file and select "Properties."
    b. On the properties screen, uncheck the "Unblock" check box before extracting and installing.



2. The user's computer might be locked down to prevent downloading and installing software.
    a. Suppose you work for a company that prevents you from automatically downloading and installing software. In that case, you must contact your company's Admin for privileges to download and install the software.

Path to GPS Signal in the Simulator:

- Main Menu > Mapping > Map Setup > GPS Input > Internal Simulator
- Tap 'Return' button twice to go to Moving Map Screen

Technical Support

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