SATLOC® FALCON PRO

TRANSLAND ELECTRIC GATE BOX INITIAL SETUP WITH SATLOC FALCON PRO

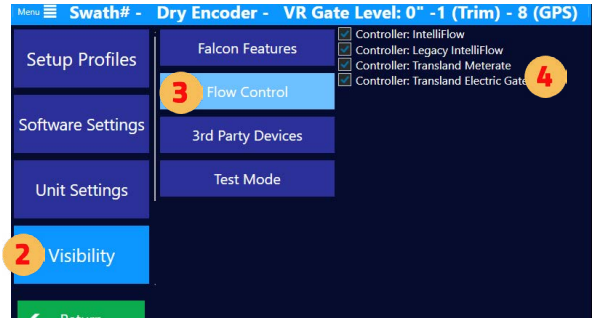
EXCERPT FROM
FALCON USER MANUAL
PN 875-3010-000, Rev B1

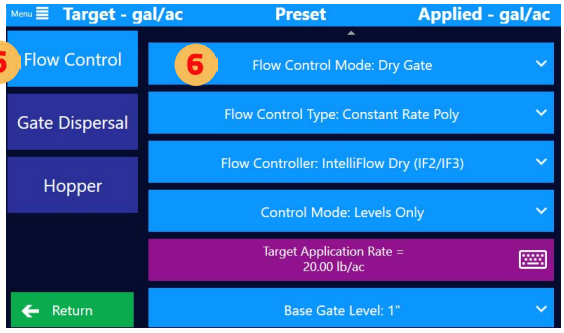
4.2 TRANSLAND ELECTRIC GATE BOX INITIAL SETUP

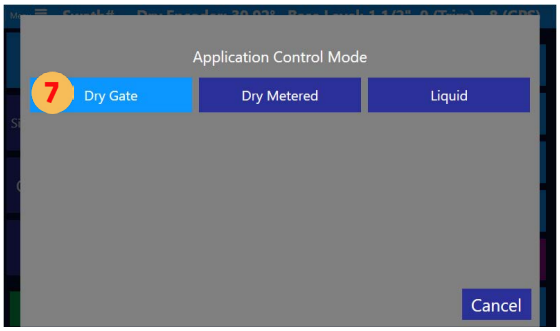
Selecting Flow Control Mode

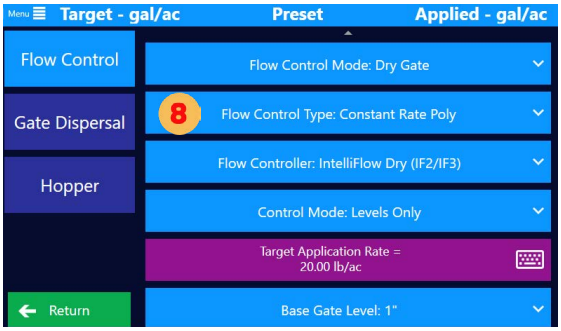
Note: This section only applies to Falcon Pro systems.

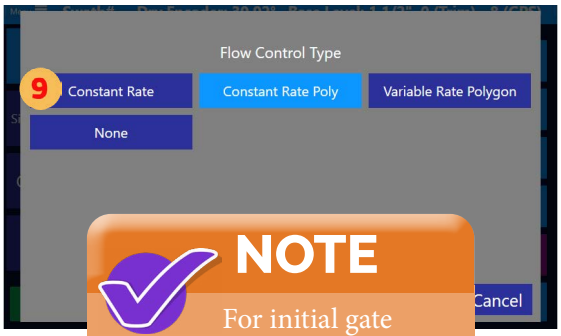
1. Tap 'Advanced'
2. Tap 'Visibility'
3. Tap 'Flow Control'
4. Click the box for 'Controller Transland Electric Gate'
5. Go to Main Menu and tap 'Applications'
6. Tap 'Flow Control Mode'
7. Tap 'Dry Gate'
8. Tap 'Flow Control Type'
9. Tap 'Constant Rate'
10. Tap 'Flow Controller'
11. Tap 'Transland Electric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

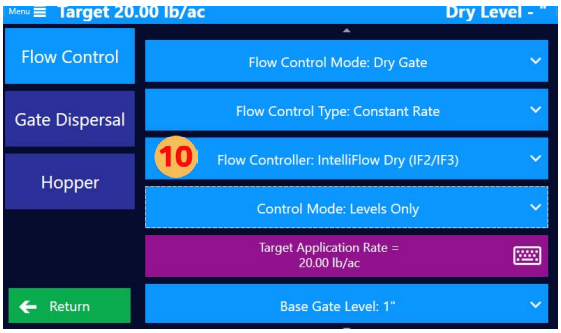






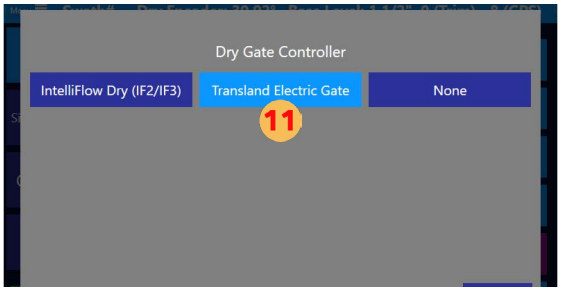






NOTE

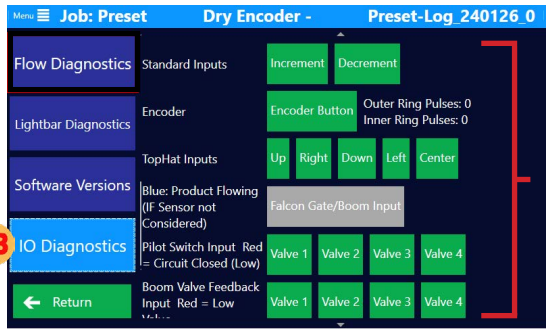
For initial gate setup, select "Constant Rate." If your jobs contain polys, after initial setup, please change to "Constant Rate Poly."



Dry Gate Input Setup

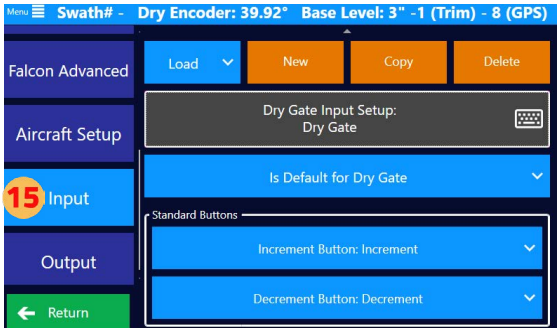
12 To verify all inputs and all top hat switches are mapped correctly, go to the Main Menu and tap 'Diagnostics.'

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.

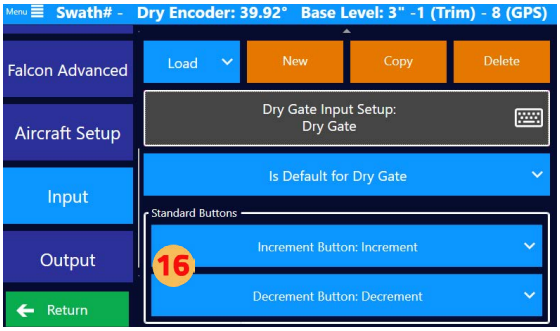


14 Go to Main Menu and tap 'Devices'

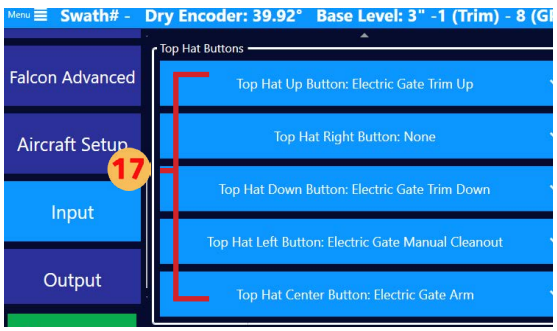
15 Tap 'Input'

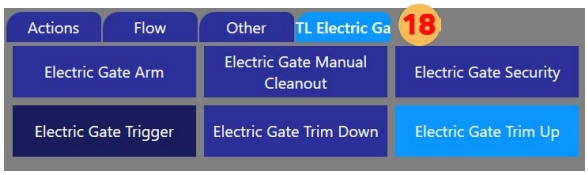


16 There are two Standard Buttons - Set Choices for those buttons. **Note:** Increment - Means Advance

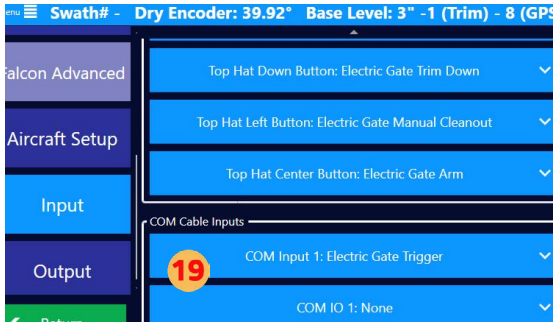


17 Set your choices for the Dry Gate Top Hat by tapping on the appropriate button. **Note: Be sure that you did** Steps 12 and 13 to verify the mapping.





18 Select the desired function for the button.



19 Set your Dry Gate COMs choices.

TIP

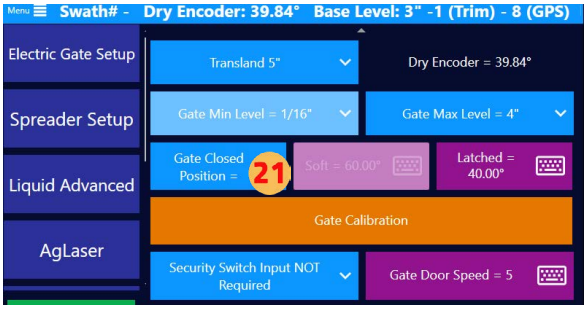
Satloc recommends setting up custom Display Settings (inputs, displays, hotkeys, & Lightbar) for all likely Guidance Modes (Liquid, Dry Gate, etc.) and a Display Setting for Ferrying. This information is covered in Chapter 2 of this manual.

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'

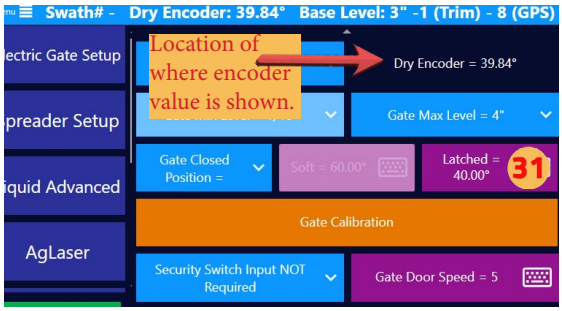
37 Tap 'Gate Min Level'

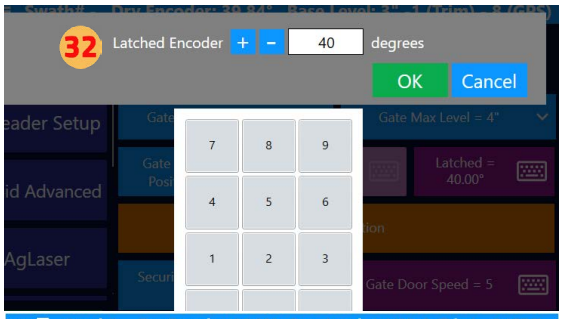
38 Set Minimum Operating Gate Levels

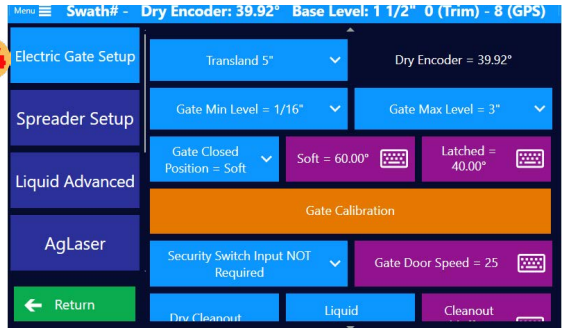
39 Tap 'Gate Max Level'

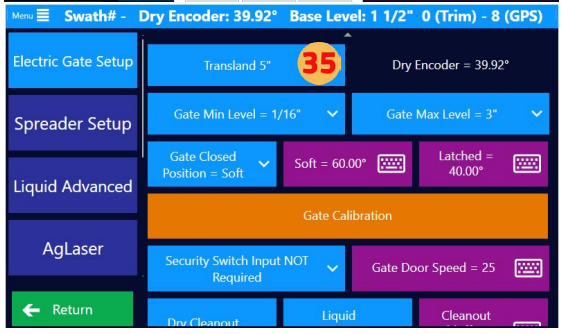
40 Set Maximum Operating Gate Levels

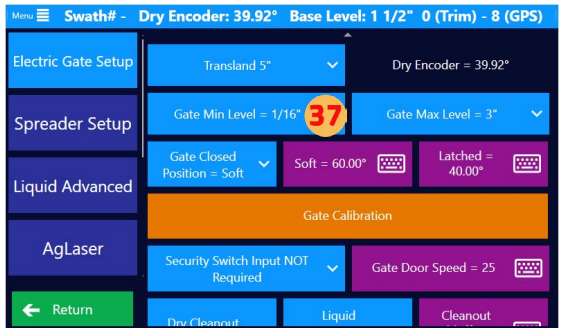
41 Tap 'Gate Closed Position'

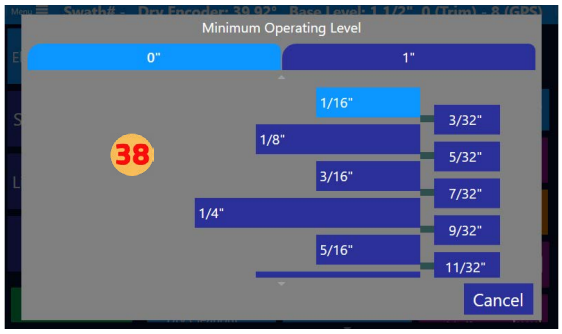


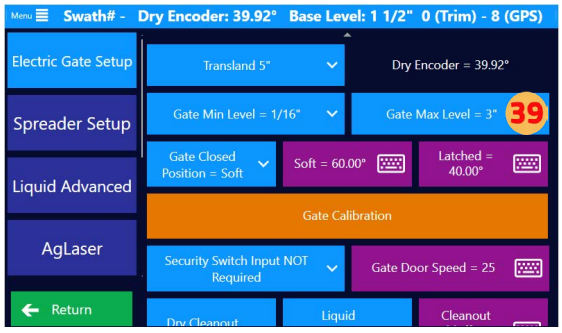


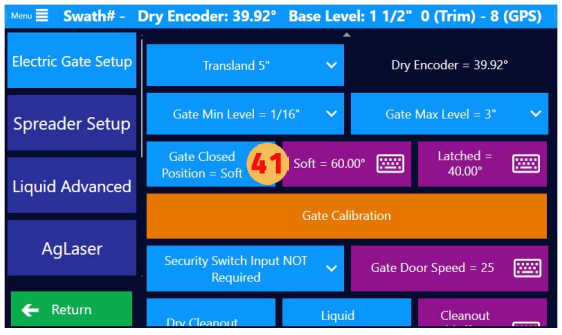












42 Select Gate Closed Position

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'

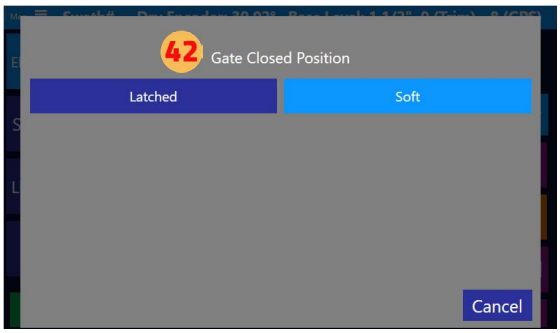
47 Set Soft Encoder

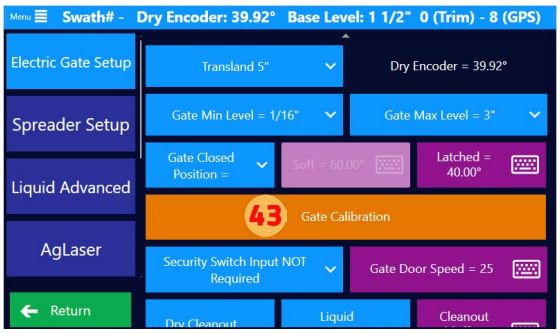
48 Tap 'Security Switch Input' button

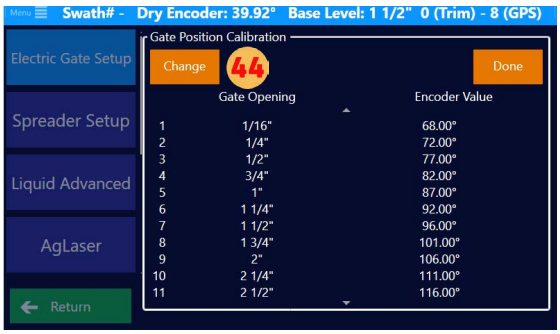
49 Choose Security Switch Usage

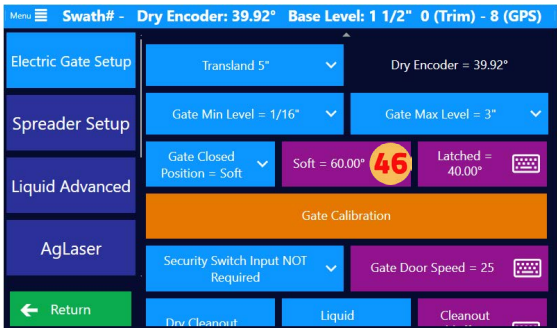
50 Tap 'Gate Door Speed'

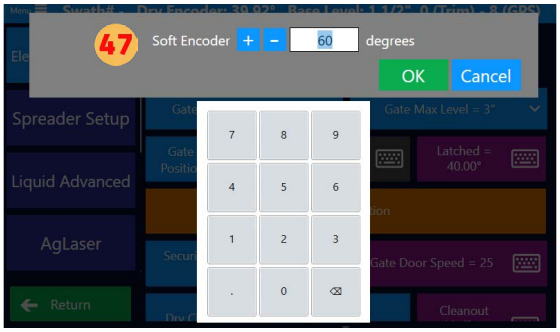
51 Set Gate Door Speed. Then, click 'OK.'

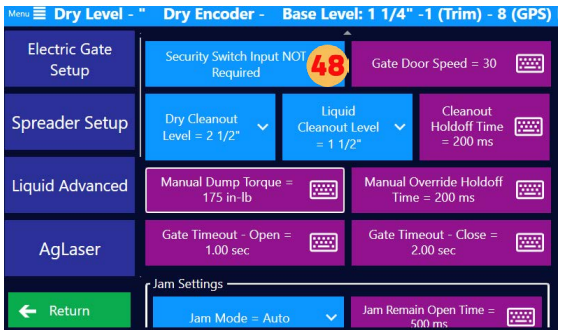


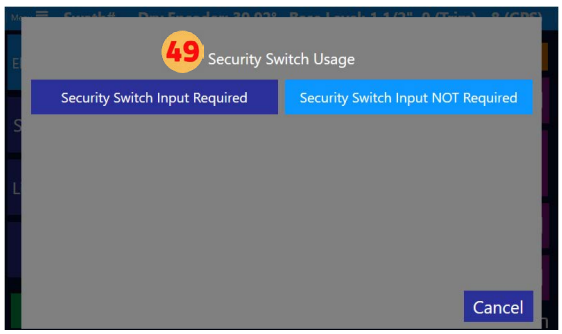


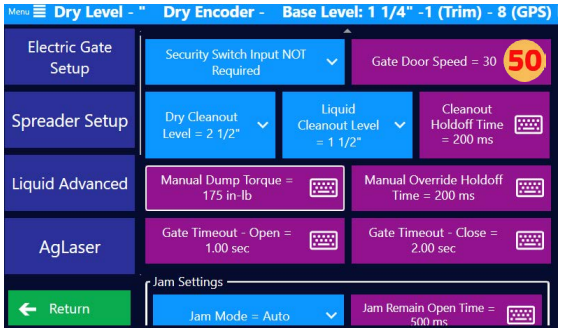


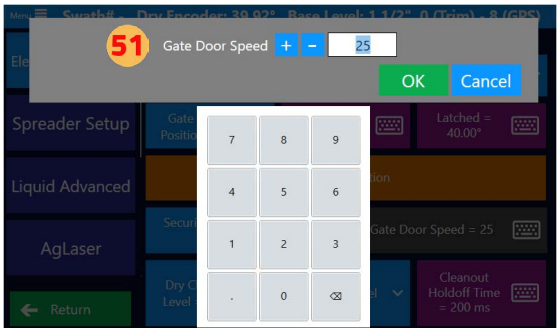












52 Tap 'Dry Cleanout Level'

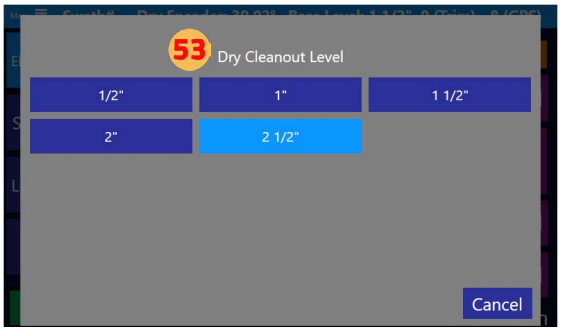
53 Set Dry Cleanout Level

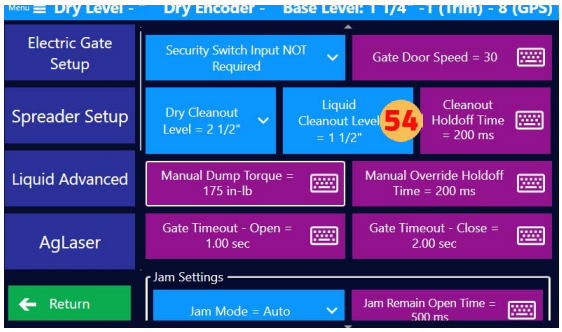
54 Tap 'Liquid Cleanout Level'

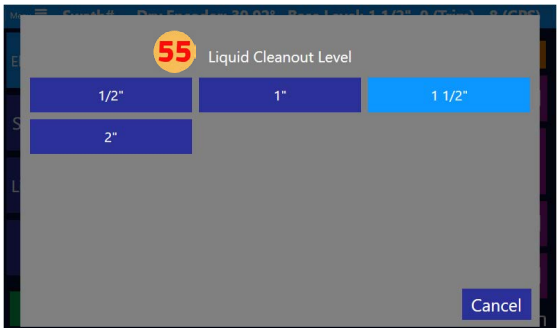
55 Set Liquid Cleanout Level'

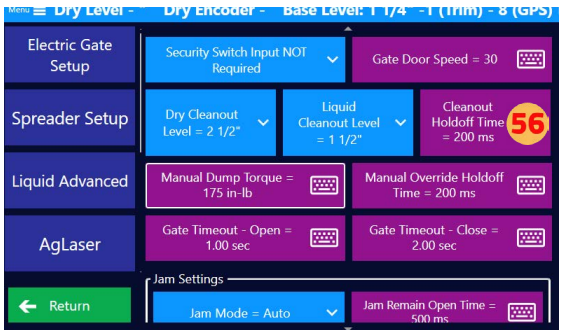
56 Tap 'Cleanout Holdoff Time'

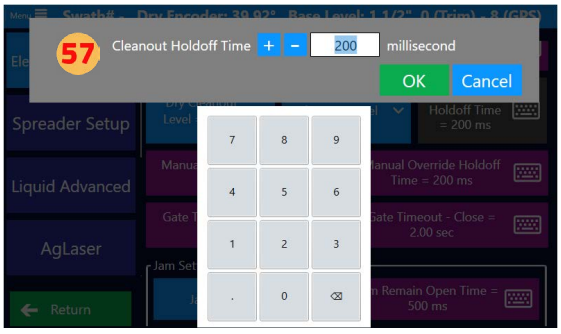
57 Set Cleanout Holdoff Time. Then, tap 'OK.'











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.

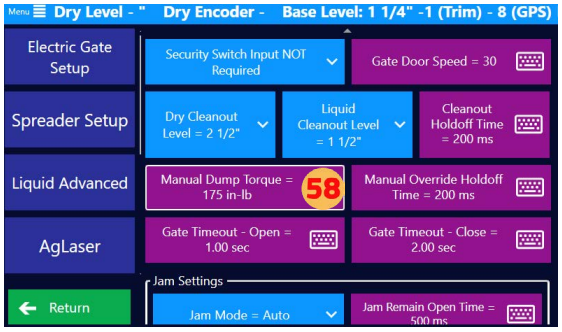
Term	Customer Benefit & Explanation
Gate Timeout – Close	**Customer Benefit:** Avoid gate, motor or seal damage with intelligent gate timeout features, preventing gate closure beyond 1.0 to 2.5 seconds if the target position isn't achieved. **Explanation:** The time at which the gate will stop trying 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.

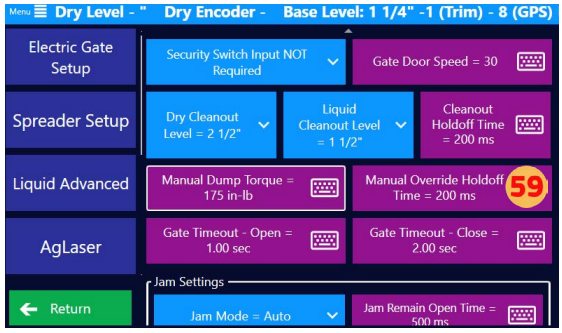
58 Tap 'Manual Dump Torque.' Set Manual Dump Torque. Then, tap 'OK.'

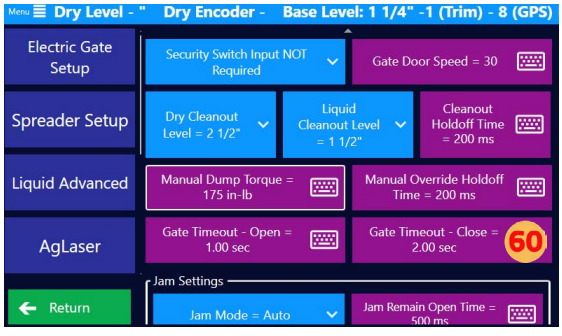
59 Tap 'Manual Override Holdoff Time.' Set Manual Override Holdoff Time. Then, tap 'OK.'

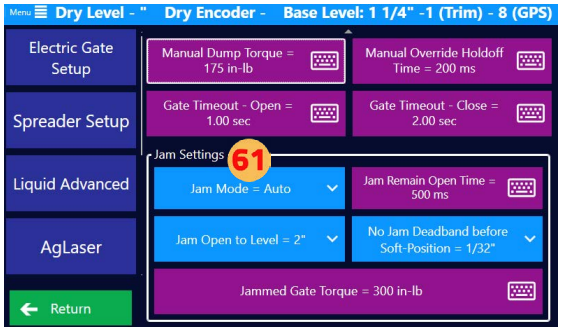
60 Tap 'Gate Timeout - Close.' Set Gate Timeout - Close. Then, tap 'OK.'

61 Select and Set all Jam Settings









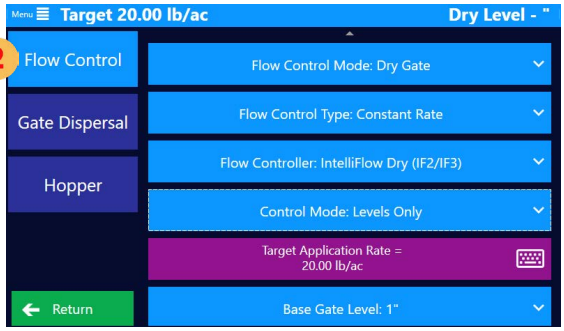
4.3 LEVELS SETUP FOR ELECTRIC GATE

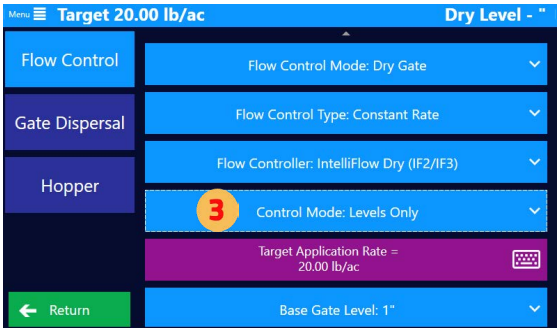
Key Differences in Levels vs. Single Profiles

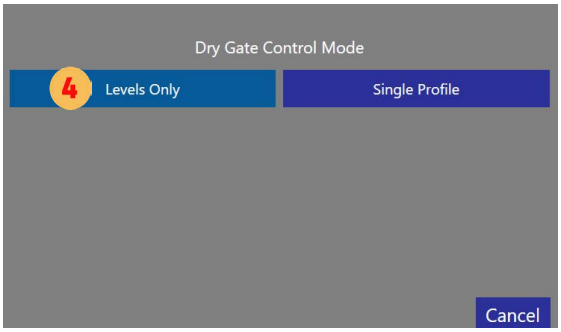
- Standardization vs. Customization: Levels are more about standard, preset options, while single profiles offer more room for customization and fine-tuning.
- Ease of Use vs. Precision: Levels provide ease of use and quick selection, useful in general or less sensitive applications. Single profiles, 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.

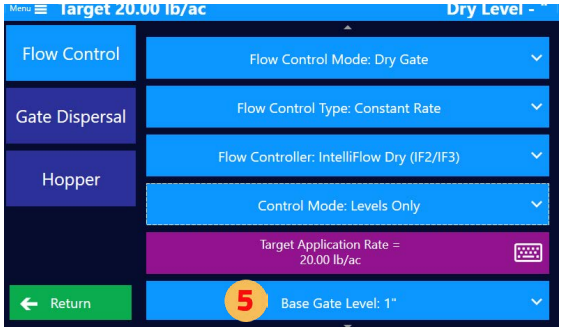
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Levels Only'
5. Tap 'Base Gate Level' and set it
6. Select the 'Target Application Rate'

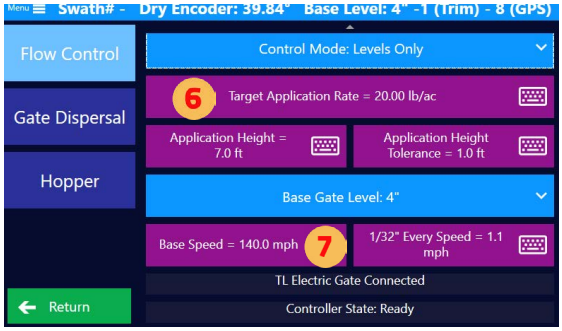
   Selecting the target gate level will automatically set a 'default every speed.'
7. If you want to change the Base Speed, Tap 'Base Speed' and set it.











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.'

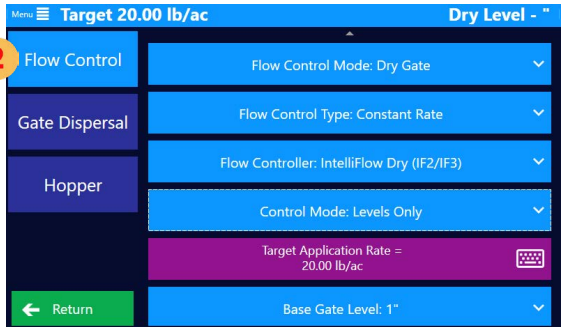
4.4 SINGLE PROFILE SETUP FOR ELECTRIC GATE

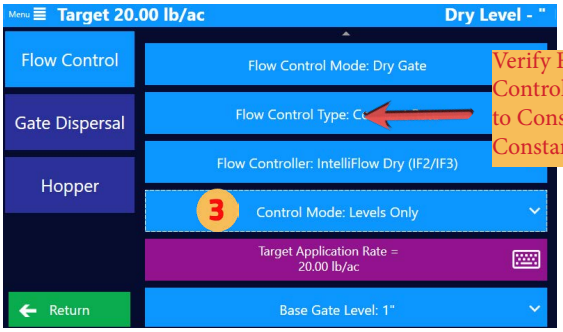
Key Differences in Levels vs. Single Profiles

- 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.

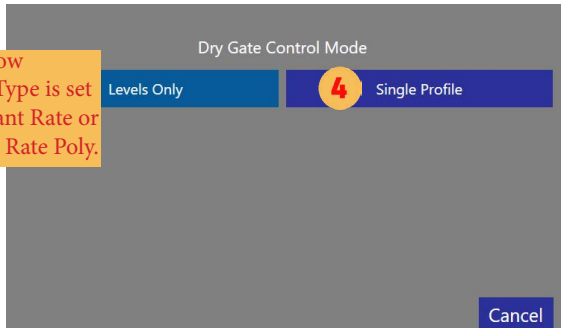
1. Tap 'Application'
2. Tap 'Flow Control'
3. Tap 'Control Mode'
4. Tap 'Single Profile'
5. If you want to alter the product that is selected for the single profile in any way, tap 'Single Profile Settings.'

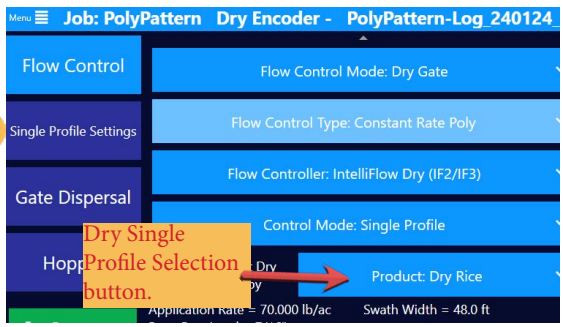
   You will need to copy a default dry profile into an editable profile.
6. Tap 'Edit Profiles'
7. Tap 'Copy'
8. Name the Dry Product Profile and tap 'OK.'



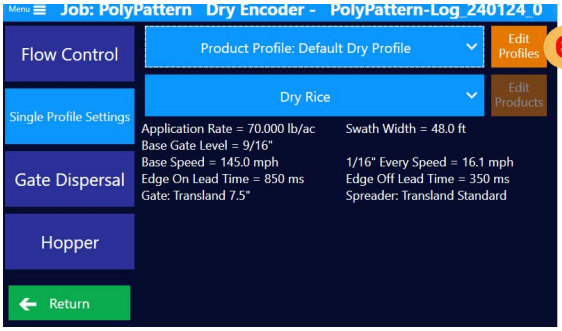


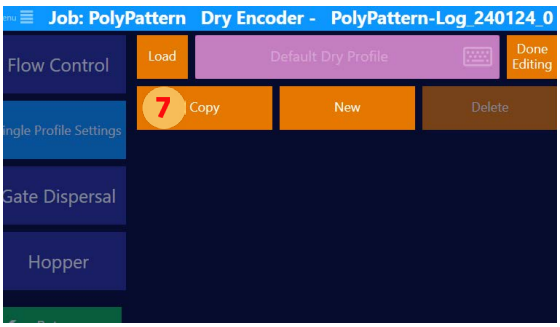
Verify Flow Control Type is set to Constant Rate or Constant Rate Poly.

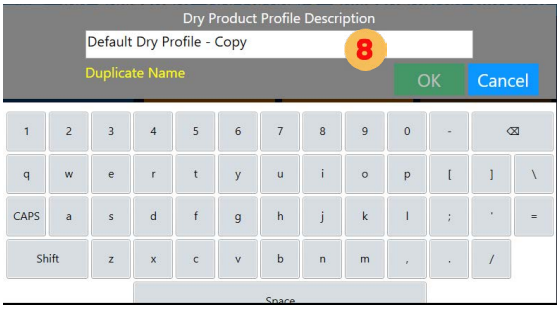




Dry Single Profile Selection button.





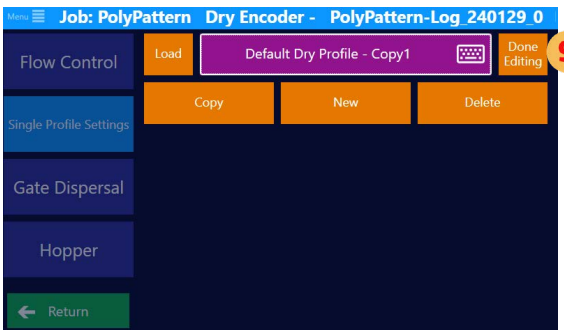


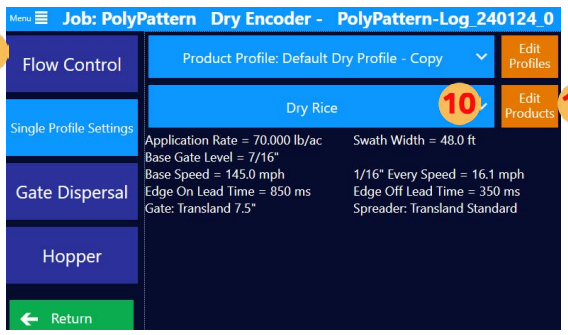
9 Tap 'Done Editing'

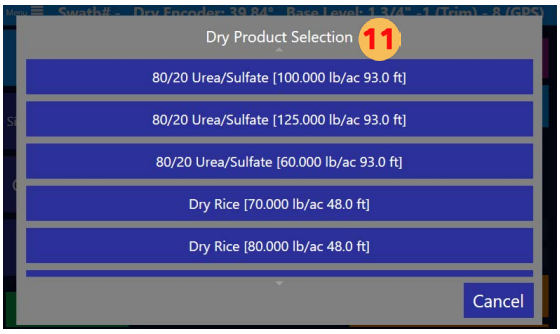
10 Tap 'Edit Products'

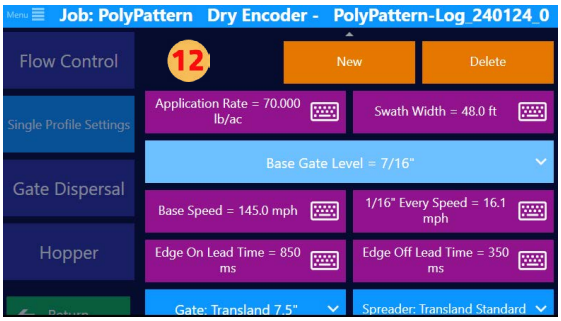
11 Load the Product you want

12 Edit the various settings per usage preferences



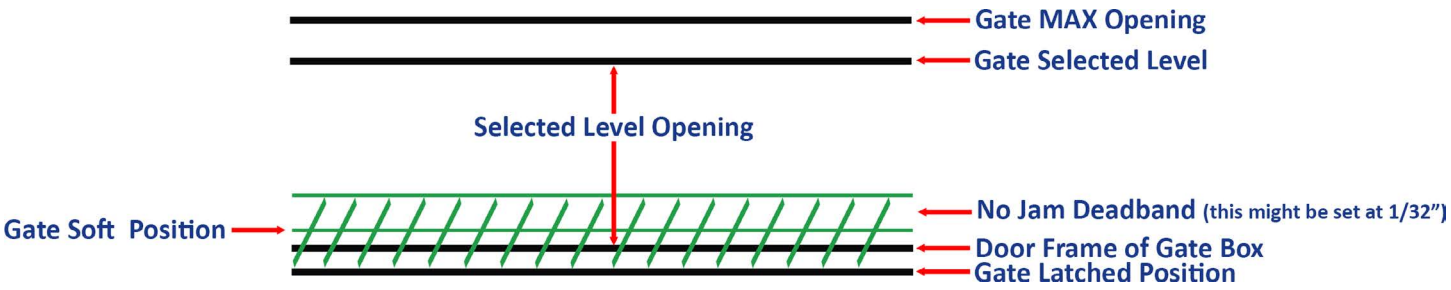






4.5 ADDITIONAL ELECTRIC GATE INFORMATION

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.