GRITAUTOMATION®


Hardware Installation

Device Configuration

Operations of GRIT® Systems

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# TO OUR CUSTOMERS

Thank you for purchasing your GRIT Automation® system. Please read this manual carefully to ensure that your new products are installed, configured, and maintained correctly.

We're a small company that loves the product we've created, and we're confident you will too! If you ever have any questions or feedback, feel free to contact us at the address below.

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# Device Power

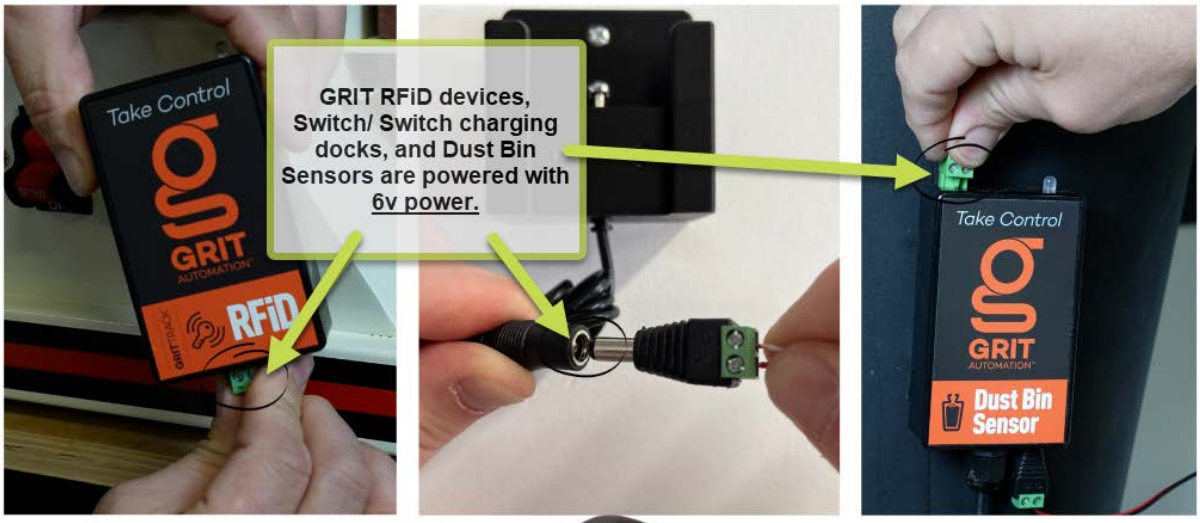
**Attention: Supplying appropriate and sufficient power for your GRIT devices is crucial for optimal performance. Please, carefully read through all power information and recommendations.**

**Most importantly, remember to unplug or cut the power to any tool you are working on.**

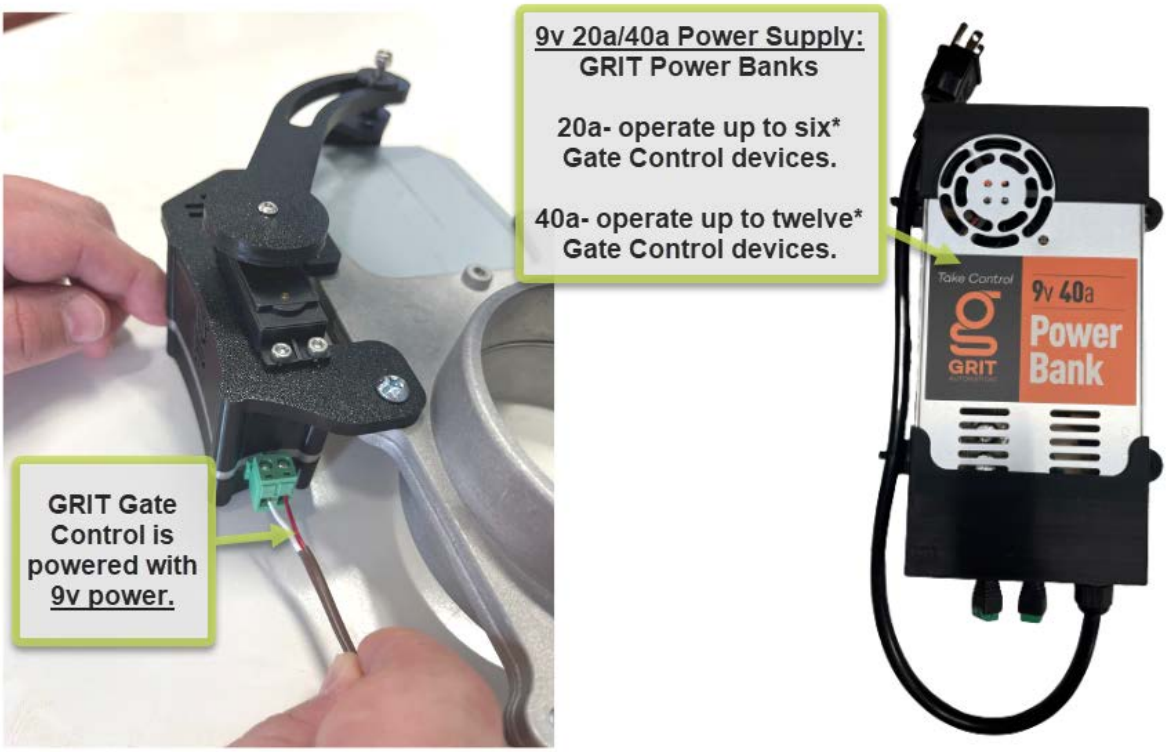
## Power Requirements

**RFiD, Switch charging docks, Gate Control, and Dust Bin Sensor's Strobe Light are all powered with low-voltage power, BUT require different voltages to operate. All low-voltage devices are shipped with 18/2 solid copper thermostat wire.**

### 6v power




## 9v power



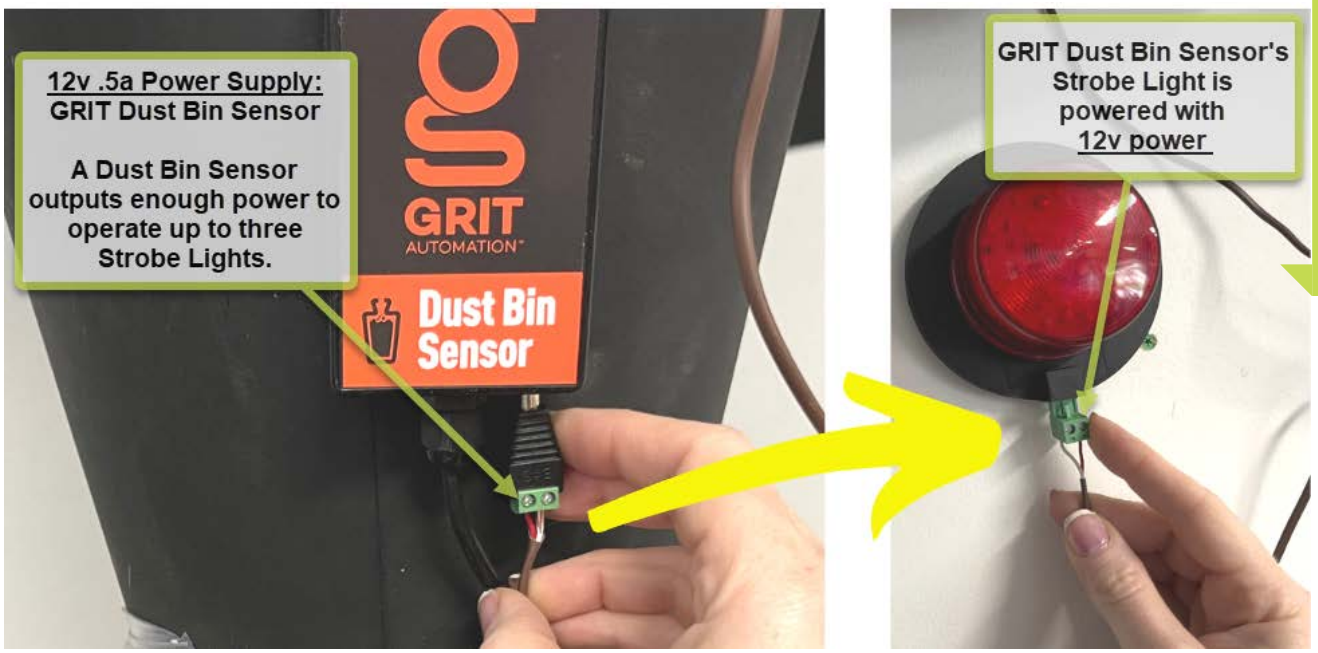

The low-voltage wire can be run from a device to the Power Bank in a "home run" fashion, or, hopped from one Gate Control device to the next on its way to the Power Bank in a "daisy chained" fashion. The Power Bank has two low-voltage jacks, but two sets of wires can be landed in each, if needed.

*Note: These recommendations could slightly increase or decrease based on the frequency with which multiple gates on the same Power Bank open in unison and/or how close to the dust collector the gate is located. Large Gate Control (5''+) devices do use more amperage than the Standard Gate Control (2.5''-4'').

Troubleshooting:

- If gates seem "sluggish", decrease the number of gates that operate synchronously on a single Power Bank. If gates aren't receiving sufficient amps, they lose "throw" power.
- If gates keep "re-setting", you may need to ground your ductwork.

## 12v power

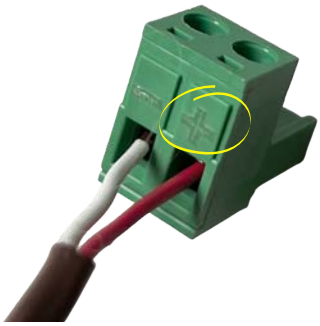



## Pay Attention to Polarity

**A brief note about the two types of low-voltage connectors used in the GRIT system: Terminals and Jacks. The positive and negative ports for these two connectors are located on opposite sides from each other. When running the low-voltage wire to devices, pay attention to polarity. A good rule of thumb is "Red on Right/Positive." This rule does not hold, however, for the low-voltage jacks found on Switch charging docks, Dust Bin Sensor Strobe Lights , or Power Banks. Refer to the image below.**

Low-voltage terminal

**- / +**



Low-voltage jack

**+ / -**

# GRIT Lock®

The premise of GRIT Lock is simple: easily lock/unlock tools to increase shop safety. With the use of GRIT Triggers, we are able to not only control the power that reaches your tool, but also, measure the current draw of the machine. Beyond the lock/unlock capability, the system provides an additional safety feature: Emergency Lock. Understanding how GRIT Lock® works and how to fine tune the power profile configuration of each tool/Trigger will ensure the proper current measurement to detect when a tool is running, as well as, optimal response time in the event of an Emergency Lock situation.

## Emergency Lock

One of our safety "policies" is that GRIT will NEVER turn off a tool that is running. In the event that the HUB goes offline, someone initiates a system update, or someone is running a tool after the HUB's scheduled lock time, GRIT NEVER CUTS POWER TO A RUNNING TOOL.

**An Emergency Lock, or an instance when GRIT <u>will</u> cut power to a tool, is described in the following scenario:**

**GRIT quickly cuts power to tools left in the 'ON' position prior to that tool's Trigger being unlocked.**

Example: The entire shop is locked. Person 'A' walks up to the bandsaw and flips the power switch 'ON'. Since the tool is locked, it will not power on. Mistakenly, person 'A' leaves the tool's power button in the 'ON' position and walks away.

Later, the shop owner enters the shop and unlocks all the tools. When the bandsaw gets the unlock command, the Trigger will switch on the power feeding the bandsaw. As soon as the Trigger unlocks, GRIT immediately checks whether power is flowing. If the Trigger reads power above the activation current level set for the bandsaw, it cuts the power again within 1/60th of a second (1 cycle of AC current). GRIT immediately re-locks the bandsaw and logs an event called 'Emergency Lock'. To allow usage of a tool that has been shut off due to Emergency Lock, simply turn off the tool, then press the unlock button again.

## GRIT Lock® and the Importance of Trigger Configuration

The effectiveness of a majority of your GRIT system, including GRIT Lock, is dependent upon properly configuring each tool's Trigger. A Trigger's "job" within the system is, in essence, to measure and control current flow to its tool. All tools vary in the amount of current they pull, the amount they pull when 'on' versus 'running' (i.e., CNCs), the time it takes to reach their full draw (i.e., slow-start router tables), and the consistency with which they pull it while running (i.e., lasers). With your shop's complexity in mind, GRIT has a fully configurable application to completely capture each tool's power profile.

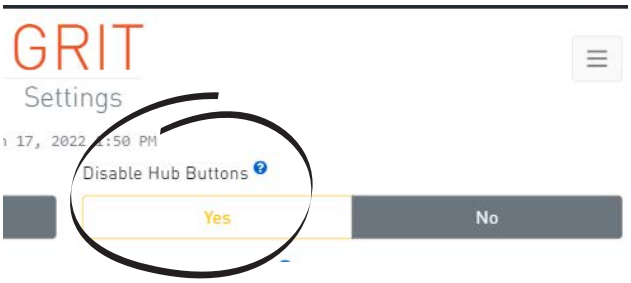
The details for properly configuring Triggers are covered under the Trigger Configuration section.

# 6 Ways to Lock/Unlock Your Tools

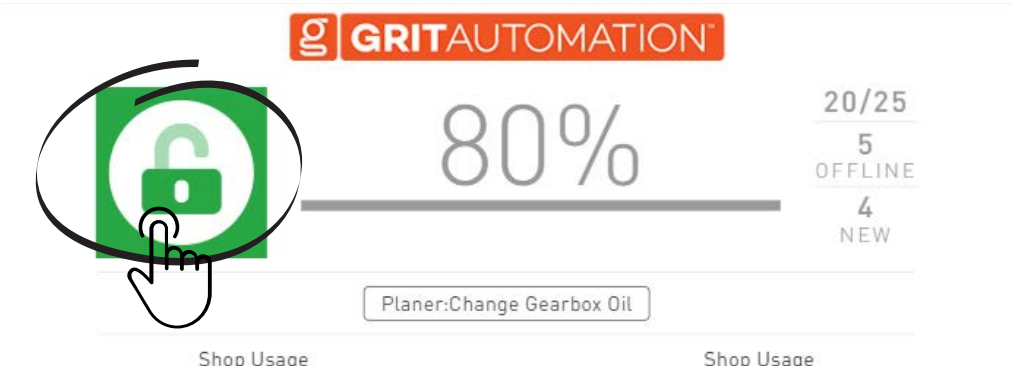
**Lock/Unlock the entire shop with:**

## 1. The Hub buttons.


*Note: the use of the Hub buttons can be disabled in the Admin section if the Hub is mounted in a location where using the buttons poses a safety concern.

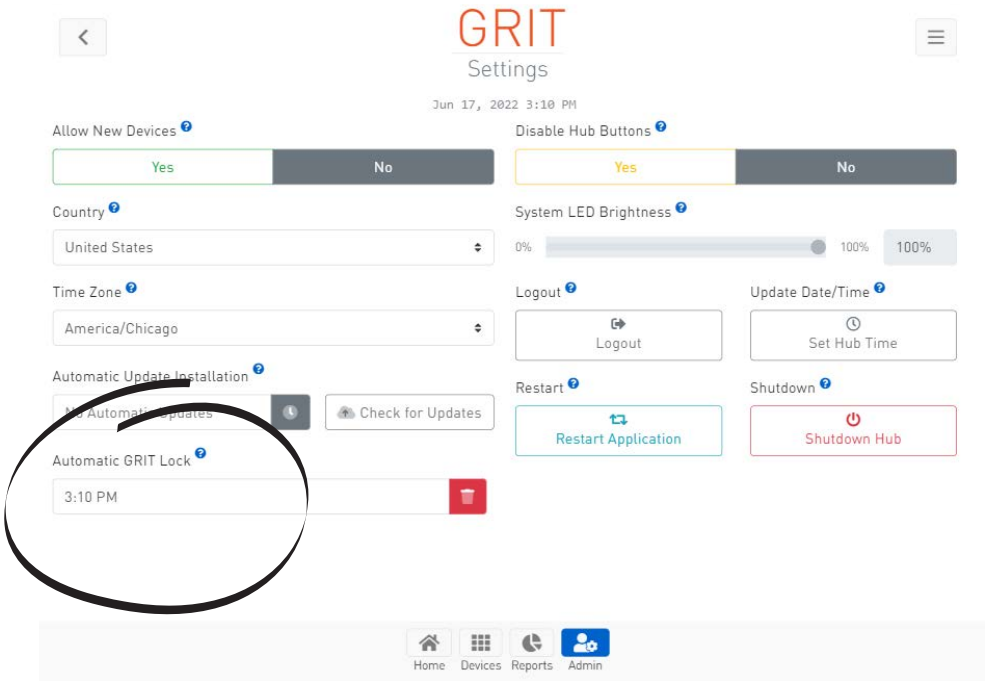



## 2. The GRIT App Dashboard.



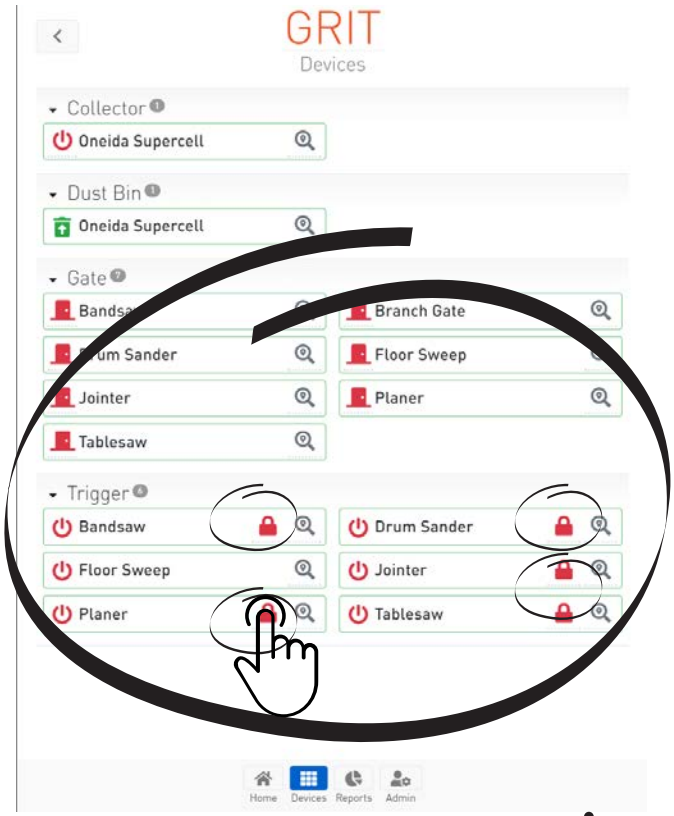
## 3. The Automatic GRIT Lock setting.

A scheduled system lock can be setup to automatically lock all triggers at the end of the day.



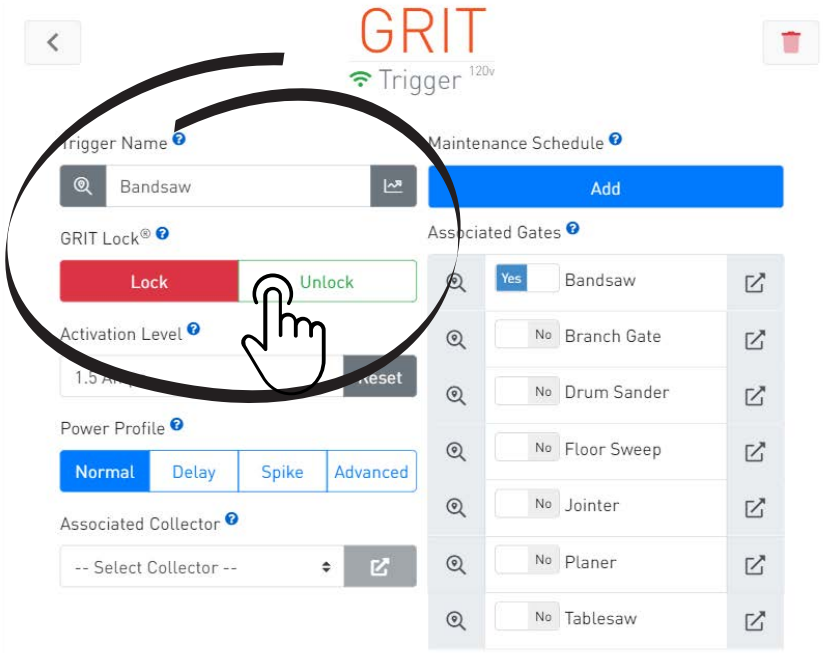

## Lock/Unlock a single tool with:

## 4. The GRIT App Devices screen.



## 5. The GRIT App Trigger screen.

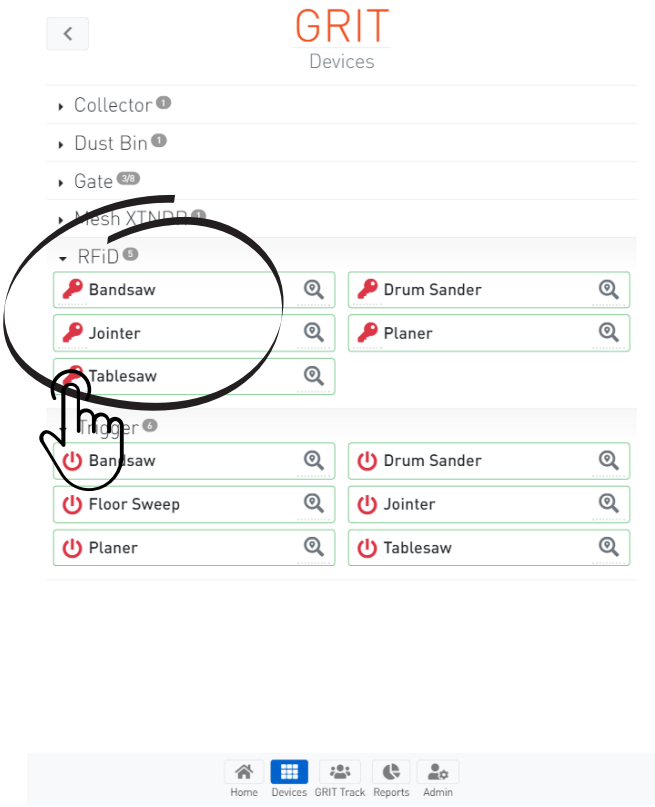
A tool's detailed configuration screen provides a button to toggle the state of that Trigger.




## 6. GRIT Track® RFiD devices.

If a tool is outfitted with Access Control, unlock:

- by swiping a RFiD card.
- by pressing the key icon in the GRIT App

# Initial Setup

**The GRIT Hub® is the "brains" of the system and should be installed first.**

- Select a location for your Hub that:
  - is centrally located in your shop to support good connectivity with other devices.
  - is located near an ethernet connection or close to your personal Wi-Fi port (if applicable).
  - is located near a 120v outlet.

- The GRIT system does not require internet access to operate, however, in order to access your system remotely and to perform updates, internet access is required and recommended. The two options of accessing the Hub are:
  - **Connect with the Hub via your own local network, or;**
  - **Connect with the Hub via its own projected Wi-Fi***

Plug in the Hub using the provided power supply. Allow the Hub to boot up (can take up to 2 minutes). A QR code is visible on the side display when the Hub is ready for connection.

Choose the connection method you'll be using: Ethernet or the Hub's own Wi-Fi*.

***Note: If planning to connect with your own private Wi-Fi, choose the initial setup option that first connects with the Hub's Wi-Fi. If you switch from the Hub's WiFi to your personal WiFi, wait until you have completed that proc to save the App shortcut to your device Homescreen.**

# GRIT Hub® Connection Options

**Option 1: Connect to GRIT Hub with ethernet**

**Step 1:**

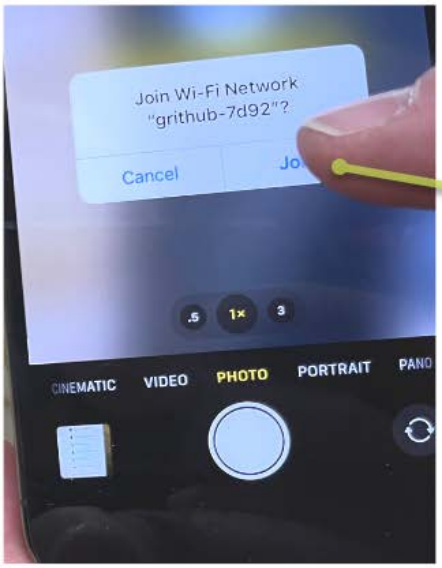
Plug one end of an ethernet cable into the jack located on the bottom of the Hub, and the other end into your personal router or switch.



**Option 2: Connect with GRIT Hub Wi-Fi**
(ensure ethernet is not plugged in.)

**Step 1:**

Press the button on the left side of the Hub until a QR code labeled 'CONNECT TO HUB WIFI' appears on the display screen.




**Step 2:**

Scan the QR code with your phone or tablet's camera to join.

(Note: If your phone/tablet has trouble scanning the QR code, you can manually connect):

-Go to the device's W-Fi settings.

-Select the Wi-Fi network that starts with 'grithub-'.

-The password is gritautomation (all one word, all lowercase).

# Access the GRIT App

**After connecting with the Hub via ethernet or the Hub's own Wi-Fi, it is now time to access the GRIT App. (Remember, if you plan to switch from the Hub's Wi-Fi to your own personal Wi-Fi connection, wait until that step is completed to save the shortcut to your device as the IP address will change in the process of the switch.)**

The GRIT App works on mobile phones, tablets, and PCs. Using the native browser for the mobile device allows for the application to be installed on the home screen.

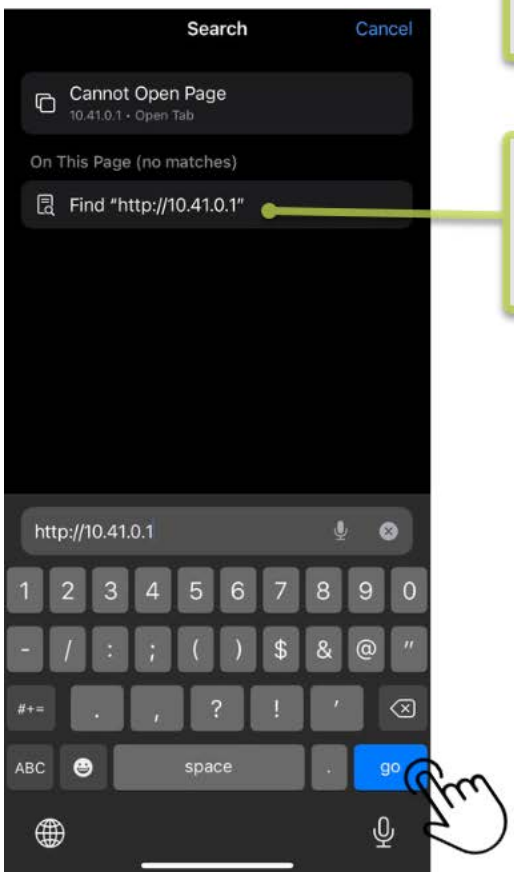
Apple devices use Safari (not Chrome).

Android devices, use Chrome.

**Press the button on the left side of the Hub to display the unique IP address QR code. You can either:**

**Scan the code with your phone/tablet's camera,**

**or;**




**Manually enter the IP address displayed into your device's native browser.**

# Create GRIT Administrator Account


The 'Create Account' screen will appear after you access the GRIT App IP address.


Complete this form with the information of the main administrator or shop owner.

The 4-digit PIN can be used to login to the GRIT account in the future, as well as, used on the SignOn kiosk, if applicable.

This is a novel PIN, so no other user can select a duplicate PIN.

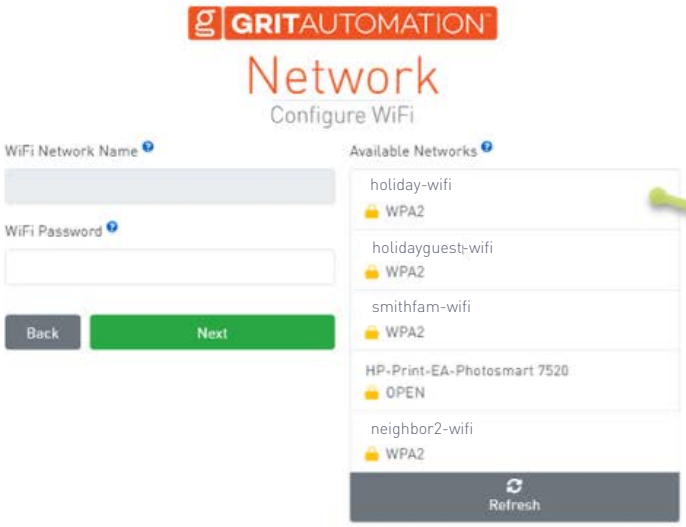

Press 'Continue' once you complete all fields.

# Switch from Hub WiFi to Personal WiFi


**Step 1:**

If you would like to continue using the Hub's own WiFi, press 'No'.

If you would like to switch from the Hub's own WiFi to your own personal WiFi network, press 'Yes'.




**Step 2:**

Select your preferred WiFi network from the list of Available Networks. If you do not see yours in the list, press 'Refresh'.

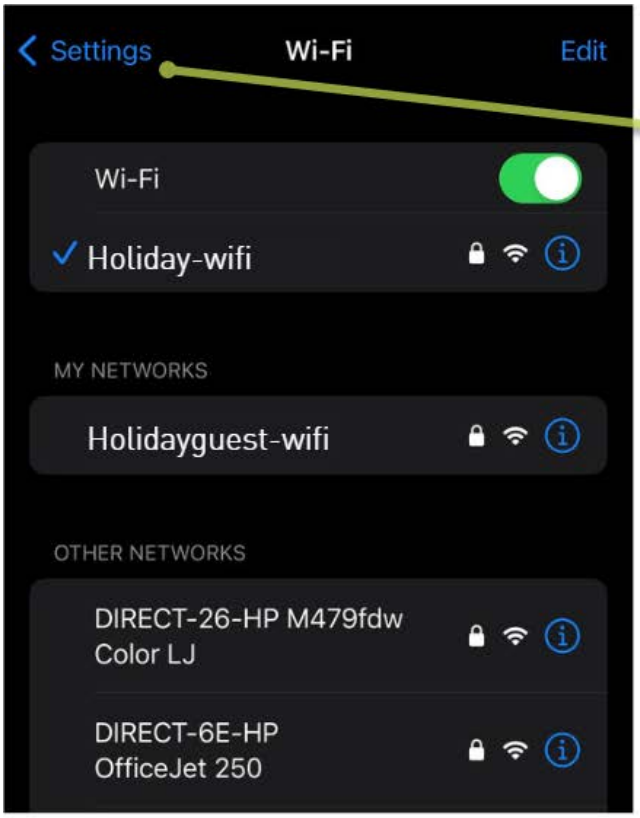
Once selected, enter your WiFi password. Take care to enter the password correctly.

Press 'Next'.


**Step 3:**

This screen will display when the connection has switched to your personal WiFI network.

# GETTING STARTED




**Step 4:**

**Go to your phone/tablet's Settings and make sure your device is on the same WiFi network you selected for your Hub.**

**Step 5:**

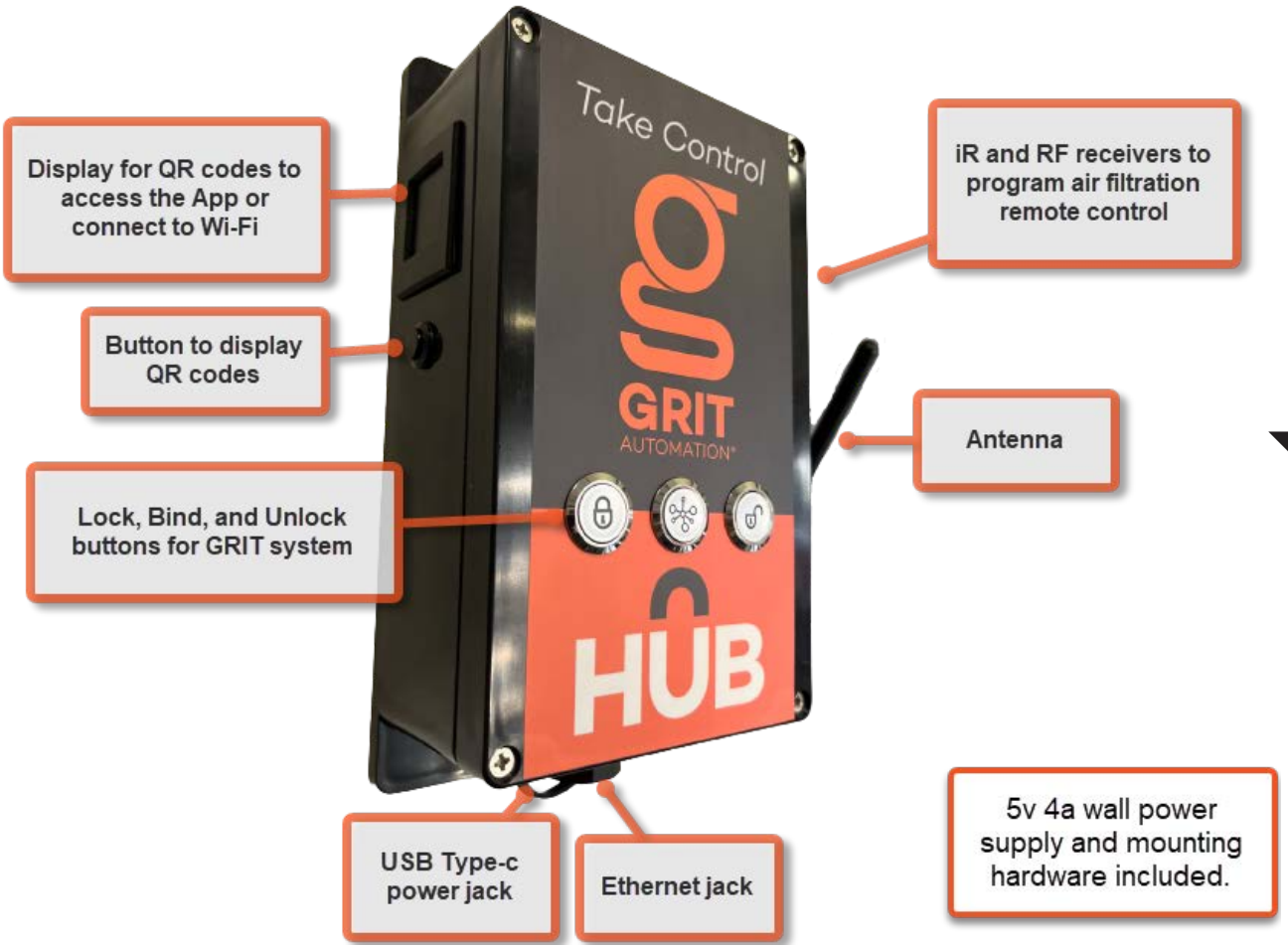
**Press the button on the side of the Hub until you see the QR code for the new GRIT App IP address.**

**Scan with your phone/ tablet's camera or enter the IP address into your native browser's search window.**

***Please note: If you enter the wrong password during the WiFi setup, press and hold the button on the side of the Hub for 10 seconds to delete the WiFi settings and start again.**

# GRIT Hub®

**The Hub is the 'brains' of your system and all other GRIT devices communicate through its Mesh Network. All data collected from the system is stored locally.**



# Installation

The GRIT Hub® can be installed anywhere as long as it can connect to a single device to form the GRIT Mesh Network. However, the following should be considered to avoid having to move it later.

- The more centrally located the GRIT Hub®, the better.
- If your system will be connecting to your local network via ethernet cable, ensure that its placement makes this connection easy.
- If your system will be connecting to a local Wi-Fi network, make sure it is placed with good signal strength.
- If your shop has any thick concrete walls or thick metal walls that separate portions of the space, try to position the Hub central to this barrier. This will ensure the best communication between the areas. If your space has many rooms spread over large distances you may need to purchase the GRIT Mesh Xtndr device to bridge the long distances.
- If your system will not be using GRIT Track® (RFiD), physical access to the hub should be considered to limit access by unauthorized persons (i.e., In a locked closet or office). If your system includes GRIT Track® (RFiD), the GRIT Lock® buttons on the front of the device are not used.
- Access to 120v power is required to power the GRIT Hub®.

When mounting the Hub make sure it has no obstructions that might hinder the communication with the GRIT Mesh Network.

# GRIT HUB® + APP


**Step 2:**

**Screw on the antenna and position it pointing up.**


**Step 3:**

**Plug the supplied 5v 4a power adapter into the jack on the bottom of the Hub, then into a 120v wall outlet.**

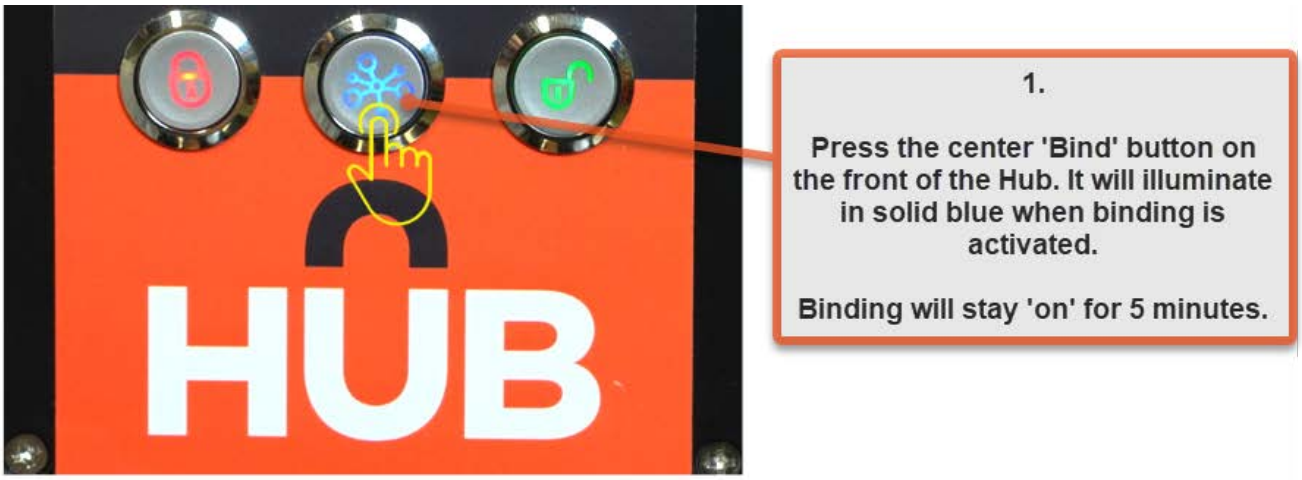

**Step 4:**

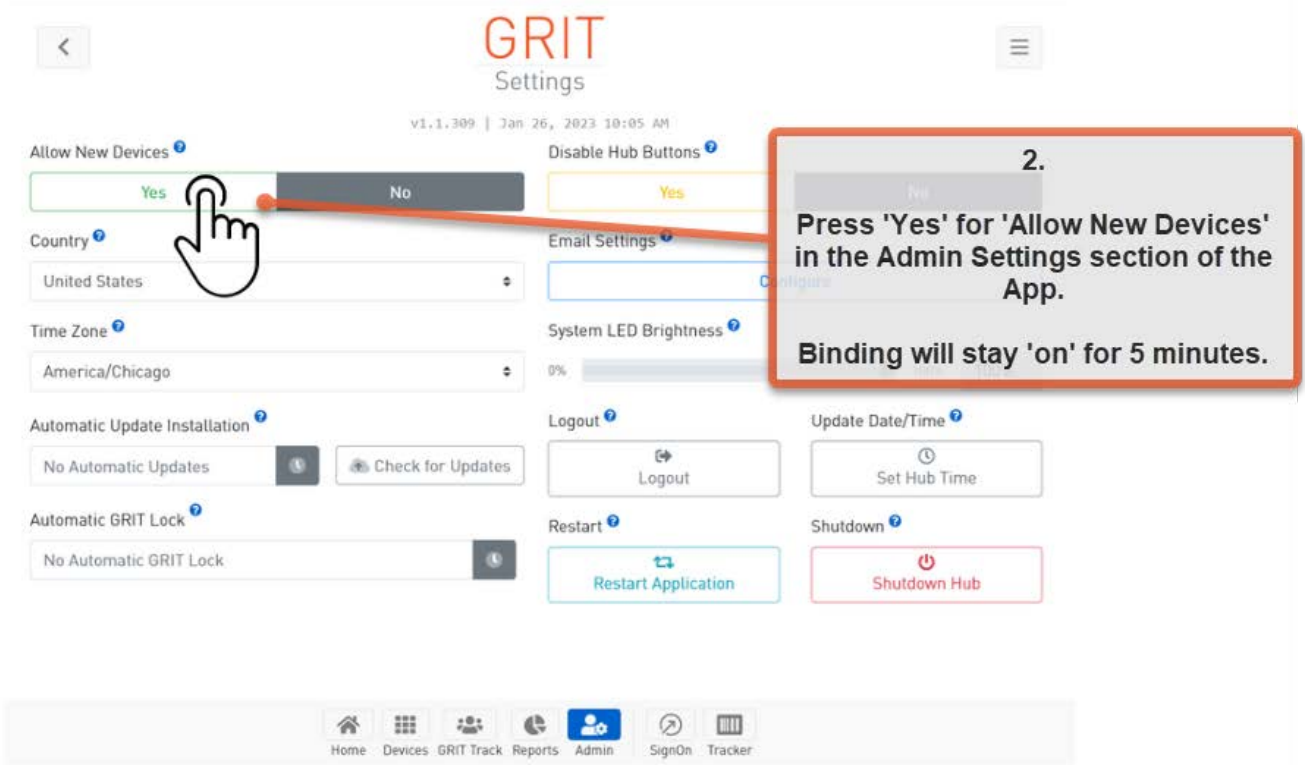
**If you are using an ethernet cable to connect to your local network, plug one end into a router or switch, and the other end into the jack on the bottom of the Hub.**
**(Cat5 cable not supplied.)**

# Bind Devices

**After physically installing the other GRIT devices in the shop, you must Bind the devices to the Hub.**

## There are 2 Ways to Bind Devices*



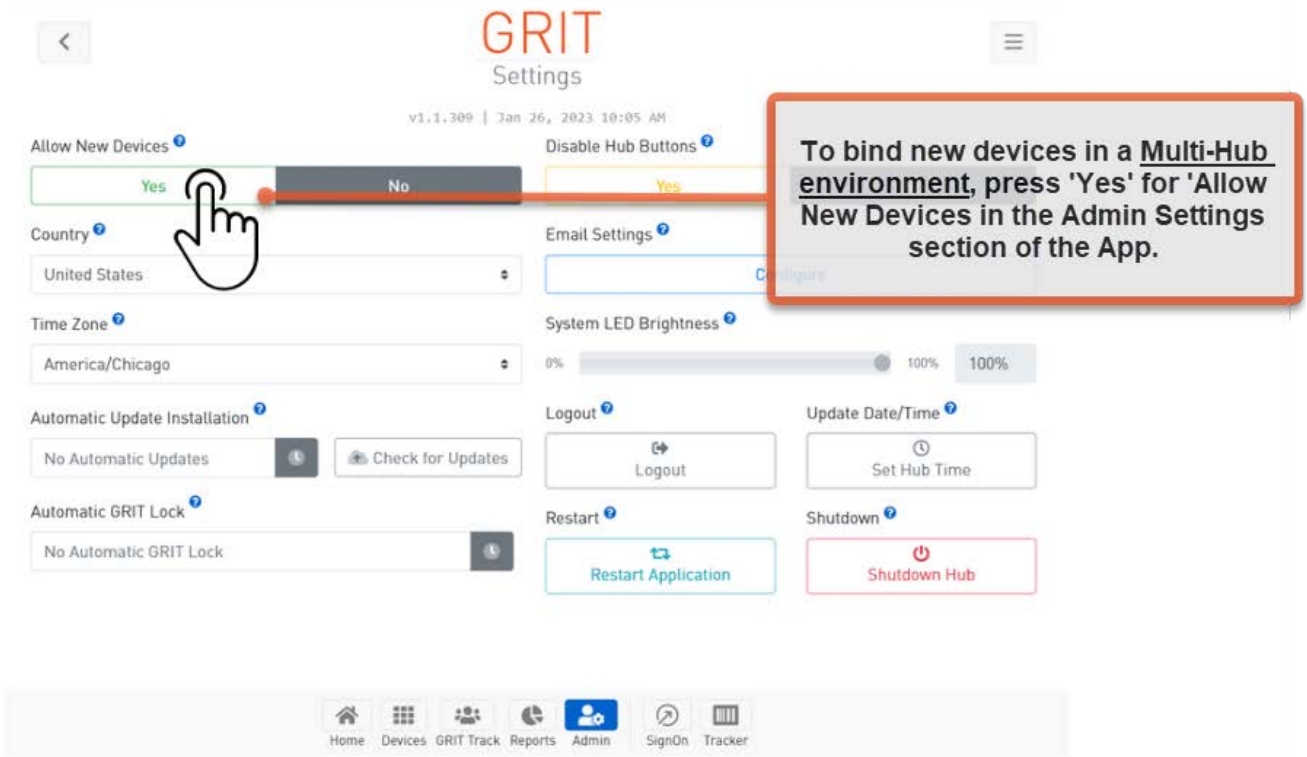
# *Bind Devices: Multi-Hub Environment

**After physically installing the other GRIT devices in the shop, you must Bind the devices to the Hub. If there is another Hub that is close enough to yours to hear projected messages over the mesh network, your Hub will slightly alter its binding process to keep the systems separated.**

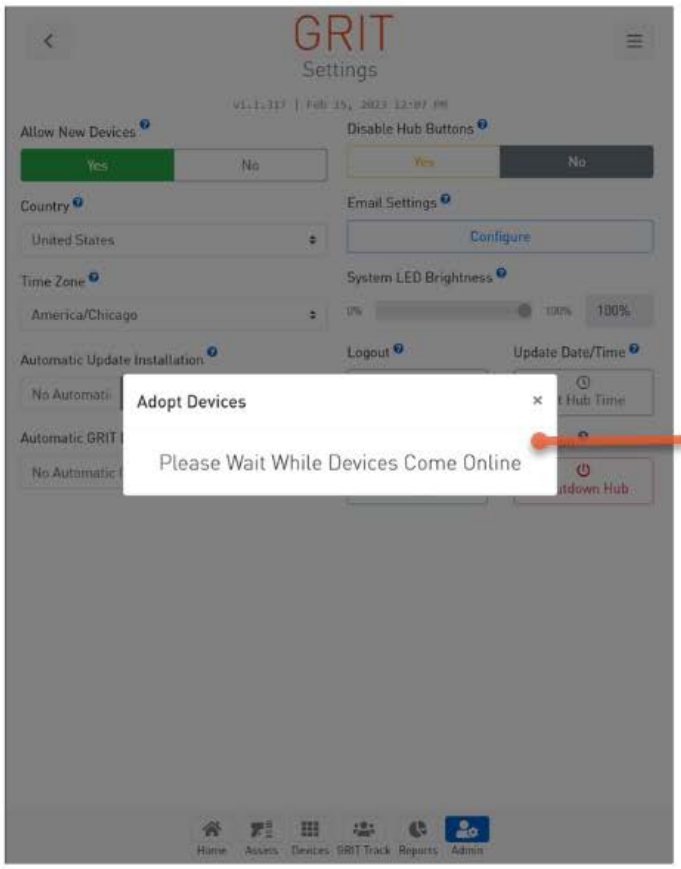

When you are in an environment where there are multiple HUBs present, the 'Bind' button on the front of the HUB will no longer enable new devices to bind.

When pushed, it will FLASH blue (rather than being solid) indicating that you must use the App to bind.

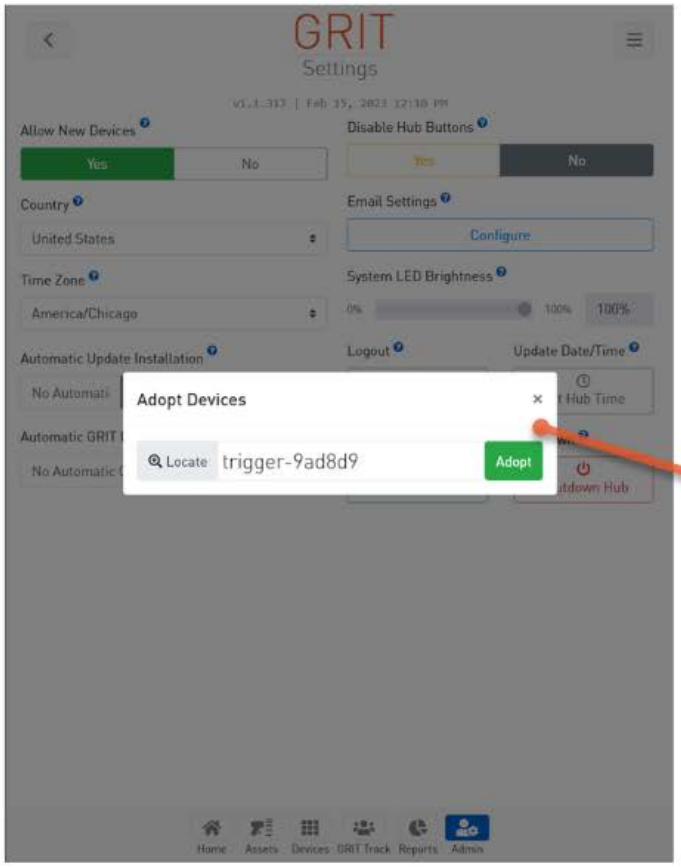





To bind new devices in a Multi-Hub environment, press 'Yes' for 'Allow New Devices in the Admin Settings section of the App.




After pressing 'Yes', a popup window will appear. If there are no devices waiting to bind, you will see this message.




After pressing 'Yes', a popup window will appear. If there are new devices waiting to bind, you will see this message.

Press 'Adopt' for each device you would like to bind to your HUB.

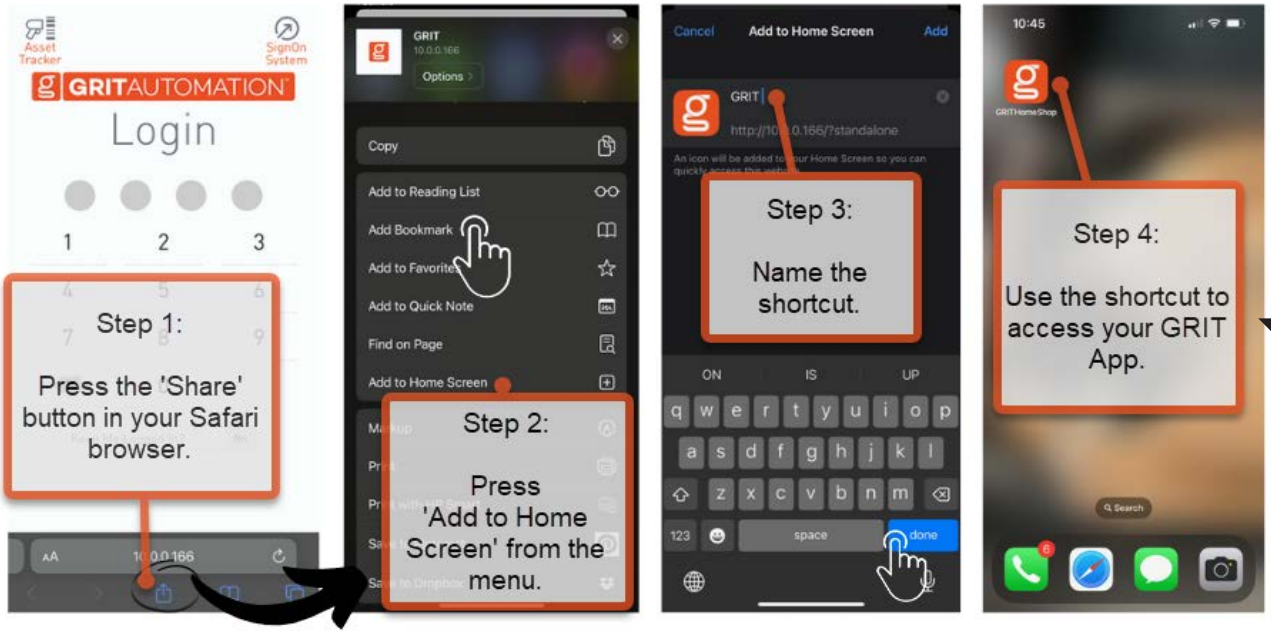
Be sure to only 'Adopt' devices that are present in your shop, to eliminate the chance that you bind a device from a nearby shop.

# GRIT App

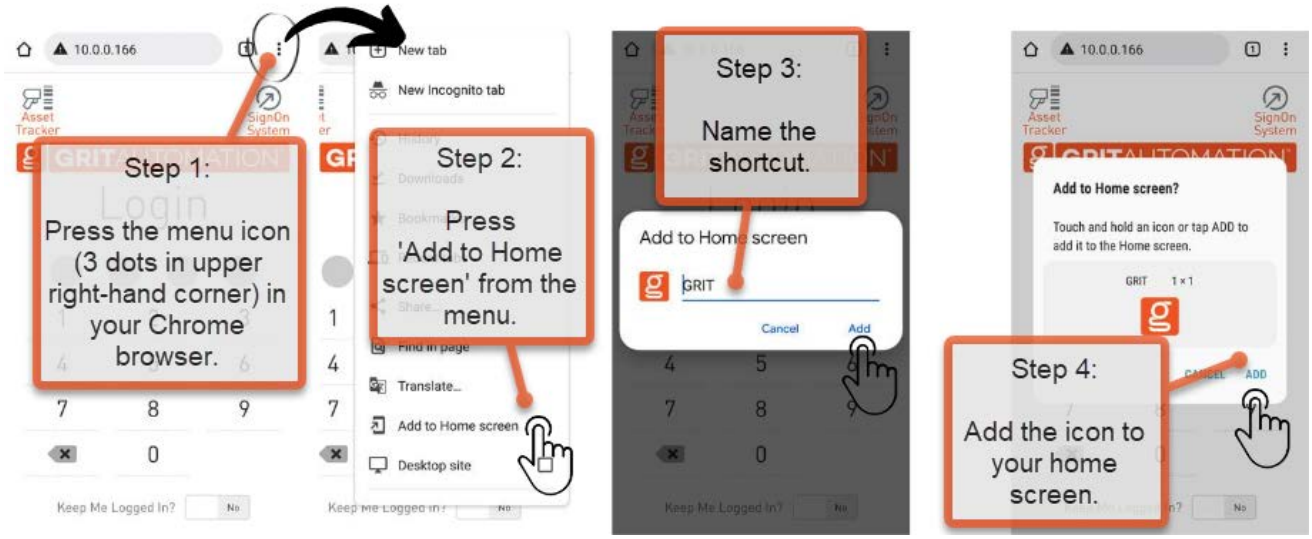
**After connecting with your Hub and creating your GRIT administrator account, save the GRIT App shortcut to your Home Screen(s) for easy future access. Be aware that the network your phone/tablet/PC is on must be the same network used by your Hub. You will not be able to access the App from a different network.**

## Save App to Home Screen

### iOS (use Safari)

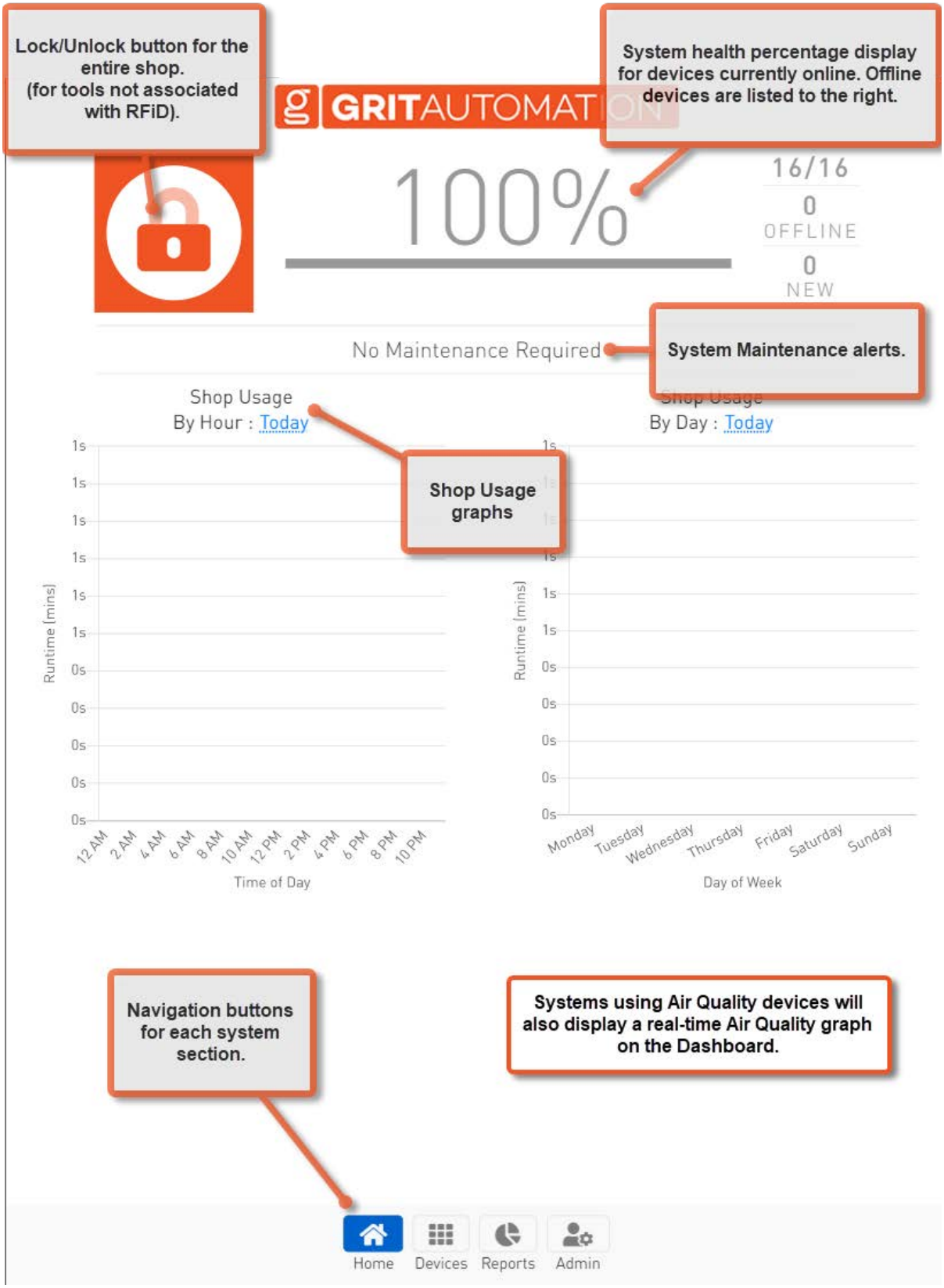



### Android (use Chrome)

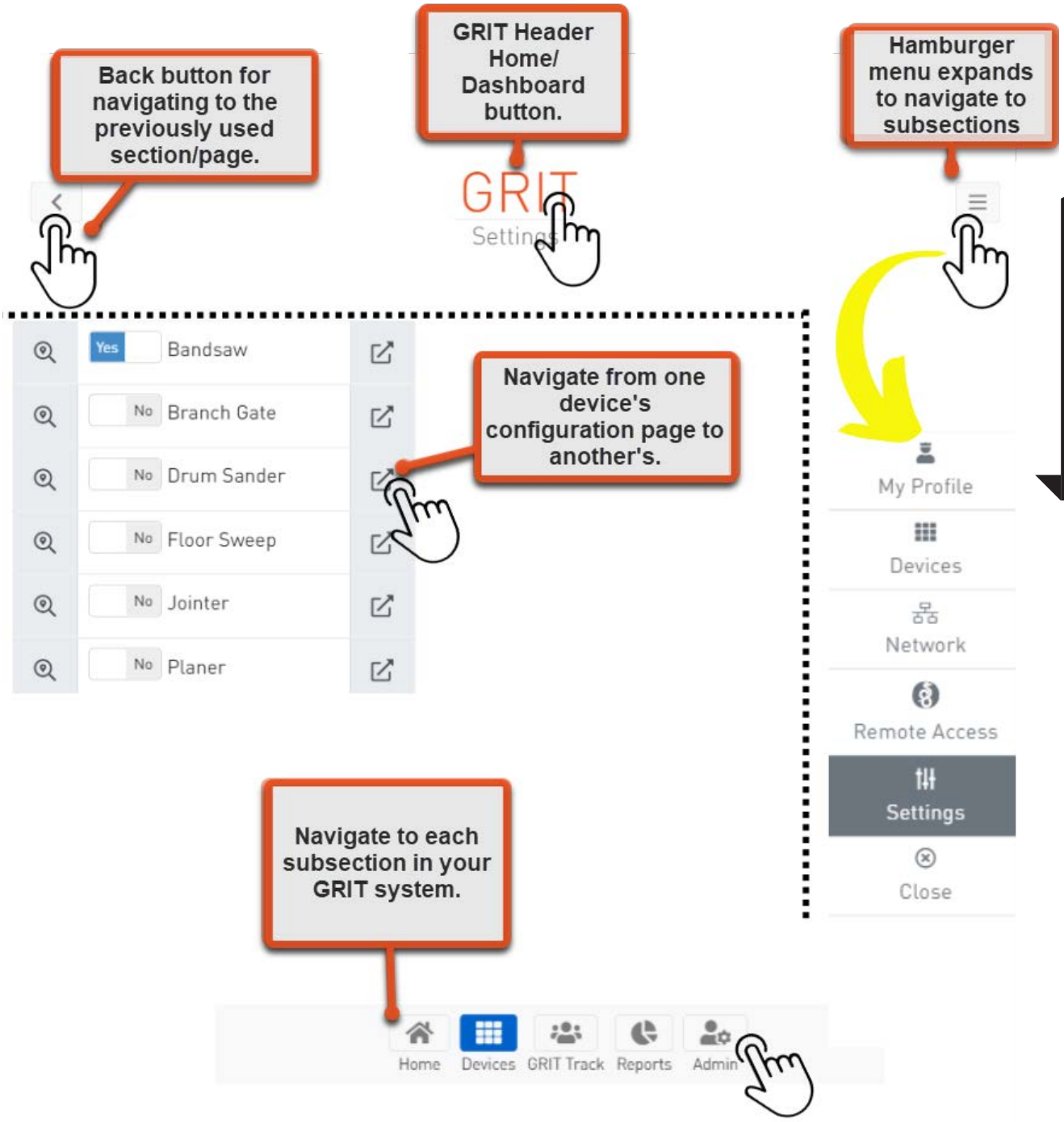


# Common GRIT App Functionality

## Dashboard



# Navigation


Back button for navigating to the previously used section/page.
GRIT Header Home/ Dashboard button.
Hamburger menu expands to navigate to subsections
GRIT
Settings
Yes Bandsaw
No Branch Gate
No Drum Sander
No Floor Sweep
No Jointer
No Planer
Navigate from one device's configuration page to another's.
My Profile
Devices
Network
Remote Access
Settings
Close
Navigate to each subsection in your GRIT system.
Home
Devices
GRIT Track
Reports
Admin

# Icons

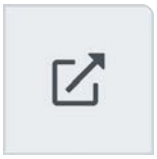
Locate button makes device LED lights flash

Displays Green/Red to indicate online/offline status

Display device graph

Hamburger menu to expand subsection options

Gives more in depth information about a field



Navigate to another device detail page

Indicates dropdown menu

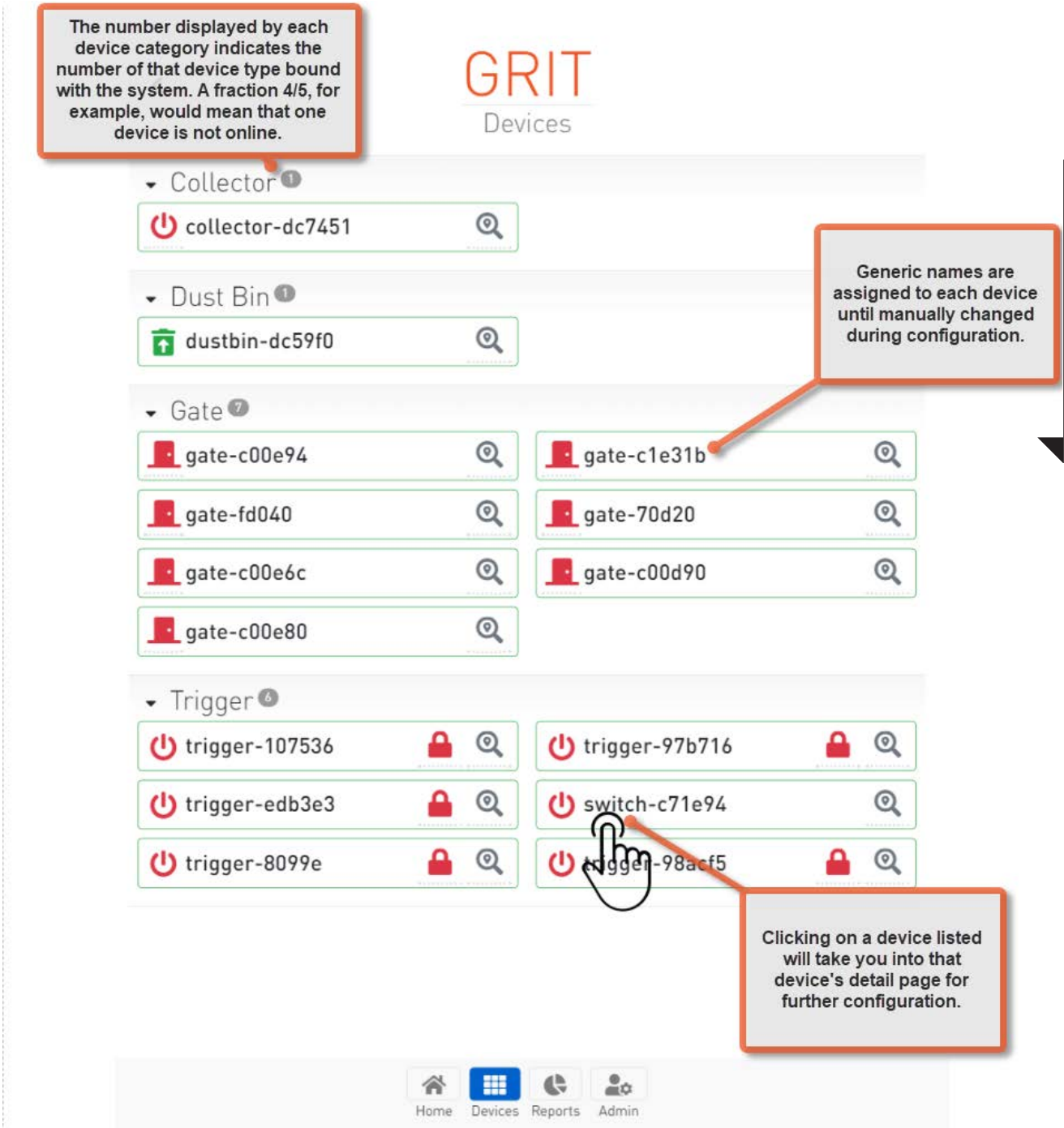
Delete/Replace device

Displays Red/Locked or Green/Unlocked

Displays Red/Closed or Green/Open

Note: Any icon with these gray dots underneath is a clickable button

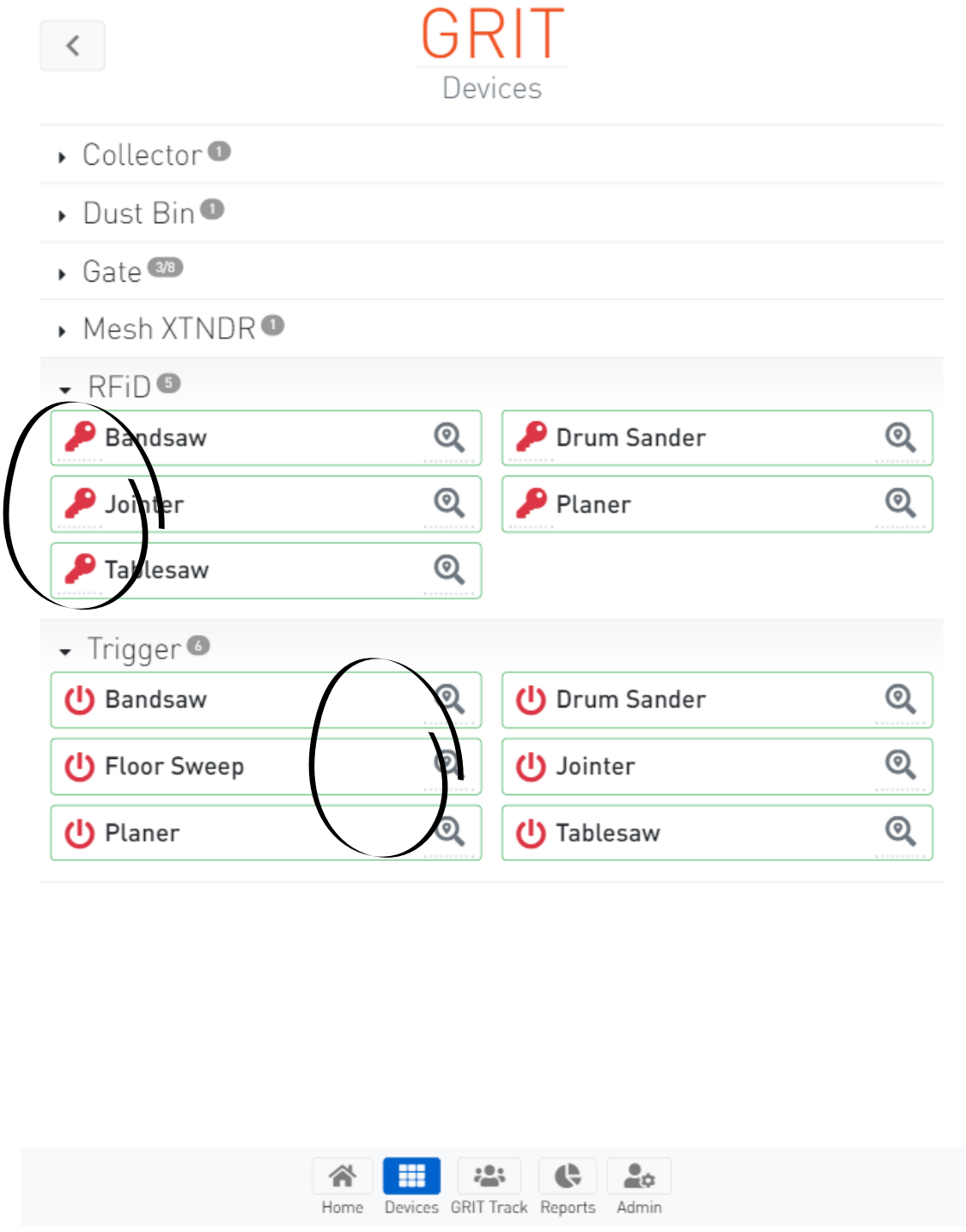
# Devices Page Overview



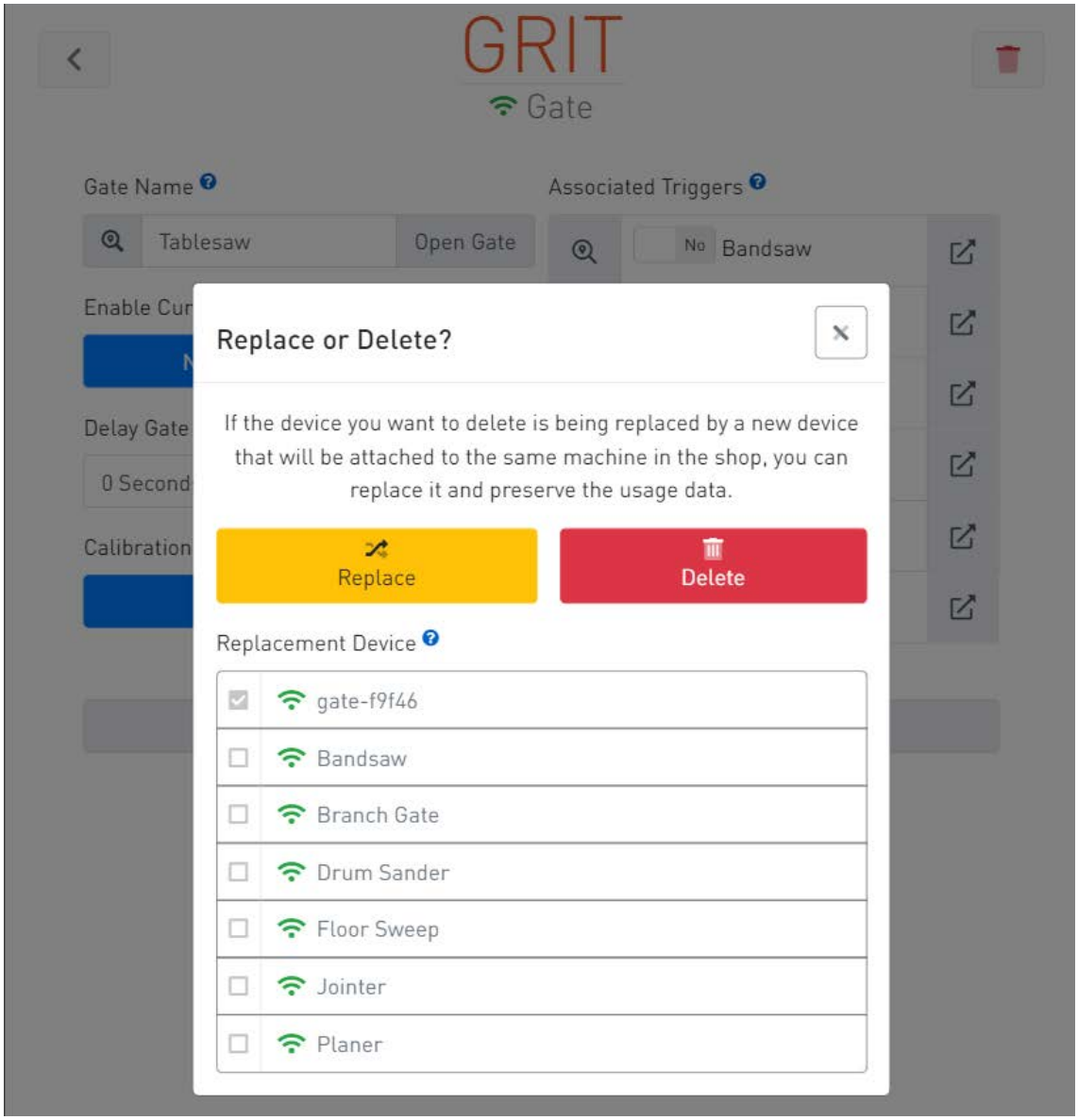
# Devices Page Overview with GRIT Track® RFiD

**The Devices page displays all GRIT devices bound to the Hub. This includes RFiD devices when they have been installed in a shop using GRIT Track®.**

**One notable difference in the Devices page when a shop is using GRIT Track® is that the key icon is present next to each RFiD device and the Lock/Unlock icon is no longer located next to Triggers with an associated RFiD.**



# Replace/ Delete Device

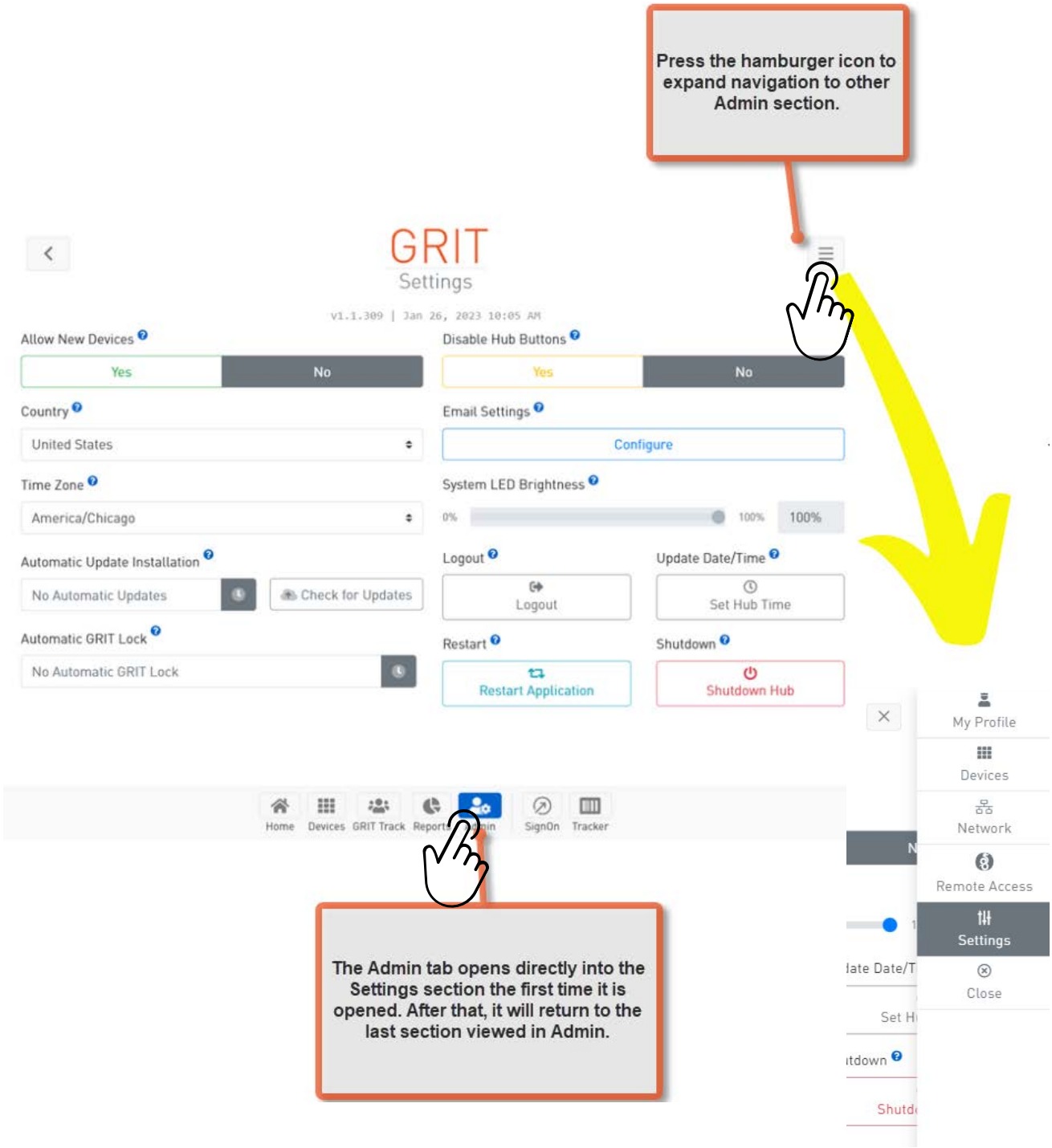





- To Delete a device, go to the device's detail page and press the trash icon. Then select 'Delete'.

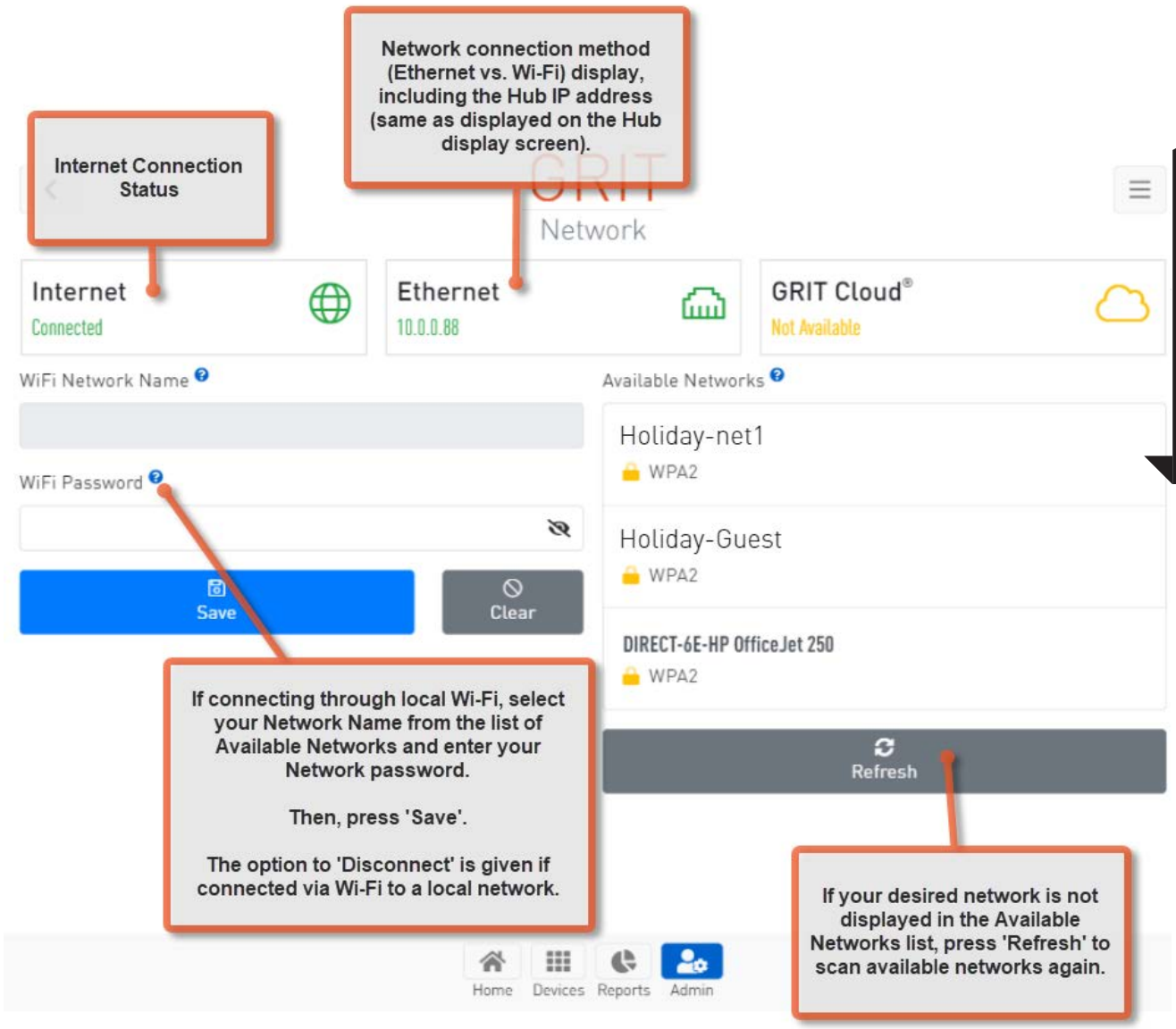
- To Replace a device with a new one on the same machine, physically remove the old device then install and Bind the new device. Go to the old device's detail page and press the trash icon. Then select the newly installed device in the Replacement Device list and press 'Replace'.

# Administration

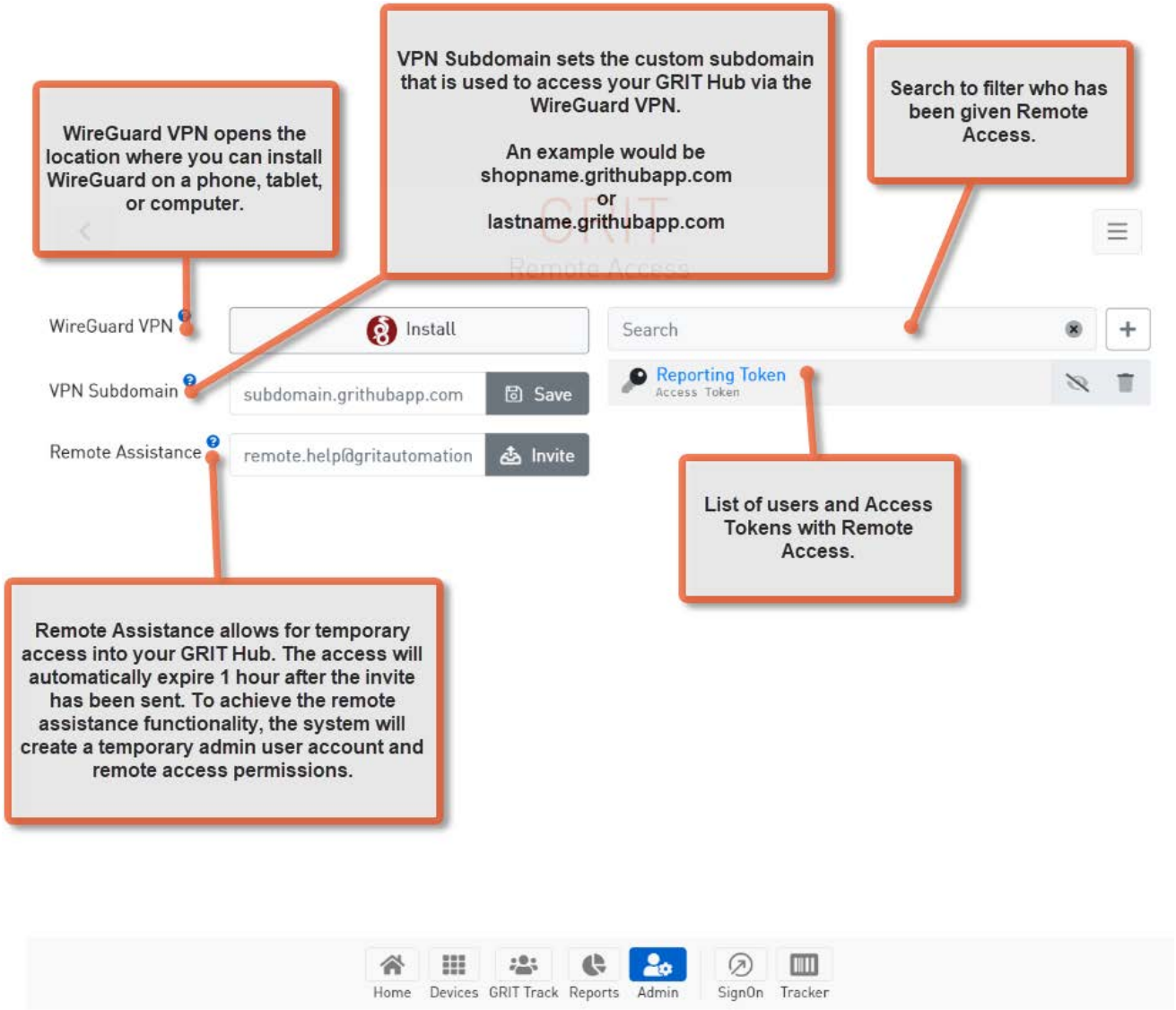


# Network

**The Network page in the Admin tab is used to check internet connection status and connect the Hub with a local WiFi network.**

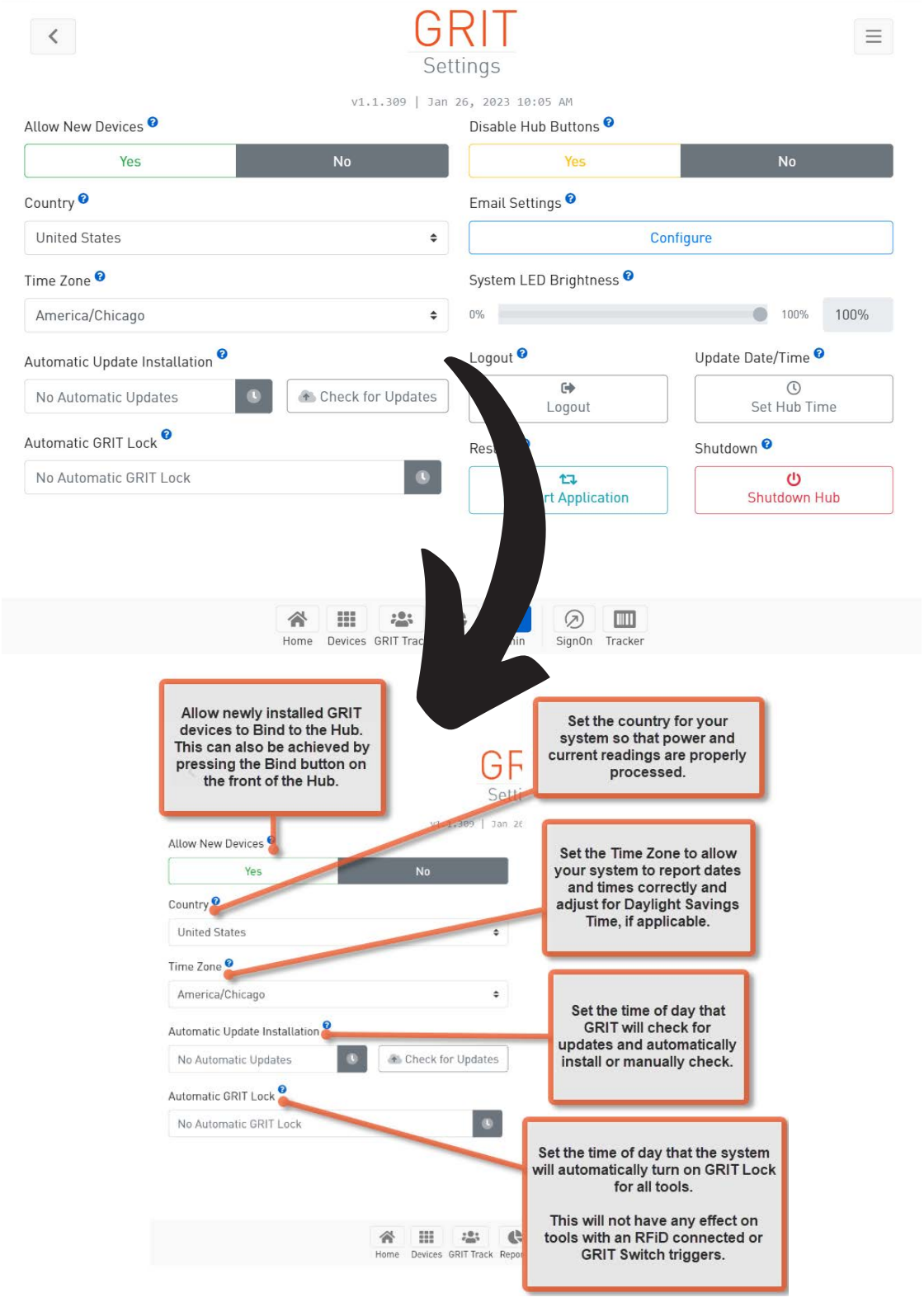


# Remote Access

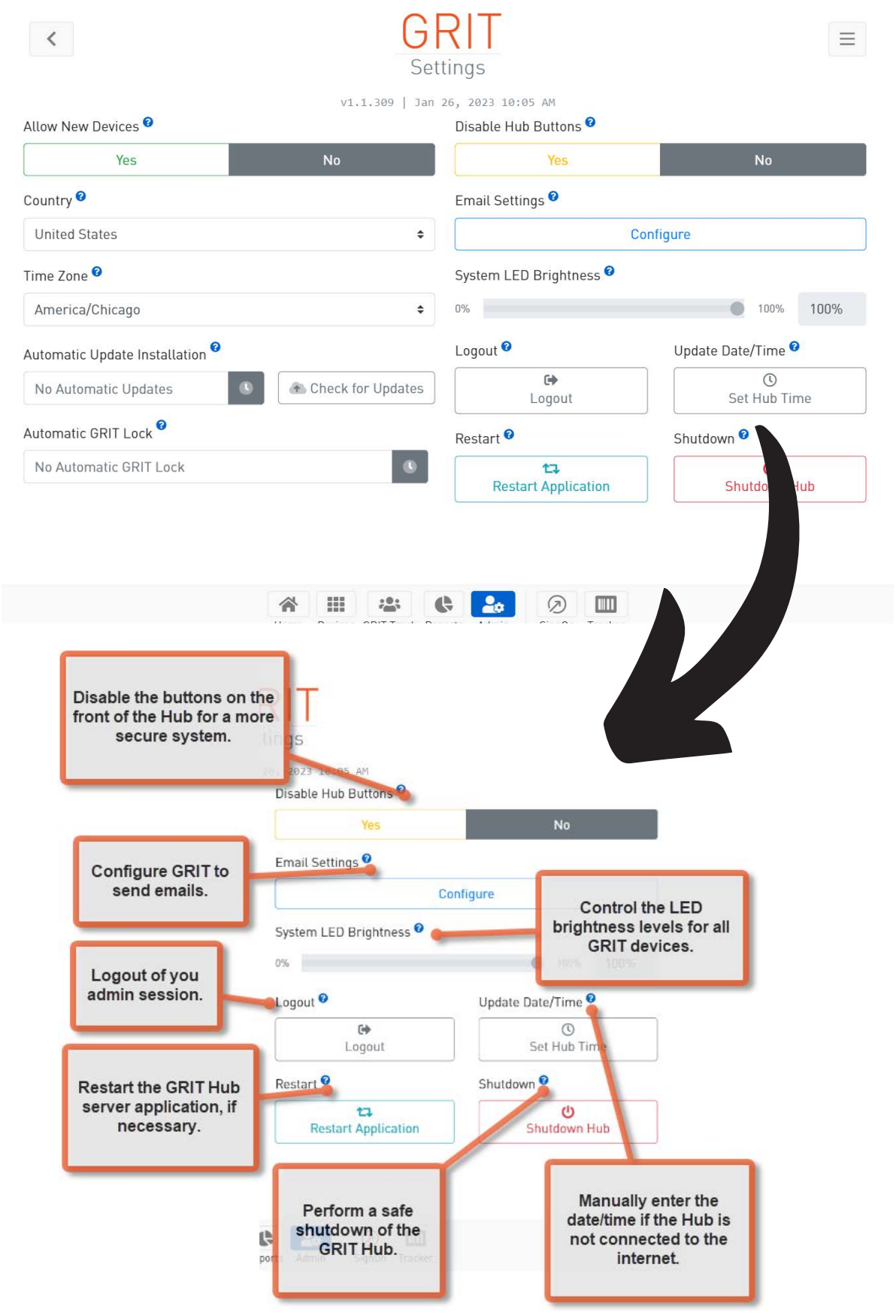


# Settings

**The Settings page in the Admin tab is used to manage key elements of your GRIT system.**

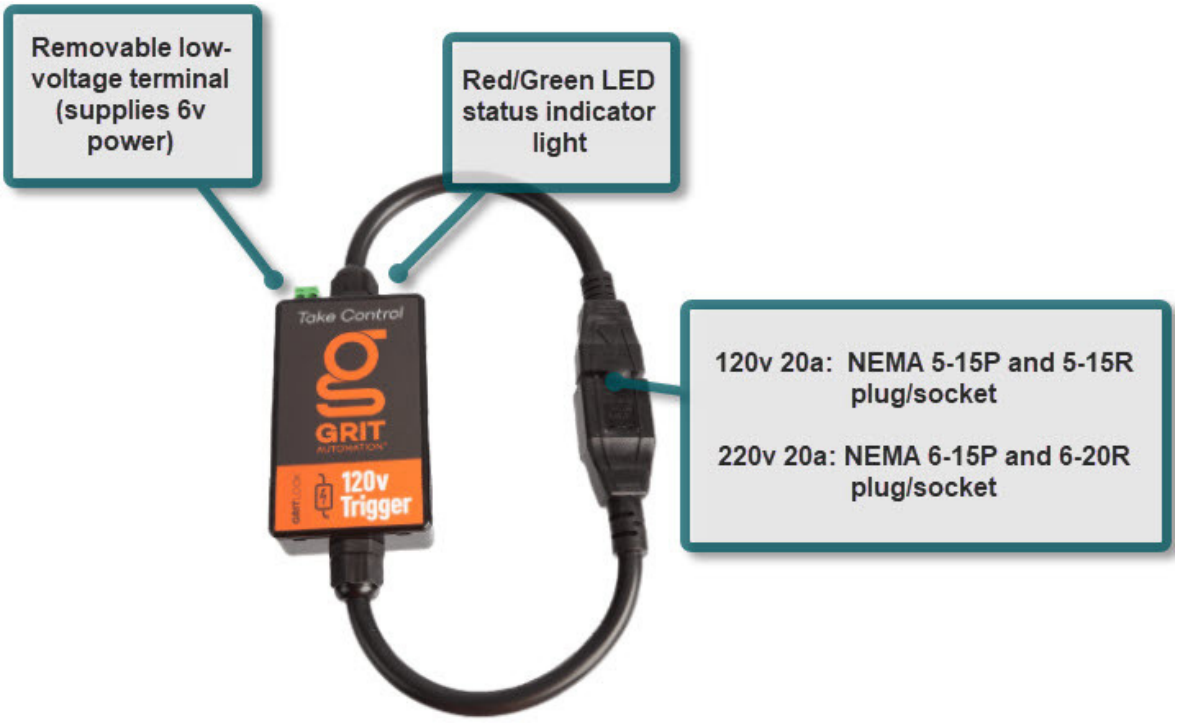


# GRIT HUB® + APP

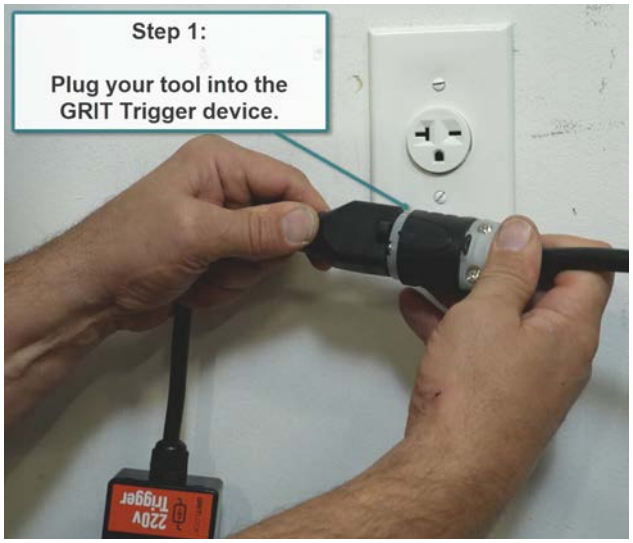

GRIT
Settings
v1.1.309 | Jan 26, 2023 10:05 AM
Allow New Devices
Yes
No
Disable Hub Buttons
Yes
No
Country
United States
Email Settings
Configure
Time Zone
America/Chicago
System LED Brightness
0%
100%
100%
Automatic Update Installation
No Automatic Updates
Check for Updates
Logout
Logout
Update Date/Time
Set Hub Time
Automatic GRIT Lock
No Automatic GRIT Lock
Restart
Restart Application
Shutdown
Disable the buttons on the front of the Hub for a more secure system.
Configure GRIT to send emails.
Control the LED brightness levels for all GRIT devices.
Logout of you admin session.
Restart the GRIT Hub server application, if necessary.
Perform a safe shutdown of the GRIT Hub.
Manually enter the date/time if the Hub is not connected to the internet.

## Standard 120v and 220v (up to 20a) Triggers

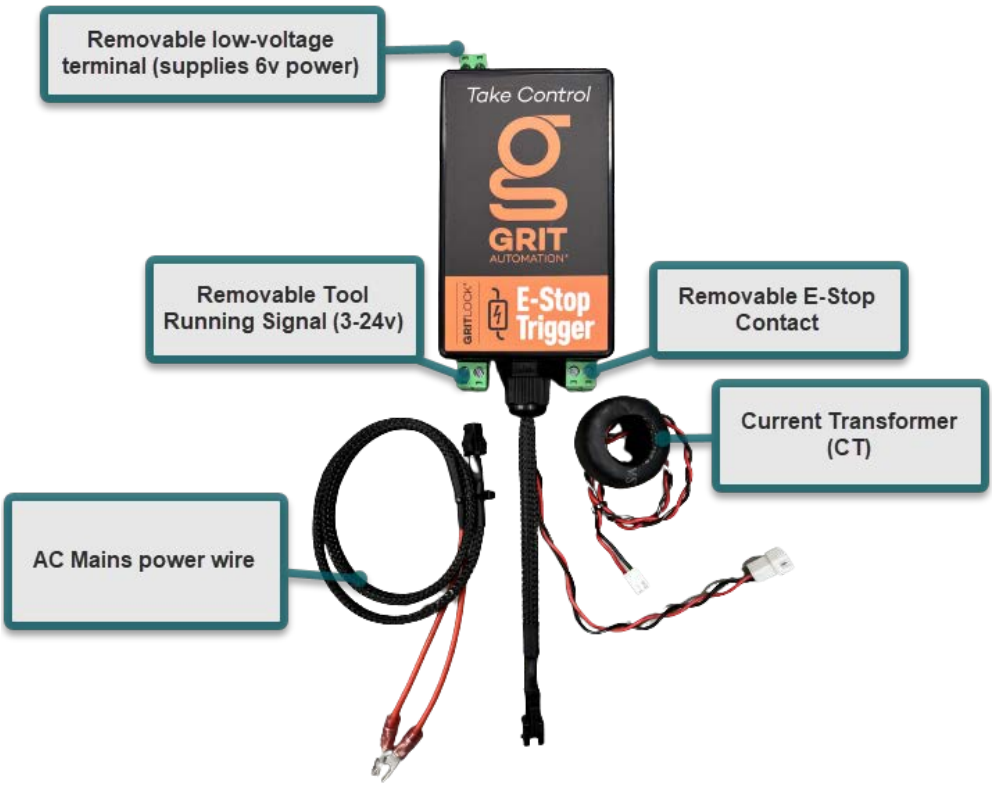
**The GRIT Trigger creates a virtual barrier between tools and unauthorized users. This hardware component of GRIT Lock® technology is able to monitor and control the power that reaches your tool.**






# E-STOP Trigger




## Installation Overview

The E-Stop Trigger is a versatile device to measure whether your tool is running. It has various installation options based on your machine and which components are most accessible.

Installation consists of three primary steps:

**Step 1: Power the GRIT E-Stop Trigger Device**

- use the AC Mains power wires from the GRIT device.

**Step 2: Measure Whether the Tool is Running**

- Option 1: use the CT from the GRIT device to measure the tool's current, or;
- Option 2: wire the Removable Tool Running Signal from the GRIT device inline with the tool's running signal.

**Step 3: Control the Tool's Power**

- Option 1: wire the Removable E-Stop Contact from the GRIT device inline with the tool's emergency stop button, or;
- Option 2: wire the Removable E-Stop Contact from the GRIT device inline with the low-voltage wire that controls the tool's contactor coil.

# TRIGGERS

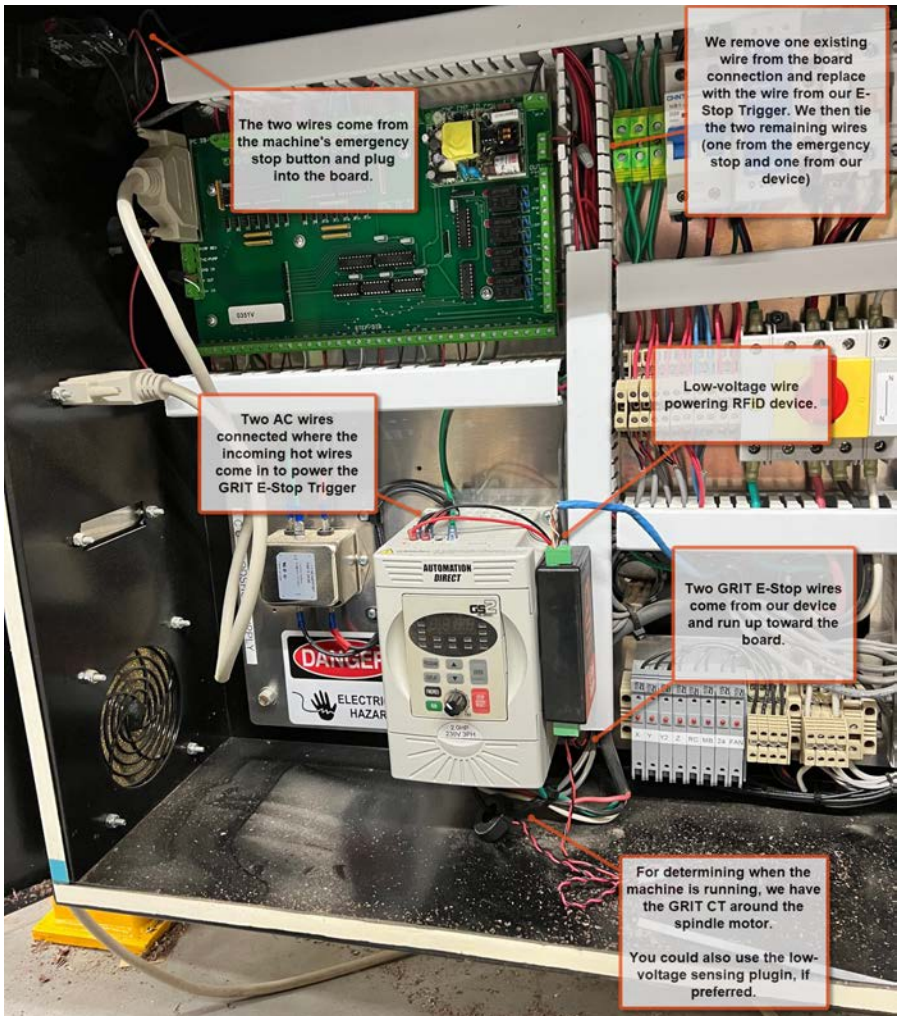
This is an example of a completed E-Stop Trigger installation where the user installed the device into their CNC.  If the E-Stop device doesn't fit inside your machine, you may need to drill a hole through the contactor box to pass the wires through. Then, mount the E-stop with provided VHB tape.

Step 1:
They've connected the two AC wires.

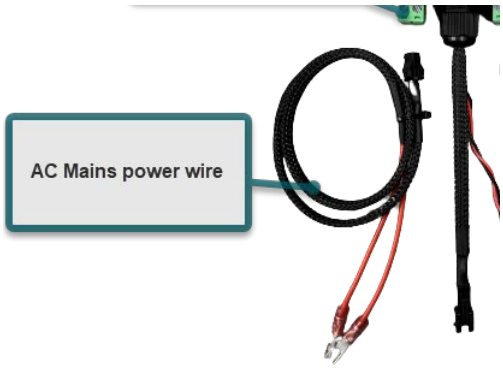
Step 2:
They've measured whether the tool is running with the CT around the spindle motor wire.

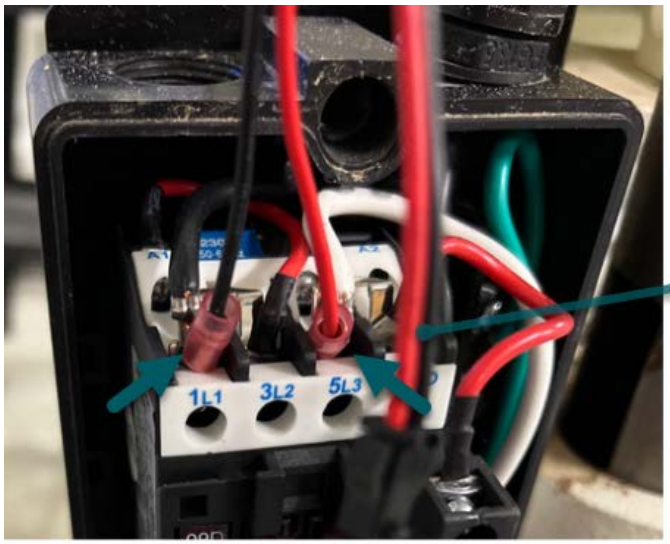
Step 3:
They've controlled the tool's power by wiring inline with the tool's emergency stop button.

Please note that it is possible to install this device without wiring inline with the emergency stop or the contactor coil, but none of the GRIT Lock safety features would be available if you skip the third step, so we do not recommend this.



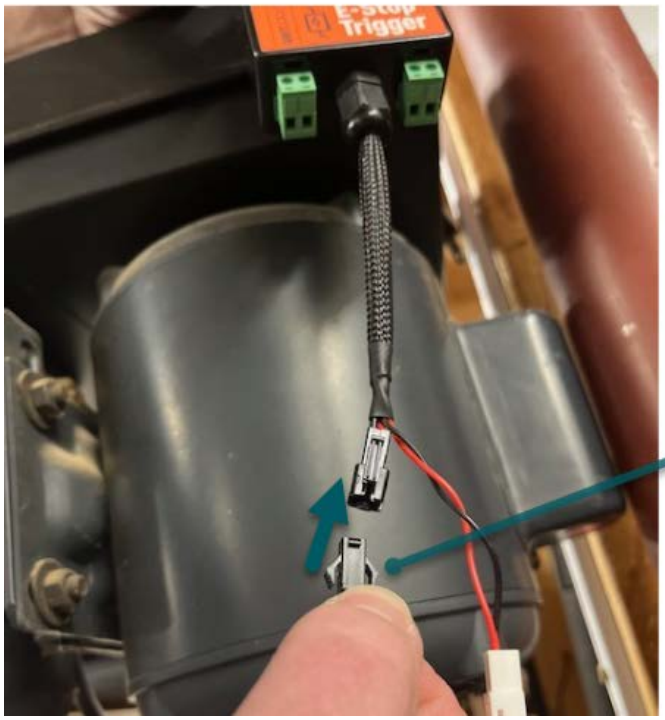
## Step 1: Power the GRIT E-Stop Trigger Device




**Step 1:**

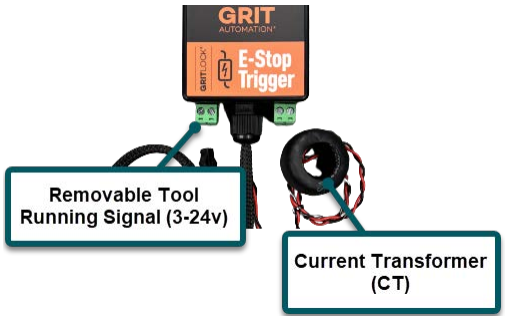
Connect the AC Mains power wires to 110v- 240v AC power by landing the fork connectors into the contactor's terminals with the first two incoming hot wires.



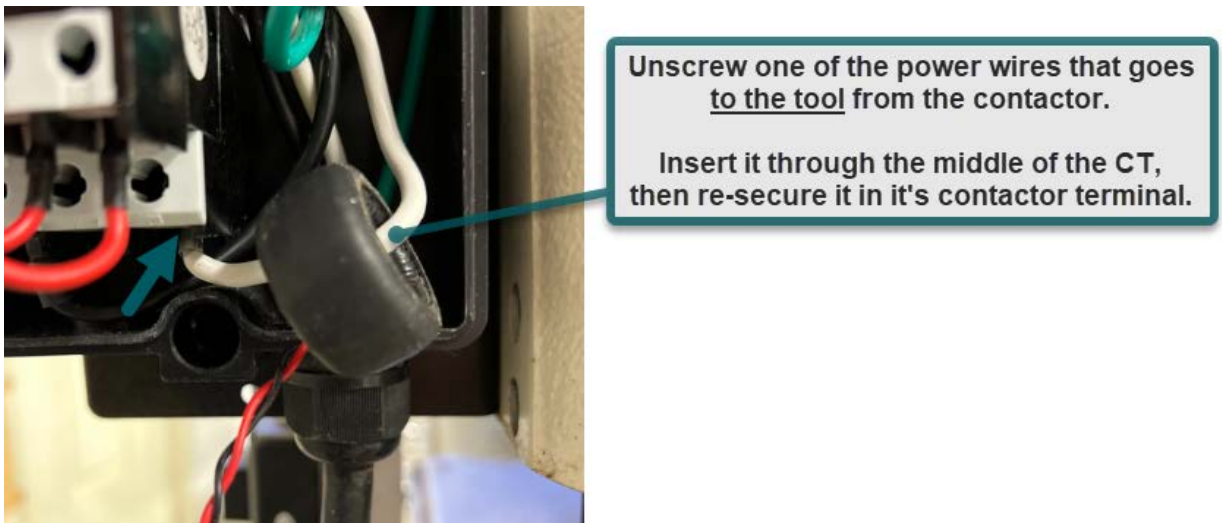

**Step 2:**

Connect the other end into the black terminal coming from the bottom of the E-Stop Trigger.

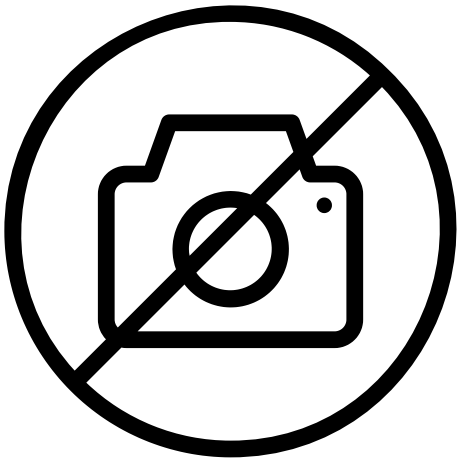
## Step 2: Measure Whether the Tool is Running




### Option 1: Measure with the CT




### Option 2: Measure with the Tool's Low-Voltage Running Signal



Not Yet Pictured

Using the Tool Running Signal (must be DV voltage 3v-24v), insert the positive signal wire into the right side of the green terminal (marked with a +).

Connect the negative ground from the tool to the left side of the same green terminal (marked with a -).

Plug the green terminal back into the E-Stop Trigger.

## Step 3: Control the Tool's Power


### Option 1: Wire Inline with the Emergency Stop Button


If your machine has an Emergency Stop button, open up the machine and find the two wires leading from the back of the button.

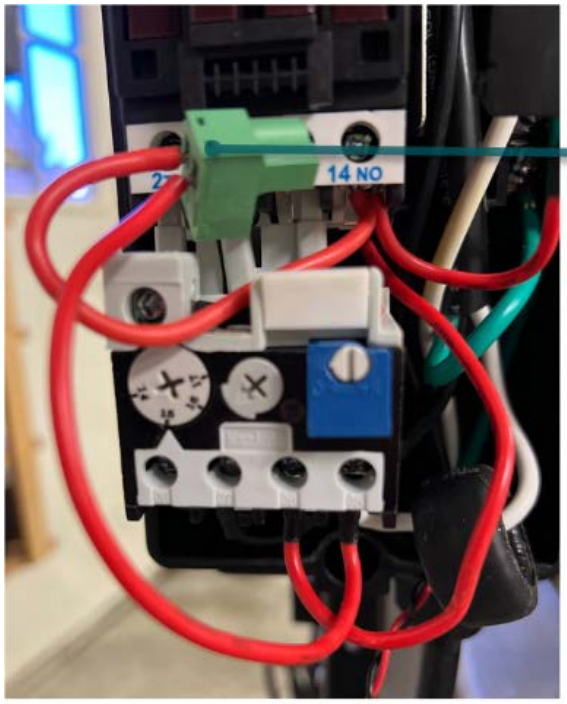
Follow those wires to find their connection on the board.

Remove one of the wires from the board, and land it in one side of the E-Stop Contact green terminal. If that wire is not long enough to reach the trigger, connect an extra length of wire with a wire nut.

Next, run an extra segment of wire from the other side of the green terminal and land it where the other wire had been on the board.

## Option 2: Wire Inline with the Contactor Coil Power Wire

**The purpose of this installation choice is the break the connection powering the contactor's magnetic coil.**




Find a wire that is going to the contactor's coil. The Removable E-Stop Contact green terminal should then be wired in series with that existing wire (-/+ side does not matter).

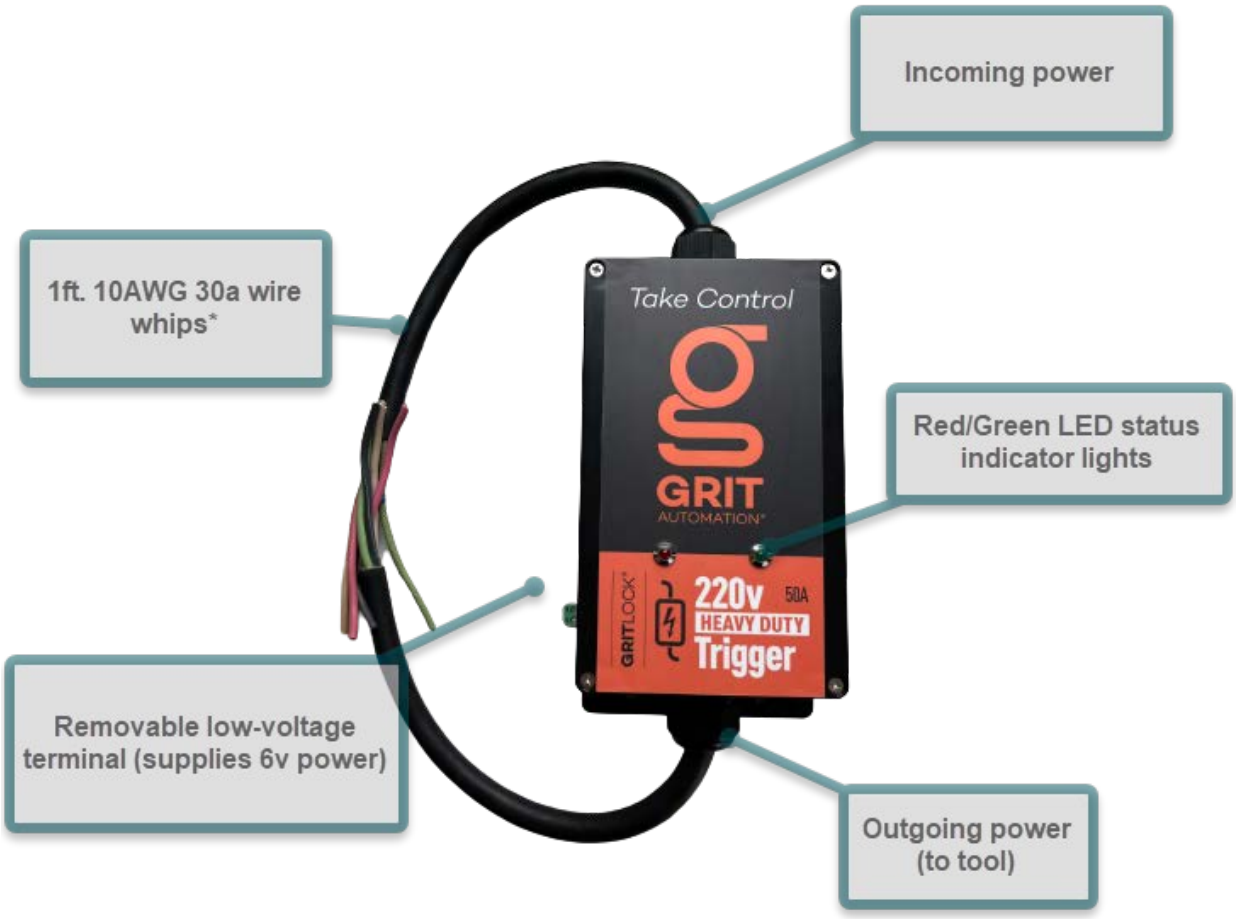

Plug the E-Stop Contact green terminal back into the bottom right-hand side of the E-Stop Trigger.

# TRIGGERS



Complete the installation by attaching the E-Stop Trigger with provided VHB tape.

## Standard 220v Heavy Duty (up to 35a) Trigger






*Note: The 220v Heavy Duty Trigger does not come with a plug or socket end attached to the wire whip since tools with this power profile vary widely. The supplied wire whip is rated up to 30a. Customer is responsible for purchasing and wiring appropriate plug/socket or larger gauge wire for their purposes.

### Installation

Follow the instructions provided with your chosen plug/socket. Once wiring is complete:

1. Plug your tool into the GRIT Trigger device.
2. Plug GRIT Trigger device into the wall.

# Industrial 220v Single Phase Trigger


## Installation

*Note: We recommend all electrical installation be performed by a licensed electrician. Wire whip, mounting hardware, chase nipple, and FMC connector are not included.

See page 54 for installation instructions for the Industrial 220v 1PH and Industrial 208v 3PH Triggers.

# Industrial 208v 3 Phase Trigger




## Installation

*Note: We recommend all electrical installation be performed by a licensed electrician. Wire whip, mounting hardware, chase nipple, and FMC connector are not included.

## Industrial 220v 1PH + 208v 3PH Trigger Installation

**Step 1:**

Turn off the breaker leading to the tool. Disconnect the power wires feeding the tool.

**Step 2:**

Mount the trigger near the incoming power drop. That may mean attaching the trigger to the wall or the tool itself.

**Step 3:**

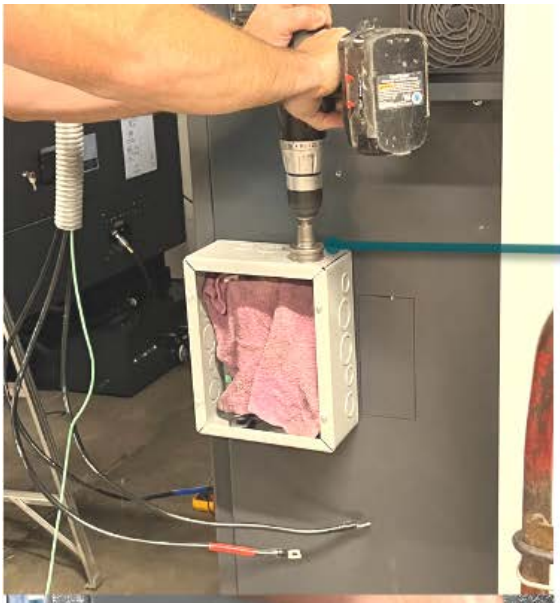
Use one of the existing knockouts, or drill a hole in the back of the enclosure to align with the existing hole where power is already being run to the tool.

Insert and tighten a chase nipple.

**Step 4:**

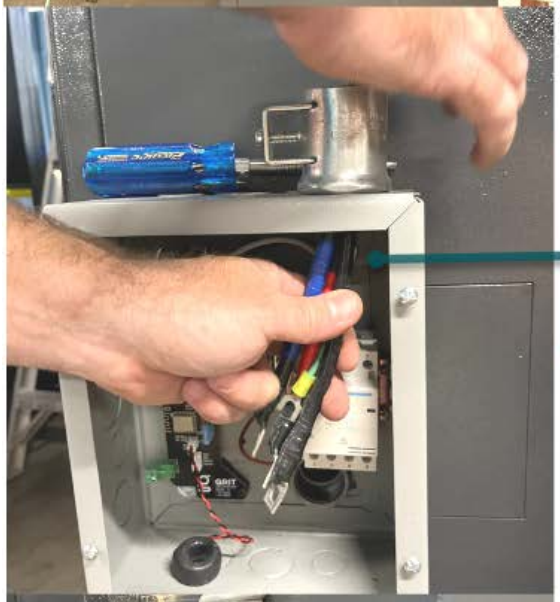
Measure and cut the conduit, if needed.

# TRIGGERS



**Step 5:**

**Cut a hole for the incoming power or use one of the existing knockouts.**



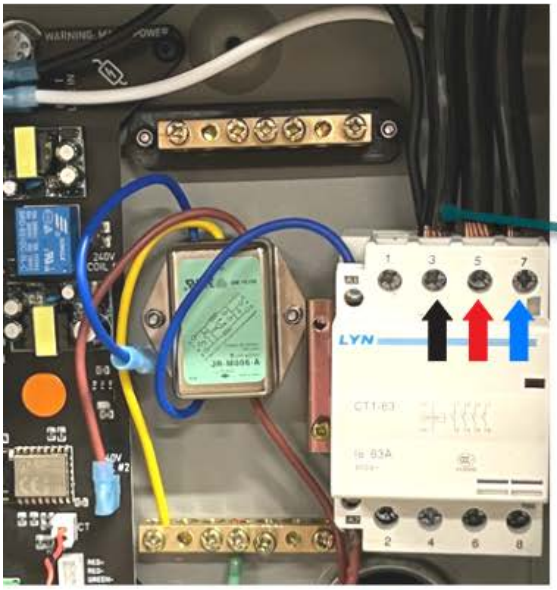
**Step 6:**

**Insert an FMC Connector and feed the incoming wires through the opening.**

**Step 7:**

**Secure the incoming conduit.**

# TRIGGERS



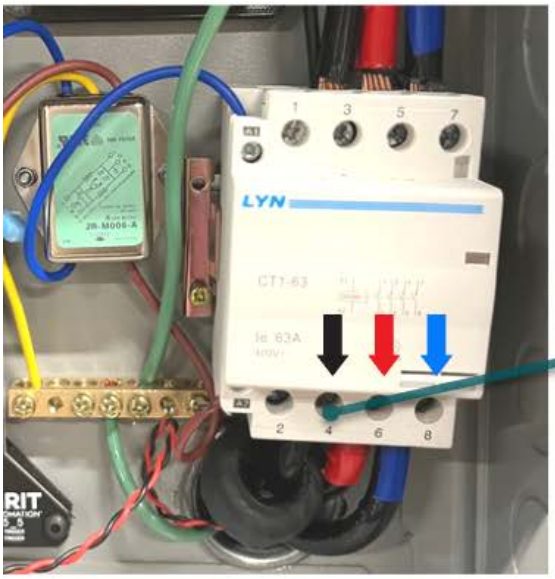

**Step 8:**

Cut the incoming wires to length, mark with colored electrical tape.

Strip and land the first incoming hot wire in terminal 3 with the Black wire connected to the PCB.

Strip and land the second incoming hot wire in terminal 5 with the White wire connected to the PCB.

If there are three hots coming in, land the third wire in terminal 7.



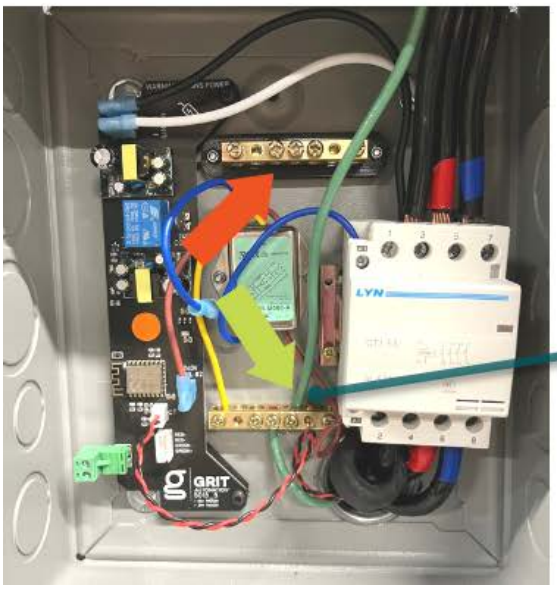

**Step 9:**

When landing the outgoing power in the contactor, be sure to keep the wires in line with the incoming wires.

Put the first outgoing hot wire through the CT. Strip and land in terminal 4.

Strip and land the second outgoing hot wire in terminal 6.

If there are three hots, land the third wire in terminal 8.

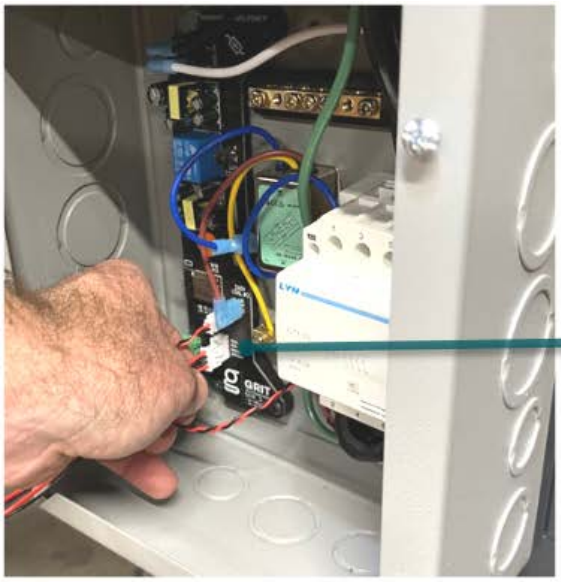



**Step 10:**

Cut the incoming ground wire to length and land in the ground terminal (see green arrow). Repeat with the ground wire leading into the tool.

If there is a neutral wire, land in one of the black/gold terminals (see orange arrow).

# TRIGGERS



**Step 11:**

**Plug the LED indicator light harness (attached to the lid) into the PCB.**


**Step 12:**

**To power an RFiD device from an Industrial Trigger, insert the black push-in connector into a small knockout.**

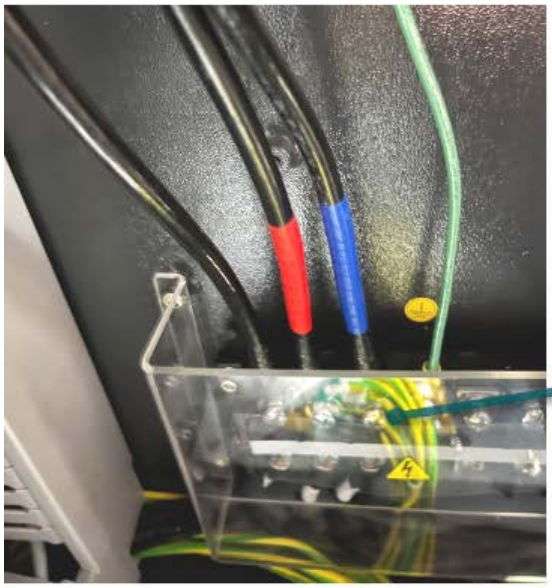

**Step 13:**

**Cut, strip, and land low-voltage wire(s) into the low-voltage terminal located on the PCB.**

# TRIGGERS

**Step 14:**

**Replace and secure the lid.**

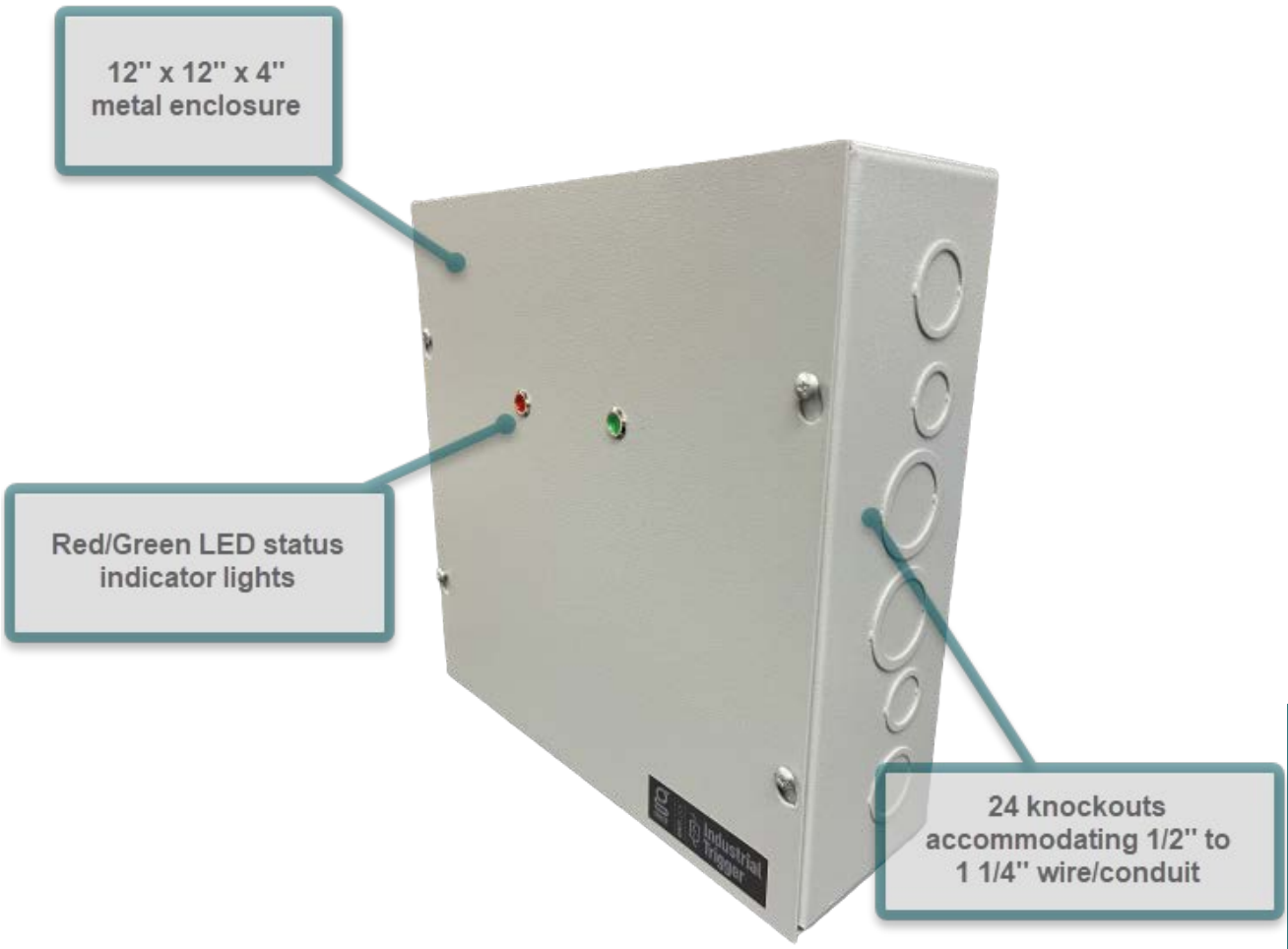


**Step 15:**

**Re-land the wires leading into the tool.**

**Turn on the breaker leading to the tool.**

# Industrial 480v 3 Phase Trigger






## Installation

*Note: We recommend all electrical installation be performed by a licensed electrician. Wire whip, mounting hardware, chase nipple, and FMC connector are not included.

# Industrial 480v 3PH Trigger Installation

**Step 1:**

Turn off the breaker leading to the tool. Disconnect the power wires feeding the tool.

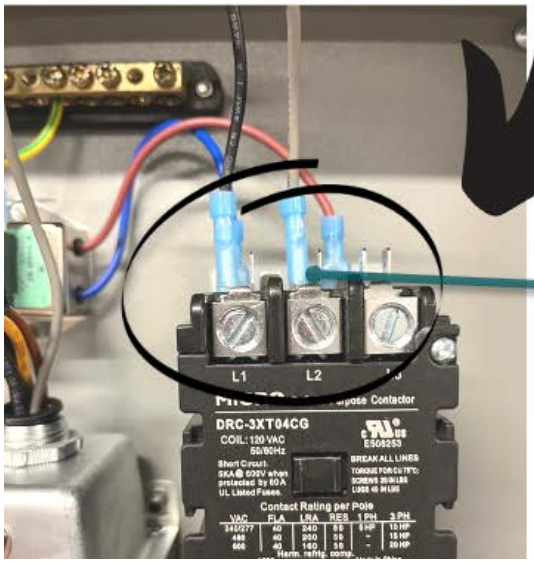
**Step 2:**

Mount the trigger near the incoming power drop or breaker.

Use one of the existing knockouts, or drill a hole in the enclosure to align with the hole where power is already being run to the tool and the incoming power.


**Step 3:**

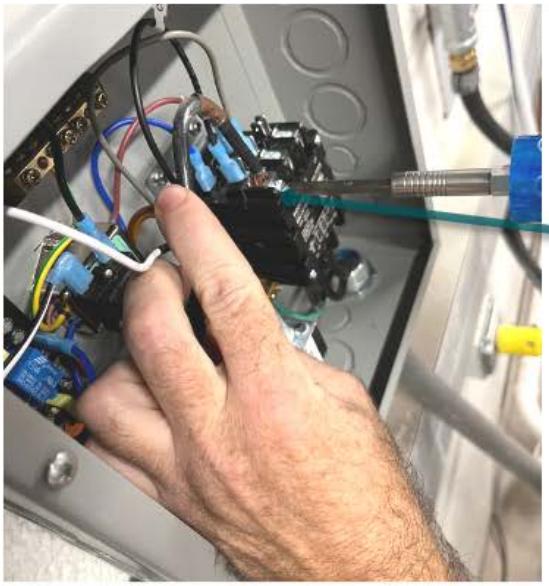
The Industrial 480v 3PH Triggers contain a transformer used to power the GRIT PCB. For 480v power, use the Black wire and the light Grey wire.




**Step 4:**

Land the Black wire on a prong of L1 and the light Grey wire on a prong of L2.

# TRIGGERS



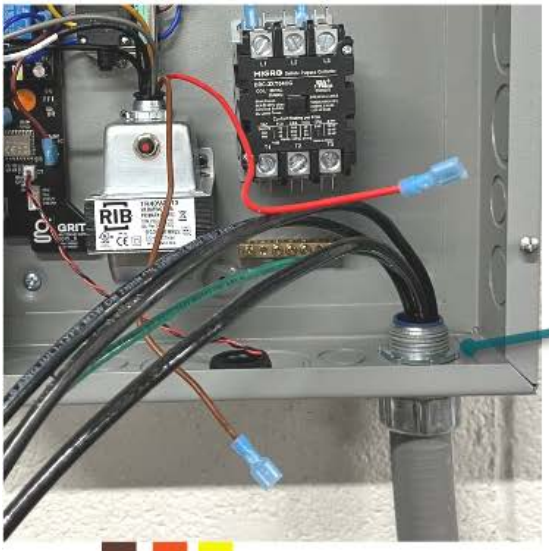
**Step 5:**

Cut the incoming wires to length, mark with colored electrical tape.

Strip and land the first incoming hot wire in the screw terminal L1 (in front of the Black wire landed from the transformer).

Strip and land the second incoming hot wire in the screw terminal L2 (in front of the light Grey wire landed from the transformer).

Strip and land the third incoming hot wire in the screw terminal L3.




**Step 6:**

Insert and tighten a chase nipple through a knockout.

Insert the outgoing wires leading to/from the tool.


**Step 7:**

Put the first outgoing hot wire through the CT. Strip and land in terminal T1.

Strip and land the second outgoing hot wire in terminal T2.

Strip and land the third outgoing hot wire in terminal T3.

# TRIGGERS


**Step 8:**

**When landing the outgoing power leading to the tool in the contactor, be sure to keep the wires in line with the incoming wires.**

**Step 9:**

**Plug the LED indicator light harness (attached to the lid) into the PCB.**


**Step 10:**

**To power an RFiD device from an Industrial Trigger, insert the black push-in cable connector into a small knockout.**

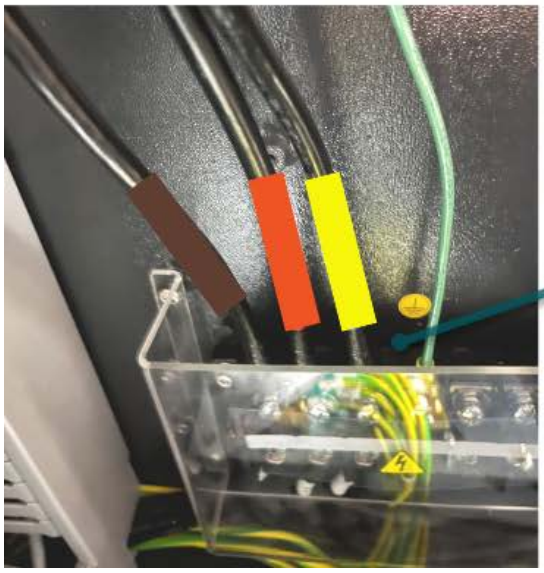
# TRIGGERS


**Step 11:**

**Cut, strip, and land low-voltage wire(s) into the low-voltage terminal located on the PCB.**


**Step 12:**

**Replace and secure the cover.**



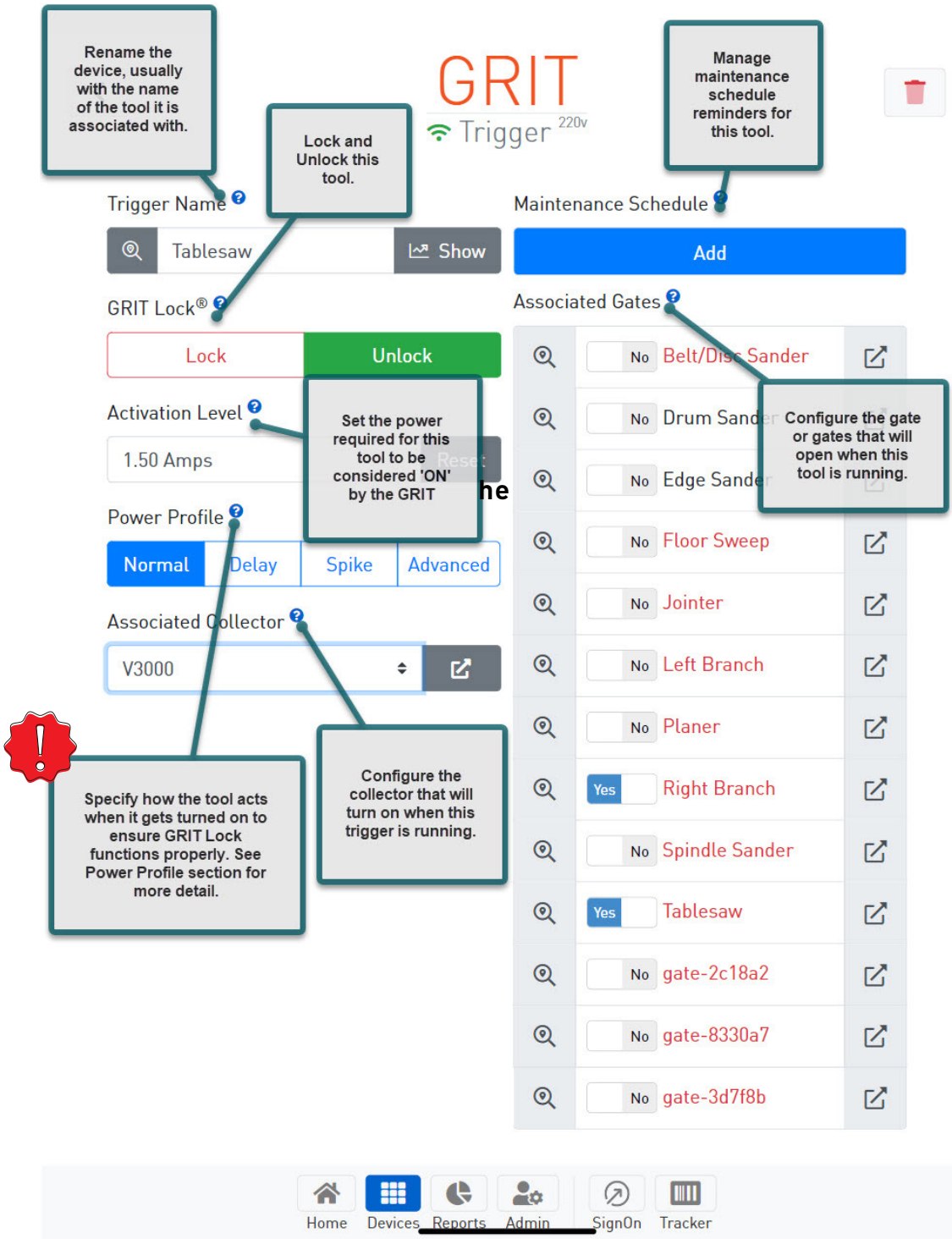
**Step 13:**

**Re-land the wires leading into the tool.**

**Turn on the breaker leading to the tool.**

# Trigger Device Configuration with Associated Collector Device

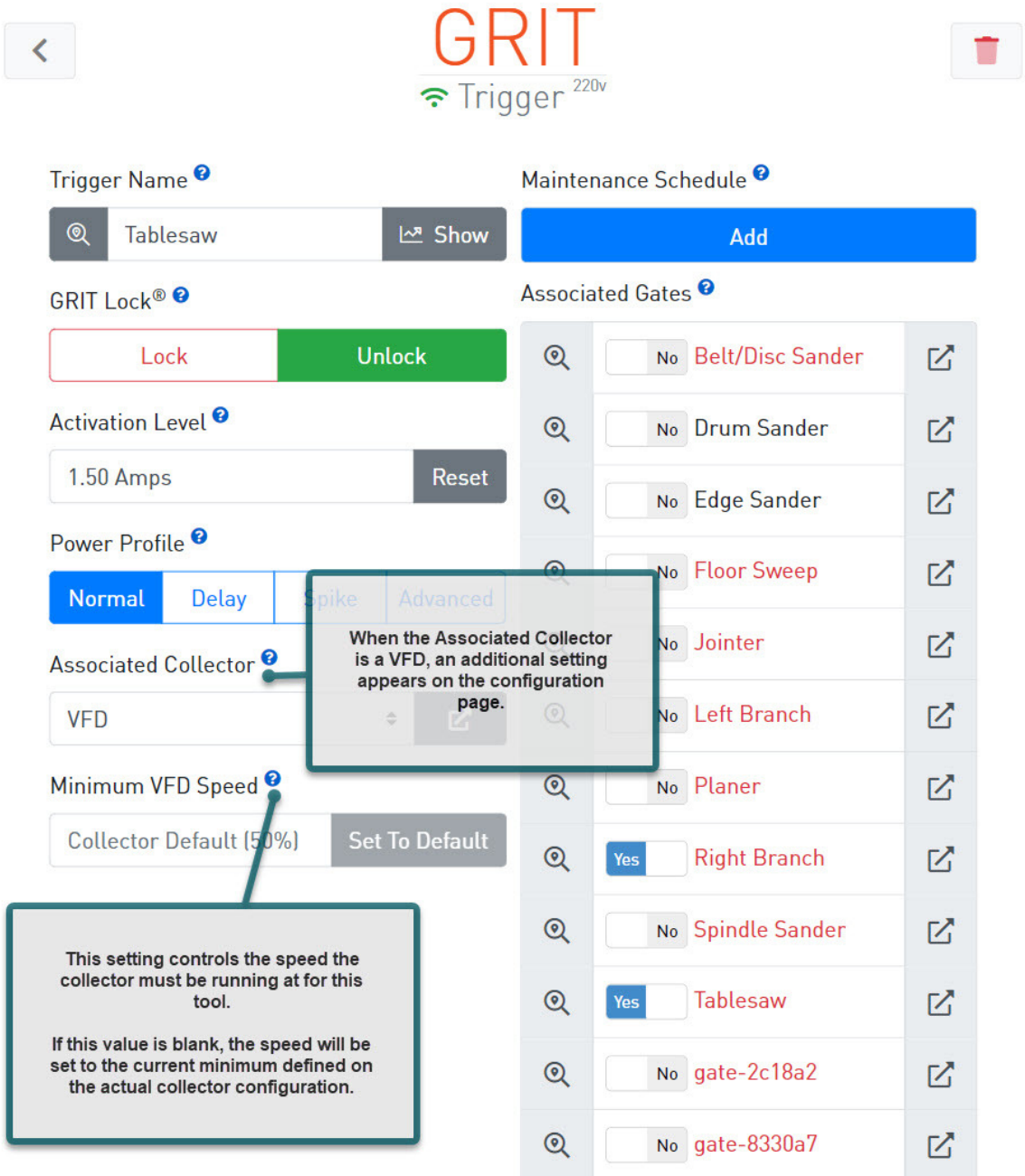
**Each installed Trigger has its own detail configuration page in the GRIT App. As mentioned in the GRIT Lock® section of the manual, it is essential that each Trigger be carefully configured for its specified tool.**



# Trigger Device Configuration with Associated VFD Device

**Each installed Trigger has its own detail configuration page in the GRIT App. As mentioned in the GRIT Lock® section of the manual, it is essential that each Trigger be carefully configured for its specified tool.**

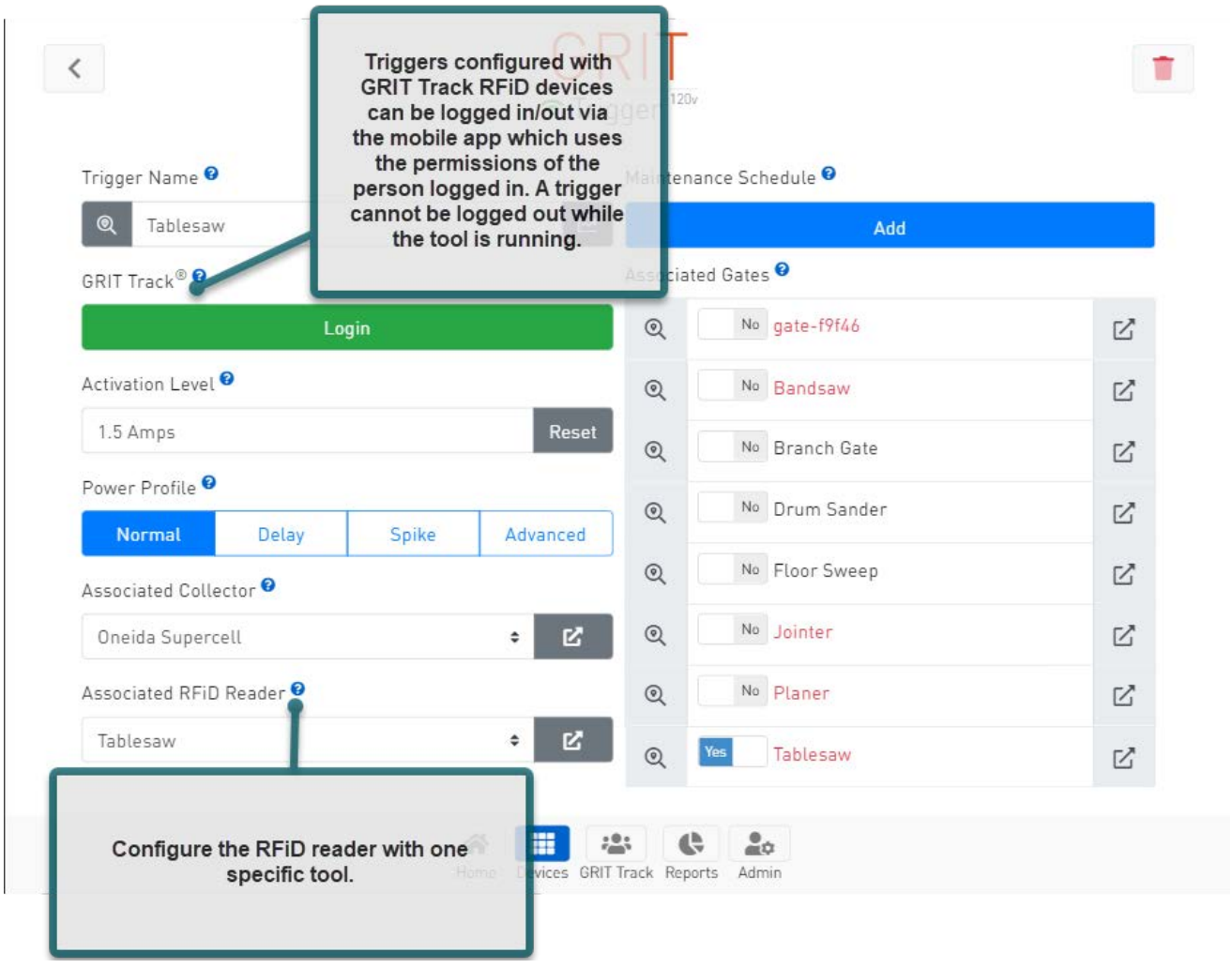
**The trigger configuration page has the following differences when associated with a VFD device rather than a Collector device.**



# Trigger Device Configuration with GRIT Track® RFiD

**Each installed Trigger has its own detail configuration page in the GRIT App. As mentioned in the GRIT Lock® section of the manual, it is essential that each Trigger be carefully configured for its specified tool.**

**The trigger configuration page has the following differences when associated with a GRIT Track RFiD device.**



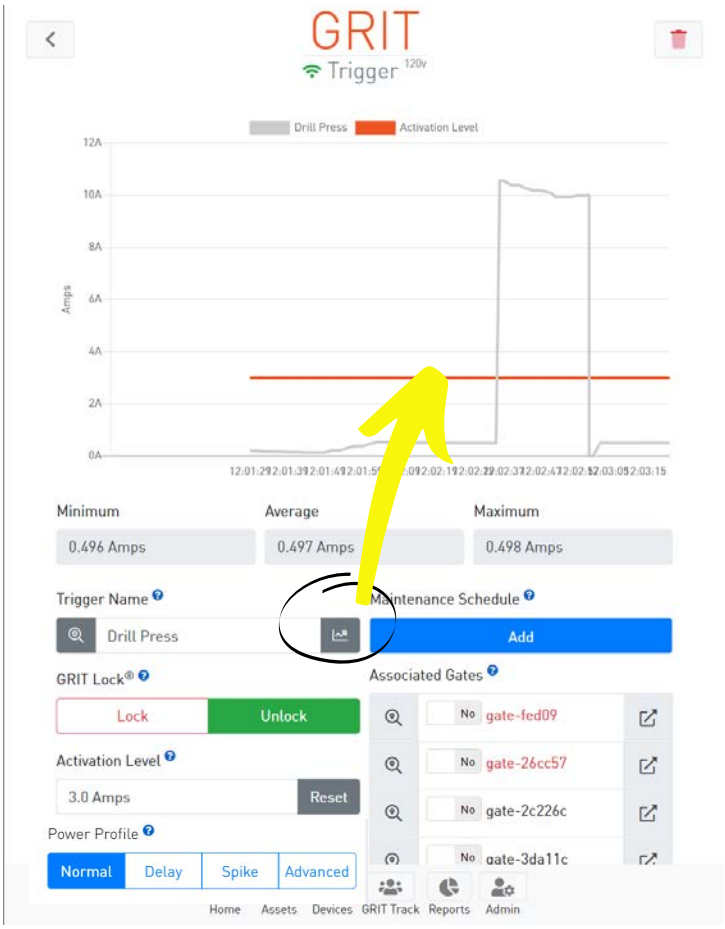
# Activation Level and Power Profiles

**Correctly setting each tool's Activation Level and Power Profile in the trigger's detail configuration screen is essential to the overall functioning of the GRIT system. When GRIT Lock® can accurately assess whether a tool is running, the system can turn on an associated dust collector, open associated blast gates, and quickly initiate an Emergency Lock, but only if the tool's power is accurately captured in its configuration settings.**

**To further clarify, if the Activation Level is telling GRIT what level to check for, the Power Profile setting tells GRIT when and how to check.**

## Normal

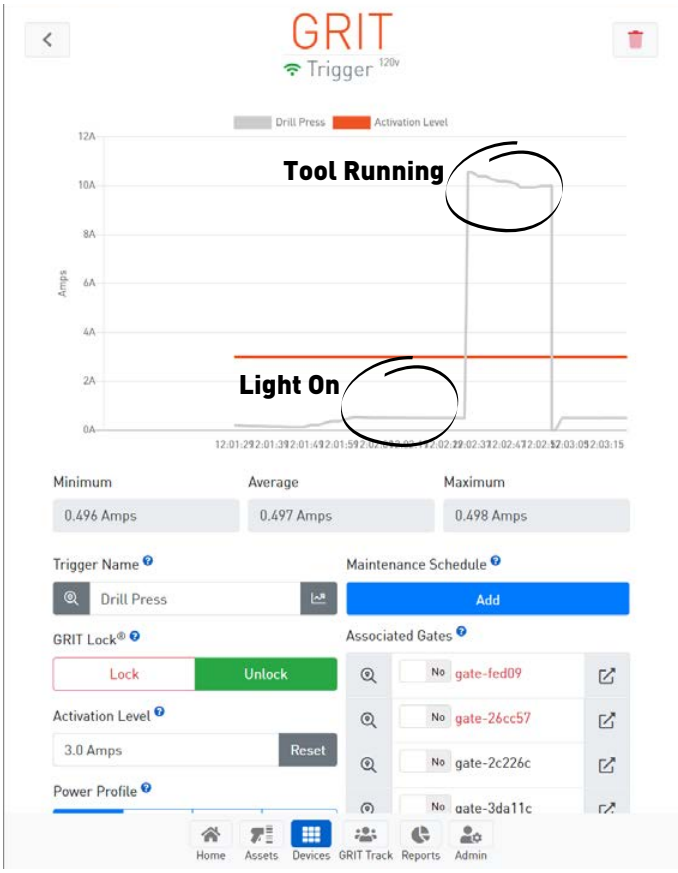

Tools that roar to life as soon as they are powered on have a "Normal" power profile. To properly configure this type of tool, look at its power graph.




For a tool to be considered running in the GRIT system, the current draw has to exceed the value set for the Activation Level.

In this example the Activation Level is set to 3.0 Amps with the drill press pulling ~10 Amps consistently when running. Setting the Activation Level anywhere between 1.0 Amp and 9.0 Amps would allow GRIT to accurately determine when this tool is running.

# TRIGGERS

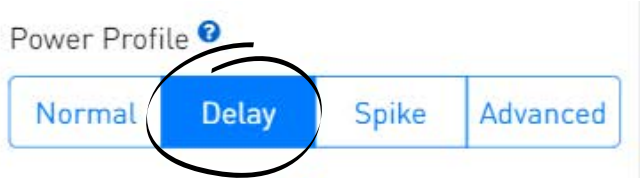



This particular drill press has a light that draws about .5 Amp when the trigger is unlocked but the tool is not yet running.

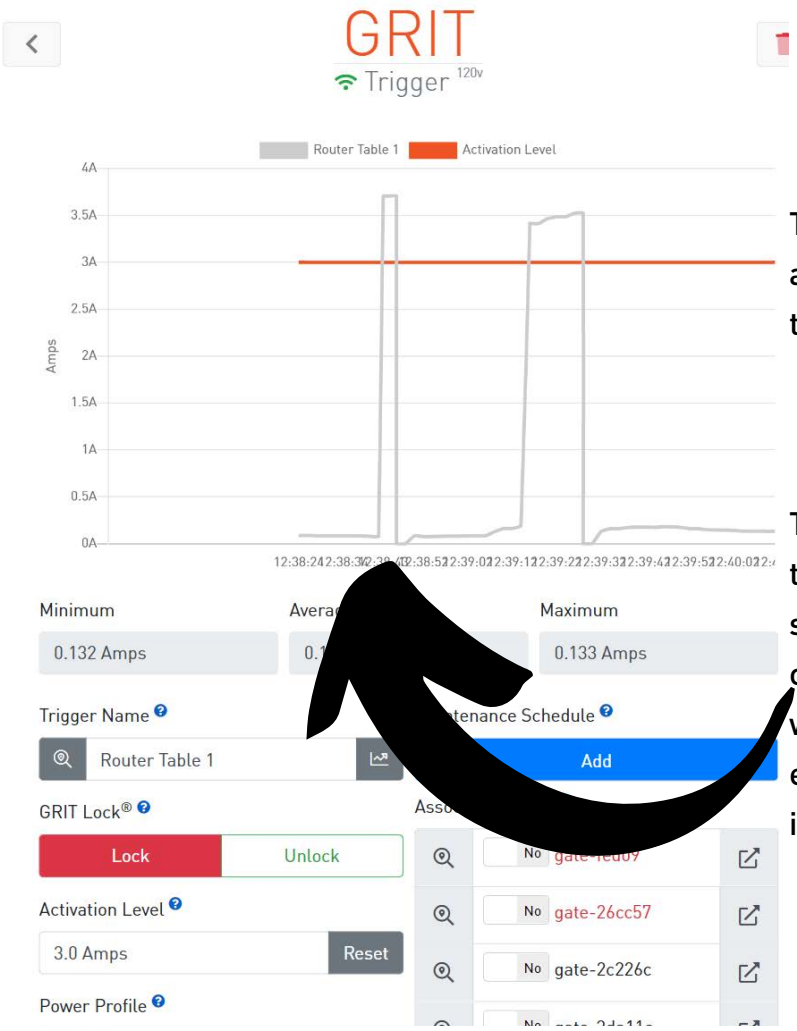
If there is an aspect of the tool that draws power even when it is not running, be sure to set the Activation Level above that amp level. This is to avoid the system thinking the tool is running when it is merely operating other components (i.e., a light, a computer, etc.).

Note: Some incandescent lights actually pull a great amount of power when they are turned on from a cold state. Keep this in mind when setting your Activation Level.

## Delay



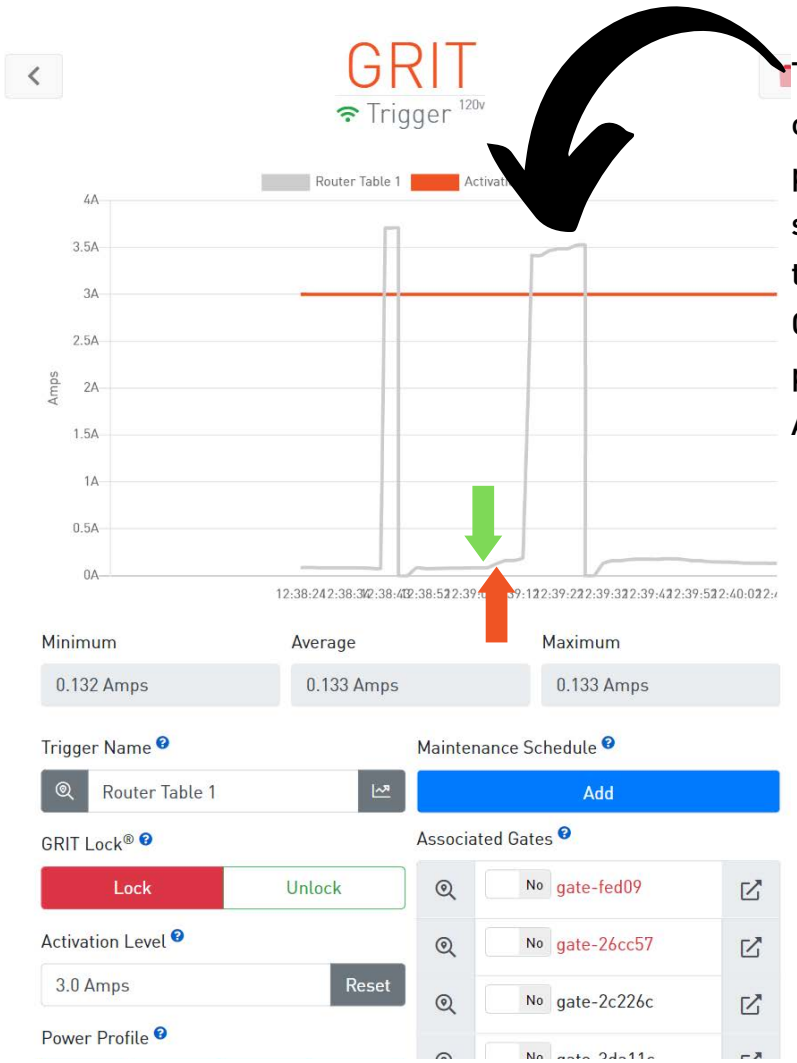

If the tool in question is a router table with a soft start motor, there is a chance that the "Normal" Power Profile might miss the current draw being above the Activation Level immediately after the tool is unlocked. For tools that have a slow or soft start, the trigger should be set to "Delay" for the Power Profile. This setting adds a sub-second pause before measuring the current, allowing the motor to begin pulling power.




This power graph shows a tool with a slow start motor which requires the Delay Power Profile setting.

The first spike was captured with the Power Profile set to Delay. The system waited 100ms before checking if the tool's power draw was above 3.0 Amps, which was enough time for the motor to reach its full current draw.

# TRIGGERS

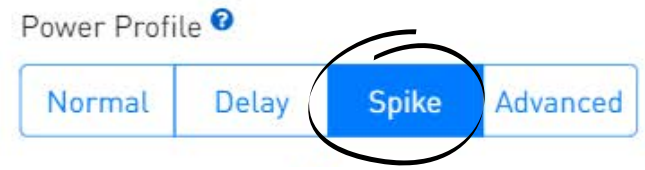



The second spike on the graph was captured with a Normal power profile setting. The green arrow shows when the tool was turned on, the orange arrow indicates when GRIT checks whether the tool is pulling power above the set Activation Level.

When a slow start motor is not configured with a Delay Power Profile, the system immediately measures the current after the trigger is unlocked. Because of the time it takes a slow start motor to ramp up to full speed, the system misses the accurate information that the tool is running.

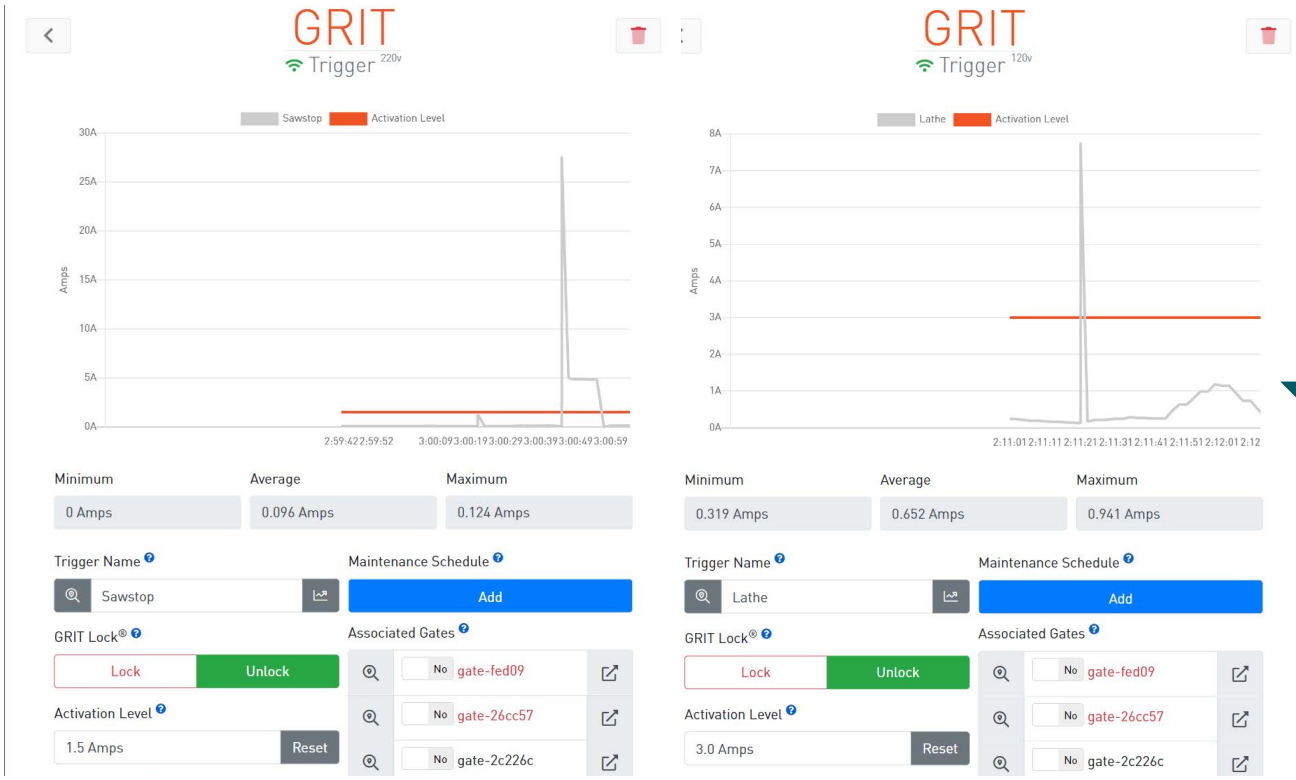
This would impact not only the system turning on an associated collector or opening associated blast gates, but would impact the system's ability to initiate an Emergency Lock, if needed.

# Spike



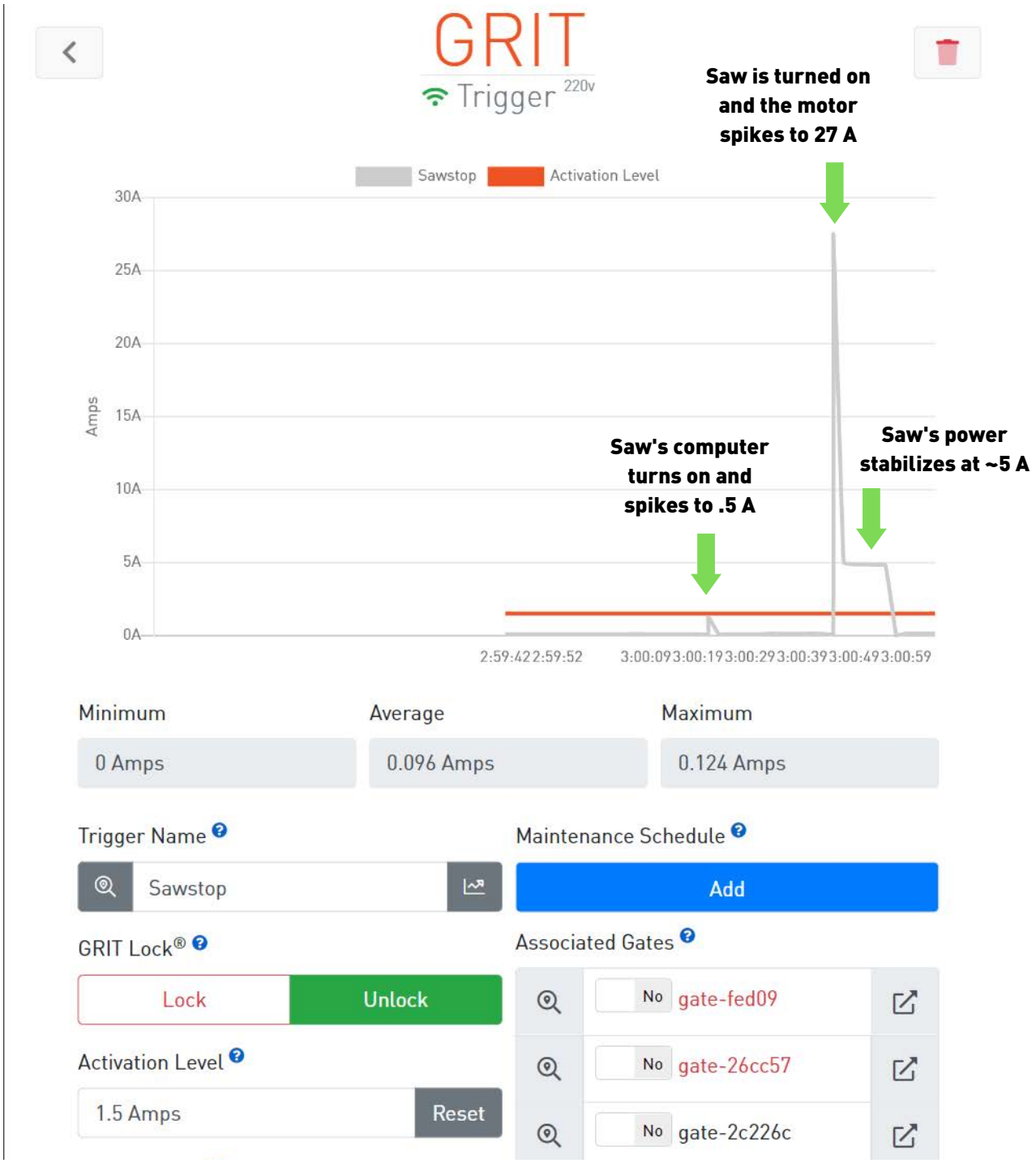

A "Spike" power profile is used for tools that have a huge inrush of current when they are unlocked. An example of this would be a wood lathe with a single phase to 3 phase converter. These will have a huge inrush as capacitors are charged. During this initial inrush, we don't want to measure until the spike has settled down or the system will incorrectly think the tool is on and re-lock it and log an Emergency Lock.

Here are two examples with spikes in the power graph: A Tablesaw and a Lathe. The SawStop can be configured with a Normal power profile and a higher Activation Level. The Lathe, however, requires a Spike Power Profile and a lower Activation Level.

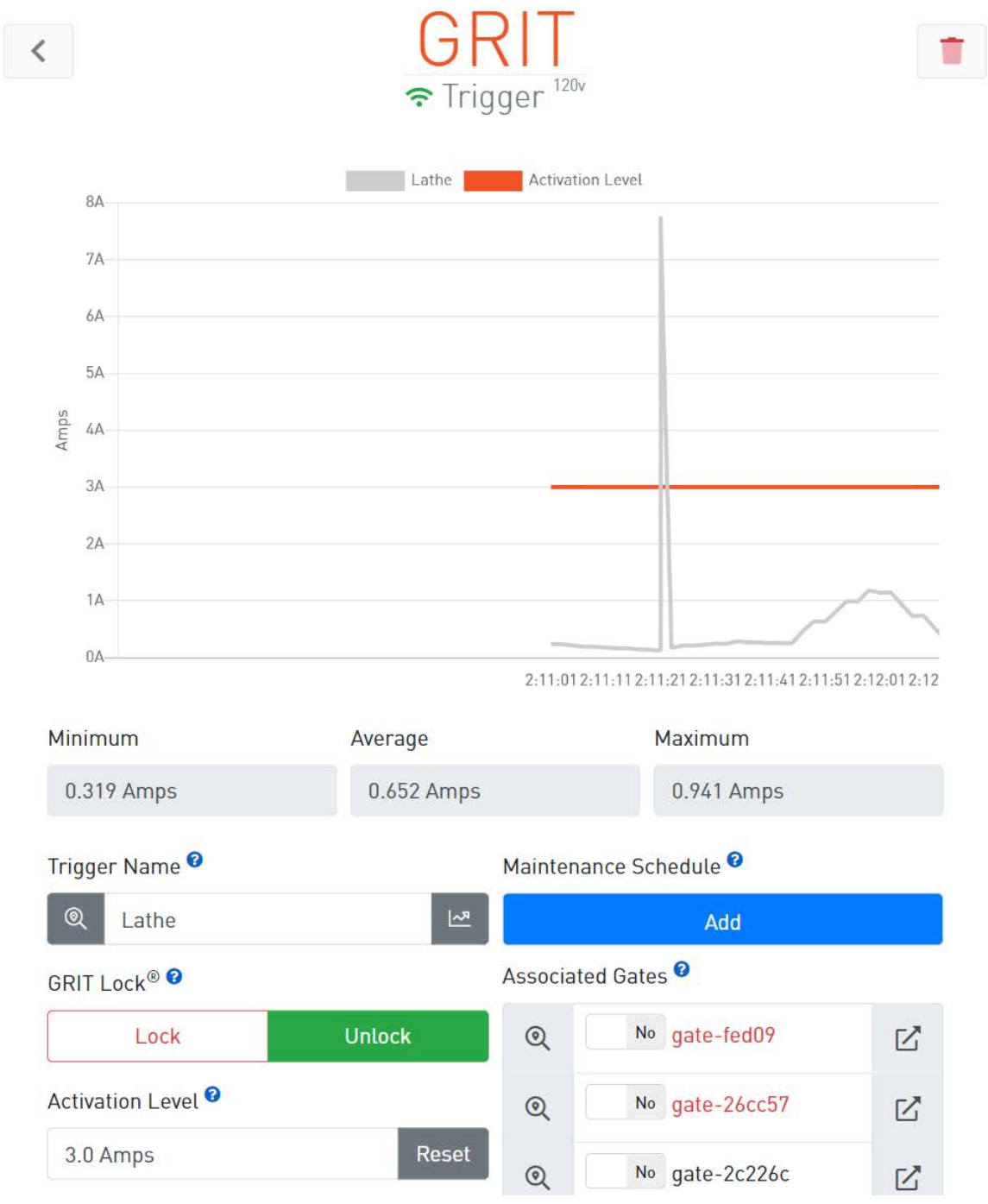


# TRIGGERS

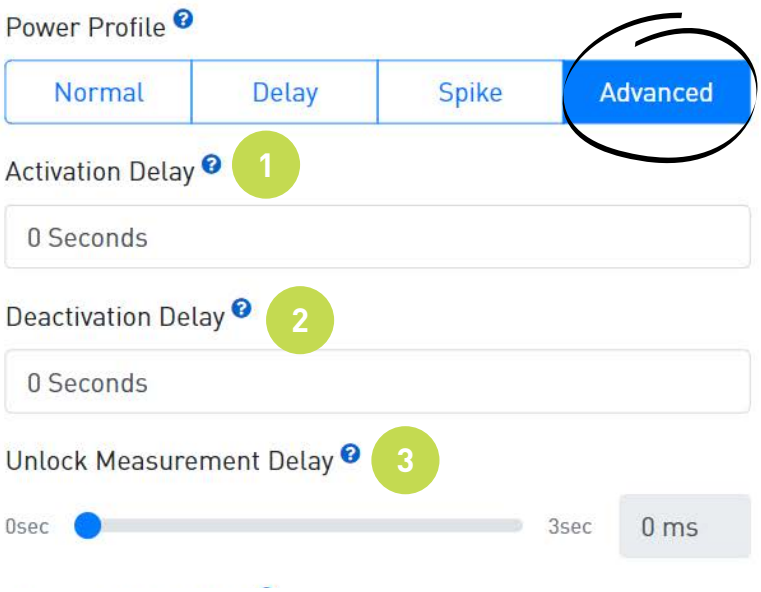
Although the Tablesaw has a power spike when the trigger is unlocked, it does not need to be configured with a Spike power profile because the inrush spike level is still less than when the saw is actually running.  Configure this trigger with a Normal power profile and increase the Activation Level to 1.5 Amps (higher than the computer spike but lower than the consistent current draw when the saw is running).



The lathe, however, requires a Spike power profile because the spike level is higher than the level of current when the lathe is running. The system must then wait until after the initial spike to determine if the tool is running. Configure this trigger with a Spike power profile and lower the Activation Level to 3 Amps.



## Advanced




The Advanced power profile setting is for finetuning how the trigger operates. If none of the other preset settings accurately capture the tool's specific power startup timing/levels, you can set all of them manually in Advanced. This will show three new settings: Activation Delay, Deactivation Delay and Unlock Measurement Delay.

Two machines that frequently require "Advanced" power profiles are CNC machines and Lasers.

1. The Activation Delay setting controls how long the trigger needs to sense the current flowing before the attached device/tool is considered running. This setting is used when a tool such as a CNC machine might cause a current spike when the gantry moves, but this should not send out the messages to open gates and turn on the collector. Only when the current level sensed is above the Activation Level setting and for the amount of time specified here, should the tool be considered running. The same applies for how long the tool needs to be without current to be considered off. The system uses this to understand when to turn on an associated collector, air quality device, and move associated gates.

2. The Deactivation Delay setting controls how long the trigger needs to not sense the current flowing before the attached tool is considered off. This setting is used when a tool might cause repeated on/off current spikes (e.i., CNC or laser). The desired functionality is that these quick power spikes should not be viewed as lots of on/off commands, but instead wait for the current to stop flowing for the length of time specified in this setting before considering the tool to be off.

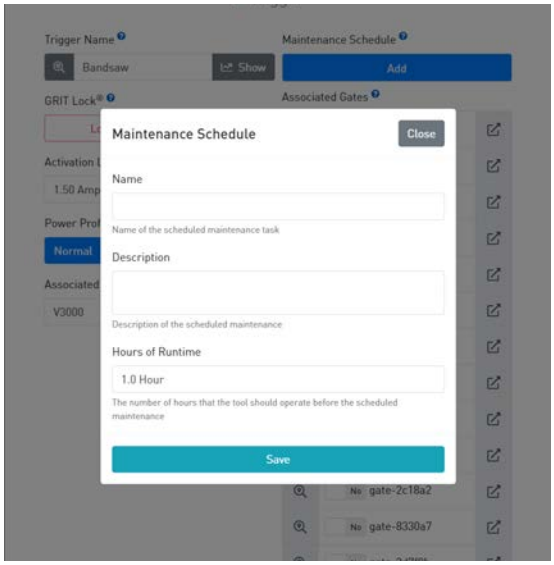
Example: A power graph of a laser would show the need for a Deactivation Delay setting set above 0 sec. so that the system does not think the machine is no longer running each time the laser stops firing.




3. The Unlock Measurement Delay* setting controls how long the trigger will wait between unlocking and measuring the current from the attached tool. For instance, some tools have a soft start that require this value be set above zero. If you find that GRIT is not correctly sensing a tool that was left in the ON position when the trigger is unlocked, this value needs to be adjusted higher. The higher the value, the longer GRIT will wait before checking for current flow.

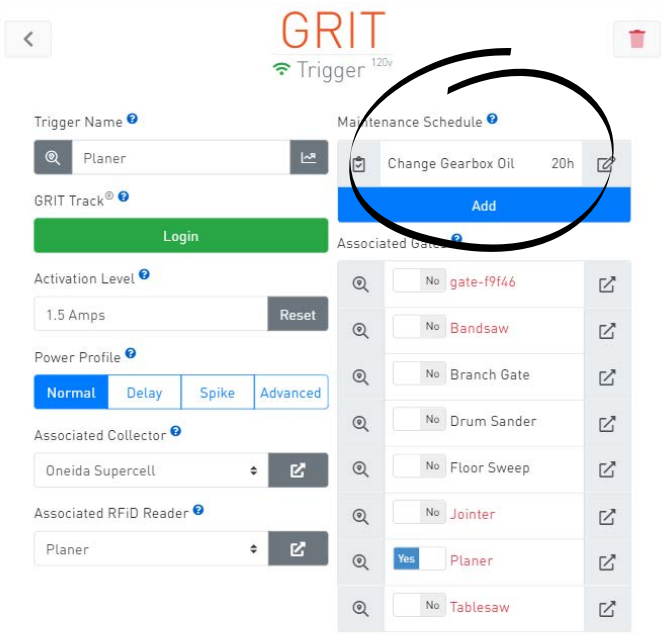
***Be aware, the downside of this setting is that if it is set too high, it will allow a tool to unintentionally run longer than it would need to during an Emergency Lock situation.**

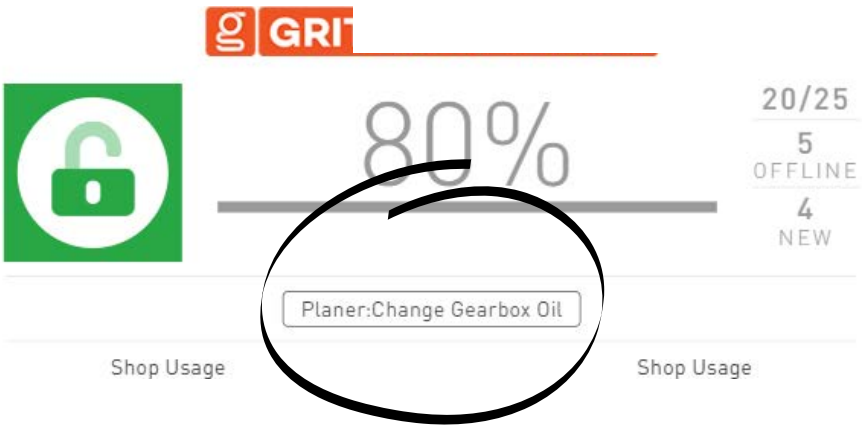
# Maintenance Schedule




Set tool-specific maintenance tasks. Alerts for maintenance are displayed on the GRIT Dashboard after the configured number of hours has been reached. Optionally, email/ SMS can be sent and can be specified in the Admin Settings.

Example: A Maintenance Schedule has been set for this Planer to Change the Gearbox Oil after 20 hours of runtime. The time remaining will update after each use of the planer. Once the 20 hours has passed it's red and negative.

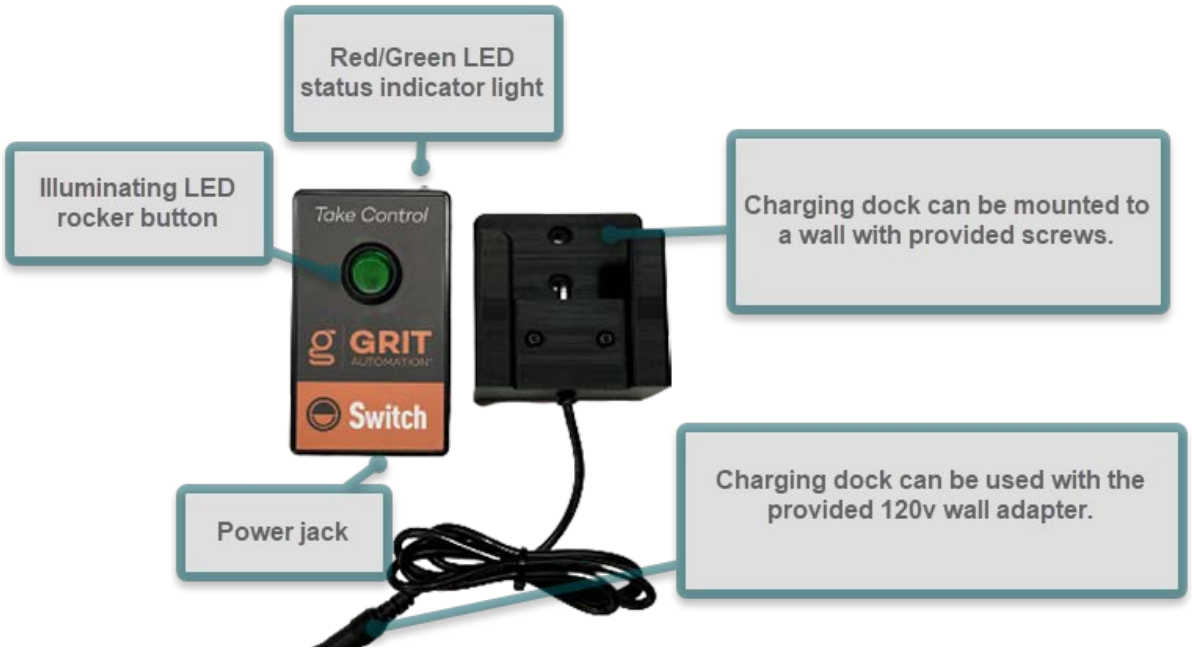


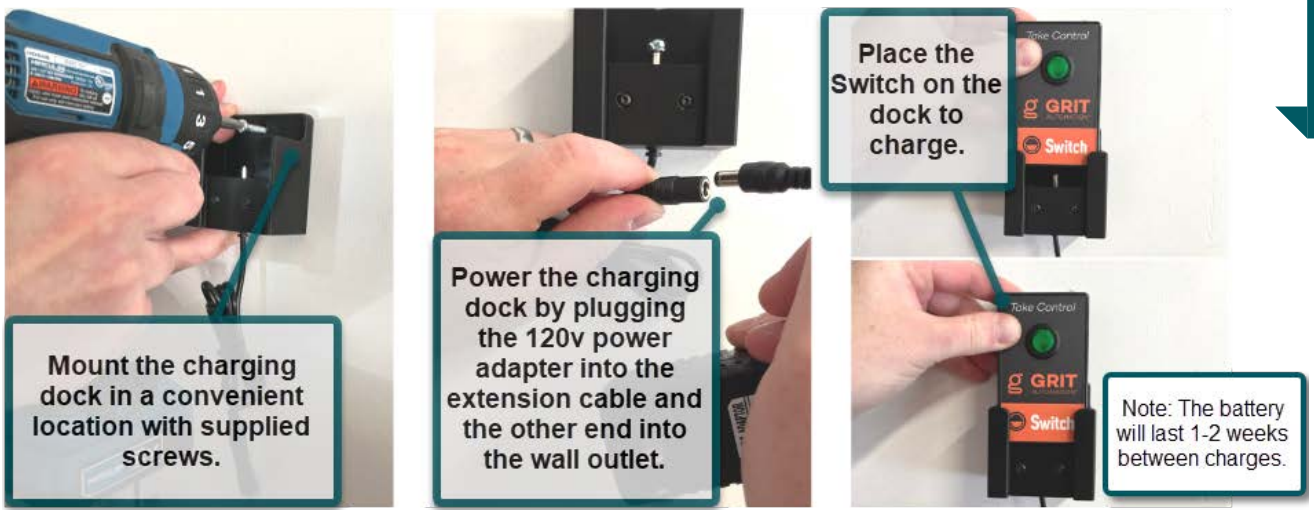

Example: Maintenance alert on Dashboard.

# GRIT Switch

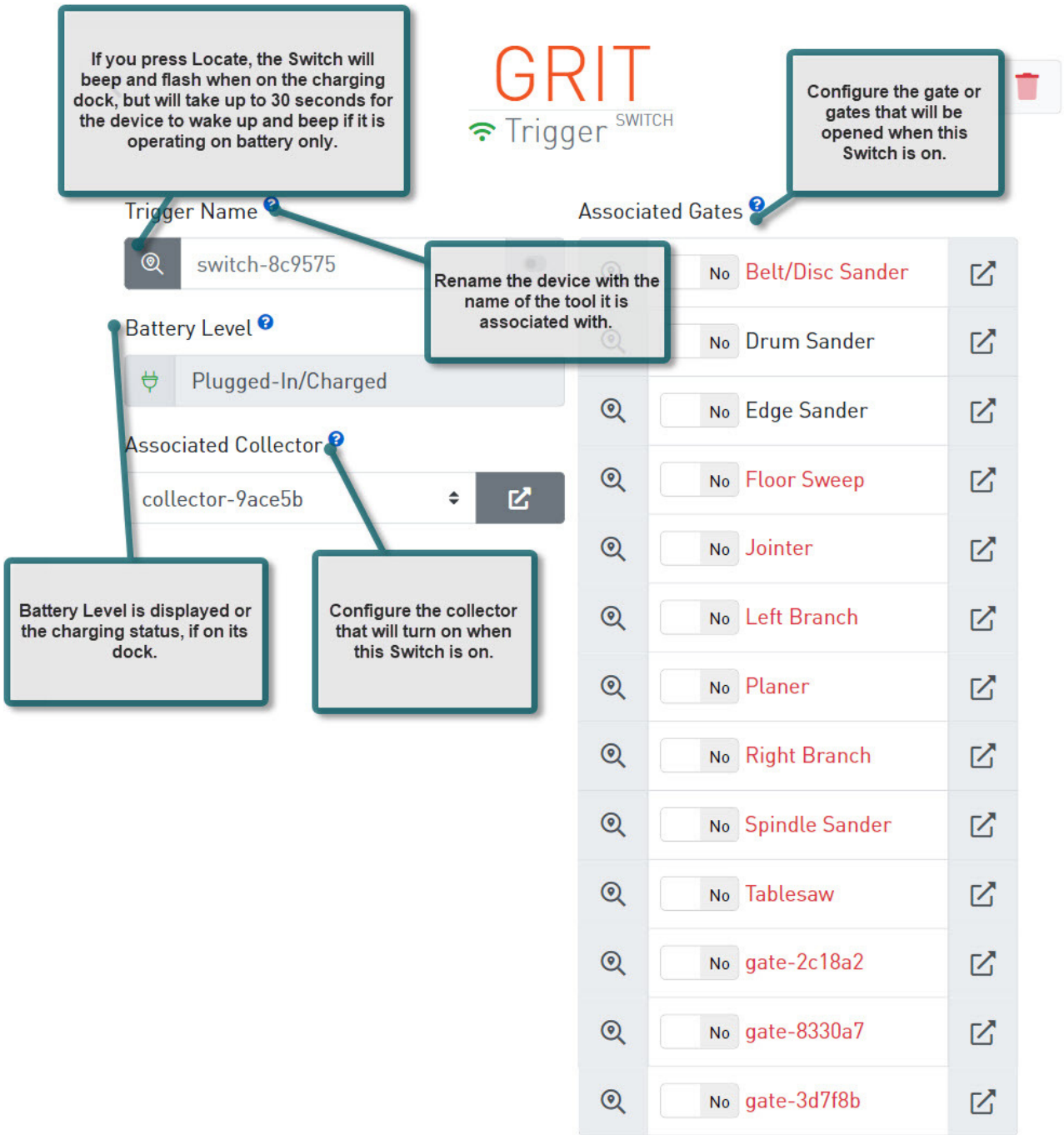
The GRIT Switch is a wireless trigger that can be configured exactly the same as other triggers, except instead of having the tool activate the collector, the toggle switch does. These are often used for a shop's floor sweep or for a work station that has rotating tools or wood lathes.

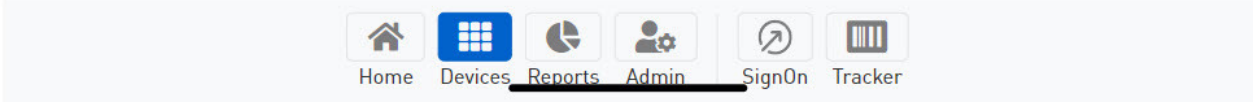



## Installation



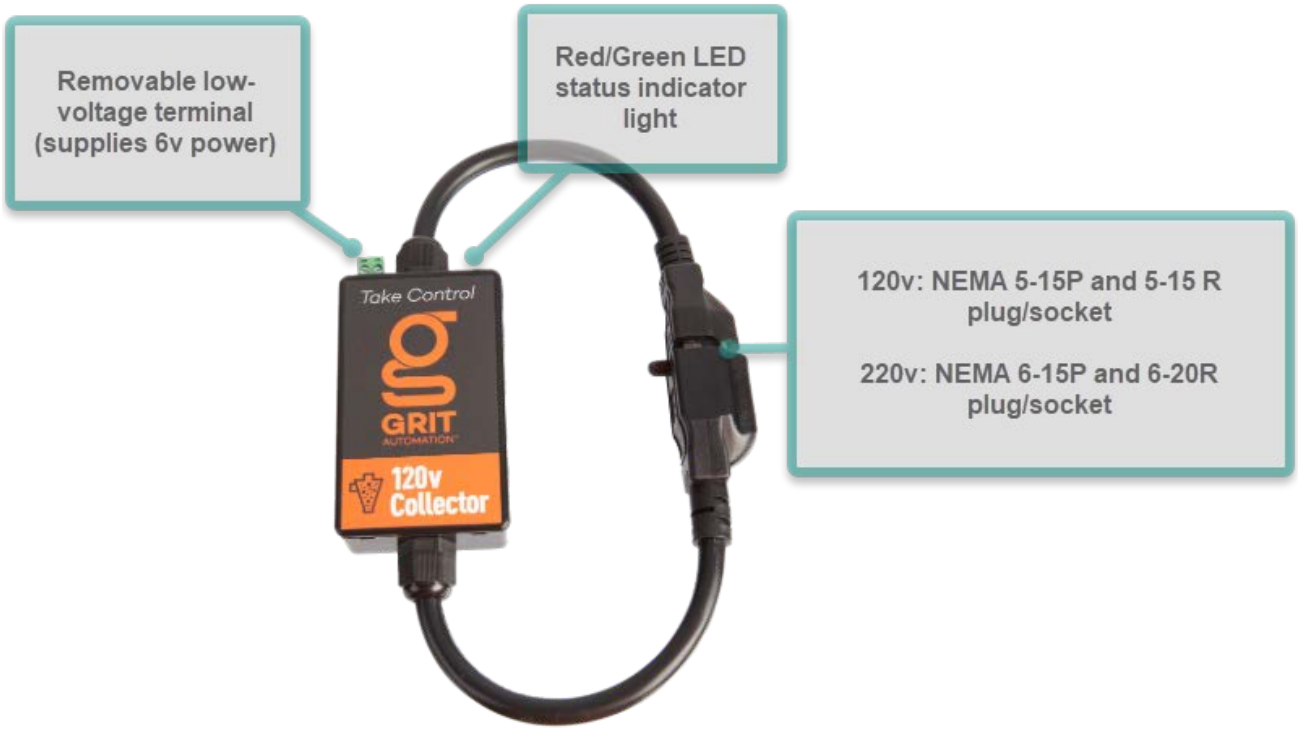
# Switch Device Configuration



# 120v and 220v Collectors

The GRIT Collector device controls dust collectors. It can be linked to triggers and will turn on/off automatically.




## Installation



**Step 3: Turn on your collector's manual switch (not pictured).**

# MagSwitch Collectors


## Installation

The installation options for your MagSwitch Collector are listed below. You will need the following tools to complete:

- Power drill with step bit
- Flathead screwdriver (provided)
- Phillips screwdriver

**Option 1: Oneida Collector with Oneida remote module**

**Option 2: Contactor with motor starter***

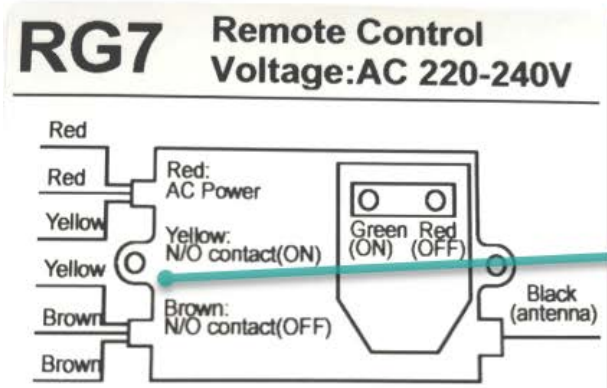
**Option 3: Laguna Collector**

*If the contactor enclosure is large enough, the MagSwitch Collector device can be put inside. If it cannot fit in the enclosure, the knockout must be at least 5/8''.

# Option 1: Onedia Collector with Oneida remote module

**Step 1: Remove the Cover.**

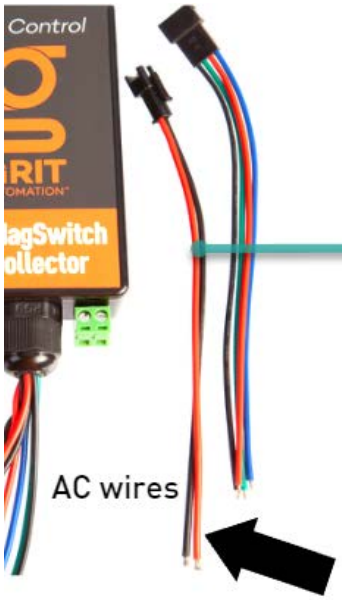
If you have a Gorilla Pro, only remove the top cover to the VFD.




**Step 2: Connect the Control Wires**

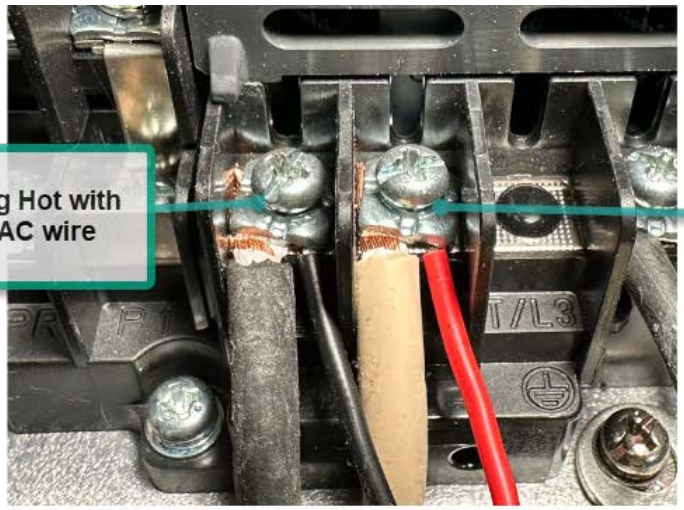
Replace the yellow wires from the existing remote module with the **BLACK** and **GREEN** control wires from the MagSwitch device (side does not matter).

Then, replace the brown wires from the existing remote module with the **RED** and **BLUE** control wires from the MagSwitch device (side does not matter).




**Step 3: Connect the AC Wires**

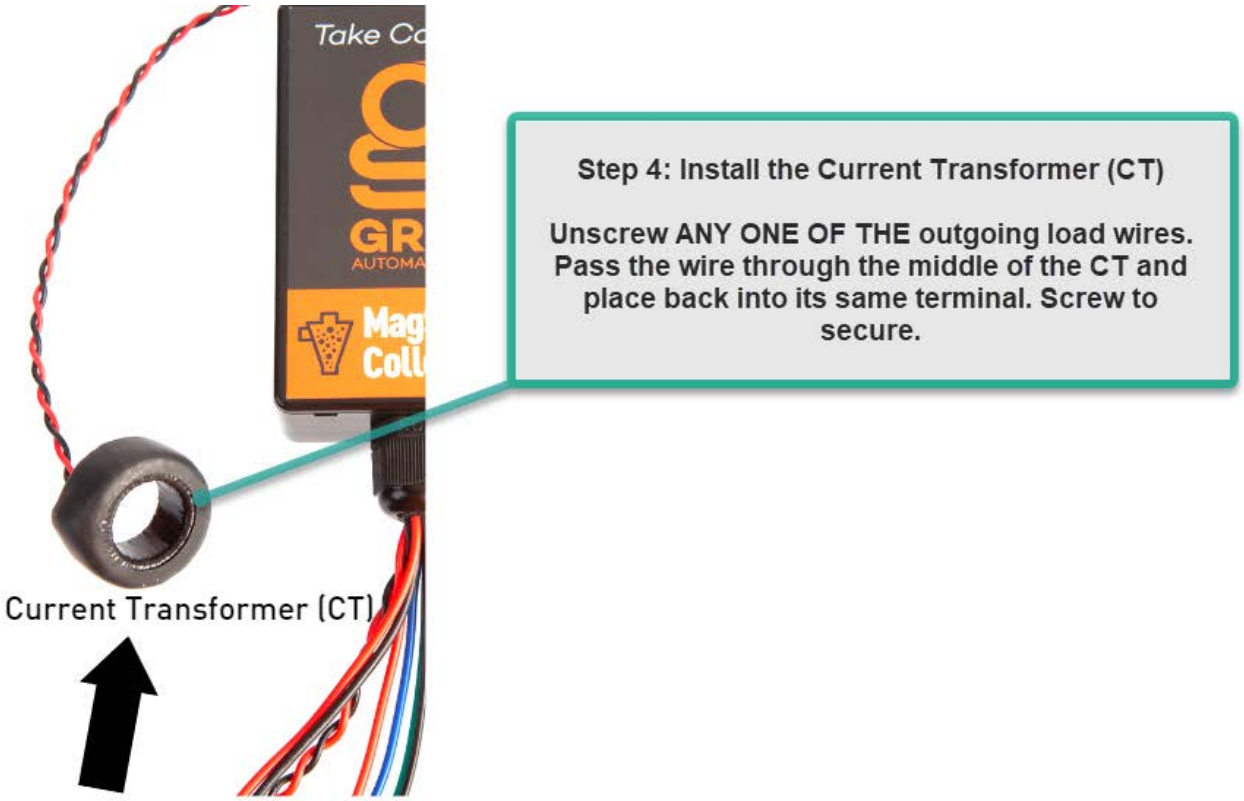
To power the MagSwitch device, install the BLACK and RED AC wires with the incoming hot wires in the contactor (side does not matter).




Pictured: Oneida Gorilla Pro

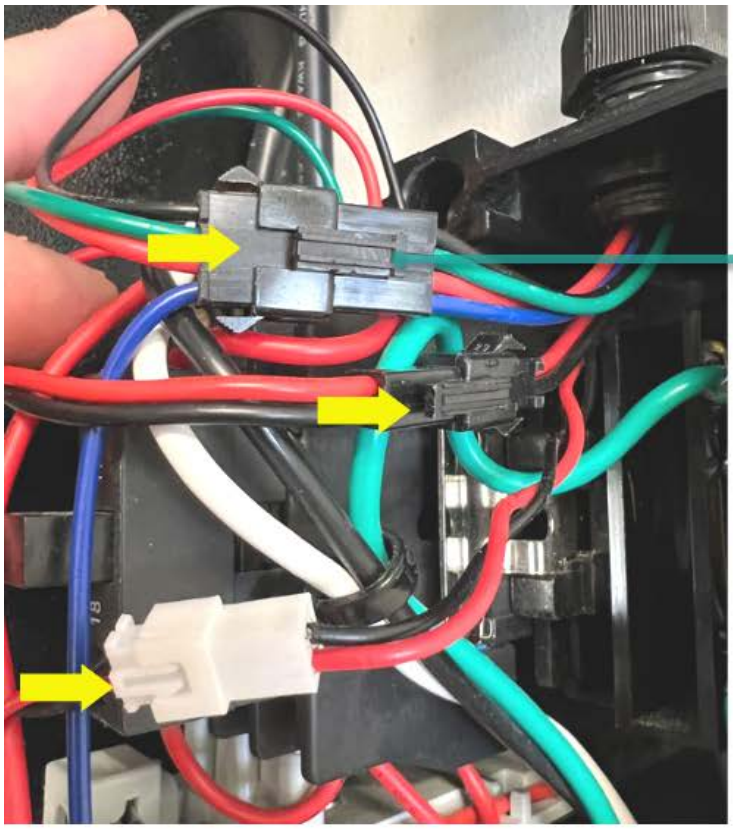

Pictured: Oneida Supercell

# COLLECTORS




Pictured: Oneida Gorilla Pro

Pictured: Oneida Supercell



Step 5: Connect the Installed Wires to the MagSwitch Device.

Connect the AC wires, Control wires, and CT.

Step 6: Replace the Cover.

Replace the contactor cover and mount the MagSwitch device with provided VHB tape, if desired.

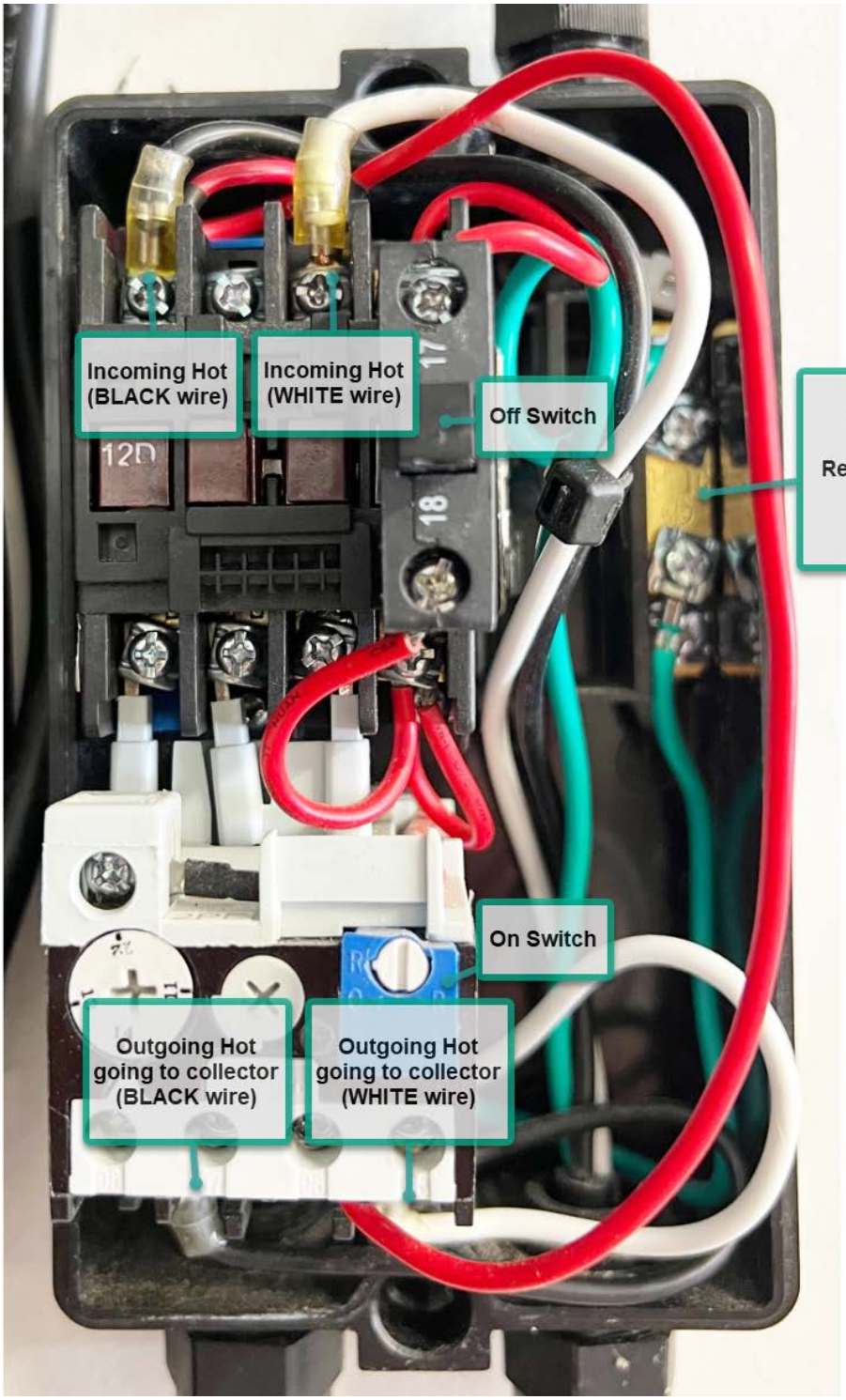
Pictured: Oneida Gorilla Pro

Pictured: Oneida Supercell

## Option 2: Contactor with Motor Starter

**Installation Video**

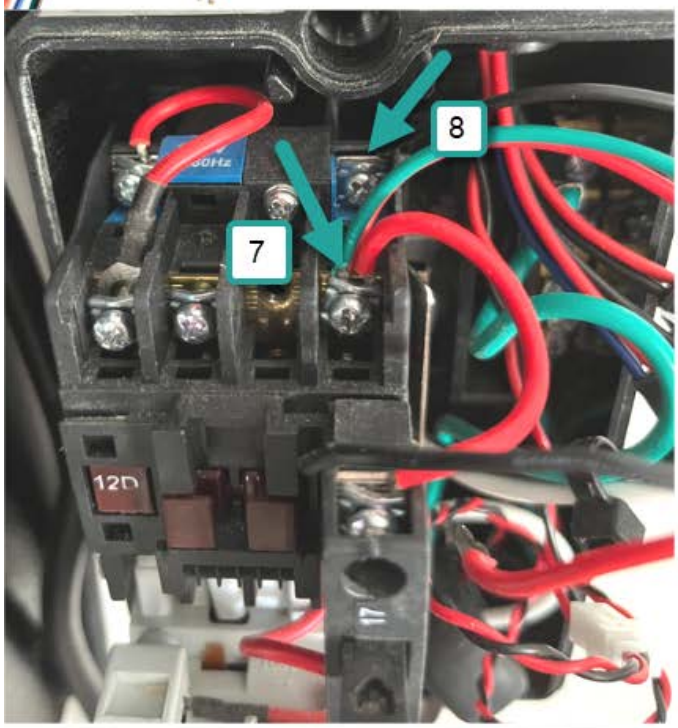
SCAN ME



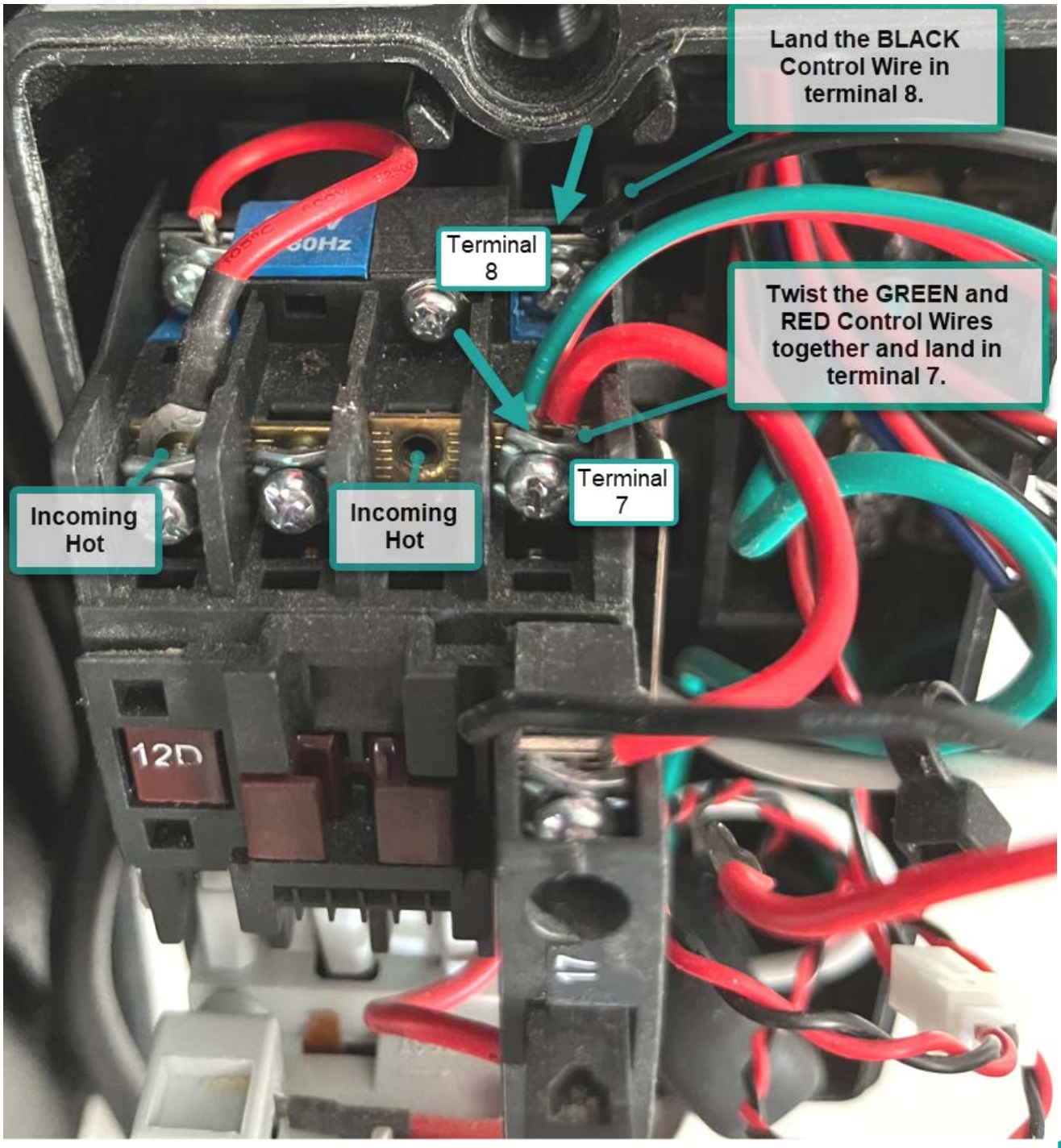

Control wires

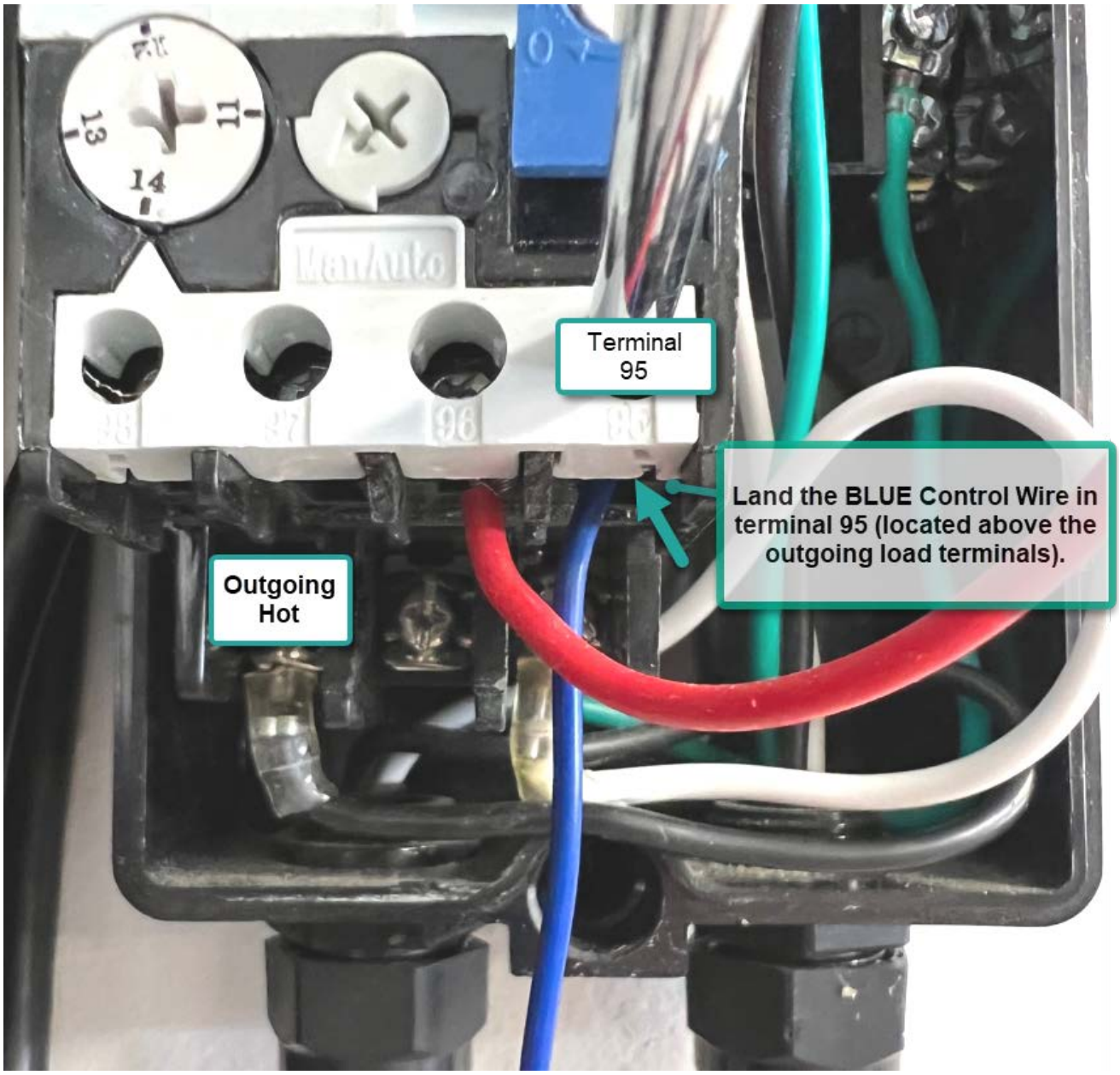
**Step 2: Connect the Control Wires**

The control wires for this installation option will be landed in terminals 7 and 8 at the top of the contactor and in terminal 95 at the bottom of the contactor.

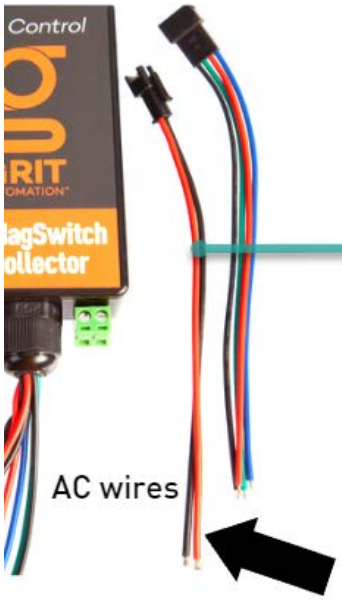



# COLLECTORS


Land the BLACK Control Wire in terminal 8.
Terminal 8
Twist the GREEN and RED Control Wires together and land in terminal 7.
Terminal 7
Incoming Hot
Incoming Hot
12D

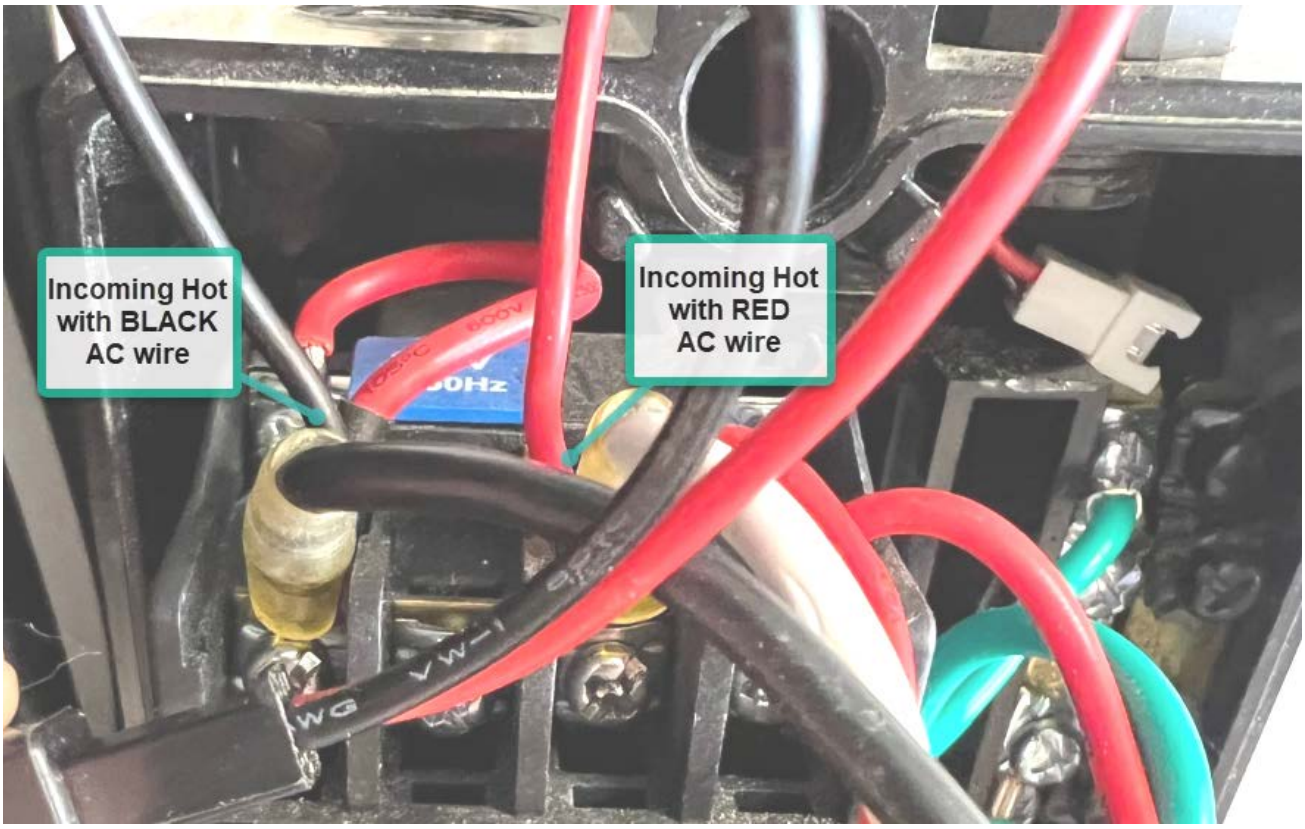

Terminal 95
Land the BLUE Control Wire in terminal 95 (located above the outgoing load terminals).
Outgoing Hot

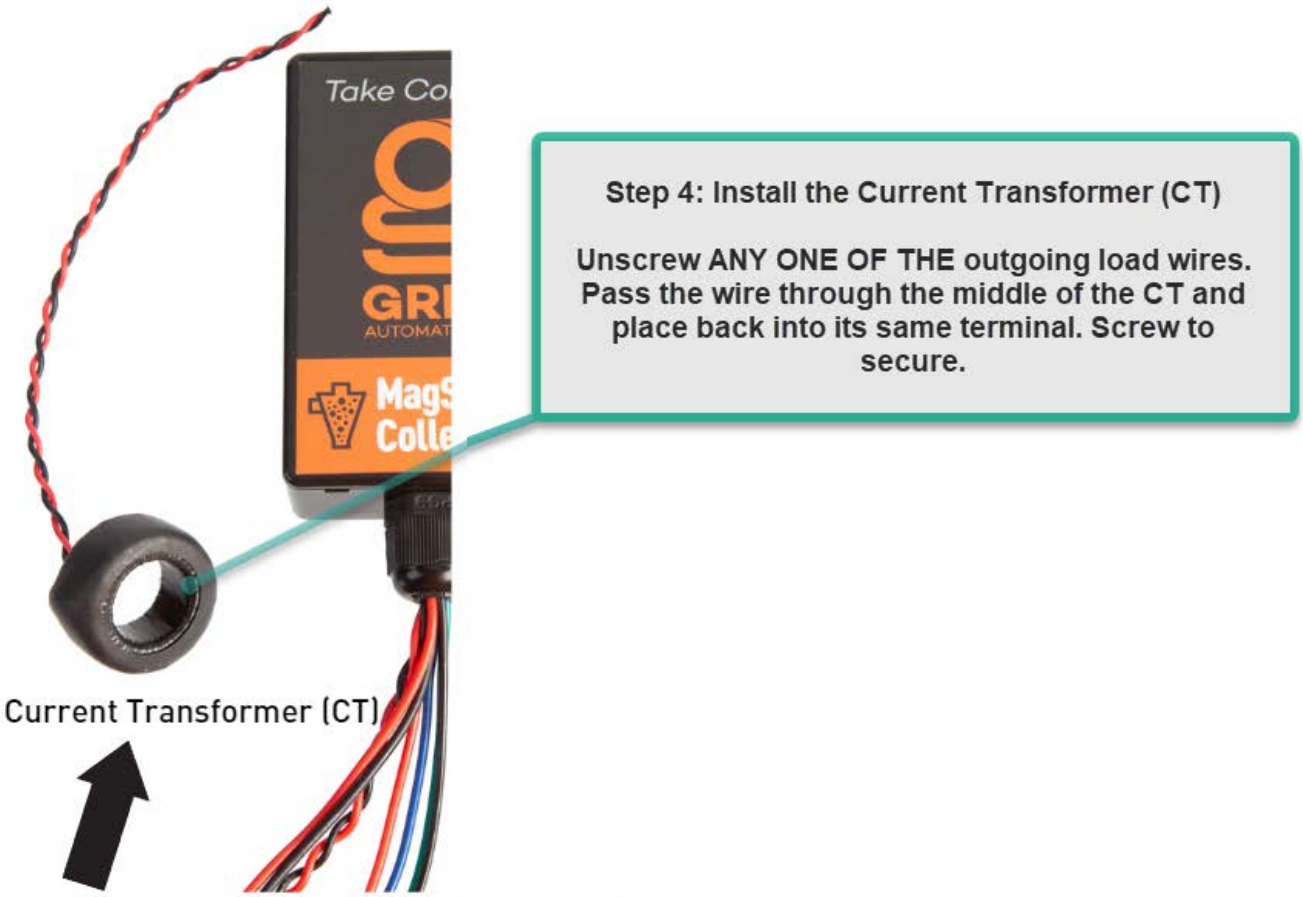
# COLLECTORS




**Step 3: Connect the AC Wires**

To power the MagSwitch device, install the BLACK and RED AC wires with the incoming hot wires in the contactor (side does not matter).

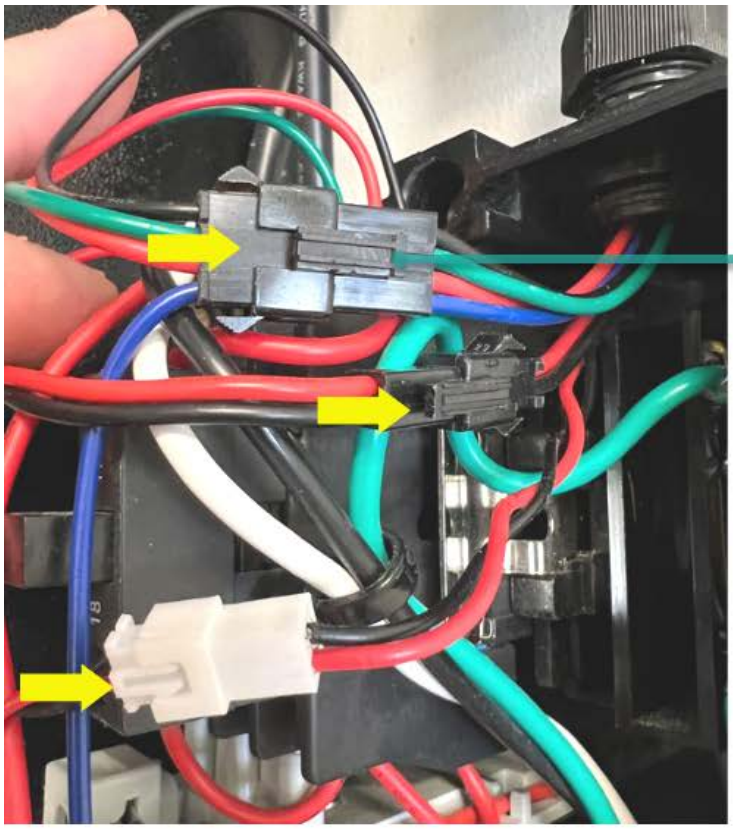





**Step 4: Install the Current Transformer (CT)**

**Unscrew ANY ONE OF THE outgoing load wires. Pass the wire through the middle of the CT and place back into its same terminal. Screw to secure.**

# COLLECTORS



**Step 5: Connect the Installed Wires to the MagSwitch Device.**

**Connect the AC wires, Control wires, and CT.**

**Step 6: Replace the Cover.**

**Replace the contactor cover and mount the MagSwitch device with provided VHB tape, if desired.**

Pictured: Oneida Gorilla Pro

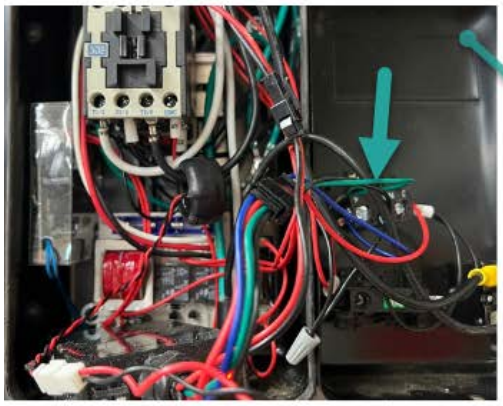
Pictured: Oneida Supercell

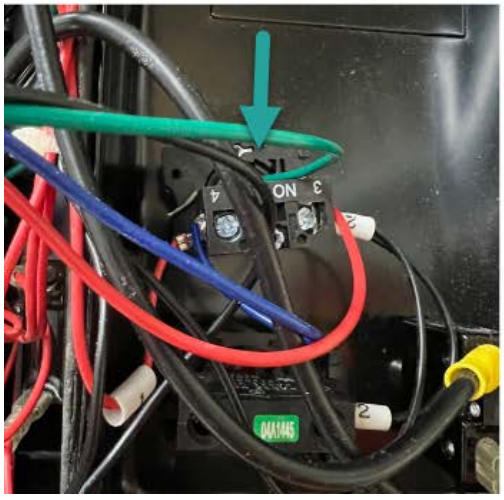
## Option 3: Laguna Collector

**Installation Video**

SCAN ME


Step 1: Open the Cover.





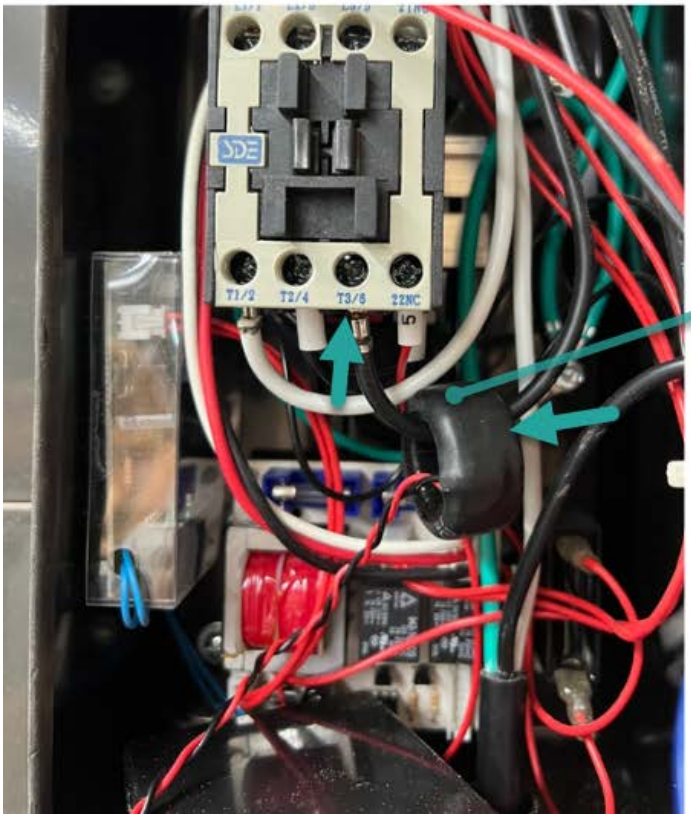
Step 2: Connect the Control Wires.

Replace the yellow wires from the existing remote module with the BLACK and GREEN control wires from the MagSwitch device (side does not matter).

Replace the brown wires from the existing remote module with the RED and BLUE control wires from the MagSwitch device (side does not matter).

**Step 3: Connect the AC Wires**

To power the MagSwitch device, install the BLACK and RED AC wires with the incoming hot wires in the contactor (side does not matter).



**Step 4: Install the Current Transformer (CT)**

Unscrew ANY ONE OF THE outgoing load wires. Pass the wire through the middle of the CT and place back into its same terminal.
Screw to secure.

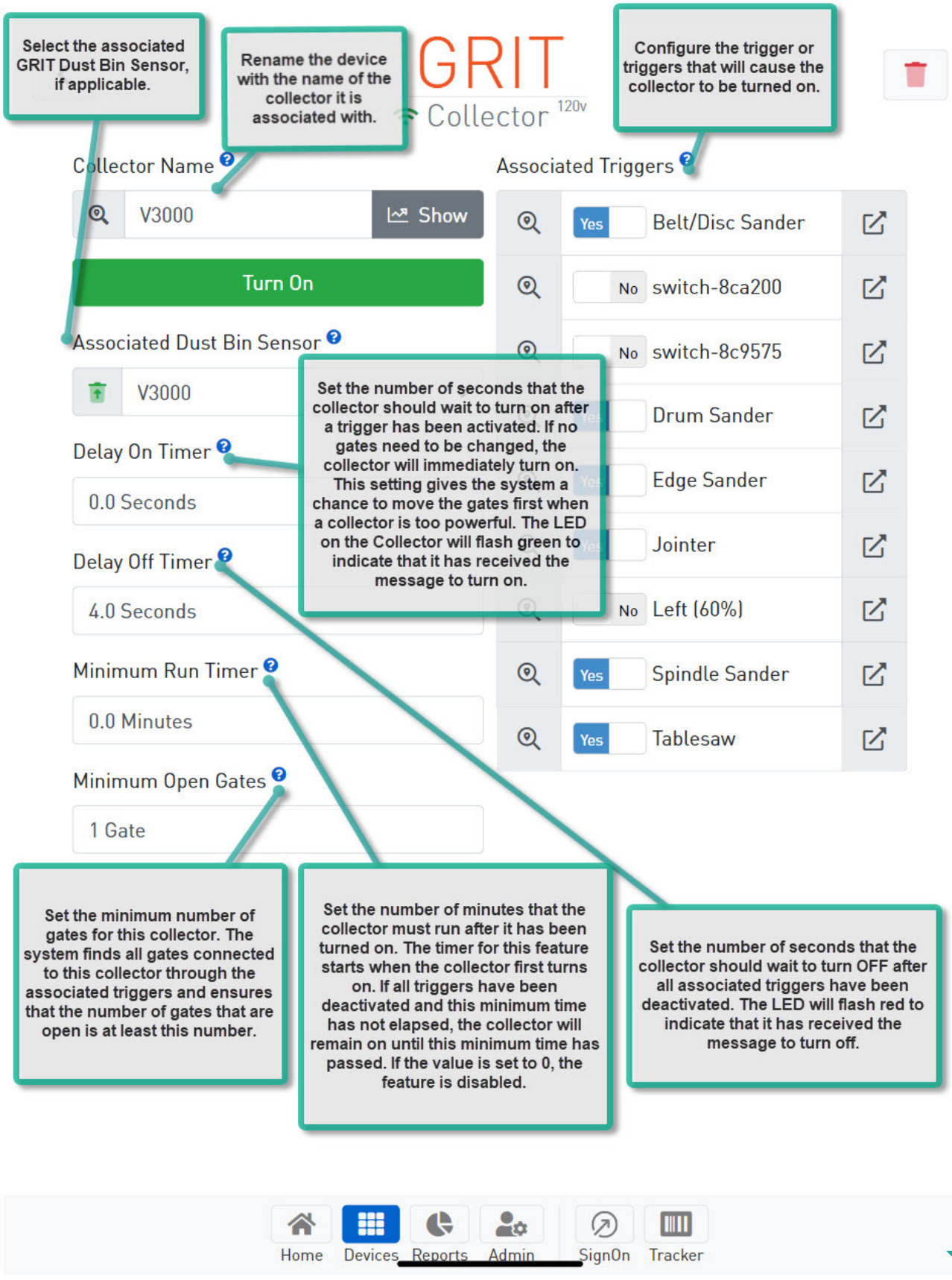
Step 5: Connect the Installed Wires to the MagSwitch Device.

Connect the AC wires, Control wires, and CT.

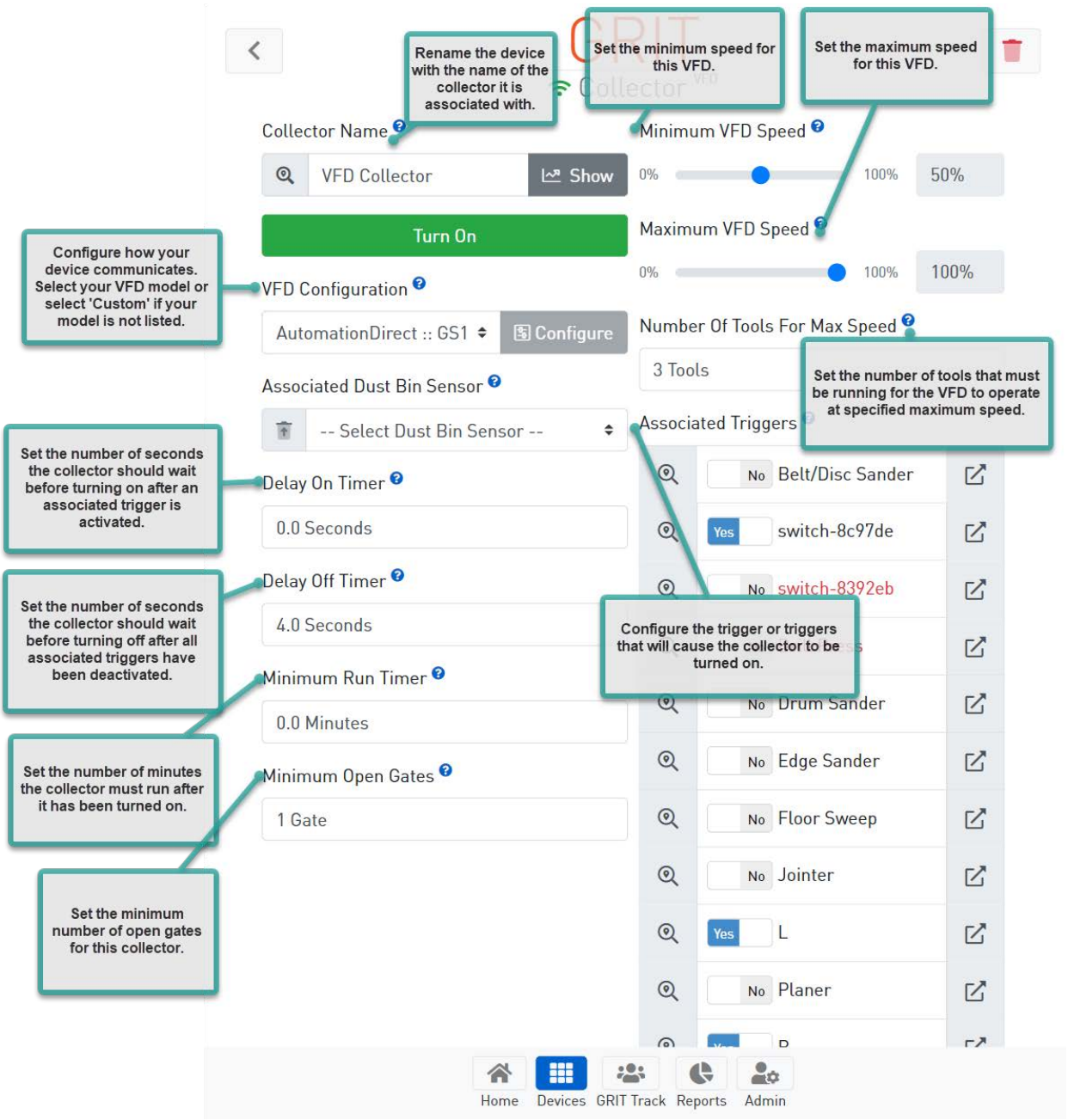

Step 6: Close the Cover.

Mount the MagSwitch device with provided VHB tape and close the cover.

# Collector Device Configuration

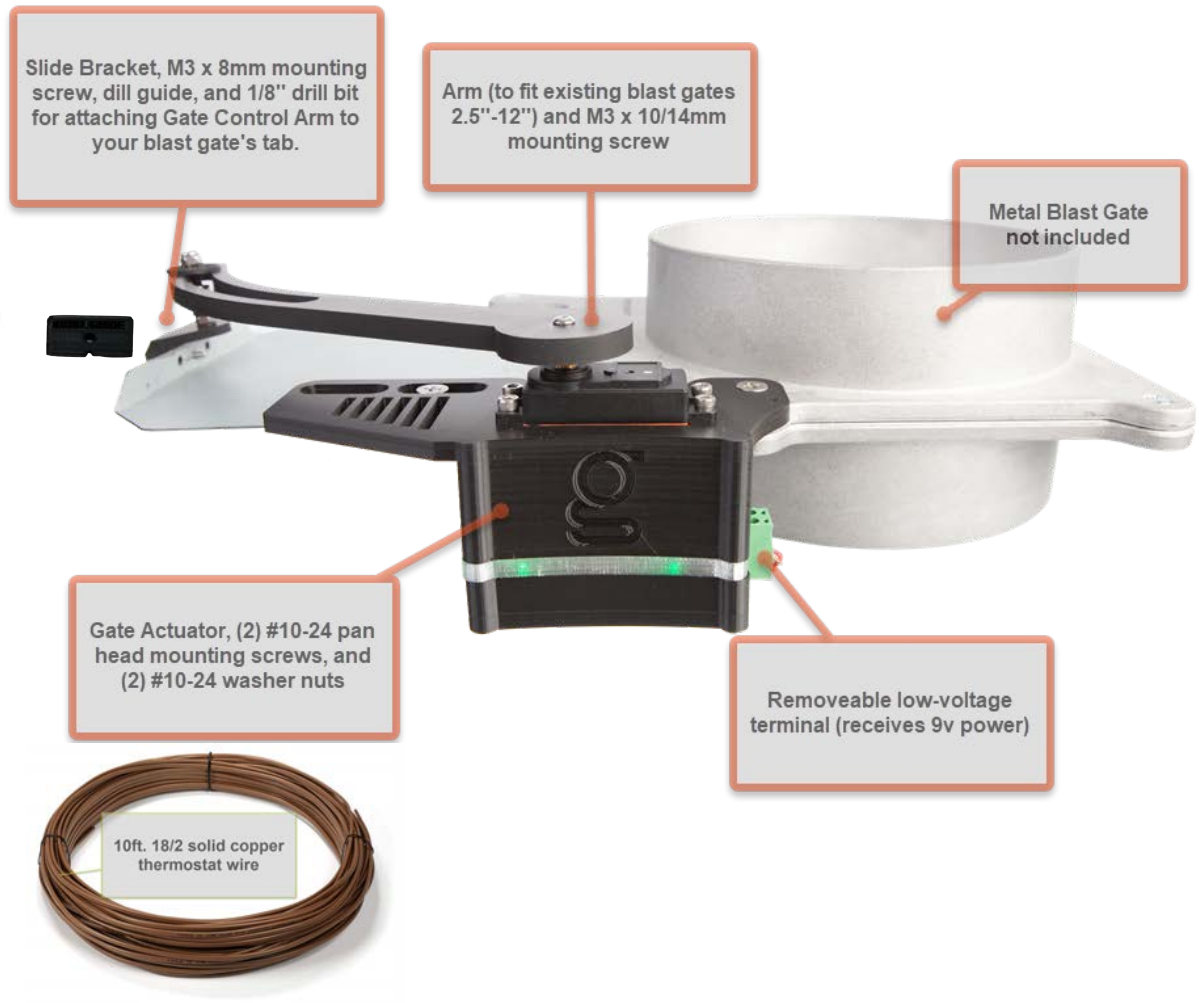


# VFD Device Configuration



# Gate Control

**The GRIT Gate Control device attaches to an existing metal blast gate to automatically open and close the gate when an associated tool is turned on/off.**






## Installation Tool Requirements

The instructions to install your Gate Control are listed below.
You will need the following tools to complete installation:

- Power drill with 1/8" drill bit (provided)
- Drill Guide (provided)
- Flathead screwdriver (provided)
- T8 Torque screwdriver (provided)
- 7mm Socket driver (provided)
- Phillips screwdriver
- Wire stripper

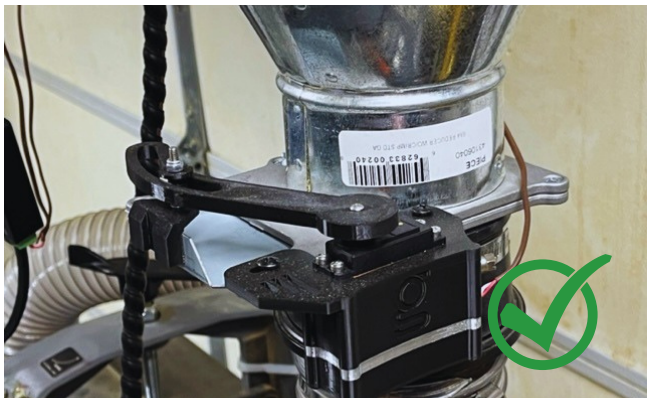
**Installation Video**

SCAN ME

## Orientation

GRIT Gate Control devices, when powered properly, operate in any orientation. Some placement considerations can be made, however, to assist in their best performance.

- If you notice strain when opening/closing, consider mounting the actuator so that:
  - the arm operates parallel to the floor, or;
  - the arm opens up toward the ceiling.



If the location of the existing blast gate does not allow for mounting the gate actuator as shown above, you can move the actuator to the other side of the blast gate by changing the direction of the Slide Bracket post.

The Slide Bracket arrives assembled with:

M4 x 30mm post
M4 lock washer
M4 nut
Assorted hat and flat washers
M4 lock nut
and
M3 x 8mm screw to secure the bracket to the gate's tab

To change the orientation of the Slide Bracket:

Step 1: Remove all components from the post.

# GATE CONTROL

Step 2: Insert the post on the other side of the bracket.

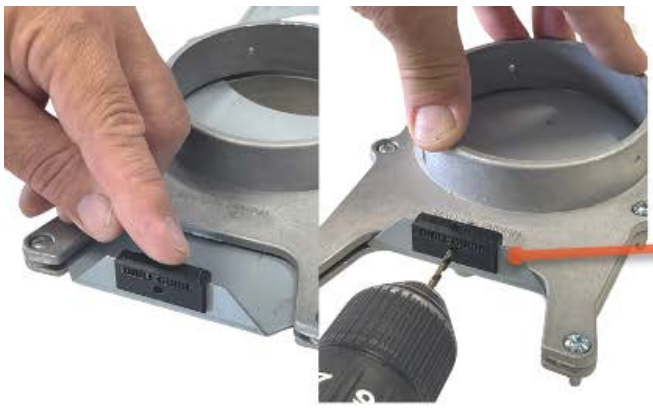
Secure with the M4 lock washer and M4 nut.

Step 3: Attach the newly oriented Slide Bracket onto the tab per Gate Control installation instructions.

Secure with the M3 x 8mm screw.

The newly installed Slide Bracket, Actuator, and Arm will look like this when installed with the flipped bracket.

## Installation



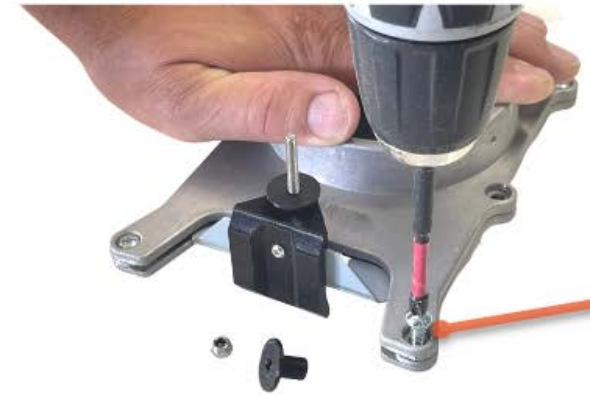
**Step 1:**

To mount the Slide Bracket to the gate's tab, place the Drill Guide over the middle of the tab. Drill through the tab with the supplied 1/8" drill bit. Remove the Drill Guide.

Note: Use a new Drill Guide for each gate.

**Step 2:**

Place the Slide Bracket over the tab, align the holes, and screw in the M3 x 8mm screw to secure the Slide Bracket to the tab.



**Step 3:**

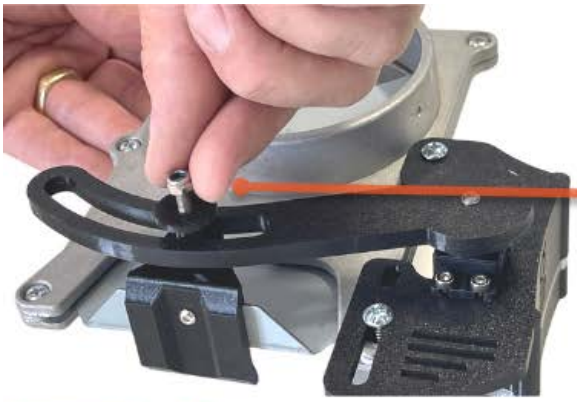
Remove the lock nut, top flat washers, and hat washer from the Slide Bracket post.

Remove the two screws from the blast gate (as shown).

**Step 4:**

Place the Arm over the Slide Bracket post and attach the Gate Actuator to the blast gate with the provided #10-24 mounting screws.

# GATE CONTROL



**Step 5:**

Replace the hat washer, flat washers, and M4 lock nut on the Slide Bracket post.

Make sure the bottom of the hat washer touches the flat washers placed under the Arm.

**Step 6:**

Tighten the lock nut with the provided socket driver. The Arm and hat washer should be secure but still able to move freely.



**Step 7:**

The Gate Control device is now fully installed onto the existing metal blast gate.

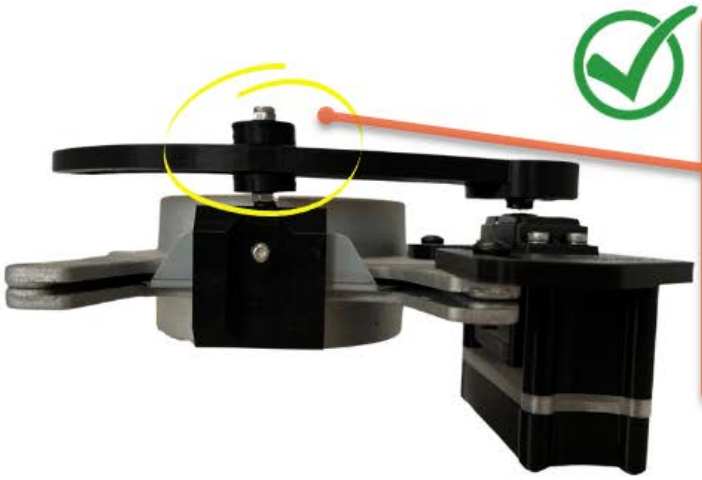
**Step 8:**

Run the low-voltage wire from the green terminal of the Gate Control device to a GRIT Power Bank.

Note: You can land two sets of wires in each terminal if wiring from one gate to another in a 'daisy chain'.

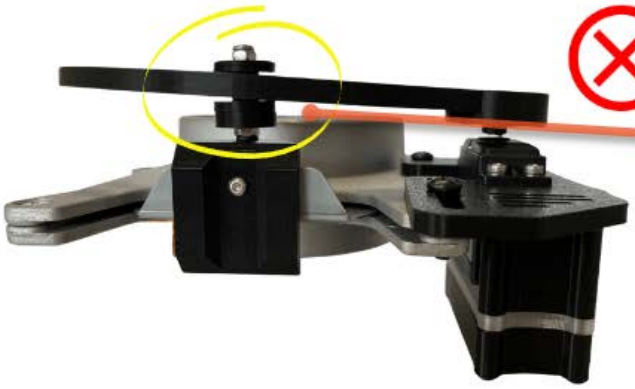
## Finetune the Arm Position

To make sure your Gate Control Arm slides smoothly, take care in placing the correct configuration of Hat and Flat washers on the Slide Bracket post so that the Arm is level and secure. The best configuration will vary from gate-to-gate, so use these images as a guide.

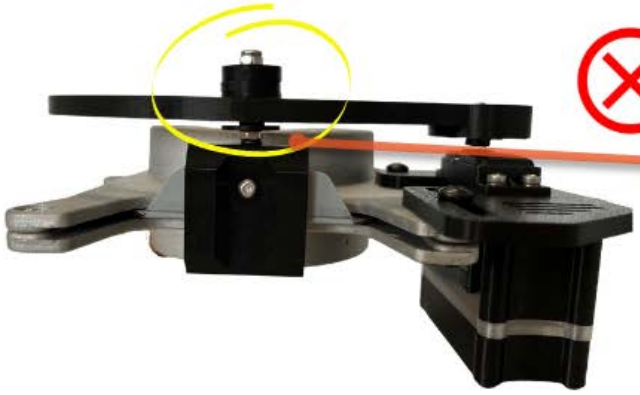


This Arm is fairly level and supported with no additional tension being placed at its connection point with the servo.

For reference, this configuration has a 3mm and 1mm washer placed below the Arm with a hat washer, 3mm, and 1mm washer placed above.



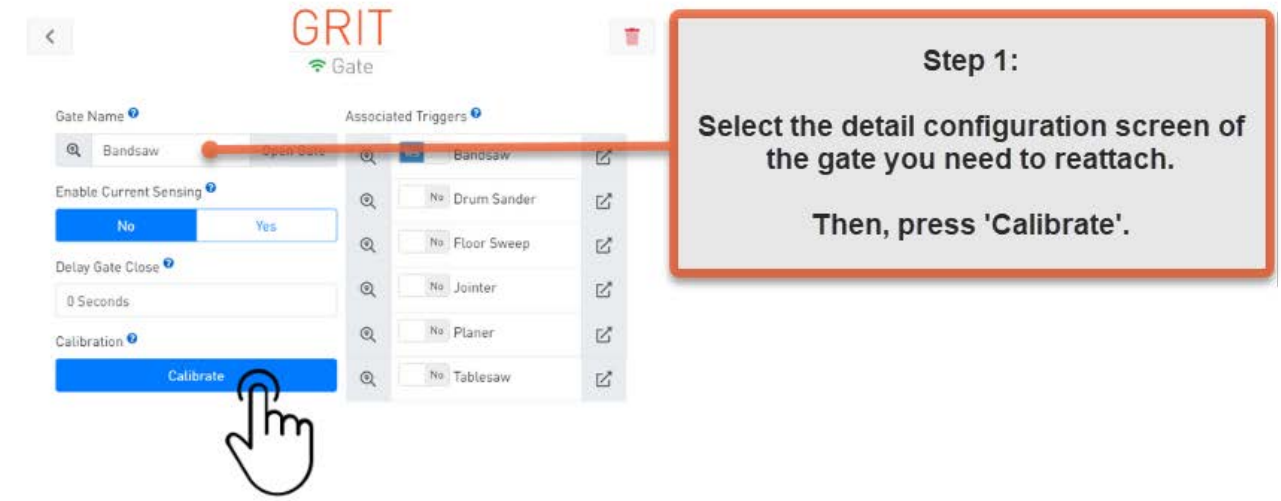
This Arm is pitched up at an angle due to too many flat washers being placed below the Arm.

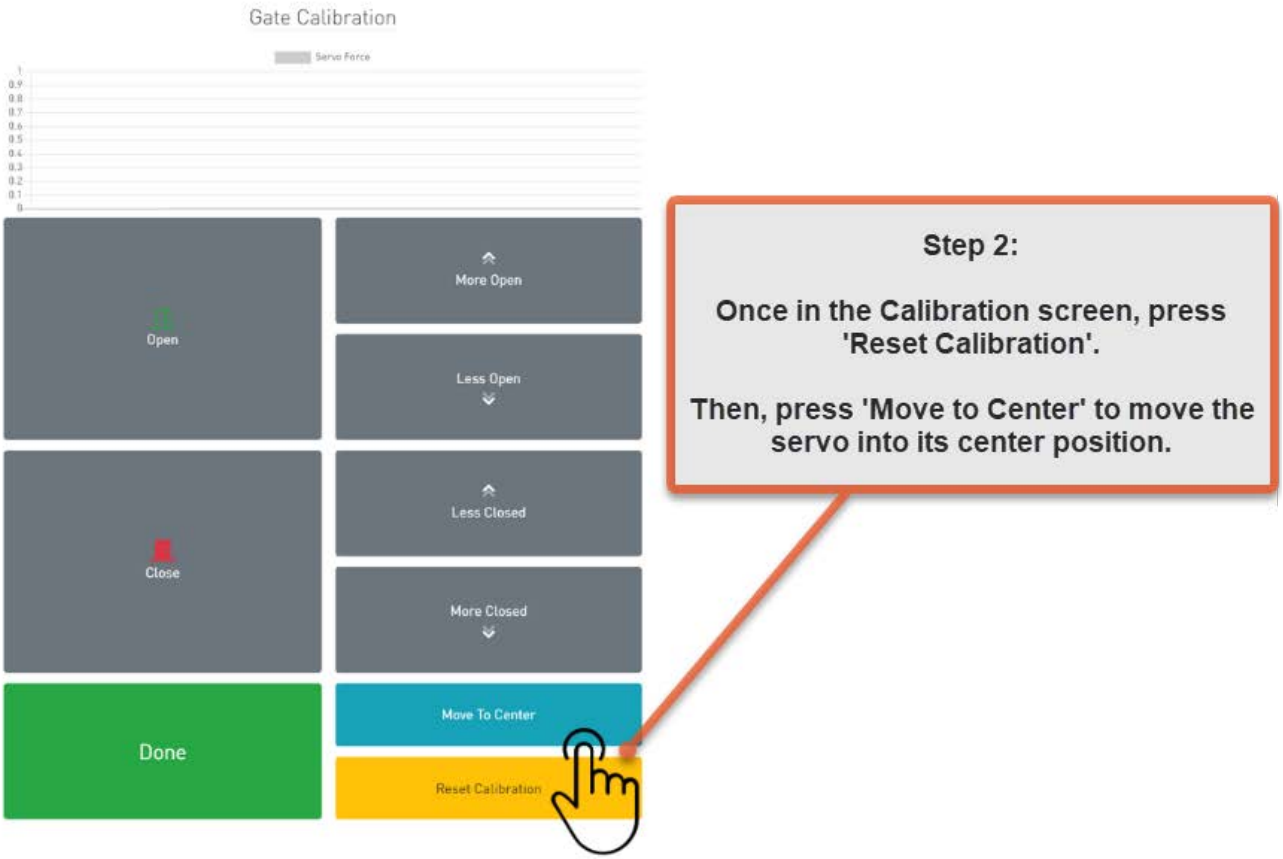


While this Arm is fairly level, it is not adequately supported with flat washers underneath the Arm.

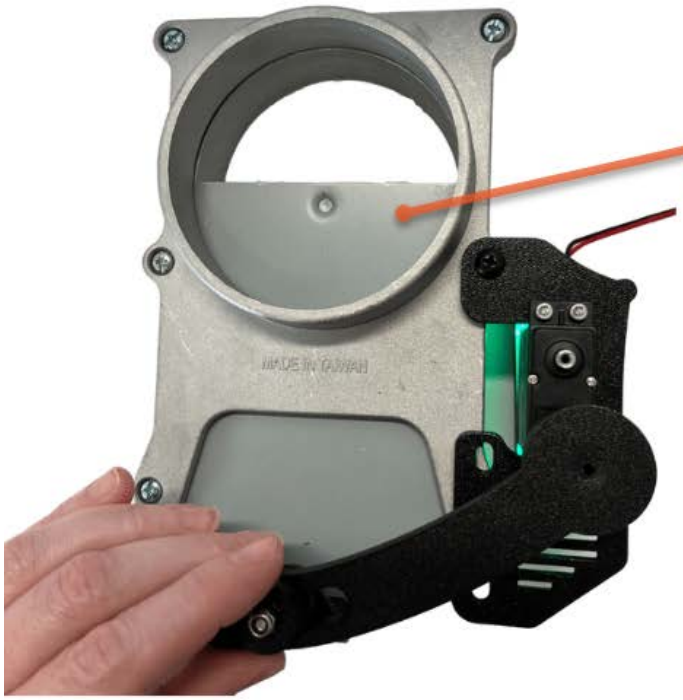
# Reattach the Arm

The Arm of the Gate Control device arrives attached in the proper placement for calibration and does not need to be removed during the installation process. If for any reason you need to remove the Arm, please follow these steps to reattach it properly.



# GATE CONTROL



**Step 3:**

**Manually slide the gate's tab so that the gate is approximately half open.**

**Step 4:**

**While keeping the gate's tab half open, push the Arm down onto the servo.**

**Secure with the M3 screw.**

**Finish calibrating the open and closed positions per the 'Calibration' instructions.**

## Slide Guide

A Slide Guide is an additional component that can be added to your blast gate to assist in smooth operation for gates 6'' and larger.

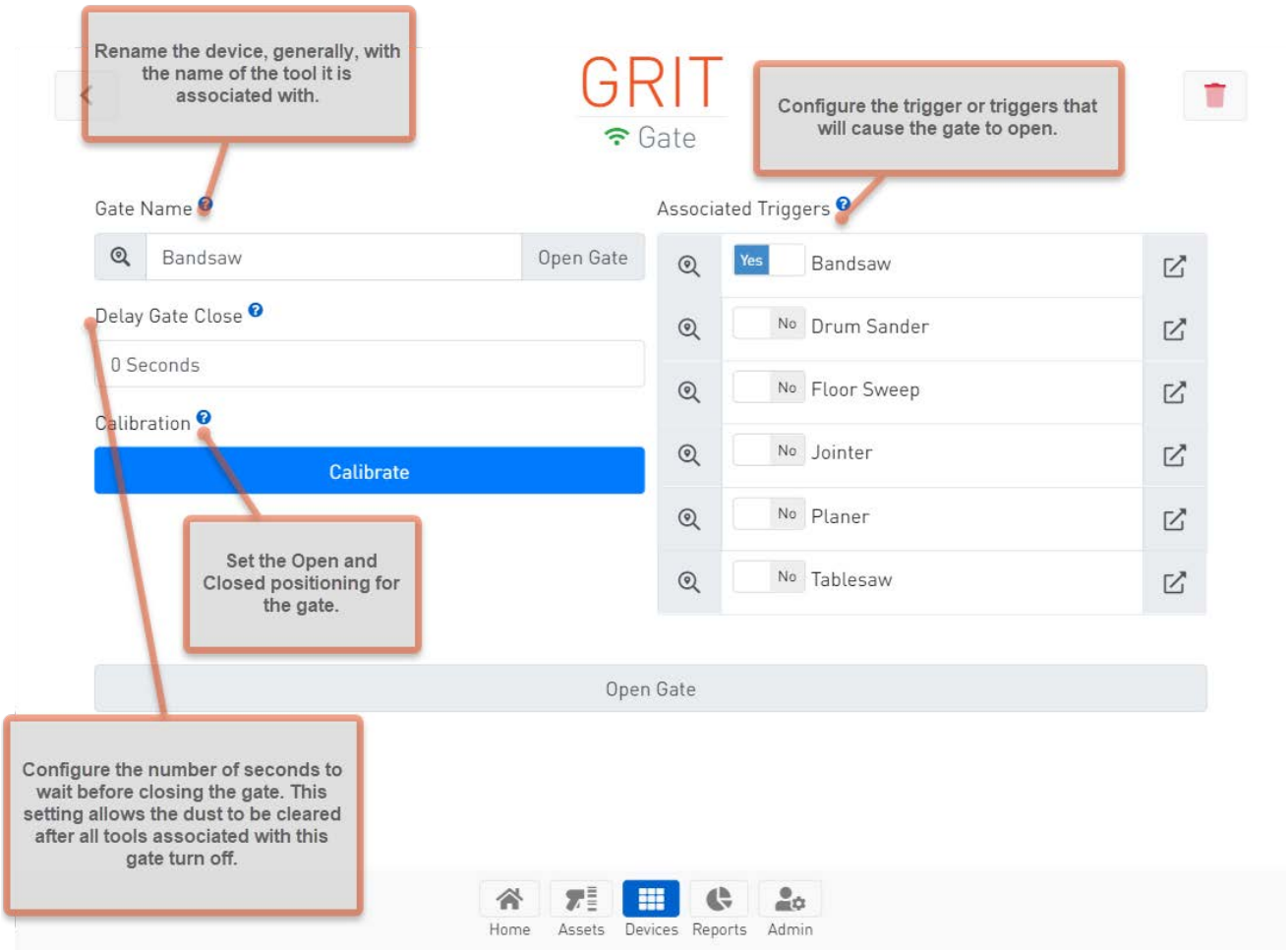
Install the Slide Guide on the side opposite the Gate Control Actuator.

Remove the two screws from the blast gate.

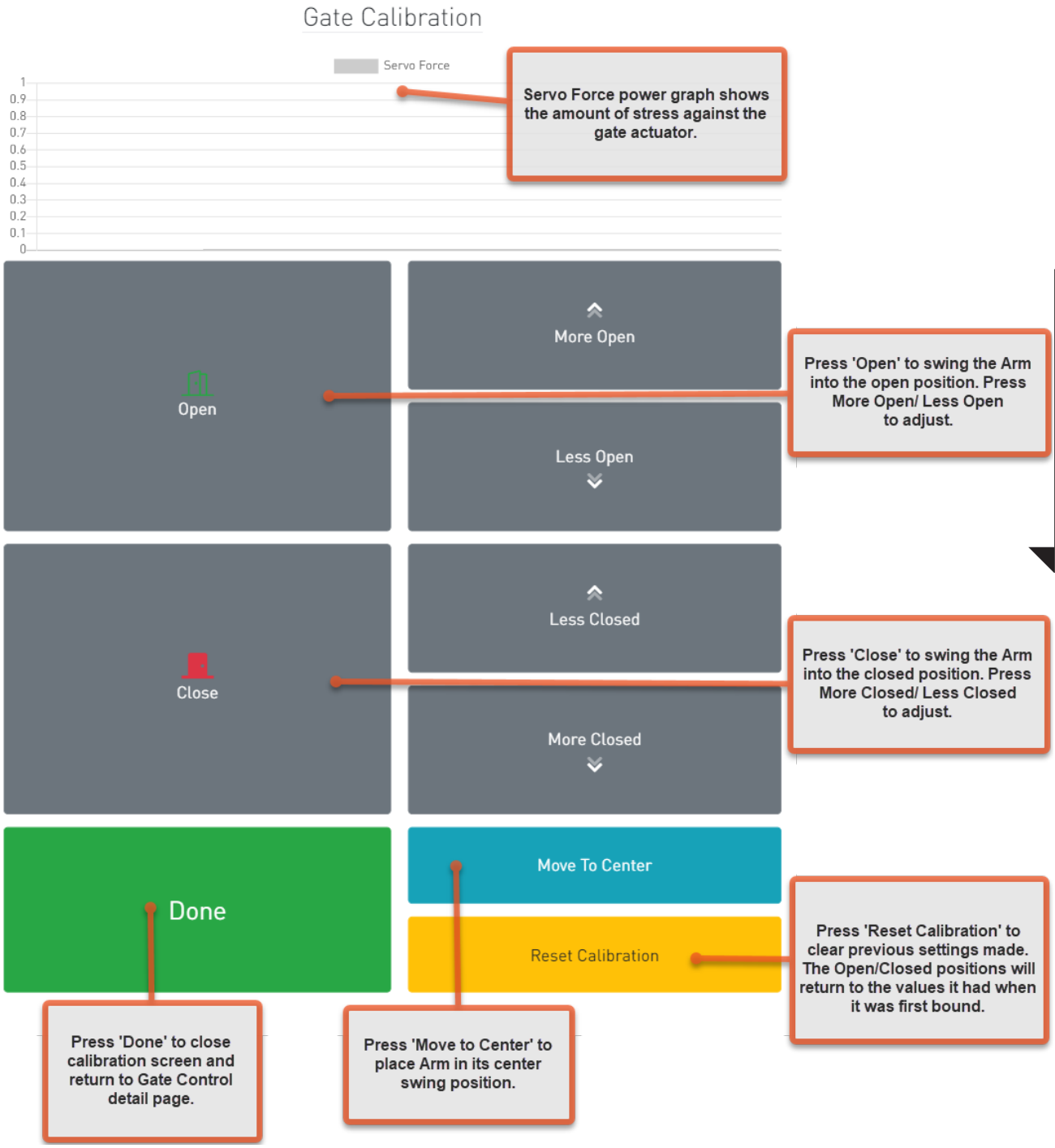
Place the Slide Guide over the holes, and attach with the provided #10-24 mounting screws.

The slide of the metal blast gate will glide along the metal bearings of the Slide Guide to keep it on track.

# Gate Control Device Configuration



## Calibration

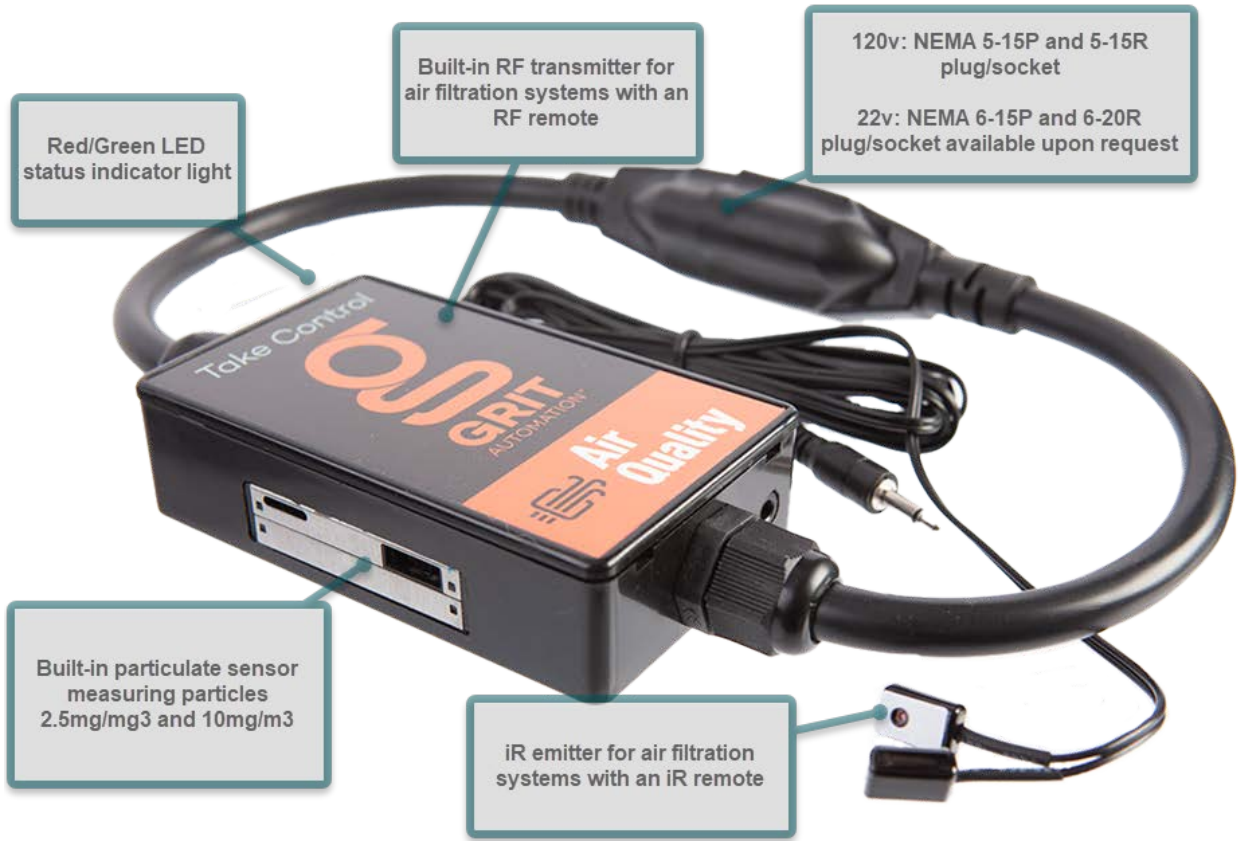





*Tips/Tricks: The LEDs on the Gate will flash each time you adjust its Open/Close position. Decrease the amount of the Open/Close if the stress on the servo becomes high. Indications that the position is too far in one direction is servo shuttering, the gate opening/closing spontaneously, or the LEDs turning off and the gate resetting.

# Air Quality

The GRIT Air Quality device automatically controls air filtration units. It continuously monitors air quality levels and activates the air filter system based on the configured settings.



## Installation

**Step 1:**

Plug your air filter into the GRIT Air Quality device.

**Step 2:**

Plug the GRIT Air Quality device into the outlet.

**Steps 3 and 4 are only used for air filtration systems with an iR remote. Basic on/off systems or systems with an RF remote will not use the included iR emitter.**

**Step 3:**

Plug the jack of the iR emitter into the port on the bottom of the GRIT Air Quality device.

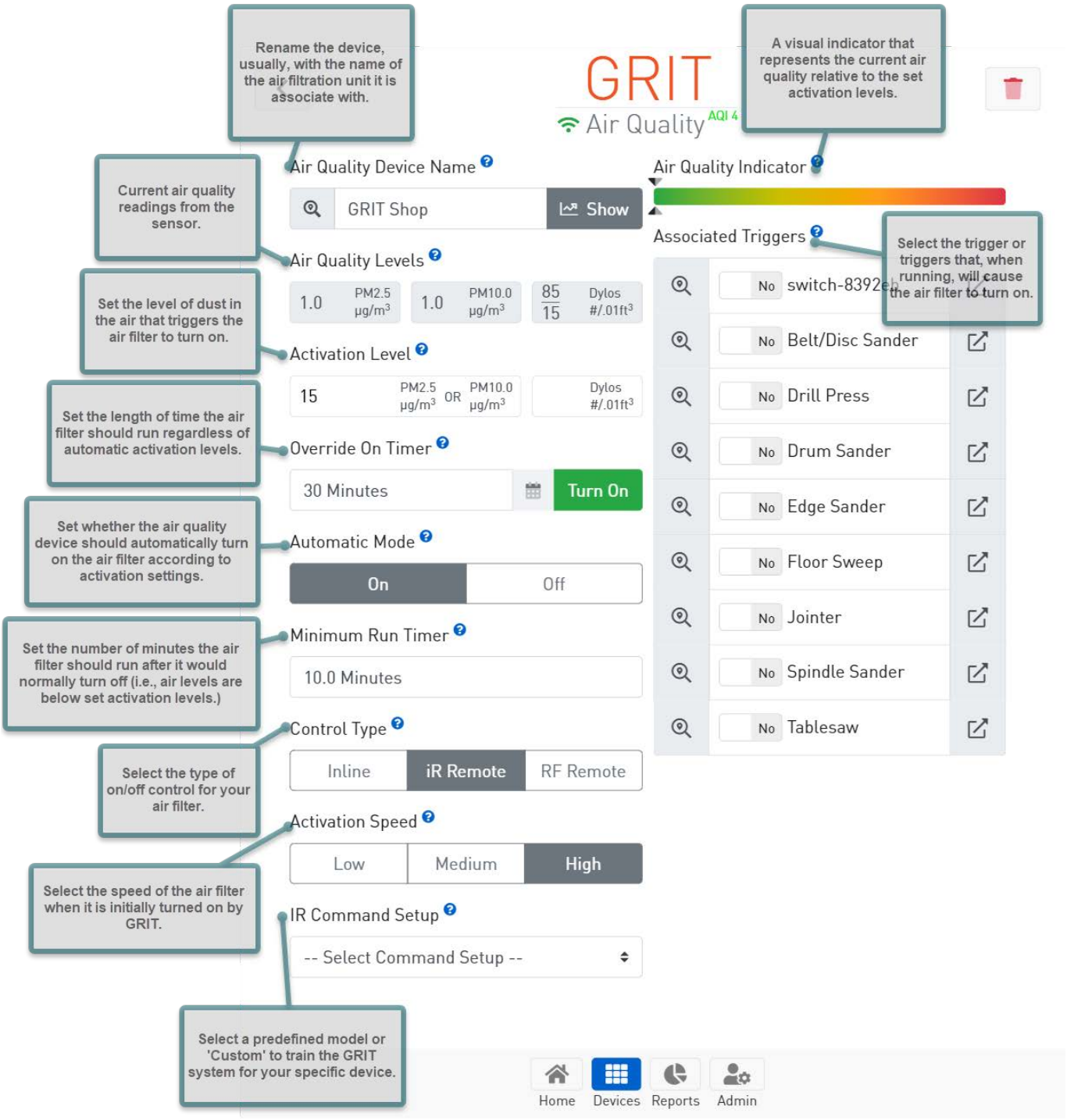

**Step 4:**

Remove the white sticker from the back of the iR emitter and place on top of the eye on the air filtration system.

Dusty environments might need more tape.

Note: If your shop has multiple Air Quality devices, you may need to cut off the second emitter to avoid sending signals to other devices.

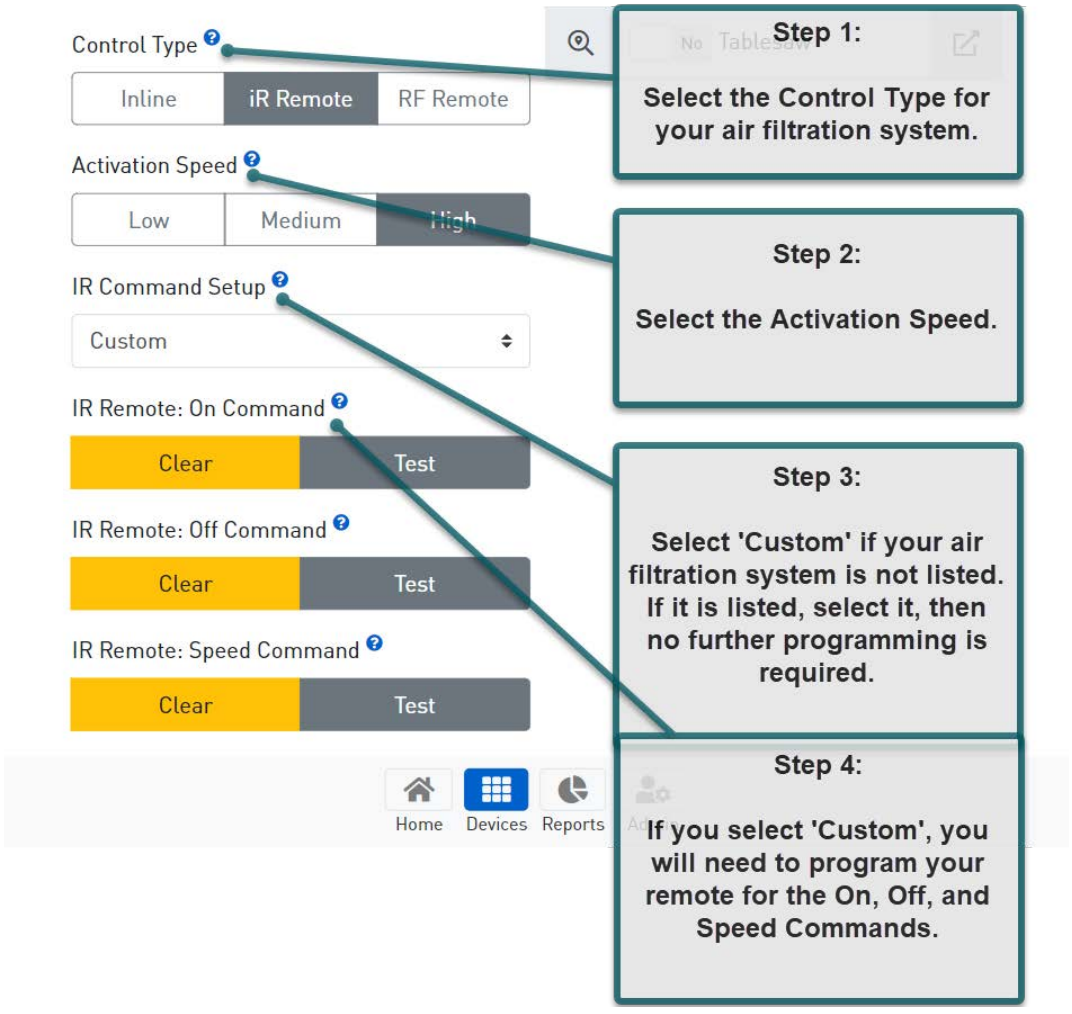
# Air Quality Device Configuration



# Air Quality Device Configuration with an iR or RF Remote

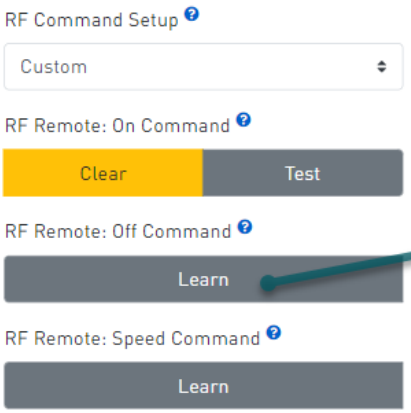
To program the GRIT Air Quality device to your air filtration system, first determine if the remote is iR or RF. If you are unsure, you can determine this by looking for a clear LED bulb on the remote or a tinted plastic window on the top of your remote. If none is present, it is RF.





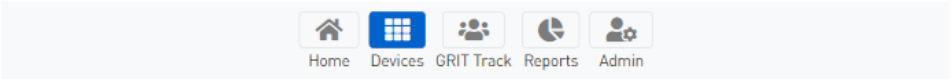

**Step 5:**

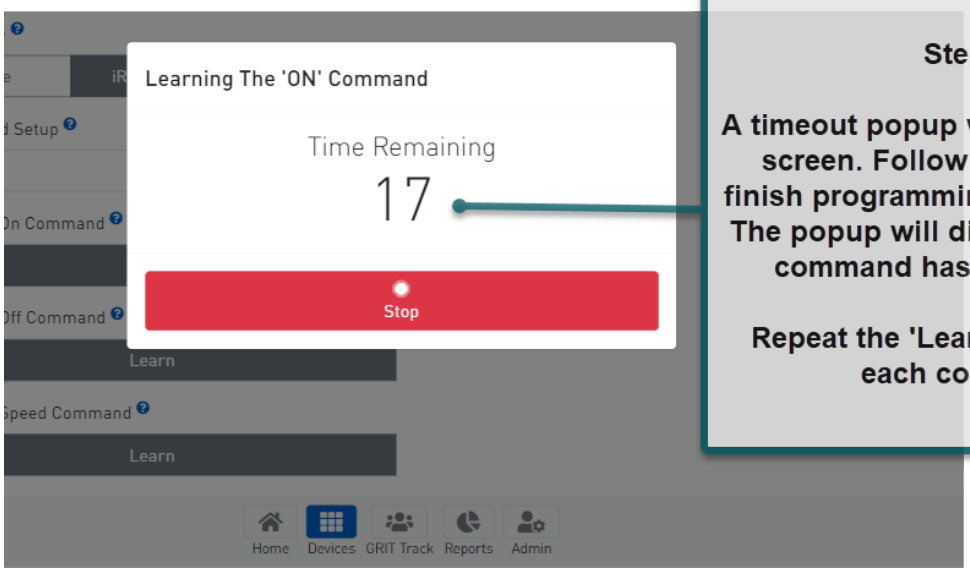
**Point the remote (iR or RF) at transmitter located inside the vent on the side of the Hub.**




**Step 6:**

**Select 'Learn' for each command you need to program.**



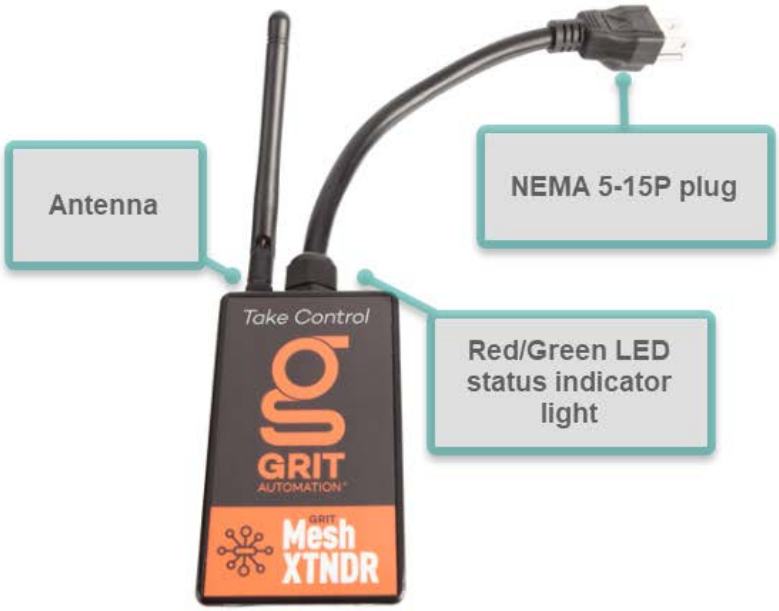

**Step 7:**

**A timeout popup will display on the screen. Follow the prompts to finish programming that command. The popup will disappear once the command has been learned.**

**Repeat the 'Learn' sequence for each command.**

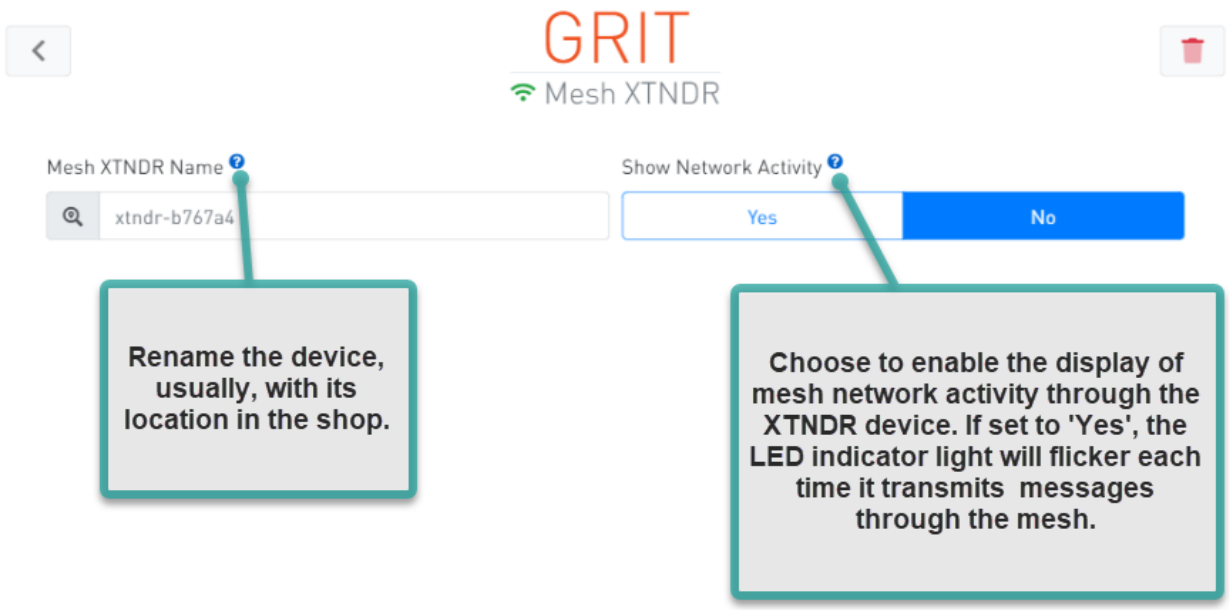
# Mesh XTNDR

The Mesh Xtndr device extends the range of the GRIT mesh network in situations where devices are having trouble communicating.




## Installation

# Mesh XTNDR Device Configuration



# GRIT Track®

## Overview

As discussed in the previous section on GRIT Lock®, shop safety is our number one objective. GRIT Track® builds on the lock/unlock functionality with individual user access control per tool. Usage of dangerous shop equipment and tools can now be limited to users with the correct trainings that have been granted access from a shop manager.

GRIT wants you to get the most out of what your system can offer!

Use GRIT Track® to:

- Create shop user profiles with contact information and configurable demographic information.
- Assign administrator privileges to a user or multiple users.
- Give a user permissions for a tool or a group of tools.
- View detailed reports of which tools are used, when, how long, and by whom.
- View which tools a user has permissions for, when permissions were granted, and by which administrator(s).
- Determine which user damaged a tool.
- Revoke permissions for a user, if needed.
- Create, view, and organize notes for individual users.
- View overall shop and tool usage trends to make informed decisions on shop staffing, shop hours, future tool purchases, and more.

The GRIT Track® system interfaces with RFiD devices and the GRIT SignOn system.

# GRIT Track® RFiD

GRIT Track® RFiD allows the shop administrator(s) to control and monitor access to all tools by assigning access to individual users. Users carry a GRIT RFiD card and use it to unlock tools they are allowed to use.


## Installation


**Step 1:**

Adhere the RFiD device to your tool using the provided VHB tape and press firmly until adhered. Be sure the area is clean or tape will not adhere properly.

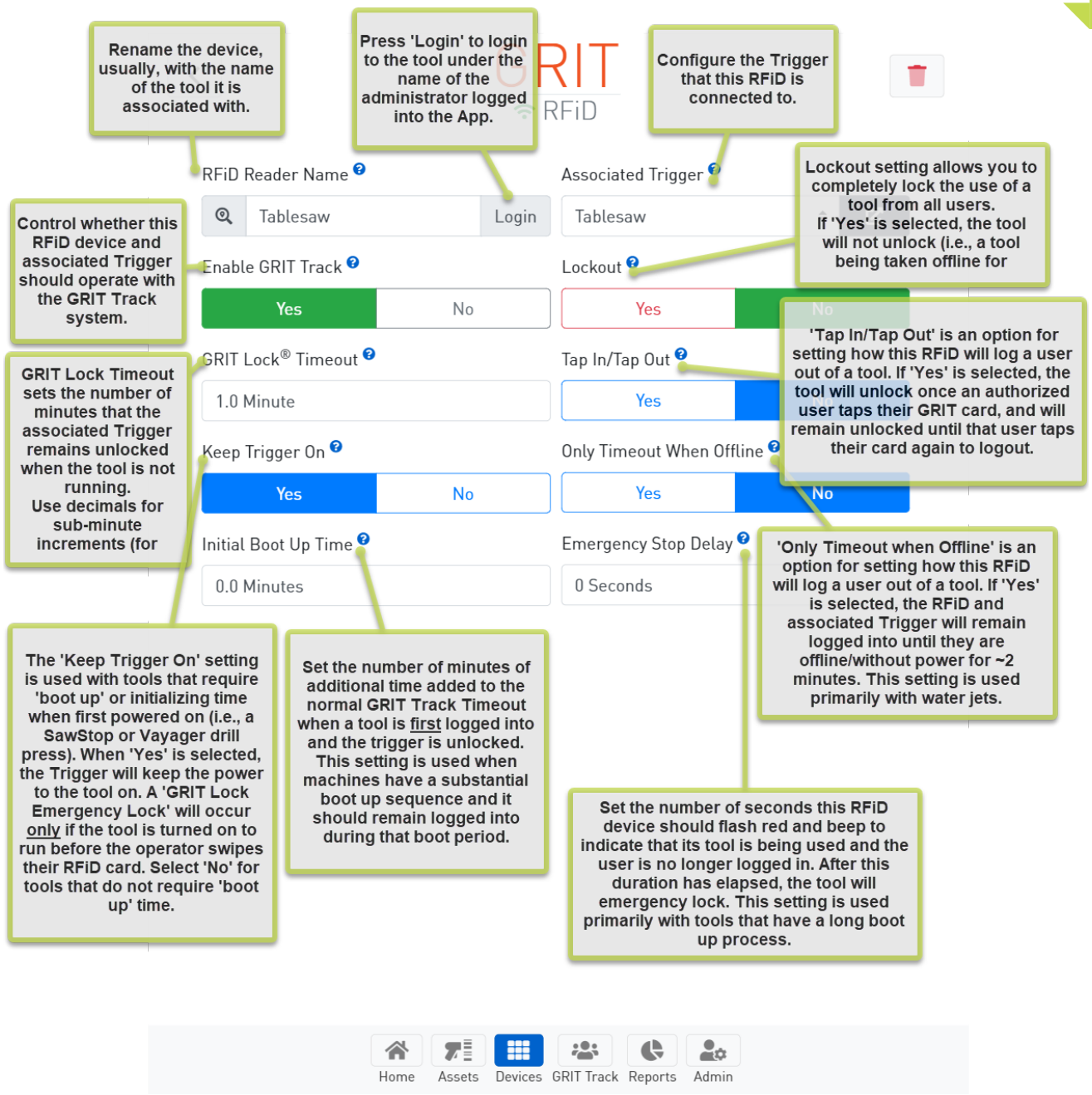

**Step 2:**

To power the RFiD, run the provided low-voltage wire from the green low-voltage terminal on the RFiD to the green terminal of the Trigger.

Use zip ties or cord wrap to secure the low-voltage wire to the tool's power wire for a tidy install.

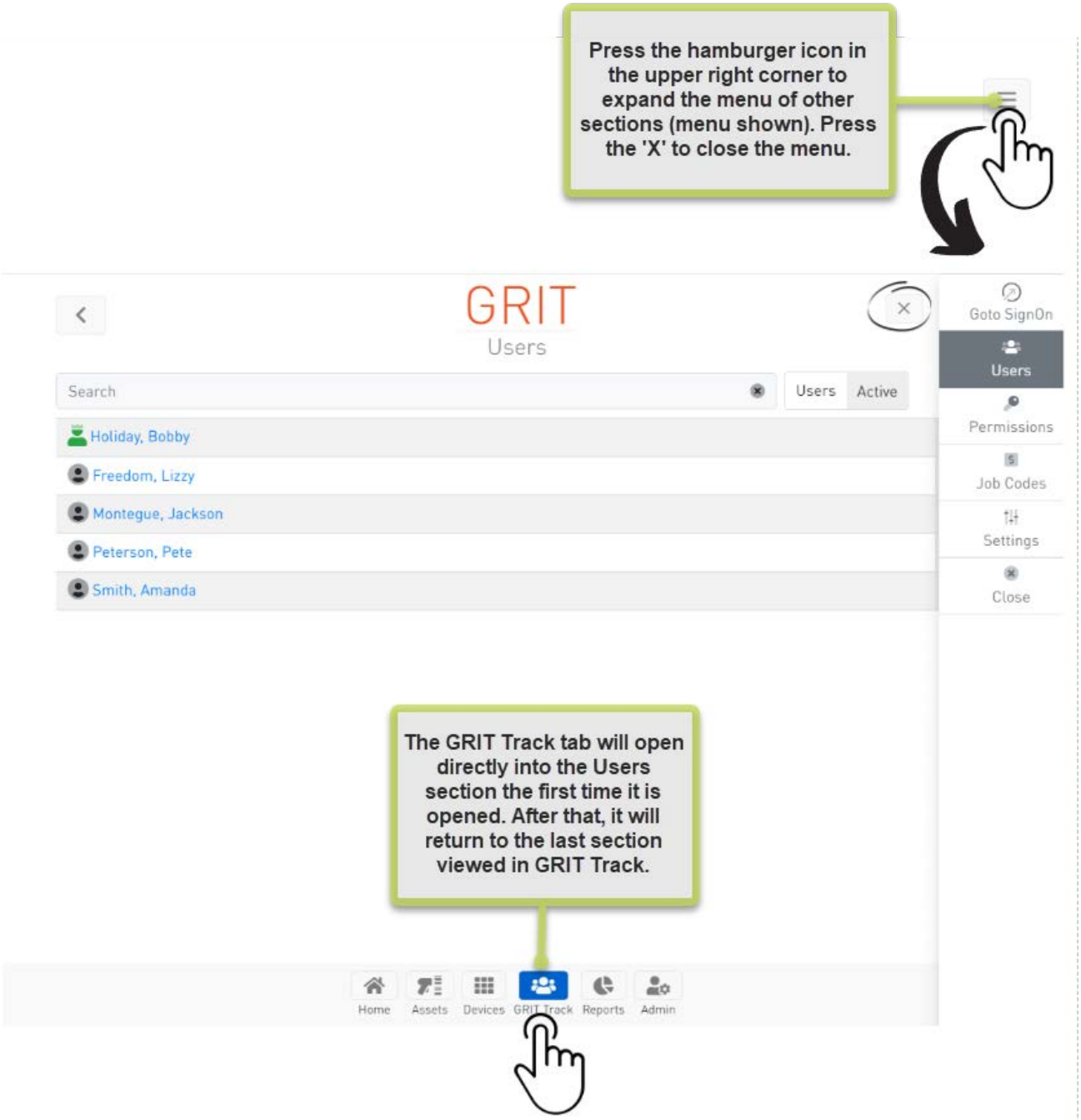
# GRIT Track® RFiD Device Configuration

Taking time to accurately configure each tool's RFiD device is extremely important for the operation and safety of GRIT in your shop. The configuration of a tool's RFiD device could vary as much as the configuration of its Trigger. The various configuration abilities are detailed in this section. Please note that additional examples may be available by clicking on the '?' next to any setting in the App.

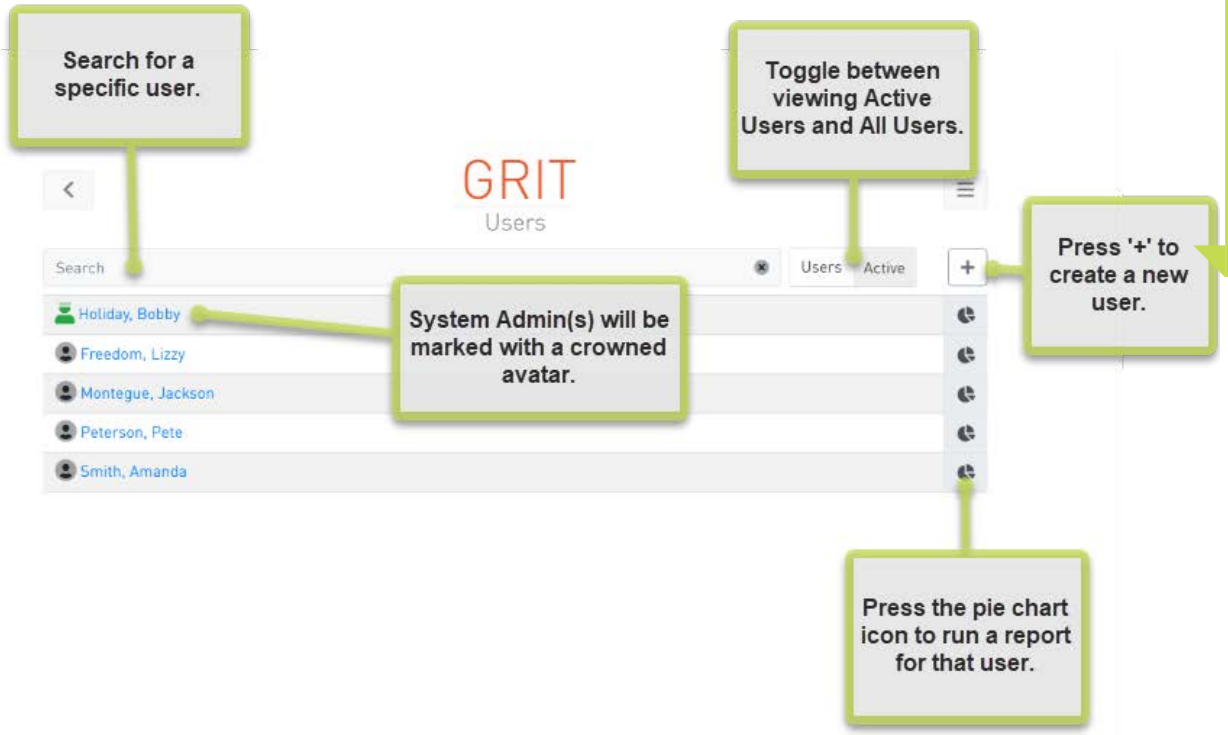


# GRIT Track® Administration

After the installation and configuration of your RFiD devices, use the GRIT Track® section in the App to create and manage users, create and assign tool permissions, assign permanent RFiD access cards, manage demographic settings, and more.



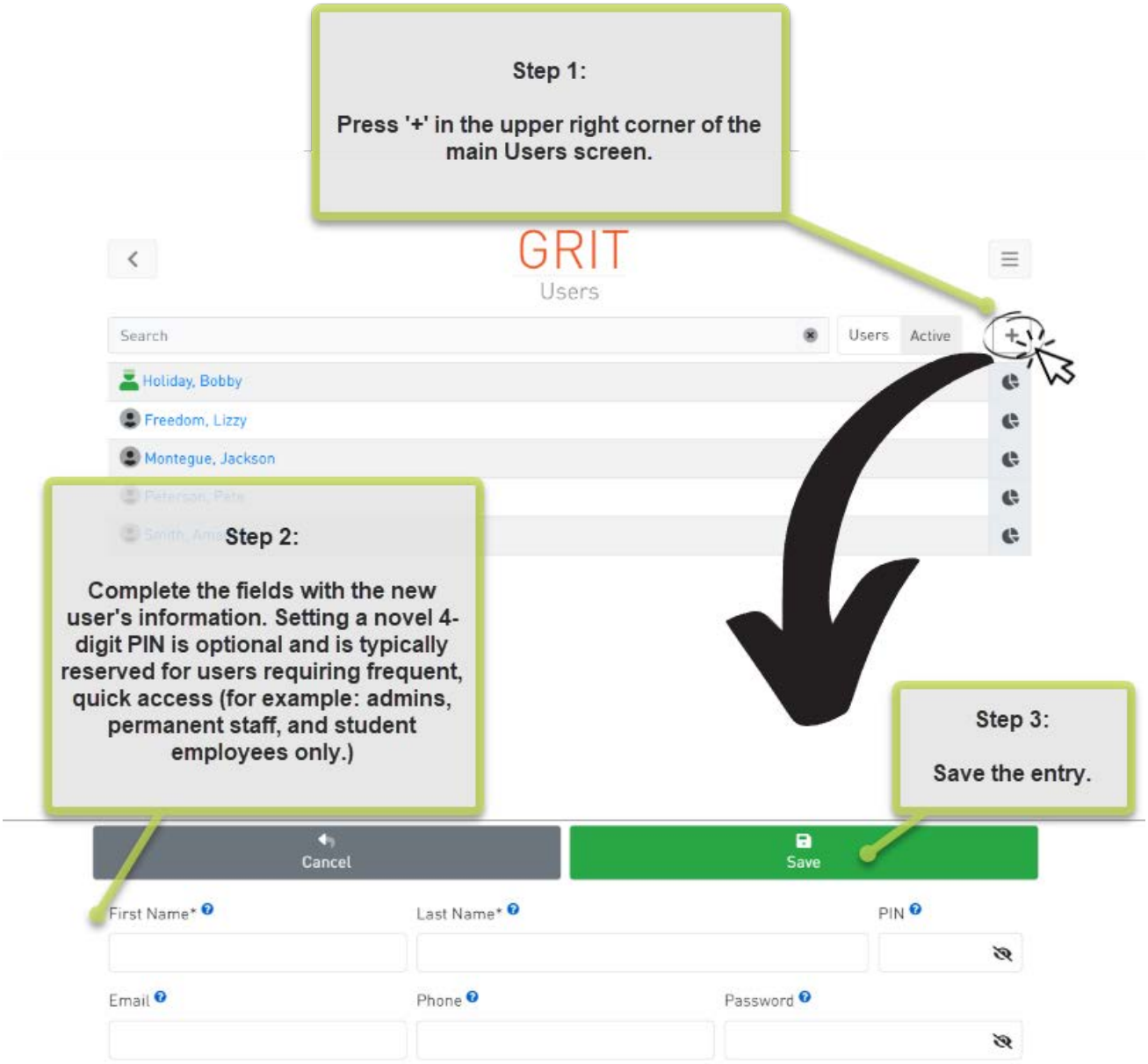
# Users





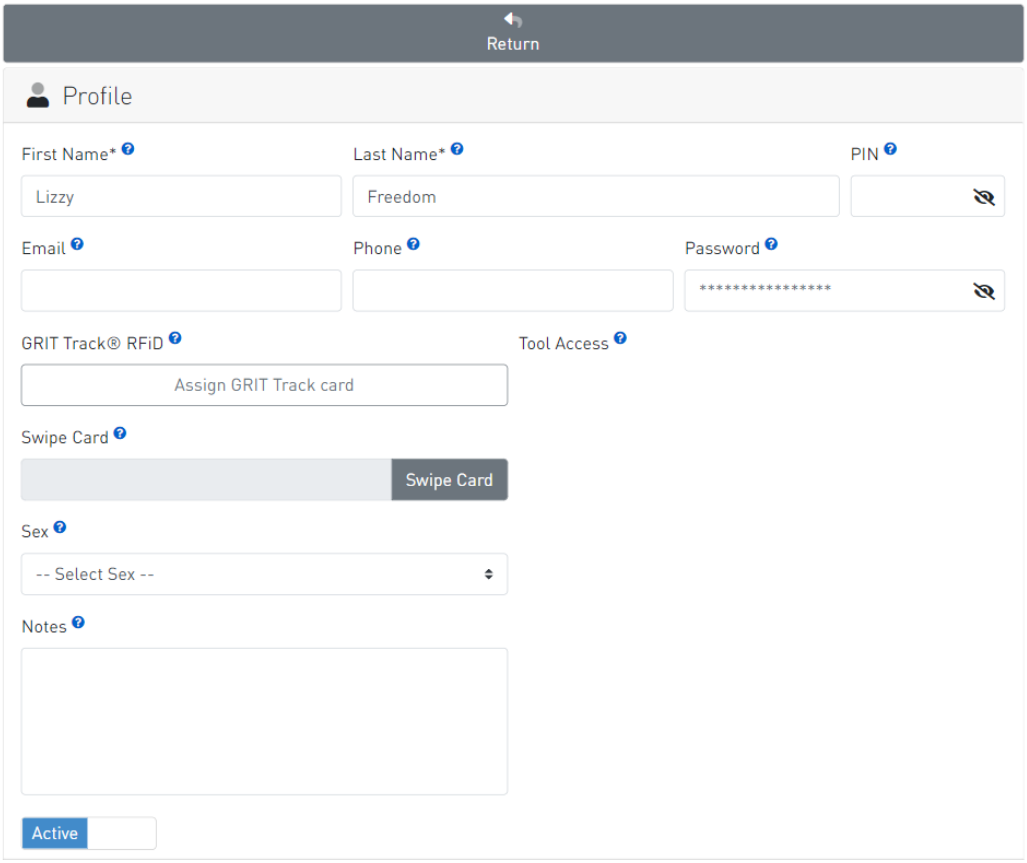
Note: When more than 25 users are in the system, it shows a pagination control at the top and bottom of the list.

# Create User




After saving, you will be taken to the new user's Profile screen to complete extended user profile information.

# Extended User Profile




In the new user's Extended User Profile, you can:

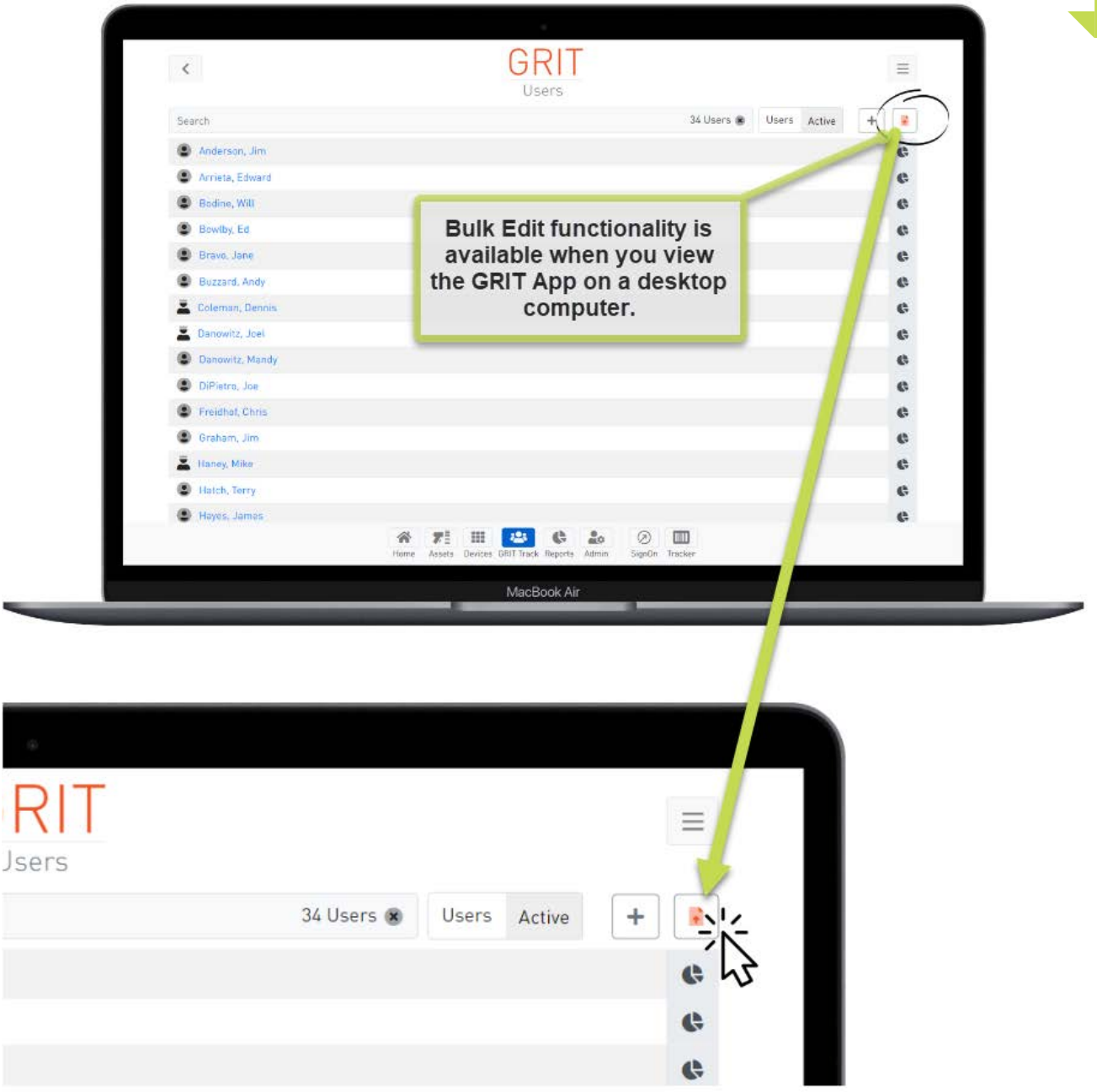
- Assign a permanent GRIT Track card.
- Assign an identifying Swipe Card (available only with SignOn systems).
- Enter Demographic information (these fields are created under 'GRIT Track -->Settings'.)
- Add Notes about the user.
- View a list of all Tool Access permissions.
- Change user status from Active to Inactive.

*Note: All changes auto-save. Press Return to go to the main Users screen.

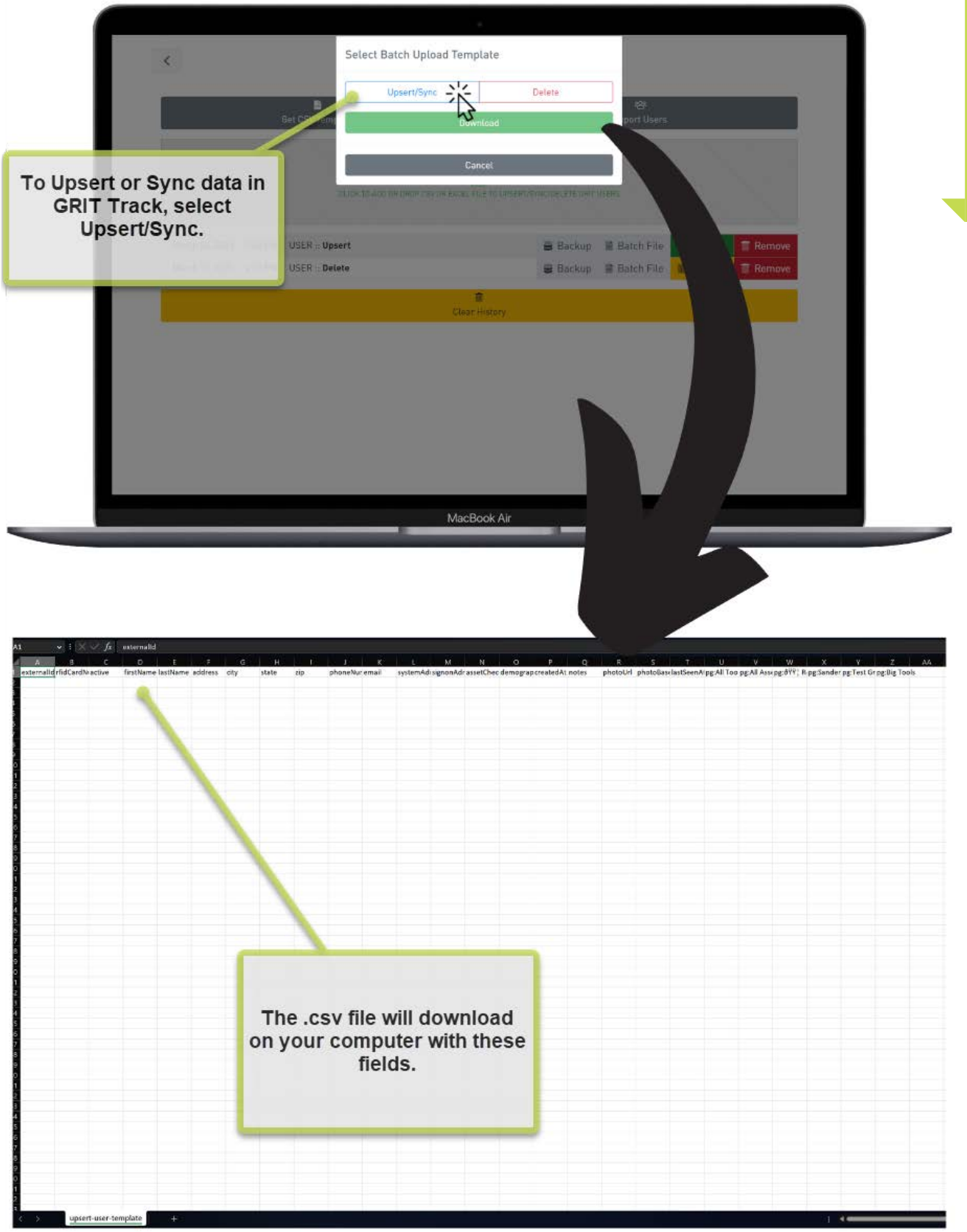
# Modify Existing User

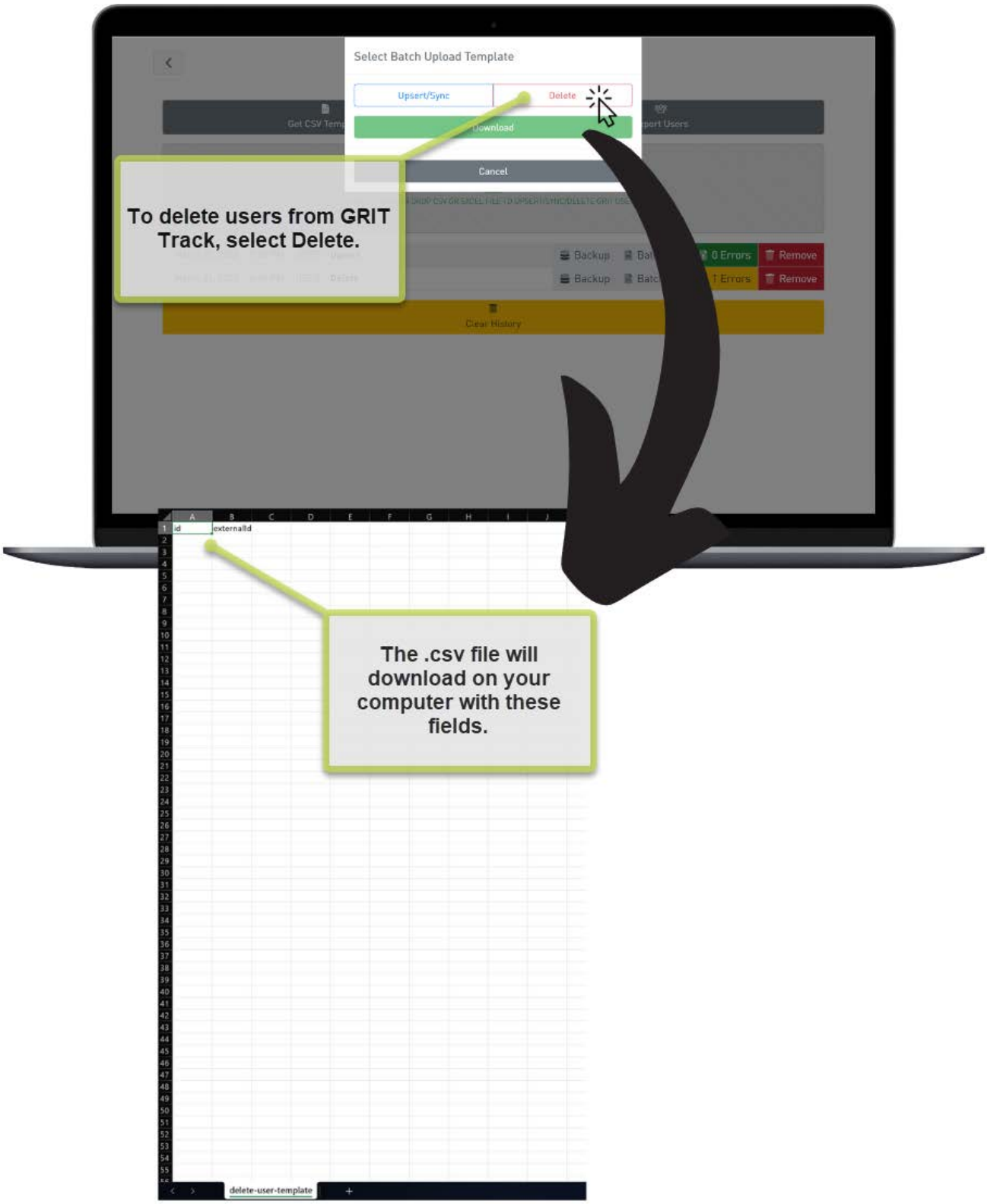
# Bulk Edit

The Bulk Edit feature is only available for users who have a SignOn System, but will be used in the GRIT Track section of the App.

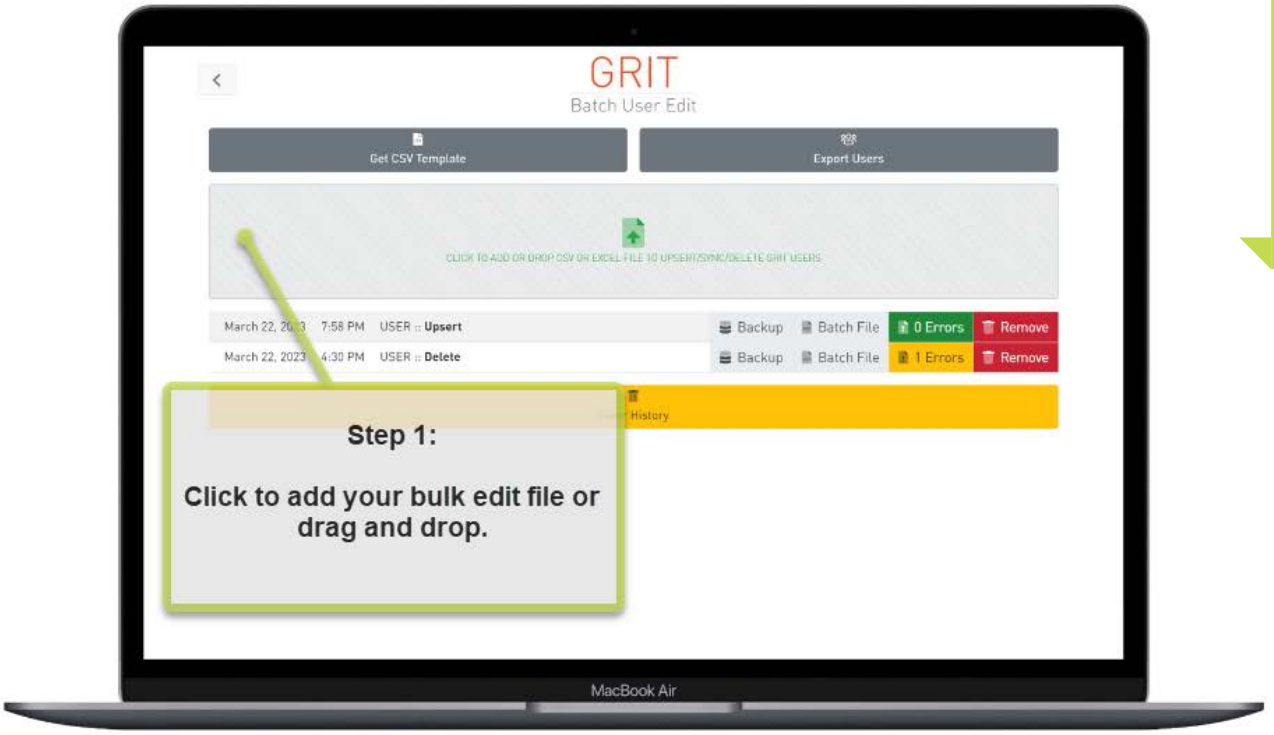


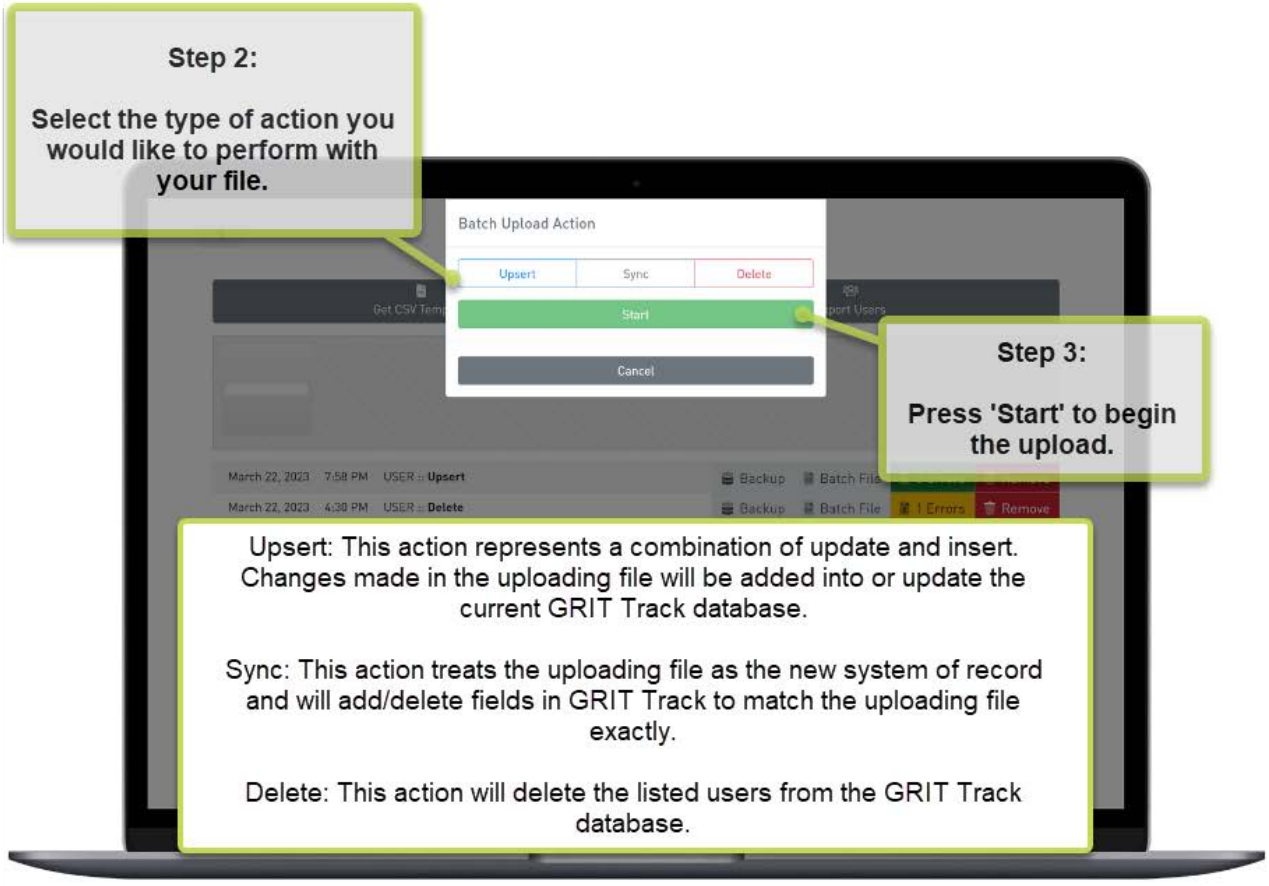
# Bulk Edit Templates


Select Batch Upload Template
Upsert/Sync
Delete
Download
Cancel
To Upsert or Sync data in GRIT Track, select Upsert/Sync.
USER :: Upsert
USER :: Delete
Backup
Batch File
Remove
Clear History
MacBook Air
externalId
rfidCardNo
active
firstName
lastName
address
city
state
zip
phoneNu
email
systemAd
signonAdr
assetChec
demograp
createdAt
notes
photoUrl
photoBas
lastSeenA
All Too
All Ass
Sander
Test Gr
Big Tools
upsert-user-template
The .csv file will download on your computer with these fields.

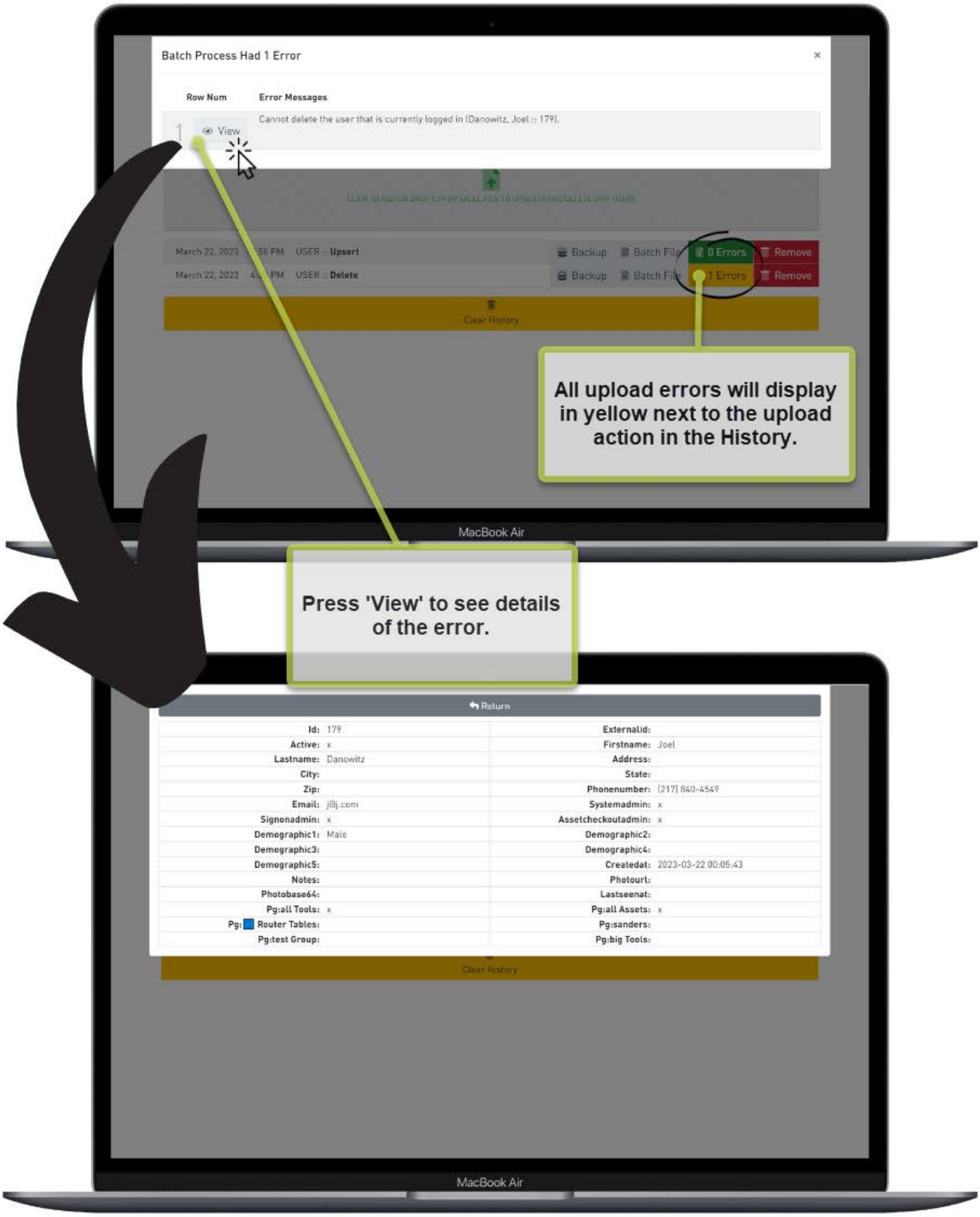

Select Batch Upload Template
Upsert/Sync
Delete
Download
Cancel
To delete users from GRIT Track, select Delete.
Backup
0 Errors
Remove
Clear History
id
externalId
The .csv file will download on your computer with these fields.
delete-user-template

# Bulk Edit File Upload

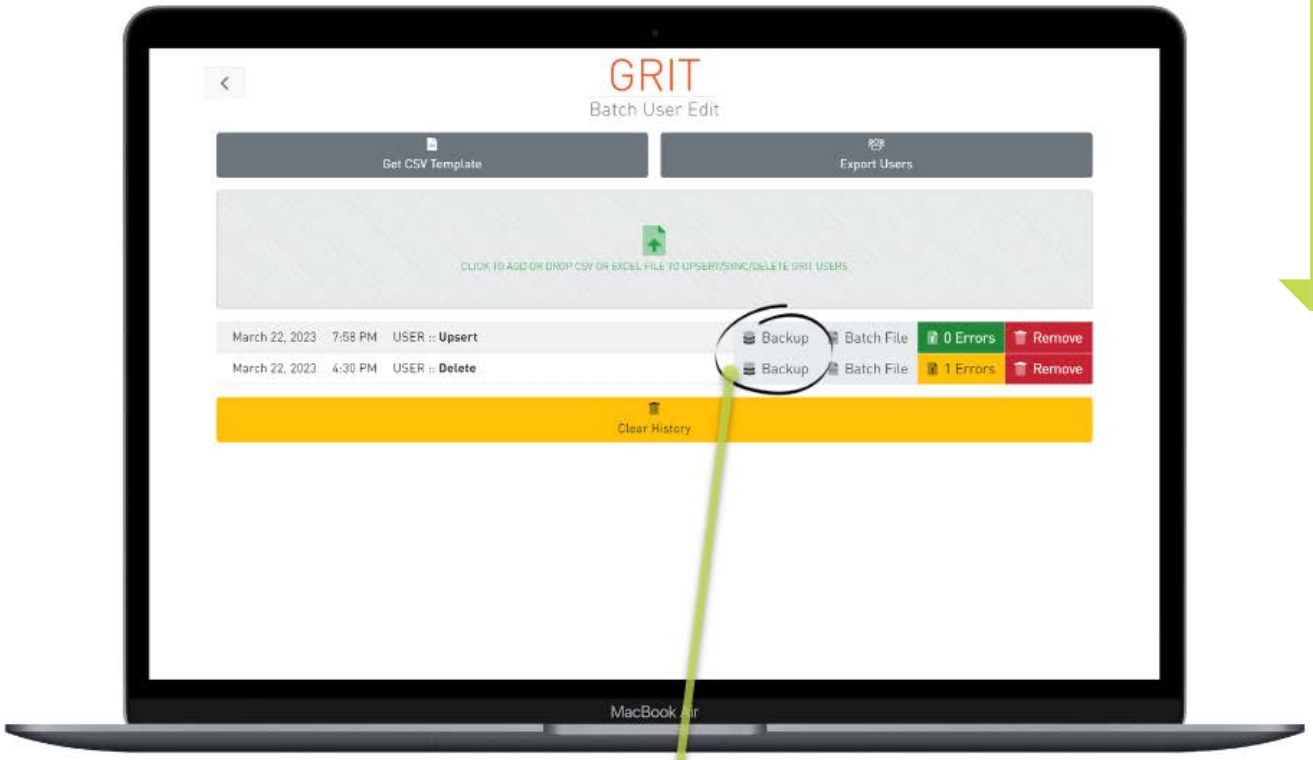


# Upload Errors



# Previous Backup Version



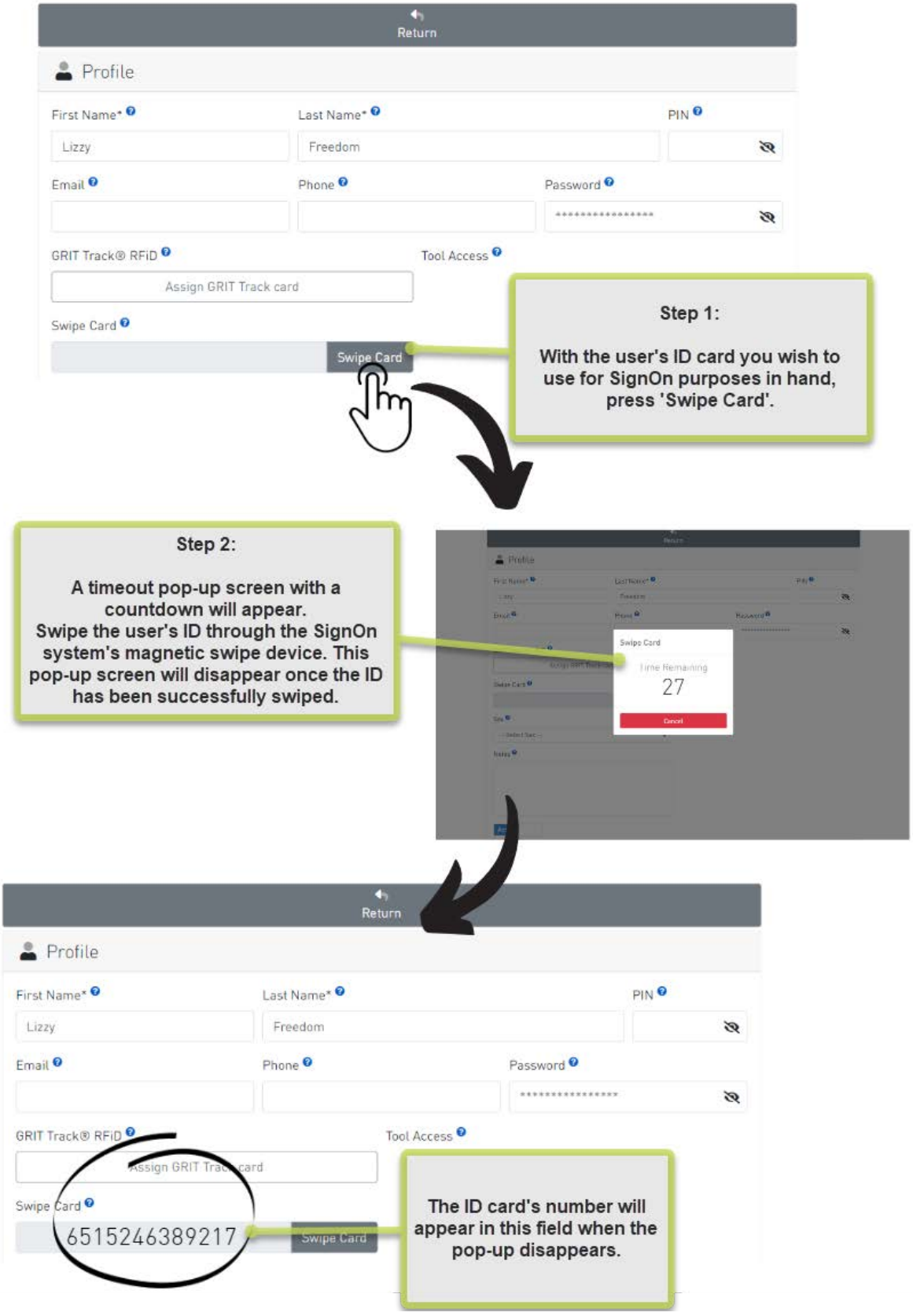

The Backup button next to each upload action has the GRIT Track database version prior to that bulk edit action.

If you need to go back to that previous version of the database:

- Press 'Backup' to download that file.

- Upload that backup file with a 'Sync' upload action.

# Assign User Swipe Card for SignOn



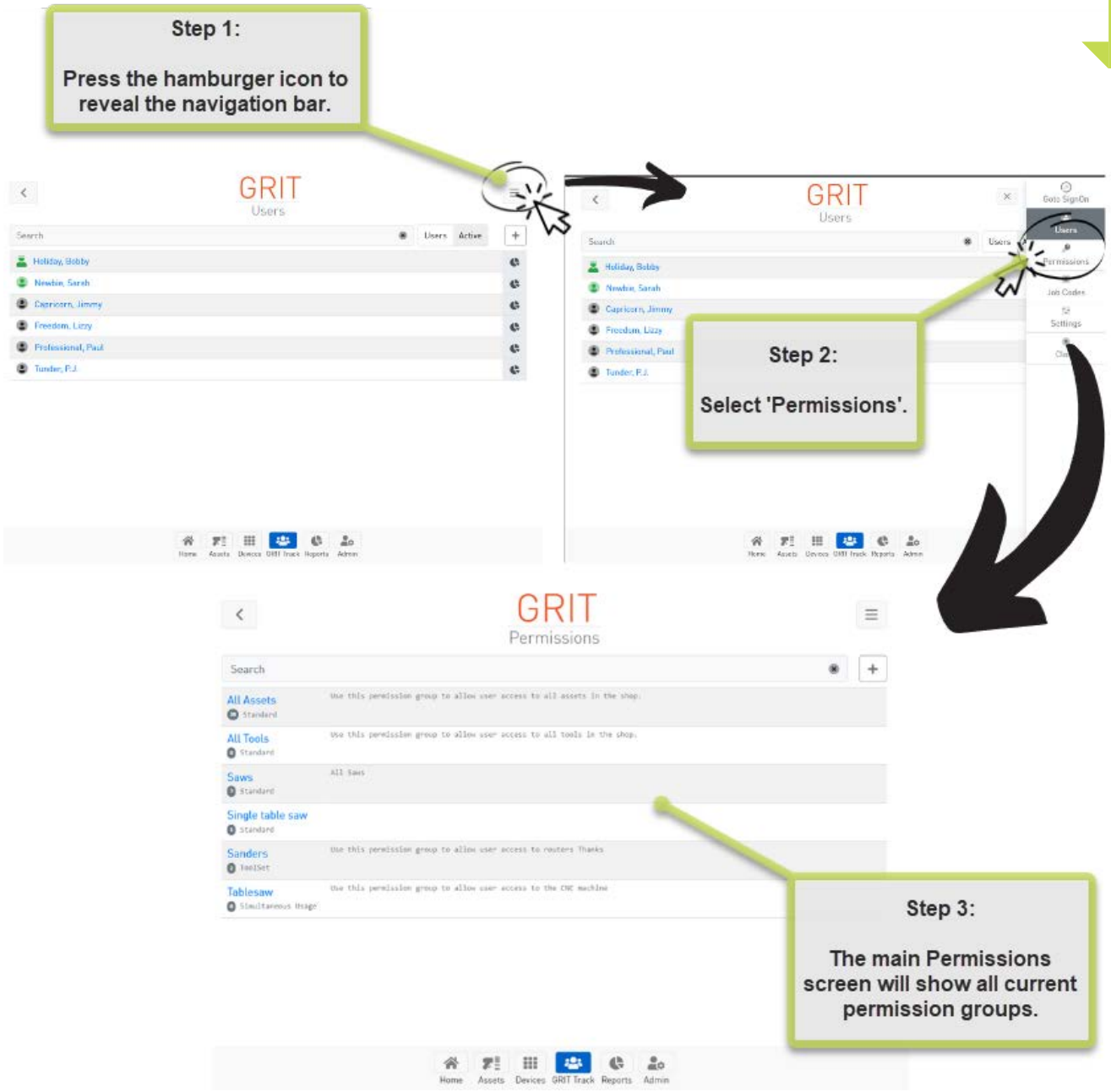
# Assign Permanent GRIT Track® card

# Imported User with Proximity Card

# Permissions

Setting Permissions is an integral part of fully utilizing the GRIT Track® system. This section covers how to create tool permissions, assign them to users, and grant administrative permissions to users.

To access the Permissions section of GRIT Track®:




The 'All Assets' and 'All Tools' permission groups are the default groups for GRIT Track®, however, it is easy to add custom permission groups.

# Create New Permission Group

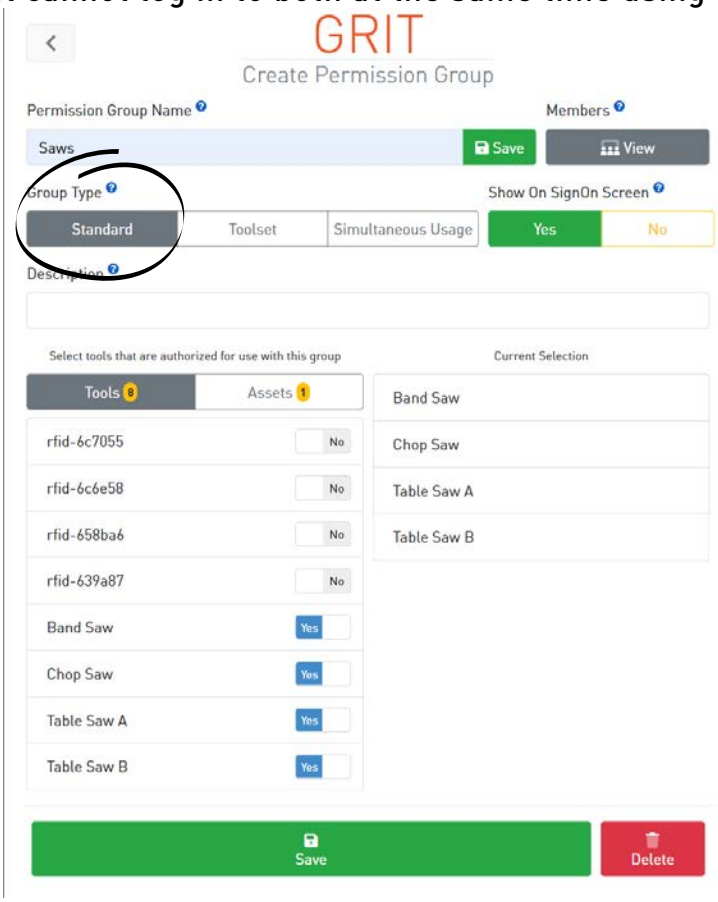
# Group Type

Setting permissions for tool usage through GRIT Track® ensures that users can only unlock tools they have permission to use. There are three types of tool permission groups: Standard, Toolset, and Simultaneous Usage.

## Standard

The Standard permission for GRIT assumes that one person can only perform one task at a time, and generally speaking, that means one tool at a time. In a Permission Group with multiple tools, selecting a Standard Group Type means that users are still only able to access one tool at a time. It is a shorthand way of assigning permissions to a number of tools, while still only allowing use of one at a time for a user.

For example, if a user has been given permission to use all of the saws in the shop (in a tool permission group named 'Saws') and is cutting a sheet of plywood on the table saw, they cannot also be using the chop saw. They could use these saws one after the other, but cannot log in to both at the same time using their GRIT card.

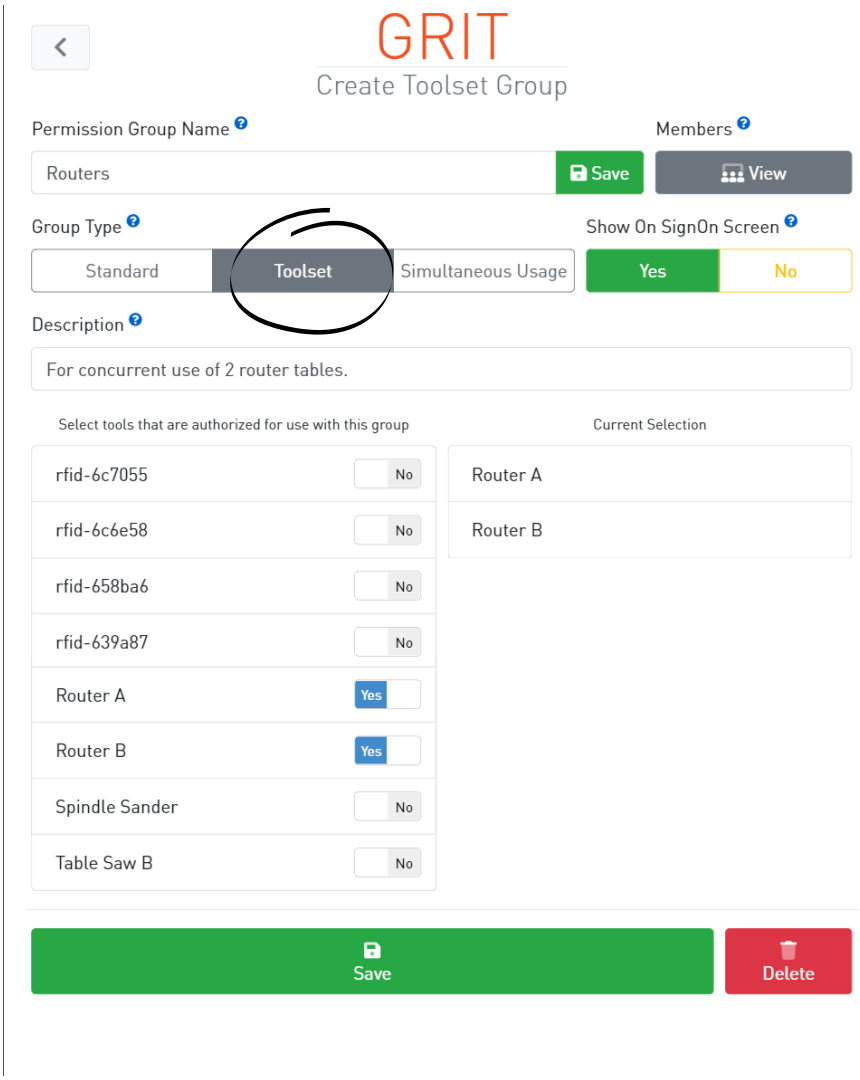



Selecting a 'Standard' Group Type for a Permission Group means a user can only access/ turn on one tool at a time.

## Toolset

The Toolset permission for GRIT assumes that one person can only perform one task at a time, but that it might involve using more than one tool at a time to complete that task.

For example, if a user is building 5-piece construction doors using a rail and stile router bit set, they may need two different router tables operating at the same time. With a Standard Group Type, this is not allowed, but with a Toolset Group Type, it is. Creating a Toolset permission group means that all of the tools in the group can be accessed and run by a user concurrently.

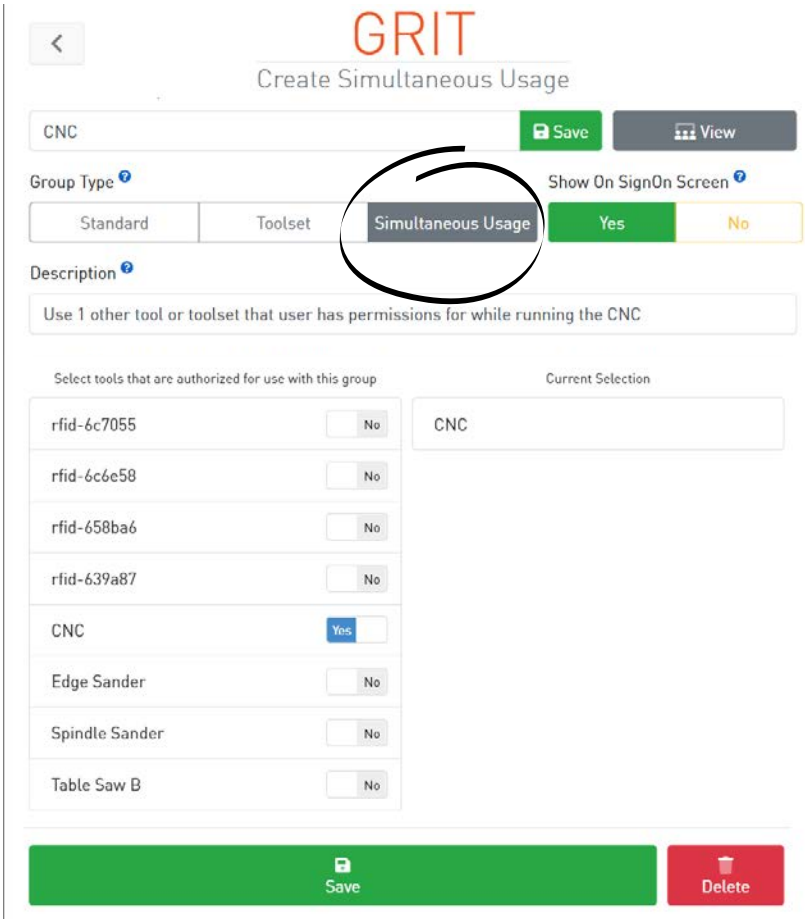



Selecting a 'Toolset' Group Type for a Permission Group means a user can access/ turn on any number of tools in the permission group at the same time.

## Simultaneous Usage

The Simultaneous Usage Group Type assumes that there are tools that can be turned on and run autonomously for a majority of its operation. In those cases, a user could be working elsewhere in the shop.

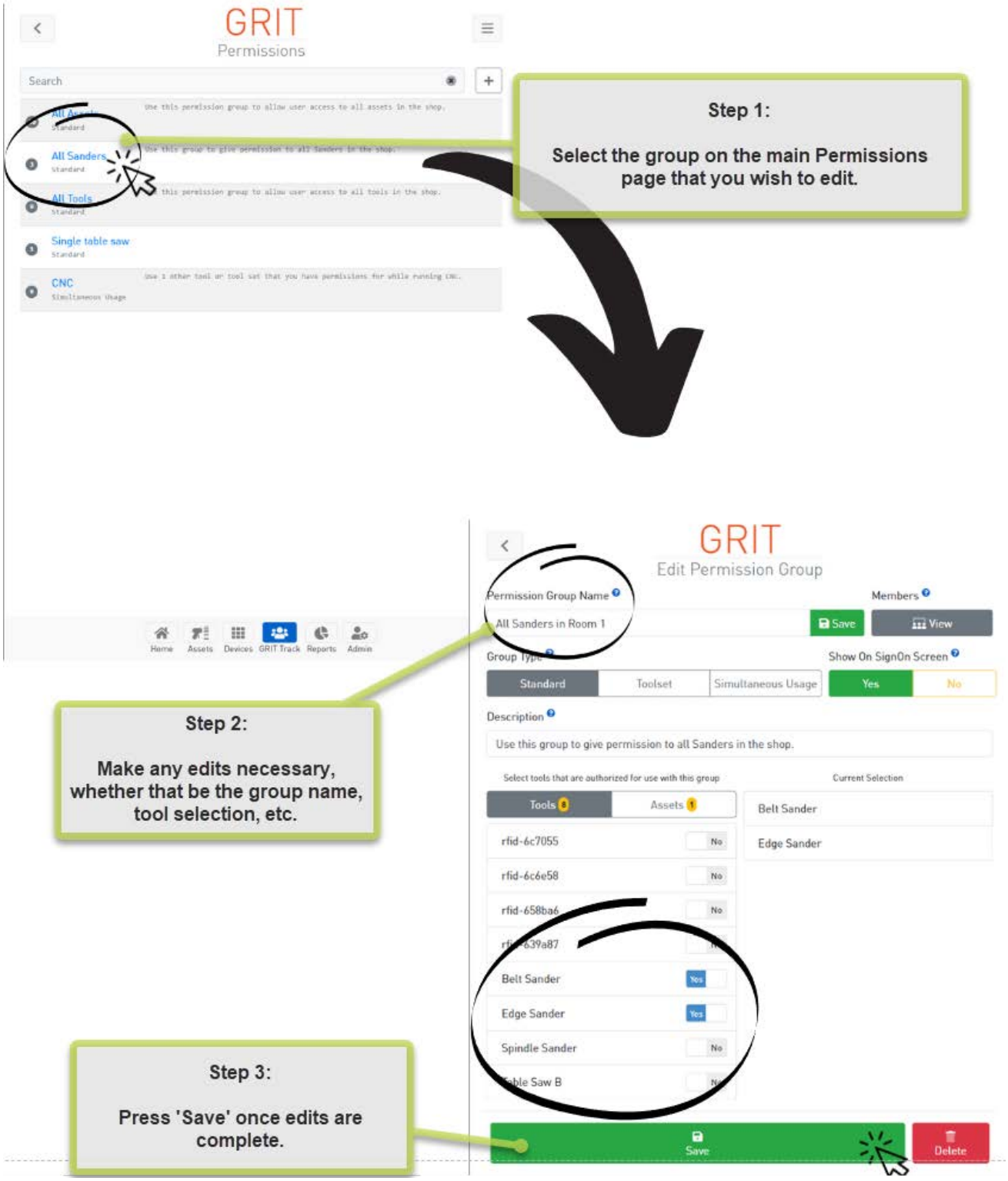
For example, if a user is running a job on a CNC, after the initial setup, they could work on other tasks simultaneously. With a Standard permission group, this is not allowed, but with a Simultaneous Usage group, it is. A user can log into another tool or toolset group that they have permissions for while running the CNC machine specified in this group.




Selecting a 'Simultaneous Usage' Group Type for a Permission Group means a user can access/ turn on the tool (or tools) specified in the selected tool list AND any other tool or toolset they have permissions for at the same time.

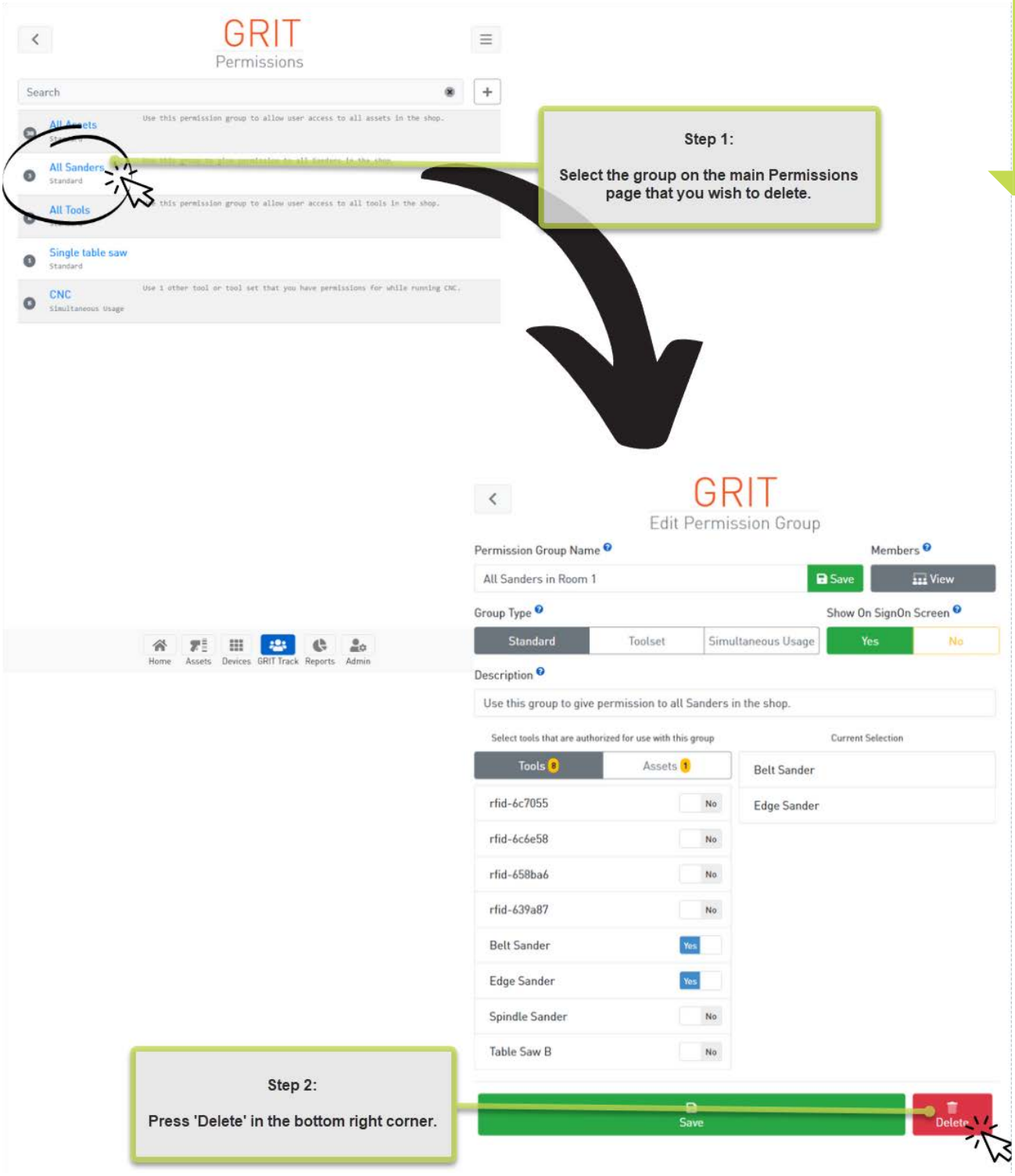
# Edit Permission Group

To Edit a Permission Group:



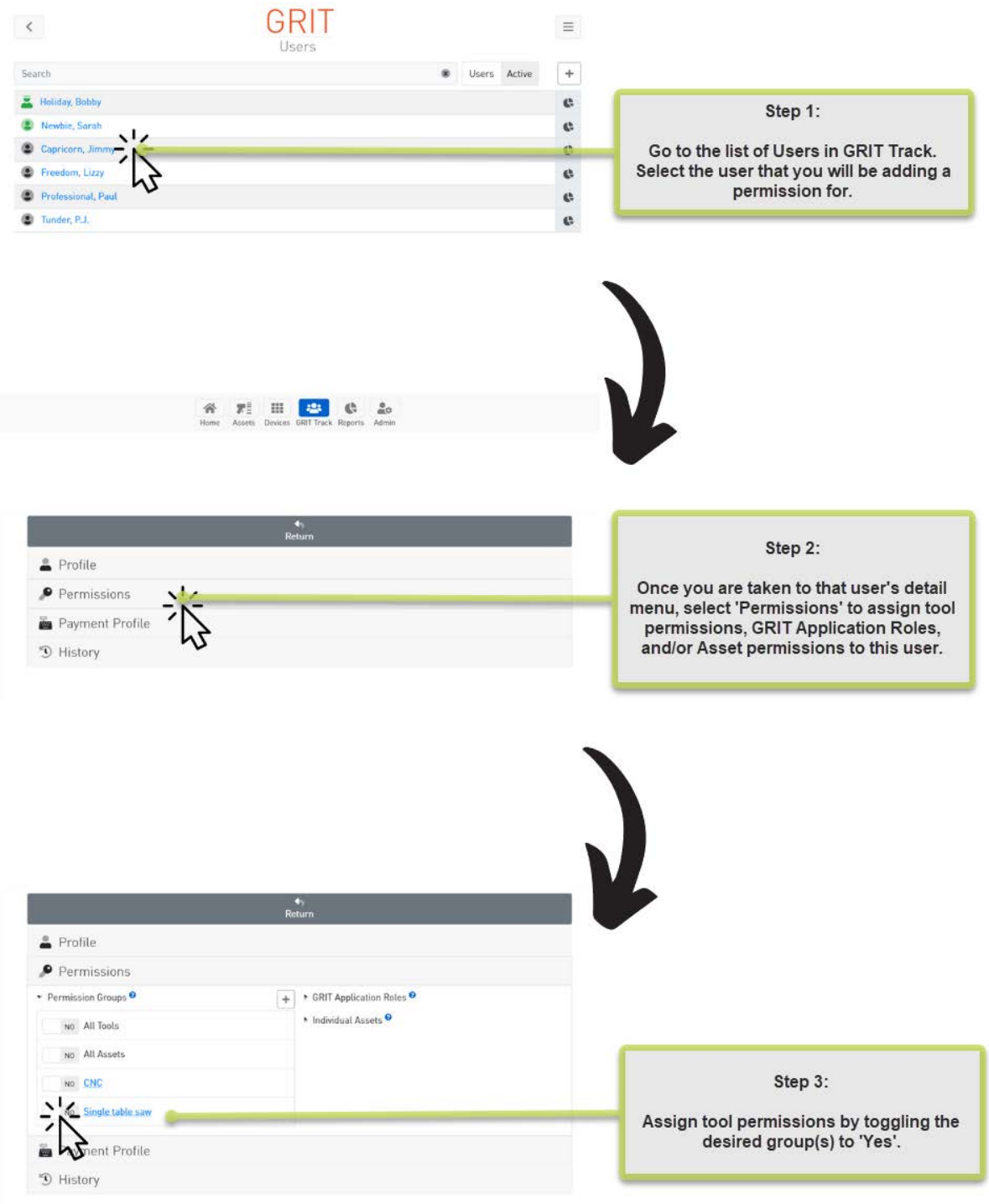
# Delete Permission Group

To delete a Permission Group:



# Assign Permissions to User

Give users permission to use a tool or a group of tools in the shop by assigning a tool permission to their user permissions page.



# Revoke Permissions from User

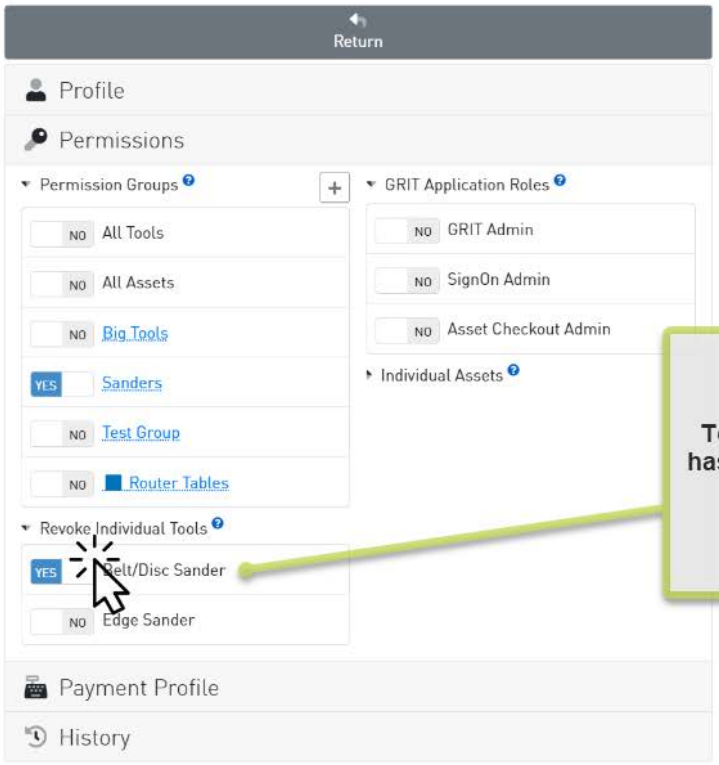



**Step 1:**

**Go to the list of Users in GRIT Track. Select the user that you will be revoking a permission from.**


**Step 2:**

**Once you are taken to that user's detail menu, select 'Permissions'.**



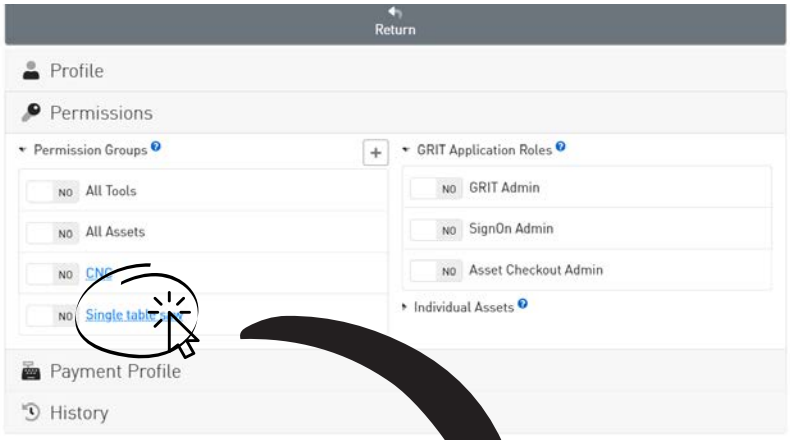

**Step 3:**

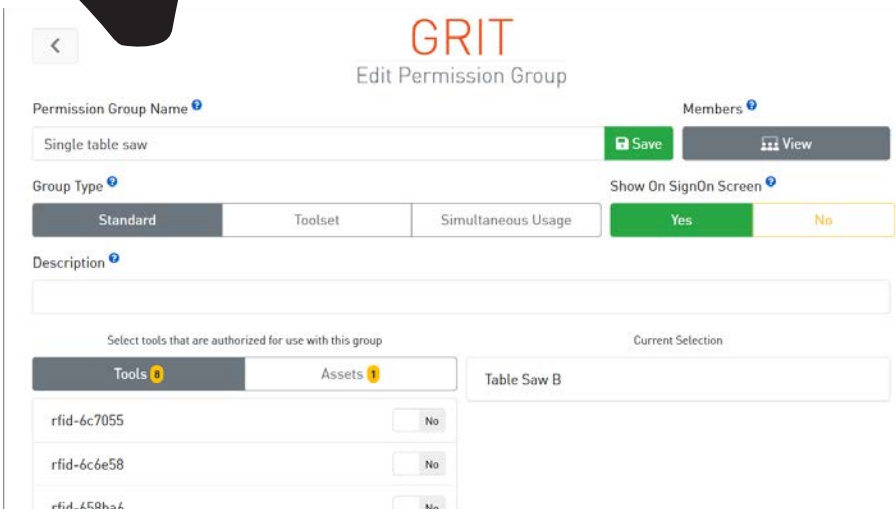
**Toggle to 'Yes' for any tool they've previously has permissions for to revoke for that individual tool.**

**Toggle to 'No' to return that permission.**

# Navigate to Tool Permission Group

To navigate to a tool permission group's edit screen, click the group's name (highlighted in blue) from the user's permissions page.



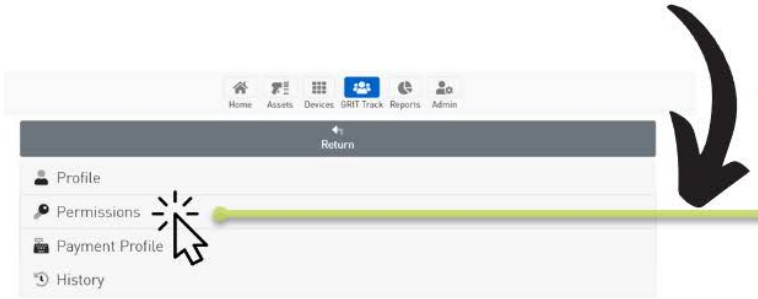
# Assign GRIT Application Roles to User

Give users adminstrative access in various roles.

- GRIT Admin: User with system-wide Administrative access
- SignOn Admin: User with authentication authority on SignOn kiosk
- Asset Checkout Admin: User with authentication authority on Asset Tracker kiosk

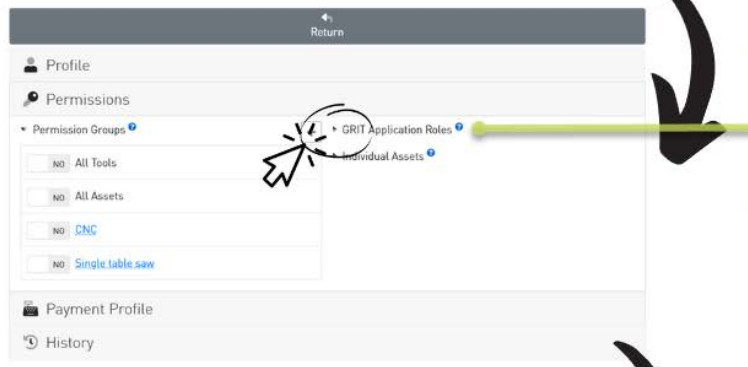

**Step 1:**

Go to the list of Users in GRIT Track. Select the user that you will be adding a permission for.



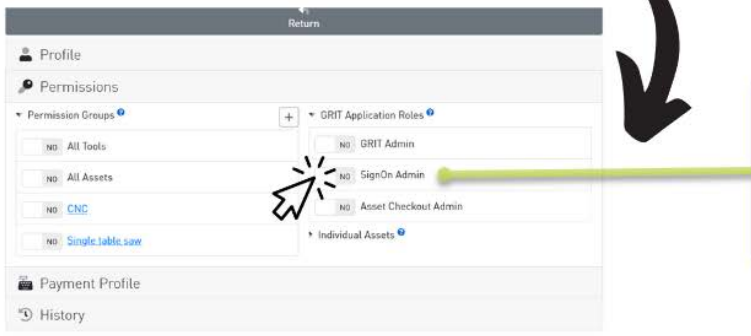

**Step 2:**

Once you are taken to that user's detail menu, select 'Permissions' to assign too permissions, GRIT Application Roles, and/or Asset permissions to this user.




**Step 3:**

Toggle the arrow next to 'GRIT Application Roles' to expand options.

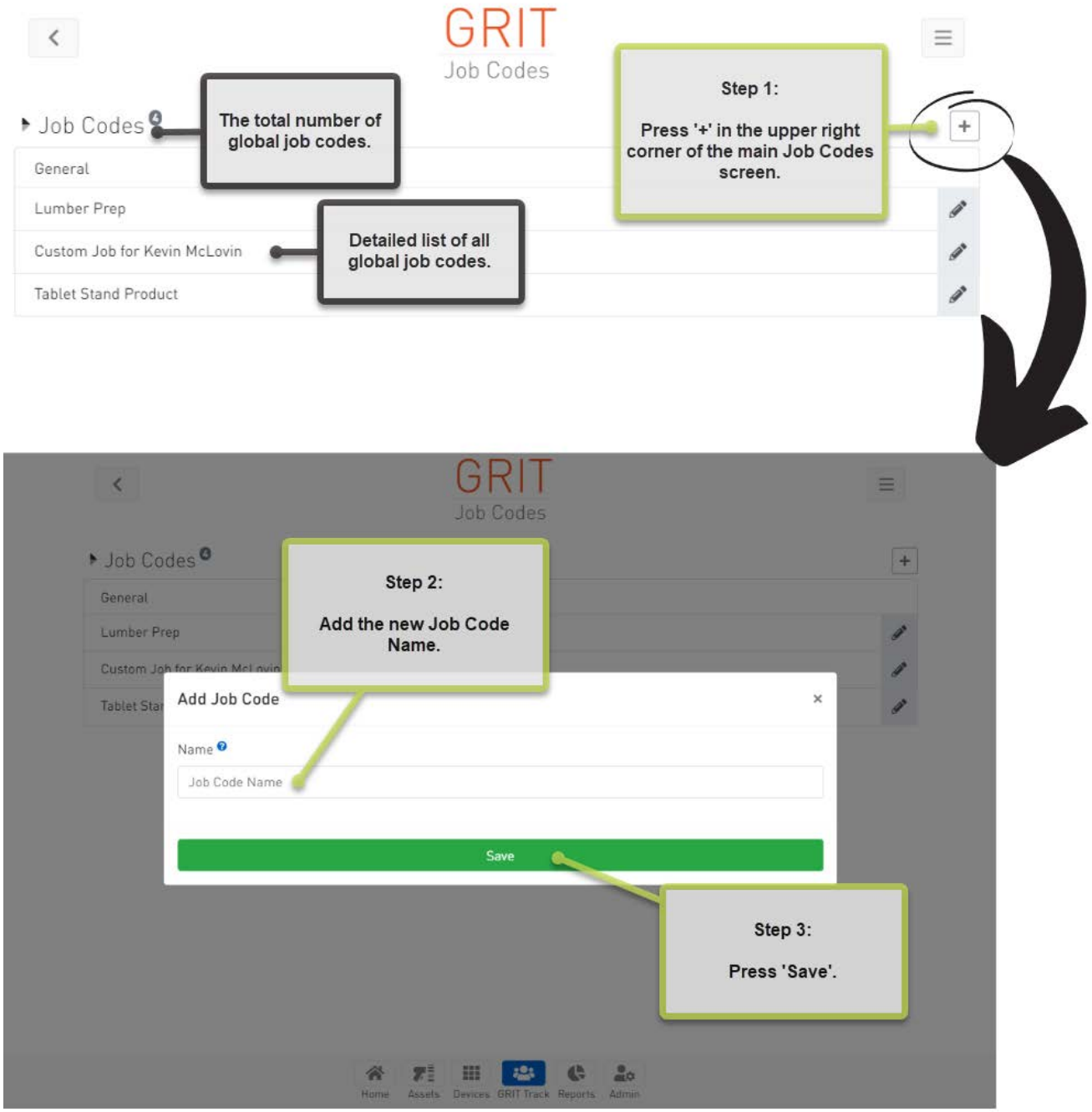



**Step 4:**

Assign administrative permissions by toggling the desired role(s) to 'Yes'.

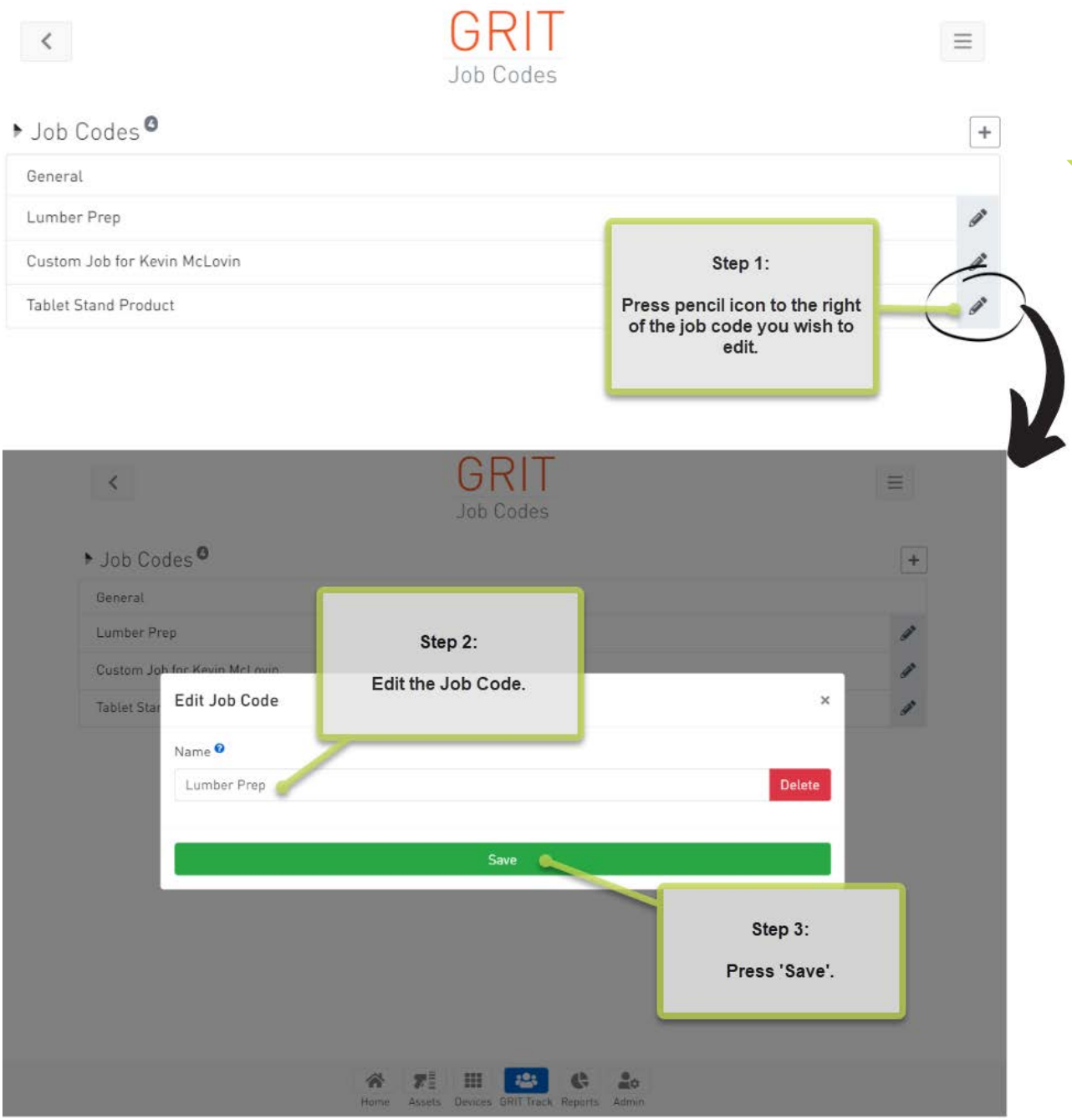
# Add Global Job Codes

Job Codes are only available and visible in the App if you have the GRIT SignOn System.

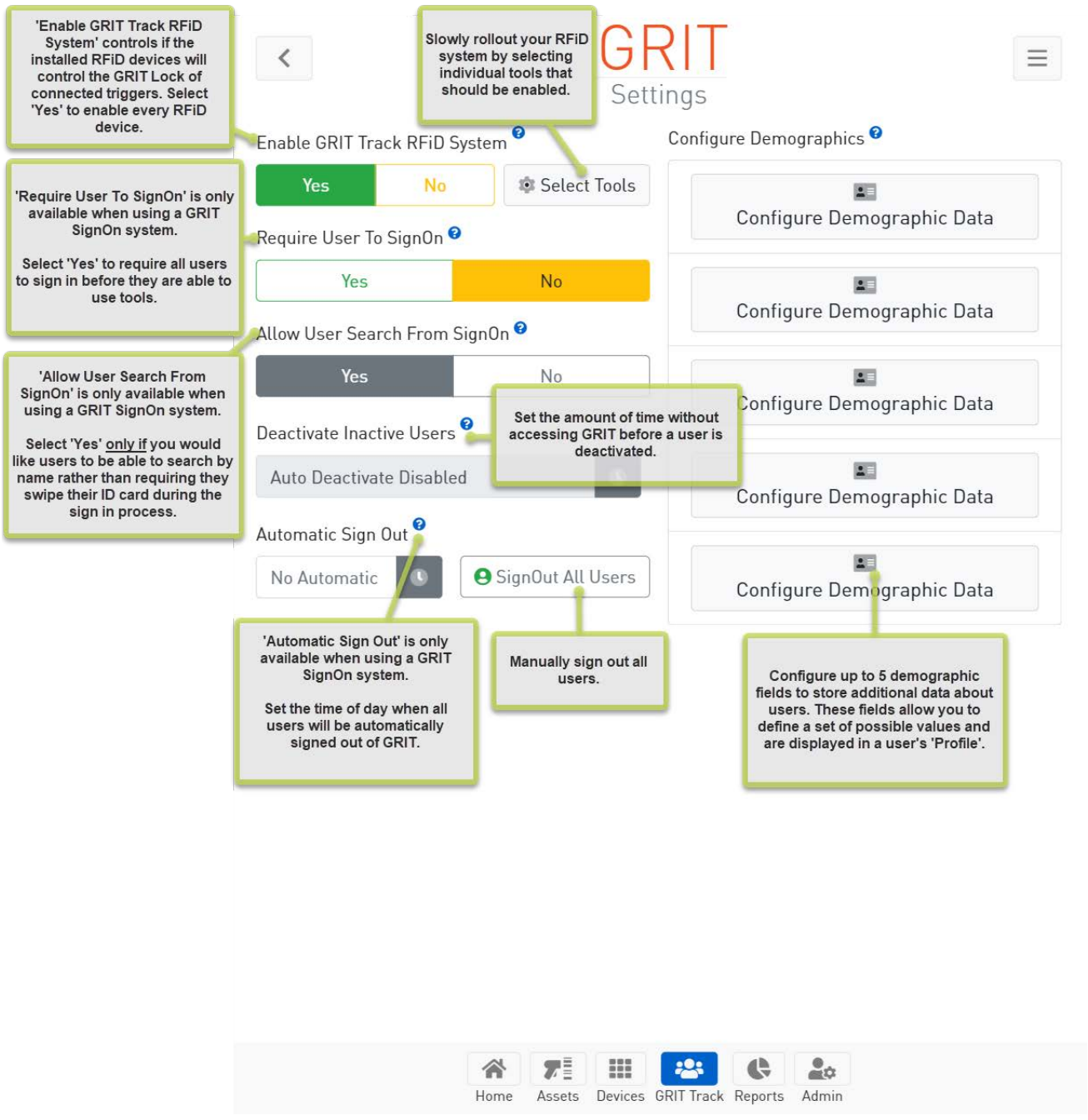


# Edit Global Job Codes

Job Codes are only available and visible in the App if you have the GRIT SignOn System.



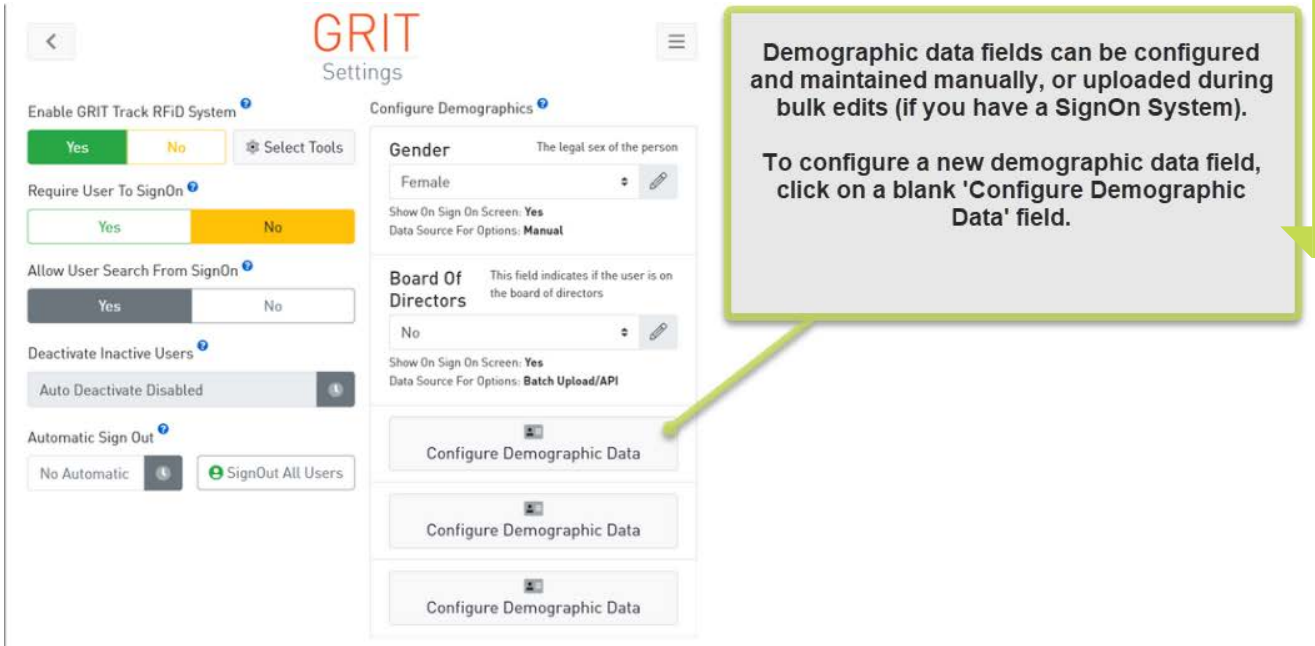
# Settings

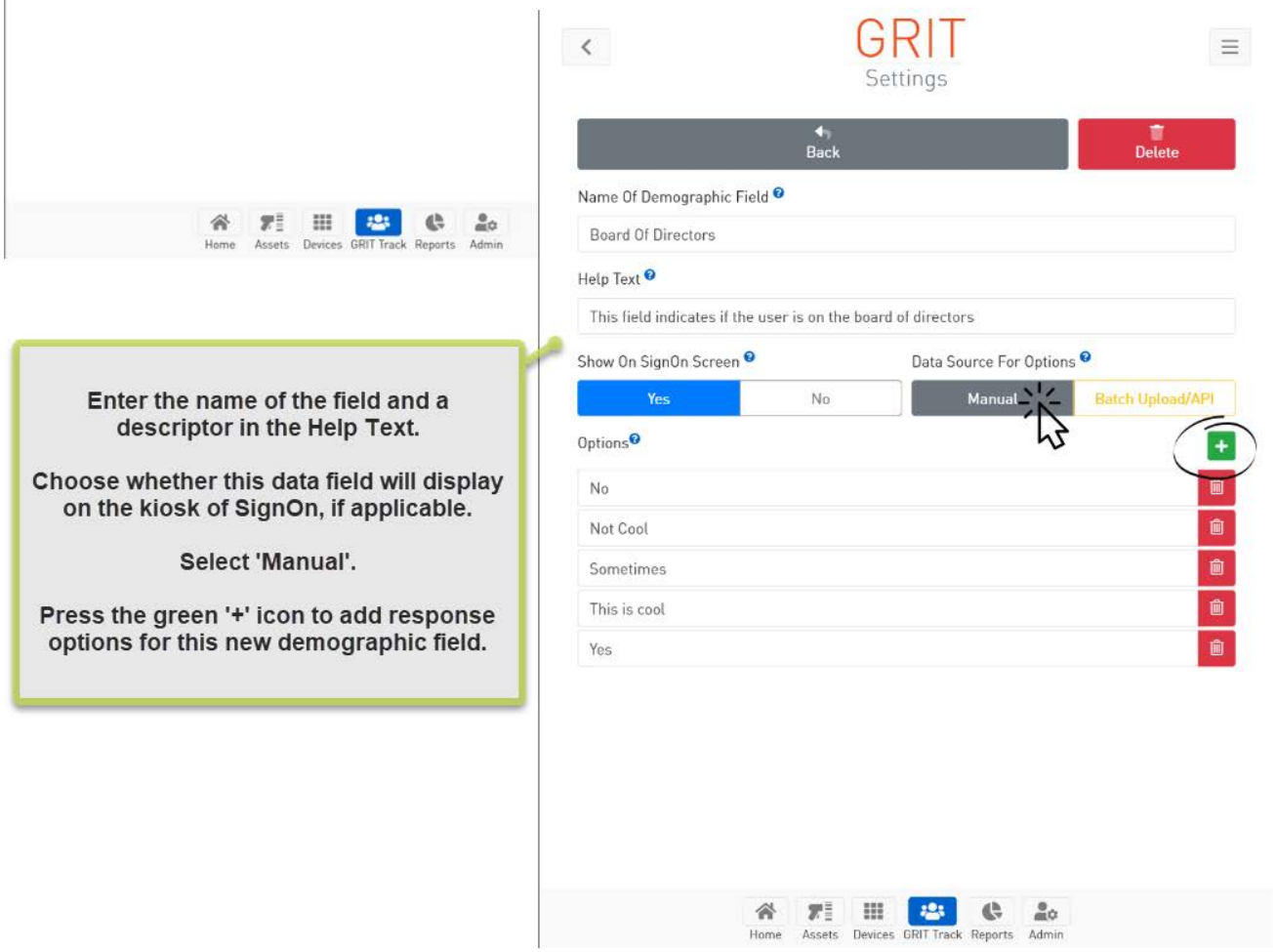

'Enable GRIT Track RFiD System' controls if the installed RFiD devices will control the GRIT Lock of connected triggers. Select 'Yes' to enable every RFiD device.
Slowly rollout your RFiD system by selecting individual tools that should be enabled.
GRIT
Settings
Enable GRIT Track RFiD System
Yes
No
Select Tools
Configure Demographics
'Require User To SignOn' is only available when using a GRIT SignOn system.
Select 'Yes' to require all users to sign in before they are able to use tools.
Require User To SignOn
Yes
No
Configure Demographic Data
Configure Demographic Data
'Allow User Search From SignOn' is only available when using a GRIT SignOn system.
Select 'Yes' only if you would like users to be able to search by name rather than requiring they swipe their ID card during the sign in process.
Allow User Search From SignOn
Yes
No
Configure Demographic Data
Set the amount of time without accessing GRIT before a user is deactivated.
Deactivate Inactive Users
Auto Deactivate Disabled
Configure Demographic Data
Automatic Sign Out
No Automatic
SignOut All Users
Configure Demographic Data
'Automatic Sign Out' is only available when using a GRIT SignOn system.
Set the time of day when all users will be automatically signed out of GRIT.
Manually sign out all users.
Configure up to 5 demographic fields to store additional data about users. These fields allow you to define a set of possible values and are displayed in a user's 'Profile'.
Home
Assets
Devices
GRIT Track
Reports
Admin

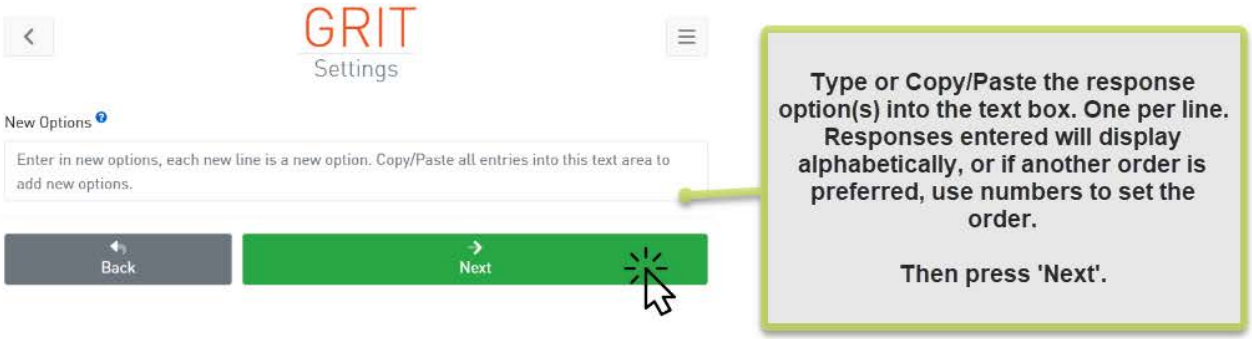
# Configure Demographics

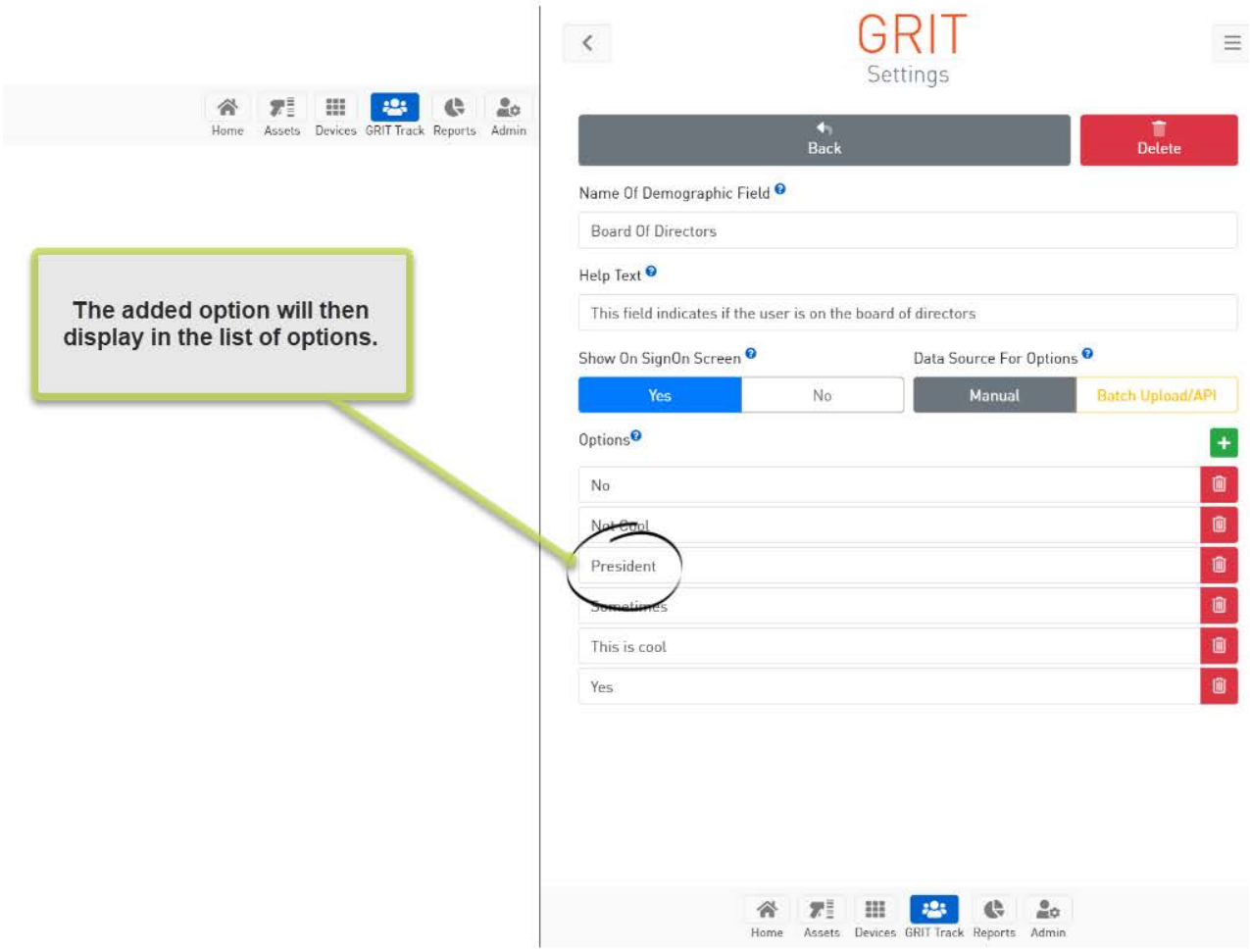
## Manually

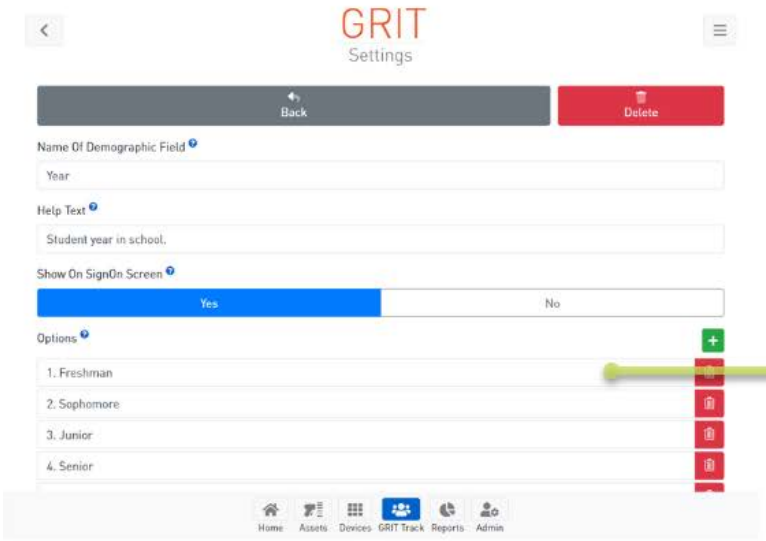





GRIT
Settings
New Options
Enter in new options, each new line is a new option. Copy/Paste all entries into this text area to add new options.
Back
Next
Type or Copy/Paste the response option(s) into the text box. One per line. Responses entered will display alphabetically, or if another order is preferred, use numbers to set the order.
Then press 'Next'.


Home
Assets
Devices
GRIT Track
Reports
Admin
The added option will then display in the list of options.
GRIT
Settings
Back
Delete
Name Of Demographic Field
Board Of Directors
Help Text
This field indicates if the user is on the board of directors
Show On SignOn Screen
Yes
No
Data Source For Options
Manual
Batch Upload/API
Options
No
President
This is cool
Yes



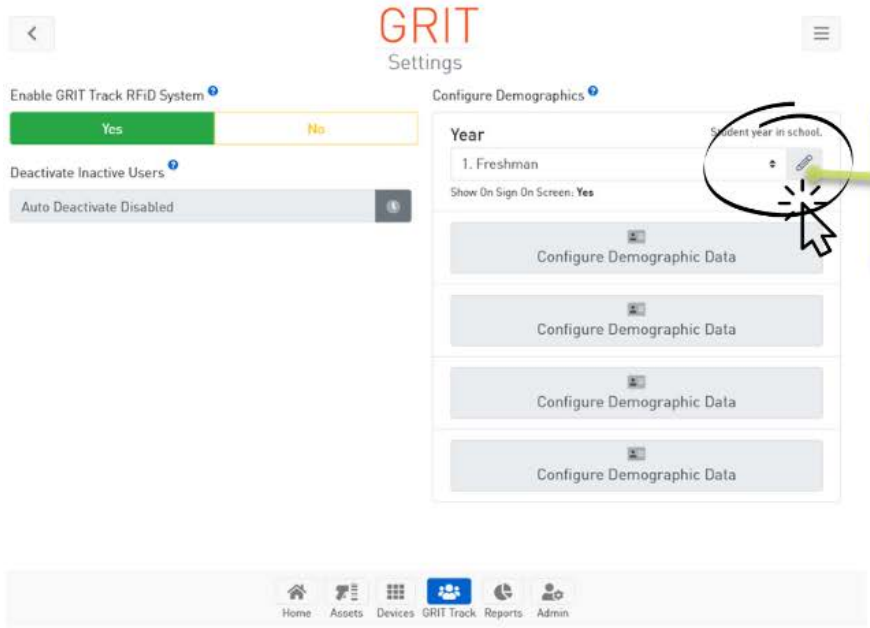

The responses entered on the previous screen will display in list form under 'Options'.

- To add another response, press the green '+' icon.

-To edit a response, click in its text box and type.

-To delete a response, press the red trash can icon.

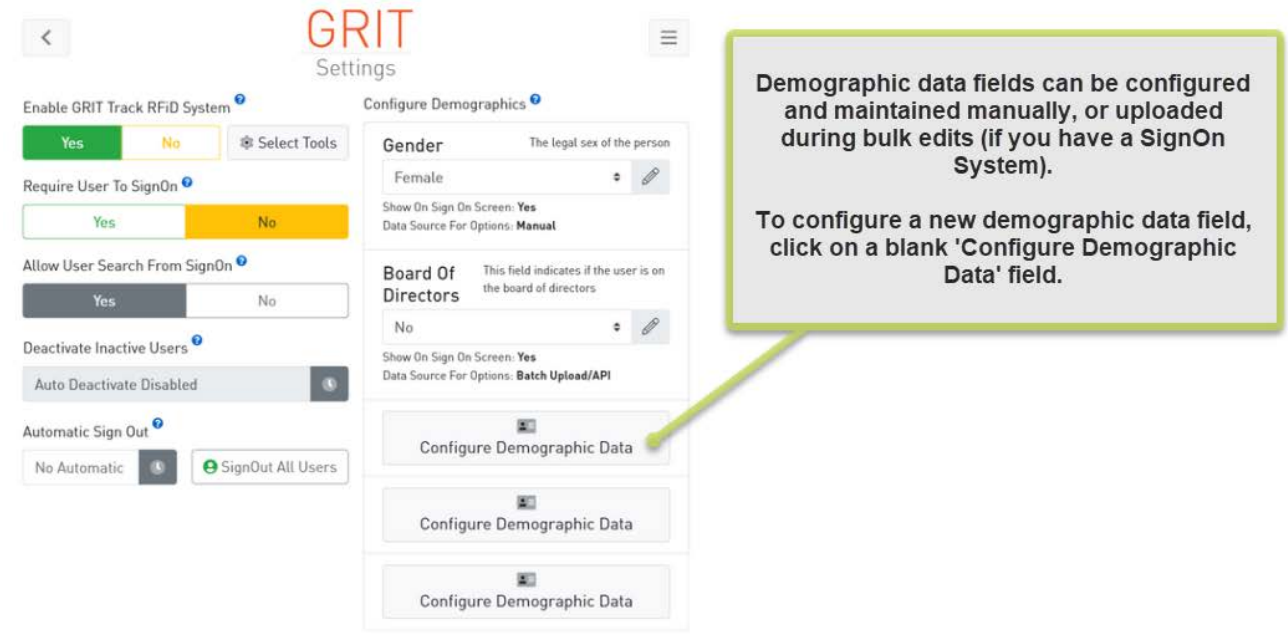
Press 'Back' when done editing this Demographic Field.

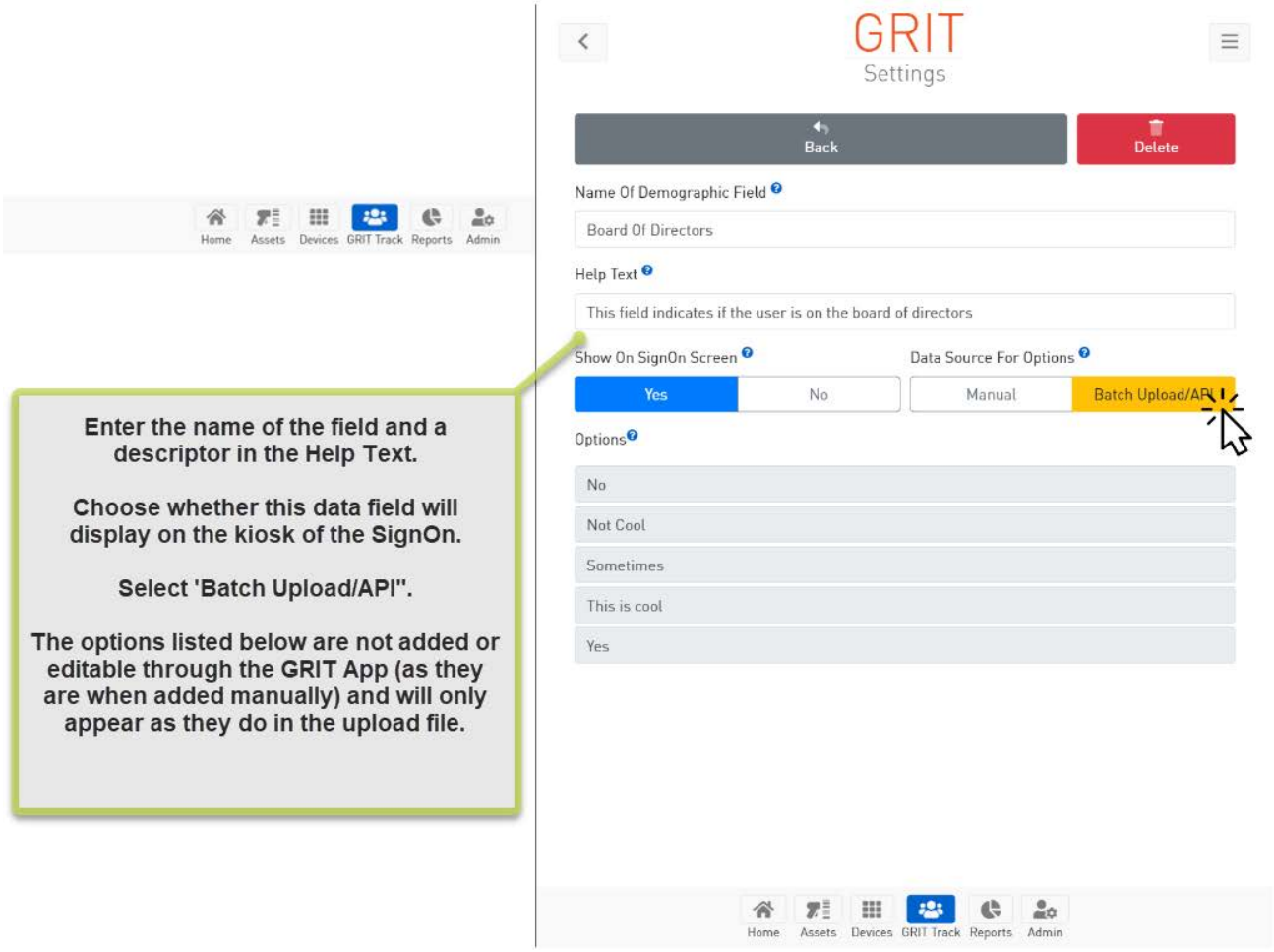



To edit an existing demographic field, press the pencil icon.

# Configure Demographics

## Batch Upload



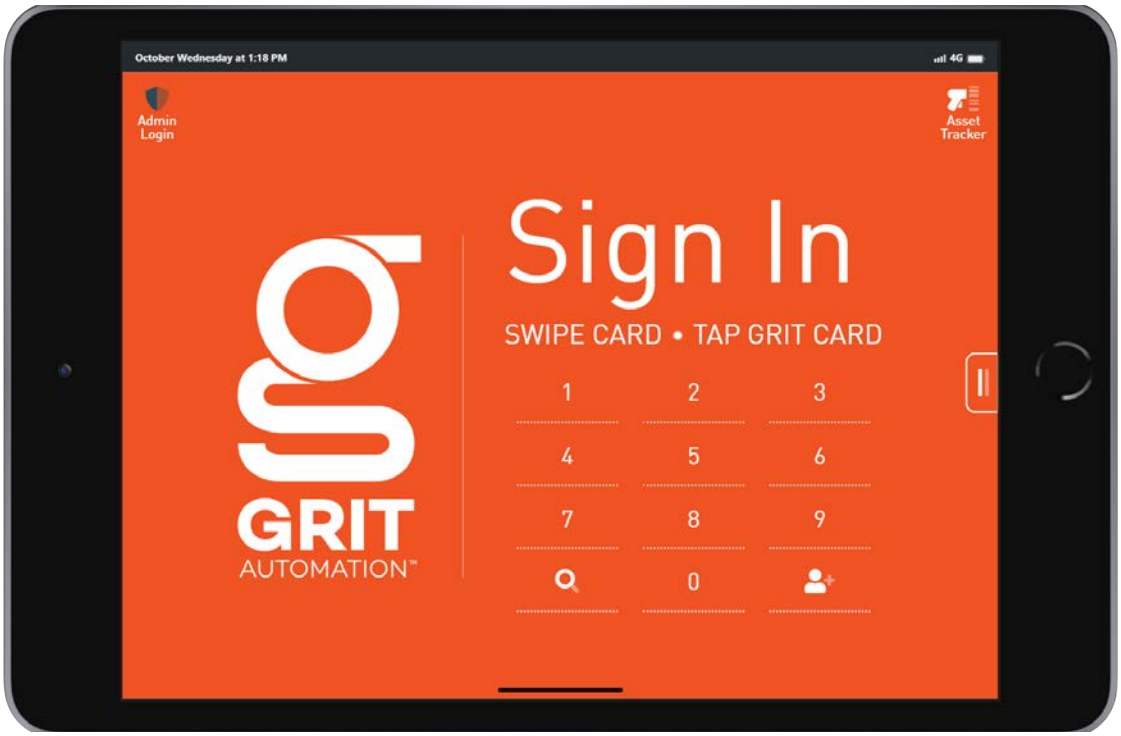
# Overview

The Grit SignOn system is built for shops that fall into one of the following categories:

- Users have a separate identification card, such as a school ID or corporate ID. Instead of issuing them yet another ID card, the SignOn system will allow the user to sign in with an alternate form of identification and have a temporary card issued.
- Certain groups of users might lose the cards (educational environments), or;
- Large number of transient users. Educational and makerspace environments will see turnover regularly and with SignOn the administrative burden is lessened because of the self-service kiosk functionality in the SignOn system.
- Shops that want to add time tracking capabilities. The system tracks tool usage and user access, plus total time spent in the shop environment. This is extremely valuable for shops that want to bill users based on rented shop time.

Grit SignOn is a public kiosk with an integrated touch-screen tablet outfitted with a magnetic swipe card reader or scanner. All backend administrative settings for SignOn functionality are covered in the GRIT Track® Users, Permissions, and Settings sections.





# GRIT SignOn System

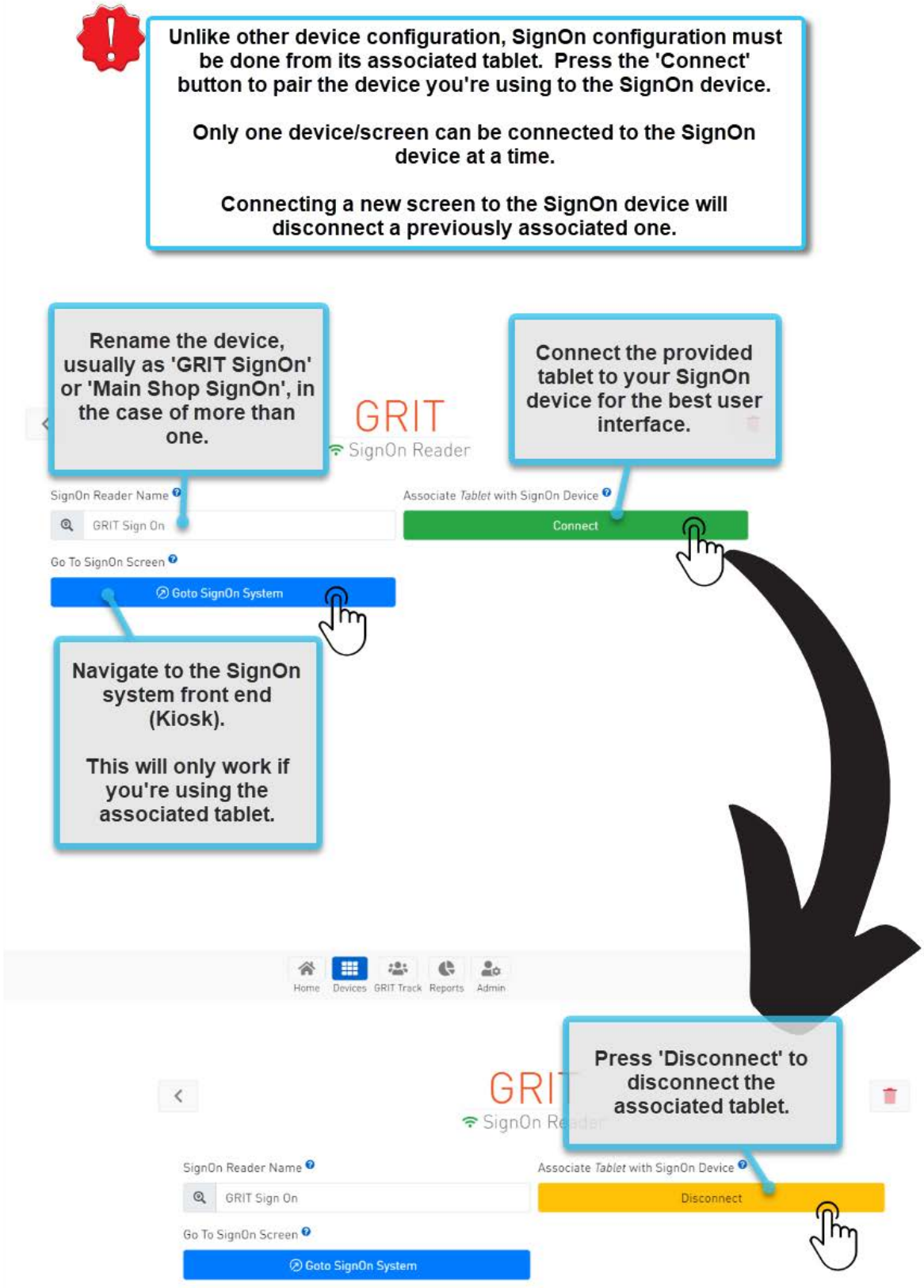
The GRIT SignOn system enhances shops with GRIT Track® RFiD to manage large or revolving user groups. Assign temporary cards from a self-serve kiosk-style touch screen and magnetic swipe card reader. *QR code/barcode scanner is available in place of the magnetic swipe card reader, if preferred.


## Installation

Place 10'' touchscreen tablet and GRIT SignOn device in an easily accessible location for users to sign in/out (can be wall-mounted with provided hardware or placed on a desk).

1. Plug power adapter into the jack on the bottom of the SignOn device.
2. Plug power adapter into a standard 120v wall outlet.
3. Plug the tablet into the side of the SignOn device using the supplied USB-C cable.
4. Place temporary GRIT Track® RFiD cards in a nearby location for users signing in.

# SignOn Device Configuration

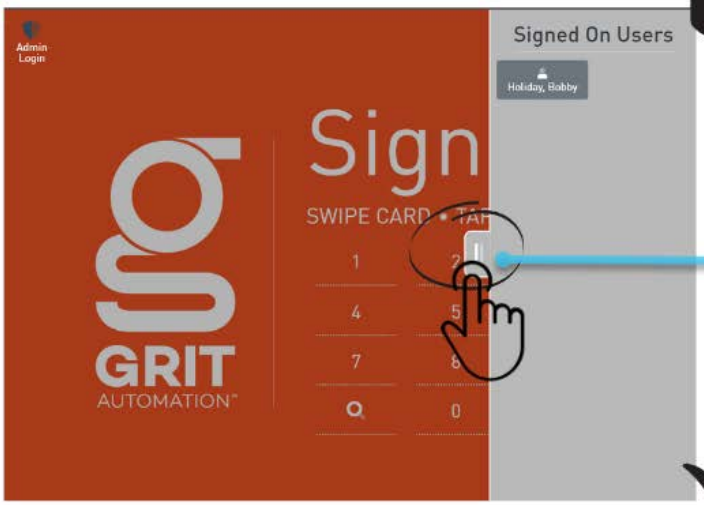


# GRIT SignOn Kiosk

## View Signed On Users


**Step 1:**

To view all users currently signed into the shop, tap the slide-out panel tab located on the right hand side of the screen.




**Step 2:**

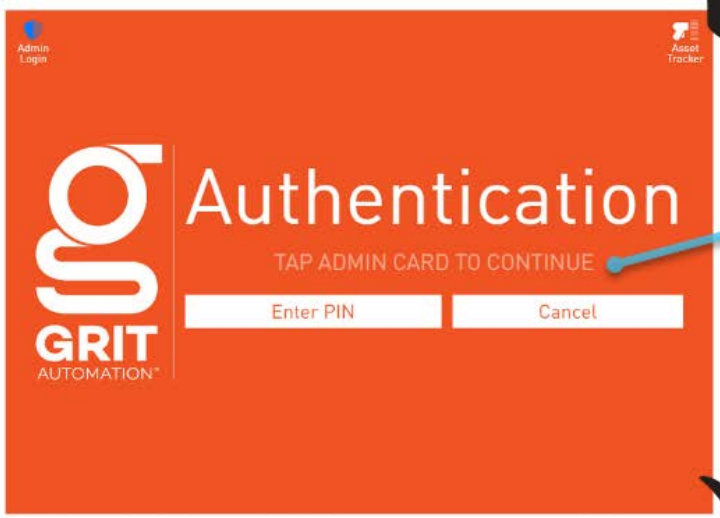
All signed in users are listed in the expanded panel.

To collapse the slide-out panel, tap again.

# Create User

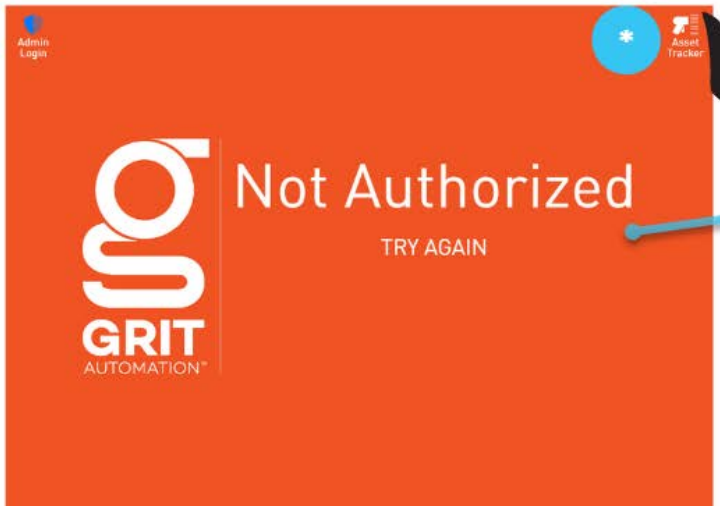

**Step 1:**

To Create a New User from the SignOn Kiosk, a SignOn Administrator presses the 'Add User' button.




**Step 2:**

The SignOn Administrator must tap their own RFiD card or enter their PIN to continue.




*** Please note:**

If the person attempting to create a new user does not have SignOn Administrator permissions, this screen will appear.

# GRIT SIGNON


**Step 3:**

**Complete Name and Email fields.**

**Have the new user swipe their ID after pressing 'Swipe Card'. Then press 'Save'.**

*** Please note: A message saying 'Create Permissions in the GRIT App' will display if none have been created in the GRIT Track Permissions section.**

**Otherwise, a 'Select Permission' button will appear (if 'Show on SignOn' is marked as 'Yes' in the GRIT Track Permissions configuration).**


**Step 4:**

**This screen displays once the new user has been successfully created.**


**The SignOn tablet display will then return to the Main SignOn screen.**

# Find User


**Step 1:**

**To Find a User from the SignOn Kiosk:**

**- enter their PIN (if applicable),**

**- swipe their ID in the Magnetic card reader,**

**or;**

**- tap their GRIT RFiD card on the SignOn device.**




*** Please note:**

**To Find a User from the SignOn Kiosk when the user does not have a PIN, ID, or permanent GRIT RFiD card, press the 'Locate' icon to search by their name.**

**This feature can be disabled in the GRIT Track Admin Settings for security purposes.**


**To use the 'Locate' feature, type the name of the user you're searching for in the text bar. All existing users with that name will pop up below.**

**Select the corrector user.**

# Edit User


**Step 1:**

To Edit a User from the SignOn Kiosk, enter their PIN, swipe their ID, or tap their GRIT RFiD card.


**Step 2:**

Once their profile is found in the system, select 'Edit'.


**Step 3:**

From this screen you can:

- edit/ update name spelling errors,
- assign a new swipe card,
- change PIN,
- update permissions

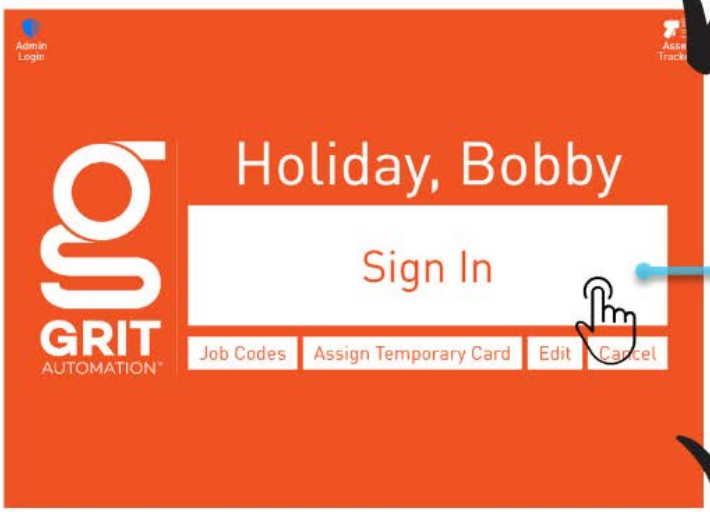
Press 'Save' when changes are complete.

Please note: The user's ID can only be changed with the 'Swipe Card' when they are not currently signed in.

# Sign In with a Permanent GRIT Card


**Step 1:**

When signing in with a permanent GRIT RFiD card, tap the card on the SignOn device.




**Step 2:**

The User Screen displays. From here, the user can:

- edit their profile
- assign/ create a job code
-assign a temporary card
- sign in


**Step 3:**

The 'Welcome' screen displays briefly after pressing 'Sign In'.

# GRIT SIGNON

## Sign In with a PIN or ID


**Step 1:**

To sign in with an ID, swipe the card through the magnetic card reader.

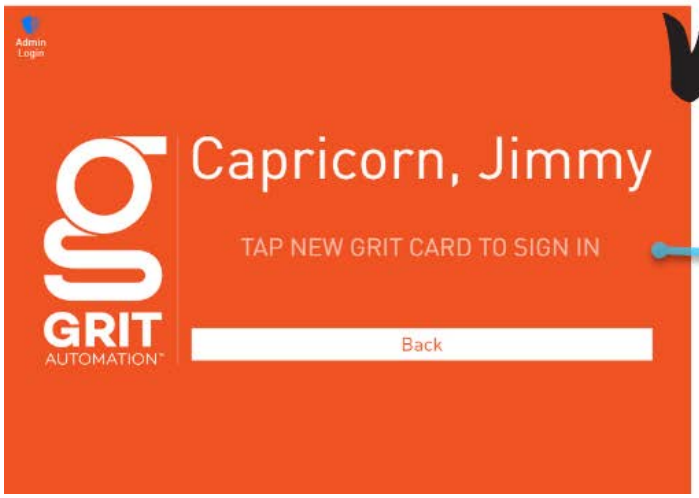
To sign in with a PIN, enter via the number pad displayed on the tablet.


**Step 2:**

The User Screen displays.
From here the user can:

- edit their profile
- create/ modify job codes
- assign themselves a temporary GRIT RFiD card.

Press 'Assign Temporary Card'.




**Step 3:**

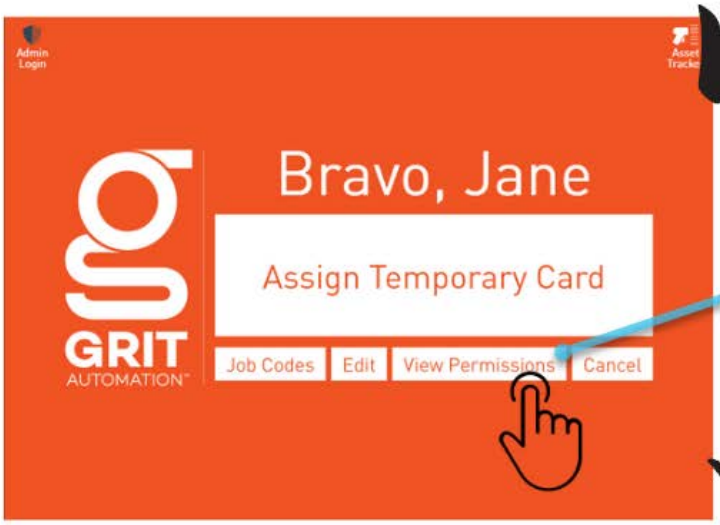
Tap a blank temporary GRIT RFiD card on the SignOn device to complete the sign in process.

The 'Welcome' screen displays briefly after tapping the temporary card.

# View Permissions on SignOn

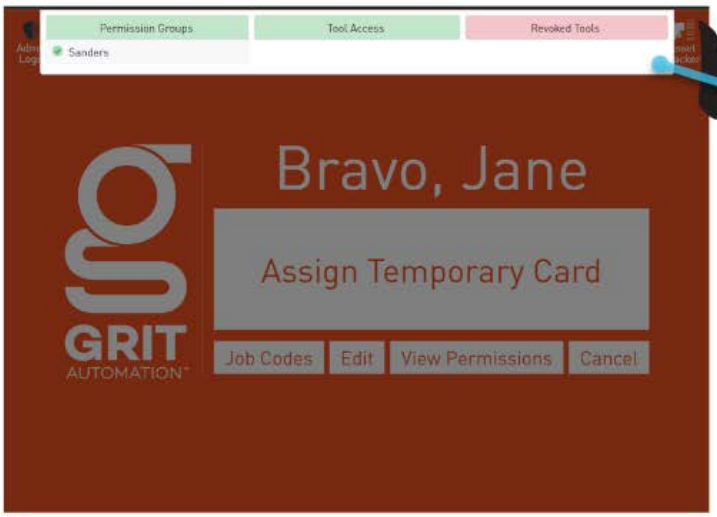

**Step 1:**

To view a user's permissions on the SignOn kiosk, tap their permanent card, enter their PIN, or search.




**Step 2:**

Press 'View Permissions'.




All of the user's permissions will appear in the pop-up window.

## Sign Out


**Step 1:**

To sign out, tap your temporary or permanent GRIT RFiD card on the SignOn device,

or

Enter your PIN.


**Step 2:**

Press 'Sign Out'.

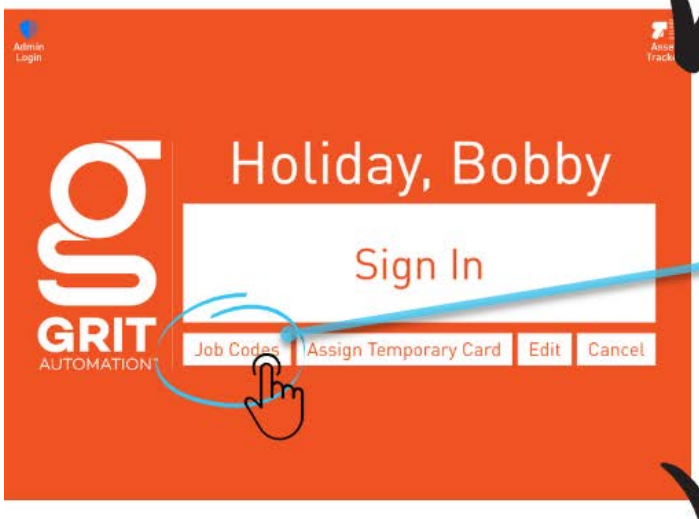

**Step 3:**

The 'Goodbye' screen displays briefly after pressing 'Sign Out'.

# Manage Personal Job Codes before Signing In

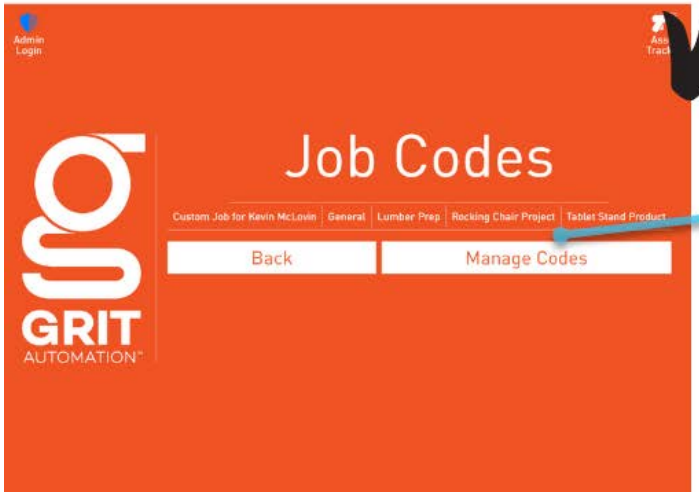

**Step 1:**

Tap your RFiD card, swipe your ID, or enter your PIN.




**Step 2:**

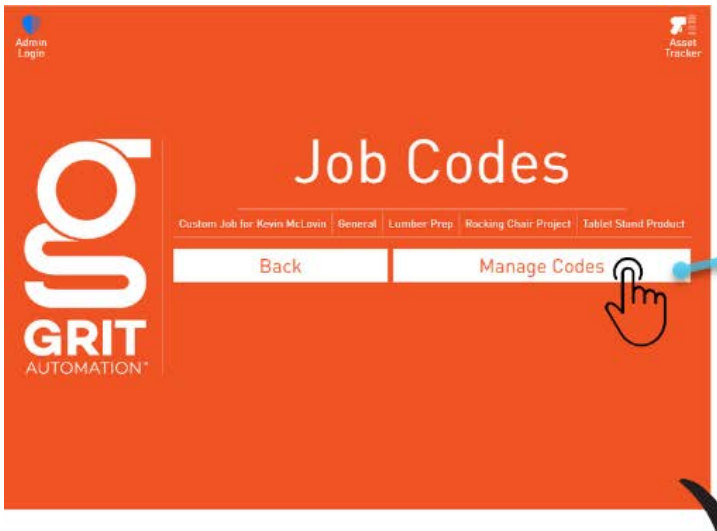
Press 'Job Codes'.




**Step 3:**

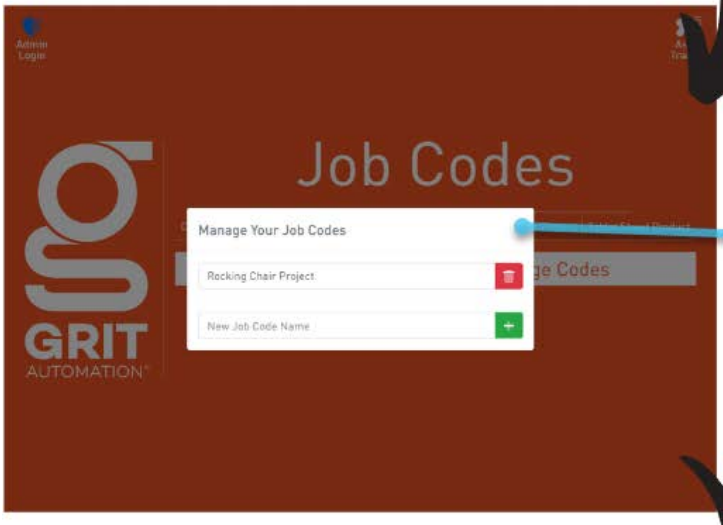
In the Job Codes screen, either select an existing job code from the list, or select 'Manage Codes'.

# GRIT SIGNON




**Step 4:**

**If you want to make changes to your job codes, press 'Manage Codes'.**




**Step 5:**

**In the 'Manage Codes' screen, you can:**

**- add a new personal job code**
**- delete an existing code**


**Step 6:**

**After you have selected the preferred job code to sign in, or are done managing codes, press 'Back' to return to the User Screen to complete your Sign In.**

# Manage Personal Job Codes after Signing In


**Step 1:**

If you need to manage job codes after you've already signed in or change the job code for the remainder of the time you are signed in, tap your GRIT card, enter your PIN, or swipe your ID.

Press 'Job Codes'.


**Step 2:**

To change the job code you are signed in with, select the new job code from the listed codes.

To manage codes, press 'Manage Codes'.


**Step 3:**

The newly selected job code will be displayed on the User Screen.

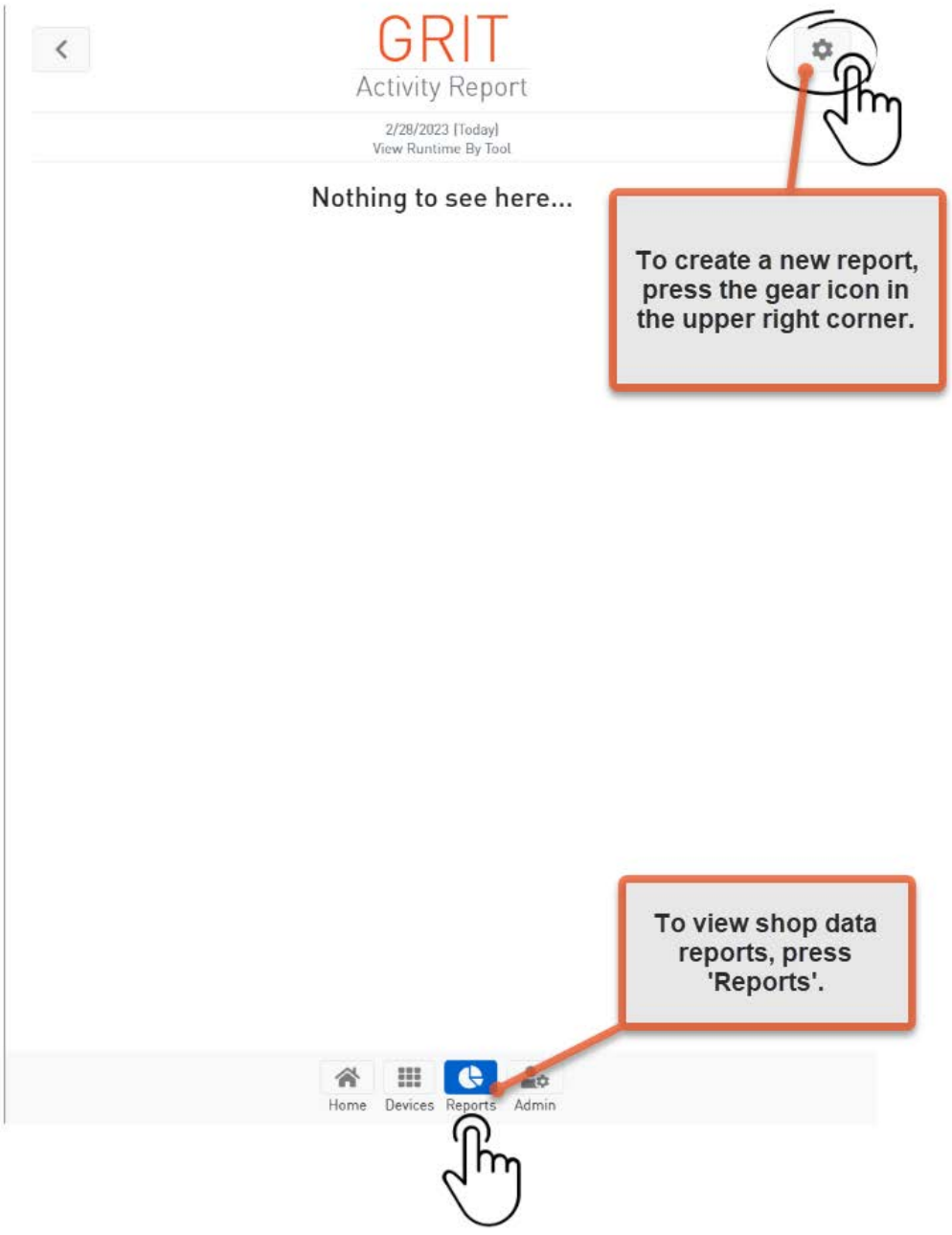
Select 'Cancel' to remain signed in.

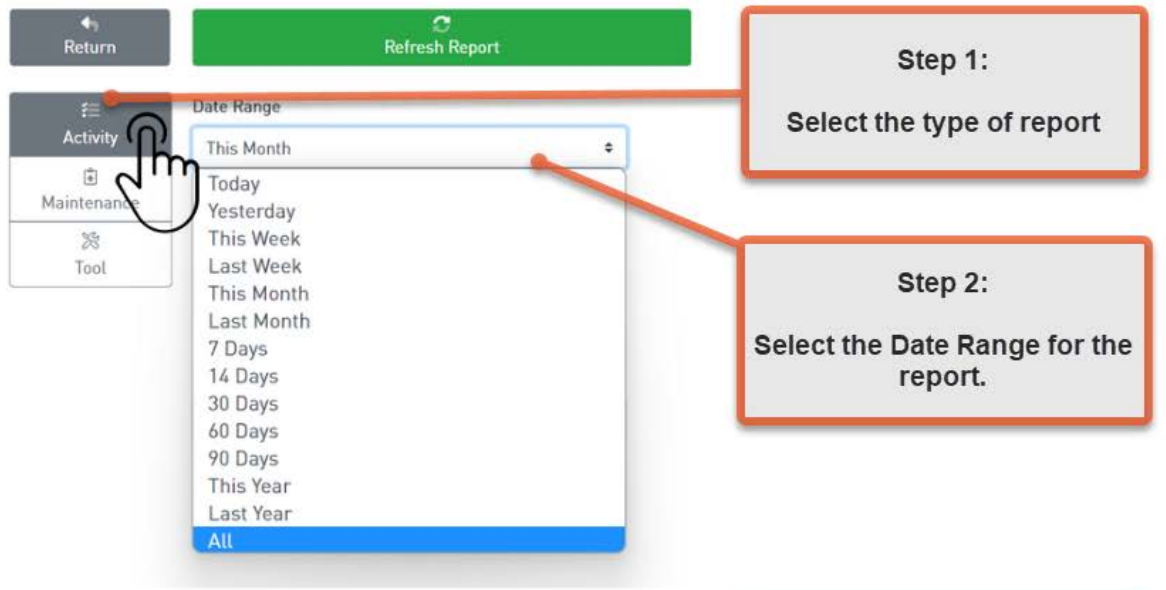
# GRIT REPORTS

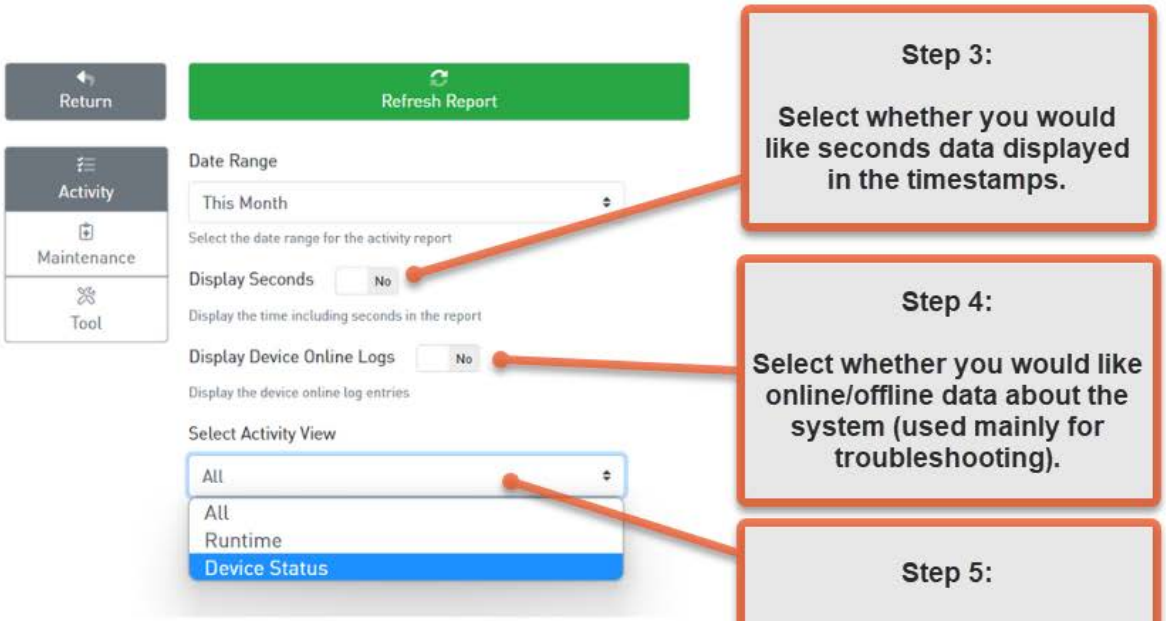
**Six types of reports available:**

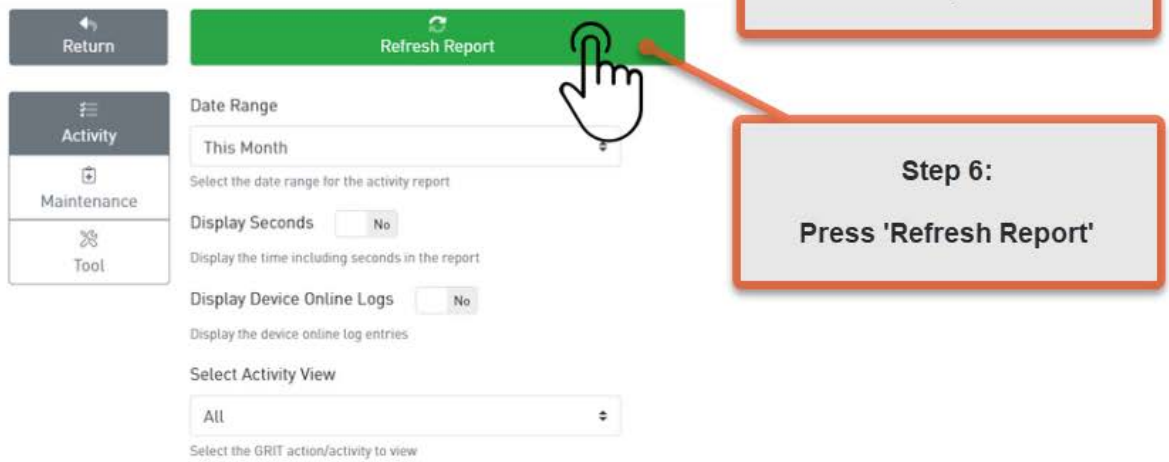
1. Activity Reports
2. Maintenance Reports
3. Permissions Reports
4. SignOn Reports (when you have the SignOn System)
5. Tool Reports
6. User Reports

## Activity Reports



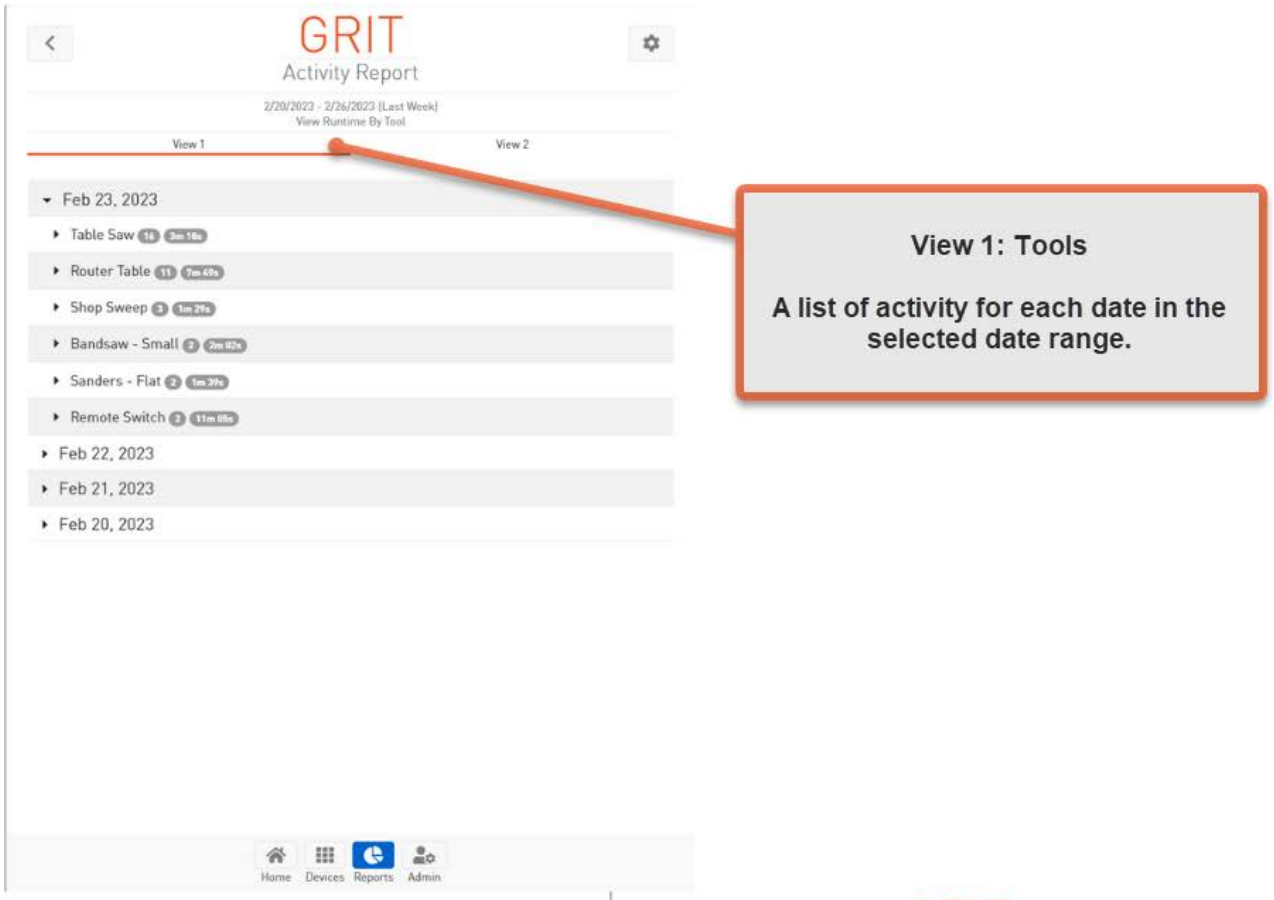


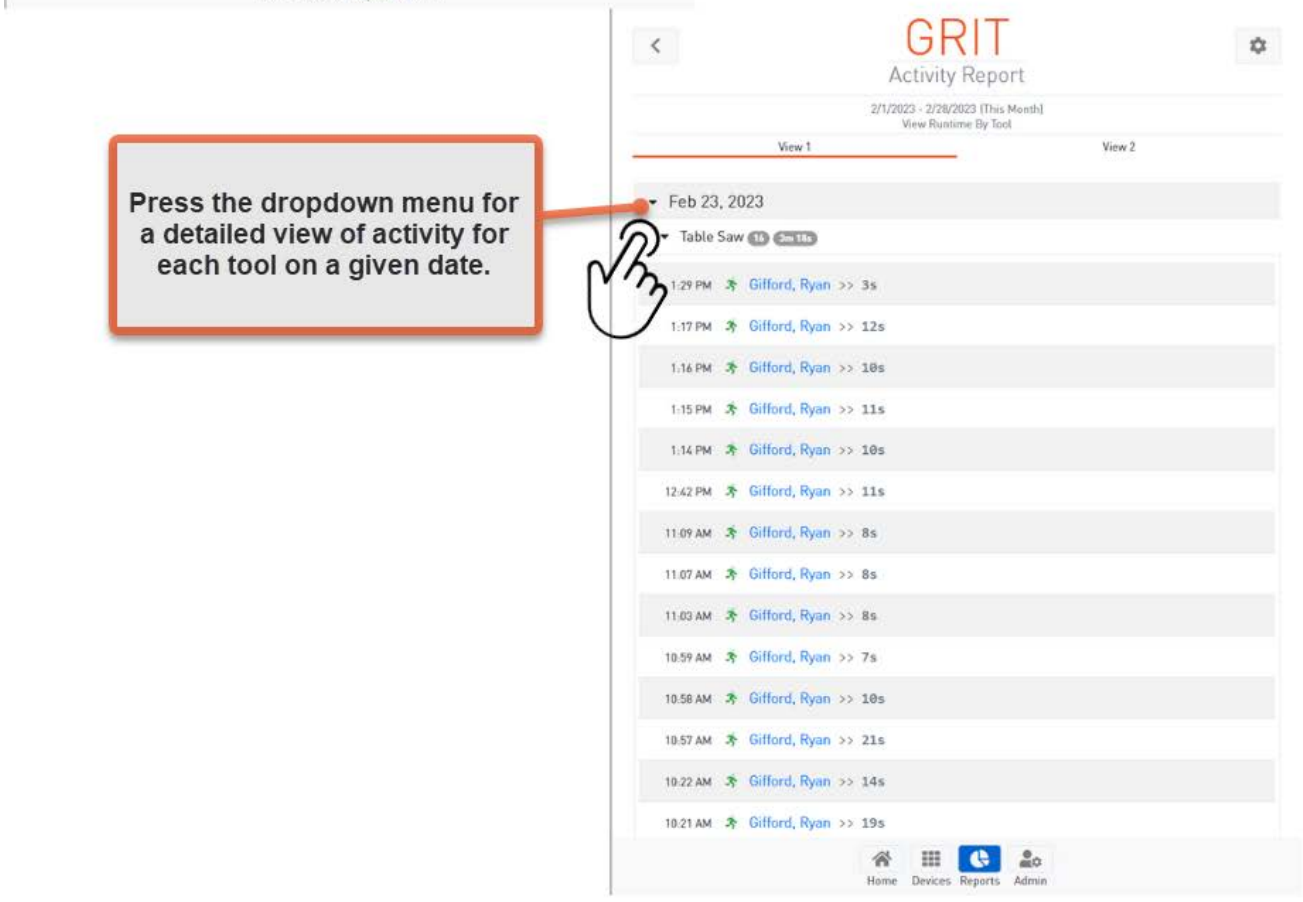



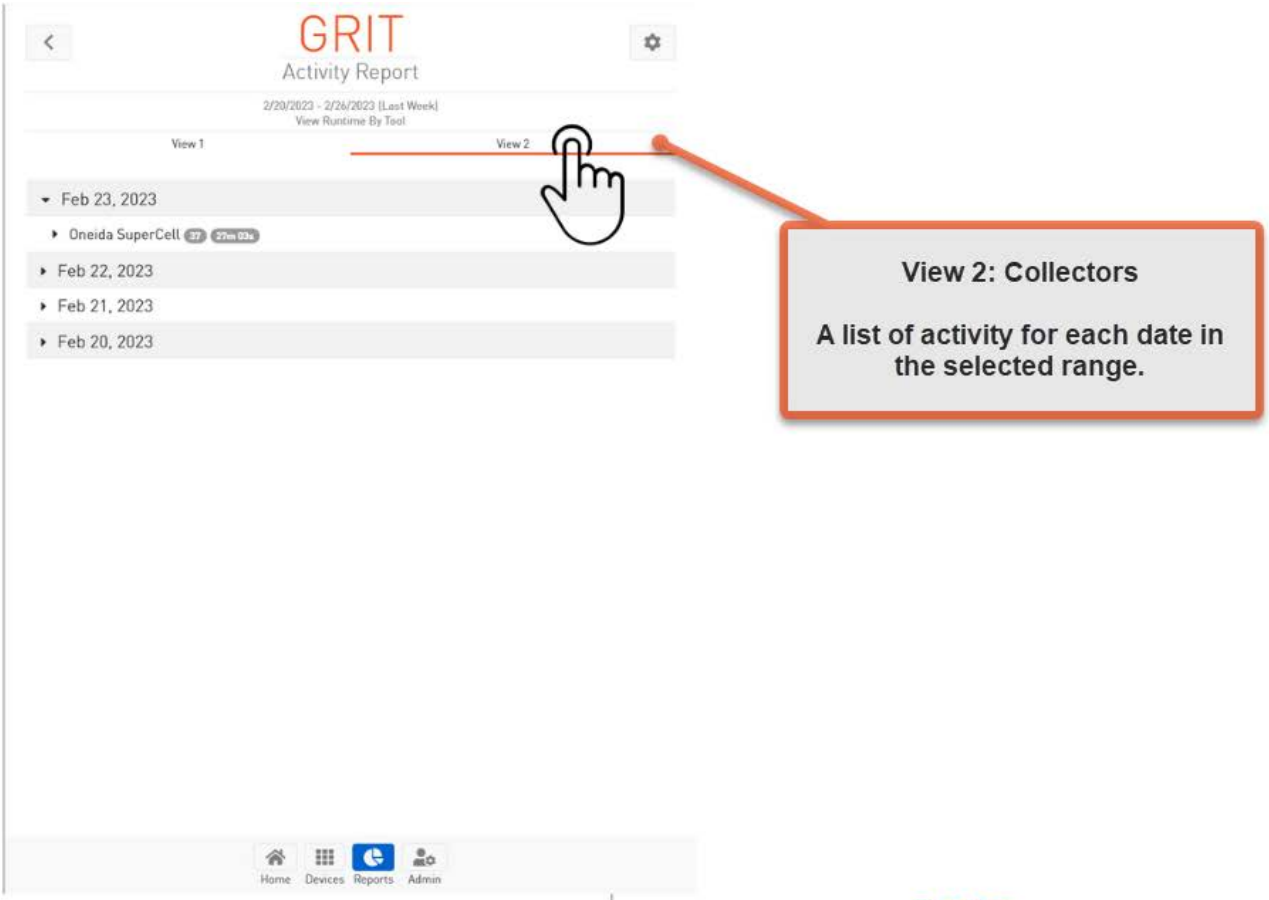

with GRIT Track can be viewed by User.

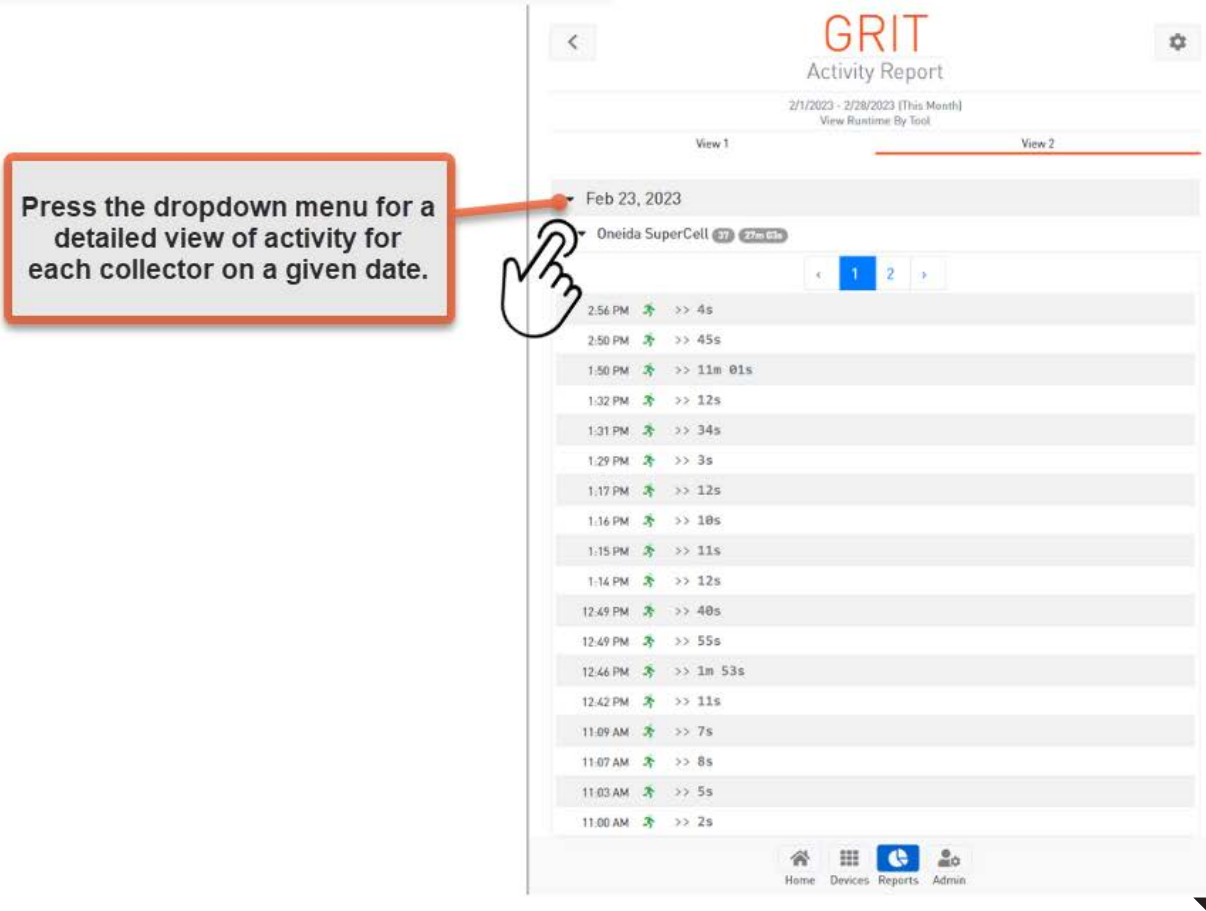
# GRIT REPORTS



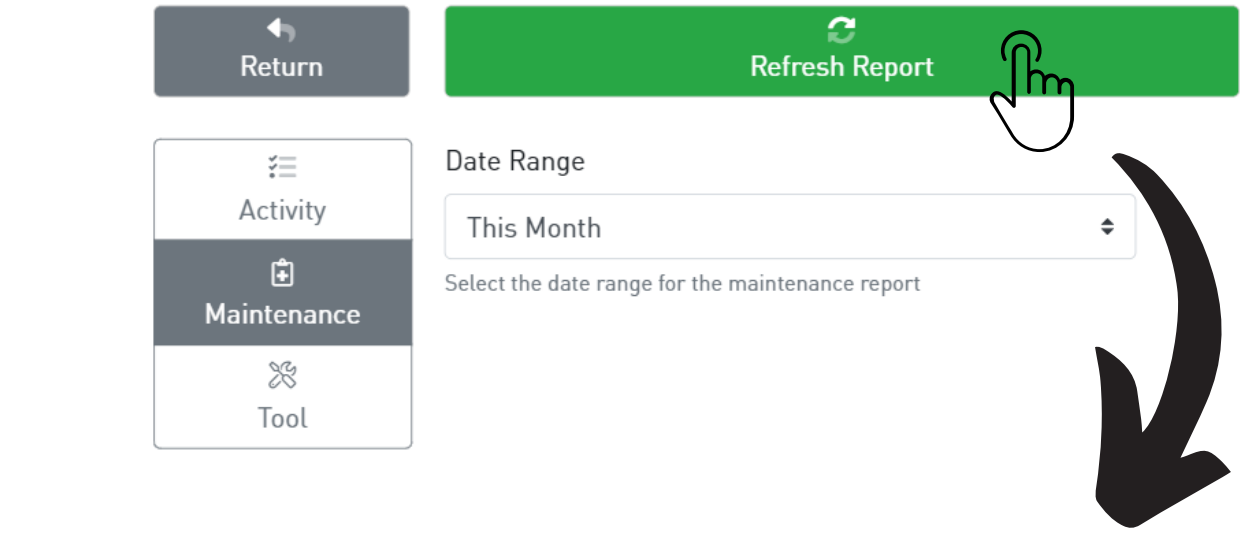



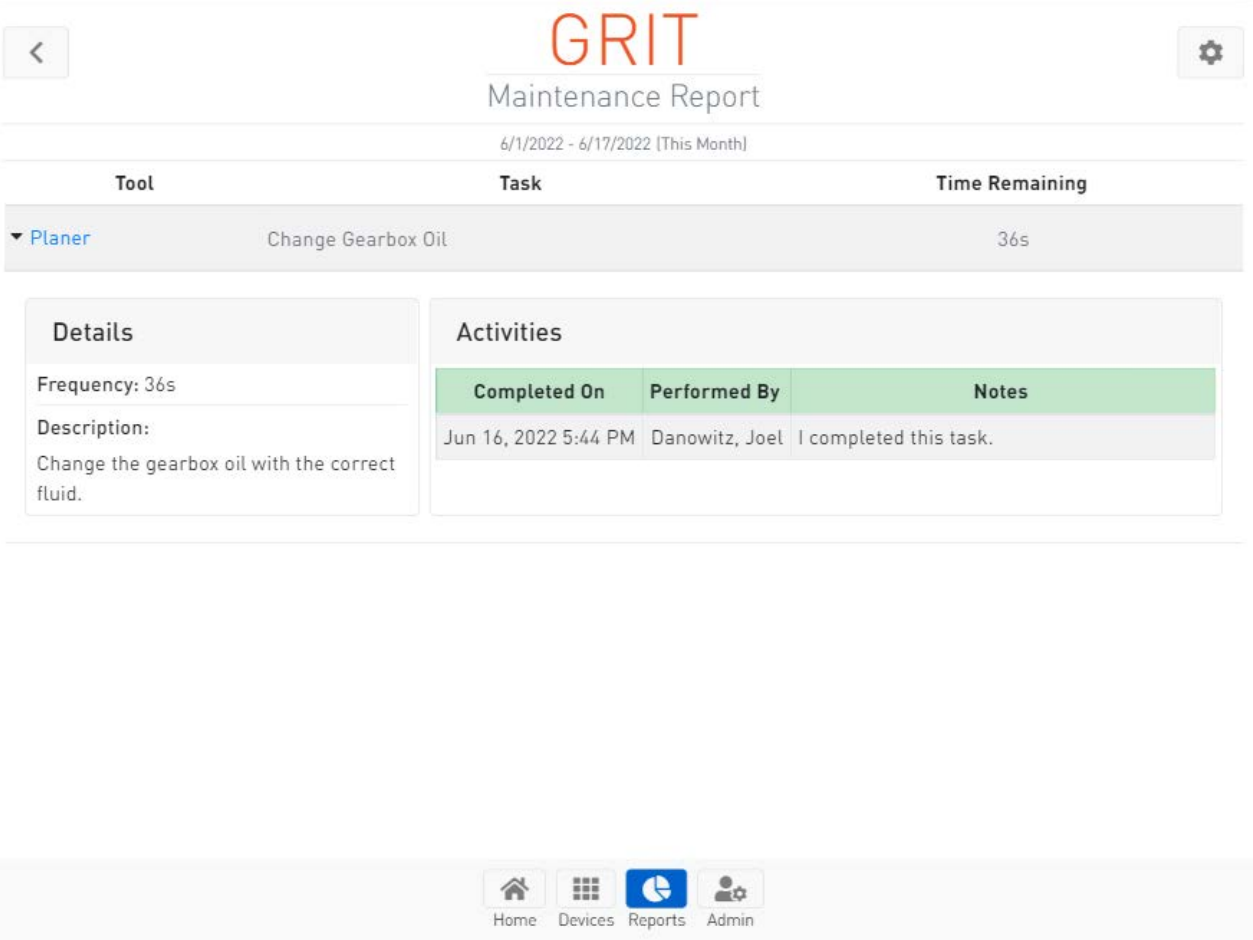
# GRIT REPORTS



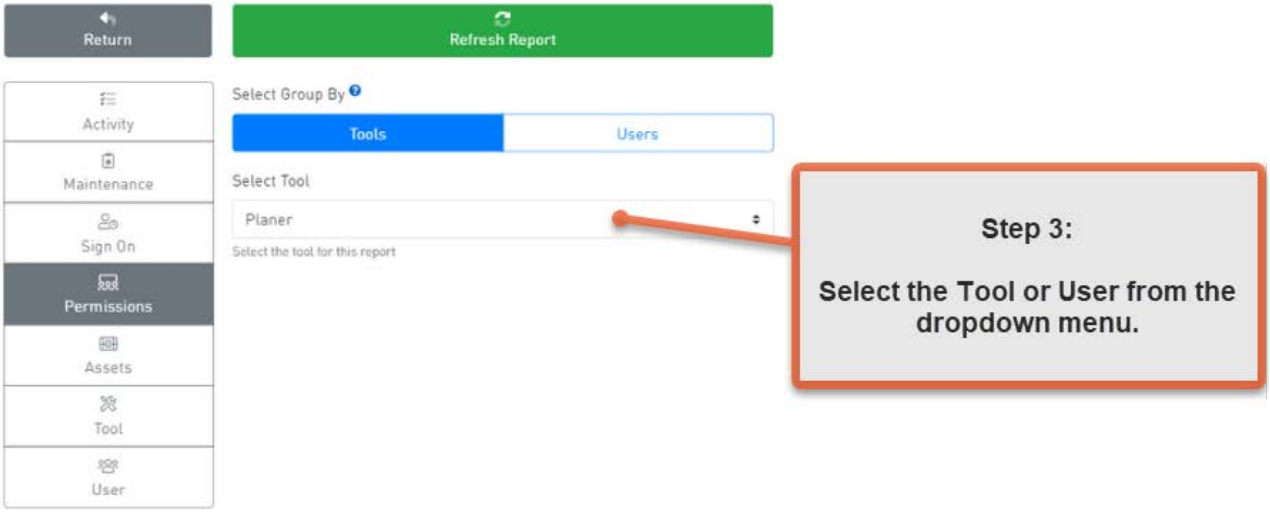



# Maintenance Reports

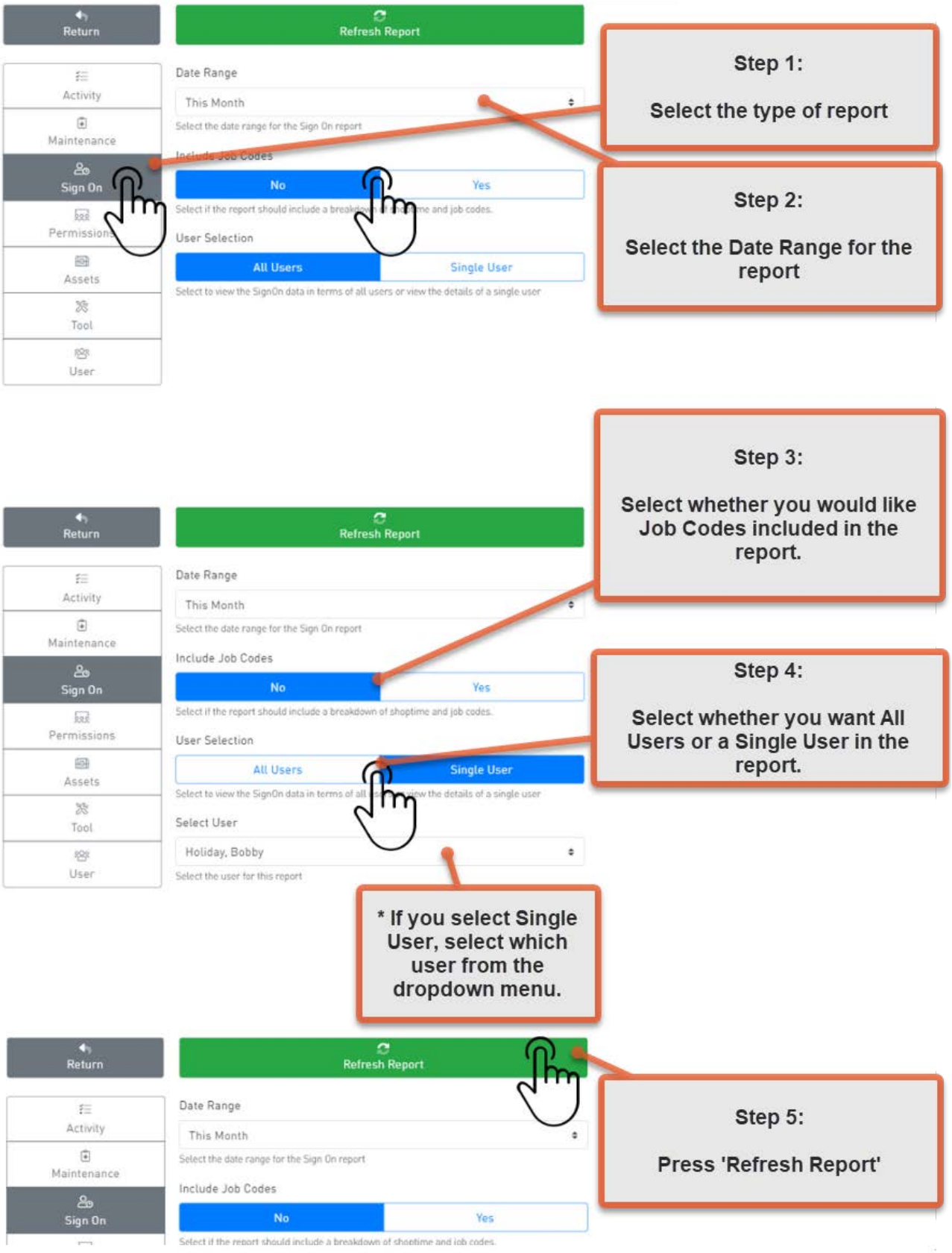


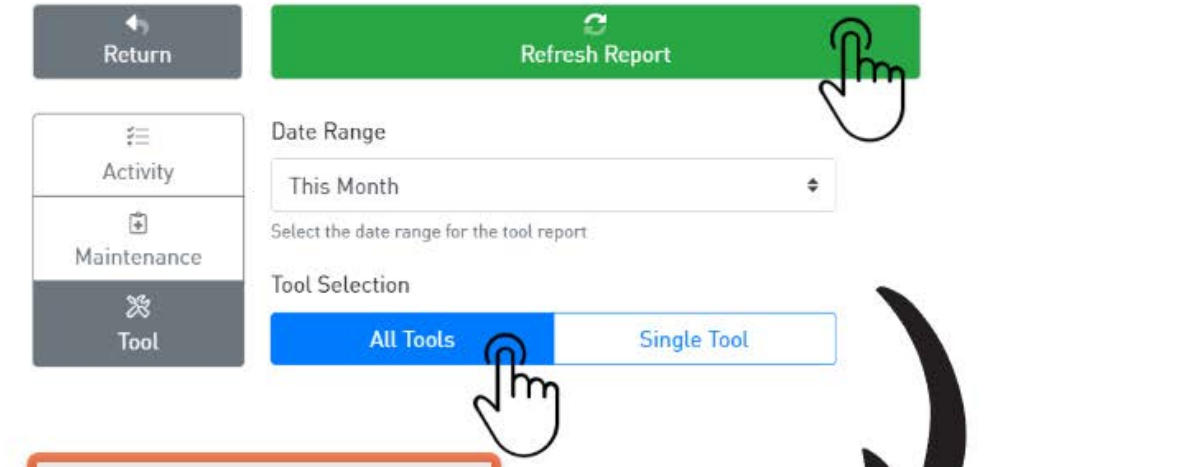
# Permissions Reports


# SignOn Reports



# Tool Reports




**View 1: All Tools Report**

**A list of total tool runtime for all tools in the shop for the selected date range.**

GRIT
Tool Report

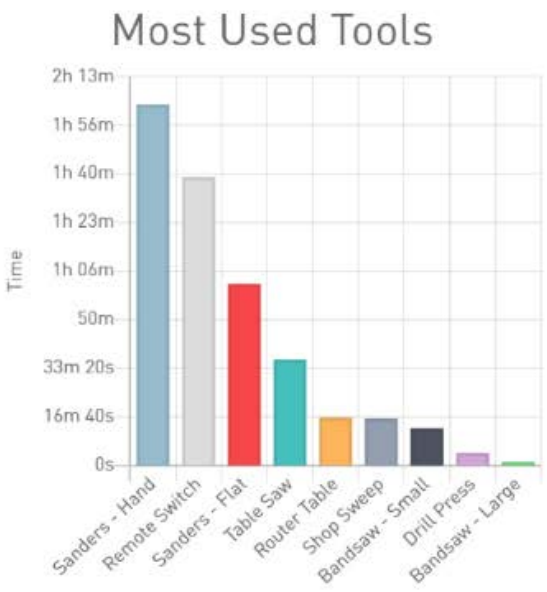
2/1/2023 - 2/28/2023 (This Month)

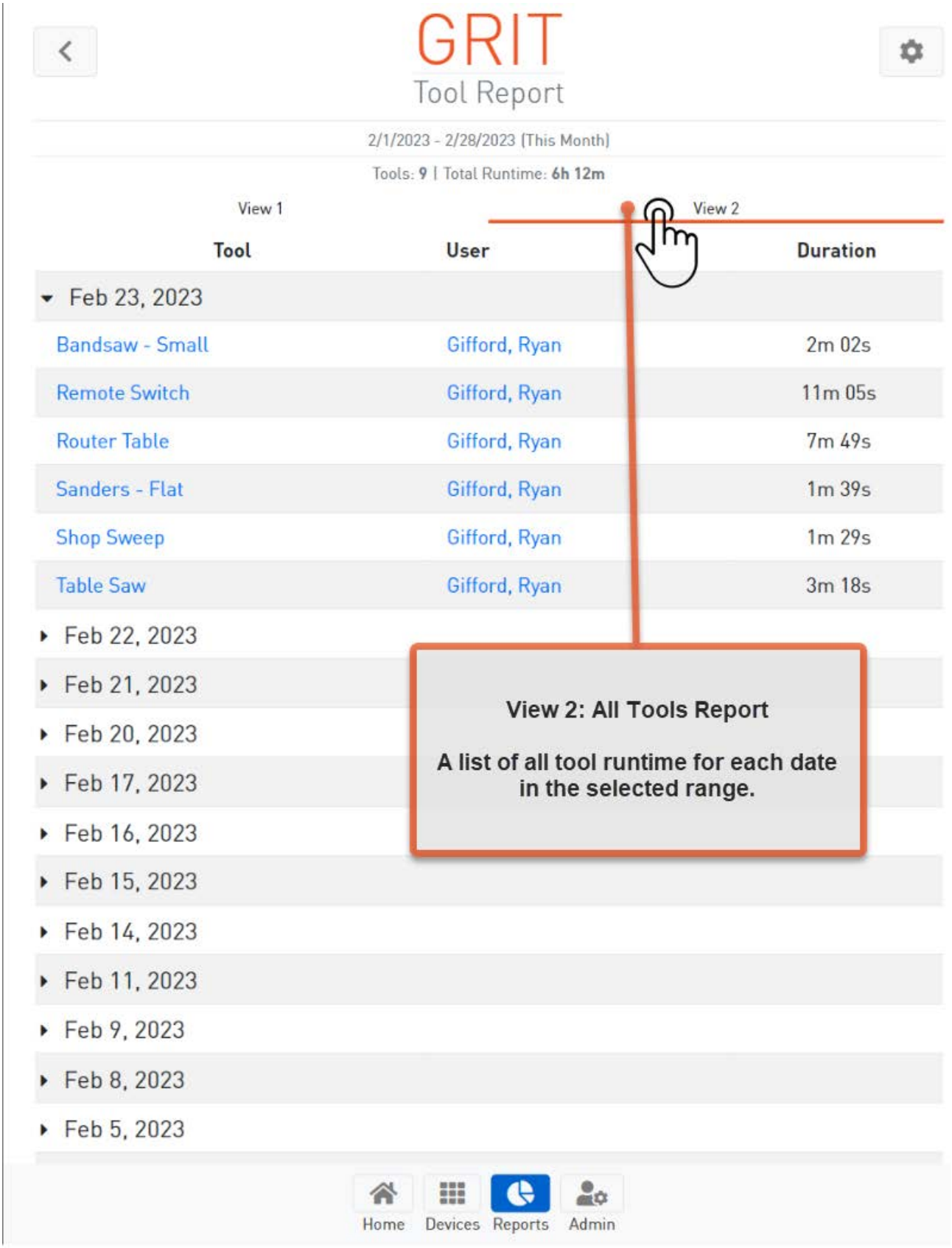
Tools: **9** | Total Runtime: **6h 12m**

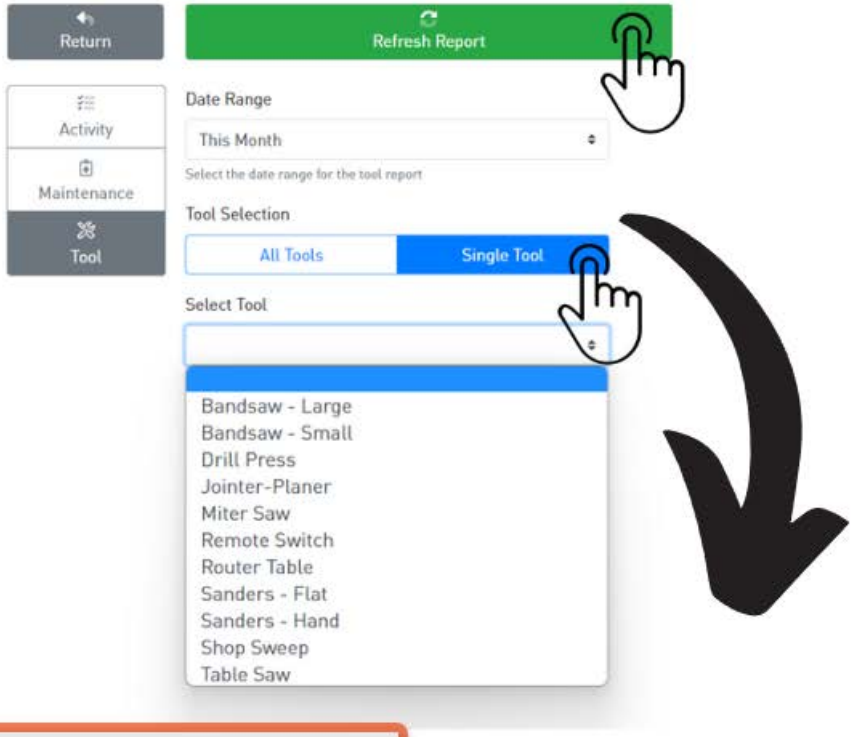
View 1

| Tool | Duration |
|---|---|
| Sanders - Hand | 2h 03m |
| Remote Switch | 1h 38m |
| Sanders - Flat | 1h 02m |
| Table Saw | 36m 25s |
| Router Table | 16m 31s |
| Shop Sweep | 16m 12s |
| Bandsaw - Small | 12m 51s |
| Drill Press | 4m 26s |
| Bandsaw - Large | 1m 16s |

View 2

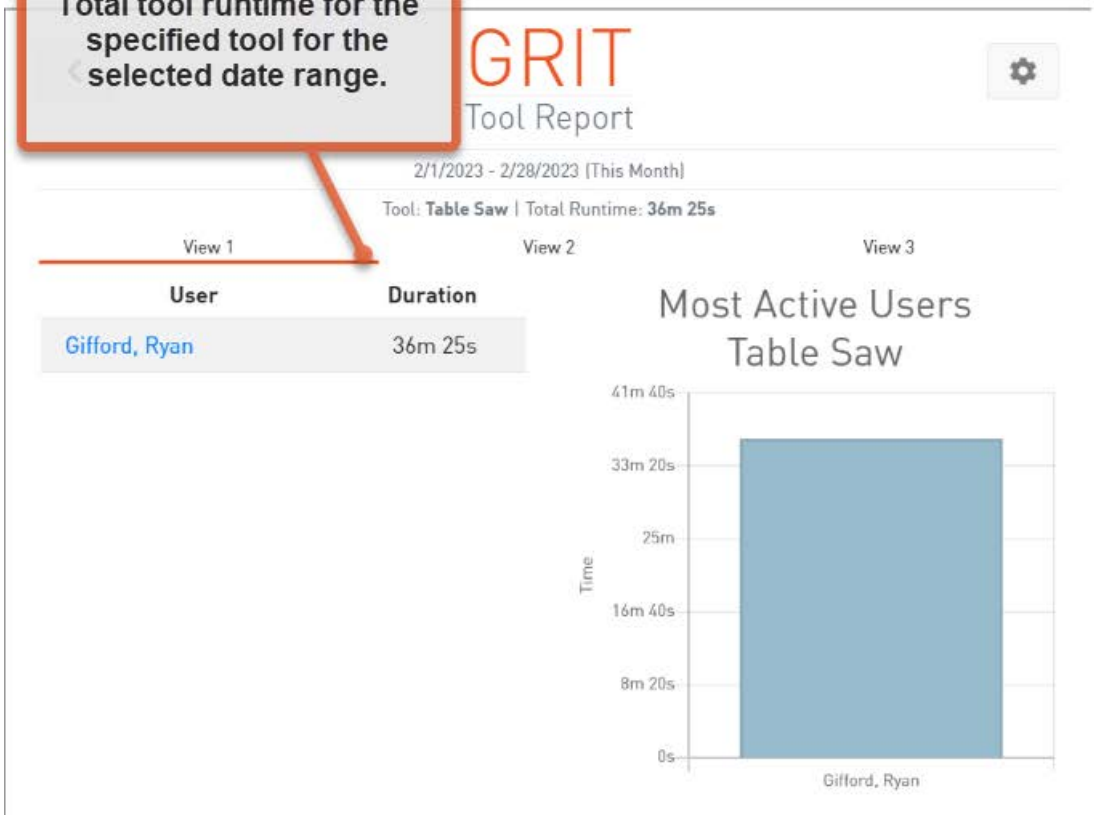



GRIT
Tool Report
2/1/2023 - 2/28/2023 (This Month)
Tools: 9 | Total Runtime: 6h 12m
View 1
View 2
Tool
User
Duration
Feb 23, 2023
Bandsaw - Small
Gifford, Ryan
2m 02s
Remote Switch
Gifford, Ryan
11m 05s
Router Table
Gifford, Ryan
7m 49s
Sanders - Flat
Gifford, Ryan
1m 39s
Shop Sweep
Gifford, Ryan
1m 29s
Table Saw
Gifford, Ryan
3m 18s
Feb 22, 2023
Feb 21, 2023
Feb 20, 2023
Feb 17, 2023
Feb 16, 2023
Feb 15, 2023
Feb 14, 2023
Feb 11, 2023
Feb 9, 2023
Feb 8, 2023
Feb 5, 2023
View 2: All Tools Report
A list of all tool runtime for each date in the selected range.
Home
Devices
Reports
Admin

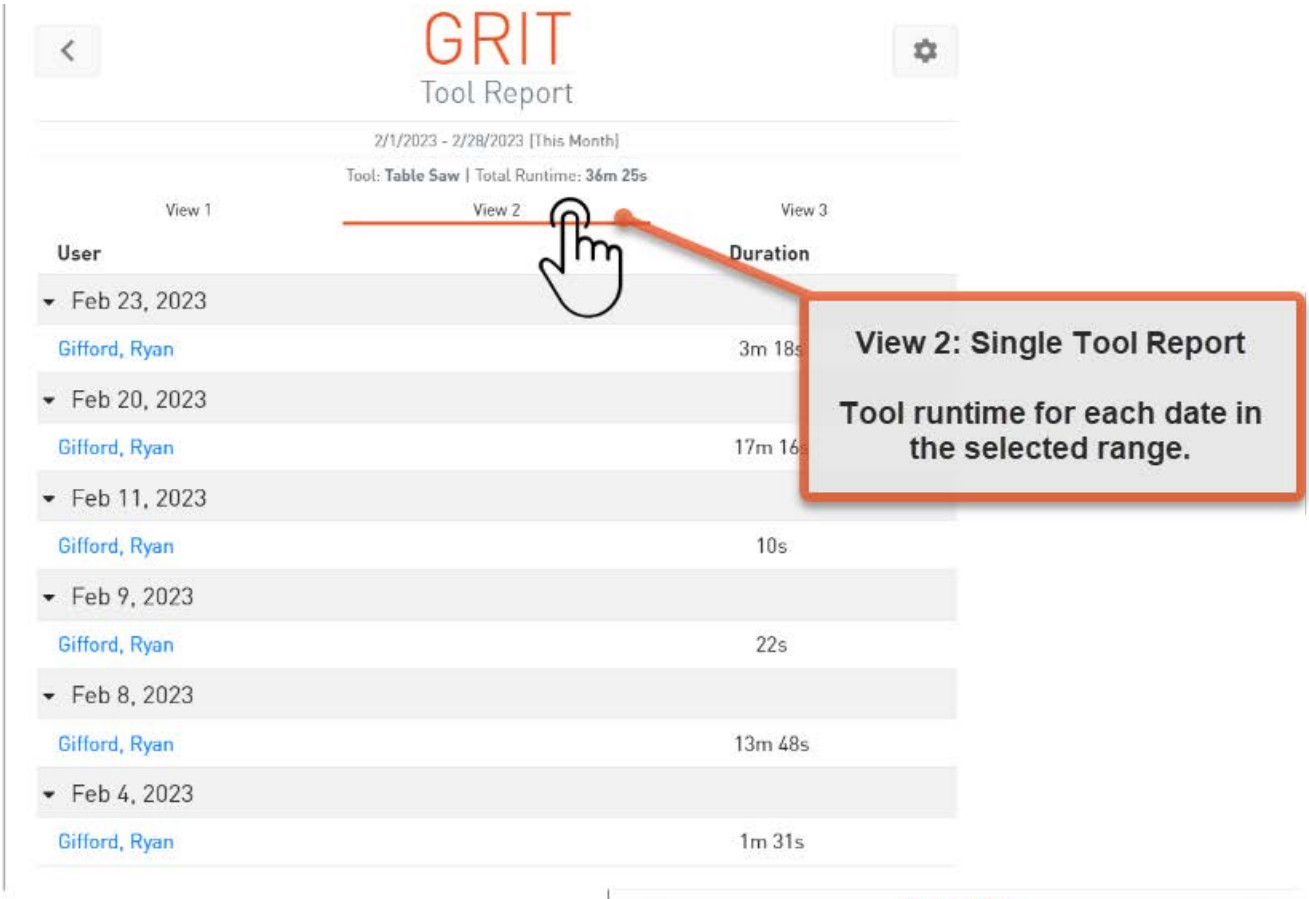


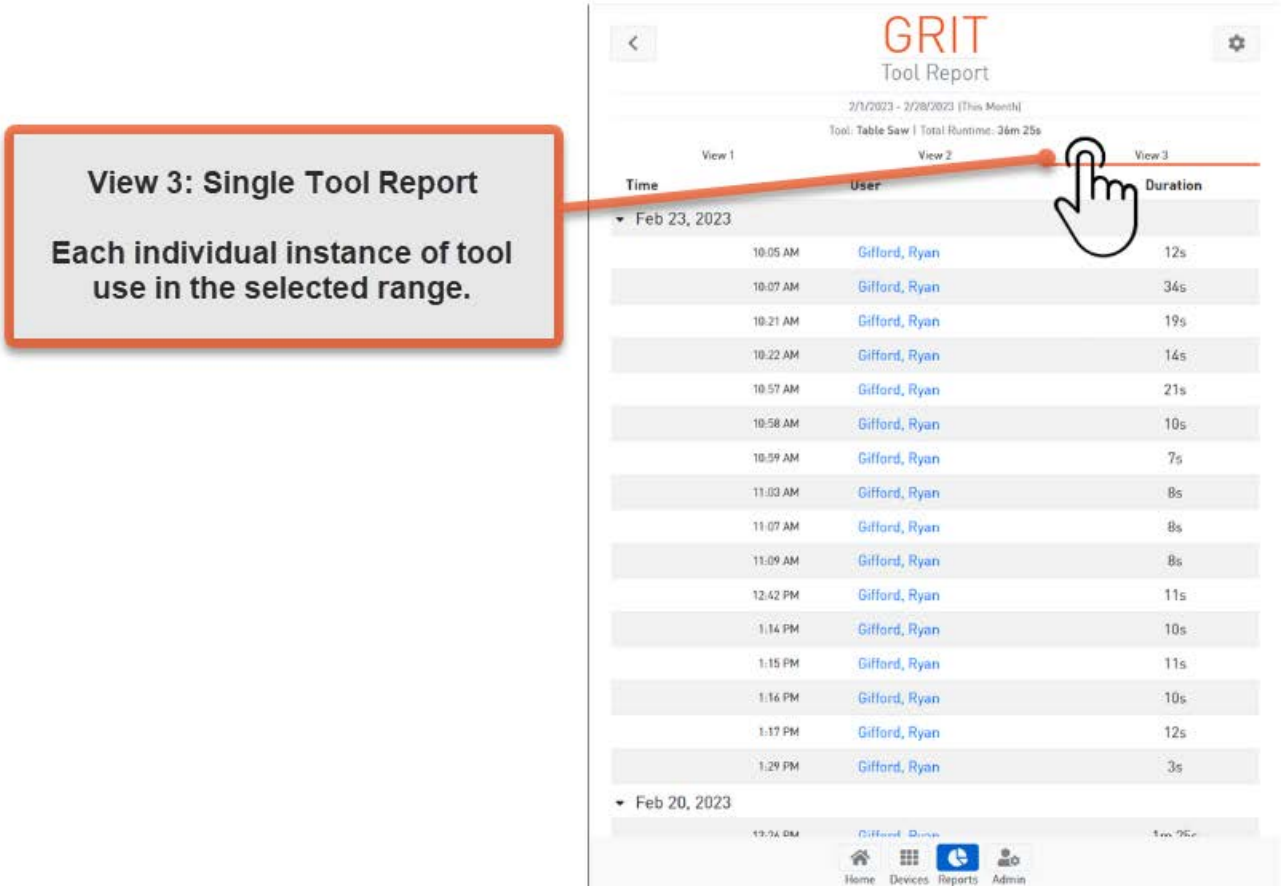

**View 1: Single Tool Report**

**Total tool runtime for the specified tool for the selected date range.**

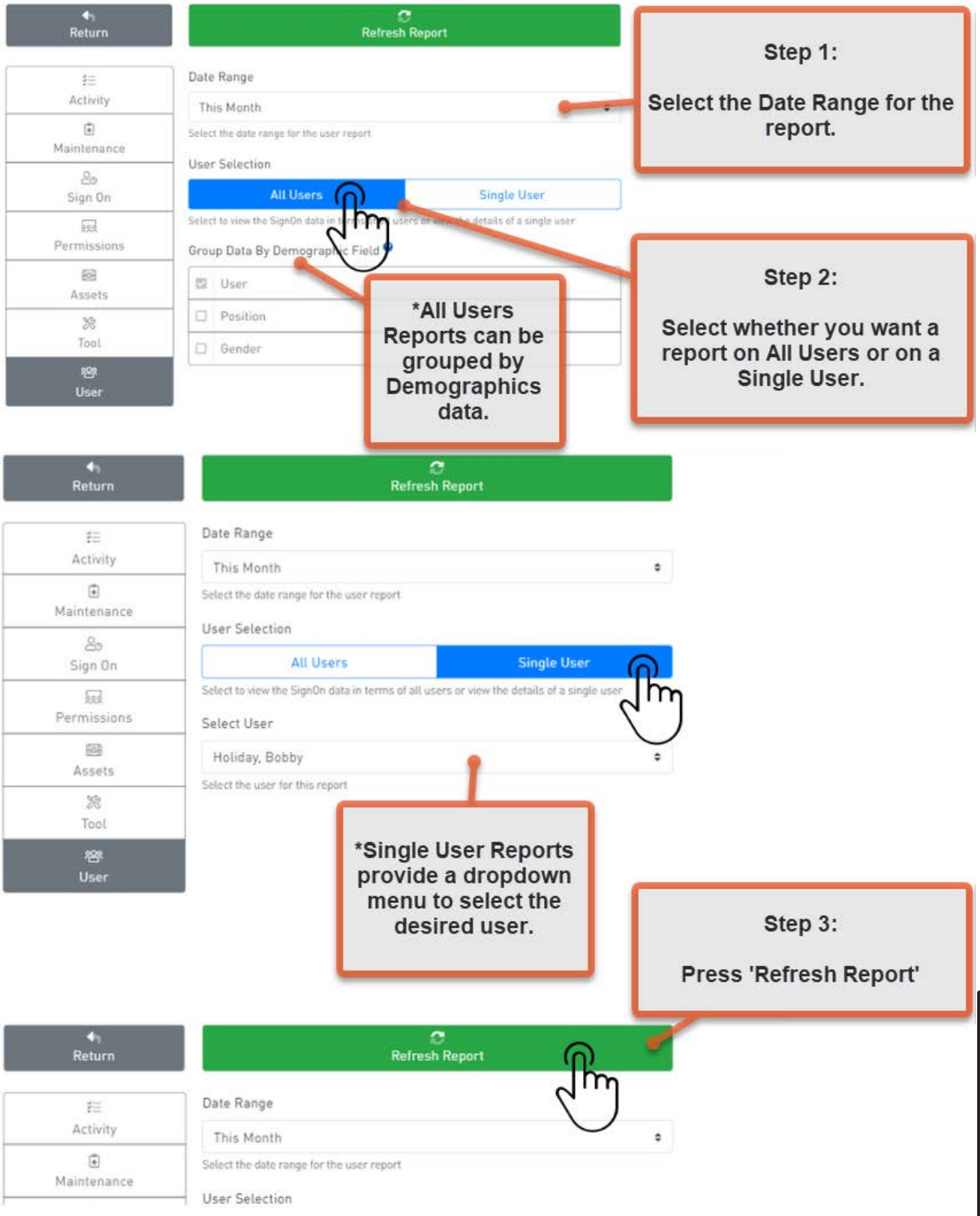


# GRIT REPORTS

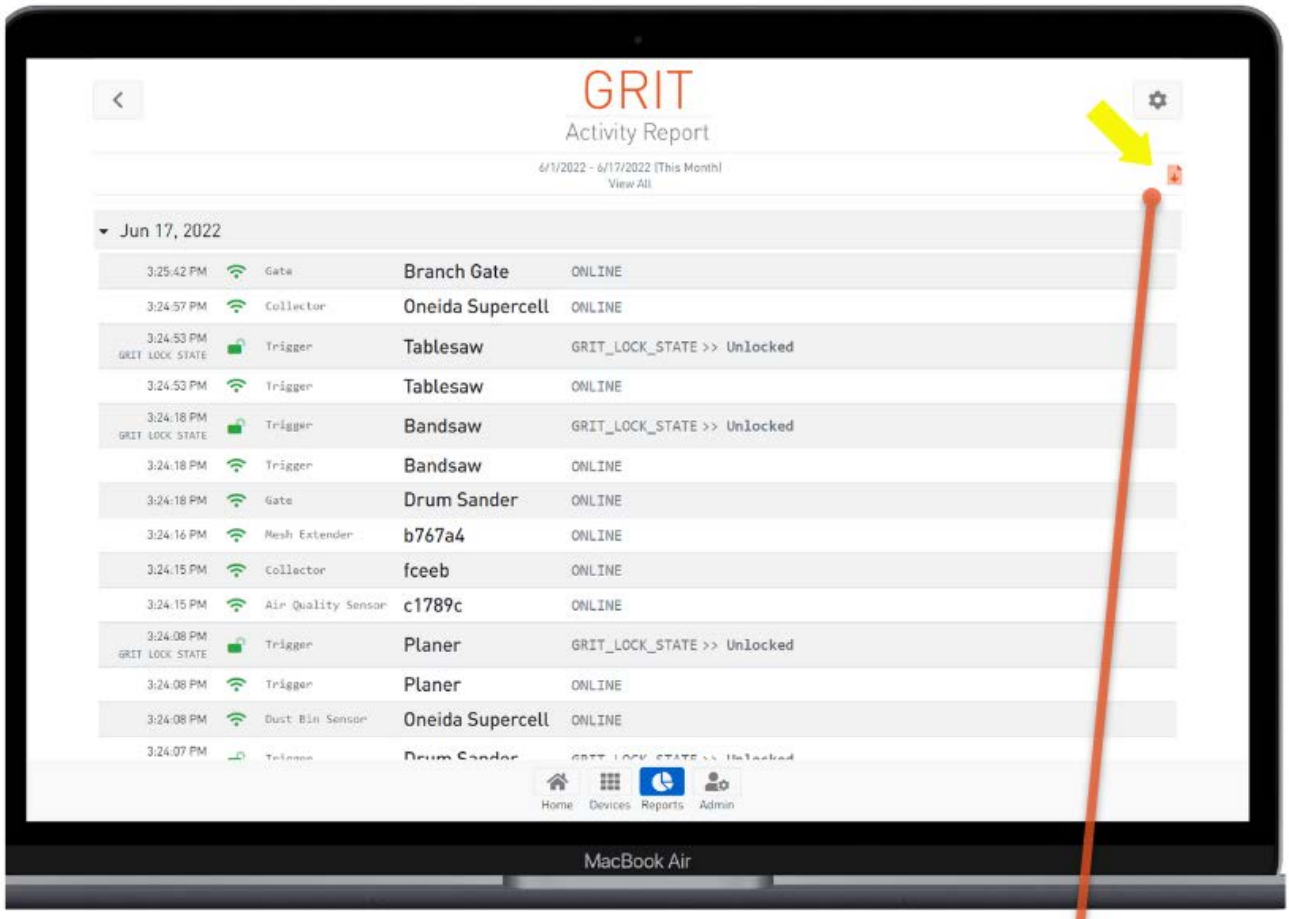


# User Reports



## Download Reports




When running reports on a Desktop, reports can be exported as an Excel file by pressing the red download icon.

# GRIT AUTOMATION, INC. 12-MONTH LIMITED WARRANTY

1. GRIT Automation, Inc. ("GRIT", "us", "we", "our") warrants all products sold directly from us to be free from defects in workmanship and materials for a period of twelve (12) months from the original shipment date when installed and used in accordance with the GRIT Automation Owner's Manual. Warranty repairs may require you to install a replacement part provided by GRIT, or require you to return the product to us for warranty service or replacement.

2. Such repair or replacement is subject to verification of the defect or malfunction. If we conclude shipping is necessary we will provide you with a shipping label. You are solely responsible for any damage to the returning product, so please ensure packaging is sufficient to product all components therein.

3. This warranty does not cover repairs or replacements for:

GRIT products used for a purpose or used in any manner for which the product was not intended.

GRIT products damaged as a result of incorrect or inadequate maintenance or care.

Damages resulting from misuse, abuse, negligence, accidents, or shipping damage.

Damages that are a result of normal wear and tear.

Damages incurred during assembly or maintenance.

Damages that are determined to be from repairs made by third parties.

Without limiting the generality of the foregoing, this warranty will be void for products if you do any of the following:

Install any firmware not specifically issued by GRIT.

Make any change or modification to the electronics or computer components of GRIT.

Use or attempt to use GRIT components to control or move any device or object not specifically issued or authorized by GRIT.

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4. Technical support is done through email only at info@gritautomation.com. To obtain warranty service, first email and include your order number, order date, and contact information along with a brief explanation of the issue you are having. Support will work with you via email to diagnose the issue. This may require you to send pictures and/or videos to help with the diagnostics. Do NOT send any products or components back to GRIT without prior approval from Tech Support.

5. Acceptance of the exclusive repair and replacement remedies described herein is a condition of the contract for the purchase of every GRIT product. In no event shall GRIT be liable for any incidental, special, consequential or punitive damages, or for any costs, attorney fees, expenses, losses or delays alleged to be as a consequence of any damage to, failure of, or defect in any product including, but not limited to, any claims for loss of profits. This warranty is exclusive and in lieu of all other express warranties, written or oral. To the extent permitted by law, GRIT disclaims any implied warranties, including without limitation any implied warranty of merchantability or fitness for a particular use or purpose; to the extent such disclaimer not permitted by law, such implied warranties are limited to the duration of the applicable express warranty as described above.

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