



**Aerial Harness Training System
Installation Guide**

Overview

The RECON Aerial Harness Training System is designed to assist in the training, notification and monitoring for proper use of an aerial safety harness. The system provides the lift operator an audible warning of unsafe usage of the lift when the operator has not clipped in to the lift (like not using a safety belt in a vehicle). In addition, the system can monitor for unsafe usage and report this information to safety and operations personnel to improve lift safety compliance. The Aerial Harness Training System once installed on the vehicle requires setup through the Recon Asset Management System (RAMS) to establish communication between the ProxBox and sensors.

PROCEDURE

This procedure is written in the context of mounting the aerial harness training system onto a typical bucket vehicle or squirt boom. There may be configurations of bucket vehicles that this installation guide does not cover. It is recommended to consult with Recon Dynamics customer support in such an instance to ensure proper functionality of the system. For support visit www.recondynamics.com customer support portal or call customer support at 877-480-3551.

CONTENTS

- The installation kit contains the following items needed to install the Recon Dynamics Aerial Harness Training System:
 1. ProxBox, mounting hardware and power cord
 2. Patch antenna
 3. RECON audible sensor (RASR) and mounting bracket
 4. Wireless boom sensor and boom magnet
 5. Wireless bucket sensor
- Compare the list of contents provided above with contents of the kit. If any discrepancies are found, contact the Recon Dynamics customer service department.
- For each installation, document the serial numbers for the audible sensor, boom sensor, bucket sensor and ProxBox. This information is required to properly setup the Aerial Harness Training System. Serial numbers can be found on the box label and on each individual item label.



This installation kit contains strong magnets which can damage sensitive electronics and/or cause physical harm if improperly handled.

ProxBox Installation

Once installation is complete access your account and complete the setup. Refer to the provisioning section in this guide for further details. If you do not have an account, contact RECON Dynamics customer support. Based on information Recon receives on your company contacts, users and structure, an account will be created for you to access.

PRE-INSTALLATION

PROXBOX

- Inspect the vehicle prior to installing the ProxBox to determine the best location for mounting the ProxBox and antenna.
- Document any information regarding the vehicle or equipment the ProxBox is being installed on for input into the Recon system.
- Document the serial number of the ProxBox for input into the Recon system.
- Criteria for mounting a ProxBox:
 - Mount the ProxBox on a surface large enough that all 4 mounting points can be used.
 - Mount the ProxBox close enough to the front of a vehicle so the power cable can be hooked up to the vehicle's main battery with the supplied cable length. Extending the supplied power cord is acceptable to increase mounting options.
 - Mount the ProxBox such that no tools or equipment will damage it while they are in use or being stored on the vehicle.
 - Mount the ProxBox as high as possible and as far away from any nearby metal obstructions to minimize interference with the gray top.
 - See Appendix A for installation examples.



It may be necessary to fabricate a mounting plate or structure to create the proper mounting condition for the ProxBox and patch antenna, which would then need to be mounted (welded or bolted), to the vehicle.

PATCH ANTENNA

- The recommended placement of the patch antenna should be located as high as possible with a good visibility to the back of the vehicle and separated as far away from the ProxBox as possible. Depending on the location of the battery, a typical installation has the ProxBox mounted on the driver's side of the vehicle and the patch antenna mounted on the passenger's side roughly 2-3 feet away.
- Criteria for mounting the patch antenna:

RECON DYNAMICS AERIAL HARNESS TRAINING SYSTEM INSTALLATION GUIDE

- Mount the patch antenna such that the antenna front (curved portion) is facing to the back of the vehicle. The best location is typically directly behind the cab of the vehicle.
- Mount the patch antenna close enough to the ProxBox so the antenna cable can be connected to the ProxBox with the supplied cable length without stressing the connector.
- Mount the patch antenna such that no tools or equipment will damage it while they are in use or being stored on the vehicle.
- Mount the antenna as high as possible to minimize any interference.
- See Appendix A for installation examples.

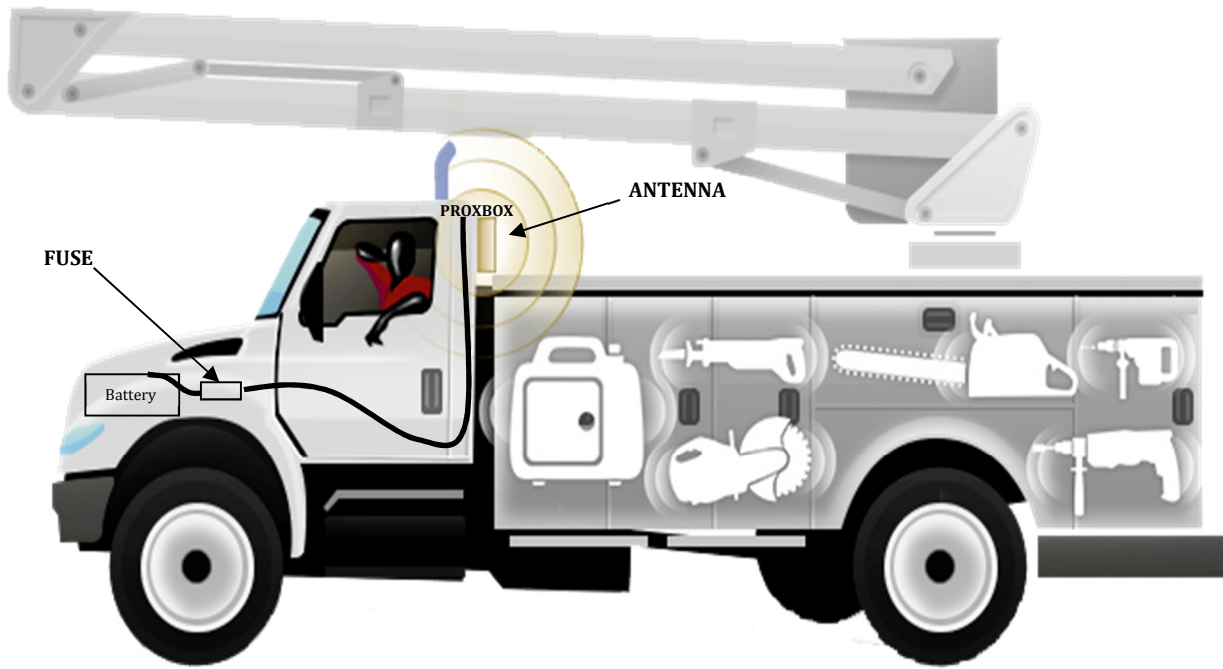


Figure 1

Figure 1 shows the typical routing of the power cable and component placement for the ProxBox system.

INSTALLATION

PROXBOX INSTALLATION

- Use the mounting flanges as a drill template and center punch to mark locations to drill. Mount the ProxBox using the vibration mounting kit. Ensure all metal surfaces are touched up with paint after drilling to avoid corrosion.
- Route supplied power cable from ProxBox to the vehicle's main battery, the bare end (no connector) is to be routed.



Caution

Ensure when routing the power cable that it is well protected, so nothing can damage it once installed.



Caution

Do not connect power to the ProxBox until patch antenna is connected.

- Secure cable to the vehicle using tie wraps. It is recommended to use wire loom for added protection.
- It is best to leave the power cable at full length and just bundle up excess cable with a wire tie. But, if necessary, cut excess length from the cable.
- Strip the pre-tinned wire leads back far enough to connect to both posts of the battery. The 18 AWG red “hot” wire requires an inline 10A fuse added (not included). Add appropriate size ring terminals (not included) to the end of each wire.



Warning

Shock hazard! Be very careful when connecting leads to the battery.

- Attach black lead to the ground post of the battery. Attach red lead to the hot post of battery. Ensure both connections are bolted tightly to battery and power cable fuse is routed to eliminate potential damage.

PATCH ANTENNA INSTALLATION

- Before mounting ensure antenna cable will easily reach the ProxBox connector marked “Ant”.
- Attach Patch antenna using a minimum of (2) screws (not included) to a solid surface, (4) screws are recommended though. Use the antenna as a drill template and center punch to mark locations to drill. Do not over tighten screws or bolts as the antenna is plastic and will be damaged. Ensure all metal surfaces are touched up with paint after drilling to avoid corrosion.



Note

Do not mount antenna using glue, tape or tie wraps.

- Route cable from patch antenna to ProxBox.
- Secure excess cable neatly using wire ties. It is recommended to use wire loom for added protection.



Ensure when routing the antenna cable that it is well protected, so nothing can damage it once installed.

- Connect cable to ProxBox and hand tighten. Refer to Figure 2 for ProxBox port identity.
- Wrap connector with supplied coax seal tape to completely cover the connection then mold around cable and connector to weatherize connection. Inspect to ensure connection is fully covered.

FINAL POWER UP

- Re-inspect all cable routing and connections to ensure completion. Re-inspect battery connection for proper polarity.
- Measure voltage at the power connector to verify 12 to 24 volts will be supplied to the ProxBox.
- The ProxBox power connector is keyed. Inspect the connector on the ProxBox and power cord connector and properly align keys. Once the power cord is fully seated on to the power connector a final $\frac{1}{4}$ turn clockwise is required to secure the power connection. Refer to Figure 2 for ProxBox port identity.
- The ProxBox has a blue, green and red LED on the bottom between the ports. When all three LED are lite the ProxBox is operational. This can take 5-6 minutes. Refer to appendix B for the LED status reference table and troubleshooting guide.



Note

The ProxBox has a hibernation mode designed to reduce current draw when a vehicle is not used for extended periods of time. If a vehicle has a weak battery it will need to be turned on to ensure the ProxBox does not go into hibernation mode during installation of the Aerial Harness Training system. Refer to the LED reference table in appendix B for LED status during hibernation mode.

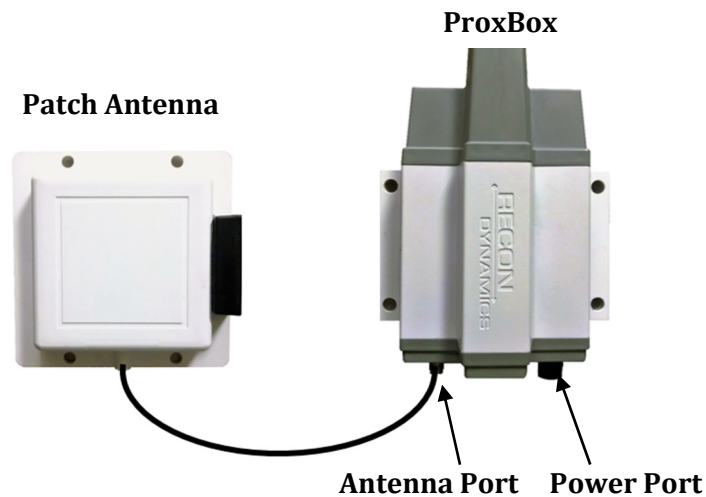


Figure 2

Wireless Sensor Installation

RECON AUDIBLE SENSOR (RASR)

- Inspect the vehicle prior to installing the RASR to determine the best location for mounting. For ease of installation mount this sensor close to the ProxBox and route the power wire the same as the ProxBox power wire.
- Criteria for mounting a RASR:
 - Mount the RASR on a surface large enough that the two mounting points of the mounting bracket can be utilized.
 - Mount the RASR close enough to the front of a vehicle and pointed to the back of the vehicle so the power cable can be hooked up to the vehicle's main battery with the supplied cable length. If this is not possible the power cable will need to be extended.
 - Mount the RASR such that no tools or equipment will damage it while they are in use or being stored on the vehicle.



It may be necessary to fabricate a mounting plate or structure to create the proper mounting condition for the RASR, which would then need to be mounted (welded or bolted), to the vehicle.

WIRELESS BOOM SENSOR AND BOOM MAGNET

- The recommended placement for the boom sensor and magnet is as shown in figure 1. The sensor should be mounted to the lower arm of the boom or pedestal and the boom magnet should be mounted to the upper arm of the boom.
- Criteria for mounting the boom sensor:
 - Mount the boom sensor and magnet such that during use of the boom vehicle nothing will damage them such as trees, poles or buildings.
 - Mount the boom sensor and magnet no more than half the length of the upper boom arm away from the bucket. This ensures the system detects boom up as early as possible.

WIRELESS BUCKET SENSOR(S)

- The Aerial Harness Training system supports up to 2 bucket sensors. This allows boom operators to clip into either the primary or a secondary location. The second bucket sensor is optional.
- The installation criteria for both bucket sensors are the same
 - Mount the bucket sensor as close to the D-ring as possible
 - Once the bucket sensor is installed it cannot impede the boom operator's ability to clip in.

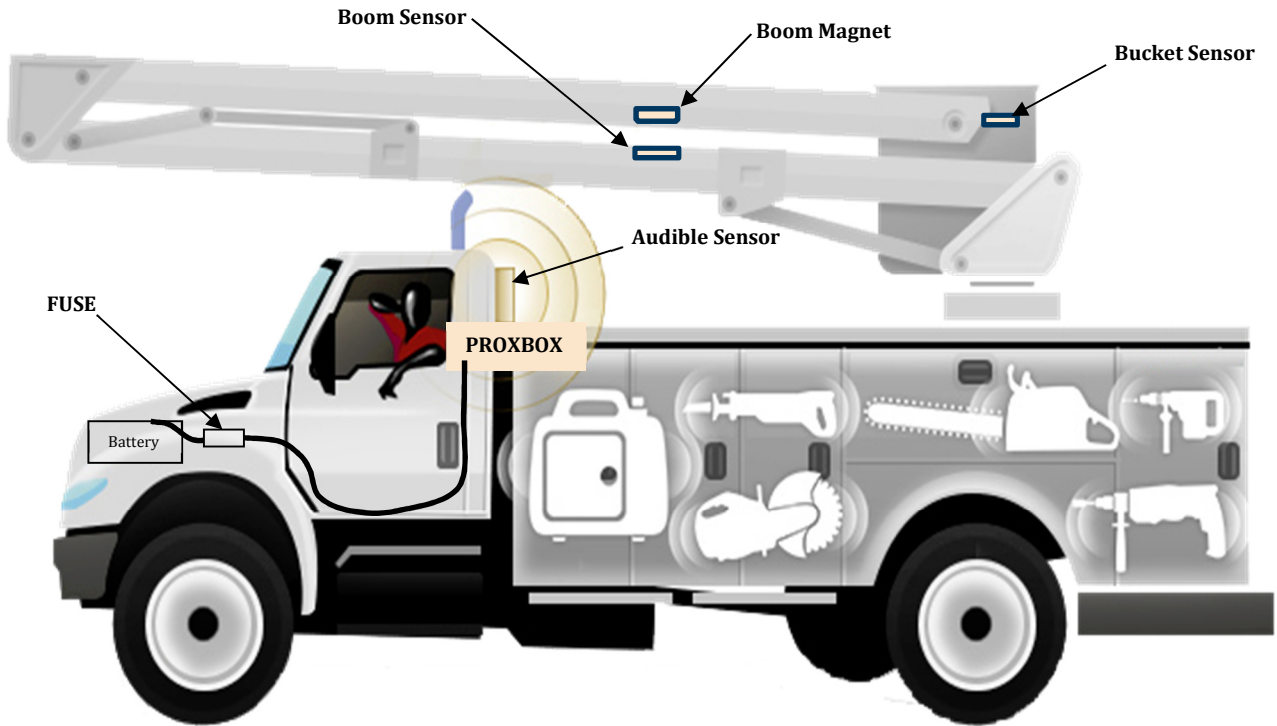


Figure 3

Figure 3 shows the typical routing of the power cable and component placement for the audible sensor, bucket sensor, boom sensor and magnet.

INSTALLATION



Prior to installing the Aerial Harness Training System sensors, the ProxBox must be installed and fully provisioned in the RECON website portal.

RASR INSTALLATION

- Mount the RASR using the mounting bracket supplied with the kit. Refer to figure 4.
 1. Select proper direction of bracket
 2. Use the mounting bracket as a drill template and center punch to mark locations to drill for the two mounting bracket screws and mount the bracket.
 3. Insert the mounting bracket into the rectangular bracket hole on the housing and secure with the supplied attachment screw.
 4. Loosen the bracket angle screw and adjust the bracket to the proper angle then securely tighten angle bracket screw

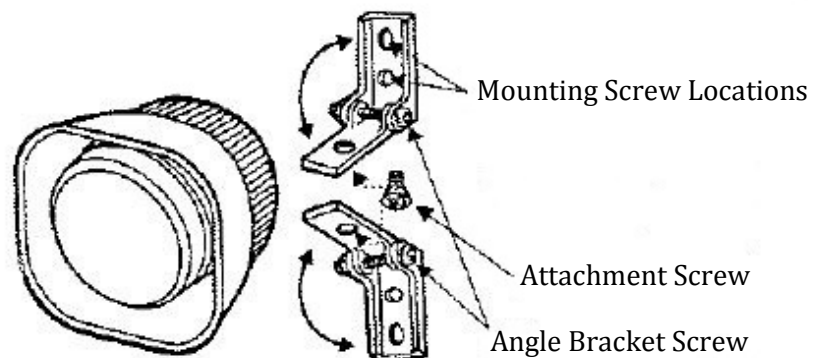


Figure 4



Improperly tightened screws may allow RASR to loosen over time which may cause damage.

- Route supplied power cable from audible sensor to the vehicle's main battery, the bare end (no connector) is to be routed.



Ensure when routing the power cable that it is well protected, so nothing can damage it once installed.

- Secure power cable to the vehicle using tie wraps. It is recommended to use wire loom for added protection.

- It is best to leave the power cable at full length and just bundle up excess cable with a wire tie. But, if necessary, cut excess length from the cable.
- Strip the pre-tinned wire leads back far enough to connect to both posts of the battery. The 18 AWG red “hot” wire requires an inline 10A fuse added (not included). Add appropriate size ring terminals (not included) to the end of each wire.



Shock hazard! Be very careful when connecting leads to the battery.

- Attach black lead to ground post of primary vehicle battery. Attach red lead to hot post of primary vehicle battery. Ensure both connections are bolted tightly to battery and power cable fuse is routed to eliminate potential damage. When Power is applied to the audible sensor it will sound for a short time and then stop.

BOOM SENSOR AND MAGNET INSTALLATION

- Attach the boom sensor and magnet to the boom in the general location shown in figure 1. Mount the boom sensor and magnet using a permanent epoxy.



Ensure epoxy will create a permanent attachment for the sensor and magnet. Follow manufacturer’s instructions for mounting surface prep and proper adhesion requirements.

- In the boom down position, a 3-4 inch spacing is required between the boom sensor and magnet when the sensor is mounted horizontally as shown in figure 5.
- If the magnet to sensor spacing is less than 3 inches, the sensor must be offset such that one end of the sensor aligns with the centerline of the magnet as shown in figure 6.
- If mounting the boom sensor vertically, position the pointed end of the label closest to the magnet as shown in figure 7. Ensure the spacing does not exceed 3 inches.



Figure 5

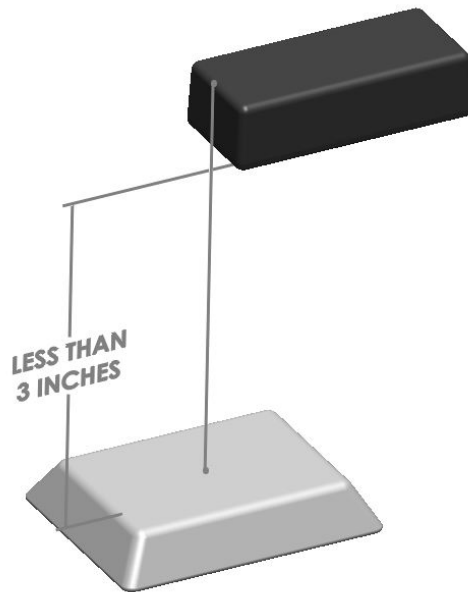


Figure 6



Figure 7

BUCKET SENSOR INSTALLATION

- Attach the bucket sensor near the **primary** lanyard clip attachment point. Typically, this is a “D” ring. Attach the sensor in the general location shown in figure 8. Mount the bucket sensor using a permanent epoxy.
- When installed, the middle of the bucket sensor should be as close as possible and centered on the “D” ring but not too close to inhibit movement of the lanyard clip on the ring.



Ensure epoxy will create a permanent attachment for the sensor and magnet. Follow manufacturer’s instructions for mounting surface prep and proper adhesion requirements.



Middle of sensor center
and as close as possible
to D-ring

Figure 8

SENSOR INSTALLATION GUIDELINES

Proper installation of the bucket sensor is important for correct function of the system. Figure 8 shows the sensor close to a D-ring and centered to capture the range of movement of a lanyard clip. **When deciding orientation of the sensor relative to the D-ring remember to keep the middle of the sensor as close to the center of the D-ring as possible.** Figure 9 illustrates a vertical orientation of the sensor with the sensor centered on a D-ring. Figure 10 illustrates a horizontal orientation of the sensor placing the middle of the sensor closer to and centered on the D-ring. In this example, the horizontal location is the preferred installation.



Middle of Sensor

Figure 9



Middle of Sensor

Figure 10 - Preferred

Center of D-ring

LANYARD MAGNET INSTALLATION (OPTIONAL)

RECON Dynamics offers two solutions for creating a magnetized lanyard: 1. integrated magnetic lanyard, purchased from approved RECON Dynamics vendor and 2. retrofit magnet set for existing lanyards sold by RECON Dynamics. No installation is required for the integrated magnetic lanyard. Below are instructions for installing the magnet set on an existing lanyard.

- Attach the lanyard magnets to the lanyard clip as shown in figures 11 and 12. The right magnet “R” mounts to the right side of the clip. The left magnet “L” mounts to the left side of the clip. For reference to right or left side of clip, hold the clip such that the opening of the clip is farthest away from you. Then when looking at the clip, its right side will be to your right and left side to your left illustrated in figure 13.
- Mount the magnets using a permanent epoxy. When installed, the magnets should not restrict movement or functionality of the clip.



Ensure epoxy will create a permanent attachment for the sensor and magnet. Follow manufacturer’s instructions for mounting surface prep and proper adhesion requirements.

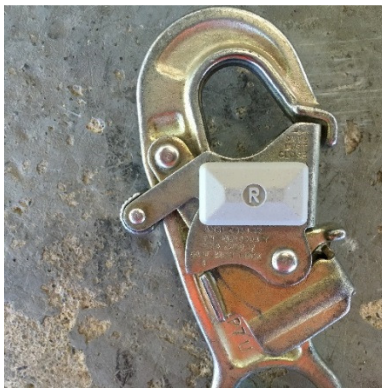


Figure 11

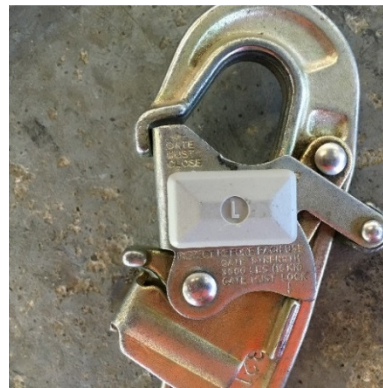
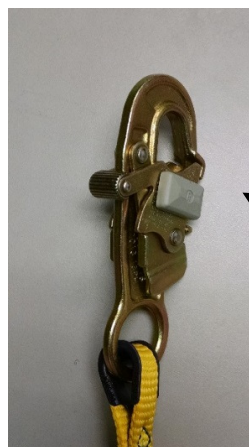


Figure 12



Opening of Clip

Figure 13

Provisioning

Passwords and Signing In

First time users receive an e-mail from Recon Dynamics prompting them to create a new password. The e-mail contains a link which the user clicks on opening a new window seen in figure 14. Passwords must be 8 characters or longer and contain at least 1 digit and 1 special character such as exclamation point (!). Passwords are case sensitive.



The screenshot shows a web browser window with the RECON DYNAMICS logo in the top left and 'RECON Asset Management Solution' in the top right. The main heading is 'Change Password'. Below this is a form with two input fields: 'New Password' and 'Confirm Password'. A blue button labeled 'Change Password' is positioned below the second field. At the bottom of the page, there is a small copyright notice: 'Copyright © 2013-2016 RECON Dynamics'.

Figure 14 Change Password

Once the user creates their password a new screen appears, shown in figure 15 confirming the password was successfully changed and gives the user a link for signing in (highlighted in blue).

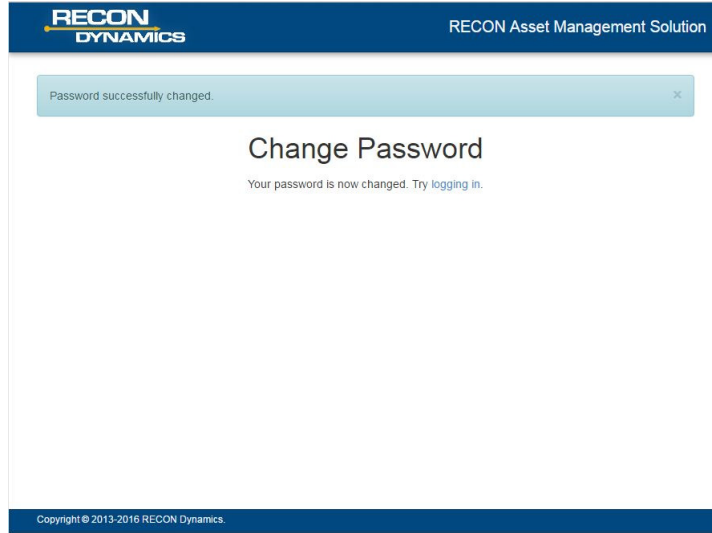


Figure 15 Change Password Successful

Your companies web page address is: [https://\(your company's name\).tv.recondynamics.com](https://(your company's name).tv.recondynamics.com).
Example: <https://aaaelectric.tv.recondynamics.com> where the companies name is AAA Electric.
Figure 3 shows the main sign in screen. Typically, your e-mail address will be your user name.

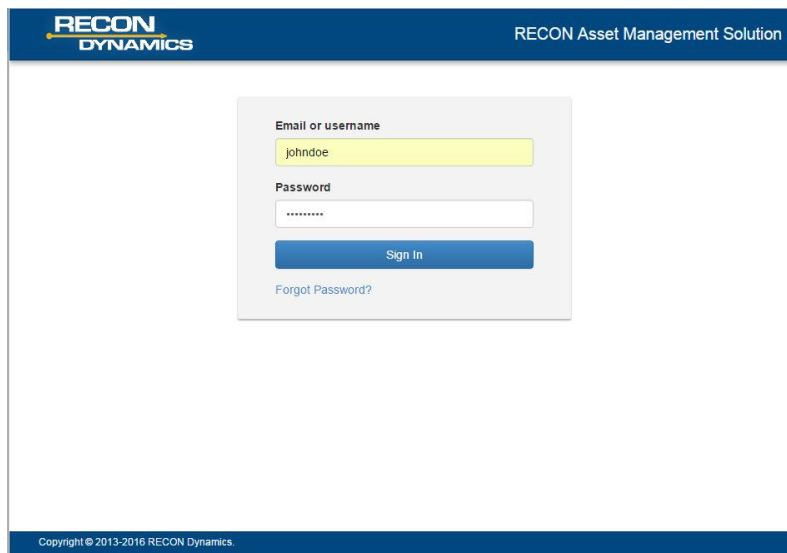


Figure 16 Sign in Screen

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To log out or change a password select the user name tab in the upper right corner of the screen shown in figure 4.

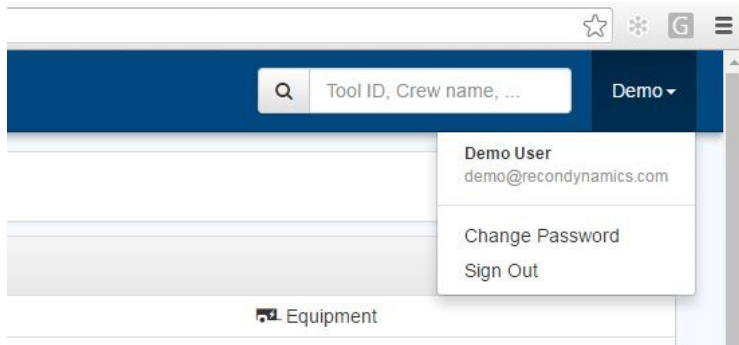


Figure 17 Log Out

Yards

The first screen for a new company website has the option of adding a yard as seen in figure 18. The yard can also be thought of as a region for the company where crews work using vehicles, equipment and tools. To create a yard, click on the “Add a yard” button and fill out the form. A name is required for the yard. Notes are not required but can be helpful to identify aspects of the yard such as locations and people’s names associated with the yard. Figure 19 shows a yard successfully added and allows for additional yards to be added.

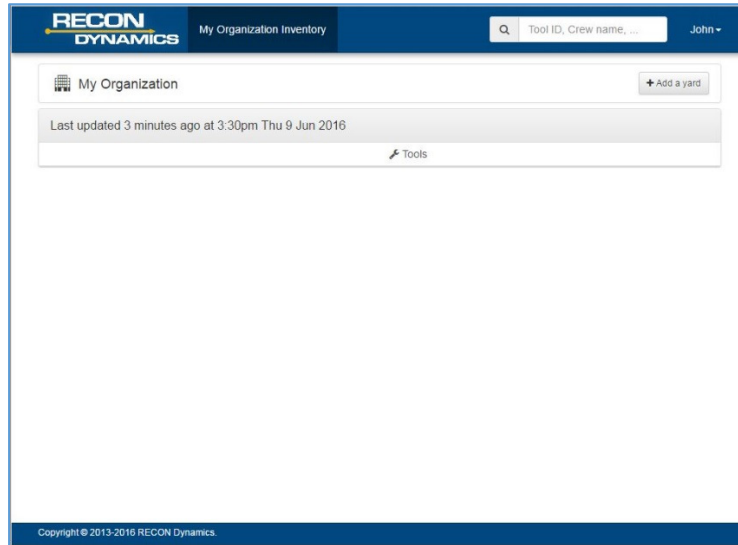


Figure 18 Yard First Screen

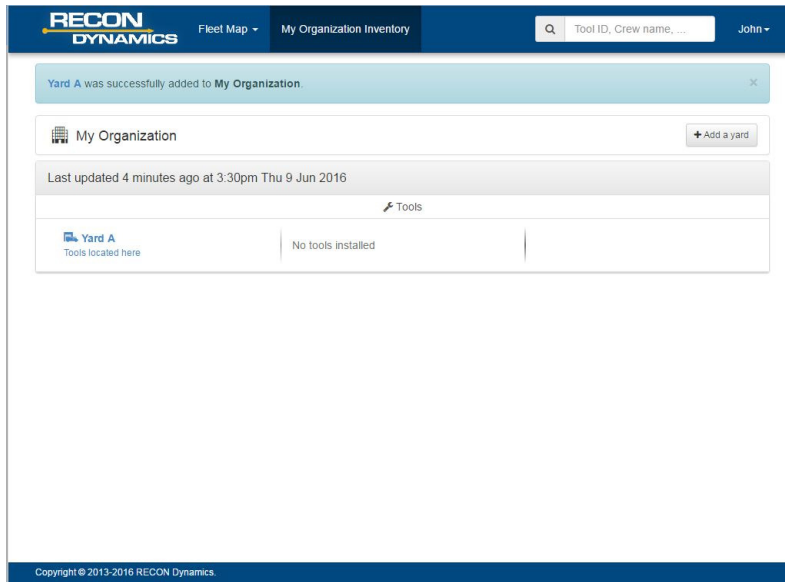


Figure 19 Yard Added

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Once a yard is created, clicking on the yard name opens the yard screen shown in figure 20. Clicking on the edit button allows for information regarding the yard to be edited or added. Figure 8 also shows a list of add features for the yard. Figure 21 shows the edit yard screen. When completed the update button saves and changes.

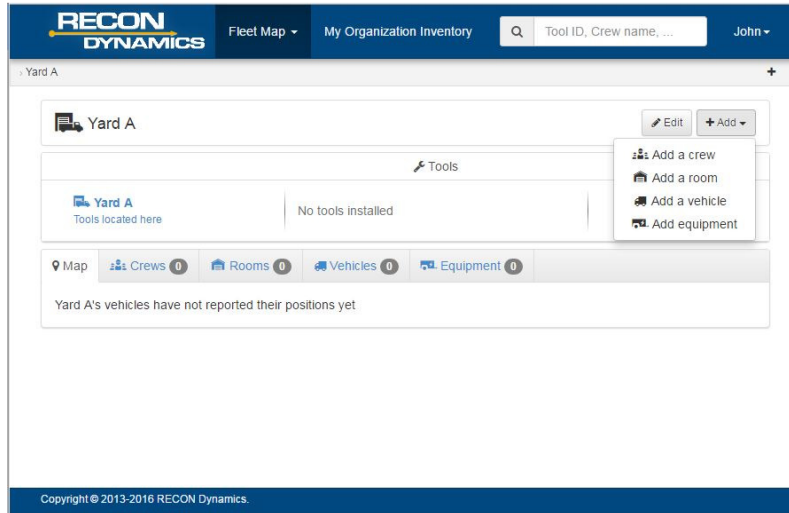


Figure 20 Add and Edit Buttons

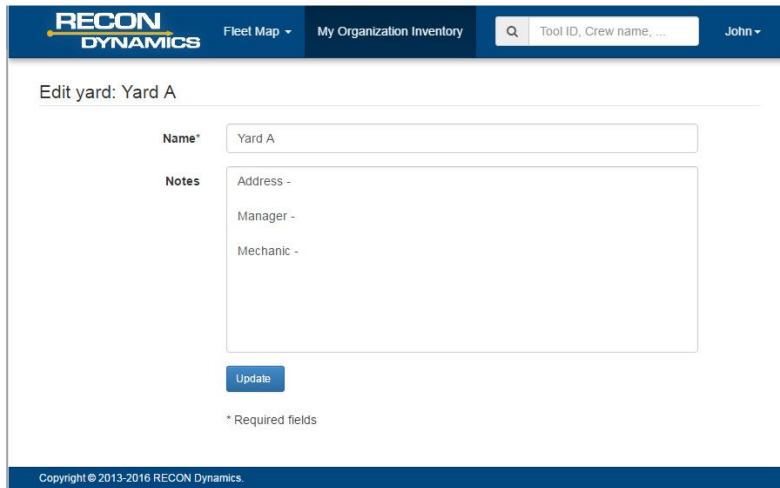


Figure 21 Edit Yard Information

Crews

Crews are typically identified by the foreman of the crew and consists of vehicles that the foreman uses on a day to day bases. Crews can also be created to group like vehicles such as mechanic trucks. These vehicles will often be used to haul tools and other equipment. In the yard page, clicking on the add crew button pulls up the add a crew info page as shown in figure 22. The name of the crew is required but notes are only recommended. The e-mail and phone number of the crew foreman are typically used for alerting and notifications and this note section is a good place to store them.

Figure 22 Crew Info Page

Once the crew has been created successfully the system shows the new crew under the crew tab on the yard page illustrated in figure 23.

Figure 23 Crew Tab

Vehicles

Selecting the crew name under the Crews tab pulls up that crew's page which allows vehicles to be added. The initial page is shown in figure 24. Vehicles can also be added directly to a yard in a similar fashion.

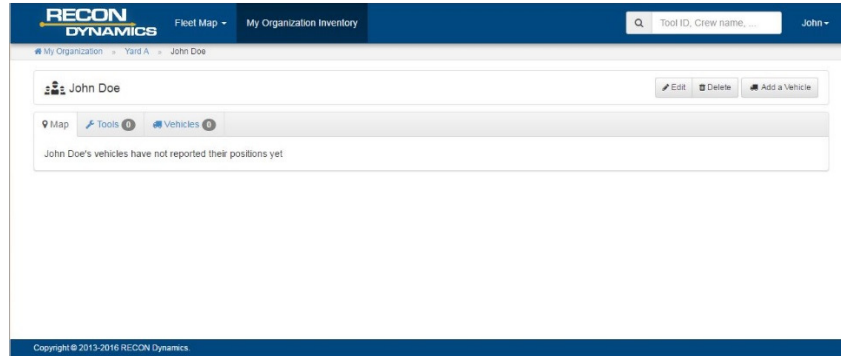


Figure 24 Add Vehicle to Crew

The add a vehicle page is shown in figure 25. Select a vehicle type from the pull-down menu. The vehicle type defines the icon used in mapping and shows in info screens. The Aerial Harness Training System defined in this guide can only be added to bucket truck (BKT) and squirt boom (SQT) types. The vehicle ID is the asset number assigned by your company. Vehicle descriptions can be the same as the ID or different and sets the vehicle label in mapping. The description can help distinguish like vehicles on search lists and on maps. Notes on the vehicle may include such info as license number, VIN number or other aspects such as unique features that are important to identify.

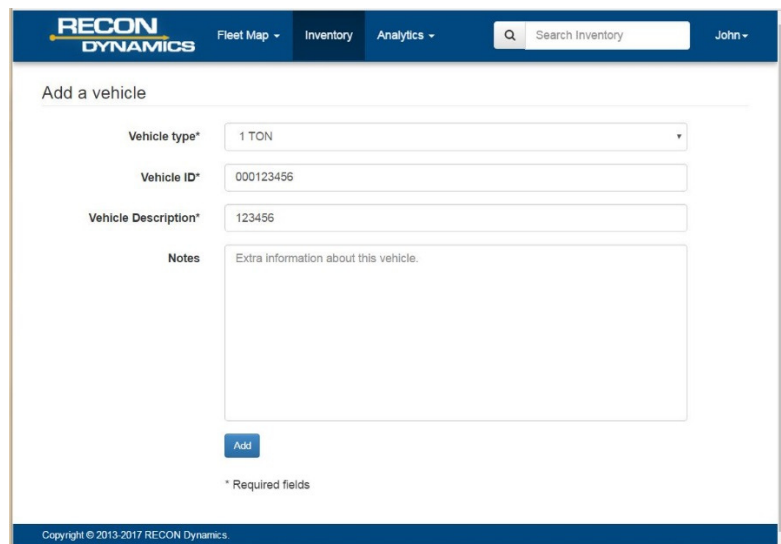


Figure 25 Define Vehicle

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The system will indicate the vehicle was successfully added to a crew as shown in Figure 26.

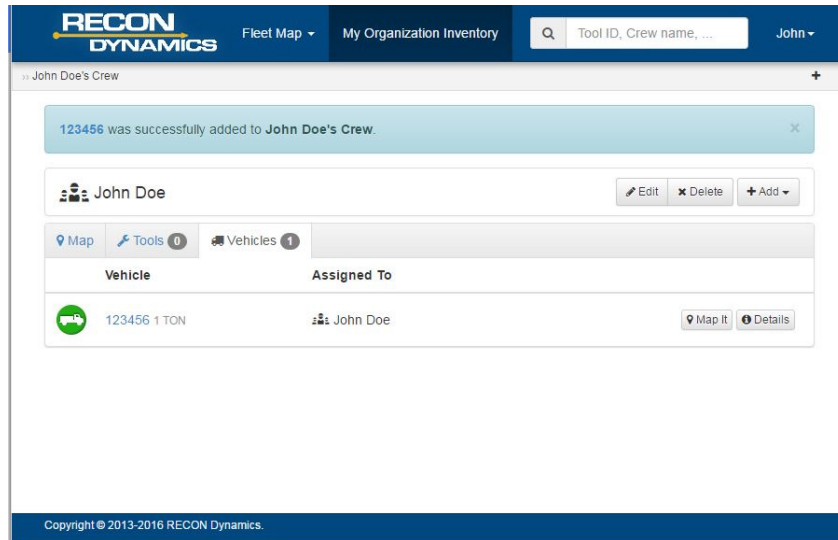


Figure 26 New Vehicle Added

Clicking on the highlighted number; in this example “123456”, opens the vehicle page shown in figure 27. At this stage, a ProxBox needs assigned and photos attached if available.

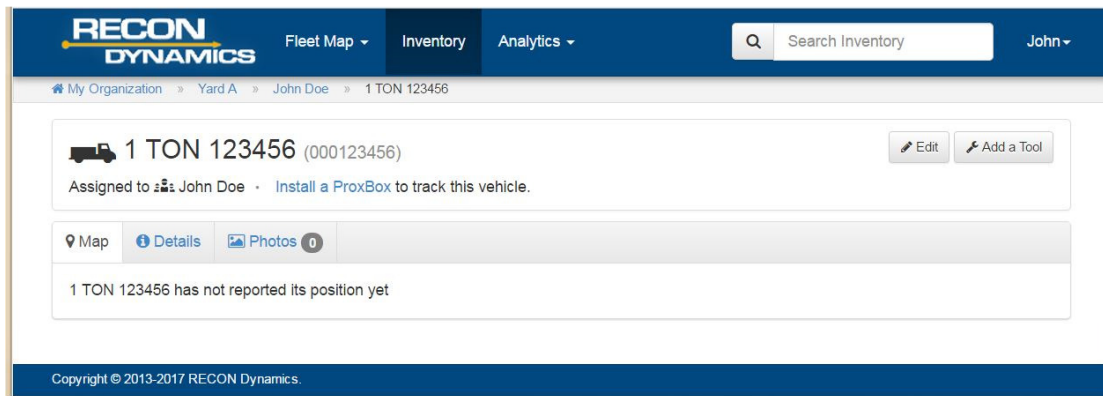


Figure 27 Vehicle Page

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Photos can be added to assets (vehicles, equipment and tools). Photos are helpful in identifying assets with unique functionality that may be hard to capture in the note section. Once the photo tab is selected follow the instructions then click the upload button to add a photo. Figure 28 shows a photo added. Additional photos can be added and once added can be downloaded by selecting the download button. Clicking on a photo enlarges it for better viewing.

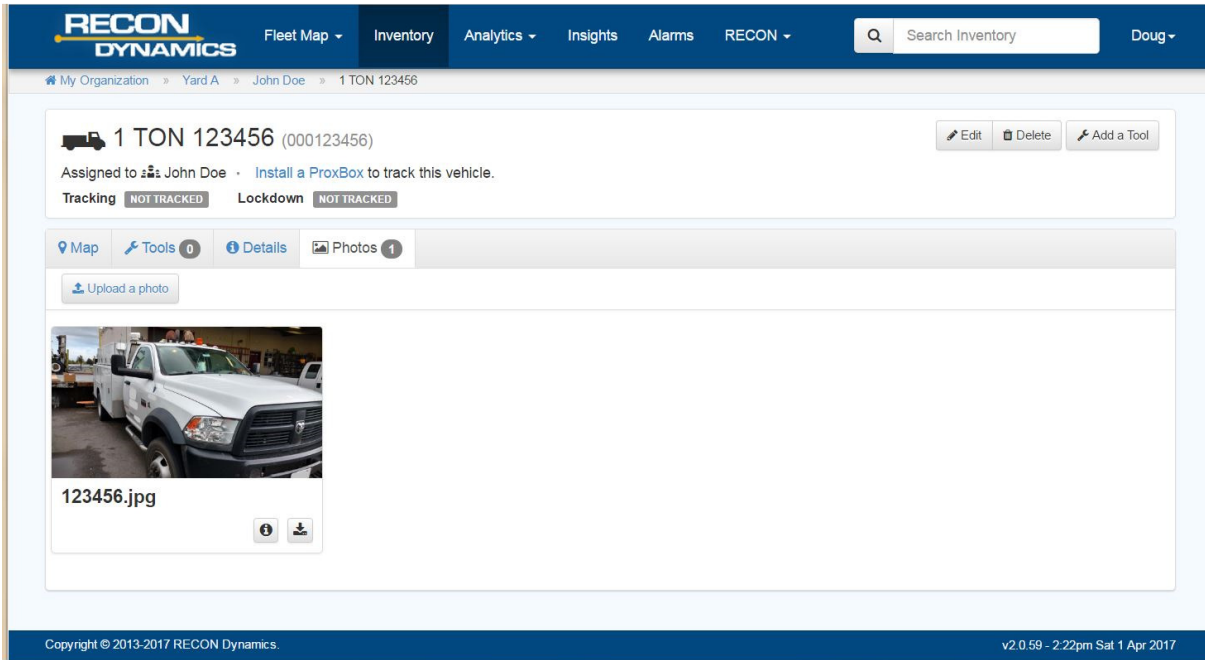


Figure 28 Add a Photo

Refer to the ProxBBox installation guide for installing the hardware on a vehicle or in a room. The words “Install a ProxBBox” are highlighted as seen in figure 28 and once selected opens the screen shown in figure 29. Fill out the Install ProxBBox form using serial numbers (S/N) from the ProxBBox and vehicle Proxlet labels. Each number on the product and its packaging is represented with human readable characters and a bar code. It is recommended to use a bar code reader to eliminate any human error during this step. Installation details and notes can be added for specific

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circumstances regarding the ProxBox installation at the time of installation or at a future date if something that needs documented arises.

RECON DYNAMICS Fleet Map My Organization Inventory Tool ID, Crew name, ... John

Install ProxBox in 123456

ProxBox S/N* 000198

Vehicle proxlet S/N* 00124800060A1464

Installation details Where and how this ProxBox was installed

Installation notes Extra information about this install

Install

* Required fields

Figure 29 ProxBox Install Screen

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When completed with the form click on the install button. The screen in figure 30 shows the box was successfully installed but may not have reported position. If a box was already pre-installed on a vehicle the system will still take a few minutes to start communicating with the box and registering location data. If the ProxBox is first installed in the system and then installed on a vehicle expect it to take an additional 10-15 minutes for the system to start communicating with the box once installed on the vehicle.

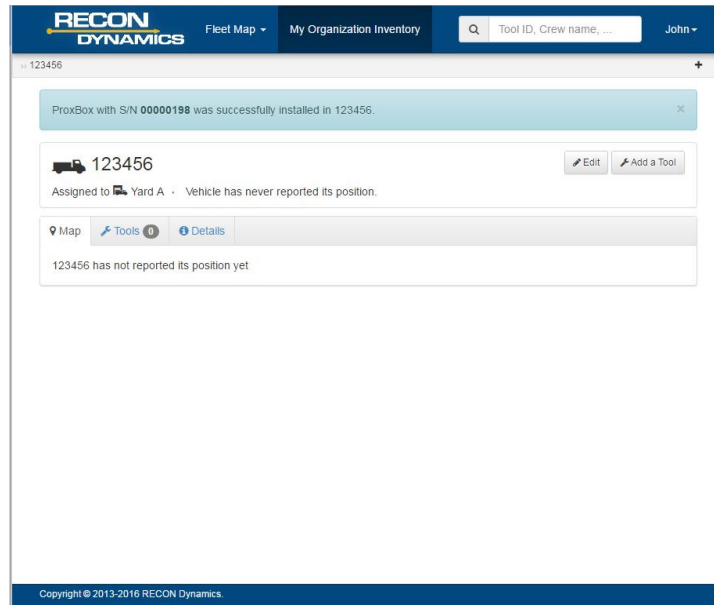


Figure 30 ProxBox Installed Screen

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Figure 31 show an updated map with current info on the vehicle.

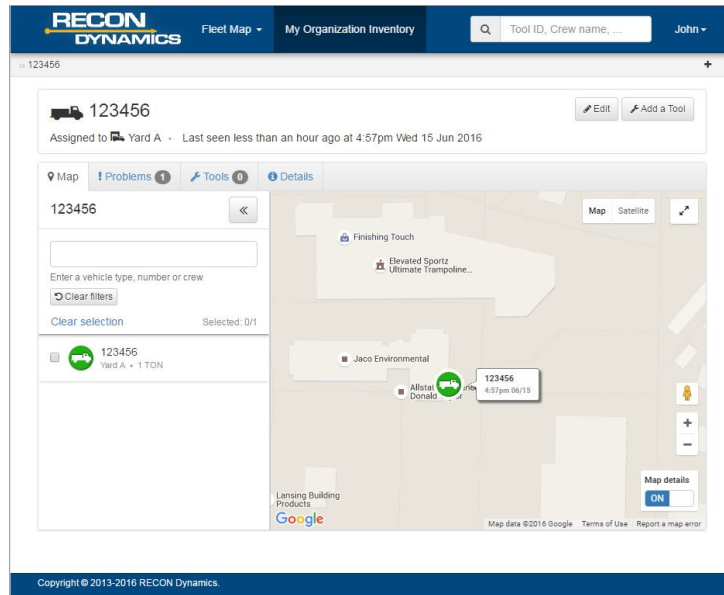


Figure 31 Vehicle Shown on Map

There will be instances when a vehicle is added to the yard level not the crew level. This is typical of carrier trucks and special function vehicles that are shared between crews. The add screen is the same when adding any vehicle but to add a yard vehicle select the add button as shown in figure 32.

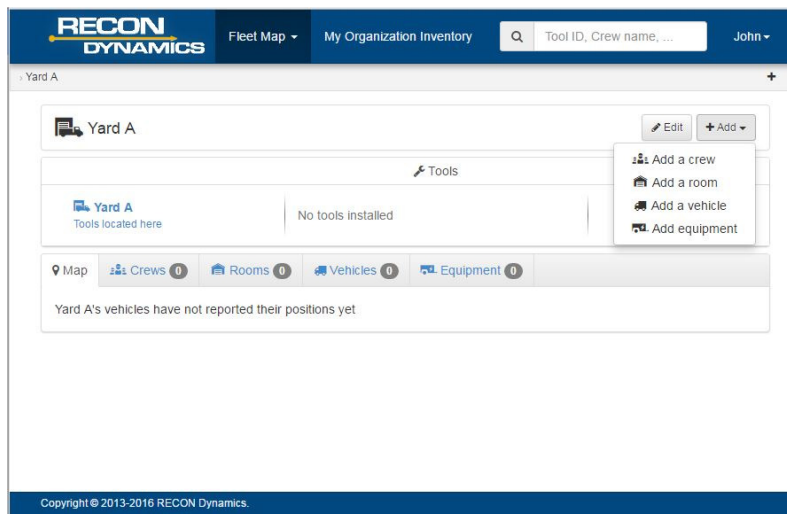


Figure 32 Add a Vehicle to Yard

AERIAL HARNESS TRAINING SYSTEM

Refer to the Aerial Harness Training System Installation Guide for installing the hardware on a vehicle. RECON's Aerial Harness Training System is an integrated feature in the RAMS website. Vehicles created as either BKT or SQT will have the Aerial System tab shown in figure 33. Selecting this tab opens the input screen for sensors shown in figure 34.

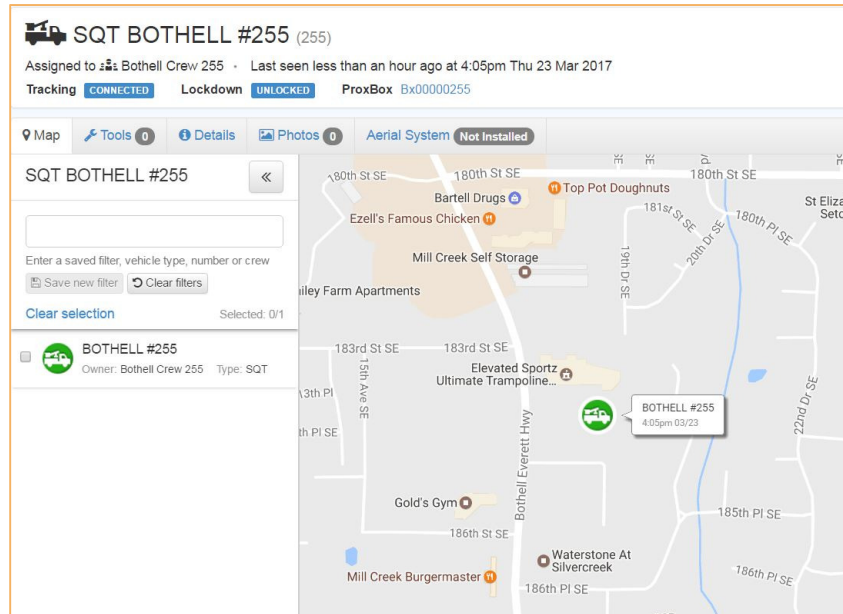


Figure 33 Aerial System Tab

Follow the instructions for adding serial numbers off the sensor labels. It is recommended to use a bar code reader to input the serial numbers to eliminate errors. When finished inputting the numbers, select the install button to move to the next step.

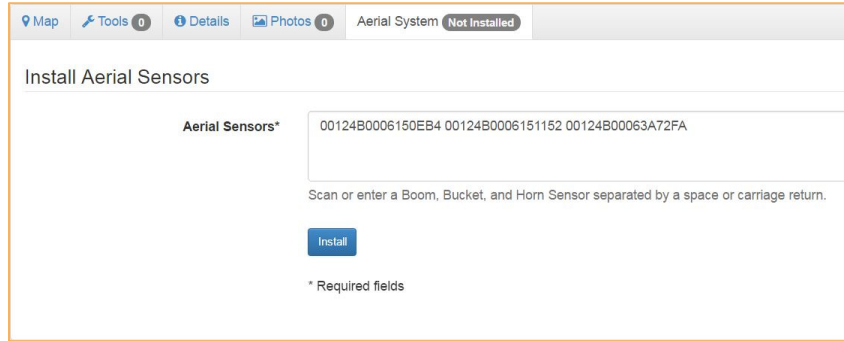


Figure 34 Sensor Input Screen

It may take a few minutes for the 3 sensors to fully connect to the system. A refresh button is shown allowing the screen to be refreshed manually during this time. Once the sensors are connected the screen displays green as in figure 35. If there are connection issues or a sensor needs reinstalled, click on the highlighted words “Replace or Reinstall Sensors” which will take you back to a screen like that illustrated in figure 34.

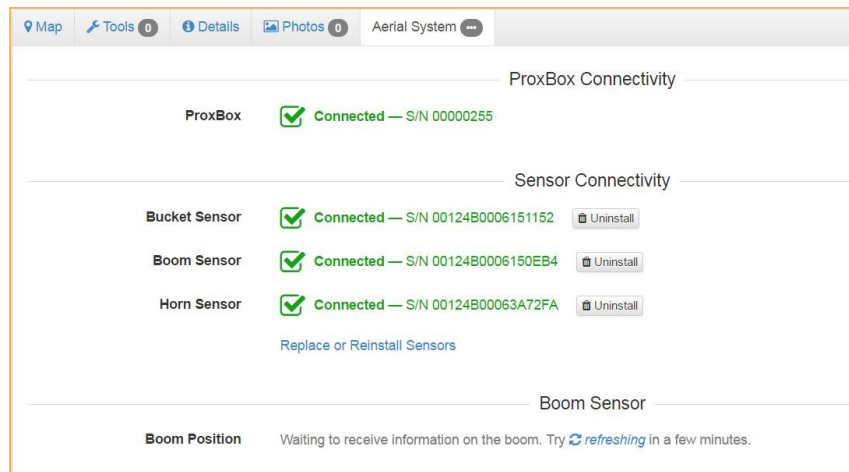


Figure 35 Sensors Connected

Once the boom position is detected as shown in figure 36 click on the refresh button for initializing the bucket sensor until the sensor status shows green demonstrated in figure 37.

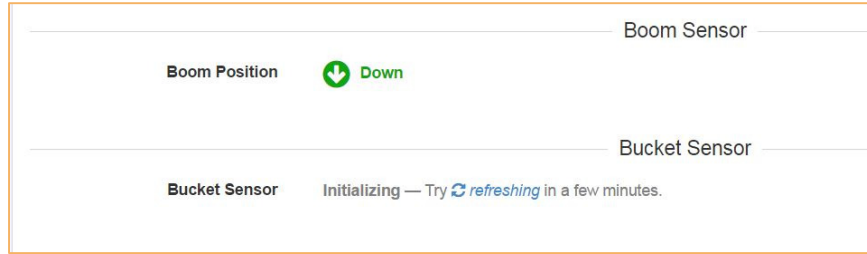


Figure 36 Boom Position Detected

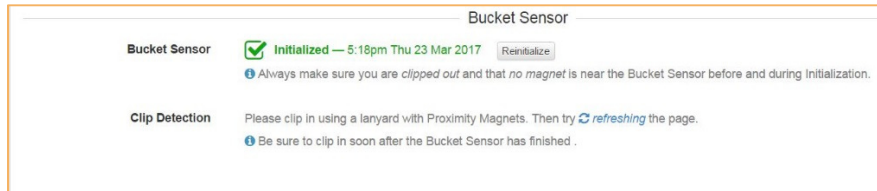


Figure 37 Sensor Status

The last step is to enable the system to detect a clip-in. Follow the instructions on the screen until it shows the system is successfully initialized and verified as illustrated in figure 38.

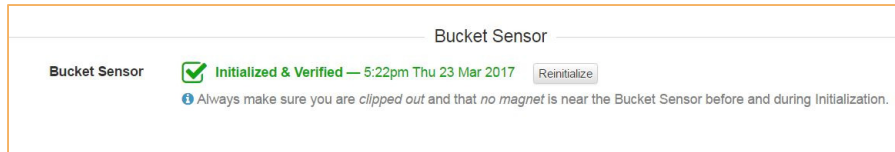


Figure 38 Bucket Sensor Initialized and Verified

Physical verification that the system is working properly can be achieved by raising the boom a couple feet without clipping a lanyard in. Wait at least 1 minute after the bucket sensor is initialized and verified before raising the boom. Once the RASR sounds, to turn it off clip a lanyard with proximity magnets installed into the D-ring or lower the boom to its resting position.

APPENDIX A

Appendix A includes example images of ProxBox installations including ProxBox, patch antenna and RASR.





RECON DYNAMICS AERIAL HARNESS TRAINING SYSTEM INSTALLATION GUIDE





APPENDIX B

Below is the LED sequence and status table and troubleshooting guide.

BLUE	GREEN	RED	STATUS
OFF	OFF	OFF	No power
BLINK	OFF	OFF	ProxBox initialization
ON	ON	ON	All Good (including boom, bucket and RASR sensors)
OFF	ON/BLINK	ON/BLINK	ProxBox not working
ON	OFF	NA	GPS failure
ON	BLINK	NA	Searching GPS
ON	NA	OFF	Cellular failure
ON	NA	BLINK	Searching cellular connection
BLINK	BLINK	ON	Boom sensor not OK
BLINK	ON	BLINK	Bucket sensor not OK
BLINK	BLINK	BLINK	RASR not OK
BLINK (Every 10 seconds)	OFF	OFF	ProxBox is in Hibernation mode.



An NA in the table indicates that LED state is not relevant.

Note

TROUBLESHOOTING

If after 10 minutes if the ProxBox is still initializing remove the disconnect the power cord from the ProxBox, wait 1 minute then plug back in.

If ProxBox does not initialize (Blue light on):

- Verify power to the ProxBox is between 12 and 24 volts DC
- Inspect ProxBox power connector and power cord for damage
- Inspect ProxBox for any visible damage, this may indicate the electronics inside are damaged

If ProxBox is searching for GPS per the table:

- Ensure vehicle is not in a building or under a metal cover
- ProxBox gray top is exposed to the open sky with no metal objects directly above
- If surrounded by tall buildings move vehicle to an open area

If ProxBox is searching for a cellular connection per the table:

- Verify the serial number input into the system is correct
- Ensure vehicle is not in a building or under a metal cover
- ProxBox gray top is exposed to the open sky with no metal objects directly above
- If vehicle is in a rural area known to be outside of cellular coverage move it into a more urban location where cellular coverage is available

If the RASR is not OK per the table after provisioning:

- Verify the serial number input into the system is correct
- Verify power to the RASR is between 12 and 24 volts DC
- Disconnect power and re-connect power listening for a quick chirp sound. If no sound is heard replace RASR

If boom or bucket sensor is not OK per the table after provisioning:

- Verify the serial number input into the system is correct

APPENDIX C

FCC Statement for ProxBox

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by manufacturer could void the user's authority to operate the equipment.

IMPORTANT! Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

47 CFR 15.505- FCC

Class B

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Radiation Exposure Statements

For FCC

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

FCC statement for RASR, Boom Sensor and Bucket Sensor

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by manufacturer could void the user's authority to operate the equipment.

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Radiation Exposure Statements

For FCC

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.