

Portable Target System Setup Manual v24



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Introduction

Thank you for your recent purchase of AutoTargets™. We sincerely appreciate your business and hope it improves your shooting experience as much as it has our own. This user guide supports the hardware setup for AutoTargets portable training systems. The systems included will most likely be controlled via an Android™ operating system downloadable app. The AutoTargets will form an isolated WiFi mesh network that can be deployed anywhere in the world without additional web-based networks or cellular connectivity. This version of portable AutoTargets is recommended for up to 20 units.

In some installations, a more advanced server system with wired access points (WAP) over a local area network (LAN) has been installed.

This guide is limited to the setup of portable AutoTargets downrange hardware. Please consult the AutoTargets App User Guide or the AutoTargets Range Control Server User Guide for further operational information regarding the product.

Should you have any questions please feel free to contact AutoTargets™ technical support at support@autotargets.com or for urgent matters call us at **215.948.2422**.



Before You Start

Familiarize yourself with the following product manuals:

- Read this manual completely and carefully
 - **NOTE: some steps must be done before going to the range, please prepare!**
- Read the AutoTargets™ App User Guide
- [If Applicable] Read the AutoTargets Range Control Server User Guide
- Read the Target Calibration notice for new Hex Link™ Style targets
 - *(Obsolete unless you have AutTargets Units purchased before 2020)*

Pro Tip: For Best User Experience

- 1) Read the guide ahead of time
- 2) Allocate plenty of time to do setup, especially the first time
- 3) Do a dry-run of the setup off the range, well before the system is required for your training/event

Products Covered

This document addresses the startup and shut down procedures for the following AutoTargets Products.

ATS PN	Alt. PN	Type	Description

Accessory Products

Consider reviewing the manuals for the following accessories if applicable.

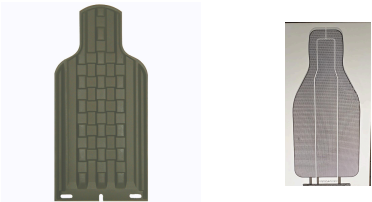
ATS PN	Alt. PN	Type	Description

System Setup - Before The Range

Equipment Checklist

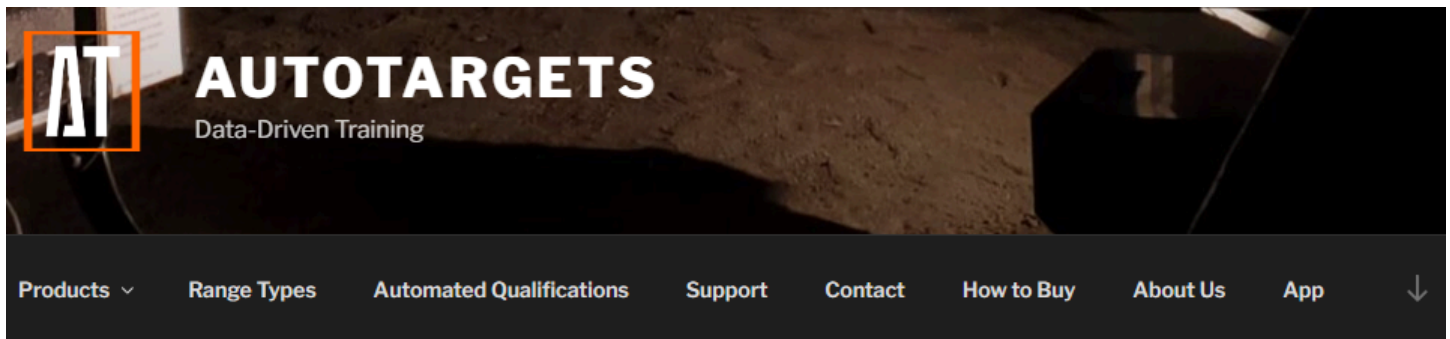
Start by inventorying your equipment. Don't find out you're missing something important when you get to the range!

→ Android Tablet	The tablet or smartphone is the only way to control the AutoTargets and run the system.	
→ Lift Unit	The AutoTargets Lift Unit is the main mechanical chassis assembly to which all other components connect	
→ Battery and charger	Each portable Lift Unit requires a rechargeable lithium battery. The included battery is capable of powering a full day of lifts and can be recharged hundreds of times.	
→ Pneumatic source	AutoTargets use a pneumatic drive system powered by pressurized, inert gas. A regulator is included with the kit that threads onto a 20 oz. CO2 or HPA bottle common to the paintball industry. Air pressures including those from compressor "house air" sources should be regulated to 60 PSI for HexLink, or 80 PSI for E-Type Lift Units.	

→ Pneumatic tubing	The external pneumatic connector is sized for 6mm OD polyurethane tube, or the plastic wye adapter. This allows for “daisy chaining” the pneumatic source, or connecting directly to the source output. 50 ft. of 6mm tubing as well as the wye adapter are included with the kit. Note: 1/4 in. pneumatic tubing WILL NOT fit in the AutoTargets.	
→ Target	Depending on the Lift Unit style, specific targets are required. AutoTargets Standard and ML Lift Units require proprietary multi-layer Hex-Link™ targets. E-Type Lift Units will only work with E or F Type plastic “waffle” silhouettes that are 1/8 in. thick or less and have the DoD mounting holes in the bottom.	
→ Ballistic shield	Recommended for use in live-fire environments. AutoTargets Lift Units are not internally ballistically protected. They should otherwise be placed behind knee walls, shoot house walls, or other forms of protection rated for use with the projectiles of choice.	
→ WiFi Antenna	This long-range antenna attaches to the AutoTargets Lift Unit on the SMA port and should be oriented vertically.	

Installing The AutoTargets™ App

The AutoTargets App is free to download on our website.



Application Link ^

Updates occur frequently and include new features, performance improvements, security updates, and new AutoTargets firmware.

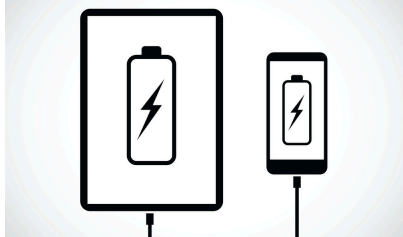
NOTE: Android™ is the only supported operating system for AutoTargets. Apple iOS™ is not supported.

Pro Tip: Software Updates

Check for updates regularly by connecting your device to a network with an internet connection and consider enabling automatic updates.

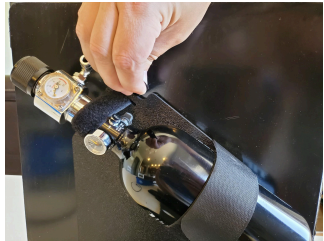
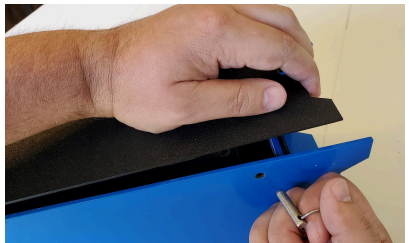
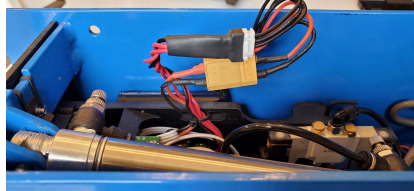
Setup Process - Before The Range

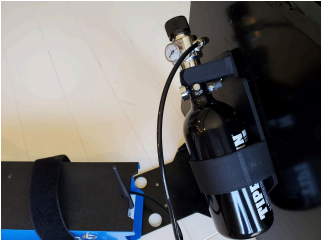
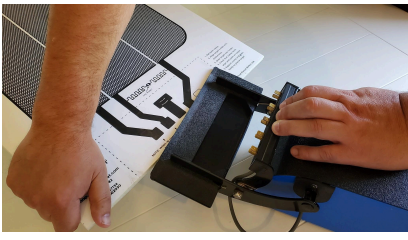
The following steps should be completed before heading out to the range.

Charge the Battery	• Verify the universal balance charger is set to "Li-Po," then connect the battery. • Plug the charger into an outlet and charge until both light indicators are green. This could take a few hours.	
Fill CO2 or HPA Bottles	Per shipping regulations, the bottles will ship empty. • Determine a local, reliable refill station or contact the AutoTargets vendor for other support equipment options or use your HPA fill station.	
Charge the tablet and download the AutoTargets App	• Charge the WiFi enabled tablet or smartphone and download the AutoTargets App from the AutoTargets website. • Check for updates before heading out to the range where signal may be limited.	
Cut an 18 in. length of 6mm tubing	• Using a sharp knife or scissors, cut a length of black 6mm pneumatic tubing. This will be used later. • NOTE: BE SURE TO MAKE A SQUARE CUT TO ENSURE A RELIABLE SEAL.	
Assemble the ballistic shield	• Follow the separate instructions for assembling the ballistic plate. Some assemblies require a 9/16 in. wrench.	

System Setup - At The Range

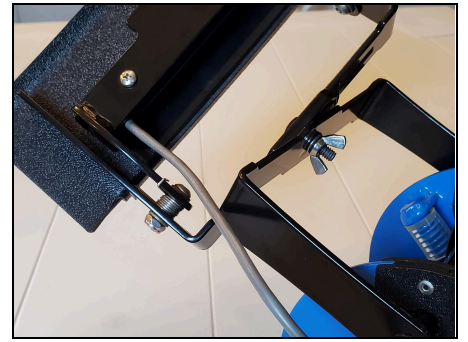
These steps should be completed at the range. Repeat this process for each Lift Unit in use.

Attach the regulator to the bottle	Ensure the regulator is closed by turning the knob on top counterclockwise until it stops. The regulator threads onto the bottle clockwise and must be tight.	
Mount the bottle	Mount the CO2 or HPA bottle to the ballistic plate using the included velcro straps.	
Remove the lid	- Remove the lid from the Lift Unit by pulling the pin ring on the upper side. - Slide the lid toward the target clamp an inch until it can lift free.	
Review the caution label	Special cautions and safety recommendations are included.	
Connect the battery	Connect the white and yellow matching connectors inside the Lift Unit and slide the battery into the snug space opposite the pneumatics and next to the valve assembly. WARNING: DO NOT TRANSPORT THE UNIT WITH THE BATTERY INSTALLED.	
Reinstall the lid	Verify the battery wires do not interfere with the lid. Slide the lid and insert the pin.	
Connect the antenna	- Thread the antenna onto the SMA port on the panel next to the power button. - Rotate the antenna so that it can pivot vertically and lock snugly into the antenna holder tab.	

Connect the pneumatic tube	- Connect the 18 in. pneumatic tubing by pressing the tube into the pneumatic quick connector on the Lift Unit panel. - Tug gently on the tube to ensure a tight lock in the connector. - Install the other end similarly to the output on the regulator	
Attach the Lift Unit to the mount plate	- Align the 4 rubber feet on the Lift Unit with the holes in the ballistic plate or universal shelf mount. - Secure the Lift Unit tight to the mount using the included velcro, passing through the guide slots on the mounting bracket.	
Power on the Lift Unit	Press and hold the power button on the Lift Unit panel for three seconds. Success will be indicated by a red top light and green 2nd and 3rd lights after 30 seconds.	
Insert the target	- Lift up on the target clamp board and slide the target into the target clamp with the printed side of the target face up. - Align the dotted rectangle with the shape of the target holder. Align the printed contact pads on the target with the tines on the clamp board.	
Secure the clamp board	Follow the instructions printed on the target. The teeth should penetrate the top 2 layers of the target. WARNING: SUPPORT THE ACTUATOR LIFT ARM WHEN PIERCING THE TARGET WITH THE CLAMP.	
Open the air regulator	Open the regulator on the bottle to 60 PSI by twisting the cap clockwise and stopping once the gauge reads 60 PSI. NOTE: Other AutoTargets Lift Units may require different pressure settings. See additional information for details.	

Setup for AutoTargets ML (Multi Lifter)

The process for setting up the AutoTargets Multi Lifter (ML) depends on the desired configuration for the target exposure. Follow the same steps for the AutoTargets Standard Lift Unit setup. In addition to an advanced target bracket and internal adjustment points, the AutoTargets ML system also comes with a universal shelf mount, struts, and hardware to aid in mounting and installation in different environments. There are multiple configurations available. Here are three of the most popular:



1. Pop Up

Out of the box this AutoTarget is configured to pop up, the same as a standard AutoTargets Lift Unit. The full 90 degree rotation begins parallel to the ground and rises to a vertical position in a half second with the target facing at 0 degrees, straight toward the antenna.

Below the target clamp is a wing nut. Loosen the wing nut to rotate the clamp assembly to eight different positions. This will change the presentation angle of the target.

Rise and fall speed changes can also be made. Those instructions are found below.

2. Swing Up

In this configuration the target will present laterally from behind cover or an obstacle. This can be beneficial in environments like shoot houses where there is insufficient depth behind the target to allow the target to fall backwards. Make the adjustment to the side lift position by rotating the target clamp 90 degrees using the method above. Ensure the AutoTargets actuator is mounted high enough that the presenting target cannot contact the ground when it falls. Use the included universal mount with velcro straps, lag bolts, and struts to secure the actuator to walls, chairs, desks or other rigid props.

3. Peak Out

In this configuration the target can expose from behind cover. The amount of exposed target and the speed of motion can be set for each target mechanically.

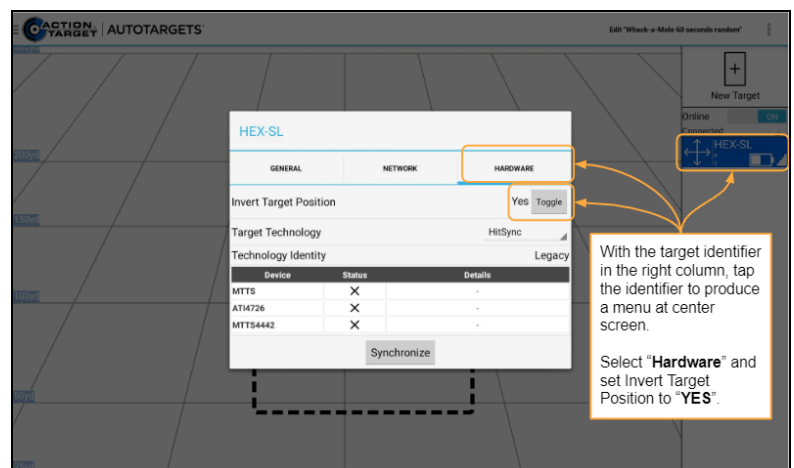
First, mount the target to a sturdy wall or prop at the desired height using the universal mount and struts. Ensure the wall, barricade or prop can protect the target actuator from bullets fired.

Rotate the target clamp to the side lift position, 90 degrees from the original pop-up position as described earlier. Ensure that the target clamp faces the shooter.

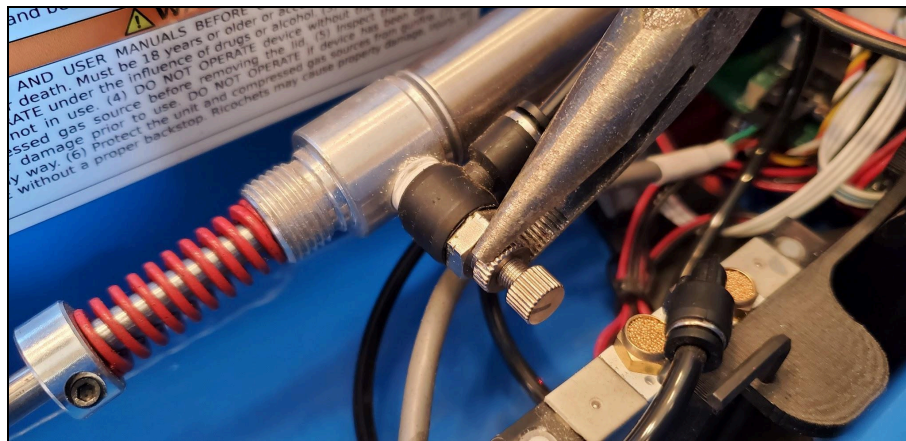
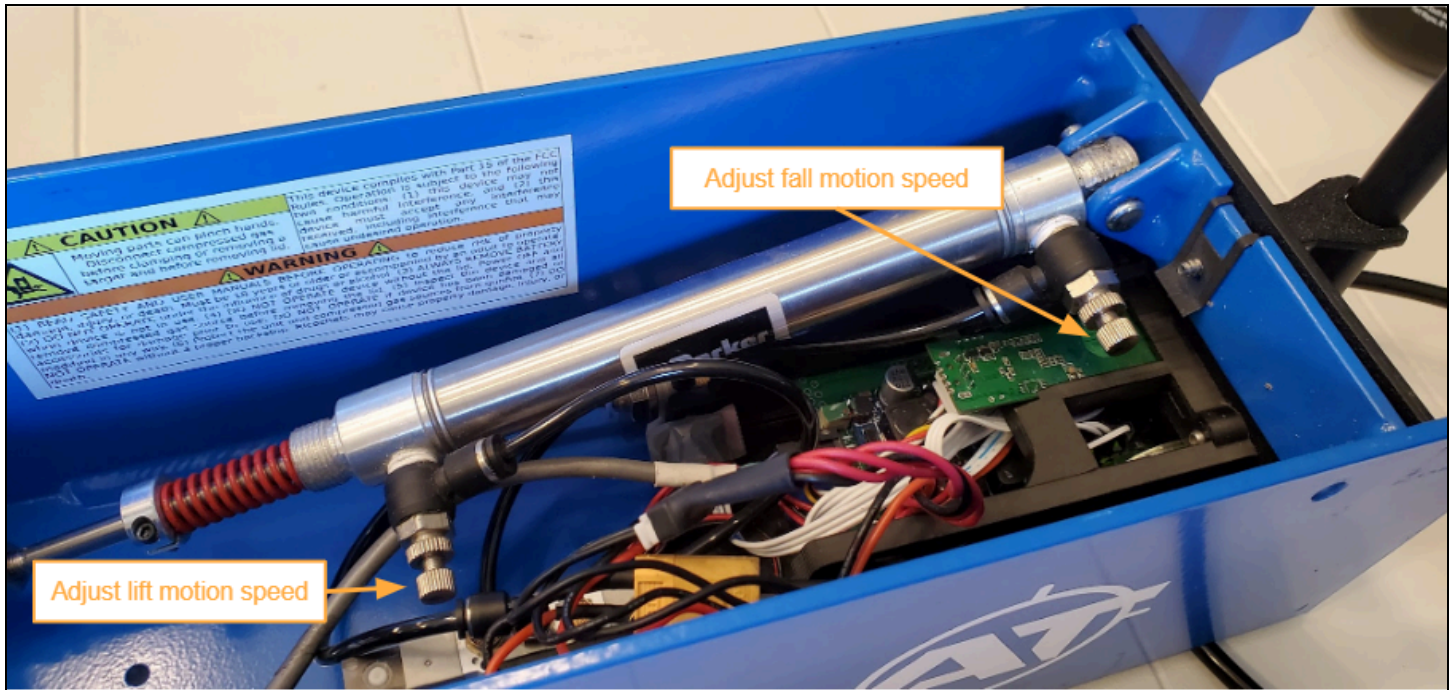
Remove the lid from the actuator and locate the allen wrench hex key stowed next to the valve assembly. On the rod that comes out of the cylinder there is a locking collar that contacts the spring.

Use the key to loosen the collar and tighten it at the desired new limit to reduce the retraction of the rod. This will limit the articulation of the target arm to any position less than 90 degrees.

Using the app, invert the target position so that the direction of motion is opposite its original motion. This will make the presentation of the target and scoring coincide with the desired position of the target. Once the settings are changed, simply tap another area on the screen to close the menu, and place the target identifier back in the field of fire. Raise and lower the target to test.



Speed: Ensure the air supply is connected to the AutoTarget ML with 60 psi. Remove the lid and locate the large drive cylinder. AutoTargets use a double-acting valve; air pressure is used to raise and lower the target. Use pliers to release the flow adjustment lock. Clockwise turns decrease the motion speed. Once the lift and fall speeds are set as desired, snug up the locking nut with pliers. Replace the lid and locking pin and install the Lift Unit in the desired location.



Setup for AutoTargets Kinetic Targets (E-Type)

Follow the same steps for the AutoTargets Standard Lift Unit setup with a few exceptions.

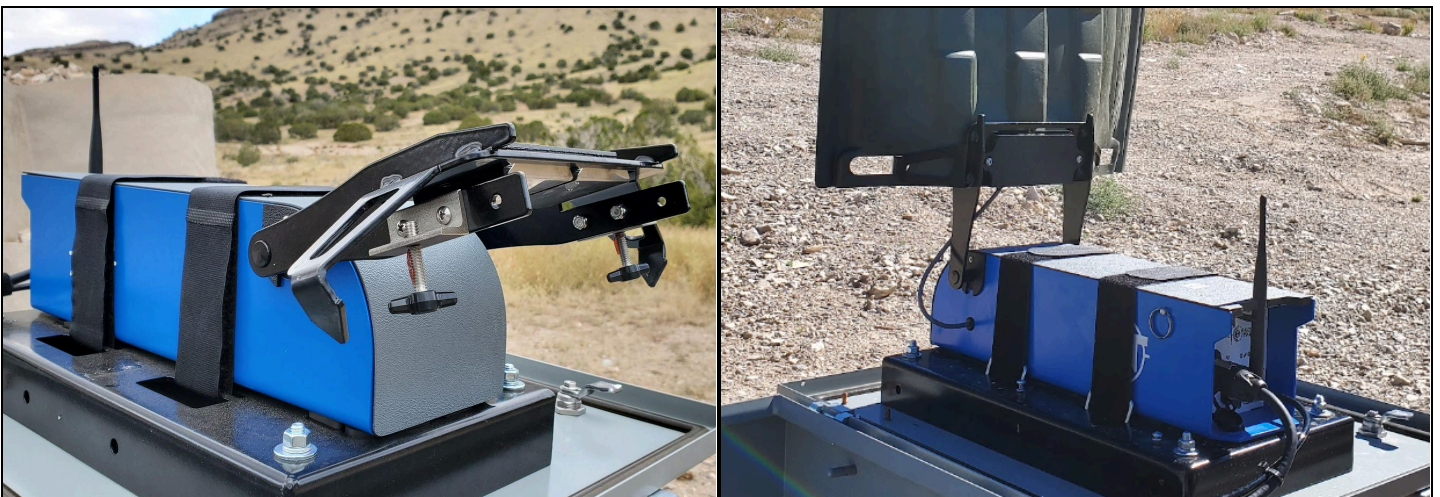
Set air pressure to 60 PSI when using E-Type targets. The E-Type target is a plastic silhouette that is 19 in. wide by 40 in. tall. F-Type silhouettes should have air pressure set at 60 psi.

This system uses kinetic-based hit detection. With bullet impacts, the vibration of the hit passes through the flat sensors in the target clamp.



Installing the E-Type Target

1. Raise the target clamp to the up position. Ensure the AutoTargets actuator is secure.
2. Slightly bend the plastic silhouette from the sides to follow the contour of the clamp.
3. Slide the target down between the clamp and the sensor plates. The target must be centered in the target clamp as it is inserted.
4. On both sides of the target clamp are pointed hooks. Press the holes in the lower corners of the plastic target over the clamp hooks to lock the target in place.
5. The E-Type target can droop in high heat. Install painter sticks vertically to the rear side of the target bracket. Tighten the thumbscrews on the target clamp to hold the wood supports.



Setup Process - AutoTargets Portable Bullet Trap Lift Unit



Installing the Bullet Trap Lift Unit

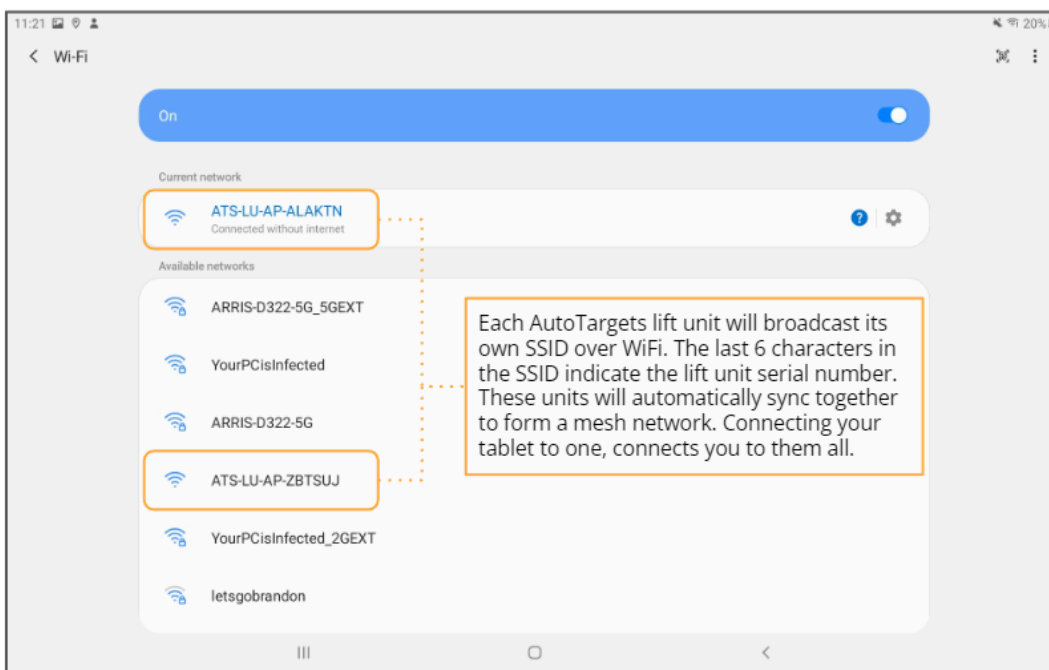
Two Persons Recommended

1. Follow the previously outlined steps for setting up the lift unit without connecting any pneumatics.
2. Attach the required mounting bracket to the back side of the bullet trap (AT logo vertical) using the included hardware, replacing the existing half-inch bolts with the included longer bolts and washers.
3. Attach the Lift Unit to the bracket using the included velcro straps. Ensure the 4 rubber feet on the Lift Unit align with the 4 holes on the bracket and then secure the velcro. Orient the antenna vertically.
4. Attach the air bottle with a regulator into the canister mount on the bracket. Secure with included velcro straps.
5. Connect an 18 inches long 6mm pneumatic tube from the regulator to the Lift Unit.
6. Open the regulator and **set to 75 PSI**. Check for leaks. Stand clear of the target as air pressure will cause rapid movement.
7. Power on the lift unit. If the target has not yet been installed, do so now with the target clamp in the raised, vertical position. Pull back on the target clamp board and slide the target down into the target clamp board. Follow the printed instruction on the target for alignment and proper fitment.
8. Orient the antenna in the vertical position.

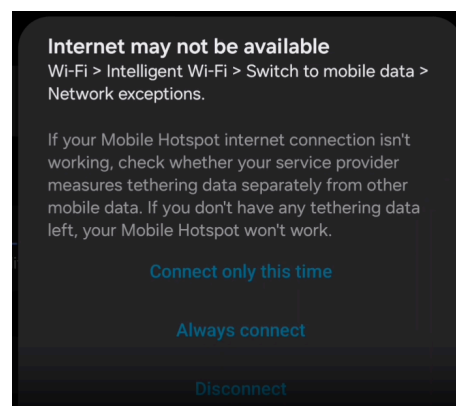
Connecting to AutoTargets™ Devices

Connect via WiFi™

Using the WiFi enabled tablet or smartphone, open the WiFi manager and enable WiFi. Search for available networks. Connect to a Lift Unit SSID. **"ATS-LU-AP-XXXXXX."** Software performance is dependent on quality WiFi signal from the Lift Unit to the tablet. Ensure that the tablet connects to a Lift Unit that is close to the operating position of the tablet. It may be necessary to reconnect to a different Lift Unit with a stronger signal once the targets are placed downrange and the firing position is determined.



NOTE: When connecting a lift unit to a tablet for the first time users may see a message similar to the image below. Selecting the "Always Connect" option will cause the device to remember the connection for subsequent connections.



Launch The App & Connect

Locate the icon for the AutoTargets App on your device and Launch the App.

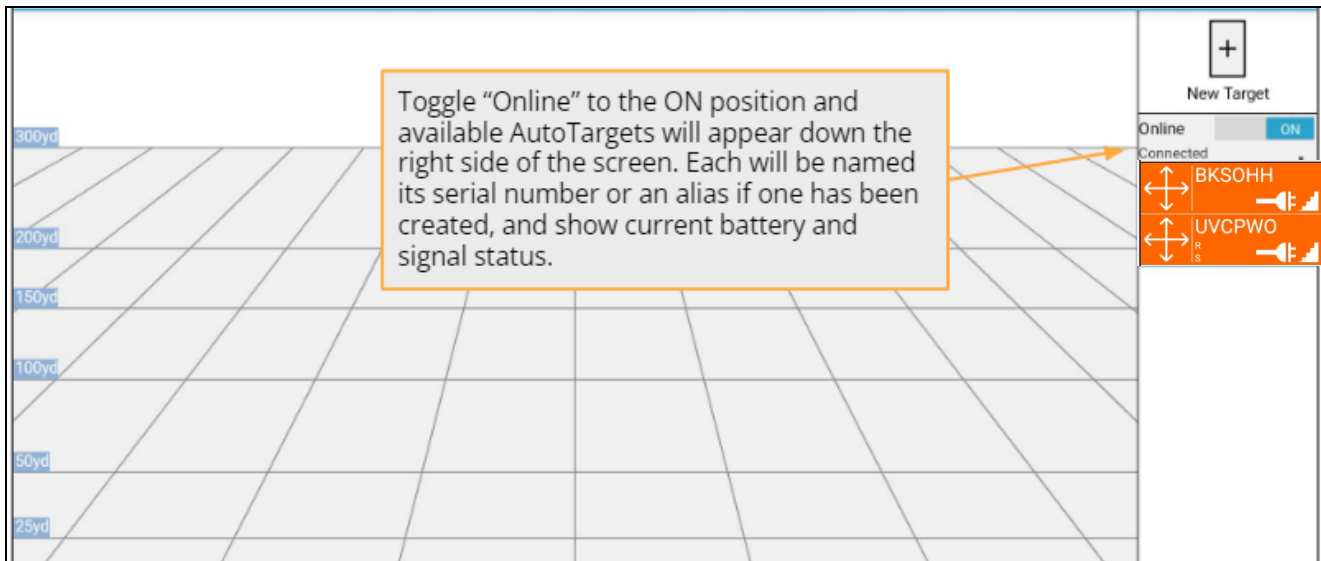
Pro Tip: Display Settings

In the Android™ tablet display settings, adjust the brightness and screen timeout settings appropriate to the environment.

With the AutoTargets App open, toggle the “online” button to the **“ON”** position. All AutoTargets devices that are powered on and within WiFi range will appear individually as a **device bar** in the app.



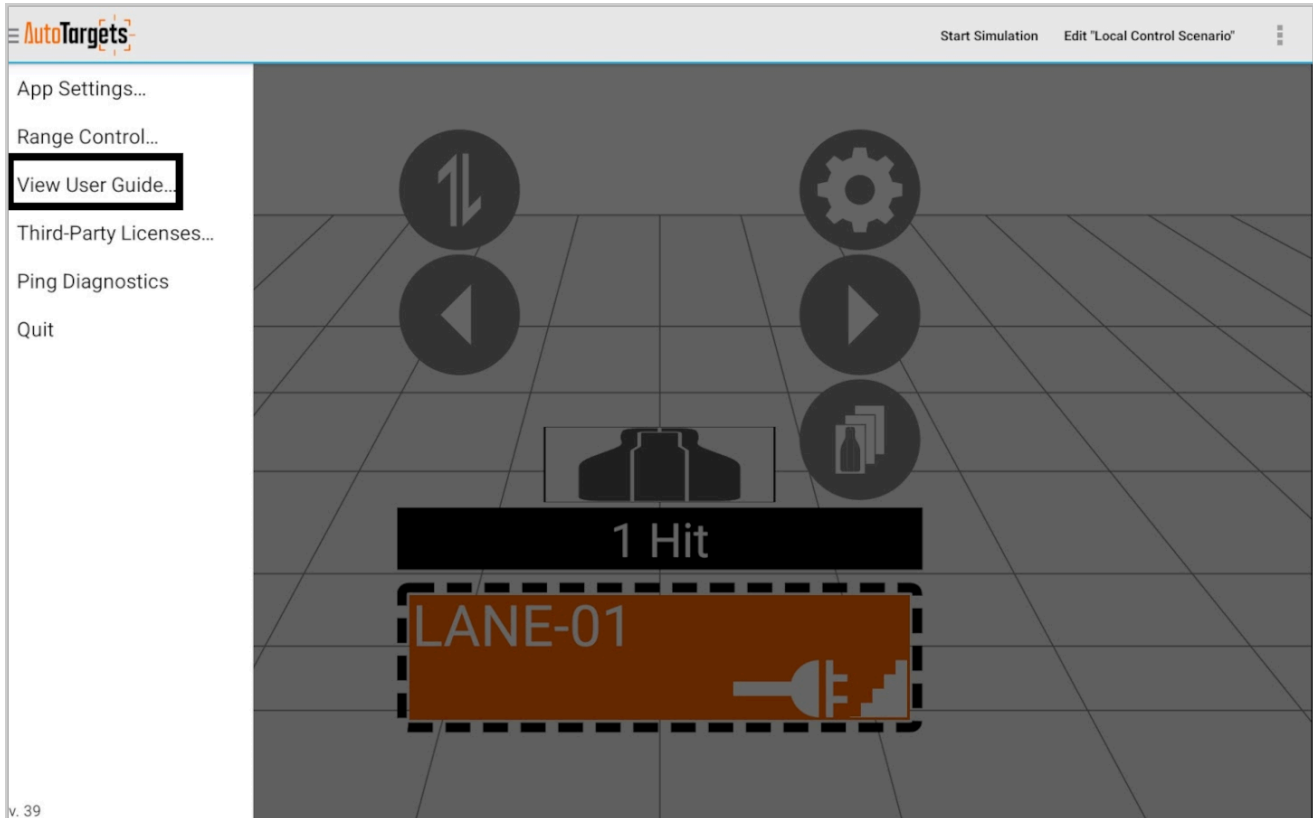
Each device bar is specific to an AutoTargets Lift Unit on the range. It shows the real-time status of each unit and is named the unique serial number or a given alias. The handle is the compass shaped icon that allows the device to be moved in and out of the field of fire. With the device bar in the right hand column and out of the field of fire, tapping the bar will open the device settings menu. Network, hardware, and alias settings can be changed in this menu.



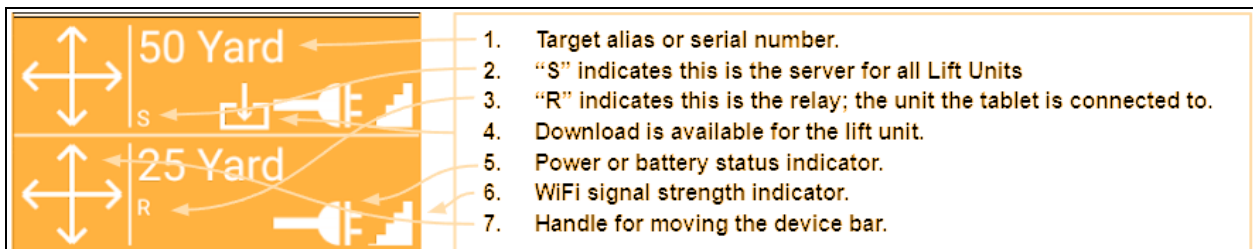
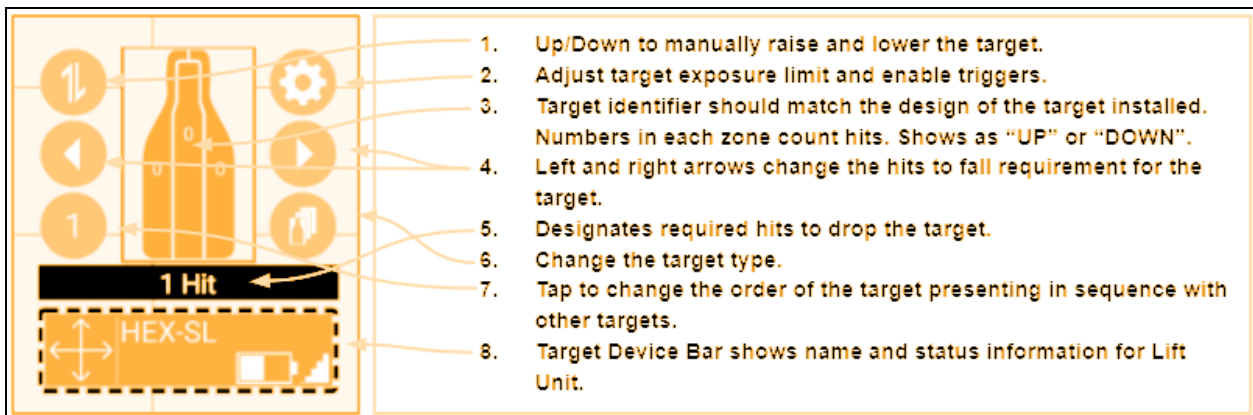
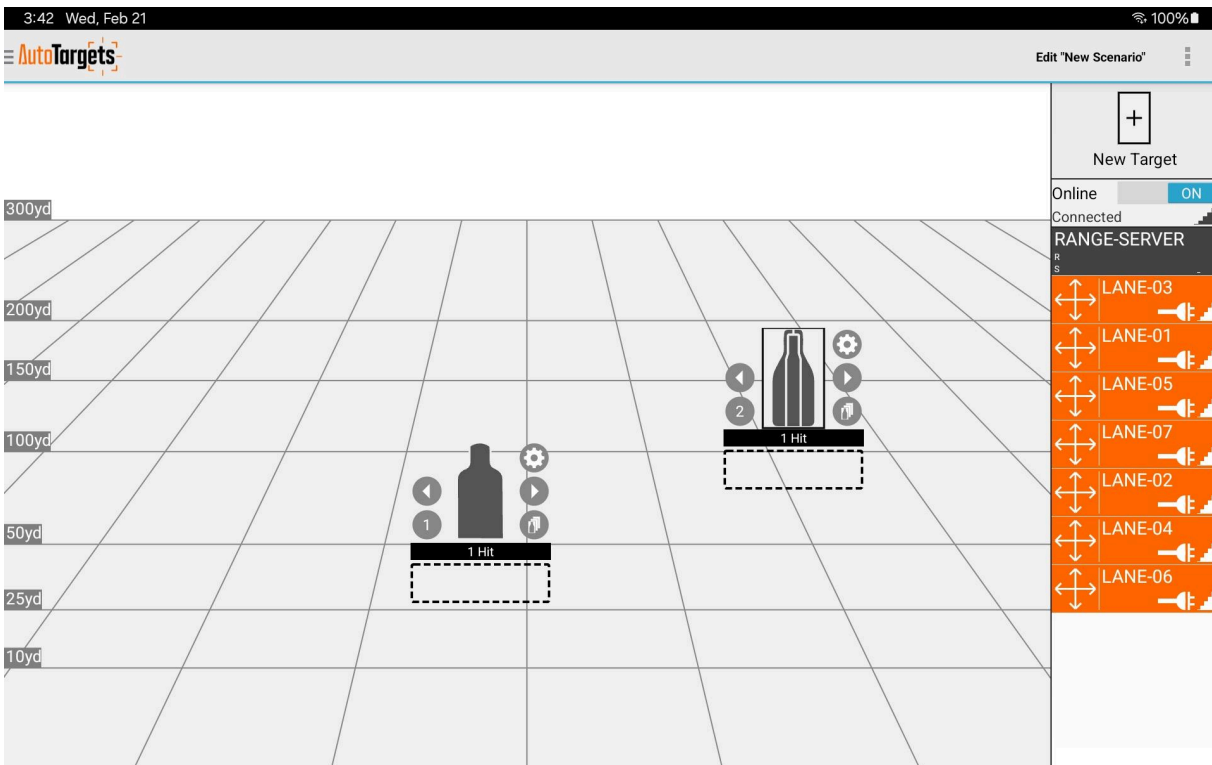
The blue colored device bar represents nominal conditions. An orange color with a “download” icon to the left of the battery status indicator shows an update is available. Gray colored device bars indicate the device is on another mesh network. This instance may require advanced setup. Review the AutoTargets App User Guide for details on the device settings menu, network setup, and updating software and firmware on Lift Units.

Pro Tip: App User Guide

The up-to-date AutoTargets App User Guide is available in the app main menu. Click the menu icon in the top left corner of the screen and select “View User Guide.” You can review the guide at any time. Click the back arrow to return to the main app screen.



AutoTargets App Main Screen Quick Reference



Place Targets in the Field of Fire

Physical Placement

Place each Lift Unit downrange as desired. Each target can be placed up to 250 yards from another target, however, this is a line of sight estimate. Trees, shrubs, buildings, barricades, other RF signals, or the area topography may limit the effective range of the WiFi on any unit. Enhance the strength of the mesh network by bringing AutoTargets closer together or adding additional units in strategic places.

Remember, each unit is a broadcast repeater for the others. Ensure that each unit has a good signal strength as per the signal bars indicated in the device bar shown in the previous section. Position each Lift Unit so that the target can rise and fall without obstruction through the full length of motion. Position each unit to face the firing position to safely conceal critical components behind the ballistic shield or other barrier.

Pro Tip: Lift Unit Connectivity

Connect the tablet WiFi to the closest AutoTarget down range. Tablets and smartphones use different internal WiFi antennas and some are stronger than others. The first Lift Unit from the tablet down range should be no further than 100 yards, but may need to be closer to ensure a strong signal.

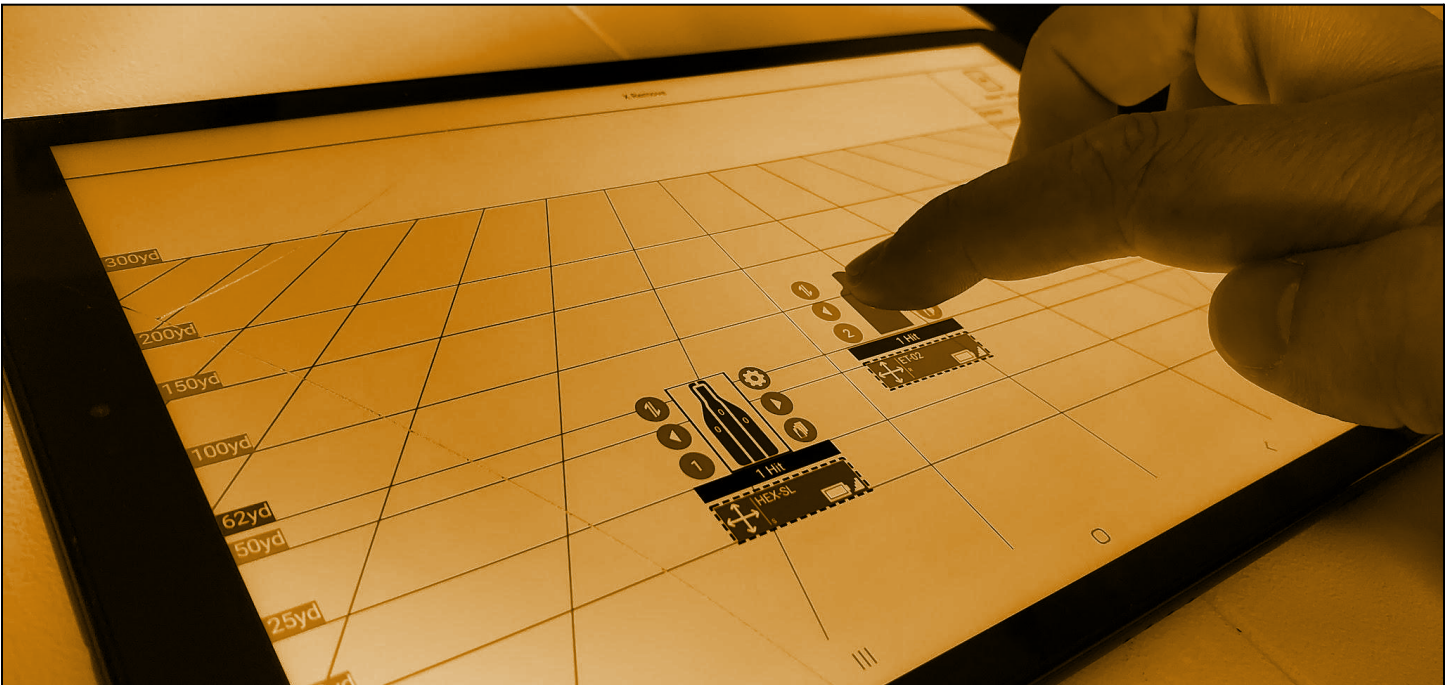
Pro Tip: Tablet Connectivity

Connect the tablet WiFi to the closest AutoTarget down range. Tablets and smartphones use different internal WiFi antennas and some are stronger than others. The first Lift Unit from the tablet down range should be no further than 100 yards, but may need to be closer to ensure a strong signal.

Digital Placement Within the App

All available Lift Units should appear on the app screen. The objective is to place the targets in the on-screen field of fire in relative representative locations to the actual target positions down range, or in any configuration that makes sense to the user. The grid background can help with orientation. The distance indicators on the left are for reference only. Lift units must be placed in the grid area in order to participate in courses of fire.

Begin by pressing and holding the handle  on the device bar. Drag the device bar to the grid area and release in the desired position. Reposition the indicator by long pressing the newly bound target identifier until a red line on the X-axis appears. Then drag to a new position and release. Indicators will automatically resize as more units are added to the field of fire.



Completed Setup Checklist

This concludes the range hardware setup. Review this checklist to help ensure that everything is correct:

- ☐ All targets in the field are positioned on the screen and show the correct target type (kinetic vs. HEX Link).
- ☐ Pressing the up/down toggle in the app raises and lowers the target.
- ☐ Up/Down target speed is smooth and not violent.
- ☐ Simulate a hit on each target in each zone, verify in app. (knife for HEX Link, physical strike for kinetic)
- ☐ From the firing position(s) nothing can be seen that should not be shot. (Blue target chassis, target arms and clamps, bottles or pneumatic tubing).
- ☐ Run a simulation using all targets several times rapidly to stress the system. No targets should disconnect or turn gray in the app. Move Lift Units closer to the group that struggle to maintain connection.

If needed, consult the troubleshooting section or move on to the AutoTargets App User Guide.

Maintenance

Lift Units

- Keep units clean from dirt and mud. Use compressed air to blow out components or a wet rag on smooth surfaces.

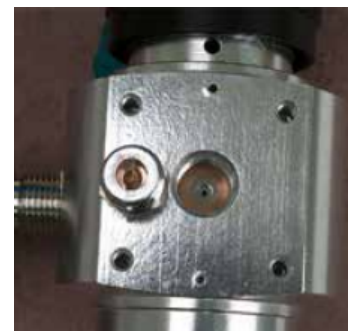
Pro Tip: Clean Up

Use the air supply and pneumatic tubing you already have for blowing out dust and debris.

- Replace silicone grease on components on cylinder clevis and target arm bracket if wiped clean.
- Plug or cover connector ports for long-term storage. Always store in a dry place protected from the elements.

Batteries

- Lithium-Ion batteries present a fire hazard. Always store batteries in locations with temperatures between 41 and 68 degrees Fahrenheit.
- Disconnect batteries from Lift Units or balance chargers when storing.
- Batteries should be stored at 50% power. Avoid storage of full or empty batteries.
- Charge batteries to at least 50% every 6 months.
- Visually inspect batteries for damage weekly before each use. Check for external damage and internal damage. Internal damage may be indicated by the battery bulging or swelling. Batteries that are damaged, bulge, or swell should be immediately discarded in a safe and responsible way. Some electronics stores provide free and safe recycling options for batteries.
- Avoid operating at temperatures above 140 degrees F.



Pneumatics

- Keep o-rings on the CO2 bottle lubricated with silicone grease.
- Store out of direct sunlight.
- Always remove the regulator before storing.
- Do not leave filled cylinders in vehicles.
- Never overfill HPA or CO2 liquid. The CO2 bottles are designed to be “full” at 68% and HPA bottles are rated for a maximum of 3000 psi.
- The regulator on the bottle has a burst disk to prevent overpressurization. Blown burst disks are more common in high or low heat environments. When activated, the disk will allow pressure to bleed out of the vent screw on the back of the regulator. It is on the opposite side of the gauge. If any air is leaking from this port, remove the regulator from the bottle. Use a 3/8 in. wrench to remove the vent screw labeled “3K” and replace the copper burst disk and nylon seating washer. A blown disk will either have a hole in the center of it or appear deformed (not flat). Install a new nylon washer and then a new burst disk. Reinstall the vent screw and tighten. If air is passing through the hole above the screw on the regulator body, then the leak is internal and the disk is not the issue. Replace the regulator.

Troubleshooting

	Symptom	Possible Cause	Repair
Network and Tablet	No Device Bars show up in App main screen	Not connected to Lift Unit Network	Verify tablet is within WiFi range of desired Lift Unit
			Verify WiFi connection to ATS-LU-XXXXXX network. The tablet may prompt you that you are on a network without internet connection. Select "Always Connect Anyways"
	Can't see the screen outdoors	Polarized sunglasses	Rotate the tablet or change your shades
		Screen brightness set too low	In the tablet's device settings, adjust brightness to 100 percent , disable adaptive brightness, and set screen timeout to maximum.
	Lift Unit drops out of network	Out of range	Be aware of any walls or environmental obstacles in the terrain that may hinder WiFi strength. Consider repositioning the Lift Units closer together
		Damage to WiFi Antenna	Check the antenna for damage by swapping it with a known working antenna
		Damage to WiFi board	The light status indicator with the chain link represents WiFi network connection. This status should be green. Remove the lid and verify that the narrow WiFi control board has a blue flashing light on its underside. No light? Contact tech support.
	Lift Unit Device Bar shows up gray	Target Mesh Is Split	Power of the "gray" device bar lift unit and power it back on in range of the other working units.
		Lift Unit connected to another WiFi mesh network	Consult the AutoTargets App User Guide for mesh network changes

	Symptom	Possible Cause	Repair
Electronics	Battery Connected, Lift Unit won't power on	Battery not charged	Swap with another known working battery
		Battery harness damaged	Check wires in white and yellow battery connectors. Replace battery
		Unit Memory Corrupted	Power light turns off as soon as the power button is released, and the unit does not stay on. Contact AutoTargets support for maintenance/replacement.
	Battery damaged, swelling	Overcharging. Exposure to high heat. Drop or scratch.	Discharge, then discard the battery responsibly with a local Li-Ion battery recycler.
	Battery not charging	Balance charger on the incorrect setting	The balance charger should be set to "Li-Po". Ensure the 4-pin connector is snug for charging.
	Battery discharges quickly	Battery may be old or damaged	Batteries should last hundreds of charge cycles, and in nominal conditions, 12-24 months. Replace old batteries and recycle responsibly. Store batteries with 50% charge in temperature controlled environments around 70 degrees.

	Symptom	Possible Cause	Repair
Pneumatics	Targets not lifting or falling	Air Compressor is off	If the air is supplied by a compressor, turn it on.
		Valve line is closed	If the air is supplied by a compressor, ensure all manifold valves are open.
		Air supply bottle is empty	Replace with a full bottle. A full 20 oz CO2 bottle weighs about 50 oz.
	Bottle Empties quickly	Leak in pneumatic line	The 6mm tubing can be cut or damaged by use on a firing range. Replace damaged tubing.
		Pneumatic line not tight in connector	Tubing should be fully inserted and locked into press fit connectors
		Leak in regulator	If air is passing through a tiny hole on the back side of the regulator, the safety burst disk may be compromised. Spare disks were included with your kit.
		Valve in the lift unit is stuck open	Moisture or particulates may have passed the filter and entered the valve. Power on the unit and pressurize. On each end of the valve there is a tiny orange button to toggle the valve position. Alternate button presses to see if the valve poppit can become free. Be extremely cautious of the moving cylinder and target arm.
		Pneumatic lines disconnected	With the lid removed, listed for air within the lift unit. Check all tube fittings.
		O-Ring on bottle damaged	Air leaks as the regulator is attached to the bottle and the valve on the regulator is closed is likely a damaged O-ring. Dry, brittle, cracked or cut o-rings should be replaced. Cover the new o-ring with a thin layer of silicon grease after it's installed on the bottle.
		Damaged regulator internal mechanisms	Air will leak out of a small weep hole on the back of the regulator, opposite the gauge and a half inch above the vent screw for the burst disk. Replace the regulator.

	Target not recording hits	Non-metallic projectiles	Hex-Link Targets require metallic projectiles. Some frangible or composite ammunition may not be conductive. Some projectiles have a plastic or wax coating that inhibits conductivity.
		Target clamp not secure	Ensure the target clamp is penetrating the target board. Used targets should not have excessive damage at the clamp surface.
		Target is worn out, large holes	Projectiles must contact the front and back of the target. Large holes from concentrated fire can reduce reactivity.
		Target zone is shorted out, showing yellow always in the target zone on the app.	Check the target for anything that could be shorted through the target such as copper jackets from ricochet, damage to the target clamp contact pads, or conductive target material from the front side connecting through the target
		Older Lift Unit not calibrated	Older lift units require a one-time mechanical calibration to use the newer Hex Link™ style targets. The calibration guide is available from AutoTargets or your distributor.
	Only recording hits in one zone	Incorrect target selected in App	Change the target that shows on the screen to match the target style that is installed in the lift unit.
		Damage to the clamp board harness	Inspect the wire harness from the clamp board that passes through the grommet on the side of the Lift Unit for damage from bullets or ricochet.
	Premature target fatigue	Up or down speed too fast	Regulate air pressure to 60 psi. Reduce if needed.
		Strong winds	AutoTargets are rated for winds up to 25 mph.