

AKTV8

PressureTech™ Installation Guide

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1 | Introduction

AKTV8's journey began by developing integrated control systems for air suspensions and pneumatic systems across all transportation markets. That experience has led to our latest product, PressureTech™, which is a configurable pressure-monitoring sensor platform capable of keeping tabs on tire pressure, suspension pressure, onboard scales and virtually any other pneumatic system on a vehicle.

PressureTech™ products are designed and tested to auto and heavy-truck OEM standards that, depending on the application, will last two years or more on a single, replaceable battery. Each sensor is easily configured by scanning a durable, laser-etched QR code on the cap.

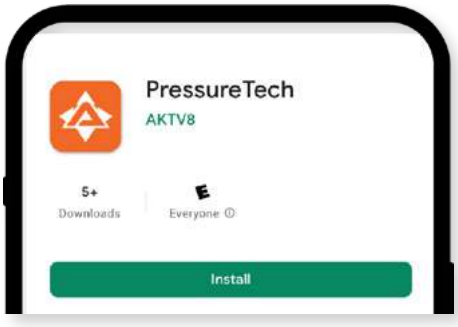
PressureTech™ can be used as a stand-alone system with the mobile app or in combination with the AKTV8 iAir® gateway range extender to enhance functionality. Each Sensor Kit comes equipped with everything needed to complete installation. Unlike hobby-grade systems, PressureTech was designed to withstand the rigors of heavy trucks. It offers a single mobile app for TPMS, load monitoring and gateway range-extender configuration. PressureTech is the all-in-one solution that makes managing one or all applications easy.

The following installation instructions may vary based on the year, make, model and configuration of the vehicle(s).

2 | PressureTech™ App — Download App and Setup Vehicle

STEP ONE: DOWNLOAD AND INSTALL APP

Download and install the AKTV8 PressureTech™ app from the Google Play Store for Android devices or the Apple App Store for Apple devices.



GOOGLE PLAY STORE

GET IT ON Google Play

APPLE APP STORE

Download on the App Store

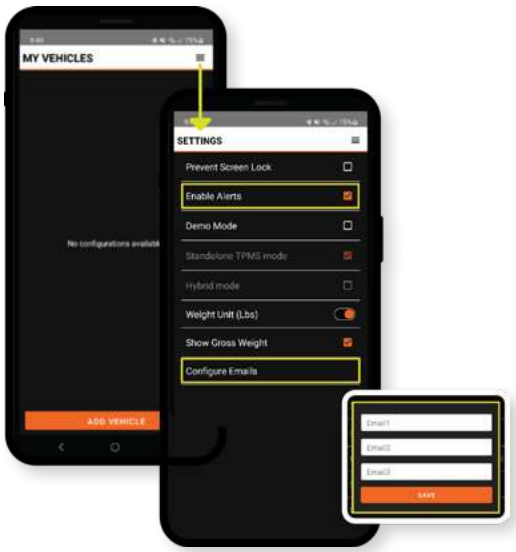
- Allow the AKTV8 PressureTech™ app access to your device's location if prompted (you will only be asked this the first time the app is opened).
- Allow the AKTV8 PressureTech™ app to turn on Bluetooth on your device if prompted — if Bluetooth is off, you will be asked to turn it on each time the app is opened.





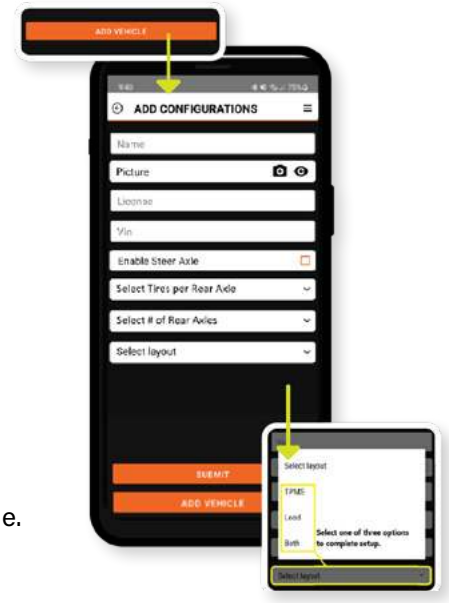
After opening the PressureTech™ app, you will be taken to the "My Vehicles" page. This page allows you to view vehicles and configure app settings.

2 | STEP TWO: APP SETTINGS



- On the top-right corner, tap the list drop down.
- Select "Settings."
- Tap "Prevent Screen Lock" if desired.
- Tap "Enable Alerts" if desired.
- "Enable Scan" turns on continuous scanning when the app is open to improve sensor read time. ***Note: This consumes battery life, so make sure phone is charging.***
- If an emailed alert is desired:
  - » Tap "Configure Emails."
  - » Add your email address and tap "Save."

STEP THREE: CREATE VEHICLE



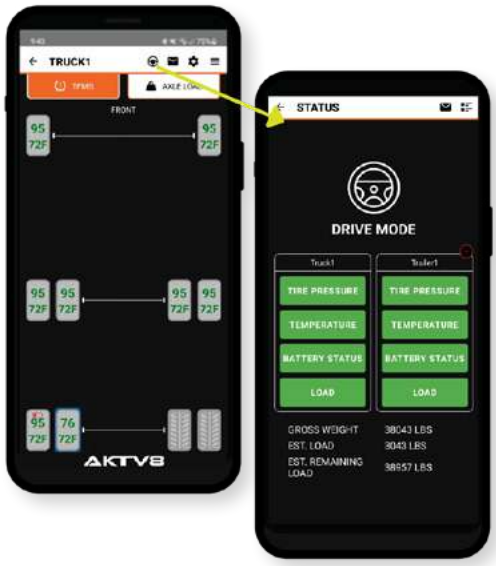
Creating a Vehicle is required before pairing and installing the AKTV8 sensors. Once created, vehicles can be easily added or removed, giving you the ability to easily swap vehicles for viewing.

- On the bottom of "My Vehicles" screen, tap "Add Vehicle."
- Fill in all required fields.
- If installing on truck or car, check "Enable Steer Axle."
- "Select Tires per Rear Axle": single tire or dual tires.
- "Select # of Rear Axles": not including steer axle.
- Set "Select layout" to either be for "TPMS", "Load" or "Both."
- Tap "Submit" to add the configuration to the app's Vehicle page.

2 | STEP FOUR: DRIVE AND MONITOR

Once PressureTech™ sensors are configured, the "Drive Mode" page can be used to easily monitor system condition with green-yellow-red status. Green = good to drive. Yellow = monitor and check next stop. Red = pull over and inspect.

- Tap the steering wheel icon on TPMS or Load page to go to "Drive Mode."
- This page will display boxes for tire pressure, temperature, battery life and vehicle weight. Based on your settings, any alerts will appear on your device's screen as yellow or red.
- Touching any status box will take you to the corresponding alert section and provide more information.
- Estimated Gross Weight, Load and Remaining Load are also displayed.





Example:

- Tire Pressure Low pressure shows red. Sensor missing or over temp shows yellow box.
- Sensor Battery Status alerts yellow if depleted.
- Overload shows red box alert.

3 | PressureTech™ TPMS

Each PressureTech™ Sensor Kit comes equipped with everything needed to complete installation, including Bluetooth valve stem sensors, anti-theft locknuts and wrench.

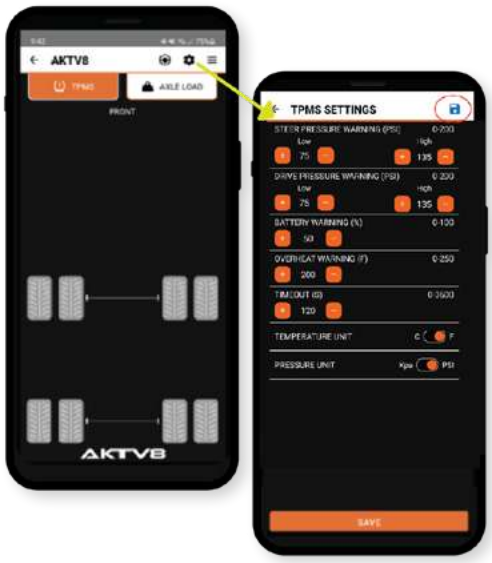
STEP ONE: TPMS SETTINGS

TPMS settings are defined per vehicle, allowing each vehicle to have custom alerts.

In upper right, tap the Settings wheel and change:

- Low and High Pressure warning thresholds.
- Battery % Warning level.
- Thermal Overheat Warning.
- Sensor Missing Timeout: wait time before app alerts for sensor missing.
- Units.

Once complete, tap blue Save icon in top right.

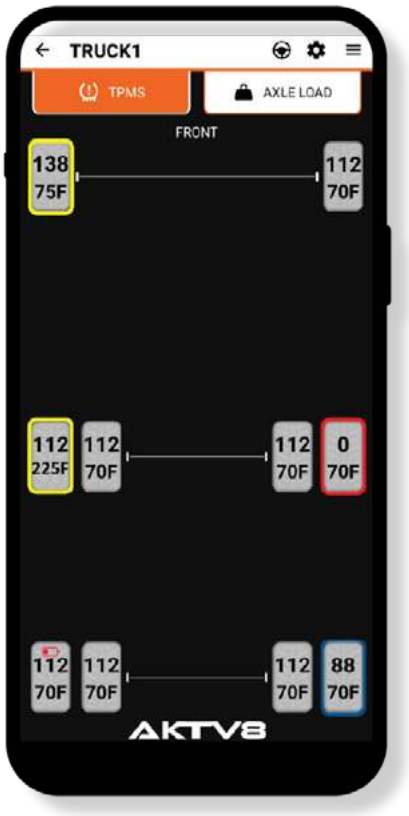


WARNINGS

Yellow flash slow when tire pressure too high.

Yellow flash slow when temperature too high.

Red battery icon when state of charge is low.



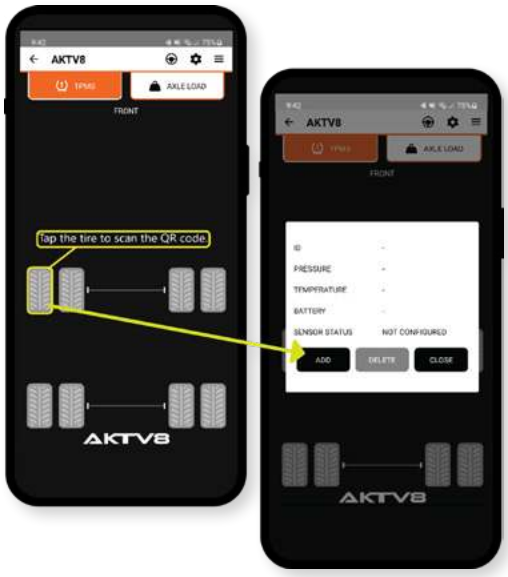
Red flash fast when warning tire pressure too low.

Blue flash slow when sensor packet is missing.

3 | STEP TWO: INSTALL TPMS

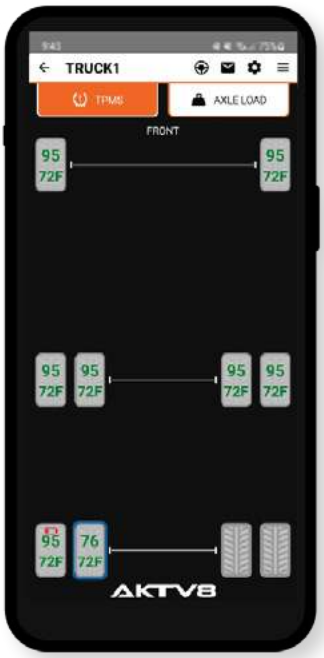
Select your vehicle from the Vehicle page. Add TPMS to the app as they are installed.

- Pair TPMS to app.
- On the TPMS page, tap the corresponding tire and tap “Add” on the pop-up window.
- Use your device’s camera to scan the QR code located on top of the sensor. Once the sensor code is captured, you will see a value in the ID line of the pop-up box.
- Tap “Save.”





- Install the sensor on the tire stem.
  - » Thread locknut on tire stem.
  - » Thread TPMS on tire stem until finger tight.
  - » Use wrench to lock TPMS in place with locknut ~ 10 in-lbs.
- Once configured, TPMS pressure, temperature and battery State of Charge will be displayed on each tire.



3 | PressureTech™ TPMS for Automatic Tire Inflation System (ATIS)

If your trailer is equipped with an Automatic Tire Inflation System (ATIS), and the tire hoses are not equipped with check ports, the hoses will need to be replaced with integral check port hoses to accommodate the PressureTech™ TPMS Sensors.

If you don't have a check port, contact the manufacturer of your ATIS system to see if they have one available. Or you can use the PressureTech™ TPMS flow through sensor connected directly to the valve stem.

When using the TPMS flow through sensor, install the sensor to the valve stem first and then install the ATIS hose. Follow the instructions from your ATIS system for removing and installing the hoses.



4 | PressureTech™ Load



Onboard Scale Sensor(s) Installation

This section details the steps for installing an Onboard Scale sensor and fitting to the air suspension system. Before you start the installation process below, the vehicle profile must be complete and the sensor(s) paired in the PressureTech™ mobile app. PressureTech™ Onboard Scale sensors are purchased with either a ¼" or ⅜" push-to-connect tee fittings (only one fitting will be needed per axle, depending on the size of air line).



The PressureTech™ app algorithm is able to estimate full vehicle weight and can accommodate both steel-spring front steer suspension and lift axles. The SPMS measures air suspension pressure and averages it over one-minute intervals to ensure accuracy.

4 | Pair app to Suspension Pressure Monitor Sensor (SPMS)



- Select your vehicle from the home screen. Tap on the "Axle Load" tab.
- If Steer Axle is selected in Vehicle Settings, the "Steer Settings" box will appear as shown. If steer axle suspension is air, not steel spring suspension, then see section "Steer Air Suspension."
- If you have lift axle(s), see "Lift Axle" section below.
- To pair Load sensors, tap the eyeball icon circled orange in the picture at right.
- Use your device's camera to scan the QR code located on top of the sensor.
- Enter "# of Axles" controlled by height valve.
- Enter maximum weights: In "Maximum Weight" boxes, enter maximum legal weight limit for Steer, Drive, Trailer.
- Tap blue "Save" icon in top-right corner.

Install SPMS in Vehicle

- Apply parking brakes and chock the wheels.
- Dump the air pressure from the air suspension system.
- Find a location in the air line to install the push-to-connect tee fitting. Choose a location in the air line feeding both air springs of an axle, as close to the springs as possible ("downstream" from the leveling or dump valve).
- Select the correct tee for the air line (⅜" or ½") and install a sensor on the tee valve stem by screwing on the sensor clockwise until finger tight ~10 in-lbs. ***Overtightening could damage the sensor and or threads.***
- Cut air line at desired sensor location. Refer to the cutting instructions in Section 4a for details on making a proper 90-degree cut for the tee fitting installation.
- Clean the ends of the cut air line to remove any dirt or grease.
- Install tee fitting by pushing the cut ends of the air line into the ends of the tee fitting. Apply a good amount of force to ensure the air line ends go in as far as it can. Tug on the air line after installation to ensure proper engagement.
- Start the vehicle and let the height control valve(s) charge the air system to operating pressure/height.
- Check for air leaks using soapy water and a spray bottle, refer to instruction in Section 4c. It is important that there are no air leaks in the air suspension system for the PressureTech™ system to work properly.
- Secure the air line with the sensor installed and prevent the sensor and air line from rubbing or impacting sharp edges or vehicle frame during travel.



Steer Air Suspension:

If your vehicle is equipped with front steer air suspension, an SPMS Load sensor must be paired and installed on front air spring circuit, similar to above. Tap "Steel" in Steer Settings page, change to "Air," and then tap the eye icon. Follow the Load Calibration steps below, entering Unloaded and Loaded Weights and touching the orange CAL buttons.



Lift Axle:

If your vehicle is equipped with lift axle(s), an SPMS Load sensor must be paired and installed on the lift axle load spring circuit (not lift springs). Use one SPMS per lift axle control valve — if multiple lift axles controlled together by one valve, you only need one SPMS. Tap the (+) sign at the top right to add. Follow Load Calibration steps below.

Load Calibration steps:

This step requires vehicle(s) to be run over scales both unloaded and loaded. Locate certified in-ground segmented (not platform) scale station nearby and plan to travel to the scales unloaded, then load vehicles to maximum load and return to scale. See video here for CAT scale instructions. The PressureTech™ app algorithm will estimate future vehicle weight based on these two weight inputs. The instructions below will guide calibration and assumes first trip to scales is with an unloaded tractor trailer.





Notes:

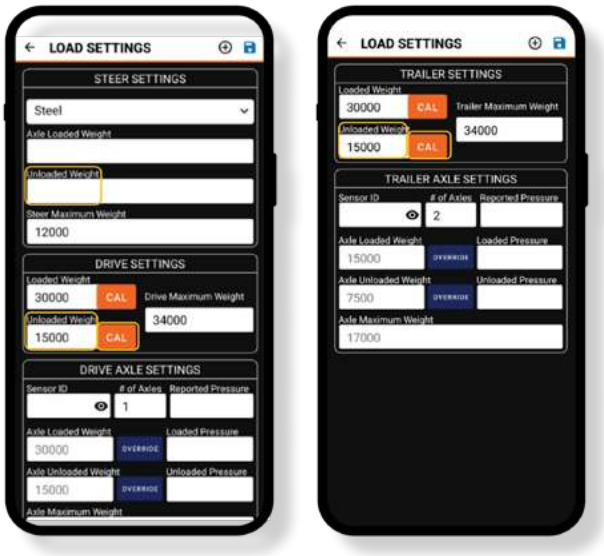
Failure to weigh at minimum/empty and maximum/fully loaded weights will result in inaccurate system weight estimation. Use same scale station for both unloaded and loaded scaling to maximize accuracy.

Always scale on level surface, with brakes released, and allow the vehicle to reach a steady, constant state prior to weighing. If scale station requires vehicle to be removed from scales prior to providing weight data/printout, then vehicle must be returned to a level surface with brakes released, allowing weight entry per below with vehicle in a steady/constant state.

If vehicle has lift axles, ensure they are lifted in unloaded state and deployed in loaded state.

Weigh Unloaded:

1. Drive onto scales.
2. Get weights.
3. Starting with Truck, enter Steer and Drive weights into Unloaded Weight boxes.
4. Tap "CAL" orange button, this will lock SPMS pressure to weight.
5. Tap blue "Save" icon in top right.
6. Switch vehicle to Trailer, enter Unloaded Weight.
7. Tap CAL button.
8. Tap blue "Save" icon in top right.

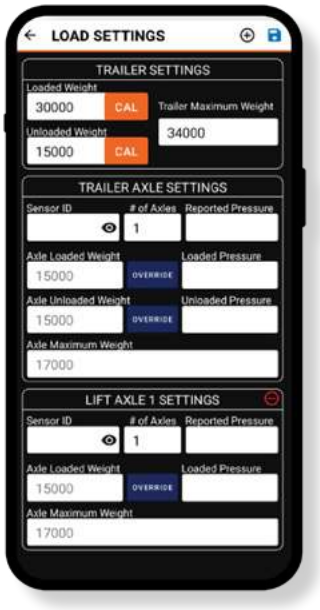


Drive off scales and proceed to load vehicles to maximum. Return to scales and enter Loaded Weights, tap CAL and Save icon. Vehicles are calibrated!

Note: PressureTech™ automatically distributes drive and trailer weights evenly across available axles. If equipped with lift axles, the loaded weight will be distributed onto the combination of lift and drive/trailer axles. See below "Axle Override" section if per-axle calibration is required.

Axle "Override" advanced/manual calibration:

PressureTech™ includes the ability to override automatically distributed weights. For example, if user has individual axle weighing capability, it is possible to manually enter axle unloaded and loaded weights. Also, if vehicle is equipped with lift axles and user prefers to individually calibrate each lift axle set, the "override" feature can be used:



Scale axle.

- Tap blue "Override" button — enter loaded/unloaded weights.
- Tap orange "CAL" button.
- Tap "Save" blue icon in top right.

4 | Cutting Air Hose

Improper cutting of air hose is the #1 installation issue. Using the right tool the right way will ensure a leak-free connection. Using the wrong tool will cause leaks and frustration.

- ONLY use sharp-bladed tools to cut the hose square.
- DO NOT USE side cutters or scissors — these pinch the hose and create burrs that cut the internal O-rings of the push-to-connect fittings and will cause leaks.
- DO NOT cut on angle.
- We have found these to be the best tool as they have a recess for both a ¼" and ⅜" hose. Check them out on Amazon.







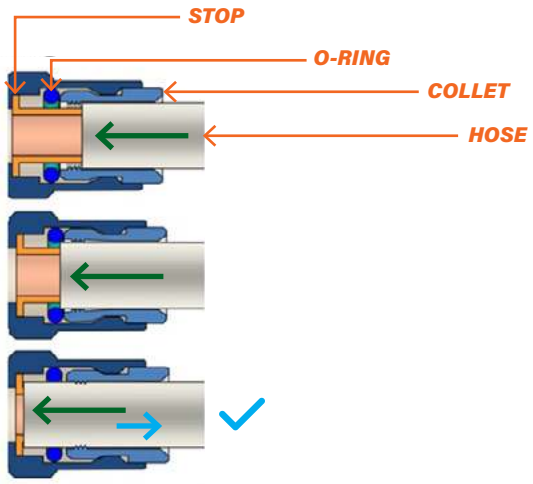






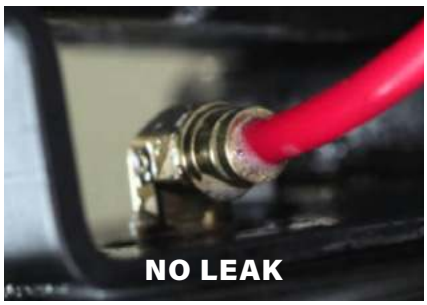
4 | Hose Insertion into Tee Fitting

- Insert nylon hose into push-in fitting.
- Push hose through collet, lightly twisting.
- Continue to push and twist hose through O-ring until tube reaches mechanical stop.
- Lightly pull hose to ensure retention: This will secure collet teeth into hose.



Leak Checking

- Check leaks at all connections using soapy water solution or Snoop. Soapy water in a spray bottle works great: 1 tablespoon dish detergent (no ammonia or salt) to 1 quart water, mixed.

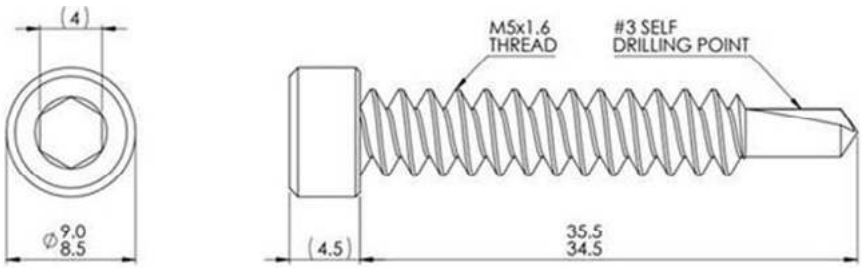




5 | Gateway Range Extender Installation

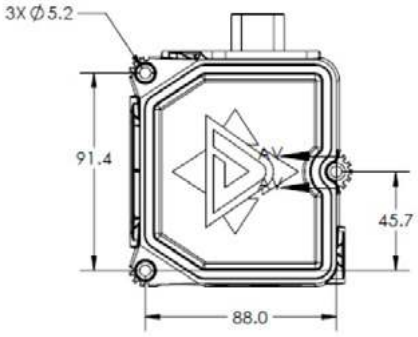
The PressureTech™ Gateway Range Extender is a rugged, waterproof ECU that can be mounted anywhere under the vehicle. The Gateway will recognize PressureTech™ sensors and retransmit their signals over Bluetooth to your device.

- Optimally the Gateway is equidistant/centralized between all PressureTech™ sensors and cab/cockpit to enable best performance. Trial-install harness to determine locations to mount Gateway. The unit requires 12v+ ignition switched and -ground. Determine if harness needs to be extended to comfortably route without stretching or kinking.
- Use self-tapping screws provided to mount unit to chassis. Max torque is 23 in-lbs.

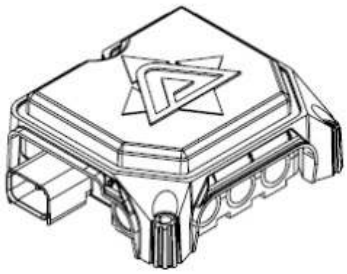


5

- Secure wiring while ensuring connector wiring is not strained. The wires must not be pulled to the side, as this can allow water/moisture past the wires. Protect wiring over sharp edges/ through sheet metal holes with grommets or sheathing (split or spiral convolute works great).
- Power up and confirm PressureTech™ sensors are reading in your cab/cockpit.







6 | Troubleshooting

Blue band around tire/load icon: Device not receiving data from sensor.

- Device too far from sensors.
  - » Move device closer to sensor location.
- Sensor not awake.
  - » Unscrew sensor from valve stem and reinstall, ensuring Shrader valve engaged by sensor.
  - » All sensors will not update at identical times but should report in 30-60 seconds, depending on device.
- Battery below operating voltage.
  - » Replace battery with new 1632 lithium cell.

Unable to scan QR code.

- Sensor code dirty.
  - » Wipe sensor clean.
- Sensor code damaged.
  - » Type last six digits of code into box, tap “Submit.”



7 | Battery Replacement

PressureTech™ by AKTV8 – TPMS Cap Sensor Battery Replacement Guide

- **Remove the sensor** by loosening the jam nut and unscrewing the sensor from the valve stem of the tire.
- **Open the sensor** by prying the anti-rotation key from bottom of the sensor. Using a 12mm socket or wrench, hold the brass nut while twisting the cap off.









- **Locate the battery** inside the sensor.



- **Replace the battery** by removing the old battery and inserting a new CR1632 battery. Note the battery's polarity position (+/-) so the plus (+) side is facing up.



- **Close the sensor** by gently screwing the cover back on the sensor two turns, followed by the anti-rotation key making sure the tab is correctly located in the cutout window (see image 1 below). If the key does not correctly fit in the window, (see image 2 of misaligned key) use a socket to slightly readjust the sensor in the cap until fit is achieved.



Image 1

Anti-rotation key with tab correctly located in the cutout window



Image 2

Anti-rotation key with tab misaligned in the cutout window

- **Reattach the sensor** by screwing the sensor back onto the valve stem and tightening the jam nut.
- **Confirm sensor functionality** by opening the PressureTech™ app.