

SmartDiagnostics V2 Sensor Battery Change Guide

This guide will walk you through changing a battery of a SmartDiagnostics Version 2 sensor, and properly documenting the sensors location, orientation, and antenna direction.

Step-By-Step Guide to Change a Sensor Battery

Tools Required (See Figure 1 Below):

1. T15 Torx Driver
2. Sharpie or other permanent marker
3. Replacement Duracell CR123A Battery
4. Tweezers or other blunt, & flat object
5. Secondary sensor to use as a magnetic battery puller

Figure 1 - Tool Layout



Identify Sensor, Mark Location, Label Orientation, Record Serial Number:

1. Identify the sensor that requires a new battery by observing the asset the sensor is placed on, location of the sensor on the asset, and the serial number of the sensor. Ex: Sensor serial number 000076EC located on Slurry Pump #1 Inboard. (See Figure 2)
2. Trace the sensor base with a sharpie to create an outline of the sensor location. Reference the sensor label to draw an arrow that corresponds to the X-axis of the sensor. (See Figure 3)
3. Write the sensor serial number within the trace mark. (See Figure 4)

Figure 2 - Sensor Location



Figure 3 - Sensor Axis Label

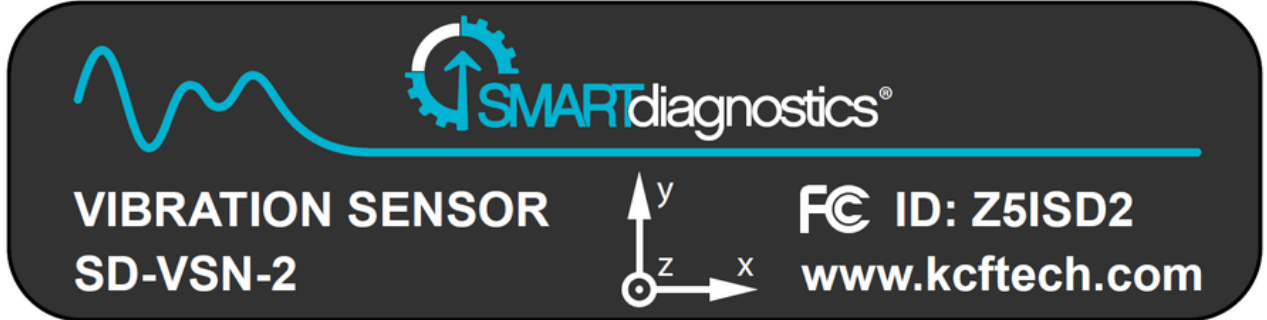


Figure 4 - Sensor Serial Number Documentation



Removing the Cap and Battery:

1. Remove the cap in an area free of water or falling debris. Water or debris entry **will** damage the sensor.

2. Unscrew the sensor's top cap screws with the T15 Torx Driver. (See Figure 5)
3. Remove the top cap to expose the battery. Be sure to keep track of the cap and screws through the remainder of the process. (See Figure 6)
4. Check the O-ring and the O-ring contact area of the cap to ensure no debris has entered the sensor. If debris is present, wipe these areas clean. (See Figure 7)
5. Remove the battery using the secondary sensor (See Figure 8). Typically the battery will come right out with the use of the second sensor. If the battery is snug in the sensor, use a back end of tweezers, or a flat & blunt object to pry the battery out. Please do so carefully as to not damage the battery or electronics within. (See Figure 9)

Figure 5 - Removing the Cap Screws



Figure 6 - Removing the Cap



Figure 7 - Check the Seal for Debris



Figure 8 - Remove the Battery with A Second Sensor



Figure 9 - Use the Back End of Tweezers if Necessary to Pry Battery Out of Sensor



Replacing the Cap and Battery:



1. Insert the new battery by first angling in the Negative  terminal of the battery, and then swinging the Positive  terminal into the sensor. Please be aware of the battery terminals and **DO NOT FORCE THE BATTERY INTO THE SENSOR**. If the battery does not enter the sensor, try inserting the battery at a different angle (See Figure 10). Once the battery has made contact with the battery terminals, the orange LED will flash (See Figure 11). If you do not see a flash, remove the battery, ensure the battery terminals have not been damaged, and reinsert the new battery.
2. Replace the sensor cap by aligning the screw lobes of the cap, to the screw bosses on the sensor housing. Once aligned, press firmly down on the cap to initiate the seal between the sensor and the cap (See Figure 12). Check to see if the O-ring is still properly seated. In some cases the cap may push the O-ring out of place, and render the seal ineffective. If this happens, remove the cap, place the O-ring back in its respective groove, and retry placing the cap.
3. To properly screw in the cap screws, use the T15 Torx Driver. Turn the driver counter clockwise to find the start of the thread. Once the thread is found, turn the screws clockwise until the cap makes contact with the sensor housing. **DO NOT TORQUE THE SCREWS**. The screws only need to be driven in until the cap makes initial contact with the housing. (See Figure 13 & 14). Figure 13 shows the gap between the sensor cap and the sensor housing. Figure 14 shows initial contact between the cap and sensor housing.

Figure 10 - Angling In the Battery



Figure 11 - LED Flash



Figure 12 - Apply Pressure to Cap to Create Seal



Figure 13 - Gap Between Sensor Cap and Sensor Housing



Figure 14 - Initial Contact Between Sensor Cap and Sensor Housing



Replacing the Sensor in the Field:

1. When replacing the sensor in the field, verify the serial number matches with the location marking. Place the sensor back in its trace mark, and verify the X-axis matches the orientation of the marked arrow. (See Figure 15)
2. Steer the antenna into its original position, or the most vertical position possible. (See Figure 16)

Figure 15 - Replace Sensor in Original Location and Orientation



Figure 16 - Steer Antenna to Original Direction or the Most Vertical Position



Further Technical Support:

If additional technical support is required, please contact our SmartDiagnostics Customer Support Team through the following methods:

1. Calling KCF Technologies' number (814-867-4097) and selecting SmartDiagnostics Customer Support Team on the automated menu.
2. Emailing our SmartDiagnostics Customer Support Team via support@kcftech.com