

## Blue iQ® Thermistor Faults and Replacement

**Affected Vehicles**

Certain Agility® Blue iQ® CNG fuel systems exhibiting the following Cummins® INSITE™ fault codes:

| Fault Code | Description                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------|
| 6963       | Fuel Storage Compartment 1 Temperature - Data Valid But Above Normal Operating Range - Most Severe Level |
| 7292       | Fuel Storage Compartment 1 Temperature 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source |
| 7294       | Fuel Storage Compartment 1 Temperature 2 Sensor Circuit - Voltage Above Normal or Shorted to High Source |

### Introduction

Agility Fuel Solutions LLC (Agility®) Blue iQ® CNG fuel systems are equipped with two temperature sensor assemblies called thermistors (p/n 10400559) to measure ambient temperature near CNG cylinders inside fuel storage enclosures.

If the Blue iQ® gauge indicates an over-temperature warning (*Figure 1*), use the Cummins® INSITE™ tool to check for fault codes to confirm the gauge message (*Table 1*). Verify thermistor circuit fault with a multimeter, and, if necessary, replace the affected thermistor.

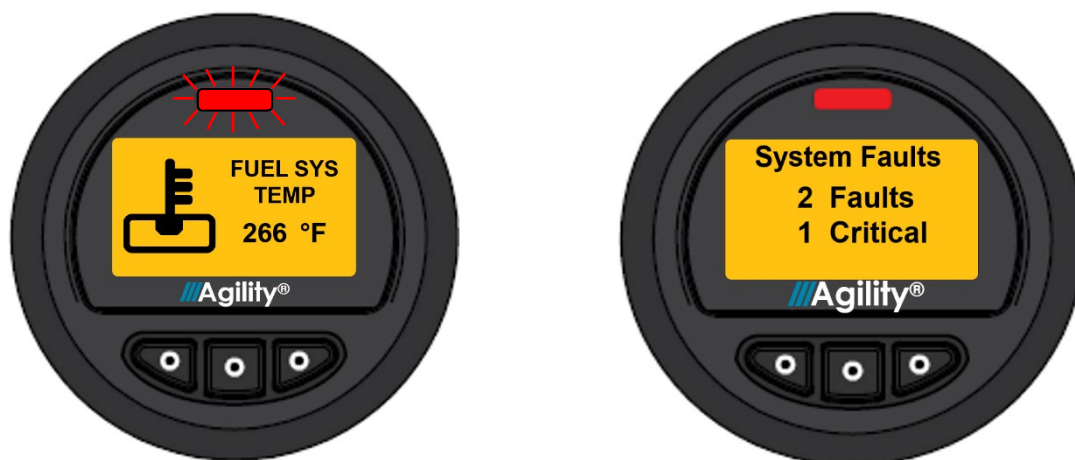


**Figure 1. LEFT: Blue iQ® gauge warning screen indicating fuel system cabinet temperature is above normal operating range of up to 168°F / 75.6°C.\***

**RIGHT: Blue iQ gauge message indicating system faults.**

Additionally, the thermistor mounting method has been updated for some fuel system types; please see Repair Instructions section for details.

\*Some Blue iQ® software versions set the normal temperature range to 165°F / 73.9°C maximum.

## Warning Statements Used in this Bulletin

### **⚠ WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.

### **NOTICE**

**NOTICE** is used to address practices not related to physical injury, such as best practices or tips to help an operation or procedure go smoothly and prevent equipment damage.

## Required Tools and Materials

The following tools and supplies are necessary to perform the steps outlined in the document:

| Item                                                               | Purpose                                                                    |
|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| Cummins® INSITE™ diagnostic tool                                   | Check for vehicle fault codes                                              |
| Multimeter                                                         | Verify thermistor circuit resistance                                       |
| Test probe kit                                                     | Properly probe connectors and terminal cavities                            |
| Non-contact infrared thermometer                                   | Measure temperature at thermistor location                                 |
| <i>If required:</i> Center punch                                   | Facilitate removal of thermistor mounting rivets                           |
| <i>If required:</i> Power drill and drill bits                     | Remove rivets securing thermistors to the fuel system frame                |
| Edge clip zip ties, Agility® p/n 10712380, QTY: 2 or 4 (as needed) | Secure replacement thermistor(s)                                           |
| <i>If required:</i> Scaffolding                                    | Safe access to thermistors in behind the cab (BTC) roof mount (RM) systems |
| <i>If required:</i> Fall restraint PPE                             | Safe access to thermistors in BTC and RM systems                           |

## Warranty Information

This procedure is covered under the provisions of the fuel system warranty. Standard repair time (SRT) is 1.0 hour which includes fault code retrieval, thermistor removal and replacement, clearing fault codes, and testing.

## Secure Vehicle

### **⚠ WARNING**

Set emergency brake.

### **⚠ WARNING**

Place wheel chocks under vehicle tires.

### **⚠ WARNING**

Use approved scaffolding and fall restraint PPE when working on behind the cab (BTC) or roof mount (RM) systems.

## Component Locations

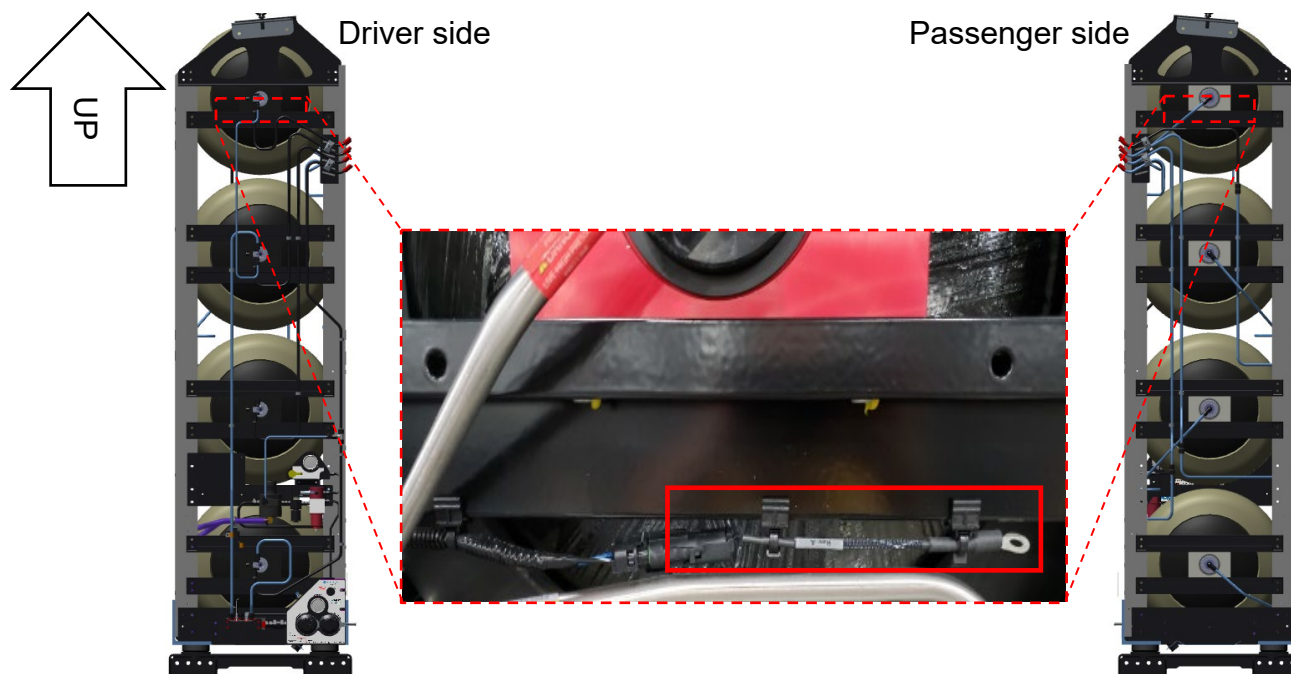


*Figure 2. Thermistor locations (rectangle) in a behind the cab (BTC) system.*

### **NOTICE**

On Blue iQ systems equipped with BTC cylinders **AND** a single side mount (SM) cylinder, one thermistor is mounted in the BTC enclosure and one thermistor is mounted in the SM enclosure.

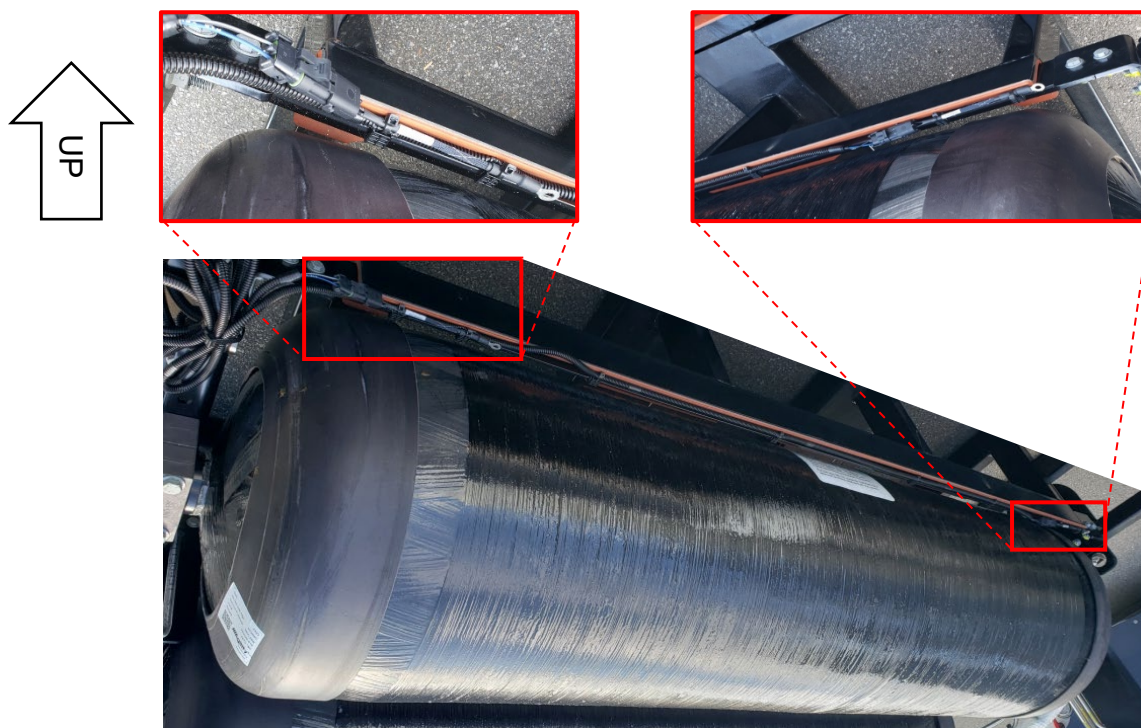


*Figure 3. Thermistor locations (rectangles) in a tailgate mount system.*

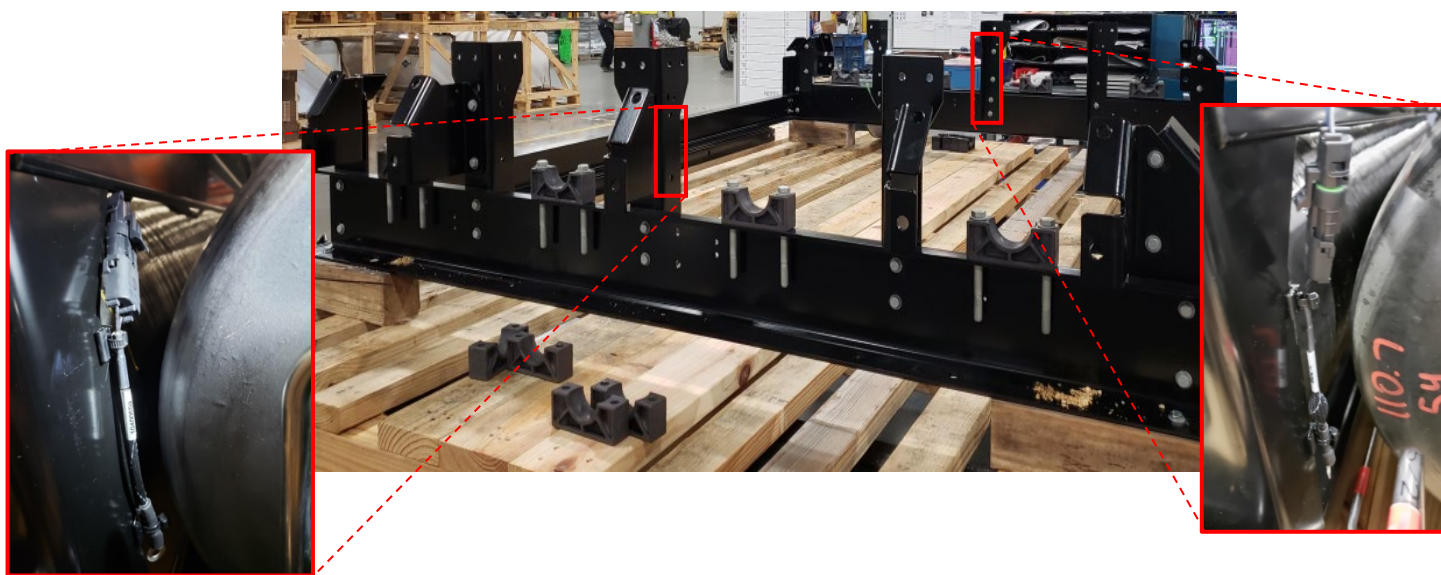


**Figure 4. Thermistor locations (rectangles) in a roof mount (RM) system.**

**NOTE: One thermistor is mounted at the cylinder valve end of the enclosure and one thermistor is mounted at the cylinder plug end.**

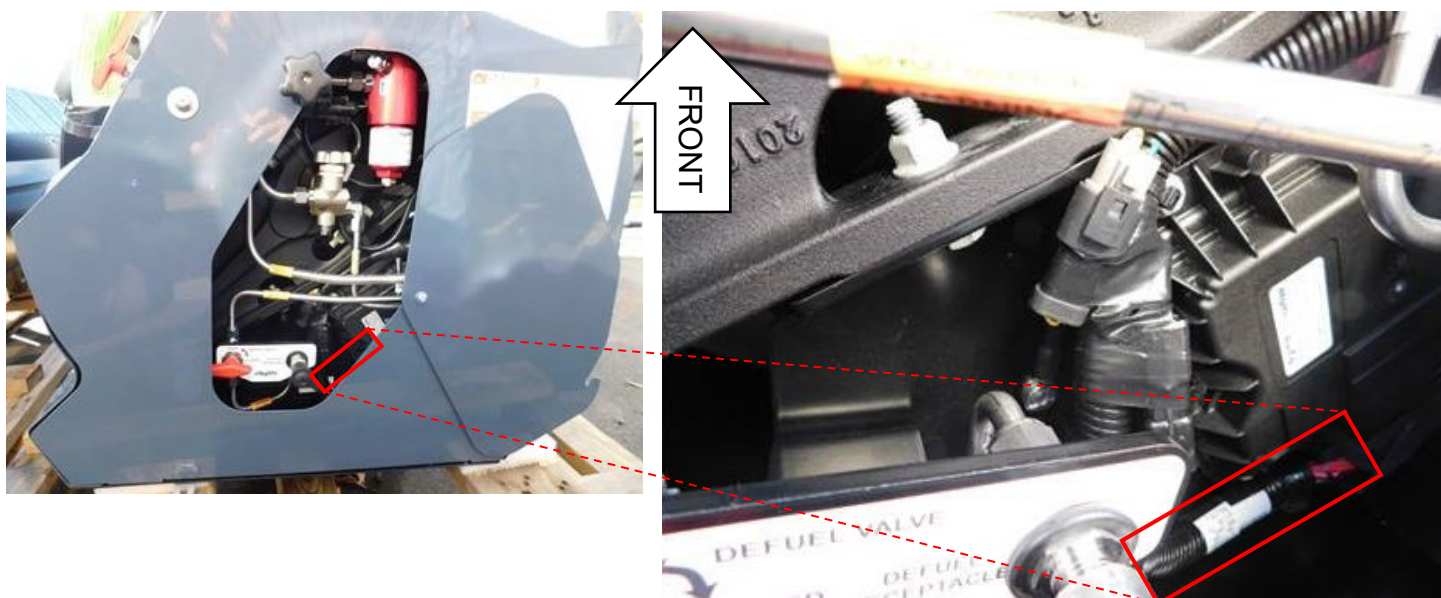


**Figure 5a. Driver side thermistor location (rectangles) for a dual side mount (SM) system.**

**NOTE: On single side mount systems, one thermistor is mounted at the cylinder valve end of the enclosure and one thermistor is mounted at the cylinder plug end.**

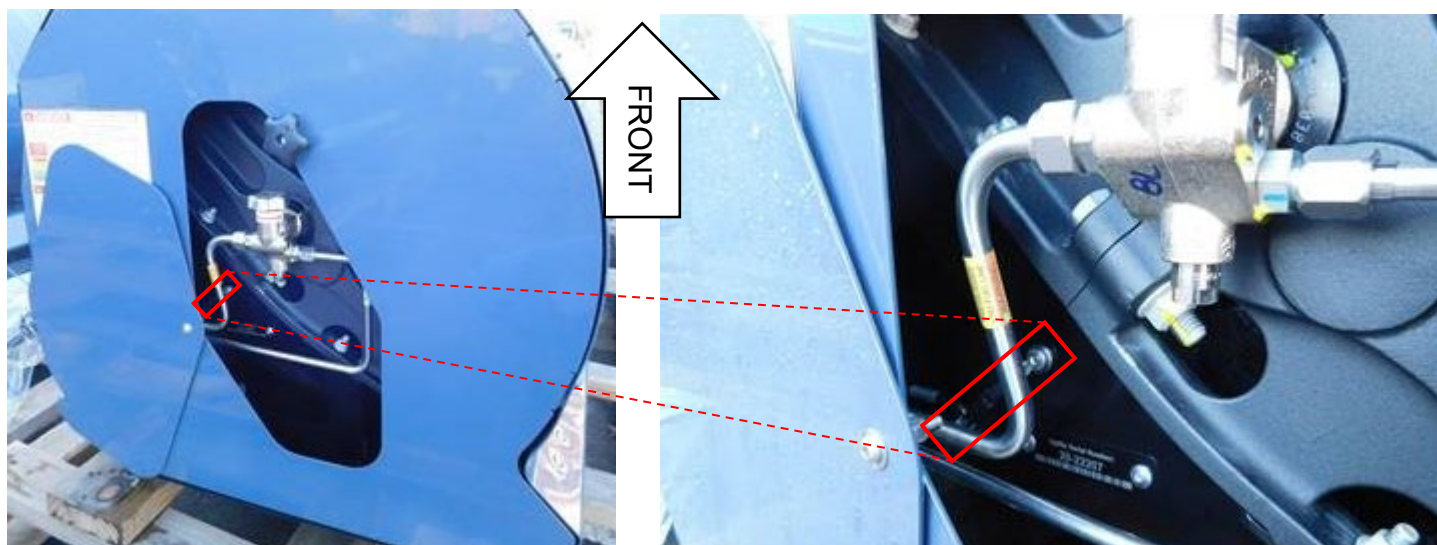


**Figure 5b. Passenger side thermistor location (rectangles) for a dual side mount (SM) system.**  
**NOTE:** On single side mount systems, one thermistor is mounted at the cylinder valve end of the enclosure and one thermistor is mounted at the cylinder plug end.

## Diagnostic Procedure

1. Connect vehicle to Cummins® INSITE™ tool to access fault code(s) as follows:
  - a. Click on “Connect to Module”
  - b. Click on “Agility® Fuel Delivery System CM1881 AFS[18].” *Figure 6*

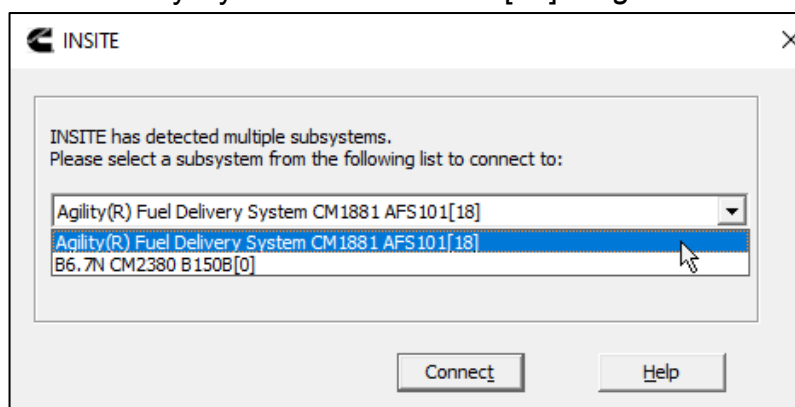


**Figure 6. Select Agility® Fuel Delivery System from Cummins® INSITE™ menu.**

**NOTICE** Fault codes must be supplied for warranty repair reimbursement.

2. Record any fault code(s) present.
3. Clear fault code(s).
4. Use a non-contact infrared thermometer to measure surface temperature at the first thermistor selected for testing. Record surface temperature at the thermistor site at the time of the reading. *Refer to Figures 2, 3, 4, 5a, and 5b for thermistor locations.*
5. Disconnect thermistor from Blue iQ® chassis harness. *Figure 7*

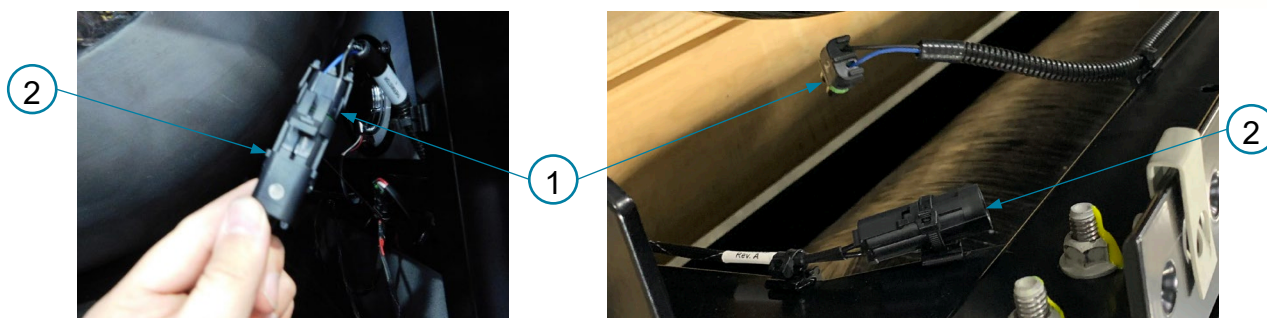


**Figure 7. Blue iQ® chassis harness connector (1), thermistor connector (2).**

### NOTICE

**Thermistor resistance values must be submitted for warranty repair reimbursement.**

6. Use a multimeter and test probe kit to measure resistance across Pin A and Pin B of the thermistor connector. *Figure 7*
7. Refer to *Table 1* for the acceptable thermistor resistance range at temperature, and record resistance value of the thermistor as measured at the temperature recorded at Step 3.

**Table 1. Thermistor Resistance at Temperature.**

| Temp |     | Resistance Range<br>(Ohms) |          |
|------|-----|----------------------------|----------|
| °F   | °C  |                            |          |
| -40  | -40 | 32277                      | to 35177 |
| -22  | -30 | 17083                      | to 18359 |
| -4   | -20 | 9413                       | to 10015 |
| 14   | -10 | 5397                       | to 5673  |
| 32   | 0   | 3197                       | to 3335  |
| 50   | 10  | 1954                       | to 2026  |
| 77   | 25  | 989                        | to 1011  |
| 86   | 30  | 796                        | to 816   |
| 104  | 40  | 524                        | to 542   |
| 122  | 50  | 352                        | to 368   |
| 140  | 60  | 243                        | to 255   |
| 158  | 70  | 170                        | to 180   |
| 176  | 80  | 122                        | to 130   |
| 194  | 90  | 89                         | to 95    |
| 212  | 100 | 66                         | to 70    |

8. Repeat Steps 1 through 7 for the other thermistor.
9. If thermistor(s) conform to specifications:
  - a. *Behind the Cab (BTC), tailgate, Roof Mount (RM), and Side Mount (SM) Blue iQ® systems:* Check thermistor mounting method before reconnecting; if pop rivets were used to secure thermistors, remount thermistor(s) using Repair Procedure below.
  - b. *Other systems and systems with thermistors mounted using zip ties:* Reconnect each thermistor to the Blue iQ® chassis harness and follow **Road Test Procedure** below.
10. If thermistor resistance is out of spec, **replace thermistor(s) using Repair Procedure below.**

## Repair Procedure

1. *If not already unplugged:* Unplug Blue iQ® chassis harness from thermistor to be removed. *Figure 7*
2. *Behind the Cab (BTC), tailgate, Roof Mount (RM), and Side Mount (SM) Blue iQ® systems:* If thermistors were secured with pop rivets, remove pop-rivet securing thermistor to fuel system frame as follows:
  1. If the pop rivet does not have an indentation in the head, use a center punch to make a guide divot in the center of the rivet head.
  2. Use a power drill and drill bit to drill out the pop rivet.

**⚠ WARNING** Do not allow drill or drill bit to contact cylinders, fuel system tubing, harness, thermistor, or other components.

3. Mount thermistor p/n 10400559 to fuel system frame using two p/n 10712380 edge clip zip ties by positioning one edge clip zip tie at each end of the thermistor. *Figure 8*

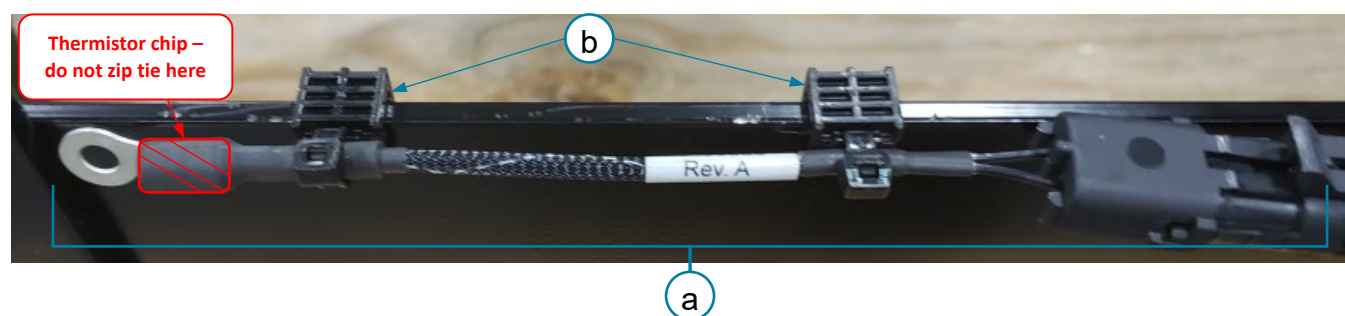


*Figure 8. Thermistor (a), edge clips (b).*

**NOTICE** Edge clip zip tie cannot be installed on the thermistor chip.

**NOTICE** Both edge clip zip ties must face in the same direction.

**NOTICE** Install zip ties to prevent tension on the thermistor joint or twisting and damaging wires connected to the thermistor.

4. Reconnect chassis harness to thermistor connector.
5. *If the other thermistor is indicated as faulty by either the Blue iQ gauge or Cummins® INSITE™:* Repeat **Repair Procedure Steps 1 through Step 3** for the other thermistor.
6. Road test vehicle using the procedure described below.

## Road Test Procedure

1. Use Cummins® INSITE™ diagnostic tool to clear any fault codes and verify thermistor-related fault codes do not reappear.
2. Remove wheel chocks from tires.
3. Start engine and verify proper fuel system operation using Blue iQ® gauge. *Figure 9*



**Figure 9. Examples of normal Blue iQ gauge operation.**

4. **If Blue iQ® gauge displays faults** (Figure 1), turn off engine, set emergency brake, and reposition wheel chocks before doing the following:
  - a. Record Blue iQ® gauge message.
  - b. Check for fault codes using Cummins® INSITE™ diagnostic tool, record any codes present, and contact Agility Customer Care and Technical Services (CCTS) using the contact information below.
5. Road test the vehicle until it reaches operating temperature to see if the fault code(s) return at the same surface temperature as the initial thermistor test.
6. **If Blue iQ gauge displays faults or the Cummins® INSITE fault returns:**
  - a. Record Blue iQ display message.
  - b. Check for fault codes using Cummins® INSITE™ diagnostic tool, record any codes present, and contact Agility Customer Care and Technical Services (CCTS) using the contact information below.
7. **If fault does not return**, release vehicle into service.
8. Update vehicle maintenance and repair records.

## Agility® Customer Care and Technical Services

Fuel system warranty or non-warranty product support may be obtained by calling or emailing Agility® Customer Care and Technical Services (CCTS). Please provide **your name, phone number, email address, and complete vehicle information: VIN, year, make, model, mileage, unit number vehicle owner, and current vehicle location.** A service advisor will contact you to arrange vehicle repair or ship a part.

**+1 855 500 2445** (toll-free, U.S. and Canada)

**+1 949 267-7745**

**Support** [support@agilityfs.com](mailto:support@agilityfs.com)

**Parts Orders** [parts@agilityfs.com](mailto:parts@agilityfs.com)

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