



Countries: CANADA, UNITED STATES **Document ID:** IK0700096
Availability: ISIS, FleetISIS, IsSIR **Revision:** 16
Major System: EXHAUST **Created:** 5/19/2017
Current Language: English **Last Modified:** 11/13/2017
Other Languages: NONE **Author:** Josh Bowman
Viewed: 22118

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Coding Information

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Title: Urea Quality Sensor (UQS) Supplemental Diagnostic and Service Information

Applies To: Navistar N9, N10, N13, A26 and Cummins ISB, ISL, ISX built from January 2016 to present

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

11/13/2017 - Corrected linking concern in step 7 per article feedback
 10/30/2017 - Addressed article feedback and updated incorrect figure numbers
 10/24/2017 - Added vent tube cut procedure in step 3
 10/10/2017 - Added calibration info (new cal released)
 10/01/2017 - Added fault codes and supplemental diagnostics.

DESCRIPTION

This document will guide the user through supplemental diagnostic and service procedures for the Urea Quality Sensor (UQS). This document only applies to vehicles built between January of 2016 to present. Refer to Symptoms section below to find the list of fault codes that apply. The Diagnostic Steps section below will guide the user through a series of steps to determine the cause of the fault code.

SYMPTOMS

Diagnostic Trouble Codes:

DTC/Light	Description
SPN 3516 FMI 10	N9/N10/N13/A26
SPN 3516 FMI 18	N9/N10/N13
SPN 3516 FMI 15	N9/N10/N13/A26
SPN 4094 FMI 31	A26
SPN 3364 FMI 10 (4277)	ISB/ISL/ISX/X15/B6.7
SPN 3364 FMI 18 (3867)	ISB/ISL/ISX/X15/B6.7
SPN 3364 FMI 15 (4842)	ISB/ISL/ISX/X15/B6.7
SPN 3521 FMI 16 (6765)	X15/B6.7
SPN 3521 FMI 18 (6766)	X15/B6.7
SPN 3521 FMI 31 (6767)	X15/B6.7

NOTE:

These faults are NOT resolved with the UQS boot kit. Resolve other faults first before continuing with diagnostics for faults listed in the section above.

For Cummins powered vehicles:

SPN:3364 FMI: 1,2,3,4,5,6,7,9,11,12,13,19, and 31.

For Navistar powered vehicles:

SPN:3516 FMI:1,2,3,4,12, and 19

SPN:3515 FMI:3,4,5,6,10,11,20, and 21

Verify sensor is working correctly before replacing or installing boot kit using the following steps:

DIAGNOSTIC STEP(s)**Before starting diagnostics:**

Navistar N9/10 powered vehicles: Update ACM to the latest calibration using NavKal. The latest calibration has been released to address the 3516-18 fault code.

Step	Action	Decision
1	DIAGNOSTIC: Check DEF with refractometer. Is DEF concentration between 30-34%?	Yes. Go to Step 2.
		No. Drain DEF and refill with new DEF. Confirm new DEF concentration is in spec. Go to Step 6.

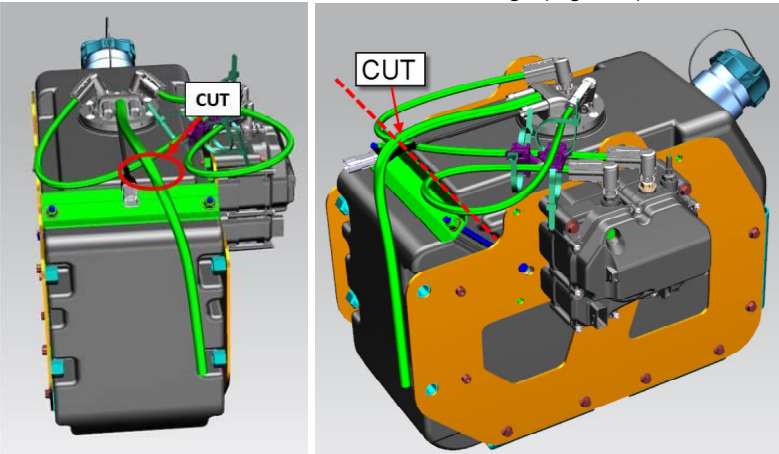
Step	Action	Decision
2	DIAGNOSTIC: Check DEF/DEF Tank for debris. Is any debris found?	Yes. Drain DEF tank, flush and refill with new DEF. Confirm new DEF concentration is within spec. Go to Step 6.
		No. Go to step 3.

Step	Action	Decision
3	DIAGNOSTIC: Aeration can be caused by the DEF heater valve operating incorrectly. Follow IK0700079 . Are the DEF heater valve and lines installed correctly ?	Yes. Go to step 4
		No. Correct DEF heater valve installation and retest for faults. If the fault codes do not return, go to Step 6.

Step	Action	Decision
4	DIAGNOSTIC: Check DEF concentration using Navistar Engine Diagnostics (Navistar Engines parameter 3516) or INSITE (Cummins Engines).	Yes. Go to Step 6.
		No. Go to Step 5.

	Is the concentration displayed in the service tool WITHIN spec (matching refractometer reading within 3%)?	
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Step	Action	Decision
5	DIAGNOSTIC: Through the DEF Tank fill hole, inspect sensor for bubble accumulation. Are any bubbles on the lens?	Yes. Remove bubbles from sensor and return to Step 4.
		No. Go to Step 7.

Step	Action	Decision
6	DIAGNOSTIC: Install UQS boot and retest for faults. Refer to Service Parts Information section below for UQS boot kit part number and repair instructions. Also, locate the vent tube on the DEF sensor head and cut as shown below. The tube should be cut at the end of the DEF tank edge (Figure 1) :  Figure 1: DEF Tank Vent Hose Are any faults active after boot installation? *Fault code monitors may take several minutes to come active. Refer to appropriate manual to locate the conditions for setting the fault code.	Yes. Go to Step 7.
		No. Release truck to customer.

Step	Action	Decision
7	DIAGNOSTIC: Replace UQS sensor. Depending on chassis number, you may receive a float/optical sensor or an ultrasonic sensor. If float/optical sensor received: Install UQS Boot Kit, part number 2518079C91, and retest If ultrasonic sensor received: Follow IK0700097 . THIS SENSOR DOES NOT REQUIRE A BOOT KIT Have any fault codes come active after installation? *Fault code monitors may take several minutes to come active. Refer to appropriate manual to locate the conditions for setting the fault code.	Yes. Contact Tech Support
		No. Release truck to customer.

NOTE:

For Navistar engines, Programmable Parameter (PP) reset of "SCR Faults Reset Request" is needed to remove inducement effects.

SERVICE PARTS INFORMATION

The UQS Boot Kit is now available to order through the PDCs.

Kit Description	Part Number	Quantity Required
Kit, Urea Quality Sensor Boot	2518079C91	1

Refer to Training and Repair Steps below to find instructions for installing the UQS boot kit.

NOTE:

A heat gun is required to install this kit, if you do not have a heat gun please open up a Tools order case file indicating you need a loaner heat gun to perform this procedure.

TRAINING

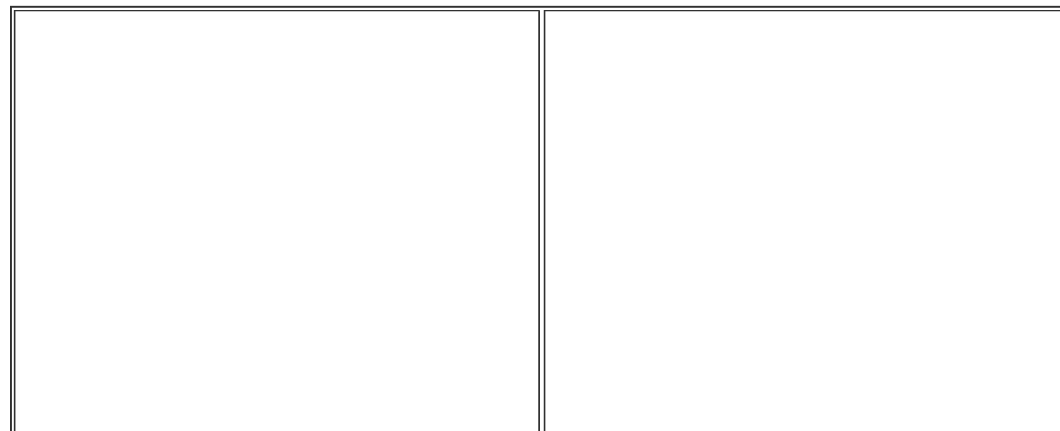
Before attempting to make this repair, please review a short training video in the Course Catalog on the LMS.

www.navistarlearning.com

REPAIR STEPS

The UQS boot kit was revised 8/18/17 with a plastic boot in place of the original heat shrink boot. The new boot has separate instructions.

- If you have a UQS Boot Kit with only heat shrink boots and a green zip tie as pictured in **Figure 2** below, use the installation instructions found here: [UQS - Urea Quality Sensor Heat Shrink Boot Installation](#)
- If you have a UQS Boot Kit with the plastic boot and blue zip tie as pictured in **Figure 3** below, use the instructions found here: [UQS - Urea Quality Sensor Plastic Boot Installation](#)



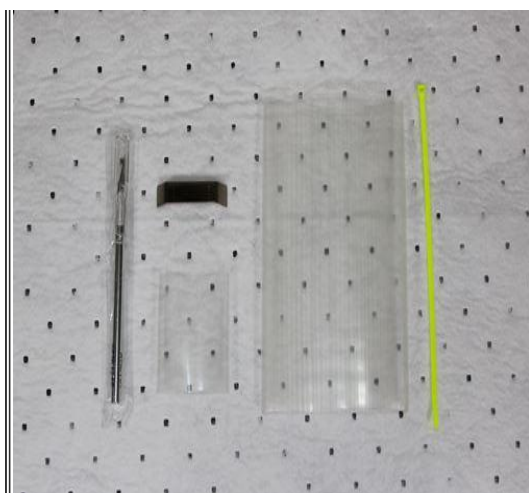


Figure 2: Heat Shrink Kit



Figure 3: Plastic Boot Kit

NOTE:

Instructions are subject to revision, if printing discard after single use.

WARRANTY INFORMATION**Warranty Claim Coding:**

Group:	18050 - SCR Aftertreatment
Noun:	124 - Sensor Assembly Def Tank

OTHER RESOURCES[Master Service Information Site](#)[UQS - Urea Quality Sensor Heat Shrink Boot Installation](#)[UQS - Urea Quality Sensor Plastic Boot Installation](#)

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Feedback Information

Viewed: 22117

Helpful: 74

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Staff ID	Client ID	Comments	Created Date
	DYYBGM7	You received the following feedback From: dybgbm7 - Brandon McKaba Email Address: bmckaba@carolinainternational.com Job Classification: SE008, Service Technician Dealer: CAROLINA INTL TRUCKS Feedback: Step 4, DEF quality in Insite. you can not perform this. Insite has no parameter to monitor.	11/17/2017 6:25:33 AM
	DY62513	You received the following feedback From: dy62513 - Matt Wallace Email Address: mawwwwallace07@yahoo.com Job Classification: SE008, Service Technician Dealer: BYERS INTL TRKS, INC Feedback: After working on several of these issues it is my opinion that steps 3,4, and 5 are backwards. Checking DEF concentration with insite or maxxforce software should be done first, and if it is not within 3% of the refractometer reading then proceed to checking for air bubbles. Then if no air bubbles air present replace the sensor, but if air is present then check the defthv for proper routing. i know someone on a higher pay scale comes up with the diag steps but to me it would save time if you did it this way. It just makes sense if the sensor is reading incorrectly and there is no air present the is no reason to check the defthv for a stuck open situation. Thanks	11/18/2017 7:48:35 AM