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Availability: ISIS, FleetSIS, NotSIR

Major System: EXHAUST

Current Language: English

Other Languages: NONE

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Coding Information

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Title: SCR Vehicles Setting DEF Quality Faults due to Crossed DEF Tank Coolant Lines or Inverted DEFTHV

Applies To: All SCR Vehicles

CHANGE LOG

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

06/20/2019 - Updated DEF Heater Valve Part Numbers
 04/23/2018- Repaired broken link, added Export to viewing countries
 04/03/2018 - Author updated for feedback purposes
 10/04/2017 - Added Figure 4 DEF Supply line graphic to step 3
 09/27/2017 - Modified DEF line routing diagram on EPA 2017 graphic
 08/08/2017 - Added A26 graphic
 06/19/2017 - Added step 3.

DESCRIPTION

This document will guide the user through determining the cause of fault code 3363-16 (FC1713) on vehicles equipped with SCR. BEFORE replacing any components, verify the DEF tank coolant lines are properly routed and the Diesel Exhaust Fluid Tank Heater Valve (DEFTHV) is facing the proper direction according to the procedure below.

NOTE: The example used below is a typical DEF tank coolant line routing for a ProStar with an ISX. Other models may vary, but same failure mode may still exist.

SYMPTOM(s)

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

	Cummins Fault Code	Description	Light
SPN 3363 FMI 16	1713	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level	Amber Warning Light
SPN 3364 FMI 10	4277	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change	Amber Warning Light
SPN 3364 FMI 18	3867	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderately Severe Level	Amber Warning Light
SPN 3516 FMI 10	N/A	DEF Quality Sensor abnormal rate of change	Amber Warning Light
SPN 3516 FMI 18	N/A	DEF Quality Low - Moderately Severe level	Amber Warning Light
SPN 4094 FMI 31	N/A	NOx limits exceeded due to Insufficient Diesel Exhaust Fluid Quality: Condition Exists	Amber Warning Light
SPN 3364 FMI 4	1685	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Amber Warning Light
SPN 3516 FMI 4	N/A	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Amber Warning Light

Customer Observations or Concerns:

Amber Warning Light (▽)

SPECIAL TOOL(s) / SOFTWARE

NOT APPLICABLE

SERVICE PARTS INFORMATION

Kit Description	Vehicle Family	Part Number	Quantity Required	Ordering Instructions
ISX/ISB Diesel Exhaust Fluid Tank Heater Valve (DEFTHV)	ALL	3856343C2	1	Source Locally
N13 Diesel Exhaust Fluid Tank Heater Valve (DEFTHV)	ALL	3998612C2	1	Source Locally
N9/10 Diesel Exhaust Fluid Tank Heater Valve (DEFTHV)	WorkStar	4029783C2	1	Source Locally
N9/10 Diesel Exhaust Fluid Tank Heater Valve (DEFTHV)	DuraStar	3856343C2	1	Source Locally
EPA 2017 Diesel Exhaust Fluid Tank Heater Valve (DEFTHV)	ALL	4064184C1	1	Source Locally

DIAGNOSTIC STEP(s)

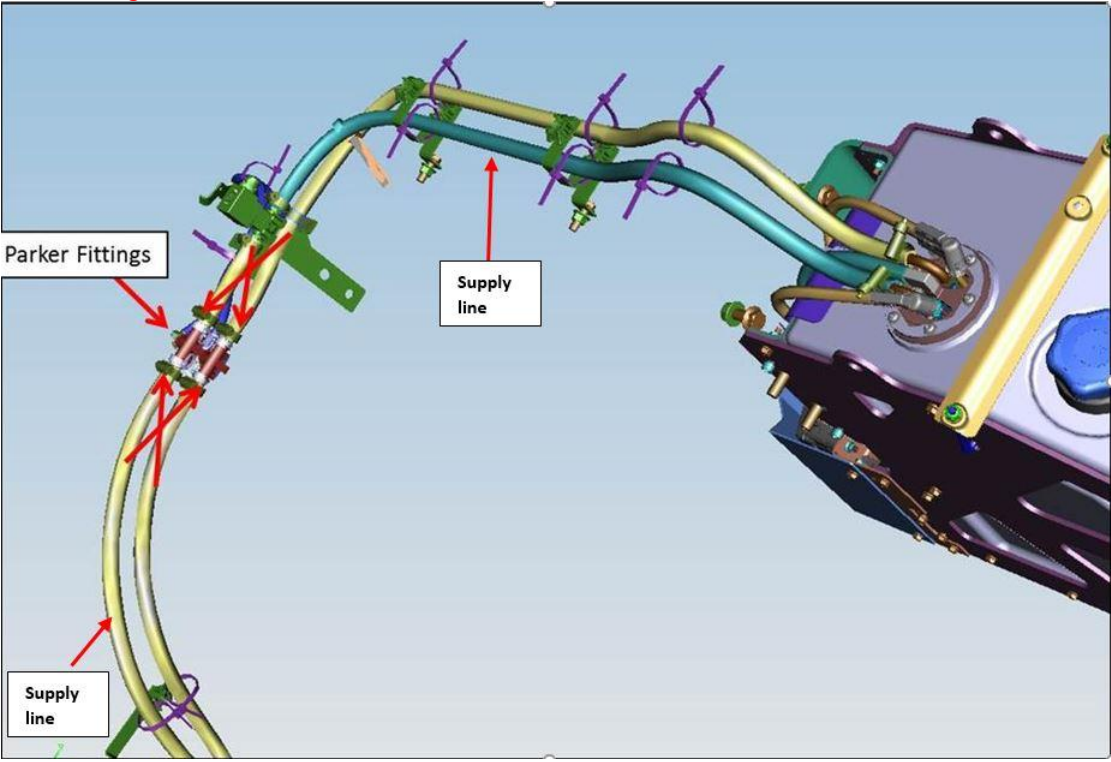
Step	Action	Decision
1	<p>DIAGNOSTIC: Locate supply line. The DEFTHV should be installed on the DEF tank supply line. Verify the lines are not crossed as shown in Figure 1 or Figure 2 below.</p> <p>Use this diagram for EPA 2013 vehicles:</p>  <p>Figure 1: DEF Tank Coolant Lines possibly Crossed at the Parker Fittings for EPA 2013 vehicles</p> <p>Use this diagram for EPA 2017 vehicles:</p>	<p>Yes: Go to S</p> <p>No: Remove coolant lines fittings and/c properly Ret (FC1713)</p> <p>NOTE: Hosi used to clar coolant doe</p>



Figure 2: DEF Tank Coolant Line orientation for EPA 2017 vehicles

Are the DEF tank coolant lines routed properly (not crossed)?

Step	Action	Decision
2	<p>DIAGNOSTIC: Verify the DEFTHV is facing the correct direction on the vehicle. Locate DEFTHV part number (In red box), see Figure 2 below. Correct direction of supply coolant flow is towards the DEF tank.</p> <p>NOTE: Electrical connectors of valve may face multiple directions.</p> <p>Figure 3: DEFTHV Direction</p> <p>Is the DEFTHV facing the proper direction on the vehicle?</p>	<p>Yes: Go to S If diagnosing than 3363-11 associated F</p> <p>No: Reorien direction, cle</p>

Step	Action	Decision

Coolant cannot flow backwards through the tank. Disconnect the DEF tank coolant supply line from the DEF sending unit (see supply line location in Figure 4 below).

Yes: Replac

3

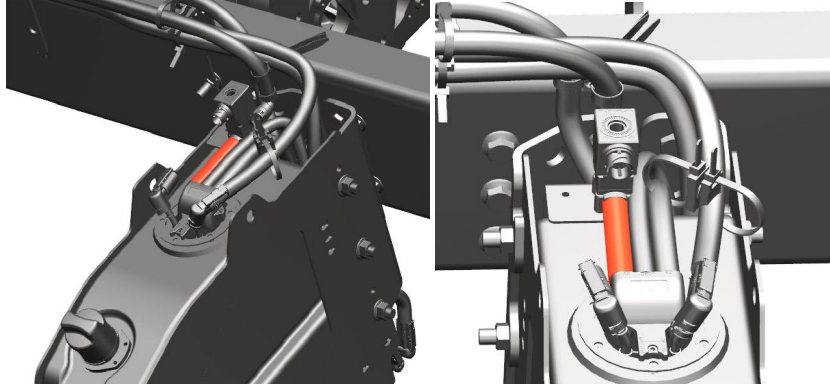


Figure 4: DEF Sending Unit Line

No: Retest f
other fault cc
see associat

With the line disconnected, only residual coolant should exit the line. Allow 2 minutes for residual coolant to exit. If a constant, steady stream is passing through the valve, the valve is stuck open.

After 2 minutes with the coolant line disconnected, is there a constant, steady stream of coolant exiting the supply line?

REPAIR STEP(s)

For removal and installation of DEF heater components, see *Diesel Exhaust Fluid (DEF) System* section in the appropriate *Exhaust and Aftertreatment System with DPF and SCR Service Manual*. Links to these manuals are given in the resources section below.

WARRANTY INFORMATION

Warranty Claim Coding:

For inverted or failed DEFTHV:

Group:	18160 - Coolant Lines / Hoses
Noun:	793 - Tank DEF, Coolant Flow Valve

For engine to coolant valve *supply* line:

Group:	18160 - Coolant Lines / Hoses
Noun:	750 - Hose, Engine to Coolant Valve Supply Line

For coolant valve to tank *supply* line:

Group:	18160 - Coolant Lines / Hoses
Noun:	751 - Hose, Coolant Valve to Tank

Note: If problem is found, put iKnow article in claim comments section.

OTHER RESOURCES

[Master Service Information Site](#)

[Service Repair Time Home Page](#)

[Bus Exhaust Aftertreatment System with DPF and SCR Service Manual](#)

[Star and 9000 Series Exhaust Aftertreatment System with DPF and SCR Service Manual](#)

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