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Less Info

Title: LT Daycab - HVAC Performance Concerns

Applies To: LT daycabs only

CHANGE LOG

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

010/22/2017 - Initial Article Release

DESCRIPTION

This document will guide the user through identifying a customer's concern regarding HVAC performance under certain driving conditions.

SYMPTOM(s)

Vent temps rise due to extended compressor off times.

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

For the scope of this article, fault codes do not apply and it is assumed that all other repairs have already been completed and you are trying to verify the customer's true complaint.

Customer Observations or Concerns:

The HVAC quits working at somepoint durring the day. They are concerned that the vent temps do not remain stable durring the day and there is a signifigant fluctuation in vent temps noticed.

SPECIAL TOOL(s) / SOFTWARE

Diamond Logic Builder

SERVICE PARTS INFORMATION

Not applicable

DIAGNOSTIC STEP(s)

WARNING! To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING! To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

WARNING! To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

NOTE:

Under certain situations such as high idle (>1000 RPMS) and the engine fan cycles on and off aggressivly and there isn't any good air flow across the condenser, overall performance of the HVAC system on the daycab may not be as optimal as the customer would like. This concern can also be duplicated when the customer is sitting in heavy traffic. Always perform complete performance diagnostics on the HVAC system and make sure that your customer's fresh air filter and recirc filter are not clogged with debris.

If the body controller disengages the compressor clutch because of the high or low pressure switch, the clutch will remain off for 14 seconds after the switches close again. - Potential cause for increased cab temps. No resolution at this time.

Durring a request to disengage because of the evap temp, evap core temp will below 42.8 F and remain off until the evap reaches 48F. If the evap temp rises in under 8 seconds, the clutch will remain off until 8 seconds have passed.

Raising Vent temps from extended compressor off times are cause by:

Low Pressure Switch Cycling, you described this pretty well, fan kicks on and pulls down quickly causing compressor to cycle off LP switch 2-3 times.
Compressor staying off until Max Initial Head Pressure is below 250 psig.

Step	Action	Decision
# 1	**DIAGNOSTIC:** Any active diagnostic faults pertaining to the a/c system?	**Yes**. Refer to appropriate service manual, diagnose and repair the faults.
		No. Proceed to next step.

Step	Action	Decision
# 2	**DIAGNOSTIC:** Run performance tests on the a/c system per the LT service manual. Any issue discovered?	**Yes:** Repair and retest. **No:** Refer to graph section below for explanations.

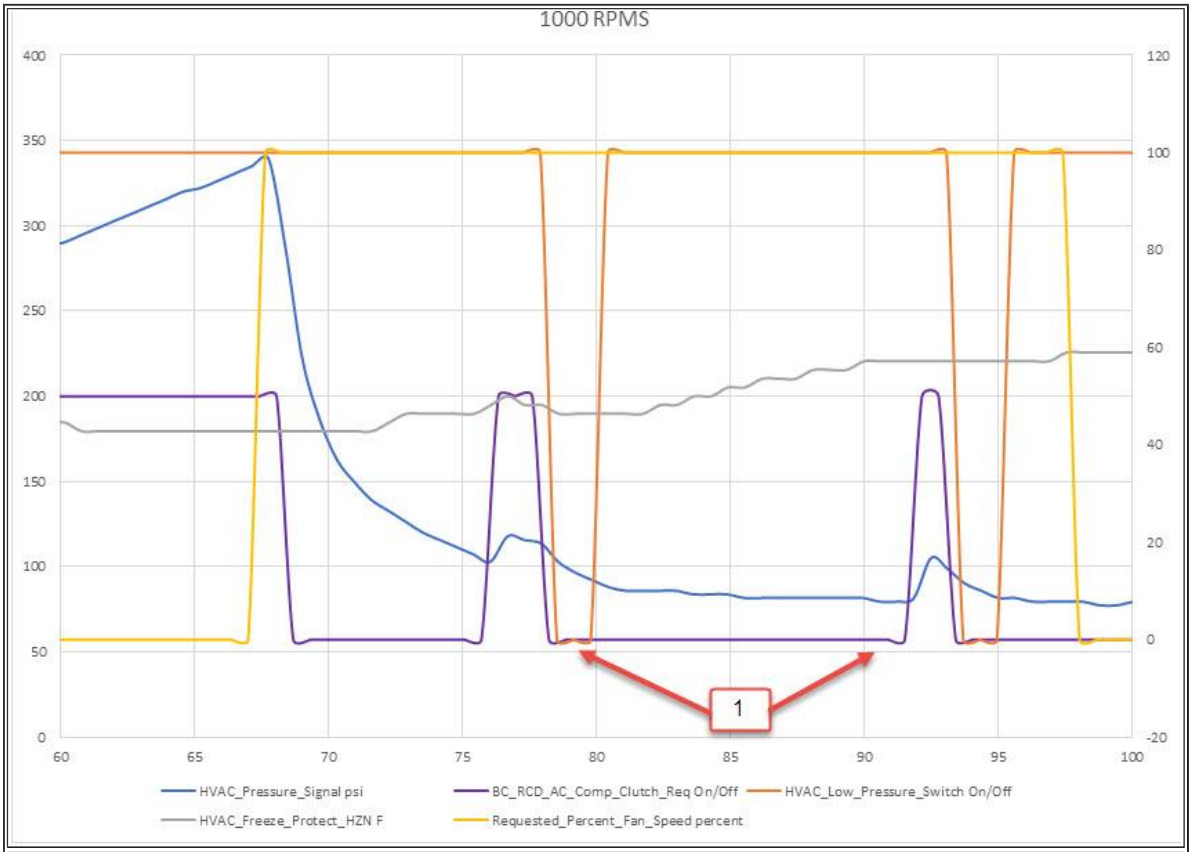

Figure #: 1 Low Pressure Switch cutout

Item 1: Low pressure switch went from closed to open.

In this example the fan engaged (yellow line) and due to the sudden change in air flow across the condenser the low side actually dropped so rapidly that the low pressure switch (orange line) opened up and requested the clutch to disengage (Purple line). As the event started, evap temperatures (grey line) began to rise from the upper 40's to the

low 60's. As the fan stayed engaged the low pressure dropped out multiple times and the evap temp continued to rise as a result. Once the system got stable air flow across the condenser the system began to perform much better.

NOTE:

For graphing purposes; in the actual raw data a "1" was replaced with either a "50" or a "100" so it could be viewed easier in the graph.

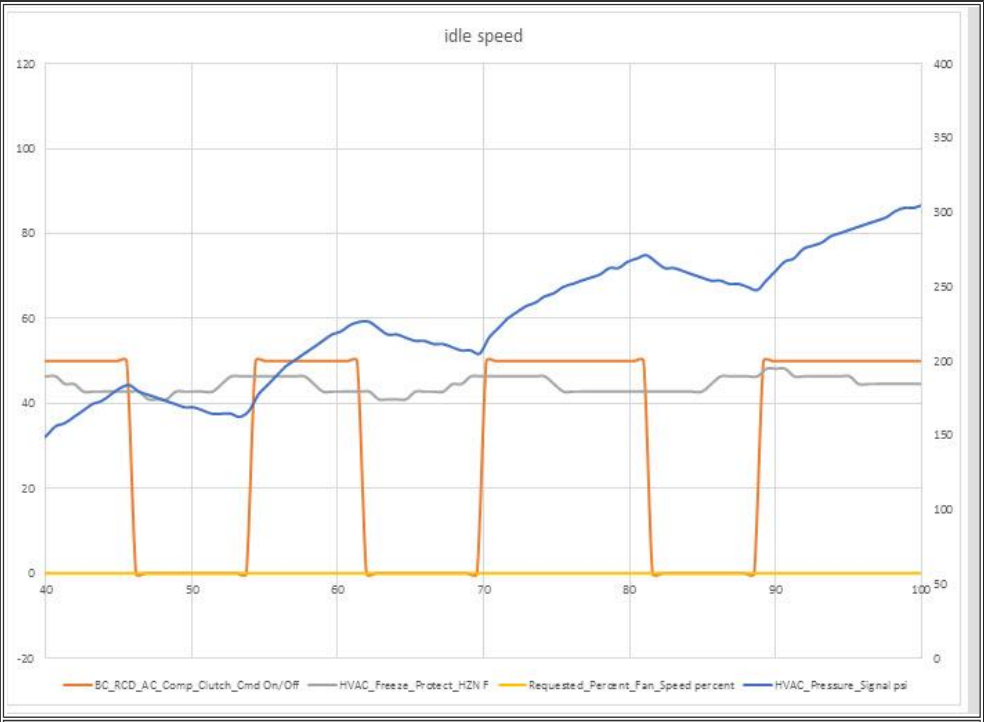

Figure #:2 Freeze Probe Requesting the Clutch to Disengage

In this example the evap dropped below 42.8F and the clutch did not reengage until the evap temp reached 48 degrees. The cycle repeats each time the evap temp drops. This is a pretty good snapshot as the evap temp remains right in between the low and high setpoints.

REPAIR STEP(s)

If the customer is not satisfied with how their system operates, especially in heavy traffic:

1. Advise customer to engage the fan manually while sitting in traffic. The constant air flow will help keep the evap temps down.
   a. Consider adding a manual switch if the unit is not already equipped with one.

2. Make sure the driver is using the HVAC system in "max" mode as much as possible.

3. If the customer does not accept that resolution create a case file with tech services and they can possibly adjust some parameters to get a little better performance.
   a. When opening a tech service case file, an A/C performance snapshot **must** be attached when submitting the case file.

4. Engineering is activley investigating this concern and there will be more updates in the future.

INSTALLATION PROCEDURE:

WARRANTY INFORMATION

Warranty Claim Coding:
Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s):
Refer to the SRT Manual for Repair Times

OTHER RESOURCES

HVAC Resource Center

Body Controller Resource Center

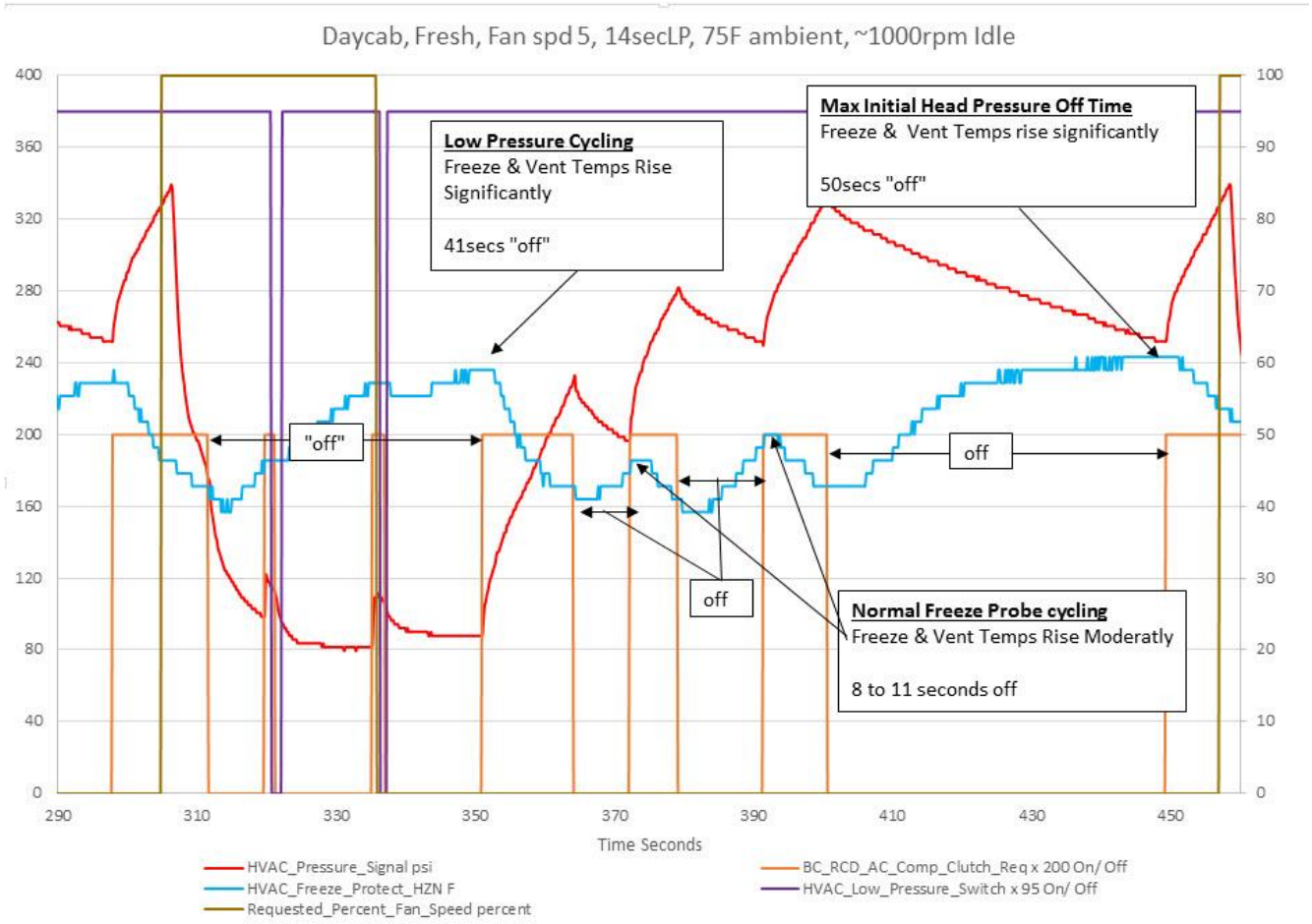

Figure #3 - Additional Example

you can see in this example due to the extended off time for the compressor to recover vent temps began to rise. This would have caused a noticable difference in temp at the vents.

Hide Details

Feedback Information

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Not Helpful: 1

No Feedback Found