Countries:	CANADA, UNITED STATES	**Document ID**:	IK1900207
Availability:	ISIS, FleetISIS, Body Builder	**Revision**:	3
Major System:	ACCESSORIES	**Created**:	5/2/2013
Current Language:	English	**Last Modified**:	10/29/2013
Other Languages:	NONE	**Author**:	Matthew Boyer
Viewed:	6211		

Less Info

Hide Details Coding Information

Copy Link	Copy Relative Link	Bookmark	Add to Favorites	Print	Provide Feedback	Helpful	Not Helpful
		View My Bookmarks				32	4

Title: 2010 and Later ProStar and LoneStar HVAC Diagnostic Information

Applies To: 2010 and Later ProStar and LoneStar Trucks

DESCRIPTION

This iKNow describes the unique service procedures and signals that apply to the post 2010 Bergstrom air conditioning system installed in ProStar and LoneStar vehicles.

HVAC DOOR MOTOR

If any of the following components are serviced, the HVAC door system needs to be calibrated:

- Blend air control, mode air control, or temperature air control door actuators or doors
- Any wiring that runs from the above listed HVAC door actuators to the HVAC control head
- Any wiring to the HVAC control head
- The HVAC control head

For resetting the system, the connector to the HVAC control head needs to be removed for a minimum of 15 seconds with the key in the on position. Alternatively, the battery power from the truck can be removed to accomplish the same thing, although this may interfere with driver programmable settings.

HVAC CONTROL HEAD

The HVAC control head performs 3 tasks. It provides the A/C request to the body controller from the user, controls the operation of all the door actuators in the HVAC system based on knob position, and sends a signal to the body controller for the status of

the HVAC door actuators. The body controller does not control any of the HVAC door positions. If the HVAC control head is replaced with an incompatible part number, any of the following situations can result:

- Door actuators working opposite of driver selected positions
- Air conditioning inoperative
- HVAC door actuators inoperative
- Door actuator fault codes in the Body Controller

As a result, the correct part number should be verified using the parts catalog, and cross checked to the old HVAC control head.

A/C REFRIGERANT AND OIL

The HVAC system contains 40 OZ (2.5 LBS) for daycab models, and 48 OZ(3.0 LBS) for sleeper cab models of R-134a refrigerant. The refrigerant should be purchased from Navistar parts to ensure that a quality brand name refrigerant is used. Please see IK1900165 for more details.

300 cc(10.14 OZ) of PAG 100 oil (PN ZGGR725028) is the lubricating oil installed in all post 2010 ProStar and LoneStar trucks A/C compressors.

Mineral oil (PN ZGGR6912) should be used as lubricating oil for assembly on all o-rings and fittings.

AIR CONDITIONING COMPRESSOR OPERATION

The following interlocks must be meet for the A/C compressor to transition states from off to on:

- Ignition and Accessory voltage at body controller (Checkmarks at A1 and A16 at 1602 of B/C)
- Air conditioning request from HVAC control head to B/C (Checkmark at 1600_A2)
- Engine running signal (Engine_Running)
- Engine speed above 300 RPM (Engine_Speed)
- Low pressure input is grounded (Checkmark at 1600_B5)
- Freeze Probe Thermistor input is ≥ 38° F (HVAC_Freeze_Protect_Raw above 2.4976 volts 1600_B13)
- A/C high side pressure is greater that 35 psi, but less then 218 psi (AC_High_Side_PSI) - Pressures may change due to programmable parameters. See table below.
- No HVAC fault codes active

HVAC FILTER MAINTENANCE

Remove the fresh air filter(s) once each season and check for dirt, lint, etc. Replace if

necessary. Vehicles operating in unusually dusty conditions may require inspecting and replacing the air filter(s) more often. ProStar and LoneStar models have 3 air filters. 2 are recirculation filters that are located on the inside of the cab. Those filters may be carefully power-washed with a soap solution and reused. Be sure to wash and rinse both sides and be sure to keep the spray head at least six inches away from the filter to prevent damage. The fresh air filter is located on the outside of the cab.

HVAC FLUSHING PROCEDURE

A new air conditioning service tool has been developed to flush the air conditioning system after a catastrophic A/C compressor failure. The tool is an essential dealer tool for all medium duty and heavy duty dealers.

Tool Information

Flushing Instructions

DLB SESSION

Please download and import the attached DLB session for diagnosing electrical issues

ProStar_LoneStar_AC

FAULT CODES

Signal	B/C Pin	SPN	FMI	Description	Action
BC_RCD_Pressure_Raw_Signal	1600-B12	2609	16	HVAC High Pressure Protection	HVAC Pressure Sensor Reading Above 480 PSI
Switched_5V_Sense_Raw_Signal	1602-E6	1079	1	5 volt sensor supply below normal	Short Circuit From 1602_E6 to 6201_C
RCD_HVAC_Ctrl_Head_Diag_Signal	1600-A3	3985	9	HVAC Control Head Circuit Failed To Communicate With BC	Open Circuit From 1200_A9 to 1600_A2
RCD_HVAC_Ctrl_Head_Diag_Signal	1600-A3	1552	2	HVAC Control Head Temperature Mix DM1	HVAC Temperature Door Stuck, Defective Door Actuator, or Open/ Shorted Circuit 1200_B11 to Temp Actuator Pin A, or 1200_B12 to

					Temp Actuator Pin F
RCD_HVAC_Ctrl_Head_Diag_Signal	1600-A3	3981	2	HVAC Control Head Mode Fault DM1	HVAC Mode Door Stuck, Defective Door Actuator, or Open/Shorted Circuit 1200_B9 to Mode Actuator A, or 1200_B10 to Mode Actuator Pin F
RCD_HVAC_Ctrl_Head_Diag_Signal	1600-A3	3984	2	HVAC Control Head Air Inlet DM1	HVAC Air Inlet Door Stuck, Defective Door Actuator, or Open/Shorted Circuit 1200_B1 to 4202_A, or 1200_B2 to 4202_F
J1939BB_Rcv_61217_058_033_Timer	N/A	2058	9	Rear HVAC Data Link Communication Failure	Body Builder Datalink Connecting Body Controller circuit failure, Rear HVAC Controller Not Powered Up or Defective. Voltage on Both Wires Should Equal 5 volts. Voltage on Each Wire Should Not Be Equal.
J1939BB_Rcv_61217_058_033_Timer	N/A	2058	14	Rear HVAC Data Link Communication Failure	Body Builder Datalink Connecting Body Controller circuit failure, Rear HVAC Controller Not Powered Up or Defective. Voltage on Both Wires Should Equal 5 volts. Voltage on Each Wire Should Not Be Equal.
Rear_HVAC_Blower_UP	N/A	3982	2	HVAC Rear Blower Speed Control Switch Error	Faulty Switch Actuator or Micro switch for HVAC Rear Blower Speed Control Switch

Rear_HVAC_Temp_UP	N/A	3983	2	Rear HVAC Temperature Control Switch Error	Faulty Switch Actuator or Micro switch for Rear HVAC Temperature Control Switch
HVAC Control Head Multiple Motor Faults	N/A	520465	2	HVAC Control Head Multiple Motor Faults	HVAC Motor in Wrong Position or Jammed (HVAC Control Head Multiple Motor fault DM1)

PROGRAMMABLE PARAMETERS

Below is the list of programmable parameters that control the operation of the HVAC system. These are how the parameters are set from the factory for proper operation.

Parameter ID	Parameter	Value	Units	Description
2562	HVAC_Compressor_HP_OFF_Time	9	Seconds	When AC Head pressure is above 400 psi, the compressor is cycled OFF for 9 seconds and ON for 1 second. This parameter is the OFF time
2561	HVAC_Compressor_HP_ON_Time	1	Seconds	During high pressure mode the AC Compressor is cycled OFF and ON. This parameter sets how long the compressor is ON
2563	HVAC_Emergency_Shutdown_Pressure	420	PSI	Maximum AC Head Pressure allowed before emergency compressor shutdown. There is a relief value that will release the coolant into the atmosphere if the head pressure exceeds 500 - 530 psi. This value should be somewhat less than that (arbitrarily chose 480 psi) Value will be typically the same as parameter 'HVAC_Pressure_Over_Limit'
2551	HVAC_Freeze_Probe_High_Limit	505	A2Dcounts	High limit for Freeze Probe to allow Compressor to operate
2542	HVAC_Freeze_Probe_Low_Limit	511	A2Dcounts	Low limit for Freeze Probe to allow Compressor to operate
2576	HVAC_Leave_HiPressureMode_Timeout	15	Seconds	When leaving High Pressure Mode, this is the maximum amount of time we can wait for the pressure to drop below 300 psi before going to Normal Operation (Compressor ON) Mode
2548	HVAC_Max_Initial_Pressure	218	PSI	Maximum head pressure allowable when turning the compressor ON. (Transition from Compressor OFF to Normal Operation Mode)

2546	HVAC_Pressure_High_Limit	350	PSI	Maximum pressure where HVAC Compressor can operate
2556	HVAC_Pressure_Low_Limit	35	PSI	Low limit allowed to turn On Compressor

A/C HIGH PRESSURE TRANSDUCER ELECTRICAL FAULT/ SIGNAL TABLE

This table outlines what the A/C pressure transducer signal reads if there is a electrical fault in the system. The pressure readings may vary slightly.

Signal	B/C Pin	Description	DLB Reading
AC_High_Side_Pressure	1600-B12	Open circuit for air conditioning high side pressure sensor wiring on any wire, failed sensor, or short to ground on the signal wire	6525.8 PSI. No fault code is generated by this condition
AC_High_Side_Pressure	1600-B12	Short circuit from air conditioning high side pressure sensor feed(5 volts) to the sensor signal wire	530 PSI. Fault code 2609 16 HVAC Pressure Protection is set. Fault clears at key cycle
AC_High_Side_Pressure	1600-B12	Short to power(12v) to air conditioning high side pressure sensor feed wire	1080 PSI. Fault code 2609 16 HVAC Pressure Protection is set. Fault clears at key cycle

ADDITIONAL RESOURCES

IK0800092 The First Check to make when Troubleshooting any Body Controller or ESC Issue

S16047 HEAT VENTILATION AIR CONDITIONING (HVAC) FOR 2010 ProStar and LoneStar Models (Revision 1)

S08344 ProStar® Chassis Built June 14, 2010 and After - ELECTRICAL CIRCUIT DIAGRAMS

S08371 Electrical Circuit Diagrams – LoneStar® MaxxForce® 13/ ProStar+® MaxxForce® 15L Built January 2012 and After (EPA 2010 Emissions) Revision 1

0000002122 ProStar®+ with Cummins® ISX15 Engine Electrical Circuit Diagrams

TSI1900001 **Air Conditioning (A/C) condenser replacement versus flushing**

IK1900156 **A/C HVAC Service Resource Center**

IK1900193 **Post 2010 A/C Pressure Transducer Diagnostics**

Hide Details

Feedback Information

Viewed: 6210
Helpful: 32
Not Helpful: 4

No Feedback Found