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ProStar™ and LoneStar™ HVAC system compressor and discharge hose failure diagnostics and repair procedures

Applies To:

2008 through pre-2010 emissions engine, equipped ProStar™ and LoneStar™ sleeper model vehicles

DESCRIPTION

This document covers two specific HVAC failures requiring special diagnostics and repair processes.

1. Ruptured and leaking A/C compressor discharge hoses, ("high side", compressor to condenser hose):

These ruptures and leaks have commonly occurred at the fitting closest to the compressor. The rupture causes damage to the A/C compressor from the sudden loss of refrigerant and lubricant, therefore replacement of the compressor and complete system flushing is necessary.

**2. A/C Compressor Failures :**

This can include, but is not limited to seizure, clutch failures (caused by internal seizure), audible metallic noise and/or poor compressor performance.

FAILURE DETAILS

The primary cause of these two failures is high head pressure, which can be caused by:

- System overcharge, either refrigerant or oil
- Plugged condenser / cooling package (limited air flow across condenser)
- Improper flushing or purging from prior repair
- Inoperative fan drive
- Missing or damaged fan shroud
- Running blower speeds on low speed for extended periods during high ambient temperatures.
- Kinked, rubbing or misrouted hoses
- Inadequate air flow through the evaporator (may be caused by dirty/plugged evaporator core or cabin filters, both cab and sleeper-replace if necessary)
- Thermister failures

REPAIR PROCEDURE:

NOTE:

UPDATE THE BODY CONTROLLER TO THE LATEST VERSION.

Changes were implemented to data version 137 and above.

NOTE:

Always follow proper flushing, purging and evacuation procedures.

Follow recommended service procedures found in Master Service Manual [S16039 -HEAT VENTILATION AIR CONDITIONING \(HVAC\) SYSTEM - ProStar and LoneStar](#)

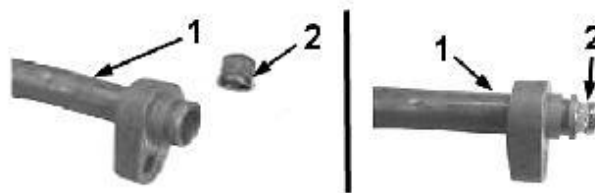
Compressor Replacement Procedure:

1. Evacuate the HVAC system.
2. Remove compressor.
3. Remove receiver/dryer.
4. Flush and purge HVAC system. See [IK1900145](#)- "A/C Flushing Tools, Techniques, and Flushing Solvent"

NOTE: This procedure is necessary to remove metallic debris and residual oil from the system. Whether the HVAC system has experienced metallic contamination or not, this procedure should be performed. This will remove all residual oil from the system, so that an accurate oil level can be attained.

5. Do not flush the condenser, replace it. See [TSI1900001](#) "Air Conditioning (A/C) condenser replacement versus flushing" for additional details.

6. Install a HVAC Screen Kit 2607294C91 in the suction hose per [IK1900170](#)



7. Since the entire A/C system has been flushed and purged, the new Sanden compressor does not

need to be drained (oil). It already contains 300cc of the proper PAG 100 oil. Do not add any additional oil or dye to the the system. Compressor oil calculations are required whenever a system has not been completely flushed.

8. Connect to the vehicle with Diamond Logic Builder. With the ignition key ON, enter "Diagnostic Mode" by selecting the "Diagnostic" icon. Under the "Features" tab select the HVAC feature that is checked and select "Make Session". Monitor the "AC_Evaporator_Inlet_Temp" and the "AC_Evaporator_Outlet_Temp" If the temperatures do not read ambient temperature or are not within 5 degrees of each other replace **both** thermistors. Consider replacing thermistors if you are not certain that they were shrink-tubing sealed when initially installed. A check of warranty history will assist you.

9. Just before evacuating replace the receiver/dryer. Note: The new dryer contains a UV dye wafer inside.

10. Evacuate and recharge the system as outlined in the HVAC Master Service manual (1000-2000 microns of vacuum must be achieved). See hose filter note below. While the system is evacuating and charging complete the installation of all attaching hardware, component mounting, hose mounting, etc.

11. Run the unit for several minutes to stabilize the pressures, and test the HVAC performance.

12. If satisfactory perform a road test monitoring HVAC vent outlet temperature.

13. Compare the readings to the HVAC performance charts found in the Master Service manual. If satisfactory, no further action is required.

14. Open a Tech Service case file indicating a failed compressor, or failed hose in the details. Document all diagnostics and all repairs performed in the case file notes and request closure if no further assistance is required.

NOTE: If any metallic debris or residue is noted, indicated by metal shavings or black oily residue, after evacuation and disassembly, both TXVs (thermal expansion valves) and the condenser should be replaced. If the compressor discharge hose was ruptured or leaking, replace it also. Install these parts after the flushing and purging.

IF YOU RECOVER REFRIGERANT FROM A TRUCK AND THEN DETERMINE THAT THE A/C SYSTEM NEEDS FLUSHING, THE 2 HOSE FILTERS ON THE INTERNATIONAL A/C MACHINE (RTI) NEED TO BE CLEANED OR REPLACED AND BEFORE RECHARGING THE HVAC SYSTEM (Replacement filters listed below)



See- [S16039 -HEAT VENTILATION AIR CONDITIONING \(HVAC\) SYSTEM - ProStar and LoneStar](#)

PARTS INFORMATION

Part numbers below are for reference only. All part numbers should be verified using the Parts Catalog

Part Number	Description
2607294C91	Suction hose screen kit (mandatory install)
3670134C1	Filter, drier
3660853C2	TXV Exp valve-Cab HVAC unit
3599589C1	TXV Exp valve-Sleeper HVAC unit
3612296C92	Compr. To cond. Hose-Cummins application
3626413C94	Compr. To cond. Hose- MaxxForce 11 and 13 IBB application
3808548C1	Compressor- MaxxForce 11 and 13 IBB Application
3628699C1	Compressor-Cummins Application
ZGGR725028	Oil, Castrol A/C, PAG 100 (8 oz.)
3543727C1	RING,O SEAL 10.78 X 2.62 (TAN)
3543728C1	RING,O SEAL 15.54 X 2.62
3543881C1	SEAL,C-PLATE 1/2"
3543882C1	SEAL,C-PLATE 3/4"
3622764C3	Thermistor
3660862C1	O-ring, Front TXV
3660864C1	O-ring, Front TXV

3660865C1	O-ring, Rear TXV
1693968C1	O-ring, Rear TXV
1693970C1	O-ring, Rear TXV
3824715C1	O-ring, Rear TXV
3824716C1	O-ring, Front TXV

MaxxPower, "No-Idle" (Bergstrom) APU equipped vehicles

3688242C1	TXV Exp valve-Sleeper HVAC unit
3685792C1	O-ring, Rear TXV (one required)

Other Parts

ZGG15704	Flush Solvent Based 1 Gallon (preferred)
ZGG16061	Flush Solvent Based 1 Quart
ZGGR725031	Flush Solvent Based 1 Quart
ZGGR725022	Flush Non Flammable Solvent 1 Gallon
ZGGR725032	Flush Non Flammable Solvent 1 Quart
IRT13608161800	RTI Hose Filter Screens
ZGGR725030	Mineral oil for O-rings

Customer A/C modified operating guide for balance A/C System operation

To prevent high head pressures that can cause hose and compressor failures instruct the operator to follow these modified A/C operating guidelines. This will help to provide better balance in the HVAC system operation.

1. When running the Cab A/C set the Sleeper blower control to a minimum of low speed.
2. When running the Sleeper A/C set the Cab blower control to a minimum of low speed

OTHER RESOURCES

[S16039 -HEAT VENTILATION AIR CONDITIONING \(HVAC\) SYSTEM - ProStar and LoneStar](#)

[S16019- AIR CONDITIONING BASIC THEORY, SYSTEM DIAGNOSIS AND SERVICE \(with R-134a Refrigerant System\)](#)

[SFN Number: 08-10RB 125401NAV Vehicle Air Conditioning Oil and Dye Injection Equipment](#)

[RTI RHS 980C-NAV A/C Recovery Recycling and Charging Machine Operators Manual](#)

[IK1900024 Repairing AC Thermistor Connectors and Terminals](#)

[IK1900014 AC System Refrigerant and Oil Capacity Quick Reference Chart](#)

[IK0900025 - MaxxForce 11 and 13 Fan Drive Diagnostics](#)

[IK1900123 Evaporator Temps are Normal, But the Vent Temp is High.](#)

[IK1900145 A/C Flushing Tools and Solvents](#)

[TSI 11-16-01](#)

[A/C Support \(Tools & Equipment Page\)](#)

[HVAC Resource Center](#)

TOWN HALL Q&A

Q- "If we dont' have nitrogen, what is the next best thing to use?"

A- **CAUTION** – When purging the system, or components of the system, use only dry nitrogen. The introduction of compressed air into the A/C system may cause contamination of the system. (Taken from S16039 Master Service manual)

Q- "Is denatured alcohol acceptable to flush the A/C system, or should we use only Navistar approved A/C flush?"

A- When flushing components, use only flushing agents approved for R-134a charged air conditioning systems

Q- "How much oil should we put back into a new compressor when we do not flush the system, because you do not know history of past repairs? It could have too much or too little."

A- If a component only is replace, the oil level in the system will need to be adjusted accordingly. Refer to the Oil Fill Guideline section of the HVAC Master Service manual found on ISIS. If the system oil quantity is in question, or can not be accurately measured, it's recommended the entire system be flushed, the receiver/dryer be replaced, and the compressor fill guidelines be followed. This will accurately install the required amount of oil into the system.

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DYYRDM1	Rod Minor	PA003, Parts Counter Person	DODGE CITY INTL INC (670133 - 000)	what is wrong when dash displays "HVAC High Temp"	3/24/2011 9:09:02 AM
DYYWAC1	William Cosby	SE003, Service Manager	RUSH TRUCK CENTERS OF UT (799064 - 000)	Is there any way you can identify by date what has been added going forward? I reread the entire thing every time you make a change and I would really only like to read the parts that have been added. Thanks	9/1/2010 11:43:04 AM
DYYJG9	Joseph Goodwin	SE008, Service Technician	ATTERBERY TRK SALES INC (625202 - 000)	thank you for adding the additional o-ring part#s on this iknow	8/20/2010 1:34:31 PM
DYYWEC7	Willis Cunningham	SE008, Service Technician	GOODPASTURE MOTOR CO (696260 - 000)	it is not clear about the flush an purge on comp. replacement, an can be read either way an leads some to think you flush an purge only if comp. is damaged.	8/19/2010 3:01:54 PM
DYYCXJ8	Clayton Jenkins	SE008, Service Technician	RUSH TRUCK CENTERS OF GA (610030 - 002)	very helpful	8/16/2010 8:36:49 PM
DYYMRB7	Mike Babbitt	SE003, Service Manager	MCCANDLESS INTL TRUCKS (754010 - 000)	What about Sanden compressors sold over the counter to the Penske's,Ryder's and used on the 4,7 and 9000 series trucks?	8/9/2010 6:10:43 PM