HINO TRUCKS

A Toyota Group Company

SERVICE BULLETIN

SB-21-027 S-SERIES AIR CONDITIONING DIAGNOSIS CHECK SHEET

GROUP: 0-GENERAL
BULLETIN NO: SB-21-027
DATE: 2-22-2022
REF: SB16-D-001A

Subject: 2022MY-Current S-Series trucks equipped with air conditioning.

Note: This technical service bulletin is provided as technical information and is not authorization for a warrantable repair.

INFORMATION:

An investigation of the air conditioning compressors returned as warranty parts has shown that compressors are being unnecessarily replaced. The common complaints of noise and/or poor cooling are most likely a result of ***low refrigerant levels***. In order to help technicians diagnose A/C system problems, Hino trucks is providing the diagnostic procedure below to help differentiate between a low refrigerant condition and a mechanical issue. A check sheet is also provided at the end of this bulletin to assist you in keeping track of your test procedure results.

This check sheet must be attached to the repair order for any compressor replacement made under warranty.

It is important to understand that a properly performing A/C system will only provide outlet temperatures up to about 20°F (6.7°C) lower than ambient temperatures.

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SERVICE PROCEDURE:

Step	Description	Yes	No
Step 1	Visually inspect the following. • Check the climate controls for proper operation. Be sure all vents and blend doors activate correctly. • Inspect the inside and outside HVAC air filters for debris and obstructions • Check that the A/C drive belt is tensioned correctly. • Check the condenser fins for debris and obstructions. • Check for obvious damage to the A/C system (broken hoses, bent or damaged pipes, road damage to the condenser, etc.) • Attempt to turn the compressor inner hub by hand. If it will not turn by hand the compressor may be seized. Was a problem found and corrected?	Go to Step 2	Go to Step 2
Step 2	Perform the following A/C performance test. • Keep engine at 1500 RPMs • Select max A/C and recirculation • Keep the windows and doors shut • Place a thermometer in the center A/C duct • Put the A/C blower fan on maximum • Run 5 minutes and check the duct outlet temperature Check the vent temperature and compare it to the current ambient temperature. Is the vent temperature 20°F (6.7°C) lower than the ambient temperature?	System Normal	Go to Step 3
Step 3	Check that the magnetic clutch engages when the system is turned on. • If the clutch does not engage there may be an electrical problem. Check the wiring to confirm power is supplied to the clutch coil when the A/C button is pushed ON. • A low or empty refrigerant charge may also prevent the magnetic clutch from engaging. Was a problem found and corrected?	Go to Step 2	Go to Step 4

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Step 4	Remove the front panel and radiator grill in order to access the A/C service fittings. Connect a set of A/C gauges, start the engine, turn the A/C ON and check the pressures at IDLE and at 1500 RPM. Review the pressure readings of the vehicle against the pressure chart provided below. Check the "possible causes" based on the pressure readings of the vehicle. Was a possible cause low refrigerant?	Go to Step 5	Go to Step 6
Step 5	It is normal in a system with a low refrigerant charge for the compressor to make some noise. This is because oil is not being provided to the compressor by refrigerant. Once the refrigerant level is brought up to normal, the noise should decrease or cease. If a low refrigerant charge is determined to be the source of the complaint, make sure to inspect the entire A/C system for leaks. Look for oil stains and/or missing A/C caps and use an electronic refrigerant leak detector to determine the source of a leak. Was a problem found and corrected?	Go to Step 2	Go to Step 6
Step 6	Diagnose the possible cause. If the compressor is determined to be inoperable and will be covered under warranty, complete the Air Conditioning System Operation Check Sheet and attached it to the repair order. It will need to be returned with the compressor if the part is collected. Was a problem found and corrected?	Go to Step 2	Go to Step 1

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Pressure Chart
At Ambient Temperatures of 86 - 95°F (30 - 35°C)

CONDITION	LOW SIDE PRESSURE	HIGH SIDE PRESSURE	POSSIBLE CAUSE
Normal	18 – 35 psi	199 – 242 psi	----
Low Pressure on Both Sides	< 18 psi	< 190 psi	Low Refrigerant Charge
High Pressure on Both Sides	> 40 psi	> 250 psi	Overcharged system Condenser Fan inoperable Plugged or restricted Condenser
High Pressure on the High Side and Low Pressure or a Vacuum on the Low Side	< 10 psi	> 250 psi	Stuck closed/clogged expansion valve
Equal Pressure on Both Sides	50 – 100 psi	50 – 100 psi	Damaged Compressor Stuck open Expansion Valve
Rapidly Fluctuating High Side	18 – 35 psi	Rapidly Fluctuating	Damaged Compressor

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AIR CONDITIONING SYSTEM OPERATION CHECK SHEET

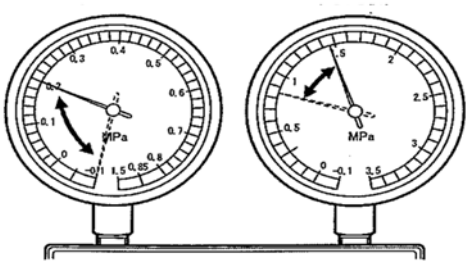
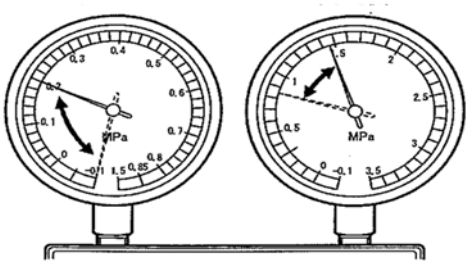
Complete and attach to the repair order

Date	Dealer Code	Last 9 of VIN	Year & Model	Mileage

	VISUAL INSPECTION				
Step 1	A/C Belt OK ☐ NG ☐	Condenser OK ☐ NG ☐	Hoses & Pipes OK ☐ NG ☐	HVAC Filters OK ☐ NG ☐	Compressor Spin by Hand OK ☐ NG ☐

	A/C PERFORMANCE TEST	
Step 2	Ambient Temperature	A/C Duct Outlet Temperature

	MAGNETIC CLUTCH OPERATION
Step 3	Engaging ☐ Not Engaging ☐ Power at Clutch Coil OK ☐ NG ☐

	REFRIGERANT PRESSURES			
Step 4	Idle	Low pressure / High pressure 	Low Side	High Side
	1500 RPM	Low pressure / High pressure 	Low Side	High Side

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