



Technical Service Bulletin

87 Air conditioning does not cool; B10AE21

87 23 52 2063575/3 August 18, 2023. Supersedes Technical Service Bulletin Group 87 number 22-28 dated July 12, 2022, for reasons listed below.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
Q5, Q5 e quattro, and SQ5	2020 – 2024	All	Not Applicable
Q5 Sportback, and SQ5 Sportback	2021 – 2024		
A4, A4 allroad, S4, A5, A5 Cabriolet, A5 Sportback, S5, S5 Cabriolet, S5 Sportback, RS 5, RS 5 Sportback, Q7, and SQ7	2022 – 2024		

Condition

REVISION HISTORY		
Revision	Date	Purpose
3	-	Revised header (Add Model Year 2024) Revised <i>Service</i> (Add relay and fuse carrier suggestion)
2	07/12/2022	Revised header (Add Model Years, Models) Revised <i>Technical Background</i> (More specific description of condition) Revised <i>Service</i> (Additional diagnostic steps and method, revised documentation requirement, revised part submission requirement)
1	06/16/2021	Initial publication

Customer states:

- The air conditioning does not blow cold enough, takes a long period of time to cool, or does not cool at all.

Technical Background



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The refrigerant circuit head pressures are checked, found to be insufficient and after recovering the refrigerant volume the diagnostic finding is determined that the refrigerant volume in the circuit is very low or empty. DTC B10AE21 (High-pressure sensor Lower limit not reached) may be stored in the Heating/Air Conditioning Electronics control module, E87 (address word 0008). Leak identification dye is added to the refrigerant circuit along with a full charge of the refrigerant and the vehicle is test driven. Correct cabin cooling is restored. A visual inspection of the refrigerant circuit is conducted and no obvious leak can be seen under UV lighting. When using an electronic refrigerant leak detector at the central vents and condensate drain it alerts that the evaporator core may be the source of the leak.



Figure 1. HVAC evaporator and housing.

Production Solution

Several improvements have been implemented in the evaporator core resulting in a more robust unit resistant to leaking refrigerant.

Service

The vast majority of the evaporator cores replaced in the models for which this TSB appears have been returned, laboratory tested, and found to not have any leak whatsoever. This evidence confirms that while replacement of the evaporator core appears to solve the refrigerant leak, the root cause of the leak is not the evaporator core itself but likely a compromised connection at any of the expansion valve connections to/from the evaporator or at any other refrigerant connection, hose or component in the refrigerant circuit. If the refrigerant leak is in the cowl or engine compartment area for example, the free refrigerant migrates through the fresh air intake and into the evaporator housing. This generates a false positive evaporator core leak reading from the cabin air outlet vents when using a halogen leak detector. The evaporator core is incorrectly diagnosed as the sole source of the leak in these cases.



Note:

It has been determined that a halogen leak detector is not the most reliable method for precisely locating a refrigerant leak, particularly in an evaporator core where direct access to the core is not possible. It is strongly recommended that the use of calibration gas using the tools and procedure outlined in TSB 2064077 *87 Air conditioning refrigerant circuit diagnostic method using calibration gas* be used as the diagnostic method where a suspected evaporator leak is concerned.



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If, after checking for refrigerant leaks at each component and connection in the refrigerant circuit and systematically excluded as a cause, your diagnostic conclusion is that the evaporator core is the only refrigerant leak in the entire circuit apply a high level of scrutiny to the connection junction at the evaporator core /expansion valve/refrigerant lines for a possibly overlooked leak in these areas (figures 2 - 3).

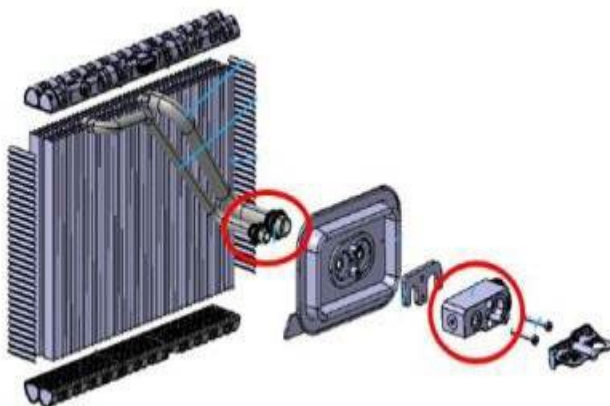


Figure 2. Refrigerant connections in need of closer observation.



Figure 3. Refrigerant connections to the expansion valve.



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If a refrigerant leak is detected from the evaporator core/expansion and valve/refrigerant line junction, take a short video showing the diagnostic confirmation of a leak in this area and post it to Doc-IT. Then, replace the expansion valve and all four O-rings without replacing the evaporator (figure 4). Re-test to ensure that the refrigerant leak is solved without the replacement of the evaporator core. Photograph any damage to the expansion valve ports, damaged o-rings, or refrigerant line connections and post these to Doc-IT as well.



Figure 4. Leak at expansion valve connection evidenced by residue from the contrast agent.

Should your diagnostic process conclude, however, that any and all leak possibilities from the expansion valve connections (between the evaporator and expansion valve, between the expansion valve and high and low refrigerant lines) or at any other refrigerant connection, hose or component in the refrigerant circuit have been excluded as a cause and replacement of the evaporator core is the **only** logical course of action that remains then **replace the evaporator housing with evaporator core assembly along with the expansion valve, retaining plate and bolts (included in small parts kit 4M0 898 037 A) and all four o-ring seals.**

Do not replace **only** the evaporator housing with core assembly. Do not loosen or remove the expansion valve from the evaporator core connections in any way. Do not disassemble the evaporator housing assembly in any way. Ensure that the evaporator housing assembly, retaining plate and bolts and expansion valve are carefully packaged



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securely as a single unit. This entire assembly will be requested for submission and laboratory analysis.



Note:

Should the evaporator for the Q5 be confirmed leaking by way of this diagnostic procedure and replacement of the evaporator is performed it is necessary to loosen and refasten the Relay and Fuse Carrier 3 -SR3- (shown in figure 5, position 1) in the course of the repair. During reassembly of the vehicle it is critically important that this relay and fuse carrier in particular be reinstalled in its correct original position. Failure to reinstall the Relay and Fuse Carrier 3 precisely will result in water intrusion and subsequent component damage.

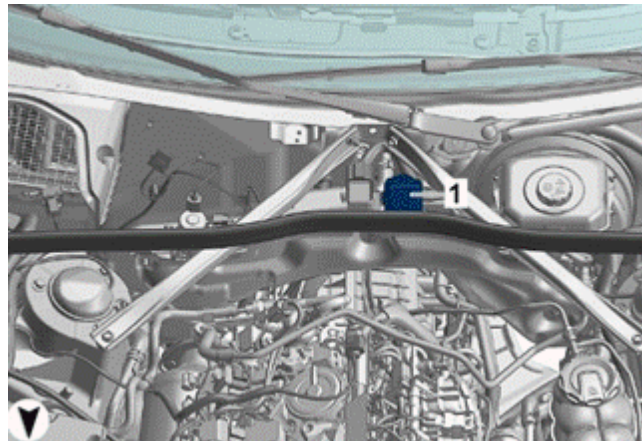


Figure 5. Relay and fuse carrier 3 –SR3-



Note:

The complete evaporator housing assembly, expansion valve, bolts and o-ring seals as described in this TSB received in the WPRC incomplete, disassembled or determined to include components confirmed to not be the original components from the case (verified through component serial numbers and production dates) as specified in this TSB will be returned to the dealer and the claim debited.

Warranty

This TSB is informational only and not applicable to any Audi Warranty.

Required Parts and Tools

Tool Number	Tool Description
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Various	 Electronic Refrigerant Leak Detector
NITROKITG	 Automotive A/C Nitrogen Leak Test Kit
VAS 6160/VAS 6150	VAS tester with the current version of ODIS (Windows 10)

Additional Information

The following Technical Service Bulletin will be necessary to complete this procedure:

- TSB 2064077 87 *Air conditioning refrigerant circuit diagnostic method using calibration gas*

All part and service references provided in this TSB (2063575) are subject to change and/or removal. Always check with your Parts Department and/or ETKA for the latest information and parts bulletins. Please check the Repair Manual for fasteners, bolts, nuts, and screws that require replacement during the repair.

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