

Technical Service Bulletin



87 Air conditioning does not cool and / or compressor is noisy

87 15 66 2038023/5 July 29, 2015. Supersedes Technical Service Bulletin Group 87 number 15-65 dated July 2, 2015 for reasons listed below.

| Model(s) | Year | VIN Range | Vehicle-Specific Equipment |
|------------------|------|-----------------|----------------------------|
| A3, A3 Cabriolet | 2015 | 000001 - 106816 | Not Applicable |

Condition

| REVISION HISTORY | | |
|------------------|-----------|---|
| Revision | Date | Purpose |
| 5 | - | Revised <i>Warranty</i> (Added additional necessary SRTs) |
| 4 | 7/2/2015 | Revised <i>Technical Background</i> (Added image) Revised <i>Production Solution</i> (Added images) Revised <i>Service</i> (Completely revised) Revised <i>Warranty</i> (Change to necessary SRTs) Revised <i>Required Parts and Tools</i> (Added part) |
| 3 | 4/23/2015 | Revised <i>Required Parts and Tools</i> (Added required seal set) |

- One or more of the following conditions are exhibited:
 - The air conditioning does not cool, or the cooling performance is very weak.
 - The air conditioning system cools, but the compressor is noisy. The noise is characterized as a grinding or groaning noise.
 - Either symptom may be intermittent.
- No DTCs are stored.

Technical Background

The condition may be caused by a faulty N280 valve (Figure 1). The internal components of the valve can be obstructed and incapable of full function. This loss of refrigerant regulation from N280 can cause noise from the A/C compressor and/or affect the HVAC cooling.



Figure 1. N280 Refrigerant Regulating Valve.

Production Solution

Denso A/C compressors are currently being installed in production, but installation of Sanden A/C compressors will resume in the future (Figure 2 and Figure 3).

An improved N280 valve for the Sanden A/C compressor is now available as a replacement part (5Q0 260 839 A), and replacement of the entire A/C compressor is not necessary in every case.



Figure 2. Denso compressor identification tag.



Figure 3. Sanden compressor identification tag.

Service

Confirm the cause:

Since either symptom may be intermittent, the diagnostic process can affect the reproducibility of the condition. Begin the diagnosis by isolating the cause before performing the basic checks:

1. Connect both the refrigerant service station (Figure 4) and the diagnostic tester to the vehicle.



Figure 4. Robinair A/C Service Unit.

2. For cases of noise:

When diagnosing cases of noise, use chassis ears or a technician's stethoscope to make sure that the root cause of the noise is from the air conditioning compressor. The noise can change or may be absent depending on the setting on the HVAC control unit. In many cases, the noise is more pronounced with the system switched off.

For cases of low or no cooling performance:

Rule out a refrigerant circuit leak as the root cause. Evacuate the refrigerant circuit to determine the refrigerant volume. The refrigerant volume will likely be in specification. Should the refrigerant volume be too low, investigate a potential refrigerant leak in the circuit. It is not likely that the refrigerant level will be too high because if it is, a DTC will be stored. If no system leak is determined, recharge the circuit with the specified amount of refrigerant before proceeding.

Perform the test plan:

1. With the engine at idle, switch the climate control unit to full cold and full fan.
2. Using the diagnostic tester, go to Guided Functions.
3. Monitor the measuring value for the air conditioner compressor regulating valve N280 signal (Figure 5).

The actual and specified values will be plausible and will show a normal regulating range of current for cooling request (0.400 A – 0.680 A).

However, there will be equalized pressure readings on the high and low sides of the circuit (no pressure generation from the compressor).

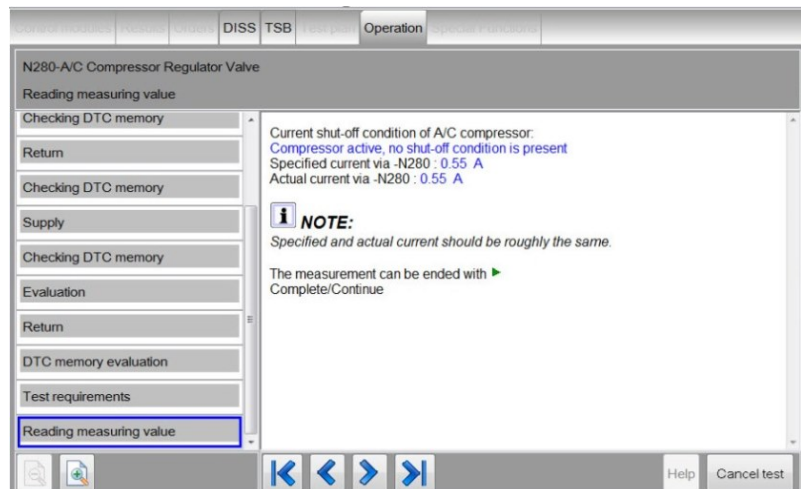


Figure 5. Checking N280 signal value Measuring Value Block.

- Continuing in Guided Functions, select the test plan for “Check A/C Compressor” (Figure 6).

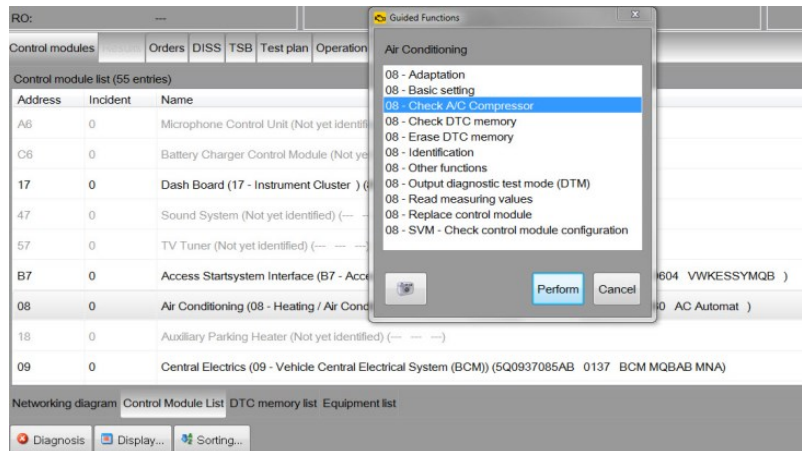


Figure 6. Selecting test plan for “Check A/C Compressor”.

- Shut off the engine. Connect the breakout harness VAS 5256 (Figure 7) between the N280 valve and its connector.



Figure 7. VAS 5256 breakout harness.

- Next, the signal wave form will be checked (Figure 8). The square wave signal should be between 75% and 100%.

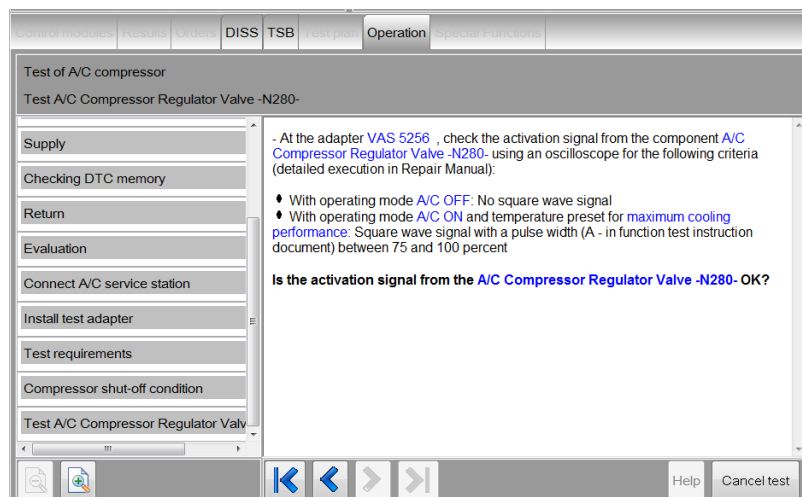


Figure 8. Checking the N280 signal wave form.

- If the wave form signal is good, the mechanical integrity of the N280 valve will be inspected next (Figure 9).

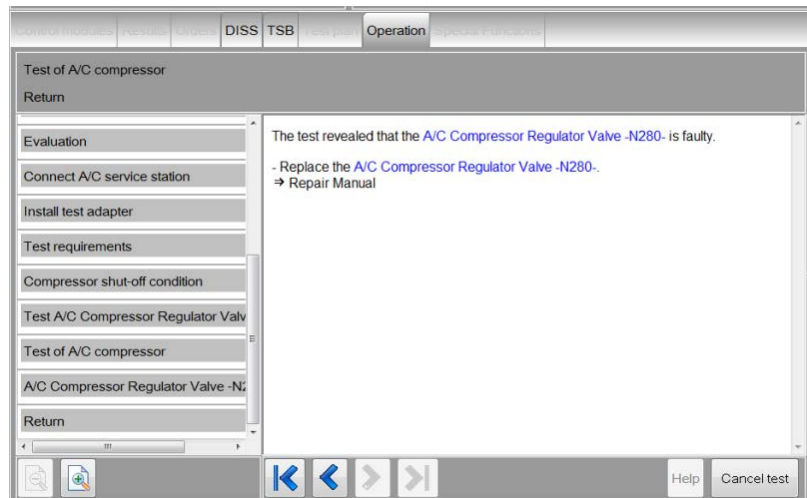


Figure 9. Checking for N280 valve contamination.

- Recover the refrigerant from the system. Remove the N280 valve using the procedure in the Elsa Repair Manual.

Warning: With the refrigerant circuit charged the N280 valve is under pressure. Be certain that the refrigerant circuit is completely discharged before removing the N280 valve.

- Assess the condition of the N280 valve bore and the valve filter screen (Figure 10). If severe contamination is found in either area, the entire A/C compressor must be replaced.



Figure 10. Corrosion in the N280 valve bore.

10. Should severe contamination be found at the valve filter screen (Figure 11) and A/C compressor replacement becomes necessary, ensure that the refrigerant circuit is flushed in the course of repair.



Figure 11: Severe contamination at the N280 valve filter screen.

11. If no contamination is found, the test plan will direct to replace the N280 regulating valve (Figure 12). Replace the valve using the instructions in the Elsa Repair Manual.

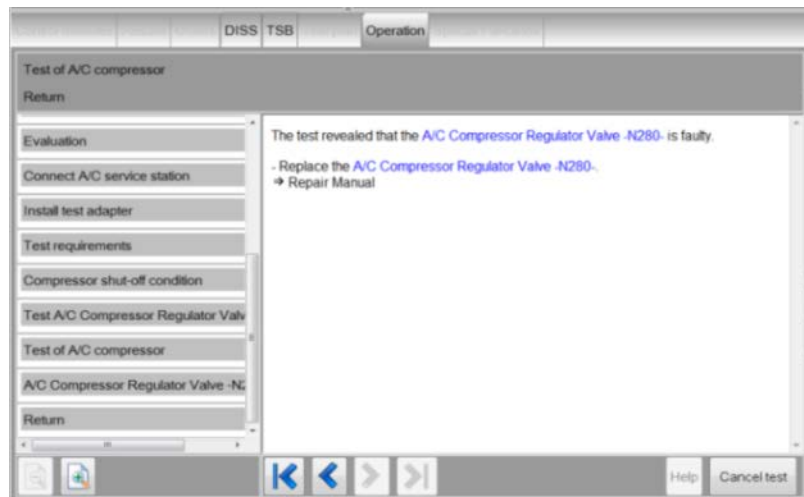


Figure 12: Test plan confirming that the N280 is faulty.

Replace the air conditioning compressor, if necessary:

1. As mentioned in the *Technical Background*, the originally-installed compressor on the MY 2015 A3 is manufactured by Sanden (Figure 13). The replacement compressor is manufactured by Denso (Figure 14).

When replacing the original Sanden compressor with a Denso compressor, be aware that while the refrigerant volume is the same regardless of the compressor installed, the PAG oil type and volume is not. Sanden and Denso compressors have specific PAG oils that must be used.



Figure 13: Sanden compressor identification tag.



Figure 14: Denso compressor identification tag.

2. The original PAG oil that will be in the refrigerant circuit must be flushed out completely with the air conditioning service station with flushing equipment, as specified in the Elsa Repair Manual.
 - The flushing procedure can be found in the Elsa Repair Manual at: *Heating, Ventilation & Air Conditioning>>Refrigerant R134a Servicing>>87 Air Conditioning>>Refrigerant Circuit>>Refrigerant Circuit, Cleaning (Flushing), with Refrigerant R134a*. The procedure is also described in TSB 2018162.
 - The correct adapters for the 2015 A3 can be found in the Elsa Repair Manual at: *Heating, Ventilation & Air Conditioning>>Refrigerant R134a Servicing>>87 Air Conditioning>>Refrigerant Circuit>> Refrigerant Circuit, Cleaning (Flushing), with Refrigerant R134a>>Adapter for Assembling Flushing Circuit*.
3. The replacement compressor will come with the specified type of PAG oil for the compressor (Figure 15). The amount of PAG oil supplied with the replacement compressor may not be the exact amount required to replenish the refrigerant circuit. Drain and measure the PAG oil in the replacement compressor to determine the required amount. If the amount needs to be added, do so using the correct type of PAG oil specified in ETKA. Refer to Elsa for the correct oil capacity for the compressor being installed.



Figure 15: Compressor manufacturer specific PAG oils.

Technical Service Bulletin



Tip: Air conditioning compressors that are replaced due to the conditions described will be requested for submission and analysis. Any needlessly-replaced A/C compressor will be returned to the dealer and the warranty claim debited.

Warranty

| | | | |
|--------------------------|---|-----------|--------|
| Claim Type: | Use applicable claim type. If vehicle is outside any warranty, this Technical Service Bulletin is informational only. | | |
| Service Number: | 8734 | | |
| Damage Code: | 0010 | | |
| Labor Operations: | (If N280 regulating valve replacement is necessary) | | |
| | A3, A3 Cabriolet 1.8 and 2.0 Gasoline Engines: | | |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall | 8734 9999 | 50 TU |
| | S3: | | |
| | Cooling fan housing remove and reinstall | 1920 1915 | 70 TU |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall | 8734 9999 | 50 TU |
| | A3 2.0 TDI: | | |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall | 8734 9999 | 50 TU |
| | -or- (if A/C compressor is necessary) | | |
| | A3, A3 Cabriolet 1.8 and 2.0 Gasoline Engines: | | |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall (debris on filter screen found) | 8734 9999 | 50 TU |
| | A/C compressor remove+reinstall | 8734 1915 | 110 TU |
| | Front bumper cover remove+reinstall | 6329 1900 | 90 TU |



Audi

Technical Service Bulletin

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|-------------------------|--|-----------|---|
| | Receiver drier replace | 8755 5565 | 70 TU |
| | Expansion valve remove+reinstall | 8770 1900 | 40 TU |
| | Air conditioner clean | 8701 2950 | 110 TU |
| | S3: | | |
| | Cooling fan housing remove and reinstall | 1920 1915 | 70 TU |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall (debris on filter screen found) | 8734 9999 | 50 TU |
| | A/C compressor remove+reinstall | 8734 1915 | 110 TU |
| | Front bumper cover remove+reinstall | 6329 1900 | 90 TU |
| | Receiver drier replace | 8755 5565 | 70 TU |
| | Expansion valve remove+reinstall | 8770 1900 | 40 TU |
| | Air conditioner clean | 8701 2950 | 110 TU |
| | A3 2.0 TDI: | | |
| | Refrigerant drain+fill | 8703 1700 | 50 TU |
| | N280 refrigerant regulating valve remove and reinstall (debris on filter screen found) | 8734 9999 | 50 TU |
| | A/C compressor remove+reinstall | 8734 1917 | 90 TU |
| | Front bumper cover remove+reinstall | 6329 1900 | 90 TU |
| | Receiver drier replace | 8755 5567 | 70 TU |
| | Expansion valve remove+reinstall | 8770 1900 | 40 TU |
| | Air conditioner clean | 8701 2950 | 110 TU |
| Diagnostic Time: | GFF | 0150 0000 | Time stated on diagnostic protocol (Max 100 TU) |
| | Road test prior to service procedure | 0121 0002 | 10 TU |
| | Road test after service procedure | 0121 0004 | 10 TU |
| | Technical diagnosis at dealer's discretion | | |



Technical Service Bulletin



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| | (Refer to Section 2.2.1.2 and Audi Warranty Online for DADP allowance details) |
| Claim Comment: | As per TSB #2038023/5 |



All warranty claims submitted for payment must be in accordance with the *Audi Warranty Policies and Procedures Manual*. Claims are subject to review or audit by Audi Warranty.

Required Parts and Tools

| Part Number | Part Description | Quantity |
|-------------|--|----------|
| ROB134APF |  <p>Robinair A/C Service Unit</p> | 1 |
| VAS 6337/1A |  <p>Air Conditioning Flush Tool</p> | 1 |



Technical Service Bulletin



| | | |
|-------------|---|---|
| VAS 6338/3 |  <p>Refrigerant Circuit Adapter 3</p> | 1 |
| VAS 6338/12 |  <p>Refrigerant Circuit Adapter 12</p> | 1 |
| VAS 6338/38 |  <p>Refrigerant Circuit Adapter 38</p> | 1 |
| 5Q0260839A |  | 1 |

Technical Service Bulletin



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|---------------------------------------|--|---|-----|
| | N280 Refrigerant Regulating Valve | | |
| -or- (if A/C compressor is necessary) | | | |
| G 052300A2 |  | | 0.2 |
| | Oil for refrigerant compressor - Denso | | |
| G 052154A2 |  | | 0.2 |
| | Oil for refrigerant compressor - Sanden | | |
| 5Q0820803F | Air conditioner compressor | | 1 |
| 4D0260749B | Seal ring | | 1 |
| 4E0260749A | Seal ring | | 1 |
| 8E0260749C | Seal ring | | 1 |
| 4E0260749B | Seal ring | | 1 |
| 5Q0898850A | Set of round seals | | 1 |
| 5Q0298403A | Drier insert with mounting parts | 1 | |
| -or- (depending on condenser version) | | | |
| 5Q0298403B | Drier insert with mounting parts | 1 | |



Additional Information

All parts and service references provided in this TSB (2038023) are subject to change and/or removal. Always check with your Parts Department and service manuals for the latest information.