



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Condition

Applicable Vehicles					
Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Golf/GTI	2015-2017	All	All	AU_FM000001	AU_HM009117
Golf SportWagen	2015-2017	All	All	AU_FM500001	AU_HM506396

Revision Table			
Instance Number	Published Date	Version Number	Reason For Update
2038368/15	5/12/20	87-18-02	Tool number added to table. Removal of Behr Flush Kit VAS 6337/1A
2038368/14	1/25/18	V871802	To revise notes on service direction and WISE process.
2038368/1	9/25/14	V871410	Original publication.

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.

Note:

This technical bulletin **MUST** be read in its entirety. The AC performance test must be completed before performing this procedure to eliminate any other fault conditions. It is mandatory for all compressor reimbursement. See TB 2043704 for information on performing the AC performance test. All documentation, pictures and printouts must be uploaded to WISE. See warranty section for more information on uploading information in WISE.



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Technical Background

The condition may be caused by a faulty A/C compressor regulator valve N280 (Sanden). 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 air conditioning compressor and/or affect the HVAC cooling (Figure 1).



Figure 1 N280 Refrigerant Regulating Valve 5Q0260839A

 **Note:**

This bulletin applies to vehicle built with Sanden 5Q0820803C, 5Q0820803E and 5Q0820803G compressors only. The replacement N280 valve is not compatible with other Sanden compressors. The N280 valve is not compatible with any Denso compressors.

If a Denso compressor is installed on the vehicle this bulletin does not apply. Further diagnosis is required.

Production Solution

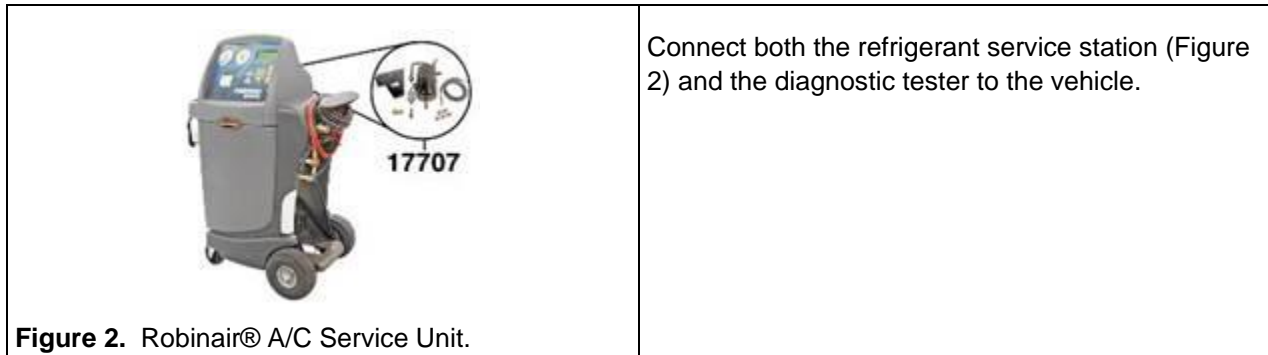
Improved **-N280-** valve for the Sanden A/C compressor CW34/16.

**87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy**

Release date: 5/12/20

Service

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.

**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.

Cases of low or no cooling performance:**Note:**

All faults and the Guided Fault Finding AC performance test must be completed before performing this procedure to eliminate any other fault conditions. Submit GFF log with performance test through GFF paperless for reimbursement. **See TB 2043704 for information on performing the AC performance test.**

Rule out a refrigerant circuit leak as the root cause. If the GFF performance test determines low refrigerant this bulletin does not apply. The refrigerant leak should be resolved before continuing diagnosis. Should the refrigerant volume be too low, investigate a potential refrigerant leak in the circuit.

Perform the following diagnostic steps:

With the engine at idle, switch the climate control unit to full cold and full fan.

Turn recirculation mode on and close all windows.

Using the diagnostic tester, go to Guided Functions.



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20



Monitor the measuring value for the air conditioner compressor regulating valve N280 signal (Figure 3).

The actual and specified values will be plausible and will show a normal regulating range of current for cooling request (0.400 A – 0.820 A).

Figure 3. Checking N280 signal value Measuring Value Block.



Figure 4. Equalized pressure condition. No pressure generated from compressor.

After verifying the compressor should be on and operating check the gauge readings on the Robinair® service station. If the gauges show no pressure generation from the compressor continue to the next step.

(Example of no pressure generation is when the pressure readings on the high and low sides are equalized in Figure 4).

Note: If the gauge readings are showing normal compressor operation per the Elsa Repair Manual, this bulletin does not apply and further diagnosis is required.



Figure 5a. Example of torque limiter over load protection

Check that the compressor torque limiter has not been activated (Figure 5b).

Note: If the torque limiter has been released the N280 regulating valve is not at fault. The compressor needs to be replaced.



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

activated.



Figure 5b. Example of torque limiter over load protection still intact.



Shut off the engine. Connect the breakout harness VAS 5256 (Figure 6) between the N280 valve and its connector.

Figure 6. VAS 5256 breakout harness.



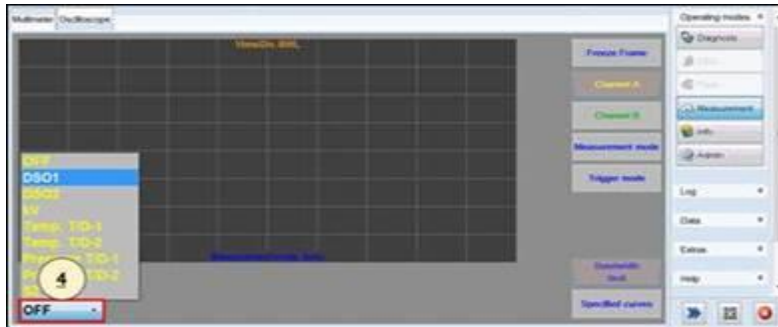
Go to Operating Mode "Measurements" to check the N280 signal from the control module.
Select Measurements.
Select oscilloscope.
Change time division to 2ms/Div (Figure 7).



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

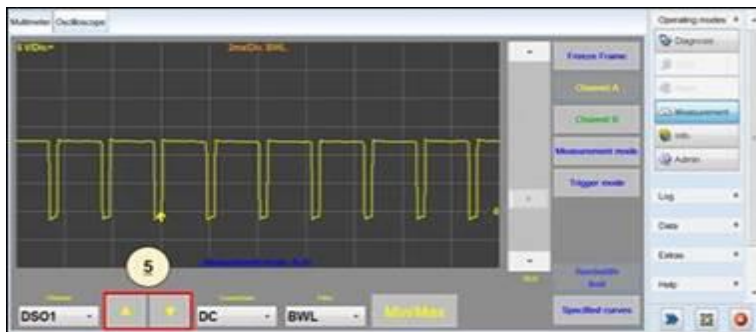
Release date: 5/12/20

Figure 7. Select Measurements from operating mode menu”.



Select the correct DSO channel according the test leads hooked to the vehicle (Figure 8).

Figure 8. Setting up DSO channel”.



Change the voltage to 5VDiv.

Check the signal wave form (Figure 9). The square wave signal should be between 75% and 100%.


If the wave form signal is good, the mechanical integrity of the N280 valve needs to be inspected.

GO TO: Removing/Installing the N280 Regulating valve.

Figure 9. Checking the N280 signal wave form.

Removing/Installing the N280 Regulating valve.

Recover the refrigerant from the system. Remove the N280 valve using the following procedure.

 **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.

Remove one of the A/C lines from the compressor to assure the pressure in the compressor is the same as ambient pressure.

87-18-02 - Air Conditioning Does Not Cool and / or Compressor is
Noisy

Release date: 5/12/20

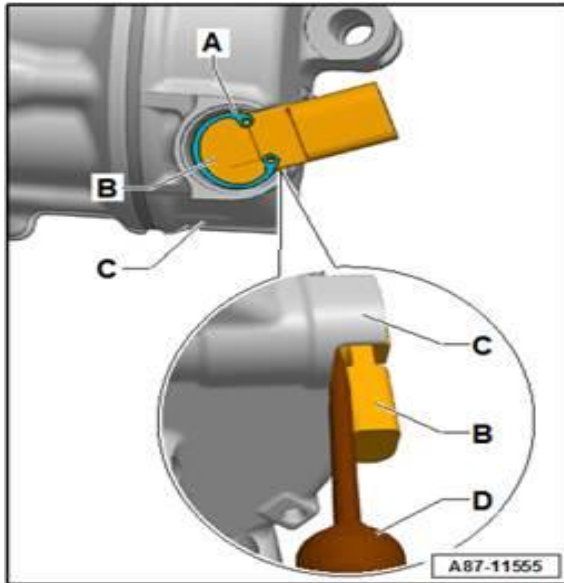


Figure 10. Circlip / N280 removal

1. Remove circlip-A- carefully.

**Note:**

Circlip must be reused.

2. Carefully remove the A/C Compressor Regulator Valve -N280- -B- from the A/C compressor mount -C-, using a suitable screwdriver -D-, for example (Figure 10).



Figure 11. Corrosion in the N280 valve bore.

Assess the condition of the N280 valve bore and the valve filter screen (Figure 11). If severe contamination is found in valve bore there is a risk of damaging the replacement valve on installation. In these cases the A/C compressor must be replaced.

**Note:**

A slight amount of debris or corrosion does not present a risk and does not justify replacement of the AC compressor.



Figure 12: Severe contamination at the N280 valve filter screen.

Should severe contamination be found at the valve filter screen (Figure 12) and A/C compressor replacement becomes necessary, ensure that the refrigerant circuit is flushed in the course of repair.

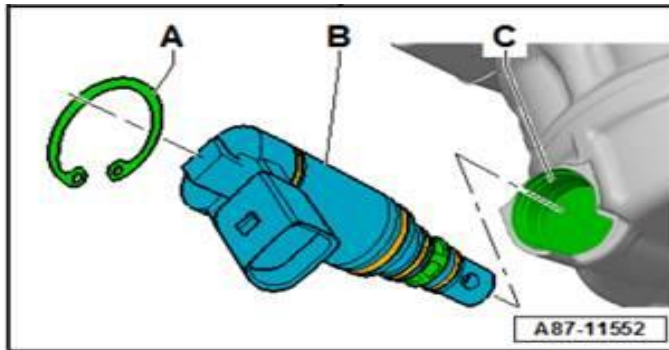
**Note:**

Small random particles on the filter screen does not constitute "severe" contamination and does not justify replacement of the A/C compressor.

**87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy**

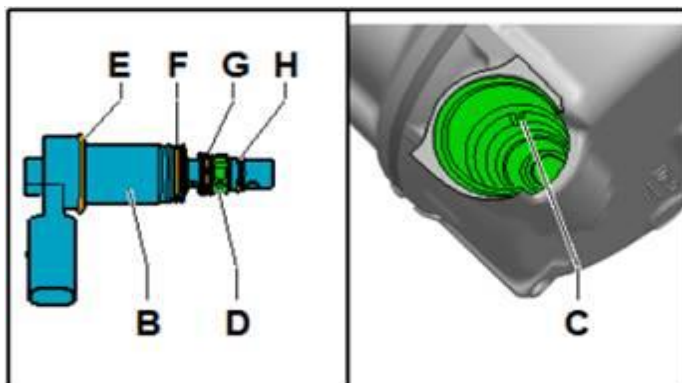
Release date: 5/12/20

- If little or no corrosion or contamination is found perform Repair Procedure A: Replacing the N280 regulating valve.
- If corrosion and contamination is found, perform Repair Procedure B: A/C compressor replacement.
- Document the all workshop findings of this procedure on the repair order.

Repair Procedure A: Replacing the N280 regulating valve**Figure 13:** Prepare mount for N280 installation.**Note:**

Risk of damaging another N280 Valve or compressor may result due to dirt contamination or damage to the sealing surfaces in the mount.

- If necessary, carefully clean the A/C compressor mount -C- using only a clean, lint-free cloth (do not use compressed air).
- Make sure while cleaning the mount -C- that no dirt gets into the area underneath the O-ring sealing surface -F- or the existing channels and none of the mount sealing surfaces become damaged.

**Figure 14.** Check and prepare N280 o-rings

1. Check the O-rings -F-, -G-, -H- and -E- (if applicable) of the A/C Compressor Regulator Valve - N280- -B- for damage.
2. Coat the O-rings -F-, -G-, -H- and -E- (if applicable) of the A/C Compressor Regulator Valve - N280- -B- lightly with refrigerant oil and check for proper seating (Figure 14).

3. Insert the A/C Compressor Regulator Valve -N280- -B- until the stop in the A/C compressor mount -C-.
4. Re install circlip -A-.

**87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy**

Release date: 5/12/20

-
5. Install the removed parts in the opposite order.
 6. Evacuate and refill the refrigerant circuit.

**Note:**

When the N280 is replaced a photo copy of the A/C compressor label must be attached to the repair order and uploaded to WISE for supplier traceability (Figure 15).

Figure 15. Example of compressor label



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Repair Procedure B: Air conditioning compressor replacement.



Note:

The refrigerant circuit must be flushed every time the A/C compressor is replaced. The replacement A/C compressor comes with a full charge of oil for the entire refrigerant system. Therefore the A/C circuit must be flushed of all original oil from the entire refrigerant circuit.

For this procedure always replace the receiver drier and expansion valve after flushing the refrigerant circuit.

The flushing procedure can be found in Elsa at: Heating, Ventilation & Air Conditioning>>Refrigerant R134a Servicing >>00 General Technical Data>> Refrigerant circuit removing contaminates>>Refrigerant Circuit, Cleaning (Flushing), with Refrigerant R134a. The procedure is also described in Technical Service Bulletin 2019947.

The correct adapters for the 2015 Golf/GTI can be found in Elsa at: Ventilation & Air Conditioning>>Refrigerant R134a Servicing >>00 General Technical Data>> Refrigerant circuit removing contaminates>>Refrigerant Circuit, Cleaning (Flushing), with Refrigerant R134a >>Adapter for Assembling Flushing Circuit.



MY2015 GTI/Golf, SportWagen production have Sanden® compressors 5Q0820803C, 5Q0820803E and 5Q0820803G.

The replacement compressor is Denso 5Q0820803F

Figure 16: Denso compressor 5Q0820803F

**87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy**

Release date: 5/12/20

**Figure 17**

When installing a new compressor transfer the compressor shipping caps to the original compressor as shown in Fig 17.

**Figure 18:** Denso compressor manufacturer PAG oil G 052 300 A2.

The replacement Denso® compressor will come with the specified type of PAG oil G 052 300 A2 (Figure 16).

**Note:**

The compressor comes with a full charge of oil for the entire refrigerant circuit. However the amount of PAG oil supplied with the replacement compressor may not be the exact amount 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 adjusted, 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.



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Warranty



Note:

Document and attach all workshop findings of this procedure on the repair order and include the following.

- ODIS GFF cooling performance test plan.
• RobinAir print out of the recovered refrigerant volume.
• RobinAir print out of the flush procedure.

All documentation is needed for reimbursement and must be uploaded to WISE. For information on uploading documents and pictures in WISE, go to WISE > Resource Center > Dealer Processes & Guide, select pdf file: Wise Operations Section – Doc-IT Technical Bulletin Uploading Process Job Aid

All replaced compressors must have the shipping caps re-installed before being returned to the WPRC.

Table with 6 columns: Model(s), Year(s), Eng. Code(s), Trans. Code(s), VIN Range From, VIN Range To. Includes sections for SAGA Coding, Claim Type, Service Number, Damage Code, HST, Damage Location, Parts Manufacturer, and Repair Procedure A.



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Labor Operation ³⁾ : Noise dampening pan remove and reinstall	10821900 = 40 TU
-OR--	
Repair Procedure B: (if A/C compressor is necessary)	
Labor Operation ³⁾ : Refrigerant drain and fill	87031700 = 50 TU
Labor Operation ³⁾ : Noise dampening pan remove and reinstall	10821900 = 40 TU
Labor Operation ³⁾ : N280 valve remove and install (with debris on filter screen found)	87371950 = 20 TU
Labor Operation ³⁾ : A/C compressor remove and reinstall	87341970 = 50 TU (1.8/2.0 TFSI) 87341955 = 40 TU (2.0 TDI)
Labor Operation ³⁾ : Expansion valve remove and reinstall	87701970 = 50 TU (1.8/2.0 TFSI) 87701955 = 60 TU (2.0 TDI)
Labor Operation ³⁾ : Radiator grill remove and reinstall	66051900 = 20 TU
Labor Operation ³⁾ : Receiver drier replace (non-Modine)	87555550 = 30 TU
Labor Operation ³⁾ : Receiver drier replace (Modine)	87555552 = 40 TU
Labor Operation ³⁾ : Air conditioner clean	87012999 = 140 TU
Outside Material: A/C Flush Machine Bosch filter, Part No. 17707-6	\$23.75 total per A/C System Flush which accompanies a repair (this amount equals ¼ of the cost of the A/C flush machine filter)
OR	
Outside Material: A/C Flush Machine Behr filter, Part No. BAI783400103 (For use with previous flush kit Behr VAS 6337/1A)	\$5.32 total per A/C System Flush which accompanies a repair (this amount equals ¼ of the cost of the A/C flush machine filter)
Causal Part:	5Q0260839A
Diagnostic Time ⁴⁾	



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

GFF Time expenditure	01500000 = 55 TU max.	YES
Road Test	01210002 = 10 TU 01210004 = 10 TU	YES
Technical Diagnosis	01320000 = 20 TU max.	YES
Claim Comment: Input "As per Technical Bulletin 2038368" in comment section of Warranty Claim.		
<p>1) Vehicle may be outside any Warranty in which case this Technical Bulletin is informational only.</p> <p>2) Code per warranty vendor code policy.</p> <p>3) Labor Time Units (TUs) are subject to change with ELSA updates.</p> <p>4) Documentation required per Warranty Policy Procedures Manual.</p>		

Required Parts and Tools



Part Description	Part No:	Quantity
N280 Regulating Valve (Sanden)	5Q0260839A	1
-OR- (if A/C compressor is necessary)		
Oil for refrigerant compressor (Denso)	G 052300A2	0.2 (Max if required)
Air conditioner compressor (Denso)	5Q0820803F	1
Seal ring	4D0260749B	1
Seal ring	4E0260749B	1
Seal ring	4E0260749A	1
Seal ring	8E0260749C	1
Drier insert with mounting parts	5Q0298403A	1



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy

Release date: 5/12/20

Expansion Valve (With Compressor replacement only)	5Q0820679C	1
Set of round seals	5Q0898850A	1

Tool Description	Tool No:
<p>Air Conditioning Service System.</p> 	<p>ROB134APF Or latest machine version</p>
<p>Air Conditioning System Flushing Device</p> 	<p>17707 Kit, Flusher Filter</p>



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is Noisy


Release date: 5/12/20

<p>Air Conditioning System Flushing Device Filter</p> 	<p>Bosch – 17707-6</p>
<p>Air Conditioning System Flushing Device Filter (For previous version of Behr VAS 6337/1A)</p> 	<p>Behr – BAI783400103</p>
<p>Refrigerant Circuit Adapter 3</p> 	<p>VAS 6338/3</p>
<p>Refrigerant Circuit Adapter 12</p> 	<p>VAS 6338/12</p>



87-18-02 - Air Conditioning Does Not Cool and / or Compressor is
Noisy

Release date: 5/12/20

<p>Refrigerant Circuit Adapter 38</p> 	<p>VAS 6338/38</p>
-------------------------------------------------------------------------------------------------------------------------	--------------------

Additional Information

All part and service references provided in this Technical Bulletin are subject to change and/or removal. Always check with your Parts Dept. and Repair Manuals for the latest information.