



87-18-05 - Air Conditioning Does Not Cool and or Compressor is Noisy

Release date: 5/11/20

**Condition**

Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Jetta	2011-2013	CBPA,CBTA,CBUA, CJAA	All	All	All
Jetta	2014	CBPA, CJAA	All	All	All
Jetta	2015	CVCA, CBPA	All	All	All
Jetta	2015	CPRA,CPKA,CPLA, CPPA	All	All **	All **
Jetta	2016-2018	All	All	All	All
Passat	2012-2017	CBUA,CBTA,CDVB, CKRA, CVCA	All	All	All
Passat	2014-2017	CPKA, CPRA	All	All **	All **
Golf/Jetta SportWagen	2011-2014	CJAA,CBTA,CBUA	All	All	All
NB/NBC	2012-2014	CJAA,CBTA,CBUA,	All	All	All
NB	2015	CVCA	All	All	All
NB	2015	CPRA,CPKA, CPLA, CPPA	All	All **	All **
NBC	2015	CPRA,CPKA, CPLA, CPPA	All	All **	All **
NB/NBC	2016-2017	All	All	All	All



**Note:**

\*\*For Passat, Jetta and NB 1.8T and 2.0T from June of 2014 to February 2015 production a mix of Denso and Sanden compressors were installed. The -N280- A/C Compressor Regulator Valve is for Sanden Compressors only. Be sure to check the Compressor type installed before replacing the -N280- A/C Compressor Regulator Valve \*\*.



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Revision Table			
Instance Number	Published Date	Version Number	Reason For Update
2044165/12	5/11/2020	87-18-05	New machine version added to table. Removal of Behr Flush kit.
2044165/11	5/7/19	87-18-05	Add additional labor operations due to labor time updates in Elsa.
2044165/10	4/17/18	V871805	To include a new flush adaptor for Jetta, Passat and Beetle.
2044165/9	1/17/18	V871801	Revise notes on service direction and WISE process.
2044165/1	7/11/16	V871611	Original publication.

One or more of the following conditions are exhibited:

- The Air Conditioning (A/C) does not cool, or the cooling performance is very weak.
- The A/C system cools, but the A/C 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 A/C performance test must be completed before performing this procedure to eliminate any other fault conditions. It is mandatory for all A/C Compressor reimbursement. See TB 2043704 for information on performing the A/C performance test. All documentation, pictures and printouts must be uploaded to WISE. See warranty section for more information on uploading information in WISE.



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## Technical Background

The condition may be caused by a faulty **-N280-** A/C Compressor Regulator Valve (Sanden). The internal components of the valve can be obstructed and incapable of full function. This loss of refrigerant regulation from **-N280-** A/C Compressor Regulator Valve can cause noise from the air conditioning compressor and/or affect the HVAC cooling.



Figure 1 -**N280-** A/C Compressor Regulator Valve 1K0260839



### Note:

This bulletin applies to vehicle built with Sanden **1K0820808 B>H** and **5C0820803 B>G** A/C Compressors only. The replacement **-N280-** A/C Compressor Regulator Valve is not compatible with other Sanden Compressors. The **-N280-** A/C Compressor Regulator Valve is not compatible with any Denso Compressors.

If a Denso A/C Compressor is installed on the vehicle this bulletin does not apply. Further diagnosis is required. See TB 2043704 for information on performing the AC performance test.

## Production Solution

No production change required.

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## 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.



Connect both the Refrigerant Service Station (Figure 4) and the diagnostic tester to the vehicle.

**Figure 4.** Robinair A/C Service Unit.

### 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 A/C 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 A/C performance test must be completed before performing this procedure to eliminate any other fault conditions. Submit through the 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.



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- Monitor the measuring value for the A/C Compressor - **N280**- A/C Compressor Regulator Valve 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 – 0.820 A).

Figure 5. Checking N280 signal value Measuring Value Block.



Figure 6. 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.



Tip:

An example of no pressure generation is when the pressure readings on the high and low sides are equalized in Figure 6.



Note:

If the gauge readings are showing normal A/C Compressor operation per the Elsa Repair Manual, this bulletin does not apply and further diagnosis is required.



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**Figure 7a.** Example of torque limiter over load protection activated.



**Figure 7b.** Example of torque limiter over load protection still intact.

- Check that the A/C Compressor torque limiter has not been activated (Figures 7a and 7b).

**! Note:**

If the torque limiter has been released the - **N280-** A/C Compressor Regulator Valve is not at fault. The A/C Compressor needs to be replaced.



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Figure 8. MY2016 AC compressor with clutch (Sanden)

- For MY2016 vehicles with Sanden A/C Compressor 1K0820808H make sure the Compressor Clutch is engaged when the A/C is switched ON.
- If clutch is not engaging perform diagnosis of the compressor clutch -**J44**- test.

**Tip:**

Check that adaptation channel 9 is set at 1 for clutch enabled. (See TT 2044502 87-16-01TT).

**Note:**

If the A/C Compressor Clutch is not engaging this bulletin does not apply.



Figure 9. VAS 5256 breakout harness.

- Shut off the engine.
- Connect the breakout harness VAS 5256 (Figure 9) between the -**N280**- A/C Compressor Regulator Valve and its connector.



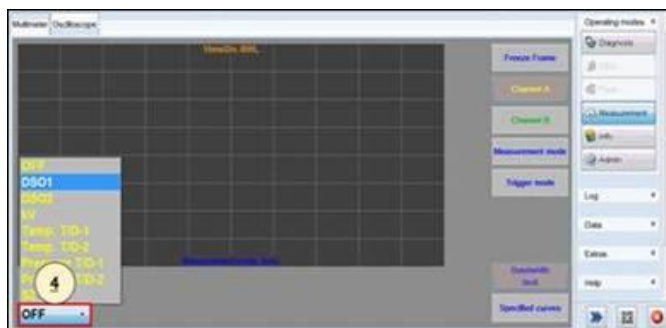
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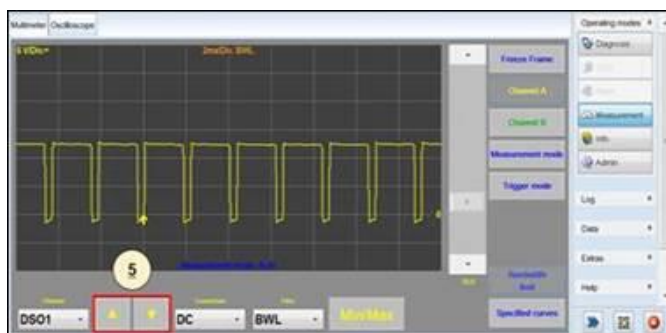
- Go to: Operating Mode “Measurements” to check the -N280- A/C Compressor Regulator Valve signal from the control module.
- Select Measurements.
- Select oscilloscope.
- Change time division to 2ms/Div (Figure 10).

Figure 10. Select Measurements from operating mode menu”.



- Select the correct DSO channel according the test leads hooked to the vehicle (Figure 11).

Figure 11. Setting up DSO channel”.



- Change the voltage to 5V/Div.
- Check the signal wave form (Figure 12). The square wave signal should be between 75% and 100%.

If the wave form signal is good, the mechanical integrity of the -N280- A/C Compressor Regulator Valve needs to be inspected.

**GO TO: Removing/Installing the -N280- A/C Compressor Regulator Valve.**

Figure 12. Checking the N280 signal wave form.



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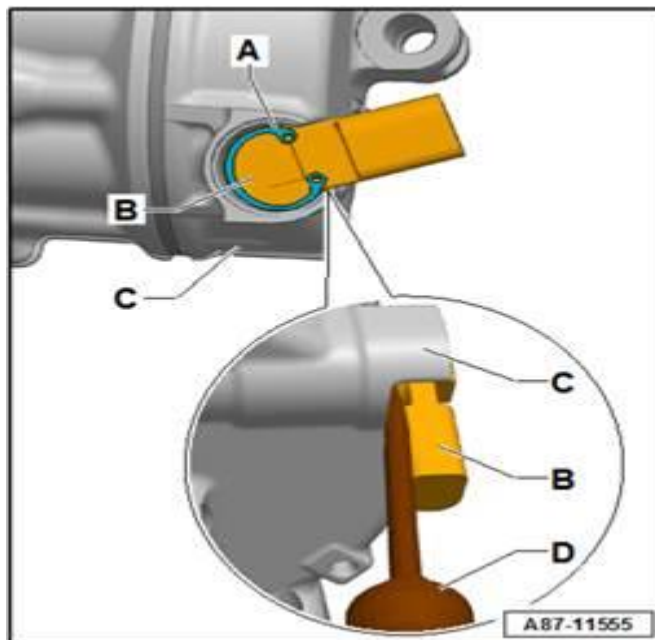
**Removing/Installing the -N280- A/C Compressor Regulator Valve.**

Recover the refrigerant from the system. Remove the -N280- A/C Compressor Regulator Valve using the following procedure.

 **WARNING:**

With the refrigerant circuit charged the -N280- A/C Compressor Regulator Valve is under pressure. Be certain that the refrigerant circuit is completely discharged before removing the -N280- A/C Compressor Regulator Valve.

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



**Figure 13.** Circlip / N280 removal

- Remove circlip-A- carefully.

 **Note:**

Circlip must be reused.

- Carefully remove the -N280- A/C Compressor Regulator Valve -B- from the A/C Compressor mount -C-, using a suitable screwdriver -D-, for example (Figure 13).



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**Figure 14.** Corrosion in the -N280- A/C Compressor Regulator Valve bore.

- Assess the condition of the -N280- A/C Compressor Regulator Valve bore and the valve filter screen (Figure 14). 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 15:** Severe contamination at the -N280- A/C Compressor Regulator Valve filter screen.

- Should severe contamination be found at the valve filter screen (Figure 15) 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 or A/C refrigerant circuit flush.

- If little or no corrosion or contamination is found perform Repair Procedure A: Replacing the -N280- A/C Compressor Regulator 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.

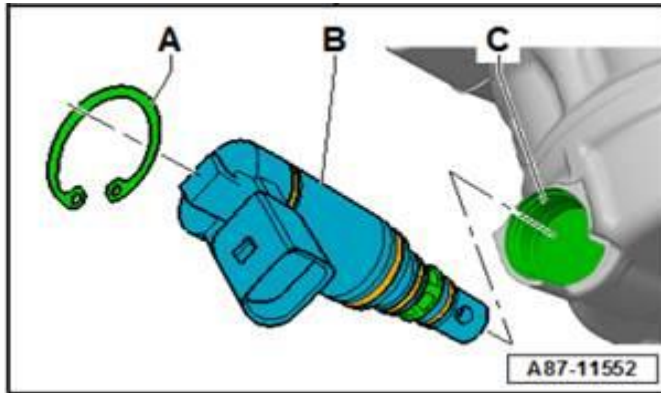
**Repair Procedure A: Replacing the -N280- A/C Compressor Regulator Valve****Note:**

If no contamination was found during the -N280- A/C Compressor Regulator Valve inspection flushing the refrigerant circuit is not necessary and the Expansion Valve and Receiver Dryer do not need to be replaced.



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- Check the A/C Compressor mount -C- and the circlip groove for dirt, and if necessary, clean them carefully and thoroughly with a clean, lint-free cloth (Figure 16).

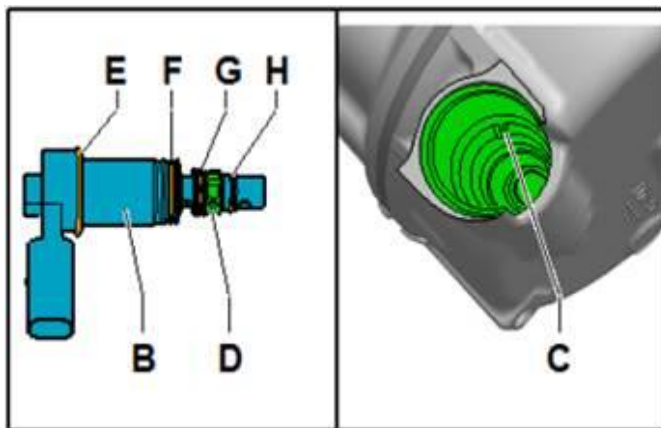
Figure 16: Prepare mount for -N280- A/C Compressor Regulator Valve installation.



**Note:**

Risk of damaging another -N280- A/C Compressor Regulator Valve or A/C 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.



- Check the O-rings -F-, -G-, -H- and -E- (if applicable) of the -N280- A/C Compressor Regulator Valve -B- for damage.
- Coat the O-rings -F-, -G-, -H- and -E- (if applicable) of the -N280- A/C Compressor Regulator Valve -B- lightly with refrigerant oil and check for proper seating (Figure 17).

Figure 17. Check and prepare N280 O-rings

- Insert the -N280- A/C Compressor Regulator Valve -B- until the stop in the A/C compressor mount -C-.
- Re install circlip -A-.
- Install the removed parts in the opposite order.

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- Evacuate and refill the refrigerant circuit.

**Note:**

When the **-N280-** A/C Compressor Regulator Valve is replaced a photo copy of the A/C Compressor label must be attached to the repair order for supplier traceability.

**Repair Procedure B: A/C 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 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.



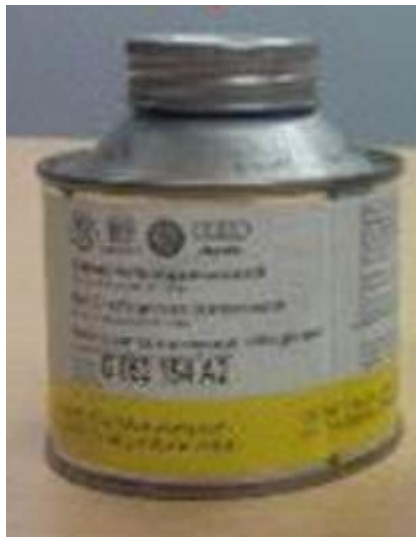
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When installing a new A/C Compressor transfer the Compressor shipping caps to the original Compressor as shown in Fig 18.

Figure 18



The replacement Sanden A/C Compressor will come with the specified type of PAG oil G 052 154 A2 (Figure 19).

**Note:**

The A/C Compressor comes with a full charge of oil for the entire refrigerant circuit. However the amount of PAG oil supplied with the replacement A/C Compressor may not be the exact amount to replenish the refrigerant circuit. Drain and measure the PAG oil in the replacement A/C 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.

Figure 19: Sanden compressor manufacturer

PAG oil G 052 154 A2.



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Note:

Document and attach all workshop findings of this procedure to 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, Eng. Code, Trans. Code, VIN Range From, VIN Range To. It lists various Volkswagen models like Jetta, Passat, Golf/Jetta SportWagen, and NB/NBC with their corresponding engine codes and VIN ranges.



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NBC	2015	CPRA,CPKA, CPLA, CPPA	All	All**	All**
NB/NBC	2016-2017	All	All	All	All
<b>SAGA Coding</b>					
<b>Claim Type:</b>	<b>Use applicable Claim Type <sup>1)</sup></b>				
<b>Service Number:</b>	<b>Damage Code</b>	<b>HST</b>	<b>Damage Location (Depends on Service No.)</b>		
8734	0010	--	Use applicable when indicated in Elsa (L/R)		
<b>Parts Manufacturer</b>	(See manufacturer label on compressor)		ZJX or SY3		
<b>Repair Procedure A: N280 valve replacement</b>					
<b>Labor Operation <sup>3)</sup></b> : Refrigerant drain and fill		87031700 = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : Noise dampening pan remove and reinstall		108219XX = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : N280 valve remove and install		87371999 = 20 TU			
<b>Causal Part:</b> N280 Valve		1K0260839			
<b>-OR-</b>					
<b>Repair Procedure B: (A/C compressor)</b>					
<b>Labor Operation <sup>3)</sup></b> : Refrigerant drain and fill		87031700 = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : Remove and Reinstall Air Cleaner		242519XX = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : Noise dampening pan remove and reinstall		108219XX = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : N280 valve remove and install (with debris on filter screen found)		87371999 = 20 TU			
<b>Labor Operation <sup>3)</sup></b> : Cooling Fan R&I		192019XX = (See Elsa for SRT if applicable)			
<b>Labor Operation <sup>3)</sup></b> : Ribbed Belt R&I		137219XX = (See Elsa for SRT if applicable)			



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<b>Labor Operation</b> <sup>3)</sup> : A/C compressor remove and reinstall	873419XX = (See Elsa for SRT if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : A/C compressor replaced	873455XX = (See Elsa for SRT if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Expansion valve remove and reinstall	877019XX = (See Elsa for SRT if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Receiver drier replace	8755XXXX = (See Elsa for SRT if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Air conditioner flush	87012999 = 140 TU	
<b>Labor Operation</b> <sup>3)</sup> : Radiator Grille R&I	660519XX = (See Elsa for SRT if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Front Bumper Cover remove and install	632919XX = (See Elsa for SRT, if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Headlight Assembly Adjusted	941516XX = (See Elsa for SRT, if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Radar Sensor Adjusted	916315XX = (See Elsa for SRT, if applicable)	
<b>Labor Operation</b> <sup>3)</sup> : Lock Carrier Loosen and Fasten	503809XX = (See Elsa for SRT, if applicable)	
<b>Outside Material</b> : 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		
<b>Outside Material</b> : 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)	
<b>Causal Part</b> : A/C Compressor	***820****	
<b>Diagnostic Time</b> <sup>4)</sup>		
<b>GFF Time expenditure</b>	01500000 = 55 TU max.	YES
<b>Road Test</b>	01210002 = 10 TU	YES
	01210004 = 10 TU	
<b>Technical Diagnosis</b>	01320000 = 20 TU max.	YES





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Claim Comment: Input "As per Technical Bulletin 2044165" in comment section of Warranty Claim.

- 1) Vehicle may be outside any Warranty in which case this Technical Bulletin is informational only
- 2) Code per warranty vendor code policy.
- 3) Labor Time Units (Tus) are subject to change with ELSA updates.
- 4) Documentation required per Warranty Policy Procedures Manual.



Required Parts and Tools

Part Description	Part No:	Quantity
Repair Procedure A: N280 valve replacement		
Oil for refrigerant recharge	G 052154A2	0.2 (Max if required)
N280 Regulating Valve (Sanden)	1K0260839	1
<b>-OR-</b>		
Repair Procedure B: (A/C compressor)		
Air conditioner compressor	<b>Order per vin application in ETKA</b>	1
Seal ring (EXP valve line low)		1
Seal ring (EXP valve line high )		1
Seal ring (compressor)		1
Seal ring (compressor)		1
Drier insert with mounting parts		1
Expansion Valve		1
Set of round seals (EXP valve to evaporator)		1



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Tool Description	Tool No:
<p data-bbox="302 506 688 533">Air Conditioning Service System.</p> 	<p data-bbox="1049 506 1203 533">ROB134APF</p> <p data-bbox="976 554 1276 581">Or latest machine version</p>
<p data-bbox="256 858 737 886">Air Conditioning System Flushing Device</p> 	<p data-bbox="987 858 1268 886">17707 Kit, Flusher Filter</p>
<p data-bbox="224 1255 769 1283">Air Conditioning System Flushing Device Filter</p> 	<p data-bbox="1024 1255 1227 1283">Bosch – 17707-6</p>



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<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>



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<p>Refrigerant Circuit Adapter</p> 	<p>VAS 6338/18 (MY2013-2015)</p>
<p>Refrigerant Circuit Adapter</p> 	<p>VAS 6338/74 MY 2016-2017 Passat and Beetle MY 2016-2018 Jetta</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.