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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	AJ_FM313889	AJ_FM499999
Jetta	2016	All	All	All	All
Passat	2012-2016	CBUA,CBTA,CDVB, CKRA, CVCA	All	All	All
Passat	2015-2016	CPKA,CPRA	All	A3_EC115640	A3_GC999999
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	AT_FM643884	AT_FM699999
NBC	2015	CPRA,CPKA, CPLA, CPPA	All	AT_FM813985	AT_FM899999
NB/NBC	2016	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 valve is for Sanden compressors only. Be sure to check the compressor type installed before replacing the N280 valve.

Condition

87 16 17 September 14, 2016 2044165 Supersedes Technical Bulletin V871616 dated August 29, 2016 to update vendor code and parts table.

Air Conditioning Does Not Cool and or Compressor is Noisy



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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:

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.

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 N280 Refrigerant Regulating Valve
1K0260839



Note:

This bulletin applies to vehicle built with Sanden **1K0820808 B>H** and **5C0820803 B>G** 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. See TB 2043704 for information on performing the AC performance test.



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Production Solution

No production change required.

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 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.



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Cases of low or no cooling performance:



Note:

All faults in Guided Fault Finding and 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.

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 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.



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 – 0.820 A).

Figure 5. Checking N280 signal value Measuring Value Block.



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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.

(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 compressor operation per the Elsa Repair Manual, this bulletin does not apply and further diagnosis is required.



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

Check that the compressor torque limiter has not been activated (Figure 7b).



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



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



Figure 8. MY2016 AC compressor with clutch (Sanden)

For MY2016 vehicles with Sanden AC compressor 1K0820808H make sure the compressor clutch is engaged when the AC is switched on.

If clutch is not engaging perform diagnosis of the compressor clutch J44 test.

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

⚠ Note: If the AC compressor clutch is not engaging this bulletin does not apply.



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Shut off the engine. Connect the breakout harness VAS 5256 (Figure 9) between the N280 valve and its connector.

Figure 9. VAS 5256 breakout harness.



Go to Operating Mode “Measurements” to check the N280 signal from the control module.

Select Measurements.

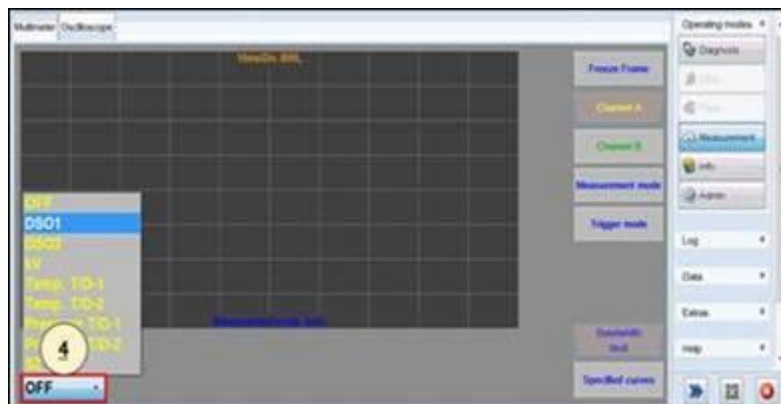
Select oscilloscope.

Change time division to 2ms/Div (Figure 10).

Figure 10. Select Measurements from operating mode menu”.

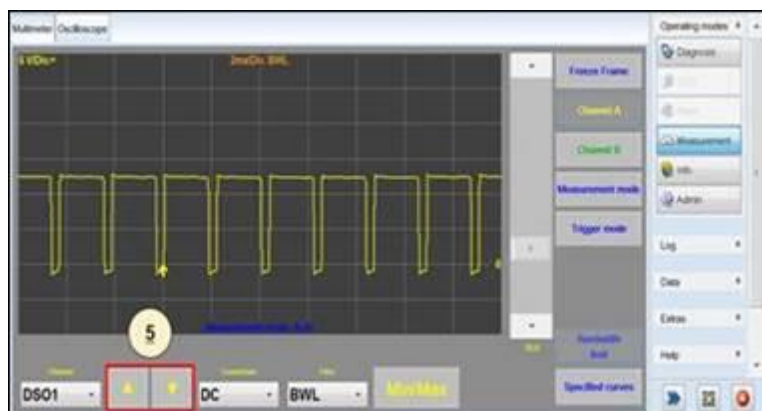


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Select the correct DSO channel according to the test leads hooked to the vehicle (Figure 10).

Figure 11. Setting up DSO channel”.



Change the voltage to 5VDiv.

Check the signal wave form (Figure 11). 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 12. 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.



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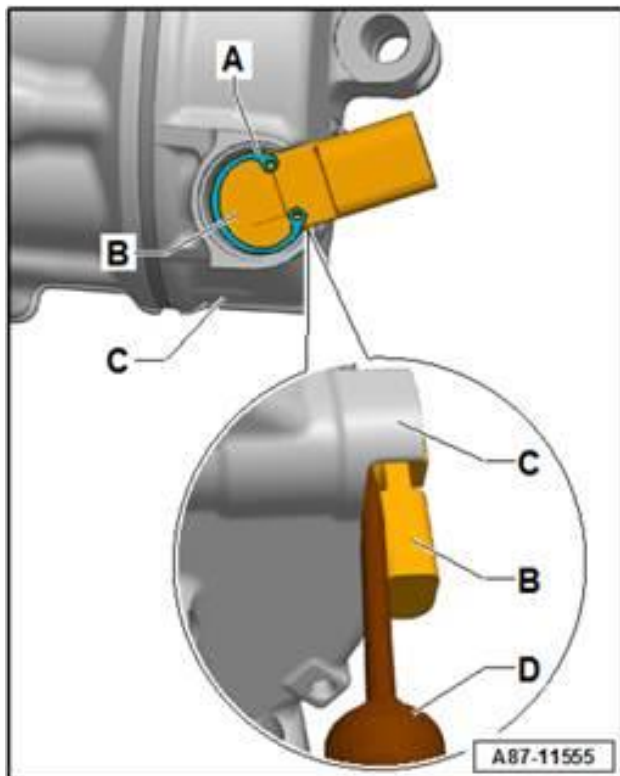


Figure 13. Circlip / N280 removal

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 13).



Figure 14. Corrosion in the N280 valve bore.

Assess the condition of the N280 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.



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Figure 15: Severe contamination at the N280 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.

- 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



Note:

The refrigerant circuit must be flushed when the N280 valve is replaced.

Be sure to use the Robinair AC service station to record the oil extracted during evacuation to ensure the correct amount of oil is added back to system after reassembly.

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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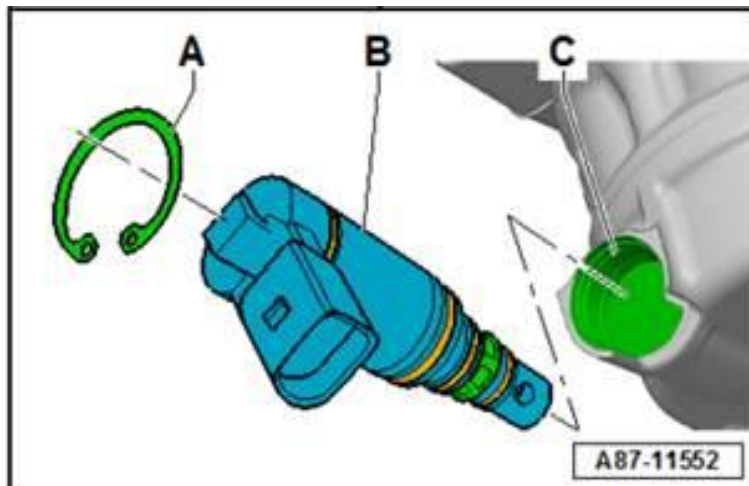


Figure 16: Prepare mount for N280 installation.



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.

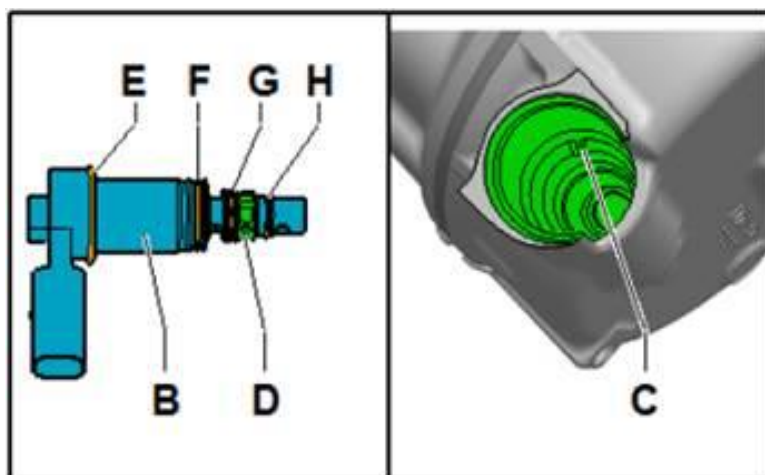


Figure 17. Check and prepare N280 o-rings

1. 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).

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 17).



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

Repair Procedure B: Air conditioning compressor replacement.



Note:

The refrigerant circuit must be flushed every time the air 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 compressor transfer the compressor shipping caps to the original compressor as shown in Fig 18.

Figure 18



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



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.

Figure 19: Sanden compressor manufacturer PAG oil G 052 154 A2.



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Warranty



Note:

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

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

To determine if this procedure is covered under Warranty, always refer to the Warranty Policies and Procedures Manual ¹⁾

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	AJ_FM313889	AJ_FM499999
Jetta	2016	All	All	All	All
Passat	2012-2016	CBUA,CBTA,CDVB, CKRA, CVCA	All	All	All
Passat	2015-2016	CPKA,CPRA	All	A3_EC115640	A3_GC999999
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	AT_FM643884	AT_FM699999
NBC	2015	CPRA,CPKA, CPLA, CPPA	All	AT_FM813985	AT_FM899999
NB/NBC	2016	All	All	All	All
SAGA Coding					



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Claim Type:	Use applicable Claim Type ¹⁾		
Service Number:	Damage Code	HST	Damage Location (Depends on Service No.)
8734	0010	--	Use applicable when indicated in Elsa (L/R)
Parts Manufacturer	(See manufacturer label on compressor)		ZJX or SY3
Repair Procedure A: N280 valve replacement			
Labor Operation ³⁾: Refrigerant drain and fill		87031700 = (See Elsa for SRT if applicable)	
Labor Operation ³⁾: Noise dampening pan remove and reinstall		108219XX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾: N280 valve remove and install		87371999 = 20 TU	
Labor Operation ³⁾: Expansion valve remove and reinstall		877019XX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾: Receiver drier replace		8755XXXX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾: Air conditioner flush		87012999 = 140 TU	
Labor Operation ³⁾: Front Bumper Cover remove and install		632919XX = (See Elsa for SRT, if applicable)	
Labor Operation ³⁾: Lock Carrier Loosen and Fasten		503809XX = (See Elsa for SRT, if applicable)	
Causal Part: N280 Valve		1K0260839	
Outside Material: A/C Flush Machine Behr filter, Part No. BA1783400103		\$4.25 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 Bosch filter, Part No. 17707-6		\$17.88 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--			



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Repair Procedure B: (A/C compressor)		
Labor Operation ³⁾ : Refrigerant drain and fill	87031700 = (See Elsa for SRT if applicable)	
Labor Operation ³⁾ : Noise dampening pan remove and reinstall	108219XX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾ : N280 valve remove and install (with debris on filter screen found)	87371999 = 20 TU	
Labor Operation ³⁾ : A/C compressor remove and reinstall	873419XX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾ : Expansion valve remove and reinstall	877019XX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾ : Receiver drier replace	8755XXXX = (See Elsa for SRT if applicable)	
Labor Operation ³⁾ : Air conditioner flush	87012999 = 140 TU	
Labor Operation ³⁾ : Front Bumper Cover remove and install	632919XX = (See Elsa for SRT, if applicable)	
Labor Operation ³⁾ : Lock Carrier Loosen and Fasten	503809XX = (See Elsa for SRT, if applicable)	
Outside Material: A/C Flush Machine Behr filter, Part No. BA1783400103	\$4.25 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 Bosch filter, Part No. 17707-6	\$17.88 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: A/C Compressor	***820****	
Diagnostic Time ⁴⁾		
GFF Time expenditure	01500000 = 55 TU max.	YES
Road Test	01210002 = 10 TU 01210004 = 10 TU	YES
Technical Diagnosis	01320000 = 20 TU max.	YES



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<p>Claim Comment: Input “As per Technical Bulletin 2044165” in comment section of Warranty Claim.</p> <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>
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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
Seal ring (EXP valve line low)	Order per vin application in ETKA	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
-OR-		
Repair Procedure B: (A/C compressor)		
Air conditioner compressor	Order per vin application in ETKA	1
Seal ring (EXP valve line low)		1
Seal ring (EXP valve line high)		1





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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

Tool Description	Tool No:
 <p>VAS6337/1A</p> <p>Robinair A/C Service Unit</p>	<p>ROB134APF</p>
 <p>Air Conditioning Flush Tool</p>	<p>VAS 6337/1A</p>



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<p>Air Conditioning System Flushing Device Filter</p> 	<p>Behr - BAI783400103</p>
<p>OR</p>	
<p>Air Conditioning System Flushing Device Filter</p> 	<p>Bosch – 17707-6</p>
<p>Refrigerant Circuit Adapter 3</p> 	<p>VAS 6338/3</p>



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 <p>Refrigerant Circuit Adapter 12</p>	<p>VAS 6338/12</p>
 <p>Refrigerant Circuit Adapter 18</p>	<p>VAS 6338/18 (MY2013-2015)</p> <p>Note: For MY2016 the expansion valve must drilled out and used to flush the refrigerant circuit. A new expansion valve must be installed.</p>



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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.

Document Control Revision Table			
Instance Number	Published Date	Version Number	Reason For Update
2044165/4	9/14/16	V871617	To update vendor codes and revise parts table for procedure A.
2044165/3	8/29/16	V871616	Update to causal part line in warranty table and model year applicability.
2044165/2	7/26/16	V871613	To include a corrected Refrigerant Circuit Adapter in the parts table.
2044165/1	7/11/16	V871611	Original publication.