



Technical Service Bulletin

21 Engine difficult to start, turbocharger is damaged - V8 4.0TFSI

21 21 38 2044640/11 December 16, 2021. Supersedes Technical Service Bulletin Group 21 number 21-37 dated August 31, 2021 for reasons listed below.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
RS 7	2014 - 2016	All	4.0L
S8+, RS 7+	2016	All	4.0L
A8	2017	000001 - 019190	4.0L
S8, S8+	2017	000001 - 901368	4.0L
S6, S7	2017	000001 - 115286	4.0L
RS 7, RS 7+	2017	000001 - 904264	4.0L
A8, S6, S7, and S8	2013 - 2016	All	4.0L

Condition

REVISION HISTORY		
Revision	Date	Purpose
11	-	Revised attachment Revised <i>Service</i> (Updated Step 8 and 9) Revised <i>Warranty</i> (Updated Labor Operations)
10	08/31/2021	Revised <i>Service</i> (Updated Step 1 and 9) Revised <i>Warranty</i> (Updated Claim Type and Labor Operations) Revised <i>Required Parts and Tools</i> (Added and updated tool part numbers)
9	10/30/2020	Revised <i>Required Parts and Tools</i> (Updated part number)

Customer states:

- The engine cannot be started or only with difficulty.
- The engine makes unusual noises when accelerating.
- The engine has reduced performance.

Workshop findings:



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- Damage on turbocharger impeller fins causes increased free play on the impeller shaft of the turbocharger or there is a broken impeller shaft.

Technical Background

Damage to the turbocharger is rarely directly the result of turbocharger failure. Therefore, it is important to perform further checks to find the root cause, to avoid repeat repairs.

Known causes for turbocharger damage:

- Performance increases by tuned ECM.
- Non-compliance with service intervals.
- Incorrectly fitted oil filter element.
- Leaks in the intake tract allowing outside unfiltered air and debris into the turbocharger.
- Poor oil supply to the turbocharger.



Note:

If the vehicle has any DTCs related to the turbocharger boost/regulation the complete GFF Test plan must be completed and repairs performed before determining if further repairs are necessary.

Production Solution

Optimized oil strainer 079115175G for oil supply lines to turbochargers in the cover in the inner valley of the engine. The oil strainer and check valve 079103175C must always be replaced to ensure proper oil flow to the turbochargers.



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Service

Watch the June Hot Topics before proceeding with the below repair at: <https://audi-academy.kzoplatform.com/player/medium/1186073779801953796> (Figure 1).



Figure 1. QR Code for supporting video.

1. Perform the Guided Functions with the diagnosis tester: "01 check warranty information." Then check for an entry with the vehicle data in Elsa under the warranty key.
 - All information must be documented with pictures with the attached Checklist completely filled out and stored with the Repair Order.
2. Check the hardware version of the engine control module. An X version indicates that the engine control module was replaced/or is modified (Figure 2).

First system test with DTC memory entries

Address: 0001 System name: 01 - Engine Electronics Protocol versions: UDS/ISOTP
ASAM base version: BV_EnginContrModul1UDS
ASAM control module version: EV_ECM20TFS0208W0906259C_001
Hardware part number: 06L907425
Software part number: 8W0906259C
Hardware version number: H13
Software version number: 0004
Build group number:

Figure 2. Correct hardware version number.

Perform a visual check of the engine control module (check for irregularities of the housing of the control module) and check whether a tuning box is fitted (also in the area behind the diagnostic interface).

3. Check the intake tract for leaks. Review the repair history for possible previous repairs on the intake tract.
4. Measure the oil pressure at idle and 2000 rpm according to Elsa.
5. Visually assess the condition of the damaged turbocharger from both sides. No oil marks (charge air and exhaust side) could be another indication of poor oil supply to the turbocharger.



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6. Check the oil filter for correct installation and correct filter part number 079115561J. If the oil filter is not centrally fitted, the engine oil may not be filtered, entering the oil supply of the turbocharger due to the crooked position of the oil filter element.
7. Check the installation of the oil filter bypass valve according to service measure 17F2.



Note:

This TSB is not replacing any Elsa Repair Manual instructions, this TSB is meant to supplement the Repair Manual. See Elsa, *Engine >> 8-Cylinder Direct Injection 4.0L 4V TFSI Engine >> 21 Turbocharger >> Turbocharger, Removing and Installing*.

8. Replace the turbocharger as well as the **oil strainer** and **check valve** in the inner valley of the engine according to Elsa and observe all instructions, including:
 - Check the oil supply line for through flow and oil deposits.
 - Check the oil drain hoses for through flow and oil deposits.
 - Filling the turbocharger at the supply line connections with engine oil.
 - Replacement of the turbocharger wastegate vacuum actuator is no longer necessary. The vacuum actuator and actuator rod can be reused. The existing clip must not be reused and must always be replaced. The retaining clip is now available in ETKA.
9. Change the engine oil including the oil filter. Check the drained oil and oil filter for particles. If particles are found, flush the engine and new turbocharger with the new engine oil at an increased engine speed for 15 minutes.
 - If no particles were found in the drained engine oil or oil filter, another oil change is not necessary and the engine does not have to be flushed at an increased idle speed.
 - To ensure the turbocharger is supplied with enough oil, let the engine run at idle for approximately one minute after starting, do not increase rpm.



Note:

Failure to follow the TSB and Elsa instructions may lead to premature turbocharger failure which may be reviewed by Warranty.

Warranty may review the claim and request the turbocharger that was replaced. Documents and pictures may be requested to be sent to the Warranty Parts Return Center.



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Warranty

Claim Type:	• 110		
Service Number:	S642		
Damage Code:	0010		
Labor Operations:	Turbocharger replace (1 or 2)	2130 5671 Or 2130 5571	See SRT with associated operations
	Oil pressure check	1703 0199	80 TU
	Check intake and exhaust system for debris, additional time is included in Turbocharger remove + reinstall	2130 0199	20 TU
	Remove + reinstall oil strain and check valve	1726 2099	70 TU
	Check that the oil bypass valve is fitted correctly	1701 0199	10 TU
	Engine oil and filter change - once	1701 1799	40 TU
	OR		
	Engine oil and filter change – twice. Flush oil circuit	1701 1799	100 TU
	Both Turbochargers remove + reinstall	2130 2071	See SRT with associated operations
	OR		
	Left turbocharger remove + reinstall	2130 1971	See SRT with associated operations
	OR		
	Right turbocharger remove + reinstall	2130 1972	See SRT with associated operations



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	Air intake distributor remove + reinstall	2446 1921 Or 2446 1971 Or 2446 1923 (RS7 only)	See SRT with associated operations
	Night vision Camera System adjustment (if equipped)	9080 1550	See SRT with associated operations
	Radar sensor adjustment (if equipped)	9163 1650	See SRT with associated operations
	Overhead view camera adjust (if equipped)	9083 1550	See SRT with associated operations
Diagnostic Time:	GFF	0150 0000	Time as stated on the diagnostic protocol (Max 150 TU)
	Road test prior to service procedure	0121 0002	10 TU
	Road test after service procedure	0121 0004	10 TU
Claim Comment:	As per TSB # 2044640/11		



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

Always check with your Parts Department and/or ETKA for the latest information and parts bulletins.		
Part Number	Part Description	Quantity
Order by VIN	Turbochargers	01 or 02
079103175C	Check valve	01
079115175G	Oil strainer	01



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079145769	Wastegate rod retaining clip	02
079103161Q	Cover Gasket	01
N 90303801	Lower oil supply o-rings 9x1.5 black	02
N 91056801	Upper oil supply o-rings 12x2 black	02
WHT006901A	Oil return o-rings 14.5x2	02
N 90465003	Water-tube o-rings 23x2.6	03
N 90409501	Clamp breather hoses	04
079129717K	Intercooler housing gasket (Right)	01
079129717J	Intercooler housing gasket (Left)	01
079145818	Throttle body gasket	01
079103583	Breather seals	03
N 90686902	Spring clips 23x12 breather hoses	04
WHT006335A	Turbo coolant pipe o-rings lines (blue 2.0mm)  Note: Installed seals are based on which pipes are installed (Campaign 21F2 addresses this).	04
WHT006537	Turbo coolant pipe o-rings lines (black 2.8mm)  Note: Installed seals are based on which pipes are installed (Campaign 21F2 addresses this).	04
WHT001011A	Coolant supply pipe lower o-rings yellow 12.2x1.65	02
WHT005529	Inlet pipe o-rings	02
079253039M	Exhaust manifold gaskets	02
N 90894601	Manifold nuts M8	16
G 052112A3	Hot bolt paste 170G	01
4G0253115D	Turbocharger outlet gaskets	02



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N 91153902	Turbocharger studs	10
N 91130802	Manifold nuts	10
N 0138495	Drain plug gasket	01
079198405D	Oil filter kit	01 or 02 if flush is required (If 2 required, list 079198405D with qty 2 on the same line)
See Parts Catalogue	Coolant additive	01
Outside material	Distilled water (obtained locally)	Shop supply
See ETKA	Fasteners, Bolts, Nuts, and Screws as needed per the Repair Manual	See ETKA/ELSA

Tool Number	Tool Description
3371	Gauge – Gap adjustment tool
V.A.G 1342	Oil pressure gauge kit
V.A.G 1274/8	Adapter
V.A.G 1274/10	Adapter
VAS6096	Cooling system charge unit
T10007B	Refractometer
GRX3000VAS	MRT battery charger
MTRMSP0702	Battery Maintainer

Additional Information

More information can be found at the following resources:

- Elsa, *Engine >> 8-Cylinder Direct Injection 4.0L 4V TFSI Engine >> 21 Turbocharger >> Turbocharger, Removing and Installing.*
- Elsa, *Systems >> Campaigns/Actions >> Campaign 21F2.*



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

- TSB 2028842, *01 Automatic detection of unauthorized chip tuning (TD1 warranty key)*.

All parts and service references provided in this TSB (2044640) are subject to change and/or removal.

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