

## EGR Valve Diagnosis and Cleaning Procedure using TU-NAP 926® on 906, 907 Sprinter with OM642 Diesel Engine

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Topic number	LI14.20-N-073867
Version	5
Function group	14.20 - Exhaust gas recirculation
Date	7/3/24
Validity	906, 907 Sprinter with OM642 V6 Diesel Engine
Reason for change	Update Work Instructions

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### Complaint

#### Complaint A:

The engine is jolting/bucking between 1700 and 1900 rpm.

#### Complaint B:

One or more mechanical related fault codes for EGR Valve stored in CDI control unit, with possible Check Engine Light. Review list of mechanical fault codes in table below.

NOTE: If one or more electrical related fault codes for EGR Valve are also present in CDI, utilize Complaint C. Review list of electrical fault codes PDF document in attachments.

#### Complaint C:

One or more electrical related fault codes for EGR Valve stored in CDI control unit, with possible Check Engine Light. Review list of electrical fault codes PDF document attached.

NOTE: This LI supersedes LI14.20-N-073813, which is no longer valid.

### Cause

#### Cause of Complaint A:

Increased friction between the EGR Valve blade and seat due to soot deposits causing a delay of the EGR Valve being able to reach the target value of the EGR Valve position controller.

NOTE: This causes the EGR Valve blade and potentially the boost pressure controller to oscillate.

#### Cause of Complaint B:

Soot deposits between the EGR Valve blade and seat leading to the EGR Valve no longer being able to meet the desired target of the EGR Valve position controller.

#### Cause of Complaint C:

Internal EGR Valve or other electrical faults related to the EGR Valve function.

### Attachments

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File	Description
<a href="#">OM642 EGR Valve before 1.jpeg</a>  A close-up photograph showing the bottom of an EGR valve. The valve is cylindrical with a black, sooted end. It is mounted on a metal housing. The background is a red fabric.	Bottom of sooted EGR Valve.
<a href="#">OM642 EGR Valve before 2.jpeg</a>  A side-view photograph of the EGR valve. The valve is cylindrical and has a black, sooted end. It is mounted on a metal housing. The background is a red fabric.	Side view of sooted EGR Valve.

## Remedy

Remedy for Complaint A:

Perform the following steps:

1. Disable the EGR Valve (Y27/17) by disconnecting the electrical connector.
2. Perform a test drive to check if jolting/bucking issue resolves.
3. If the jolting/bucking is resolved, proceed to Remedy for Complaint B.
4. If jolting/bucking is still present, proceed with diagnosis to determine root cause. Consider checking the following, but not limited to:
  - EGR system including the EGR Cooler, pipes, EGR Bypass Flap, and EGR Temperature Sensor for excessive sooting and/or clogging, as well as EGR Bypass Flap vacuum element, switchover valve, and vacuum system.
  - Visually check the leak oil line or T-piece; reference LI07.00-N-059118.
  - Fuel System, including fuel type and quality.
  - Intake system for excessive oil accumulation; If present check for worn oil separator or turbocharger.
  - Combustion and compression.

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- Transmission.
- Evaluate DPF Regeneration History.
- Plausibility check of the Exhaust Temperature Sensors and Back Pressure Sensor key on engine off check when the vehicle is cold.
- Etc.

## Remedy for Complaint B:

Clean the EGR Valve with TUNAP 926® (BQ6670128) by performing the following steps:

NOTE: Prior to performing cleaning procedure, ensure to run coverage check of EGR Valve using the following qualifying damage codes; 4901M, 14315. If no coverage, then performing procedure is considered customer pay.

### EGR Valve Removal:

1. Remove the EGR Valve using the appropriate WIS document (document numbers referenced below).

### EGR Valve Cleaning:

1. Attempt to gently turn the EGR Valve blades clockwise to ensure they move. If the blades are seized, the EGR Valve must be replaced, and therefore cleaning is not permitted.
2. Position EGR Valve so open cavity is facing upward. Fill cavity with cleaner, and then proceed to apply cleaner to blades from the outside. Additionally, apply cleaner to outside where additional soot is found.
3. Allow 15 minutes for the cleaning gel to take effect.
4. Carefully brush the areas with the supplied cleaner brush or another suitable non-metallic brush with soft bristles; e.g. Kids size toothbrush and straw cleaning brush (see picture in attachments).
5. Continue to clean the EGR Valve by turning the EGR Valve blades clockwise to the open position, then hold blades in place with a suitable non-metallic holder/wedge placed in the hole directly in front of the open cavity (see picture in attachments).
6. Rinse the cleaned mechanical areas of EGR Valve with clear, cold water. Be careful not to get the electrical connection area of the EGR Valve wet. Furthermore, do not use pressurized water, otherwise the EGR Valve can be damaged.
7. Dry the cleaned areas of the EGR Valve (do not use compressed air).
8. Check whether soot deposits are still present. If traces of soot deposits are still present, repeat the cleaning process.

### NOTES:

1. Do not lift, pry up, or use excess force on the blades to open during step 2 and 5 of cleaning procedure.
2. Cleaning instructions are supported by a video in attachments.

### Debris Disposal:

- Refer to the attached MSDS as well as observe local regulations for information on disposal.

### EGR Valve Installation and Testing:

1. Re-install the EGR Valve with a new gasket using the appropriate WIS document (document numbers referenced below).
2. Following cleaning, initialization of the EGR Valve via XENTRY diagnosis is NOT required.
3. Perform a test drive to see if complaint is resolved.
4. If the fault persists following cleaning, then proceed to perform further diagnosis to determine root cause starting with Remedy for Complaint A Step 4.
5. If no other faults are found following proper diagnosis, it is acceptable to replace the EGR Valve for mechanical issues.

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## Remedy for Complaint C:

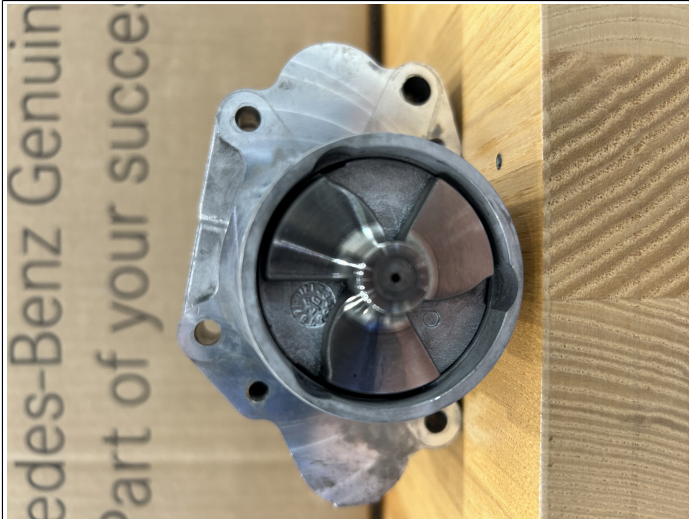
1. Diagnose electrical faults.
2. If the electrical fault is determined to be the EGR Valve, it must be replaced. Cleaning will not be effective for electrical related issues of the EGR Valve, and therefore not permitted.

## Ensure to review and follow the following notes:

1. If the EGR Valve is determined to have a mechanical fault, the EGR Valve must be cleaned first, and thereafter, test drive the vehicle to see if issue is resolved before an EGR Valve replacement is to be considered and accepted as warrantable.
2. If the EGR Valve requires replacement following cleaning and diagnosis provided no remedy utilizing Remedy for Complaint A Step 4, state in write-up that cleaning was performed. This information will be necessary if EGR Valve replacement is claimed under warranty.
3. If the EGR Valve cleaning is unsuccessful to resolve the issue, the cleaning can still be claimed under warranty if EGR Valve warranty coverage is available for vehicle.
4. If the EGR Valve is damaged while attempting to remove it, the part must be replaced. Ensure to provide explanation of damage on RO and provide pictures of damage to warranty claim if repair is warrantable.
5. The EGR Valve cleaning procedure is NOT valid for OM651 equipped Sprinters or Diesel equipped Passenger Cars.
6. Do NOT use TUNAP 926® to clean any other EGR system component. This product is only intended to clean EGR Valves.
7. If the vehicle returns after cleaning the EGR Valve in accordance to this LI, perform further diagnosis. Use Step 4 of Remedy for Complaint A to aid in diagnosis. Once root cause is found and rectified, check EGR Valve for sooting and clean if necessary.
8. Increased soot production can accumulate in the EGR system resulting in unfavorable driving conditions. Consider the following reasons for the increase in soot production:
  - Speak with the client to determine the primary vehicle usage, including driving habits (highway, city, stop-and-go, short trips) and the amount of idle time the vehicle/engine undergoes.
  - The wrong oil or exceeding the maintenance interval can lead to increased soot production and accumulate within the EGR system. If questionable, obtain an oil sample and send to ALS Tribology for testing.
  - The use of any Diesel fuel exceeding 5% Biodiesel (B20 fuels) or Renewable Diesel fuels can lead to increased soot production and accumulate with the EGR system. If questionable, obtain a fuel sample and send to ALS Tribology for testing.

NOTE: The information contained in this document is intended for use by trained, professional technicians with the knowledge to properly and safely perform diagnosis and repairs on Mercedes-Benz vehicles, using Mercedes-Benz approved tools and equipment. It informs service technicians about conditions that could occur in certain vehicles and provides information that could assist in proper vehicle diagnosis, service, or repair. It does not indicate that a defect is present in any vehicle referenced in this document nor does it imply warranty coverage. DO NOT assume that a symptom or condition, or a described cause of a symptom or condition, affects any particular vehicle or groups of vehicles, or that a described repair applies to any particular vehicle or groups of vehicles. There can be multiple causes resulting in the same or similar symptoms or conditions described in this document, and trained professional service technicians must use their diagnostic skills to make evaluations on a case-by-case basis. The information contained in this document does not guarantee warranty coverage nor does it extend the vehicle's warranty in any way.

Attachments	
File	Description
<a href="#">EGR Valve Electrical Fault Codes.pdf</a>	List of EGR Valve Electrical Fault Codes.
<a href="#">OM642 EGR Valve Cleaning Instructional Video using TUNAP 926®.mp4</a>	OM642 EGR Valve Cleaning Instructional Video using TUNAP 926.
<a href="#">TUNAP 926® MSDS.PDF</a>	TUNAP 926 MSDS.
<a href="#">OM642 After Cleaning 1.JPG</a>	Bottom view of cleaned EGR Valve looking at blades.



OM642 EGR After Cleaning 2.JPG

Side view of cleaned EGR Valve.



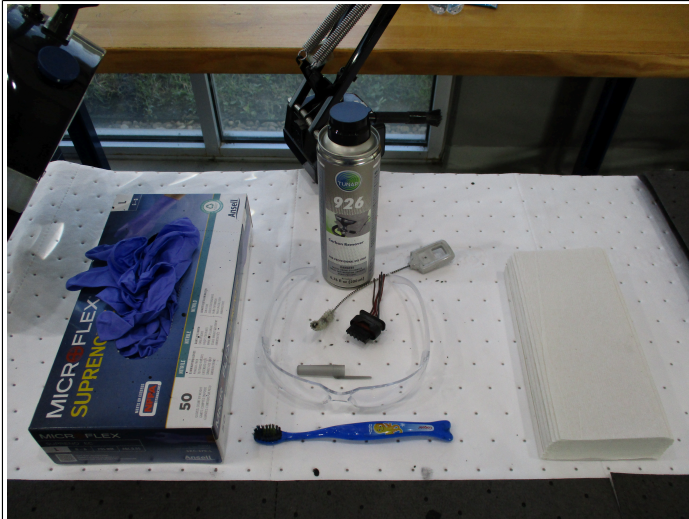
EGR Valve Cleaner Application.JPG

EGR Valve with cavity filled, and blades covered in cleaner.

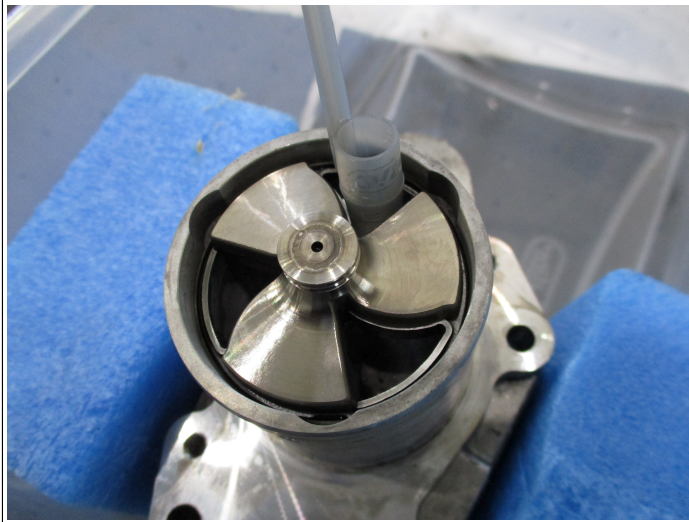


Brushes.JPG

Non-metallic soft brushes to assist in cleaning, and pen cap used to hold blades open for cleaning.



Blades Open.JPG



Hold blades open to clean using suitable non-metallic holder/wedge placed in the hole directly in front of the open cavity (i.e. pen cap).

## WIS-References

Document number	Title	Note
AR14.20-D-7662SG	Remove/install exhaust gas recirculation valve	Engine 642.896/898 in model 906
AR14.20-D-7662TSV	Remove/install exhaust gas recirculation valve	Engine 642.899 in model 907

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<b>Symptoms</b>
Power generation > Engine management > Engine running > Runs rough/shakes
Power generation > Engine management > Indicator lamp > Engine diagnosis > lit
Power generation > Engine management > Function > Malfunction

<b>Parts</b>						
Part number	ES1	ES2	Designation	Quantity	Note	EPC
A6421422380			Engine	1	OM642 EGR Valve Gasket	X
BQ6670128			Engine	0.5	1 Can of TUNAP 926® BQ6670128 should be able to clean 2 EGR Valves. Claim 0.5 Qty. per Warranty Claim. For heavily sooted EGR Valves which requires more than 1/2 of can to clean, claim 1.0 for these special instances.	X

<b>Control unit/fault code</b>	
Control unit	Fault text
CDI6Common Rail Diesel Injection (CR6NFZ)	<p>14A000 - Component 'Y27/17 (Exhaust gas recirculation positioner)' has an internal fault.</p> <p>14A100 - Component 'Y27/17 (Exhaust gas recirculation positioner)' has an internal fault.</p> <p>14B700 - The exhaust gas recirculation valve sticks when closed.</p> <p>14B800 - EGR valve jams in opened position.</p> <p>14CF00 - Event:Component 'Y27/17 (Exhaust gas recirculation positioner)' was temporarily sluggish.(Position control deviation)</p> <p>148B00 - Exhaust gas recirculation rate is too high.</p>
CDI60Common Rail Diesel Injection (CR60NFZ)	<p>P14A000 - The position of the exhaust gas recirculation positioner (high pressure) is outside the adaptation values.</p> <p>P14A100 - The position of the exhaust gas recirculation positioner (high pressure) is outside the adaptation values.The commanded position cannot be reached.</p> <p>P14B700 - The exhaust gas recirculation positioner (high pressure) is jammed closed.</p> <p>P14B800 - The exhaust gas recirculation positioner (high pressure) is jammed open.</p> <p>P148B00 - Component Exhaust gas recirculation positioner has a malfunction.The actuator does not close.</p>

<p>N3/28 - Motor electronics 'CDI61NFZ' for combustion engine 'OM642' (CDI) (CR61NFZ)</p>	<p>P042FFA - The exhaust gas recirculation positioner (high pressure) is jammed closed. _</p> <p>P049D00 - The position of the exhaust gas recirculation positioner (high pressure) is outside the adaptation values. _</p> <p>P30017E - The position of the exhaust gas recirculation positioner (high pressure) is outside the adaptation values.</p> <p>P30017F - The position of the exhaust gas recirculation positioner (high pressure) is outside the adaptation values. The commanded position cannot be reached.</p> <p>P300182 - Component 'Exhaust gas recirculation actuator (high pressure)' has a malfunction. The actuator does not open.</p> <p>P300198 - The exhaust gas recirculation positioner (high pressure) is jammed closed.</p> <p>P300199 - The exhaust gas recirculation positioner (high pressure) is jammed open.</p>
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## Operation numbers/damage codes

Op. no.	Operation text	Time	Damage code	Note
			4901M01	Use only for EMP 906 Sprinter with OM642 with active BlueTec Extended Modification Warranty. Total claim not to exceed 2.5 hours with supporting documentation and punch times. Also reference LI document number in technician story per Warranty Policy 10.11.
			1431593	Use only for non-EMP 906, 907 Sprinter with OM642 and vehicle has EGR Valve Warranty Coverage. Total claim not to exceed 2.5 hours with supporting documentation and punch times. Also reference LI document number in technician story per Warranty Policy 10.11.
070641	Diagnosis of EGR Valve related concerns including CEL, or drivability concern	Up to 1.0 hours		Punch time must support claimed time.
140000	Clean EGR Valve	Up to 0.5 hours		Must follow non-time policy with separate and identifiable punch.
147660	Remove and re-install EGR Valve			For time, refer to ASRA.
541011	Quick Test			For time, refer to ASRA.