**SB-10034867-7599**

SI M12 02 10
Engine Electrical Systems

September 2012
Technical Service

This Service Information bulletin supersedes SI M12 02 10 **dated March 2012.**

NEW designates changes to this revision

## SUBJECT
**Cooper S with N14: Diagnosis for Misfire Faults**

## MODEL
R55, R56, R57, R58 and R59 with the N14 engine

## SITUATION
The Service Engine Soon (MIL) lamp is illuminated and/or the customer complains that the engine runs rough (engine cold or warm) with any of the following misfire faults stored in the DME:

- 2771, 2772, 2773, 2775, 2776, 2777, 2779, 277A, 277B, 277D, 277E, 277F – "Combustion misfire, cylinder 1..4", sometimes together with:
- 2781, 2782, 2783 – "Combustion misfire, multiple cylinders"

On rare occasions, the Service Engine Soon lamp may not be illuminated (with misfire faults still stored in the DME) when the vehicle is brought to the workshop.

## CAUSE
Multiple causes related to electrical and mechanical engine components, or poor fuel quality in combination with unfavorable driving behavior (low loads and short driving distances). This condition may lead to possible clogging of the injector tips, causing a disturbance of the fuel spraying pattern or excessive carbon deposits on the intake valves/ports, resulting in reduced air flow into the combustion chambers.

## PROCEDURE

1. Vehicles in the New Passenger Car Limited Warranty period (4 years/50,000 miles)
2. NEW Correction steps 10 and 11: A TeileClearing PuMA case is required at this point to obtain recommended repair procedures, and to allow for the submission of eligible and covered repairs.
3. Vehicles beyond the New Passenger Car Limited Warranty period (4 years/50,000 miles)
4. Following the Correction steps that follow, in order.

## CORRECTION
The following steps should be used as **guidance and a supplement to the ISTA Misfire Diagnostic Test** plan:

1. NEW If other fault codes for VANOS, high-pressure fuel systems (e.g., HPP FC 2880), injectors, ignition, turbo boost control, etc., are stored in the DME as well as the misfire faults, **it is**

**mandatory to perform the appropriate ISTA/D test plans for the affected component prior to executing the misfire test plan (B1214 M MISFIRE2 Misfiring detection).**

**Perform necessary repairs as needed.**

2. NEW Conduct basic engine diagnostic checks:

   - Check coils, plugs, relevant electrical connections, etc.

   - Check the intake track for leaks or restrictions (air filter, collapsed hoses, etc.).

   - Check that the crankcase pressure = 38.0 mbar +/-10%, but not more than 4 mbar.

   - Check the inlet oil feed pipe to the turbo for possible blockage (follow SI M11 03 08).

   **Perform necessary repairs as needed.**

3. NEW **IMPORTANT HINT: For vehicles with combustion misfire faults stored in multiple cylinders:**

   **Check the cylinder-specific misfire fault's environmental conditions for indication of fuel pressure loss. A cylinder-specific misfire fault states, in the description of the fault, the cylinder in which the fault occurred. Disregard the environmental conditions stated in FC 2778, "Misfiring, several cylinders," since these environmental conditions are incorrectly stated.**

   **If the fuel pressure recorded in any cylinder-specific misfire fault's environmental conditions show a value less than 4.00 MPa, replace the High-pressure Fuel Pump (HPP) and clear the DME adaptation values. Verify the effectiveness of the repair with a cold start (mandatory for complaints of rough running/misfire faults when cold) after overnight parking.**

4. NEW If the fuel pressure recorded in misfire faults under environmental conditions **is equal to or higher than 4 MPa, perform ISTA/D test plan "B1214_M_MISFIRE2_Misfiring detection."**

   **Note:** It is generally **not recommended to perform a compression test at this early stage of diagnosis**, as it is currently stated in the misfire test plan. The compression and leak-down test should be performed when diagnosing repeat drivability-related visits which were not corrected by previous repairs. Certain vehicles, usually with higher mileage (above 35,000 miles), when driven mostly in city stop-and-go conditions, may develop an excessive carbon buildup on the intake valves. This may affect engine compression and leak-down. If the leak-down test shows results substantially exceeding the standard of 8% (e.g.,15-25%), the cylinder head has to be removed, the valves/seats checked, and the valves lapped

   **Perform necessary repairs as needed.**

5. NEW **IMPORTANT:** Rough running complaint where NO "Service Engine Soon" lamp is illuminated and no misfire fault codes are stored in the DME:

   In a situation where the customer may complain about a rough running condition but the "Service

Engine Soon" lamp is **NOT** illuminated, and there are **NO** misfire fault codes stored in the DME, the cause of this complaint may not be related to the condition described in this bulletin.

**If no defect is found, recommend that the customer purchase and add one bottle of MINI Fuel System Cleaner Plus (P/N 82 14 2 186 158) to the vehicle's fuel tank (during the next refueling) for cleaning of the injection system.**

**Explain to the customer that in order to help maintain optimum engine cleaning performance, MINI USA recommends routinely adding one bottle of the MINI Fuel System Cleaner Plus every 3,000 miles when refueling, preferably with TOP TIER Detergent Gasoline that provides a premium level of detergent concentration and qualities. Adding the MINI Fuel System Cleaner Plus, as recommended, is not a warranty matter (non-eligible repair).**

Also, the MINI Fuel System Cleaner Plus is the only MINI approved fuel system cleaner for cleaning the fuel injection system and combustion chambers. Using non-approved fluid or tools can lead to premature component failure, and will not be covered under warranty.

6. If the "Service Engine Soon" lamp is illuminated or the misfire fault(s) is stored in the DME, proceed to the next step.

7. NEW **On vehicles within the first 4 years/50,000 miles:**

   **Perform ISTA/D test plan "B1214_M_MISFIRE2_Misfiring detection."**

8. NEW When the following question is encountered, "Is the procedure performed for checking a cleaning of the intake ports or setting of the timing? **YES/NO**"

   - Select "**NO**" if this is the initial diagnosis of the customer's complaint.
   - Select "**YES**" if this is a verification test after repairs have been conducted, i.e., setting the timing or cleaning the valves.

9. NEW Manually record the averaged operational smoothness value of all cylinders and the target values of the automatic coking test results, since these will be needed for TeileClearing case approval.

10. NEW If the test plan advises to clean the intake valves, complete the remaining steps of the test plan, obtain a diagnosis code, terminate the current diagnostic session, and allow FASTA data to transmit. Remove the intake manifold and create a TeileClearing case and provide the following information in the case details:

    - Averaged operational smoothness value of all cylinders and the target values of the automatic coking test results
    - Level of carbon (1-10) that resembles one of the illustrations in the attachment to this bulletin

11. NEW If the result of the test plan advises to adjust the camshaft timing, complete the remaining steps of the test plan, obtain a diagnosis code, terminate the current diagnostic session, and allow

FASTA data to transmit. Do not adjust the camshaft timing. Create a TeileClearing case.

**Notes on Submitting a TeileClearing case to N14 Drivability TC Action titled "N14 Rough running/misfire".**

Refer to SI M00 03 09 (PuMA Enhancements for TeileClearing Process) for details on creating a "TC Case" in PuMA. Please submit a "Case" in PuMA for regular technical support by the Technical Support Engineers (TSEs) when the affected TeileClearing part replacement authorization is not required, e.g., technical support with coding and programming that does not require TC part replacement.

**Before creating a "TC Case" in PuMA:**

- The technician assigned to the vehicle must have training directly related to the vehicle or system in question.
- All available resources must be reviewed. These include, and are not limited to: Service Information bulletins, Service Technology Bulletins (SBT), DCS messages, Bonnet, Boot & Wings, Training Manuals, Repair Instructions, and Functional Descriptions. It is the dealer's responsibility to be familiar with all published technical information.
- NEW Required checks must be performed, e.g., applicable diagnostic test plans for the faults stored (with the exception of the faults identified in this bulletin for vehicles within the first 4 years/50,000 miles), checking fuel pressures, checking the vehicle service history, etc.
- The Shop Foreman and/or Team Leader must be consulted.
- The vehicle must be in the shop.
- NEW In order to aid the Technical Specialists in diagnosis, the diagnostic tester must transmit the required FASTA data, and applicable diagnostic test plans for the faults stored which have been completed (with the exception of the faults identified in this bulletin for vehicles within the first 4 years/50,000 miles). DO NOT perform a "quick delete" or delete any fault memory before transmitting FASTA data.

To contact our TeileClearing Management Team for any TC process inquiries or current TC case escalation, please send an email to tc@bmwna.com.

12. NEW **For vehicles beyond the first 4 years/50,000 miles, follow the steps below:**

13. NEW **Perform ISTA/D test plan "B1214_M_MISFIRE2_Misfiring detection".**

14. NEW In a situation where the customer may complain about a rough running condition but the "Service Engine Soon" lamp is **NOT** illuminated and there are **NO** misfire fault codes stored in the DME, the cause of this complaint may not be related to the condition described in this bulletin.

    **If no defect is found, recommend that the customer purchase and add one bottle of MINI Fuel System Cleaner Plus (P/N 82 14 2 186 158) to the vehicle's fuel tank (during the next refueling) for cleaning of the injection system.**

**Explain to the customer that in order to help maintain optimum engine cleaning performance, MINI USA recommends routinely adding one bottle of the MINI Fuel System Cleaner Plus every 3,000 miles when refueling, preferably with TOP TIER Detergent Gasoline (provides a premium level of detergent concentration and qualities). Adding the MINI Fuel System Cleaner Plus, as recommended, is not a warranty matter (non-eligible repair).**

Also, the MINI Fuel System Cleaner Plus is the only MINI approved fuel system cleaner for cleaning the fuel injection system and combustion chambers. Using non-approved fluid or tools can lead to premature component failure, and will not be covered under warranty.

15. NEW If the "Service Engine Soon" lamp is illuminated or the misfire fault(s) is stored in the DME, proceed to the next step.

16. NEW Follow the test plan using ISTA/D test plan "B1214_M_Misfire2 - Misfire detection," supplied in version 2.33.0 or higher, after reviewing the troubleshooting hints described above in steps 1-5.

17. NEW Only clean the excessive carbon deposits if instructed by the test plan. To clean intake carbon deposits, use BMW Group Carbon Blaster P/N 81 29 2 208 034, shipped to your dealership via the Automatic Tool Shipment Program (SI M04 03 11). Follow the Operating Manual (attached to SI M04 03 11) for a detailed description of the cleaning procedure.

18. NEW When the following question is encountered in the test plan, "Is the procedure performed for checking a cleaning of the intake ports or setting of the timing? YES/NO"

    - Select "**NO**" if this is the initial diagnosis of the customer's complaint.

    - Select "**YES**" if this is a verification test after repairs have been conducted, i.e., setting the timing or cleaning the valves.

19. NEW After the cleaning procedure has been completed, the test plan will need to be conducted once more before releasing the vehicle. When the following question is encountered, "Is the procedure performed for checking a cleaning of the intake ports or setting of the timing?" Select "**YES**" to continue to a verification test after repairs have been conducted, i.e., setting the timing or cleaning the valves.

    After the carbon cleaning procedure is completed, add one bottle of MINI Fuel System Cleaner Plus (P/N 82 14 2 186 158) to the vehicle's fuel tank for additional cleaning of the injection system.

    **NOTE:** For prolonged and continuous fuel system cleaning effects, advise the customer to add one bottle every 3,000 miles when refueling. Refer to SI M13 05 06, "MINI Fuel System Cleaner Plus," for a full explanation of the product benefits.

20. NEW If the test plan advises that the carbon on the valves is not excessive but does recommend performing an injection cleaning, only use the approved in-rail injection cleaning kit. This kit utilizes the approved **"BMW Group Fuel Injection and Induction System Cleaner."** Refer to the attached procedure. The injection cleaning Application Kit (P/N 82 14 0 429 692) has been shipped via the Automatic Tool Shipment Program to every MINI dealer. Refer to SI M04 07 07

for complete details. Advise the customer that it is necessary to add one bottle of the MINI Fuel System Cleaner Plus (P/N 82 14 2 186 158, provided free of charge at the time of releasing the vehicle) with either TOP TIER Detergent Gasoline or premium fuel, with a minimum octane rating of AKI 91, the next time the vehicle is refueled.

**NOTE:** For prolonged and continuous fuel system cleaning effects, advise the customer to add one bottle every 3,000 miles when refueling. Refer to SI M13 05 06, "MINI Fuel System Cleaner Plus," for a full explanation of the product benefits.

**Important:**

**After completion of the repairs, reprogram the complete vehicle using the current ISTA/P version (ISTA/P 2.47.1 or higher; target integration level R056-12-07-503 or higher). The new DME calibration software includes an optimized injection timing strategy, as well as an increased operating pressure, improving the injector's operation.**

NEW Additionally, MINI USA recommends that the in-rail injection cleaning service be performed yearly (on a customer-pay basis) on N14 vehicles which currently do not exhibit the negative harmful effects of carbon buildup, to maintain MINI's dynamic performance and maximize fuel economy.

NEW **Note: The fluids and tools described in this Service Information bulletin are the only MINI approved items that can be used to clean the fuel injection system and combustion chamber. Using non-approved fluids or tools can lead to premature component failure and will not be covered under Warranty.**

## WARRANTY INFORMATION

NEW **Procedure 1 (Vehicles Within the New Passenger Car Limited Warranty – 4 years/50,000 miles)**

NEW **A. Correction Steps: 1-4**

NEW Eligible repairs are covered under the terms of the MINI New Passenger Car Limited Warranty,

NEW If performing the ISTA diagnostics, related test plans and the recommended diagnosis procedures results with **other eligible necessary and covered repairs**, claim these repairs with the applicable defect code and labor operations listed in KSD2.

NEW **Note:** Please follow any TeileClearing or Diagcode requirements that may apply to this additional work.

NEW **B. Correction Steps: 6-11**

NEW Eligible repairs are covered under the terms of the MINI New Passenger Car Limited Warranty,

NEW If the required TC case results in eligible and covered recommended work, claim this work with the defect code and labor operations provided in the TC case and/or as listed in KSD2.

NEW **Procedure 2 (Vehicles Beyond the New Passenger Car Limited Warranty – 4 years/50,000 miles)**

**NEW C. Correction Steps: 1-20 as Necessary (Excluding Non-eligible Repair Steps 5 and 14)**

NEW Specific eligible repairs may be covered by the terms of the **applicable** Federal, State or MINI Emissions Warranty or the MINI NEXT Certified Pre-Owned Limited Warranty.

NEW Please see SI M01 03 11 for “Emissions Warranty Coverage” and refer to the “Glossary of Emission Coverage” attachment for more information.

NEW The MINI NEXT Certified Pre-Owned Limited Warranty applies to MINI NEXT vehicles that are still within the MINI NEXT coverage period, but beyond Emissions Warranty coverage that applies.

Eligible MINI NEXT vehicles will show the program as either “Active” or “Hyper-Active” in the Contract/Service Program Information section of the DCSnet Warranty Vehicle Inquiry.

**Defect code, Labor and Sublet Reference Information**

| **Defect Code:** | **11 34 00 76 00** | |
|---|---|---|
| **Labor Operation:** | **Labor Allowance:** | **Description:** |
| 00 00 006 | Refer to KSD2 | Performing vehicle test (Main Work) |
| 11 61 550 | Refer to KSD2 | Remove and install intake manifold (Plus work) |
| NEW 11 99 000 | 7 FRU | Work time to clean carbon from intake valves/ports **(only when the test plan advises cleaning)** |
| Sublet Code 4: | See sublet reimbursement calculation item # 1, below | Reimbursement must be charged to sublet code #4 for the cleaning media (Bulk quantity of 20/30 SAE or 0.45-0.80 mm walnut shells, sourced locally) and one bottle of MINI Fuel System Cleaner PLUS (P/N 82 14 2 186 158) required to perform this repair. Do not use this part number for claim submission. Claiming for more than the applicable amount or claiming outside of sublet code 4 will result in a delayed or denied claim payment. |

**Or**

| **Labor Operation:** | **Labor Allowance:** | **Description:** |
|---|---|---|
| 00 00 006 | Refer to KSD2 | Performing vehicle test (Main work) |
| 11 61 550 | Refer to KSD2 | Remove and install intake manifold (Plus work) |
| NEW 13 99 000 | 10 FRU | Work time to clean the injectors and the |

| | | |
|---|---|---|
| | | combustion chambers **(only when the test plan advises cleaning)** |
| Sublet Code 4: | See sublet reimbursement calculation item # 2, below | Reimbursement must be charged to sublet code #4 for 300 ml of the concentrated cleaner (Bulk quantity reference P/N 82 14 0 428 376) and one bottle of MINI Fuel System Cleaner PLUS (P/N 82 14 2 186 158) required to perform this repair. Do not use this part numbers for claim submission. Claiming for more than the applicable sublet amount or claiming outside of sublet code 4 will result in a delayed or denied claim payment. |

**Or**

| **Labor Operation:** | **Labor Allowance:** | **Description:** |
|---|---|---|
| 00 00 006 | Refer to KSD2 | Performing vehicle test (Main work) |
| 13 99 000 | 10 FRU | Work time to clean the injectors and the combustion chambers (Intake valve inspection not required) |
| Sublet Code 4: | See sublet reimbursement calculation item # 2, below | Reimbursement must be charged to sublet code #4 for 300 ml of the concentrated cleaner (Bulk quantity reference P/N 82 14 0 428 376) and one bottle of MINI Fuel System Cleaner PLUS (P/N 82 14 2 186 158) required to perform this repair. Do not use this part numbers for claim submission. Claiming for more than the applicable amount or claiming outside of sublet code 4 will result in a delayed or denied claim payment. |

NEW Labor operation code 00 00 006 is a Main labor operation. If you are using a Main labor code for another repair, use the Plus code labor operation 00 00 556 instead.

NEW Refer to KSD2 for the corresponding flat rate unit (FRU) allowance. Enter the Chassis Number, which consists of the last 7 digits of the Vehicle Identification Number (VIN). Click on the “Search” button, and then enter the applicable flat rate labor operation in the FR code field.

NEW Even though work time labor operation code 11 99 000 ends in “000”; it is not considered a Main labor operation.

NEW Even though work time labor operation code 13 99 000 ends in “000”; it is not considered a Main labor operation.

NEW **Additionally, for Cooper S/Clubman S vehicles,** reprogramming control units, if required, may be claimed in conjunction with one of the repair scenarios listed above:

| Labor Operation: | Labor Allowance: | Description: |
|---|---|---|
| 61 00 710 | Refer to KSD2 | Programming and encoding control units w/o CAS |
| or | | |
| 61 00 720 | Refer to KSD2 | Programming and encoding control units with CAS |

**Materials - Sublet Reimbursement Calculation (Sublet Code 4)**

1. Walnut shells (Bulk quantity, sourced locally) at $20.00 and PN 82 14 2 186 158 (quantity one) at dealer net plus handling. Enter these materials as one sublet total and itemized the amount in the claim comment section. Do not use this part number for claim submission.

2. PN 82 14 0 428 376 (partial container quantity of 300 ml) and PN 82 14 2 186 158 (quantity one), both at dealer net plus handling. Enter these materials as one sublet total and itemized the amount in the claim comment section. Do not use this part numbers for claim submission.

   Note: PN 82 14 0 428 376 (Bulk quantity) full container size is 16 fluid ounces or 473 ml

**Cooper S/Clubman S Vehicles Requiring Reprogramming**

If a control module fails to program correctly or initializations are required, the additional work must be claimed with separate labor operations under the defect code listed above, refer to KSD2.

**ATTACHMENTS**

view PDF attachment **M120210_N14_Deposits**.
view PDF attachment
**M120210_N14_Direct_Injection_and_Combustion_Chamber_Cleaning_Procedure**.
view PDF attachment **M120210_BMW_Group_Carbon_Blaster_N14**.
view PDF attachment **M120210_Service_Instruction**.