Technical Proof Sheet

Test Center: Toyota Central Europe		**Date:**	08.07.2020
City: Prague		**Vehicle:**	Toyota C-HR
Technical Specialist	**After Sales Manager**	**Mileage:**	33.371
Petr Frühauf	Vladislav Goban	**Valve Cleaning**	

Error description:
(What, Where, When, How, Why)

Vehicle was selected for demonstration and training of Toyota Valve Cleaning Tool and TUNAP 933 & 936. Intake manifold was disassembled upon arrival as per request. Vehicle showed carbon deposits on valves and intake ducts.

Procedure performed:

Before demonstration of valve cleaning tool, TUNAP briefly introduced their company and explained the possible problems in the exhaust and intake system with special focus on the intake valves and carbon deposition. TUNAP presented products that provide solutions for these problems in the engine and exhaust system.

DEMONSTRATION VALVE CLEANING
Intake manifold needs to be disassembled for valve cleaning procedure.

The engine was covered with paper towels and paper towels were used to cover and protect the intakes of the cylinders that were not cleaned at that moment.

Cleaning Procedure:
The TUNAP application engineer Jonathan Gysel explained and showed how to use the valve cleaning tool:
1: Connect the pressure controller to the garage compressed air system.
2. Adjust the compressed air to 6,5 bar using the pressure controller.
3. Shake 933 bottle, insert the cap of the spray gun into bottle and screw on tightly
4. Connect the spray gun with the compressed air hose to the pressure controller.
5. Ensure the valve of the cylinder to be cleaned is closed.

Photos/Documents:







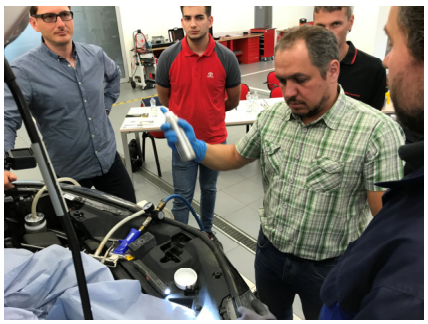


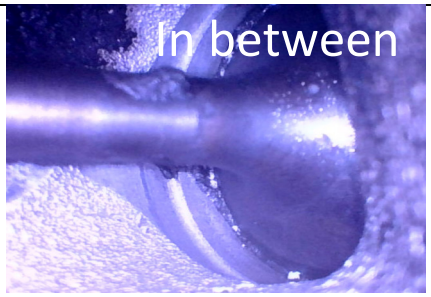
6. Attach the adapter to the vacuum cleaner and insert adapter into intake port cover.
7. Insert straight nozzle into intake port cover and place cover on intake port.
8. Turn on vacuum cleaner and lower power. Please note: the system is sensitive to strong vacuum cleaners without regulation of vacuum power!
9. Spray on dirty valves for about 20 - 30 seconds using quick bursts.
10. Check cleaning result; if front of valve is clean, switch to nozzle with 37° head and continue cleaning back of valve in same manner.
11. Connect the blow gun to the compressed air system.
12. Use it to blow residual granulate off the intake and valve areas, turn off vacuum cleaner.
13. Spray neutralisation solution into the intake and valve areas to dissolve any granulate left and wait for solution to clear. Cover intake ducting with a cloth and use the blow gun to get rid of the neutralisation solution residue.

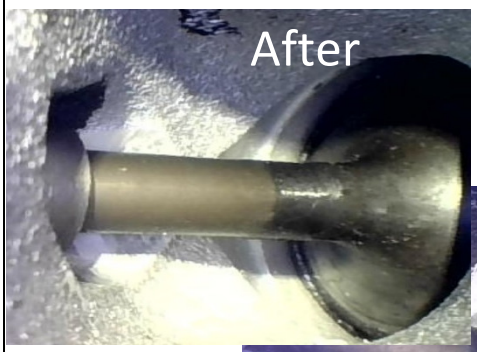
Repeat for all cylinders.

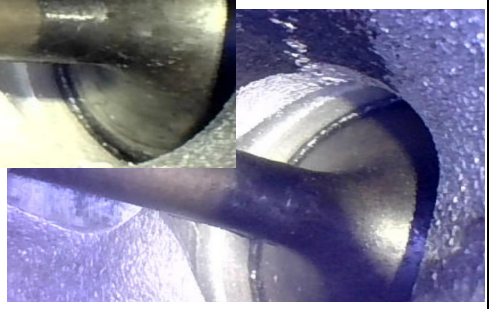
Jonathan explained and demonstrated the cleaning for the first valve. The other seven valves were cleaned by Toyota technicians who did the cleaning for the first time.

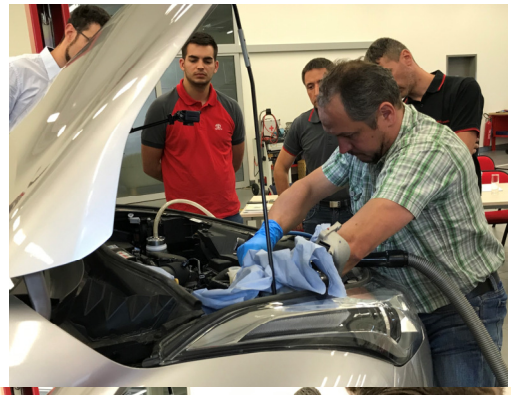
The whole cleaning procedure took one and a half hours including explanation and demonstration. 1,5 bottles of 933 were used. The intake manifold was reassembled by in 20 minutes.













Specific information:

Using TUNAP Toyota Valve Cleaning System and TUNAP 933&936 is the recommended valve cleaning procedure by TME. This method does not require disassembly of the cylinder head. The respective TSB calculates 3h to clean the valves and 1,9 h for disassembly and assembly of the intake manifold. The other option the TSB mentions is removal of the cylinder head and manual cleaning of the valves, for which an operating time of 22 h is given.

Final Analysis:

All carbon residues were removed from the valves. All Toyota technical personnel used this cleaning method for the first time and quickly learned to clean valves reliably using the TUNAP tool. After the demonstration, all Toyota technical personnel present was capable of cleaning valves by themselves.

Technical Service Bulletin

EG-00094T-TME
Version 7
6 Apr 2020

Subject:
8NR-FTS Cylinder Misfire DTC P030100,P030200,P030300,P030400,P030027,P030085
Area of Application:
All Markets
Models – Model Codes:
Auris - NRE185 ;
C-HR - NGX10, NGX50 ;

Engine

Revision Content

Tunap cleaning tool added to "Repair Procedure"

Introduction

This Technical Service Bulletin is to inform you of the production change and repair method for the subject concern.

Description of the phenomenon

Some customers may experience and report engine hesitation while driving. In some cases malfunction indicator light (MIL) turns ON combined with a reduction of engine power.

Based on the occurrence conditions one or a combination of below DTCs are stored in the ECU:

DTC P030027 Random/Multiple Misfire Detected (Emission) Signal Rate of Change Above Threshold

DTC P030085 Random/Multiple Cylinder Misfire Detected (Over Temperature) Signal Above Allowable Range

DTC P030100 Cylinder 1 Misfire Detected

DTC P030200 Cylinder 2 Misfire Detected

DTC P030300 Cylinder 3 Misfire Detected

DTC P030400 Cylinder 4 Misfire Detected

The phenomenon can be:

- The Engine ECU software (only applicable to vehicles equipped with Start & Stop function) which enters in a specific mode during Start and Stop condition. A bug in the software can cause a permanent damage in the Ignition Coils and misfire may occur in certain driving conditions.
- Excessive amount of carbon deposits accumulated on the intake valves.

Production change

- The Engine ECU control logic is optimised to prevent the damage of the Ignition Coils.
- Ignition Coil is improved to increase internal circuit durability.

Production change information

Model	Model code	Engine type	Plant	Production change	Production change effective VIN	Implementation date
Auris	NRE185	8NR-FTS	TMUK	Engine ECU software	TBC	03/03/2017
				Ignition Coil improvement	SB1MA3JEX0E056173	12/04/2018
C-HR	NGX10, NGX50	8NR-FTS	TMMT	Engine ECU software	TBC	31/03/2017
					NMTKY9BX60R049019	24/07/2018

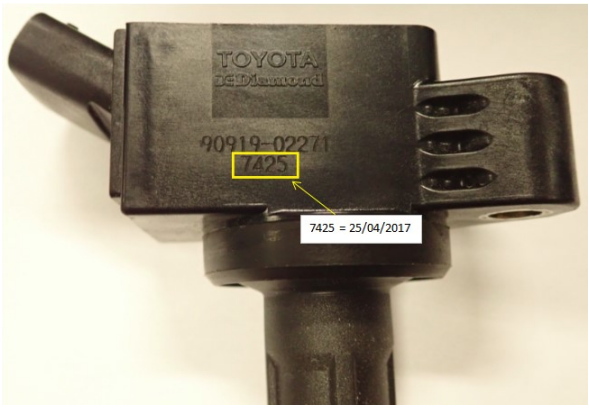
Model	Model code	Engine type	Plant	Production change	Production change effective VIN	Implementation date
				Ignition Coil improvement		

Parts information

Model Type	Previous part number	New part number	Part name	Quantity
All	89685-20010	Same	ECU Label Sticker	1
All	90919-02271	Same	COIL, IGNITION	1

Figure 1: Example of Ignition Coil production code.

All Ignition Coils with production code 8208 (08/02/2018) or higher are of the latest available kind.



Note
Production code 8208 means: 8 = year 2018 , 2 = month February, 08 = Day
In case that month is described by a letter please consider below explanation:
X = month October, Y = month November, Z = month December
Example:
Ignition Coil production code before countermeasure: 8105 (05/01/2018)
Ignition Coil production code after countermeasure: 8Y07 (07/11/2018)

Repair procedure

Category 1 (Vehicles with previous calibration ID):

- Reprogram the “Computer, Engine Control” to the latest available calibration ID (minimum to the new CID as shown in below table) and apply a new ECU label sticker (part number: 89685-20010) with the correct ECU part number.
- Replace Ignition Coils from all cylinders (x 4) according to the Repair Manual.

Model	Model code	Model description	Part number	Old calibration ID	New calibration ID
Auris	NRE185	MTM/ATM	89661-*****	896630 Z81000 896630 Z81100	896630 Z81200
				896630 Z85000 896630 Z85100	896630 Z85300
				896630 Z49000	896630 Z49100
				896630 Z51000	896630 Z51200
C-HR	NGX10, NGX50	MTM/ATM	89661-*****	89663F 406000 89663F 406100	89663F 406200

Note
After reprogramming the engine ECU, a DTC might be set. If the DTC can not be erased by using GTS, disconnect the battery for 5 minutes.

Note
For detailed description of the reprogram procedure, please refer to Technical Service Bulletin: For Toyota: G-0002 - REPROGRAMMING METHOD OF ECU

Category 2 (Vehicles with latest calibration ID):

- If the Ignition Coil(s) production code is below 8208, replace Ignition Coil(s) according to the repair manual

Attention:
If misfire phenomena occurs in the same cylinder after performing previous steps, follow repair manual and perform diagnostic procedure based on DTC's. For a detailed description of the troubleshooting procedure, please refer to the model's repair manual: "Engine / Hybrid System > 8NR-FTS ENGINE CONTROL > SFI SYSTEM > DIAGNOSTIC TROUBLE CODE CHART"

Category 3 (All cases after applying the actions described in Category 1 & 2):

- If above actions cannot solve this problem, clean the carbon deposits accumulated on the valves.

Option 1: Tunap 13400 TOY cleaning equipment

Step1: Remove the intake manifold according to repair manual, confirm intake valve position in closed condition.

Step2: Set up Tunap cleaning equipment, for protection cover the engine in order to secure possible micro flex spreading with high pressure.

Step3: Start cleaning with Tunap, 1 cycle is ~10 second. Repeat 7 to 20 times for each valve until the carbon deposit is cleaned. Spray MF936 into intake valve area to dissolve any granule left.

Step4: Confirm carbon deposit removed from each intake valve.

Step5: Install the intake manifold according to the repair manual.

After finishing the cleaning by Tunap tool compression test is recommended (according to the repair manual).

Option2: Remove the cylinder head according to the repair manual and clean the carbon deposits accumulated on the valves.

Note
High amount of carbon deposits can be accumulated on the valves during cold engine and strong acceleration driving conditions. Customers who are regularly warming up the engine before driving in such conditions, may avoid facing this issue.

Warranty information

For the warranty application, please refer to the applicable warranty policy and procedures manual.

Table 1. **Warranty for repair category 1:**

OP code	Operation	Time	OFP	T1	T2
895909N	ECU reprogramming + sticker application	0.7	89661-*****	8A	99
801013	Hand-held tester or intelligent tester ii	0.2			
191011	Ignition Coil	0.3			
191011z	Combination: remaining 3 Ignition Coils	0.1			

Table 2. **Warranty for repair category 2:**

OP code	Operation	Time	OFP	T1	T2
191011	Ignition Coil	0.3	90919-02271	04	71
191011z	Combination: remaining 3 Ignition Coils	0.1			

OP code	Operation	Time	OFP	T1	T2

Table 3. **Warranty for repair category 3: Option 1**

OP code	Operation	Time	OFP	T1	T2
Tunap	Cleaning intake valves	3	13711-47010	04	71
170011	Intake Manifold Assembly	1.9			

* In case of Tunap 13400 TOY usage consumable products can be claimed as sublet cost.

Table 4. **Warranty for repair category 3: Option 2**

OP code	Operation	Time	OFP	T1	T2
141015	Valve Grinding (all valves)	22.1	13711-47010	04	71

Note

The implementation of this TSB for rectification of the phenomenon reported requires the mandatory CCR (Condition, Cause, Remedy) comments in the warranty claim for further detailed technical analysis. It is required to mention this TSB number in the Remedy field. Failure to comply with this requirement could lead to claim rejection.