VIN: Vehicle: X' / E72 / SC / Hybrid X6 / N63 / AUTO / EUR LL / 2010 / 02
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Test instructions for the exhaust-gas (emissions) test on BMW vehicles with alternative drives

5 / F10H Active Hybrid; 7 / F04 Active Hybrid; X6 / E72 Active Hybrid; E68 Hydrogen

Situation:

With reference to the presentation of the basics pertaining to the exhaust emissions test in accordance with Service Information bulletin 00 18 12 (864) of 01.04.2012 “General and legal information on performing the periodic exhaust-gas (emissions) test”, the exact test scopes and technical details are described for the exhaust emissions test on vehicles with alternative drives.

Vehicles concerned: F10H Active Hybrid; F04 Active Hybrid; E72 Active Hybrid; E68 Hydrogen;

Procedure:

1. Essentially the same test scopes and test specifications as apply to petrol- and diesel-engine vehicles in the EU and in Germany apply here.

See here SI 00 21 12 (867) Exhaust emissions test specifications for petrol-engine vehicles and SI 00 20 12 (866) Exhaust emissions test specifications for diesel-engine vehicles.

1.1 EU-wide:

a. **Vehicle identification check:** Vehicle and vehicle documents match; recording of the vehicle data for the test certificate.

b. **Visual inspection** of the exhaust system and the emission reduction unit for completeness, proper condition and leak-tightness.

c. **Setting check:** Engine speeds, etc. in acc. with BMW emissions test nominal values.

d. **Read out/evaluate OBD data** using Generic ScanTool.

e. **Effective check** by emission or opacity measurement at the exhaust tailpipe with the engine at operating temperature.

The values as from exhaust emission stage EURO 4, i.e. valid as from 2006, are applicable:

- Petrol engine:

  CO increased. Idle (2000 – 3000 rpm) max. 0.2 % by vol.

  Lambda at increased idle: 0,97 – 1,03

  CO at idle: max. 0.3 % by vol.

- Diesel engine:

  Opacity K as per sticker value on the type plate otherwise max. 1.5 m-1

1.2. Germany:

The **exhaust emissions test must be carried out** for the BMW vehicles in question:

- fully or mild hybrid vehicles, i.e. electric drive and combustion engine directly connected to the drive, and
- for vehicles with a purely electric drive, but which have as a range extender a combustion engine as a generator drive for the high-voltage battery,

in accordance with the 2-stage procedure applicable as from date of first registration 01.01.2006:

Basic: as Point 1.a – c (identification + setting checks)

Note: The test step Visual inspection is dropped from the new version of §29_StVZO as per the 47th amendment regulation as from 01.07.2012, as this is an integral part of the technical motor vehicle inspection and thus the same components are not inspected twice.

I. Stage: Readout and evaluation of the EOBD data MIL function; P codes in Mode 3; status of the test readiness codes;

Note: If data communication is not possible in the event of several

connection attempts between the ScanTool and the vehicle-side interface (OBD socket), the emissions test is classed as “not passed”!

If not all the vehicle-specific, relevant RCs are positively set, i.e. the EOBD system is not ready for testing, the following must additionally be carried out:

II. Stage: Exhaust tailpipe inspection with the following test points:

Petrol engine with closed-loop-controlled catalytic converter and OBD:

- CO increased idle > max. 0.2 % by vol. (n=2300-2700 rpm)
- Lambda 0.97-1.03 at increased idle
- CO in idle state > max. 0.3 Vol-%
- Closed loop test i.a.w. replacement procedure: i.e. current measurement* of the lambda control sensors as per manufacturer specifications at idle.

Diesel engine with OBD:

- Checking of idle and maximum speeds* at no load
- Smoke density at free acceleration: max. opacity value as per “sticker value” on vehicle type plate K value*, otherwise max. 0.5 m-1

* = see also type-specific BMW emissions test nominal value collection

2. Technical particulars:

2.1 Operation of the combustion engine at V = 0 km/h to carry out the emissions test,

if Step II = emission or opacity measurement at the tailpipe is required.

2.1.1 BMW 750 Active Hybrid _ F04:

Thanks to the mild hybrid concept, the combustion engine can be operated in a stationary state without additional interventions by operating the Start/Stop button.

2.1.2 BMW X6 Active Hybrid E72:

For the BMW X6 Active Hybrid on account of the full hybrid concept: “Start-up generally in electric motor mode” the following steps must be performed for operation of the combustion engine in a stationary state:

1. Required operating mode: “Detection of driver not absent”; i.e. driver's door must be open and driver's seat belt not fitted.
2. Engine start via Start/Stop button
3. Gearbox selector lever in position N!
4. Depress the accelerator pedal for increased idle measurement at n-mot = 2300 - 2700 rpm and for prescribed measurement period (30 secs.)
5. Gas pedal for idle state emission measurement not activated. Note: Depending on the state of charge of the high-voltage battery (HV) an increased load can be effected for the battery charge also in idle operation.
6. End the emissions test by operating the Start/Stop button again

2.1.3. BMW 5 Series Active Hybrid F10H:

For the BMW 5 Series Active Hybrid on account of the full hybrid concept: “Start-up usually in electric motor mode” the following steps must be performed for operation of the combustion engine in a stationary state:

- Prerequisite - combustion engine is at operating temperature (engine temperature display in the instrument cluster shows 70 – 110 °C)
- Leave the transmission selector lever in position “P” for the entire test procedure!

1. Get the vehicle ready for driving by pressing the Start/Stop button once and at the same time depressing the brake pedal; see blue “Ready” arrow at bottom left in the right instrument cluster display.

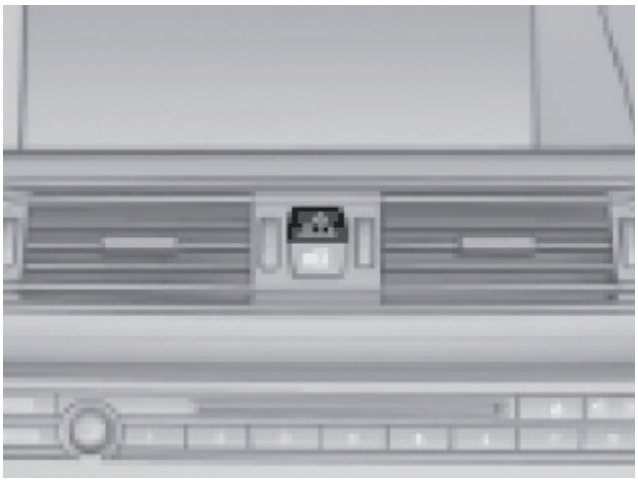
Ready display in instrument cluster

Start/stop button

Note: Keep the brake pedal permanently depressed for the following steps 2-5 also!

2. Operate the Start/Stop button again only briefly (> 0.5 sec.), i.e. place in terminal setting “R” (Radio).

3. Turn on the hazard warning switch in the centre console.



Hazard warning switch

4. Press the DSC button (front left next to selector lever) for approx. 10 secs. until the message “Test mode” appears in the

Check Control information display (CID).

DSC button

Test mode

5. Now operate the Start/Stop button again to start the combustion engine. The petrol engine starts safely and now behaves like a “normal” petrol engine.

The brake pedal can now be released.

6. For the emission measurement at increased idle speed (2300 – 2700 rpm) depress the accelerator pedal and hold down for the prescribed

measurement period of 30 seconds.

7. Carry out the emissions test at idle (do not depress the accelerator pedal).

Note: Depending on the state of charge of the high-voltage battery, a different idle speed (between 600 and 1000 rpm) can set in.

8. After the emissions test has been conducted, turn the combustion engine off by operating the Start/Stop button twice.

9. If necessary, turn off the hazard warning switch. The test mode is not terminated. (If petrol engine operation is needed again > start again from 1.)

2.2 BMW 760 Hydrogen E68

2.2.1 For the BMW 760 Hydrogen **with bivalent drive type** (alternatively petrol or hydrogen operation) and thus the possibility of running the combustion engine in petrol mode by placing the operating mode switch in the appropriate position, no special procedures are required.

The emissions test must always be carried out in petrol mode!

2.2.2 For the BMW 760 Hydrogen E68 vehicles **with monovalent hydrogen mode** below, the following applies:

Vehicle identification: E.g.: VIN: WBA GX81 040 as from XXXX

Data as per type approval certificate Part 1:

Type: 768 Version : GX81 Version: 01 KBA TSN: 000

Technology: 12-cylinder combustion engine with monovalent hydrogen injection; in wide program map ranges extremely lean burn (lambda > 3); emission stage EURO 4 in accordance with EU Directive 98/69/EC.

Emissions test particulars:

Because of the absence of carbon in the hydrogen, no lambda calculation in accordance with the emissions test conditions, e.g. from the exhaust gas at the tailpipe end and in accordance with the “Brettschneider formula”, is possible. The CO content is for hydrogen mode in the entire operation map well below the detection limit of the emissions test measuring devices.

According to the legislative bodies, the emissions test on such vehicles with alternative drives must be carried out in accordance with the test specifications drawn up by the vehicle manufacturer,

i.e. emissions test nominal values! (See Verkehrsblatt [German Transport Gazette] report 2008_Seite 196 & ff)

Procedure:

Because of the date of first registration of the vehicle after 01.01.2006 and the existing EOBD, the emissions test for these vehicles must be carried out in accordance with the

2-stage procedure applicable since 2006:

1. On the emission tester or its emission test operator prompting enter at the test step “Identification” the drive type: Alternative drives with the fuel type Hydrogen.
2. Customary visual inspection of engine, fuel system and exhaust system for correctness and leak-tightness. The captive feature of the fuel filler cap required on OBD vehicles is integrated in its design.
3. Readout and evaluation of the OBD data (status of the MIL; status of the fault codes in Mode 3; status of the test readiness codes (RC):
4. An exhaust tailpipe measurement **would have** to be carried out as a supplementary check only if the RCs are not completely set.

   Because this does not provide meaningful results during hydrogen mode with regard to the CO and lambda values to be evaluated, because there is barely any measurable CO and no more calculable lambda by means of the “Brettschneider formula”, the following must be measured and evaluated in accordance with the manufacturer's specifications:

- Adherence to the specified idle speed range: Setpoint value: 750 +/- 100 rpm
- Adherence to the current range of the lambda control sensors at idle: Setpoint value: - 0.115 to + 1.998 mA

5. Terminate the emissions test after evaluating the setpoint/actual data accordingly.