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Light vehicles:
UN Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M1 and N1 vehicles), 101 (CO2 emissions/fuel consumption), 103 (Replacement pollution control devices) and 154 (Worldwide harmonized Light vehicles Test Procedures (WLTP)) and [180] (OBM and EVP)

Proposal for a new Supplement to the 09 Series of Amendments to UN Regulation No. 83 (Emissions of M1 and N1 vehicles)

Submitted by the experts from the International Organization of Motor Vehicle Manufacturers*

The text reproduced below was prepared by the experts from the International Organization of Motor Vehicle Manufacturers (OICA). The text reproduced below introduces In-Service Conformity requirements for system power. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2026 as outlined in proposed programme budget for 2026 (A/80/6 (Sect. 20), table 20.7), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

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I. Proposal

Paragraph 9.1., amend to read:

"9.1. Measures to ensure in-service conformity of vehicles type-approved under this Regulation shall be taken in accordance with Annex 4 to this Regulation for tailpipe and evaporative emissions, Annex 5 for battery durability, Annex 11 for electric range of pure electric vehicles at low temperatures, Annex 12 for brake emissions ~~and~~**,** Annex 13 for on-board monitoring systems **and when conducted at the option of the Type Approval Authority, Annex 14 for system power testing**."

Insert a new paragraph 9.7., to read:

"**9.7. In-service conformity checks of System Power**

The requirement to undertake in-service conformity checks of System Power is optional

9.7.1. In-service conformity for System Power shall be checked on properly maintained and used vehicles, in accordance with Annex 14, with a total distance (sum of the distance driven as reported by the odometer and the virtual distance (if applicable)) between 3,000 km and up to 40,000 km or with a vehicle age of up to 2 years, counting from the date of manufacture of the vehicle, whichever comes first, and with a battery SOCE equal to or above [90] % or [in the case of NOVC-HEVs that have state of health related to the battery energy information available, equal to or above [90] %.]"

Insert a new Annex 14, to read:

"Annex 14

In-service conformity methodology for System Power approved acc. to UN Regulation No. 177

1. Introduction

The requirement to undertake in-service conformity checks of System Power is optional.

1.1. In order to verify the declared [Peak or sustained] vehicle system power during in-service conformity for each vehicle, the test procedures for [Peak or sustained] vehicle system power as described in UN Regulation No. 177 shall be used.

1.2. Types of tests

It shall be sufficient to test one representative family per type as defined in UN Regulation No. 177.
During ISC testing, the conditions of the test and of the vehicle, the test procedure, as well as the used test fuel, shall conform to the manufacturer's specification outlined in the information document and in the test report of the tested vehicle´s system power type. In the case that it is not possible to follow the same test procedure as applied at type approval without damaging the selected vehicle or major dismounting of components from the selected vehicle, the ISC tests shall be conducted following an alternative test procedure acc. to UN Regulation No. 177, as described for the following cases in the described order:

A. In the case that the original declared value was confirmed on the basis of measurements conducted on a system bench, for ISC testing a chassis dynamometer or hub dynamometer shall be used.

B. In the case that the original type approval was obtained on the basis of the TP1 method, and during ISC the TP1 method cannot be applied using external equipment (e.g. for current and voltage measurement), vehicle on-board REESS current and voltage data may be used, providing they meet the requirements specified in paragraph 8.1.2. of UN Regulation No. 177.
As the ICE power cannot be determined directly with external measurement equipment, for OVC-HEVs and NOVC-HEVs, onboard measurement data for the determination of the ICE power may be used, providing they meet the requirements specified in paragraph 8.1.2. of UN Regulation No. 177.

C. In the case that during the type approval test the TP1 method was used and the manufacturer voluntarily recorded the system power data using the TP2 method in addition, these results of the TP2 method may be used for ISC testing following the TP2 test method.

[D. Only in the case that the aforementioned cases cannot be applied, then ISC testing may be conducted using the TP2 method and the manufacturer shall provide all necessary information to follow this method, if technically feasible.]

2. Vehicle examination and maintenance

The selected vehicle shall comply with the checks set out in Annex [X]-Appendix 1.

The vehicles selected shall be accompanied by a maintenance record which shows that the vehicle has been properly maintained and has been serviced in accordance with the manufacturer's recommendations [with only original parts].

Vehicles exhibiting indications of abuse, improper use that could affect the system power performance, tampering or conditions that may lead to unsafe operation shall be excluded from ISC.

A vehicle shall be excluded from ISC testing if the information stored in the onboard computer shows that the vehicle was operated after a fault code was displayed and a repair was not carried out in accordance with manufacturer specifications.

[2.1. Access to data required for testing

At the request of the Type Approval Authority, the manufacturer shall make available the following data for ISC testing:

- **Dynamometer operation mode instructions, if available: how to enable the dynamometer operation mode as done also during TA tests;**
- **Procedure to deactivate all auxiliaries if used during TA;**
- **Procedure to measure current and voltage of all REESS with the use of external equipment: as defined in Appendix 3 of Annex B8 to UN Regulation No. 154.**
  [To measure current and voltage independently of on-board data, the manufacturer shall provide a procedure, description of current and voltage access points and list of devices used for current and voltage measurement during type approval.]]

3. Statistical procedure

3.1. General

The verification of in-service conformity shall rely on a statistical method following the general principles of sequential sampling for inspection by attributes. The minimum sample size for a pass result is three vehicles, and the maximum cumulative sample size is ten vehicles.

3.2. Pass/Fail/Invalid outcome result for a single system power test

[An ISC test shall be considered as "passed" when the system power measured during the ISC test is up to [15 %] below the manufacturer´s declared value.

An ISC test shall be considered as "failed" when the sustained system power measured during the ISC test is more than [15%] below the manufacturer´s declared value.]

3.2.1. Each failed test result shall increase the 'f' count (see paragraph 3.2.2.) by Figure 1 for that statistical instance.

An ISC test shall be considered invalid if it does not respect the requirements of the tests referred to in paragraph 1.2.

Invalid test results shall be excluded from the statistical procedure and the test shall be repeated with the same vehicle in order to have a valid test.

The results of all ISC tests shall be submitted to the granting type approval authority within ten working days from the execution of each test on a single vehicle. The test results shall be accompanied by a comprehensive test report at the end of the tests. The results shall be incorporated in the sample in chronological order of execution.

The Type Approval Authority shall incorporate all valid test results to the relevant open statistical procedure until a 'sample fail' or a 'sample pass' outcome is reached in accordance with paragraph 3.2.2.

3.2.2. Pass/Fail decision for a sample

For the purposes of deciding on a pass/fail result for the sample, 'p' is the count of passed results, and 'f' is the count of failed results. Each passed test result shall increase the 'p' count by 1 and each failed test result shall increase the 'f' count by 1 for the relevant open statistical procedure.

Upon the incorporation of valid test results to an open instance of the statistical procedure, the type approval authority shall perform the following actions:

(a) update the cumulative sample size 'n' for that instance to reflect the total number of valid emissions tests incorporated to the statistical procedure;

(b) following an evaluation of the results, update the count of passed results 'p' and the count of failed results 'f';

(c) check whether a decision is reached with the procedure described below.

The decision depends on the cumulative sample size 'n', the passed and failed result counts 'p' and 'f', as well as the number of intermediate and/or extreme outliers in the sample. For the decision on a pass/fail of an ISC sample the Type Approval Authority shall use the decision chart in Figure 1. The charts indicate the decision to be taken for a given cumulative sample size 'n' and failed count result 'f'.

Two decisions are possible for a statistical procedure for a given ISC family:

Sample pass' outcome shall be reached when the applicable decision chart from Figure 1 of Appendix 1 gives a 'PASS' outcome for the current cumulative sample size 'n' and the count of failed results 'f'.

Sample fail' decision shall be reached, for a given cumulative sample size 'n', when at least one of the following conditions is fulfilled:

(a) the applicable decision chart from Figure 1of Appendix 1 gives a 'FAIL' decision for the current cumulative sample size 'n' and the count of failed results 'f';

If no decision is reached, the statistical procedure shall remain open and further results shall be incorporated into it until a decision is reached or the procedure is closed.

Figure 1
Decision chart for the statistical procedure for vehicles (where 'UND' means undecided)

Failed result count f	10								FAIL
	9							FAIL	FAIL
	8						FAIL	FAIL	FAIL
	7					FAIL	FAIL	FAIL	FAIL
	6				FAIL	FAIL	FAIL	FAIL	FAIL
	5			FAIL	FAIL	FAIL	UND	UND	PASS
	4		FAIL	FAIL	UND	UND	UND	UND	PASS
	3	FAIL	FAIL	UND	UND	UND	UND	PASS	PASS
	2	UND	UND	UND	UND	PASS	PASS	PASS	PASS
	1	UND	PASS	PASS	PASS	PASS	PASS	PASS	PASS
	0	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
		3	4	5	6	7	8	9	10
	Cumulative sample size n								

Annex 14 - Appendix 1

Vehicle Survey

The vehicle survey shall be used for all vehicles selected for in-service conformity testing of system power defined in paragraphs 1.1. and 1.2. of this Annex. Vehicles that fall under one of the exclusion criteria below shall be eliminated from testing, or otherwise updated according to the procedures described below.

	x = Exclusion Criteria	**x = Checked and reported**	**Confidential**
Date:			**x**
Name of investigator:			**x**
Location of test:			**x**
Country of registration:		**x**	

Vehicle Characteristics

	x = Exclusion Criteria	**x = Checked and reported**	**Confidential**
Registration plate number:		**x**	**x**
*The vehicle must have both **'age' and 'distance travelled'** (defined as the time elapsed after manufacture) below the ones required in paragraph 9.7 of this Regulation.*	**x**		
Date of manufacture:		**x**	

VIN:		**x**	
Emission class and character or Model Year		**x**	
Country of registration: *The vehicle must be registered in a Contracting Party*	**x**	**x**	
Model:		**x**	
Engine code (where applicable):		**x**	
Engine capacity (l) (where applicable):		**x**	
Engine power (kW) (where applicable):		**x**	
Electric motor code:		**x**	
Electric motor power (kW):		**x**	
Energy capacity and type of battery		**x**	
Gearbox type (auto/manual):		**x**	
Drive axle (FWD/AWD/RWD):		**x**	
Tyre size (front and rear if different):		**x**	
Average fuel consumption for OVC-HEVs		**x**	
Has the vehicle been involved in a recall or service campaign? **If yes: Which one? Have the campaign repairs already been done?** *The repairs must have been done before selecting the vehicle.*		**x**	

VIN:	**x**	**x**	

Vehicle Owner Interview
(the owner will only be asked the main questions and shall have no knowledge of the implications of the replies)

Name of the owner (only available to the accredited inspection body or laboratory/technical service)			x
Contact (address / telephone) (only available to the accredited inspection body or laboratory/technical service)			x

How many owners did the vehicle have?		**x**	
Did the odometer always work? *If no, the vehicle cannot be selected.*	**x**		
Was the vehicle used for one of the following?			
As car used in show-rooms?		**x**	
As a taxi?		**x**	
As a delivery vehicle?		**x**	
For racing / motor sports?	**x**		
As a rental car?		**x**	
Has the vehicle carried heavy loads over the specifications of the manufacturer? *If yes, the vehicle cannot be selected.*	**x**		
Have there been major engine, electric motor or vehicle repairs?		**x**	
Have there been unauthorised major engine or vehicle repairs? *If yes, the vehicle cannot be selected.*	**x**		
Was the propulsion battery changed or repaired? *If yes, the vehicle cannot be selected for testing, but information should be collected*	**x**	**x**	
Has there been an unauthorised power increase/tuning? *If yes, the vehicle cannot be selected.*	**x**		
Were there any unauthorised devices installed (Urea killer, emulator, etc)? *If yes, the vehicle cannot be selected*	**x**		
Was any part of the emissions after-treatment system modified (where applicable)? *If yes, the vehicle cannot be selected*	**x**		
Was the vehicle involved in a serious accident? Provide a list of damage and repairs done afterwards		**x**	
Where has your vehicle been used more often?	-	-	-
% motorway	-	**x**	-
% rural	-	**x**	-
% urban	-	**x**	-
Has the vehicle been maintained and used in accordance with the manufacturer's instructions? *If not, the vehicle cannot be selected.*	**x**		

Is a full service and repair history including any re-works available? *If the full documentation cannot be provided, the vehicle cannot be selected.*	**x**		
Battery related checks:			
How often did you charge the vehicle when: **%with battery almost at 0 charge** **%with battery half charged** **%with battery almost fully charged**	**-** **-** **-**	**x** **x** **x**	
On average how often were fast or superfast chargers used per month? **What is your estimation of the percentage of time that the vehicle was used in the following ambient temperature ranges:** **Below -7°C:** **Between -7°C and 35°C:** **More than 35°C:**		**x** **x** **x** **x**	

Vehicle Examination and Maintenance by the Testing Centre (please use the relevant entries according to the type of vehicle)	**x= Exclusion Criteria**	**x=checked and reported**	
When was the vehicle last adequately* charged? PEV and OVC-HEV: *If the vehicle has not been charged adequately during the last month (as evidenced by values read from the vehicle under point 7 of Appendix 1 of Annex C1 to UN Regulation No. 154), then it has to be conditioned before testing by driving the vehicle no less than 50 km and in a manner that results in discharge of at least 50 per cent of the usable capacity of the battery, followed by a full recharge.* Note: * Adequately in this sense means that the vehicle was not charged in a manner stated by the manufacturer that would lead to an accurate SOCE/SOCR	**x**		
Fuel tank level (full / empty) (where applicable) Is the fuel reserve light ON? *If yes, refuel before test.*		**x**	
Are there any warning lights on the instrument panel activated indicating a vehicle or exhaust after-treatment system malfunctioning (where applicable) that cannot be resolved by normal maintenance? (Malfunction Indication Light, Engine Service Light, etc?) *If yes, the vehicle cannot be selected*	**x**		
Is the SCR light (where applicable) on after engine-on? *If yes, the reagent should be filled, or the repair executed before the vehicle is used for testing.*	**x**		
Visual inspection exhaust system (where applicable) Check leaks between exhaust manifold and end of tailpipe. Check and document (with photos) *If there is damage or leaks, the vehicle cannot be tested*	**x**		
Exhaust gas relevant components (where applicable) Check and document (with photos) all emissions relevant components for damage. *If there is damage, the vehicle cannot be tested*	**x**		
Air filter and oil filter (where applicable) Check for contamination and damage. Change if damaged or heavily contaminated or less than 800 km before the next recommended change.		**x**	

Wheels (front & rear) Check whether the wheels are freely moveable or blocked or impeded by the brake. *If not freely moveable, the vehicle cannot be selected.*	**x**	
Drive belts & cooler cover *In case of damage, the vehicle cannot be tested.*	**x**	
Check fluid levels (where applicable) Check the max. and min. levels (engine oil, cooling liquid) / top up if below minimum		**x**
Vacuum hoses and electrical wiring Check all for integrity. *In case of damage, the vehicle cannot be tested.*	**x**	
Injection valves / cabling (where applicable) Check all cables and fuel lines. *In case of damage, the vehicle cannot be tested.*	**x**	
Ignition cable (gasoline) (where applicable) Check spark plugs, cables, etc. In case of damage, replace them.		**x**
EGR & Catalyst, Particle Filter (where applicable) Check all cables, wires and sensors. *In case of tampering or damage, the vehicle cannot be selected.*	**x**	
Safety condition Check tyres, vehicle's body, electrical and braking system status are in safe conditions for the test and respect road traffic rules. *If not, the vehicle cannot be selected.*	**x**	
Aerodynamic modifications Verify no aftermarket aerodynamics modification that cannot be removed before testing was made (roof boxes, load racking, spoilers, etc.) and no standard aerodynamics components are missing (front deflectors, diffusers, splitters, etc.). If yes, the vehicle cannot be selected. Document with photos.	**x**	**x**
PEV and OVC-HEV: Check of Battery SOCE If SOCE is below the set out limits of according to paragraph 9.7. of this Regulation.	**x**	**x**
NOVC-HEV: Check of Battery state of health if available and is below the set out limits of according to paragraph 9.7. of this Regulation. If a trouble code is active before the test, the vehicle can be repaired with original parts or cannot be selected.		**x**
Check if less than 800 km away from next scheduled service, if yes, then perform the service.		**x**
Powertrain Control Module calibration part number and checksum		**x**
OBD diagnosis (before or after the range test) Read Diagnostic Trouble Codes & Print error log		**x**
OBD Service Mode 09 Query (before or after the range test) Read Service Mode 09. Record the information.		**x**

OBD mode 7 (before or after the range test) Read Service Mode 07. Record the information		**x**

Remarks for: Repair / replacement of components / part numbers"

II. Justification

EU Regulation 2024/1257 (EU7) introduces optional tests for ISC for power determination. This new Annex provides a description of vehicle selection criteria, test methodology, statistical approach and vehicle survey to fulfill the requirements of reproducible ISC tests.