<u>Informal document No.</u> GRPE-56-02 (56th GRPE, 3-6 June 2008, agenda item 6(f))

This proposal has been prepared by the experts from the European Commission in order to update the requirements of UNECE Regulation No. 85

A. PROPOSAL

Proposal for Supplement 5 to ECE Regulation No. 85

<u>Content – Annexes</u> ,	amend	to	read	:
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"Annex 1 -	Essential characteristics of the internal combustion engine and information concerning the conduct of tests
Annex 2 -	Essential characteristics of the electric drive train and information concerning the conduct of tests
Annex 3a -	Communication concerning the approval or extension or refusal or withdrawal of approval or production definitely discontinued of a drive train type pursuant to Regulation No. 85
Annex 3b -	Communication concerning the approval or extension or refusal or withdrawal of approval or production definitely discontinued of a vehicle type with regard to the drive train type pursuant to Regulation No. 85
Annex 4 -	Arrangements of approval marks
Annex 5 -	Method for measuring internal combustion engine net power
Annex 6 -	Method for measuring net power and the maximum 30 minutes power of electric drive trains
Annex 7 -	Checks on conformity of production"

Paragraph 1.2., amend to read:

"1.2. The internal combustion engines belong to one of the following categories:

Reciprocating piston engines (positive-ignition or compression-ignition), but excluding free piston engines;

Rotary piston engines (positive-ignition or compression ignition).

Naturally aspirated or supercharged engines."

Insert new paragraph 2.4., to read:

"2.4. "Maximum net power" means the maximum value of the net power measured at full engine load."

Paragraphs 2.4. to 2.5.3. (former), renumber as paragraphs 2.5 to 2.6.3

Insert new paragraph 2.7., to read:

"Standard-production equipment" means equipment provided by the manufacturer for a particular application."

Paragraph 4.3., amend to read:

"4.3. Notice of approval or of extension or of refusal of approval of a drive train type pursuant to this Regulation shall be communicated to the Parties to the 1958 Agreement applying this Regulation by means of a form conforming to the model in **annex 3a** to this Regulation."

Insert new paragraph 4.4., to read:

"4.4. Notice of approval or of extension or of refusal of approval of vehicle type with regard to the drive train type pursuant to this Regulation shall be communicated to the Parties to the 1958 Agreement applying this Regulation by means of a form conforming to the model in annex 3b to this Regulation."

Paragraphs 4.4. to 4.8. (former), renumber as paragraphs 4.5. to 4.9.

Paragraph 5.2.2., amend to read:

"5.2.2. Measurements shall be taken at a sufficient number of engine speeds to define correctly the power curve between the lowest and the highest engine speeds recommended by the manufacturer. This range of speeds must include the speeds of revolution at which the engine produces its maximum power and its maximum torque. For each speed, the average of at least two stabilized measurements is to be determined."

Paragraph 5.2.3.3.2., amend to read:

"5.2.3.3.2. In the case of an engine without self-adaptive fuelling:

The fuel used shall be the one available on the market with a Wobbe index at least 52.6 MJm (0°C, 101.3 kPa). In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8, i.e. the fuel with the highest Wobbe Index, or"

Paragraph 5.2.3.3., amend to read:

"5.2.3.3.3. In the case of an engine labelled for a specific range of fuels:

The fuel used shall be the one available on the market with a Wobbe index at least 52.6 MJm⁻³ (**0**°C, 101.3 kPa) if the engine is labelled for the H-range of gases, or at lease 47.2 MJm⁻³ (**0**°C, 101.3 kPa) if the engine is labelled for the L-range of gases. In case of dispute the fuel used shall be the reference fuel G20 specified in annex 8 if the engine is labelled for the H-range of gases, or the reference fuel G23 if the engine is labelled for the L-range of gases, i.e. the fuel with the highest Wobbe Index for the relevant range, or"

Insert new paragraph 5.2.3.5., to read:

"5.2.3.5 Positive ignition engines of vehicles that can run either on petrol or on a gaseous fuel, are to be tested with both fuels, in accordance with the provisions in items 5.2.3.1 to 5.2.3.3. The vehicles that can be fuelled with both petrol and a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and of which the petrol tank cannot contain more than 15 litres of petrol will be regarded for the test as vehicles that can only run a gaseous fuel."

Paragraph 5.2.5., amend to read:

"5.2.5. The test report shall contain the results and all the calculations required to find the net power, as listed in the appendix to annex 5 to this Regulation together with the characteristics of the engine listed in annex 1 to this Regulation. In order to draw up this document, the competent authority may use the report prepared by an approved or recognized laboratory pursuant to the provisions of this Regulation."

Annex 1., amend to read:

"Annex 1

The following information, if applicable, must be supplied in triplicate and include a list of contents. Any drawings must be supplied in appropriate scale and in sufficient detail on size A4 or on a folder of A4 format. Photographs, if any, must show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance must be supplied.

0.	GENERAL
0.1.	Make (trade name of manufacturer):
0.2.	Type and general commercial description(s):
0.3.	Means of identification of type, if marked on the vehicle:
0.3.1.	Location of that marking:
0.4.	Category of vehicle:
0.5.	Name and address of manufacturer:
0.8.	Address(es) of assembly plant(s):
1.	GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE
1.1.	Photographs and/or drawings of a representative vehicle:
1.2.	Hand of drive: left/right 1/:

2.1.	Manufacturer:
2.2.	Manufacturer's engine code (as marked on the engine, or other means of
	identification):
2.3.	Working principle: positive ignition/compression ignition, four stroke/two
	stroke 1/
2.4.	Number and arrangement of cylinders:
2.5.	Bore: mm
2.6.	Stroke:mm
2.7.	Firing order:
2.8.	Engine capacity: cm ³
2.9.	Volumetric compression ratio:
2.10.	Drawings of combustion chamber, piston crown and, in the case of positive
2.10.	ignition engines, piston rings:
2.11.	Maximum net power:kW at min ⁻¹
2.11.	(manufacturer's declared value)
2.12.	Maximum permitted engine speed as prescribed by the manufacturer:
2.12.	min ⁻¹
2.12	
2.13	Maximum net torque 1/:Nm atmin ⁻¹
2.0	(manufacturer's declared value)
3.0.	Fuel: diesel oil/petrol/LPG/NG 1/
3.1.	RON, leaded:
3.2.	RON, unleaded:
3.3.	Fuel feed
3.3.1	By carburettor(s): yes/no 1/
3.3.2.	Make(s):
3.3.3.	Type(s):
3.3.4.	Number fitted:
3.3.5.	Adjustments
3.3.5.1.	Jets:
3.3.5.2.	Venturis:
3.3.5.3.	Float-chamber level:
3.3.5.4.	Mass of float:
3.3.5.5.	Float needle:
	Or the curve of fuel delivery plotted against the air flow and settings
	required to keep to the curve
3.3.6.	Cold start system: manual/automatic 1/
3.3.6.1.	Operating principle(s):
3.3.6.2.	Operating limits/settings 1/:
3.4.	By fuel injection (compression ignition only): yes/no 1/
3.4.1.	System description:
3.4.1. 3.4.2.	Working principle: direct injection/pre-chamber/swirl chamber 1/
3.4.3.	Injection pump
3.4.3.1.	Make(s):
3.4.3.2.	Type(s):
3.4.3.3.	Maximum fuel delivery 1/: mm ³ /stroke or cycle at a pump speed
2.4.6.4	of: min ⁻¹ or, alternatively, a characteristic diagram:
3.4.3.4.	Injection timing:
3.4.3.5.	Injection advance curve:
3.4.3.6.	Calibration procedure: test bench/engine 1/
3.4.4.	Governor

3.4.4.1.	Type:
3.4.4.2.	Make:
3.4.4.3.	Cut-off point
3.4.4.3.1.	Cut-off point under load: min ⁻¹
3.4.4.3.2.	Cut-off point under road: min Cut-off point without load: min ⁻¹
3.4.4.4.	Maximum speed without load:min ⁻¹
3.4.4.5.	Idle speed:
3.4.5.	-
	Injection piping
3.4.5.1. 3.4.5.2.	Length: mm
	Internal diameter: mm
3.4.6.	Injector(s)
3.4.6.1.	Make(s):
3.4.6.2.	Type(s):
3.4.6.3.	Opening pressure: kPa or characteristic diagram:
3.4.7.	Cold start system
3.4.7.1.	Make(s):
3.4.7.2.	Type(s):
3.4.7.3.	Description:
3.4.8.	Electronic control unit
3.4.8.1.	Make(s):
3.4.8.2.	Description of the system:
3.5.	By fuel injection (positive ignition only): yes/no 1/
3.5.1.	Working principle: intake manifold (single-/multi-point 1/) direct
	injection/other (specify) 1/:
3.5.2.	Make(s):
3.5.3.	Type(s):
3.5.4.	System description
3.5.4.1.	Type or number of the control unit:
3.5.4.2.	Type of fuel regulator:
3.5.4.3.	Type of air-flow sensor:
3.5.4.4.	Type of fuel distributor:
3.5.4.5.	Type of pressure regulator:
3.5.4.6.	Type of throttle housing:
	In the case of systems other than continuous injection give equivalent
	details.
3.5.5.	Injectors: opening pressure: kPa or characteristic diagram:
	•••••
3.5.6.	Injection timing:
3.5.7.	Cold start system
3.5.7.1.	Operating principle(s):
3.5.7.2.	Operating limits/settings 1/:
4.0.	Feed pump
4.1.	Pressure: kPa or characteristic diagram:
5.0.	Electrical system
5.1.	Rated voltage: V, positive/negative ground 1/
5.2.	Generator
5.2.1.	Type:
5.2.2.	Nominal output: VA
6.0.	Ignition
6.1.	Make(s):

6.2.	Type(s):
6.3.	Working principle:
6.4.	Ignition advance curve:
6.5.	Static ignition timing degrees before TDC
6.6.	Contact-point gap: mm
6.7.	Dwell-angle: degrees
7.0.	Cooling system (liquid/air) 1/
7.1.	Nominal setting of the engine temperature control mechanism:
7.2.	Liquid
7.2.1.	Nature of liquid:
7.2.2.	Circulating pump(s): yes/no 1/
7.2.3.	Characteristics, or
7.2.3.1.	Make(s):
7.2.3.2.	Type(s):
7.2.4.	Drive ratio(s):
7.2.5.	Description of the fan and its drive mechanism:
7.3.	Air
7.3.1.	Blower: yes/no 1/
7.3.2.	Characteristics:, or
7.3.2.1.	Make(s):
7.3.2.2.	Type(s):
7.3.3.	Drive ratio(s):
8.0.	Intake system
8.1.	Pressure charger: yes/no 1/
8.1.1.	Make(s):
8.1.2.	Type(s):
8.1.3.	Description of the system (e.g. maximum charge pressure: kPa,
	wastegate if applicable):
8.2.	Intercooler: yes/no 1/
8.3.	Description and drawings of inlet pipes and their accessories (plenum
	chamber, heating device, additional air intakes, etc.):
8.3.1.	Intake manifold description (include drawings and/or photos):
8.3.2.	Air filter, drawings:, or
8.3.2.1.	Make(s):
8.3.2.2.	Type(s):
8.3.3.	Intake silencer, drawings:, or
8.3.3.1.	Make(s):
8.3.3.2.	Type(s):
9.0.	Exhaust system
9.1.	Description and/or drawing of the exhaust manifold:
9.2.	Description and/or drawing of the exhaust system:
9.3	Maximum allowable exhaust back pressure at rated engine speed and at
	100 % load: kPa
10.0.	Minimum cross-sectional areas of inlet and outlet ports:
11.0.	Valve timing or equivalent data
11.1.	Maximum lift of valves, angles of opening and closing, or timing details of
	alternative distribution systems, in relation to dead-centres:
11.2.	Reference and/or setting ranges 1/:
12.0.	Measures taken against air pollution

12.1.	Additional anti-pollution devices (if any, and if not covered by another
	heading)
12.2.	Catalytic converter: yes/no 1/
12.2.1.	Number of catalytic converters and elements:
12.2.2.	Dimensions, shape and volume of the catalytic converter(s):
12.3.	Oxygen sensor: yes/no 1/
12.4.	Air injection: yes/no 1/
12.5.	Exhaust gas recirculation: yes/no 1/
12.6.	Particulate trap: yes/no 1/
12.6.1.	Dimensions, shape and capacity of the particulate trap:
12.7.	Other systems (description and operation):
13.0.	LPG fuelling system:yes/no 1/
13.1.	Approval number according Regulation No. 67:
13.2.	Electronic engine management control unit for LPG fuelling:
13.2.1.	Make(s):
13.2.2.	Type(s):
13.2.3.	Emission-related adjustment possibilities:
13.3.	Further documentation:
13.3.1.	Description of the safeguarding of the catalyst at switch-over from petrol
	to LPG or back:
13.3.2.	System lay-out (electrical connections, vacuum connections compensation
	hoses, etc.):
13.3.3.	Drawing of the symbol:
14.0.	NG fuelling system: yes/no 1/
14.1.	Approval number according to Regulation No. 110:
14.2.	Electronic engine management control unit for NG fuelling:
14.2.1.	Make(s):
14.2.2.	Type(s):
14.2.3.	Emission-related adjustment possibilities:
14.3	Further documentations:
14.3.1.	Description of the safeguarding of the catalyst at switch-over from petrol
17.5.1.	to NG or back:
14.3.2.	System lay-out (electrical connections, vacuum connections compensation
17.5.2.	
1422	hoses, etc.): Drawing of the symbol:
14.3.3.	
15.0.	Temperatures permitted by the manufacturer
15.1.	Cooling system
15.1.1.	Liquid cooling
1510	Maximum temperature at outlet:°C
15.1.2.	Air cooling
15.1.2.1.	Reference point:
15.1.2.2.	Maximum temperature at reference point:°C
15.2.	Maximum outlet temperature of the inlet intercooler:°C
15.3.	Maximum exhaust temperature at the point in the exhaust pipe(s)
	adjacent to the outer flange(s) of the exhaust manifold:°C
15.4.	Fuel temperature
	minimum:°C
	maximum:°C
15.5.	Lubricant temperature
	minimum:°C

	maximum:°C
16.0.	Lubrication system
16.1.	Description of the system
16.1.1.	Position of the lubricant reservoir:
16.1.2.	Feed system (by pump/injection into intake/mixing with fuel, etc.) 1/:
16.2.	Lubricating pump
16.2.1.	Make(s):
16.2.2.	Type(s):
16.3.	Mixture with fuel
16.3.1.	Percentage:
16.4.	Oil cooler: yes/no 1/
16.4.1.	Drawing(s):, or
16.4.1.1.	Make(s):
16.4.1.2.	Type(s):
	J.F. (17)
	(Date, file
1/ Delete	where not applicable.
	ary equipment driven by the engine (as per item 2.3.2 of Annex 5) (list and
brief descrip	tion if necessary):
17.0	Additional information on test conditions (for positive ignition engines
only)	
17.1.	Spark plugs
17.1.1.	Make:
17.1.2.	Type:
17.1.3	Spark-gap setting:
17.2.	Ignition coil
17.2.1.	Make:
17.2.2	Type:
17.3.	Ignition condenser
17.3.1.	Make:
17.3.2.	Type:
17.4.	Radio interference suppression equipment
17.4.1.	Make:
17.4.2.	Type:"

"Annex 3a

COMMUNICATION

(Maximum format: A4 (210 x 297 mm))

(1		issued by:	Name of administration:
conce	erning: 2/	APPROVAL GRANTED APPROVAL EXTENDED APPROVAL REFUSED APPROVAL WITHDRAWN PRODUCTION DEFINITELY	' DISCONTINUED
of a d	rive train pursuant to I	Regulation No. 85.	
Appro	oval No	Extension No	
1.	Trade name or mark	of drive train or set of drive train	ıs:
2. 2.1. 2.2. 2.3.	Type:		
3. 3.1. 3.2. 3.3.	Type:		
5.	Drive train or set of	drive trains submitted for approve	al on:
6.	Technical service responsible for conducting approval tests:		
7.	Date of report issued	by that service:	
8.	Number of report iss	ued by that service:	
9.	Location of the appr	oval mark:	

10.	Reason(s) for extens	sion of approval (if ap	plicable): 2/			•
11. 11.1.	Internal combustion Declared figures	engine				
11.1.1.	Maximum net powe	er:k	W, at	m	in1	
11.1.2.	Maximum net torqu	e:N	m, at	m	in1	
11.2.	Essential characteris	stics of the engine type	:			
	Operating principle:	: four stroke/two strok	2/			
	Number and layout	of cylinders:		,		
	Fuel feed: carburette	or/indirect injection/di	rect injection 2/			
	Pressure-charger de					
		g device: Yes/No 2/				
11.3.	Engine fuel requirer	ments: leaded petrol / 1	ınleaded petrol / die	sel fuel / NG / LPG	G: /2	
	,	s):		•••••		
	Declared figures				1	
		er:				
		e:				
	_	e at zero speed:				
		es power:		······································	••••••	. kW
		stics of the electric dri				
	_					
	O I					•
12.2.3.	Cooling system:	1: :1/: 2/				
	Motor:	liquid/air 2/				
	Variator:	liquid/air 2/				
13.	Approval granted/ex	xtended/refused/withd	rawn 2/			
14.	Place:					
15.	Date:				•••••	
16.	Signature:					
17. request		d with the request for a	pproval or extension	n may be obtained	on	

Notes

- 1/ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).
- 2/ Strike out what does not apply."

"Annex 3b

COMMUNICATION

(Maximum format: A4 (210 x 297 mm))

		issued by:	Name of administration:
conce	erning: 2/	APPROVAL GRANTED APPROVAL EXTENDED APPROVAL REFUSED APPROVAL WITHDRAWN PRODUCTION DEFINITEL	
of a v	vehicle type with rega	rd to the drive train pursuant t	o Regulation No. 85.
Appr	oval No	Extension No	
1.	Vehicle make and t	ype:	
2.	Manufacturer's na	me and address:	
3.	If applicable, name	and address of manufacturer's	representatives:
4.	Trade name or man	k of drive train or set of drive t	trains:
5. 5.1. 5.2. 5.3.	Type:		
6. 6.1. 6.2. 6.3.	Type:		
7.	Drive train or set of	f drive trains submitted for app	oroval on:
8.			oval tests:
9.	Date of report issue	ed by that service:	

10.	Number of report issued by that service:
11.	Location of the approval mark:
12.	Reason(s) for extension of approval (if applicable): 2/
13.	Internal combustion engine
13.1.	Declared figures
	. Maximum net power: min ⁻¹
	2. Maximum net torque: min ⁻¹
13.2.	Essential characteristics of the engine type:
	Operating principle: four stroke/two stroke 2/
	Number and layout of cylinders:
	Cylinder capacity:cm3
	Fuel feed: carburettor/indirect injection/direct injection 2/
	Pressure-charger device: Yes/No 2/
	Exhaust gas cleaning device: Yes/No 2/
13.3.	
LPG:	/2
14.	Electric drive train(s):
15.1.	Declared figures
15.1.1	kW, atmin ⁻¹
15.1.2	2. Maximum net torque:Nm, atNm at
15.1.3	S. Maximum net torque at zero speed:Nm
	l. Maximum 30 minutes power:kW
	Essential characteristics of the electric drive train
15.2.1	. Test DC voltage:V
	2. Working principle:
15.2.3	3. Cooling system:
	Motor: liquid/air 2/
	Variator: liquid/air 2/
16.	Approval granted/extended/refused/withdrawn 2/
17.	Place:
18.	Date:
19.	Signature:
20.	The documents filed with the request for approval or extension may be obtained
on re	quest.
	<u>Notes</u>
	Distinguishing number of the country which has
	granted/extended/refused/withdrawn approval (see approval provisions in the
	Regulation).
2/	Strike out what does not apply."

Annex 5,

<u>Insert new paragraph 3.1.</u>, to read:

"3.1. The net power test shall consist of a run at full throttle for positive-ignition engines and at fixed full load fuel-injection-pump setting for compression-ignition engines, the engine being equipped as specified in Table 1."

Paragraphs 3.1. to 3.9. (former), renumber as paragraphs 3.2 to 3.10

Paragraph 3.6., amend to read:

"3.6. Observed brake load, fuel consumption and inlet air temperature data shall be taken simultaneously and shall be the average of two stabilized consecutive values which do not vary more than 2% for the brake load **and fuel consumption.**"

Paragraph 3.9., amend to read:

"3.9. The temperature of the lubricating oil measured in the oil pump or within the oil sump or at the outlet from the oil cooler, if fitted shall be maintained within the limits **established by the engine manufacturer.**"

Paragraph 3.10., amend to read:

"3.10. An auxiliary regulating system may be used if necessary to maintain the temperature within the limits specified in paragraphs **3.7.**, **3.8.** and **3.9** above of this annex."

Paragraph 4.2., amend to read:

"4.2. Engine speed: The measurement must be accurate to within \pm 0.5%. Engine speed must be measured preferably with an automatically synchronized revolution counter and chronometer (or counter-timer)."

Annex 5 – Appendix

<u>Insert new paragraph 1.2.6.</u>, to read:

Insert new paragraph 1.3., to read:

"1.3. Engine speed when idling: min⁻¹"

Paragraphs 1.3. to 1.3.2. (former), renumber as paragraphs 1.4. to 1.4.2.

Insert new paragraphs 1.5. to 1.5.2., to read:

"1.5	Characteristics of the opacimeter		
1.5.1	Make:		
1.5.2	Type:''		

Insert new paragraph 2.1.4.1., to read:

"2.1.4.1. MON No:"

Paragraphs 2.1.4.1. to 2.1.4.2. (former), renumber as paragraphs 2.1.4.2 to 2.1.4.3

<u>Insert new table 1.,</u> to read:

"Table 1

	Engine speed (min ⁻¹)	Nominal flow G (litres/second)	Limit absorption values (m ⁻¹)	Measured absorption values (m ⁻¹)
1				
2				
3				
4				
5				
6				

B. JUSTIFICATION

In order to simplify the legislative framework and to reduce the administrative burden and the cost of approvals for manufacturers, the European Commission, following the recommendations of the High Level Group on the CARS21 (Competitive Automotive Regulatory System for the 21 century) program, is repealing a number of Directives by making reference to the technical provisions in the equivalent Regulations in the UNECE framework.

In that context, Directive 80/1269/EEC will be repealed and their main provisions incorporated in the new legislation regarding pollutant emissions from passenger cars and light duty vehicles (stages Euro 5&6) and heavy duty vehicles (stage Euro VI). Therefore, it is necessary to update the technical provisions and requirements of ECE Regulation No. 85 in order to align them with the corresponding to the above mentioned directive.