

TECHNICAL REPORT

No. MKEH-7281.U15.1

Test according to ECE Regulation No. 67

**Inspection concerning the specific components of motor vehicles using
Liquefied Petroleum Gases(LPG) in their propulsion system**

Make (trade name of manufacturer): AUTOGAS ITALIA

Type:
RPG 09
RPG 09 PANTHER
SPECTRE
SPECTRE 2

Specific component: Vaporizer/pressure regulator

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Rev. 2 Added new types and trade names. Changed assembly plant address.

Date: 2025. 04. 24

1. Generals

1.1. Test Provisions

The inspection was carried out according to the requirements of ECE-Regulation No. 67 including Revision 4, Supplement 14 to the 01 series of amendments, which entered into force on 9 October 2014.

1.2. Information concerning the vehicle type and the requested approval

The statements below apply to the previous ECE type- approval as referred to on page 1.

1.2.1. Numbering according to the communication concerning the approval of ECE-R67.

[1.] *LPG equipment considered*

Vaporizer/pressure regulator

Type

**RPG 09
RPG 09 PANTHER
SPECTRE
SPECTRE 2**

Classification of component

Filter: Class 1
Reducer chamber: Class 2
Shut-off valve: Class 3

Design temperature

-20°C to +120°C

[2.] *Trade name or mark*

**AUTOGAS ITALIA,
ECOMOTIVE SOLUTIONS, BIGAS, RAIL**

[3.] *Manufacturer's name and address*

**ECOMOTIVE SOLUTIONS S.R.L.
Via A. Grandi 16
42030, Vezzano Sul Crostolo (RE)
ITALY**

[4.] *If applicable, name and address of
manufacturer's representative*

**GGL KFT
8000 SZEKESFEHERVAR
FARKASVERMI U. 85**

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[5.] Submitted for approval on 2010. 10. 05

2. Inspections and their results

2.1 Version of the tested equipment

The following variants have been used for testing (if not stated in part 1.2.1. of this report):
Not applicable

2.2.1. General

The marking requirements according to item 4.1. and 4.2. of Part I of the Regulation are fulfilled.

The installation of the component of the LPG-equipment has to comply with the relevant electromagnetic compatibility requirements according to the Regulation 10.05 series of amendments, or equivalent.

2.2.2. Inspections

General design rules

Paragraph 6.15.2. Provisions regarding the electrical insulation

	Requirement	samples				
		1	2	3	4	
Isolation resistance	> 10 MΩ	> 500 MΩ	> 500 MΩ	> 500 MΩ	> 500 MΩ	

Paragraph 6.15.3.1 Provision on valve actived by external power

The valve is in „closed” position when its power is switched off.

Paragraph 6.15.4.1 Heat exchance medium (compability and pressure requirement)

Requirements fulfilled.

Paragraph 6.15.5 Overpressure bypass security

Requirements fulfilled.

Paragraph 6.15.6.2 Gas flow prevention

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Requirements fulfilled.

Component : part of Class 1

Annex 15, par. 4 Overpressure test

Test pressure at 6750 kPa

	Requirement	samples				
		1	2	3	4	5
Rupture or permanent distortion	no	no	no	no	no	no

Annex 15, par. 5 External leakage test

Leakage from stem or body seals or other joints, test pressure 0 to 4500 kPa ,

	Requirement	samples				
		1	2	3	4	5
at +20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h
at +120°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h
at -20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

Annex 15, par. 6 High temperature test

Test pressure 4500 kPa

	Requirement	samples				
		1	2	3	4	5
Leakage	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

Annex 15, par. 7 Low temperature test

Test pressure 4500 kPa

	Requirement	samples				
		1	2	3	4	5
Leakage	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

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Annex 15, par. 8 Seat leakage test

N/A

Annex15, par. 9 Endurance

N/A

Annex 15, par. 11 LPG compatibility

Resistance to n-pentane according to ISO 1817

Rubber FPM 75 ShA

	Requirement	samples				
		1	2	3	4	5
Maximum change in volume	20%	+ 0.7 %	+ 0.55 %	+ 1.30 %	+ 1.55 %	+ 0.85 %
Change of mass after air tempering	> -5%	- 0.03 %	+ 0.02%	- 0.15 %	- 0.24 %	- 0,05 %

Annex 15, par. 12 Corrosion resistance

Salt spray (144 hours) according to ISO 9227

Overpressure test 6750 kPa

	Requirement	samples				
		1	2			
Cracking	no	no	no			
Ropture	no	no	no			
Permanent distorsion	no	no	no			

External leakage test after Corrosion resistance test, test pressure 4500 kPa

	Requirement	samples				
		1	2			
at +20°C	< 15 cm³/h	0 cm³/h	0 cm³/h			
at +120°C	< 15 cm³/h	0 cm³/h	0 cm³/h			
at -20°C	< 15 cm³/h	0 cm³/h	0 cm³/h			

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Annex 15, par. 13 Resistance to dry heat

Resistance to air according to ISO 188

Rubber FPM 75 ShA

	Requirement	samples				
		1	2	3	4	5
Allowable change in tensile strength	$\leq +25 \%$	+ 3.9 %	-2.8 %	-1.0 %	-1.4%	+ 1.7%
Allowable change in ultimate elongation	$\leq +10 \%$ $\geq -30 \%$	- 1.3 %	+ 2.5 %	-3.2 %	-4.3 %	+5.4 %

Annex 15, par. 14 Ozone ageing

Resistance to ozone according to ISO 1431/1

Rubber FPM 75 ShA

	Requirement	samples				
		1	2	3	4	5
Cracking of test piece	no	no	no	no	no	no

Annex 15, par. 15 Creep

N/A

Annex 15, par. 16 Temperature cycle test

N/A

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Component : part of Class 2

Annex 15, par. 4 Overpressure test

Test pressure at 1015 kPa

	Requirement	samples				
		1	2	3	4	5
Rupture or permanent distortion	no	no	no	no	no	no

Annex 15, par. 5 External leakage test

Leakage from stem or body seals or other joints, test pressure 0 to 675 kPa ,

	Requirement	samples				
		1	2	3	4	5
at +20°C	< 15 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h
at +120°C	< 15 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h
at -20°C	< 15 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h

Annex 15, par. 6 High temperature test

Test pressure 675 kPa

	Requirement	samples				
		1	2	3	4	5
Leakage	< 15 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h	0 cm³/h

Annex 15, par. 7 Low temperature test

Test pressure 675 kPa

	Requirement	samples				
		1	2	3	4	5
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	Requirement	1	2	3	4	5
Leakage	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

Annex 15, par. 11 LPG compatibility

Resistance to n-pentane according to ISO 1817

Rubber FPM 75 ShA

	Requirement	samples				
		1	2	3	4	5
Maximum change in volume	20%	+ 0.7 %	+ 0.55 %	+ 1.30 %	+ 1.55 %	+ 0.85 %
Change of mass after air tempering	> -5%	- 0.03 %	+ 0.02%	- 0.15 %	- 0.24 %	- 0,05 %

Annex 15, par. 12 Corrosion resistance

Salt spray (144 hours) according to ISO 9227

Overpressure test 1015 kPa

	Requirement	samples				
		1	2			
Cracking	no	no	no			
Rupture	no	no	no			
Permanent distortion	no	no	no			

External leakage test after Corrosion resistance test, test pressure 675 kPa

	Requirement	samples				
		1	2			
at +20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h			
at +120°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h			
at -20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h			

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Component : integrated Shut-off valve, Class 3 (Annex 7)

Annex 15, par. 8.2 Seat leakage test

Test pressure 0 to 3000 kPa

	Requirement	samples				
		1	2	3	4	5
Leakage	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

Annex 15, par. 9.2 Endurance

Test pressure 3000 kPa , External Leakage test after Endurance test.

	Requirement	samples				
		1	2	3	4	5
at +20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h
at +120°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h
at -20°C	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

Test pressure 0 to 3000 kPa, Seat leakage test after Endurance test.

	Requirement	samples				
		1	2	3	4	5
Leakage	< 15 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h	0 cm ³ /h

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DECLARATION

Standardised procedure : YES NO

Deviation from test metod : ~~YES~~ NO

Technical description : see technical description and drawing archived in test laboratory

Test results included in this report refer exclusively to the sample tested.

2.3. Test facilities

All measuring and test equipment used to carry out the inspections are in accordance with the ECE-Regulation stated in 1.1. of this report and with EN 45001.

2.4 A "Test-Report" dokumentumok át lettek írva angol nyelvre az ügyfél külön kérésére.

BUDAPEST, 2025. 04. 24