



Report No. 9853204306

in accordance with Clause 12 of the Standards Law, 1953

Details of order:

The test was ordered by : ENNE PI SRL.
Address : Via Risorgimento, 25080 Calvagese Della Riviera (BS) ITALY.
Date of order : 10.01.2018

Description of sample:

Copper alloy valves for LPG refillable cylinders for nominal pressure: 25 bar, with valve stem thread designated M26x1.5 and outlet connection G4, date of manufacture: 11-17
Model: 8064903218
Manufacturer: ENNE
Country of manufacture: ITALY

Test details:

The sample was received for testing on 22.04.2018 and taken by: TUV representative.
Sample size: 13 valves.
The batch from which the sample was taken: 10902 pcs.
The test was performed within a customer request.

Nature of test:

Compliance of the valves with the requirements of clauses: 4.2.3 – Metallic materials, 4.2.4 – Non-metallic materials (pentane test), 4.3.4 – Valve stem, 4.3.5 – Valve outlet, 5.3 – External and internal tightness test, Test report, 5.4 – Hydraulic pressure test, 5.6 – Valve closure test, 5.7 – Valve stem test, 5.9 – Hand wheel fire exposure test, 5.10 – Impact test, 5.12 – Resistance to excessive closing torque test, 5.13 – Resistance to excessive opening torque test, 5.16 – External and internal tightness test after ageing, 5.17 – Endurance test, 5.19 – External and internal tightness test – High temperature, 5.20 – External and internal tightness test – Low temperature, 5.21 – Examination of dismantled valves, 6 – Documentation/Test report and 7 - Markings in Israel Standard SI 637 Part 2.1 (2011) "Gas cylinders valves: Liquefied petroleum gas (LPG) cylinders valves - manually operated".

The test was carried out within the pre-import frame work.

This report contains 6 page and may be used only in full.

The test results in this document refer only to the item tested.

This document is not approval for marking the product with the standards mark

Conclusion:

The valves comply with the requirements in all the abovementioned clauses.

Full details of the test findings are maintained with this test certificate in the Laboratory secretariat.

The valves are intended for cylinders up to and including 12-liters capacity, excluding composed cylinders.

Name : Dvir Zeman
Position : Head of Water Technologies Section

Date of signature: 27/5/2018

Name : Asher Sheich
Position : Tester

Date of signature: 27/05/2018

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No. of clause in Standard	Subject	Test results and comments				Compliance with requirements of the Standard	
4.2.3	Metallic materials	The composition of the body material of valve no. 1 was checked, and found to be alloy CW617N in Standard SI 137 Part 3. (the test where executed in chemistry laboratory. Internal inspection certificate no.: 9852203448) The hardness of the body was measured 99 HB. The requirement of the standard: Min. number 80 HB. (Internal inspection certificate no.: 985220344)				Complies	
4.2.4	Non-metallic materials	Property tested		Test results	Requirements of Standard	Complies	
		Resistance to pentane Average change (%) (on three samples weighing more than 0.5 g)	After immersion: stem seals	3.129%	+10 -5		
			After drying: stem seals	-3.720%	+5 -8		
		Resistance to lubricants (average of three samples weighing more than 0.5 g)	Stem seals	Weight change (%)	0.18%		+15 -10
				Hardness change (IRHD)	1.2		±10
		Ageing resistance (average of three seals, in IRHD units)	Stem seals	2.4	±10		Complies
Low temperature resistance	See clause 5.20				-		
High temperature resistance	See clause 5.19				-		
4.3.1 4.3.2 4.3.3	Structure	The structure of the valves is in accordance with the requirements of the Standard.				Complies	

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No. of clause in Standard	Subject	Test results and comments	Compliance with requirements of the Standard															
4.3.4	Valve stem	The valve stem is conical external, noted M26x1.5 in Standard CGA-V-1. The thread was checked with the following go-no-go M26x1.5 ring gages: and were found compliance.	Complies															
4.3.5	Valve outlet	<p>The outlet connection is a no G4 connection in Standard EN1520 with a W21.8X1/14 thread.</p> <p>The outlet connection thread was checked with go-no-go W21.8X1/14 gages and were found compliance.</p> <p>The outlet connection dimensions' measurement:</p> <table border="1"> <thead> <tr> <th>meas.</th> <th>Measured in valve no.</th> <th>Standard requirement</th> </tr> </thead> <tbody> <tr> <td>C2</td> <td>Measured with in the limit: 13.0-13.1 mm</td> <td>12.7-13.3</td> </tr> <tr> <td>C3</td> <td>Measured with in the limit: 7.0-7.2 mm</td> <td>6.8-7.2</td> </tr> <tr> <td>C4</td> <td>In all the valve measured: 9.2 mm</td> <td>9.0 min.</td> </tr> <tr> <td>C6</td> <td>Measured with in the limit: 11.3-11.5 mm</td> <td>11.5 min.</td> </tr> </tbody> </table>	meas.	Measured in valve no.	Standard requirement	C2	Measured with in the limit: 13.0-13.1 mm	12.7-13.3	C3	Measured with in the limit: 7.0-7.2 mm	6.8-7.2	C4	In all the valve measured: 9.2 mm	9.0 min.	C6	Measured with in the limit: 11.3-11.5 mm	11.5 min.	Complies
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5.3	External and internal tightness tests	<p><u>Internal tightness:</u></p> <p>The valve inlets were attached to a source of air with the outlet open to the atmosphere with the closing mechanism closed with a torque of 3 N·m. The pressure at the inlet was increased to 0.1 bar for one minute followed by an increase of pressure to 25 bar for one minute. During the test, no leaks were exhibited through the valve outlet.</p>	Complies															
		<p><u>External test</u></p> <p>Following the tightness test, the outlet opening was sealed and the operating mechanism was fully opened. A pressure of 0.1 bar was applied for one minute followed by an increase of pressure to 25 bar for one minute through the inlet. The test was repeated in the three following states:</p> <ul style="list-style-type: none"> With the operating mechanism approximately one quarter open; With the operating mechanism approximately one half open; With the operating mechanism approximately three quarters open. <p>No leaks whatsoever were exhibited during all the test stages from the body or from the connections.</p>	Complies															

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No. of clause in Standard	Subject	Test results and comments	Compliance with requirements of the Standard
5.4	Hydraulic pressure test	<p>The valve stem from valve no. 1 was connected to a source of water pressure. After removal of all residual air from the valve, with the operating mechanism in the closed state and the outlet open to the atmosphere, the pressure at the inlet was gradually increased to 45 bar. The maximum pressure was applied for two minutes.</p> <p>During the test, the valve outlet was sealed and the operating mechanism was fully opened.</p> <p>At the inlet, a hydraulic pressure of 45 bar was again applied for two minutes.</p> <p>During the whole test and upon completion, no leaks, residual deformation or damage whatsoever was exhibited.</p> <p>At the end of the test, the valve was again tested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p> <p>(Note: during the test, the safety accessory opening was sealed.)</p>	Complies
5.6	Valve closure test	<p>The seal in valve no. 1 was disassembled and the valve closed to the end of its travel by means of the hand wheel until contact was made of the seal housing with the sealing seat.</p> <p>The operating mechanism did not come apart and permitted metal to metal contact between the seal housing and the seal in the valve body.</p>	Complies
5.7	Valve stem test	<p>The valve stem of valve no. 2 was connected to the proper steel internal thread with a tightening torque of 200 N·m without any sealant between them.</p> <p>The valve passed the test without causing any damage in the valve and in the operating mechanism.</p> <p>At the end of the test, the valve was retested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p>	Complies
5.9	Hand wheel fire exposure test	<p>The hand wheel of valve no. 3 was exposed for one minute to a flame of 150 mm length at a temperature of 800 °C to 1,000 °C that enveloped the hand wheel.</p> <p>After the valve cooled, the operating mechanism was capable of being closed manually (the test where executed in a fire laboratory. Internal inspection certificate no.: 9811906326).</p>	Complies
5.10	Impact test	<p>Valve no. 4 was assembled in the test fixture with the operating mechanism closed.</p> <p>A weight, whose end is a 13 mm steel ball weighing 8.88 kg, was vertically dropped from a height of 0.46 m on the centre line, two thirds the distance from the exposed valve stem thread.</p> <p>(An impact of 40 Joule at a velocity of 3 m/s).</p> <p>Upon visual examination, no signs of fracture or cracks whatsoever appeared in the valve that could cause leakage through them.</p> <p>At the end of the test, the valve was retested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p>	Complies

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No. of clause in Standard	Subject	Test results and comments	Compliance with requirements of the Standard
5.12	Resistance to excessive closing torque test	<p>A gradually increasing closing torque up to 20 N·m was applied to the hand wheel of valves nos. 5 and 6.</p> <p>The valves passed the test without causing any damage whatsoever and without requiring a torque greater than 3 N·m for operation.</p> <p>At the end of the test, the valve was retested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p>	Complies
5.13	Resistance to excessive opening torque test	<p>A gradually increasing opening torque up to 22 N·m was applied to the hand wheel of valves nos. 7 and 8.</p> <p>The valves passed the test without causing any damage whatsoever and without requiring a torque greater than 3 N·m for operation.</p> <p>At the end of the test, the valve was retested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p>	Complies
5.16	External and internal tightness test after ageing	<p>Valves nos. 9 to 13 were aged in an oven at an ambient temperature of 65 °C for five days.</p> <p>At the end, the tightness was retested in accordance with clause 5.3.</p> <p>The valve passed the test without any signs of leakage whatsoever.</p>	Complies
5.17	Endurance test	<p>After ageing in accordance with clause 5.16, valves nos. 9 to 13 were assembled in the endurance test fixture and the following operating cycles were performed:</p> <p>Closing of the valve with a torque of 3 N·m and a closed time of 6 seconds.</p> <p>Opening the valve of ¾ of total stroke with a torque of 3 N·m and an open time of 6 seconds.</p> <ul style="list-style-type: none"> -The rotational speed during the test was approximately 100 turns per minute. -The air pressure during the test was 12 bars. -After each closure, the pressure downstream was released to the atmosphere. <p>The valves were tested for a total of 13,000 cycles, 10,000 of which without any load on the hand wheel followed by 3,000 cycles with an axial load of 200 Newton applied on the handwheel.</p> <p>At the end of the endurance test, no damage whatsoever was detected to the operating mechanism or any parts of the valves.</p> <p>The maximum torque required at the end of the endurance test was 3 N·m, maximum for closing and 4 N·m, maximum for opening.</p> <p>At the end, the external and internal tightness test in accordance with clause 5.3 was performed.</p> <p>No signs of leakage whatsoever were detected.</p>	Complies

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No. of clause in Standard	Subject	Test results and comments	Compliance with requirements of the Standard
5.19	External and internal tightness test – High temperature	After the endurance test in accordance with clause 5.17, valves nos. 9 to 13 were tested for external and internal tightness in accordance with clause 5.3 at an ambient temperature of 65 °C. The valves passed the test without any signs of leakage whatsoever.	Complies
5.20	External and internal tightness test – Low temperature	After the external and internal tightness test - High temperature, valves nos. 9 to 13 were tested in accordance with clause 5.3 at an ambient temperature of -20 ± 0.5 °C. The valves passed the test without any signs of leakage whatsoever.	Complies
5.21	Examination of dismantled valves nos. 9 to 13	At the end of the tests in accordance with clauses 5.12 to 5.20, valves nos. 9 to 13 were dismantled to their various components. Upon visual examination, no damage or cracks whatsoever were found in the various components.	Complies
6	Documentation/Test report	<p>General Report comments:</p> <p>1. Attached to the test certificate:</p> <ul style="list-style-type: none"> • Assembly drawing. • Parts list. • Metallic materials. • Nonmetallic materials. • Valve drawing parts. <p>2. Activation method details:</p> <ul style="list-style-type: none"> • Gas type information. • Pressure. • Temperature. • Connections. • Whether it design for neck or dome container protection. <p>3. documents which detect material match in LPG.</p>	Complies
7	Markings	<p>The valves bear the following cast and stamped markings:</p> <ul style="list-style-type: none"> - manufacturer's name or his registered trademark. NP trademark of Cavagna. - date of manufacture 11-17. - the words: LPG. <p>The valves bear the additional markings: π0409 -40c°</p>	Complies