

Maximator Test, LLC Test Report

Test Report No.: TR 191010-02a

Customer Information

Company Name: Custom Elite Manufacturing, LLC
Address: PO Box 968
Lake Geneva, WI 53147
Contact: Mark Schafer
Phone Number: 262-909-2627
E-mail Address: info@custom-elite.com

Test Date: October 22nd, 2019

Location: Maximator Test
1350 Tri State Parkway, Unit 130
Gurnee, IL 60031

Report approved by:



Brian J. Cullen – Managing Director

Outline:

Custom Elite Manufacturing, LLC commissioned Maximator Test, LLC to perform a proof test on three 1-1/2" NH Pipe Assemblies. The samples are to be slowly pressurized to a minimum of 900 psi (~62 bar) and dwell at pressure for 2 minutes.

Test Equipment:

Maximator Burst Pressure/Leak Test Bench (PN 259) will be used to conduct the test using water as the test medium. See **Figure 1**.



Figure 1: Maximator Burst Pressure and Leak Test bench (PN 259)

Test Procedure:

The test sample was pre-filled with water, installed in the test chamber and adapted to the test bench. Once installed the system was bled of entrapped air, sealed and the testing started. See **Figure 2** for test setup.



Figure 2: Assembly Loaded in Test Chamber

Results:

Custom Elite Manufacturing, LLC
Proof Test on: 1-1/2" Hose Adaptor Assembly
Start Date: 10-22-19

Sample No.	Max Pressure (Bar)	Max Pressure (psi)	Dwell Period (seconds)	Results	Comments
1	64.68	938	120	Passed	No leakage detected
2	65.29	947	120	Passed	No leakage detected
3	64.37	934	120	Passed	No leakage detected

Table 1: Summary of Proof Test, Sample 1-3

Customer Name: Custom Elite Manufacturing Actual No.: 1-1/2in NPT Assembly
 Customer Number: PT 191010-02 Test Operator: BBB
 Order ID: 191010-02
 Test No.: Sample 1



Test parameter: Start: 10/22/2019 9:29:35 AM End: 10/22/2019 9:32:21 AM Duration: 0d 0h 2m 45s Test mode: Leak test

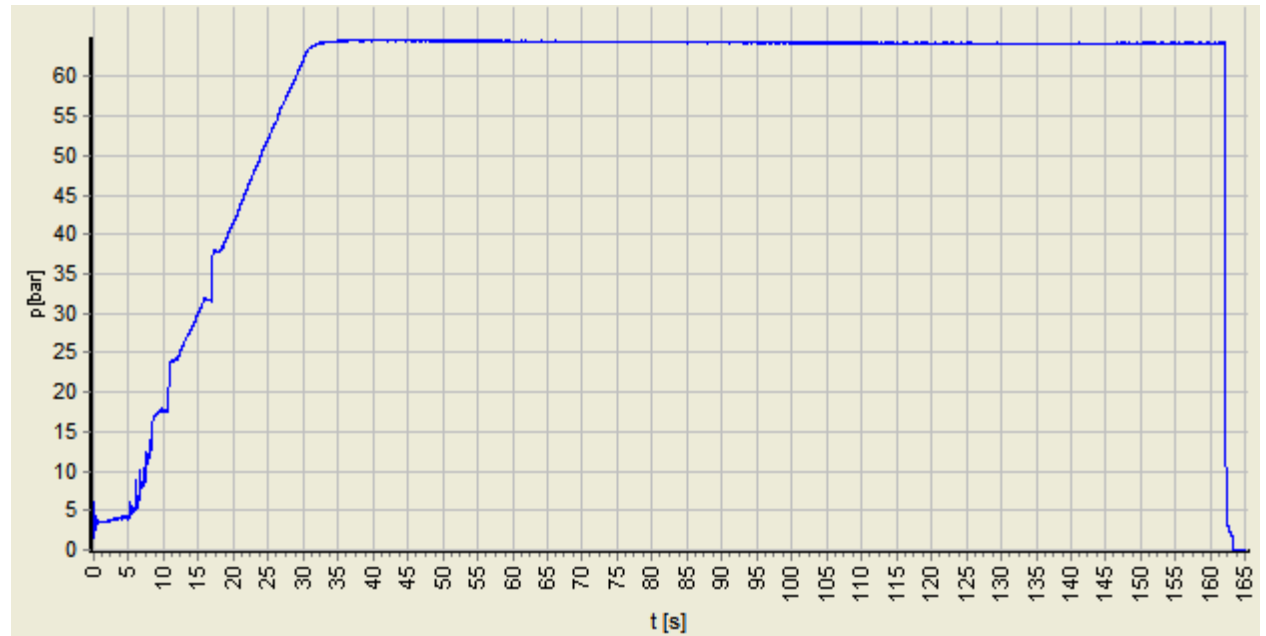
Leak test

Reference parameter

		Pressure	Offset	Pressurize	Stabilisation	Testing
		[bar]	[bar]	[s]	[s]	[s]
Maximum pressure drop (stabilisation) [bar]:	15	60	-1	30	10	120
Maximum pressure drop (build-up) [bar]:	100					
Maximum pressure drop (test) [bar]:	15					

Last start pressure [bar]: 64.66
 Last end pressure [bar]: 64.23
 Start pressure too low: -
 Pressure drop too high: -
 Maximum test pressure [bar]: 64.68

Remarks:
 2 min dwell



Test result (leak test) passed

Customer Name: Custom Elite Manufacturing Actual No.: 1-1/2in NPT Assembly
 Customer Number: PT 191010-02 Test Operator: BBB
 Order ID: 191010-02
 Test No.: Sample 2



Test parameter: Start: 10/22/2019 9:54:46 AM End: 10/22/2019 9:57:32 AM Duration: 0d 0h 2m 45s Test mode: Leak test

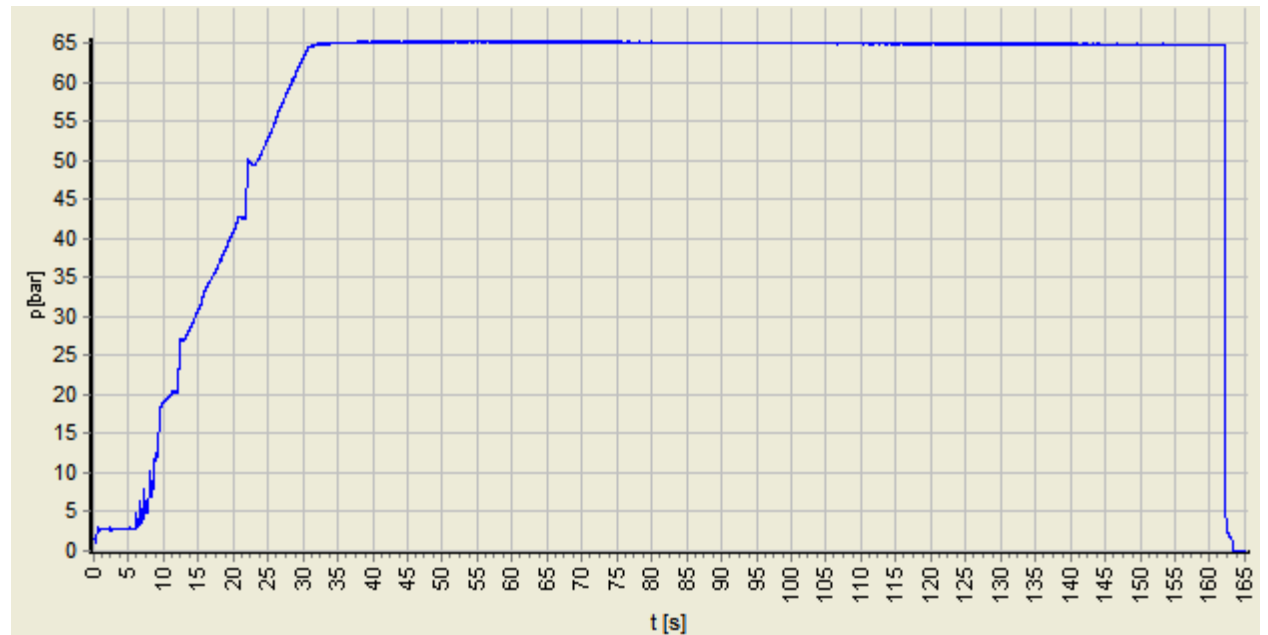
Leak test

Reference parameter

		Pressure	Offset	Pressurize	Stabilisation	Testing
		[bar]	[bar]	[s]	[s]	[s]
Maximum pressure drop (stabilisation) [bar]:	15	60	-1	30	10	120
Maximum pressure drop (build-up) [bar]:	100					
Maximum pressure drop (test) [bar]:	15					

Last start pressure [bar]: 65.14
 Last end pressure [bar]: 64.72
 Start pressure too low: -
 Pressure drop too high: -
 Maximum test pressure [bar]: 65.29

Remarks:
 2 min dwell



Test result (leak test) passed

Customer Name: Custom Elite Manufacturing Actual No.: 1-1/2in NPT Assembly
 Customer Number: PT 191010-02 Test Operator: BBB
 Order ID: 191010-02
 Test No.: Sample 3



Test parameter: Start: 10/22/2019 10:22:22 AM End: 10/22/2019 10:25:07 AM Duration: 0d 0h 2m 45s Test mode: Leak test

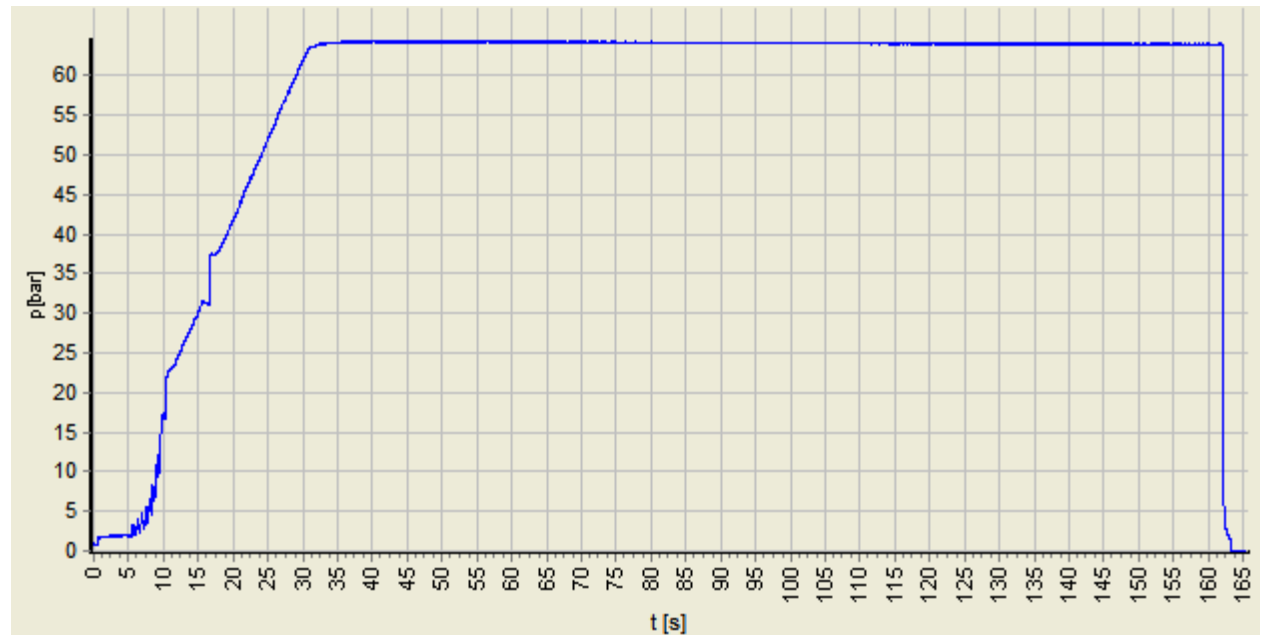
Leak test

Reference parameter

		Pressure	Offset	Pressurize	Stabilisation	Testing
		[bar]	[bar]	[s]	[s]	[s]
Maximum pressure drop (stabilisation) [bar]:	15	60	-1	30	10	120
Maximum pressure drop (build-up) [bar]:	100					
Maximum pressure drop (test) [bar]:	15					

Last start pressure [bar]: 64.3
 Last end pressure [bar]: 63.91
 Start pressure too low: -
 Pressure drop too high: -
 Maximum test pressure [bar]: 64.37

Remarks:
 2 min dwell



Test result (leak test) passed

Pressure Transducer Calibration Certificate:

Certificate-No.: QS-CG 19/017	MAXIMATOR Pressure Sensor	Type:																																																												
Certificate of quality DIN 55 350 - 18 - 4.2.2																																																														
1. Test Location:	Maximator Dienstleistungs-und Prüfzentrum, Nordhausen																																																													
2. Customer:	Brian Cullen	IL 60031 Gurnee USA 1350 Tri State Parkway, Suite 130																																																												
3. Testitem:	Transmitter: 0 - 250 bar accuracy class: 0,25 % Vendor: WIKA Alexander Wiegand SE & Co. KG	Type: Druckaufnehmer S-10 Serial-No.: S#11058NBV P#8384386																																																												
4. Reference sensor:	Transmitter: 0 - 250 bar accuracy class 0,025 % Vendor: WIKA Alexander Wiegand SE & Co. KG	Type: Druckaufnehmer CPT 6000 Serial-No.: N515025004 S#5795240																																																												
5. Test conditions:	Testmedium: Maxifluid Testtemperature in °C: 22 Stabilisationtime in Sec.: 30 Calibration-Interval: 12 Monate																																																													
6. Date of adjustment:	02.05.2019																																																													
7. Measurement Values / Errors:																																																														
<table border="1"><thead><tr><th>Measuring point [bar]</th><th>Reference sensor [bar]</th><th>Testitem [bar]</th><th>absolute Error [bar]</th><th>relative Error [%]</th></tr></thead><tbody><tr><td>1: 0,0</td><td>-0,009</td><td>0,001</td><td>0,011</td><td>0,004</td></tr><tr><td>2: 25,0</td><td>25,087</td><td>25,135</td><td>0,048</td><td>0,019</td></tr><tr><td>3: 50,0</td><td>49,995</td><td>49,95</td><td>0,045</td><td>0,018</td></tr><tr><td>4: 75,0</td><td>74,994</td><td>74,967</td><td>0,027</td><td>0,011</td></tr><tr><td>5: 100,0</td><td>100,047</td><td>99,949</td><td>0,098</td><td>0,039</td></tr><tr><td>6: 125,0</td><td>124,996</td><td>124,933</td><td>0,063</td><td>0,025</td></tr><tr><td>7: 150,0</td><td>150,098</td><td>150,019</td><td>0,079</td><td>0,032</td></tr><tr><td>8: 175,0</td><td>174,977</td><td>174,739</td><td>0,238</td><td>0,095</td></tr><tr><td>9: 200,0</td><td>199,925</td><td>199,752</td><td>0,173</td><td>0,069</td></tr><tr><td>10: 225,0</td><td>225,064</td><td>224,918</td><td>0,146</td><td>0,058</td></tr><tr><td>11: 250,0</td><td>250,059</td><td>249,804</td><td>0,255</td><td>0,102</td></tr></tbody></table>	Measuring point [bar]	Reference sensor [bar]	Testitem [bar]	absolute Error [bar]	relative Error [%]	1: 0,0	-0,009	0,001	0,011	0,004	2: 25,0	25,087	25,135	0,048	0,019	3: 50,0	49,995	49,95	0,045	0,018	4: 75,0	74,994	74,967	0,027	0,011	5: 100,0	100,047	99,949	0,098	0,039	6: 125,0	124,996	124,933	0,063	0,025	7: 150,0	150,098	150,019	0,079	0,032	8: 175,0	174,977	174,739	0,238	0,095	9: 200,0	199,925	199,752	0,173	0,069	10: 225,0	225,064	224,918	0,146	0,058	11: 250,0	250,059	249,804	0,255	0,102		
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All measurement values are arithmetic average values of 6 series of measurements.																																																														
Measuring Error = Reference value - testitem value																																																														
8. Result of inspection:	The Testitem is within the allowed tolerance.																																																													
Tester		Maximator GmbH																																																												
Christoph Goedeke	Date: 06.05.2019																																																													
This document is valid without signature.																																																														
Maximator GmbH		00724 Nordhausen																																																												