

# µHoubolt Test Protocol – Proof Pressure Testing of Oxidizer System Pressure Vessel

[TEST START: 13:00]

[TEST END: 16:00]

[TEST DATE: 31.08.2022]

TEST BY
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TESTTYPE	Proof Pressure Test
TESTGOAL	Testing the oxidizer tank with a maximum static pressure

## Test summary

### General Description:

To ensure the tank's functionality under high pressure conditions, the oxidizer system was statically pressure proofed. As the safety relief valve works in a range of 30 to 60 bar and the oxidizer tank pressure is defined as 50 bar, the relief valves were set to 60 bar. The conducted test required a pressure 1.5 times larger than the maximum operating condition, so the test was conducted with 90 bar and water as operating fluid due to safety and expedience reasons. Previously performed static fire tests proved the maximum system working time after pressurizing to be around 30 minutes. Thus, the testing duration was expanded to 2 hours (4 times larger than the maximum system working time) to guarantee that the tank withstands the 90 bar pressure over a long period of time.

### System Setup:

The system was pressurized using the HPLC Compact Pump which was connected via Swagelok connections to the oxidizer manifold. To ensure that the overpressure doesn't damage any active component, none of them were screwed into the manifold. Instead, all the ports were closed off with fitting plugs. The oxidizer manifold itself was in turn connected to the top of the tank, to which below the flight configuration was applied, ending the testing system with the oxidizer main valve.



### Test Outcome:

The oxidizer vessel endured the static pressure of 90 bar over a 2-hour duration without any negative effect on the material or components.

Signature 1

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Signature 2

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Signature 3

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