**ESS Tuning Dump Screen System**

**Final Leak Check Procedure**

**Document Change Record**

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| --- | --- | --- | --- |
| Version | Date | Section/Sheet | Comment |
| 1.0 | 18-10-19 |  | First Issue |

**Document Purpose**

This document defines the final leak checks on STFC vacuum hardware prior to despatch to ESS. This document should be printed and completed by hand. This procedure must be carried out in compliance with the ASTEC Leak Testing of vacuum vessels specification ASTEC-VAC-QCD-spc-001.

This document should be printed and completed by hand during assembly. Once completed with all signatures, a scanned copy should be sent to the project manager for storage in the document management system.

**Unit**

|  |  |
| --- | --- |
| Module Name: |  |

**Approval**

|  |  |  |  |
| --- | --- | --- | --- |
| Assembled by: | Print | Signature | Date |
| Approved by: | Print | Signature | Date |

**Test Procedure**

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| --- | --- | --- |
| **Step number** | **Task Description** | **Initial / Date** |
|  | Precautions  Care must be taken to ensure that no oils or greases are used on any vacuum surfaces or seals. Care shall also be taken to ensure external surfaces are free from oils, greases and solvents. |  |
|  | Method:  Two methods are permitted for the final leak testing of vacuum equipment. Indicate here the method being used:   |  |  |  | | --- | --- | --- | | **Method (please tick):** | RGA | Mass Spectrometer | | **Comments:**  (use continuation sheet if necessary) |  | | |  |
|  | Equipment  Report the equipment being used for the leak check procedure:   |  |  | | --- | --- | | **Equipment Type and Model** |  | | **Asset number** |  | | **Comments:**  (use continuation sheet if necessary) |  | |  |
|  | Test item readiness  Confirm that all required pre-particle count activities have been completed on this unit   |  |  |  |  | | --- | --- | --- | --- | | **Process** | **Procedure Number** | **Completed Y/N** | **Date** | | **Inspection activities** | tdl-1252-tmve-pdure-001 |  |  | | **Mechanical assembly** | tdl-1252-tmve-pdure-002 |  |  | | **Pump down checklist** | tdl-1252-tmve-pdure-003 |  |  | |  |
|  | Calibration  The leak test equipment must be calibrated in accordance with step 6.3 or 6.4 of ASTEC-VAC-QCD-spc-004.  Confirm leak detector calibration is successful before proceeding to the next step. |  |
|  | Leak Test  The leak test shall be performed by spraying all joints, welds and surfaces with the probe gas (helium).  The item may be enclosed in a polythene bag or tent to ensure a sufficient dwell time of the probe gas is achieved to allow the material porosity to be assessed. |  |
|  | Test Results  Report the leak rate of the probe gas recorded:   |  |  |  | | --- | --- | --- | | **Leak rate recorded**  **(mBar l/sec)** | **Requirement**  **(mBar l/sec)** | **Pass or Fail** | |  | 1 x 10-9 |  |   If the test is a failure then investigatory measures should be implemented:   * Identify the location of the leak * Identify cause of the leak * Apply remedial action (in consultation with the test engineer) * Perform a retest   If the test is successful then proceed to the next step. |  |
|  | Repeat measurement  The leak test performed in step 6 shall be repeated to assess the consistency of the vacuum performance.  A repeatability of +/- 5 % is required for the leak check test to be passed.   |  |  |  |  | | --- | --- | --- | --- | | **Leak rate recorded**  **(mBar l/sec)** | **Allowable range** | | **Pass or Fail** | | **Previous measurement less 5 %** | **Previous measurement plus 5 %** | |  |  |  |  |   If the test is successful then this procedure can be concluded.  If the test is a failure then investigatory measures should be implemented:   * Identify the location of the leak * Identify cause of the leak * Apply remedial action (in consultation with the test engineer) * Perform a retest |  |

**Test Completion**

Lead technician responsible to check all steps have been completed:

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Position** | **Signed** | **Date** |
|  |  |  |  |

**Continuation Sheet:**

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| *Record any additional observations here* |