WILLIAM E. BOEING DEPARTMENT OF
AERONAUTICS & ASTRONAUTICS
College of Engineering

AA421
Structural Deflection Test Procedure

SPACE Lab

Part Name: _____

Part Number: _____

Date: _____ / _____ / _____
yyyy mm dd

Test Team:

Name	**Initials**

Test Objective

Verify through testing that requirements Ci.4 and Ls.2 will be met and the structure of both the chamber interface and leveling system will have a maximum vertical displacement of 0.04 inches when fully loaded. The chamber interface and leveling system subsystems will be assembled and put together as designed, then the assemblies will be loaded as though the pendulum, frame, and largest thruster size were on top of them. Deflection will be measured using a dial indicator and compared to FEA simulation results.

Equipment Required

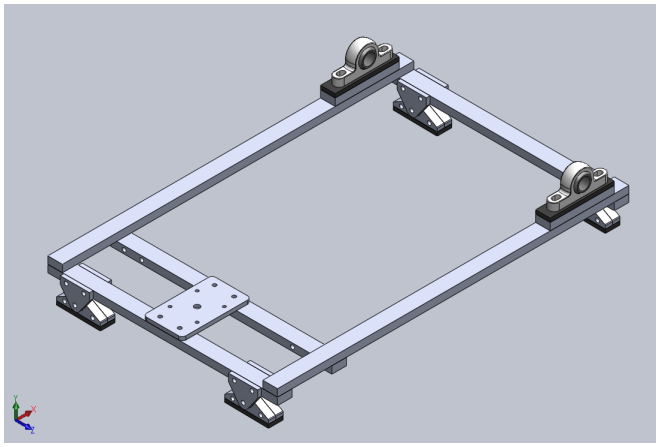
Qty	Description	Specs/Calibration	Check
1	Chamber Interface subassembly (p/n-CIA1)		
1	Leveling System subassembly (p/n-LSA1)		
4	2.5 kg masses		
1	0-0.5” dial indicator	0-0.5”	

Test Procedure

1 Setup

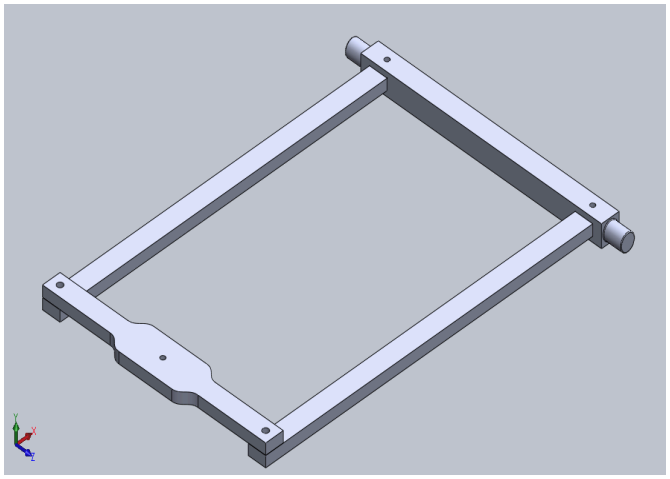
Assemble chamber interface assembly (p/n-CIA1) per assembly instructions

OK?_____



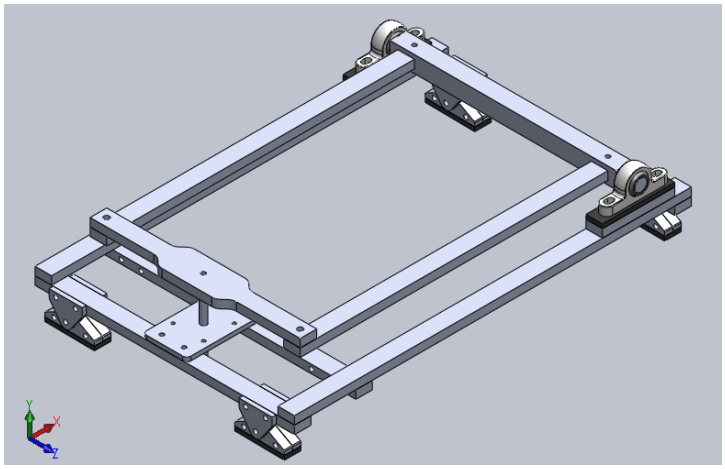
Assemble leveling system assembly (p/n-LSA1) per assembly instructions

OK?_____



Install leveling system assembly onto chamber interface assembly per assembly instructions

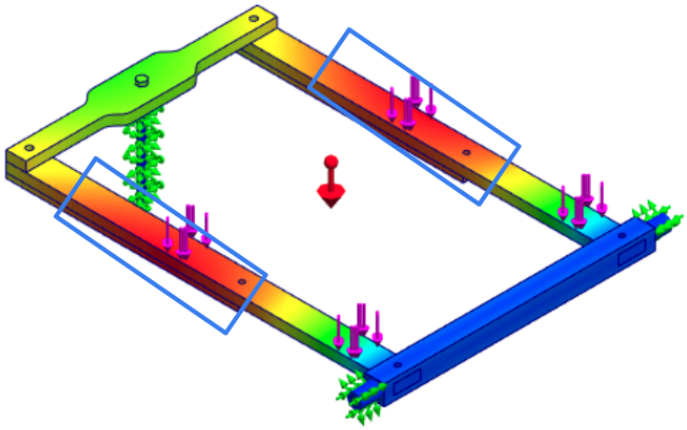
OK?_____



2 Test

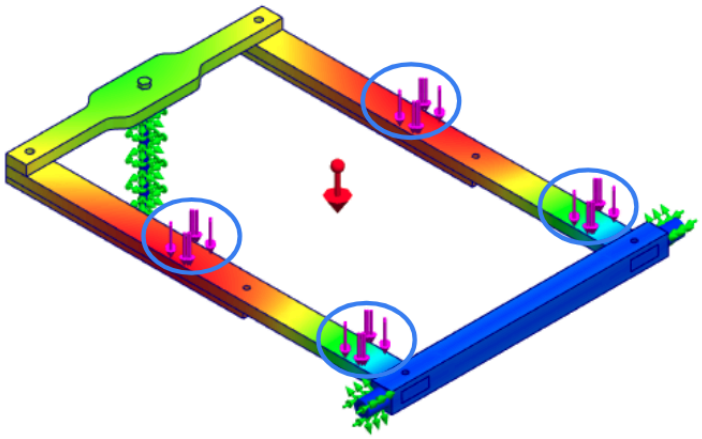
Zero dial indicator on the leveling system longitudinal strut (p/n-LSLS1) within the spaces indicated by the blue boxes below

OK?_____



Install 2.5 kg masses at the four pendulum mounting points on the leveling system longitudinal struts (p/n-LSLS1) indicated by the purple arrows below to simulate maximum loading of the test stand pendulum assembly

OK?_____



Record the deflection reading measured by the dial indicator
_____in

Is this value less than or equal to 0.04 inches?
OK?_____

Remove masses from leveling system
OK?_____

Remove dial indicator from leveling system longitudinal strut
OK?_____

Zero dial indicator on opposite leveling system longitudinal strut in same space indicated by blue boxes above to verify deflection of both sides of the leveling system

OK?_____

Install 2.5 kg masses at four pendulum mounting points on the leveling system longitudinal struts as done in step 2

OK?_____

Record the deflection reading measured by the dial indicator
_____in

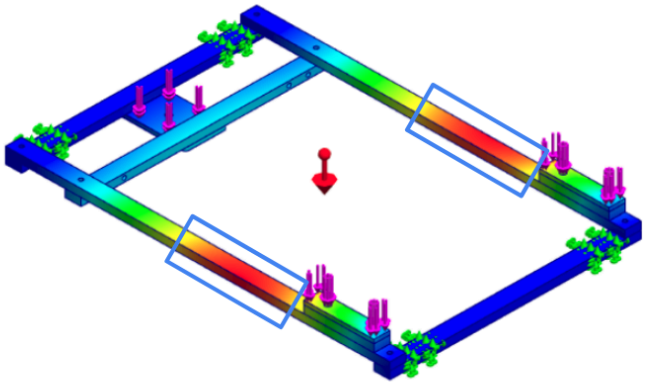
Is this value less than or equal to 0.04 inches?
OK?_____

Remove masses from leveling system
OK?_____

Remove dial indicator from leveling system
OK?_____

Zero dial indicator on the chamber interface longitudinal struts (p/n-LS1) within the spaces indicated by the blue boxes below

OK?_____



Install 2.5 kg masses at four pendulum mounting points on the leveling system longitudinal struts as done in step 2

OK?_____

Record the deflection reading measured by the dial indicator
_____in

Is this value less than or equal to 0.04 inches?
OK?_____

Remove masses from leveling system
OK?_____

Remove dial indicator from chamber interface longitudinal struts
OK?_____

Zero dial indicator on opposite chamber interface longitudinal strut in same space indicated by blue boxes above to verify deflection of both sides of the leveling system

OK?_____

Install 2.5 kg masses at four pendulum mounting points on the leveling system longitudinal struts as done in step 2

OK?_____

Record the deflection reading measured by the dial indicator
_____in

Is this value less than or equal to 0.04 inches?
OK?_____

Remove masses from leveling system
OK?_____

Remove dial indicator from chamber interface
OK?_____

4 Shut down

Stow dial indicator in box to return to AA machine shop
OK?_____

Remove leveling system from chamber interface and store in box to return to AERB 139
OK?_____

Store pendulum parts and frame in box and return to AERB 139
OK?_____

Change Log

Ver	Date	By	E-mail	Change
1.0	4/28/20254	Adam Delbow	adelbow@uw.edu	Initial release.