

Document owner:	Steven Donovan			
Date:	2/13/20-2/15/20			
Test Setup:	Mount the solenoid to the cryostat using the custom brackets. Follow the procedure outlined in 'Cryostat testing' document all the way through purging the liquid nitrogen. After this monitor the temperature and test periodically. Given cooling is an exponential decay the test will take place over the course of a few days to reach the base temperature. Record the temperatures when activating the solenoid and maintain the 13 watt power target across the temperature range.			
Test Objective:	Test the solenoid with as few modifications as possible to eliminate human error and variability in setup.			
Test Result:	The test shows that with minimal modifications the solenoid can operate in the cryogenic region. The test was ended early in light of the good result to conserve LN.			
Temperature (K)	Actuation	Notes		
293	1			
200	1			
153	1			
143	1			
114	1*	got stuck with 20V applied		
104	1	Became unstuck upon application of power		
103	1			
105	1	Ran out of LN called an end to the test		
Investigate current limitations				
add				
time of day clock for time stamping				

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Test Setup:	Mount the solenoid to the cryostat using the custom brackets. Follow the procedure outlined in 'Cryostat testing' document all the way through purging the liquid nitrogen. After this monitor the temperature and test periodically. Given cooling is an exponential decay the test will take place over the course of a few days to reach the base temperature. Record the temperatures when activating the solenoid and maintain the 13 watt power target across the temperature range.
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Solenoid Modifications:	The solenoid was placed in the sonicator filled with isopropyl alcohol at 30°C for 99 minutes to clean any potential grease out of the solenoid fixture. A generous amount of molybdenum lubricant was then applied to act in place of any cleaned out.
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Test Objective:	Test the solenoid with the new modifications.
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Test Result:	The solenoid actuation became more inconsistent. This could be the result of a lack of drying time for the solenoid after the cleaning process could have caused the isopropyl alcohol to freeze the solenoid in place while at cryostat temperatures. The test was ended early when LN ran out and was back ordered through the weekend. The test yielded questionable results, likely because of the reason listed above, but it was decided to move forward with the testing when LN was re-stocked.
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Temperature (K)	Actuation	Notes
293	1	
200	1	
101	1	
93.7	1	
93.8	1	

Document owner:	Steven Donovan			
Date:	2/25/20-2/26/20			
Test Setup:	Mount the solenoid to the cryostat using the custom brackets. Follow the procedure outlined in 'Cryostat testing' document all the way through purging the liquid nitrogen. After this monitor the temperature and test periodically. Given cooling is an exponential decay the test will take place over the course of a few days to reach the base temperature. Record the temperatures when activating the solenoid and maintain the 13 watt power target across the temperature range.			
Solenoid Modifications:	The solenoid was placed in the sonicator filled with isopropyl alcohol at 30°C for 99 minutes to clean any potential grease out of the solenoid fixture from previous test. The new modifications include disassembling the solenoid to drill out the shaft slide by Ø.002. During this process the inside of shaft and moving parts were re-lubricated with molybdenum lubricant.			
Test Objective:	Test the solenoid with NEW modifications.			
Test Result:	The solenoid was no longer functioning as expected at cryogenic temperatures. It is possible this is a result of the additional modifications.			
Temperature (K)	Actuation	Notes		
130	0	Did not actuate		
82	1*	actuated but was stuck open		
95	0	was still stuck open		