

# LIGO Production Small Actuator Test Report

Actuator Serial #: S039  
 Operator Name: Gordon, Matt  
 Date: 9/13/2010 Time: 2:43 PM  
 Actuator Coil Resistance: 10.42 Ohms, PASS  
 Ambient Temperature: 77.9 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.672  
 Y Travel Limit (inches): 0.206  
 Z Travel Limit (inches): 0.513

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.574	9.947	6.319	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.777	9.927	5.585	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.771	10.027	5.662	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.810	10.124	5.593	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.803	9.945	5.517	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.763	10.064	5.709	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.718	10.037	5.842	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.726	10.022	5.806	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.680	9.952	5.923	PASS
<b>Center</b>	0.000	0.000	0.000	-1.578	-9.993	6.332	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.757	-9.939	5.657	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.778	-10.063	5.661	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.781	-10.074	5.657	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.784	-10.077	5.648	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.780	-10.057	5.649	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.835	-9.928	5.410	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.794	-10.097	5.628	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.778	-9.968	5.607	PASS

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# LIGO Production Small Actuator Test Report

Actuator Serial #: S040  
 Operator Name: Gordon, Matt  
 Date: 9/13/2010 Time: 3:08 PM  
 Actuator Coil Resistance: 10.35 Ohms, PASS  
 Ambient Temperature: 77.9 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.652  
 Y Travel Limit (inches): 0.207  
 Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.588	10.024	6.311	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.778	9.993	5.621	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.799	10.023	5.572	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.793	10.034	5.597	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.764	10.051	5.697	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.752	9.987	5.701	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.613	10.096	6.258	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.728	10.073	5.829	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.744	9.972	5.719	PASS
<b>Center</b>	0.000	0.000	0.000	-1.577	-9.928	6.295	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.749	-9.951	5.688	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.771	-10.069	5.685	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.786	-10.057	5.631	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.754	-10.042	5.726	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.806	-10.022	5.548	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.759	-10.035	5.705	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.779	-9.984	5.611	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.808	-10.017	5.541	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S041  
 Operator Name: Gordon, Matt  
 Date: 9/13/2010 Time: 3:26 PM  
 Actuator Coil Resistance: 10.24 Ohms, PASS

Ambient Temperature: 78.1 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.661  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.568	9.972	6.361	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.801	9.975	5.537	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.764	10.010	5.676	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.800	10.028	5.570	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.803	9.936	5.511	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.776	10.019	5.643	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.753	9.983	5.697	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.738	9.967	5.735	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.782	10.031	5.629	PASS
<b>Center</b>	0.000	0.000	0.000	-1.608	-9.989	6.210	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.732	-9.937	5.736	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.767	-10.013	5.665	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.778	-10.013	5.632	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.754	-9.925	5.657	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.815	-9.946	5.480	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.821	-9.951	5.466	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.804	-10.063	5.579	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.829	-9.999	5.466	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S042  
 Operator Name: Gordon, Matt  
 Date: 9/13/2010 Time: 3:43 PM  
 Actuator Coil Resistance: 10.33 Ohms, PASS  
 Ambient Temperature: 77.9 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.686  
 Y Travel Limit (inches): 0.204

Z Travel Limit (inches): 0.514

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.599	10.100	6.316	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.787	9.978	5.585	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.775	9.988	5.627	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.806	10.066	5.573	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.776	10.044	5.656	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.725	9.968	5.780	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.755	10.018	5.710	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.735	10.005	5.767	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.677	9.986	5.954	PASS
<b>Center</b>	0.000	0.000	0.000	-1.552	-9.927	6.397	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.706	-9.947	5.831	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.739	-10.003	5.752	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.744	-10.001	5.735	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.748	-10.062	5.756	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.764	-10.042	5.694	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.804	-9.939	5.510	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.794	-9.977	5.562	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.783	-9.953	5.583	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S043  
 Operator Name: Gordon, Matt  
 Date: 9/13/2010 Time: 4:01 PM  
 Actuator Coil Resistance: 10.45 Ohms, PASS  
 Ambient Temperature: 77.9 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.671  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.585	10.039	6.334	PASS

<b>Position 1</b>	0.250	0.085	0.220	1.779	10.093	5.672	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.814	9.911	5.464	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.784	9.929	5.564	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.775	9.957	5.610	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.745	9.948	5.700	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.755	10.014	5.705	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.751	10.003	5.713	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.745	9.973	5.715	PASS
<b>Center</b>	0.000	0.000	0.000	-1.552	-10.026	6.459	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.696	-9.993	5.893	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.712	-10.068	5.882	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.673	-9.931	5.938	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.694	-9.988	5.895	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.735	-9.918	5.717	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.774	-10.062	5.672	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.730	-10.069	5.819	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.768	-9.972	5.640	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S044  
Operator Name: Gordon, Matt  
Date: 9/13/2010 Time: 4:19 PM  
Actuator Coil Resistance: 10.33 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.652  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.515

	<b>X Position (in)</b>	<b>Y Position (in)</b>	<b>Z Position (in)</b>	<b>Current (A)</b>	<b>Force (lbs)</b>	<b>Force Constant (lbs/A)</b>	<b>PASS/FAIL</b>
<b>Center</b>	0.000	0.000	0.000	1.503	10.061	6.695	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.799	9.948	5.529	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.776	10.022	5.644	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.767	10.013	5.667	PASS

<b>Position 4</b>	-0.250	0.085	0.220	1.785	10.028	5.620	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.742	10.009	5.746	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.685	10.054	5.966	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.741	10.042	5.769	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.697	10.032	5.913	PASS
<b>Center</b>	0.000	0.000	0.000	-1.601	-9.950	6.214	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.748	-10.006	5.723	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.752	-9.943	5.674	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.760	-9.943	5.649	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.764	-9.994	5.666	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.843	-10.025	5.441	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.829	-9.993	5.464	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.828	-10.004	5.471	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.784	-10.010	5.612	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S045  
Operator Name: Gordon, Matt  
Date: 9/13/2010 Time: 4:35 PM  
Actuator Coil Resistance: 10.36 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.680  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.537	9.938	6.467	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.807	9.919	5.491	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.788	9.969	5.576	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.775	9.993	5.630	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.764	9.974	5.654	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.746	10.020	5.738	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.713	9.980	5.825	PASS

<b>Position 7</b>	0.250	-0.085	-0.220	1.746	9.972	5.711	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.735	10.046	5.788	PASS
<b>Center</b>	0.000	0.000	0.000	-1.584	-9.921	6.262	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.754	-9.929	5.661	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.776	-10.075	5.672	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.754	-9.928	5.659	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.776	-10.049	5.657	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.831	-9.960	5.440	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.834	-9.940	5.420	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.766	-9.947	5.631	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.801	-9.954	5.528	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S046  
Operator Name: Gordon, Matt  
Date: 9/13/2010 Time: 4:58 PM  
Actuator Coil Resistance: 10.36 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.637  
Y Travel Limit (inches): 0.206  
Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.577	10.020	6.354	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.796	9.918	5.522	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.832	9.969	5.442	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.843	9.953	5.401	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.819	10.016	5.506	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.726	10.070	5.834	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.721	9.987	5.804	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.733	10.072	5.812	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.747	10.071	5.766	PASS
<b>Center</b>	0.000	0.000	0.000	-1.572	-9.923	6.311	PASS

<b>Position 1</b>	0.250	0.085	0.220	-1.766	-10.039	5.684	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.783	-10.048	5.634	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.776	-10.018	5.640	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.773	-10.017	5.650	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.807	-9.913	5.487	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.732	-10.010	5.781	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.753	-10.057	5.738	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.751	-9.938	5.677	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S047  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 9:05 AM  
Actuator Coil Resistance: 10.22 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.657  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.515

	<b>X Position (in)</b>	<b>Y Position (in)</b>	<b>Z Position (in)</b>	<b>Current (A)</b>	<b>Force (lbs)</b>	<b>Force Constant (lbs/A)</b>	<b>PASS/FAIL</b>
<b>Center</b>	0.000	0.000	0.000	1.644	10.019	6.094	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.759	10.040	5.708	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.738	9.982	5.744	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.842	9.992	5.425	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.823	9.987	5.478	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.768	10.027	5.671	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.809	10.035	5.546	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.807	10.033	5.551	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.813	10.038	5.538	PASS
<b>Center</b>	0.000	0.000	0.000	-1.631	-9.932	6.089	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.801	-10.042	5.577	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.800	-10.060	5.589	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.823	-10.068	5.523	PASS



<b>Position 4</b>	-0.250	0.085	0.220	-1.800	-10.045	5.581	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.837	-9.934	5.407	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.798	-10.055	5.591	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.832	-9.986	5.452	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.822	-10.033	5.506	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S048  
Operator Name: Gordon, Matt  
Date: 9/16/2010 Time: 12:42 PM  
Actuator Coil Resistance: 10.33 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.677  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.515

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.600	10.049	6.280	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.799	10.050	5.585	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.830	9.955	5.441	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.731	10.030	5.796	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.788	9.988	5.585	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.770	9.930	5.611	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.764	10.074	5.711	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.748	9.964	5.700	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.717	9.946	5.793	PASS
<b>Center</b>	0.000	0.000	0.000	-1.599	-9.964	6.232	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.773	-9.956	5.617	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.767	-9.956	5.635	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.769	-9.951	5.625	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.765	-9.957	5.642	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.802	-9.966	5.529	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.777	-10.066	5.664	PASS

<b>Position 7</b>	0.250	-0.085	-0.220	-1.768	-10.001	5.658	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.743	-9.980	5.726	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S049  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 9:41 AM  
Actuator Coil Resistance: 10.29 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.674  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.511

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.593	9.991	6.271	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.822	9.974	5.474	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.795	10.050	5.598	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.819	10.036	5.518	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.821	9.992	5.487	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.770	10.028	5.666	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.747	10.039	5.747	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.770	10.049	5.679	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.720	10.069	5.854	PASS
<b>Center</b>	0.000	0.000	0.000	-1.575	-10.007	6.354	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.752	-10.055	5.740	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.763	-9.946	5.641	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.778	-10.092	5.676	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.740	-10.026	5.761	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.809	-10.023	5.542	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.807	-9.953	5.509	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.788	-9.962	5.570	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.776	-10.018	5.641	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S050  
 Operator Name: Gordon, Matt  
 Date: 9/15/2010 Time: 10:06 AM  
 Actuator Coil Resistance: 10.29 Ohms, PASS  
 Ambient Temperature: 78.8 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.674  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.576	10.044	6.372	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.823	10.019	5.496	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.799	10.036	5.578	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.815	10.044	5.535	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.807	10.045	5.560	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.769	10.044	5.677	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.763	10.065	5.708	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.780	10.089	5.667	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.779	10.074	5.662	PASS
<b>Center</b>	0.000	0.000	0.000	-1.581	-10.031	6.345	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.750	-10.048	5.742	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.751	-9.983	5.702	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.751	-9.988	5.703	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.764	-10.053	5.699	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.785	-10.010	5.609	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.849	-10.021	5.418	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.809	-9.998	5.526	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.826	-10.040	5.497	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S051  
 Operator Name: Gordon, Matt  
 Date: 9/15/2010 Time: 11:11 AM  
 Actuator Coil Resistance: 10.18 Ohms, PASS  
 Ambient Temperature: 78.8 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.657  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.513

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.597	10.004	6.265	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.760	10.127	5.754	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.816	9.983	5.496	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.784	10.012	5.613	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.846	9.961	5.396	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.784	10.099	5.660	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.770	10.024	5.662	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.749	10.027	5.734	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.773	9.983	5.630	PASS
<b>Center</b>	0.000	0.000	0.000	-1.635	-10.012	6.125	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.806	-10.052	5.567	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.807	-10.009	5.538	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.804	-9.990	5.539	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.800	-10.046	5.581	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.791	-9.995	5.580	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.825	-9.918	5.433	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.829	-9.957	5.443	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.785	-10.043	5.626	PASS

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# LIGO Production Small Actuator Test Report

Actuator Serial #: S052

Operator Name: Gordon, Matt

Date: 9/15/2010 Time: 11:27 AM

Actuator Coil Resistance: 10.24 Ohms, PASS

Ambient Temperature: 73.2 F

Hi Pot Test Results: 1000 MOhms, PASS

X Travel Limit (inches): 0.669

Y Travel Limit (inches): 0.205

Z Travel Limit (inches): 0.513

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.568	9.945	6.341	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.829	9.976	5.456	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.735	9.984	5.754	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.758	9.969	5.670	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.822	10.022	5.502	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.775	9.971	5.618	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.735	10.050	5.791	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.613	10.060	6.238	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.756	9.971	5.677	PASS
<b>Center</b>	0.000	0.000	0.000	-1.604	-10.079	6.284	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.752	-10.030	5.723	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.749	-10.016	5.728	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.763	-9.992	5.668	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.760	-10.037	5.702	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.765	-10.068	5.705	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.768	-10.051	5.685	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.804	-9.991	5.539	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.775	-10.102	5.692	PASS

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# LIGO Production Small Actuator Test Report

Actuator Serial #: S053

Operator Name: Gordon, Matt  
 Date: 9/15/2010 Time: 11:43 AM  
 Actuator Coil Resistance: 10.23 Ohms, PASS  
 Ambient Temperature: 78.8 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.679  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.516

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.574	9.968	6.332	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.701	10.068	5.919	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.765	10.023	5.680	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.796	9.981	5.558	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.787	10.074	5.636	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.757	9.960	5.668	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.774	10.038	5.658	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.729	10.029	5.799	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.763	9.954	5.646	PASS
<b>Center</b>	0.000	0.000	-0.000	-1.613	-9.975	6.182	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.777	-10.002	5.630	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.778	-9.968	5.606	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.772	-9.953	5.617	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.772	-9.975	5.629	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.757	-10.010	5.696	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.783	-10.032	5.628	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.822	-10.045	5.513	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.773	-10.069	5.679	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S054  
 Operator Name: Gordon, Matt  
 Date: 9/15/2010 Time: 1:27 PM  
 Actuator Coil Resistance: 10.36 Ohms, PASS  
 Ambient Temperature: 78.8 F

Hi Pot Test Results: 1000 MOhms, PASS

X Travel Limit (inches): 0.657

Y Travel Limit (inches): 0.205

Z Travel Limit (inches): 0.515

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.571	10.046	6.396	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.782	10.018	5.621	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.808	10.036	5.552	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.759	10.113	5.750	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.760	9.958	5.657	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.746	10.003	5.729	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.725	10.081	5.844	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.739	10.075	5.793	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.789	10.008	5.595	PASS
<b>Center</b>	0.000	0.000	0.000	-1.612	-10.065	6.244	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.778	-10.076	5.668	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.779	-10.047	5.648	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.770	-10.024	5.662	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.788	-10.055	5.625	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.799	-9.961	5.536	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.754	-10.034	5.719	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.747	-10.023	5.736	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.832	-10.054	5.488	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S055

Operator Name: Gordon, Matt

Date: 9/15/2010 Time: 1:44 PM

Actuator Coil Resistance: 10.33 Ohms, PASS

Ambient Temperature: 78.8 F

Hi Pot Test Results: 1000 MOhms, PASS

X Travel Limit (inches): 0.663

Y Travel Limit (inches): 0.206

Z Travel Limit (inches): 0.516

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.581	10.051	6.356	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.731	10.065	5.814	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.775	10.021	5.646	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.732	9.975	5.759	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.848	10.032	5.430	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.737	10.011	5.764	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.750	10.060	5.747	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.743	10.068	5.775	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.724	10.015	5.809	PASS
<b>Center</b>	0.000	0.000	0.000	-1.605	-10.059	6.268	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.738	-10.005	5.758	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.771	-10.048	5.673	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.790	-10.037	5.607	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.762	-9.968	5.657	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.764	-10.041	5.694	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.752	-10.070	5.749	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.771	-10.009	5.651	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.753	-10.066	5.743	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S056  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 2:00 PM  
Actuator Coil Resistance: 10.35 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.676  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.515

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.574	10.056	6.389	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.814	10.066	5.548	PASS



<b>Position 2</b>	0.250	-0.085	0.220	1.768	10.067	5.694	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.785	10.033	5.621	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.773	9.973	5.624	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.741	10.077	5.787	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.748	10.084	5.768	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.738	10.096	5.810	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.741	10.090	5.795	PASS
<b>Center</b>	0.000	0.000	0.000	-1.596	-10.083	6.319	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.735	-9.963	5.742	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.767	-10.020	5.671	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.770	-10.021	5.662	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.759	-10.091	5.737	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.824	-10.052	5.511	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.747	-10.067	5.762	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.795	-10.060	5.604	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.801	-9.997	5.552	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S057  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 2:15 PM  
Actuator Coil Resistance: 10.46 Ohms, PASS  
Ambient Temperature: 79.1 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.668  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.513

	<b>X Position (in)</b>	<b>Y Position (in)</b>	<b>Z Position (in)</b>	<b>Current (A)</b>	<b>Force (lbs)</b>	<b>Force Constant (lbs/A)</b>	<b>PASS/FAIL</b>
<b>Center</b>	0.000	0.000	0.000	1.529	10.021	6.553	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.815	9.956	5.487	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.799	10.007	5.563	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.744	9.985	5.727	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.760	9.978	5.669	PASS

Position 5	-0.250	0.085	-0.220	1.774	10.085	5.684	PASS
Position 6	-0.250	-0.085	-0.220	1.743	9.973	5.722	PASS
Position 7	0.250	-0.085	-0.220	1.755	9.968	5.680	PASS
Position 8	0.250	0.085	-0.220	1.737	9.985	5.749	PASS
Center	0.000	0.000	0.000	-1.612	-10.021	6.216	PASS
Position 1	0.250	0.085	0.220	-1.748	-10.011	5.727	PASS
Position 2	0.250	-0.085	0.220	-1.779	-10.054	5.651	PASS
Position 3	-0.250	-0.085	0.220	-1.774	-10.049	5.664	PASS
Position 4	-0.250	0.085	0.220	-1.729	-10.004	5.787	PASS
Position 5	-0.250	0.085	-0.220	-1.758	-10.026	5.702	PASS
Position 6	-0.250	-0.085	-0.220	-1.780	-9.984	5.610	PASS
Position 7	0.250	-0.085	-0.220	-1.834	-9.994	5.451	PASS
Position 8	0.250	0.085	-0.220	-1.758	-10.042	5.712	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S058  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 2:31 PM  
Actuator Coil Resistance: 10.15 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.667  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.516

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
Center	0.000	0.000	0.000	1.559	9.953	6.386	PASS
Position 1	0.250	0.085	0.220	1.767	9.961	5.636	PASS
Position 2	0.250	-0.085	0.220	1.805	9.964	5.521	PASS
Position 3	-0.250	-0.085	0.220	1.798	9.977	5.548	PASS
Position 4	-0.250	0.085	0.220	1.779	9.981	5.611	PASS
Position 5	-0.250	0.085	-0.220	1.747	10.080	5.771	PASS
Position 6	-0.250	-0.085	-0.220	1.739	9.993	5.746	PASS
Position 7	0.250	-0.085	-0.220	1.730	10.006	5.785	PASS

<b>Position 8</b>	0.250	0.085	-0.220	1.723	9.958	5.779	PASS
<b>Center</b>	0.000	0.000	0.000	-1.612	-9.955	6.174	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.772	-10.000	5.642	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.782	-9.946	5.580	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.770	-9.945	5.619	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.783	-9.982	5.598	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.835	-10.021	5.462	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.834	-9.980	5.441	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.750	-10.014	5.723	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.834	-9.951	5.427	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S059  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 2:47 PM  
Actuator Coil Resistance: 10.39 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.678  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.516

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.554	10.016	6.446	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.784	9.983	5.597	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.785	10.044	5.626	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.764	10.003	5.672	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.772	9.942	5.612	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.722	10.013	5.814	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.696	10.069	5.935	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.709	10.043	5.876	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.705	10.011	5.871	PASS
<b>Center</b>	0.000	0.000	0.000	-1.584	-10.014	6.321	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.752	-10.017	5.717	PASS

<b>Position 2</b>	0.250	-0.085	0.220	-1.752	-9.977	5.693	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.752	-9.974	5.693	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.752	-10.023	5.721	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.826	-10.024	5.491	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.750	-10.024	5.728	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.747	-10.043	5.750	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.826	-9.999	5.476	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S060  
Operator Name: Gordon, Matt  
Date: 9/15/2010 Time: 3:14 PM  
Actuator Coil Resistance: 10.39 Ohms, PASS  
Ambient Temperature: 76.3 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.649  
Y Travel Limit (inches): 0.207  
Z Travel Limit (inches): 0.515

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.641	10.001	6.094	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.837	9.932	5.405	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.836	9.952	5.420	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.835	10.051	5.478	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.823	10.063	5.519	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.810	10.000	5.524	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.808	10.056	5.563	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.798	10.028	5.577	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.834	10.106	5.509	PASS
<b>Center</b>	0.000	0.000	0.000	-1.656	-9.918	5.989	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.835	-9.944	5.418	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.845	-9.982	5.411	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.847	-9.935	5.381	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.830	-9.922	5.423	PASS

<b>Position 5</b>	-0.250	0.085	-0.220	-1.817	-10.027	5.518	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.845	-9.953	5.396	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.844	-9.930	5.386	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.843	-10.133	5.500	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S062  
Operator Name: Gordon, Matt  
Date: 9/16/2010 Time: 10:15 AM  
Actuator Coil Resistance: 10.15 Ohms, PASS  
Ambient Temperature: 72.2 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.693  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.513

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.690	10.013	5.924	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.813	10.066	5.553	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.803	9.926	5.506	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.827	9.988	5.468	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.709	9.994	5.849	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.832	9.930	5.421	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.828	9.971	5.455	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.816	9.977	5.495	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.823	9.945	5.456	PASS
<b>Center</b>	0.000	0.000	0.000	-1.619	-10.030	6.195	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.777	-9.950	5.600	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.796	-10.018	5.579	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.804	-10.017	5.554	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.791	-10.057	5.616	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.793	-10.011	5.583	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.827	-10.037	5.494	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.799	-9.931	5.520	PASS

<b>Position 8</b>	0.250	0.085	-0.220	-1.794	-10.026	5.587	PASS
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## LIGO Production Small Actuator Test Report

Actuator Serial #: S063  
Operator Name: Gordon, Matt  
Date: 9/16/2010 Time: 9:09 AM  
Actuator Coil Resistance: 10.34 Ohms, PASS  
Ambient Temperature: 78.8 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.648  
Y Travel Limit (inches): 0.205  
Z Travel Limit (inches): 0.512

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.575	10.061	6.389	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.799	10.023	5.573	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.787	10.010	5.603	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.726	10.031	5.811	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.804	10.028	5.558	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.746	10.037	5.749	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.760	9.985	5.673	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.753	10.101	5.762	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.759	10.040	5.708	PASS
<b>Center</b>	0.000	0.000	0.000	-1.596	-9.955	6.237	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.752	-9.998	5.706	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.789	-10.076	5.632	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.781	-10.076	5.659	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.751	-9.979	5.700	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.758	-10.050	5.717	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.751	-9.979	5.698	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.755	-10.035	5.717	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.752	-10.061	5.744	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S064  
 Operator Name: Gordon, Matt  
 Date: 9/16/2010 Time: 10:33 AM  
 Actuator Coil Resistance: 10.10 Ohms, PASS  
 Ambient Temperature: 72.9 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.659  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.514

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.599	9.963	6.232	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.805	9.952	5.514	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.774	10.036	5.656	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.743	10.104	5.797	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.762	10.067	5.715	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.790	9.999	5.587	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.799	10.076	5.602	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.795	10.083	5.616	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.770	10.004	5.652	PASS
<b>Center</b>	0.000	0.000	0.000	-1.627	-9.957	6.119	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.789	-9.994	5.585	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.800	-9.965	5.536	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.795	-9.961	5.550	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.807	-9.989	5.527	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.831	-9.978	5.450	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.828	-9.980	5.460	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.834	-9.998	5.451	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.836	-10.070	5.483	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S065  
Operator Name: Gordon, Matt  
Date: 9/16/2010 Time: 10:58 AM  
Actuator Coil Resistance: 10.10 Ohms, PASS  
Ambient Temperature: 73.6 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.664  
Y Travel Limit (inches): 0.206  
Z Travel Limit (inches): 0.517

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
Center	0.000	0.000	0.000	1.597	9.926	6.217	PASS
Position 1	0.250	0.085	0.220	1.765	9.998	5.664	PASS
Position 2	0.250	-0.085	0.220	1.823	10.000	5.487	PASS
Position 3	-0.250	-0.085	0.220	1.821	10.085	5.540	PASS
Position 4	-0.250	0.085	0.220	1.784	9.942	5.574	PASS
Position 5	-0.250	0.085	-0.220	1.800	9.937	5.522	PASS
Position 6	-0.250	-0.085	-0.220	1.749	10.022	5.729	PASS
Position 7	0.250	-0.085	-0.220	1.790	10.028	5.603	PASS
Position 8	0.250	0.085	-0.220	1.763	9.994	5.667	PASS
Center	0.000	0.000	0.000	-1.633	-9.956	6.096	PASS
Position 1	0.250	0.085	0.220	-1.789	-10.004	5.591	PASS
Position 2	0.250	-0.085	0.220	-1.811	-9.992	5.518	PASS
Position 3	-0.250	-0.085	0.220	-1.798	-9.993	5.559	PASS
Position 4	-0.250	0.085	0.220	-1.801	-10.019	5.563	PASS
Position 5	-0.250	0.085	-0.220	-1.828	-10.026	5.486	PASS
Position 6	-0.250	-0.085	-0.220	-1.831	-10.050	5.490	PASS
Position 7	0.250	-0.085	-0.220	-1.829	-10.012	5.474	PASS
Position 8	0.250	0.085	-0.220	-1.827	-10.041	5.496	PASS

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# LIGO Production Small Actuator Test Report

Actuator Serial #: S066  
Operator Name: Gordon, Matt  
Date: 9/16/2010 Time: 11:15 AM  
Actuator Coil Resistance: 10.10 Ohms, PASS  
Ambient Temperature: 74.2 F  
Hi Pot Test Results: 1000 MOhms, PASS  
X Travel Limit (inches): 0.646  
Y Travel Limit (inches): 0.204  
Z Travel Limit (inches): 0.513

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.604	9.954	6.205	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.784	10.088	5.656	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.812	9.985	5.512	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.777	10.007	5.632	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.821	9.944	5.460	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.792	10.027	5.597	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.787	9.980	5.586	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.775	9.961	5.612	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.780	10.036	5.637	PASS
<b>Center</b>	0.000	0.000	0.000	-1.615	-9.951	6.163	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.788	-10.002	5.594	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.798	-9.970	5.547	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.803	-10.005	5.550	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.788	-10.010	5.597	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.815	-9.993	5.507	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.774	-10.047	5.665	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.822	-10.010	5.495	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.792	-10.017	5.591	PASS

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# LIGO Production Small Actuator Test Report

Actuator Serial #: S067  
 Operator Name: Gordon, Matt  
 Date: 9/16/2010 Time: 9:26 AM  
 Actuator Coil Resistance: 10.12 Ohms, PASS  
 Ambient Temperature: 79.1 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.669  
 Y Travel Limit (inches): 0.205  
 Z Travel Limit (inches): 0.510

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.578	9.978	6.322	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.769	10.076	5.696	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.788	9.964	5.574	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.806	10.008	5.543	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.816	9.973	5.492	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.726	9.945	5.760	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.755	10.010	5.702	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.786	9.988	5.592	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.772	9.961	5.623	PASS
<b>Center</b>	0.000	0.000	0.000	-1.630	-9.998	6.135	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.809	-10.024	5.542	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.801	-9.983	5.542	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.809	-9.979	5.517	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.803	-10.005	5.548	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.804	-10.007	5.547	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.797	-10.033	5.584	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.778	-9.968	5.606	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.809	-10.071	5.567	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S068  
 Operator Name: Gordon, Matt  
 Date: 9/16/2010 Time: 12:27 PM

Actuator Coil Resistance: 10.17 Ohms, PASS  
 Ambient Temperature: 78.8 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.658  
 Y Travel Limit (inches): 0.204  
 Z Travel Limit (inches): 0.511

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.627	9.950	6.116	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.804	9.967	5.524	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.751	10.029	5.728	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.742	10.100	5.797	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.794	10.018	5.583	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.811	9.992	5.518	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.782	9.916	5.564	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.813	10.028	5.531	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.815	9.995	5.508	PASS
<b>Center</b>	0.000	0.000	0.000	-1.650	-9.971	6.043	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.811	-9.985	5.512	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.827	-9.979	5.461	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.825	-9.982	5.471	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.828	-9.968	5.452	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.835	-9.949	5.423	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.830	-9.963	5.445	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.813	-9.974	5.502	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.819	-9.962	5.477	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S069  
 Operator Name: Gordon, Matt  
 Date: 9/16/2010 Time: 11:33 AM  
 Actuator Coil Resistance: 10.11 Ohms, PASS  
 Ambient Temperature: 74.7 F  
 Hi Pot Test Results: 1000 MOhms, PASS  
 X Travel Limit (inches): 0.674

Y Travel Limit (inches): 0.205

Z Travel Limit (inches): 0.515

	X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
<b>Center</b>	0.000	0.000	0.000	1.621	9.965	6.149	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.822	10.062	5.523	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.809	9.956	5.504	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.787	9.981	5.586	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.829	10.022	5.480	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.791	10.029	5.599	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.807	10.060	5.566	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.814	10.028	5.527	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.799	10.033	5.576	PASS
<b>Center</b>	0.000	0.000	0.000	-1.661	-9.982	6.010	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.823	-10.027	5.502	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.826	-9.969	5.460	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.823	-9.967	5.468	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.814	-10.011	5.519	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.839	-9.926	5.398	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.823	-9.996	5.483	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.826	-9.930	5.438	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.820	-9.904	5.443	PASS

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## LIGO Production Small Actuator Test Report

Actuator Serial #: S070

Operator Name: Gordon, Matt

Date: 10/28/2010 Time: 11:10 AM

Actuator Coil Resistance: 10.22 Ohms, PASS

Ambient Temperature: 71.1 F

Hi Pot Test Results: 1000 MOhms, PASS

X Travel Limit (inches): 0.668

Y Travel Limit (inches): 0.205

Z Travel Limit (inches): 0.513

X Position (in)	Y Position (in)	Z Position (in)	Current (A)	Force (lbs)	Force Constant (lbs/A)	PASS/FAIL
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<b>Center</b>	0.000	0.000	0.000	1.655	10.070	6.085	PASS
<b>Position 1</b>	0.250	0.085	0.220	1.782	9.997	5.611	PASS
<b>Position 2</b>	0.250	-0.085	0.220	1.787	9.983	5.588	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	1.816	9.985	5.499	PASS
<b>Position 4</b>	-0.250	0.085	0.220	1.810	10.044	5.550	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	1.761	10.019	5.690	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	1.783	10.071	5.648	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	1.751	10.058	5.744	PASS
<b>Position 8</b>	0.250	0.085	-0.220	1.768	10.047	5.684	PASS
<b>Center</b>	0.000	0.000	0.000	-1.603	-9.946	6.205	PASS
<b>Position 1</b>	0.250	0.085	0.220	-1.776	-9.960	5.610	PASS
<b>Position 2</b>	0.250	-0.085	0.220	-1.804	-10.042	5.566	PASS
<b>Position 3</b>	-0.250	-0.085	0.220	-1.805	-10.025	5.554	PASS
<b>Position 4</b>	-0.250	0.085	0.220	-1.811	-10.048	5.549	PASS
<b>Position 5</b>	-0.250	0.085	-0.220	-1.780	-9.996	5.617	PASS
<b>Position 6</b>	-0.250	-0.085	-0.220	-1.786	-9.980	5.588	PASS
<b>Position 7</b>	0.250	-0.085	-0.220	-1.778	-9.971	5.607	PASS
<b>Position 8</b>	0.250	0.085	-0.220	-1.780	-10.040	5.642	PASS

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