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NEMA23 ACME Lead Screw Linear Actuator Test Data

The test data below gives is an indication of the speeds and loads which can be expected from a NEMA23 ACME Lead Screw Linear Actuator. The numbers are only meant as an indication, and in no way should be expected, as different actuator configurations, controllers, and settings could have an impact on the data below.

Actuator Configuration: NEMA23 ACME Lead Screw Actuator – 250mm – 175oz Motor 2.8A

Driver Settings: 8x Microstepping, 1.25A Current, 199.10 Steps/mm

Testing Load: No Load

Position Test

Move forward and back to five setpoints, repeating 6 times.

Target distance	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Average	Average Deviation	Actual Deviation
20	20.01	20.16	20.01	20.17	20.01	20.17	20.088	0.078	0.088
40	39.98	40.16	39.98	40.14	39.98	40.14	40.063	0.083	0.083
60	60.01	60.17	60.02	60.18	60.02	60.18	60.097	0.080	0.097
80	80	80.18	80	80.17	80.01	80.17	80.088	0.085	0.088
100	100.03	100.16	100.04	100.17	100.04	100.2	100.100	0.063	0.100
								Repeatability	Accuracy
								0.078	0.091

Force Test

Vary pressure in air cylinder until actuator can no longer move a set distance. Speed set to 2000mm/min, acceleration set to 50 mm/s²

Result: Motor stalls at approximately 115N (11.7kg)



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Actuator Configuration: NEMA23 ACME Lead Screw Linear Actuator – 250mm – 345oz Motor 3.0A

Driver Settings: 8x Microstepping, 1.25A Current, 199.10 Steps/mm

Testing Load: No Load

Position Test

Move forward and back to five setpoints, repeating 6 times.

Target distance	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Average	Average Deviation	Actual Deviation
20	19.98	20.17	19.98	20.17	19.98	20.17	20.075	0.095	0.095
40	40.01	40.18	40.01	40.18	40.01	40.18	40.095	0.085	0.095
60	60.04	60.23	60.04	60.22	60.03	60.22	60.130	0.093	0.130
80	80.07	80.2	80.07	80.2	80.07	80.2	80.135	0.065	0.135
100	100.06	100.23	100.06	100.23	100.05	100.2	100.142	0.085	0.142
								Repeatability	Accuracy
								0.085	0.119

Force Test

Vary pressure in air cylinder until actuator can no longer move a set distance. Speed set to 2000mm/min, acceleration set to 50 mm/s²

Result: Motor stalls at approximately 294N (30.0kg)