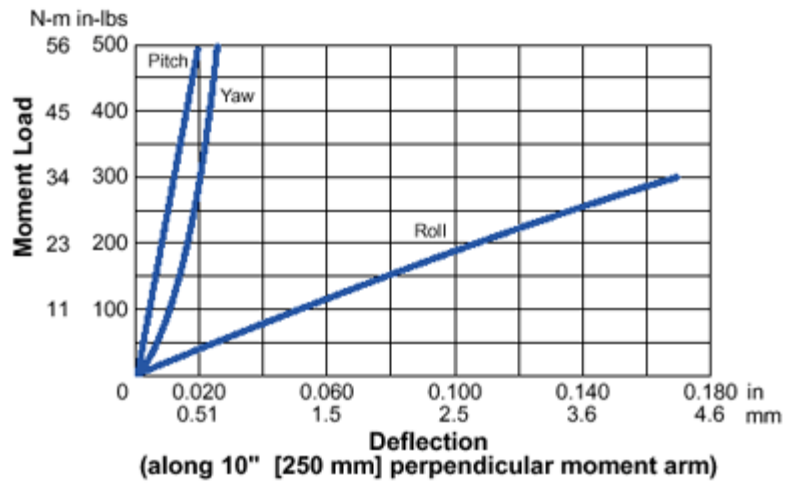


R3 Rodless Actuator

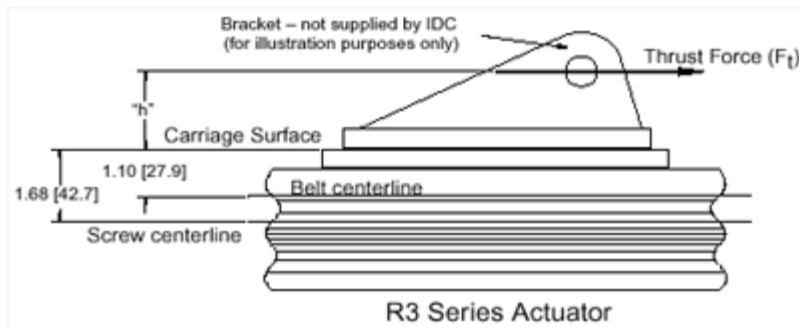


Product Dimensions

Moment Load vs. Carriage Deflection

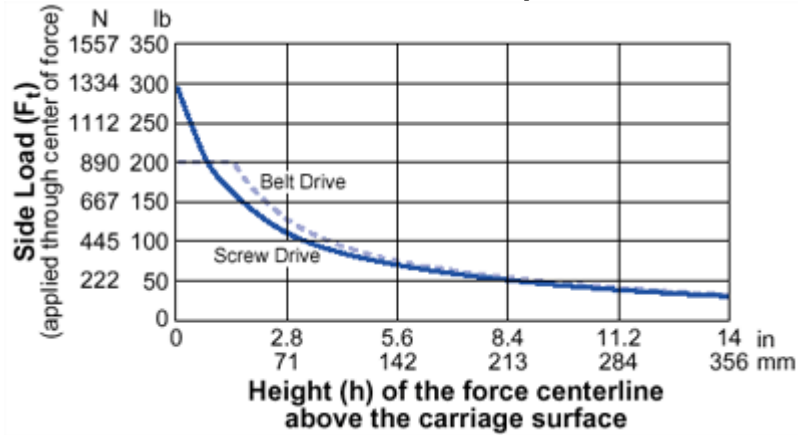


Pitch Moment

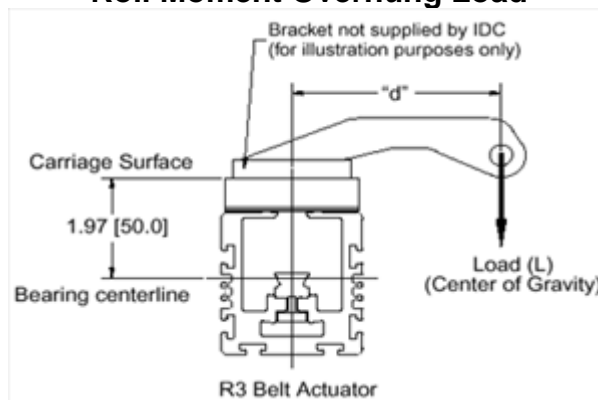


R3 Rodless Actuator

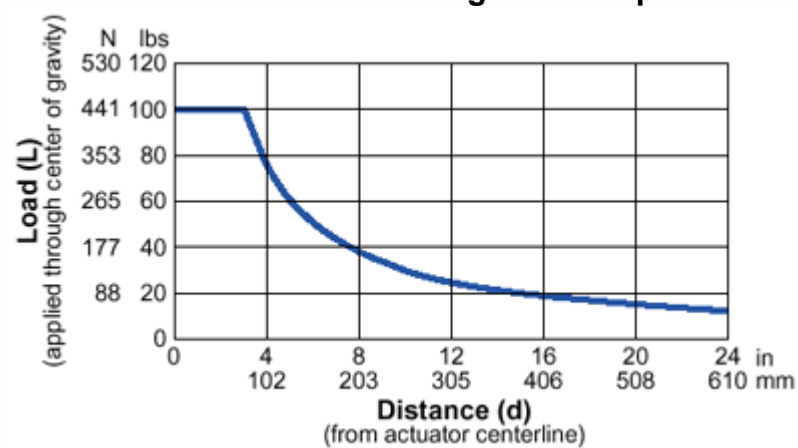
Pitch Moment Graph



Roll Moment Overhung Load

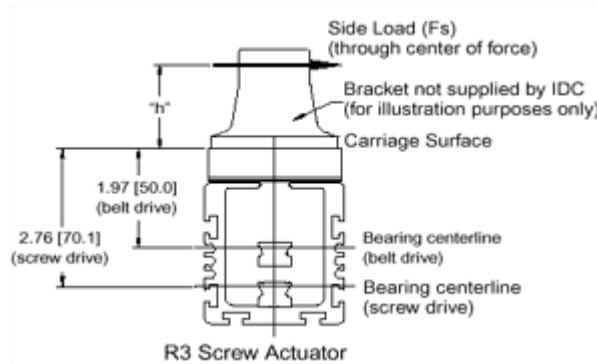


Roll Moment Overhung Load Graph

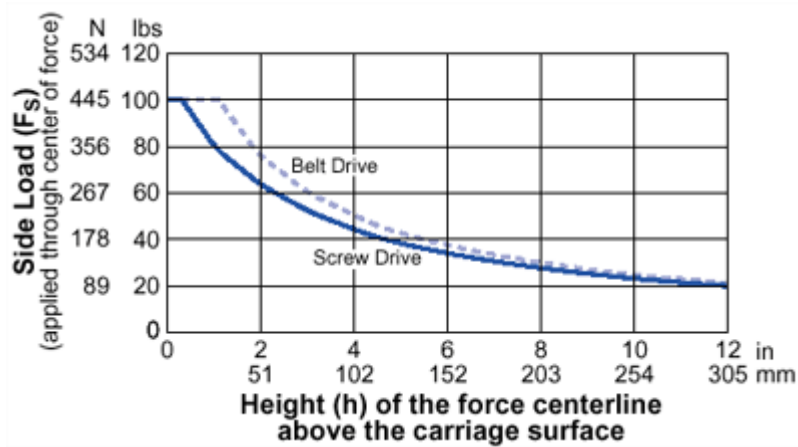


R3 Rodless Actuator

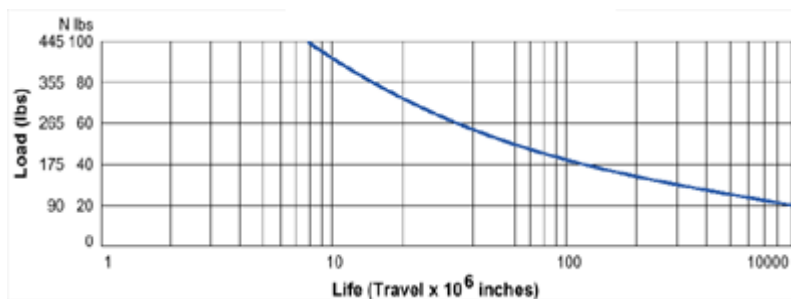
Roll Moment Side Load



Roll Moment Side Load Graph

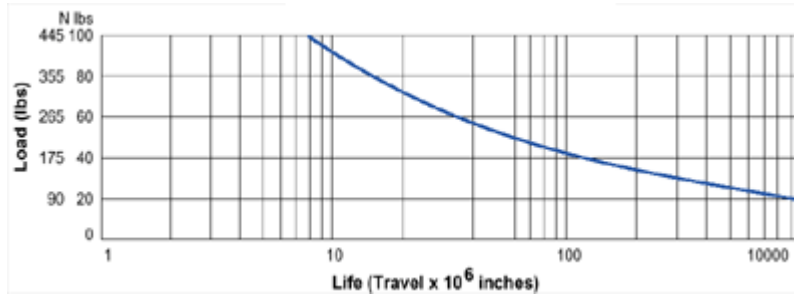


Carriage Load vs. Rail Life

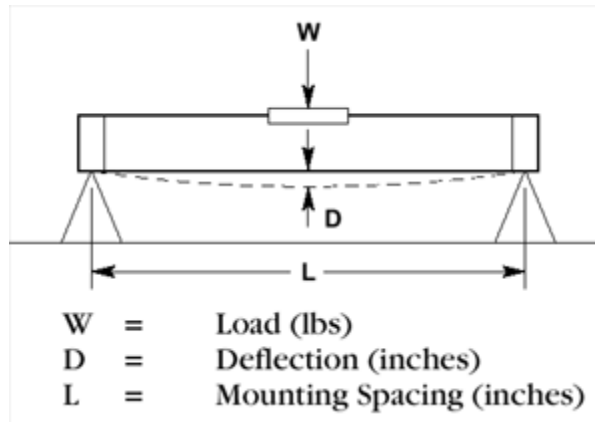


R3 Rodless Actuator

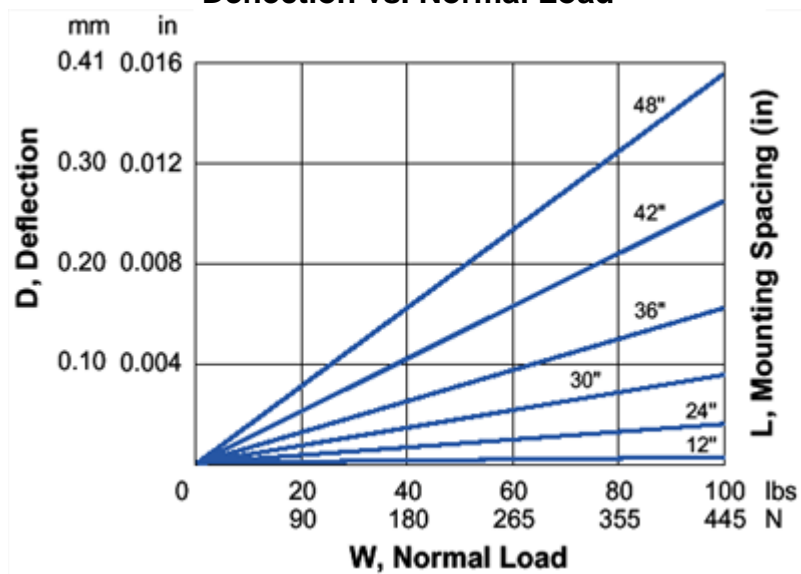
Ball Screw Life vs. Travel Life



Actuator Deflection



Deflection vs. Normal Load





R3 Rodless Actuator

Specifications

	R3-D Series	R3-H Series	R3-S/P Series	R3-B Series
Load (Thrust) Capacity (lbs [N])	300 [1335] screw-drive		200 [890] belt-drive	
Max. No Load Speed (in/s [m/s])	40 [1,000] screw drive, 120 [3,000] belt drive			
Max. Carriage Load (lbs [kg])	100 [45]			
Repeatability (in [mm])	±0.005 [0.13]	±0.001 [0.025]	±0.0005 [0.013]	±0.001 [0.025]
Motor Type	24 Volt DC Servo	160 Volt DC Servo	1.8° Hybrid Stepper	Brushless Servo
Compatible Controls Offered	D2400	B8001 B8501 B8961 B8962	NextStep S6002 S6961 S6962 SmartStep	B8001 B8501 B8961 B8962

Servo*System cost based on single quantity price, 30 inch stroke actuator with control.

Common Specifications

Travel Lengths	6, 12, 18, 24, 30, 36, 42, 48, 60, 72 inches	
Construction Materials	Bearing & Drive Housing	6063-T6 aluminum, hardcoat anodized
	Guide Housing	6063-T6 aluminum, hardcoat anodized
	Carriage Assembly	6061-T6 aluminum, hardcoat anodized
	Internal Rail Bearings	Recirculating ball on precision ground rail
Leadscrew or belt	Support Bearings	Angular contact, high thrust ball bearings
	Acme Screw; drive nut	0.625" diameter alloy steel screw; lubricated polyacetal plastic (R3-D) or lubricated bronze drivenut (R3-H, R3-S, R3-B)
	Ball Screw; drive nut	0.625" diameter hardened alloy steel screw; alloy steel, heat treated ballnut
	Belt Drive	1.0" wide XL pitch polyurethane with steel reinforcement cords
	Flexible Seal	Stainless steel band with elastomeric seal
Weight	R3-D R3-H R3-S23 R3-S33 R3-B23 R3-B32	17 + 0.4 × (inches stroke) lbs [7.7 + 0.18 ×(inches stroke)] kg 19 + 0.4 × (inches stroke) lbs [8.6 + 0.18 ×(inches stroke)] kg 17 + 0.4 × (inches stroke) lbs [7.7 + 0.18 ×(inches stroke)] kg 20 + 0.4 × (inches stroke) lbs [9.1 + 0.18 ×(inches stroke)] kg 17 + 0.4 × (inches stroke) lbs [7.7 + 0.18 ×(inches stroke)] kg 25 + 0.4 × (inches stroke) lbs [11.3 + 0.18 ×(inches stroke)] kg
Environmental Operation	Temperature	-20° to 140°F [-28° to 60°C]
	Moisture/Contaminants	IP 44 rated: Splash-proof, protected against ingress of solid particles greater than 0.040" [1 mm] diameter.

R3 Series Actuator Inertia

Rotary Inertia (reflected to the motor) = A + B* (stroke, in) + C* (load, lb) + D

Linear Inertia (reflected to the carriage) = [A + B* (stroke, in) + D]/C + (load, lb)

Belt Driven

Model	Motors	Ratio	Belt	A (lb-in-s ²)	B (lb-in-s ² /in)	C (lb-in-s ² /lb)
R3...-20T	B23	2:1	1.0 wide	1.56 E-03	4.82 E-06	5.78 E-04
R3...-50T	H, P22/S33, B23/32	5:1		3.78 E-04	7.61 E-07	9.12 E-05
R3...-70T	H, P22/S33, B23/32	7:1		1.75 E-04	3.93 E-07	4.72 E-05

R3 Rodless Actuator

Screw Driven

Model	Motors	Ratio	Screw	A (lb-in-s ²)	B (lb-in-s ² /in)	C (lb-in-s ² /lb)
R3...-102B	H, P22/S33, B23	1:1	0.625x0.5	2.15 E-04	7.12 E-05	1.64 E-05
R3...-152B	All	1.5:1		9.80 E-05	3.17 E-05	7.29 E-06
R3...-202B	All	2:1		5.70 E-05	1.78 E-05	4.10 E-06
R3...-502B	All	5:1		1.41 E-04	2.80 E-06	6.48 E-07
R3...-702B	D, H, P22	7:1		6.38 E-05	1.45 E-06	3.35 E-07
R3...-105BM	All	1:1	0.625x0.2	1.80 E-04	7.12 E-05	2.62 E-06
R3...-155B	All	1.5:1		8.22 E-05	3.17 E-05	1.17 E-06
R3...-205B	All	2:1		4.81 E-05	1.78 E-05	6.64 E-07
R3...-505B	D, H, P22/S33	5:1		1.40 E-04	2.80 E-06	9.71 E-08
R3...-705B	D, P22	7:1		6.31 E-05	1.45 E-06	5.36 E-08
R3...-102A	H, P22/S33	1:1	0.625x0.5	2.01 E-04	7.12 E-05	1.64 E-05
R3...-105A	H, P22/S33, B23	1:1	0.625x0.2	1.79 E-04	7.12 E-05	2.62 E-06
R3...-155A	D, B23	1.5:1		8.19 E-05	3.17 E-05	1.17 E-06
R3...-205A	All	2:1		4.80 E-05	1.78 E-05	6.64 E-07
R3...-505A	All	5:1		1.40 E-04	2.80 E-06	9.71 E-08
R3...-705A	D, H, P22	7:1		6.31 E-05	1.45 E-06	5.36 E-08

Motor	Inertia (lb-in-s ²)
D	1.13 E-03
H	3.06 E-03
P22	3.81 E-04
S33	1.66 E-03
B23	1.20 E-04
B32	1.00 E-03

Metric Conversions:

1 mm = 0.03937 in

1 kg = 2,205 lb

1 lb-in-s² = 1129 kg-cm² = 1.152 kg-cm-s²

Carriage

Straightness & Flatness	±0.005 in/ft [0.125 mm/300 mm], not to exceed ±0.035 in [0.9 mm]
Load Linimits	
Normal (F _n)	±100 lbs [±450 N]
Side (F _s)	±100 lbs [450 N]
Pitch (M _p)	500 in-lbs [56 N-m]
Roll (M _r)	300 in-lbs [34 N-m]
Yaw (M _y)	500 in-lbs [56 N-m]

Deflection

Orientation	Deflection Equation	Maximum Allowed
Normal	D=WL 3 / 7.2 x 10 ⁸ , inches	0.010" [0.25 mm]
Side	D=WL 3 / 6.5 x 10 ⁸ , inches	0.010" [0.25 mm]
Pitch	3.3 x 10 ⁻⁶ radians/in-lb	0.002 radians @ 500 in-lbs
Roll	4.6 x 10 ⁻⁵ radians/in-lb	0.014 radians @ 300 in-lbs
Yaw	5.1 x 10 ⁻⁶ radians/in-lb	0.003 radians @ 500 in-lbs