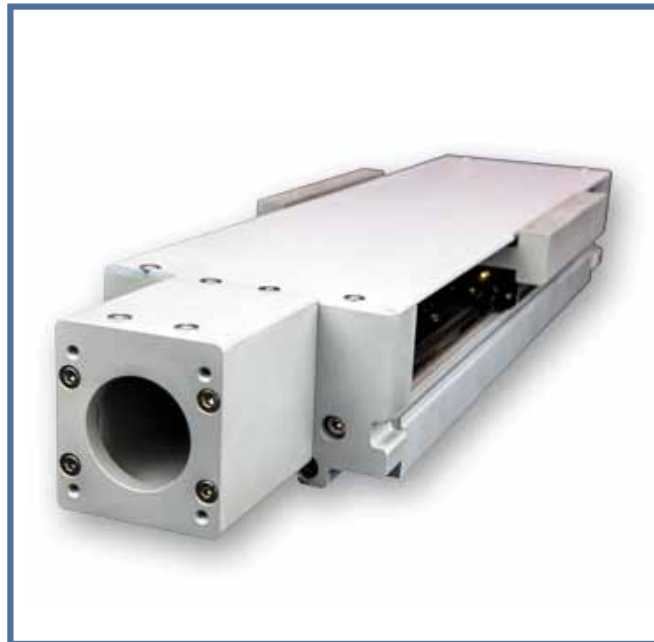


# HDS Actuator

A MOTION SOLUTIONS•NPOINT PRODUCT



## HEAVY DUTY LINEAR GUIDE STAGE



**HDS Linear Guide Stages** are ruggedized, budget-friendly positioners designed for heavy loads. They can position high masses, high moment loads, and variable center-of-gravity loads to repeatabilities as tight as 10  $\mu\text{m}$ . HDS stages are both accurate and rigid, courtesy of an extruded aluminum U-channel base and high-load linear guides.

Because we build the stages in-house, users have many options, starting with a choice of standard or high-axial-thrust versions. Other options include choice of leads, motor mounts, cover types, and more, including a hand-cranked version. Like other Vertex products, stages from our HDS line can be customized to serve particular needs.

## HDS75 Key Features:

### Rugged Design

- Linear guides rated for 24.2 kN (5,440 lbs) per block, four blocks per bearing
- Caged bearings for long lifetime
- Extruded aluminum U-channel base
- High-stiffness design eliminates need for additional supports

### Performance

- High critical speed
- 78.4 kN static radial capacity
- 11.6 kN axial capacity

### Configurability

- Standard and high-axial-thrust models
- Lead-screw and ball-screw versions
- Anti-backlash lead-screw nut

### Lead Options

- Lead-screws: 0.100, 0.125, 0.200, 0.375 and 0.625 in.
- Ball-screws: 2, 5, 10, 16, and 50 mm

### Lengths of up to 2 m

- NEMA 23, NEMA 34, 60-mm and 80-mm diameter servo mounts

### Wrap brackets for parallel motor mounting

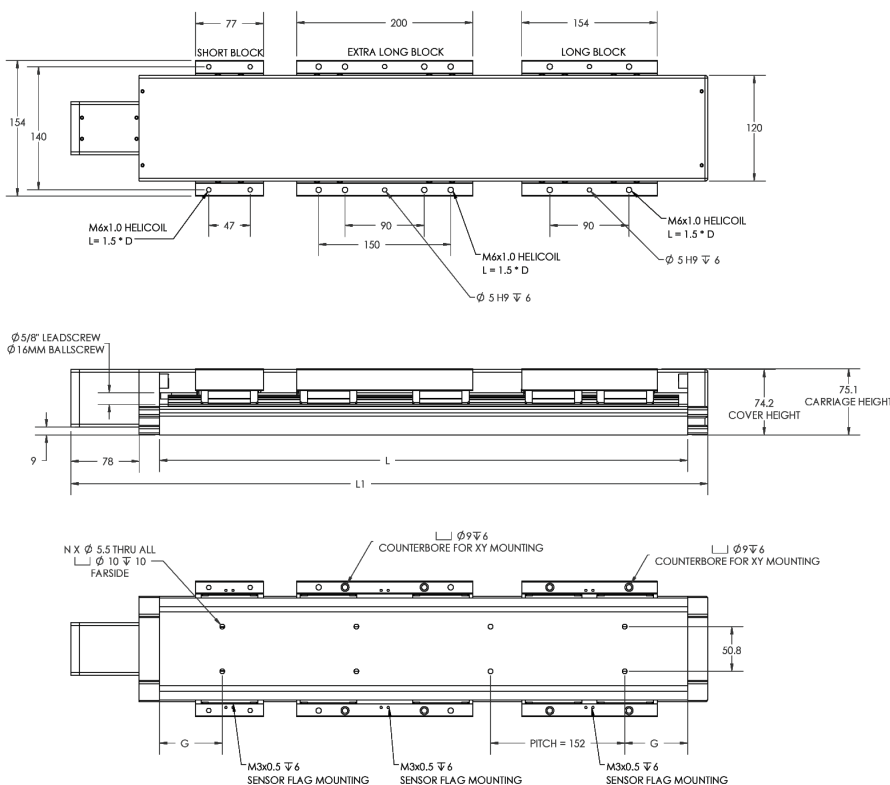
- Servo, stepper motor, and integrated motor drives

### Hardcover or bellows protection

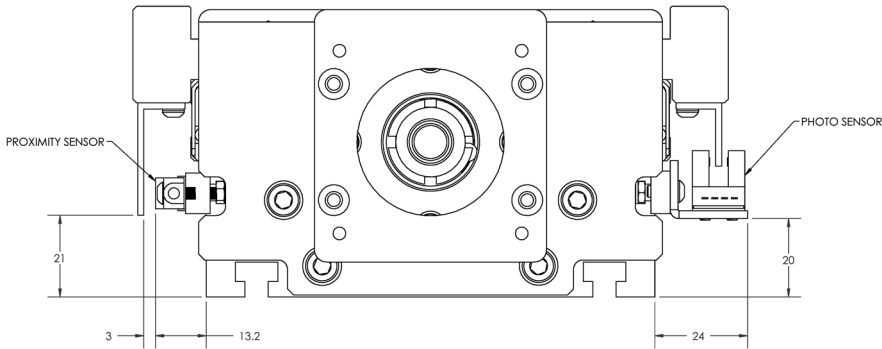
### Optional sensor kits

### Custom Options

- Clean-room compatibility
- Vacuum compatibility
- Ingress protection
- Anticorrosion coatings
- Mechanical elements such as brackets



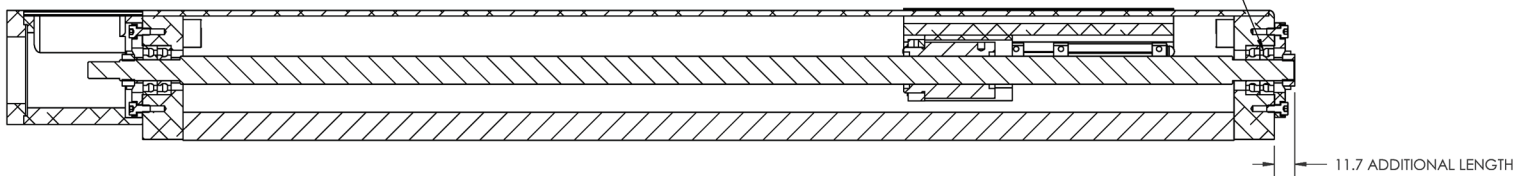
The **HDS75** is designed and built in the United States. This gives us the ability to offer industry leading lead times, as well as the flexibility to customize the actuator for your needs. Our state of the art manufacturing facility keeps product costs down, which we pass directly to our customers.



## SENSORS

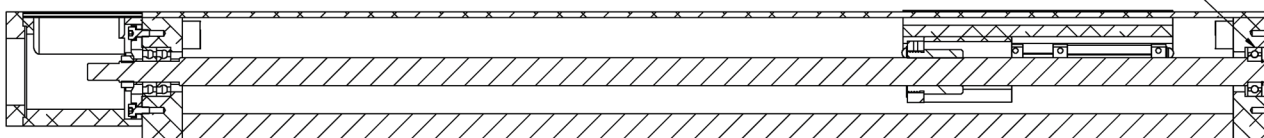
The **HDS75** is offered in both lead screw and ball screw versions, as well as numerous different lead, preloads, and lengths. The leadscrew option allows for lower cost and is especially helpful in vertical applications where self-locking is needed. The ball screw option is available for applications requiring high efficiency, duty cycle, or speed. For those applications requiring additional stiffness, the axial solution is available, allowing a higher critical speed and greater axial load capacity. Because the screws are supported at both ends, they are under tension, increasing critical speed. Stages can be combined in xy configurations without the need for an adapter bracket; z-axis stages do require a support bracket.

FIXED-FIXED SUPPORT  
SCREW IS TENSIONED  
SECOND SET OF BEARINGS IN TANDEM INCREASES THRUST LOAD CAPACITY



## HIGH THRUST

FIXED-SIMPLE SUPPORT  
SCREW IS MORE EASILY ALIGNED



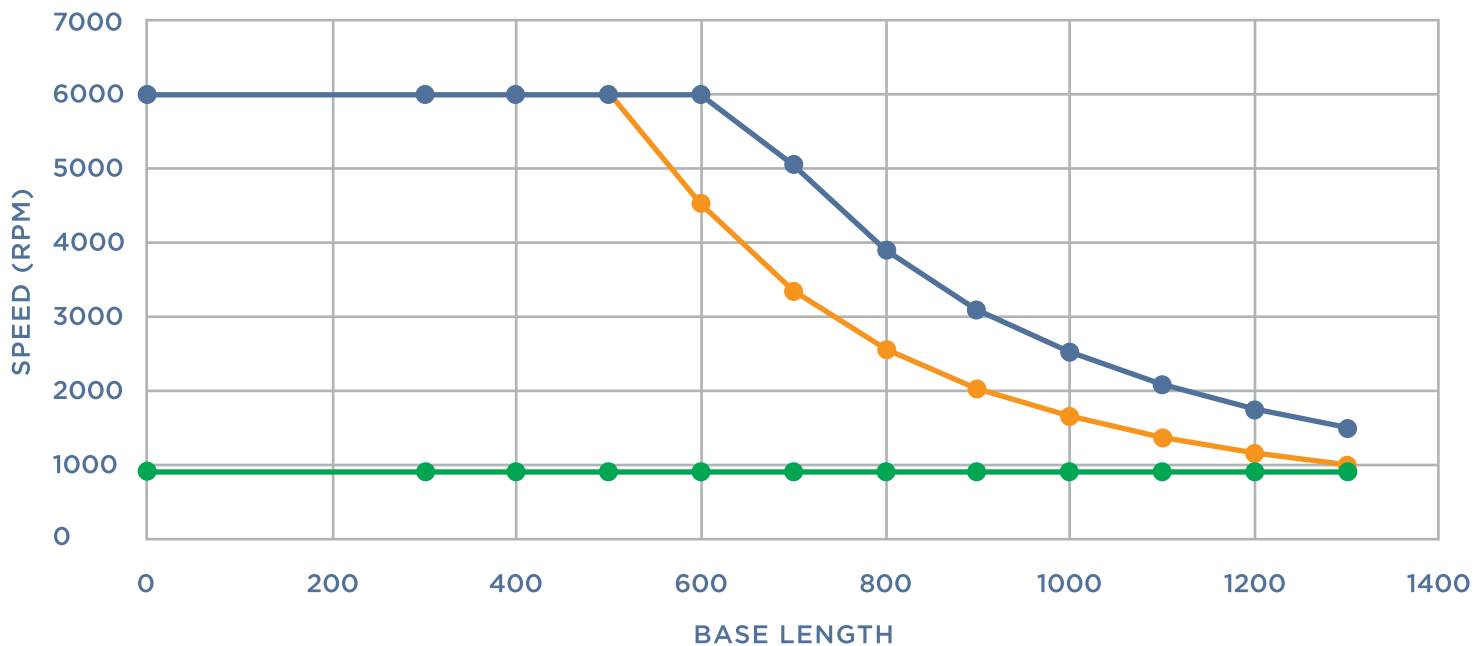
## STANDARD

## LOAD & ACCURACY SPECIFICATIONS (Linear Guides)

Block Type	Static Radial Load Capacity [KN]	Dynamic Radial Load Capacity [KN]	Pitch Moment [KN-M]	Roll Moment [KN-M]	Yaw Moment [KN-M]	Running Parallelism [MM]
A-Block	96.8	56.8	1.80	4.36	1.80	0.20/300
Y-Block	96.8	56.8	6.18	4.36	6.18	
C-Block	48.4	28.4	0.35	2.18	0.35	
D-Block	96.8	56.8	See Note*	4.36	See Note*	

\*Pitch & Yaw capacities depend on carriage separation

## CRITICAL SPEED



- BALLSCREW - HIGH THRUST
- BALLSCREW - STANDARD
- LEADSCREW

## LOAD & ACCURACY STANDARD (Screw)

Model	Screw Dia.	Lead	Efficiency	Dyn Load Capacity [KN]	Stat Load Capacity [KN]	Positioning Repeatability [μm]		Positioning Accuracy	Backlash [μm]	
						Standard	Pre-Loaded		Standard	Pre-Loaded
Turcite (AB Nut, 11 LBF Max Preload)	5/8"	0.100"	35%	0.13	2.96	100	26	300μm/300MM	200	0
		0.125"	40%	0.21	4.67					
		0.200"	53%	0.21	4.36					
		0.375"	65%	0.21	4.67					
		0.625"	74%	0.20	4.67					
Turcite (Plain Nut)	5/8"	0.100"	35%	0.16	3.70	100	26	300μm/300MM	250	N/A
		0.125"	40%	0.27	5.83					
		0.200"	53%	0.26	5.44					
		0.375"	65%	0.26	5.83					
		0.625"	74%	0.25	5.83					
Peek (Plain Nut)	5/8"	0.100"	35%	0.34	6.28	100	26	300μm/300MM	250	N/A
		0.125"	40%	0.57	9.89					
		0.200"	53%	0.56	9.23					
		0.375"	65%	0.55	9.89					
		0.625"	74%	0.53	9.89					
Ball Screw	16 MM	2 MM	90%	2.50	5.50	100	26	200μm/300MM	150	0
		5 MM	90%	12.00	25.00					
		10MM	90%	8.50	12.50					
		16MM	90%	7.80	15.50					
		50MM	90%	4.80	11.00					

\*Dynamic Load Capacity assumes 1200 rpm

## LOAD & ACCURACY STANDARD (Support Bearing)

Type	Fixity	Part Number	Dyn Load Cap [KN]	Static Load Cap [KN]
Standard	Fixed-Supported	7001CDU	9.45	5.80
High Load	Fixed-Fixed	7001CDU	18.9	11.60

# HDS Actuator • Part Number Creation



A DIVISION OF  
**MOTION SOLUTIONS**

**HDS75 1001 A-300(115) A B1 2K T XXXX**

Model No.

Lead

Block Type

Base Length (Stroke)

Special Options

Axial Support Option

Sensor Option

Motor Bracket

Nut Type

*\*Consult Motion Solutions for custom length.*

*\*Covers not available over 1400 length.*

*Please select custom bellows as alternative dust protection.*

Model No.
<b>HDS75</b>

Lead	
IN (Lead Screw) [EX. 2501=0.250"]	M (Ball Screw) [EX. 02M=2MM]
1001	02M
1251	05M
2001	10M
3751	16M
6251	50M

Block Type
A-Single Long Block
Y-Single XLong Block
C-Single Short Block
D-Double Short Block

Base Length (Stroke)			
A-Block	Y-Block	C-Block	D-Block
300(115)	300(68)	300(192)	300(125)
400(215)	400(168)	400(292)	400(225)
500(315)	500(268)	500(392)	500(325)
600(415)	600(368)	600(492)	600(425)
700(515)	700(468)	700(592)	700(525)
800(615)	800(568)	800(692)	800(625)
900(715)	900(668)	900(792)	900(725)
1000(815)	1000(768)	1000(892)	1000(825)
1100(915)	1100(868)	1100(992)	1100(925)
1200(1015)	1200(968)	1200(1092)	1200(1025)
1300(1115)	1300(1068)	1300(1192)	1300(1125)
1400(1215)	1400(1168)	1400(1292)	1400(1225)
1500(1315)	1500(1268)	1500(1392)	1500(1325)
1600(1415)	1600(1368)	1600(1492)	1600(1425)
1700(1515)	1700(1468)	1700(1592)	1700(1525)
1800(1615)	1800(1568)	1800(1692)	1800(1625)
1900(1715)	1900(1668)	1900(1792)	1900(1725)
2000(1815)	2000(1768)	2000(1892)	2000(1825)

*\*Consult Motion Solutions for custom leads*

Nut Type
A=AB Lead Screw Nut (Turcite)
T=Plain Lead Screw Nut (Turcite)
P=Plain Lead Screw Nut (Peek)
N=Min. Clearance Ball Nut
S=Standard Ball Nut

Motor Bracket
B0=No Motor Flange
B1=Nema 34 Mount
B2=Nema 23 Mount
B3=Wrap Bracket for Nema 23
B4=60MM Servo
B5=80MM Servo
R0=Exposed Bracket
H1=Handwheel & Trantorque

Sensor Options
0=No Sensors
2K=NPN Proximity Sensor Kit (2 NC)
2KP=PNP Proximity Sensor Kit (2 NC)
21=NPN Proximity Sensor Kit (2 NC, 1 NO)
21P=PNP Proximity Sensor Kit (2 NC, 1 NO)
2H=NPN Photo Sensor Kit (2 Sensors)
2HP=PNP Photo Sensor Kit (2 Sensors)
3H=NPN Photo Sensor Kit (3 Sensors)
3HP=PNP Photo Sensor Kit (3 Sensors)
CS=Custom Sensor Configuration

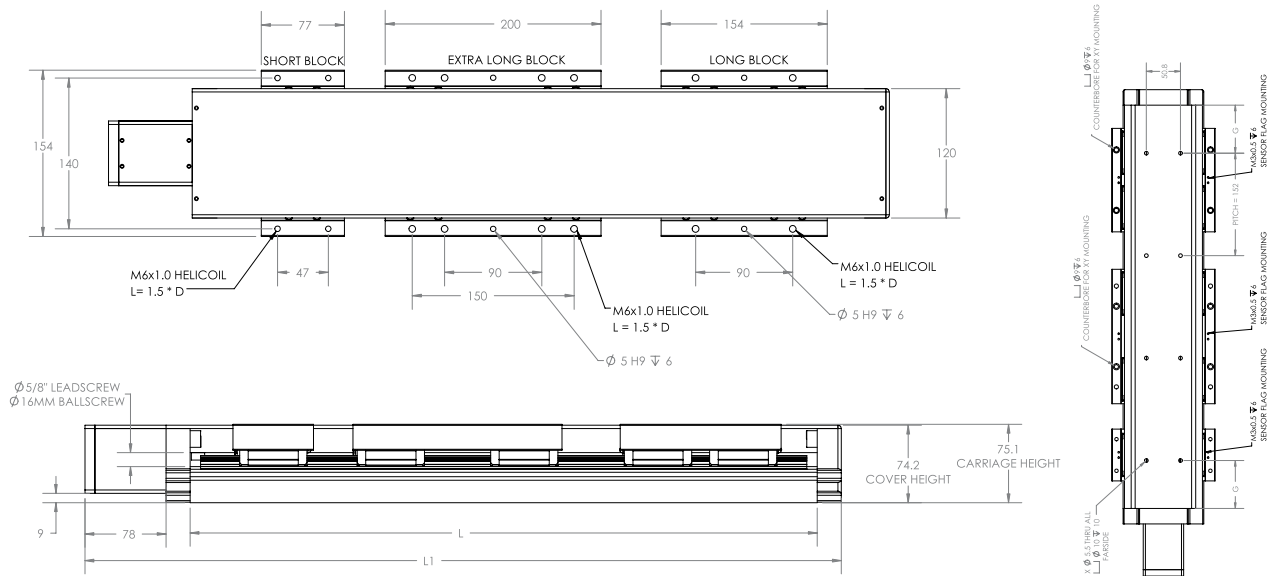
Special Options
Blank = Nothing
F = Chrome Plated Rails
M = Stainless Steel Rails
G = Chrome Plated Ballscrew
T = Teflon Coated Leadscrew
B = Custom Bellows

**Special Lubrication**  
*\*Specify type of lubrication in description*

Axial Support Option
S=Standard
T=High Thrust

**Include Motor**  
*\*Must specify motor P/N in description*

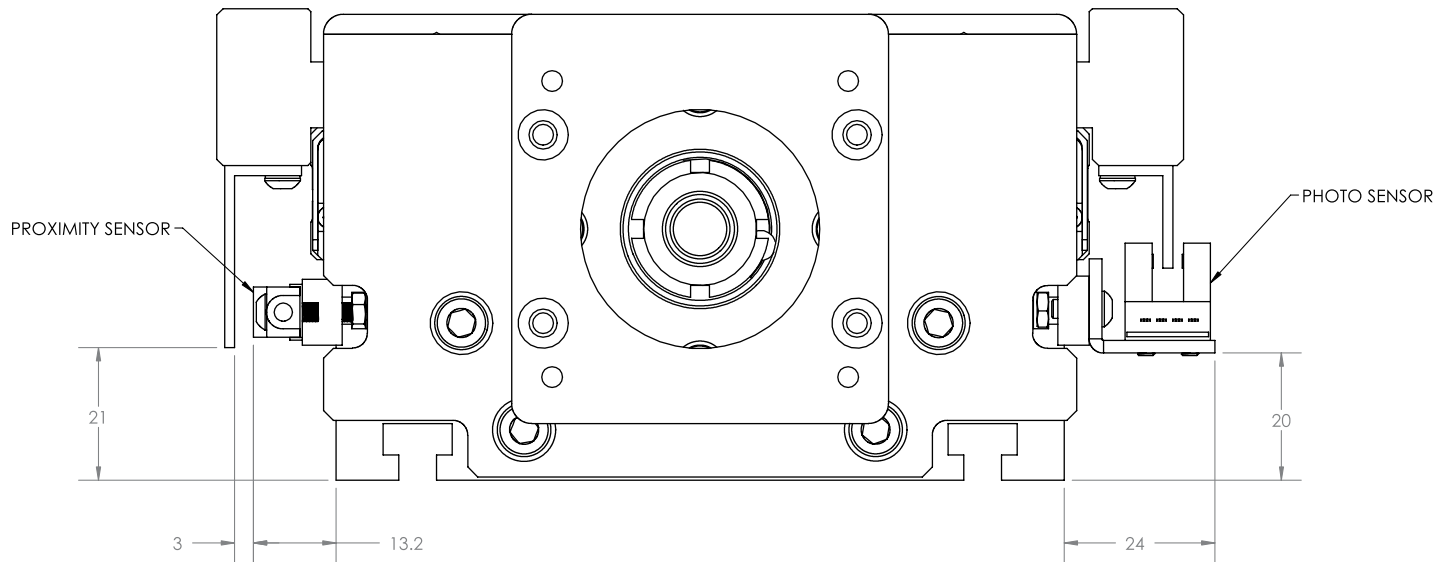
**Special Machining**  
*\*Specify custom machining in description*



## HDS75 MECHANICAL DIMENSIONS

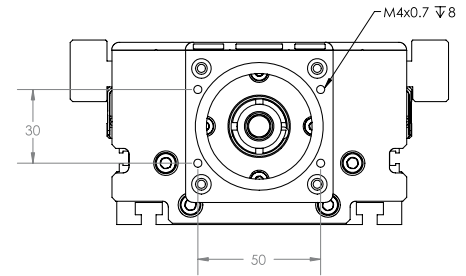
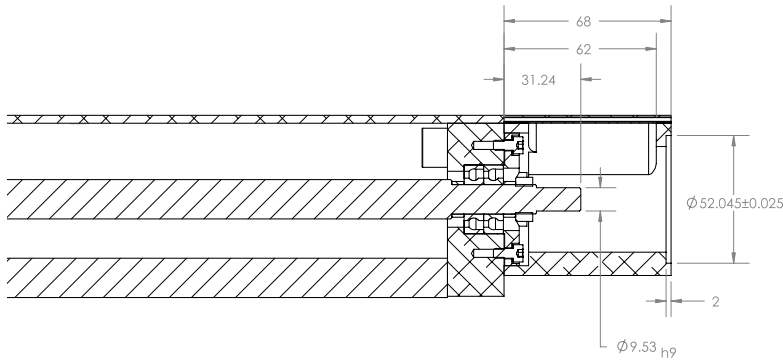
Rail Length "L" [MM]	Overall Length "L1" [MM]	"G" Dimension [MM]	# Of N-Holes	Mass [KG]
300	420.4	73.8	2	6.61
400	520.4	47.6	3	7.78
500	620.4	21.4	4	8.92
600	720.4	71.4	4	10.08
700	820.4	45.2	5	11.24
800	920.4	19	6	12.40
900	1020.4	69	6	13.56
1000	1120.4	42.8	7	14.72
1100	1220.4	92.8	7	15.88
1200	1320.4	66.6	8	17.04
1300	1420.4	40.4	9	18.20
1400	1520.4	90.4	9	19.36
1500	1620.4	64.2	10	20.52
1600	1720.4	38	11	21.68
1700	1820.4	88	11	22.84
1800	1920.4	61.8	12	24.00
1900	2020.4	35.6	13	25.16
2000	2120.4	85.6	13	26.32

\*Mass assumes single A block. \*\*+12.80 mm length on high thrust.

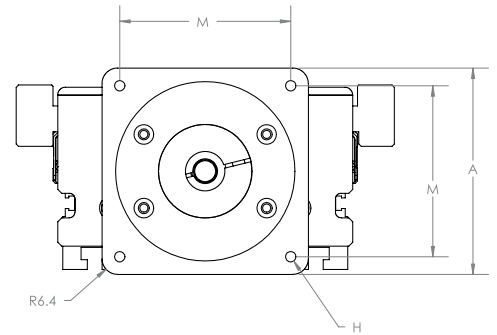
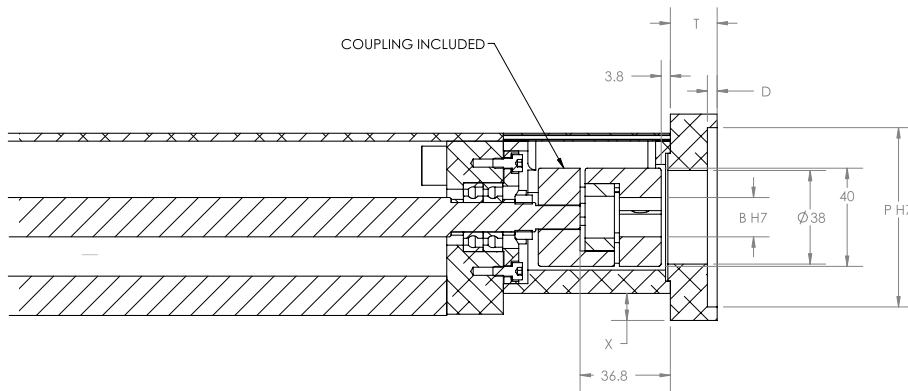


## HDS ACTUATOR SENSORS

Sensor Options	Sensor Part No.
2K=NPN Proximity Sensor Kit (2 NC)	E2SW241M (2)
21=NPN Proximity Sensor Kit (2 NC, 1 NO)	E2SW241M (2) & E2SW23B1M (1)
2KP=PNP Proximity Sensor Kit (2 NC)	E2SW261M (2)
21P=PNP Proximity Sensor Kit (2 NC, 1 NO)	E2SW261M (2) & E2SW25B1M (1)
2H=NPN Photo Sensor Kit (2 Sensors)	EE-SX674 (2) & EE-1006 (2)
3H=NPN Photo Sensor Kit (3 Sensors)	EE-SX674 (3) & EE-1006 (3)
2HP=PNP Photo Sensor Kit (2 Sensors)	EE-SX674P (2) & EE-1006 (2)
3HP=PNP Photo Sensor Kit (3 Sensors)	EE-SX674P (3) & EE-1006 (3)

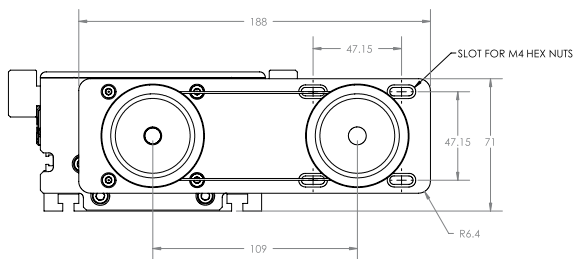
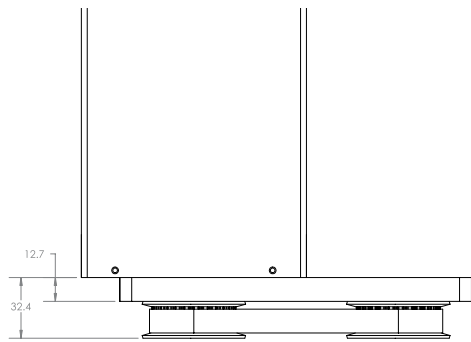


**B0**



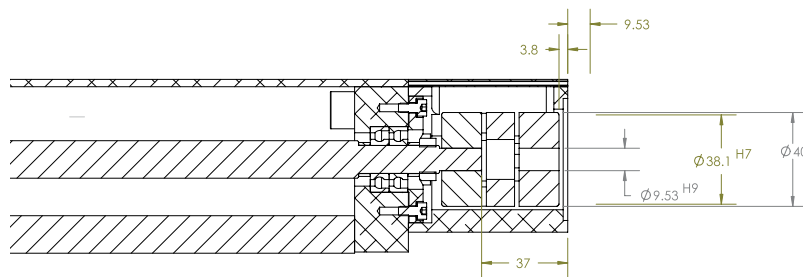
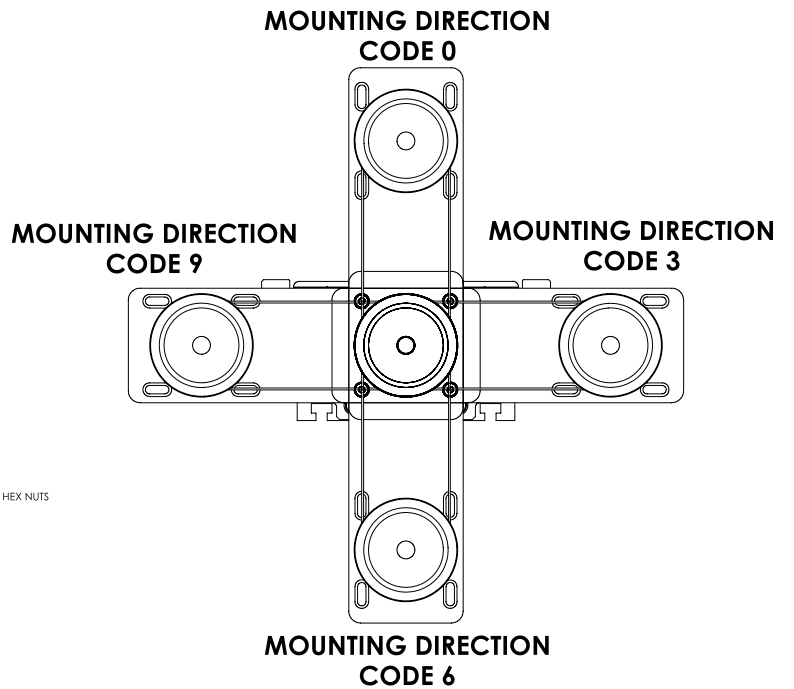
## LOAD & ACCURACY STANDARD (Screw)

Motor Bracket	Motor Type	A [MM]	M [MM]	P [MM]	B [MM]	X [MM]	D [MM]	T [MM]	H
B1	NEMA 34	84	69.6	73.03	15.875	11	4	19	M5
B4	60MM Servo	70	53.03	60	14	4	3.5	10	M4
B5	80MM Servo	84	70.7	80	19	11	4	19	M5

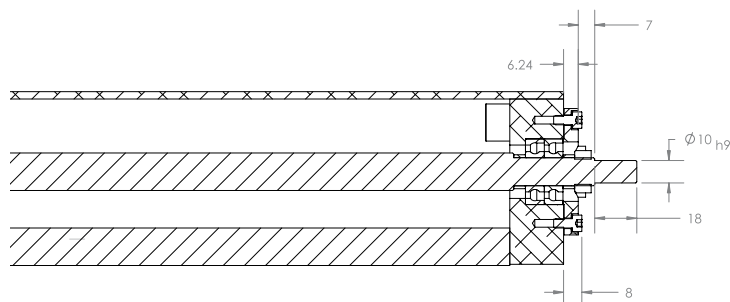
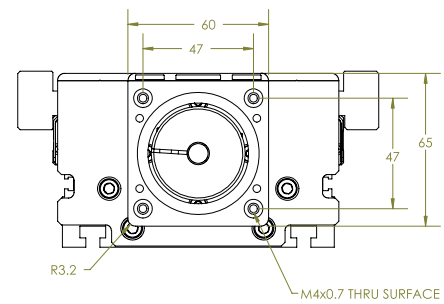


### **B3 NEMA 23 WRAP BRACKET**

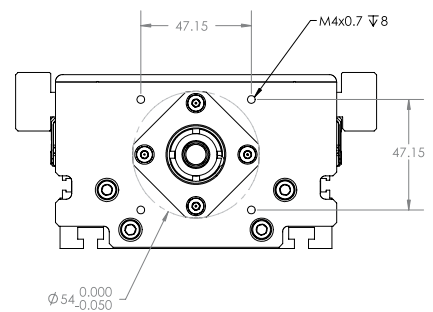
INCLUDED PULLEYS: 28-TEETH, XL  
TIMING BELT: 1/2" POLYURETHANE WITH STEEL CORE, 78 TEETH, XL



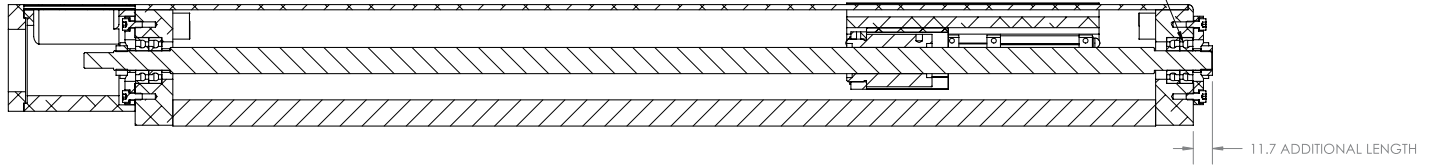
### **B2**



### **R0**

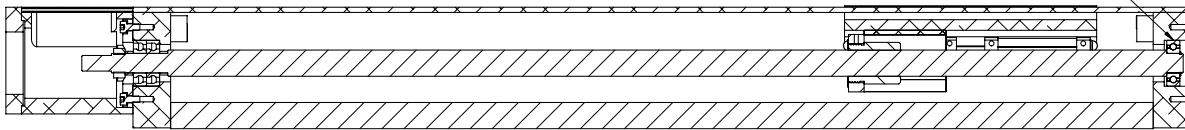


FIXED-FIXED SUPPORT  
SCREW IS TENSIONED  
SECOND SET OF BEARINGS IN TANDEM INCREASES THRUST LOAD CAPACITY



## HIGH THRUST

FIXED-SIMPLE SUPPORT  
SCREW IS MORE EASILY ALIGNED



## STANDARD

Don't see exactly what you need?  
Give us a call and let us configure the system for you.

**Southern California**  
27 Argonaut  
Aliso Viejo, CA 92656  
Tel: (949) 586-7442

**Northern California**  
47517 Seabridge Drive  
Fremont, CA 94538  
Tel: (925) 243-8700



**Wisconsin**  
3030 Laura Ln, Ste 100  
Middleton, WI 53562  
Tel: (608) 573-5183

**Email:**  
sales@motionsolutions.com  
sales@npoint.com

