JENA TEC

Ballscrew Linear Actuators CATALOGUE

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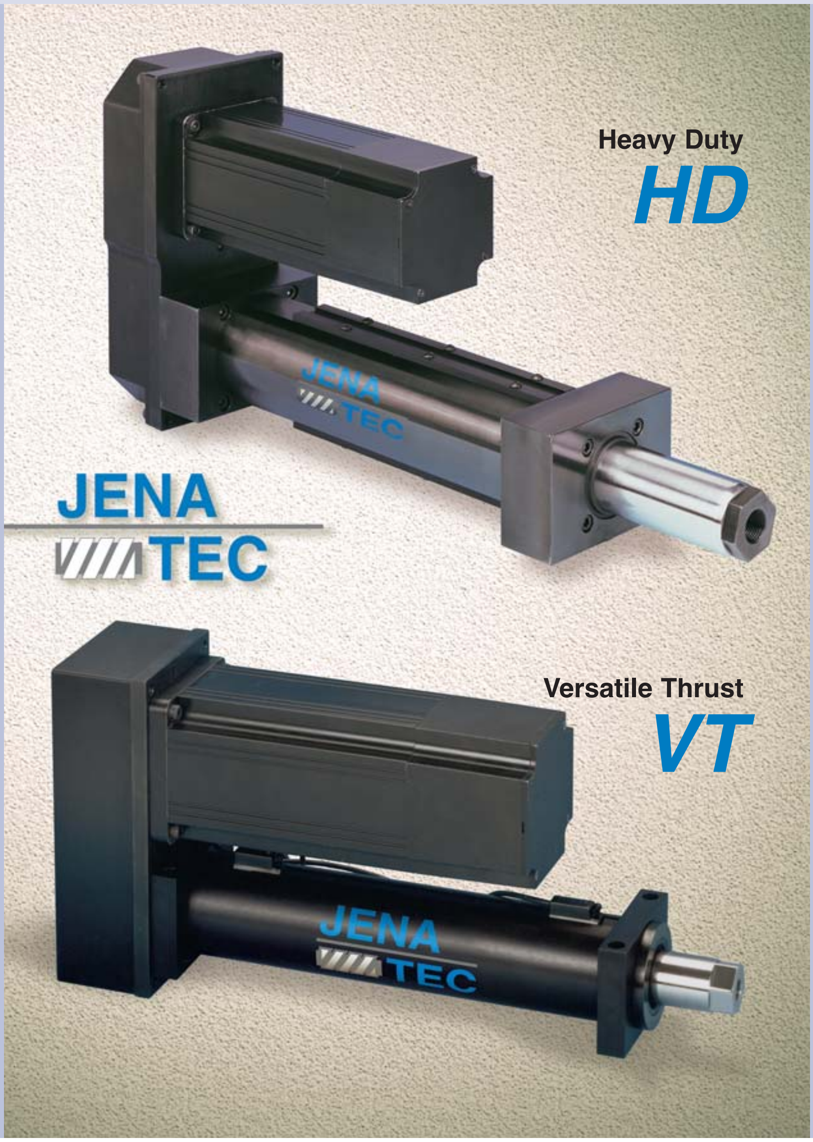


Avingtrans plc
engineering technology group

JENA TEC **HD**

• Hydraulic Replacement • Die Accelerators • Transfer Systems • Robotics • Packaging Machinery • Assembly Machinery •

Hydraulic Replacement • Metal Forming Machines • Valve Control• Broaching Machines • Food Processing Machines • Bending Machines

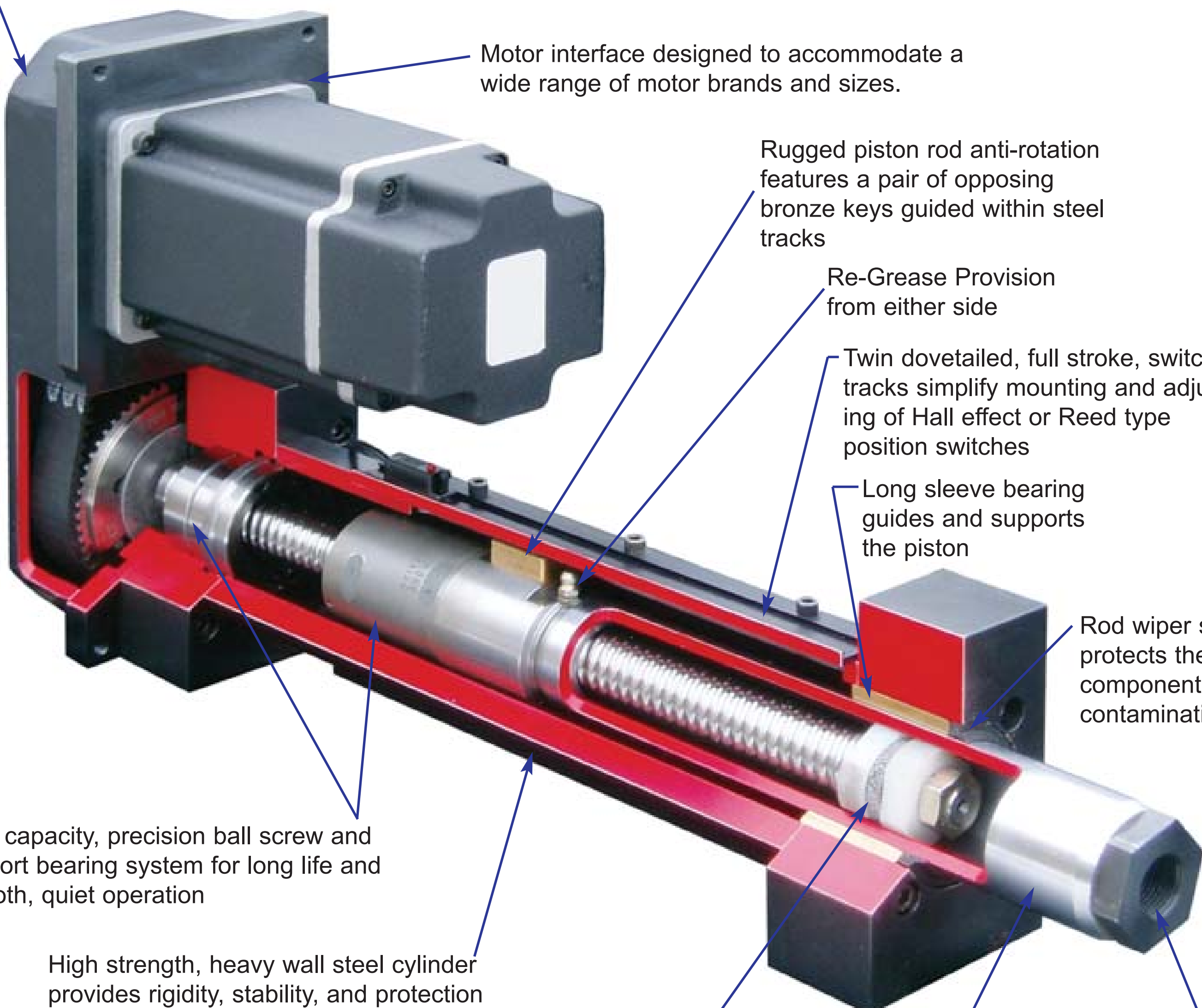
Hydraulic Replacement • Metal Forming Machines •Tensile Testing • Packaging Machinery • Food Processing Machines • Injection Molding

Heavy Duty Ball Screw Linear Actuators

- ***Thrust From 17,000 to 178,000 N***
- ***Heavy Wall Steel Construction***
- ***Longest Life***
- ***Simultaneous High Thrust with High Speed***
- ***Piston with Rugged Anti Rotation Feature***
- ***Sealed Chamber Design***

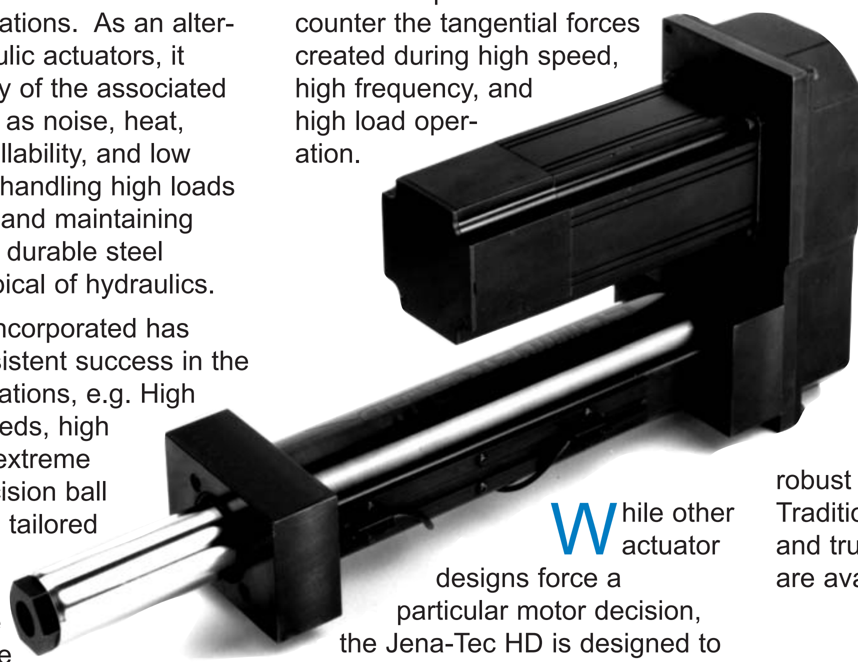
• Hydraulic Replacement • Pneumatic Replacement • Assembly Machines • Automation • Simulators • Motion Bases •

Features:


Standard configurations include parallel offset (1:1 or 2:1 gearbelt ratio) and in-line
Motor interface designed to accommodate a wide range of motor brands and sizes.
Rugged piston rod anti-rotation features a pair of opposing bronze keys guided within steel tracks
Re-Grease Provision from either side
Twin dovetailed, full stroke, switch tracks simplify mounting and adjusting of Hall effect or Reed type position switches
Long sleeve bearing guides and supports the piston
Rod wiper seal protects the internal components from contamination
High capacity, precision ball screw and support bearing system for long life and smooth, quiet operation
High strength, heavy wall steel cylinder provides rigidity, stability, and protection from operating abuse
Internal bumper helps prevent jamming at both ends of travel
Internal threaded piston nose accepts standard rod ends; e.g. Spherical rod eye, misalignment coupler, etc.
Heavy wall, alloy steel piston provides rigidity, and a hard chrome plated, ground, and polished surface resists corrosion and mechanical damage

The Heavy Duty ball screw linear actuator series was developed to provide a strong, durable, and precise ball screw linear actuator for high end applications. As an alternative to hydraulic actuators, it eliminates many of the associated concerns, such as noise, heat, leakage, controllability, and low stiffness, while handling high loads at high speeds and maintaining the rugged and durable steel construction typical of hydraulics.

The design Incorporated has shown consistent success in the toughest applications, e.g. High loads, high speeds, high precision, and extreme durability. Precision ball screw systems, tailored for maximum life, load and speed, provide the motion while fully enclosed, thus eliminating contamination related failures.



A long bronze nose bearing provides support for the extended piston. Rugged bronze keys in opposing steel slots provide anti-rotation and counter the tangential forces created during high speed, high frequency, and high load operation.

While other actuator designs force a particular motor decision, the Jena-Tec HD is designed to suit virtually any motor, gear box, or gearhead the customer chooses to use. In-line as well as parallel offset configurations are standard with 1:1 and 2:1 synchronous gearbelt ratios available.

Dual, nonferrous dovetail switch tracks provide a simple method of placing and adjusting switches for over travel protection as well as "home" detection. Hall effect type as well as reed limit switches are available.

Machine tool principals and guidelines ensure robust sizing of all components. Traditional front flange, bottom, foot, and trunnion mounting capabilities are available for the standard price.

Benefits:

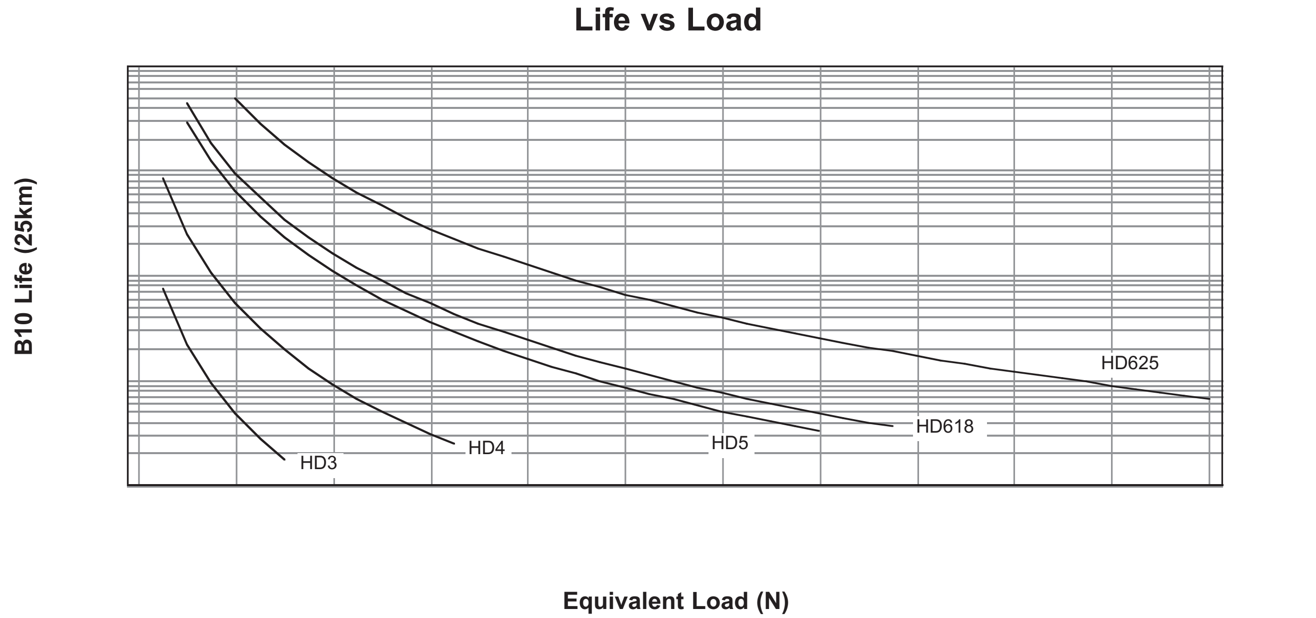
- ***RUGGED STEEL CONSTRUCTION:*** Tolerates rough operating conditions
- ***HIGH DYNAMIC CAPACITY COMPONENTS:*** Longest Life
- ***HIGH THRUST EVEN AT HIGH SPEED:*** Means no compromises in the production cycle
- ***POSITIONAL ACCURACY:*** Repeatable to .0127 mm
- ***ACCEPTS MOST COMBINATIONS OF MOTORS OR GEARHEADS WITHOUT AN ADAPTER PLATE:*** Reducing cost and allowing the end user to select their preferred motor source
- ***IP54 RATED:*** When using positive pressure purge provision
- ***VARIETY OF STANDARD MOUNTING OPTIONS:*** Makes it easy to mount and align actuator

Specifications

Model Number	Thrust Load Rated (N)	Thrust Load Max. (N)	Linear Velocity Max. (mm s-1)	Travel Length[1] Max. (mm)	Frame Size (in)	Lead[2] (mm)	Ball Screw Diameter (mm)	Ball Screw Speed Max. (RPM)	Torque @ Ball Screw Max. (Nm)	Basic Load Rating (10^6 revs) C (N)	Basic Load Rating (25 km) C (kN)	Motor/ Gearhead Frame Supported Max.[3] (in)	Unit Weight "U" Motor Mount (Kg)	Unit Weight "L" Motor Mount (Kg)
HD302-06	8,896	17,793	584.2	152	3	10	25	3,500	16	28,869	21.2	4.25	17	14
HD302-12	8,896	17,793	584.2	305	3	10	25	3,500	16	28,869	21.2	4.25	20	17
HD302-18	8,896	17,793	584.2	457	3	10	25	3,500	16	28,869	21.2	4.25	24	21
HD302-24	8,896	17,793	584.2	610	3	10	25	3,500	16	28,869	21.2	4.25	28	24
HD302-30	8,896	17,793	584.2	762	3	10	25	3,500	16	28,869	21.2	4.25	31	28
HD302-36	8,896	17,793	515.6	914	3	10	25	3,100	16	28,869	21.2	4.25	35	32
HD304-06	17,793	35,586	584.2	152	3	10	25	3,500	31	28,869	21.2	4.25	17	14
HD304-12	17,793	35,586	584.2	305	3	10	25	3,500	31	28,869	21.2	4.25	20	17
HD304-18	17,793	35,586	584.2	457	3	10	25	3,500	31	28,869	21.2	4.25	24	21
HD304-24	17,793	35,586	584.2	610	3	10	25	3,500	31	28,869	21.2	4.25	28	24
HD304-30	17,793	35,586	584.2	762	3	10	25	3,500	31	28,869	21.2	4.25	31	28
HD304-36	17,793	35,586	515.6	914	3	10	25	3,100	31	28,869	21.2	4.25	35	32
HD404-06	17,793	35,586	457.2	152	4	10	32	2,750	31	64,855	47.6	5.75	34	28
HD404-12	17,793	35,586	457.2	305	4	10	32	2,750	31	64,855	47.6	5.75	40	34
HD404-18	17,793	35,586	457.2	457	4	10	32	2,750	31	64,855	47.6	5.75	47	40
HD404-24	17,793	35,586	457.2	610	4	10	32	2,750	31	64,855	47.6	5.75	53	46
HD404-30	17,793	35,586	457.2	762	4	10	32	2,750	31	64,855	47.6	5.75	59	53
HD404-36	17,793	35,586	457.2	914	4	10	32	2,750	31	64,855	47.6	5.75	65	59
HD404-42	17,793	35,586	457.2	1,067	4	10	32	2,750	31	64,855	47.6	5.75	71	65
HD406-06	26,689	53,379	457.2	152	4	10	32	2,750	47	64,855	47.6	5.75	34	28
HD406-12	26,689	53,379	457.2	305	4	10	32	2,750	47	64,855	47.6	5.75	40	34
HD406-18	26,689	53,379	457.2	457	4	10	32	2,750	47	64,855	47.6	5.75	47	40
HD406-24	26,689	53,379	457.2	610	4	10	32	2,750	47	64,855	47.6	5.75	53	46
HD406-30	26,689	53,379	457.2	762	4	10	32	2,750	47	64,855	47.6	5.75	59	53
HD406-36	26,689	53,379	457.2	914	4	10	32	2,750	47	64,855	47.6	5.75	65	59
HD406-42	26,689	53,379	457.2	1,067	4	10	32	2,750	47	64,855	47.6	5.75	71	65
HD508-06	35,586	66,723	355.6	152	5	12	50	1,780	75	139,007	108.3	8.00	79	57
HD508-12	35,586	66,723	355.6	305	5	12	50	1,780	75	139,007	108.3	8.00	88	66
HD508-18	35,586	66,723	355.6	457	5	12	50	1,780	75	139,007	108.3	8.00	98	75
HD508-24	35,586	66,723	355.6	610	5	12	50	1,780	75	139,007	108.3	8.00	107	84
HD508-30	35,586	66,723	355.6	762	5	12	50	1,780	75	139,007	108.3	8.00	117	94
HD508-36	35,586	66,723	355.6	914	5	12	50	1,780	75	139,007	108.3	8.00	126	103
HD508-42	35,586	66,723	355.6	1,067	5	12	50	1,780	75	139,007	108.3	8.00	135	112
HD508-48	35,586	66,723	355.6	1,219	5	12	50	1,780	75	139,007	108.3	8.00	144	122
HD516-06	71,172	133,447	355.6	152	5	12	50	1,780	151	139,007	108.3	8.00	79	57
HD516-12	71,172	133,447	355.6	305	5	12	50	1,780	151	139,007	108.3	8.00	88	66
HD516-18	71,172	133,447	355.6	457	5	12	50	1,780	151	139,007	108.3	8.00	98	75
HD516-24	71,172	133,447	355.6	610	5	12	50	1,780	151	139,007	108.3	8.00	107	84
HD516-30	71,172	133,447	355.6	762	5	12	50	1,780	151	139,007	108.3	8.00	117	94
HD516-36	71,172	133,447	355.6	914	5	12	50	1,780	151	139,007	108.3	8.00	126	103
HD516-42	71,172	133,447	355.6	1,067	5	12	50	1,780	151	139,007	108.3	8.00	135	112
HD516-48	71,172	133,447	355.6	1,219	5	12	50	1,780	151	139,007	108.3	8.00	144	122
HD618-06	80,068	133,447	248.9	152	6	12	63	1,450	169	159,024	123.8	8.00	109	84
HD618-12	80,068	133,447	248.9	305	6	12	63	1,450	169	159,024	123.8	8.00	124	99
HD618-18	80,068	133,447	248.9	457	6	12	63	1,450	169	159,024	123.8	8.00	139	114
HD618-24	80,068	133,447	248.9	610	6	12	63	1,450	169	159,024	123.8	8.00	154	129
HD618-30	80,068	133,447	248.9	762	6	12	63	1,450	169	159,024	123.8	8.00	169	144
HD618-36	80,068	133,447	248.9	914	6	12	63	1,450	169	159,024	123.8	8.00	184	159
HD618-42	80,068	133,447	248.9	1,067	6	12	63	1,450	169	159,024	123.8	8.00	199	174
HD618-48	80,068	133,447	248.9	1,219	6	12	63	1,450	169	159,024	123.8	8.00	214	189
HD625-06	111,206	133,447	365.8	152	6	20	80	1,100	393	231,975	214.2	8.00	112	87
HD625-12	111,206	177,929	365.8	305	6	20	80	1,100	393	231,975	214.2	8.00	127	102
HD625-18	111,206	177,929	365.8	457	6	20	80	1,100	393	231,975	214.2	8.00	142	117
HD625-24	111,206	177,929	365.8	610	6	20	80	1,100	393	231,975	214.2	8.00	157	132
HD625-30	111,206	177,929	365.8	762	6	20	80	1,100	393	231,975	214.2	8.00	172	147
HD625-36	111,206	177,929	365.8	914	6	20	80	1,100	393	231,975	214.2	8.00	187	161
HD625-42	111,206	177,929	365.8	1,067	6	20	80	1,100	393	231,975	214.2	8.00	202	176
HD625-48	111,206	177,929	365.8	1,219	6	20	80	1,100	393	231,975	214.2	8.00	217	191

(1) Intermediate lengths are available; Longer lengths possible.
(2) Lead accuracy is within DIN 69051 (ISO 3408-5) Grade G7.
Standard backlash is 0.076 in maximum. Optional zero backlash is also available.
(3) Motor adapter plates are available for larger motor frames.

Graph 1: Life Vs. Load



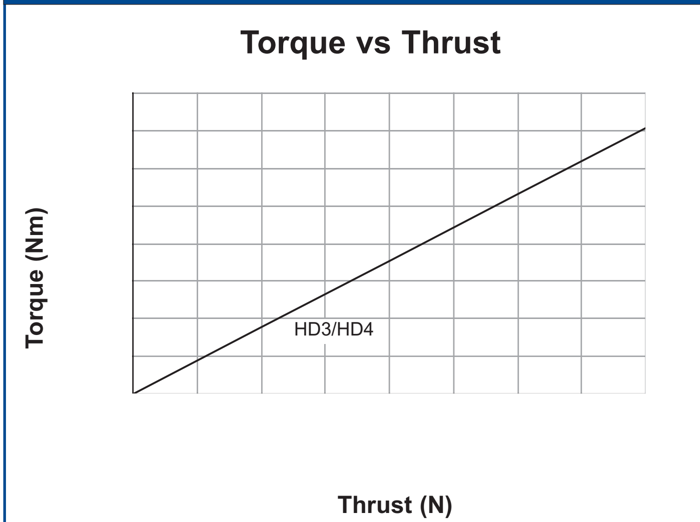
EQUIVALENT LOAD is the average force over the working stroke, weighted proportionately to the distance traveled. For constant force loads, the equivalent load is the same as the typical or average load. Where forces vary due to gravity, angle of actuator, acceleration and deceleration, friction, and changing dynamic loads at different positions, it is best to determine the equivalent load in order to most accurately predict the B10 life of the actuator.

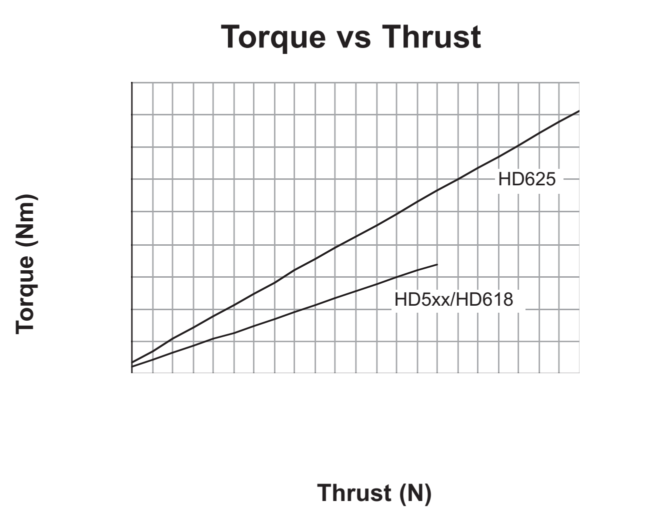
$$F = \sqrt[3]{\frac{L_1(F_1)^3 + L_2(F_2)^3 + L_3(F_3)^3 + L_4(F_4)^3 + \ldots\ldots L_n(F_n)^3}{L}}$$

Where: F_n is the calculated force for segment "n" with travel length of L_n and total travel L.

Find the intersection of this value and the appropriate curve. The value on the scale to the left reflects the B10 life of the actuator.

Graph 2: Torque Vs. Thrust at Ball Screw

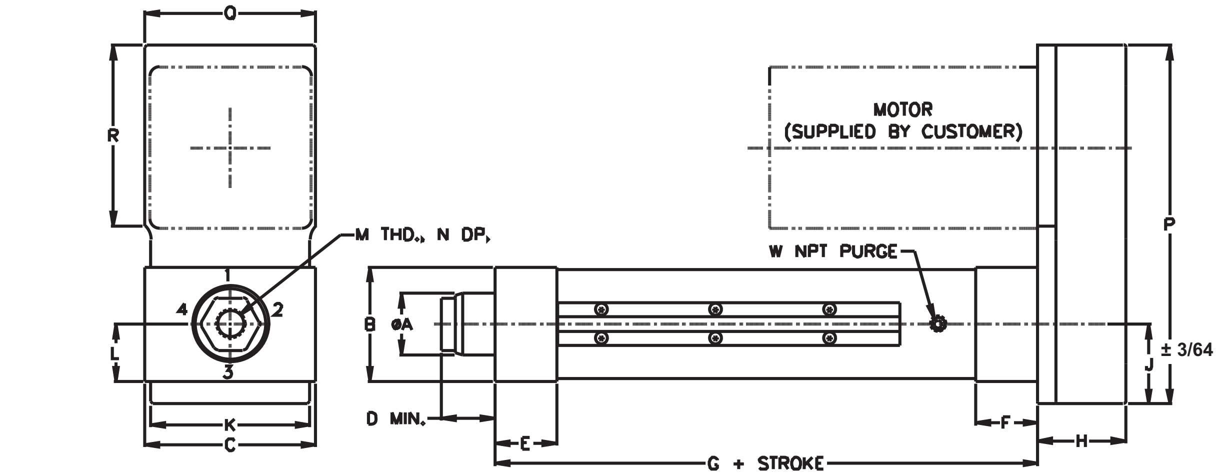




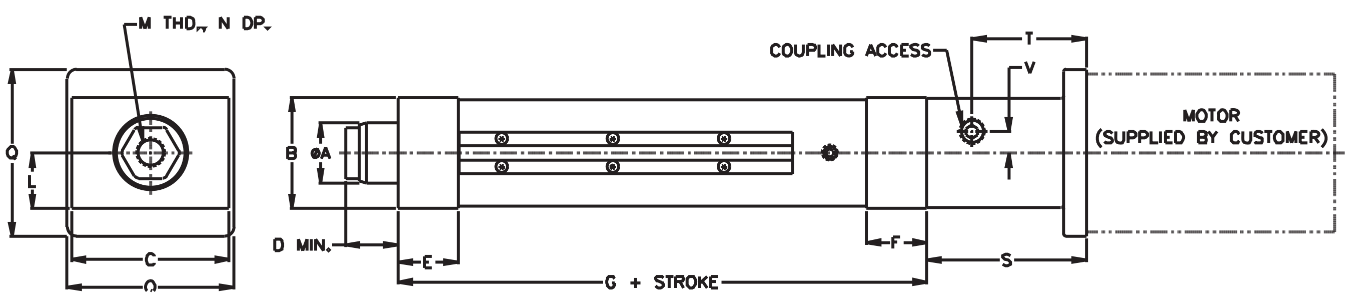
The approximate motor torque required to produce a given force can be determined by examining the appropriate chart above, finding the intersection between the thrust required and the line and following that to the vertical axis where you can get an approximate torque requirement. This is for a 1:1 gearbelt or in-line arrangement. For 2:1, the torque can be reduced by 50%.

General Dimensions

U-Parallel Offset Motor Configuration



L-Inline Motor Configuration

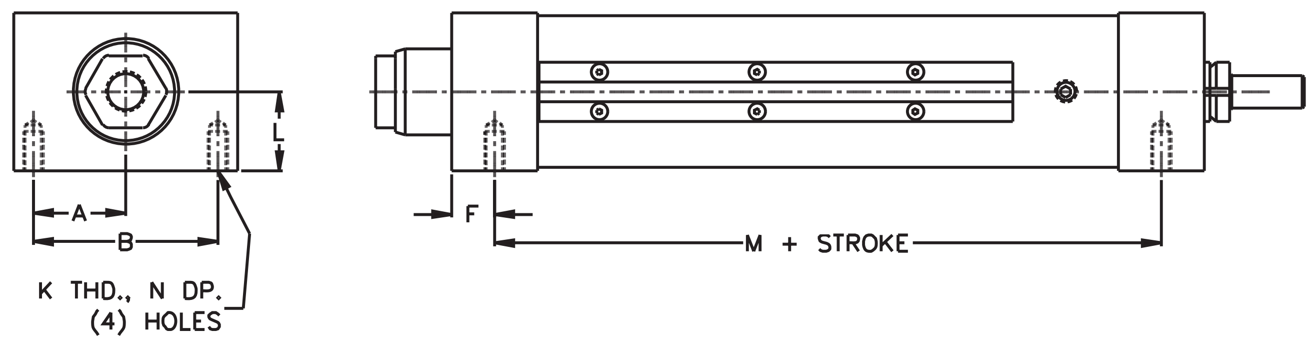


U-Parallel Offset and L-Inline Motor Configuration

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	41.4	76.2	108	35.8	41	41	210.3	60	53.1	107	38.1	M16 x 1,5	25
HD304	41.4	76.2	108	39.6	41	41	210.3	60	53.1	107	38.1	M16 x 1,5	25
HD404	57.2	101.6	140	47.8	51	51	243.6	67	68.3	137	50.8	M16 x 1,5	25
HD406	57.2	101.6	140	45.5	51	51	243.6	67	68.3	137	50.8	M16 x 1,5	25
HD508	76.2	127.0	197	65.0	64	76	339.9	103	96.8	194	63.5	M24 x 2.0	41
HD516	76.2	127.0	197	65.0	64	76	339.9	103	96.8	194	63.5	M24 x 2.0	41
HD618	88.9	152.4	216	69.9	76	76	355.6	105	104.9	213	76.2	M24 x 2.0	41
HD625	101.6	152.4	216	69.9	76	76	425.5	105	104.9	213	76.2	M24 x 2.0	41

Model	P	Q	R	S	T	V	W
HD302	240	114	121	109	78	15	1/8
HD304	240	114	121	109	78	15	1/8
HD404	330	152	176	127	100	21	1/4
HD406	330	152	176	127	100	21	1/4
HD508	437	213	233	171	118	25	3/8
HD516	437	213	233	171	118	25	3/8
HD618	454	229	233	184	130	30	1/2
HD625	454	229	233	184	130	30	1/2

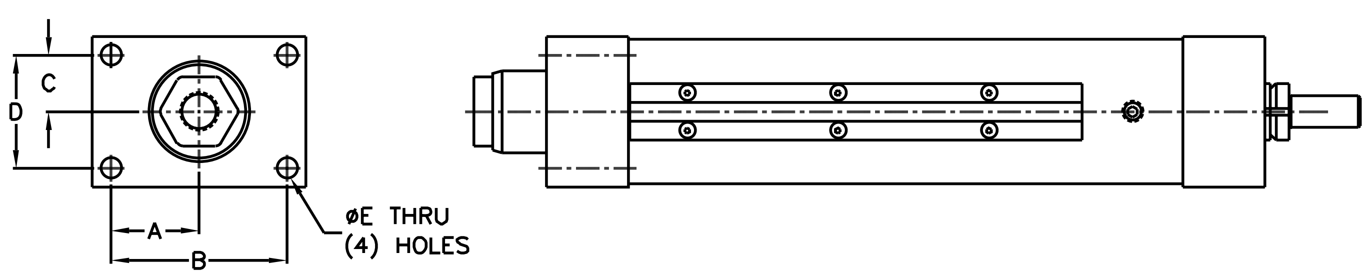
Bottom Mount Dimensions



Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD304	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD404	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD406	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD508	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD516	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD618	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	279.40	45
HD625	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	349.25	45

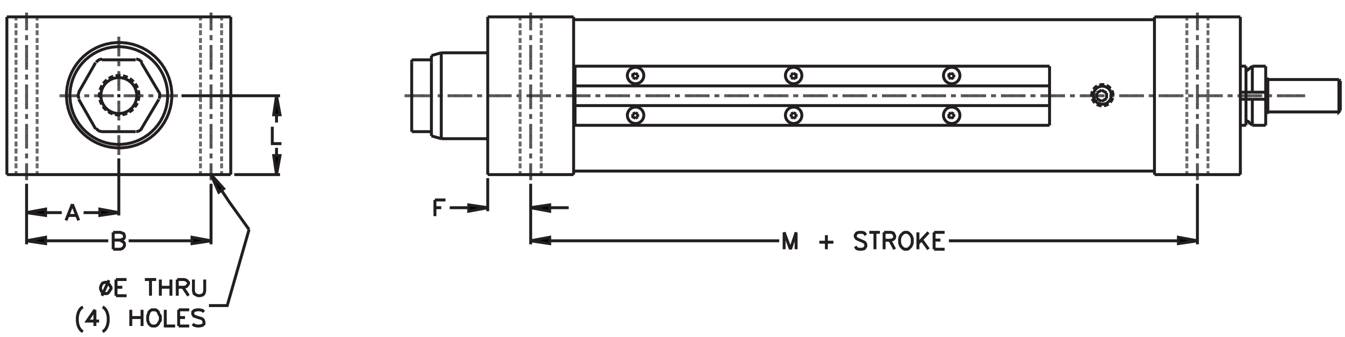
Front Flange Mount Dimensions



Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD304	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD404	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD406	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD508	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD516	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD618	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	279.40	45
HD625	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	349.25	45

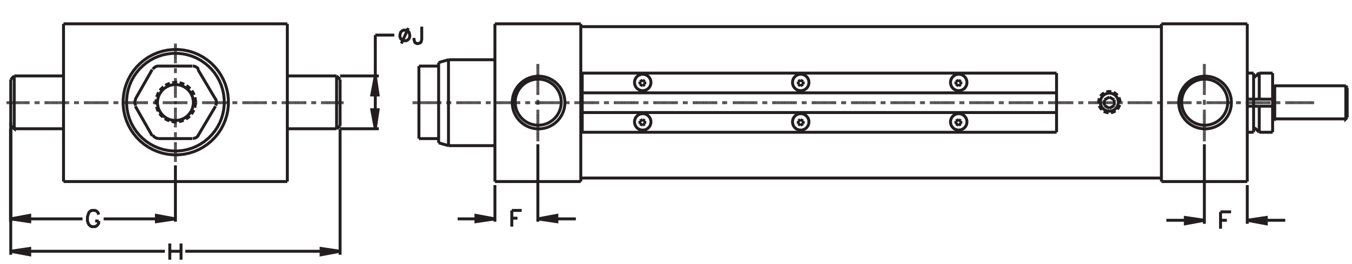
Foot Mount Dimensions



Foot Mount Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD304	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD404	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD406	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD508	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD516	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD618	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	279.40	45
HD625	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	349.25	45

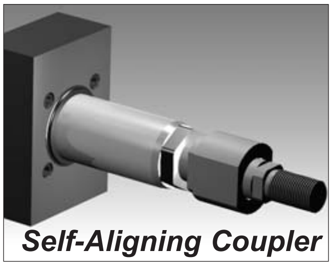
Trunnion Mount Dimensions

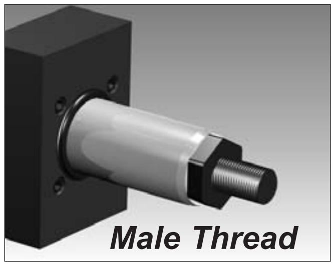


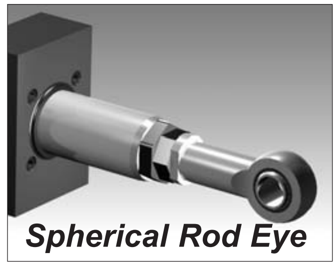
Dimensions

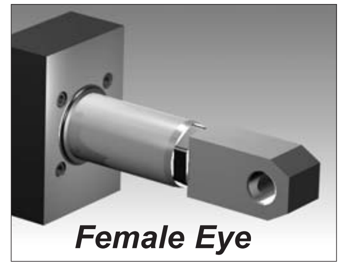
Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD304	44.5	88.9	28.7	57.2	9	21	86	171	25 g6	M8 x 1.25	38.10	169.16	20
HD404	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD406	55.6	111.3	36.6	73.2	18	25	114	229	30 g6	M16 x 2	50.80	192.79	25
HD508	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD516	79.5	158.8	44.5	88.9	22	32	159	318	40 g6	M16 x 2	63.50	270.00	32
HD618	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	279.40	45
HD625	84.1	168.4	50.8	101.6	26	38	181	362	50 g6	M24 x 3	76.20	349.25	45

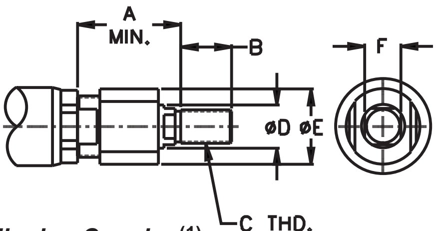
Rod End Dimensions


Self-Aligning Coupler

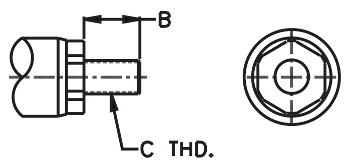

Male Thread


Spherical Rod Eye

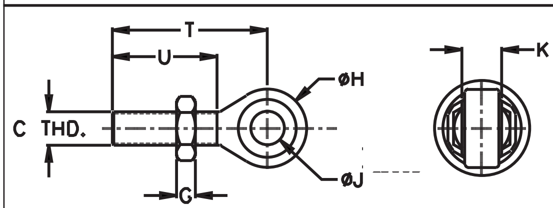

Female Eye



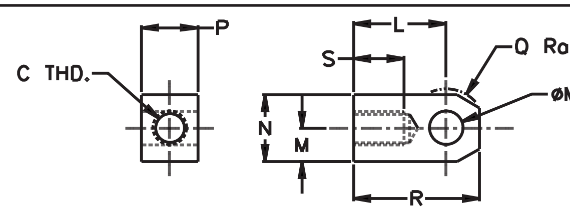
Self-Aligning Coupler (1)



Male Thread



Spherical Rod Eye



Female Eye

Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N
HD302	50.8	20	M16x1.50	15.8	31.7	14.2	8	38	16	21	52.4	16	38.1
HD304	50.8	20	M16x1.50	15.8	31.7	14.2	8	38	16	21	52.4	16	38.1
HD404	50.8	20	M16x1.50	15.8	31.7	14.2	8	38	16	21	52.4	16	38.1
HD406	50.8	20	M16x1.50	15.8	31.7	14.2	8	38	16	21	52.4	16	38.1
HD508	73	41	M24x2.00	35	63.5	32	12	56	25	31	101.6	25	50
HD516	73	41	M24x2.00	35	63.5	32	12	56	25	31	101.6	25	50
HD618	73	41	M24x2.00	35	63.5	32	12	56	25	31	101.6	25	50
HD625	73	41	M24x2.00	35	63.5	32	12	56	25	31	101.6	25	50

Model	P	Q	R	S	T	U
HD302	31.8	22.2	71.4	28.6	73.0	44.5
HD304	31.8	22.2	71.4	28.6	73.0	44.5
HD404	31.8	22.2	71.4	28.6	73.0	44.5
HD406	31.8	22.2	71.4	28.6	73.0	44.5
HD508	50.8	40	122.2	50	94	57
HD516	50.8	40	122.2	50	94	57
HD618	50.8	40	122.2	50	94	57
HD625	50.8	40	122.2	50	94	57

(1) Zero backlash version also available

How To Order:

Base Number | **Options** | **Special**

H D □ □ □ – □ □ – □ □ – □ – □ □ – □ □ – □ □ □ – □ □ □ □ □

Model Number

Unit Mounting Option:

MB	Bottom Mount
FF	Front Flange
MF	Foot Mount
TF	Front Trunnion
TR	Rear Trunnion

End Effector/Rod End:

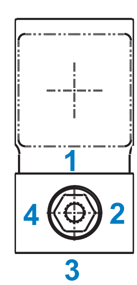
E	Female Eye
F	Female Thread
A	Self-Aligning Coupler
M	Male Thread
S	Spherical Rod Eye

Configuration:

L- In-Line
U- Parallel Offset

Motor Position:

1, 2, 3, 4
0 = Inline



Gearbelt Reduction:

00- Direct Coupled
10- 1:1
20- 2:1

Switch Type:

A	Hall Sourcing	PNP
B	Hall Sinking	NPN
C	Reed	

N.O. Switch Qty:
0, 1, 2, 3, etc.

N.C. Switch Qty:
0, 1, 2, 3, etc.

Custom Length (mm):
00.00

Precision:

A- .002 in/ft; Zero Backlash
B- .0005 in/ft; Zero Backlash

Key Issues for Tough Actuator Applications

When calculating the required force, consider the force to accelerate the mass as well as the force to overcome friction and the applied force. For sizing the system, consider the maximum force and duration. For evaluating life under varying loads, calculate the root mean cube equivalent load which weights the different load levels by the typical length traveled under that load.

Linear velocity is limited by: (1) the maximum ball screw rpm without "whipping" of the ball screw shaft; and (2) critical speeds for the ball nut assembly (beyond which the motion of the balls becomes erratic and performance life suffers).

Life under load (B10 life) is predictable; severe load applications can generally be compensated for by providing additional capacity - this can be calculated.

Alignment of the actuator, parallel to the line of motion, is critical. Also, the end effector connection must be designed to prevent any transfer of bending moments back to the actuator .

Side loads are generally undesirable. Almost any force not coaxial to the actuator compromises potential life. Isolate the actuator from all bending moments or at least recognize and minimize the amount of side loading. Where side loading is unavoidable, specify a linear actuator designed to accommodate side loading.

Maximum acceleration of a ball screw assembly is approximately 9.8 m/sec^2, above this level, unit life becomes shorter and less predictable.

Impact is unacceptable to ball screws as well as anti-friction bearings. Severely shortened life and/or catastrophic failure are the results. Avoid impact or provide a mechanical system to buffer the ball screw assembly from shock loads. Install and connect limit switches before operating the actuator.

Good lubrication is essential. Use a high quality, extreme pressure grease without graphite or MOS2 additives. The actuator comes from the factory prelubricated. Inspect, and regrease every 1,000 hours. Do not mix lubricants; remove the old grease before changing the type of grease.

Contamination of the ball screw system is the leading cause of premature failure. Providing a continuous, low pressure, air purge to the system is a good way to ensure clean operation.

Other Jena-Tec Linear Actuator Solutions

HDL: *Load Cell Actuator*

VT: *Versatile Thrust Actuator*

SL: *Sideload Capable Actuator*


JENA TEC
Plus
Any Motor
A
Perfect
Combination

JENA TEC **VT**

Versatile Thrust Ball Screw Linear Actuators

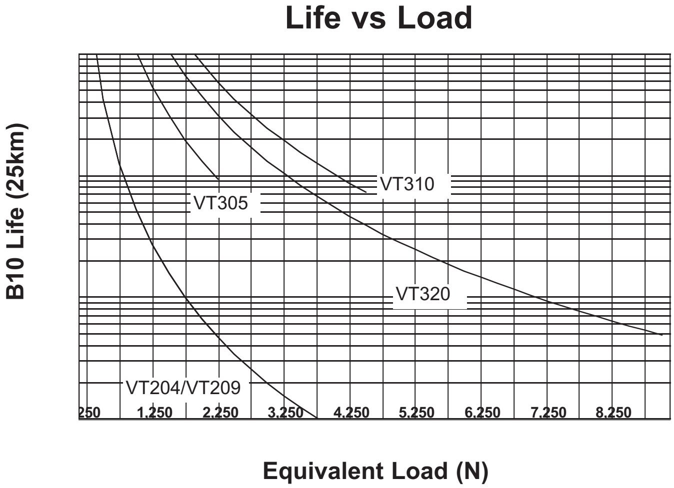
- ***Force from 1,880 to 8,900 N***
- ***Velocity to 1,000 mm s^{-1}***
- ***Sealed from Contamination***
- ***Adjustable Limit Switch Positions***
- ***Accepts Any Motor***
- ***Piston with Rugged Anti-Rotation***

Specifications:

Model Number	Thrust Load Rated (N)	Linear Velocity Max. (mm s^{-1})	Travel Length[1] Max. (mm)	Frame Size (mm)	Lead[2] (ins)	Ball Screw Diameter (mm)	Ball Screw Max. (rpm)	Torque @ Ball Screw Max. (Nm)	Basic Load Rating (10^6 revs) C (N)	Basic Load Rating (25 km) C (N)	Motor Gearhead Frame Supported Max. (ins)	Unit Weight "U" Motor Mount (kg)	Unit Weight "L" Motor Mount (kg)
VT204-06	1,880	400	150	57	0.50	12.7	1,920	4.0	4,750	3,780	3.5	4.1	3.2
VT204-12	1,880	400	300	57	0.50	12.7	1,920	4.0	4,750	3,780	3.5	5.4	4.5
VT204-18	1,880	400	450	57	0.50	12.7	1,920	4.0	4,750	3,780	3.5	6.8	5.9
VT204-24	1,880	400	610	57	0.50	12.7	1,920	4.0	4,750	3,780	3.5	8.2	7.3
VT209-06	4,000	230	150	57	0.20	16.0	2,700	3.6	4,750	3,780	3.5	4.1	3.2
VT209-12	4,000	230	305	57	0.20	16.0	2,700	3.6	4,750	3,780	3.5	5.4	4.5
VT209-18	4,000	230	455	57	0.20	16.0	2,700	3.6	4,750	3,780	3.5	6.8	5.9
VT209-24	4,000	230	610	57	0.20	16.0	2,700	3.6	4,750	3,780	3.5	8.2	7.3
VT305-06	2,220	1,000	150	83	1.00	25.4	2,400	9.9	10,230	10,230	4.5	10.9	9.0
VT305-12	2,220	1,000	305	83	1.00	25.4	2,400	9.9	10,230	10,230	4.5	12.9	11.0
VT305-18	2,220	1,000	455	83	1.00	25.4	2,400	9.9	10,230	10,230	4.5	14.9	13.0
VT305-24	2,220	1,000	610	83	1.00	25.4	2,400	9.9	10,230	10,230	4.5	16.9	15.0
VT305-30	2,220	1,000	760	83	1.00	25.4	2,400	9.9	10,230	10,230	4.5	18.9	17.0
VT310-06	4,450	500	152	83	0.50	25.4	2,400	9.9	23,800	18,900	4.5	10.9	9.0
VT310-12	4,450	500	305	83	0.50	25.4	2,400	9.9	23,800	18,900	4.5	12.9	11.0
VT310-18	4,450	500	455	83	0.50	25.4	2,400	9.9	23,800	18,900	4.5	14.9	13.0
VT310-24	4,450	500	610	83	0.50	25.4	2,400	9.9	23,800	18,900	4.5	16.9	15.0
VT310-30	4,450	500	760	83	0.50	25.4	2,400	9.9	23,800	18,900	4.5	18.9	17.0
VT320-06	8,900	250	150	83	0.25	25.4	2,400	9.9	24,350	15,350	4.5	10.9	9.0
VT320-12	8,900	250	610	83	0.25	25.4	2,400	9.9	24,350	15,350	4.5	12.9	11.0
VT320-18	8,900	250	455	83	0.25	25.4	2,400	9.9	24,350	15,350	4.5	14.9	13.0
VT320-24	8,900	250	610	83	0.25	25.4	2,400	9.9	24,350	15,350	4.5	16.9	15.0
VT320-30	8,900	250	762	83	0.25	25.4	2,400	9.9	24,353	15,346	4.5	18.9	17.0

(1) Intermediate lengths are available. (2) Lead accuracy is within DIN 69051 (ISO 3408-5) Grade G7. Backlash is 0.1 max.

Graph: Life Vs. Load



EQUIVALENT LOAD is the average force over the working stroke, weighted proportionately to the distance traveled. For constant force loads, the equivalent load is the same as the typical or average load. Where forces vary due to gravity, angle of actuator, acceleration and deceleration, friction, and changing dynamic loads at different positions, it is best to determine the equivalent load in order to most accurately predict the B10 life of the actuator.

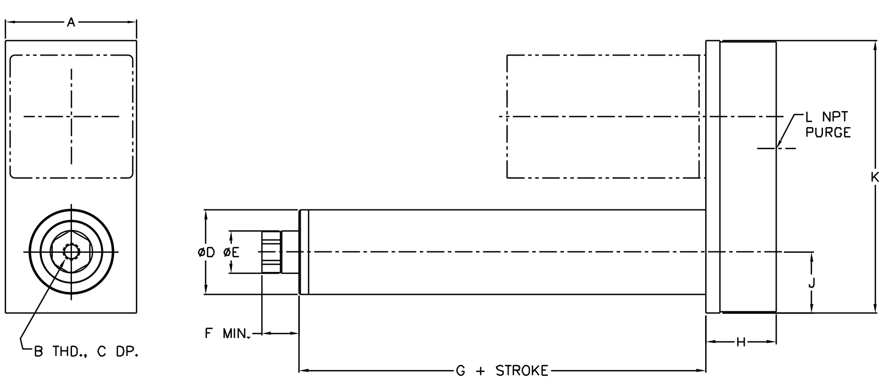
$$F = \sqrt[3]{\frac{L_1(F_1)^3 + L_2(F_2)^3 + L_3(F_3)^3 + L_4(F_4)^3 + \ldots\ldots L_n(F_n)^3}{L}}$$

Where: F_n is the calculated force for segment "n" with travel length of L_n and total travel L.

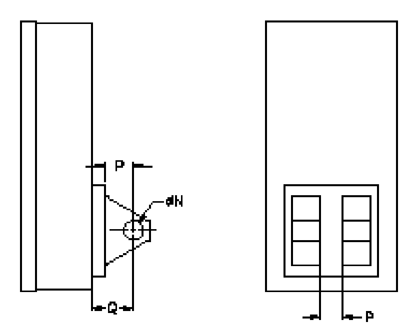
Find the intersection of this value and the appropriate curve. The value on the scale to the left reflects the B10 life of the actuator.

General Dimensions

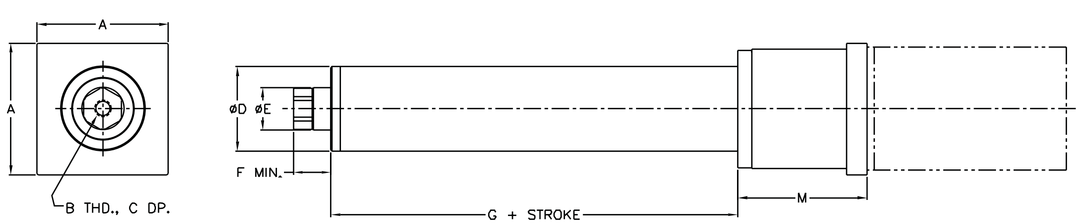
U-Parallel Offset Motor Configuration



Rear Clevis Dimensions



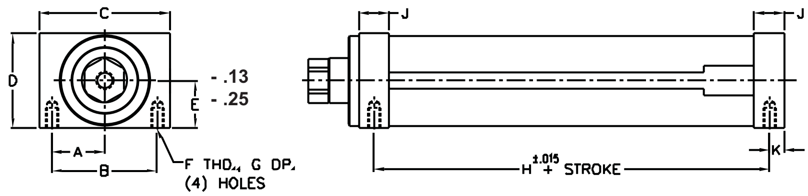
L-Inline Motor Configuration



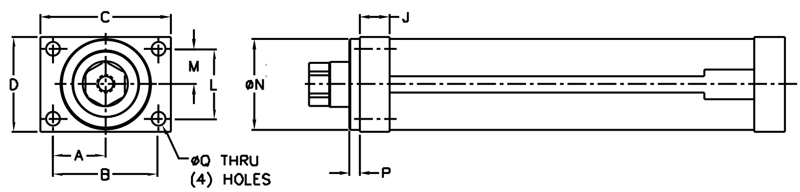
Jena-Tec *VT U-Parallel Offset, L-Inline and Rear Clevis Dimensions*

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
VT204	89	M12 x 1.25	16	57	28.70	31.8	122.94	48	41.40	184	1/8	87	12^{H9}	19.4	28.7
VT209	89	M12 x 1.25	16	57	28.70	31.8	122.94	48	41.40	184	1/8	87	12^{H9}	19.4	28.7
VT305	114	M16 x 1.5	24	83	44.45	38.1	178.56	63	60.45	245	1/8	101	20^{H9}	32.1	47.8
VT310	114	M16 x 1.5	24	83	44.45	38.1	178.56	63	60.45	245	1/8	101	20^{H9}	32.1	47.8
VT320	114	M16 x 1.5	24	83	44.45	38.1	178.56	63	60.45	245	1/8	101	20^{H9}	32.1	47.8

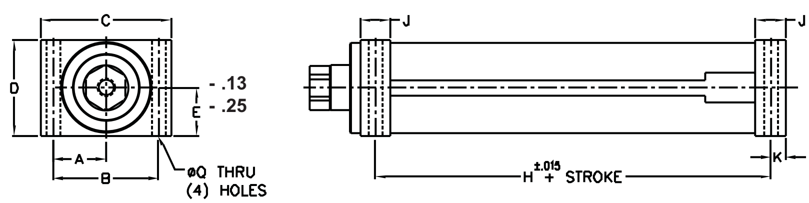
Bottom Mount Dimensions



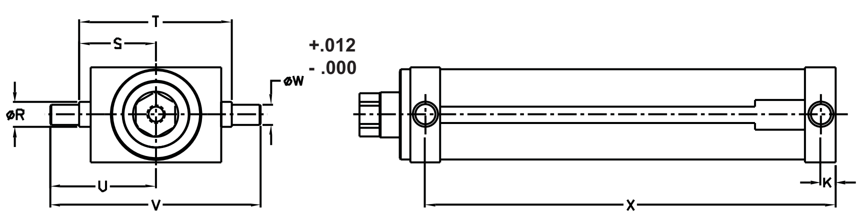
Front Flange Dimensions



Foot Mount Dimensions



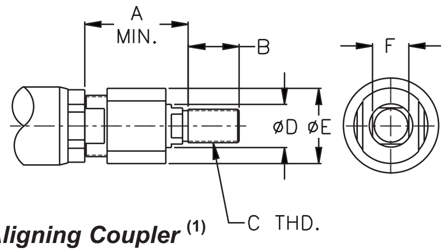
Trunnion Mount Dimensions



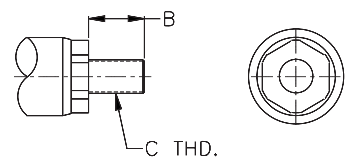
Unit Mounting Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
VT2	33.3	66.8	83	60	30.23	M8 x 1.25	16	97.54	19	10	44.5	22.4	57.15	6.4	9	18	48	96	67	133	12.70	107.2
VT3	47.8	95.3	114	86	42.93	M8 x 1.25	20	146.81	25	13	66.8	33.3	82.55	6.4	14	24	64	128	89	178	19.05	159.5

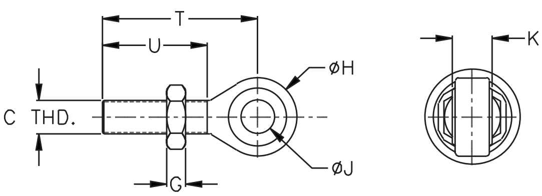
Rod End Options



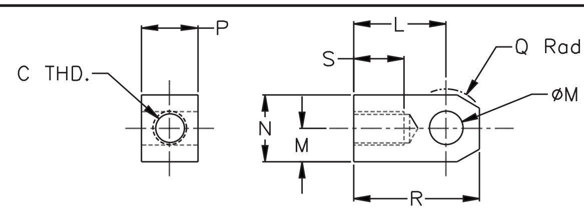
Self-Aligning Coupler [(1)]



Male Thread



Spherical Rod Eye



Female Eye

Rod End Options																			
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
VT2	50.8	20	M12x1.25	15.8	31.7	14.2	6	30	12	16	38.1	12	25.4	19.1	15.9	50.8	19.1	54	66
VT3	50.8	20	M16x1.50	15.8	31.7	14.2	8	38	16	21	52.4	16	38.1	31.8	22.2	71.4	28.6	73.0	44.5

(1) Zero backlash version also available

How To Order:

Base Number | **Options** | **Special**

V T □ □ □ – □ □ – □ □ – □ – □ □ – □ □ – □ □ □ □ □ □ □

Model Number

Unit Mounting Option:
- **MB** Bottom Mount
- **FF** Front Flange
- **MF** Foot Mount
- **TF** Front Trunnion
- **TR** Rear Trunnion
- **CR** Rear Clevis

End Effector/Rod End:
- **E** Female Eye
- **F** Female Thread
- **A** Self-Aligning Coupler
- **M** Male Thread
- **S** Spherical Rod Eye

Configuration:
- ***L- In-Line***
- ***U- Parallel Offset***

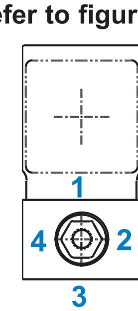
Gearbelt Reduction:
- ***00- Direct Coupled***
- ***10- 1:1***
- ***20- 2:1***

Motor Position

1, 2, 3, 4

0 = Inline

(refer to figure)



Switch Type:
- **A** - Hall Sourcing PNP
- **B** - Hall Sinking NPN
- **C** - Reed

N.O. Switch Qty:
0, 1, 2, 3, etc.

N.C. Switch Qty:
0, 1, 2, 3, etc.

Custom Length (mm):
00.00