ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Bimba TE-046-CM* at our website: ***Click HERE***

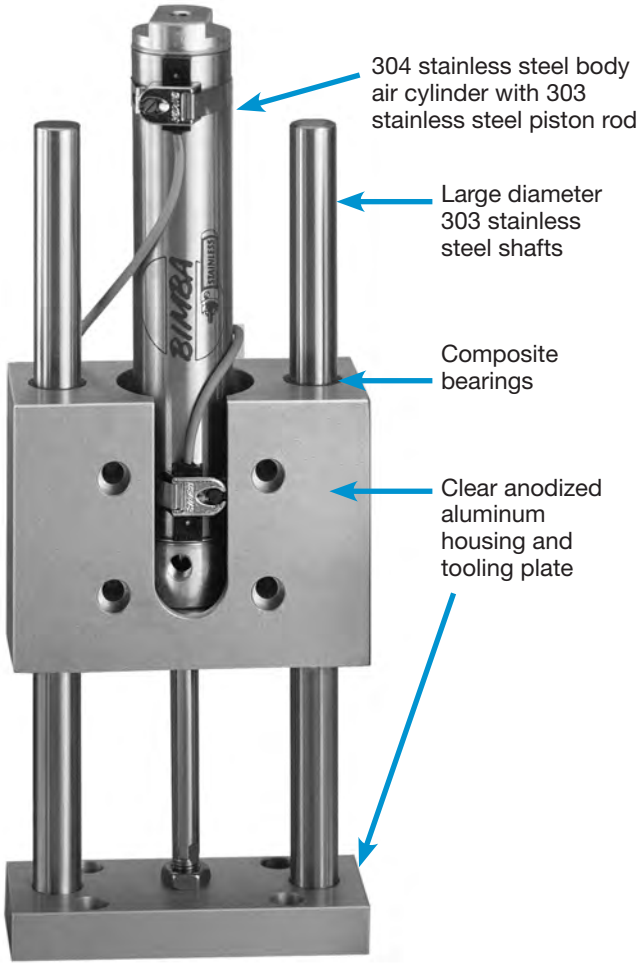
Linear Thrusters/PneuMoment

- Extruded Linear Thrusters 3.3-3.10
- TE Series (Composite Bearings) 3.11-3.16
- T Series (Ball Bearings) 3.17-3.22
- Multiple Position Linear Thrusters 3.23-3.24
- T4 Series 3.25-3.28
- Movable Housing Linear Thrusters 3.29-3.32
- Linear Thrusters Checklist 3.33
- PneuMoment Pneumatic Actuators 3.34-3.48
- PneuMoment Application Checklist 3.49





Bimba Linear Thrusters

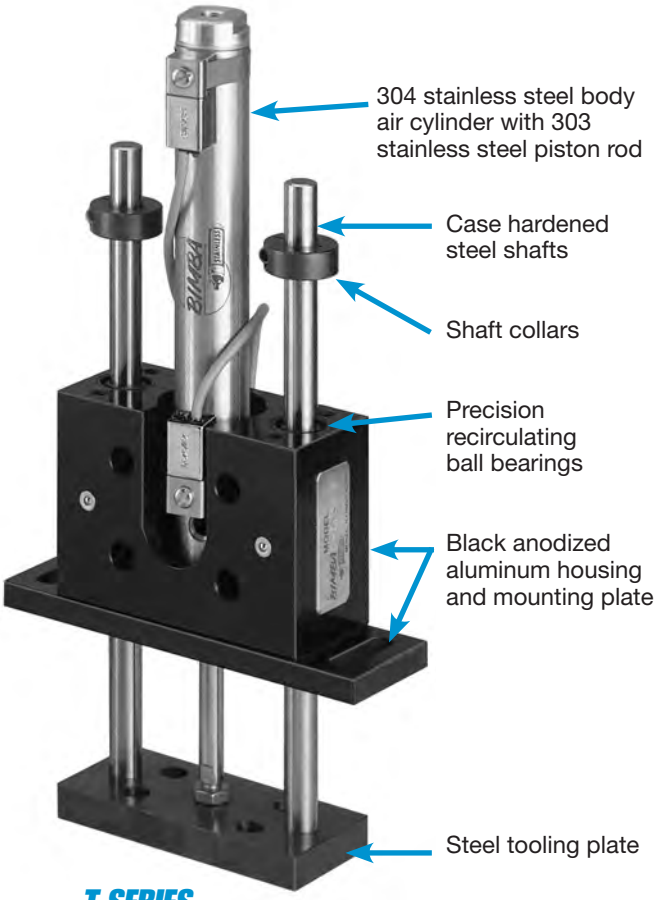


TE SERIES

- Large diameter stainless steel shafts (hard chrome plated carbon steel on 2-1/2" and 3" bores).
- Mounting plate and shaft collars optional.
- High-strength composite bearing made of fiber-imbedded plastic.
- Composite bearing may perform better in certain environments (for example, dust or lint).
- Composite bearing/stainless steel shaft combination is ideal for corrosive environments.
- High load capabilities.

ADVANTAGES

- Bimba stainless steel body air cylinders for long, reliable life.
- Optional magnetic piston for use with Hall Effect or Magnetic Reed Switches. (Hall Effect Switch not available for 9/16" bore.)
- Optional adjustable cushions for smooth deceleration of load at end of stroke. (Not available for 9/16".)
- Optional internal or external bumpers to absorb shock or adjust stroke.
- Easily accessible ports.
- Choice of TE (composite bearing) and T (ball bearing).



T SERIES

- Less friction
- High precision
- Easily accessible lubrication ports
- Mounting plate and shaft collars standard

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bimba Extruded Linear Thrusters



The Bimba Extruded Thruster is a rugged, guided actuator with a cylinder integral to the thruster block. The sleek body incorporates switch mounting, for a clean, space-efficient package.

How to Order

The model number for Extruded Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options.

Please note the following features are standard, and are included in all model numbers: E (inch-series threading), and M (magnetic position sensing).

Model

- ET – Extruded Thruster Extended Shafts; 4 bushings
- ETS – Extruded Thruster Shafts Flush; 2 bushings
- ETD – Extruded Thruster Double-end; Saddle Mount

Bore Size

12 - 12mm
16 - 16mm
20 - 20mm
25 - 25mm
32 - 32mm

ET - 16100 - EK12M

Options U.S. Customary Units

E Inch Series Porting/Mounting
***Standard; included in all model numbers.**

External Bumpers
EB External Bumpers, Retract
EB1 External Bumpers, Extend
EB2 External Bumpers, Both Ends
ETS - EB available only
No Stroke Reduction with Bumpers
Extend Bumpers include One Set of Collars

Shock Absorbers
K_ _ First _ will be: 1-Both Ends, 2-Extend Only, 3-Retract Only
Second _ will be: 1-Light Duty, 2-Medium Duty, 3-Heavy Duty[1]
[1]Not available on 12mm and 16mm bores.
ETS - K3 available only (retract only)
See Minimum Stroke Note in Stroke Table

Magnetic Position Sensing
M MRS Position Sensing
***Standard; included in all model numbers**

Alternate Port Location
P Ports on Top Surface
Must be specified if Option X is ordered

Fluoroelastomer Seals
V High Temperature (0 to 275 deg F)
Maximum Temperature derated when V Option is specified in combination with other options

Ball Bushings
X Ball Bushings and Hardened Shafts
Must specify Option P with X Option

Standard Stroke Lengths 1mm increments to 255mm Exceptions

Bore	ETD	ET with Option X (Ball Bearings)	ET with Option K (Shock Absorbers)	ETD with Option X Only 2 Bushings (not 4) when stroke is less than
	Minimum Stroke Length			
12mm	13.5mm	26mm	N/A	26mm
16mm	16mm	26mm	N/A	26mm
20mm	26mm	26mm	N/A	26mm
25mm	31mm	39mm	16mm	39mm
32mm	33mm	42mm	45mm	42mm

ET and ETS have no stroke minimum.
Short strokes may reduce mounting holes from (4) to (2).

List Prices

Model Type	12mm	16mm	20mm	25mm	32mm
ET (extended shafts, 4 bushings)	$174.75	$189.25	$202.40	$228.30	$300.05
add per 5mm stroke	0.95	1.05	1.10	1.15	1.70
ETS (shafts flush, 2 bushings)	171.40	185.50	198.40	223.75	294.05
add per 5mm stroke	0.90	0.95	1.00	1.05	1.35
ETD (double-end, saddle mount)	192.30	208.15	222.60	251.20	330.00
add per 5mm stroke	0.95	1.05	1.10	1.15	1.70

Options	12mm	16mm	20mm	25mm	32mm
EB (External Bumpers, Retract)	$ 8.20	$ 8.20	$ 10.85	$ 13.45	$ 16.20
EB1 (External Bumpers, Extend	24.10	24.10	29.45	35.35	40.00
EB2 (External Bumpers, Both Ends)	32.10	32.10	40.00	48.65	55.95
K__(Shock Absorbers); Per End	109.95	139.15	155.50	172.85	186.85
V (High Temperature Seals)	13.95	16.55	16.65	19.15	21.80
X (Ball Bushings) ETS	66.55	66.55	79.90	83.15	96.75
X (Ball Bushings) ET and ETD	133.00	133.00	159.60	166.20	193.40

No Charge Options: P
Included as Standard in Base: E, M

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Engineering Specifications

Maximum Operating Pressure: 140 psi (10 bar)
Temperature Range: 15 to 160 degrees F (-10 to 70 degrees C)
Expected Service Life: 1,500 miles (with filtered, lubricated air)
Cylinder Lubrication: PTFE grease

Theoretical Cylinder Forces
FORCE = Power Factor (PF) x Input Pressure
PF x bar = kg; PF x psi = pounds

Bore	Input = PSI		Input = Bar	
	PF Extend	PF Retract	PF Extend	PF Retract
12mm	0.2	0.1	1.1	0.8
16mm	0.3	0.2	2.0	1.5
20mm	0.5	0.4	3.1	2.4
25mm	0.8	0.6	4.9	3.8
32mm	1.2	0.9	8.0	6.0

Tooling Plate Endplay
Maximum Tooling Plate Movement
in Unloaded Condition (values in inches)

ETS; with Standard Bearings

Bore	25mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm	225mm	250mm	275mm
12mm	0.019	0.031	0.042	0.054	0.066	0.078	0.089	0.101	0.113	0.124	0.136
16mm	0.019	0.031	0.042	0.054	0.066	0.078	0.089	0.101	0.113	0.124	0.136
20mm	0.019	0.030	0.042	0.053	0.064	0.075	0.087	0.098	0.109	0.120	0.132
25mm	0.017	0.026	0.035	0.044	0.053	0.062	0.071	0.080	0.089	0.098	0.107
32mm	0.016	0.024	0.032	0.039	0.047	0.055	0.063	0.070	0.078	0.086	0.094

ETS; with Ball Bearings

Bore	25mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm	225mm	250mm	275mm
12mm	0.006	0.010	0.014	0.018	0.022	0.026	0.030	0.034	0.038	0.042	0.046
16mm	0.006	0.010	0.014	0.018	0.022	0.026	0.030	0.034	0.038	0.042	0.046
20mm	0.007	0.011	0.015	0.019	0.023	0.027	0.031	0.035	0.039	0.043	0.047
25mm	0.005	0.008	0.011	0.014	0.016	0.019	0.022	0.025	0.028	0.031	0.033
32mm	0.006	0.009	0.012	0.015	0.018	0.021	0.024	0.027	0.030	0.033	0.037

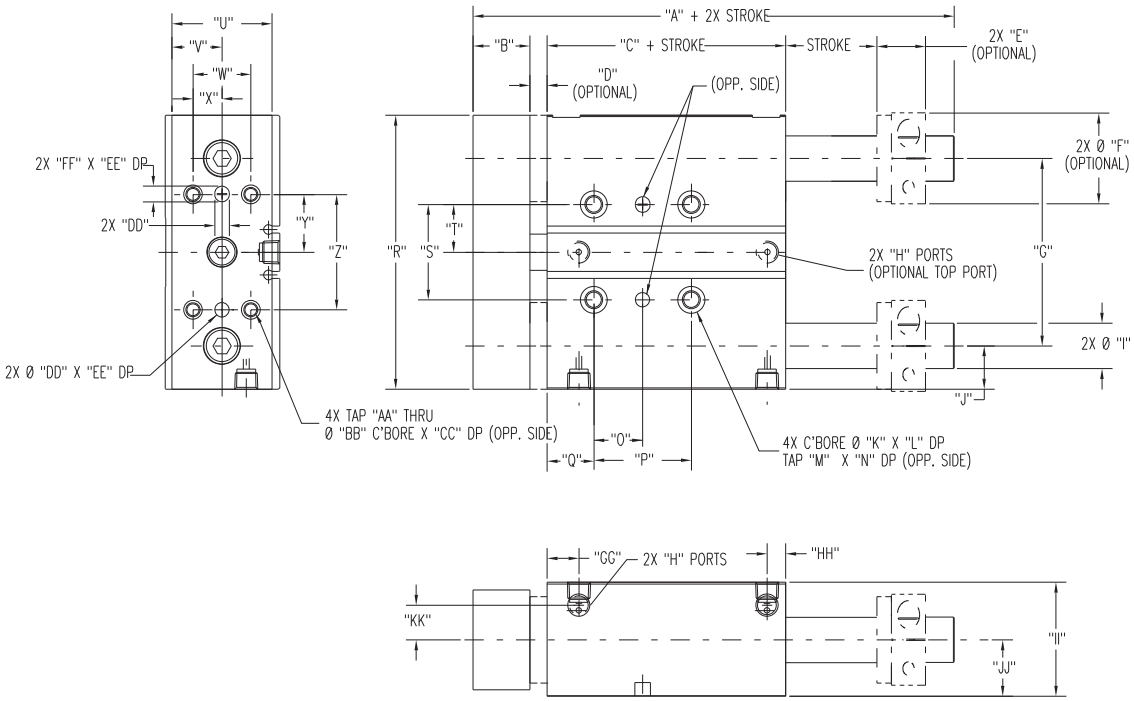
ET and ETD; with Standard Bearings

Bore	25mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm	225mm	250mm	275mm
12mm	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
16mm	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
20mm	0.003	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005
25mm	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.005
32mm	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.006

ET and ETD; with Ball Bearings
Endplay on all ET and ETD Thrusters with Option “X” not to exceed .003"

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions - ET



Bore	A	B	C	D	E	F	G	H	I
12mm	3.20	.55	1.66	.25	0.60	0.95	2.00	#10-32	.39 (10mm)
16mm	3.36	.55	1.81	.25	0.60	0.95	2.00	#10-32	.39 (10mm)
20mm	3.79	.62	1.91	.25	0.68	1.10	2.50	1/8 NPT	.47 (12mm)
25mm	3.90	.79	1.96	.25	0.76	1.34	2.75	1/8 NPT	.63 (16mm)
32mm	4.43	.98	2.21	.25	0.84	1.57	3.25	1/8 NPT	.79 (20mm)

Bore	J	K	L	M	N	O	P	Q	R	S
12mm	.43	.28	.16	#10-32	.50	.44	.88	.63	2.85	1.00
16mm	.43	.28	.16	#10-32	.50	.53	1.06	.65	2.85	1.00
20mm	.50	.38	.21	1/4-20	.63	.63	1.25	.79	3.50	1.39
25mm	.62	.38	.21	1/4-20	.63	.75	1.50	.79	3.99	1.39
32mm	.75	.47	.26	5/16-18	.77	.84	1.69	.85	4.75	1.65

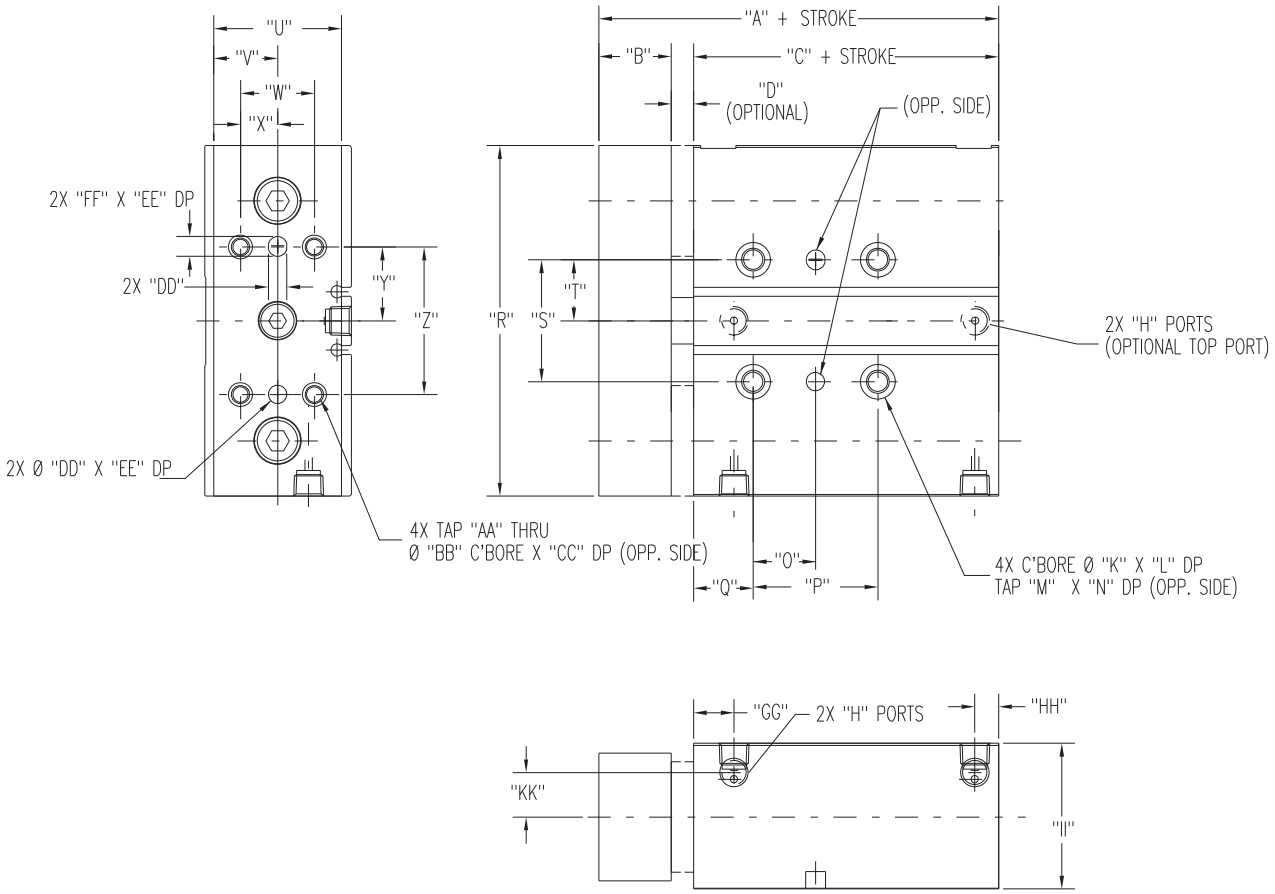
Bore	T	U	V	W	X	Y	Z	AA	BB	CC
12mm	.50	.86	.43	.50	.25	.50	1.00	#8-32	.25	.20
16mm	.50	.86	.43	.63	.31	.63	1.25	#8-32	.25	.20
20mm	.69	1.10	.55	.75	.38	.75	1.50	#10-32	.28	.20
25mm	.69	1.30	.65	.88	.44	.88	1.75	#10-32	.28	.30
32mm	.82	1.73	.87	1.00	.50	1.00	2.00	1/4-20	.33	.44

Bore	DD	EE	FF	GG	HH	II	JJ	KK
12mm	.1565/.1577	.14	.20	.48	.19	.98	.45	.37
16mm	.1878/.1890	.20	.24	.51	.19	1.11	.45	.37
20mm	.1878/.1890	.20	.24	.57	.32	1.36	.57	.49
25mm	.2503/.2515	.24	.28	.57	.32	1.49	.73	.50
32mm	.2503/.2515	.24	.28	.63	.32	1.98	.98	.58

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions - ETS



Bore	A*	B	C	D	H	K	L	M	N	O
12mm	2.21	.55	1.66	.25	#10-32	.28	.16	#10-32	.50	.44
16mm	2.36	.55	1.81	.25	#10-32	.28	.16	#10-32	.50	.53
20mm	2.53	.62	1.91	.25	1/8 NPT	.38	.21	1/4-20	.63	.63
25mm	2.75	.79	1.96	.25	1/8 NPT	.38	.21	1/4-20	.63	.75
32mm	3.19	.98	2.21	.25	1/8 NPT	.47	.26	5/16-18	.77	.84

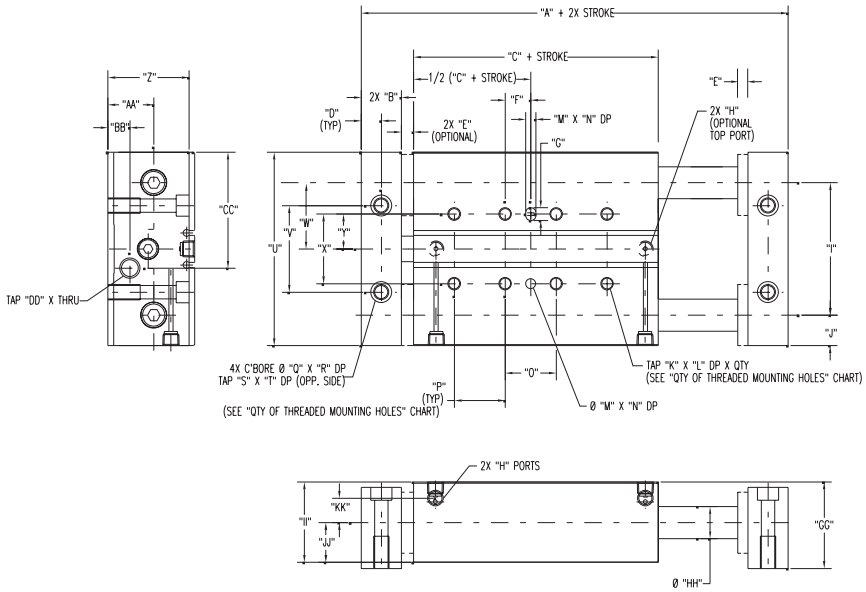
Bore	P	Q	R	S	T	U	V	W	X	Y
12mm	.88	.63	2.85	1.00	.50	.86	.43	.50	.25	.50
16mm	1.06	.65	2.85	1.00	.50	.86	.43	.63	.31	.63
20mm	1.25	.79	3.50	1.39	.69	1.10	.55	.75	.38	.75
25mm	1.50	.79	3.99	1.39	.69	1.30	.65	.88	.44	.88
32mm	1.69	.85	4.75	1.65	.82	1.73	.87	1.00	.50	1.00

Bore	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	KK
12mm	1.00	#8-32	.25	.20	.16	.14	.20	.48	.19	.98	.37
16mm	1.25	#8-32	.25	.20	.19	.20	.24	.51	.19	1.11	.37
20mm	1.50	#10-32	.28	.20	.19	.20	.24	.57	.32	1.36	.49
25mm	1.75	#10-32	.28	.30	.25	.24	.28	.57	.32	1.49	.50
32mm	2.00	1/4-20	.33	.44	.25	.24	.28	.63	.32	1.98	.58

*Optional bumpers (EB) add .25" to overall length

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions - ETD



Bore	A*	B	C	D	E	F	G	H	I
12mm	2.76	.55	1.66	.28	0.25	0.44	.20	#10-32	2.00
16mm	2.91	.55	1.81	.28	0.25	0.53	.24	#10-32	2.00
20mm	3.16	.62	1.91	.31	0.25	0.63	.24	1/8 NPT	2.50
25mm	3.54	.79	1.96	.39	0.25	0.75	.28	1/8 NPT	2.75
32mm	4.18	.98	2.21	.49	0.25	0.85	.28	1/8 NPT	3.25

Bore	J	K	L	M	N	O	P**	Q	R	S
12mm	.43	#10-32	.50	.1565/.1577	.14	.88	.88	.36	.19	1/4-28
16mm	.43	#10-32	.50	.1878//1890	.20	1.06	1.00	.43	.26	5/16-24
20mm	.50	1/4-20	.63	.1878/.1890	.20	1.25	1.25	.43	.27	5/16-24
25mm	.62	1/4-20	.63	.2503/.2515	.24	1.50	1.50	.52	.32	3/8-24
32mm	.75	5/16-18	.77	.2503/.2515	.24	1.69	1.69	.52	.32	3/8-24

Bore	T	U	V	W	X	Y	Z	AA	BB	CC
12mm	.49	2.85	1.31	.66	1.00	.50	.84	.56	.28	1.13
16mm	.50	2.85	1.26	1.00	1.00	.50	.84	.56	.26	1.16
20mm	.68	3.50	1.69	1.25	1.39	.69	1.08	.64	.31	1.31
25mm	.58	3.99	1.76	1.38	1.39	.69	1.28	.95	.35	2.41
32mm	.80	4.75	2.13	1.63	1.65	.83	1.71	1.12	.41	1.83

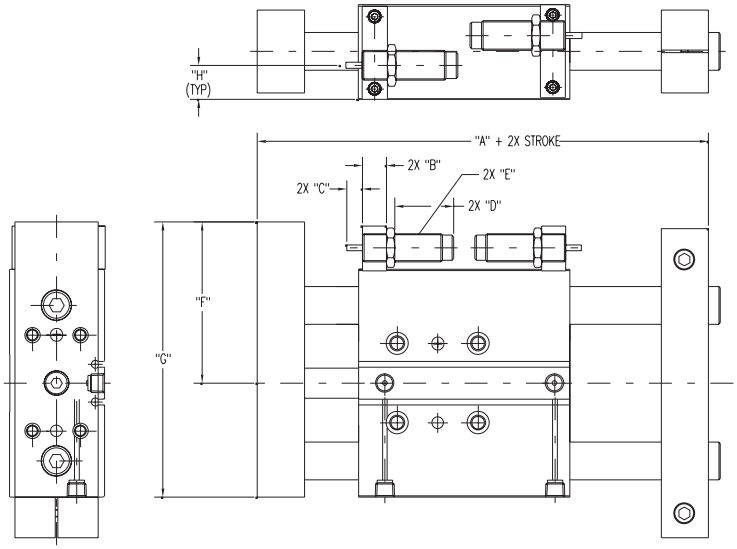
Bore	DD	EE	FF	GG	HH	II	JJ	KK
12mm	M8 x 1.0	.48	.19	1.09	.39 (10mm)	.98	.45	.37
16mm	M8 x 1.0	.51	.19	1.22	.39 (10mm)	1.11	.45	.37
20mm	M10 x 1.0	.57	.32	1.43	.47 (12mm)	1.36	.57	.49
25mm	M12 x 1.0	.57	.32	1.70	.63 (16mm)	1.48	.73	.50
32mm	M14 x 1.0	.63	.32	2.12	.79 (20mm)	1.98	.98	.58

**Quantity of Threaded Mounting Holes

Bore	4	8	12	16	20	24
	For stroke lengths (mm):					
12mm	13.5 - 57.9	58.0 - 102.3	102.4 - 146.8	146.9 - 191.2	191.3 - 235.7	235.8 - 254.0
16mm	16.0 - 69.6	69.7 - 123.6	123.7 - 177.6	177.7 - 231.6	231.7 - 254.0	N/A
20mm	26.0 - 89.3	89.4 - 152.8	152.9 - 216.3	216.4 - 254.0	N/A	N/A
25mm	31.0 - 107.0	107.1 - 183.2	183.3 - 254.0	N/A	N/A	N/A
32mm	33.0 - 118.6	118.7 - 203.6	203.7 - 254.0	N/A	N/A	N/A

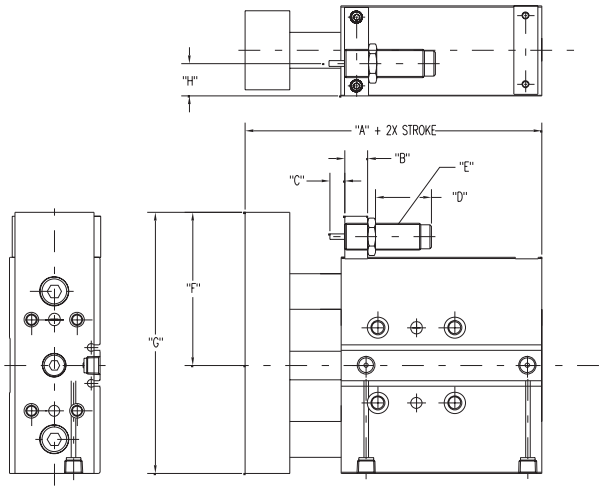
*Optional bumpers (EB, EB1, EB2) add .25" per end to overall length

Dimensions
Options-ET with Shock Absorbers



Bore	A	B	C	D	E	F	G	H
12mm	3.20	0.23	0.22	0.89	M8 x 1.0	1.91	3.34	0.20
16mm	3.36	0.23	0.22	0.89	M8 x 1.0	1.91	3.34	0.33
20mm	3.79	0.31	0.26	0.82	M10 x 1.0	2.42	4.17	0.79
25mm	3.90	0.39	0.40	1.57	M12 x 1.0	2.71	4.70	0.36
32mm	4.43	0.47	0.63	2.77	M14 x 1.0	3.23	5.60	0.56

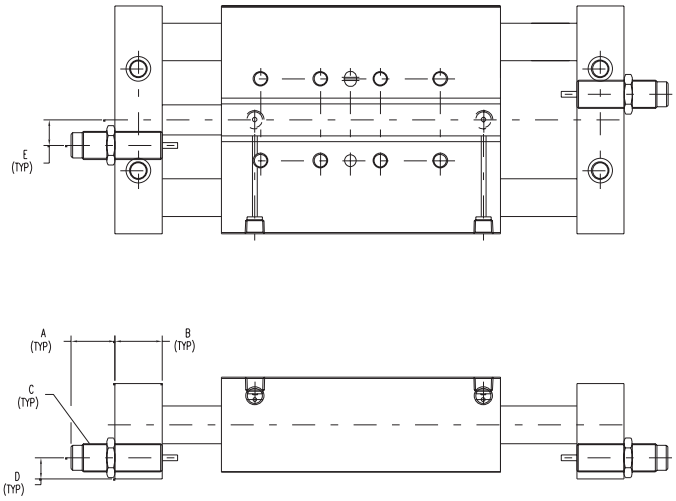
Dimensions
Options-ETS with Shock Absorbers



Bore	A	B	C	D	E	F	G	H
12mm	2.46	0.23	0.22	0.89	M8 x 1.0	1.91	3.34	0.20
16mm	2.61	0.23	0.22	0.89	M8 x 1.0	1.91	3.34	0.33
20mm	2.78	0.31	0.26	0.82	M10 x 1.0	2.42	4.17	0.79
25mm	3.00	0.39	0.40	1.57	M12 x 1.0	2.71	4.70	0.36
32mm	3.44	0.47	0.63	2.77	M14 x 1.0	3.23	5.60	0.56

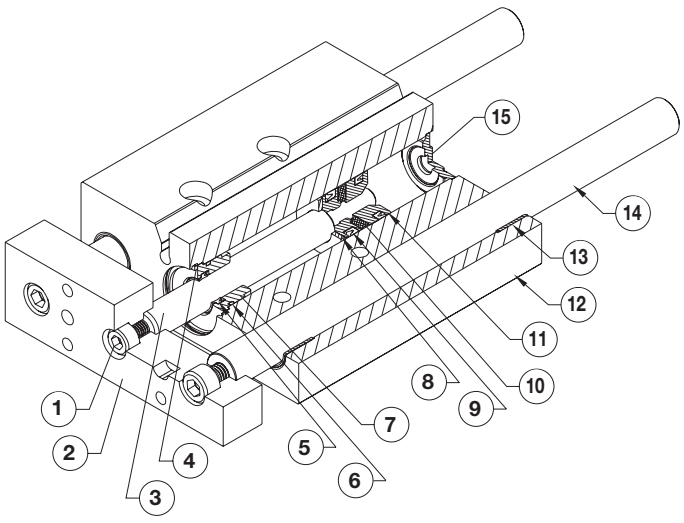
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions
Options-ETD with Shock Absorbers



Bore	A	B	C	D	E
12mm	0.57	0.55	M8 x 1.0	0.28	0.30
16mm	0.57	0.55	M8 x 1.0	0.26	0.27
20mm	0.51	0.62	M10 x 1.0	0.31	0.44
25mm	1.17	0.79	M12 x 1.0	0.35	0.42
32mm	2.25	0.99	M14 x 1.0	0.41	0.55

Components/Materials of Construction

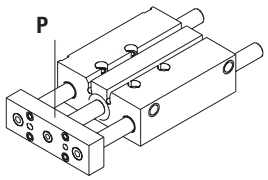


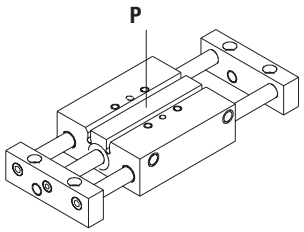
Item #	Description	Material
1	Assembly Bolt	Zinc-Plated Steel
2	Tooling Plate	Anodized Aluminum
3	Piston Rod	Hard Chrome Plated Stainless Steel
4	Retaining Ring	Zinc-Plated Steel
5	Rod Seal	Nitrile (Fluoroelastomer optional)
6	Rod Guide Seal	Nitrile (Fluoroelastomer optional)
7	Rod Guide	Anodized Aluminum
8	Bumper	Urethane
9	Piston Seal	Nitrile (Fluoroelastomer optional)
10	Magnet	Nitrile
11	Piston	Aluminum
12	Body	Anodized Aluminum
13	Guide Bushing	Self-Lubricating Nylon
		Ball Bushings optional
14	Guide Shaft	Stainless Steel
		Case Hardened Steel with X Option
15	Rear Head	Anodized Aluminum

Basic Repair Kit includes: Piston Seals, Rod Seal, and Rod Guide Seal. Specify as K-B-ET- (bore size) - V (if applicable)

Kit	Bore				
	12mm	16mm	20mm	25mm	32mm
K-B-ET-__	$ 9.60	$10.00	$11.00	$11.65	$12.30
K-B-ET-__-V	15.00	17.45	17.75	20.50	24.45

Maximum Side Load





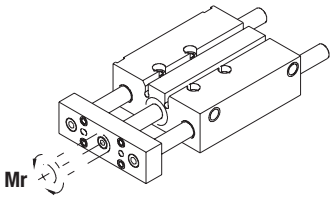
Maximum Load “P” as shown for ET, ETS, ETD
with Standard Bearings (pounds)

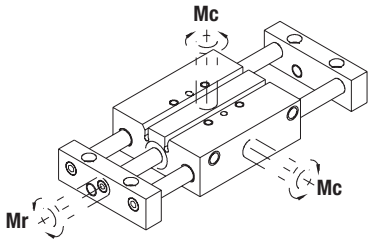
			ETS; by Stroke										
Bore	**ET**	**ETD**	**25mm**	**50mm**	**75mm**	**100mm**	**125mm**	**150mm**	**175mm**	**200mm**	**225mm**	**250mm**	**275mm**
12mm	19	64	3.5	2.2	1.6	1.3	1.0	0.9	0.8	0.7	0.6	0.6	0.5
16mm	19	64	3.5	2.2	1.6	1.3	1.0	0.9	0.8	0.7	0.6	0.6	0.5
20mm	26	92	5.6	3.7	2.8	2.2	1.8	1.6	1.4	1.2	1.1	1.0	0.9
25mm	43	156	11.1	7.5	5.7	4.6	3.8	3.3	2.9	2.6	2.3	2.1	1.9
32mm	68	255	21.5	15.0	11.6	9.4	7.9	6.8	6.0	5.4	4.9	4.4	4.1

Maximum Load “P” as shown for ET, ETS, ETD
with Ball Bearings, Option “X” (pounds)

For Ball Bearing mode, use 2x Load Rating for Standard Bearings in above table.

Maximum Moments





Maximum Radial Moment (Mr) as shown for ET, ETS, ETD
Standard Bearings (inch-pounds)

Standard Bearings

Bore	ET/ETD	ETS
12mm	64	32
16mm	64	32
20mm	115	57
25mm	214	107
32mm	414	207

For Ball Bearing model, use 2x Moment Rating for Standard Bearings in above table.

Maximum Axial (Ma) and Cross (Mc) Moments as shown for ETD
Standard Bearings (inch-pounds)

ETD; by Stroke

Bore	25mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm	225mm	250mm	275mm
12mm	72	104	136	168	200	232	264	296	328	360	392
16mm	77	109	141	173	205	237	269	301	332	365	370
20mm	112	158	203	250	295	341	387	433	478	525	570
25mm	184	262	340	417	495	573	650	729	806	885	960
32mm	309	437	564	690	819	947	1074	1200	1329	1457	1584

For Ball Bearing model, use 2x Moment Rating for Standard Bearings in above table.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

How to Order

The model number of all Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the charts below for an example of model number TE-098-EB1M. This is a 1-1/16" bore, 8" stroke TE series Linear Thruster with extension external bumpers and a magnet for position sensing.

TE - 098 - EB1M

TYPE	
TE	Composite Bearing Thruster
TEF	Position Feedback Thruster (09-70 bores)
TEV	Composite Bearing Thruster with the cylinder omitted

BORE SIZE	
02	9/16"
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"
50	2-1/2"
70	3"

STANDARD STROKE LENGTHS*
1" increments to 6"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"

Stroke lengths beyond maximum are available; the rear of the cylinder must be supported in horizontal applications. Contact Bimba or your local distributor for pricing.

All options listed below are to be alphabetically applied to the last part of your Thruster part number, except the EEx.xx option which is length sensitive and should be listed at the very end of all the options selected. The options are listed below in three categories for improved organization and understanding.

THRUSTER HOUSING OPTIONS	CYLINDER OPTIONS	PFC CYLINDER OPTIONS
D – Dowel pin holes for Transition Plate[2]	B – Cylinder option for internal bumpers[1,5]	L – PFC cylinder option for low friction seals[6]
EB1 – External bumpers, extension (one set) (see page 3.20)	C – Cylinder option for adjustable cushions[1,5]	PC – PFC cylinder option for M8 corded connector[6]
EB2 – External bumpers, both ends (two sets) (see page 3.20)	M – MRS® magnetic position sensing[3]	PA – PFC cylinder option for M8 plug connector[6]
K_ _ – Shock absorbers[4]	N – Cylinder option for low temperature service lubricant and seals[5]	
First _ will be: 1 - Shock both ends	Q – Cylinder option for side ported rear head[5]	
2 - Shock extend only	T1 – Cylinder option for low profile switch track[5]	
3 - Shock retract only	V – Cylinder option for high temperature seals and lubricant[5]	
Second _ will be: 1 - Light shock	EEX.XX – Cylinder and Thruster guide shaft option for extra rod and guide shaft extension[5]	
2 - Standard shock	99 – Cylinder option for oil pre-lubrication[5]	
3 - Heavy shock		
H – Tapped Holes		
P – Mounting plate (includes 12 tapped holes)		
S – Stainless steel tooling plate, shafts and collars[4]		

[1] Internal bumpers and cushions cannot be ordered in combination. Adjustable cushions are not available for 9/16" bore size.

[2] Transition Plate Applications: Option -D must be ordered if dowel pin holes are required. Not available in 2-1/2" and 3" bores with S option. Dowel pin hole locations shown in Appendix.

[3] Hall Effect Switch not available for 9/16" bore size.

[4] Not available in 2-1/2" and 3" bores.

[5] See Original Line catalog section for more details.

[6] See PFC catalog section for more information.

NOTE: TE Series Linear Thruster includes shaft collars only when external bumpers are ordered as an option (see page 3.14). Shaft collars can also be ordered separately as a repair part.

Approximate Power Factors

9/16"	=	0.2
3/4"	=	0.4
1-1/16"	=	0.9
1-1/2"	=	1.7
2"	=	3.1
2-1/2"	=	5.0
3"	=	7.0

For example, a TE-046-CM will exert a force of 0.4 times the air line pressure; a TE-173-M will exert a force of 1.7 times the air pressure, etc.

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List Prices

Basic Model	Base Price by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
TE	$205.55	$222.55	$268.60	$381.30	$564.45	$919.40	$1505.70
Adder per 1" of Stroke	4.00	4.65	5.20	7.30	9.70	8.55	9.20
TEF	N/A	N/A	643.90	756.60	939.75	1294.70	1881.00
Adder per 1" of Stroke	N/A	N/A	20.20	24.65	29.95	31.90	35.75

Consult Bimba or www.bimba.com for TEF and TEV type pricing.

Options	Adders by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
B-Internal Bumpers, Both Ends	$ 4.90	$ 4.90	$ 4.90	$ 6.05	$ 7.65	$ 7.30	$ 9.50
C-Adjustable Cushions, Both Ends	N/A	15.85	17.65	20.60	33.75	40.00	45.40
D-Dowel Pin Holes — Standard Tooling Plate	6.95	8.85	12.75	17.10	17.45	25.15	35.25
D-Dowel Pin Holes — Stainless Steel Tooling Plate	10.40	12.15	20.35	26.40	28.55	N/A	N/A
EB1-External Bumpers, Extension (1 set)	38.00	40.10	44.10	47.95	55.60	96.60	153.55
EB1-with S-Option	54.20	57.20	62.85	68.50	79.45	N/A	N/A
EB2-External Bumpers, Both Ends (2 sets)	67.80	69.90	75.95	81.85	95.10	179.85	287.00
EB2-with S-Option	96.75	99.70	108.45	116.80	135.65	N/A	N/A
H-12 Tapped Holes	7.95	7.95	7.95	9.55	10.90	34.60	49.55
K-Shock Absorbers, Per End	109.95	139.15	155.50	186.85	250.05	N/A	N/A
M-MRS Magnetic Position Sensing	11.35	11.35	14.10	16.95	19.70	18.80	33.35
P-Mounting Plate*	26.70	30.00	36.70	50.10	66.70	109.55	154.45
PA-Plug Connector	N/A	N/A	83.50	83.50	83.50	83.50	83.50
PC-M8 Corded Connector	N/A	N/A	42.85	42.85	42.85	42.85	42.85
S-Stainless Steel Tooling Plate	43.75	48.65	65.60	75.15	139.65	412.90	491.90

**Option P includes 12 tapped holes (option H)*
Consult Bimba or www.bimba.com for pricing on cylinder and PFC cylinder options not shown in this price chart.

Engineering Data

- Rated 250 psi
- Low breakaway friction

Components:

- 303 stainless steel shafts through 2" bore
- Hardchrome plated shafts for 2-1/2" and 3" bores
- Clear anodized aluminum housing and tooling plate
- Plastic composite guide shaft bearings

Cylinder:

- 304 stainless steel body
- High-strength aluminum alloy porting ends
- 303 stainless steel piston rods
- Buna N “U” cup seals
- Sintered bronze rod guide bushing

Options:

- Internal Buna N or external urethane bumpers
- Patented adjustable cushions*
- Buna N magnet for position sensing

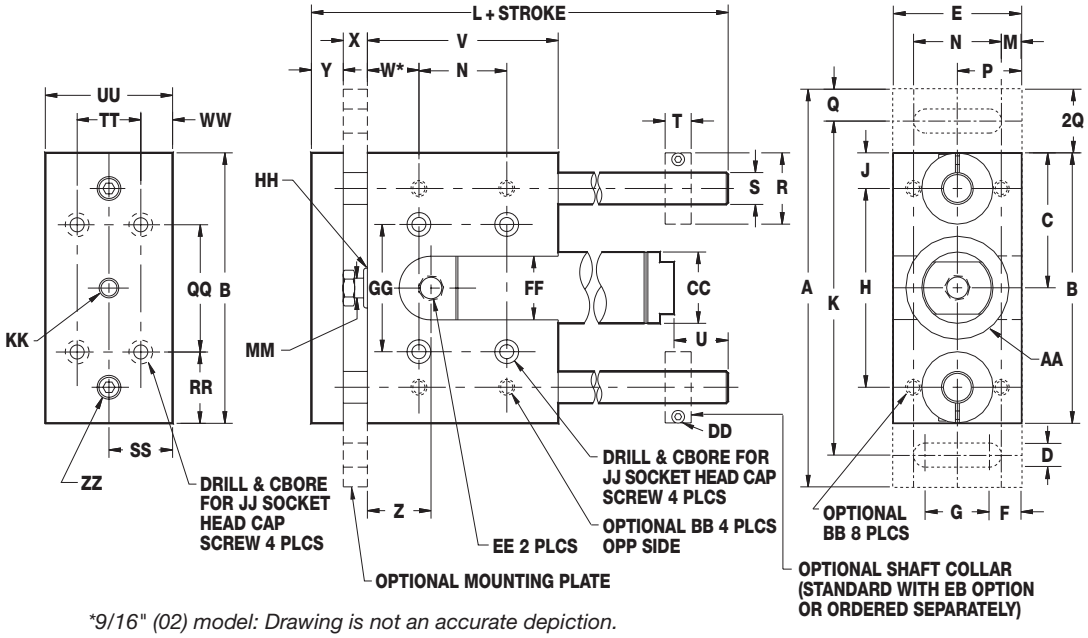
*U.S. Patent nos. 4,794,681 and 4,862,786

Temperature Range:
Buna N seals with a temperature range of -20ºF (-25ºC) to 200ºF (95ºC) are standard in all BIMBA air cylinders. High temperature option V seals rated for higher temperature applications are available. If cylinders are operated at temperatures below 0ºF for extended time periods, special modifications may be required. Special seal materials are available on request.

With -M option: -20ºF to +185ºF (-25ºC to +85ºC).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions (in.)



**9/16" (02) model: Drawing is not an accurate depiction.*

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
9/16" (02)	3.50	2.50	1.25	0.22	1.00	0.31	0.38	1.75	0.38	3.00	3.50	0.12	0.75	0.50	0.25
3/4" (04)	4.50	3.00	1.50	0.25	1.25	0.38	0.50	2.12	0.44	3.75	4.25	0.16	0.94	0.62	0.38
1-1/16" (09)	6.25	4.25	2.12	0.38	2.00	0.50	1.00	3.12	0.56	5.25	5.00	0.31	1.38	1.00	0.50
1-1/2" (17)	7.50	5.50	2.75	0.44	2.50	0.59	1.31	4.00	0.75	6.50	6.38	0.38	1.75	1.25	0.50
2" (31)	8.00	6.00	3.00	0.44	3.00	0.75	1.50	4.25	0.88	7.00	7.12	0.50	2.00	1.50	0.50
2-1/2" (50)	11.50	7.50	3.75	0.69	3.50	0.84	1.81	5.37	1.06	9.50	9.75	0.50	2.50	1.75	1.00
3" (70)	13.00	9.00	4.50	0.81	4.50	1.15	2.19	6.50	1.25	11.00	11.50	0.75	3.00	2.25	1.00

Bore	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE
9/16" (02)	0.88	0.38	0.34	0.60	2.25	1.25	0.25	0.38	0.86	0.75	8-32	0.62	6-32	10-32
3/4" (04)	1.12	0.50	0.41	0.52	2.50	0.78	0.38	0.50	0.85	1.00	10-32	0.81	8-32	1/8 NPT
1-1/16" (09)	1.31	0.62	0.44	0.98	3.00	0.81	0.38	0.62	1.00	1.50	1/4-20	1.12	10-32	1/8 NPT
1-1/2" (17)	1.50	0.75	0.50	1.57	4.00	1.12	0.50	0.75	1.38	2.00	5/16-18	1.56	1/4-28	1/8 NPT
2" (31)	1.62	0.88	0.50	1.07	4.00	1.00	0.75	1.00	1.60	2.25	5/16-18	2.08	1/4-28	1/4 NPT
2-1/2" (50)	1.87	1.13	0.50	2.20	6.00	1.75	0.75	1.25	1.45	3.00	3/8-16	2.62	1/4-28	1/4 NPT
3" (70)	2.25	1.38	0.56	3.73	7.00	2.00	1.00	1.50	1.62	3.50	1/2-13	3.12	1/4-28	3/8 NPT

Bore	FF	GG	HH	JJ	KK	MM	QQ	RR	SS	TT	UU	WW	ZZ
9/16" (02)	0.69	1.00	7/16-20	#8	10-32	0.19	1.25	0.63	0.45	0.60	0.90	0.15	#10-32
3/4" (04)	0.94	1.25	5/8-18	#10	1/4-28	0.25	1.50	0.75	0.58	0.75	1.15	0.20	1/4-20
1-1/16" (09)	1.12	1.88	5/8-18	1/4	5/16-24	0.31	2.00	1.12	0.88	1.00	1.75	0.38	5/16-18
1-1/2" (17)	1.12	2.38	3/4-16	5/16	7/16-20	0.44	3.00	1.25	1.12	1.50	2.25	0.38	3/8-16
2" (31)	1.25	2.70	1-1/4-12	5/16	1/2-20	0.62	3.00	1.50	1.38	2.00	2.75	0.38	3/8-16
2-1/2" (50)	1.50	3.50	1-3/8-12	3/8	1/2-20	0.63	3.75	1.88	1.63	2.25	3.25	0.50	1/2-13
3" (70)	1.75	4.20	1-1/2-12	1/2	5/8-18	0.75	4.50	2.25	2.00	2.75	4.00	0.63	3/4-16

Linear Thrusters ordered with adjustable cushions incorporate a side port on rear of cylinder.

Linear Thrusters ordered with PFC Technology (model TEF) include a sideported, extended rearhead. Dimension X will also grow as much as 3/16". Contact Technical Assistance for details.

Repair Parts

Add the bore size to the basic model number shown below. For the Basic Shaft, specify the stroke length in inches and indicate options -EB1 or -EB2 as applicable. For example, shaft collars for a 1-1/16" bore Linear Thruster Series TE would be SCTE-09.

The Basic Shaft for the same thruster with 8-1/2" stroke would be BSTE-09-8.5. Cylinder repair part number corresponds to number shown on cylinder shipped with Linear Thruster.

Part #	Description	Quantity Used Per Cylinder
BTE- ☐	Shaft Bearing	4
BSTE- ☐	-X.XX Basic Shaft	2
EBTE- ☐	External Bumper	2 or 4
LT-Bore Stroke-D	Cylinder	1
LT-Bore Stroke-DB	Cylinder	1
LT-Bore Stroke-DM*	Cylinder	1
LT-Bore Stroke-DBM*	Cylinder	1
LTC-Bore Stroke-D	Cylinder	1
LTC-Bore Stroke-DM	Cylinder	1
SCTE- ☐	Shaft Collars	2 or 4
TNTE- ☐	Cylinder Lock Nut	1

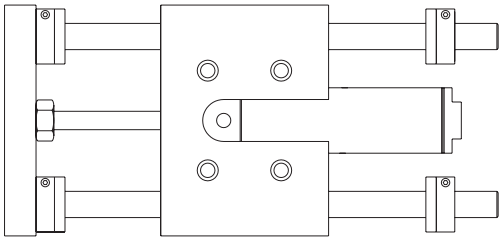
**For 1-1/16" bore use LTE prefix.*

Note: Part numbers listed are individual components. Order the quantity needed to be replaced.

External Bumpers

Use and Dimensional Changes

Guide Shaft Extension with Bumpers (in.)	
Bore Size	Length Adder
9/16"	0.5
3/4"	0.5
1-1/16"	0.63
1-1/2"	0.75
2"	0.875
2-1/2"	1.38
3"	1.50

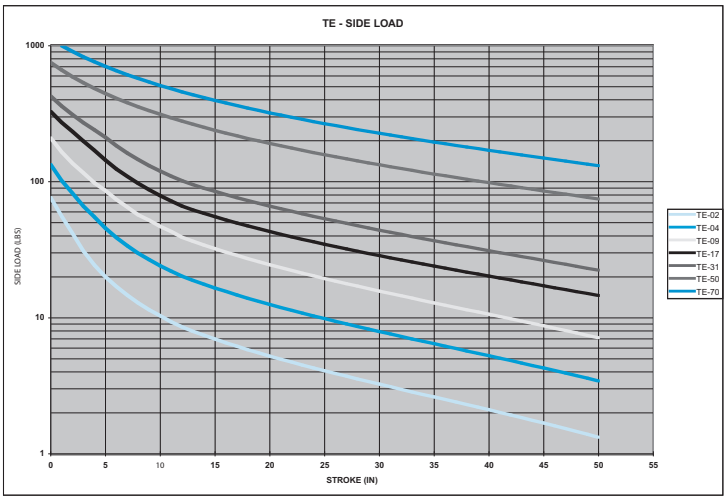


Retraction Stroke Reduction with Bumpers (in.)		
Bore Size	Reduction	
	Standard	with Mounting Plate Option
9/16"	0.34	0.59
3/4"	0.28	0.66
1-1/16"	0.31	0.69
1-1/2"	0.25	0.75
2"	0	0.75
2-1/2"	.25	1.06
3"	.31	1.31

The stroke can be adjusted with external urethane bumpers. These are available on one or both ends (-EB1 and -EB2 options). They are 1/4" thick through 2" bore, 1/2" for 2-1/2" bore, and 3/4" for 3" bore and fit over the guide shafts at the ends of the housing (see illustration). Shaft collars are supplied with each set of bumpers to eliminate movement possible with high loads and velocities. Thus, with -EB1 option, there will be a total of two collars; with -EB2 option, there will be four shaft collars. **Guide shafts are lengthened so stroke on extension isn't affected; however, bumpers reduce the retraction stroke (see charts above).** Higher loads and velocities may dictate the use of external means of deceleration such as shock absorbers.

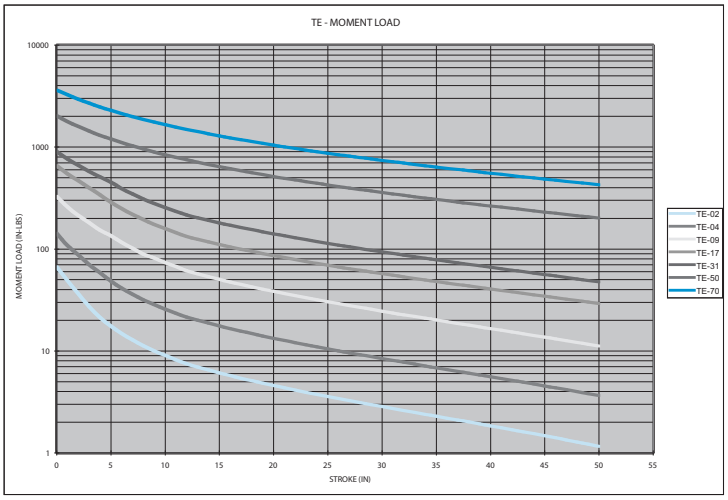
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

TE - Maximum Side Loads (lbs.)



	TE-02	TE-04	TE-09	TE-17	TE-31	TE-50	TE-70
0	76.52	133.95	210.00	328.24	425.18	752.44	1000.00
1	55.80	102.00	165.60	273.00	359.17	661.79	999.87
2	41.50	82.00	136.00	233.00	310.00	590.30	905.30
3	31.00	66.00	116.00	199.00	271.00	532.45	826.67
4	24.40	55.02	98.00	170.00	240.00	484.67	760.25
5	19.96	45.50	86.00	144.00	211.67	444.52	703.38
6	16.94	38.78	74.00	124.00	183.91	410.31	654.14
7	14.65	33.77	65.00	109.00	162.33	380.80	611.07
8	12.83	29.78	57.00	97.00	145.22	355.07	573.07
9	11.44	26.71	52.00	87.00	131.26	332.44	539.30
10	10.32	24.11	47.00	79.00	119.66	312.38	509.07
11	9.30	21.99	43.00	72.00	109.74	294.46	481.85
12	8.54	20.16	39.00	66.00	101.38	278.35	457.20
13	7.95	18.81	36.46	62.03	95.03	263.80	434.78
14	7.43	17.61	34.20	58.48	89.66	250.57	414.28
15	6.96	16.53	32.17	55.27	84.80	238.50	395.47
16	6.54	15.57	30.35	52.36	80.39	227.44	378.15
17	6.16	14.70	28.69	49.71	76.36	217.25	362.13
18	5.82	13.90	27.18	47.28	72.67	207.85	347.28
19	5.51	13.18	25.79	45.05	69.26	199.14	333.46
20	5.22	12.51	24.52	42.99	66.12	191.04	320.58
21	4.95	11.89	23.34	41.08	63.20	183.49	308.53
22	4.71	11.32	22.25	39.31	60.49	176.43	297.23
23	4.48	10.79	21.23	37.66	57.96	169.82	286.62
24	4.27	10.30	20.29	36.12	55.59	163.62	276.63
25	4.07	9.84	19.40	34.67	53.37	157.77	267.21
26	3.89	9.41	18.57	33.31	51.28	522.26	258.30
27	3.71	9.00	17.79	32.03	49.32	147.06	249.87
28	3.55	8.62	17.06	30.83	47.46	142.13	241.87
29	3.39	8.25	16.36	29.69	45.70	137.46	234.28
30	3.25	7.91	15.70	28.61	44.04	133.02	227.05
31	3.11	7.59	15.08	27.58	42.46	128.79	220.17
32	2.97	7.28	14.48	26.61	40.96	124.77	213.60
33	2.85	6.98	13.92	25.68	39.52	120.93	207.32
34	2.73	6.70	13.38	24.79	38.16	117.27	201.32
35	2.61	6.43	12.86	23.95	36.85	113.76	195.58
36	2.50	6.18	12.37	23.14	35.60	110.41	190.07
37	2.40	5.93	11.90	22.37	34.41	107.19	184.78
38	2.29	5.69	11.44	21.63	33.26	104.10	179.71
39	2.20	5.47	11.01	20.91	32.16	101.13	174.82
40	2.10	5.25	10.59	20.23	31.10	98.27	170.12
41	2.01	5.04	10.19	19.57	30.08	95.52	165.60
42	1.93	4.83	9.80	18.94	29.10	92.87	161.23
43	1.84	4.64	9.42	18.33	28.15	90.32	157.01
44	1.76	4.45	9.06	17.74	27.24	87.85	152.94
45	1.68	4.26	8.71	17.17	26.35	85.47	149.01
46	1.60	4.09	8.37	16.61	25.50	83.16	145.20
47	1.53	3.91	8.04	16.08	24.67	80.93	141.52
48	1.46	3.75	7.73	15.56	23.87	78.77	137.95
49	1.39	3.58	7.42	15.06	23.09	76.67	134.49
50	1.32	3.43	7.12	14.58	22.34	74.64	131.13

TE - Maximum Moments (in.-lbs.)



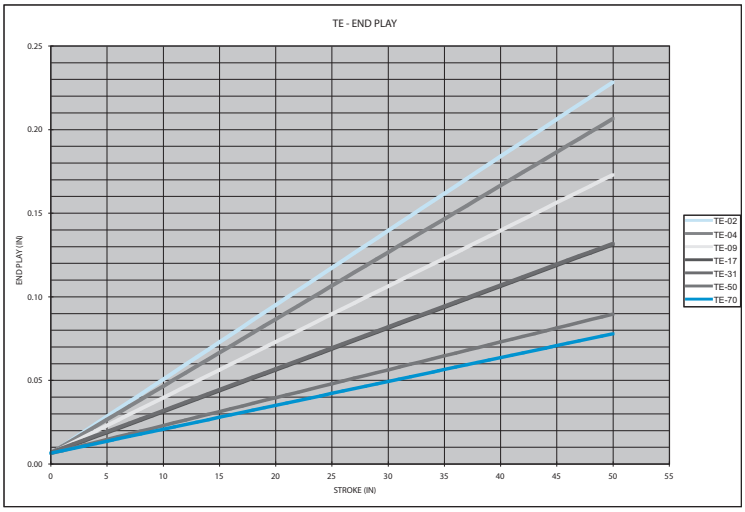
Frictional characteristics of TE Series Linear Thrusters deteriorate as stroke length increases.

Note: Static load data represented

	TE-02	TE-04	TE-09	TE-17	TE-31	TE-50	TE-70
0	66.96	142.32	328.12	656.48	903.51	2022.18	3623.75
1	48.83	108.38	258.75	546.00	763.24	1778.57	3249.57
2	36.31	87.13	212.50	466.00	658.75	1586.43	2942.22
3	27.13	70.13	181.25	398.00	575.88	1430.96	2686.67
4	21.35	58.46	153.13	340.00	510.00	1302.54	2470.80
5	17.47	48.34	134.38	288.00	449.80	1194.65	2285.99
6	14.82	41.20	115.63	248.00	390.81	1102.70	2125.94
7	12.82	35.88	101.56	218.00	344.95	1023.39	1985.97
8	11.23	31.64	89.06	194.00	308.59	954.26	1862.49
9	10.01	28.38	81.25	174.00	278.93	893.44	1752.72
10	9.03	25.62	73.44	158.00	254.28	839.52	1654.47
11	8.14	23.36	67.19	144.00	233.20	791.36	1566.00
12	7.47	21.42	60.94	132.00	215.43	748.08	1485.90
13	6.95	19.98	56.97	124.07	201.93	708.96	1413.03
14	6.50	18.71	53.44	116.95	190.52	673.41	1346.42
15	6.09	17.57	50.27	110.54	180.20	640.97	1285.29
16	5.72	16.54	47.41	104.72	170.83	611.24	1228.98
17	5.39	15.62	44.82	99.42	162.27	583.87	1176.92
18	5.09	14.77	42.46	94.56	154.41	558.60	1128.65
19	4.82	14.00	40.30	90.10	147.18	535.18	1083.75
20	4.57	13.29	38.31	85.98	140.50	513.41	1041.87
21	4.34	12.64	36.47	82.17	134.30	493.13	1002.71
22	4.12	12.03	34.76	78.62	128.54	474.16	966.01
23	3.92	11.47	33.18	75.32	123.16	456.40	931.52
24	3.74	10.94	31.70	72.23	118.13	439.72	899.05
25	3.56	10.45	30.32	69.34	113.42	424.01	868.43
26	3.40	9.99	29.02	66.62	108.98	409.21	839.48
27	3.25	9.56	27.80	64.07	104.80	395.21	812.08
28	3.10	9.15	26.65	61.65	100.86	381.97	786.09
29	2.97	8.77	25.56	59.37	97.12	369.41	761.40
30	2.84	8.41	24.53	57.21	93.59	357.48	737.91
31	2.72	8.06	23.56	55.16	90.23	346.14	715.54
32	2.60	7.73	22.63	53.21	87.03	335.33	694.19
33	2.49	7.42	21.74	51.36	83.99	325.01	673.80
34	2.39	7.12	20.90	49.59	81.09	315.16	654.30
35	2.29	6.83	20.10	47.90	78.31	305.74	635.63
36	2.19	6.56	19.33	46.28	75.66	296.71	617.73
37	2.10	6.30	18.59	44.74	73.12	288.06	600.55
38	2.01	6.05	17.88	43.25	70.68	279.76	584.05
39	1.92	5.81	17.20	41.83	68.34	271.78	568.18
40	1.84	5.58	16.55	40.46	66.09	264.10	552.90
41	1.76	5.35	15.92	39.14	63.92	256.71	538.18
42	1.68	5.14	15.31	37.87	61.83	249.59	523.99
43	1.61	4.93	14.73	36.65	59.82	242.73	510.30
44	1.54	4.73	14.16	35.47	57.88	236.09	497.07
45	1.47	4.53	13.61	34.33	56.00	229.69	484.28
46	1.40	4.34	13.08	33.23	54.19	223.49	471.91
47	1.34	4.16	12.57	32.16	52.43	217.50	459.93
48	1.28	3.98	12.07	31.13	50.73	211.69	448.33
49	1.21	3.81	11.59	30.12	49.08	206.06	437.08
50	1.15	3.64	11.12	29.15	47.47	200.60	426.16

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

TE - Tooling Plate End Play (in.)



	TE-02	TE-04	TE-09	TE-17	TE-31	TE-50	TE-70
0	0.006	0.007	0.006	0.006	0.007	0.006	0.006
1	0.011	0.011	0.010	0.009	0.009	0.008	0.008
2	0.015	0.015	0.013	0.011	0.012	0.010	0.009
3	0.019	0.019	0.016	0.014	0.014	0.011	0.011
4	0.024	0.023	0.020	0.016	0.017	0.013	0.012
5	0.028	0.027	0.023	0.019	0.019	0.015	0.014
6	0.033	0.031	0.026	0.021	0.022	0.016	0.015
7	0.037	0.035	0.030	0.024	0.024	0.018	0.016
8	0.042	0.039	0.033	0.026	0.027	0.020	0.018
9	0.046	0.043	0.036	0.029	0.029	0.021	0.019
10	0.051	0.047	0.040	0.031	0.032	0.023	0.021
11	0.055	0.051	0.043	0.034	0.034	0.025	0.022
12	0.059	0.055	0.046	0.036	0.037	0.026	0.024
13	0.064	0.059	0.050	0.039	0.039	0.028	0.025
14	0.068	0.063	0.053	0.041	0.042	0.030	0.026
15	0.073	0.067	0.056	0.044	0.044	0.031	0.028
16	0.077	0.071	0.060	0.046	0.047	0.033	0.029
17	0.082	0.075	0.063	0.049	0.049	0.035	0.031
18	0.086	0.079	0.066	0.051	0.052	0.036	0.032
19	0.091	0.083	0.070	0.054	0.054	0.038	0.034
20	0.095	0.087	0.073	0.056	0.057	0.040	0.035
21	0.099	0.091	0.076	0.059	0.059	0.041	0.036
22	0.104	0.095	0.080	0.061	0.062	0.043	0.038
23	0.108	0.099	0.083	0.064	0.064	0.045	0.039
24	0.113	0.103	0.086	0.066	0.067	0.046	0.041
25	0.117	0.107	0.090	0.069	0.069	0.048	0.042
26	0.122	0.111	0.093	0.071	0.072	0.050	0.044
27	0.126	0.115	0.096	0.074	0.074	0.051	0.045
28	0.131	0.119	0.100	0.076	0.077	0.053	0.046
29	0.135	0.123	0.103	0.079	0.079	0.055	0.048
30	0.139	0.127	0.106	0.081	0.082	0.056	0.049
31	0.144	0.131	0.110	0.084	0.084	0.058	0.051
32	0.148	0.135	0.113	0.086	0.087	0.060	0.052
33	0.153	0.139	0.116	0.089	0.089	0.061	0.054
34	0.157	0.143	0.120	0.091	0.092	0.063	0.055
35	0.162	0.147	0.123	0.094	0.094	0.065	0.056
36	0.166	0.151	0.126	0.096	0.097	0.066	0.058
37	0.171	0.155	0.130	0.099	0.099	0.068	0.059
38	0.175	0.159	0.133	0.101	0.102	0.070	0.061
39	0.179	0.163	0.136	0.104	0.104	0.071	0.062
40	0.184	0.167	0.140	0.106	0.107	0.073	0.064
41	0.188	0.171	0.143	0.109	0.109	0.075	0.065
42	0.193	0.175	0.146	0.111	0.112	0.076	0.066
43	0.197	0.179	0.150	0.114	0.114	0.078	0.068
44	0.202	0.183	0.153	0.116	0.117	0.080	0.069
45	0.206	0.187	0.156	0.119	0.119	0.081	0.071
46	0.211	0.191	0.160	0.121	0.122	0.083	0.072
47	0.215	0.195	0.163	0.124	0.124	0.085	0.074
48	0.219	0.199	0.166	0.126	0.127	0.086	0.075
49	0.224	0.203	0.170	0.129	0.129	0.088	0.076
50	0.228	0.207	0.173	0.131	0.132	0.090	0.078

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

How to Order

The model number of all Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the charts below for an example of model number T-046-CM. This is a 3/4" bore, 6" stroke Linear Thruster with adjustable cushions and a magnet for position sensing.

T - 046 - CM

TYPE	
T	Ball Bearing Thruster
TF	Position Feedback, Ball Bearing Thruster (09-70 bores)
TV	Ball Bearing Thruster with the cylinder omitted

BORE SIZE	
02	9/16"
04	3/4"
09	1-1/16"
17	1-1/2"
31	2"
50	2-1/2"
70	3"

STANDARD STROKE LENGTHS*
1" increments to 6"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"
1" increments to 12"

**Stroke lengths beyond maximum are available; the rear of the cylinder must be supported in horizontal applications.*

All options listed below are to be alphabetically applied to the last part of your Thruster part number, except the EEx.xx option which is length sensitive and should be listed at the very end of all the options selected. The options are listed below in three categories for improved organization and understanding.

THRUSTER HOUSING OPTIONS	CYLINDER OPTIONS	PFC CYLINDER OPTIONS
D – Dowel pin holes for Transition Plate[2] EB1 – External bumpers, extension (one set) (see page 3.20) EB2 – External bumpers, both ends (two sets) (see page 3.20) K_ _ – Shock absorbers[4] First _ will be: 1 - Shock both ends 2 - Shock extend only 3 - Shock retract only Second _ will be: 1 - Light shock 2 - Standard shock 3 - Heavy shock NP – No mounting plate S – Stainless steel tooling plate, shafts and collars[4]	B – Cylinder option for internal bumpers[1,5] C – Cylinder option for adjustable cushions[1,5] M – MRS® magnetic position sensing[3] N – Cylinder option for low temperature service lubricant and seals[5] Q – Cylinder option for side ported rear head[5] T1 – Cylinder option for low profile switch track[5] V – Cylinder option for high temperature seals and lubricant[5] EEX.XX – Cylinder and Thruster guide shaft option for extra rod and guide shaft extension[5] 99 – Cylinder option for oil pre-lubrication[5]	L – PFC cylinder option for low friction seals[6] PC – PFC cylinder option for M8 corded connector[6] PA – PFC cylinder option for M8 plug connector[6]

[1] Internal bumpers and cushions cannot be ordered in combination. Adjustable cushions are not available for 9/16" bore size.

[2] Transition Plate Applications: Option -D must be ordered if dowel pin holes are required. Not available in 2-1/2" and 3" bores with S option. Dowel pin hole locations shown in Appendix.

[3] Hall Effect Switch not available for 9/16" bore size.

[4] Not available in 2-1/2" and 3" bores.

[5] See Original Line catalog section for more details.

[6] See PFC catalog section for more information.

Approximate Power Factors

9/16"	=	0.2
3/4"	=	0.4
1-1/16"	=	0.9
1-1/2"	=	1.7
2"	=	3.1
2-1/2"	=	5.0
3"	=	7.0

For example, a T-046-CM will exert a force of 0.4 times the air line pressure; a T-173-M will exert a force of 1.7 times the air pressure, etc.

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List Prices

Basic Model	Base Price by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
T	$362.55	$404.25	$423.30	$597.00	$828.90	$1632.60	$3093.75
Adder per 1" of Stroke	4.75	4.75	4.95	7.05	7.80	8.55	9.95
TF	N/A	N/A	798.60	972.30	1204.20	2007.90	3469.05
Adder per 1" of Stroke	N/A	N/A	19.95	24.40	28.05	31.90	36.50

Consult Bimba or www.bimba.com for TF and TV type pricing.

Options	Adders by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
B-Internal Bumpers, Both Ends	$ 4.90	$ 4.90	$ 4.90	$ 6.05	$ 7.65	$ 7.30	$ 9.50
C-Adjustable Cushions, Both Ends	N/A	15.85	17.65	20.60	33.75	40.00	45.40
D-Dowel Pin Holes — Standard Tooling Plate	6.95	8.85	12.75	17.10	17.45	25.15	35.25
D-Dowel Pin Holes — Stainless Steel Tooling Plate	10.40	12.15	20.35	26.40	28.55	N/A	N/A
EB1-External Bumpers, Extension (1 set)	29.95	29.95	32.10	34.00	39.55	83.05	141.85
EB1-with S-Option	42.45	42.45	46.70	55.20	67.80	N/A	N/A
EB2-External Bumpers, Both Ends (2 sets)	59.90	59.90	64.00	67.80	78.95	152.60	268.90
EB2-with S-Option	84.70	84.70	93.25	110.10	135.50	128.95	128.95
K-Shock Absorbers, Per End	109.95	139.15	155.50	186.85	250.05	N/A	N/A
M-MRS Magnetic Position Sensing	11.35	11.35	14.10	16.95	19.70	18.80	33.35
NP-No Mounting Plate (Deduct from Price)	(6.45)	(7.80)	(12.10)	(18.40)	(34.45)	(62.05)	(120.55)
PA-Plug Connector	N/A	N/A	83.50	83.50	83.50	83.50	83.50
PC-M8 Corded Connector	N/A	N/A	42.85	42.85	42.85	42.85	42.85
S-Stainless Steel Tooling Plate, Shafts and Collars (Base Price)	99.40	134.25	156.85	221.70	342.15	N/A	N/A
Adder per inch of stroke when S option is ordered	7.40	7.65	8.30	9.80	10.95	N/A	N/A

Consult Bimba or www.bimba.com for pricing on cylinder and PFC cylinder options not shown in this price chart.

Engineering Data

- Rated 250 psi
- Low breakaway friction

Components:

- Case hardened steel shafts
- Steel tooling plate and collars
- Black anodized aluminum housing and mounting plate
- Precision recirculating ball bearings

Cylinder:

- 304 stainless steel body
- High-strength aluminum alloy porting ends
- 303 stainless steel piston rods
- Buna N “U” cup seals
- Sintered bronze rod guide bushing

Options:

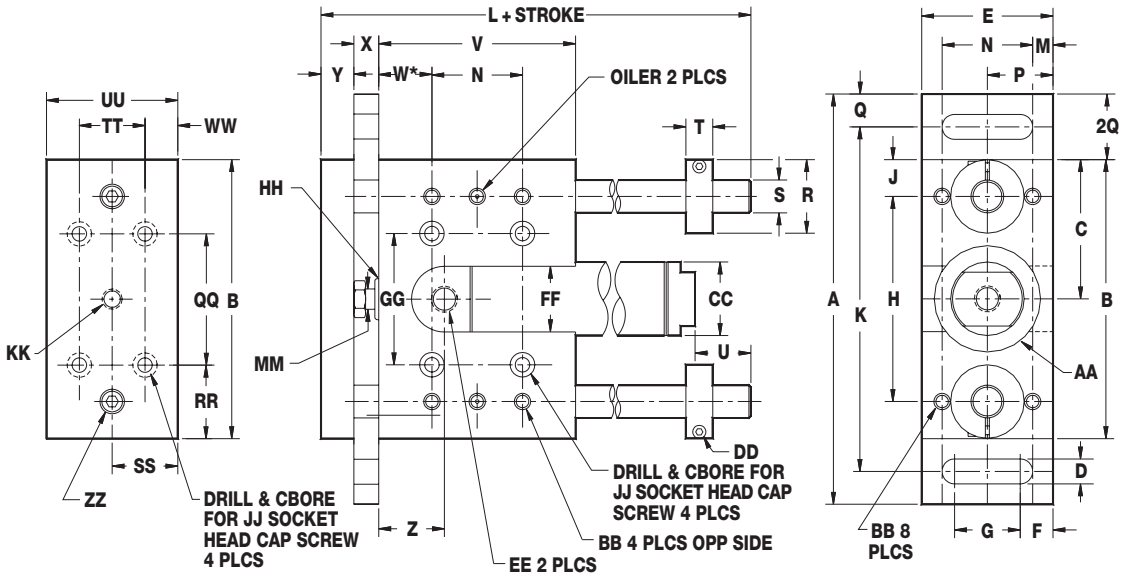
- Internal Buna N or external urethane bumpers
- Patented adjustable cushions*
- Buna N magnet for position sensing

Temperature Range:
Buna N seals with a temperature range of -20ºF (-25ºC) to 200ºF (95ºC) are standard in all BIMBA air cylinders. High temperature option V seals rated for higher temperature applications are available. If cylinders are operated at temperatures below 0ºF for extended time periods, special modifications may be required. Special seal materials are available on request. With -M option: -20ºF to +185ºF (-25ºC to +85ºC).

Lubrication:
The two spring-loaded oiler ports on the housing face should receive several drops of medium to heavy inhibited hydraulic or general purpose oil every 100 hours of operation. For applications that involve rapid cycling, oil these ports more often.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions



**9/16" (02) model: Drawing is not an accurate depiction.*

Bore	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
9/16" (02)	3.50	2.50	1.25	0.22	1.00	0.31	0.38	1.75	0.38	3.00	3.50	0.12	0.75	0.50	0.25	0.62
3/4" (04)	4.50	3.00	1.50	0.25	1.25	0.38	0.50	2.12	0.44	3.75	4.12	0.16	0.94	0.62	0.38	0.88
1-1/16" (09)	6.25	4.25	2.12	0.38	2.00	0.50	1.00	3.12	0.56	5.25	4.75	0.31	1.38	1.00	0.50	1.12
1-1/2" (17)	7.50	5.50	2.75	0.44	2.50	0.59	1.31	4.00	0.75	6.50	6.25	0.38	1.75	1.25	0.50	1.31
2" (31)	9.50	7.00	3.50	0.56	4.00	1.22	1.56	5.00	1.00	8.25	7.00	0.94	2.12	2.00	0.63	1.50
2-1/2" (50)	12.50	8.50	4.25	0.63	4.50	1.25	2.00	6.25	1.13	10.50	9.50	0.94	2.63	2.25	1.00	1.75
3" (70)	15.00	11.00	5.50	0.81	6.00	1.41	3.19	8.00	1.50	13.00	11.50	1.00	4.00	3.00	1.00	2.06

Bore	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
9/16" (02)	0.25	0.28	0.67	2.25	1.25	0.25	0.31	0.86	0.75	8-32	0.62	4-40	10-32	0.69
3/4" (04)	0.38	0.34	0.51	2.50	0.78	0.38	0.38	0.85	0.94	10-32	0.81	6-32	1/8 NPT	0.94
1-1/16" (09)	0.50	0.41	0.85	3.00	0.81	0.38	0.50	1.00	1.62	1/4-20	1.12	8-32	1/8 NPT	1.12
1-1/2" (17)	0.62	0.44	1.44	4.00	1.12	0.50	0.75	1.50	2.12	5/16-18	1.56	10-32	1/8 NPT	1.12
2" (31)	0.75	0.50	0.95	4.00	0.94	0.75	1.00	1.60	3.00	3/8-16	2.08	1/4-28	1/4 NPT	1.25
2-1/2" (50)	1.00	0.50	2.92	6.00	1.69	0.75	1.25	1.48	3.50	3/8-16	2.62	1/4-28	1/4 NPT	1.25
3" (70)	1.25	0.50	3.75	7.00	1.50	1.00	1.50	1.88	4.63	1/2-13	3.12	1/4-28	3/8 NPT	1.25

Bore	GG	HH	JJ	KK	MM	QQ	RR	SS	TT	UU	WW	ZZ
9/16" (02)	1.00	7/16-20	#8	10-32	0.19	1.25	0.62	0.50	0.60	1.00	0.20	N/A
3/4" (04)	1.25	5/8-18	#10	1/4-28	0.25	1.50	0.75	0.62	0.75	1.25	0.25	10-32
1-1/16" (09)	1.88	5/8-18	1/4	5/16-24	0.31	2.00	1.12	1.00	1.00	2.00	0.50	1/4-20
1-1/2" (17)	2.38	3/4-16	5/16	7/16-20	0.437	3.00	1.25	1.25	1.50	2.50	0.50	3/8-16
2" (31)	3.25	1-1/4-12	3/8	1/2-20	0.625	4.00	1.50	1.50	2.00	3.00	0.50	3/8-16
2-1/2" (50)	4.10	1-3/8-12	3/8	1/2-20	0.63	4.75	1.76	2.00	3.00	4.00	0.50	1/2-13
3" (70)	5.25	1-1/2-12	1/2	5/8-18	0.75	6.00	2.50	2.00	3.00	4.00	0.50	3/4-16

Linear Thrusters ordered with adjustable cushions incorporate a side port on rear of cylinder.

Linear Thrusters ordered with PFC Technology (model TEF) include a sideported, extended rearhead. Dimension X will also grow as much as 3/16". Contact Technical Assistance for details.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

External Bumpers

Use and Dimensional Changes

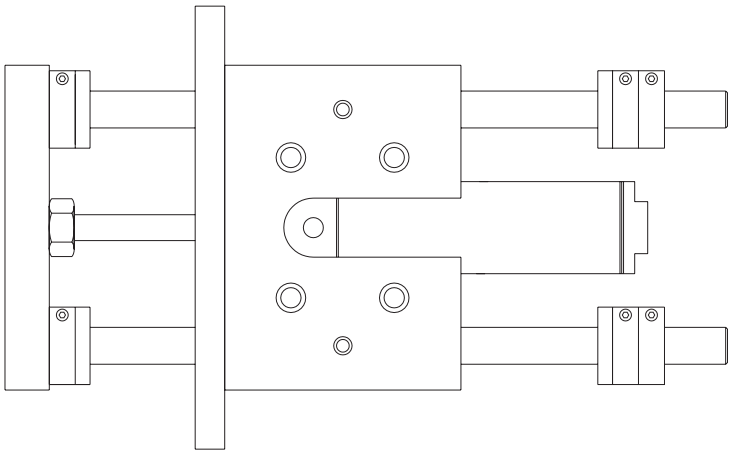
The stroke can be adjusted with external urethane bumpers. These are available on one or both ends (-EB1 and -EB2 options). They are 1/4" thick through 2" bore, 1/2" for 2-1/2" bore, and 3/4" for 3" bore and fit over the guide shafts at the ends of the housing (see illustration). Shaft collars are supplied with each set of bumpers to eliminate movement possible with high loads and velocities. Thus, with -EB1 option, there will be a total of four collars; with -EB2 option, there will be six shaft collars. Flat stainless steel washers are also installed to protect the shaft seals from impact damage. **Guide shafts are lengthened so stroke on extension isn't affected; however, bumpers reduce the retraction stroke if the mounting plate is used in the shipped position (see charts above).** Higher loads and velocities may dictate the use of external means of deceleration such as shock absorbers.

Guide Shaft Extension with Bumpers (in.)	
Bore Size	Length Adder
9/16"	0.5
3/4"	0.5
1-1/16"	0.63
1-1/2"	0.75
2"	0.875
2-1/2"	1.38
3"	1.50

Retraction Stroke Reduction with Bumpers (in.)		
Bore Size	With Mounting Plate	Without Mounting Plate
9/16"	0.56	0.31
3/4"	0.62	0.24
1-1/16"	0.70	N/A
1-1/2"	0.73	0.25
2"	0.81	N/A
2-1/2"	1.06	0.31
3"	1.31	0.31

NOTE: The single set of shaft collars supplied with each Linear Thruster are for setup only. DO NOT use them to limit the stroke or damage can occur.

Thin washer included with EB Option to protect housing wipers from impact damage.



Repair Parts

Add the bore size to the basic model number shown below. For the Basic Shaft, specify the stroke length in inches and indicate options -EB1 or -EB2 and -S as applicable. For example, shaft seals for a 1-1/16" bore Linear Thruster would be S-09. The Basic Shaft for the same thruster with 8-1/2" stroke would be BS-09-8.5. Cylinder repair part number corresponds to number shown on cylinder shipped with Linear Thruster.

Part #	Description	Quantity Used Per Cylinder
B-☐	Shaft Bearing	4
BS-☐	-X.XX Basic Shaft	2
EB-☐	External Bumper Assembly	2 or 4
LT-Bore Stroke-D	Cylinder	1
LT-Bore Stroke-DB	Cylinder	1
LT-Bore Stroke-DM*	Cylinder	1
LT-Bore Stroke-DBM*	Cylinder	1
LTC-Bore Stroke-D	Cylinder	1
LTC-Bore Stroke-DM	Cylinder	1
S-☐	Shaft Seal	4
SC-☐	Shaft Collars	2, 4 or 6
TN-☐	Cylinder Lock Nut	1

NOTE: We recommend that if bearings are replaced, seals be replaced at the same time. Part numbers listed are individual components. Order the quantity needed to be replaced.
**For 1-1/16" bore use LTE prefix.*

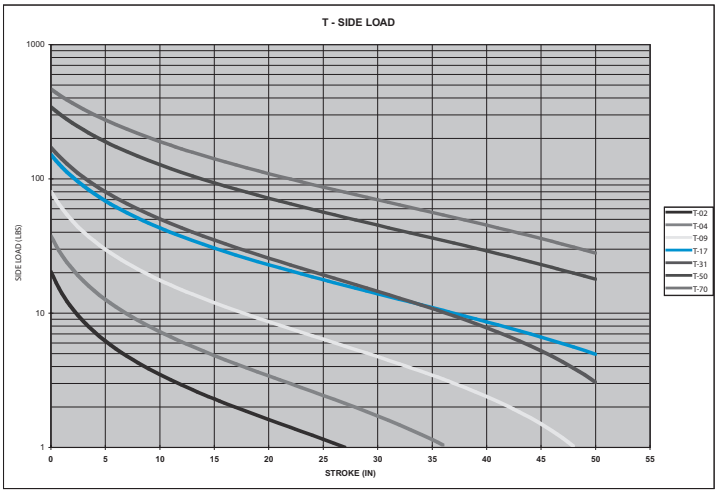
Approximate Weights

(T and TE Series)

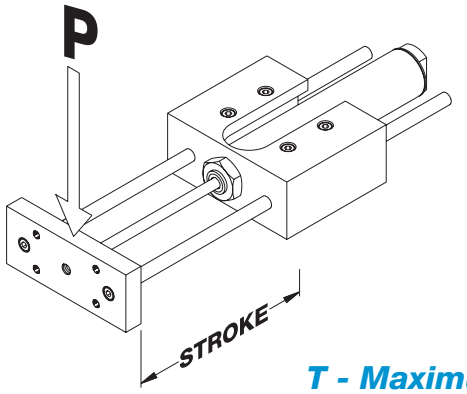
Bore	Base Weight (oz.)	Adder per 1" (oz.)	Mounting Plate (oz.)
9/16" (02)	13	1	1
3/4" (04)	32	2.2	2.2
1-1/16" (09)	46	5.7	5
1-1/2" (17)	154	6.3	10
2" (31)	296	8.3	32
Model T			
2-1/2" (50)	586	9.9	191
3" (70)	1048	15.2	408
Model TE			
2-1/2" (50)	400	11.7	137
3" (70)	640	17.6	265

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

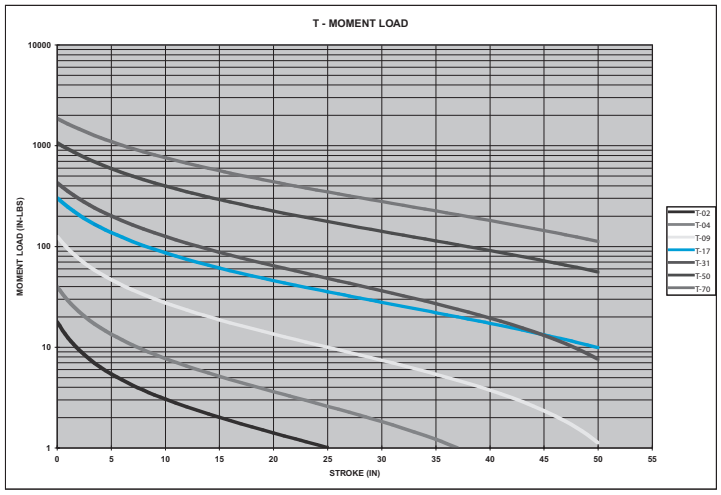
T - Maximum Side Loads (lbs.)



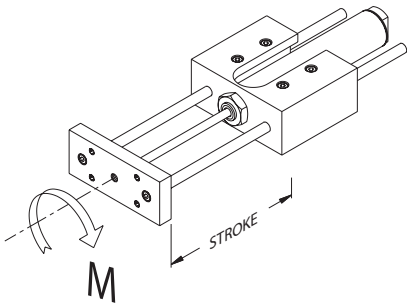
	T-02	T-04	T-09	T-17	T-31	T-50	T-70
0	20.34	37.49	80.50	151.62	171.30	342.37	465.67
1	14.11	27.17	60.61	122.73	140.62	295.93	410.17
2	10.76	21.23	48.46	102.88	118.91	260.13	365.92
3	8.67	17.38	40.26	88.39	102.73	231.67	329.78
4	7.24	14.66	34.34	77.34	90.19	208.50	299.70
5	6.19	12.65	29.87	68.63	80.18	189.25	274.27
6	5.40	11.09	26.37	61.58	72.00	173.00	252.46
7	4.77	9.85	23.54	55.75	65.19	159.10	233.56
8	4.26	8.83	21.22	50.86	59.41	147.06	217.00
9	3.84	7.98	19.27	46.68	54.46	136.52	202.37
10	3.48	7.26	17.61	43.07	50.16	127.22	189.34
11	3.18	6.64	16.17	39.92	46.38	118.95	177.66
12	2.91	6.10	14.92	37.14	43.04	111.54	167.13
13	2.68	5.63	13.82	34.67	40.06	104.85	157.57
14	2.48	5.21	12.83	32.47	37.39	98.80	148.86
15	2.30	4.83	11.96	30.48	34.97	93.28	140.88
16	2.13	4.49	11.16	28.67	32.77	88.33	133.54
17	1.98	4.18	10.44	27.03	30.77	83.58	126.77
18	1.85	3.90	9.79	25.53	28.92	79.30	120.49
19	1.72	3.64	9.18	24.15	27.22	75.33	114.66
20	1.61	3.40	8.63	22.87	25.65	71.64	109.22
21	1.50	3.18	8.11	21.69	24.19	68.20	104.14
22	1.41	2.98	7.64	20.59	22.83	64.99	99.37
23	1.31	2.78	7.19	19.57	21.56	61.97	94.89
24	1.23	2.60	6.78	18.61	20.37	59.14	90.67
25	1.15	2.44	6.39	17.71	19.25	56.48	86.68
26	1.07	2.28	6.02	16.86	18.20	53.96	82.91
27	1.00	2.12	5.67	16.06	17.20	51.58	79.34
28		1.98	5.34	15.31	16.26	49.32	75.94
29		1.84	5.03	14.60	15.36	47.18	72.72
30		1.71	4.74	13.92	14.51	45.14	69.64
31		1.59	4.45	13.28	13.70	43.20	66.71
32		1.47	4.18	12.66	12.93	41.35	63.90
33		1.36	3.93	12.08	12.19	39.58	61.22
34		1.25	3.68	11.52	11.48	37.89	58.64
35		1.14	3.45	10.98	10.80	36.26	56.18
36		1.04	3.22	10.47	10.15	34.70	53.80
37			3.00	9.98	9.52	33.21	51.52
38			2.79	9.50	8.92	31.77	49.33
39			2.59	9.05	8.34	30.38	47.21
40			2.39	8.61	7.78	29.05	45.16
41			2.20	8.19	7.24	27.76	43.19
42			2.02	7.78	6.72	26.51	41.28
43			1.84	7.38	6.21	25.30	39.43
44			1.67	7.00	5.72	24.14	37.64
45			1.50	6.63	5.24	23.01	35.91
46			1.33	6.27	4.78	21.91	34.22
47			1.17	5.92	4.33	20.85	32.59
48			1.02	5.58	3.89	19.82	31.00
49				5.25	3.47	18.82	29.46
50				4.93	3.05	17.84	27.95



T - Maximum Moments (in.-lbs.)



	T-02	T-04	T-09	T-17	T-31	T-50	T-70
0	17.80	39.83	125.78	303.23	428.25	1069.92	1862.69
1	12.35	28.86	94.70	245.46	351.56	924.78	1640.70
2	9.42	22.56	75.72	205.76	297.28	812.90	1463.66
3	7.59	18.46	62.90	176.78	256.83	723.97	1319.12
4	6.33	15.58	53.66	154.68	225.48	651.55	1198.81
5	5.42	13.44	46.67	137.26	200.46	591.41	1097.07
6	4.72	11.78	41.20	123.16	180.01	540.64	1009.86
7	4.17	10.46	36.79	111.51	162.96	497.18	934.23
8	3.73	9.38	33.16	101.71	148.53	459.55	868.00
9	3.36	8.48	30.11	93.36	136.15	426.62	809.47
10	3.05	7.72	27.51	86.14	125.39	397.56	757.37
11	2.78	7.06	25.27	79.84	115.96	371.71	710.65
12	2.55	6.49	23.31	74.28	107.61	348.55	668.51
13	2.35	5.98	21.59	69.35	100.16	327.67	630.29
14	2.17	5.54	20.05	64.93	93.47	308.74	595.44
15	2.01	5.13	18.68	60.95	87.43	291.49	563.53
16	1.86	4.77	17.44	57.35	81.93	275.71	534.18
17	1.73	4.45	16.32	54.06	76.91	261.19	507.08
18	1.62	4.15	15.29	51.06	72.31	247.80	481.98
19	1.51	3.87	14.35	48.30	68.06	235.40	458.64
20	1.41	3.62	13.48	45.74	64.13	223.87	436.89
21	1.32	3.38	12.68	43.38	60.48	213.12	416.54
22	1.23	3.16	11.93	41.18	57.08	203.08	397.47
23	1.15	2.96	11.24	39.13	53.91	193.66	379.55
24	1.08	2.77	10.59	37.22	50.93	184.82	362.66
25	1.01	2.59	9.98	35.42	48.13	176.49	346.72
26		2.42	9.40	33.72	45.49	168.62	331.64
27		2.26	8.86	32.13	43.00	161.18	317.35
28		2.10	8.35	30.62	40.64	154.13	303.78
29		1.96	7.86	29.19	38.40	147.44	290.87
30		1.82	7.40	27.84	36.27	141.07	278.56
31		1.69	6.96	26.55	34.25	135.01	266.83
32		1.56	6.54	25.33	32.31	129.22	255.61
33		1.44	6.14	24.16	30.47	123.69	244.87
34		1.33	5.75	23.04	28.70	118.39	234.58
35		1.21	5.38	21.97	27.00	113.32	224.70
36		1.11	5.03	20.94	25.37	108.45	215.22
37		1.00	4.69	19.96	23.81	103.77	206.09
38			4.36	19.01	22.30	99.27	197.30
39			4.04	18.10	20.85	94.94	188.83
40			3.74	17.22	19.45	90.77	180.65
41			3.44	16.37	18.10	86.74	172.76
42			3.15	15.56	16.79	82.84	165.12
43			2.87	14.77	15.52	79.08	157.73
44			2.60	14.00	14.29	75.43	150.57
45			2.34	13.26	13.10	71.90	143.63
46			2.08	12.54	11.95	68.48	136.90
47			1.83	11.84	10.82	65.16	130.36
48			1.59	11.17	9.73	61.94	124.00
49			1.36	10.51	8.66	58.80	117.82
50			1.13	9.87	7.63	55.75	111.81

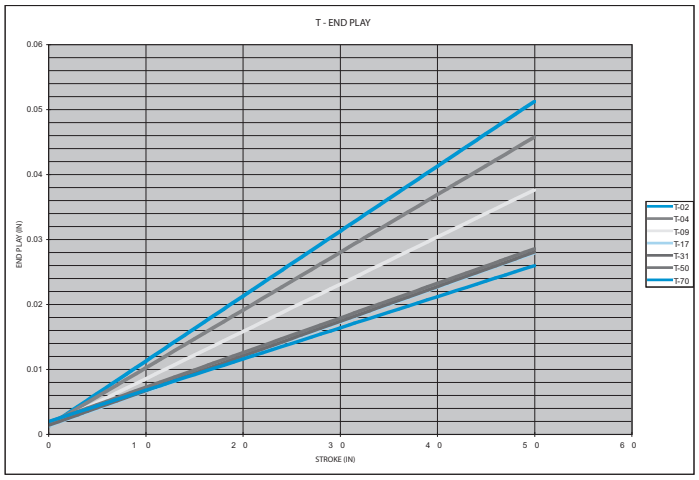


Note: Static load data represented

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

T - Tooling Plate End Play (in.)



	T-02	T-04	T-09	T-17	T-31	T-50	T-70
0	0.001	0.001	0.001	0.001	0.001	0.002	0.002
1	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2	0.003	0.003	0.003	0.002	0.002	0.003	0.003
3	0.004	0.004	0.003	0.003	0.003	0.004	0.003
4	0.005	0.005	0.004	0.003	0.004	0.004	0.004
5	0.006	0.006	0.005	0.004	0.004	0.005	0.004
6	0.007	0.007	0.006	0.004	0.005	0.005	0.005
7	0.008	0.008	0.006	0.005	0.005	0.006	0.005
8	0.009	0.008	0.007	0.006	0.006	0.006	0.006
9	0.010	0.009	0.008	0.006	0.006	0.007	0.006
10	0.011	0.010	0.009	0.007	0.007	0.007	0.007
11	0.012	0.011	0.009	0.007	0.007	0.008	0.007
12	0.013	0.012	0.010	0.008	0.008	0.008	0.008
13	0.014	0.013	0.011	0.008	0.008	0.009	0.008
14	0.015	0.014	0.011	0.009	0.009	0.009	0.009
15	0.016	0.015	0.012	0.009	0.009	0.010	0.009
16	0.017	0.016	0.013	0.010	0.010	0.010	0.010
17	0.018	0.016	0.014	0.010	0.010	0.011	0.010
18	0.019	0.017	0.014	0.011	0.011	0.012	0.011
19	0.020	0.018	0.015	0.011	0.012	0.012	0.011
20	0.021	0.019	0.016	0.012	0.012	0.013	0.012
21	0.022	0.020	0.017	0.012	0.013	0.013	0.012
22	0.023	0.021	0.017	0.013	0.013	0.014	0.013
23	0.024	0.022	0.018	0.014	0.014	0.014	0.013
24	0.025	0.023	0.019	0.014	0.014	0.015	0.014
25	0.026	0.024	0.019	0.015	0.015	0.015	0.014
26	0.027	0.024	0.020	0.015	0.015	0.016	0.014
27	0.028	0.025	0.021	0.016	0.016	0.016	0.015
28	0.029	0.026	0.022	0.016	0.016	0.017	0.015
29	0.030	0.027	0.022	0.017	0.017	0.017	0.016
30	0.031	0.028	0.023	0.017	0.017	0.018	0.016
31	0.032	0.029	0.024	0.018	0.018	0.018	0.017
32	0.033	0.030	0.025	0.018	0.018	0.019	0.017
33	0.034	0.031	0.025	0.019	0.019	0.020	0.018
34	0.035	0.032	0.026	0.019	0.020	0.020	0.018
35	0.036	0.032	0.027	0.020	0.020	0.021	0.019
36	0.037	0.033	0.027	0.020	0.021	0.021	0.019
37	0.038	0.034	0.028	0.021	0.021	0.022	0.020
38	0.039	0.035	0.029	0.022	0.022	0.022	0.020
39	0.040	0.036	0.030	0.022	0.022	0.023	0.021
40	0.041	0.037	0.030	0.023	0.023	0.023	0.021
41	0.042	0.038	0.031	0.023	0.023	0.024	0.022
42	0.043	0.039	0.032	0.024	0.024	0.024	0.022
43	0.044	0.040	0.033	0.024	0.024	0.025	0.023
44	0.045	0.040	0.033	0.025	0.025	0.025	0.023
45	0.046	0.041	0.034	0.025	0.025	0.026	0.024
46	0.047	0.042	0.035	0.026	0.026	0.026	0.024
47	0.048	0.043	0.035	0.026	0.026	0.027	0.025
48	0.049	0.044	0.036	0.027	0.027	0.028	0.025
49	0.050	0.045	0.037	0.027	0.028	0.028	0.026
50	0.051	0.046	0.038	0.028	0.028	0.029	0.026

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bimba Multiple Position Linear Thrusters



Bimba's Multiple Position Linear Thrusters incorporate a double-acting single rod end cylinder that provides an intermediate position in addition to fully extended and fully retracted positions.

How to Order

The model number for Multiple Position Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and strokes A/B, and options. The example below describes model T-091/2-M, a ball bearing 1-1/16" Thruster with an initial 1" stroke to the intermediate position and a total stroke of 3" with a magnet for position sensing.

T - 09 1/2 - M

PRODUCT TYPE
T - T Series (Ball Bearings) TE - TE Series (Composite Bearings)

BORE SIZE
02 - 9/16" 04 - 3/4" 09 - 1-1/16" 17 - 1-1/2" 31 - 2"

STROKE LENGTHS		
Stroke A	Stroke B	Standard Strokes and Stroke Maximums
0.5 = 1/2" 1 = 1"	0.5 = 1/2" 1 = 1"	1" increments to 12" Stroke A + Stroke B Maximum = 12"

OPTIONS
M - MRS® magnetic position sensing

List Prices

Additional pricing can be found on pages 3.12 and 3.18

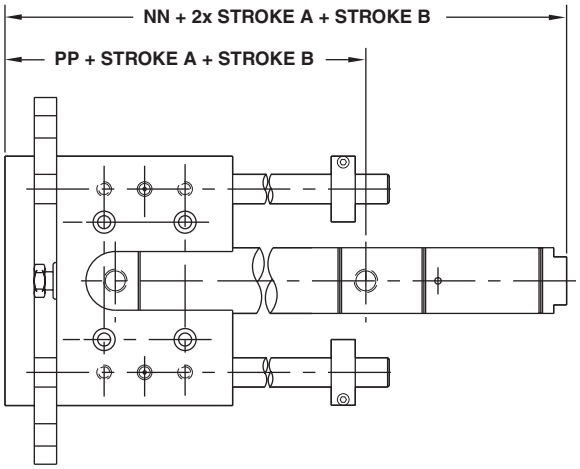
Bore	Add to Base	Stroke adder** Total combined stroke adder per inch	
		T	TE
9/16" (02)	$ 20.05	$ 4.30	$ 3.50
3/4" (04)	23.45	4.30	4.10
1-1/16" (09)	26.70	4.60	4.60
1-1/2" (17)	30.00	6.35	6.35
2" (31)	33.35	7.10	8.40

***Total combined stroke = (2 x Stroke A) + Stroke B*
Note: Cushions are not available in three-position cylinder

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions

T and TE Series



(T Series shown)

Bore Size	NN	PP
9/16" (02)	4.67	2.80
3/4" (04)	6.11	3.76
1-1/16" (09)	6.62	3.90
1-1/2" (17)	7.62	4.81
2" (31)	9.61	6.14

Note: Additional T and TE dimensions can be found on page 3.13 and 3.19.

Engineering Data

- Rated 250 psi
- Low breakaway friction

Components:

- Case hardened or hard chrome plated carbon steel shafts
- Steel or clear anodized aluminum tooling plate and collars
- Precision recirculating ball bearings or plastic composite

Cylinder:

- 304 stainless steel body
- High-strength aluminum alloy porting ends
- 303 stainless steel piston rods
- Buna N “U” cup seals
- Sintered bronze rod guide bushing

Options:

- Internal Buna N or external urethane bumpers
- Buna N magnet for position sensing

Temperature Range:
Buna N seals with a temperature range of -20ºF (-25ºC) to 200ºF (95ºC) are standard in all BIMBA air cylinders. High temperature option V seals rated for higher temperature applications are available. If cylinders are operated at temperatures below 0ºF for extended time periods, special modifications may be required. Special seal materials are available on request.

With -M option: -20ºF to +185ºF (-25ºC to +85ºC).

Lubrication:
Air cylinders are pre-lubricated and sealed at the factory for extensive maintenance-free life. Cylinder life can be lengthened by providing additional lubricant with an air line mist lubricator or direct introduction of oil to the cylinder every 500 hours of operation. Recommended oil is medium to heavy inhibited hydraulic and general purpose oil.

The two spring-loaded oiler ports on the housing face should also receive several drops of the same oil every 100 hours of operation. For applications that involve rapid cycling, oil these ports more often.

T-700 series incorporates grease fittings.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bimba Linear Thrusters-T4 Series (Ball Bearings)



Available in bore sizes 2" and larger, this new T4 series thruster offers the smooth actuation of the "T" series Thrusters, while delivering twice the static load-carrying capability.

With the same distinct design as the original Thruster series, including a black anodized body and precision re-circulating ball bearings, the "T4" provides ultra smooth actuation. At the same time, four guide shafts, instead of the typical two, double the load-carrying capacity and reduce deflection.

How to Order

The model number of all Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the charts below for an example of model number T-316-CM. This is a 2" bore, 6" stroke Linear Thruster with adjustable cushions and a magnet for position sensing.

T4 - 31 6 - CM

BORE SIZE
31 - 2"
50 - 2-1/2"
70 - 3"

STANDARD STROKE LENGTHS*
1" increments to 12"
1" increments to 12"
1" increments to 12"

*Stroke lengths beyond maximum are available; the rear of the cylinder must be supported in horizontal applications.

Note: For Multiple Position, specify Stroke A/Stroke B

OPTIONS	
B	– Bumpers, both ends[1]
C	– Adjustable cushions, both ends[1]
EB1	– External bumpers, extension (one set)[2]
EB2	– External bumpers, both ends (two sets)[2]
M	– MRS® magnetic position sensing
NP	– No mounting plate

[1] Internal bumpers and cushions cannot be ordered in combination.
[2] Shock Absorbers available upon request.

Approximate Power Factors

2" = 3.1
2-1/2" = 5.0
3" = 7.0

For example, a T-31-CM will exert a force of 3.1 times the air line pressure.

List Prices

Basic Model	Base Price by Bore Size		
	2"	2-1/2"	3"
T4	$1136.15	$1954.10	$3468.95
Adder per 1" of stroke	16.05	19.25	24.05

Options	Adders by Bore Size		
	2"	2-1/2"	3"
B-Internal Bumpers, Both Ends	$ 7.65	$ 7.30	$ 9.50
C-Adjustable Cushions, Both Ends	33.75	40.00	45.40
EB1-External Bumpers, Extension (1 set)	79.00	166.05	283.65
EB2-External Bumpers, Both Ends (2 sets)	157.90	305.15	537.70
M-MRS Magnetic Position Sensing	19.70	18.80	33.35
NP-No Mounting Plate (Deduct from Price)	(34.45)	(62.05)	(120.55)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Engineering Data

- Rated 250 psi
- Low breakaway friction

Components:

- Case hardened steel shafts
- Steel tooling plate and collars
- Black anodized aluminum housing and mounting plate
- Precision recirculating ball bearings

Cylinder:

- 304 stainless steel body
- High-strength aluminum alloy porting ends
- 303 stainless steel piston rods
- Buna N “U” cup seals
- Sintered bronze rod guide bushing

Options:

- Internal Buna N or external urethane bumpers
- Patented adjustable cushions
- Buna N magnet for position sensing

External Bumpers

Use and Dimensional Changes

The stroke can be adjusted with external urethane bumpers. These are available on one or both ends (-EB1 and -EB2 options). They fit over the guide shafts at the ends of the housing (see illustration). Shaft collars are supplied with each set of bumpers to eliminate movement possible with high loads and velocities. Thus, with -EB1 option, there will be a total of eight collars; with -EB2 option, there will be twelve shaft collars. Flat stainless steel washers are also installed to protect the shaft seals from impact damage. **Guide shafts are lengthened so stroke on extension isn't affected; however, bumpers reduce the retraction stroke if the mounting plate is used in the shipped position (see charts below).** Higher loads and velocities may dictate the use of external means of deceleration such as shock absorbers.

Guide Shaft Extension with Bumpers (in.)	
Bore Size	Length Adder
2"	0.875
2-1/2"	1.38
3"	1.50

Retraction Stroke Reduction with Bumpers (in.)		
Bore Size	With Mounting Plate	Bumper Thickness
2"	0.81	0.25"
2-1/2"	1.06	0.50"
3"	1.31	0.75"

NOTE: The single set of shaft collars supplied with each Linear Thruster are for setup only. DO NOT use them to limit the stroke or damage can occur.

Thin washer included with EB Option to protect housing wipers from impact damage.

Temperature Range:
Buna N seals with a temperature range of -20ºF (-25ºC) to 200ºF (95ºC) are standard in all BIMBA air cylinders. High temperature option V seals rated for higher temperature applications are available. If cylinders are operated at temperatures below 0ºF for extended time periods, special modifications may be required. Special seal materials are available on request. With -M option: -20ºF to +185ºF (-25ºC to +85ºC).

Lubrication:
Air cylinders are pre-lubricated and sealed at the factory for extensive maintenance-free life. Cylinder life can be lengthened by providing additional lubricant with an air line mist lubricator or direct introduction of oil to the cylinder every 500 hours of operation. Recommended oils are medium to heavy inhibited hydraulic and general purpose oil.

The two spring-loaded oiler ports on the housing face should also receive several drops of the same oil every 100 hours of operation. For applications that involve rapid cycling, oil these ports more often.

Repair Parts

Add the bore size to the basic model number shown below. For the Basic Shaft, specify the stroke length in inches and indicate options -EB1 or -EB2 as applicable. Cylinder repair part number corresponds to number shown on cylinder shipped with Linear Thruster.

Part #	Description	Quantity Used Per Cylinder
B- ☐	Shaft Bearing	8
BS- ☐	-X.XX Basic Shaft	4
EB- ☐	External Bumper Assembly	4 or 8
LT-Bore Stroke-D	Cylinder	1
LT-Bore Stroke-DB	Cylinder	1
LT-Bore Stroke-DM	Cylinder	1
LT-Bore Stroke-DBM	Cylinder	1
LTC-Bore Stroke-D	Cylinder	1
LTC-Bore Stroke-DM	Cylinder	1
S- ☐	Shaft Seal	8
SC- ☐	Shaft Collars	4, 8 or 16
TN- ☐	Cylinder Lock Nut	1

NOTE: We recommend that if bearings are replaced, seals be replaced at the same time. Part numbers listed are individual components. Order the quantity needed to be replaced.

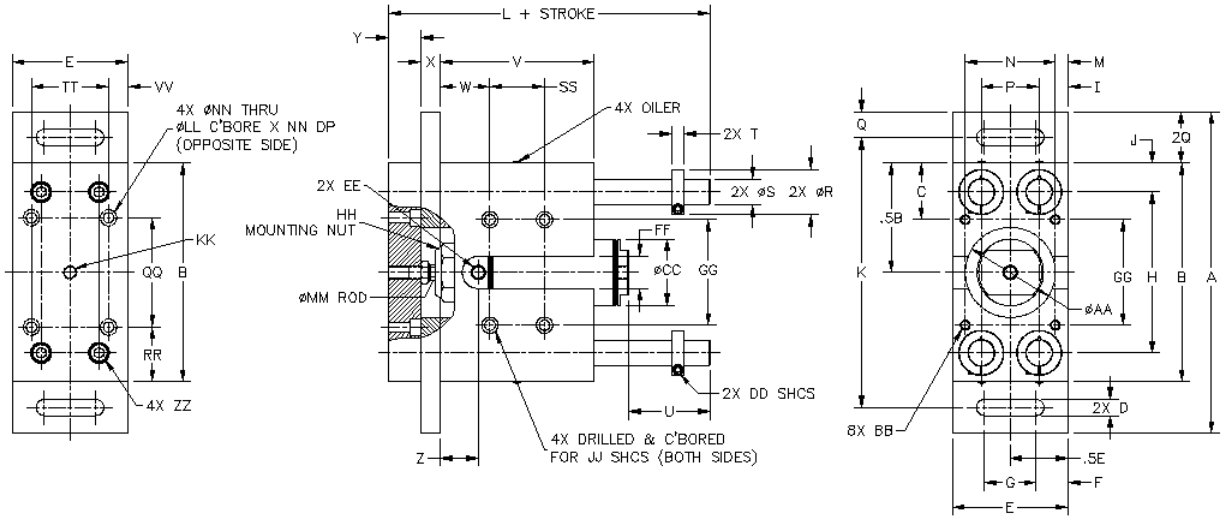
Approximate Weights

(T4 Series)

Bore	Base Weight lbs.	Adder per 1" lbs.
2" (31)	24	0.67
2-1/2" (50)	41	1.16
3" (70)	82.5	1.82

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions



Bore	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R
2" (31)	9.50	7.00	1.75	0.56	4.00	1.22	1.56	5.25	1.00	0.88	8.25	7.00	0.63	2.75	2.00	0.63	1.50
2-1/2" (50)	12.50	8.50	2.20	0.63	4.50	1.25	2.00	6.25	1.13	1.13	10.50	9.50	0.50	3.50	2.25	1.00	1.75
3" (70)	15.00	11.00	2.88	0.81	6.00	1.41	3.19	8.00	1.50	1.50	13.00	11.50	0.50	5.00	3.00	1.00	2.06

Bore	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH
2" (31)	0.75	0.50	0.95	4.00	1.25	0.75	1.00	1.53	3.00	3/8-16	2.08	1/4-28	1/4 NPT	1.25	3.50	1-1/4-12
2-1/2" (50)	1.00	0.50	3.17	6.00	1.94	0.75	1.25	1.49	3.50	3/8-16	2.62	1/4-28	1/4 NPT	1.25	4.10	1-3/8-12
3" (70)	1.25	0.50	3.87	7.00	1.75	1.00	1.50	1.97	4.63	1/2-13	3.12	1/4-28	3/8 NPT	1.25	5.25	1-3/8-12

Bore	JJ	KK	LL	MM	NN	QQ	RR	SS	TT	UU	VV	ZZ
2" (31)	3/8	1/2-20	0.63	0.63	0.41	3.50	1.75	1.50	3.00	10.00	0.50	3/8-16 SHCS
2-1/2" (50)	3/8	1/2-20	0.63	0.63	0.41	4.25	2.13	2.13	3.00	12.25	0.75	1/2-13 SHCS
3" (70)	1/2	5/8-18	0.81	0.75	0.53	5.50	2.75	3.50	4.50	15.00	0.75	3/4-16 Hex Bolt

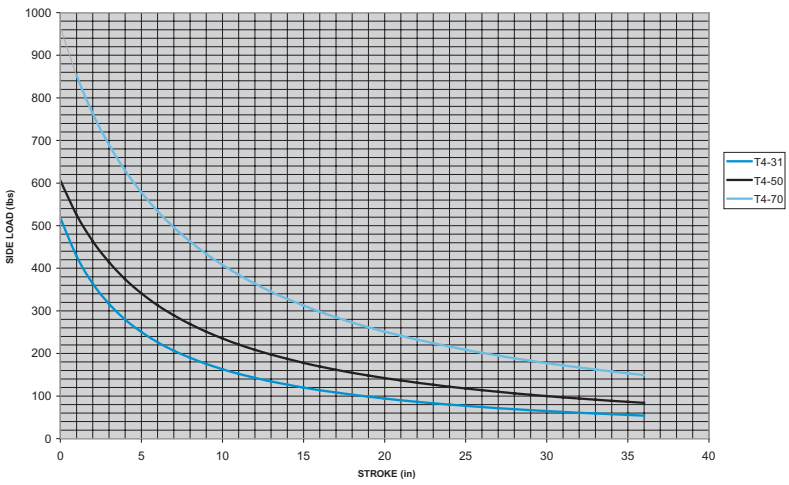
Linear Thrusters ordered with adjustable cushions incorporate a side port on rear of cylinder.

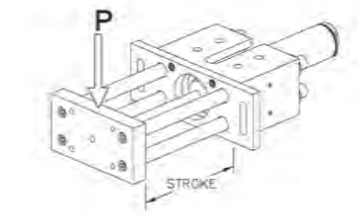
For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

T4 - Maximum Side Loads (lbs.)

T4 - SIDE LOAD

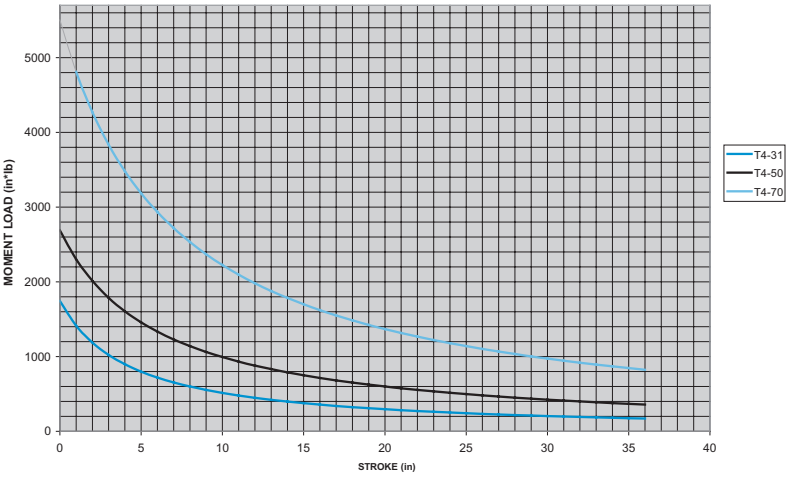


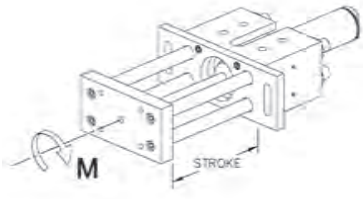


	T4-31	T4-50	T4-70
0	518.70	605.94	965.54
1	428.08	525.43	852.80
2	364.07	463.46	763.04
3	316.45	414.28	689.88
4	279.63	374.30	629.11
5	250.32	341.16	577.82
6	226.43	313.25	533.96
7	206.58	289.41	496.02
8	189.83	268.83	462.88
9	175.51	250.86	433.68
10	163.12	235.05	407.77
11	152.30	221.03	384.60
12	142.76	208.50	363.78
13	134.30	197.25	344.95
14	126.74	187.09	327.85
15	119.94	177.86	312.25
16	113.79	169.45	297.97
17	108.21	161.75	284.83
18	103.11	154.67	272.71
19	98.45	148.14	261.49
20	94.16	142.11	251.09
21	90.20	136.50	241.40
22	86.54	131.29	232.36
23	83.14	126.43	223.91
24	79.97	129.89	215.99
25	77.02	117.63	208.56
26	74.26	113.64	201.56
27	71.68	109.88	194.97
28	69.25	106.33	188.74
29	66.96	102.99	182.85
30	64.81	99.83	177.28
31	62.78	96.83	171.99
32	60.86	94.00	166.97
33	59.03	91.30	162.19
34	57.31	88.74	157.64
35	55.67	86.30	153.30
36	54.11	83.97	149.17

T4 - Maximum Moment Loads (in.-lbs.)

T4 - MOMENT LOAD





	T4-31	T4-50	T4-70
0	1745.02	2687.72	5504.63
1	1413.35	2302.45	4810.54
2	1186.76	2012.74	4269.61
3	1022.14	1786.95	3836.17
4	897.12	1606.03	3481.08
5	798.95	1457.82	3184.85
6	719.81	1334.17	2933.96
7	654.66	1229.45	2718.74
8	600.09	1139.62	2532.09
9	553.72	1061.71	2368.66
10	513.83	993.50	2224.38
11	479.14	993.28	2096.06
12	448.70	879.73	1981.20
13	421.78	831.79	1877.78
14	397.80	788.63	1784.17
15	376.30	749.56	1699.04
16	356.91	714.03	1621.28
17	339.34	681.58	1549.98
18	323.35	651.83	1484.36
19	308.72	624.44	1423.77
20	295.30	599.16	1367.65
21	282.94	575.74	1315.53
22	271.51	553.99	1266.98
23	260.92	533.74	1221.66
24	251.08	514.83	1179.25
25	241.91	497.13	1139.48
26	233.34	480.54	1102.11
27	225.32	464.95	1066.93
28	217.79	450.27	1033.75
29	210.71	436.43	1002.40
30	204.05	423.36	972.75
31	197.76	410.99	944.64
32	191.82	399.26	917.97
33	186.19	388.14	892.63
34	180.86	377.57	868.51
35	175.80	367.51	845.54
36	170.99	357.94	823.63

Note: Static load data represented

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Bimba Movable Housing Linear Thrusters (Ball Bearings and Composite Bearings)



Available in seven bore sizes from 9/16" bore through 3", the new Movable Housing from Bimba offers extremely high load carrying capability with the same precision and low friction found in our T Series Linear Thrusters. The Bimba Movable Housing is black anodized and is fitted with either re-circulating ball bearings or TFE (lined) composite bearings.

How to Order

The model number of all Linear Thrusters consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the charts below for an example of model number TMH-096-EB2M. This is an 1-1/16" bore, 6" stroke Movable Housing with external bumpers on both ends and a magnet for position sensing.

TMH - 096 - EB2M

PRODUCT TYPE	
TMH	- Thruster Movable Housing, Ball Bearings
TEMH	- Thruster Movable Housing, Composite Bearings
TMHF/TEMHF	- Thruster Movable Housing with Position Feedback (09-70 bores only)
TMHV/TEMHV	- Thruster Movable Housing without the cylinder

BORE SIZE	
02	- 9/16"
04	- 3/4"
09	- 1-1/16"
17	- 1-1/2"
31	- 2"
50	- 2-1/2"
70	- 3"

STANDARD STROKE LENGTHS
1" to 12"
1" increments standard
Any length available
Multiple position, specify stroke A/stroke B
32" stroke maximum

OPTIONS	
(Enter in alphabetical order)	
C	- Cushions, both ends
B	- Internal bumpers
E	- Non-lube service seals and lubrication
F	- MolyCoated body
G	- Grease lubricant
L	- PFC Lip seal
M	- Magnet
N	- Low temperature service seals and lubrication
Q	- Side ported rear head, ports kept in-line
T1,T2,T3	- Switch track(s) used to accommodate miniature switch mounting
V	- High temperature seals and lubrication (bumpers stay)
EB	- External bumpers, retract
EB1	- External bumpers, extend
EB2	- External bumpers, both ends
K__	- Shock absorbers (just like Thrusters)
S	- Stainless steel shafts
Z	- Bimba 500 Hydraulic Cylinder replaces air cylinder

List Prices

Base and Stroke	Base Price by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
TMH	$510.55	$587.95	$614.90	$778.65	$1040.75	$1689.75	$2701.10
TEMH	444.50	503.85	523.95	695.25	930.75	1540.65	2503.65
Adder per 1" of stroke	4.30	4.40	4.40	6.30	7.50	8.45	10.90

Note: Consult Bimba or www.bimba.com for TMHF/TEMHF and TMHV/TEMHV pricing.

Options	Adders by Bore Size						
	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
EB/EB1	$ 29.95	$ 29.95	$ 32.10	$ 34.00	$ 39.55	$ 83.05	$141.85
EB2	59.90	59.90	64.00	67.80	78.95	152.60	268.90
K1x	219.90	278.30	311.00	373.70	500.10	NA	NA
K2x or K3x	109.95	139.15	155.50	186.85	250.05	NA	NA
S	55.70	94.75	94.75	167.10	221.70	334.20	1113.85
S Option Stroke adder (add this to standard stroke adder)	7.40	7.65	8.30	9.80	10.95	17.85	20.10
EB/EB1 w/S	55.70	61.35	61.35	66.90	74.70	109.20	194.95
EB2 w/S	111.40	122.60	122.60	133.70	149.30	218.35	389.85
C	NA	15.85	17.65	20.60	33.75	40.00	45.40
B	4.90	4.90	4.90	6.05	7.65	7.30	9.50
M	11.35	11.35	14.10	16.95	18.80	19.70	33.35
N	1.65	1.65	1.65	3.10	3.10	4.40	4.40
Z	NA	NA	42.95	60.65	69.45	NA	NA

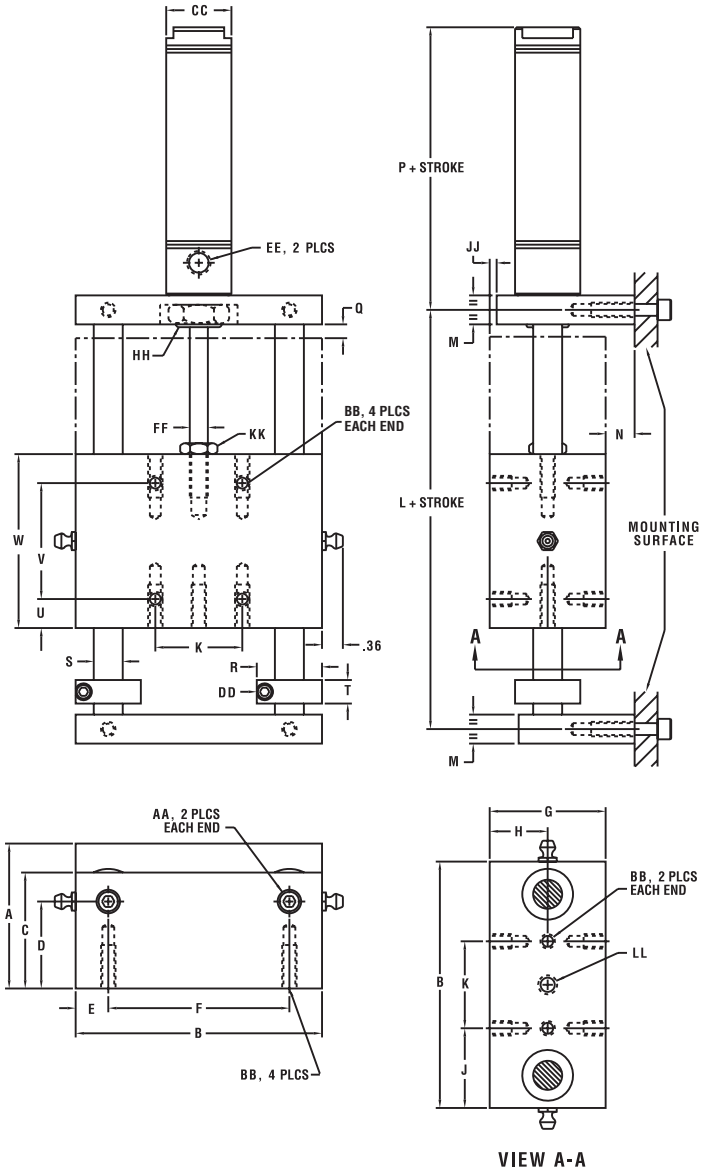
Note: Options G and Q are available at no charge.
For Options E, F, V, and T1, consult Bimba or bimba.com for pricing.

All product is sold F.O.B. shipping point. Prices are subject to change without notice.

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Dimensions



VIEW A-A

All dimensions are in inches

Bore	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
A	1.50	2.50	2.50	3.00	3.50	4.00	5.00[2]
B	3.00	4.25	4.25	5.50	7.00	8.50	11.00
C	1.25	2.00	2.00	2.50	3.00	3.50	4.00
D	0.87	1.50	1.50	1.75	2.00	2.25	2.75
E	0.44	0.56	0.56	0.75	1.00	1.125	1.50
F	2.125	3.125	3.125	4.00	5.00	6.25	8.00
G	1.25	2.00	2.00	2.50	3.00	3.50	4.00
H	0.62	1.00	1.00	1.25	1.50	1.75	2.00
J	1.00	1.38	1.38	1.75	2.00	2.50	3.50
K	1.00	1.50	1.50	2.00	3.00	3.50	4.00
L	4.38	4.63	4.63	6.00	6.50	8.50	11.00
M	0.38	0.50	0.50	0.75	0.75	1.00	1.00
N	0.25	0.50	0.50	0.50	0.50	0.50	0.75
P	2.10	2.72	2.88	3.19	3.88	4.00	4.38
Q	0.21	0.21	0.21	0.38	0.91[1]	0.58[1]	0.51
R	0.87	1.12	1.12	1.31	1.50	1.75	2.06
S	0.375	0.50	0.50	0.625	0.75	1.00	1.25
T	0.34	0.41	0.41	0.44	0.50	0.50	0.50
U	0.50	0.50	0.50	0.75	0.75	1.00	1.00
V	2.00	2.00	2.00	2.50	2.50	4.00	5.00
W	3.00	3.00	3.00	4.00	4.00	6.00	7.00
AA	10-32	1/4-20	1/4-20	3/8-16	3/8-16	1/2-13	1/2-13
BB	10-32	1/4-20	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13
CC	0.62	0.81	1.12	1.56	2.08	2.62	3.16
DD	6-32	8-32	8-32	10-32	1/4-28	1/4-28	1/4-28
EE	10-32	1/8 NPT	1/8 NPT	1/8 NPT	1/4 NPT	1/4 NPT	3/8 NPT
FF	0.188	0.25	0.312	0.437	0.625	0.625	0.75
HH	7/16-20	5/8-18	5/8-18	3/4-16	1-1/4-12	1-3/8-12	1-1/2-12
JJ	0.06	0.12	0.12	0.12	0.12	0.12	0.00
KK	10-32	1/4-28	5/16-24	7/16-20	1/2-20	1/2-20	5/8-18
LL	1/4-28	5/16-24	1/4-28	1/2-20	5/8-18	5/8-18	1-14

NOTES:

[1] Dimension Q = 0.70 inches for strokes longer than 6 inches.

[2] Dimension shown is to top of cylinder end mounting plate. Dimension to top of housing is 4.75 inches.

DIMENSIONAL NOTES:

1.) Cylinder options Q, C, B will increase the overall length of the cylinder. Dimension P will grow (see charts below).

2.) When specifying Position Feedback (TMHF or TEMHF), or the Bimba 500 Cylinder (option H), dimension P will increase and the stroke will be reduced.

Contact 1-800-44-BIMBA for dimensional information.

P Dimension Length Adders

Bore	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
B-Option	0.13	--	0.13	0.13	0.25	0.25	0.25
C-Option	N/A	0.43	0.25	0.18	0.38	0.38	0.44
Q-Option	0.03	0.44	0.25	0.19	0.38	0.38	0.44
Z-Option	N/A	N/A	0.35	0.25	0.34	N/A	N/A
PFC-Option	N/A	N/A	0.90	0.94	0.85	1.41	1.22

Q Dimension Length Adders

Bore	9/16"	3/4"	1-1/16"	1-1/2"	2"	2-1/2"	3"
Z-Option	N/A	N/A	0.57	0.40	0.30	N/A	N/A
PFC-Option	N/A	N/A	0.48	0.12	0.05	0.17	0.43

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

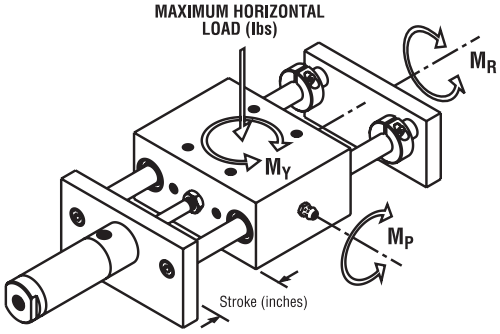
Engineering Data

Horizontal and Torsional Load Capacities

The following charts and tables provide loading and deflection data to assist in the sizing of Movable Housing Linear Thrusters. The Capacity tables provide the maximum loading for the thrusters under dynamic and static conditions. The dynamic capacities are presented as a function of travel life stated in millions of linear inches. As shown by the tables, the travel life is a function of load. Therefore, higher dynamic loads can be applied but will reduce travel life.

The deflection curves shown reflect the theoretical deflections of the guide shafts at mid-stroke.

Example: The 02 bore has a maximum dynamic load capacity of 45 lbs. for a travel life of 200 million inches.



Horizontal Load Capacity

Bore	Max Dynamic Load (lbs) Travel Life (x 10^6 inches)				Max Static Load (lbs)
	50	200	500	1000	
02	71	45	32	26	87
04/09	209	131	96	76	256
17	328	231	169	133	328
31/50	403	259	190	150	403
70	938	579	419	326	1062

Torque Capacity - M_R

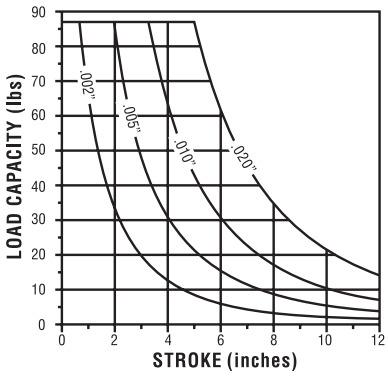
Bore	Max Dynamic Torque (in-lbs) Travel Life (x 10^6 inches)				Max Static Torque (in-lbs)
	50	200	500	1000	
02	68	43	32	25	82
04/09	159	100	74	59	193
17	372	267	196	156	372
31/50	430	279	205	163	430
70	1756	1106	815	647	1952

Torque Capacity - M_P and M_Y

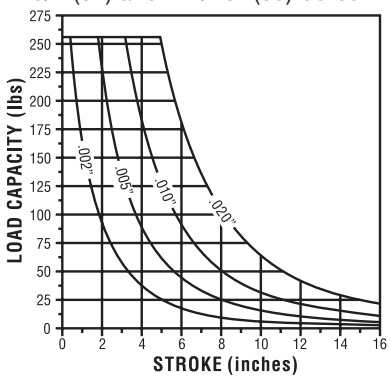
Bore	Max Dynamic Torque (in-lbs) Travel Life (x 10^6 inches)				Max Static Torque (in-lbs)
	50	200	500	1000	
02	77	48	36	28	93
04/09	331	209	154	122	403
17	662	474	349	277	662
31/50	1012	655	483	383	1012
70	3875	2441	1798	1427	4308

Horizontal Load and Deflection Charts

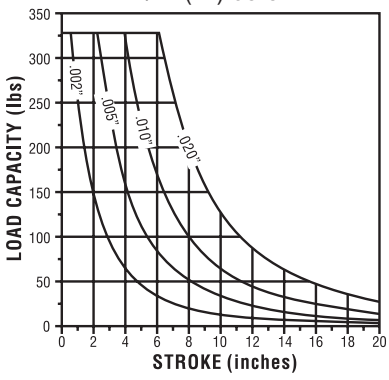
9/16" (02) bore



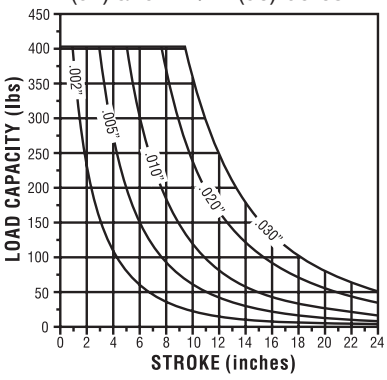
3/4 (04) and 1-1/16" (09) bores



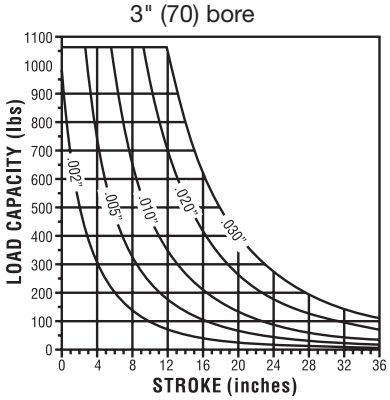
1-1/2" (17) bore



2" (31) and 2-1/2" (50) bores



3" (70) bore



Approximate Weights

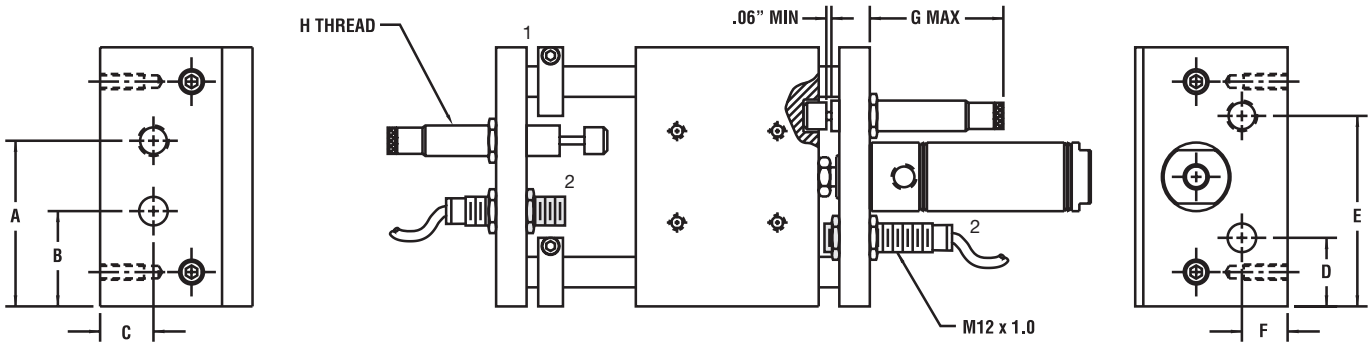
Bore	Base (lbs)	Adder per inch of stroke
02	1.8	0.10
04/09	3.6	0.20
17	8.5	0.29
31/50	12.5	0.42
70	47.5	1.12

For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Options

Note: Maintain the .06 inch clearance gap between the nylon cap and shock absorber housing to prevent damage to the shock absorber.



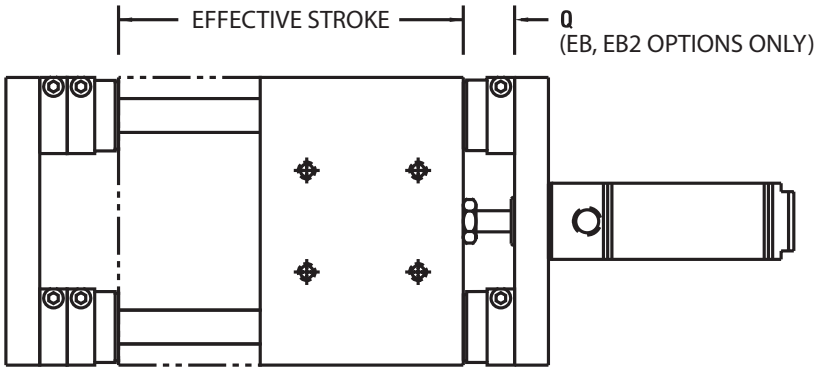
Model	A	B	C	D	E	F	G	H
02	1.88	1.13	0.56	0.84	2.17	0.40	3.00	.500-20
04/09	2.65	1.60	1.50	1.13	3.13	0.75	3.75	.750-16
17	3.50	2.00	1.75	1.46	4.00	0.84	3.25	.750-16
31/50	3.50	2.25	2.00	1.75	5.31	0.90	4.75	1.00-12
70	5.50	3.50	2.75	1.75	9.25	4.19	4.80	1.00-12

[1] The single shaft collars supplied with each Linear Thruster are intended for setup purposes only. They must not be used to limit the stroke or serious damage to the Linear Thruster may occur!

[2] Position sensing switch shown in drawing is sold separately.

Stroke Reduction Table

Bore	External Bumper Option			Q
	EB	EB1	EB2	
02	0.41	0.17	0.58	0.62
04/09	0.48	0.18	0.66	0.69
17	0.37	0.32	0.69	0.75
31	0,00	0.47	0.47	0.81
50	0.00	0.39	0.39	0.81
70	0.80	0.00	0.80	1.31



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Linear Thruster Application Checklist

This checklist makes sizing and selecting Bimba actuators easier. Bimba's Engineering Department will assist you by providing a detailed analysis of your application and, based on the information in the application checklist, will help you choose the actuators best suited to your needs.

Step 1. Photocopy the sketch and checklist sheets.

Step 2. Complete the sketch and checklist.

Step 3. Mail or fax the sketch and checklist to your local stocking distributor.

Date: _____

Your Name: _____

Company: _____

Address: _____

Phone: _____

Fax: _____

1. Type of Linear Thruster selected.

☐ T Series ☐ TE Series

2. What is the weight of the load being moved?

_____(lbs.)

3. What is the required stroke length?

_____(in.)

4. How will the Linear Thruster be mounted?

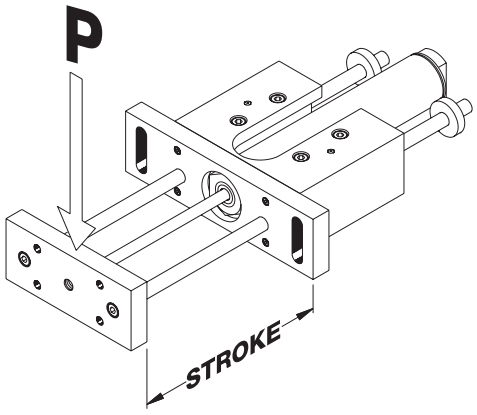
☐ Horizontally.

☐ Vertically, tooling plate at top.

☐ Vertically, tooling plate at bottom.

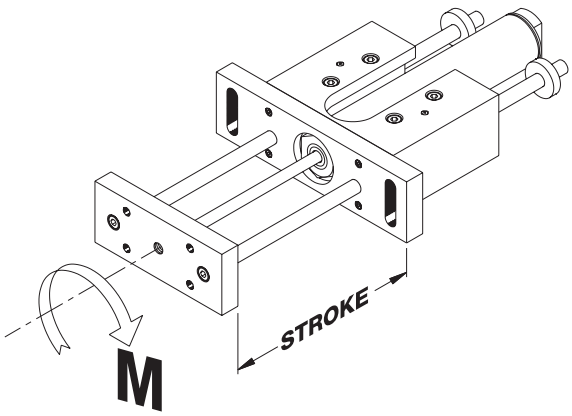
5. What kind of force does the load place on the tooling plate?

☐ Side load _____(lbs)



Maximum Side Load

☐ Moment _____(lbs)



Maximum Moments

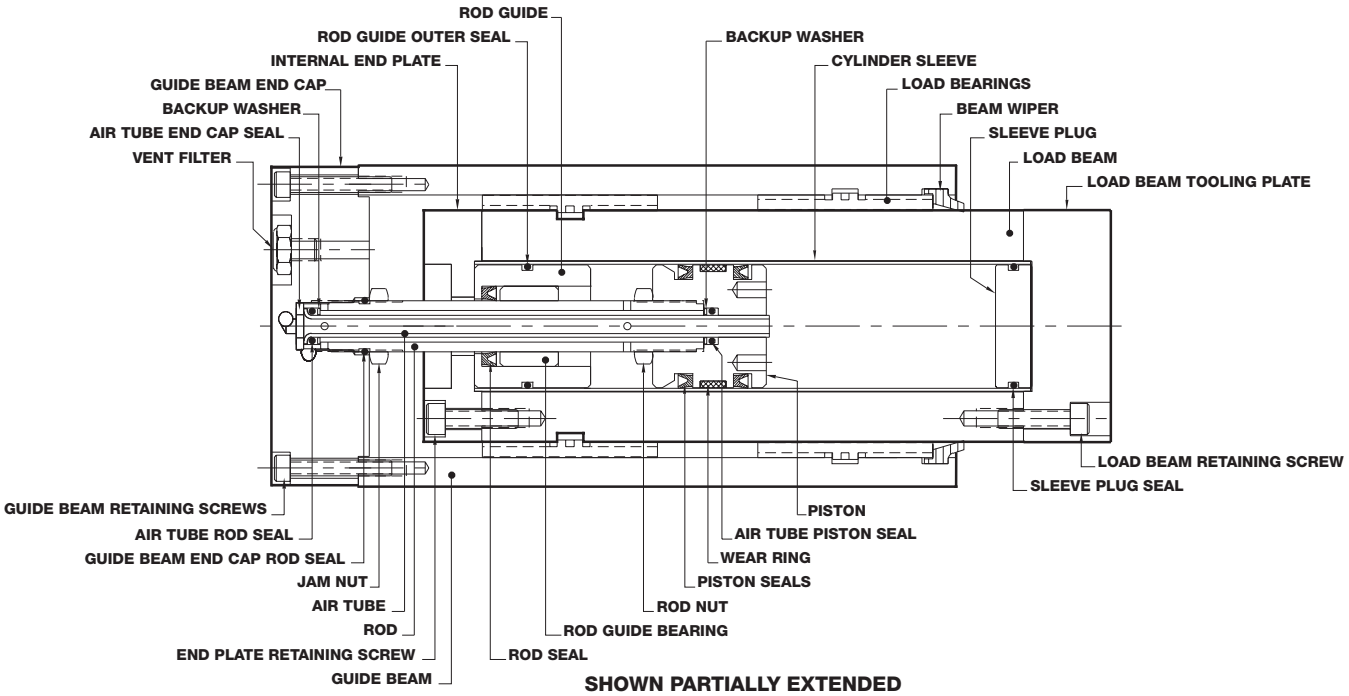
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

ADVANTAGES

The Bimba PneuMoment pneumatic actuator features a revolutionary, compact design that uses conventional pneumatic technology but has the capacity to carry high loads and moments.

The PneuMoment guide beam provides the mounting surface and remains stationary, and the load beam provides the motion, extending and retracting. A stationary piston and rod assembly is attached to the guide beam end cap. The piston rod is a coaxial assembly of two hollow rods which convey air to and from each side of the piston. Air let into one hollow rod pressurizes the chamber at one end of the piston, causing the load beam to extend. Air let into the other rod pressurizes the other end of the piston and causes the load beam to retract.

The PneuMoment has eight flat bearings to support the load beam. These bearings ride on hard anodized, PTFE-impregnated surfaces to allow the PneuMoment to carry heavy loads and large moments. No lubrication is needed for the bearings, although standard air line lubrication should be used to enhance the actuator's seal life.



SHOWN PARTIALLY EXTENDED

FEATURES AND BENEFITS

- Carries high moment loads
- Compact design
- Long life
- Available in U.S. customary units (inches) or metric
- Non-lube bearings
- Built-in track for position sensing switches
- Guide beam end cap ports transmit air or vacuum through the actuator from the guide beam end cap to connect additional automation devices such as grippers.
- Corrosion-resistant, hard coat anodized aluminum load and guide beams with PTFE impregnation
- Standard vacuum port for clean room applications
- Standard side or end ports
- Base, front or rear flange mounting

OPTIONS

- Internal or external bumpers
- External shock absorbers for retract and extend strokes
- Internal stroke adjustment – full stroke, retract and extend (1-1/16" and 2" bores only)
- Magnetic Position Sensing
- Auxiliary ports to transmit air or vacuum through the actuator to operate automation devices.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

How to Order

The model number consists of three alphanumeric clusters. These designate product type, bore size and stroke length, and options. Please refer to the example and charts below to determine the model number needed. The U.S. customary units (inch) model example shown below include options for external bumpers, magnetic position sensing, auxiliary port and plugs installed in the guide beam end cap ports.

PRODUCT TYPE

PM - U.S. Customary units
PMM - (metric)
(All external fasteners and ports are metric)

PM - 096 - EBMRY

BORE SIZE*

09	1-1/16"
09	27mm
17	1-1/2"
17	38mm
31	2"
31	50mm
50	2-1/2"
50	63mm

The above bore sizes are *not directly inter-changeable. Refer to dimensional drawing on page 3.37 for details.*

STANDARD STROKE LENGTHS**

1" increments to 6"

25mm increments to 150mm

***Stroke lengths beyond 6" are available up to a maximum of 30" (762mm). Stroke lengths above 15" require application review. Fractional stroke lengths are also available. Consult your distributor for price and availability.*

OPTIONS

A	–	Internal stroke adjustment, both ends[1]
B	–	Internal bumpers, both ends
EB	–	External bumpers – both ends (Can be used for stroke adjustment)
M	–	Magnetic position sensing
R	–	Auxiliary port - air/vacuum[2]
S	–	Shock absorber - both directions with stroke adjustment
S1	–	Shock absorber - extend with stroke adjustment
S2	–	Shock absorber - retract with stroke adjustment
Y	–	Air ports - side[3]

[1] Not required with shock absorber or external bumper. Not available in stroke lengths above 15". (Above 4" on 2" bore). Not available on 1-1/2" and 2-1/2" bores.

[2] Seals used allow air or vacuum transmitted through the actuator to the load beam tooling plate.

[3] The standard unit offers both end and side ports in the guide beam end cap. The standard unit has flush surface plugs installed in the side ports. PneuMoments ordered with the "Y" option are shipped with the plugs installed in the end ports.

Note - (Stroke lengths 15" and above) Stroke adjustment can be achieved by using External Bumper - Option EB or Shock Absorber - option S, S1, S2. These options will require a modified stop plate to compensate for guide rod deflection.

Clean room applications - The PneuMoment has a vent port on the guide beam end cap. Remove the vent fitting and connect a vacuum line to this port for clean room service.

Option/Combination Availability

Bore	A	B	EB	M	R	S	Y
1-1/16" (27mm)	M,R,Y	M,R,Y	M,R,Y	A,B,EB, R,S,Y	A,B,EB, M,S,Y	M,R,Y	A,B,EB, M,R,S
1-1/2" (38mm)	N/A	M,R,Y	M,R,Y	B,EB, R,S,Y	B,EB, M,S,Y	M,R,Y	B,EB, M,R,S
2" (50mm)	M,R,Y	M,R,Y	M,R,Y	A,B,EB,R,S,Y	A,B,EB,M,S,Y	M,R,Y	A,B,EB,M,R,S,Y
2-1/2" (63mm)	N/A	M,R,Y	M,R,Y	B,EB,R,S,Y	A,B,EB,M,S,Y	M,R,Y	A,B,EB,M,R,S,Y

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

List Prices

	Base Model PM / PMM		A	B	EB	M	R	S	S1	S2	Y
Base Price	09 (1-1/16")	$420.50	$ 77.80	$21.70	$159.45	$ 6.00	$ 73.50	$396.80	$319.90	$319.90	N/C
	17 (1-1/2")	579.45	N/A								
	31 - (2")	808.00	302.20	24.80	285.75	19.70	81.85	811.40	592.65	592.65	N/C
	50 - (2-1/2")	1101.75	N/A								
Stroke Adder per inch/25mm of stroke	09 (1-1/16")	9.20	2.75	N/C	1.60	N/C	0.80	1.60	1.60	1.60	N/C
	17 (1-1/2")	13.05	N/A								
	31 - (2")	21.50	3.55	N/C	3.80	N/C	2.00	3.80	3.80	3.80	N/C
	50 - (2-1/2")	22.95	N/A								

Mounting Accessories

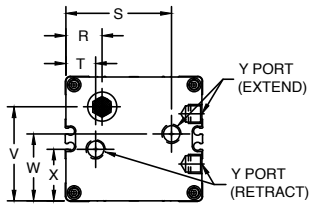
Description	Model Number	List Price	Model Number	List Price
4 Mounting Clamps with Through Holes (U.S. Customary Units and Metric)	1-1/6" - 1-1/2"		2" - 2-1/2"	
	PM-MC-09	$ 48.85	PM-MC-31	$ 67.90
End Flange Brackets with 4 Clamps – Threaded Hole (U.S. Customary Units Only)	PM-EF-09	83.20	PM-EF-31	115.25
End Flange Brackets with 4 Clamps – Threaded Hole (Metric)	PMM-EF-09	91.40	PMM-EF-31	115.25
End Flange Brackets with 4 Clamps – Through Hole (U.S. Customary Units)	PM-EFT-09	83.20	PM-EFT-31	108.50
End Flange Brackets with 4 Clamps – Through Hole (Metric)	PMM-EFT-09	83.20	PMM-EFT-31	108.50

Repair Parts

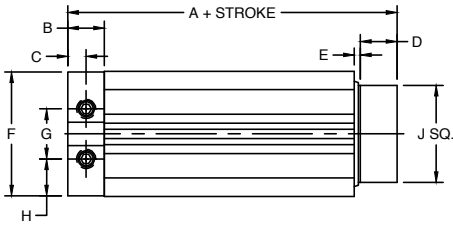
Order #		Part Description	Quantity
Seal Kits 1-1/16" – PMKS-09 1-1/2" – PMKS-17 2" – PMKS-31 2-1/2" – PMKS-50 (US and Metric)		Piston Seals	2
		Air Tube Piston Seal	2
		Rod Guide Inner Seal	1
		Rod Guide Outer Seal	1
		Rod Seal	1
		Sleeve Plug Seal	1
		Beam Wiper	1
		Tube Gasket	1
		Wrench – For Piston Removal	1
1-1/16" 1-1/2"	RD-76758 (U.S. Customary)	Replacement Shock	1
27mm 38mm	RD-68404-M (Metric)	Replacement Shock	1
2" 2-1/2"	RD-80179 (U.S. Customary)	Replacement Shock	1
31mm 50mm	RD-80179-M (Metric)	Replacement Shock	1

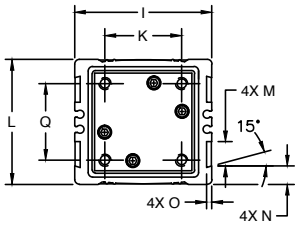
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Basic Model

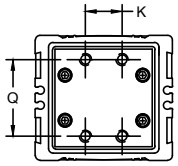


09 & 17 BORE GUIDE BEAM
PORT PLUG CONFIGURATION

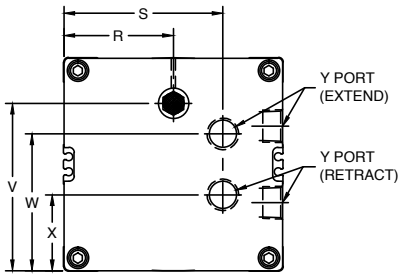




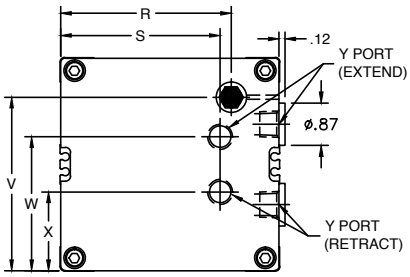
09 BORE TOOLING PLATE
BOLT HOLE PATTERN



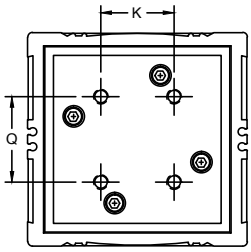
17 BORE TOOLING PLATE
BOLT HOLE PATTERN



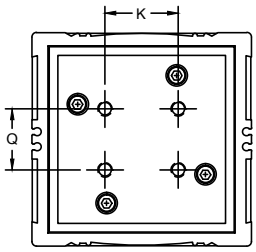
31 BORE GUIDE BEAM
PORT PLUG CONFIGURATION



50 BORE GUIDE BEAM
PORT PLUG CONFIGURATION



31 BORE TOOLING PLATE
BOLT HOLE PATTERN



50 BORE TOOLING PLATE
BOLT HOLE PATTERN

Bore		A	B	C	D	E	F	G	H	I	J	K	L	M
(09)	1-1/16"	5.75	0.75	0.38	0.75	0.12	2.54	1.02	0.76	2.81	2.00	1.57	2.56	0.50
	27mm	146.0	19.0	9.5	19.0	3.2	64.6	26.0	19.3	71.4	50.7	39.9	65.0	12.7
(17)	1-1/2"	5.88	0.88	0.33	0.75	0.12	2.54	1.17	0.69	2.81	2.00	0.75	2.56	0.50
	38mm	149.4	22.4	8.4	19.0	3.2	64.6	29.7	17.4	71.4	50.7	19.0	65.0	12.7
(31)	2"	10.48	1.19	0.59	1.00	0.12	4.35	1.65	1.35	4.50	3.43	1.50	4.38	1.28
	50mm	266.2	30.1	15.1	25.4	3.2	110.6	41.9	34.4	114.3	87.1	38.1	111.1	32.6
(50)	2-1/2"	10.48	1.19	0.59	1.00	0.12	4.35	1.65	1.35	4.50	3.43	1.50	4.38	1.28
	63mm	266.2	30.1	15.1	25.4	3.2	110.6	41.9	34.4	114.3	87.1	38.1	111.1	32.6

Bore		N	O	P	Q	R	S	T	U	V	W	X	Y
(09)	1-1/16"	0.38	0.11	1/4-20 UNC	1.57	2.17	0.74	0.61	#10-32	1.93	1.38	1.06	1/8 NPT
	27mm	9.5	2.8	M6 x 1.0	39.9	55.0	18.8	15.5	M5x0.8	49.0	35.0	26.9	G 1/8
(17)	1-1/2"	0.38	0.11	1/4-20 UNC	1.66	1.98	1.25	0.81	#10-32	1.93	1.76	0.88	1/4 NPT
	38mm	9.5	2.8	M6 x 1.0	42.1	50.4	31.8	20.5	M5x0.8	49.0	44.8	22.4	G 1/4
(31)	2"	0.50	0.11	5/16-18 UNC	1.75	3.50	2.24	N/A	1/8 NPT	3.43	2.74	1.61	3/8 NPT
	50mm	12.7	2.8	M8 x 1.25	44.5	88.8	56.9	N/A	G 1/8	87.1	69.7	40.9	G 1/4
(50)	2-1/2"	0.50	0.11	5/16-18 UNC	1.25	2.24	3.51	N/A	1/8 NPT	3.55	2.80	1.55	3/8 NPT
	63mm	12.7	2.8	M8 x 1.25	31.8	56.9	89.2	N/A	G 1/8	90.2	71.1	39.5	G 1/4

Ports

The basic unit offers both end and side ports in the guide beam end cap. The unit is supplied with flush surface plugs installed in the side ports unless the PneuMoment is ordered with the “Y” option. This no charge option has the plugs installed in the end ports.

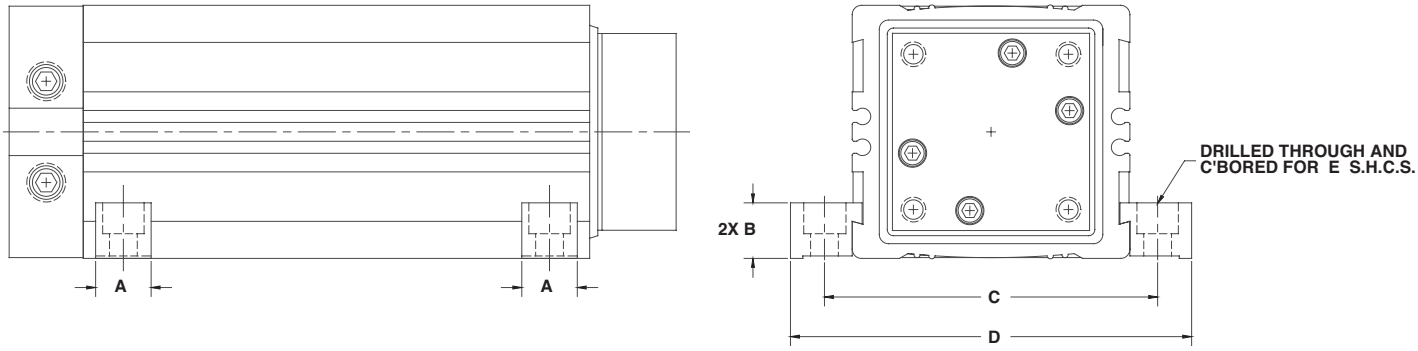
Vent Filter – Vacuum Port

The vent port can be used to connect a vacuum line. Remove the vent filter and connect a vacuum line to this port for clean room applications.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Mounting Accessories

Mounting Clamps



Mounting clamps can be used any time the PneuMoment is mounted to a flat surface. They are supplied with through holes for socket head cap screws. The clamps connect to the channel that runs along the length of the guide beam. Mounting clamps can be located anywhere along the length of the guide beam but we recommend they be as close to the ends as possible with the width of the clamp engaged into the guide beam channel. Mounting clamps are supplied in packets of four. The same clamp is used for U.S. customary unit and metric mountings.

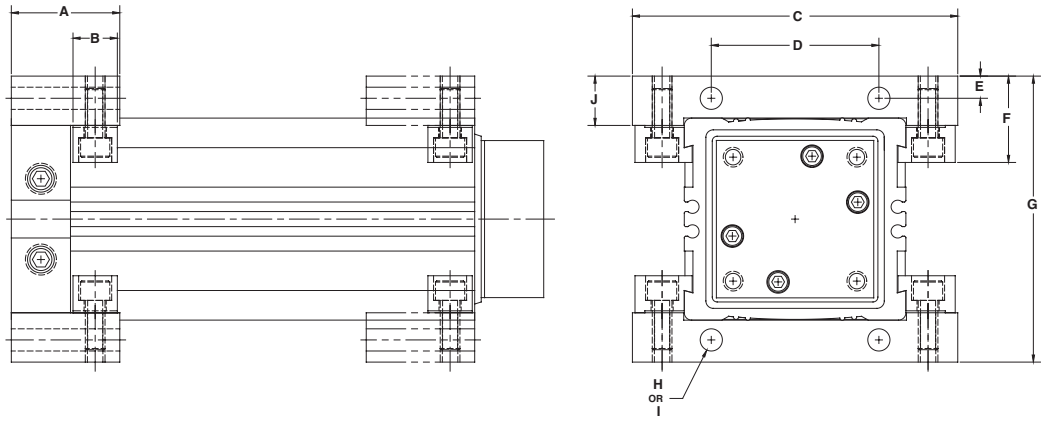
Bore		Part No.	A	B	C	D	E
(09)	1-1/16"-1-1/2"	PM-MC-09	0.56	0.56	3.37	4.06	1/4-20 UNC
	(27mm-38mm)		14.3	14.3	85.6	103.1	M6 x 1.0
(31)	2"-2-1/2"	PM-MC-31	1.50	.69	5.30	6.18	3/8-16 UNC
(50)	(50mm-63mm)		38.1	17.5	134.5	156.9	M10 x 1.5

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Mounting Accessories

End Flanges

End flanges can be used to mount the actuator at either end of the guide beam. The clamps connect to the flange bracket using screws and threaded holes. Two flange bracket styles are available; one with through holes and the other with threaded holes. End flanges are supplied in a kit containing two flange brackets and four clamps.



Threaded Holes (U.S. PM-EF-09, Metric PMM-EF-09*) U.S. PM-EF-31, Metric PMM-EF-31
Through Holes (U.S. PM-EFT-09, Metric PMM-EFT-09*) U.S. PM-EFT-31, Metric PMM-EFT-31

Bore	A	B	C	D	E	F	G	H	I	J
1-1/16", 1-1/2"	1.50	0.56	4.12	2.12	0.28	1.06	3.62	0.28	1/4-20 UNC	0.62
(27mm), (38mm)	38.3	14.3	104.8	53.9	7.1	27.0	92.0	7.1	M6 x 1.0	15.9
2" - 2-1/2"	2.74	1.50	6.25	3.82	0.38	1.47	5.88	0.41	3/8-16 UNC	0.92
(50mm), (63mm)	69.6	38.1	158.9	97.1	9.5	37.4	149.2	0.42	M10 x 1.5	23.4

**1-1/16" and 1-1/2" bore sizes use the same End Flange.*
2" and 2-1/2" bore sizes use the same End Flange.

Options

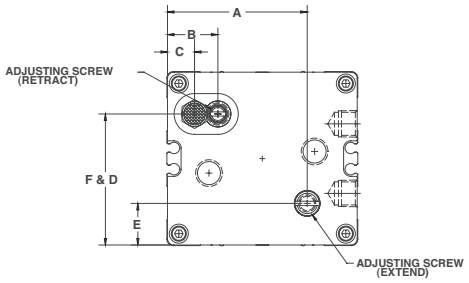
Internal Stroke Adjustment – Option A

Optional internal stroke adjustment screws on the rear of the guide beam end cap limit the stroke in either direction. Each screw limits the stroke in one direction. Approximate adjustment per 1/4 turn – Extend .008", Retract .014" for 1-1/16 (27mm) bore. Extend .021", Retract .025" for 2" (31mm) bore.

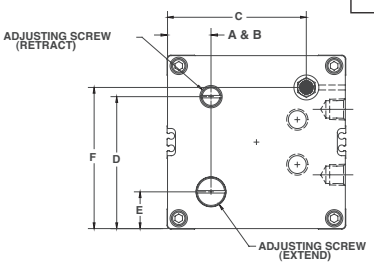
Note: Within the unit's stroke length there are no dimensional limitations for either extend or retract adjustments. Not compatible with shock absorbers, external bumpers or internal bumpers.

Bore		A	B	C	D	E
(09)	1-1/16"	2.06	0.73	0.36	1.94	0.61
	(27mm)	52.2	18.5	9.1	49.3	15.5

Option A – is not available for 1-1/2" and 2-1/2" bore. Use External Bumper – Option EB to achieve stroke adjustment.



090 (1.06) BORE INTERNAL STROKE ADJUSTER CONFIGURATION



310 (2.00) BORE INTERNAL STROKE ADJUSTER CONFIGURATION

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Options

Internal Bumpers – Option B

Provides internal bumpers for end of stroke noise reduction in both directions.

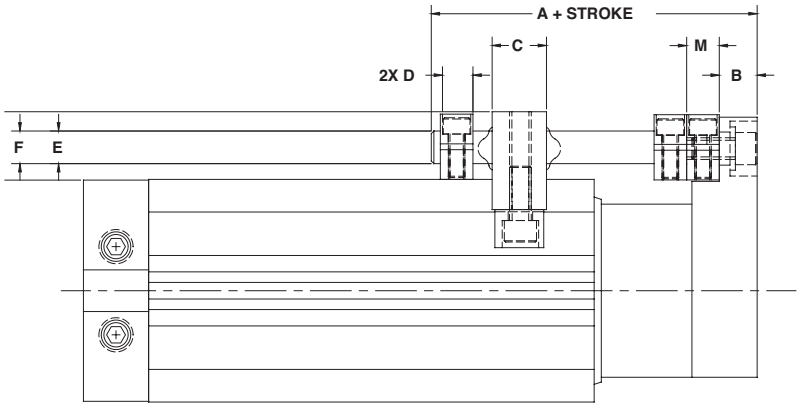
Air Pressure Effect on Stroke

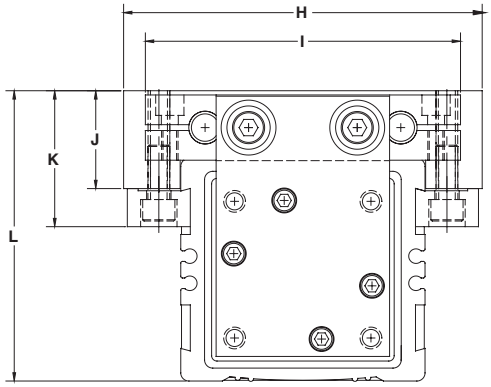
Air Pressure	20 psi	40 psi	60 psi	80 psi
1-1/16", 1-1/2"	-0.77	-0.047	-0.020	0
27mm, 38mm	-19.0mm	-1.2mm	-0.51mm	0
2"	-0.090	-0.080	-0.020	0
50mm	-2.3mm	-2mm	-0.5mm	0
2-1/2"	-0.027	-0.018	-0.010	0
63mm	-0.68mm	-.45mm	-.25mm	0

External Bumpers – Option EB

Optional external bumpers provide both end-of-stroke noise reduction and end-of-stroke adjustment. The external bumper assembly is mounted to the actuator with clamps that connect to the channel that runs along the length of the guide beam.

Note: not compatible with shock absorbers, end flange mounting on the guide beam end, internal stroke adjustment and internal bumpers.





Bore		A	B	C	D	E	F	G	H	I	J	K	L
(09), (17)	1-1/16", 1-1/2"	2.75	0.44	0.62	0.38	0.38	0.73	0.75	4.12	3.62	1.16	1.59	3.37
	(27mm), (38mm)	69.8	11.1	15.9	9.5	9.5	18.5	19.0	104.8	92.0	29.4	40.5	85.6

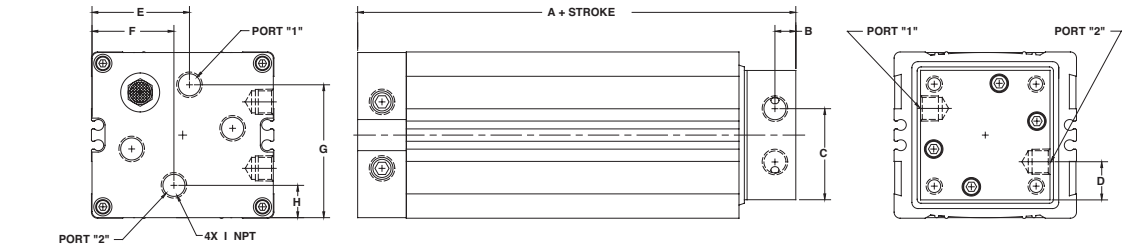
Bore		A	B	C	D	E	F	G	H	I	J	K	L	M
(31) (50)	2", 2-1/2"	4.44	0.68	1.54	0.50	0.62	1.56	1.57	6.25	5.69	1.75	2.30	5.95	0.75
	50mm - 63mm	112.8	17.3	39.1	12.7	15.9	39.6	40.0	158.9	144.4	44.3	58.3	151.1	19.1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

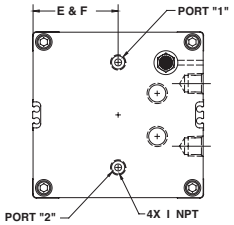
Options

Auxiliary Port-Air/Vacuum – Option R

Optional air/vacuum ports can be supplied to transmit air or vacuum through the actuator to the load beam tooling plate for use by other automation devices.



090 & 170 (1.06 & 1.50) BORE GUIDE BEAM END CAP
AUXILIARY PORT CONFIGURATION



310 & 500 (2.00 & 2.50) BORE GUIDE BEAM END CAP
AUXILIARY PORT CONFIGURATION

Bore		A	B	C	D	E	F	G	H	I
(09)	1-1/16"	5.75	0.32	1.41	0.59	1.50	1.26	2.05	0.50	1/8 NPT
	(27mm)	146.0	8.2	35.8	14.9	38.1	32.1	52.0	12.6	G 1/8
(17)	1-1/2"	5.88	0.32	1.00	1.00	0.65	2.06	2.02	0.48	1/8 NPT
	(38mm)	149.4	8.2	25.3	25.3	16.5	52.2	51.3	12.2	G 1/8
(31)	2"	10.48	0.50	2.84	0.60	2.24	2.24	3.56	0.80	1/8 NPT
	50mm	266.2	12.7	72.1	15.2	56.9	56.9	90.4	20.2	G 1/8
(50)	2-1/2"	10.48	0.50	1.68	1.76	0.99	3.49	3.43	0.83	1/4 NPT
	63mm	266.2	12.7	42.6	44.7	25.1	88.7	87.1	21.0	G 1/4

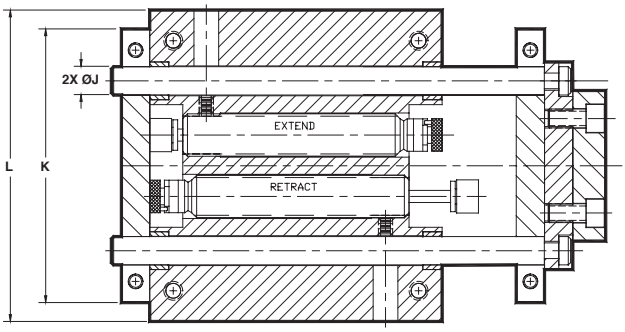
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Options

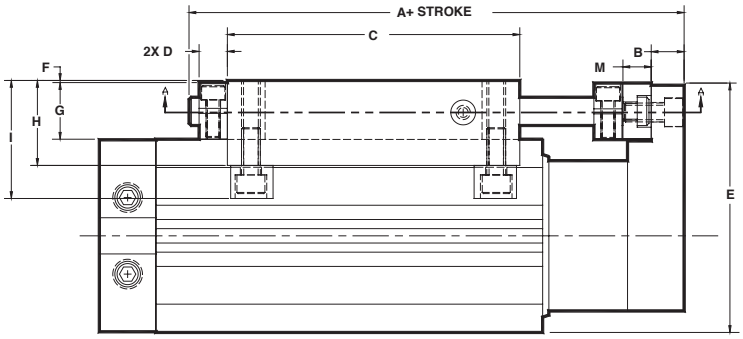
Shock Absorbers – Option S, S1, S2

Optional adjustable shock absorbers are available to control the deceleration of heavier loads as well as limit the stroke of the actuator. The shock absorber assembly is mounted with clamps that connect to the channel that runs along the length of the guide beam. Option S includes two shocks to decelerate loads in both directions. Option S1 provides one shock in the extend direction. Option S2 provides one shock in the retract direction. See page 3.43 to select the proper shock absorber setting for your application.

Note: not compatible with external bumpers, end flange mounting on either end, internal stroke adjustment and internal bumpers.



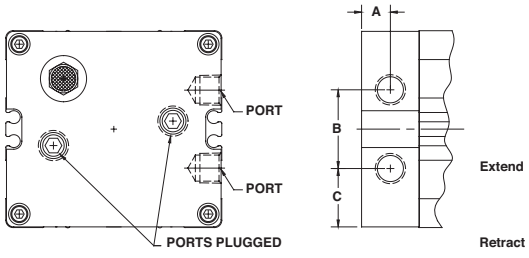
SECTION A-A



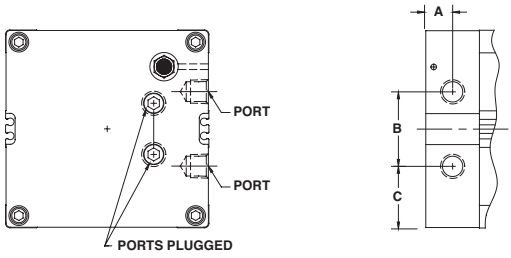
Bore		A	B	C	D	E	F	G	H	I	J	K	L	M
(09), (17)	1-1/16", 1-1/2"	5.56	0.44	3.88	0.38	3.37	0.02	0.73	1.16	1.59	0.38	3.62	4.12	N/A
	(27mm), (38mm)	141.2	11.1	98.4	9.5	85.6	0.4	18.5	29.4	40.5	9.5	92.0	104.8	N/A
(31) (50)	2", 2-1/2"	8.17	0.68	5.71	0.50	5.84	0.02	1.56	1.75	2.30	0.62	5.69	6.25	0.75
	(50mm) - (63mm)	207.5	17.3	145.0	12.7	148.4	0.40	39.6	44.3	58.3	15.9	144.4	158.9	19.1

End and Side Ports – Option Y

All PneuMoments have both end and side ports in the guide beam end cap. Removable flush port plugs are installed at the factory in the side ports unless the "Y" option is specified. PneuMoments with this option are shipped with plugs installed in the end ports.



090 & 170 (1.06 & 1.50) BORE GUIDE BEAM END CAP PORT PLUG CONFIGURATION



310 & 500 (2.00 & 2.50) BORE GUIDE BEAM END CAP PORT PLUG CONFIGURATION

Bore		A	B	C
(09)	1-1/16"	0.38	1.02	0.76
	(27mm)	9.5	26.0	19.3
(17)	1-1/2"	0.33	1.17	0.69
	(38mm)	8.4	29.7	17.4
(31)	2"	0.59	1.65	1.35
	(50mm)	15.1	41.9	34.4
(50)	2-1/2"	0.59	1.65	1.35
	(63mm)	15.1	41.9	34.4

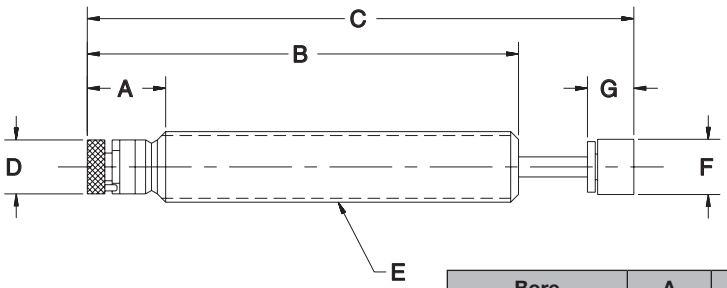
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Options

Shock Absorbers – Option S, S1, S2

The load-carrying capabilities of the PneuMoment can be enhanced by the use of external deceleration devices such as shock absorbers. Shocks, when used properly, can also increase actuator life. Use the following data to determine the requirements for your specific application.

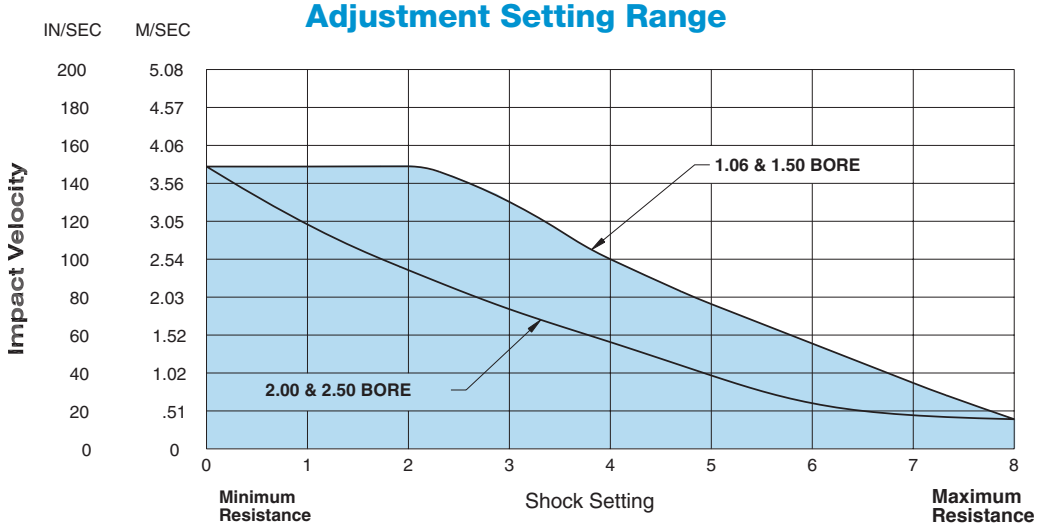
The shock allows multiple deceleration settings. Set the adjustable shock dial to the setting that meets your application.



Bore	A	B	C	D	E	F	G
1-1/16" - 1-1/2"	0.69	3.31	4.36	0.59	9/16-18 UNF	0.5	0.47
27mm-38mm	17.4	84.1	110.7	15.1	M16 x 1.5		11.9
2" - 2-1/2"	0.58	4.45	6.52	0.88	1-3/8-12UNF	1.22	N/A
50mm-63mm	14.7	113	165.6	22.4	N/C	31	N/A

Adjustment Setting Range

The shock allows multiple deceleration settings. The blue area represents the range of settings to consider based on velocity. Set the adjustable shock dial to the setting that meets your application.



Use this chart to determine the shock absorber's maximum energy levels.

Shock Absorber Specifications											
Bore	Model	Shock Absorber Bore	(S) Stroke	Thread Type	(E_T) Max. Per Cycle	(E_T-C) Max. Per Hour	(F_P) Max. Shock Force	Normal Coil Spring Force		(F_D) Max. Propelling Force	Weight
								Extension	Compression		
1-16" 1-1/2"	U.S.	.28 in	.5 in	3/4-16UNF-2A	250 in-lbs.	284,000 in-lbs.	775 lbs.	1.25 lbs.	2.75 lbs.	250 lbs.	5 oz.
27mm 38mm	Metric	(7.11mm)	(12.7mm)	M16 x 1.5	(16.95 Nm)	(33,900 Nm)	(2 KN)	(4.44 N)	(9.77 N)	(534 N)	(85 g.)
2"-2-1/2"	U.S.	.63"	1.00"	1-3/8-12UNF-2A	1100 in-lbs.	808,000 in-lbs.	1700 lbs.	9.00"	13.00"	500 lbs.	20 oz.
*31mm 50mm	*Metric	(16.0mm)	(25.4mm)	——	(124.5 Nm)	(91,291.7 Nm)	(7.5 KN)	(40 N)	(57.8 N)	(2224.1 N)	(567 g.)

*Uses U.S. shock for 2" - 2-1/2".

Engineering Specifications

Components:

Guide beam	PTFE-impregnated, hard-coat anodized extruded aluminum
Load beam	PTFE-impregnated, hard-coat anodized extruded aluminum
Guide beam end cap	Black anodized aluminum
Load beam tooling plate	Black anodized aluminum
Load bearings	PTFE-filled polymer
Beam wiper	Urethane
Rod	Welded DOM steel
Air tube	304 stainless steel
Internal end plate	6061 aluminum
Cylinder sleeve	304 stainless steel
Sleeve plug	2011 aluminum
Rod guide	2011 aluminum
Rod guide bearing	Phosphor bronze
Rod nut	Carbon steel-plated
Piston	2011 aluminum
Port plugs	Galvanized steel
Vent filter	Sintered bronze
Internal seals	Buna-N
Retaining screws	Grade 8 Alloy Steel

Rated Air Pressure
150 psi (10.34 bar)

Power Factors

1-1/16" bore
Extend .888 x Air Pressure
Retract .734 x Air Pressure

2" bore
Extend 3.1 x Air Pressure
Retract 2.65 x Air Pressure

1-1/2" bore
Extend 1.7 x Air Pressure
Retract 1.5 x Air Pressure

2-1/2" bore
Extend 5.0 x Air Pressure
Retract 4.42 x Air Pressure

Velocity @ 80 psi
1-1/16" bore – 27mm-27 in/sec.
1-1/2" bore – 38mm-27 in/sec.
2" bore – 30 in/sec.
2-1/2" bore – 26 in/sec.
*Special units with increased velocity are available. Contact your Bimba distributor.

Temperature Range:
-20°F to 140°F (-29°C to 60°C)

Breakaway:
Less than 13 psi without external bumper or shock option. Less than 18 psi if external bumper or shock option is included.

Lubrication:
All Bimba PneuMoment actuators are pre-lubricated with our special HT-99 lubrication and sealed at the factory for extensive maintenance-free life. Actuator life can be extended by providing additional lubricant with an air line mist lubricator. Actuator life is also dependent upon operational temperature, velocity and load. The PTFE-filled plastic bearings require no additional lubrication for the life of the bearing.

Options:

Bumpers (internal & external)	Urethane
Stroke adjusters	303 stainless steel
Shock absorbers	Anodized aluminum end plates, 303 stainless steel guide rods
Auxiliary air tube	303 stainless steel
Magnet	Neodynium

Weights

Weights – Pounds (Kilograms)								
Model / Option	1-1/16" (09)		1-1/2" (17)		2" Bore		2-1/2" Bore	
	At 0" Stroke	Adder Per Inch (25mm) of Stroke	At 0" Stroke	Adder Per Inch (25mm) of Stroke	At 0" Stroke	Adder Per inch of Stroke	At 0" Stroke	Adder Per inch of Stroke
Standard Model	2.75 (1.25)	0.37 (0.17)	3.30 (1.50)	.44 (.20)	17 lb.	.98 lb.	16.9	1.12 lb.
Adder for A Option	0.5 (0.23)	0.04 (0.02)	N/A	N/A	.59	.067	N/A	N/A
Adder for B Option	0.01 (0.004)	N/A	0.01 (0.004)	N/A	0.03	N/A	0.03	N/A
Adder for EB Option	1.75 (0.79)	0.06 (0.03)	1.75 (0.79)	0.06 (0.03)	5.47	0.17	5.47	0.17
Adder for R Option	0.15 (0.07)	0.06 (0.03)	0.15 (0.07)	0.06 (0.03)	0.15	0.02	0.15	0.02
Adder for S Option	3.62 (1.64)	0.06 (0.03)	3.62 (1.64)	0.06 (0.03)	9.67	0.17	9.67	0.17
Adder for S1 Option	3.43 (1.56)	0.06 (0.03)	3.43 (1.56)	0.06 (0.03)	8.5	0.17	8.5	0.17
Adder for S2 Option	3.43 (1.56)	0.06 (0.03)	3.43 (1.56)	0.06 (0.03)	8.5	0.17	8.5	0.17

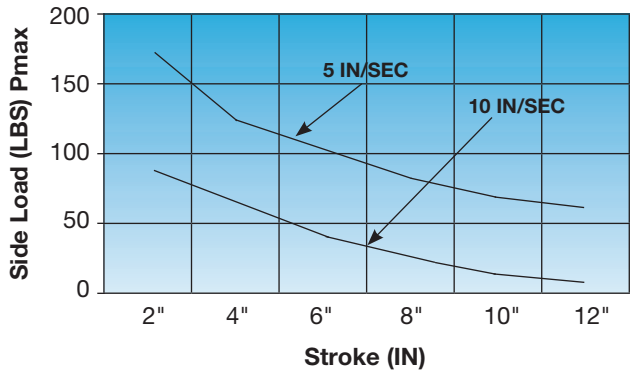
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Application Considerations

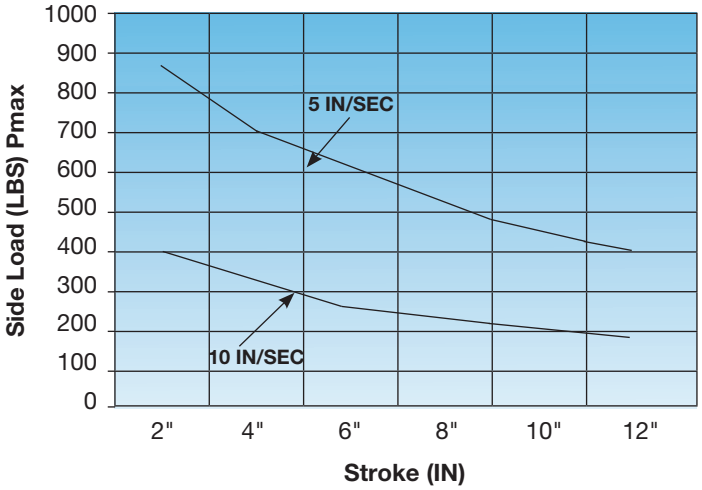
Maximum Allowable Side Load (Pmax)

These graphs illustrate PneuMoments capability to carry large sides loads. Examples for all four bore sizes are shown. Use the formulas on page 3.47 to calculate the maximum allowable side load using your application parameters or visit our website and use the PneuMoment sizing program. 80 degree F temperature used for graph calculations.

Max Side Load (Pmax) 1-1/16" and 1-1/2" Bores



Max Side Load (Pmax) 2" and 2-1/2" Bores



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

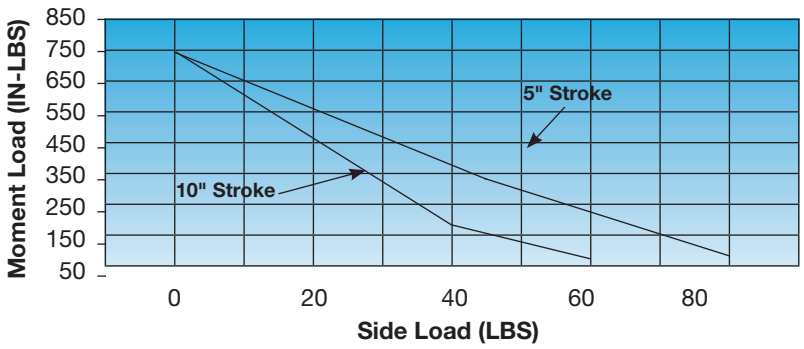
Application Considerations

Combination Side and Moment Load

The following graphs illustrate PneuMoments capability to carry a combination of side and moment load. Examples for all 4 bore sizes are shown. Use the formulas on page 3.47 to calculate the maximum load carrying capabilities for your application or visit our web-site and use the PneuMoment sizing program. 80 degree F temperature used for graph calculations.

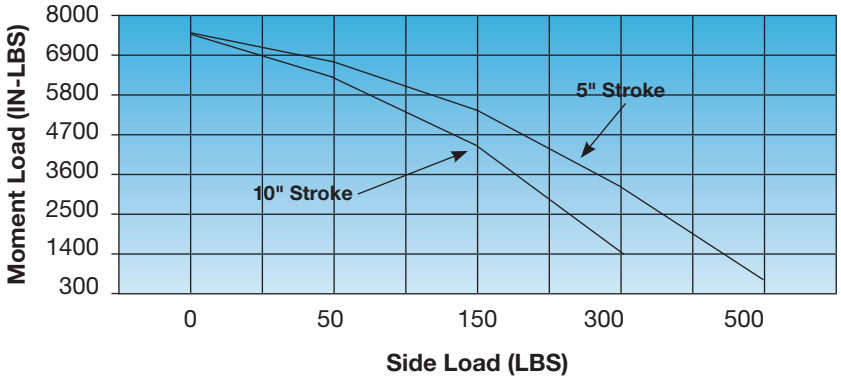
Combination Side and Moment Load

1-1/16" and 1-1/2" Bore



Combination Side and Moment Load

2" and 2-1/2" Bore

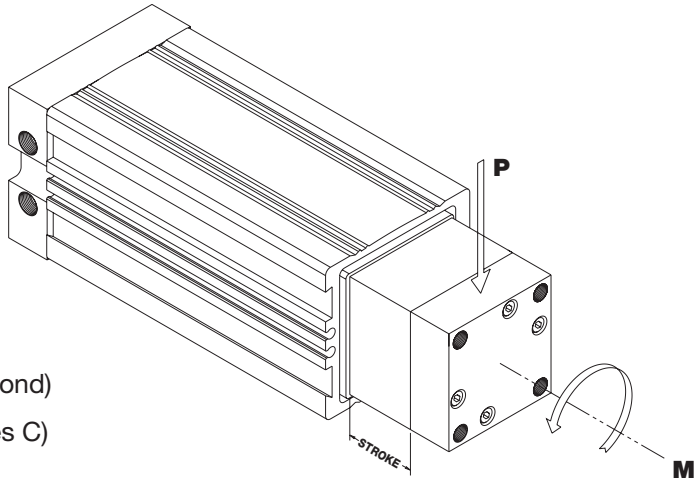


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Application Considerations

Capability

Use the following formulas to calculate PneuMoment's capability to solve your application requirement.



S_{MAX} = The maximum allowable stress in the bearing material in psi (MPa)

PV = One of the limiting factors of the bearing depending on ambient temperature and cycle velocity.

V = Velocity in feet per minute (meters per second)

T = Ambient temperature in degrees F (degrees C)

P_{MAX} = Maximum side load in pounds (Newtons)

M_{MAX} = Maximum moment load in inch-pounds (Newton-meters)

P = Actual side load in pounds (Newtons)

M = Actual Moment Load in inch-pounds (Newton-meters)

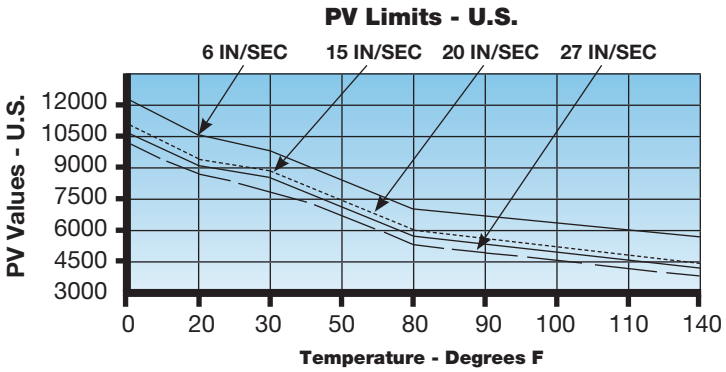
W = Actual load weight in pounds (kilograms)

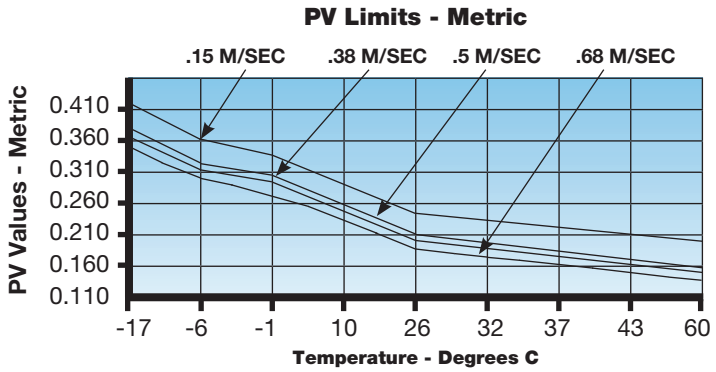
Please note that a sizing program located on our website can perform these calculations for you.

Step One: For all bore sizes - find the PV Value from the charts below or calculate it using the formula:

- **U.S. PV (psi*ft/min.)** = $0.044V^2 - 25.6V + 0.27T^2 - 87T + 12{,}970$
- **Metric PV (MPs*m/s)** = $(1703V^2 - 5039.4V + 0.875T^2 - 125.5T + 10462.5) / 28550$

T = Ambient temperature degrees – F or C





For Technical Assistance: 800-442-4622

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Application Considerations

Step Two: Calculate maximum bearing stress

Smax = PV Limit (U.S. or Metric) / Velocity (ft/min. or n/m²

All bore sizes use this calculation

Step Three: Calculate maximum Moment Load

1-1/16"(27mm) or 1-1/2"(38mm) bore sizes:
U.S. – **Mmax** (in/lbs.) = 3.165 x Smax
Metric – **Mmax** (nm) = 51.79 x Smax

2"(31mm) or 2-1/2"(50mm) bore sizes:
U.S. – **Mmax** (in/lbs.) = 31.841 x Smax
Metric – **Mmax** (nm) = 515.448 x Smax

Step Four: Calculate maximum Side Load

1-1/16"(27mm) or 1-1/2"(38mm) bore sizes:
U.S. – **Pmax** (lbs.) = (3.281 x Smax) / (3.5 + stroke)
Metric – **Pmax** (n) = (53,240 x Smax) / (88.9 + stroke)

2"(31mm) or 2-1/2"(50mm) bore sizes:
U.S. – **Pmax** (lbs.) = (26.416 x Smax) / (6.720 + stroke)
Metric – **Pmax** (n) = (432,423 x Smax) / (170.69 + Stroke)

Applications with both Moment and Side load
If you know the actual Moment load (M) in/lbs. or (nm)

Calculate the allowable Side Load

1-1/16"(27mm) or 1-1/2"(38mm) bore sizes:
U.S. – **Pmax** (lbs.) = (Smax – M / 3.165) x 3.281 / (3.5 + stroke)
Metric – **Pmax** (n) = Smax – M / 51.87) x 53,240 / (88.9 + stroke)

2"(31mm) or 2-1/2"(50mm) bore sizes:
Pmax (lbs.) - (Smax – M / 31.841) x 26.416 / (6.720 + stroke)
Pmax (n) + (Smax – M / 515.448) x 432,423 / (170.69 + stroke)

If you know the actual Side load (P) lbs. Or (n)

Calculate the allowable Moment Load

1-1/16"(27mm) or 1-1/2"(38mm) bore sizes:
Mmax (in/lbs.) = 3.165 x {Smax – [P x (3.5 + stroke) / 3.281]}
Mmax (nm) = 51.87 x {Smax – [P x (88.9 + stroke) / 53,770]}

2"(31mm) or 2-1/2"(50mm) bore sizes:
Mmax (in/lbs.) = 31.841 x {Smax – [P x (6.720 + stroke) / 26.416]}
Mmax (nm) = 515.448 x {Smax – [P x (170.69 + stroke) / 432,423]}

Kinetic Energy

PneuMoment maximum KE rating:

Bore	KE
1-1/16"(27mm) or 1-1/2"(38mm)	.135 (ft./lbs.) – 0.183 (nm)
2"(31mm) or 2-1/2"(63mm)	.270 (ft./lbs.) – 0.366 (nm)

Loads generating a KE factor above these KE values require - Shock Option (S) or other external deceleration devices. To calculate the applications KE rating use the formula $1/2mV^2$; where m is the mass of the load, V is the velocity in ft./sec. or m/s, i.e. 4 in/sec would be expressed as 4/12 or .33 ft./sec.

Additional KE information:

1-1/16"(27mm) or 1-1/2"(38mm)	U.S. m = {W + [0.162 * (3.5 + stroke(in))]} / 32.179 slugs Metric m - {W + [0.028 * (88.9 + stroke(mm))]} / 9.81
2"(31mm) or 2-1/2"(50mm)	U.S. m = {W + [0.916 * (6.72 + stroke(in))]} / 32.179 slugs Metric m - {W + [.1635 * (170.69 + stroke(mm))]} / 9.81
W = actual side load being moved	

Deflection and End Play

End play is defined as load beam movement in any one direction at full extension and 80 psi, with a specified load applied. Refer to the table on the right. Measurements are taken off the face of the load beam tooling plate. End play numbers are double when load beam movement is measured in two opposing directions.

PneuMoment Stroke Length	1-1/16"(27mm) or 1-1/2"(38mm) 5 lbs. (1.86 kg) load applied	2"(31mm) or 2-1/2"(50mm) 35 lbs. (13.06 kg) load applied
1"	.0083" - (.210mm)	.0025" - (.064mm)
2"	.0110" - (.279mm)	.0040" - (.102mm)
3"	.0140" - (.355mm)	.0045" - (.114mm)
4"	.0174" - (.441mm)	.0055" - (.140mm)
5"	.0210" - (.533mm)	.0075" - (.190mm)
6"	.0251" - (.637mm)	.0095" - (.241mm)
7"	.0294" - (.746mm)	.0110" - (.279mm)
8"	.0341" - (.866mm)	.0125" - (.318mm)
9"	.0391" - (.993mm)	.0140" - (.356mm)
10"	.0444" - (1.12mm)	.0150" - (.381mm)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PneuMoment™ Application Checklist

This checklist makes sizing and selecting Bimba PneuMoment easier. Bimba's Engineering Department will assist you by providing a detailed analysis of your application and, based on the information provided, will help you choose the actuator that best fits your needs.

Step 1. ***Photocopy this page and complete all applicable information.***

Step 2. ***Mail or fax your information to your local stocking distributor.***

Date: _____

Your Name: _____

Company: _____

Address: _____

Phone: _____

Fax: _____

1. How will the cylinder be mounted? (Check all that apply)

☐ Horizontally ☐ Vertically

☐ Base ☐ Rear Flange ☐ Front Flange

2. What is your operating air pressure?

_____psi _____(bar)

3. What is the weight of the load being moved?

_____lbs _____(kg.)

4. How far is the center of the load from the surface of the dynamic member?

_____inches _____(mm)

5. What is the desired stroke length?

_____inches _____(mm)

6. What is the maximum velocity of the load?

_____ft./second _____(m/second)

7. Will external deceleration devices be used?

☐ Yes ☐ No

8. Will PneuMoment shock absorbers be used to slow down the load?

☐ Yes ☐ No

9. What is the ambient operating temperature?

_____°F _____°C

10. Do you need position sensing?

☐ Yes ☐ No

If yes,

☐ end-of-stroke ☐ mid-stroke

Briefly describe the environment the PneuMoment will be used in:

_____

_____

_____

Application Sketch (include sketch of external guide/support)

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP