

Air-Oil Systems, Inc. www.airoil.com

BC4 BAND CYLINDER

BC4 BAND CYLINDER



NOW AVAILABLE
SIZING & SELECTION
SOFTWARE FOR
BAND CYLINDERS
WWW.TOLOMATIC.COM

The BC4 Series™ Band Cylinder®, is a cost-effective, space-saving rodless actuator perfect for applications where existing guided and supported loads require pneumatic actuation.

Its unique internal load-supporting bearing design, offers substantially more bearing surface than other cylinders in its class. The result is durable, dependable performance with lowest breakaway and highest speed of Tol-O-Matic's band cylinders.

The carrier design of the BC4 Series features a spring-loaded band insertion ramp that compensates for wear, resulting in longer life in high velocity applications. In

addition, a magnet is included as a standard feature for easy field retrofitting of switch sensors, no need to disassemble the cylinder to install a magnet.

The BC4 Series utilizes the same patented band retention system as the BC2 Series Band Cylinders (see photo below) and the clear anodized tube design resists corrosion. It offers versatile mounting options with T-Slot nuts for tube supports or direct surface mounting.

Available in 5/8", 1", 1-1/4", 1-1/2", 2" and 2-1/2" (16, 25, 32, 40, 50 and 63mm)

bore sizes, the BC4 Series Band Cylinder will carry loads ranging from 30 to 370 lbs. (13.6 to 168kgs.) For applications where heavy side loads are not a factor, the BC4 cylinders are hardworking, dependable, cost-effective rodless actuators designed with the same high quality standards that goes into every Tol-O-Matic Product.



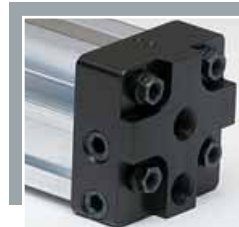
MULTI-PORTED HEADS

CORROSION RESISTANT
CLEAR ANODIZED
EXTRUDED
ALUMINUM TUBE

FLUSH END SURFACE
FOR EASY MOUNTING

MAGNET IN PISTON COMES STANDARD
FOR USE WITH SENSING DEVICES

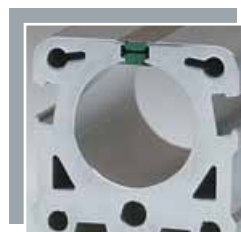
ADJUSTABLE CUSHION



Available with a single-end porting option for simplified air line installation in long stroke applications. (Not available for 5/8" Bore.)

Integrated design accommodates T-Slot nuts and Tube Supports that provide convenient intermediate support.

Unique internal load-supporting bearing system has a self-lubricating bearing running the length of the carrier web for optimal bearing surface. Unlike other systems, which utilize a fixed bearing, the bearing on the BC4 design is allowed to "float" for smooth load movement with reduced friction. Combined with a molded plastic piston, this design offers maximum bearing life for millions of cycles.



Patented band retention system* combines an inner Sealing Band that creates a tight metal-to-metal seal with the internal diameter of the cylinder bore, with an outer Dust Band that keeps dust and grit away from the Sealing Band. Elastomer strips provide a positive, non-magnetic lock.

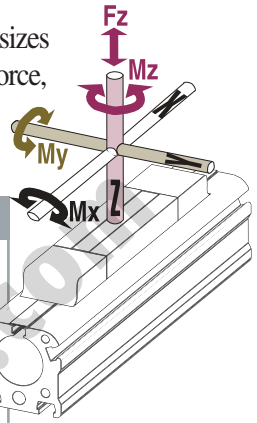
*U.S. Patent No. 4,545,290

BC4 BAND CYLINDER

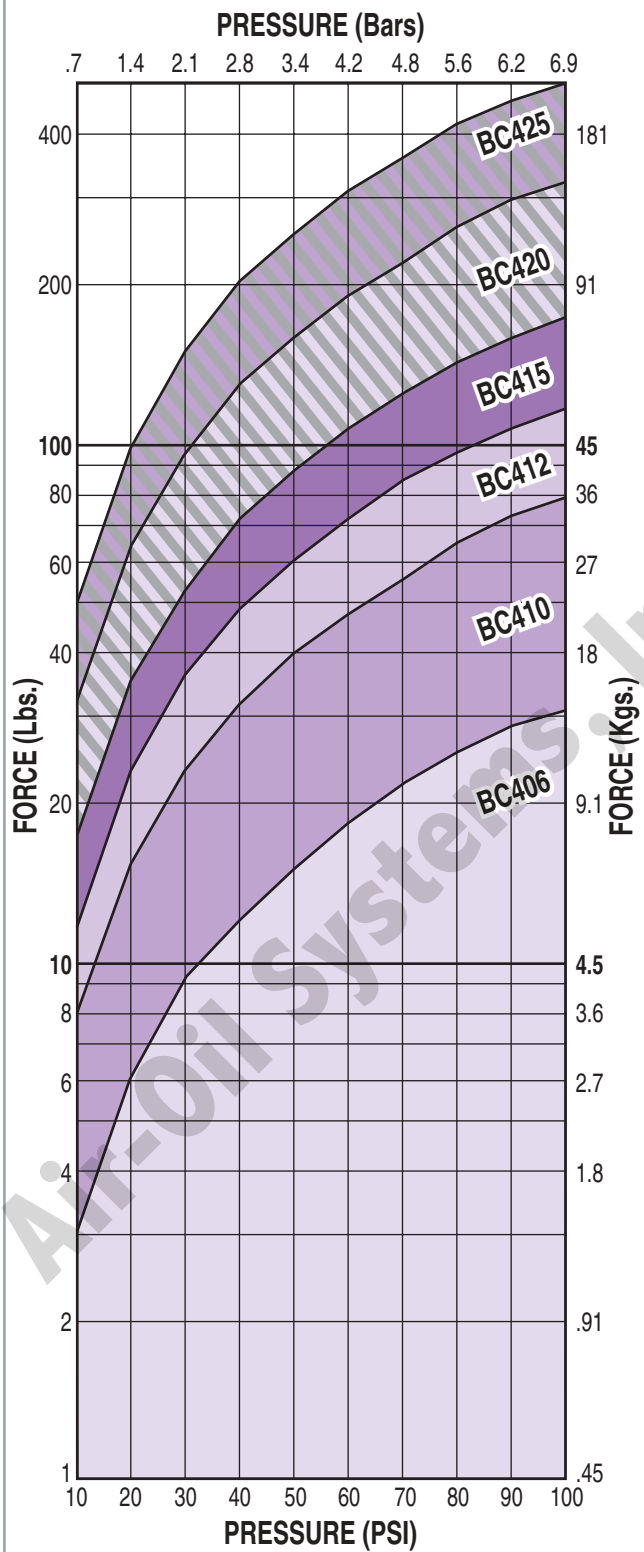
The graphs on these pages are intended for a quick reference to help in determining the BC4 Band Cylinder that will work for your project.

Refer to page 88 to find step by step directions to size and select the best rod-less cylinder for the job.

Pages following detail each of the bore sizes of the BC4, giving bore size, weights, force, cushion data, tube support requirement and available options.

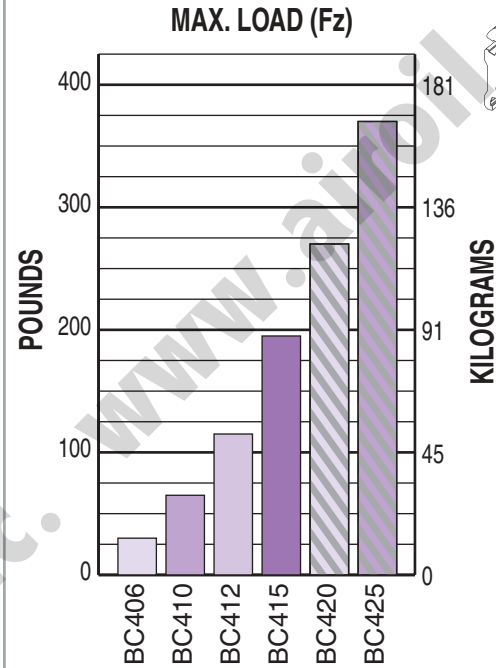


BC4 THEORETICAL FORCE vs PRESSURE

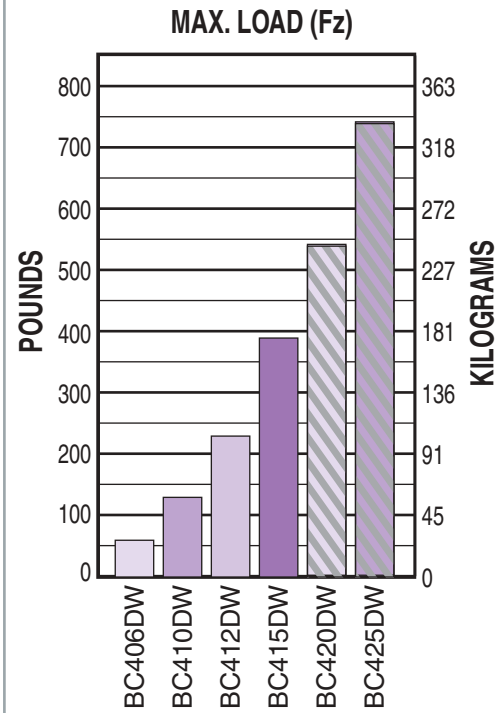


BC4 MAXIMUM LOAD

STANDARD ACTUATOR



AUXILIARY CARRIER & LONG CARRIER OPTIONS

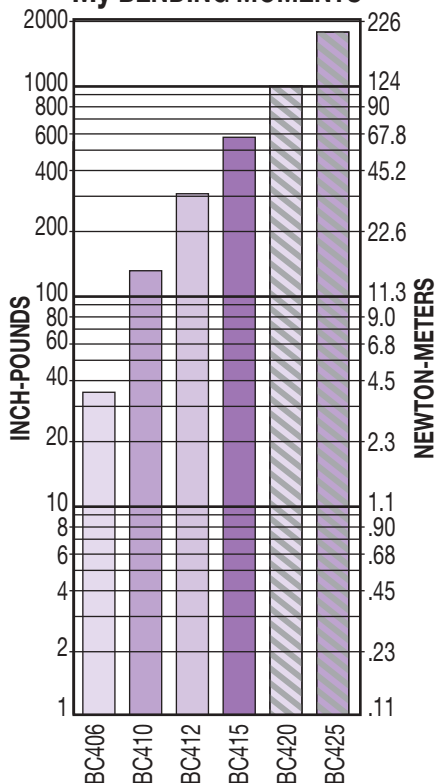


BC4 BAND CYLINDER

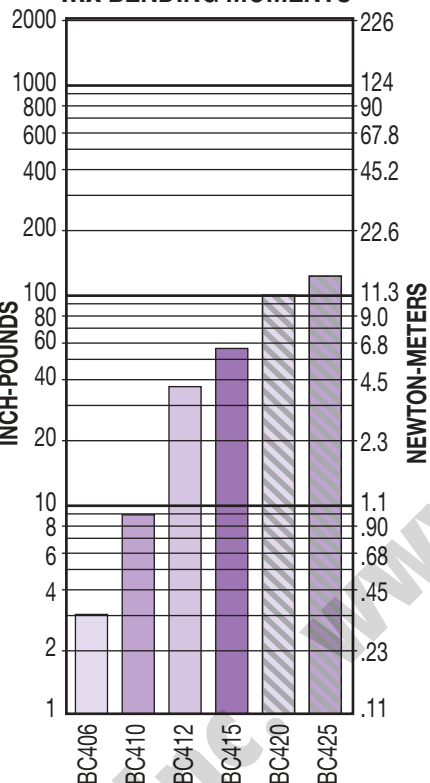
BC4 BENDING MOMENTS

STANDARD ACTUATOR

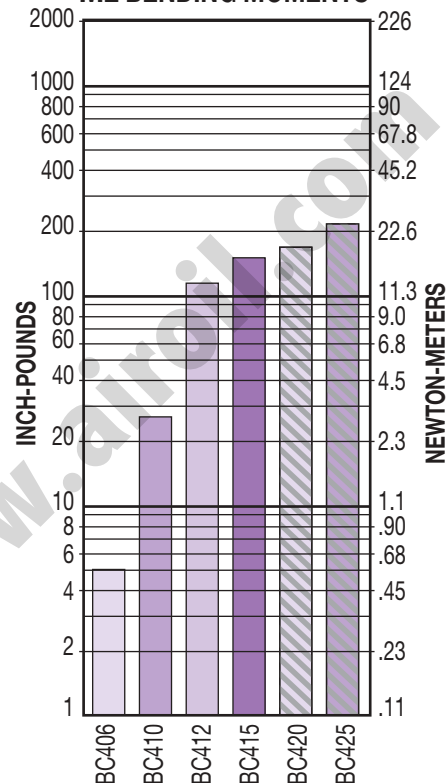
My BENDING MOMENTS



Mx BENDING MOMENTS

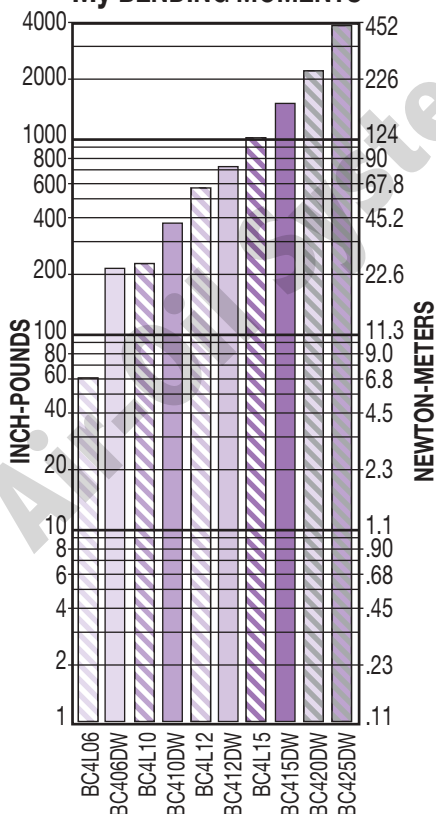


Mz BENDING MOMENTS

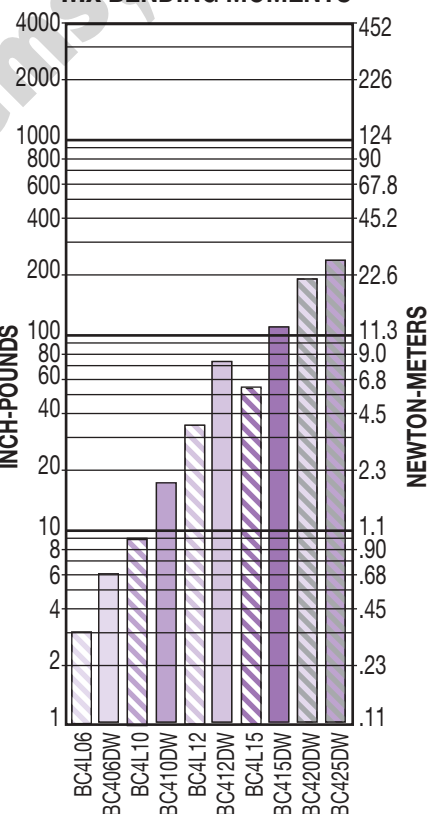


AUXILIARY CARRIER & LONG CARRIER OPTIONS

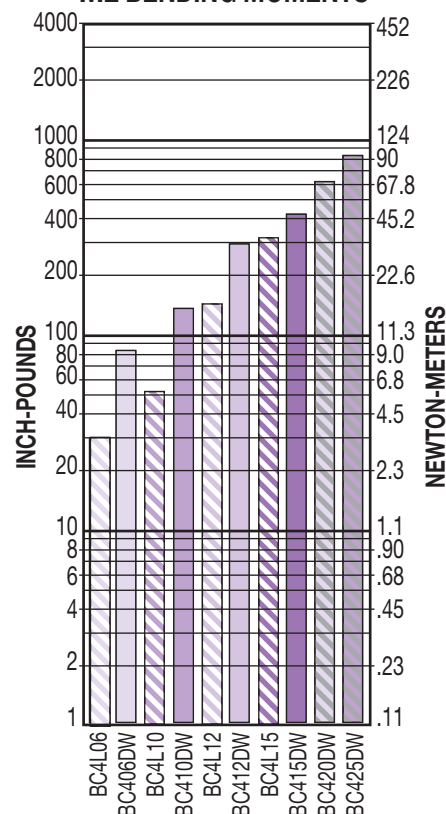
My BENDING MOMENTS



Mx BENDING MOMENTS



Mz BENDING MOMENTS



*Auxiliary carrier bending moments indicated are at minimum center to center distance. Additional My + Mz load capacity can be obtained by increasing "D" dimension. Refer to auxiliary carrier data on page 70.

BC406

For applications with light loads the BC406 is a great choice. With a space-saving profile, the BC406 will accommodate a wide variety of applications where space is limited. The BC406 accommodates thrusts up to 30 lbs. (13.9 kg.), customer-specified stroke lengths, and adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC406 is easily "custom-made" to meet application requirements.



BC406 OPTIONS	
AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
LONG CARRIER.....	69
SHOCK ABSORBERS.....	184
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES . . 197	
CUSHION NEEDLE ADJ 197	
ORDERING 75	
SELECTION 88	

MODELS:
BC406
BC4M06 (Metric w/taper ports)

Bore Size:
.625 in./16 mm

Base Weight:
.68 lbs./ .31 kgs.

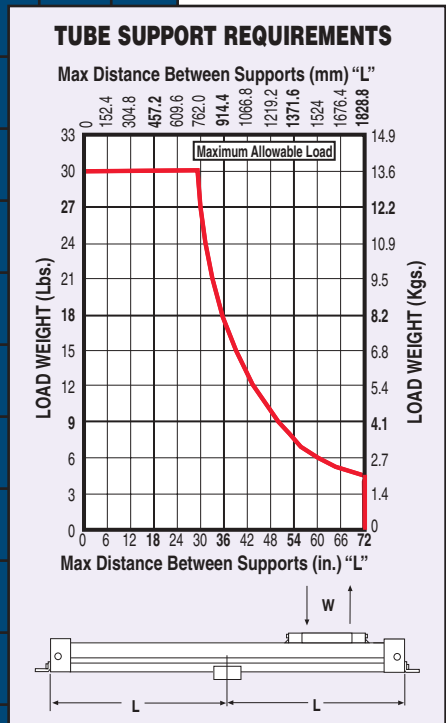
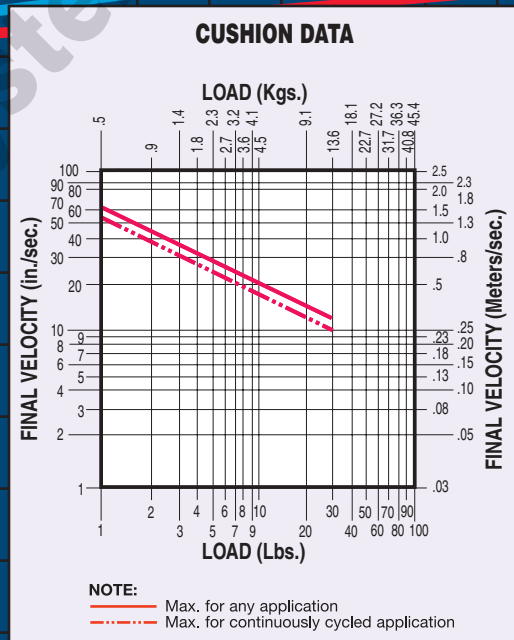
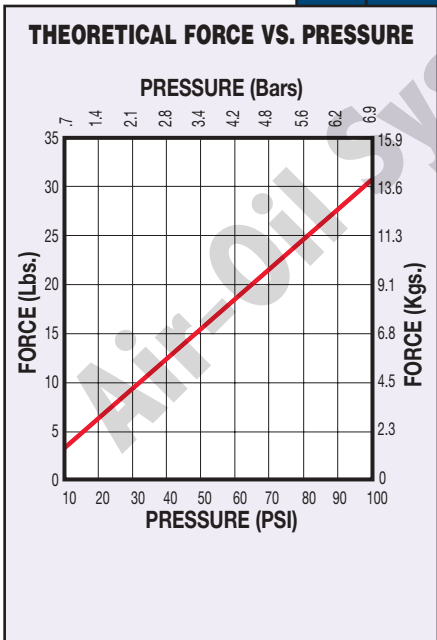
Weight Per in. of Stroke:
.063 lb./ .028 kgs.

Maximum Stroke Length
17.6 ft. / 5.4 m
(For longer stroke lengths, please consult the factory)

Maximum Pressure
100 PSI / 6.895 bar

Temperature Range
20° to 140° F / -7° to 60° C

PERFORMANCE DATA



BC410

With a space-saving profile, the BC410 will accommodate a wide variety of applications where space is limited. The BC410 accommodates thrusts up to 78 lbs. (35.38 kg.), customer-specified stroke lengths, and adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC410 is easily "custom-made" to meet application requirements.



BC410 OPTIONS

AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
LONG CARRIER.....	69
SHOCK ABSORBERS.....	184
SINGLE END PORTING.....	68
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES .. 197	
CUSHION NEEDLE ADJ.....	197
ORDERING.....	75
SELECTION.....	88

MODELS:

BC410
 BC4M10 (Metric w/taper ports)
 BC4MM10 (Metric w/parallel ports)

Bore Size:

1.00 in./25 mm

Maximum Pressure

100 PSI / 6.895 bar

Base Weight:

2.36 lbs./1.07 kgs.

Temperature Range

20° to 140° F / -7° to 60° C

Weight Per in. of Stroke:

.17 lb./0.0771 kgs.

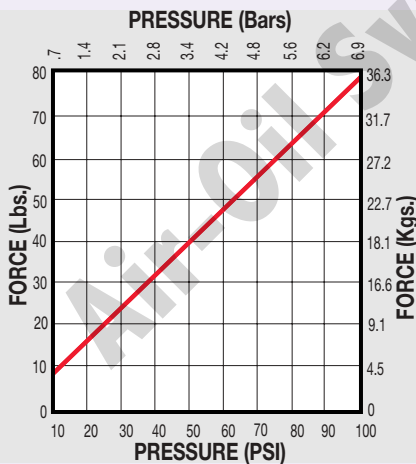
Maximum Stroke Length

17.5 ft. / 5.3 m

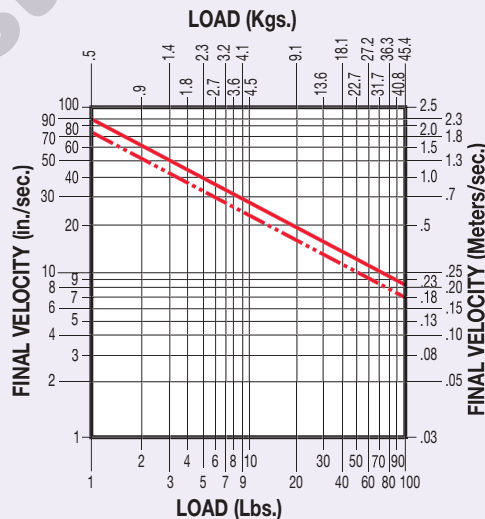
(For longer stroke lengths, please consult the factory)

PERFORMANCE DATA

THEORETICAL FORCE VS. PRESSURE

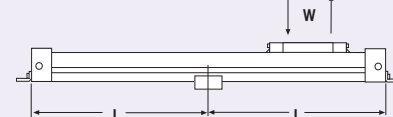
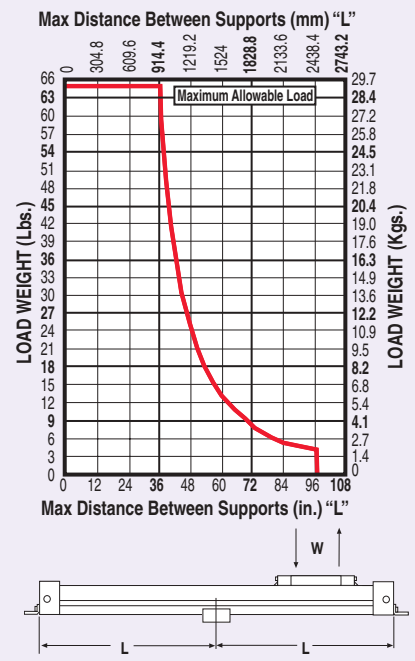


CUSHION DATA

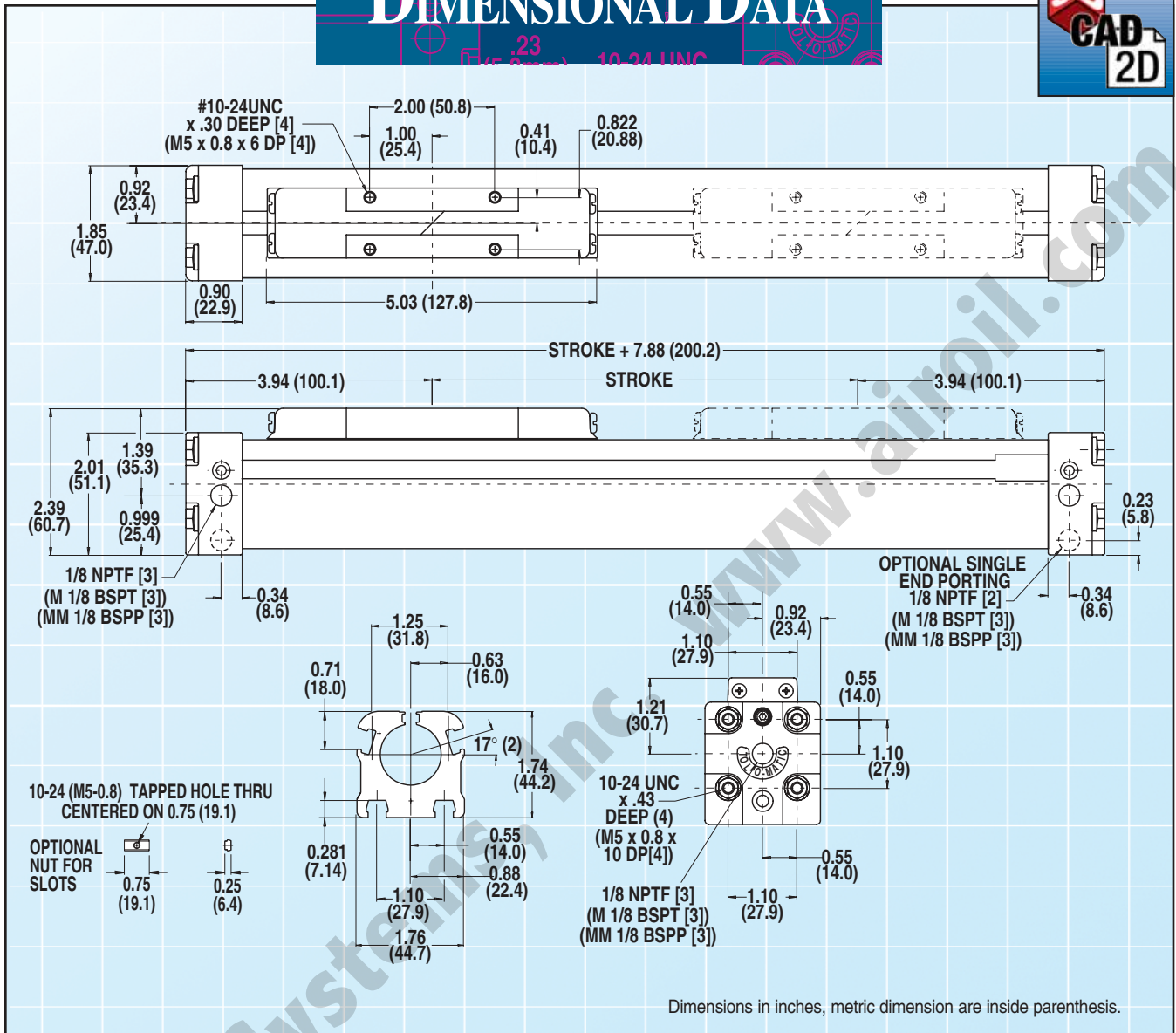


NOTE:
 ——— Max. for any application
 - - - - - Max. for continuously cycled application

TUBE SUPPORT REQUIREMENTS

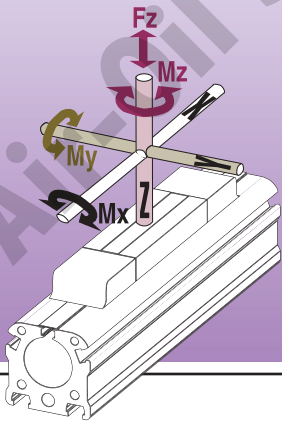


DIMENSIONAL DATA



BC4 BAND CYLINDER

BENDING MOMENTS



MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	
BC410	1.00 in.	132 in.-lbs.	9 in.-lbs.	27.0 in.-lbs.	65 lbs.
BC4M10	25 mm	14.91 N-m	1.02 N-m	3.05 N-m	29.48 kgs.

For Assistance Call
 1-800-328-2174
 (Toll Free U.S. and Canada)
 or
 763-478-8000
 Fax 763-478-8080

BC412

With its low profile and a maximum thrust of up to 122 lbs. (55.34 kg.), the BC412 is a great choice for limited-space applications with light to medium load requirements.

Uses for the BC412 are almost unlimited. Like all BC4 models, customer-specified stroke lengths, adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC412 is easily "custom-made" to meet application requirements.



BC412 OPTIONS

AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
LONG CARRIER.....	69
SHOCK ABSORBERS.....	184
SINGLE END PORTING.....	68
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES . . . 197	
CUSHION NEEDLE ADJ 197	
ORDERING.....	75
SELECTION.....	88

MODELS:

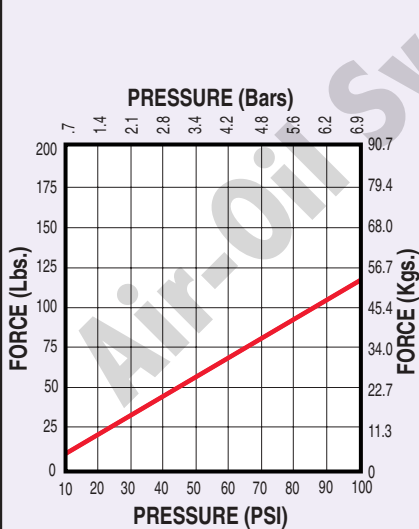
- BC412
- BC4M12 (Metric w/taper ports)
- BC4MM12 (Metric w/parallel ports)

Bore Size:	Maximum Pressure
1.25 in./32 mm	100 PSI / 6.895 bar
Base Weight:	Temperature Range
3.98 lbs./1.81 kgs.	20° to 140° F / -7° to 60° C

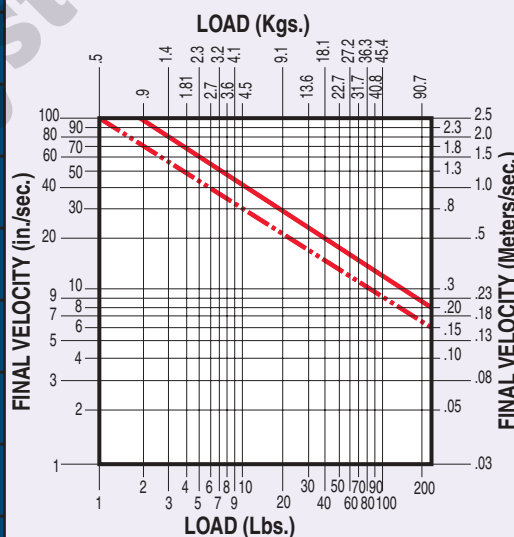
Weight Per in. of Stroke:	Maximum Stroke Length
.27 lbs./1.225 kgs.	17.4 ft. / 5.3 m
(For longer stroke lengths, please consult the factory)	

PERFORMANCE DATA

THEORETICAL FORCE VS. PRESSURE

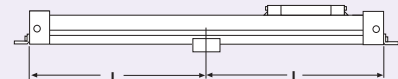
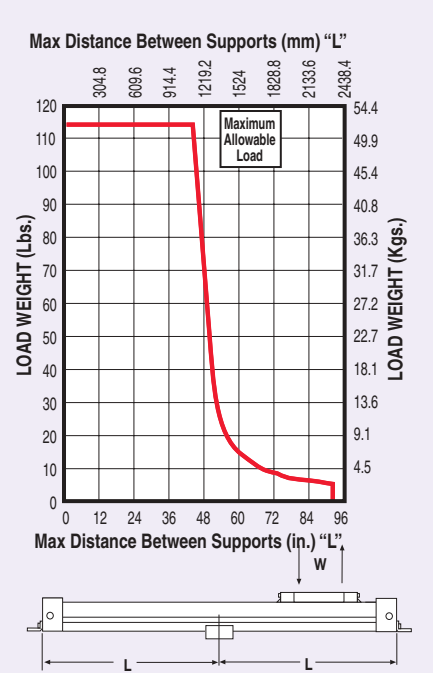


CUSHION DATA

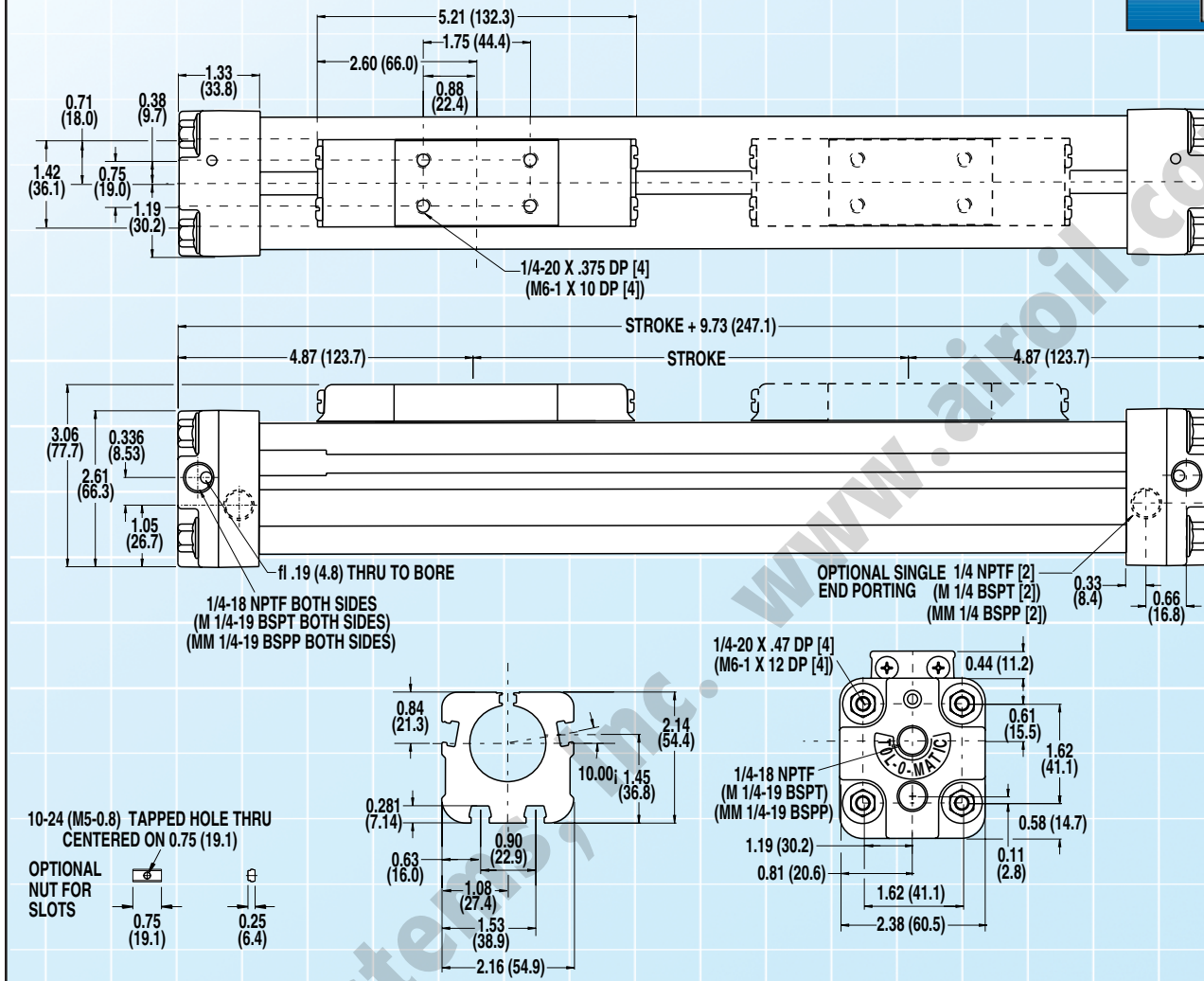


NOTE:
 — Max. for any application
 - - - Max. for continuously cycled application

TUBE SUPPORT REQUIREMENTS



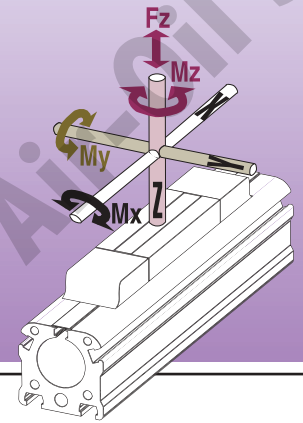
DIMENSIONAL DATA



Dimensions in inches, metric dimension are inside parenthesis.

BC4 BAND CYLINDER

BENDING MOMENTS



MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	
BC412	1.25 in.	318 in.-lbs.	36 in.-lbs.	120 in.-lbs.	115 lbs.
BC4M12	32 mm	35.93 N-m	3.95 N-m	13.56 N-m	52.16 kgs.

For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080

BC415

BC4 BAND CYLINDER



Moderate to heavy load weight applications are easily accommodated with the BC415 Band Cylinder.

Maximum thrust is 176 lbs. (79.83 kg.) for the BC415. It is an excellent choice for applications with moderate to heavy load weight considerations. Tol-O-Matic will create your BC4 in customer-specified stroke length, with adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC415 is easily "custom-made" to meet application requirements.

BC415 OPTIONS

AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
LONG CARRIER.....	69
SHOCK ABSORBERS.....	184
SINGLE END PORTING.....	68
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES . . . 197	
CUSHION NEEDLE ADJ 197	
ORDERING 75	
SELECTION 88	

MODELS:

- BC415
- BC4M15 (Metric w/taper ports)
- BC4MM15 (Metric w/parallel ports)

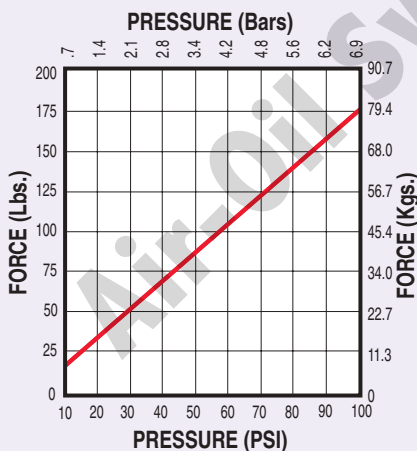
Bore Size: 1.50 in./40 mm
Maximum Pressure: 100 PSI / 6.895 bar

Base Weight: 7.56 lbs./3.43 kgs.
Temperature Range: 20° to 140° F / -7° to 60° C

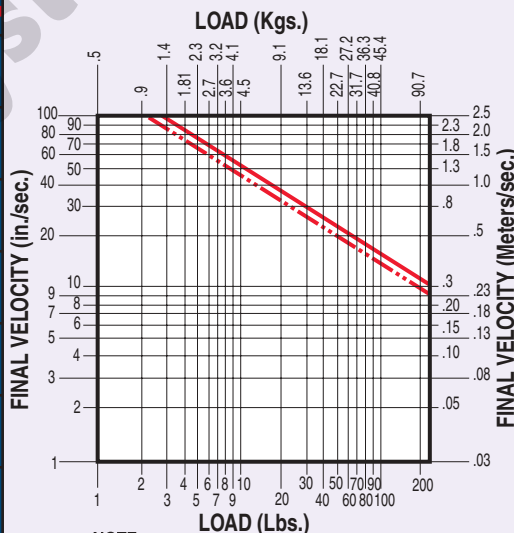
Weight Per in. of Stroke: .41 lbs./.1860 kgs.
Maximum Stroke Length: 17.2 ft. / 5.3 m
 (For longer stroke lengths, please consult the factory)

PERFORMANCE DATA

THEORETICAL FORCE VS. PRESSURE

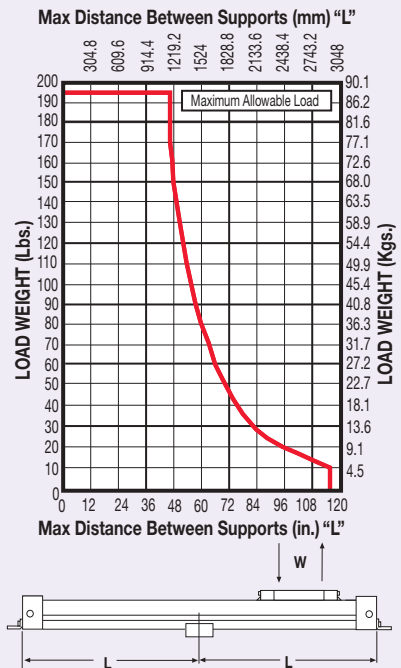


CUSHION DATA



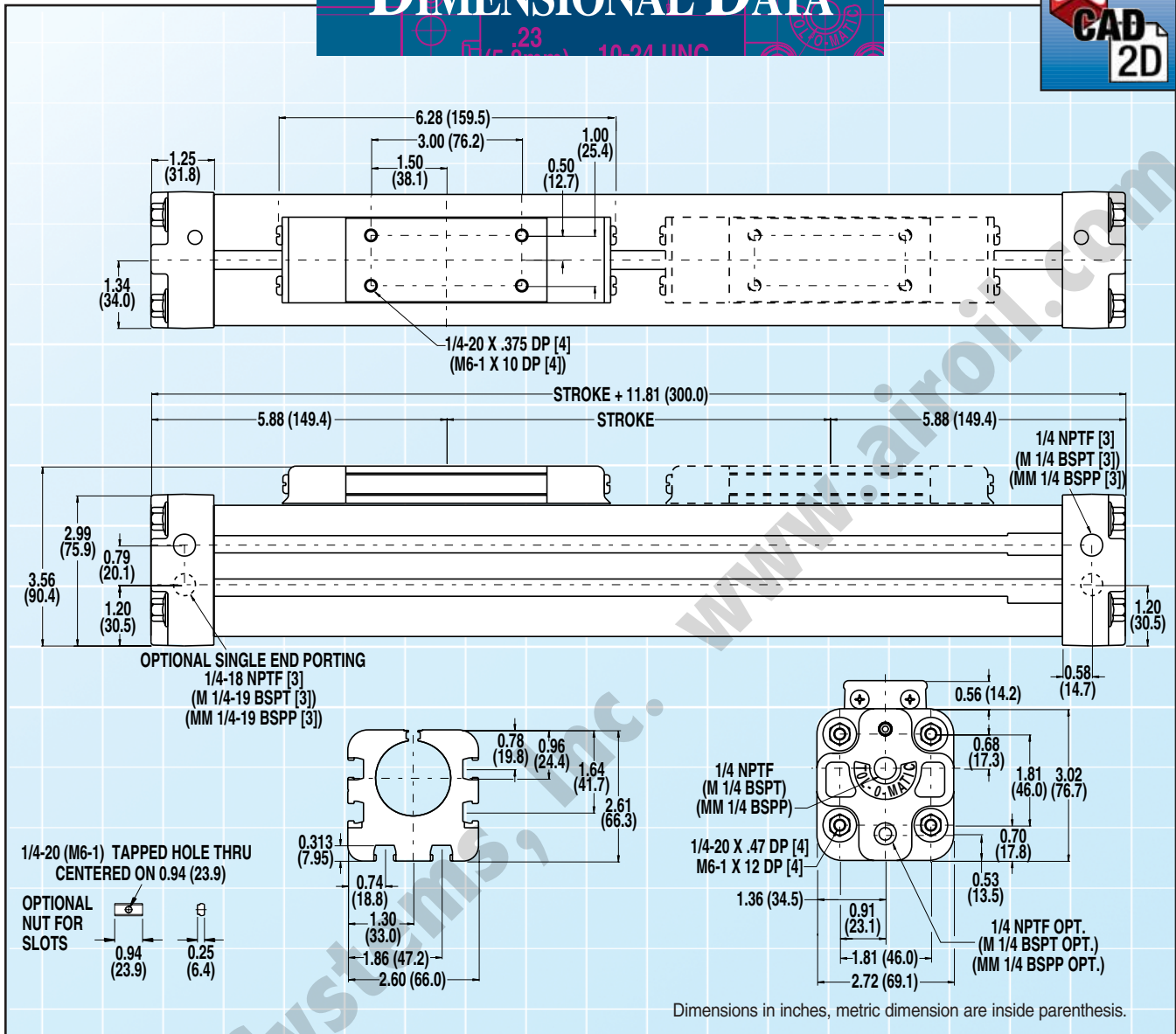
NOTE:
 ——— Max. for any application
 - - - - - Max. for continuously cycled application

TUBE SUPPORT REQUIREMENTS



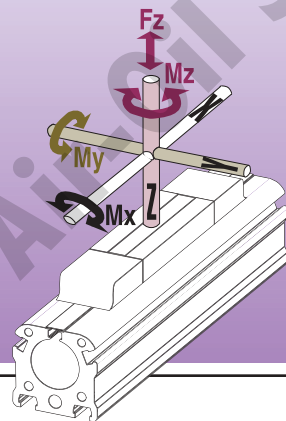
DIMENSIONAL DATA

3D CAD AVAILABLE AT
WWW.TOLOMATIC.COM



BC4 BAND CYLINDER

BENDING MOMENTS



MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC415	1.50 in.	575 in.-lbs.	55 in.-lbs.	156 in.-lbs.	195 lbs.
BC4M15	40 mm	64.97 N-m	6.21 N-m	17.63 N-m	88.45 Kgs.

For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)
or
763-478-8000
Fax 763-478-8080

BC420



With a space-saving profile, the BC420 will accommodate a wide variety of applications where space is limited. Uses for the BC420 are almost unlimited. The BC420 accommodates loads (Fz) up to 270 lbs. (122 kg.), with customer-specified stroke lengths and adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC420 is easily "custom-made" to meet application requirements.

BC420 OPTIONS

AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
SHOCK ABSORBERS.....	184
SINGLE END PORTING.....	68
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES .. 197	
CUSHION NEEDLE ADJ .. 197	
ORDERING.....	75
SELECTION.....	88

MODELS:

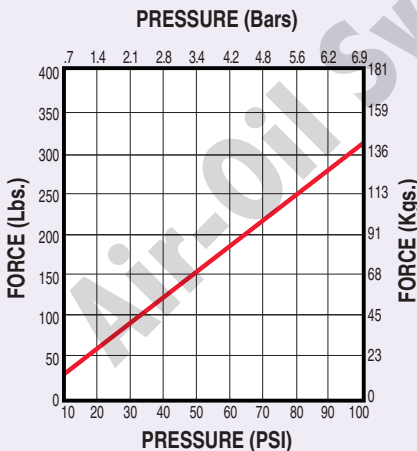
BC420
 BC4M20 (Metric w/taper ports)
 BC4MM20 (Metric w/parallel ports)

Bore Size: 2.0 in./50 mm
Maximum Pressure: 100 PSI / 6.895 bar
Base Weight: 11.90 lbs./ 5.40 kgs.
Temperature Range: 20° to 140° F / -7° to 60° C

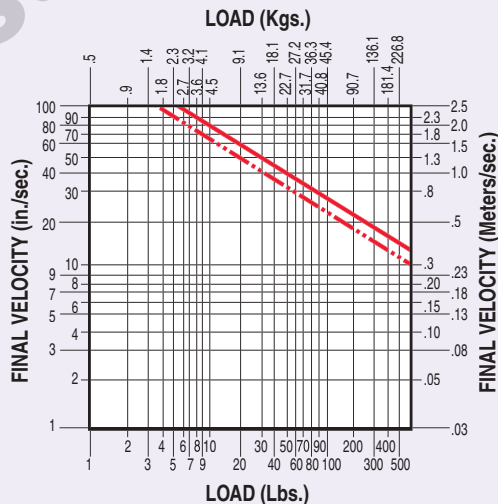
Weight Per in. of Stroke: .67 lb./ .30 kgs.
Maximum Stroke Length: 13.0 ft. / 3.96 m (For longer stroke lengths, please consult the factory)

PERFORMANCE DATA

THEORETICAL FORCE VS. PRESSURE

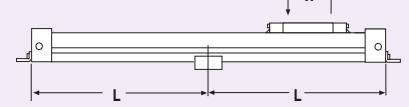
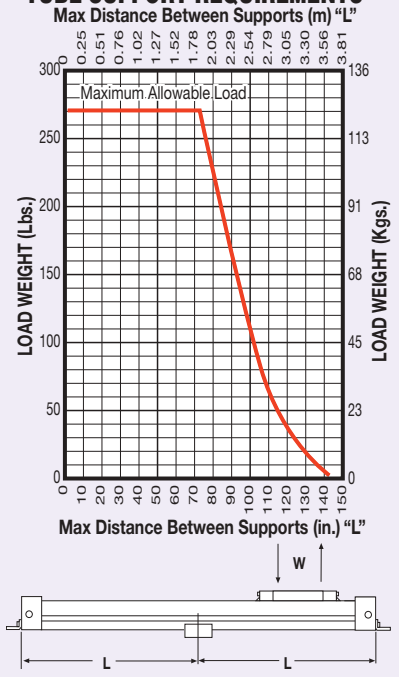


CUSHION DATA

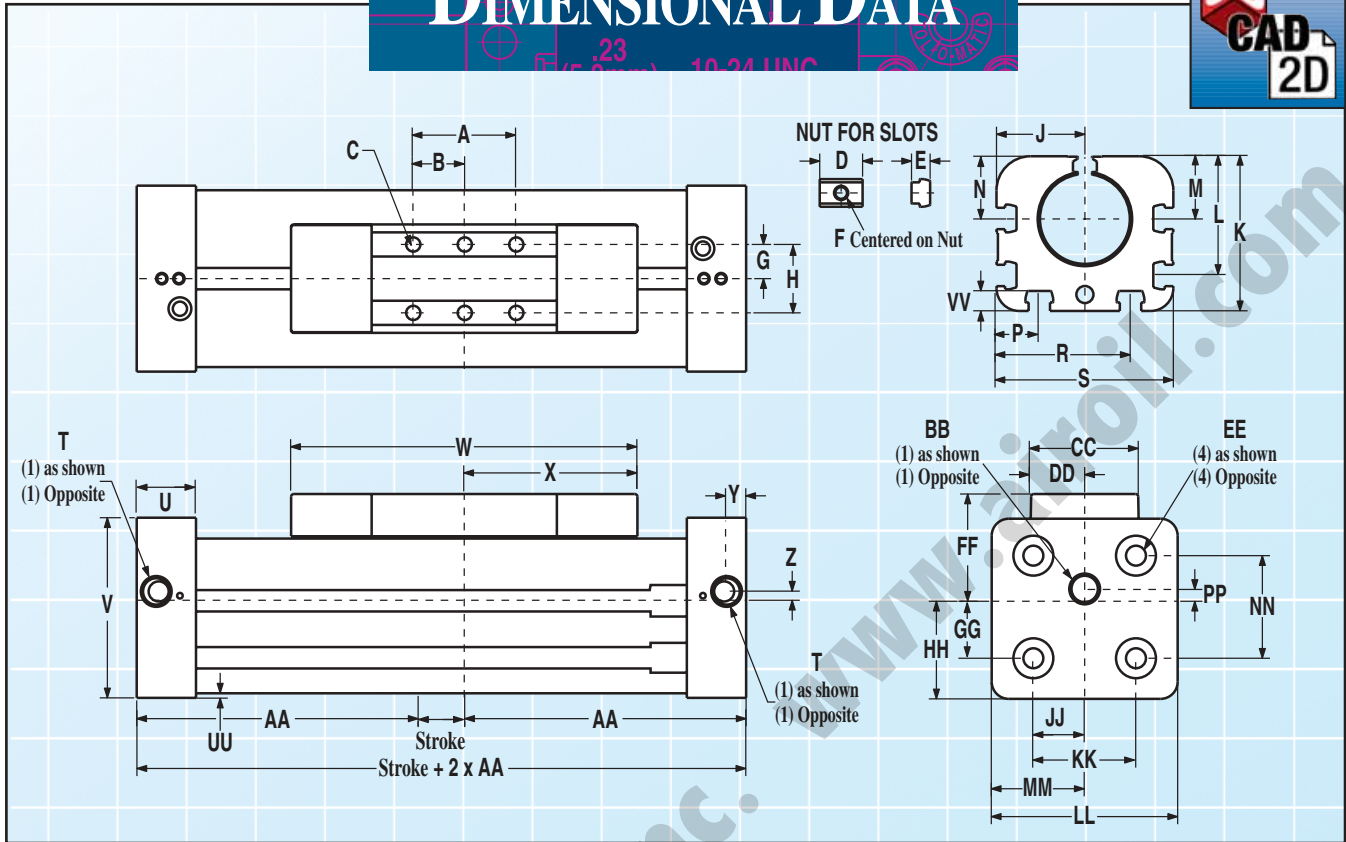


NOTE:
 ——— Max. for any application
 - - - - - Max. for continuously cycled application

TUBE SUPPORT REQUIREMENTS



DIMENSIONAL DATA



MODEL	BORE	A	B	B2	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
BC420	2.000	2.250	1.125	-	5/16-18 x .47 DP	0.940	0.408	5/16-18 UNC-2B	0.750	1.500	1.939	3.393	2.625	1.375	1.375	0.939	2.939	3.878	3/8-18 NPT	1.300

MODEL	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	UU	VV
BC420	3.951	7.594	3.797	0.428	0.193	6.181	3/8-18 NPT	2.347	1.173	5/16 - 18 x 0.88 DP	2.352	1.210	2.101	1.125	2.250	4.078	2.039	2.250	0.270	0.101	0.438

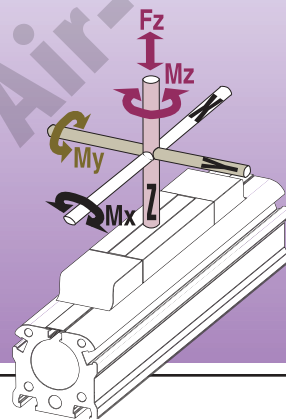
Above Dimensions in Inches

MODEL	BORE	A	B	B2	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
BC4M(MM)20	50	57.15	28.58	-	M8-1.25x13 DP	23.88	10.36	M8-1.25	19.05	38.10	49.25	86.18	66.68	34.93	34.93	23.85	74.65	98.50	3/8-19 BSP(P)T	33.02

MODEL	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	UU	VV
BC4M(MM)20	100.36	192.89	96.44	10.87	4.90	157.00	3/8-19 BSP(P)T	59.61	29.79	M8 x 22 DP	59.74	30.73	53.37	28.58	57.15	103.58	51.79	57.15	6.86	2.57	11.11

Above Dimensions in Millimeters

BENDING MOMENTS



MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC420	2.0 in.	1017.0 in.-lbs.	98.0 in.-lbs.	172.0 in.-lbs.	270.0 lbs.
BC4M(MM)20	50 mm	114.92 N-m	11.07 N-m	19.43 N-m	122.47 kgs.

BC425

BC4 BAND CYLINDER



The BC425, with its space-saving profile, accommodates loads (Fz) up to 370 lbs. (168 kg.), with customer-specified stroke lengths and adjustable cushions for smooth end of stroke deceleration. With a wide variety of available options and accessories the BC425 is easily "custom-made" to meet application requirements.

BC425 OPTIONS

AUXILIARY CARRIER.....	70
FLOATING MOUNT.....	74
FOOT MOUNTS.....	72
SHOCK ABSORBERS.....	184
SINGLE END PORTING.....	68
SWITCHES.....	174
TUBE SUPPORTS.....	73
APPLICATION GUIDELINES .. 197	
CUSHION NEEDLE ADJ 197	
ORDERING	75
SELECTION.....	88

MODELS:

- BC425
- BC4M25 (Metric w/taper ports)
- BC4MM25 (Metric w/parallel ports)

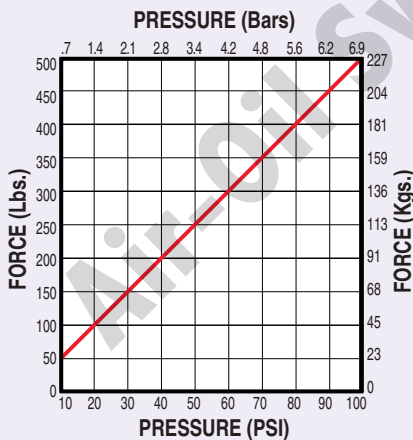
Bore Size: 2.50 in./63 mm
Maximum Pressure: 100 PSI / 6.895 bar

Base Weight: 22.10 lbs./10.02 kgs.
Temperature Range: 20° to 140° F / -7° to 60° C

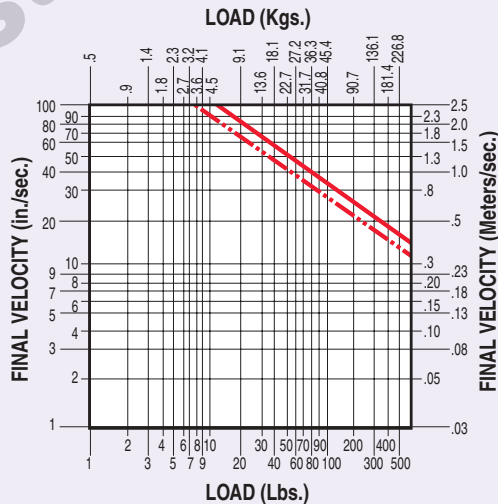
Weight Per in. of Stroke: .95 lb./43 kgs.
Maximum Stroke Length: 17.6 ft. / 5.4 m (For longer stroke lengths, please consult the factory)

PERFORMANCE DATA

THEORETICAL FORCE VS. PRESSURE

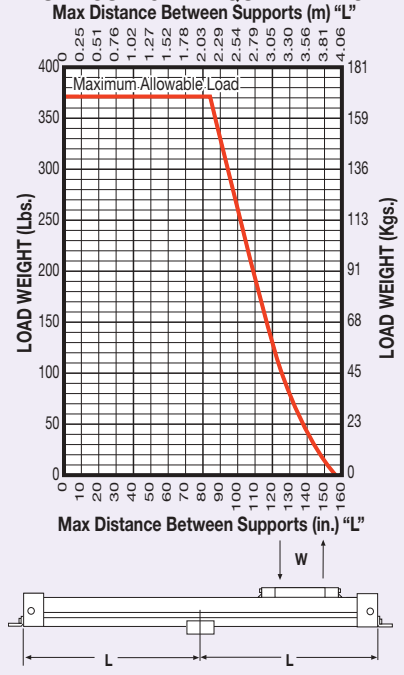


CUSHION DATA

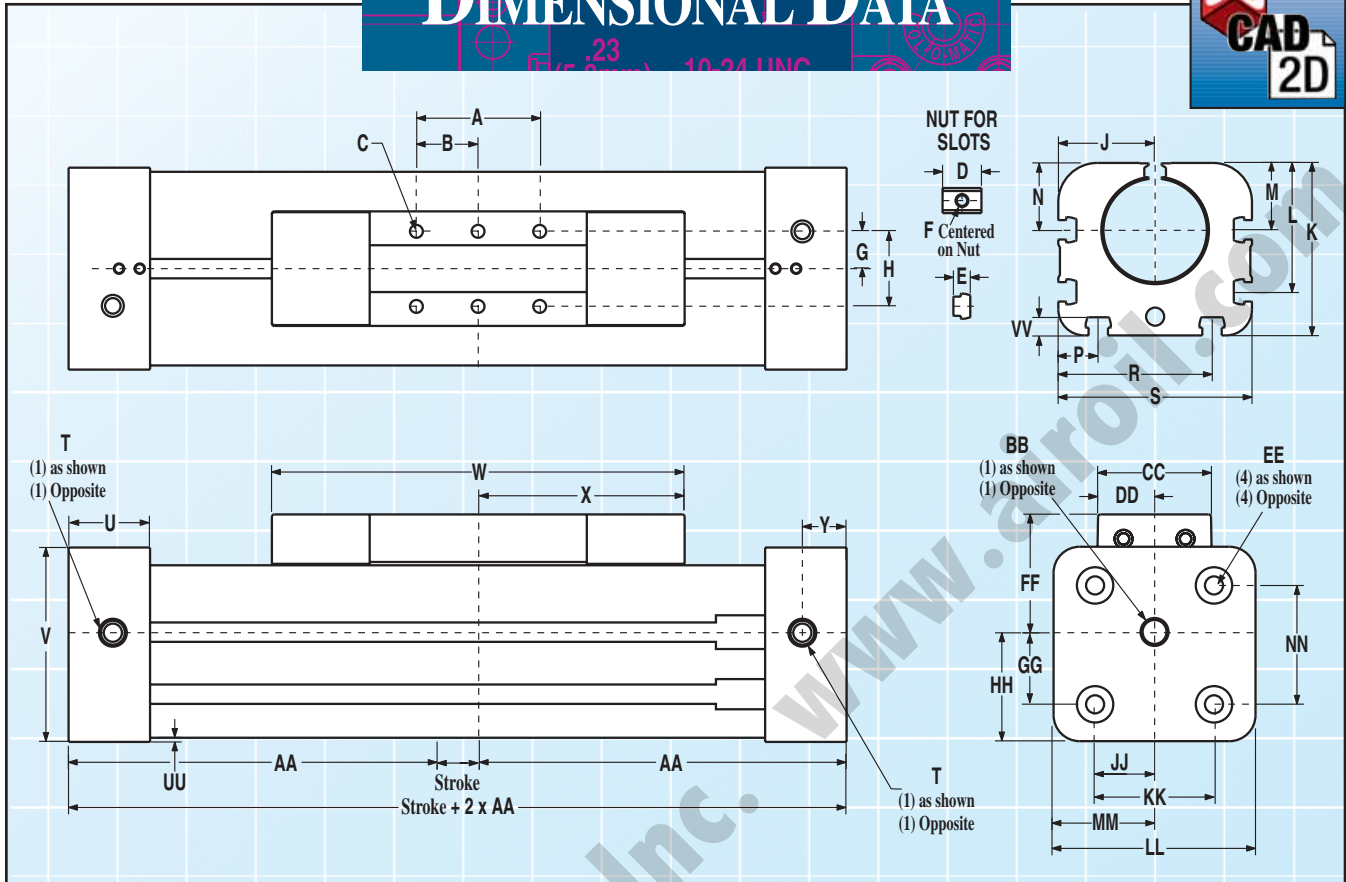


NOTE:
— Max. for any application
- - - Max. for continuously cycled application

TUBE SUPPORT REQUIREMENTS



DIMENSIONAL DATA



MODEL	BORE	A	B	B2	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
BC425	2.500	3.000	1.500	-	3/8-16 x .60 DP	0.940	0.408	5/16-18 UNC-2B	0.909	1.817	2.341	4.171	3.106	1.617	1.630	0.958	3.708	4.666	3/8-18 NPT	1.970

MODEL	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	UU	VV
BC425	4.700	9.980	4.990	1.070	-	8.423	3/8-18 NPT	2.730	1.365	5/16-18 x .88 DP	2.93	1.680	2.571	1.438	2.875	4.883	2.444	2.875	-	0.08	0.438

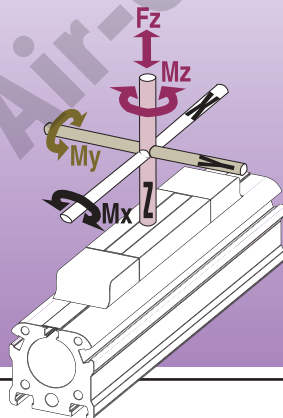
Above Dimensions in Inches

MODEL	BORE	A	B	B2	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
BC4M(MM)25	63	76.20	38.10	-	M10-1.5x15.2DP	23.88	10.36	M8-1.25-6g Thru	23.09	46.15	59.46	105.94	78.89	41.07	41.40	24.33	94.18	118.52	3/8-19 BSP(P/T)	50.04

MODEL	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM	NN	PP	UU	VV
BC4M(MM)25	119.38	253.49	126.75	27.18	-	213.94	3/8-19 BSP(P/T)	69.34	34.67	M8 x 22 DP	74.42	42.67	65.30	36.53	73.03	124.03	62.08	73.03	-	2.03	11.11

Above Dimensions in Millimeters

BENDING MOMENTS



MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC425	2.50 in.	1776.0 in.-lbs.	120.0 in.-lbs.	216.0 in.-lbs.	370.0 lbs.
BC4M(MM)25	63 mm	200.69 N-m	13.56 N-m	24.41 N-m	167.83 kgs.

SINGLE END PORTING

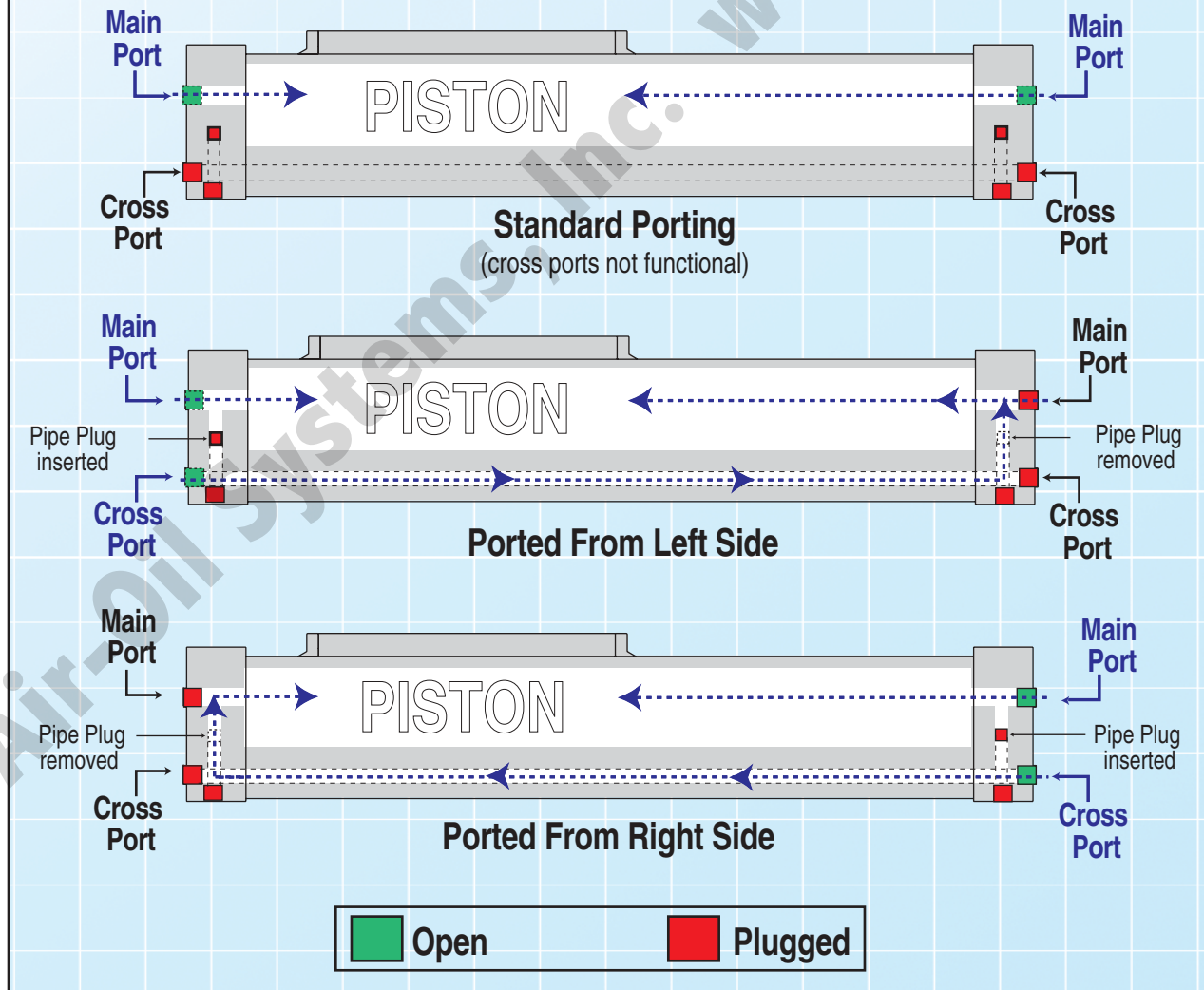


Single End Porting is an **option** available for 1", 1-1/4", 1-1/2", 2" and 2-1/2" bore sizes of BC4 Series Band Cylinders. (Not available for 5/8" bore.) Simplifying your air hook up, this option allows you to run air lines to just one end of the BC4. The Single End Porting option for the BC410 is factory installed on the right side. To order, refer to page 75.

AIR FLOW DIAGRAMS

► SINGLE END PORTING ALLOWS THE GREATEST FLEXIBILITY IN AIR HOOK UP

Converting from **Standard** porting to **Left** or **Right** side porting can be achieved if plugs are placed as in the diagram below.



Note: Standard porting may be field converted to ported from left or ported from right. For complete instructions refer to parts sheet.

LONG CARRIER

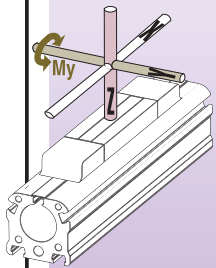
Available for the BC406, BC410, BC412 and BC415 Band Cylinder, the Long Carrier Option greatly increases the "My" and "Mz" moment load capacity. This broadens the application range for these models. Other benefits include larger mounting surface and virtual elimination of chatter for vertical cantilever loads.



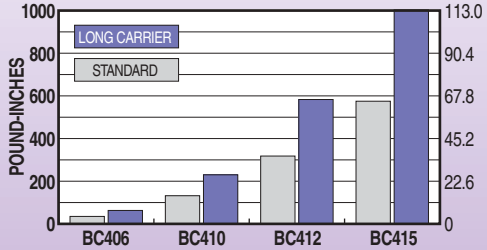
BC4
(Standard Carrier)

BC4L
(Long Carrier)

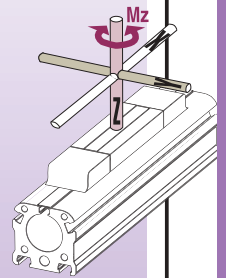
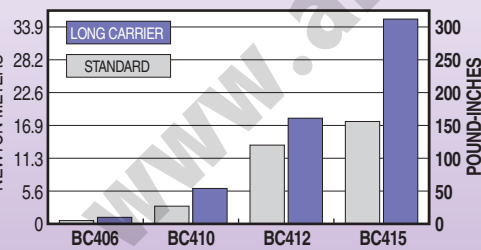
BENDING MOMENTS



"My" Bending Moment - STANDARD vs LONG CARRIER



"Mz" Bending Moment - STANDARD vs LONG CARRIER

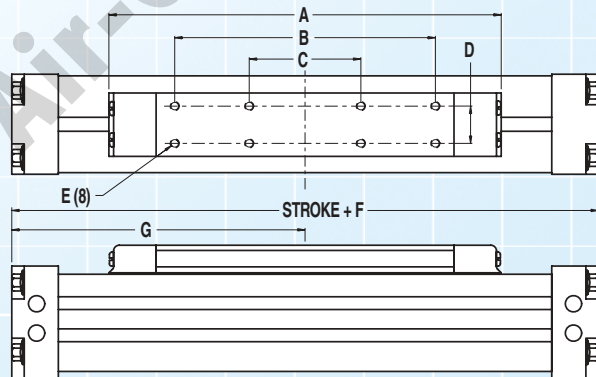


MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT					MAX. LOAD	
		My (Standard)	My (Long Carrier)	Mx*	Mz (Standard)	Mz (Long Carrier)	Fz*	Fz*
BC406	.625 in.	35 in.-lbs.	63 in.-lbs.	3.0 in.-lbs.	5.0 in.-lbs.	30 in.-lbs.	30 lbs.	
BC410	1.00 in.	132 in.-lbs.	230 in.-lbs.	9 in.-lbs.	27 in.-lbs.	54 in.-lbs.	65 lbs.	
BC412	1.25 in.	318 in.-lbs.	583 in.-lbs.	36 in.-lbs.	120 in.-lbs.	161 in.-lbs.	115 lbs.	
BC415	1.50 in.	575 in.-lbs.	1003 in.-lbs.	55 in.-lbs.	156 in.-lbs.	312 in.-lbs.	195 lbs.	

*Mx Bending Moment and Fz (Maximum Load) are the same for Standard and Long Carrier BC4.

MODEL NO.	BORE SIZE(mm)	MAXIMUM BENDING MOMENT					MAX. LOAD	
		My (Standard)	My (Long Carrier)	Mx*	Mz (Standard)	Mz (Long Carrier)	Fz*	Fz*
BC4M06	16	3.95 N-m	7.06 N-m	0.34 N-m	0.56 N-m	1.12 N-m	13.61 kgs.	
BC4M(MM)10	25	14.91 N-m	25.99 N-m	1.02 N-m	0.33 N-m	6.10 N-m	29.48 kgs.	
BC4M(MM)12	32	35.93 N-m	65.83 N-m	3.95 N-m	13.56 N-m	18.20 N-m	52.16 kgs.	
BC4M(MM)15	40	64.97 N-m	113.36 N-m	6.21 N-m	17.63 N-m	35.26 N-m	88.45 Kgs.	

DIMENSIONAL DATA



MODEL	BORE	A	B*	C*	D	E	F†	G
BC4L06	.625	6.13	3.50	1.25	.56	#6-32 x .22 DP	8.54	4.27
BC4L10	1.00	8.03	4.75	2.00	.82	#10-24 x .30 DP	10.63	5.31
BC4L12	1.25	8.53	5.00	1.75	.75	1/4-20 x .38 DP	13.06	6.53
BC4L15	1.50	10.53	7.00	3.00	1.00	1/4-20 x .38 DP	15.75	7.88

Dimensions in Inches

MODEL	BORE	A	B*	C*	D	E	F†	G
BC4ML06	16	155.6	88.9	31.8	14.3	M3x0.5x6DP	217.0	108.5
BC4M(MM)L10	25	204.0	120.7	50.8	20.9	M5x0.8x6DP	270.0	134.9
BC4M(MM)L12	32	216.7	127.0	44.5	19.1	M6x1.0x10DP	331.7	165.8
BC4M(MM)L15	40	267.5	177.8	76.2	25.4	M6x1.0x10DP	400.1	200.0

Dimensions in Millimeters

*Not the Same as BC4 Standard Carrier

†Longer Than BC4 Standard Carrier

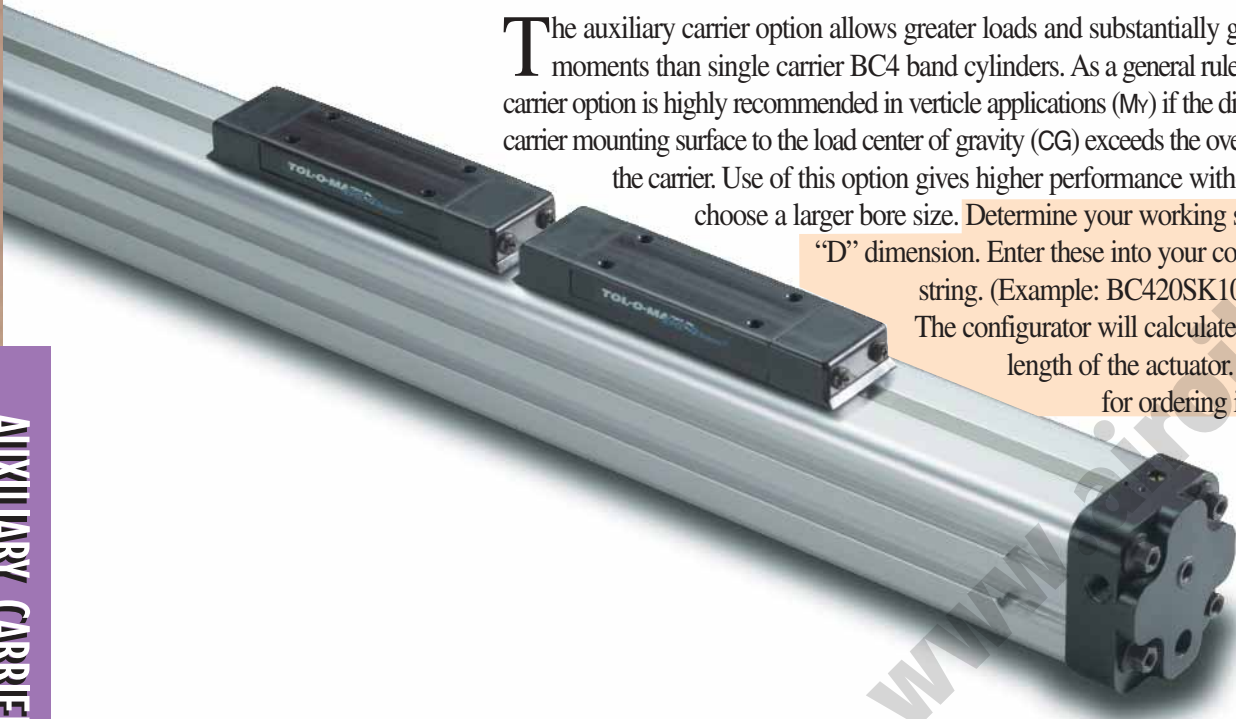
BC4 BAND CYLINDER

AUXILIARY CARRIER

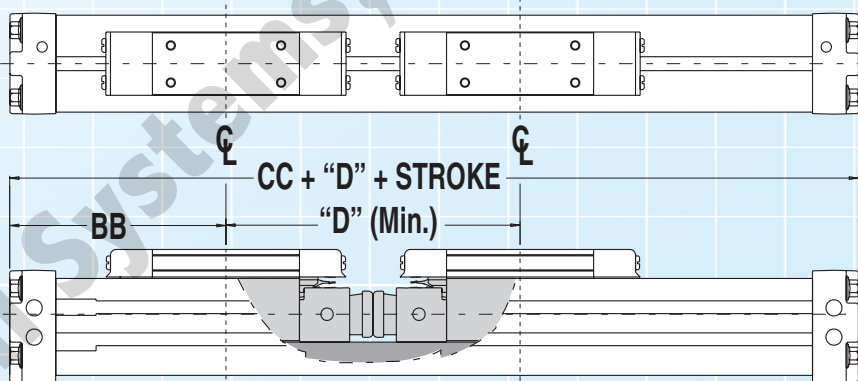
The auxiliary carrier option allows greater loads and substantially greater bending moments than single carrier BC4 band cylinders. As a general rule, the auxiliary carrier option is highly recommended in verticle applications (M_v) if the distance from the carrier mounting surface to the load center of gravity (CG) exceeds the overall length of the carrier. Use of this option gives higher performance without the need to choose a larger bore size. Determine your working stroke and your "D" dimension. Enter these into your configuration string. (Example: BC420SK10.00DW8.50) The configurator will calculate the overall length of the actuator. See page 75 for ordering information.

ORDERING PROCEDURE

AUXILIARY CARRIER



DIMENSIONAL DATA



NOTE: DIMENSION "D" IS A MINIMUM VALUE. IF D IS INCREASED BENDING MOMENT "M" AND "M_v" INCREASES (SEE GRAPH AT RIGHT).

MODEL	BORE	BB	CC	MIN "D"
BC406	0.625	3.15	6.30	4.26
BC410	1.000	3.94	7.88	5.30
BC412	1.250	4.87	9.74	6.23
BC415	1.500	5.88	11.81	8.00
BC420	2.0	6.181	12.362	8.12
BC425	2.5	8.423	16.846	11.04

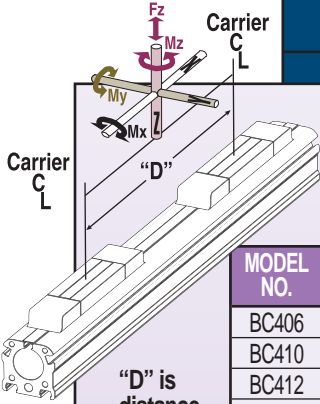
Dimensions in Inches

MODEL	BORE	BB	CC	MIN "D"
BC4M06	16	79.9	159.80	108.2
BC4M10	25	100.2	200.40	134.6
BC4M12	32	123.7	247.40	158.2
BC4M15	40	149.4	300.00	203.2
BC4M20	50	157.00	313.99	206.25
BC4M25	63	213.94	427.89	280.42

Dimensions in Millimeters

PERFORMANCE DATA

BENDING MOMENTS

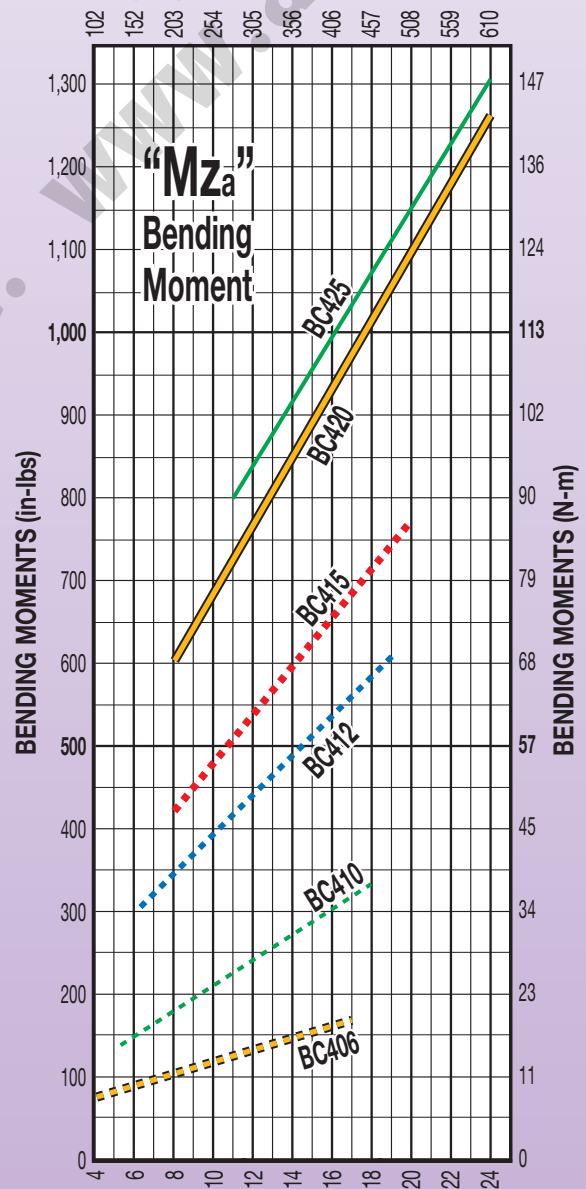
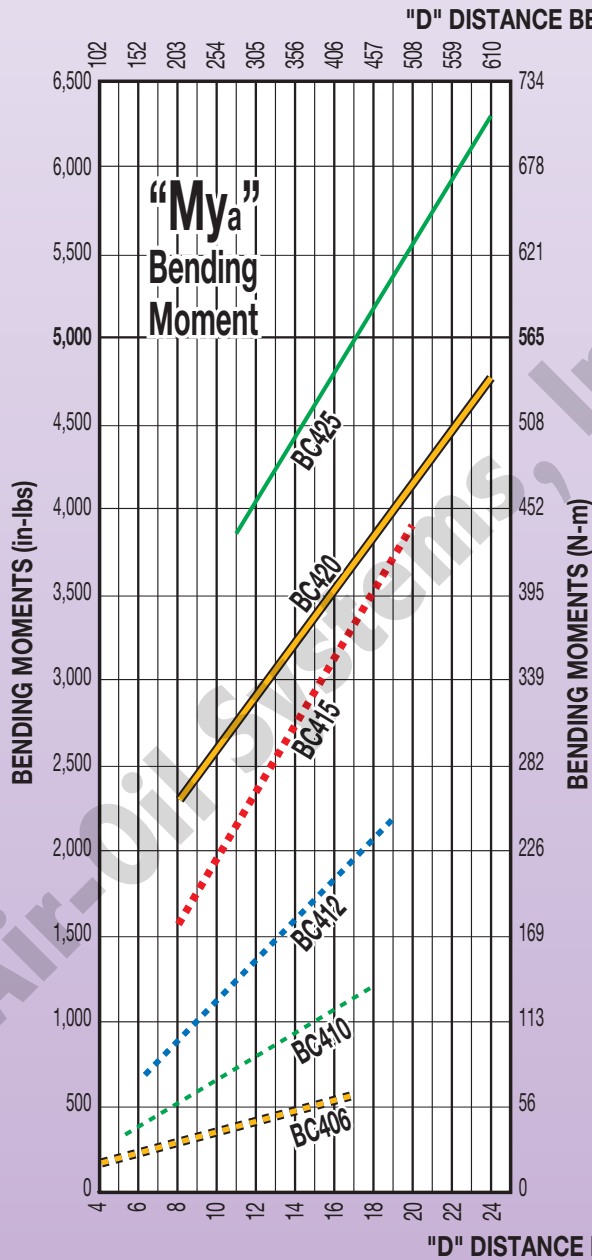


"D" is distance between carriers.

Rates were calculated with the following assumptions:
 1.) Coupling between carriers is rigid. 2.) Load is equally distributed between carriers. 3.) Coupling device applies no misalignment loads to carriers.

MODEL NO.	BORE SIZE (in)	MIN. "D" (in)	MAX. LOAD F_{za} (lbs)	MAX. M_{xa} (in-lbs)
BC406	.625	4.26	60	6.0
BC410	1.00	5.30	130	18.0
BC412	1.25	6.23	230	72.0
BC415	1.50	8.00	390	110.0
BC420	2.0	8.12	540	196.0
BC425	2.5	11.04	740	240.0

MODEL NO.	BORE SIZE (mm)	MIN. "D" (mm)	MAX. LOAD F_{za} (kg)	MAX. M_{xa} (N-m)
BC4M06	16	108.2	27	.68
BC4M(MM)10	25	134.5	59	2.03
BC4M(MM)12	32	158.2	104	8.13
BC4M(MM)15	40	203.2	176.9	12.43
BC4M(MM)20	50	206.3	244.9	22.15
BC4M(MM)25	63	280.4	335.7	27.12



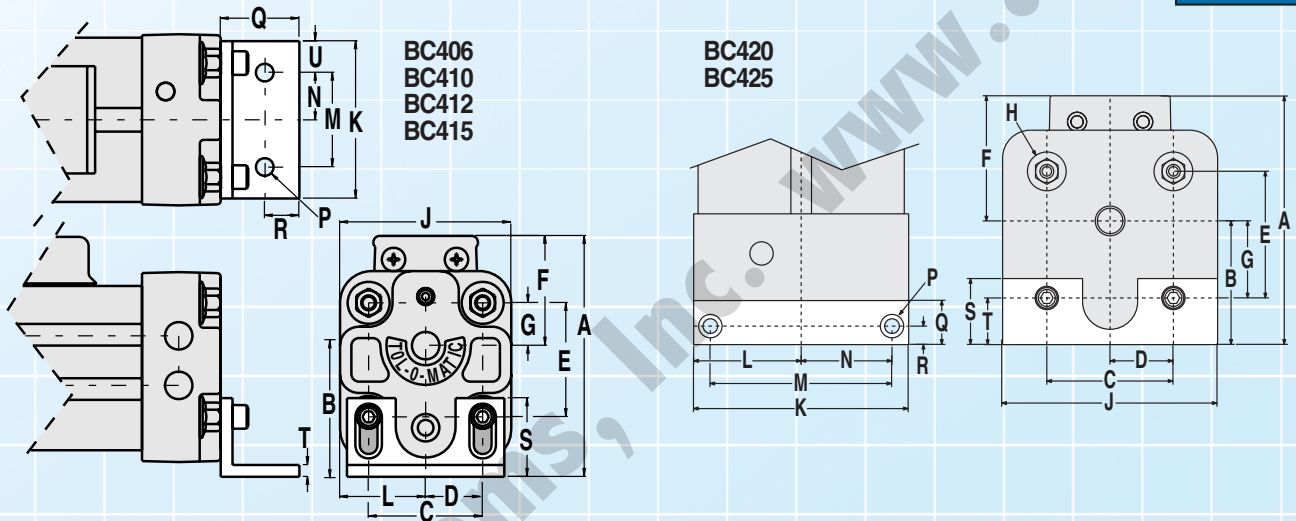
FOOT MOUNT KITS

Foot mounts are an option on all bore sizes of BC4 Series Band Cylinders when an application requires the mounting to be different than flush. They may be specified on one or both ends of the cylinder. To order, refer to page 75.



BC4 BAND CYLINDER

DIMENSIONAL DATA



MODEL	BORE	A MIN	A MAX	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
BC406	.625	1.87	1.87	.90	.75	.38	1.00	.97	.36	—	1.18	1.00	.59	.50	.25	Ø .15 Thru (2)	.70	.30	.38	.06	.25
BC410	1.00	2.19	2.54	.98	1.10	.55	1.10	1.21	.55	10-24 X .43 DP	1.85	1.60	.92	1.00	.50	Ø .27 Thru (2)	1.00	.28	.98	.19	.30
BC412	1.25	2.93	3.20	1.46	1.62	.81	1.62	1.47	.61	1/4-20 X .47 DP	2.38	2.25	1.19	1.50	.75	Ø .28 Thru (2)	1.00	.40	1.00	.19	.38
BC415	1.50	3.38	3.83	1.64	1.81	.91	1.81	1.74	.68	1/4-20 X .47 DP	2.72	2.50	1.36	1.50	.75	Ø .28 Thru (2)	1.25	.55	1.25	.19	.50
BC420	2.00	4.62	4.62	2.54	2.25	1.13	2.25	2.08	1.52	3/8-16 X .88 DP	4.08	4.08	2.04	3.38	1.69	Ø.334 THRU, Ø.531 X .32 DP C'BORE	1.00	0.51	1.50	1.02	—
BC425	2.50	5.67	5.67	2.74	2.88	1.44	2.88	2.93	1.68	3/8-16 X .88 DP	4.88	4.88	2.44	4.13	2.06	Ø.334 THRU, Ø.531 X .32 DP C'BORE	1.00	0.58	1.50	1.06	—

Above Dimensions in Inches

MODEL	BORE	A MIN	A MAX	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U
BC4M06	16	47.5	47.5	22.9	19.1	9.7	25.4	24.6	9.1	NA	30.0	25.4	15.0	12.7	6.3	Ø 3.8 Thru (2)	17.8	7.6	9.7	1.5	6.35
BC4M10	25	55.6	64.5	24.9	27.9	14.0	27.9	30.8	14.0	M5 X 10 DP	47.0	40.6	23.4	25.4	12.7	Ø 6.9 Thru (2)	25.4	7.0	24.9	4.8	7.62
BC4M12	32	74.3	81.3	37.1	41.1	20.6	41.1	37.3	15.5	M6 X 12 DP	60.5	57.1	30.2	38.1	19.1	Ø 7.1 Thru (2)	25.4	10.2	25.4	4.8	9.65
BC4M15	40	85.9	97.3	41.7	46.0	23.1	46.0	44.2	17.3	M6 X 12 DP	69.1	63.5	34.5	38.1	19.1	Ø 7.1 Thru (2)	31.8	14.0	31.8	4.8	12.70
BC4M20	50	117.3	117.3	64.5	57.2	28.6	57.2	52.9	38.6	M8 X 22 DP	103.6	103.6	51.8	85.7	42.9	Ø8.5 THRU, 13.5 X 8.1 DP C'BORE	25.4	13.0	38.1	25.9	—
BC4M25	63	144.0	144.0	69.6	73.2	36.6	73.2	74.4	42.7	M8 X 22 DP	124.0	124.0	62.0	104.9	52.4	Ø8.5 THRU, 13.5 X 8.1 DP C'BORE	25.4	14.7	38.1	26.9	—

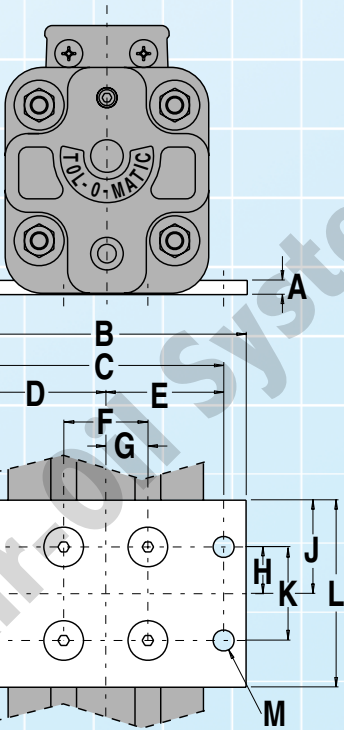
Above Dimensions in millimeters

TUBE SUPPORTS



For intermediate support, tube support brackets can be mounted to any BC4 model. Made of anodized aluminum, the brackets are designed to attach to T-nuts inside the grooves which run the length of the cylinder tube. The number of tube support brackets required and their placement depends on the overall length of the BC4 model and the load weight being moved and supported. Refer to the tube support data chart with each BC4 model. To order, refer to page 75.

DIMENSIONAL DATA



MODEL	BORE	A	B	C	D	E	F	G	H	J	K	L	M
BC406	.625	.12	1.69	1.38	.84	.69	.50	.25	.75	1.00	1.50	2.00	Ø .15 Thru (4)
BC410	1.00	.19	2.75	2.25	1.38	1.13	1.10	.55	.50	.88	1.00	1.75	Ø .23 Thru (4)
BC412	1.25	.30	3.50	2.84	1.75	1.42	.90	.45	.50	1.00	1.00	2.00	Ø .28 Thru (4)
BC415	1.50	.19	3.75	3.15	1.88	1.58	1.13	.56	.63	1.25	1.25	2.50	Ø .28 Thru (4)
BC420	2.00	0.25	6.00	5.00	3.00	2.50	2.00	1.00	0.75	1.50	1.50	3.00	Ø.344 Thru (4)
BC425	2.50	0.25	6.50	5.50	3.25	2.75	2.75	1.38	0.75	1.50	1.50	3.00	Ø.344 Thru (4)

Above Dimensions in Inches

MODEL	BORE	A	B	C	D	E	F	G	H	J	K	L	M
BC4M06	16	3.2	41.7	34.9	21.4	17.5	12.7	6.4	19.1	25.4	38.1	50.8	Ø 3.9 Thru (4)
BC4M10	25	4.8	69.9	57.1	35.1	28.7	27.9	14.0	12.7	22.2	25.4	44.4	Ø 5.8 Thru (4)
BC4M12	32	7.6	88.9	72.1	44.4	38.1	22.9	11.4	12.7	25.4	25.4	50.8	Ø 7.1 Thru (4)
BC4M15	40	4.8	95.3	80.0	47.8	40.1	28.7	14.2	16.0	31.8	31.8	63.5	Ø 7.1 Thru (4)
BC4M20	50	6.4	152.4	127.0	76.2	63.5	50.8	25.4	19.1	38.1	38.1	76.2	Ø8.7 Thru (4)
BC4M25	63	6.4	165.1	139.7	82.6	69.9	69.9	34.9	19.1	38.1	38.1	76.2	Ø8.7 Thru (4)

Above Dimensions in Millimeters

FLOATING MOUNT

Floating mount brackets are available for applications where a BC4 Band Cylinder is moving a load that is externally guided and supported or when compensating for nonparallelism between the cylinder and the independent guiding member is required. Independently guided loads, which are not parallel to the cylinder may result in the cylinder binding if the floating mount bracket is not used. To order, refer to page 75. (not to be used in conjunction with shock absorbers)

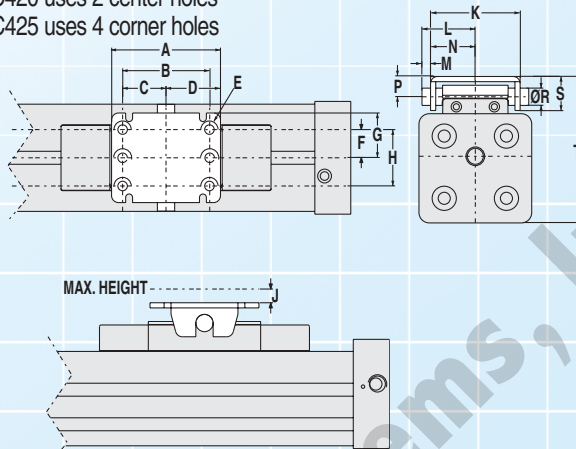


BC4 BAND CYLINDER

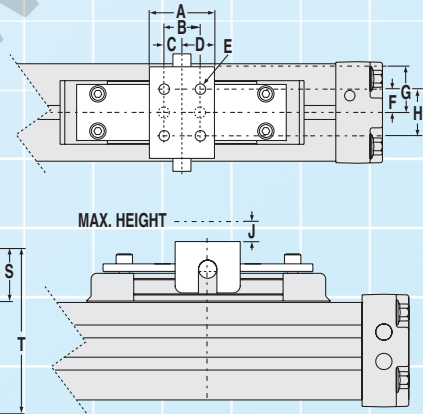
DIMENSIONAL DATA



Please Note: For Dimension "E"
BC420 uses 2 center holes
BC425 uses 4 corner holes



Please Note: For Dimension "E"
BC406 and BC410 use 2 center holes
BC412 and BC415 use 4 corner holes



MODEL	BORE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	ØR	S	T
BC406	.625	.90	.50	.25	.45	Ø.17 Thru (2)	NA	.63	NA	.33	1.27	.81	.18	.63	.38	.25	.72	2.18
BC410	1.00	1.26	.63	.32	.63	Ø.22 Thru (2)	NA	.82	NA	.33	1.64	1.00	.18	.82	.56	.38	1.01	3.04
BC412	1.25	1.50	.75	.37	.75	Ø.28 Thru (4)	.50	1.09	1.00	.44	2.18	1.50	.41	1.09	.99	.44	1.49	4.10
BC415	1.50	1.50	.75	.38	.75	Ø.28 Thru (4)	.63	1.24	1.25	.52	2.48	1.63	.39	1.24	.99	.44	1.56	4.62
BC420	2.00	3.94	3.15	1.57	1.97	Ø.344 Thru (2)	NA	1.62	NA	0.50	3.24	1.93	0.31	1.62	0.73	0.63	1.23	5.26
BC425	2.50	4.72	3.94	1.97	2.36	Ø.344 Thru (4)	1.39	1.78	2.77	0.57	3.54	2.36	0.59	1.77	0.75	0.63	1.32	6.28

Above Dimensions in Inches

MODEL	BORE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	ØR	S	T
BC4M06	16	22.9	12.7	6.4	11.5	Ø 4.3 Thru (2)	NA	16.1	NA	8.3	32.2	20.7	4.6	16.0	9.7	6.4	18.3	55.4
BC4M10	25	32.0	16.0	8.0	16.0	Ø 5.3 Thru (2)	NA	20.8	NA	8.3	41.7	25.4	4.6	20.8	14.2	9.7	25.7	77.2
BC4M12	32	38.1	19.0	9.4	19.0	Ø 7.1 Thru (4)	12.7	27.7	25.4	11.2	55.4	38.1	10.4	27.7	25.1	11.2	37.8	104.1
BC4M15	40	38.1	19.0	9.7	19.0	Ø 7.1 Thru (4)	16.0	31.5	31.8	13.2	63.0	41.4	9.9	31.5	25.1	11.2	39.6	117.3
BC4M20	50	100.08	80.01	39.88	50.04	Ø8.7 Thru (2)	NA	41.15	NA	12.70	82.30	49.05	7.90	41.15	18.64	15.88	31.24	133.6
BC4M25	63	119.9	100.08	50.04	59.94	Ø8.7 Thru (4)	35.18	45.09	70.36	14.43	89.92	59.97	15.01	44.96	19.10	15.88	33.53	159.51

Above Dimensions in Millimeters

BC4 - ORDERING

CONFIGURATOR EXAMPLE

MODEL, CARRIER, BORE, AND STROKE

1.	2.	3.	4.
B	C	4	M
		1	0
S	K	1	0
0	0	.	2
5	0		

ACCESSORIES AND OPTIONS

5.												
R	U	2	T	S	2	S	H	2				

The above example describes a BC4 Series metric version model with a taper port in a 1 in. (25mm) bore size with a stroke of 100.250 inches. Options include two Form A reed switches, two tube supports and heavy duty shocks on both ends.

Boxes above represent the number of fields available for each section and not all of them will be used in every application. Omit empty boxes when you construct your configurator number (placeholders are not required). For the above example, the order string as it is typed would appear as follows: **BC4M10SK100.250RU2TS2SH2**.

1. MODEL TYPE

- BC4** for U.S. standard version
- M** for metric version with taper port
- MM** for metric version with parallel port

NOTE: The .625 in. (16mm) bore is only available with the M option (M5 port).

2. CARRIER LENGTH

Nothing for Standard Carrier

- L** for Long Carrier (not available for BC420, BC425)
- (NOTE: Long Carrier will increase overall BC4 length)

3. BORE SIZE

- | | |
|------------------------------|-----------------------------|
| 06 for .625 in./16 mm | 15 for 1.50in./40 mm |
| 10 for 1.0 in./25 mm | 20 for 2.0 in./50 mm |
| 12 for 1.25 in./32 mm | 25 for 2.5 in./63 mm |

4. STROKE LENGTH

Enter

- SK** then required stroke length in **inches**.*
- Example: SK100.25** for 100.250 inch stroke

5. ACCESSORIES AND OPTIONS

Once the model, bore size and stroke have been determined, you can add any of the options or accessory items shown below in any order. If the optional item indicates an "x", specify quantity.

When ordered with any BC4 Series model, all options and accessories listed will be factory installed unless specified. For special model and option requirements not shown, consult Tol-O-Matic, Inc.

OPTIONS AND ACCESSORIES CODES

(x= Quantity)

- DW*** Auxiliary Carrier (With Piston)
- FL** Floating Mount
- FMx** Foot Mount (ea.)
- +SDx** Standard Shock, Hardware Only (ea.)
- +SHx** Standard Shock, Heavy Duty (ea.)
- +SLx** Standard Shock, Lite Duty (ea.)
- HD** Single End Porting (not available on BC406)
- BTx** Form C Reed Switch 5-meter lead.
- BMx** Form C Reed Switch 5-meter lead Quick-disconnect
- RTx** Form A Reed Switch 5-meter lead.
- RMx** Form A Reed Switch 5-meter lead Quick-disconnect
- CTx** AC Triac Reed Switch 5-meter lead.
- CMx** AC Triac Reed Switch 5-meter lead Quick-disconnect
- KTx** Hall-effect (Sinking) 5-meter lead.
- KMx** Hall-effect (Sinking) 5-meter lead Quick-disconnect
- TTx** Hall-effect (Sourcing) 5-meter lead.
- TMx** Hall-effect (Sourcing) 5-meter lead Quick-disconnect
- TSx** Tube Support (ea.)
- TNx** T-nuts (ea.)

NOTE: Prelubrication is standard on all BC4 Band Cylinders (see Application Guidelines) on page 197.

+ When shocks are ordered, cushion seals are removed.

*When ordering auxiliary **carrier option**, determine the minimum distance required between carriers (dimension "D" in Auxiliary Carrier Bending Moments chart, page 71). Determine your working stroke and your "D" dimension, then enter these into your configuration string. (Example: BC415SK50.00DW15.00RT2) **The configurator will calculate the overall length of the actuator.**

BC4 - FIELD RETROFIT

ORDERING - BC4

OPTIONS AND ACCESSORIES	U.S. VERSION MODELS AND PART NUMBERS							
	BC406	BC410	BC412	BC415	BC420	BC425	BC430	BC440
Auxiliary Carrier Option	6906-9023	6910-9023	6912-9023	6915-9023	6920-9023	6925-9023	6930-9023	6940-9023
Floating Mount Kits	6906-9004	6910-9004	6912-9004	6915-9004	6920-9004	6925-9004	6930-9004	6940-9004
Foot Mount Kits ¹	6906-9003	6910-9003	6912-9003	6915-9003	6920-9003	6925-9003	6930-9003	6940-9003
Shock Abs. Field Retrofit Kit ² – Heavy Duty	6906-9006	6910-9020	6912-9020	6915-9020	6920-9020	6925-9020	-	-
Shock Abs. Field Retrofit Kit ² – Lite Duty	6906-9005	6910-9005	6912-9005	6915-9005	6920-9005	6925-9005	-	-
Shock Abs. Field Mount Kit ³ (Hardware Only)	6906-9024	6910-9024	6912-9024	6915-9024	6920-9024	6925-9024	-	-
Shock Stop Kit ⁴	6906-9019	6910-9019	6912-9019	6915-9019	6920-9019	6925-9019	-	-
Shock Stop Kit (Long Carrier) ⁴	6906-9029	6910-9029	6912-9029	6915-9029	-	-	-	-
Single End Porting ⁵	NA	6910-9018	6912-9018	6915-9018	6920-9017	6925-9017	Standard Feature	Standard Feature
Switch – Hardware Only	2506-9999	6910-9999	6910-9999	3415-9999	3420-9999	3420-9999	3420-9999	6940-9005
Tube Supports ⁶	6906-9002	6910-9002	6912-9002	6915-9002	6920-9002	6925-9002	6930-9002	6940-9002

OPTIONS AND ACCESSORIES	METRIC VERSION MODELS AND PART NUMBERS							
	BC4M06 / BC4MM06	BC4M10 / BC4MM10	BC4M12 / BC4MM12	BC4M15 / BC4MM15	BC4M20 / BC4MM20	BC4M25 / BC4MM25	BC4M30 / BC4MM30	BC4M40 / BC4MM40
Auxiliary Carrier Option	7906-9023	7910-9023	7912-9023	7915-9023	7920-9023	7925-9023	7930-9023	7940-9023
Floating Mount Kits	7906-9004	7910-9004	7912-9008	7915-9008	7920-9004	7925-9004	7930-9005	7940-9005
Foot Mount Kits ¹	7906-9003	7910-9003	7912-9004	7915-9003	7920-9003	7925-9003	7930-9003	7940-9003
Shock Abs. Field Retrofit Kit ² – Heavy Duty	7906-9007	7910-9007	7912-9006	7915-9005	7920-9020	7925-9020	-	-
Shock Abs. Field Retrofit Kit ² – Lite Duty	7906-9005	7910-9005	7912-9005	7915-9006	7920-9005	7925-9005	-	-
Shock Abs. Field Mount Kit ³ (Hardware Only)	7906-9024	7910-9024	7912-9024	7915-9024	7920-9024	7925-9024	-	-
Shock Stop Kit ⁴	7906-9019	7910-1017	7912-1032	7915-1017	7920-9019	7925-9019	-	-
Shock Stop Kit (Long Carrier) ⁴	7906-9029	7910-9029	7912-9029	7915-9029	-	-	-	-
Single End Porting ⁵	NA	7910-9006 / 8910-9002	7912-9001 / 8912-9001	7915-9001 / 8915-9001	7920-9017 / 8920-9017	7925-9017 / 8925-9017	Standard Feature	Standard Feature
Switch – Hardware Only	2506-9999	6910-9999	6910-9999	3415-9999	3420-9999	3420-9999	3420-9999	6940-9005
Tube Supports ⁶	7906-9002	7910-9002	7912-9002	7915-9002	7920-9002	7925-9002	7930-9002	7940-9002

¹ Foot Mount Kit contains one bracket and mounting hardware.

² Shock Field Retrofit Kit contains one shock absorber, impact bolt, and mounting hardware.

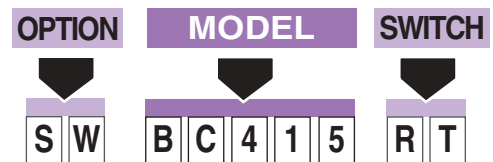
³ Shock Field Mount Kit contains one set of mounting hardware and impact bolt.

⁴ Shock Stop Kit contains shock plate and screws.

⁵ Single End Porting Kit contains replacement head and plugs.

⁶ Contains one tube support and mounting hardware.

KIT (HARDWARE & SWITCH)	DESCRIPTION	SWITCH ONLY (NO HARDWARE)
BT	Form C Reed Switch with 5 meter lead	3600-9084
BM	Form C Reed Switch with Quick-disconnect Coupler (Male)	3600-9085
RT	Form A Reed Switch with 5 meter lead	3600-9082
RM	Form A Reed Switch with Quick-disconnect Coupler (Male)	3600-9083
CT	ac Triac Reed Switch with 5 meter lead	3600-9086
CM	ac Triac Reed Switch with Quick-disconnect Coupler (Male)	3600-9087
KT	Hall-effect (Sinking) Switch with 5 meter lead	3600-9090
KM	Hall-effect (Sinking) Switch with Quick-disconnect Coupler (Male)	3600-9091
TT	Hall-effect (Sourcing) Switch with 5 meter lead	3600-9088
TM	Hall-effect (Sourcing) Switch with Q-D Coupler (Male)	3600-9089
	Connector (Female) 5 meter lead	2503-1025



To order field retrofit switch and hardware kits for all Tol-O-Matic actuators: SW (Then the model and bore size, and type of switch needed)

Example: SWBC415RT
(Hardware and Form A Reed switch with 5 meter lead for 1.5" bore BC4 band cylinder)

(NOTE: Mounting hardware is required if replacing switch for any actuator manufactured before 7/1/97.)

CONFIGURATED REPAIR KITS FOR BC4 SERIES CYLINDERS ONLY							
U.S. VERSION MODELS				METRIC VERSION MODELS			
BC406	BC410	BC412	BC415	BC4M06	BC4M10	BC4M12	BC4M15
RKBC406	RKBC410	RKBC412	RKBC415	RKBC4M(M)06	RKBC4M(M)10	RKBC4M(M)12	RKBC4M(M)15
BC420	BC425	BC430	BC440	BC4M20	BC4M25	BC4M30	BC4M40
RKBC420	RKBC425	RKBC430	RKBC440	RKBC4M(M)20	RKBC4M(M)25	RKBC4M(M)30	RKBC4M(M)40

SEAL KITS FOR BC4 SERIES			
U.S. & METRIC VERSION MODELS			
BC406	BC410	BC412	BC415
6906-9022	6910-9022	6912-9022	6915-9022
BC420	BC425	BC430	BC440
6920-9022	6925-9022	6930-9022	6940-9022

NOTE: When ordering repair kits, specify stroke as "SK" then indicate the desired length in decimal inches after the configured model indicated above.
EXAMPLE: RKBC410SK1.00