

BC2 BAND CYLINDER

BC2 BAND CYLINDER



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SOFTWARE FOR
BAND CYLINDERS
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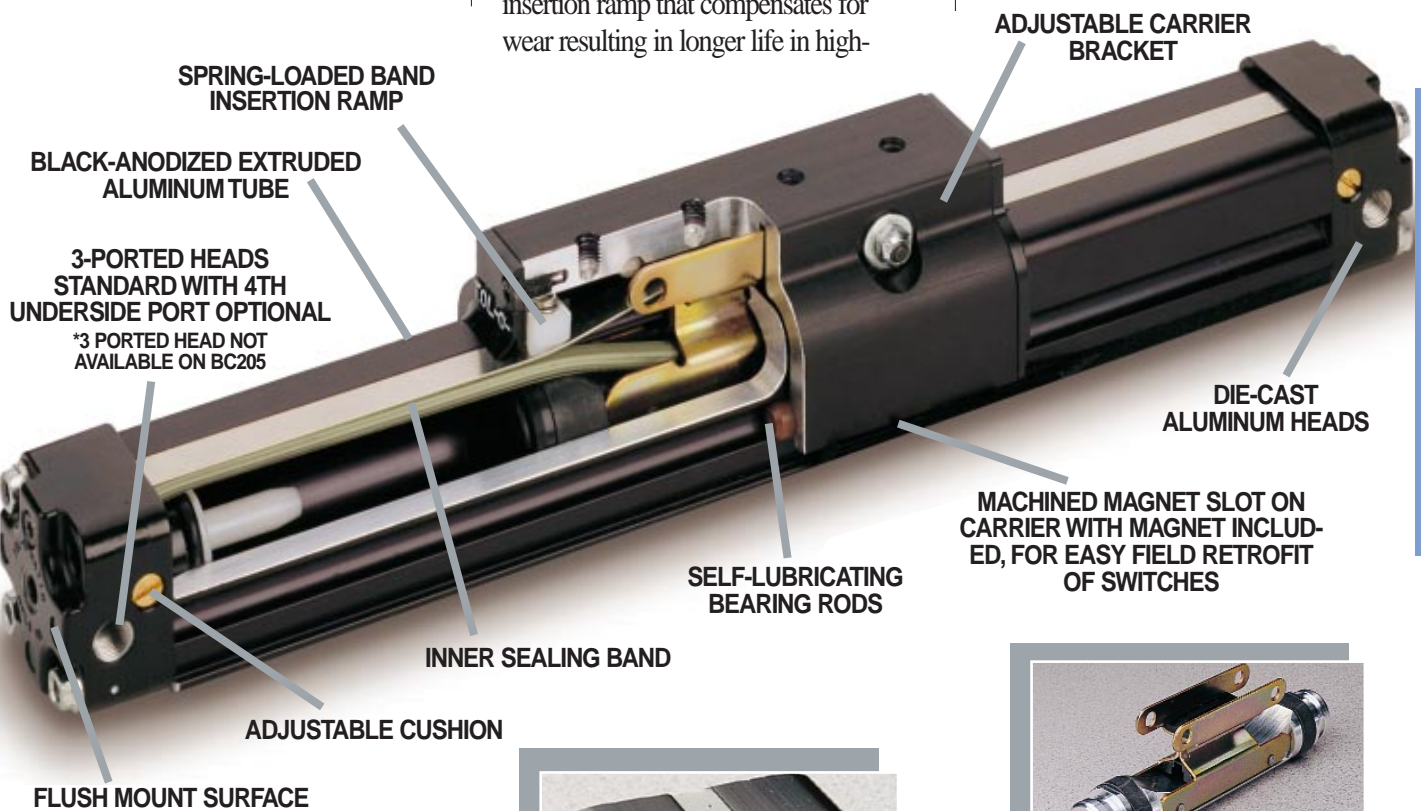
Tol-O-Matic, inventor of the world's first rodless cylinder, presents the BC2 series of Band Cylinders®. A step ahead of other rodless band-type cylinders available in the marketplace today, the BC2 series patented design and customer-driven features will fill countless application requirements with reliable, long-term performance.

It is designed for maximum flexibility and versatile mounting in both horizontal and many vertical applications, see page 22 for vertical application guidelines. BC2 Series Band Cylinders are available in six bore sizes: 1/2" (12mm), 1" (25mm), 1 1/4" (32mm), 1 1/2" (40mm), 2" (50mm) and 2 1/2" (63mm).

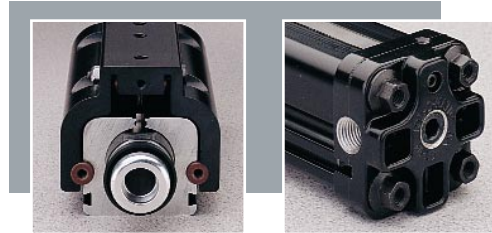
The extended carrier design of the BC2 Series features a spring-loaded band insertion ramp that compensates for wear resulting in longer life in high-

velocity applications. The magnet slot for field retrofitting of switch sensors is standard.

Adjustable cushions for smooth deceleration are standard on all models except the BC205, which features external bumpers instead.

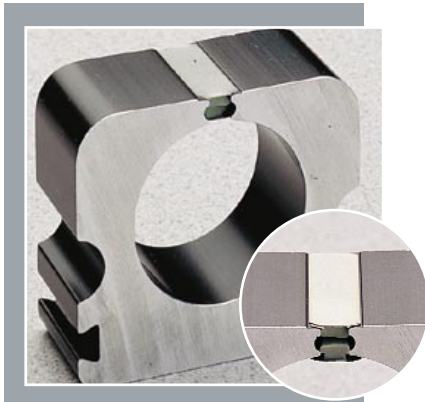


BC2 BAND CYLINDER



Patented load-bearing carrier system* features self-lubricated bearing rods that transmit the load directly from the bracket to the cylinder tube isolating the piston for longer seal life. Bearing rods guide and support moderate loads eliminating the need for external guides in many applications, saving additional costs.

Flush end mounts and 3-ported heads are standard, with 4th underside port as optional.



Stamped-steel piston bracket out performs aluminum for maximum strength at major stress points.

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



Patented adjustable carrier bracket*** has just two-bolt adjustments for true tracking and superior load support.

NOTE: Some features shown may not apply to the BC205 model.

* U.S. Patent No. 4,852,465
 ** U.S. Patent No. 4,545,290
 *** U.S. Patent No. 4,724,744

BC2 BAND CYLINDER

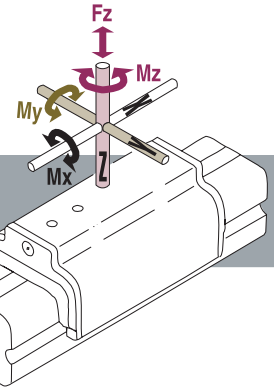
The graphs on this page are intended for a quick reference to help in determining the BC2 Band Cylinder that will work for your project.

Refer to page 84 in the Rodless

Cylinders section to find step by step directions to size and select the best rodless cylinder for the job.

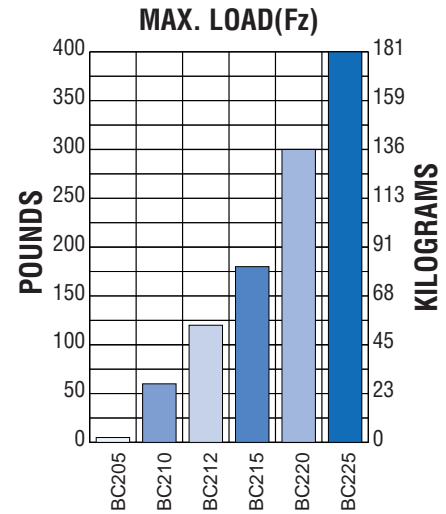
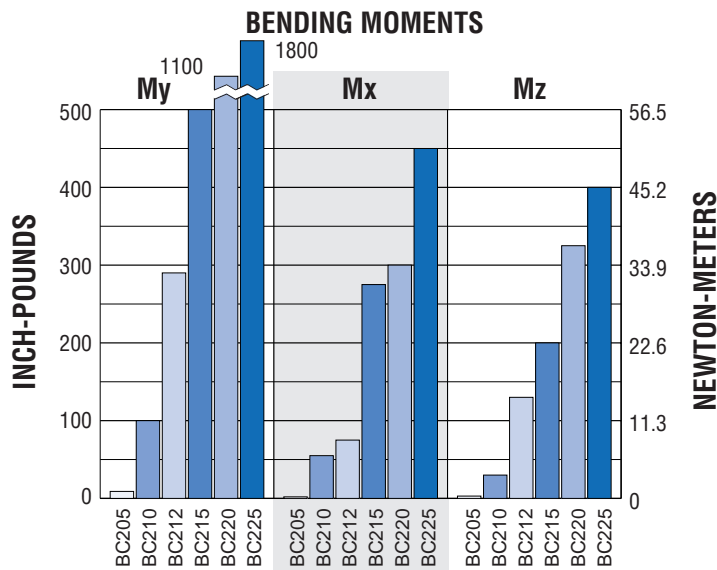
The following pages detail each of the six sizes of the BC2, giving bore size,

weights, force, cushion data, tube support requirement and available options.

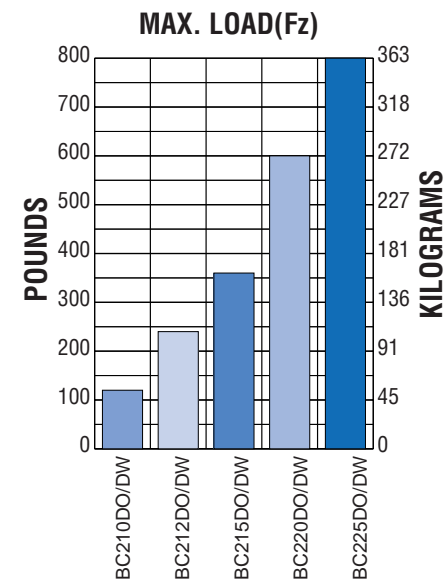
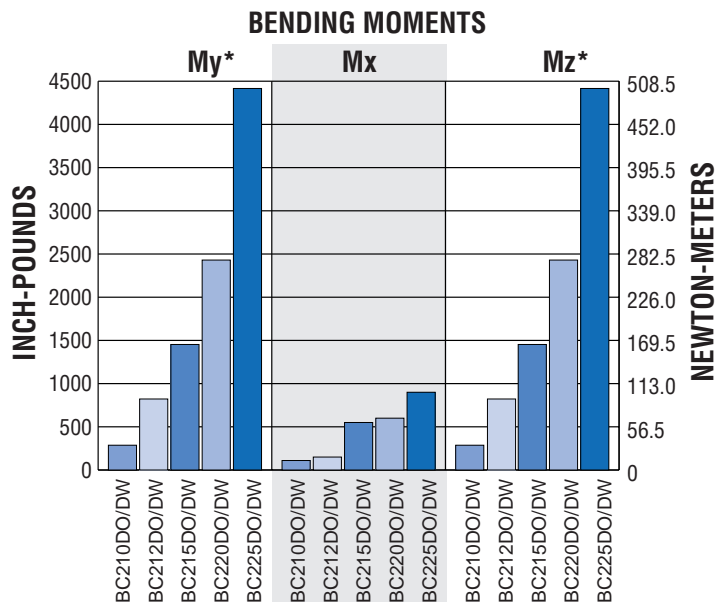


BC2 BENDING MOMENTS, LOAD : BC205, BC210, BC212, BC215, BC220, BC225

STANDARD ACTUATOR

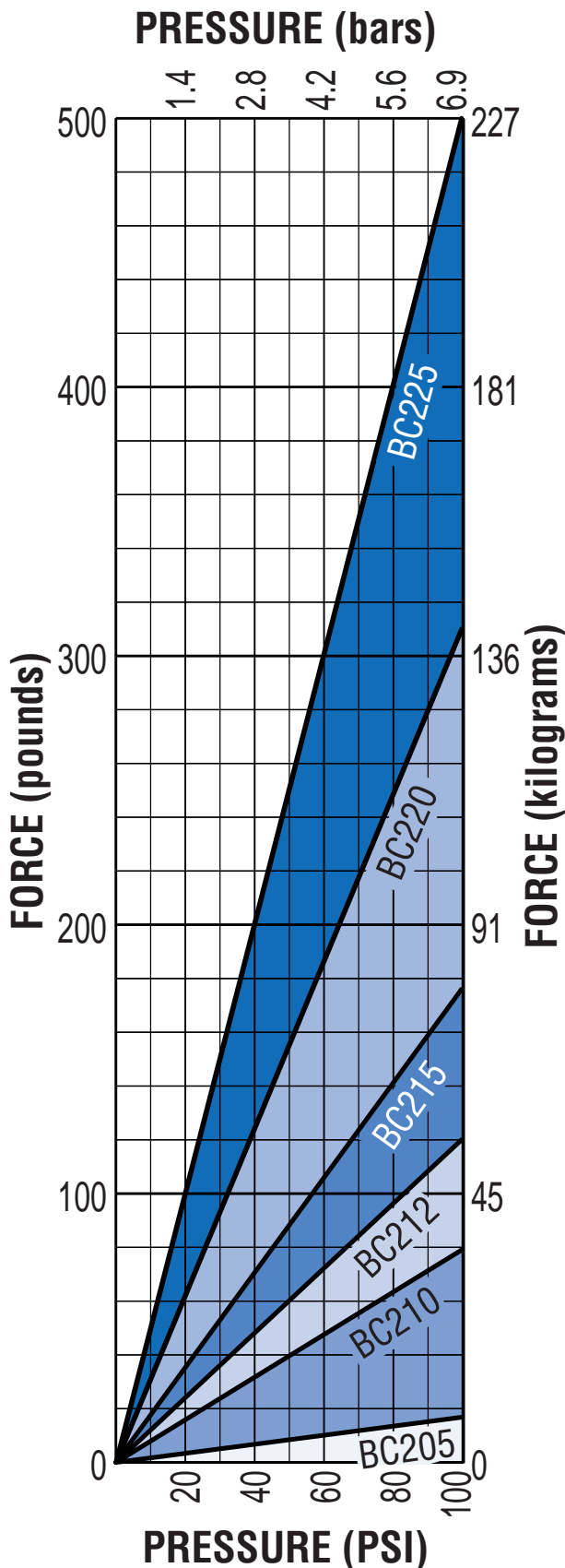


AUXILIARY CARRIER OPTION



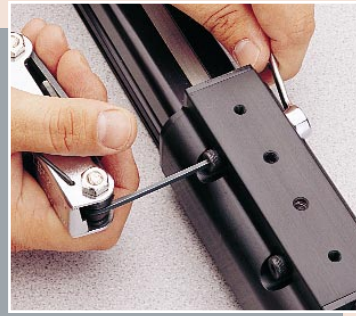
*Auxiliary carrier bending moments indicated are at minimum center to center distance. Additional My + Mz load capacity can be obtained by increasing "D" dimension. Refer to auxiliary carrier data on page 22

**BC2 THEORETICAL FORCE
VS PRESSURE:
BC205, BC210, BC212,
BC215, BC220, BC225**



APPLICATION GUIDELINES

1. BC2 CARRIER BRACKET BOLT ADJUSTMENT



BC2 carrier bracket adjustment bolts should be adjusted to suit each individual application, depending on the degree of rigidity required. A good starting point is to

tighten the nut on the bolt until there is no lateral movement of the bolt. Then, equally tighten each nut on the carrier bolt while moving the carrier by hand along the length of the stroke. When all lateral play in the carrier is eliminated and free movement along the length of the stroke is maintained, your carrier bracket is adjusted properly. Some applications may require fine tuning of this adjustment to gain more lateral play or a higher degree of rigidity. In demanding applications, carrier adjustments should be done periodically.

2. CUSHION NEEDLE ADJUSTMENT (BC2, BC3, BC4 ONLY)

Adjust the cushion needles in the cylinder heads carefully to obtain a smooth, hesitation free deceleration for your particular application. If there are questions on proper adjustment, please consult Tol-O-Matic, Inc.



3. CUSHION DATA CHARTS (BC2, BC3, BC4, CC, SA, DP, TC ONLY)

NOTE: The velocities listed on the Cushion Data charts in this catalog are final or cushion impact velocities. On applications where the internal cushions or bumpers are to be used, be sure the actual, final or impact velocity is known. If the velocity is not known, use of limit switches with valve deceleration circuits or shock absorbers should be considered.

ALSO SEE

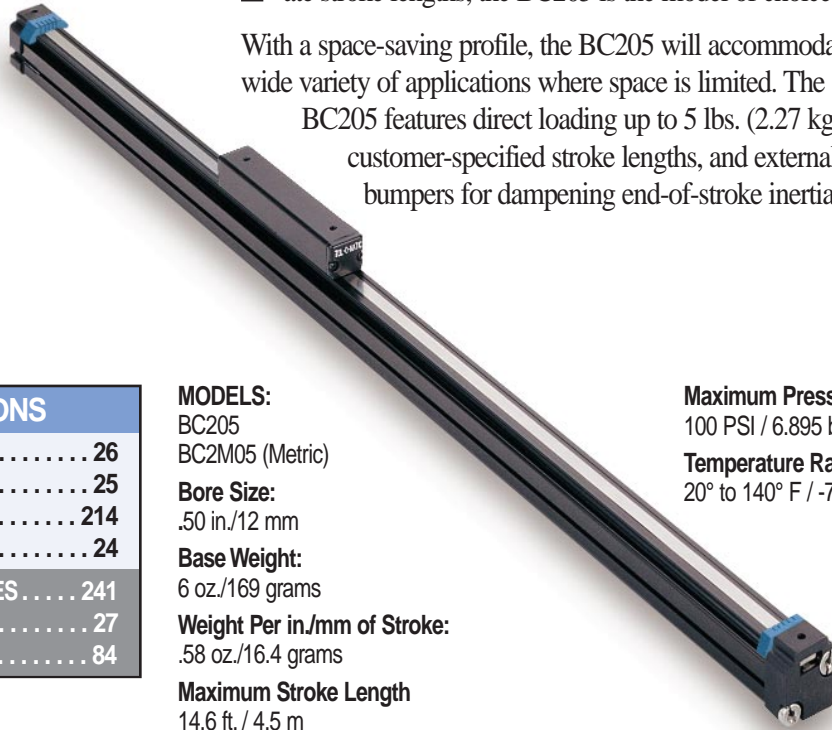
SELECTION (BC2, BC3, BC4, LS)	84
LUBRICATION GUIDELINES	241
FINAL VELOCITY CALCULATIONS	241

BC205

For applications involving light loads and short to moderate stroke lengths, the BC205 is the model of choice.

With a space-saving profile, the BC205 will accommodate a wide variety of applications where space is limited. The

BC205 features direct loading up to 5 lbs. (2.27 kg.), customer-specified stroke lengths, and external bumpers for dampening end-of-stroke inertia.



BC205 OPTIONS	
FLOATING MOUNT	26
FOOT MOUNTS	25
SWITCHES	214
TUBE SUPPORTS	24
APPLICATION GUIDELINES	241
ORDERING	27
SELECTION	84

MODELS:
BC205
BC2M05 (Metric)

Bore Size:
.50 in./12 mm

Base Weight:
6 oz./169 grams

Weight Per in./mm of Stroke:
.58 oz./16.4 grams

Maximum Stroke Length
14.6 ft. / 4.5 m

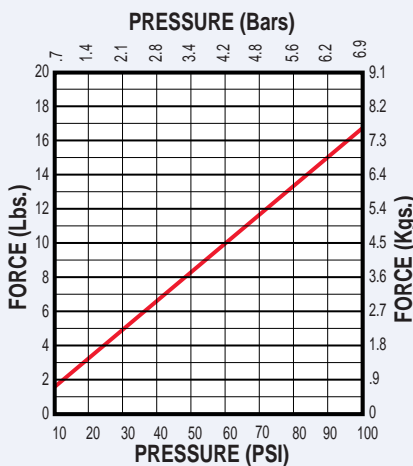
(For longer stroke lengths, please consult the factory)

Maximum Pressure
100 PSI / 6.895 bar

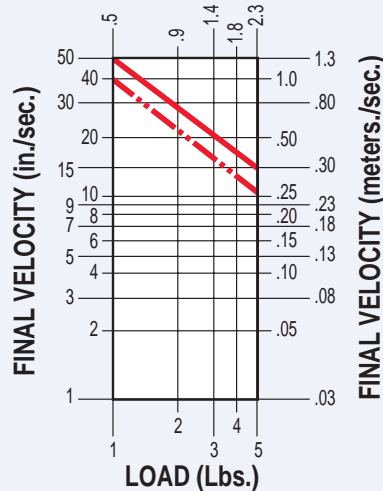
Temperature Range
20° to 140° F / -7° to 60° C

PERFORMANCE DATA

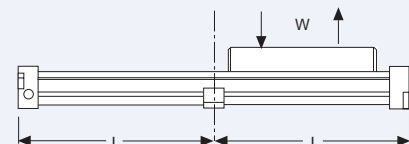
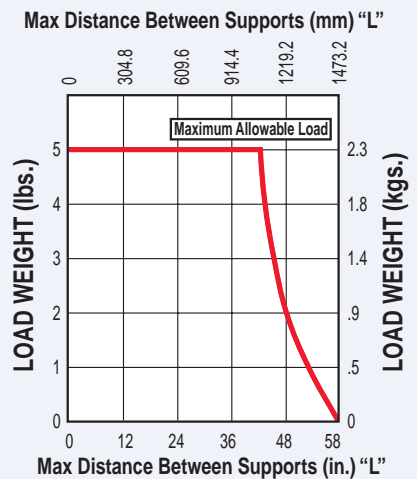
THEORETICAL FORCE VS. PRESSURE



BUMPER DAMPENING
LOAD (Kgs.)

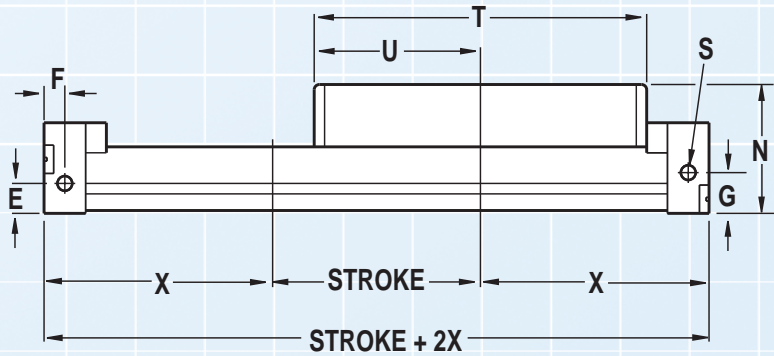
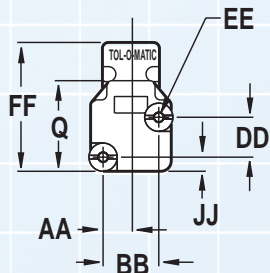
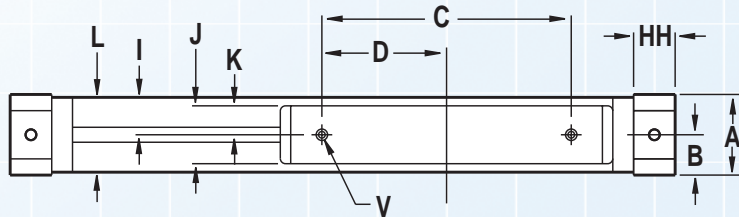
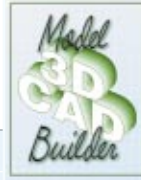


TUBE SUPPORT REQUIREMENTS



DIMENSIONAL DATA

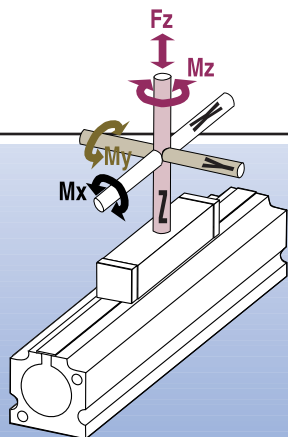
(30.7mm)
(5.8mm) 10-24 UNC



	MODELS	
	BC205	BC2M05
A	.97	24.6
B	.48	12.3
C	3.00	76.2
D	1.50	38.1
E	.36	9.1
F	.25	6.35
G	.49	12.4
I	.45	11.45
J	.70	17.8
K	.35	8.9
L	.90	22.9
N	1.55	39.4
Q	1.09	27.7
S	#10-32UNF	M5
T	4.00	101.6
U	2.00	50.8
V	2x #6-32 UNC x .38 DEEP	M3 x 9.7 DEEP
X*	2.60 @ 80-100 PSI 2.66 @ 40-80 PSI 2.71 @ 0-40 PSI	66.0 @ 80-100 PSI 67.6 @ 40-80 PSI 68.8 @ 0-40 PSI
AA	.33	8.4
BB	.66	16.8
DD	.48	12.2
EE	4x #6-32UNC x .25 DEEP	M3 x 6.4 DEEP
FF	1.55	39.4
HH	.50	12.7
JJ	.17	4.3
	INCHES	MILLIMETERS

*Bumpers compressed at end of stroke.

NOTE: To determine overall length of unit add 5.42" (137.7mm) to stroke length.

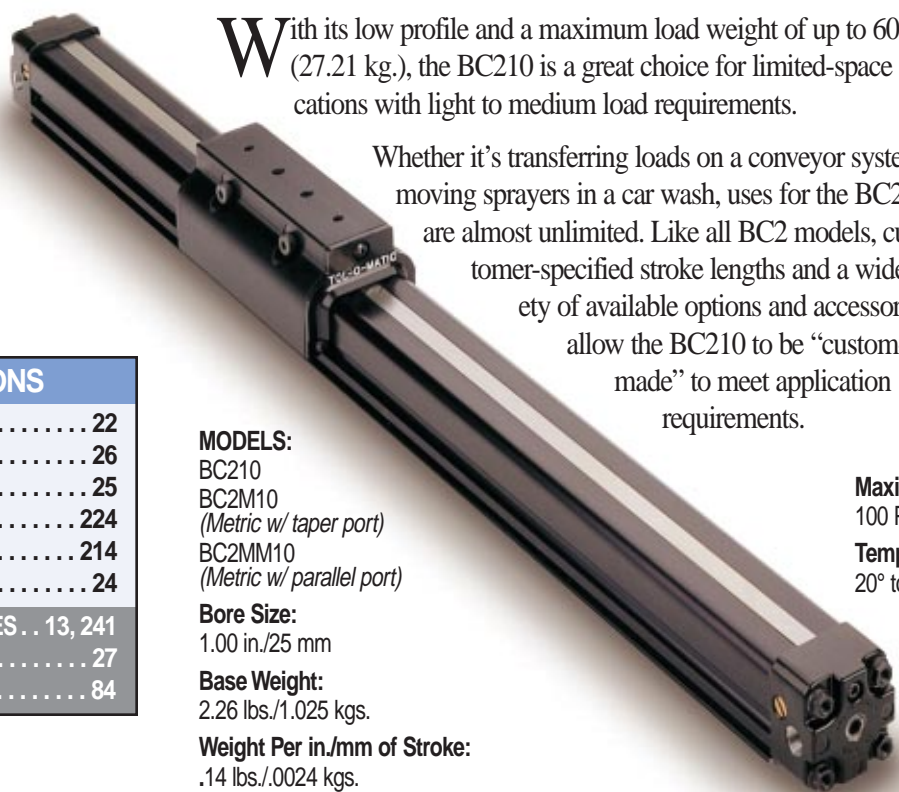


BENDING MOMENTS

MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC205	.50 in.	9.0 in.-lbs.	2.0 in.-lbs.	3.0 in.-lbs.	5.0 lbs.
BC2M05	12 mm	1.01 N-m	0.22 N-m	0.33 N-m	2.27 kgs.

BC210

BC2 BAND CYLINDER



With its low profile and a maximum load weight of up to 60 lbs. (27.21 kg.), the BC210 is a great choice for limited-space applications with light to medium load requirements.

Whether it's transferring loads on a conveyor system or moving sprayers in a car wash, uses for the BC210 are almost unlimited. Like all BC2 models, customer-specified stroke lengths and a wide variety of available options and accessories allow the BC210 to be "custom-made" to meet application requirements.

Maximum Pressure
100 PSI / 6.895 bar
Temperature Range
20° to 140° F / -7° to 60° C

BC210 OPTIONS	
AUXILIARY CARRIER.....	22
FLOATING MOUNT.....	26
FOOT MOUNTS.....	25
SHOCK ABSORBERS.....	224
SWITCHES.....	214
TUBE SUPPORTS.....	24
APPLICATION GUIDELINES . . 13, 241	
ORDERING	27
SELECTION.....	84

MODELS:
BC210
BC2M10
(Metric w/ taper port)
BC2MM10
(Metric w/ parallel port)

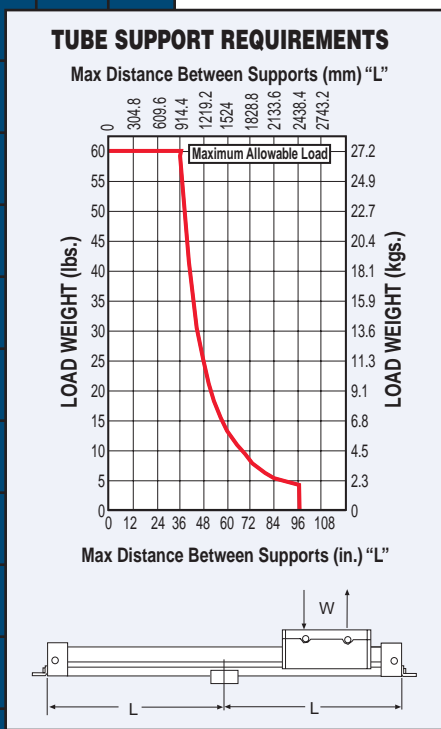
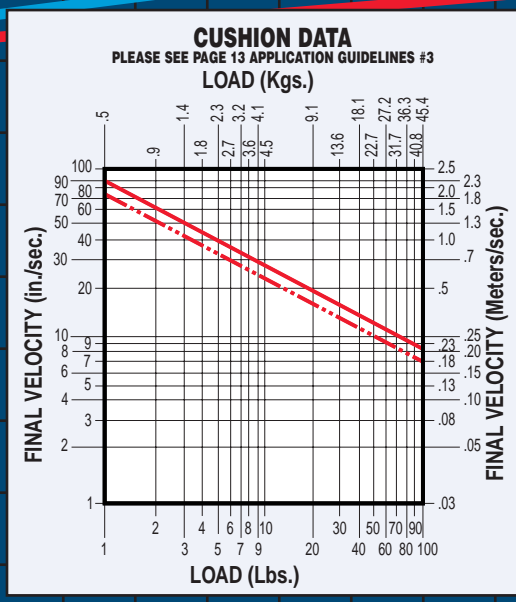
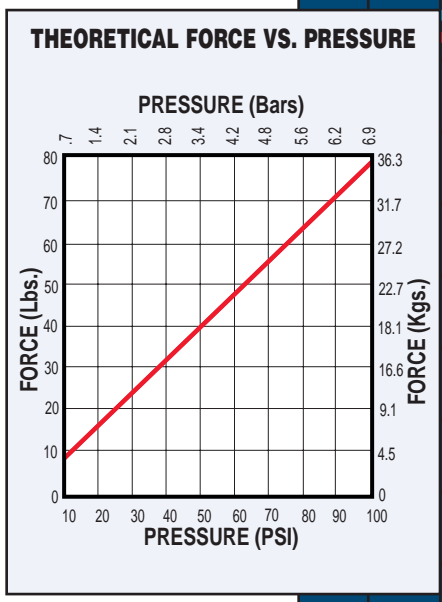
Bore Size:
1.00 in./25 mm

Base Weight:
2.26 lbs./1.025 kgs.

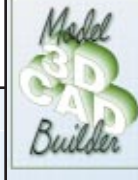
Weight Per in./mm of Stroke:
.14 lbs./0.024 kgs.

Maximum Stroke Length
23.6 ft. / 7.2 m
(For longer stroke lengths, please consult the factory)

PERFORMANCE DATA

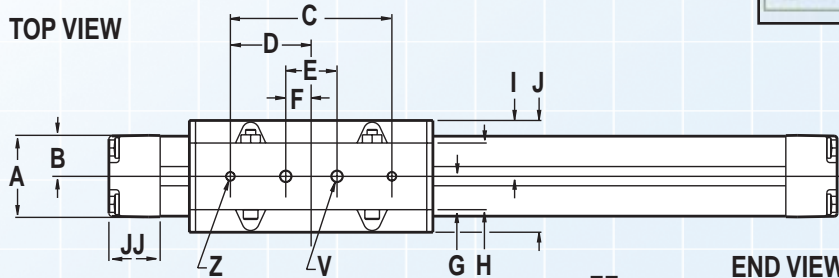


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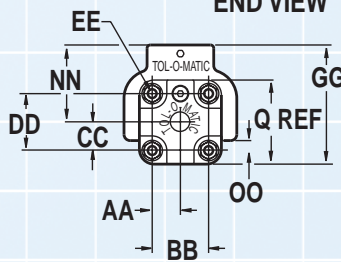


DIMENSIONAL DATA

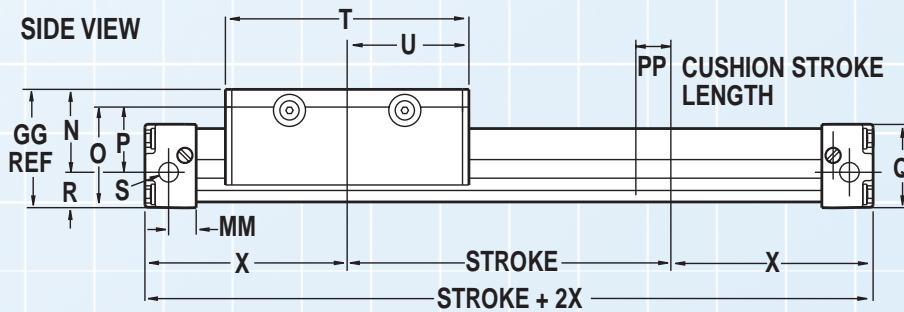
TOP VIEW



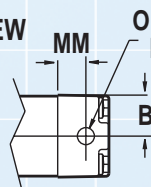
END VIEW



SIDE VIEW



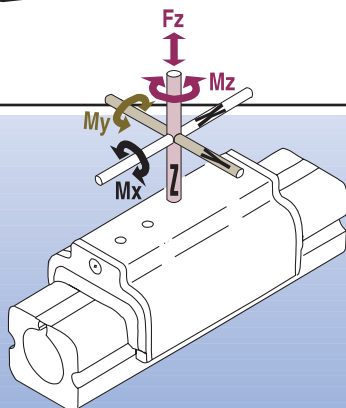
BOTTOM VIEW



MODELS

	BC210	BC2M(MM)10
A	1.58	40.1
B	.79	20.1
C	3.15	80.0
D	1.57	40.0
E	1.00	25.4
F	.50	12.7
G	.65	16.5
H	1.30	33.0
I	1.09	27.7
J	2.18	55.4
N	1.62	41.2
O	1.88	47.7
P	1.20	30.5
Q	1.64	41.5
R	.68	17.3
S	1/8 NPT (3)	M 1/8 BSPT(3) MM 1/8 BSPP(3)
T	4.75	120.7
U	2.37	60.2
V	1/4-20 UNC x .25 DEEP	M6 x 6 DEEP
X	3.94	100.1
Z	10-32 UNC x .25 DEEP	M6 x 6 DEEP
AA	.55	14.0
BB	1.10	27.9
CC	.55	14.0
DD	1.10	27.9
EE	10-24 x .43 DEEP	M5 x 11.0 DEEP
GG	2.30	58.4
JJ	1.00	25.4
MM	.55	14.0
NN	1.50	38.1
OO	.18	4.7
PP	.68	17.3
	INCHES	MILLIMETERS

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

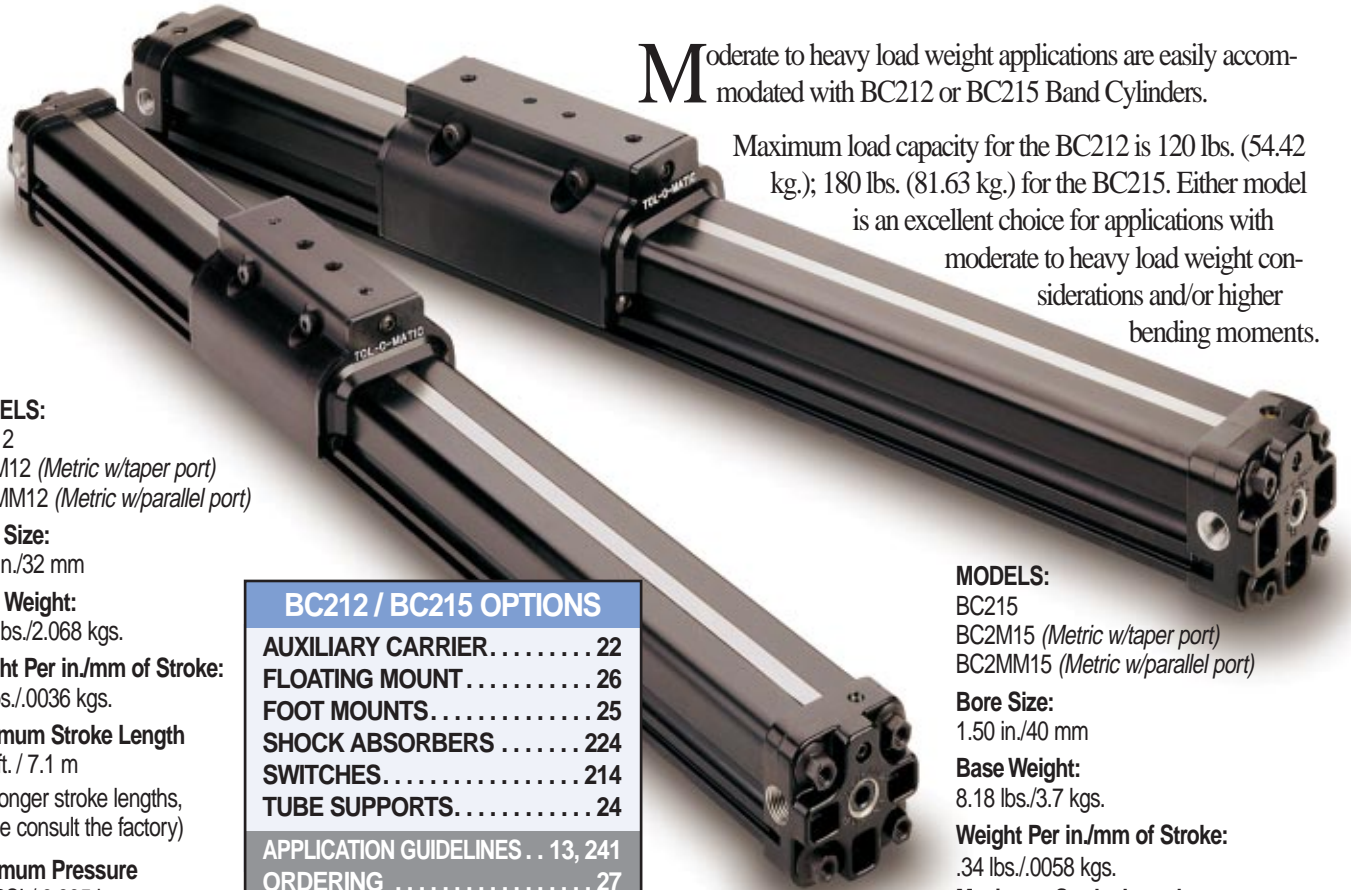


BENDING MOMENTS

MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC210	1.00 in.	100 in.-lbs.	55 in.-lbs.	30 in.-lbs.	60 lbs.
BC2M10	25 mm	11.29 N-m	6.21 N-m	3.39 N-m	27.21 kgs.

BC212/BC215

BC2 BAND CYLINDER



Moderate to heavy load weight applications are easily accommodated with BC212 or BC215 Band Cylinders.

Maximum load capacity for the BC212 is 120 lbs. (54.42 kg.); 180 lbs. (81.63 kg.) for the BC215. Either model is an excellent choice for applications with moderate to heavy load weight considerations and/or higher bending moments.

MODELS:

- BC212
- BC2M12 (*Metric w/taper port*)
- BC2MM12 (*Metric w/parallel port*)

Bore Size:

1.25 in./32 mm

Base Weight:

4.56 lbs./2.068 kgs.

Weight Per in./mm of Stroke:

.21 lbs./0.0036 kgs.

Maximum Stroke Length

23.4 ft. / 7.1 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

BC212 / BC215 OPTIONS

AUXILIARY CARRIER.....	22
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MODELS:

- BC215
- BC2M15 (*Metric w/taper port*)
- BC2MM15 (*Metric w/parallel port*)

Bore Size:

1.50 in./40 mm

Base Weight:

8.18 lbs./3.7 kgs.

Weight Per in./mm of Stroke:

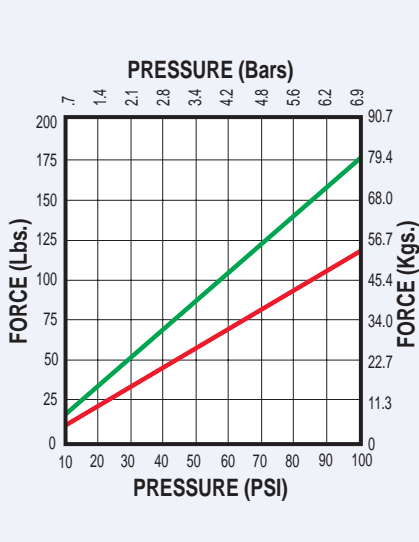
.34 lbs./0.0058 kgs.

Maximum Stroke Length

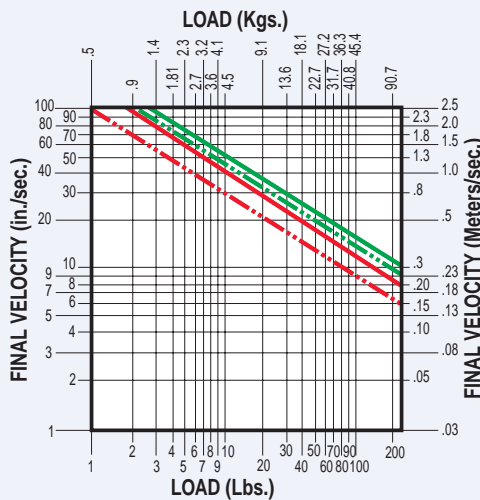
23.2 ft. / 7.1 m

PERFORMANCE DATA

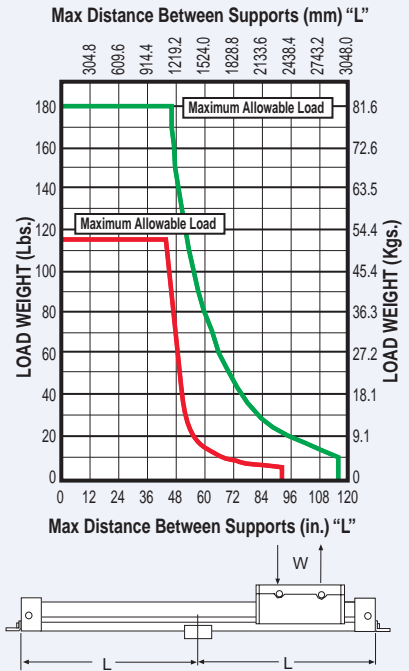
THEORETICAL FORCE VS. PRESSURE



CUSHION DATA
PLEASE SEE PAGE 13 APPLICATION GUIDELINES #3

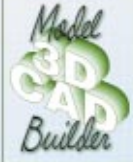


TUBE SUPPORT REQUIREMENTS



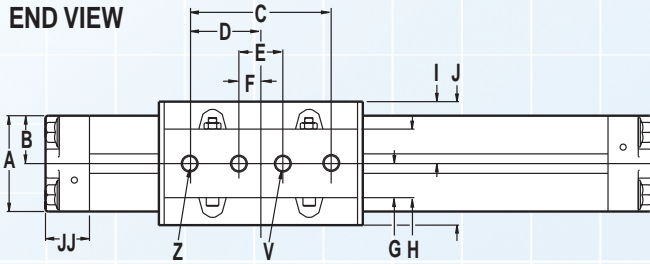
— BC212
— BC215

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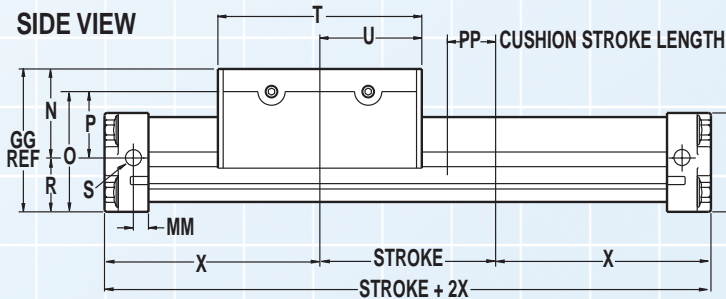


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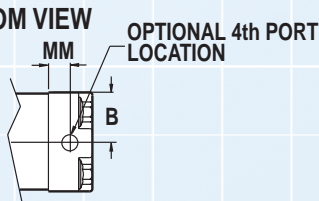
END VIEW



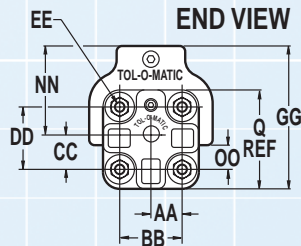
SIDE VIEW



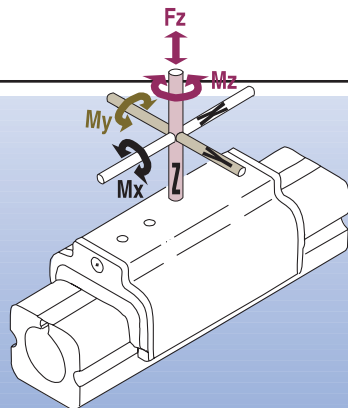
BOTTOM VIEW



END VIEW



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or
763-478-8000
Fax: 763-478-8080



BENDING MOMENTS

MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC212	1.25 in.	290 in.-lbs.	75 in.-lbs.	130 in.-lbs.	120 lbs.
BC215	1.50 in.	500 in.-lbs.	275 in.-lbs.	200 in.-lbs.	180 lbs.
BC2M12	32 mm	32.77 N-m	8.47 N-m	14.69 N-m	54.42 Kgs.
BC2M15	40 mm	56.49 N-m	31.07 N-m	22.60 N-m	81.63 Kgs.

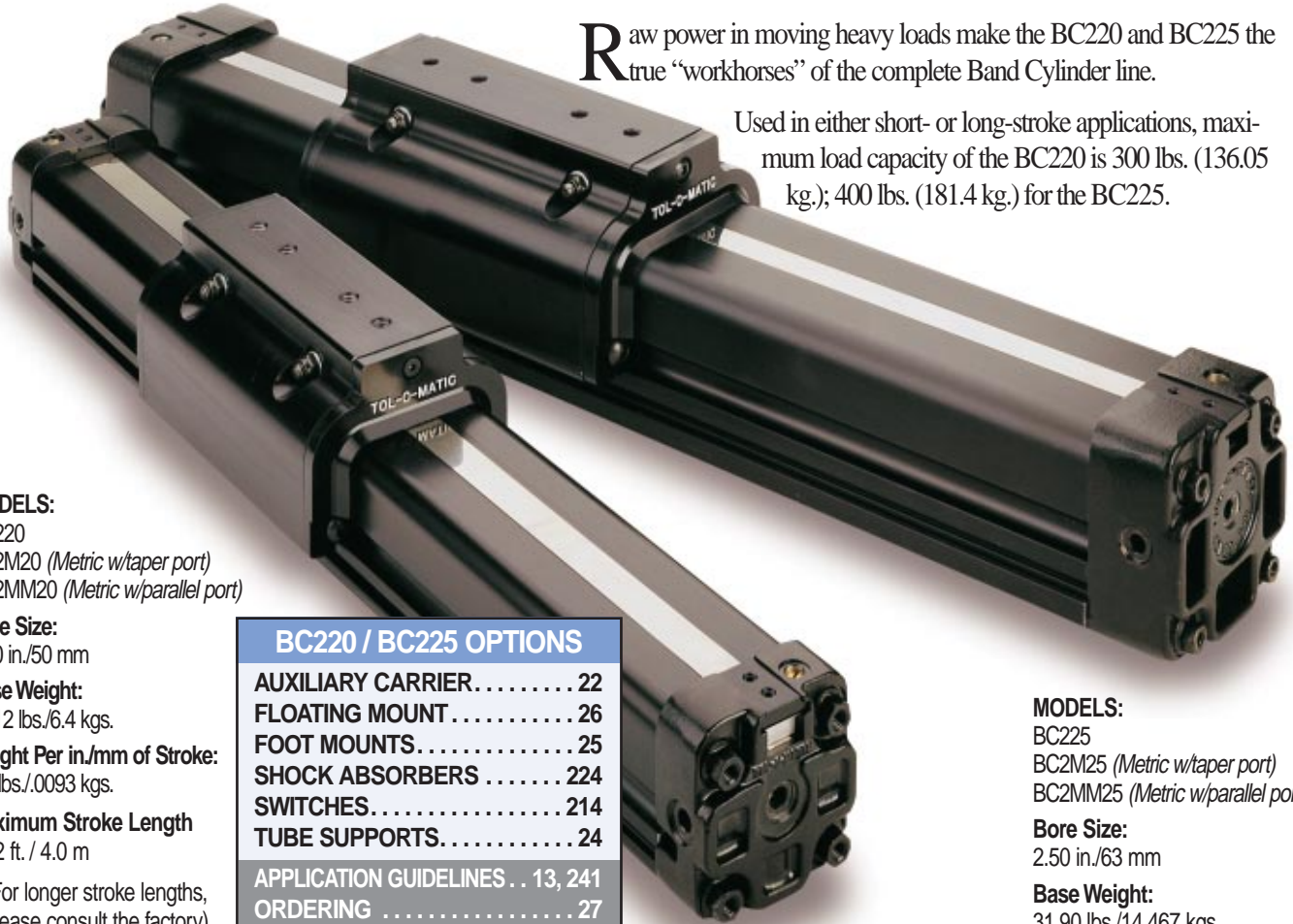
	MODELS			
	BC212	BC215	BC2M(MM)12	BC2M(MM)15
A	2.18	2.85	55.4	72.4
B	1.09	1.42	27.7	36.1
C	3.20	4.25	81.3	108.0
D	1.60	2.12	40.6	53.8
E	1.00	1.00	25.4	25.4
F	0.5	0.50	12.7	12.7
G	0.78	0.90	19.8	22.9
H	1.56	1.8	39.6	45.7
I	1.41	1.75	35.8	44.5
J	2.82	3.5	71.6	89.0
N	1.83	2.13	46.5	54.1
O	2.48	2.95	63.0	74.9
P	1.25	1.51	31.0	38.4
Q	2.25	2.59	57.2	65.8
R	1.23	1.41	31.2	36.6
S	1/4 NPT (3)	1/4 NPT (3)	M 1/4 BSPT(3) MM 1/4 BSPP(3)	M 1/4 BSPT(3) MM 1/4 BSPP(3)
T	4.64	5.91	117.9	150.1
U	2.32	2.96	58.9	75.1
V	5/16-18 UNC x .31 DEEP	1/4-20 UNC x .38 DEEP	M8 x 7 DEEP	M8 x 10 DEEP
X	4.9	5.91	124.5	150.1
Z	1/4-20 UNC x .31 DEEP	5/16-18 UNC x .38 DEEP	M8 x 7 DEEP	M8 x 10 DEEP
AA	0.71	0.91	18	23.1
BB	1.42	1.81	36.1	46.0
CC	0.78	1.03	19.8	26.2
DD	1.42	1.81	36.1	46.0
EE	1/4/20 x .47 DEEP	1/4/20 x .47 DEEP	M6 x 12 DEEP	M6 x 12 DEEP
GG	3.06	3.54	77.7	90.7
JJ	1.00	1.25	25.4	31.8
MM	0.34	0.5	8.6	12.7
NN	1.83	2.13	46.5	54.1
OO	0.35	0.28	9.0	7.0
PP	1.10	1.29	27.9	32.7
	INCHES		MILLIMETERS	

BC2 BAND CYLINDER

BC220/BC225

Raw power in moving heavy loads make the BC220 and BC225 the true "workhorses" of the complete Band Cylinder line.

Used in either short- or long-stroke applications, maximum load capacity of the BC220 is 300 lbs. (136.05 kg.); 400 lbs. (181.4 kg.) for the BC225.



BC2 BAND CYLINDER

MODELS:

- BC220
- BC2M20 (Metric w/taper port)
- BC2MM20 (Metric w/parallel port)

Bore Size:

2.00 in./50 mm

Base Weight:

14.12 lbs./6.4 kgs.

Weight Per in./mm of Stroke:

.54 lbs./0.093 kgs.

Maximum Stroke Length

13.2 ft. / 4.0 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

BC220 / BC225 OPTIONS

AUXILIARY CARRIER.....	22
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FOOT MOUNTS.....	25
SHOCK ABSORBERS.....	224
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ORDERING	27
SELECTION	84

MODELS:

- BC225
- BC2M25 (Metric w/taper port)
- BC2MM25 (Metric w/parallel port)

Bore Size:

2.50 in./63 mm

Base Weight:

31.90 lbs./14.467 kgs.

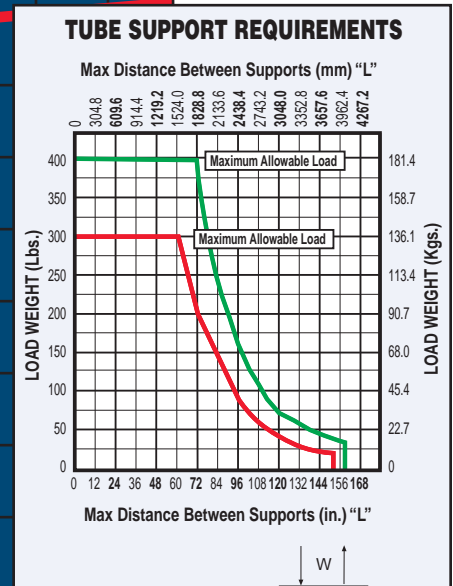
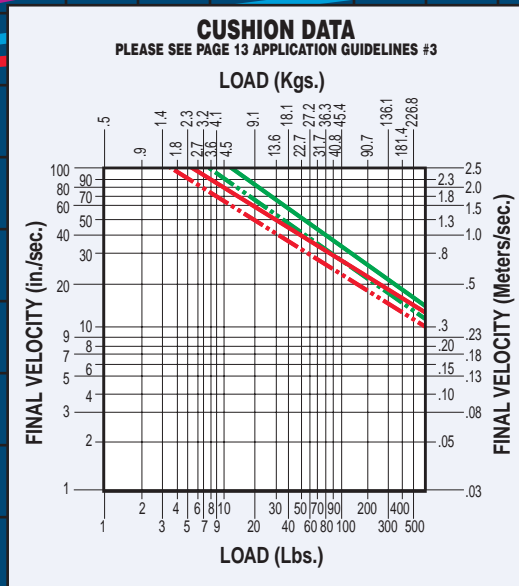
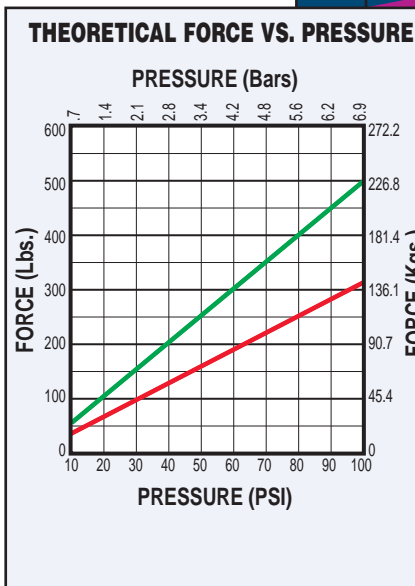
Weight Per in./mm of Stroke:

1.01 lbs./0.173 kgs.

Maximum Stroke Length

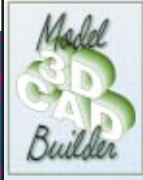
12.1 ft. / 3.7m

PERFORMANCE DATA



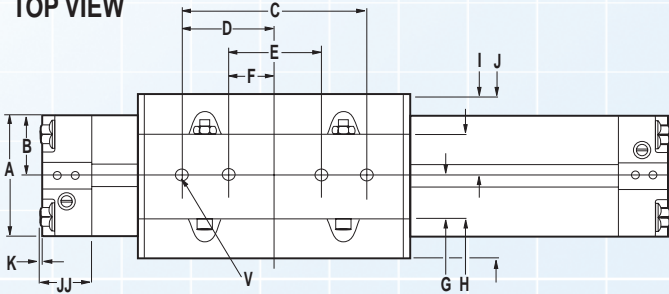
— BC220
— BC225

3D CAD AVAILABLE AT
WWW.TOLOMATIC.COM

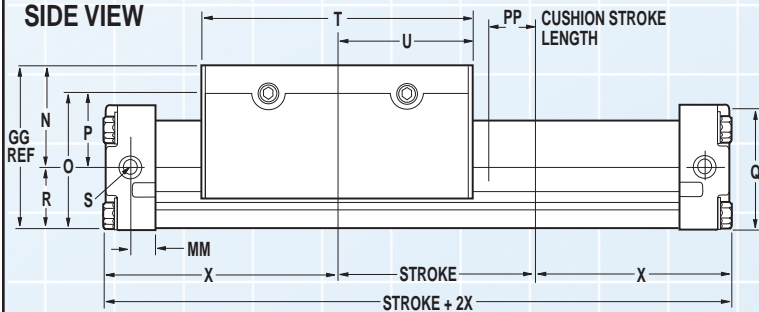


DIMENSIONAL DATA

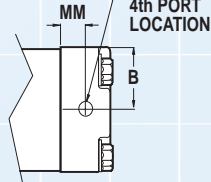
TOP VIEW



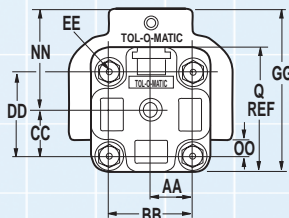
SIDE VIEW



BOTTOM VIEW



END VIEW

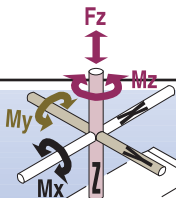


For Assistance Call
1-800-328-2174
(Toll Free U.S. and Canada)

or
763-478-8000
Fax 763-478-8080

	MODELS			
	BC220	BC225	BC2M(MM)20	BC2M(MM)25
A	3.25	4.25	82.6	108
B	1.62	2.13	41.1	54.1
C	5.00	6.00	127.0	152.4
D	2.50	3.00	63.5	76.2
E	2.50	3.00	63.5	76.2
F	1.25	1.50	31.8	38.1
G	1.16	1.27	29.5	32.4
H	2.30	2.55	58.4	64.8
I	2.22	2.81	56.4	71.4
J	4.44	5.62	112.8	142.8
K	0.06	0.03	1.5	0.76
N	2.75	3.20	69.9	81.3
O	3.69	4.67	93.7	118.6
P	2.00	2.37	50.8	60.2
Q	3.38	4.37	85.9	111.0
R	1.69	2.30	42.9	58.4
S	3/8 NPT (3)	3/8 NPT (3)	M 3/8 BSPT(3) MM 3/8 BSPP(3)	M 3/8 BSPT(3) MM 3/8 BSPP(3)
T	7.37	8.86	187.2	225
U	3.68	4.43	93.5	112.5
V	3/8-16 UNC x .44 DEEP	3/8-16 UNC x .50 DEEP	M10 x 11 DEEP	M10 x 12 DEEP
X	6.30	8.45	160	214.63
AA	1.12	1.44	28.5	36.6
BB	2.25	2.88	57.2	73.2
CC	1.25	1.75	31.8	44.5
DD	2.25	2.88	57.2	73.2
EE	5/16/18 x .88 DEEP	5/16/18 x .88 DEEP	M8 x 22 DEEP	M8 x 22 DEEP
GG	4.44	5.5	112.8	139.7
JJ	1.44	2.06	36.6	52.3
MM	0.69	1	17.5	25.4
NN	2.75	3.2	69.9	81.3
OO	0.43	0.76	10.9	19.3
PP	1.35	1.97	34.3	50
	INCHES		MILLIMETERS	

BC2 BAND CYLINDER



BENDING MOMENTS

MODEL NO.	BORE SIZE	MAXIMUM BENDING MOMENT			MAX. LOAD
		My	Mx	Mz	Fz
BC220	2.00 in.	1,100 in.-lbs.	300 in.-lbs.	325 in.-lbs.	300 lbs.
BC225	2.50 in.	1,800 in.-lbs.	450 in.-lbs.	400 in.-lbs.	400 lbs.
BC2M20	50 mm	124.28 N-m	33.90 N-m	36.72 N-m	136.05 Kgs.
BC2M25	63 mm	203.37 N-m	50.84 N-m	45.19 N-m	181.4 Kgs.

AUXILIARY CARRIER

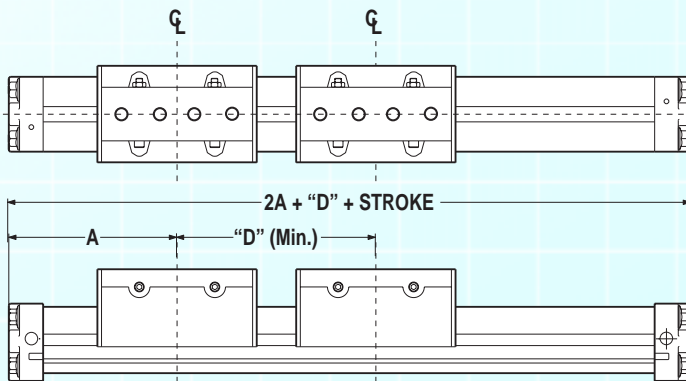
The auxiliary carrier option substantially increases load carrying and bending moments capacity over the standard single carrier models. As a general rule, the auxiliary carrier option is highly recommended in verticle applications (M_v) if the distance from the carrier mounting surface to the load center of gravity (CG) exceeds the overall length of the carrier. Auxiliary carriers can be ordered with or without an internal piston. (Auxiliary carriers without a piston have no cushion on the cylinder end closest to the auxiliary carrier.) When ordering, determine the minimum distance required between carriers (dimension "D" in Auxiliary Carrier Bending Moments chart). Determine your working stroke and your "D" dimension, then enter these into your configuration string. (Example: BC215SK50.00DW15.00RT2) The configurator will calculate the overall length of the actuator. Refer to page 27 for ordering information. NOTE: breakaway pressure will increase when using auxiliary carriers.

ORDERING PROCEDURE



BC2 BAND CYLINDER

DIMENSIONAL DATA

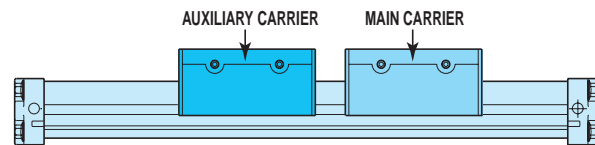


MODELS	BORE	A	MIN "D" (w/o Piston)	MIN "D" (w/Piston)
BC210DO/DW	1.00 in.	3.94	5.07	5.07
BC212DO/DW	1.25 in.	4.90	5.17	6.85
BC215DO/DW	1.50 in.	5.91	6.46	8.07
BC220DO/DW	2.00 in.	6.30	8.10	8.10
BC225DO/DW	2.50 in.	8.46	9.62	11.06

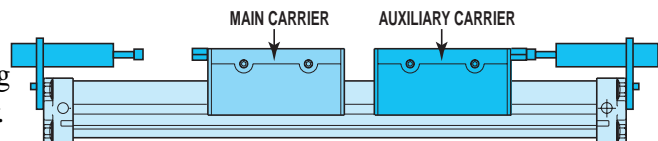
MODELS	BORE	A	MIN "D" (w/o Piston)	MIN "D" (w/Piston)
BC2M10DO/DW	25 mm	100.1	128.8	128.8
BC2M12DO/DW	32 mm	124.5	131.3	174.0
BC2M15DO/DW	40 mm	150.1	164.1	205.0
BC2M20DO/DW	50 mm	160.0	205.7	205.7
BC2M25DO/DW	63 mm	214.9	244.3	280.9

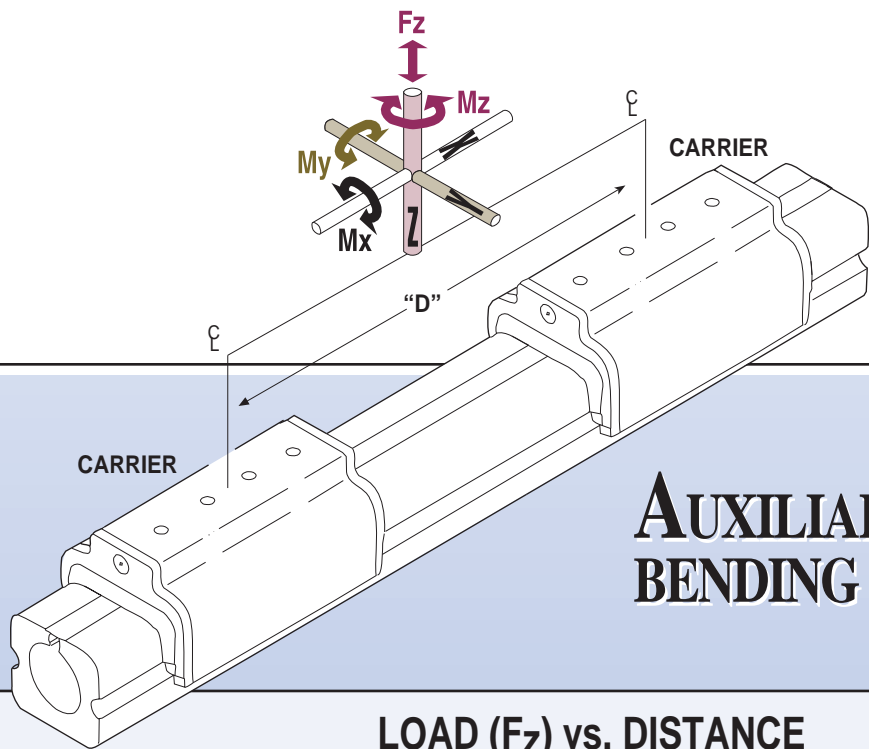
IMPORTANT INFORMATION REGARDING AUXILIARY CARRIER PLACEMENT

When a cylinder is ordered without shock absorbers, the auxiliary carrier is always placed to the left (while facing the switch mounted or open port side) of the main carrier.

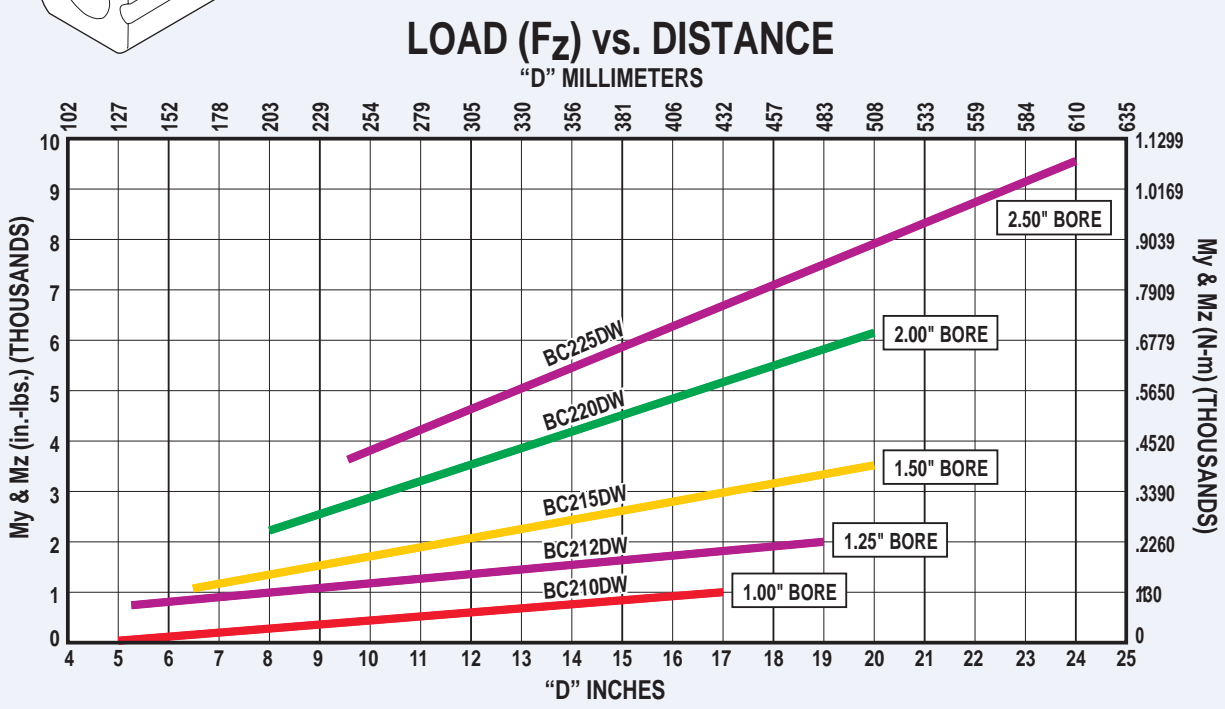


When a cylinder is ordered with shock absorbers, the auxiliary carrier is always placed to the right (while facing the switch mounted or open port side) of the main carrier.





AUXILIARY CARRIER BENDING MOMENTS



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.

BORE SIZE	"D"* MINIMUM				MAXIMUM BENDING MOMENT						MAX. LOAD	
	(w/o Piston)		(w Piston)		My**		Mx		Mz**		Fz	
in. mm	in.	mm	in.	mm	in.-lbs.	N-m	in.-lbs.	N-m	in.-lbs.	N-m	lbs.	kgs.
1.00 25	5.07	129	5.07	129	287	32.40	110	12.40	287	32.40	120	54.40
1.25 32	5.17	131	6.85	174	822	92.90	150	16.90	822	92.90	240	108.90
1.50 40	6.46	164	8.07	205	1453	164.10	550	62.10	1453	164.10	360	163.30
2.00 50	8.10	206	8.10	206	2430	274.60	600	67.80	2430	274.60	600	272.20
2.50 63	9.62	244	11.06	281	4416	498.90	900	101.70	4416	498.90	800	362.90

* "D" is distance between carriers.
 ** Loads calculated are at minimum "D", for substantially higher My + Mz loads increase "D" and refer to graph above

TUBE SUPPORTS

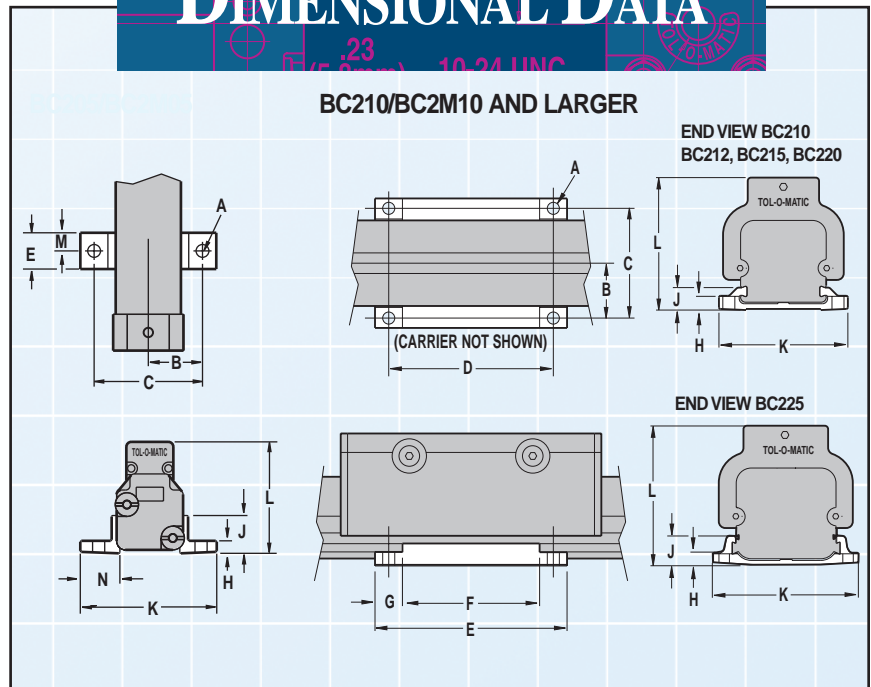
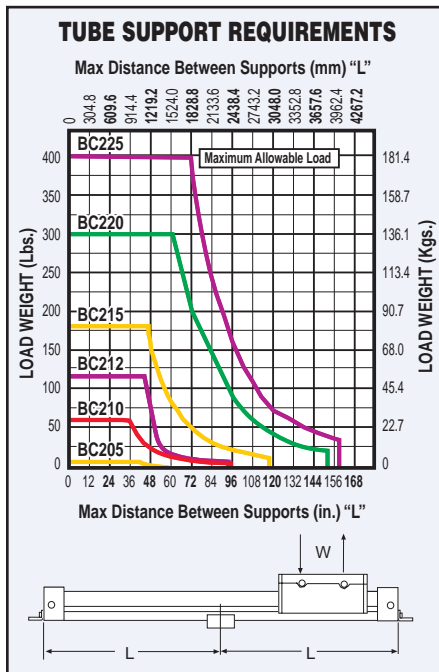


For intermediate support, tube support brackets can be mounted to any BC2 model during assembly procedure. Made of black-anodized aluminum, the brackets are designed to fit into dovetail grooves which run the length of the cylinder tube. The number of tube support brackets required and their placement, depends on the overall length of the BC2 model and the load weight being moved and supported. Refer to the tube support data at left or the individual graph with each BC2 model.

Note: Switches cannot be mounted on the same face of the actuator as tube supports.

BC2 BAND CYLINDER

DIMENSIONAL DATA



MODELS	BORE	A	B	C	D	E	F	G	H	J	K	L	M	N
BC205	0.50 in.	ø.18	.75	1.50	-	.50	-	-	.18	.54	1.88	1.60	.65	.50
BC210	1.00 in.	.220	1.00	2.00	3.00	3.50	2.50	.50	.25	.41	2.36	2.43	-	-
BC212	1.25 in.	.265	1.31	2.62	4.50	5.00	4.00	.50	.40	.81	3.12	3.23	-	-
BC215	1.50 in.	.265	1.50	3.00	4.50	5.00	4.00	.50	.312	.70	3.50	3.62	-	-
BC220	2.00 in.	.413	1.875	3.750	5.75	6.38	5.00	.69	.375	.87	4.44	4.53	-	-
BC225	2.50 in.	.421	2.563	5.125	7.75	8.50	7.00	.75	.437	1.17	6.00	5.51	-	-

Dimensions in inches

MODELS	BORE	A	B	C	D	E	F	G	H	J	K	L	M	N
BC2M05	12 mm	ø4.6	19.05	38.1	-	12.7	-	-	4.6	13.7	47.7	40.6	6.35	12.7
BC2M10	25 mm	5.6	25.4	50.8	76.2	88.9	63.5	12.7	6.3	10.4	59.9	61.7	-	-
BC2M12	32mm	6.7	33.4	66.7	114.3	127.0	101.6	12.7	10.2	20.6	79.2	82.0	-	-
BC2M15	40 mm	6.7	38.1	76.2	114.3	127.0	101.6	12.7	7.9	17.8	88.9	91.9	-	-
BC2M20	50 mm	10.5	47.6	95.3	146.1	162.1	127.0	17.5	9.5	22.1	112.8	115.1	-	-
BC2M25	63 mm	10.7	65.1	130.2	196.9	215.9	177.8	19.1	11.1	29.7	152.4	143.5	-	-

Dimensions in millimeters

FOOT MOUNT KITS

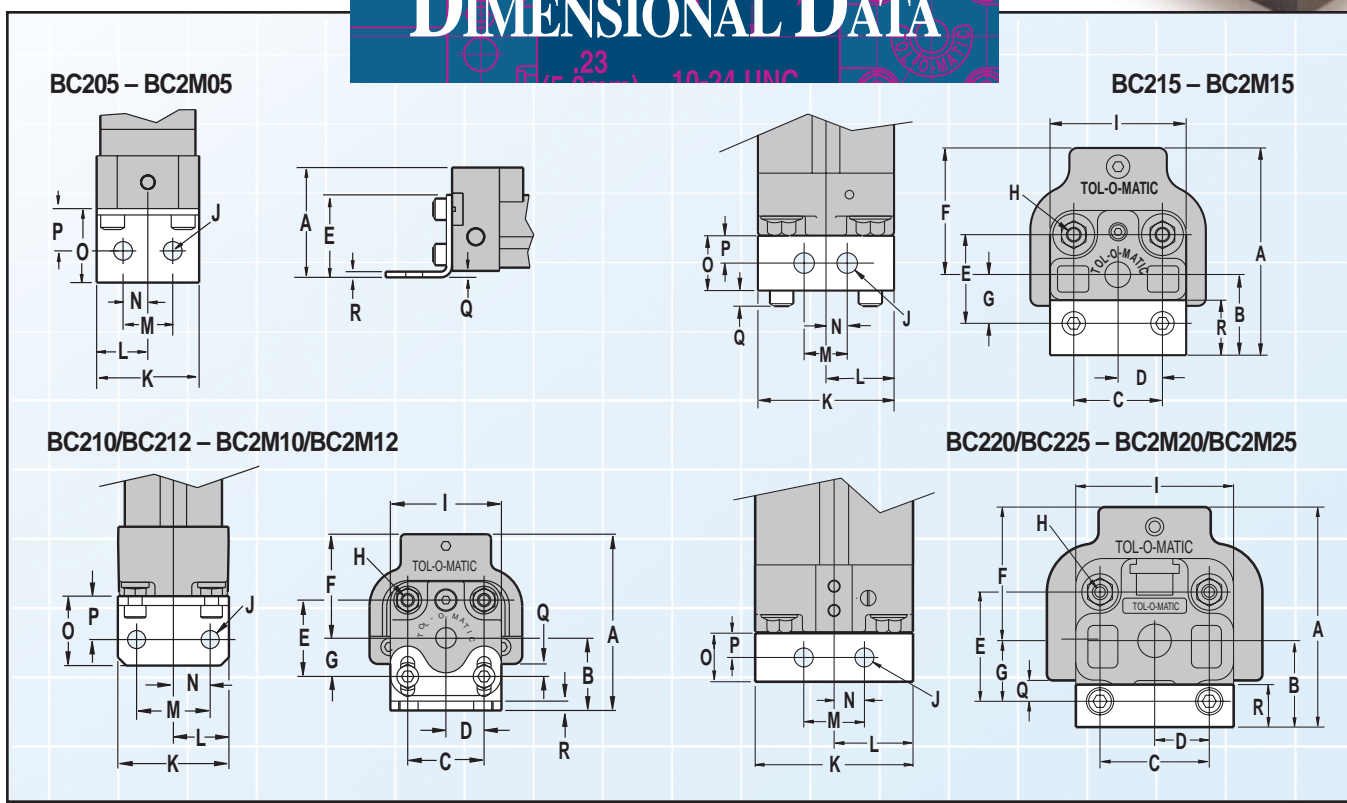
Foot mounts are an option on all bore sizes of BC2 Series Band Cylinders when an application requires the mounting to be different than flush. They may be specified on one or both ends of the cylinder. To order, refer to page 27.



DIMENSIONAL DATA

1.21 (30.7mm)
#5 (5.0mm) 10-24 UNC

BC2 BAND CYLINDER



MODELS	BORE SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
BC205	.50 in.	1.62	-	-	-	.87	-	-	-	-	∅.18	.97	.49	.47	.24	.70	.40	.06	.06
BC210	1.00 in.	2.36/2.73	.86/1.23	1.10	0.55	1.10	1.50	0.55	#10-24 x .43 DP	1.58	∅.260	1.60	0.80	1.06	0.53	1.00	0.63	0.18	0.14
BC212	1.25 in.	3.21/3.71	1.38/1.88	1.42	0.71	1.42	1.83	0.78	1/4-20 x .47 DP	2.18	∅.328	2.09	1.05	1.42	0.71	0.84	0.49	.35	0.13
BC215	1.50 in.	3.69	1.56	1.82	0.91	1.81	2.13	1.03	1/4-20 x .47 DP	2.85	∅.328	2.83	1.42	1.18	0.59	1.00	0.50	0.25	1.00
BC220	2.00 in.	4.53	1.78	2.25	1.13	2.25	2.75	1.25	5/16-18 x 1.0 DP	3.25	∅.390	3.25	1.63	1.25	0.63	1.00	0.50	.43	0.88
BC225	2.50 in.	5.65	2.45	2.88	1.44	2.88	3.20	1.75	5/16-18 x 1.0 DP	4.25	∅.437	4.25	2.13	1.89	0.95	1.18	0.59	.76	1.00

Dimensions in inches

MODELS	BORE SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
BC2M05	12 mm	41.1	-	-	-	22.1	-	-	-	-	∅4.6	24.6	12.3	11.9	6.0	20.4	10.2	1.5	1.5
BC2M10	25 mm	59.7/69.3	21.8/31.2	27.9	14.0	27.9	38.1	14.0	M5 x 11 DP	40.1	∅6.6	40.6	20.3	26.9	13.5	25.4	15.9	4.7	3.4
BC2M12	32mm	81.5/94.2	35.1/47.8	36.1	18.0	36.1	46.5	19.8	M6 x 12 DP	55.4	∅8.3	53.1	26.7	36.1	18.0	21.3	12.4	9.0	3.2
BC2M15	40 mm	93.7	39.6	46.2	23.1	46.0	54.1	26.2	M6 x 12 DP	72.4	∅8.3	71.9	36.1	30.0	15.0	25.4	12.7	6.0	25.4
BC2M20	50 mm	115.1	45.7	57.2	28.7	57.2	69.9	31.8	M8 x 25 DP	82.6	∅9.9	82.6	41.2	31.8	16.0	25.4	12.7	10.9	22.2
BC2M25	63 mm	143.5	62.2	73.2	35.6	73.2	81.3	44.5	M8 x 25 DP	108.0	∅11.1	108.0	54.1	48.0	24.1	30.0	15.0	19.3	25.4

Dimensions in millimeters

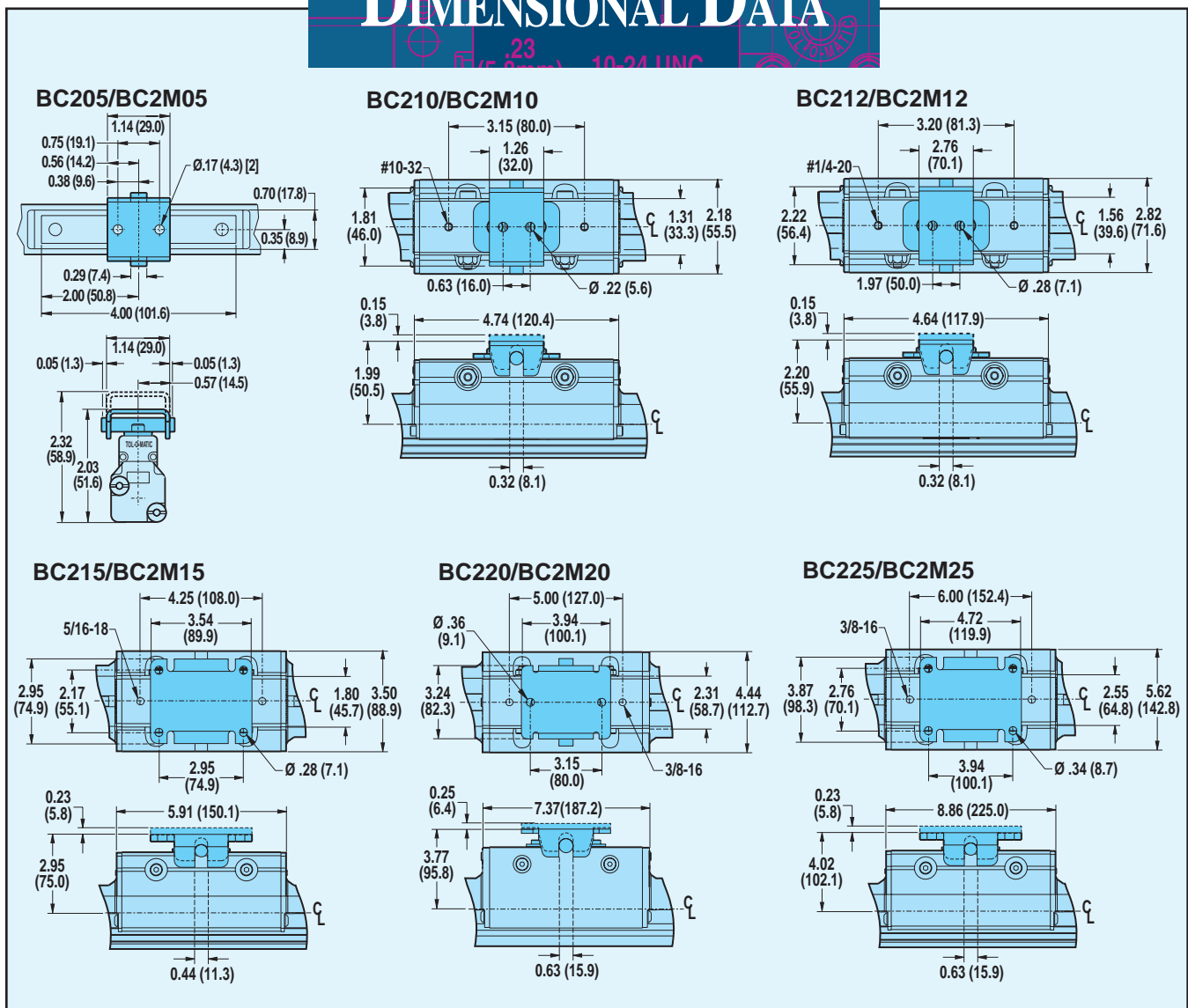
FLOATING MOUNT

Floating mount brackets are available for applications where a BC2 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. (Not to be used in conjunction with shock absorbers)



BC2 BAND CYLINDER

DIMENSIONAL DATA



BC2 - ORDERING

Placing an order for any actuator with (or without) an option or accessory item is made easy with Tol-O-Matic's order configuration system. Just specify the model selected, indicate required stroke and identify the options and accessories desired. For the available field retrofittable options and accessories, refer to corresponding charts for part number listings.

CONFIGURATOR EXAMPLE

MODEL, BORE, AND STROKE										ACCESSORIES AND OPTIONS																							
1. 2. 3.										4.																							
B	C	2	M							1	0	S	K	1	0	0	.	2	5	0	B	M	2	T	S	2	S	H	2				

The above example describes a BC2 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 C reed switches 5 meter lead with quick-disconnect, 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:
BC2M10SK100.250BM2TS2SH2

1. MODEL TYPE

Enter:

- BC2** for U.S. standard version
- M** for metric version with taper port
- MM** for metric version with parallel port
- NOTE: The .5 in. (12mm) bore is only available with the M option (M5 port).

2. BORE SIZE

Enter:

- | | |
|------------------------------|-----------------------------|
| 05 for .5 in./12 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 |

3. STROKE LENGTH

Enter

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

4. 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 BC2 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" indicates quantity.

- BTx** Form C Reed Switch with 5-meter lead
- BMx** Form C Reed Switch with 5-meter lead Quick-Disconnect
- RTx** Form A Reed Switch with 5-meter lead
- RMx** Form A Reed Switch with 5-meter lead Quick-Disconnect
- CTx** AC Triac Reed Switch with 5-meter lead
- CMx** AC Triac Form A Reed Switch w/ 5-meter lead Quick-Disconnect
- ¹KTx** Hall-effect (Sinking) Switch with 5-meter lead
- ¹KMx** Hall-effect (Sinking) Switch with 5-meter lead Quick-Disconnect
- ¹TTx** Hall-effect (Sourcing) Switch with 5-meter lead
- ¹TMx** Hall-effect (Sourcing) Switch with 5-meter lead Quick-Disconnect
- ¹MDR** Dual Magnet – Reed / TRIAC / Hall-effect
- FMx** Foot Mount (ea.)
- FL** Floating Mount
- TSx** Tube Support (ea.)
- ^{1,2}SDx** Standard Shock, Hardware Only (ea.)
- ^{1,2}SHx** Standard Shock, Heavy Duty (ea.)
- ^{1,2}SLx** Standard Shock, Lite Duty (ea.)
- ^{1,2,3}ADx** Adjustable Shock, Hardware Only (ea.)
- ^{1,2,3}AHx** Adjustable Shock, Heavy Duty (ea.)
- ^{1,2,3}ALx** Adjustable Shock, Lite Duty (ea.)
- ¹DW*** Aux. Carrier with Piston
- ¹DO*** Aux. Carrier without Piston
- ¹HDL** 4-Ported Head – Left End
- ¹HDR** 4-Ported Head – Right End
- ¹HDB** 4-Ported Head – Both Ends

NOTE: Prelubrication is standard on all BC2 Band Cylinders (see Application Guidelines) on page 241.

- ¹ Not available for BC205
- ² When ordering shocks, cushion seals are removed
- ³ When ordering adjustable shocks carrier travel (stroke) will be reduced see chart on page 229.

*When ordering auxiliary **carrier option**, determine the minimum distance required between carriers (dimension "D" in Auxiliary Carrier Bending Moments chart, page 23). Determine your working stroke and your "D" dimension, then enter these into your configuration string. (Example: BC215SK50.00DW15.00RT2) **The configurator will calculate the overall length of the actuator.**

BC2 - FIELD RETROFIT

Should field retrofitting or replacement of any available BC2 option or accessory be required, use the listings in the table below to find the appropriate part number for the item desired. Specify part number and quantity when ordering.

OPTIONS AND ACCESSORIES	U.S. VERSION MODELS AND PART NUMBERS					
	BC205	BC210	BC212	BC215	BC220	BC225
Aux. Carrier Assembly (w/piston) (each)	NA	0510-9057	0512-9057	0515-9057	0520-9057	0525-9057
Aux. Carrier Assembly (wo/piston) (each)	NA	0510-9095	0512-9095	0515-9095	0520-9095	0525-9095
Floating Mount Kits	0905-9115	0510-9007	0512-9007	0515-9007	0520-9007	0525-9007
Foot Mount Kits ¹	0905-9010	0510-9125	0512-9125	0515-9125	0520-9125	0525-9125
Std. Shock Field Retrofit Kit ² – Heavy Duty	NA	0510-9090	0512-9090	0515-9090	0520-9090	0525-9090
Std. Shock Field Retrofit Kit ² – Lite Duty	NA	0510-9091	0512-9091	0515-9091	0520-9091	0525-9091
Std. Shock Field Mount Kit ³ (Hardware Only)	NA	0510-9092	0512-9092	0515-9092	0520-9092	0525-9092
Adj. Shock Field Retrofit Kit ² – Heavy Duty	NA	0510-9048	0512-9011	0515-9011	0520-9011	0525-9011
Adj. Shock Field Retrofit Kit ² – Lite Duty	NA	0510-9049	0512-9012	0515-9012	0520-9012	0525-9012
Adj. Shock Field Mount Kit ³ (Hardware Only)	NA	0510-9072	0512-9072	0515-9072	0520-9013	0525-9013
Tube Supports ⁴	0905-1034	4510-1010	4512-1010	4515-1010	4520-1010	4525-1010
Switch Hardware Only	0505-9999	0510-9999	0512-9999	0515-9999	0520-9999	0525-9999

OPTIONS AND ACCESSORIES	METRIC VERSION MODELS AND PART NUMBERS					
	BC2M05	BC2M10	BC2M12	BC2M15	BC2M20	BC2M25
Aux. Carrier Assembly (w/piston) (each)	NA	4510-9057	4512-9057	4515-9057	4520-9057	4525-9057
Aux. Carrier Assembly (wo/piston) (each)	NA	4510-9095	4512-9095	4515-9095	4520-9095	4525-9095
Floating Mount Kits	4905-9115	4510-9007	4512-9007	4515-9007	4520-9007	4525-9007
Foot Mount Kits ¹	4905-9010	4510-9125	4512-9125	4515-9125	4520-9125	4525-9125
Shock Field Retrofit Kit ² – Heavy Duty	NA	4510-9090	4512-9090	4515-9090	4520-9090	4525-9090
Shock Field Retrofit Kit ² – Lite Duty	NA	4510-9091	4512-9091	4515-9091	4520-9091	4525-9091
Shock Field Mount Kit ³ (Hardware Only)	NA	4510-9092	4512-9092	4515-9092	4520-9092	4525-9092
Adj. Shock Field Retrofit Kit ² – Heavy Duty	NA	4510-9013	4512-9013	4515-9013	4520-9013	4525-9013
Adj. Shock Field Retrofit Kit ² – Lite Duty	NA	4510-9014	4512-9014	4515-9014	4520-9014	4525-9014
Adj. Shock Field Mount Kit ³ (Hardware Only)	NA	4510-9025	4512-9025	4515-9025	4520-9025	4525-9025
Tube Supports ⁴	0905-1034	4510-1010	4512-1010	4515-1010	4520-1010	4525-1010
Switch Hardware Only	0505-9999	0510-9999	0512-9999	0515-9999	0520-9999	0525-9999

¹ Foot Mount Kit contains two Brackets and mounting hardware.

² Shock Field Retrofit Kit contains one Shock Absorber and mounting hardware.

³ Shock Field Mount Kit contains one set of mounting hardware only.

⁴ Two Tube Supports required per Cylinder. BC2(M)05

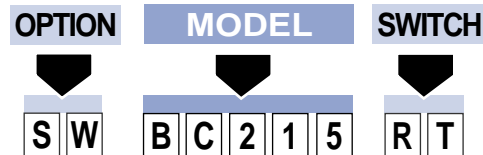
⁵ Repair Kit for 1/2" model contains O-rings, U-cups, End Caps, Wear Strips, Band Inserts, Spring Clamps, Sealing Band, Dust Band and Shock Absorbing Pads.

⁶ Repair Kit for 1" - 2 1/2" models contains End Caps, Bearing Rods, O-rings, U-cups, Wear Rings, Cushion Seals, Band Inserts, Spring Clamps, Sealing Band and Dust Band.

CONFIGURED REPAIR KITS FOR BC2 SERIES CYLINDERS ONLY											
U.S. VERSION MODELS						METRIC VERSION MODELS					
BC205 ⁵	BC210 ⁶	BC212 ⁶	BC215 ⁶	BC220 ⁶	BC225 ⁶	BC2M05 ⁵	BC2M10 ⁶	BC2M12 ⁶	BC2M15 ⁶	BC2M20 ⁶	BC2M25 ⁶
RKBC205	RKBC210	RKBC212	RKBC215	RKBC220	RKBC225	RKBC2M(M)05	RKBC2M(M)10	RKBC2M(M)12	RKBC2M(M)15	RKBC2M(M)20	RKBC2M(M)25

NOTE: When ordering repair kits, specify stroke as "SK" then indicate the desired length in decimal inches after the configured model indicated above. EXAMPLE: RKBC210SK10.00

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: SWBC215RT
(Hardware and Form A Reed switch with 5 meter lead for 1.5" bore BC2 band cylinder)

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