

# BC BAND CYLINDERS

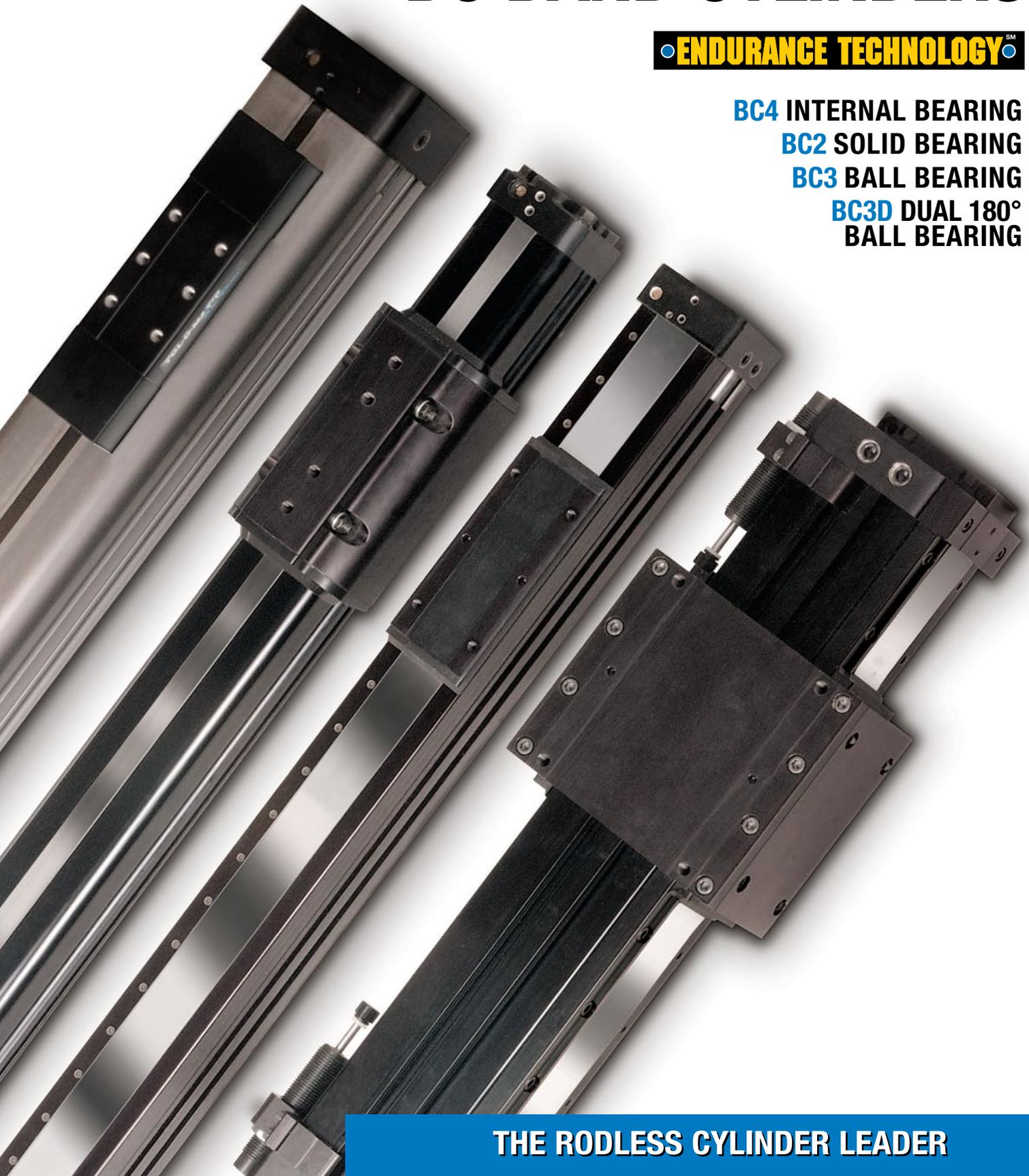
 **ENDURANCE TECHNOLOGY**™

**BC4** INTERNAL BEARING

**BC2** SOLID BEARING

**BC3** BALL BEARING

**BC3D** DUAL 180°  
BALL BEARING



**THE RODLESS CYLINDER LEADER**

# WHAT YOU EXPECT FROM THE RODLESS LEADER



Tolomatic offers a complete line of linear motion products. We offer more rodless cylinder styles than any other company. Guided rod style actuators compliment our broad line of rodless pneumatic products.

## CONTENTS

Applications .....	3
Select the Performance You Need.....	4
Band Cylinder Features .....	5
The Rodless Advantage.....	5
<b>BAND CYLINDERS</b>	
BC4 (Internal Bearing).....	6
BC2 (Solid Bearing) .....	8
BC3 (Recirculating Ball Bearing) .....	10
BC3D (Dual 180° Recirculating Ball Bearing).....	12
<b>SPECIFICATIONS</b> .....	14-15

## ● INNOVATIVE RODLESS PRODUCTS

Tolomatic created the rodless cylinder industry when we manufactured the original cable cylinder. For over 50 years, Tolomatic has been recognized as the rodless cylinder market leader. We earn that distinction daily by satisfying customers like you.

## ● ENDURANCE TECHNOLOGY<sup>SM</sup>

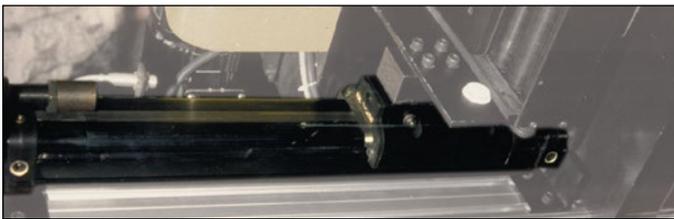
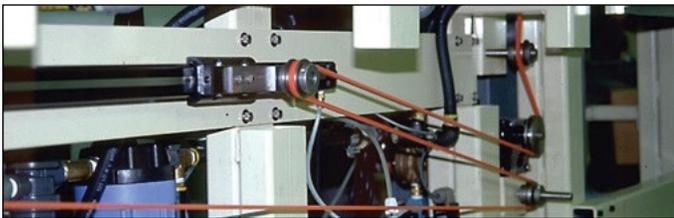
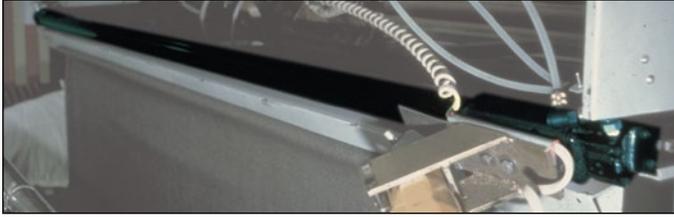
Every Tolomatic pneumatic product is designed and built with Endurance Technology<sup>SM</sup>. Material selection, from seals to finish, and every other design element is optimized for long life and excellent performance. The result is the best value and best performing pneumatic product in the market today. As one customer recently told us, “Your cylinders are built like a tank and run like a deer.” Thank you!

## ● TRUST YOUR APPLICATION TO THE RODLESS LEADER

When you want the job done right, go with the experts. Long life. Durability. Ruggedness. Built to your specifications in 5 days or less. Only one company specializes in rodless technology. Tolomatic. The rodless leader.

Be sure to visit [www.tolomatic.com](http://www.tolomatic.com) for up-to-date product specifications, free sizing and selection software, and 3D CAD solid files.

# APPLICATIONS



With over 20 years of proven application experience, Tolomatic band cylinders have been key components in the following industries and applications:

## INDUSTRY INSTALLATIONS:

- Packaging
- Automotive
- Food and Beverage
- Material Handling & Conveying
- Plastic Injection Molding
- Metal Processing
- Paper and Textiles
- Medical
- Electronics
- Printing
- and More ...

## APPLICATIONS:

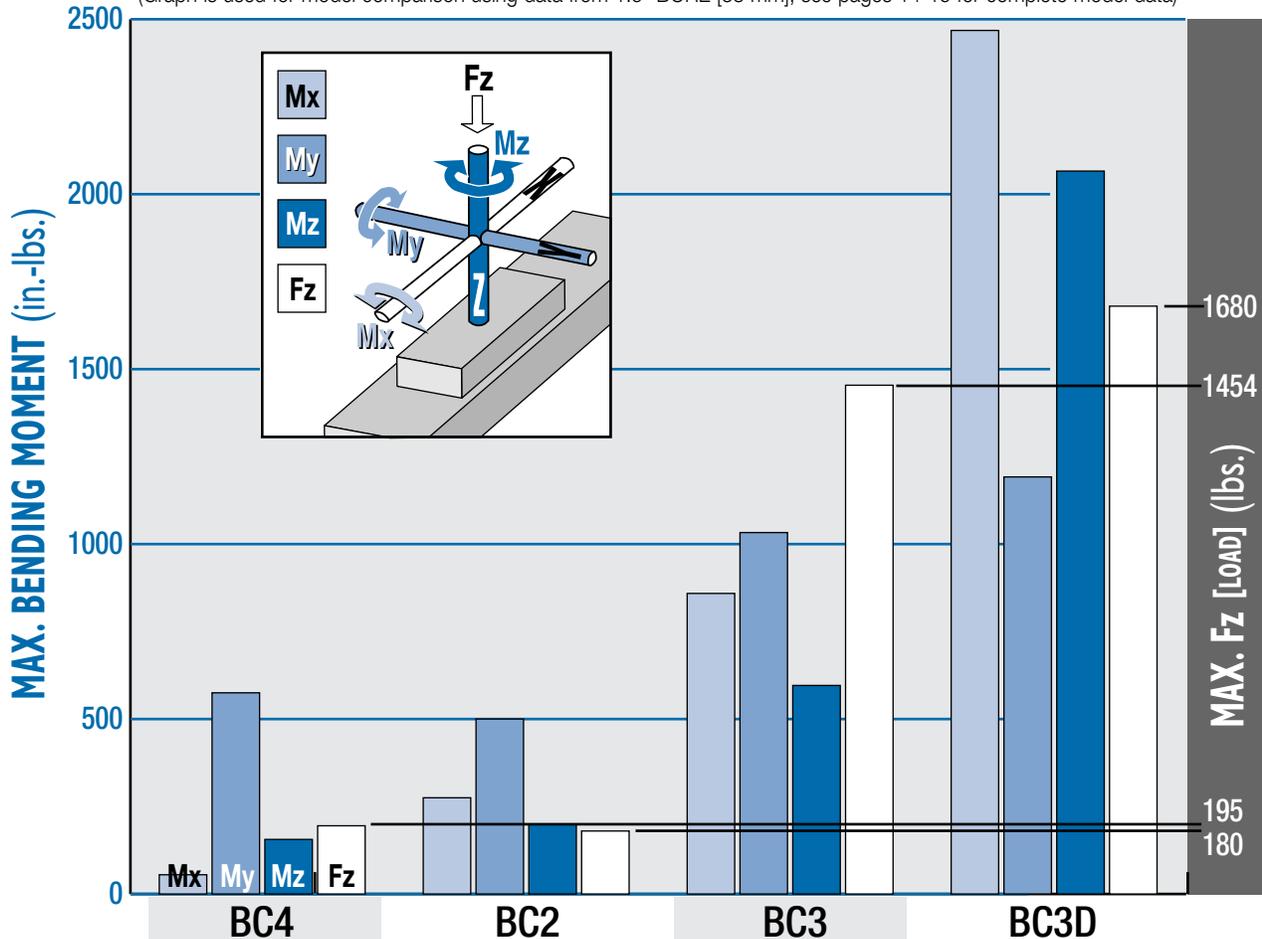
- Material Handling
- Part Transfer
- Part Advancement
- Part Sorting
- Cutting
- Elevators
- Palletizing
- Door Closure
- Conveyors
- Robotics
- Machine Tools
- General Automation
- and More ...

# SELECT THE PERFORMANCE YOU NEED

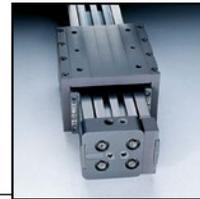
Choose from: • four band cylinder models • up to six bore sizes • built to your specific stroke length

## MOMENT & LOAD CAPACITY COMPARISON

(Graph is used for model comparison using data from 1.5" BORE [38 mm]; see pages 14-15 for complete model data)



Tolomatic Band Cylinder Series



**Guidance System**

Internal Bearing

Solid Bearing

Ball Bearing

Dual Ball Bearing

**Moment Capacity**

Medium

Medium + Mx capacity

High

Highest

**Isolated Piston**

No

Yes

Yes

Yes

**Advantages**

Lowest Cost, Highest Speeds, Vertical Applications

Impact Resistant and Replaceable Bearings, Easy to Adjust

Sealed Maintenance Free Bearings, Compact Profile

Sealed Maintenance Free Bearings, Highest Bending Moments/Loads

**Product Details**

Page 6 & 7

Page 8 & 9

Page 10 & 11

Page 12 & 13

# BAND CYLINDER

## FEATURES TABLE

- ✓ Standard Feature
- ✓ Optional Feature
- Not Available

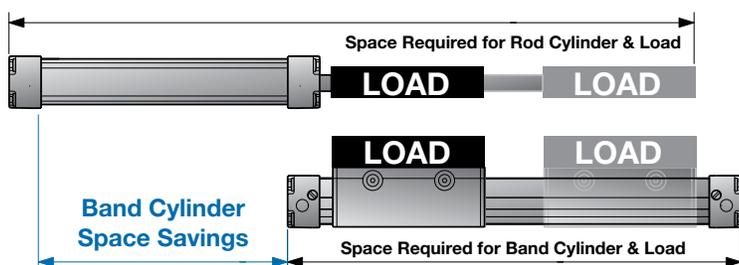
		GUIDANCE SYSTEM	STAINLESS STEEL BAND	EXTRUDED ALUMINUM BAND	PISTON SEALS ISOLATED FROM LOAD	INTERNAL AIR CUSHIONING	EXTERNAL SHOCK ABSORBERS	ADJUSTABLE SHOCK ABSORBERS	FOOT MOUNTS	TUBE SUPPORTS	**FLOATING MOUNT	AUXILIARY MOUNT	LONG CARRIER	MULTI-CARRIER	SINGLE-PORTED HEAD	HALL-EFFECT SWITCHES	REED SWITCHES	TRIAC SWITCHES
BC4	 Internal Bearing	✓	✓	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BC2	 Solid Bearing	✓	✓	✓	✓*	✓*	✓*	✓	✓	✓	-	✓*	-	✓*	✓	✓	✓	✓
BC3	 Recirculating Ball Bearing	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	✓	✓
BC3D	 Recirculating Ball Bearing	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	✓	✓
		FEATURES			SHOCKS +			MOUNTING			CARRIER		PORTING		SWITCHES			

\*Not available for BC205 (features external bumper)

\*\*NOTE: Floating mount cannot be used with shock absorbers

## THE RODLESS ADVANTAGE

### TOLOMATIC RODLESS BAND CYLINDERS GET THE JOB DONE IN LESS SPACE THAN ROD STYLE CYLINDERS



**Consider this:** A rodless band cylinder contains its stroke within the cylinder itself. A 2" bore cylinder with a 24" stroke can provide a 43% space savings when compared to an equivalently sized tie rod cylinder. In addition, the load is supported throughout the entire stroke so there is minimal bearing wear and load deflection when compared to rod style cylinders.

With a Tolomatic Band Cylinder, there is no concern about rod rotation. Because rodless cylinders have equal piston areas in both directions, the cylinder experiences zero load variation in either direction.

**GO RODLESS AND SAVE SPACE!**

## ROD STYLE vs RODLESS FEATURE COMPARISON

Feature	Tolomatic Rodless	Rod Style
Integrated Load Support	✓	-
Space Saving Design	✓	-
Piston Seals Isolated From Load	✓	-
Internal Air Cushioning	✓	✓

# BC4 BAND CYLINDER

## ENDURANCE TECHNOLOGY<sup>SM</sup>

Look for this endurance technology symbol indicating our durability design features

### LOAD-SUPPORTING BEARING DESIGN

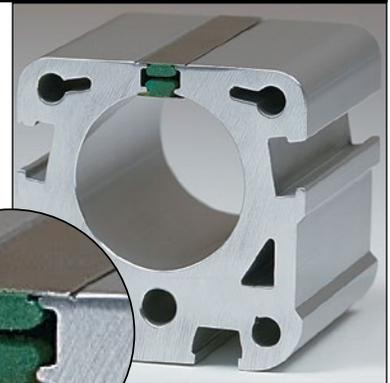
• Self-lubricating bearing runs the length of carrier web for maximum bearing surface, this patented floating bearing system provides smooth movement and maximum transverse load resistance

- Durable, engineered resin piston has 50% greater bearing area
- Thicker and longer web has 60% greater material for increased robustness
- Maximum bearing life for millions of cycles



### STAINLESS STEEL SEALING BAND SYSTEM

- Fatigue resistant stainless steel bands are specifically made to provide longer life and will not elongate, like elastomers
- Outer band keeps out contaminants for extended performance
- Inner band provides a smooth surface for less seal wear

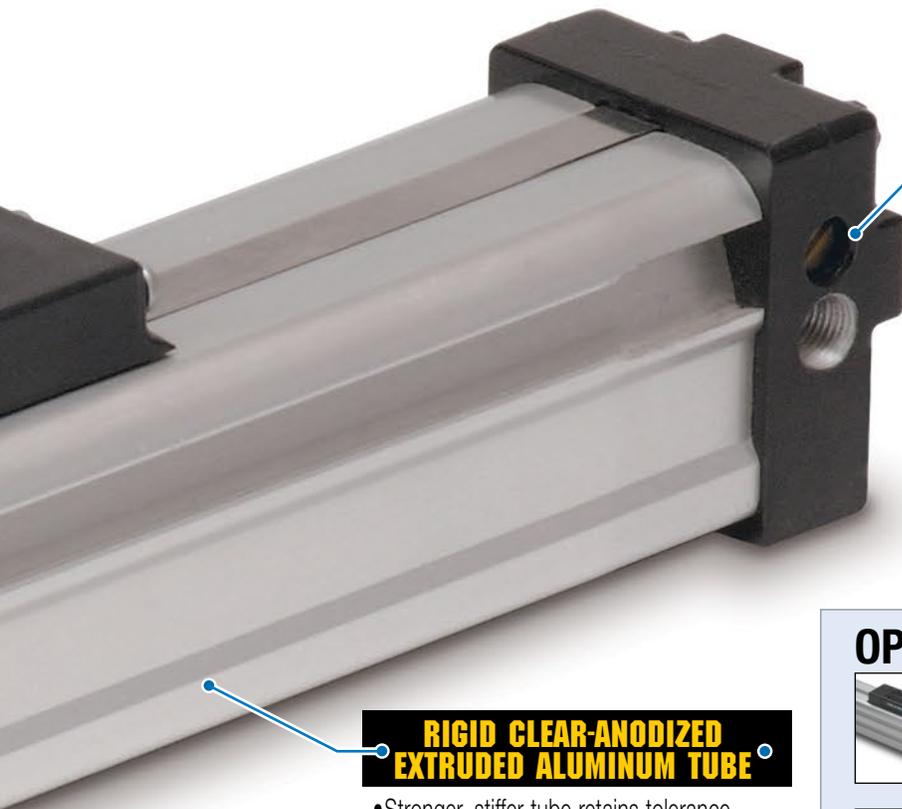


### FORMED END CAP WIPER SEAL

- Keeps contaminants from entering the sealing area
- Protects internal components
- Reduces maintenance while increasing productivity



# TOLOMATIC... THE RODLESS CYLINDER LEADER



## ADJUSTABLE CUSHIONS

- Adjustable cushions are standard, not optional
- Easy screw adjustment for end-of-stroke deceleration
- Protects actuator and load from damage

## RIGID CLEAR-ANODIZED EXTRUDED ALUMINUM TUBE

- Stronger, stiffer tube retains tolerance specifications when chamber is pressurized
- Keeps sealing band in place for maximized air efficiency
- Tube supports are minimized
- Solid structural support provides durability and long life performance

## OPTIONS



### AUXILIARY CARRIER

- Substantially higher load capacity
- Substantially higher bending moment capacity



### LONG CARRIER

- Substantially higher My and Mz bending moment capacity
- Larger load bearing mounting surface



### FLOATING MOUNT

- Compensates for non-parallelism between band cylinder and externally guided load



### TUBE SUPPORT MOUNTS

- Used for intermediate support



### FOOT MOUNTS

- For end mounting of band cylinder



### SHOCK ABSORBERS

- Smooth deceleration, higher productivity
- Allows increased operating speed
- Self-compensates for load or speed changes
- Minimizes impact load to equipment
- Adjustable position shocks available



### SINGLE END PORTING

- Simplifies air connections



### SWITCHES

- Available in Reed, Hall-effect and Triac
- 15ft. cable with flying leads; available with quick-disconnect couplers

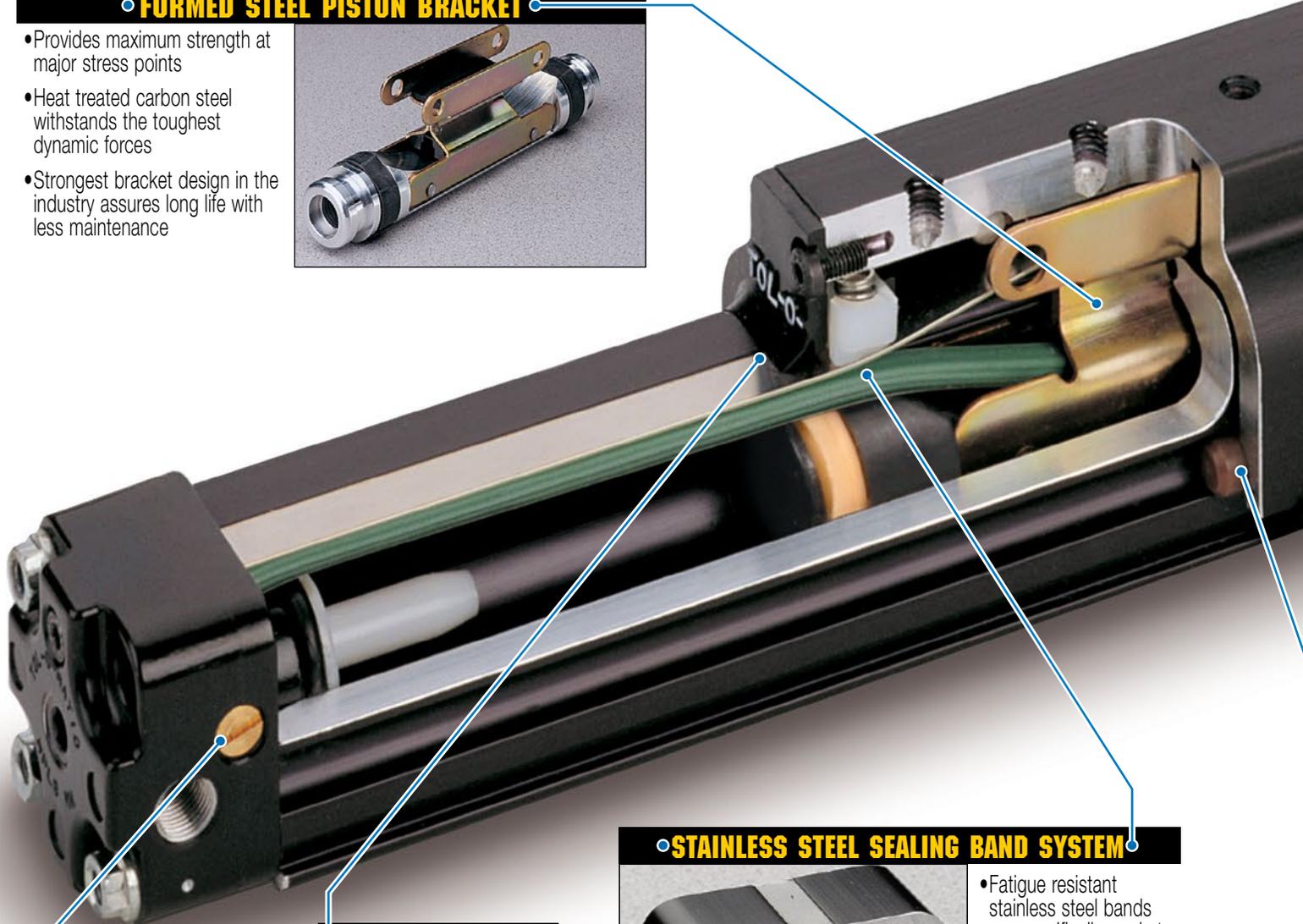
# BC2 BAND CYLINDER

## ENDURANCE TECHNOLOGY<sup>SM</sup>

Look for this endurance technology symbol indicating our durability design features

### FORMED STEEL PISTON BRACKET

- Provides maximum strength at major stress points
- Heat treated carbon steel withstands the toughest dynamic forces
- Strongest bracket design in the industry assures long life with less maintenance



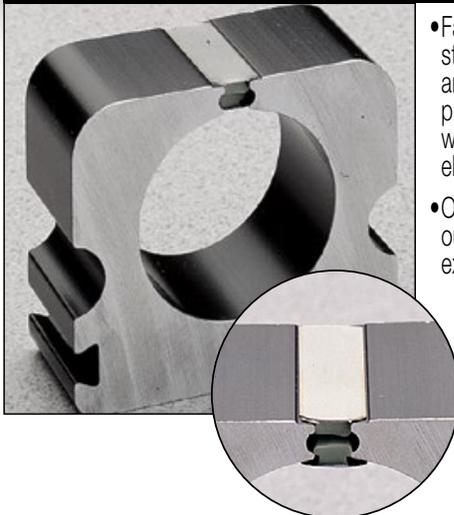
### ADJUSTABLE CUSHIONS

- Adjustable cushions are standard, not optional
- Easy screw adjustment for end-of-stroke deceleration
- Protects actuator and load from damage

### FORMED END CAP WIPER SEAL

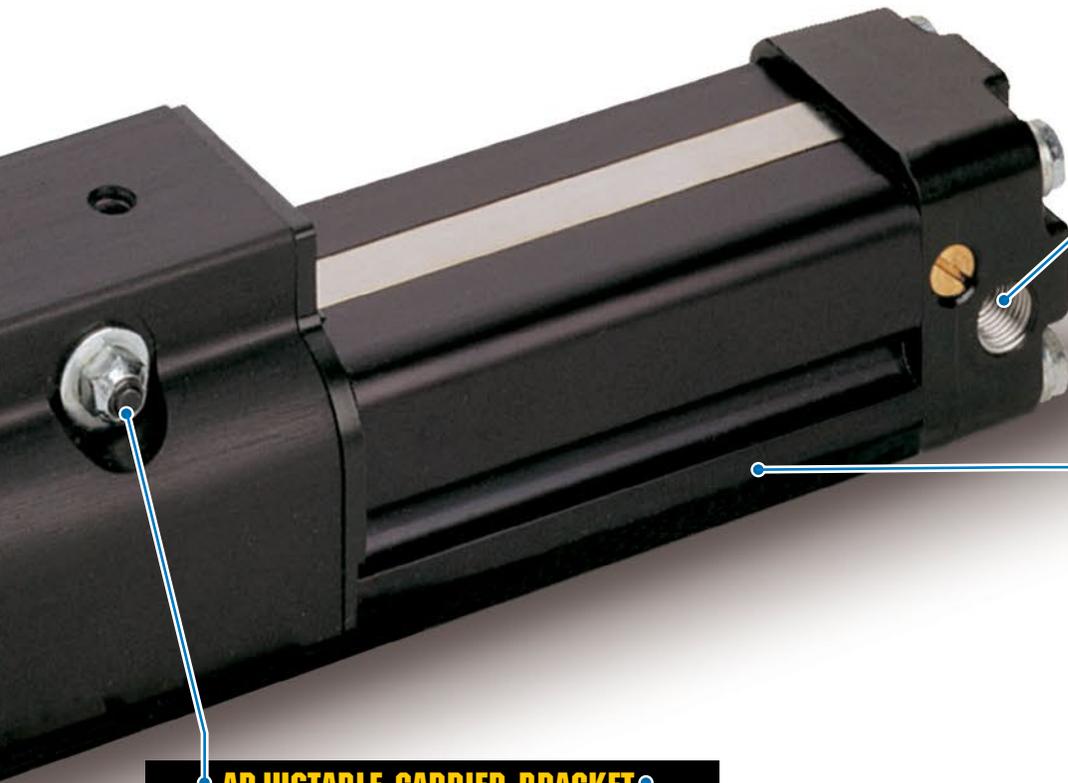
- Keeps contaminants from entering the sealing area
- Protects internal components
- Reduces maintenance while increasing productivity

### STAINLESS STEEL SEALING BAND SYSTEM



- Fatigue resistant stainless steel bands are specifically made to provide longer life and will not elongate, like elastomers
- Outer band keeps out contaminants for extended performance
- Inner band provides a smooth surface for less seal wear

# TOLOMATIC... THE RODLESS CYLINDER LEADER



## 3-PORTED HEADS

- Standard feature
- Simplifies air connections

## RIGID BLACK-ANODIZED EXTRUDED ALUMINUM TUBE

- Stronger, stiffer tube retains tolerance specs when chamber is pressurized
- Keeps sealing band in place for maximized air efficiency
- Tube supports are minimized
- Solid structural support provides durability and long life performance

## ADJUSTABLE CARRIER BRACKET



- 2-bolt adjustment instead of a series of set screws
- Easy to set tension for freer running or stiffer systems
- Minimizes free play while maintaining a higher level of load guidance

## LOAD-BEARING CARRIER DESIGN

- Load and piston are independent - piston floats, resulting in less friction and longer seal life
- Engineered resin load bearings offer consistently low friction and long wear



## OPTIONS



### AUXILIARY CARRIER

- Substantially higher load capacity
- Substantially higher bending moment capacity



### FLOATING MOUNT

- Compensates for non-parallelism between band cylinder and externally guided load



### TUBE SUPPORT MOUNTS

- Used for intermediate support



### FOOT MOUNTS

- For end mounting of band cylinder



### SHOCK ABSORBERS

- Smooth deceleration
- Allows increased operating speed
- Self-compensates for load or speed changes
- Minimizes impact load to equipment
- Higher equipment productivity
- Adjustable position shocks available



### SWITCHES

- Available in Reed, Hall-effect and Triac
- 15ft. cable with flying leads; available with quick-disconnect couplers



# BC3 BAND CYLINDER

## ENDURANCE TECHNOLOGY<sup>SM</sup>

Look for this endurance technology symbol indicating our durability design features

### FORMED END CAP WIPER SEAL

- Keeps contaminants from entering the sealing area
- Protects internal components
- Reduces maintenance while increasing productivity

### SEALED BALL BEARING SYSTEM

- All bearing components covered by seal strip
- Bearing components are sealed and lubricated at the factory
- Assures maximum resistance to contamination

### STAINLESS STEEL SEALING BAND SYSTEM

- Fatigue resistant stainless steel bands are specifically made to provide longer life and will not elongate, like elastomers
- Outer band keeps out contaminants for extended performance
- Inner band provides a smooth surface for less seal wear

### FORMED STEEL PISTON BRACKET

- Provides maximum strength at major stress points
- Heat treated carbon steel withstands the toughest dynamic forces
- Strongest bracket design in the industry assures long life with less maintenance



# TOLOMATIC... THE RODLESS CYLINDER LEADER

## LOAD-BEARING CARRIER DESIGN

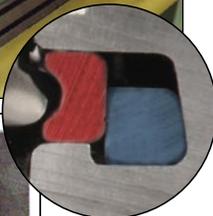
- Load and piston are independent - piston floats, resulting in less friction and longer seal life
- Recirculating ball bearing system guides and supports load for consistent long term performance
- Constant level of friction is maintained even when load orientation changes

## ADJUSTABLE CUSHIONS

- Adjustable cushions are standard, not optional
- Easy screw adjustment for end-of-stroke deceleration
- Protects actuator and load from damage

## PATENTED WEDGE BEARING SYSTEM

- Bearing surfaces adjusted at the factory for optimum pre-load
- Bearing surfaces adjusted by and supported by a steel wedge assuring long term stability



## OPTIONS



### AUXILIARY CARRIER

- Substantially higher load capacity
- Substantially higher bending moment capacity



### TUBE SUPPORT MOUNTS

- Used for intermediate support



### FOOT MOUNTS

- For end mounting of band cylinder



### SHOCK ABSORBERS

- Smooth deceleration, higher productivity
- Allows increased operating speed
- Self-compensates for load or speed changes
- Minimizes impact load to equipment
- Adjustable position shocks available



### SWITCHES

- Available in Reed, Hall-effect and Triac
- 15ft. cable with flying leads; available with quick-disconnect couplers

# BC3D BAND CYLINDER (DUAL 180° CARRIER OPTION)

## ENDURANCE TECHNOLOGY<sup>SM</sup>

Look for this endurance technology symbol indicating our durability design features

### SEALED BALL BEARING SYSTEM

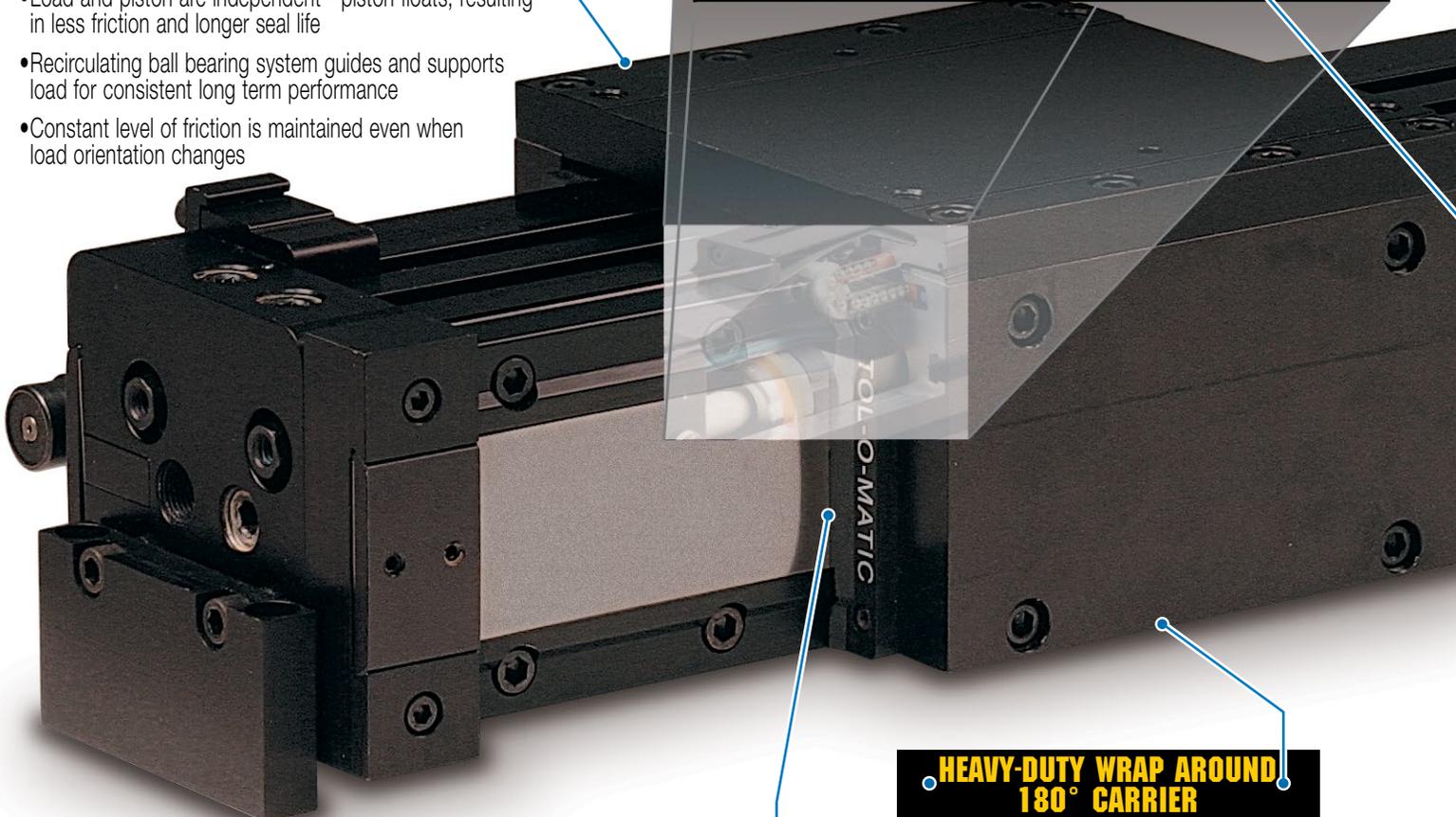
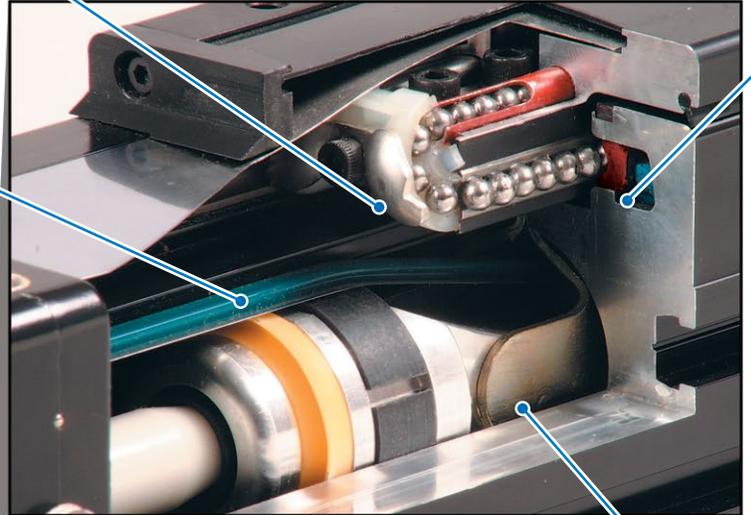
- All bearing components covered by seal strip
- Bearing components are sealed and lubricated at the factory
- Assures maximum resistance to contamination

### STAINLESS STEEL SEALING BAND SYSTEM

- Fatigue resistant stainless steel bands are specifically made to provide longer life and will not elongate, like elastomers
- Outer band keeps out contaminants for extended performance
- Inner band provides a smooth surface for piston ride with less seal wear

### LOAD-BEARING CARRIER DESIGN

- Load and piston are independent - piston floats, resulting in less friction and longer seal life
- Recirculating ball bearing system guides and supports load for consistent long term performance
- Constant level of friction is maintained even when load orientation changes



### FORMED END CAP WIPER SEAL

- Keeps contaminants from entering the sealing area
- Protects internal components
- Reduces maintenance while increasing productivity

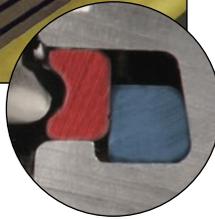
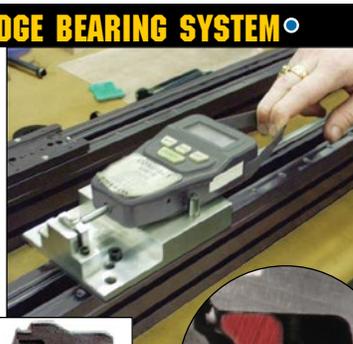
### HEAVY-DUTY WRAP AROUND 180° CARRIER

- Substantially higher bending moment capacity
- Larger load bearing mounting surface
- Maximum performance with long life

# TOLOMATIC... THE RODLESS CYLINDER LEADER

## PATENTED WEDGE BEARING SYSTEM

- Bearing surfaces adjusted at the factory for optimum pre-load
- Bearing surfaces adjusted and supported by a steel wedge assuring long term stability



## ADJUSTABLE CUSHIONS

- Adjustable cushions are standard, not optional
- Easy screw adjustment for end-of-stroke deceleration
- Protects actuator and load from damage

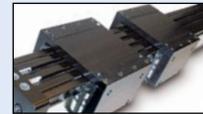


## FORMED STEEL PISTON BRACKET

- Provides maximum strength at major stress points
- Heat treated carbon steel withstands the toughest dynamic forces
- Strongest bracket design in the industry assures long life with less maintenance



## OPTIONS



### AUXILIARY CARRIER

- Substantially higher load capacity
- Substantially higher bending moment capacity
- Recommended for vertical applications



### TUBE SUPPORT MOUNTS

- Used for intermediate support



### FOOT MOUNTS

- For end mounting of band cylinder



### SHOCK ABSORBERS

- Smooth deceleration
- Allows increased operating speed
- Self-compensates for load or speed changes
- Minimizes impact load to equipment
- Adjustable position shocks available

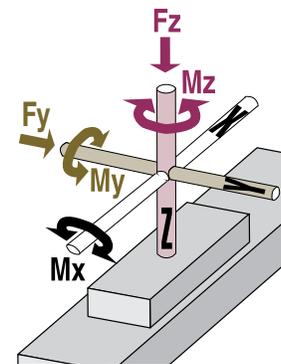


### SWITCHES

- Available in Reed, Hall-effect and Triac
- 15ft. cable with flying leads; available with quick-disconnect couplers

# MOMENT & LOAD CAPACITY

## U. S. STANDARD MODELS



	MODEL	BENDING MOMENTS (in.-lbs.)			LOAD (lbs.)		THRUST (lbs.)
		Mx	My	Mz	Fy	Fz	(at 100PSI)
<b>BC4</b>  Standard	BC406	3	35	5	-	30	30
	BC410	9	132	27	-	65	78
	BC412	36	318	120	-	115	124
	BC415	55	575	156	-	195	176
<small>www.tolomatic.com for information on long carrier</small>							
<b>Auxiliary Carrier</b> 	BC406D	6	160	75	-	60	30
	BC410D	18	350	140	-	130	78
	BC412D	72	680	305	-	230	124
	BC415D	110	1,625	425	-	390	176

<b>BC2</b>  Standard	BC205	2	9	3	-	5	18
	BC210	55	100	30	-	60	78
	BC212	75	290	130	-	120	124
	BC215	275	500	200	-	180	176
	BC220	300	1,100	325	-	300	304
	BC225	450	1,800	400	-	400	490
<b>Auxiliary Carrier</b> 	BC210D	110	287	287	-	120	78
	BC212D	150	822	822	-	240	124
	BC215D	550	1,453	1,453	-	360	176
	BC220D	600	2,430	2,430	-	600	304
	BC225D	900	4,416	4,416	-	800	490

<b>BC3</b>  Standard	BC310	250	269	156	341	591	78
	BC315	859	1,033	596	840	1,454	176
	BC320	1,662	1,472	850	1,159	2,008	304
<b>Auxiliary Carrier</b> 	BC310D	500	2,825	1,630	682	1,182	78
	BC315D	1,718	11,734	6,779	1,680	2,908	176
	BC320D	3,324	16,265	9,388	2,318	4,016	304

<b>BC3D</b>  Standard	BC3D10	657	312	538	1,182	682	78
	BC3D15	2,468	1,192	2,066	2,908	1,680	176
	BC3D20	4,527	1,700	2,944	4,016	2,318	304
<b>Auxiliary Carrier</b> 	BC3D10DW	1,314	3,328	5,768	2,364	1,364	78
	BC3D15DW	4,936	13,558	23,468	5,816	3,360	176
	BC3D20DW	9,054	18,776	32,530	8,032	4,636	304

**ACTUATOR**



**SIZING**

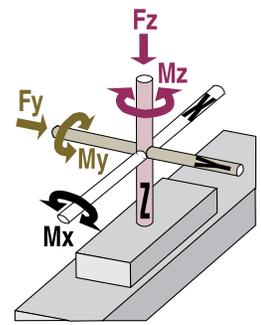
**Get the right band cylinder.**

Online Sizing & Selection Software at [www.tolomatic.com](http://www.tolomatic.com)

or call us at  
**1-800-328-2174**

# MOMENT & LOAD CAPACITY

## METRIC MODELS



	MODEL	BENDING MOMENTS (N-m)			LOAD (N)		THRUST (N) (at 6.9 bar)
		M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>	F <sub>y</sub>	F <sub>z</sub>	
<b>BC4M</b>  Standard	BC4M06	0.3	4.0	0.6	-	133	136
	BC4M10	1.0	14.9	3.1	-	289	349
	BC4M12	4.1	35.9	13.6	-	512	554
	BC4M15	6.2	65.0	17.6	-	867	786
<small>www.tolomatic.com for information on long carrier</small>  Auxiliary Carrier	BC4M06D	0.7	18.1	8.5	-	267	136
	BC4M10D	2.0	39.5	15.8	-	578	349
	BC4M12D	8.1	76.8	34.5	-	1,023	554
	BC4M15D	12.4	183.6	48.0	-	1,735	786
<b>BC2M</b>  Standard	BC2M05	0.2	1.0	0.3	-	22	80
	BC2M10	6.2	11.3	3.4	-	267	349
	BC2M12	8.5	32.8	14.7	-	534	554
	BC2M15	31.1	56.5	22.6	-	801	786
	BC2M20	33.9	124.3	36.7	-	1,334	1,355
	BC2M25	50.8	203.4	45.2	-	1,779	2,183
 Auxiliary Carrier	BC2M10D	12.4	32.4	32.4	-	534	349
	BC2M12D	16.9	92.9	92.9	-	1,068	554
	BC2M15D	62.1	164.2	164.2	-	1,601	786
	BC2M20D	67.8	274.6	274.6	-	2,669	1,355
	BC2M25D	101.7	499.0	499.0	-	3,559	2,183
	<b>BC3M</b>  Standard	BC3M10	28.2	30.4	17.6	1,517	2,629
BC3M15		97.1	116.7	67.3	3,737	6,468	786
BC3M20		187.8	166.3	96.0	5,156	8,932	1,355
 Auxiliary Carrier	BC3M10D	56.5	319.2	184.2	3,034	5,258	349
	BC3M15D	194.1	1,325.8	766.0	7,473	12,935	786
	BC3M20D	375.6	1,837.8	1,060.8	10,311	17,864	1,355
<b>BC3MD</b>  Standard	BC3MD10	74.2	35.3	60.8	5,258	3,034	349
	BC3MD15	278.9	134.7	233.4	12,935	7,473	786
	BC3MD20	511.5	192.1	332.6	17,864	10,311	1,355
	BC3MD10DW	148.5	376.0	651.7	10,516	6,067	349
	BC3MD15DW	557.7	1,531.9	2,651.6	25,871	14,946	786
	BC3MD20DW	1,023.0	2,121.5	3,675.6	35,728	20,622	1,355
 Auxiliary Carrier							

# THE TOLOMATIC DIFFERENCE What you expect from the industry leader:



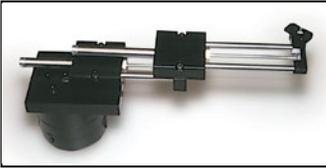
## EXCELLENT CUSTOMER SERVICE & TECHNICAL SUPPORT

Our people make the difference! Expect prompt, courteous replies to all of your application and product questions.



## INDUSTRY LEADING DELIVERIES

Tolomatic continues to offer the fastest delivery of standard catalog products. Modified and custom products ship weeks ahead of the competition.



## INNOVATIVE PRODUCTS

From standard catalog products... to modified products... to completely unique custom products, Tolomatic designs and builds the best solutions for your challenging applications.



## ONLINE SIZING & SELECTION SOFTWARE

Online sizing that is easy to use, accurate and always up-to-date. Input your application data and the software will determine a Tolomatic electric actuator to meet your requirements.



## 3D MODELS & 2D DRAWINGS AVAILABLE ON THE WEB

Easy to access CAD files are available in many popular formats.

## ALSO CONSIDER THESE OTHER TOLOMATIC PRODUCTS:

### PNEUMATIC PRODUCTS



*RODLESS CYLINDERS: Band Cylinders, Cable Cylinders, MAGNETICALLY COUPLED CYLINDERS/SLIDES; GUIDED ROD CYLINDER SLIDES*

"FOLDOUT" BROCHURE #9900-9075  
PRODUCTS BROCHURE #9900-4028

### ELECTRIC PRODUCTS



*ROD & GUIDED ROD STYLE ACTUATORS, HIGH THRUST ACTUATORS, SCREW & BELT DRIVE RODLESS ACTUATORS, MOTORS, DRIVES AND CONTROLLERS*

"FOLDOUT" BROCHURE #9900-9074  
PRODUCTS BROCHURE #9900-4016

### POWER TRANSMISSION PRODUCTS



*GEARBOXES: Float-A-Shaft®, Slide-Rite®; DISC CONE CLUTCH; CALIPER DISC BRAKES*

"FOLDOUT" BROCHURE #9900-9076  
PRODUCTS BROCHURE #9900-4029



3800 County Road 116 • Hamel, MN 55340 U.S.A.  
Phone: (763) 478-8000 • Fax: (763) 478-8080

Toll-Free: **1-800-328-2174**

Email: [help@tolomatic.com](mailto:help@tolomatic.com) • <http://www.tolomatic.com>

All brand and product names are trademarks or registered trademarks of their respective owners. Information in this document is believed accurate at time of printing. However, Tolomatic assumes no responsibility for its use or for any errors that may appear in this document. Tolomatic reserves the right to change the design or operation of the equipment described herein and any associated motion products without notice. Information in this document is subject to change without notice.

Visit [www.tolomatic.com](http://www.tolomatic.com) for the most up-to-date technical information

