

ST80 RODLESS ACTUATORS

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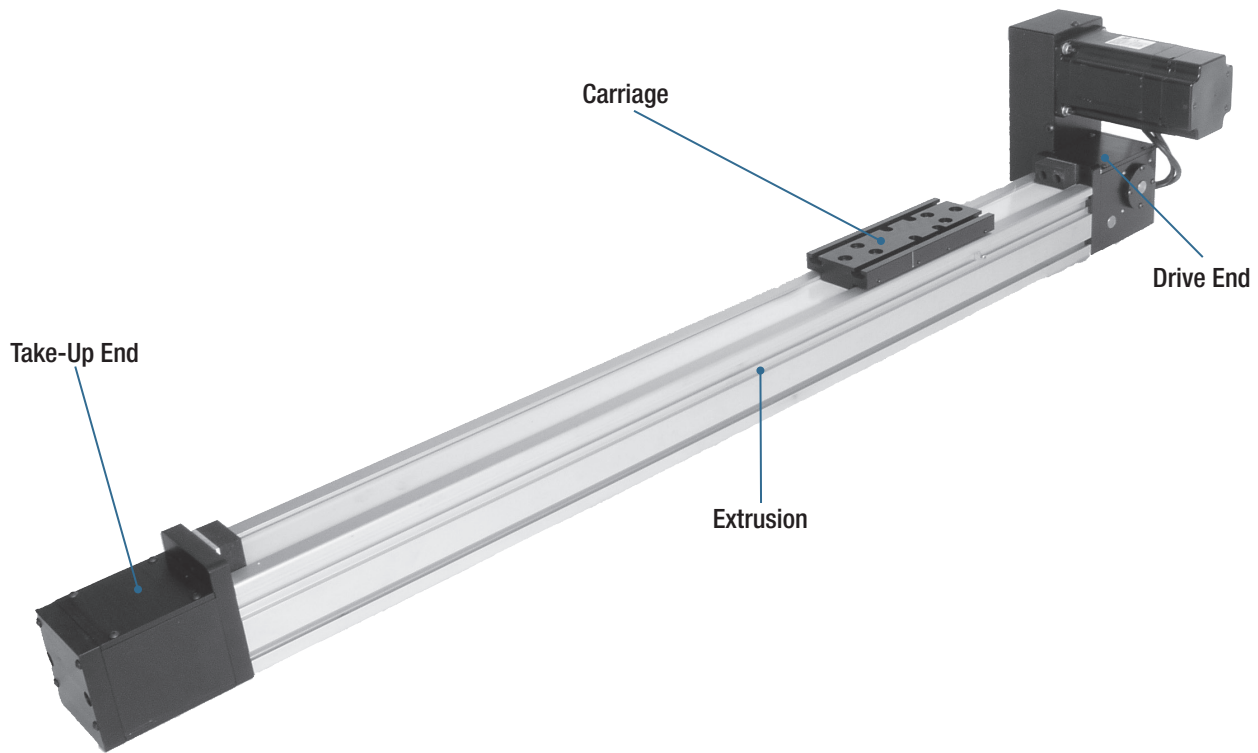
ST80 RODLESS BELT-DRIVEN ACTUATORS



The ST80 is Bimba's single rail belt driven electric linear actuator designed for use in applications that require enhanced performance in stopping and/or pushing applications. More robust and internally rigid, the ST80 picks up where the B27 leaves off, offering enhanced moment loading capability needed to support tooling found in stopping, insertion, and specialty cutting industries. The ST80 has the additional robustness to perform effortlessly in these higher demand applications where more muscle and long life are paramount.

Built using the highest quality components throughout its construction, the ST80 is specifically designed for the high demand saw cutting, window cutting, assembly, and timber industries due to its unique design and resultant capability in these environments.

PRODUCT FEATURES



FEATURES AND BENEFITS

High Precision Steel Reinforced Belt

- Reduced noise and vibration
- Zero backlash
- No cogging
- Smooth, precise motion
- Ideal for high speed applications
- Highest thrust per unit size
- Repeatability to 0.001"
- Long lengths: up to 100 ft (30m)
- Outstanding repeatability

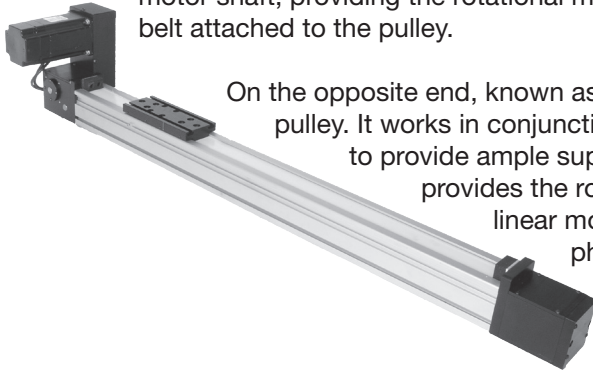
80mm Square Aluminum Extrusion:

- Heavy duty 7075 aluminum extrusion
- 25% stronger extrusion
- Supports stops and bearings
- Promotes long life

Built-in Linear Ball Rail Guide:

- Maintenance free
- Self-lubricating
- Low friction
- Smooth, quiet operation
- Long life expectancy
- Supports high loads
- Supports high moment loads

The Bimba ST80 rodless actuator uses a steel reinforced polyurethane 50mm belt that wraps around an internal drive pulley mechanism on the drive end. That is connected to a drive shaft which gets coupled to an external motor shaft, providing the rotational motion and torque necessary to rotate the pulley and traverse the belt attached to the pulley.



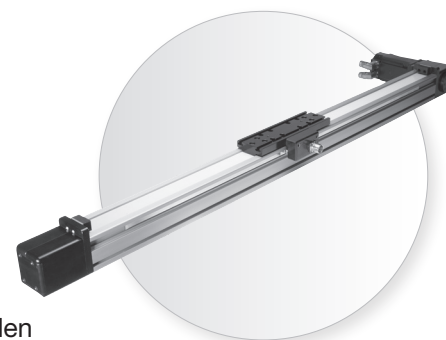
On the opposite end, known as the take-up end, the ST80 uses an equally robust take-up pulley. It works in conjunction with a similarly matched take-up slide and take-up bearing to provide ample support for the other end of the belt as the motor shaft rotates and provides the rotational torque needed to transform the rotational motion into linear motion. The linear motion generated pulls the carriage (which is physically connected to the 50mm belt) and its load along the length of the actuator under direct, defined, and precise control of the user.

MATERIALS OF CONSTRUCTION

Body Material:	Aluminum
End Caps:	Aluminum
Carriage:	7075 Aluminum
Belt:	Steel Reinforced Polyurethane

APPLICATION IDEAS

- Stopping
- Loading
- Wood Cutting
- Sawmill
- Lifting
- Pressing
- Stacking
- Insertion
- Clamping
- Parts Transfer



TARGET APPLICATIONS

The ST80 is intended for industrial applications that require continuous and sudden stopping of motion. A common ST80 application is pushing applications where large amounts of loading and side loading are quickly transmitted to the carriage, leading to large G forces to the mechanical components within. To withstand the elevated loading characteristics that are transmitted to the internal construction of the ST80, the interior of the actuator must be specially constructed with only the most durable components that can withstand the rigors of the abrupt high forces needed to stop or push elevated loads.

For applications that call for an alternative solution to a traditional pneumatic or hydraulic application, with force and load capability that mimics these fluid power technologies and that offers a more adaptable and sustainable solution, Bimba electric actuators provide an ideal solution. Growing alongside your changing business needs in an easy-to-use, long-lasting, and tough electric actuator that exceeds the competition in performance, value, and life is what makes the ST80 Bimba's premier electric stop actuator.

DRIVE OPTIONS

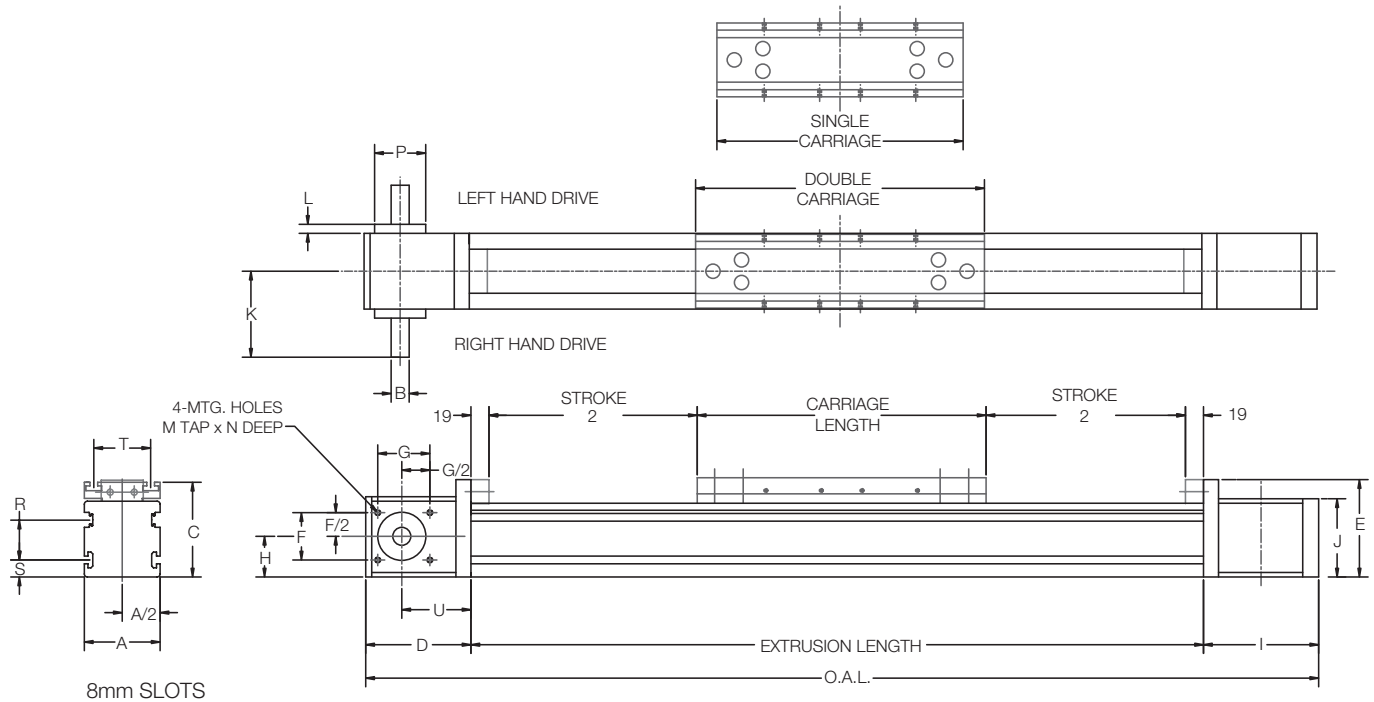
The ST80 offers numerous drive interfaces, ranging from a single or double standard shaft input to our Easy Input shaft, from our integral reducer drive to our belt drive. The choice is yours to select the option that works best for you. With many Bimba stepper and servo motors available to choose from, configuring an electric actuator that best meets the needs of even your most demanding application has never been easier. High load and thrust stopping and pushing applications become an afterthought when adding the optional reducer drive option that, when coupled with a servo motor, provides the necessary torque for use in high load applications.

ADVANTAGES

FEATURE	ADVANTAGE	BENEFIT
Carriage constructed of high-strength 7075 aluminum	Offers enhanced strength and robustness over the competitor	Less deflection and increased load and moment loading capability per carriage size
Self-lubricating linear guides	Minimized maintenance	Worry- and maintenance-free long life, even in applications that require 24/7 motion
Integral Reducer Drive (optional)	Offers increased performance using embedded gear reducer	Move larger loads, improve inertia matching, and complete that using an aesthetically pleasing, cost-effective solution
Steel reinforced polyurethane belt	25% higher thrust leads to higher loading capacity	Ballscrew-type thrust with belt drive speed capability

DIMENSIONS

Key specification information for the ST80 is given below. For additional specification information, contact Bimba Customer Service at cs@bimba.com, or 800.44.BIMBA (800.442.4622).



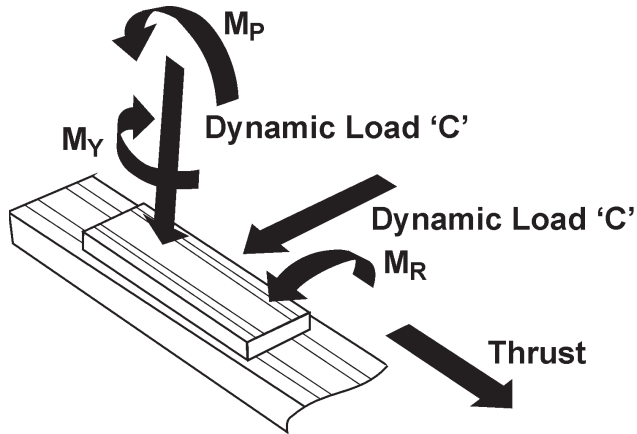
DIMENSIONS																
ACTUATOR	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	U
ST80	80	19	100	111	102	31.75	69.85	40	121	82.5	90.25	9.5	M6	8	66.68	-

CARRIAGE LENGTH		
ACTUATOR	SINGLE	DOUBLE
ST80	190	260

O.A.L. = "D" + "I" + 38 + Stroke + Carriage Length

HOW TO SPECIFY

SPECIFICATIONS



LINEAR ACTUATOR	EXTRUSION	
	MOMENT OF INERTIA	
	I _x (cm ⁴)	I _y (cm ⁴)
ST80	146	219

Straightness 0.3175mm per 300mm of length
Twist: 1/4" per 300mm, 3' maximum per 6m length

LINEAR ACTUATOR	LEAD CONSTANT (mm/rev.)	MAXIMUM INPUT TORQUE (NM)	BELT	
			MAXIMUM FORCE N (lbs)	ELASTIC LIMIT N (lbs)
ST80	200	19	875 (197)	1750 (394)

LINEAR ACTUATOR	CARRIAGE LENGTH (mm)	DYNAMIC LOAD CAPACITY N (lbs)	DYNAMIC MOMENT CAPACITY		
			ROLL M _R NM (in-lbs)	PITCH M _P NM (in-lbs)	YAW M _Y NM (in-lbs)
ST80	190	15205	281	207	207
	260	30410	562	1080	1080

Inertia (lb-in-sec²):

A Carriage, $J = (23 + \text{Stroke mm} * 0.001) * 10^{-4} * 8.85$

B Carriage, $J = (35 + \text{Stroke mm} * 0.001) * 10^{-4} * 8.85$

Weight:

9 kgs + (0.0114 kgs/mm)

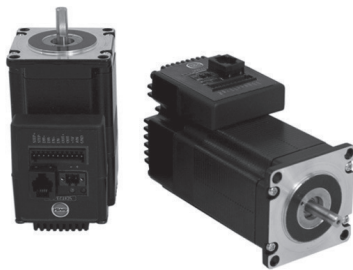
MOTORS AND DRIVES

Bimba motors are available to use as the rotary drive mechanism of the ST80 Series. With a complete array of stepper and servo motors available in stock, Bimba has a motor*-drive solution that meets many demanding applications.

Configuring your motor and creating your first motion profile program is easier than ever with Bimba's intuitive and icon based IQ® suite of motion software. With our complete software suite available for free download from the Bimba website, there is no additional cost to your motion project. All Bimba stepper and servo programming software uses the same IQ® programming software, greatly reducing the learning curve. Existing programs can be easily shared or adapted among the two motor technologies.

See the Motors and Drives section for Bimba's wide selection of available motors and motor drives.

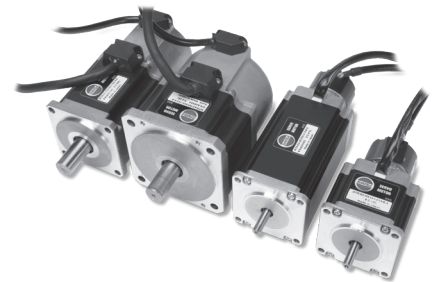
*Contact Bimba's Customer Service team for help in crossing your motor to a Bimba motor.



INTELLIMOTOR®
ITM-23Q-2-EIP-E-M12



AC STEPPER MOTOR
MTR-AC23T-753-S



AC SERVO MOTOR

General Accessories

- T-bars for mounting to the carriages
- Mechanical and proximity limit switches
- Torque tubes for dual axis gantry style applications
- Adapter plates for creating most any X-Y-Z configuration

HOW TO ACCESSORIZE

LINEAR SCALE

In extreme cases where precision beyond the normal tight accuracy of the ST80 is desired, Bimba offers external linear scales. They are capable of providing extended position precision to as tight as $10\mu\text{m}$. These scales are composed of a reading head and external scale. Linear scales are available in incremental or absolute versions which can be added to your actuator as an additional component when included in the final part number.



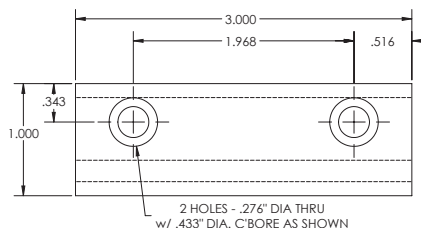
EXTERNAL LINEAR SCALE

MOUNTING CLAMPS

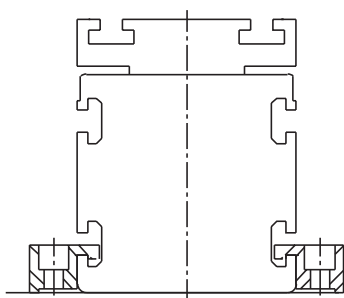
To secure an actuator to the machine frame, hold-down clamps are available. They are designed to fit perfectly in the extruded body actuator T-channel. Appropriate sized clamps are available for the ST80 actuator, as well as all of Bimba's electric actuators.



BIMBA ST80 CLAMP
CL-80-39



ST80 CLAMP DIMENSIONS



ST80 CLAMP DRAWING



ST80 CLAMP DRAWING

HOW TO ORDER

The model numbers of the ST80 Series belt-driven rodless stop actuator consist of an alphanumeric cluster designating product type, carriage type, stroke length, drive type, drive location, gear ratio (optional), external scale (optional), and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

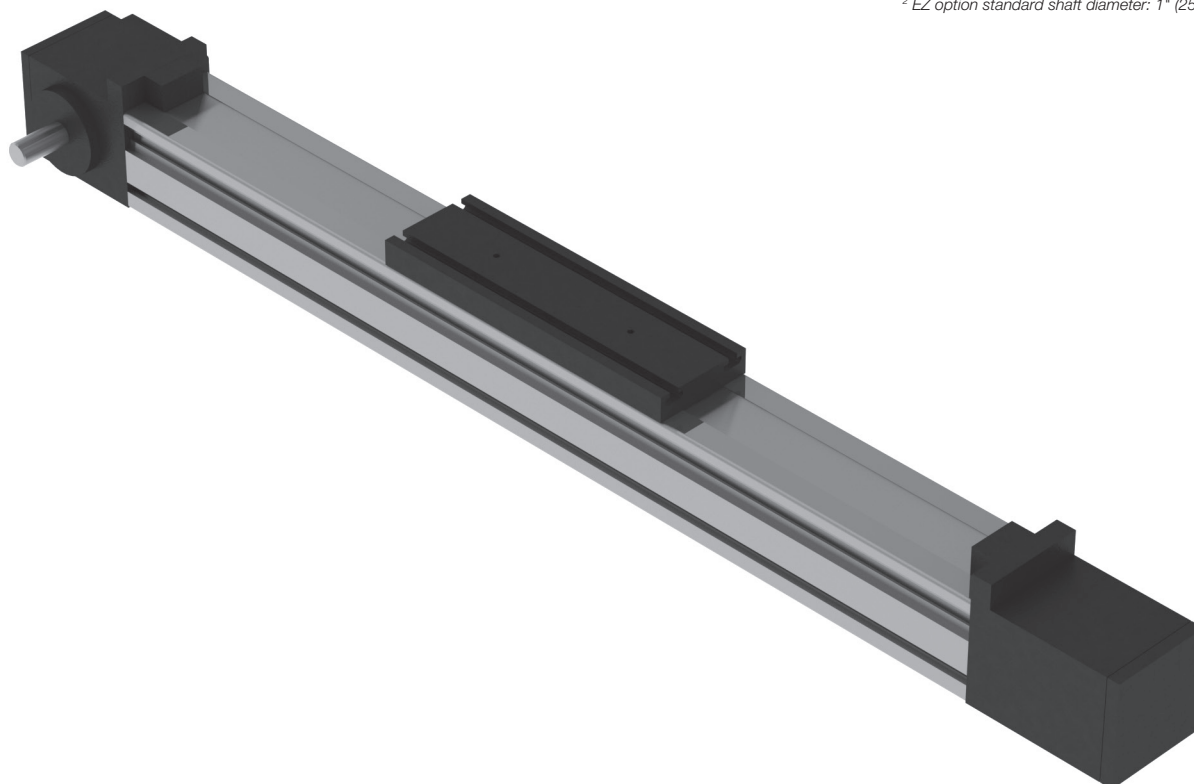
An example of a basic ST80 unit with two bearing block carriages, 500mm length, an EZ double drive for left-hand mounting with no external scale, and additional options is shown below.

CARRIAGE			DRIVE		RATIO	EXTRA CARRIAGES		PROTECTION		PURGE PORT ¹	
Carriage Type	Number of Bearing Blocks	Carriage Length									
A	1	190	SD	Single Shaft		0	None	00	Standard	P0	None
B	2	260	DD	Double Shaft		1	1 Extra	Z1	Corrosion-Resistant	PL	Left
			RD	Reducer Drive		2	2 Extra	SS	Stainless Steel	PR	Right
			EZ	EZ Drive ²						PB	Both
			ED	EZ Double Drive ²							

ST80	- B	00500	SD	R	1	N	0	0	00	N	P0
ACTUATOR		STROKE	HAND¹	SCALE¹	DISTANCE	KEYWAY					
ST80		XXXXX (mm)	L Left Hand R Right Hand	N No Scale L Left R Right	XXXX (mm) 190-1000mm	Y Yes N No					

¹ Referenced from drive end with carriage on top.

² EZ option standard shaft diameter: 1" (25.4mm)



NOTE: If a motor or gearbox adapter is required, please refer to the Adapters section of the Accessories chapter in this catalog.

HOW TO REPAIR

Bimba ST80 electric actuators are repairable. A list of the individual components is given below that together make up the ST80 electric actuator.

Please use the linear actuator serial number located at the drive end for all inquiries, along with the original purchase order number (if available). Describe the part required along with part number below. Contact Bimba Customer Service at 800-442-4622 (800-44-BIMBA) or e-mail CS@bimba.com.

ST80 SINGLE DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	STOP-29	Pulley
1	B80-18	Drive Shaft
1	B110-45	Retainer
2	B80-40	Bearing
1	B80-45	Locking Mechanism
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-30-B	Carriage
1	B80-05	Bearing

ST80 SINGLE DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	STOP-29	Pulley
1	B80-18	Drive Shaft
1	B110-45	Retainer
2	B80-40	Bearing
1	B80-45	Locking Mechanism
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-31-B	Carriage
2	B80-05	Bearing

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ST80 DOUBLE DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	B80-13	Drive Shaft
1	STOP-29	Pulley
2	B80-40	Bearing
1	B110-42	Bumper
1	B80-45	Locking Mechanism
2	B110-45	Retainer
1	B80-10	Long Shaft
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-30-B	Carriage
1	B80-05	Bearing

ST80 DOUBLE DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	B80-13	Drive Shaft
1	STOP-29	Pulley
2	B80-40	Bearing
1	B110-42	Bumper
1	B80-45	Locking Mechanism
2	B110-45	Retainer
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-31-B	Carriage
2	B80-05	Bearing

HOW TO REPAIR

Bimba ST80 electric actuators are repairable. A list of the individual components is given below that together make up the ST80 electric actuator.

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ST80 BELT REDUCER DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	STOP-29	Pulley
1	B80-18	Drive Shaft
1	B110-45	Retainer
2	B80-40	Bearing
1	B80-45	Locking Mechanism
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-30-B	Carriage
1	B80-05	Bearing
1	B80-10	Reducer

ST80 BELT REDUCER DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-321	Take-up Plate
1	B80-322	Take-up Plate
1	B80-316	Drive End Plate
1	B80-26	Take-up Shaft
2	B80-27	Take-up Slides
2	B80-44	Bearing
2	S110-24	Retainer
1	B80-313	Drive Plate
2	B80-314	Drive Plate
2	B80-317	Retainer
1	STOP-29	Pulley
1	B80-18	Drive Shaft
1	B110-45	Retainer
2	B80-40	Bearing
1	B80-45	Locking Mechanism
1	B80-01	Extrusion
1	B80-02	Linear Rail
2	B80-320	End Plate
2	B110-42	Bumper
1	LP20B-15	Belt
2	STOP-20	Belt Clamp
1	B80-41	Magnet Clamp
4	B80-42	Magnets
1	B80-31-B	Carriage
2	B80-05	Bearing
1	B80-10	Reducer

SWITCHES

Switches add versatility to your electric motion application. They can be used to provide end of stroke limits, count strokes, or communicate positioning to an outside source. Switches can provide safety to applications as well, preventing undesirable situations like runaways to prevent damage.

To learn more about Bimba's available switch selection, refer to the Switches section in this catalog.

AIR/PURGE PORTS

Air and purge ports are essential for actuators that operate in dirty applications. In both belt- and screw-driven actuators, ports keep dust and grime from egressing, protecting the internals of the actuator. Air and purge ports are recommended for use with Bimba's air preparation products.

When using purge ports, supply dry filtered air to the actuators in order to achieve optimal protection.

PROTECTION

Bimba offers several protection options for our actuators. Our primary options are Armoloy® and stainless steel. **Armoloy®** offers additional protection against moisture and dirt. It is used to coat the steel linear rail and bearings in a Bimba actuator. Armoloy® coating can also be applied to the aluminum extrusion upon request. **Stainless steel** works in conjunction with Armoloy® coatings, providing additional protection to the end caps and carriage.

Additional coatings are available upon request.

MOTOR MOUNTING

Motor mounts allow you to mount any motor to any actuator (within the actuator's rating). They give end users the ability to use Bimba electric actuators with the motor of their choosing. Careful considerations regarding torque limitations must be made when mounting a motor the actuator is not rated for.

To request custom motor mounting options, please supply Bimba with the following information: shaft diameter, shaft length, pilot diameter, pilot depth, bolt circle, and hole size.

CUSTOMER-REQUESTED HOLES AND DOWEL PINS

Bimba can provide custom holes and dowel pins to accommodate the customer's specific tooling and mounting holes.

For further customization, contact the factory.



NOTES