

S80/110 RODLESS ACTUATORS

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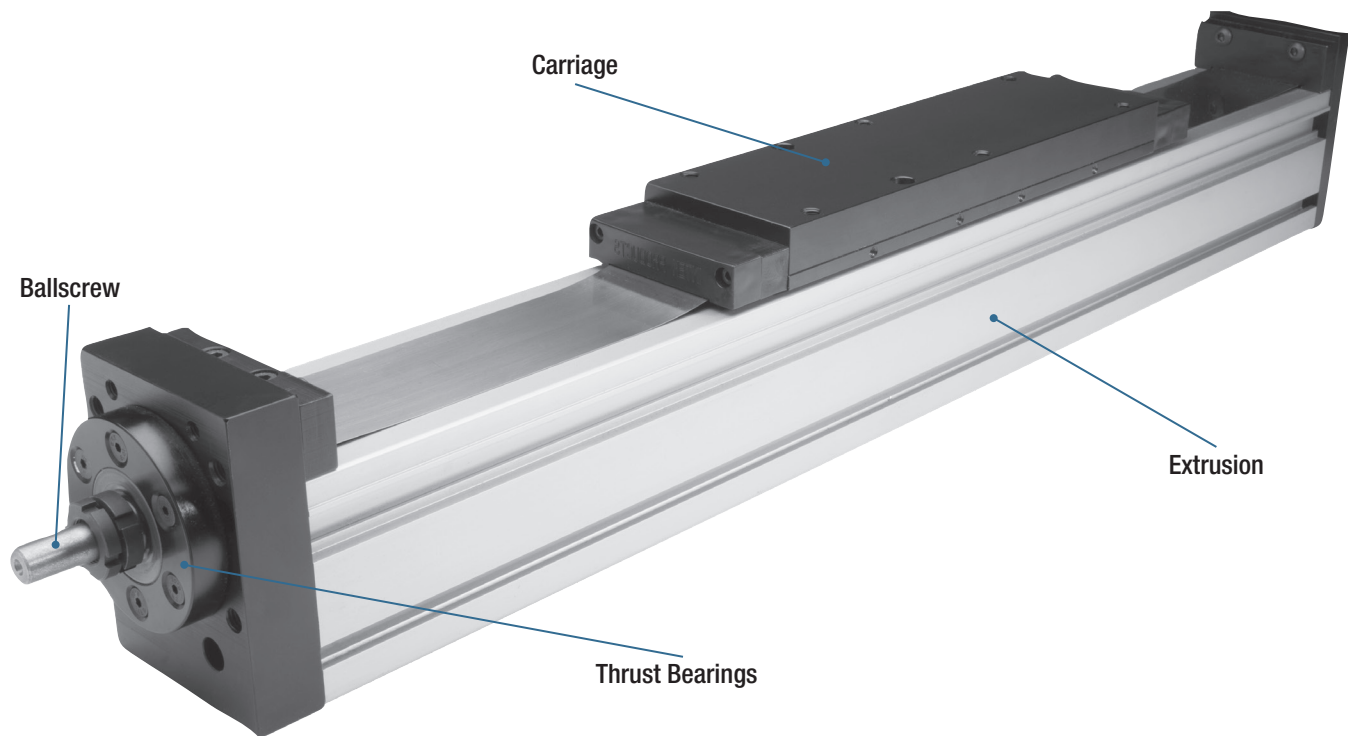


S80/110 RODLESS ACTUATOR

The S80 is Bimba's single rail electric ballscrew-driven electric linear actuator with a built-in Linear Ball Rail Guide system for use in different industries and applications. More robust and internally rigid, the S80 picks up where the S27 leaves off. Well-suited for many of the same pick and place and sorting applications recommended for the S27, the S80 has the additional robustness to perform effortlessly in higher load applications including loading, parts transfer, stacking and similar applications where more muscle and long life are paramount.

Well-built using the highest quality components throughout its construction, the S80 offers high thrust capacities and high accuracy via its robust precision rolled ballscrew design. For use in general purpose applications to use in custom designs, the S80 high thrust capability is on par with that of traditionally larger ballscrew actuators. This enhanced thrust capability, when combined with the accurate motion offered by its high-precision ballscrew design, provides more than twice the performance of similar sized competitive actuators. The end result is industry-leading dynamic and moment loading capability coupled with long life and reliability that exceeds the competition and provides peace of mind for even the toughest motion applications.

PRODUCT FEATURES



The S80 is the ballscrew version of the B80 belt drive actuator, employing identical extrusion, carriage, and bearing systems, leading to the same high-moment capacities in all mounting directions while delivering nearly three times more thrust capability. The increased thrust is a direct result of the S80's high-efficiency ballscrew and dual bearing-block design.

For extreme applications when trying to maximize the loading capability of a Bimba rodless electric actuator, the S110 is the answer to your needs. Using the same arc-belt construction found in the S80, the S110 is 30mm wider and taller than the S80, with a larger carriage and bearing system and larger diameter ballscrew. Together, this leads to maximized thrust, moment, and loading performance.

FEATURES AND BENEFITS

High Precision Rolled Ballscrew:

- High thrust capacities: up to 5850 lbs
- Highest thrust per unit size
- Available in 5, 10, and 20mm leads
- Stainless steel seal strip cover
- High stiffness
- High accuracy: 0.001"
- Several lead pitches available
- Ground ballscrews available upon request
- ACME lead screws available upon request

Square Aluminum Extrusion:

- Heavy duty 7075 aluminum extrusion
- 25% stronger extrusion
- Supports stops and bearings
- Better fit in tight applications (S80)
- Promotes long life

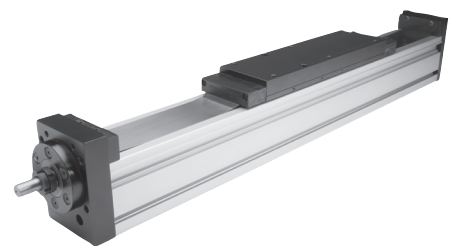
Built-in Linear Ball Rail Guide:

- Maintenance free
- Self-lubricating
- Low friction
- Smooth, quiet operation
- Long life expectancy
- S80 supports high loads and high moment loads
- S110 supports extreme loads and extreme moment loads

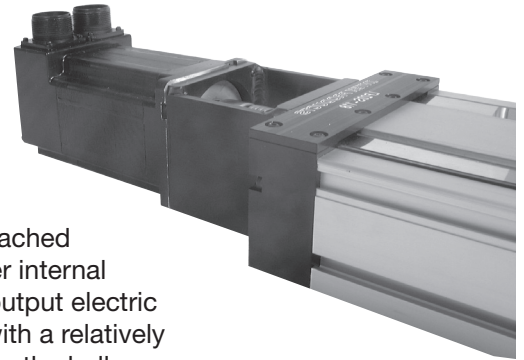
Belt Drive Reducer Available:

- Space saving belt drive motor to actuator mounting
- Adapts to your motor dimensions
- Integral to reverse parallel configurations
- 1:1, 1.5:1, 2:1, and 2.5:1 ratios available

S80/110



Bimba S80 and S110 rodless actuators use an external stepper or servo motor coupled to drive an internal ballscrew and ball nut assembly that is attached to an internal built-in linear ball rail guide system. The S80/110 uses a high-efficiency rolled ballscrew attached to an internal ball-screw lower carriage assembly, which is bolted to a self-lubing bearing block and rail ball bearing assembly beneath it. It is simultaneously bolted to the internal upper carriage, becoming the foundation for the robust external load carriage that is attached to the combined ballscrew/bearing block/bearing rail/lower via the upper internal carriage assembly. The highly efficient ballscrew leads to a high thrust output electric actuator. The high efficiency of the ballscrew allows high thrust forces with a relatively “small” motor due to the maximum mechanical advantage garnered from the ballscrew.



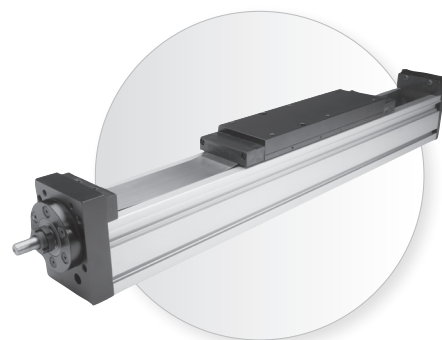
The S110 is a perfect choice when building a multi-axis system, as the high dynamic and moment loading characteristics offer outstanding load support when solving two-axis systems. With transition plates available to couple another Bimba rod, rodless, or rack & pinion actuator to the S110, solving motion applications in two dimensions becomes an easy task.

MATERIALS OF CONSTRUCTION

Body:	Aluminum
Ends:	Aluminum
Ball Nut Adapter:	Steel
Carriage:	7075 Aluminum
Sealing Strips:	400 Grade Stainless Steel
Ballscrew:	Hardened Steel

APPLICATION IDEAS

- Pick & Place
- Sorting
- Loading
- Lifting
- Pressing
- Stacking
- Insertion
- Clamping
- Parts Transfer
- Parts Rejection
- Machine Tool
- Diverting
- Conveyor



TARGET APPLICATIONS

The S80 is intended for heavy-duty industrial applications that require flexible, high-thrust and extreme precision, with robust load and moment loading capacity. When your application calls for extreme precision with up to 4470 lbs (21200 N) and speed capability in the 1m/sec (~40"/sec) range, the S80 offers you a canned solution with maximum performance and value.

The S110 is intended for maximum-duty industrial applications that require flexible, precise, or extreme load and moment loading capacity. For applications that call for up to 6 ft. (~2m) of stroke with speed capability in the 25"/sec (~0.6m/sec) range, along with dynamic loading capability exceeding 17,000 lbs. (~76,000 N), the S110 offers a robust solution in a standard offering.

For applications that call for an alternative, adaptable solution to a traditional pneumatic applications, with force and load capability that mimics a pneumatic solution and can change as your motion needs grow, S80/110 electric actuators provide the interchangeable solution. Adapting alongside your business in an easy-to-use, long-lasting, and tough electric actuator that exceeds the competition in performance, value, and life is what makes the S80/110 Bimba's flagship electric ballscrew actuator.

DRIVE OPTIONS

With two S80/110 drive interfaces to choose from—a standard single shaft mount or a reverse parallel belt drive input shaft mount which provides up to a 3:1 reduction ratio—the choice is yours to select the option that works best for you. High load and thrust applications become an afterthought when installing an S80/110; just add the optional belt drive, coupled with a servo motor, to provide the necessary torque to move high application loads.

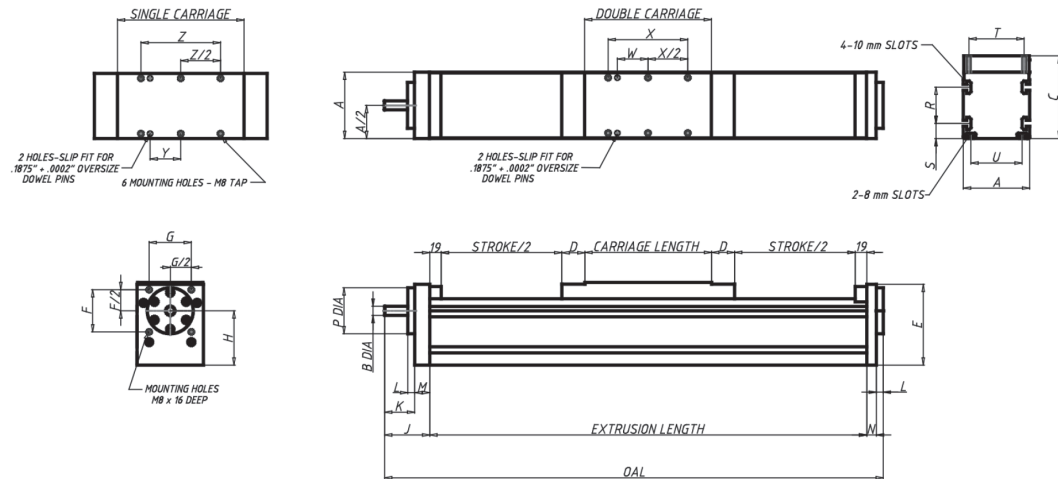
In those scenarios where yet more torque is needed, the flexibility of the S80/110 allows users to configure an integral reducer drive with the belt drive to provide a ratio that offers a multiple reduction ratio, leading to extreme torque levels.

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
Reducer Drive (optional)	Offers increased performance using embedded gear reducer	Move larger loads and improve inertia matching, using an aesthetically pleasing, cost-effective solution
Precision-rolled ballscrews	Higher accuracy and repeatability	Realize unmatched positional performance leading to reliable output, less waste, and increased throughput

DIMENSIONS

Key specification information for the S80/110 is given below. For additional specification information, contact Bimba Customer Service at cs@bimba.com, or 800.44.BIMBA (800.442.4622).



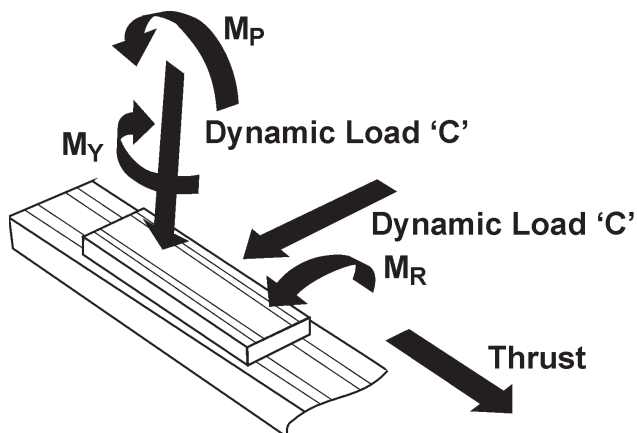
DIMENSIONS																	
ACTUATOR	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T
S80	80	12	108.3	31.8	109	50	66	70	73	48	11.5	25	16	69.8	45	18	65
S110	110	115	130	38.1	134	70	70	80	75	80	11.5	25	15	78.2	80	25	81.7

DIMENSIONS						CARRIAGE LENGTH	
ACTUATOR	U	W	X	Y	Z	SINGLE	DOUBLE
S80	35	53.29	220	34.24	150	190	260
S110	85	50.8	203.2	80.8	132	210	305

O.A.L. = "J" + "N" + "L" + (2 x "D") + 38 + Stroke + Carriage Length

HOW TO SPECIFY

SPECIFICATIONS



LINEAR ACTUATOR	EXTRUSION	
	MOMENT OF INERTIA	
	I _x (cm ⁴)	I _y (cm ⁴)
S80	146	219
S110	484	745

Straightness 0.3175mm per 300mm of length

Twist: 1/4" per 300mm, 3" maximum per 6mm length

LINEAR ACTUATOR	LEAD CONSTANT (mm/rev.)	END BEARING		SCREW	
		DYNAMIC LOAD N (lbs)	STATIC LOAD N (lbs)	DYNAMIC LOAD N (lbs)	STATIC LOAD N (lbs)
S80	5	21200 (4470)	13400 (3010)	6200 (1394)	14700 (3305)
	10			10600 (2383)	22700 (5103)
	20			6200 (1394)	14700 (3305)
	50			1325 (2923)	2508 (5530)
S110	5	26000 (5850)	16600 (3730)	6600 (1484)	18700 (4204)
	10			27500 (6182)	76300 (17152)
	25			9300 (2090)	22700 (5103)
	50			1570 (3462)	3232 (7126)

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)
S80	190	21000 (4720)	310 (2745)	270 (2390)	270 (2390)
	260	42000 (9440)	620 (5487)	1400 (12390)	1400 (12390)
S110	210	30750 (6913)	530 (4690)	460 (4071)	460 (4071)
	305	61500 (13825)	1060 (9381)	2750 (24338)	2750 (24338)

Inertia (lb-in-sec²):

S80 Actuator - A Carriage, $J = (2 + \text{Stroke mm} \times 0.001) \times 10^{-4} \times 8.85$

S80 Actuator - B Carriage, $J = (3 + \text{Stroke mm} \times 0.001) \times 10^{-4} \times 8.85$

S110 Actuator - A Carriage, $J = (5 + \text{Stroke mm} \times 0.001) \times 10^{-4} \times 8.85$

S110 Actuator - B Carriage, $J = (7 + \text{Stroke mm} \times 0.001) \times 10^{-4} \times 8.85$

Weight:

S80 = 4 kgs + (0.0134 kgs/mm)

S110 = 8 kgs + (0.0134 kgs/mm)

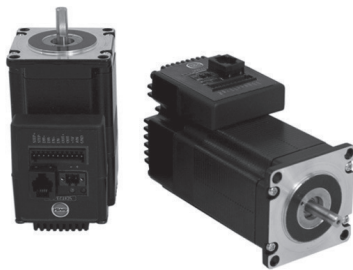
MOTORS AND DRIVES

Bimba motors are available to use as the rotary drive mechanism of the S80/110 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.

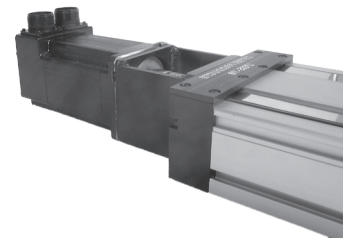
*Contact Bimba's Customer Service team for help in crossing your motor to a Bimba motor.



INTELLIMOTOR®
ITM-23Q-2-EIP-E-M12



AC STEPPER MOTOR
MTR-AC23T-753-S



AC SERVO MOTOR

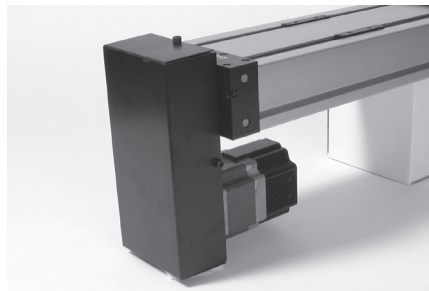
General Accessories

- 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

REVERSE PARALLEL MOTOR MOUNTS

In cases where space savings are critical, or in which gaining mechanical advantage via a geared drive belt pulley leads to an improved design, Bimba offers reverse parallel motor mounts. They are offered for use with nearly any Bimba motor or customer-provided motor. The option to mount in either the top or bottom position for the S80/110 actuator adds flexibility.

- Adapts to your motor dimensions
- Available in reduction ratios up to 2:1
- Saves valuable space



BIMBA REVERSE PARALLEL REDUCTION MOUNTS

HOW TO ACCESSORIZE

LINEAR SCALE

In extreme cases where precision beyond the normal tight accuracy of the S80/110 is desired, Bimba offers external linear scales. They are capable of providing extended position precision to as tight as 10µm. 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.



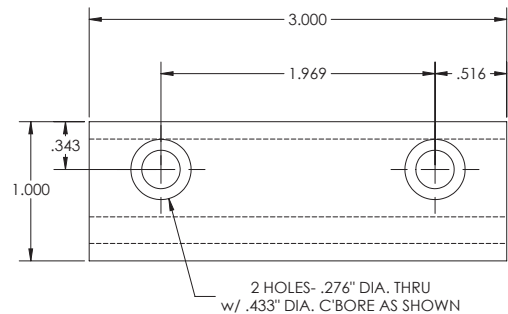
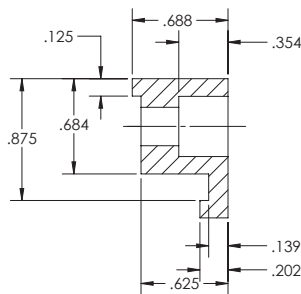
EXTERNAL LINEAR SCALE

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 S80/110 actuator, as well as all of Bimba's electric actuators.



BIMBA S80 CLAMP
CL-80-39



S80/110 CLAMP DRAWING

HOW TO ORDER

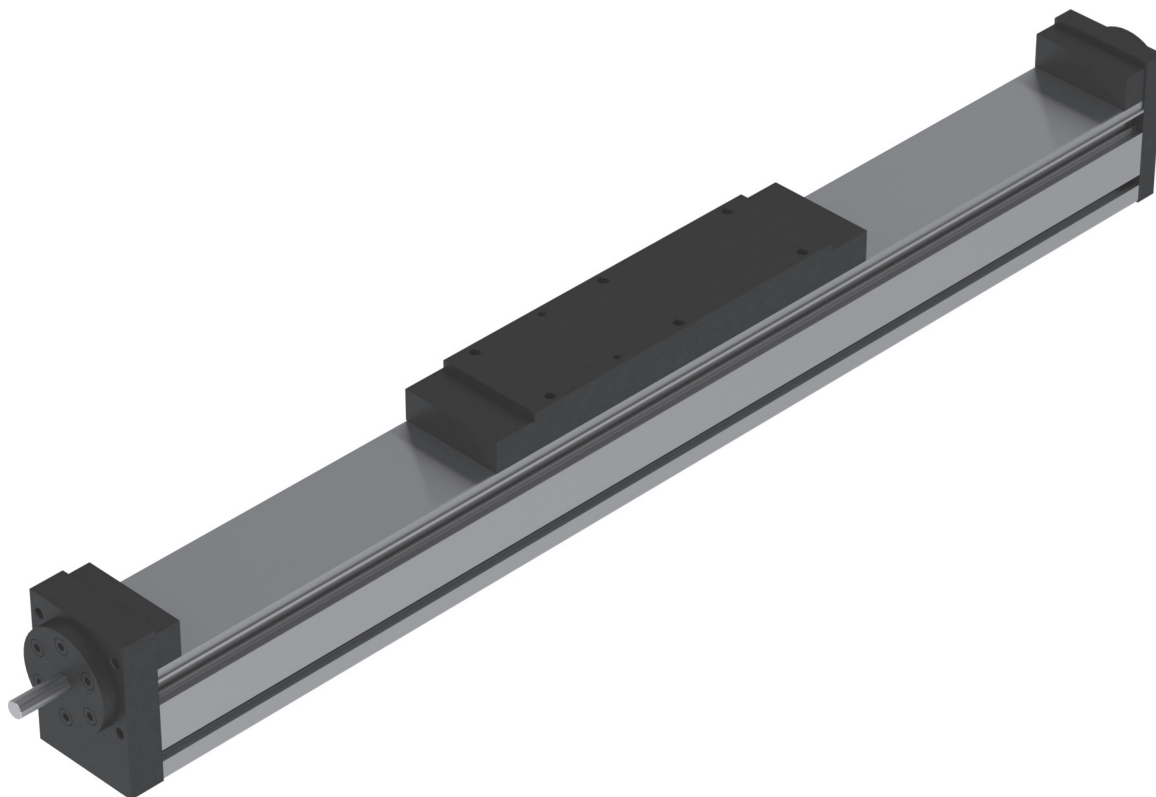
The model numbers of S80/110 Series rodless actuators consist of an alphanumeric cluster designating product type, carriage type, stroke length, drive type, lead, gear ratio (optional), external scale (optional), and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic S80 unit with a 500mm stroke, standard drive shaft, 5mm lead, no scale, and additional options is shown below.

CARRIAGE				DRIVE		SCALE*		DISTANCE		KEYWAY	
Actuator	Carriage Type	Number of Bearing Blocks	Carriage Length	SD Standard Drive		N None	L Left	XXXX (mm)		Y Yes	N No
S80	A	1	190								
	B	2	260								
S110	A	1	210								
	B	2	305								

ACTUATOR	STROKE	LEAD	EXTRA CARRIAGES	PROTECTION	PURGE PORT*
S80	XXXX (mm)	05 5mm lead	N None	00 Standard	P0 None
S110		10 10mm lead	1 1 Extra	Z1 Corrosion-Resistant	PL Left
		20 20mm lead	2 2 Extra	SS Stainless Steel	PR Right
		25 25mm lead			PB Both
		50 50mm lead			

* Referenced from drive end with carriage on top.



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 S80 Series multi-axis electric actuators are repairable. A list of the individual components is given below that together make up S80 electric actuators with standard drives.

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.

S80 STANDARD DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	S80-02	Extrusion
1	S80-03	Linear Rail
1	S80-04-10	Ballscrew
1	S80-04-10N	Ball Nut
1	S80-05	End Plate
1	S80-06	Retainer
1	S80-07	End Plate
1	S80-08	Retainer
1	S80-10A	Top Single - Sealing Strip
1	S80-10B	Bottom Single - Sealing Strip
1	S80-11	Spacer
2	B27-P30	Magnet
1	LP20-14_RevB	Ball Nut Clamp
1	S80-14	Seal Strip
2	S80-17A	Seal Clamps A & B
2	S80-17B	Seal Clamps A & B
1	S80-18	Seal Shaft
2	S80-20	Bearing Thrust
1	LP20-25	Bearing Support
1	S80-22	Lock Nut
1	S80-25	Bearing
4	B80-42	Carriage Magnets

S80 STANDARD DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	S80-02	Extrusion
1	S80-03	Linear Rail
1	S80-04-10	Ballscrew
1	S80-04-10N	Ball Nut
1	S80-05	End Plate
1	S80-06	Retainer
1	S80-07	End Plate
1	S80-08	Retainer
1	S80-09A	Top Double - Sealing Strip
1	S80-09B	Bottom Double - Sealing Strip
1	S80-11	Spacer
2	B27-P30	Magnet
1	S80-13B	Ball Nut Clamp
1	LP20-14_RevB	Ball Nut Clamp
1	S80-14	Seal Strip
2	S80-16	Seal Guides
2	S80-17A	Seal Clamps A & B
2	S80-17B	Seal Clamps A & B
1	S80-18	Seal Shaft
2	S80-20	Bearing Thrust
1	LP20-25	Bearing Support
1	S80-22	Lock Nut
1	S80-24	Retainer Ring
2	S80-25	Bearing
4	B80-42	Carriage Magnets

Bimba S110 Series multi-axis electric actuators are repairable. A list of the individual components is given below that together make up S110 electric actuators with standard drives.

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.

S110 STANDARD DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B110-01	Extrusion (General Extrusion)
1	B80-02	Linear Rail
1	S110-04-10	Ballscrew
1	S110-04-10N	Ball Nut
1	S110-05	End Plate
1	S110-06	Retainer
1	S110-07	End Plate
1	S110-08	Retainer
1	S110-10A	Carriage Single Top - A
1	S110-10B	Carriage Single Bottom - A
1	S110-11	Spacer
1	S110-12	Ball Nut Clamp
2	B27-P30	Magnet
1	S110-14	Sealing Strip
2	S110-16	Cover Guide
2	S110-17A	Cover Clamp
2	S110-17B	Cover Clamp
2	S110-20	Bearing Thrust
1	S110-21	Bearing Support
1	S110-22	Lock Nut
1	S110-24	Retainer Ring
1	S110-25	Bearing
1	S110-18	Grease Seal

S110 STANDARD DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	B110-01	Extrusion (General Extrusion)
1	B80-02	Linear Rail
1	S110-04-10	Ballscrew
1	S110-04-10N	Ball Nut
1	S110-05	End Plate
1	S110-06	Retainer
1	S110-07	End Plate
1	S110-08	Retainer
1	S110-09A-1	Carriage Double Top- B
1	S110-09B	Carriage Double Bottom- B
1	S110-11	Spacer
1	S110-12	Ball Nut Clamp
2	B27-P30	Magnet
1	S110-14	Sealing Strip
2	S110-16	Cover Guide
2	S110-17A	Cover Clamp
2	S110-17B	Cover Clamp
2	S110-20	Bearing Thrust
1	S110-21	Bearing Support
1	S110-22	Lock Nut
1	S110-24	Retainer Ring
2	S110-25	Bearing
1	S110-18	Grease Seal

HOW TO CUSTOMIZE

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.