

# LP15S/20S ACTUATORS

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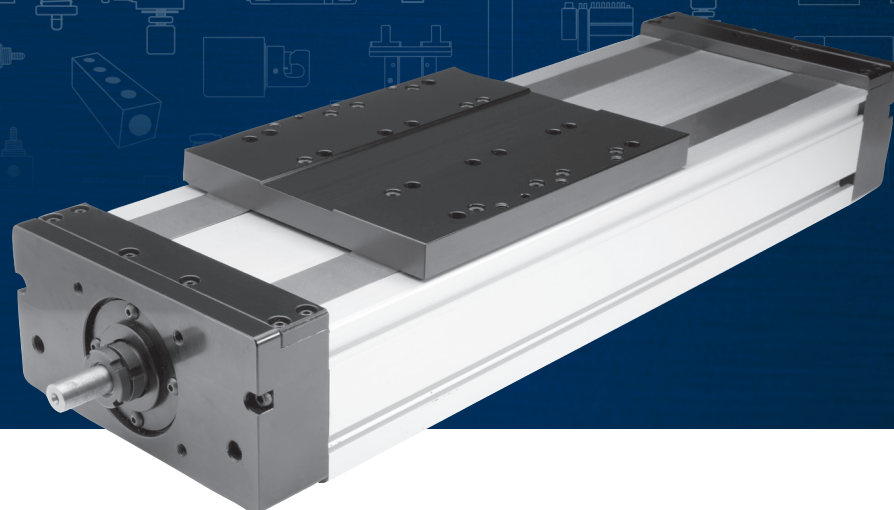
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## LP15S & LP20S ACTUATORS

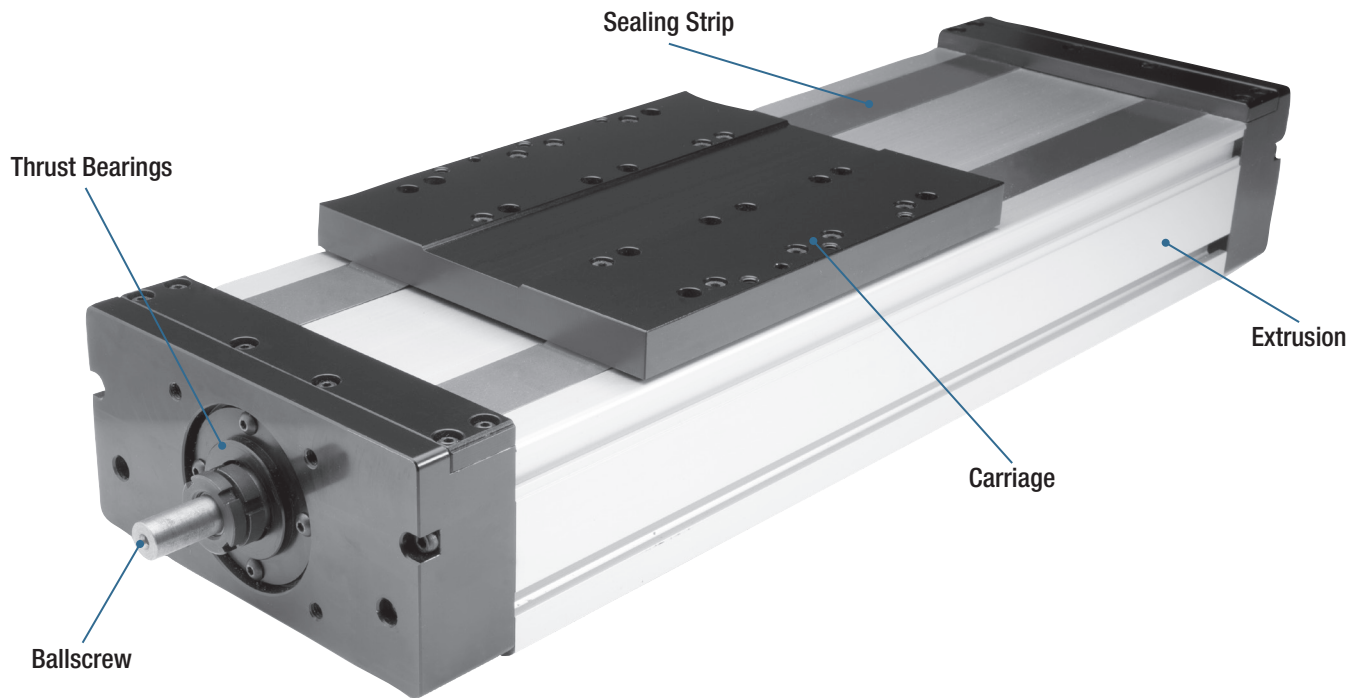
The LP15S is a dual rail ballscrew driven electric linear actuator for use in industries and applications where increased support of loads is critical. As a low-profile actuator, the LP15S picks up where the low-profile S27 leaves off. The LP15S uses a dual rail, four bearing block design that provides two and a half times the thrust force capability and two times the maximum input torque potential of the S27.

From pick and place to material handling, the LP15S/LP20S is a capable electric motion solution when looking for a motion profile with heavy-duty loading capability. Built using the highest quality components throughout its construction, the LP15S is Bimba's standard general-purpose electric linear actuator with heavy-duty characteristics not found in competitive actuators.

When still more performance and capability are called for, the LP20S is a more robust iteration of the LP15S with size 20 guide rails and bearing blocks that support nearly two and a half times the load and three times the moment capability of the LP15S.



# PRODUCT FEATURES



The LP15S/LP20S family of electric actuators offer a dual ball rail design to maximize loading characteristics while still providing high moment and precision with low noise, backlash and vibration. With two distinct ballscrew diameter sizes to choose from, high load applications are easily overcome.

## FEATURES AND BENEFITS

### High Precision Rolled Ballscrew

- High thrust capacities: up to 3350 lbs.
- Available in 5, 10, 16 and 20mm leads
- Two stainless steel seal strip covers
- High stiffness
- Repeatability to 0.001"
- NEMA 23 and 34 motor ready
- Ground ballscrews available upon request
- ACME lead screws available upon request

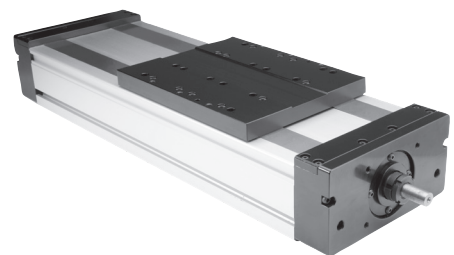
### Low Profile Aluminum Extrusion:

- Provides better fit in tight applications
- Maximum robustness per size

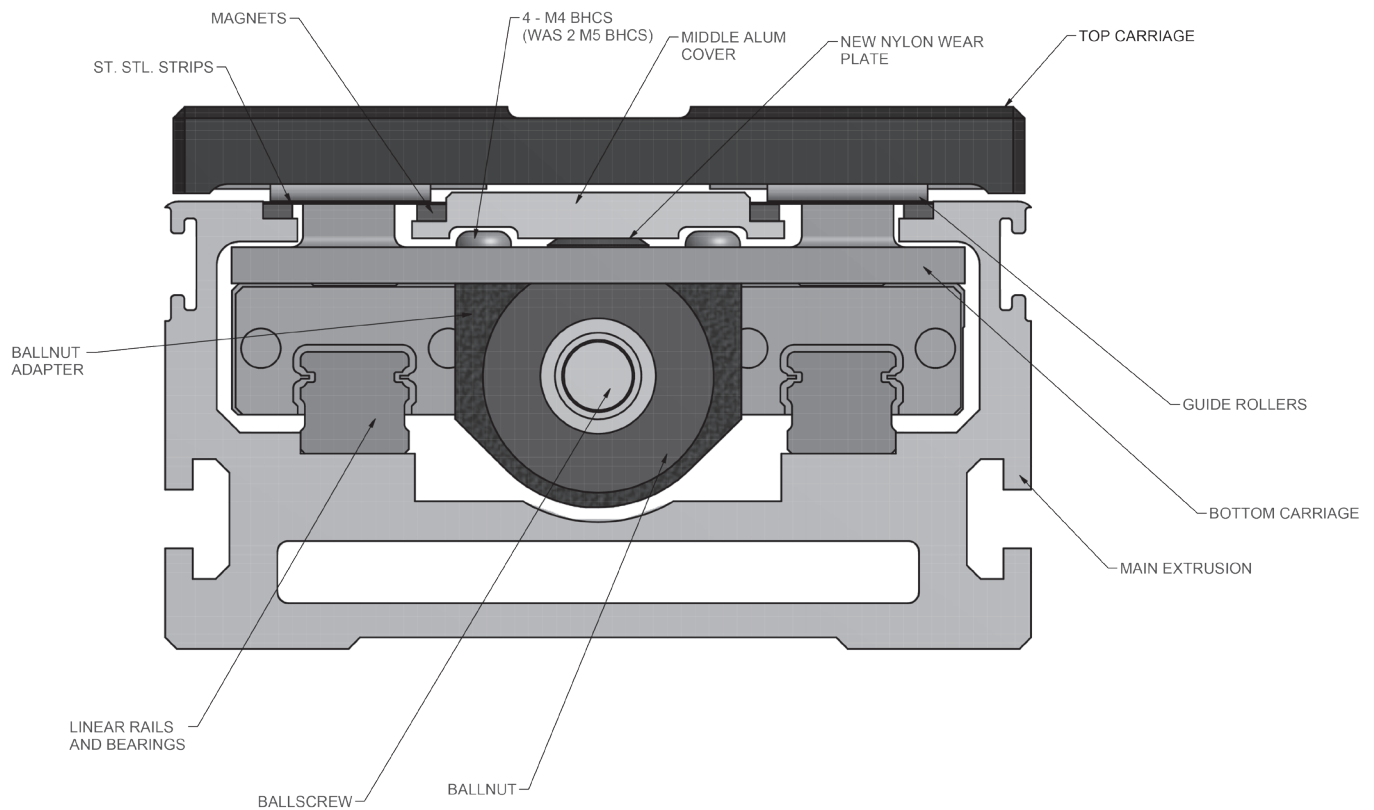
### Dual Built-in Linear Ball Rail Guides:

- Dual rails provide two times the loading
- Four bearing blocks: two per rail
- Size 15 and Size 20 rails/bearings
- Maintenance-free
- Self-lubricating
- Low friction
- Smooth operation
- Long life expectancy

LP15B/LP20B







The LP15S dual rail rodless actuator uses an external stepper or servo motor to drive an internal, precision-rolled ballscrew and ball nut assembly that is attached to a built-in linear ball rail guide system. The LP15S uses a high efficiency rolled ballscrew attached to an internal ballscrew lower carriage assembly, which is bolted to two separate self-lubed bearing blocks and rail ball-bearing assemblies beneath it. It is simultaneously bolted to its internal upper carriage, which becomes the foundation for the robust external load carriage that is attached to the ballscrew/bearing block/bearing rail/lower carriage structure via the upper internal carriage assembly. This leads to a high thrust output electric actuator thanks to the highly efficient ballscrew. The high efficiency of the ballscrew allows high thrust forces with a relatively small motor due to the maximum mechanical advantage and efficiencies garnered from the ballscrew.

The motor provides the rotational motion which is transformed into linear motion as the carriage and load attached to the ballscrew and nut assembly travels along the length of the LP15S under direct and defined control of the user. With two linear rails and an option for up to four bearing blocks (two per rail), the LP15S has the load and moment capability to handle nearly any load you can stack up against it.

## MATERIALS OF CONSTRUCTION

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



# HOW IT'S USED

## APPLICATION IDEAS

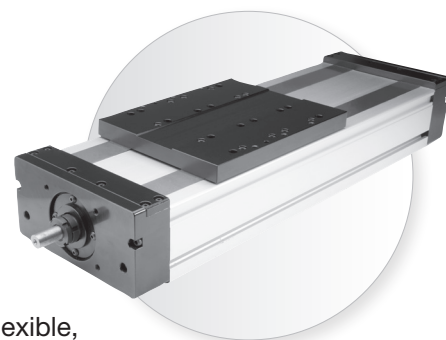
- Pick & Place
- Sorting
- Loading
- Stacking
- Insertion
- Clamping
- Parts Transfer
- Machine Tool
- Conveyor

## TARGET APPLICATIONS

The LP15S/LP20S is intended for heavy-duty industrial applications that require flexible, long distance, high thrust linear motion with a dual rail construction that provides maximum dynamic load and moment loading capacity. When your application calls for up to 1.2m (~4 ft) of stroke with more than 1000 lbs (~4450N) of thrust potential, and more than 3350 lbs (1500N) of dynamic load and speed capability in the 0.76m/sec (~30"/sec) range, the LP15B/LP20S offers you a maximum solution at an exceptional value.

The power of the dual-rail construction of the LP15S lends itself well to multi-axis motion solutions. Whether the second axis is another LP15S or nearly any other existing Bimba electric actuator, the two rail, four bearing block configuration makes adding a second axis a breeze.

For applications that call for a heavy-duty alternative solution to a traditional pneumatic application, Bimba electric actuators provide the interchangeable solution that grows and adapts alongside your business in an easy-to-use, long lasting, and tough electric actuator.



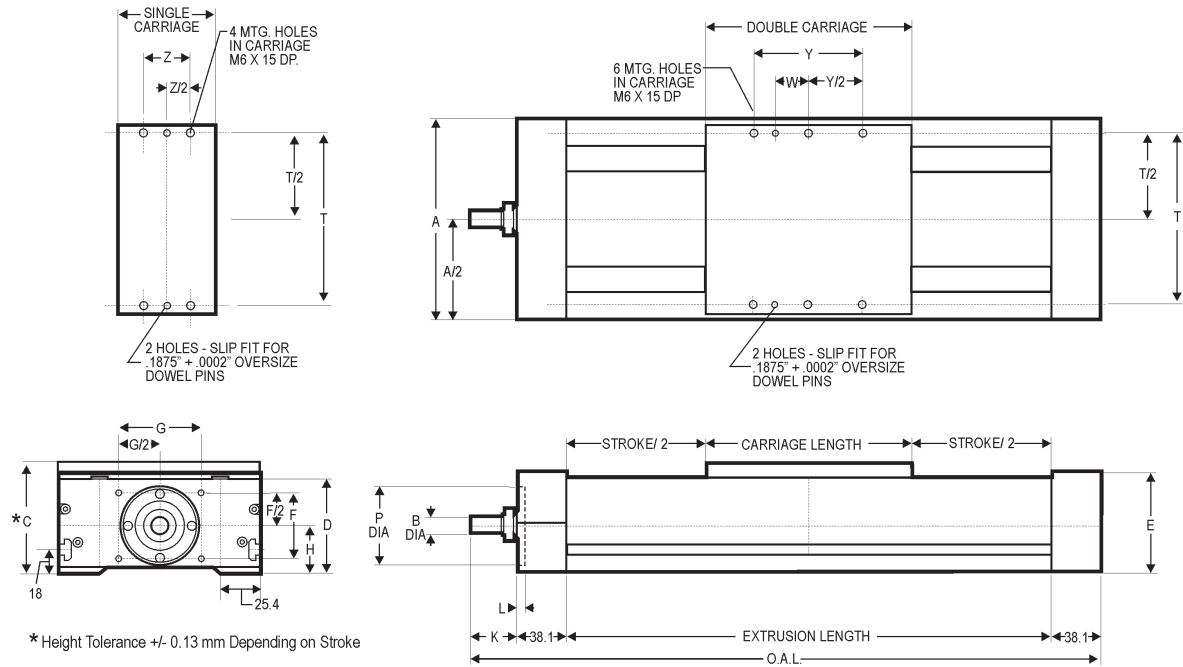
## ADVANTAGES

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
Dual rail construction	2-rail, 4-bearing block construction offers maximum moment loading capacity	Highest load and moment capacity leads to solving applications that are not otherwise possible within this class of actuator
Self-lubricating linear guides	Minimized maintenance	Worry- and maintenance-free long life, even in applications that require 24/7 motion
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 LP15S/20S is given below. For additional specification information, contact Bimba Customer Service at [cs@bimba.com](mailto:cs@bimba.com), or 800.44.BIMBA (800.442.4622).

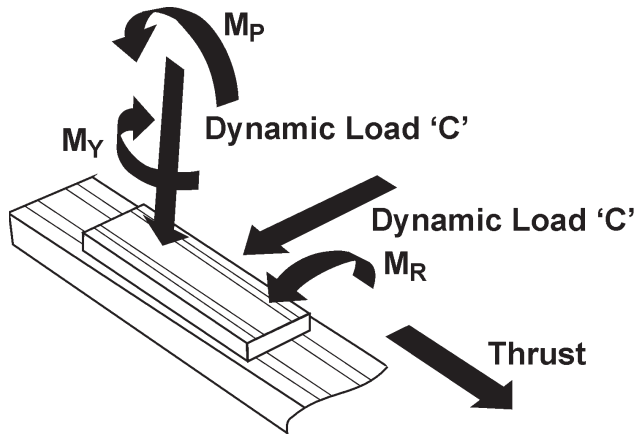


	DIMENSIONS															CARRIAGE LENGTH	
ACTUATOR	A	B	C	D	E	F	G	H	K	L	P	T	W	Y	Z	SINGLE	DOUBLE
LP15S	120	10	75.2	62	69.1	30.1	67.5	36.2	27	6.2	50.8	104.8	25.4	127	63.5	110	192
LP20S	155	12	88.53	70.8	77.1	50.8	63.5	37.8	36.6	6.5	60.3	143	25.4	84	63.5	110	192

O.A.L. = "K" + (2 \* 38.1) + Stroke + Carriage Length

# HOW TO SPECIFY

## SPECIFICATIONS



LINEAR ACTUATOR	EXTRUSION	
	MOMENT OF INERTIA	
	I <sub>x</sub> (cm <sup>4</sup> )	I <sub>y</sub> (cm <sup>4</sup> )
LP15S	59	423
LP20S	110	1014

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

LINEAR ACTUATOR	LEAD CONSTANT (mm/rev.)	END BEARING CAPACITY		SCREW CAPACITY	
		DYNAMIC LOAD N (lbs)	STATIC LOAD N (lbs)	DYNAMIC LOAD N (lbs)	STATIC LOAD N (lbs)
LP15S	5	12,400 (2790)	7650 (1720)	5100 (1146)	10,500 (2360)
	10			5100 (1146)	10500 (2360)
	16			4300 (966)	10,200 (2293)
LP20S	5	21,200 (4770)	13,400 (3010)	6200 (1394)	14,700 (3305)
	10			10,600 (2383)	22,700 (5103)
	20			6200 (1394)	14,700 (3305)
	50			13,000 (2923)	24,600 (5530)

LINEAR ACTUATOR	CARRIAGE LENGTH (mm)	DYNAMIC LOAD CAPACITY N (lbs)	DYNAMIC MOMENT CAPACITY		
			ROLL M <sub>R</sub> NM (in-lbs)	PITCH M <sub>P</sub> NM (in-lbs)	YAW M <sub>Y</sub> NM (in-lbs)
LP15S	110	20,405 (4587)	260 (2301)	70 (620)	70 (620)
	192	40,810 (9174)	420 (3717)	500 (4425)	500 (4425)
LP20S	110	32,373 (7277)	530 (4691)	130 (1151)	130 (1151)
	192	64,746 (14,555)	1060 (9382)	1475 (13,055)	1475 (13,055)

### Inertia (lb-in-sec<sup>2</sup>):

LP15S Actuator - A Carriage,  $J = (1.0 + \text{Stroke mm} * 0.001) * 10^4 * 8.85$

LP15S Actuator - B Carriage,  $J = (1.5 + \text{Stroke mm} * 0.001) * 10^4 * 8.85$

LP20S Actuator - A Carriage,  $J = (2 + \text{Stroke mm} * 0.001) * 10^4 * 8.85$

LP20S Actuator - B Carriage,  $J = (3 + \text{Stroke mm} * 0.001) * 10^4 * 8.85$

### Weight:

LP15S = 2kgs + (0.01 kgs/mm)

LP20S = 3kgs + (0.019 kgs/mm)

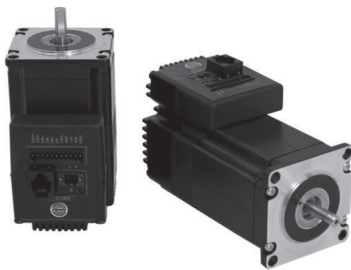
## MOTORS AND DRIVES

Bimba motors are available to use as the rotary drive mechanism of the LP15S/20S 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.**

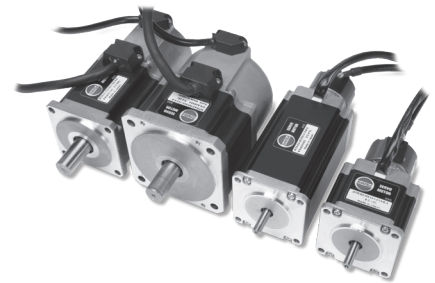
*\*Contact Bimba's Customer Service team for help in crossing your motor to a Bimba motor.*



INTELLIMOTOR®  
ITM-23Q-2-EIP-E-M12



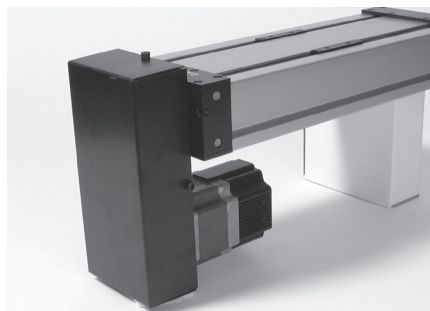
AC STEPPER MOTOR  
MTR-AC23T-753-S



AC SERVO MOTORS

## 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.



BIMBA REVERSE PARALLEL REDUCTION MOUNTS



# HOW TO ACCESSORIZE

## LINEAR SCALE

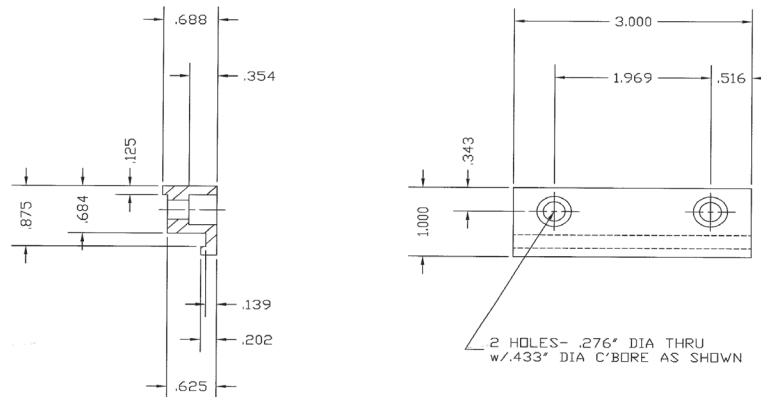
In extreme cases where precision beyond the normal tight accuracy of the LP15S/20S is desired, Bimba offers external Linear Scales. They are capable of providing extended position precision to as tight as 10µm. These scales are composed of a reading head and external scale. Linear scales are available in incremental or absolute versions which can be added to your actuator as an additional component when included in the final part number.



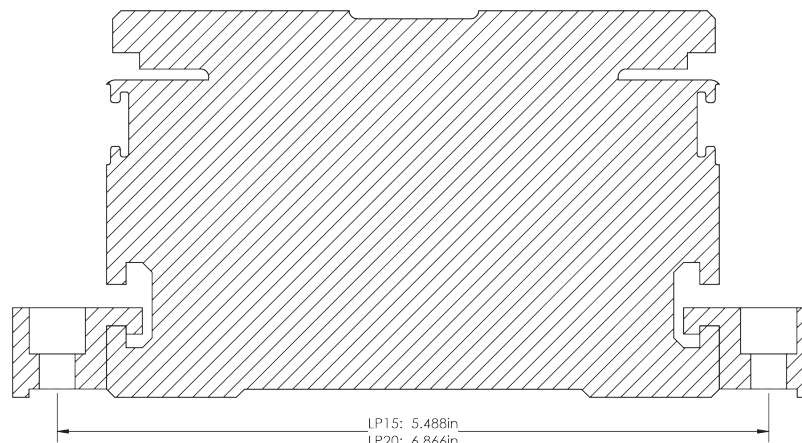
EXTERNAL LINEAR SCALE

## 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 LP15S/20S actuator, as well as all of Bimba's electric actuators.



BIMBA LP15S/20S CLAMP  
CL-80-39



LP15S/20S CLAMP DRAWING

# HOW TO ORDER

The model numbers of the LP15S and LP20S Series rodless actuators 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 LP15S unit with a 500mm stroke, standard drive shaft, and additional options is shown below.

CARRIAGE			
Carriage Type	Number of Bearing Blocks	Carriage Length	
		LP15S	LP20S
A	2	110	110
B	4	192	192

DRIVE
SD Standard Drive

SCALE*
N None
L Left
R Right

DISTANCE
XXXX (mm)
110-1340mm

KEYWAY
Y Yes
N No

LP15S

A

0500

SD

05

N

1

1000

00

N

P0

ACTUATOR
LP15S
LP20S

STROKE
XXXX (mm)

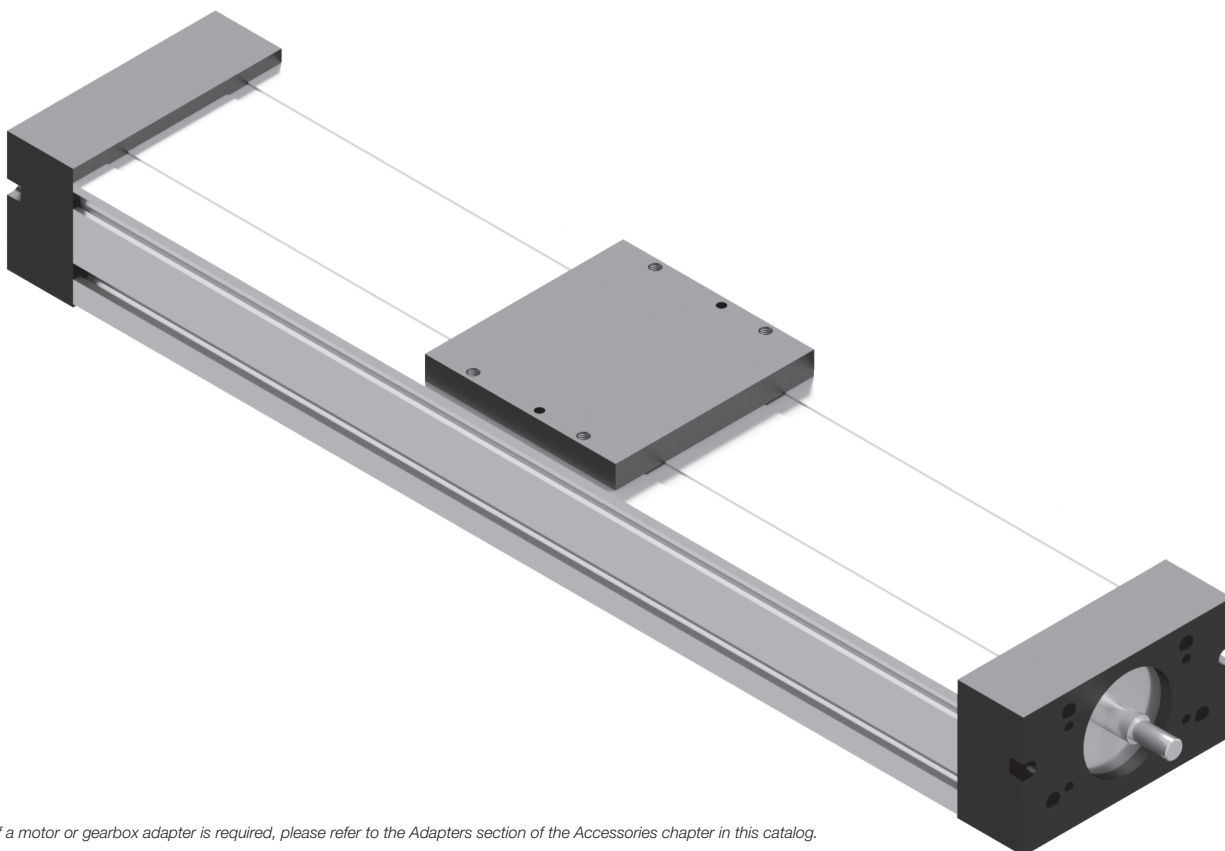
LEAD
05 5mm
10 10mm
16 16mm (15S only)
20 20mm (20S only)

EXTRA CARRIAGES
N None
1 1 Extra
2 2 Extra

PROTECTION
00 Standard
Z1 Corrosion-Resistant
SS Stainless Steel

PURGE PORT*
P0 None
PL Left
PR Right
PB Both

\* 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 LP15S Series electric actuators are repairable. A list of the individual components is given below that together make up the LP15S electric actuator.

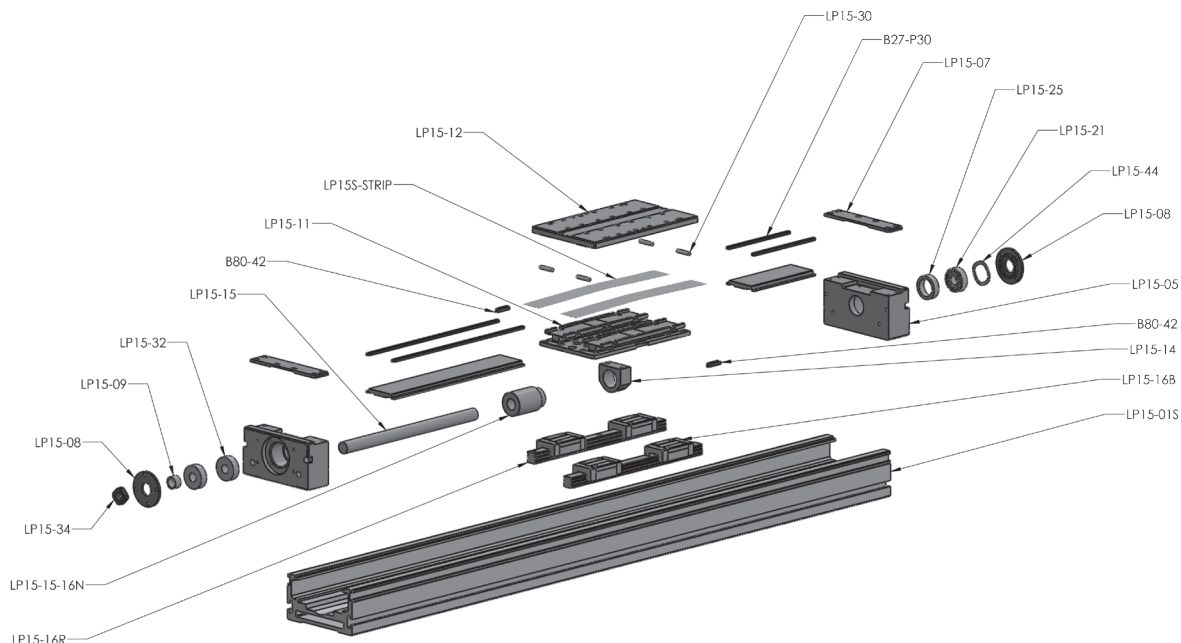
Please use the linear actuator serial number located at the drive end for all inquiries, along with the original purchase order number (if available). Describe the part required along with part number below. Contact Bimba Customer Service at 800-442-4622 (800-44-BIMBA) or e-mail CS@bimba.com.

## LP15S STANDARD DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	LP15-01	Extrusion - Body
1	LP15-03	Extrusion - Cover
2	LP15-05	Head End Plate
2	LP15-07	End Cover
2	LP15-08	Bearing Retainer
1	LP15-09	Bearing Spacer
1	LP15-13	Single Carriage (bottom)
2	LP20S-13S	Sealing Strip
1	LP15-14	Ballscrew Retainer
1	LP15-15-10	Ballscrew
1	LP15-15-10N	Ball Nut
2	LP15-16R	Rail
2	LP15-16B	Bearing Blocks
2	B27-P30	Magnets
1	LP15-10	Single Carriage (top)
2	LP15-32	Bearing Thrust
1	LP15-21	Bearing Support
1	LP15-34	Lock Nut
4	LP15-30	Roller Guide
2	LP15-100	Button
4	LP15-101	Plastic Setscrew
1	LP15-44	Wave Washer
1	LP15-25	End Bearing Spacer
2	B80-42	Carriage Magnets

## LP15S STANDARD DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	LP15-01	Extrusion - Body
1	LP15-03	Extrusion - Cover
2	LP15-05	Head End Plate
2	LP15-07	End Cover
2	LP15-08	Bearing Retainer
1	LP15-09	Bearing Spacer
1	LP15-11	Double Carriage (bottom)
2	LP20S-13S	Sealing Strip
1	LP15-14	Ballscrew Retainer
1	LP15-15-10	Ballscrew
1	LP15-15-10N	Ball Nut
2	LP15-16R	Rail
4	LP15-16B	Bearing Blocks
2	B27-P30	Magnets
1	LP15-12	Double Carriage (top)
2	LP15-32	Bearing Thrust
1	LP15-21	Bearing Support
1	LP15-34	Lock Nut
4	LP15-30	Roller Guide
2	LP15-100	Button
4	LP15-101	Plastic Setscrew
1	LP15-44	Wave Washer
1	LP15-25	End Bearing Spacer
2	B80-42	Carriage Magnets





Bimba LP20S Series electric actuators are repairable. A list of the individual components is given below that together make up the LP20S electric actuator.

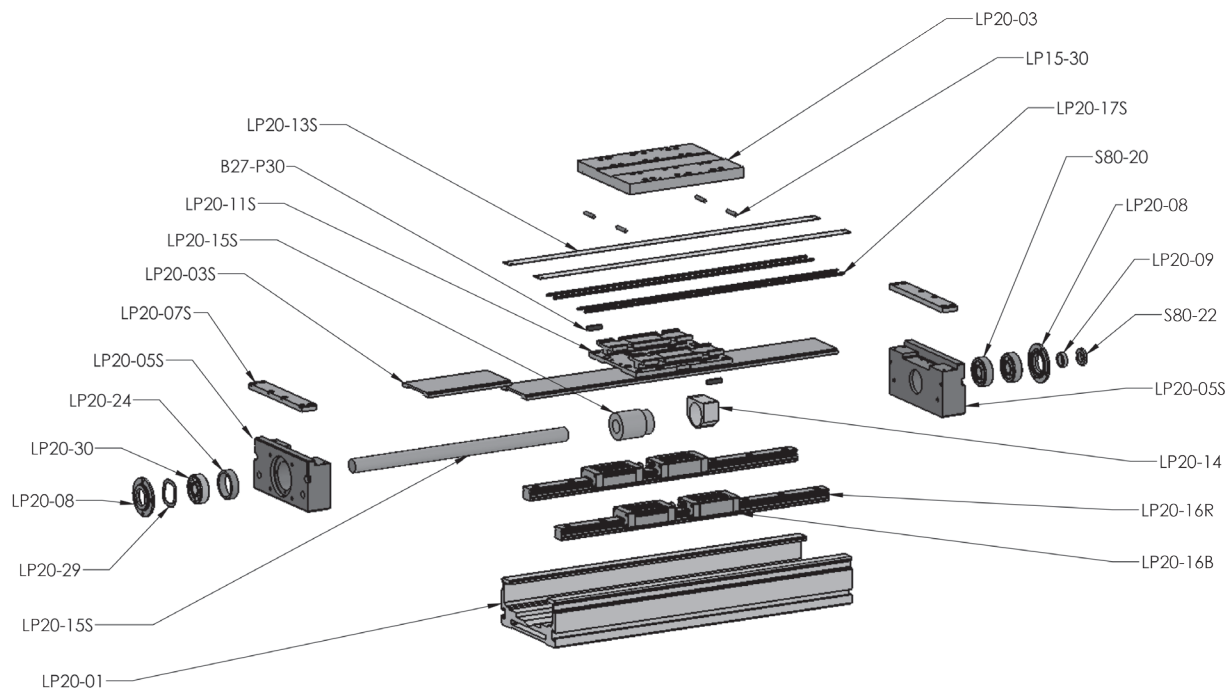
Please use the linear actuator serial number located at the drive end for all inquiries, along with the original purchase order number (if available). Describe the part required along with part number below. Contact Bimba Customer Service at 800-442-4622 (800-44-BIMBA) or e-mail CS@bimba.com.

## LP20S STANDARD DRIVE (A CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	LP20-01	Extrusion - Body
1	LP20-03	Extrusion - Cover
2	LP20-05S	Head End Plate
2	LP20-07S	Top Cover
2	LP20-08	Bearing Retainer
1	LP20-09	Bearing Spacer
1	LP20-10S	Single Carriage (bottom)
2	LP20S-13S	Sealing Strip
1	S80-13B_Rev00	Ball Nut Clamp
1	S80-04-10	Ballscrew
1	S80-04-10N	Ball Nut
2	LP20-16R	Rail
2	LP20-16B	Bearing Blocks
2	B27-P30	Magnets
1	LP20-28S	Single Carriage (top)
2	S80-20	Bearing Thrust
1	S80-22	Lock Nut
1	S80-24	Retainer Ring
4	LP15-30	Roller
1	LP20-30	Bearing Support
1	LP20-29	Spring Washer
1	LP20-24	End Bearing Spacer

## LP20S STANDARD DRIVE (B CARRIAGE)

QUANTITY	PART NO.	PART DESCRIPTION
1	LP20-01	Extrusion - Body
1	LP20-03	Extrusion - Cover
2	LP20-05S	Head End Plate
2	LP20-07S	Top Cover
2	LP20-08	Bearing Retainer
1	LP20-09	Bearing Spacer
1	LP20-11S	Double Carriage (bottom)
2	LP20S-13S	Sealing Strip
1	S80-13B_Rev00	Ball Nut Clamp
1	S80-04-10	Ballscrew
1	S80-04-10N	Ball Nut
2	LP20-16R	Rail
4	LP20-16B	Bearing Blocks
2	B27-P30	Magnets
1	LP20-21S	Double Carriage (top)
2	S80-20	Bearing Thrust
1	S80-22	Lock Nut
1	S80-24	Retainer Ring
4	LP15-30	Roller
1	LP20-30	Bearing Support
1	LP20-29	Spring Washer
1	LP20-24	End Bearing Spacer



# HOW TO CUSTOMIZE

## SWITCHES

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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

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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

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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

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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

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

For further customization, contact the factory.