

INTELLIAXIS®

LINEAR

ROBOTS

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INTELLIAXIS™ LINEAR ROBOTS

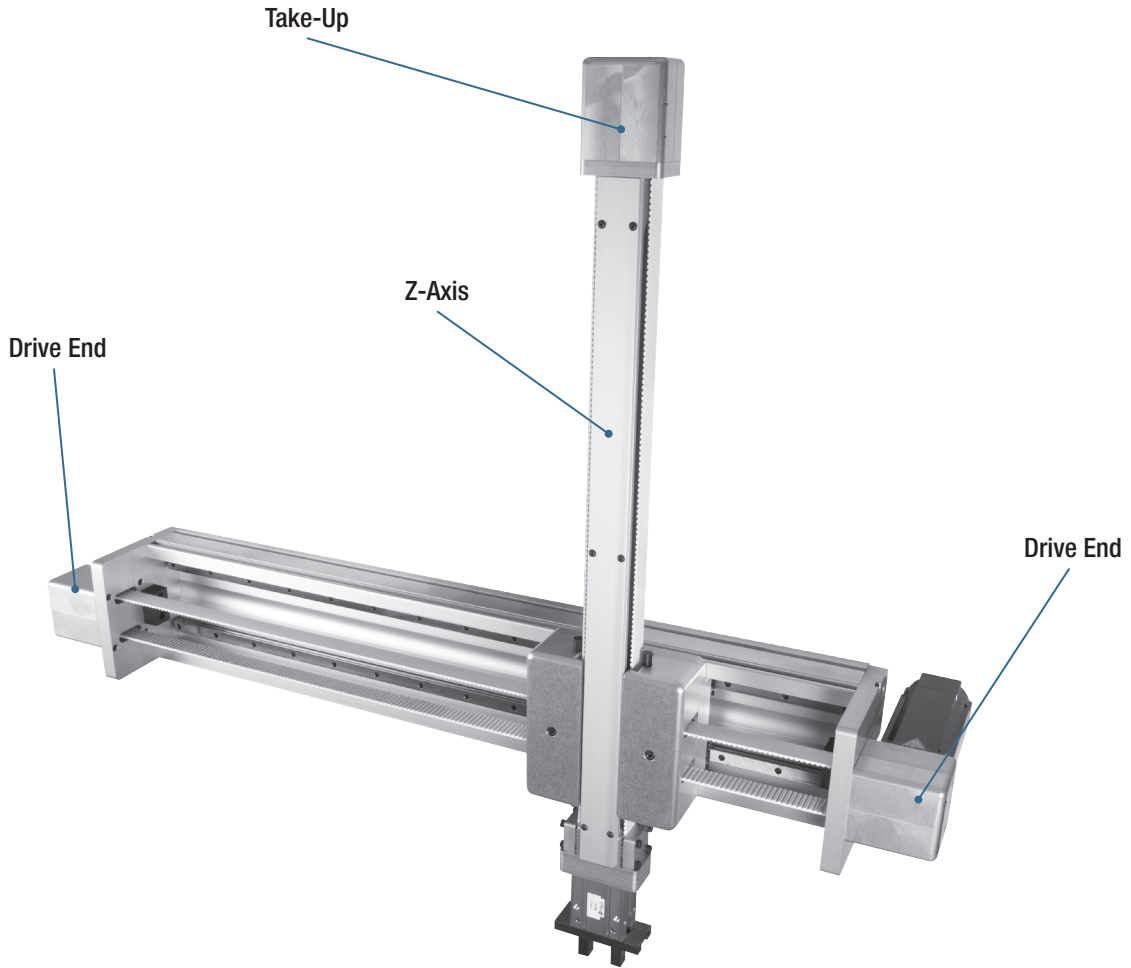


Bimba's multi-axis HSXY and HSXZ electric belt drive actuators offer two-axis linear motion control using a unique single belt transport system. The single belt system serpentine around both the X- and Z- (or Y-) axis in such a way that it eliminates the need for a motor in the Z- or Y-axis while using two coordinated motors in the X-axis. These configurations mean coordinated control for complex motion profiles including circles, ellipses, sine waves, and more.

The HSXY/Z offers high thrust capability with high speed performance via a robust belt construction. Sharing many of the same components as Bimba's flagship B80/B110 actuator family, the HSXY/Z offers long durability and performance all in a unique design. No motor in the Z-axis leads to reduced weight, which in turn leads to less overall Z-axis load and reduced X-axis motor size. The thrust and torque of both X-axis motors converge to provide twice the thrust of a single motor.

The many features and benefits found in the standard HSXY/Z offer you the added convenience of a streamlined multi-axis solution that looks great and performs even better. Consider a Bimba HSXY/Z for your next multi-axis application.

PRODUCT FEATURES



FEATURES AND BENEFITS

High Precision Steel Reinforced Belt

- Arc-belt power design (80)
- Reduced noise and vibration
- Zero backlash
- Self-aligning
- No cogging
- Smooth motion; quiet
- Ideal for high speed applications
- Highest thrust per unit size
- High precision to 0.001"
- Lengths up to 20'
- Outstanding repeatability

Square Aluminum Extrusion:

- Heavy duty, stronger aluminum extrusion
- 25% stronger extrusion
- Supports stops and bearings
- Provides better fit in tight applications
- 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

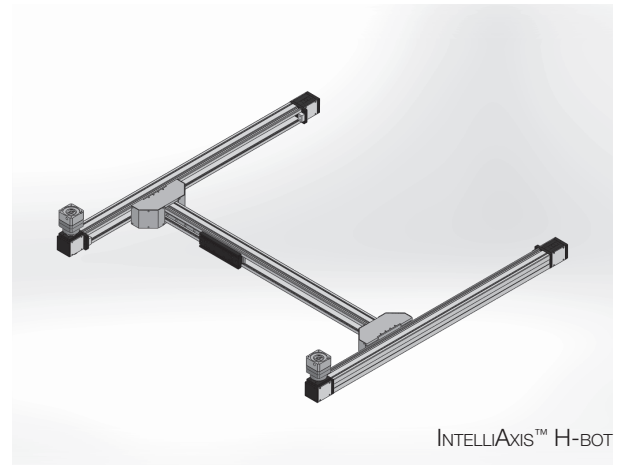
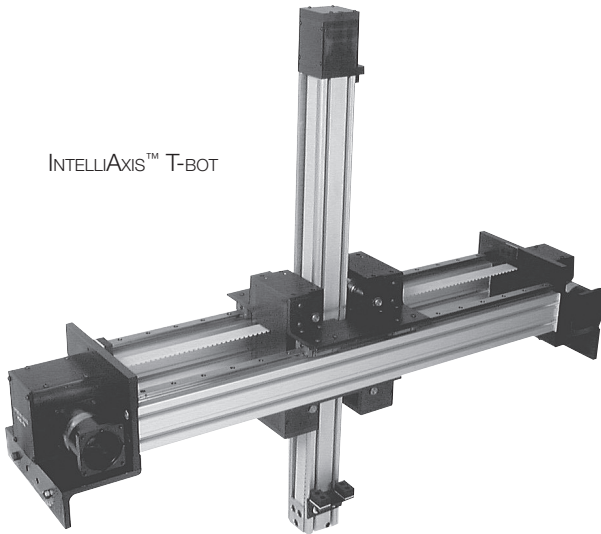


HSXY/Z

The Bimba HSXY and HSXZ actuators use a unique two-axis system for either the X-Z or X-Y motion application. The unit features a single continuous belt operated in a coordinated fashion to provide motion in both axes. The single continuous belt winds around the two axes much like an automobile serpentine belt.

Both motors are stationary, eliminating cable tracks and expensive flex cable from the system. Having the two motors in the X-axis eliminates overall weight of the carried axis, resulting in a lighter carried load. The smaller load will require a smaller overall motor selection since the torque of both motors is shared and thus doubles the available torque. A smaller motor selection results in less cost, less energy, and fits easier within a designated installation envelope. The final multi-axis construction is aesthetically pleasing and provides a natural, non-obtrusive install.

INTELLIAXIS™ T-BOT



INTELLIAXIS™ H-BOT

MATERIALS OF CONSTRUCTION

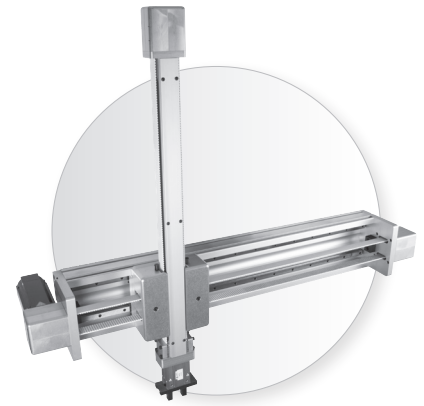
Carriage:	Aluminum
Drive Ends:	Aluminum
Belt:	Steel Reinforced Polyurethane Belt
Extrusion:	Aluminum

APPLICATION IDEAS

- Pick & Place
- Sorting
- Loading
- Pressing
- Stacking
- Insertion
- Parts Transfer
- Machine Tool
- Assembly

TARGET APPLICATIONS

The HSXY and HSXZ are intended for medium and heavy duty two-axis industrial applications that require flexible motion within a two-dimensional plane. When your application calls for long X-Y or X-Z distance, high speed motion with robust load, and moment loading capacity, the HSXY/Z Series provides an optimal solution.



With capability that allows for up to a 20' x 10' range of motion with up to 562 lbs (~2500N) and speed capability in the 5m/sec (~200"/sec) range, the HSXY/Z Series offers you a canned solution that also offers you maximum value.

For applications that call for force and load capability that mimics a pneumatic solution and offers a more adaptable solution that can grow with your motion needs, Bimba electric actuators provide the interchangeable solution. Changing alongside your business in an easy-to-use, long-lasting, and tough electric actuator that exceeds the competition in performance, value, and life, the HSXY/Z Series is the best two-axis electric actuator available today.

DRIVE OPTIONS

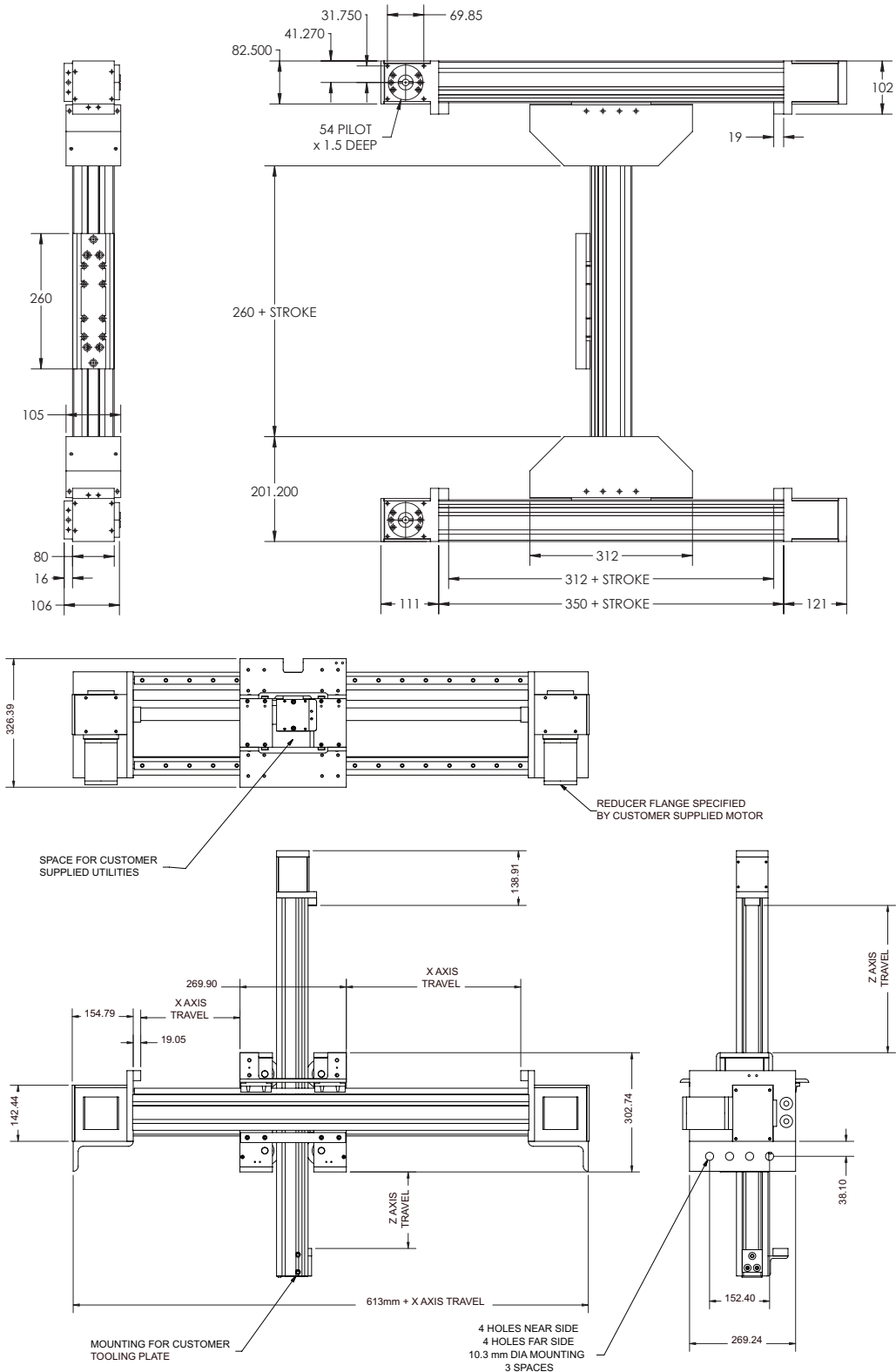
With two drive interfaces to select from—either the standard EZ Input shaft or our integral reducer drive—you're able to select the option that works best for you. The wide variety of Bimba stepper and servo motors available to choose from makes it easy to configure an electric actuator that best meets your needs. High load and thrust applications become an afterthought when adding the optional reducer drive option that, when coupled with a servo motor, provides the necessary torque to move high load applications according to the needs of your machine or process.

ADVANTAGES

FEATURE	ADVANTAGE	BENEFIT
H-Bot and T-Bot construction	One drive belt serpentine around both axes; no Y motor (or Z) required	Reduced weight of carried axis improves loading capability; high stiffness leads to enhanced precision; motor torque doubled in Z-direction
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 and improve inertia matching with an aesthetically pleasing, cost-effective solution
ARC-Power Belt	25% higher thrust leads to higher loading capacity	Ballscrew type thrust with belt drive speed ability

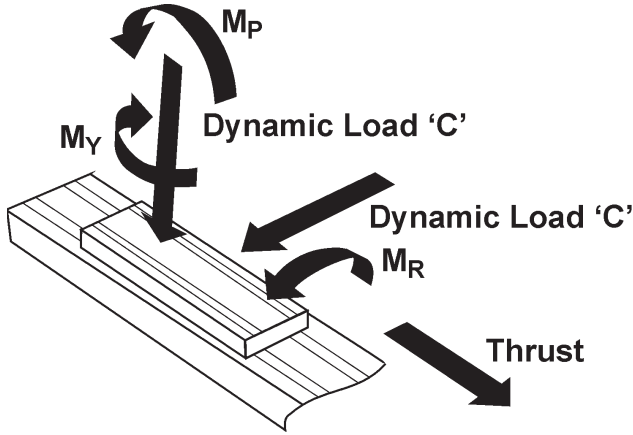
DIMENSIONS

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



HOW TO SPECIFY

SPECIFICATIONS



LINEAR ACTUATOR	EXTRUSION	
	MOMENT OF INERTIA	
	I _x (cm ⁴)	I _y (cm ⁴)
HSXZ-80 Z-Axis	146	219
HSXZ-80 X-Axis	643	66
HSXZ-15 Z-Axis	8	13
HSXZ-15 X-Axis	982	102

Straightness 0.0125" per foot per length
Twist: 1/4" per foot, 3" maximum per 6mm length

LINEAR ACTUATOR	LEAD CONSTANT (mm/rev.)	MAXIMUM INPUT TORQUE NM	BELT	
			MAXIMUM FORCE N (lbs)	ELASTIC LIMIT N (lbs)
HSXZ-80	360	290	2500 (562)	5000 (1124)
HSXZ-15	161	22	875 (197)	1944 (437)
HSXY-80	200	90	3750 (843)	7500 (1686)

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)
HSXZ80 Z-Axis	260	30412 (6835)	600 (5300)	1400 (12390)	1400 (12390)
HSXZ80 X-Axis	265	45000 (10116)	TO SUIT		
HSXZ-15 Z-Axis	165	9960 (2239)	100 (885)	172 (1522)	144 (1275)
HSXZ-15 X-Axis	165	30560 (6870)	TO SUIT		
HSXY-80 (A)	190	21000 (4720)	310 (2745)	270 (2390)	270 (2390)
HSXY-80 (B)	260	42000 (9440)	620 (5487)	1400 (12390)	1400 (12390)

Inertia (lb-in-sec²):

Z-Axis Actuator - $J=(23 + \text{Stroke mm} * 0.01) * 10^{-4} * 3417$

X-Axis Actuator - $J=(35 + \text{Stroke mm} * 0.02) * 10^{-4} * 3417$

Weight:

Z-Axis = 9kgs + (0.0114 kgs/mm)

X-Axis = 16kgs + (0.0195 kgs/mm)

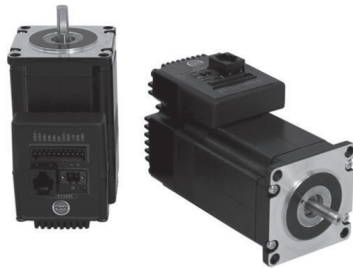
MOTORS AND DRIVES

Bimba motors are available to use as the rotary drive mechanism of the HSXY/Z 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.

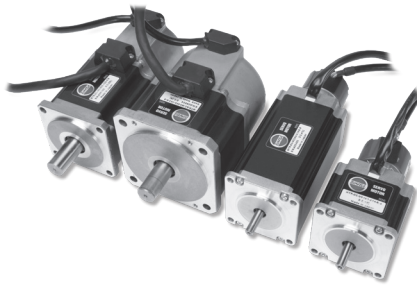
**Contact Bimba's Customer Service team for help in crossing your motor to a Bimba motor.*



INTELLIMOTOR®
ITM-23Q-2-EIP-E-M12



AC STEPPER MOTOR
MTR-AC23T-753-S



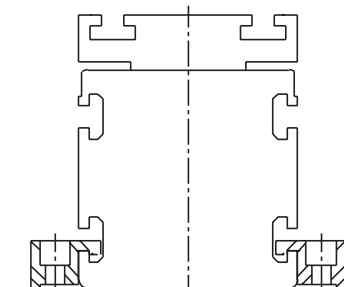
AC SERVO MOTOR



BIMBA IQ® STEPPER

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 HSXY/Z actuator, as well as all of Bimba's electric actuators.



HSXY/XZ CLAMP DRAWING

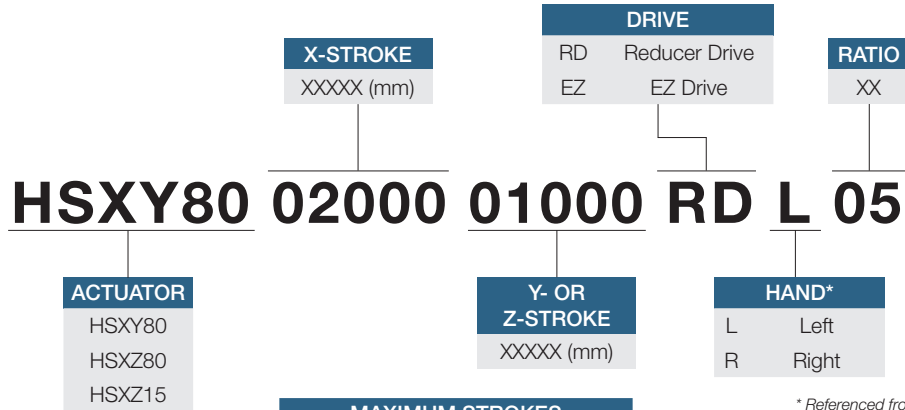


HSXY/XZ CLAMP DRAWING

HOW TO ORDER

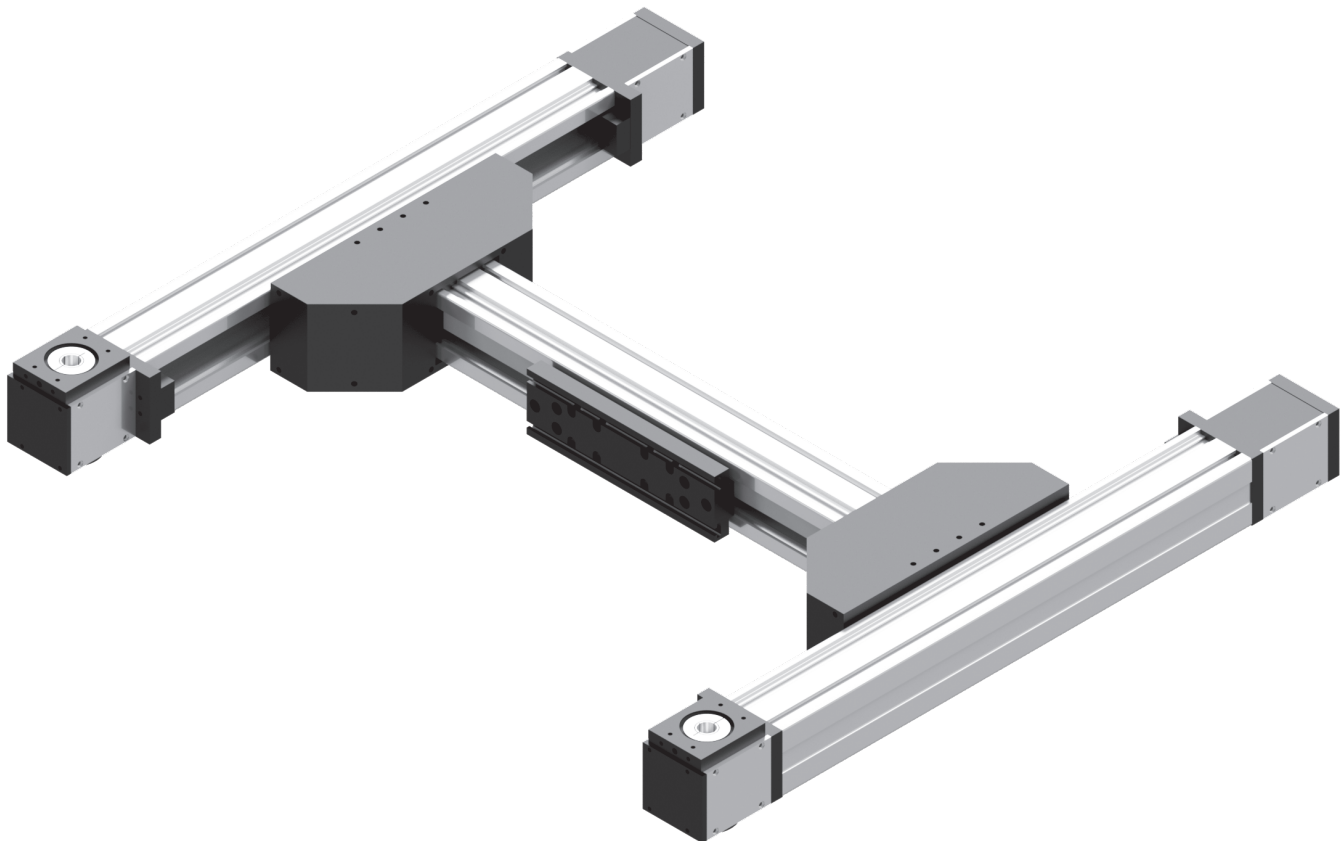
The model numbers of HSXY/Z Series two-axis belt driven actuators consist of an alphanumeric cluster designating product type, X-stroke, Z-stroke, drive type, drive location, gear ratio (optional), external scale (optional), and other optional components that together make up the complete part number to use in ordering. Use the ordering information below to build a valid part number.

An example of a basic HSXY80 unit with an X-stroke of 2000mm, Y-stroke of 1000mm, and reducer drive is shown below.



MAXIMUM STROKES		
Actuator	X-Axis	Y- or Z-Axis
HSXZ80	4500mm	3300mm
HSXZ15	2000mm	2000mm
HSXY80	2000mm	2000mm

* 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.

Bimba HSXY80 Series multi-axis electric actuators are repairable. The quantities below represent the total quantity in the system, not the order quantities.

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.

HSXY80 (TAKE-UP END)

QUANTITY	PART NO.	PART DESCRIPTION
2	B80-21	Take-up End
2	B80-22	Take-up End
2	B80-23	Take-up End Plate
4	B80-24	Covers
2	B80-25	Take-up Pulley
2	B80-26	Take-up Shaft
4	B80-27	Slide Bars
4	B80-44	Bearing
4	S110-24	Retainer
1	B80-01Y	Extrusion
1	B80-02Y	Linear Rail
2	B80-01X	Extrusion
2	B80-02X	Linear Rail
4	B110-42	Bumper
1	B110-03	Belt
2	B110-04	Belt Clamp
4	B80-20	End Plate
1	B80-41	Magnet Bracket
4	B80-42	Magnet

HSXY80 A-CARRIAGE (TAKE-UP END)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-30-B	Carriage
1	B80-05	Bearing

HSXY80 B-CARRIAGE, Y-AXIS (TAKE-UP END)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-31-B	Carriage
2	B80-05	Bearing

HSXY80 B-CARRIAGE, X-AXIS (TAKE-UP END)

QUANTITY	PART NO.	PART DESCRIPTION
2	B80-131-Z	Dual XY Carriage
4	B80-05	Bearing
8	B80-126	Idler Shaft
4	B80-127	Support Plate
16	B80-128	Spacer
4	B80-129	Guard
8	B80-133-D	Idler Pulley

HOW TO REPAIR

Bimba HSXZ80 Series multi-axis electric actuators are repairable. A list of the individual components is given below that together make up the HSXZ electric actuator. The quantities below represent the total quantity in the system, not the order quantities.

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.

HSXZ80 (Z-AXIS SYSTEM)

QUANTITY	PART NO.	PART DESCRIPTION
1	B80-320	End Plate
2	B80-321	Take-up End
1	B80-323	Take-up End Plate
1	HSXZ-05	Take-up Pulley
1	B80-26	Take-up Shaft
2	B80-27	Slide Bars
10	B80-44	Bearing
4	B110-42	Bumper
2	S110-24	Retainer
2	HSXZ-06	Clamp
1	HSXZ-10	Clamp
1	HSXZ-27	Stop
1	B80-01-XXX	Z-Axis Extrusion
1	LP20-16R-XXX	Linear Rail (Z-Axis)
1	HSXZ-03-XXX	Belt
2	B110-04	Belt Clamp
1	HSXZ-17	Carriage
4	HSXZ-18	Bottom Plate
2	HSXZ-21 ITEM A	Carriage Side Plate
2	HSXZ-21 ITEM B	Carriage Side Plate
2	HSXZ-22	Guide Plate
2	HSXZ-23	Tie Bar
2	LP20-16B	Bearing
16	S110-24	Retainer

HSXZ80 (X-AXIS SYSTEM)

QUANTITY	PART NO.	PART DESCRIPTION
2	B80-09	Adapter Reducer
2	B80-17	Retainer
1	HSXZ-08	Angle Support Carriage
1	HSXZ-09	Angle Support Carriage
4	HSXZ-14	Drive Side Plate
2	HSXZ-15	Drive Support Angle
2	HSXZ-16	Drive End Plate
2	HSXZ-80-19	Drive Pulley
1	HSXZ-20 ITEM A	End Plate
1	HSXZ-20 ITEM B	End Plate
2	HSXZ-24	Cover
4	HSXZ-25	Idler Roller
4	HSXZ-26	Idler Shaft
2	B80-40	Bearing
2	B110-43	Transtorque
2	B110-42	Bumper
2	HSXZ-12	Reducer
2	LP20-16R-XXX	Linear Rail
4	HSXZ-28	Linear Bearing
2	IPI 3842-990-300 (45 X 90H)	Extrusion
8	IPI 8981-020-302	Bolts for Extrusion

HSXZ80 (EZ MOUNT)

QUANTITY	PART NO.	PART DESCRIPTION
2	HSXZ80-114	Drive Plate
2	HSXZ80-118	Drive Shaft

NOTE: XXX represents the length of the extrusion; it does not represent the stroke.

Bimba HSXZ15 Series multi-axis electric actuators are repairable. A list of the individual components is given below that together make up the HSXZ electric actuator. The quantities below represent the total quantity in the system, not the order quantities.

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.

HSXZ15 (XZ-AXIS)

QUANTITY	PART NO.	PART DESCRIPTION
2	LP20-01-XXX	Extrusion (X-Axis)
2	B27-P23	Clamp Collar
2	LP15-16R-XXX	Rail
4	LP15-16B	Bearings
1	HSXZ-15-002	X-Axis Bottom Carriage
1	HSXZ-15-003	Z-Axis Extrusion
2	HSXZ-15-005	Covers
2	HSXZ-15-006	Bearing Tie Plate
2	HSXZ-15-007	End Plate
4	HSXZ-15-008	Idler Rolls
2	HSXZ-15-009	Take-up Side Plates
2	HSXZ-15-010	Slide Plates
2	HSXZ-15-011	Drive Plate
2	HSXZ-15-012	EZ Drive Plate
2	HSXZ-15-013	EZ Drive Shaft
2	HSXZ-15-014	Adapter Plate for VRB042 Reducer
2	HSXZ-15-015	Belt Clamp
2	HSXZ-15-016	Belt Clamp
1	HSXZ-15-017	Take-up Shaft
1	HSXZ-15-021	Mounting Plate
1	HSXZ-15-022	Take-up Mounting Plate
1	HSXZ-15-023	Z-Axis Cover Plate
2	HSXZ-15-024	Drive Pulleys
1	HSXZ-15-025	Take-up Pulley
10	HSXZ-15-026	Take-up Bearings
1	HSXZ-15-027	Belt
4	HSXZ-15-028	Idler Shafts (1/2 Shoulder Bolts)
1	MS15-P05	Rail
2	MS15-P06	Bearings
2	HSXZ-15-029	Bumper
2	HSXZ-15-032	Drive Cover
1	HSXZ-15-030	Take-up Cover
4	HSXZ-15-031	Spacers
2	LP20-25	Bearings
4	IPI-0308-025	Bumper

LINEAR SCALE

In extreme cases where precision beyond the normal tight accuracy of the HSXY/Z 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