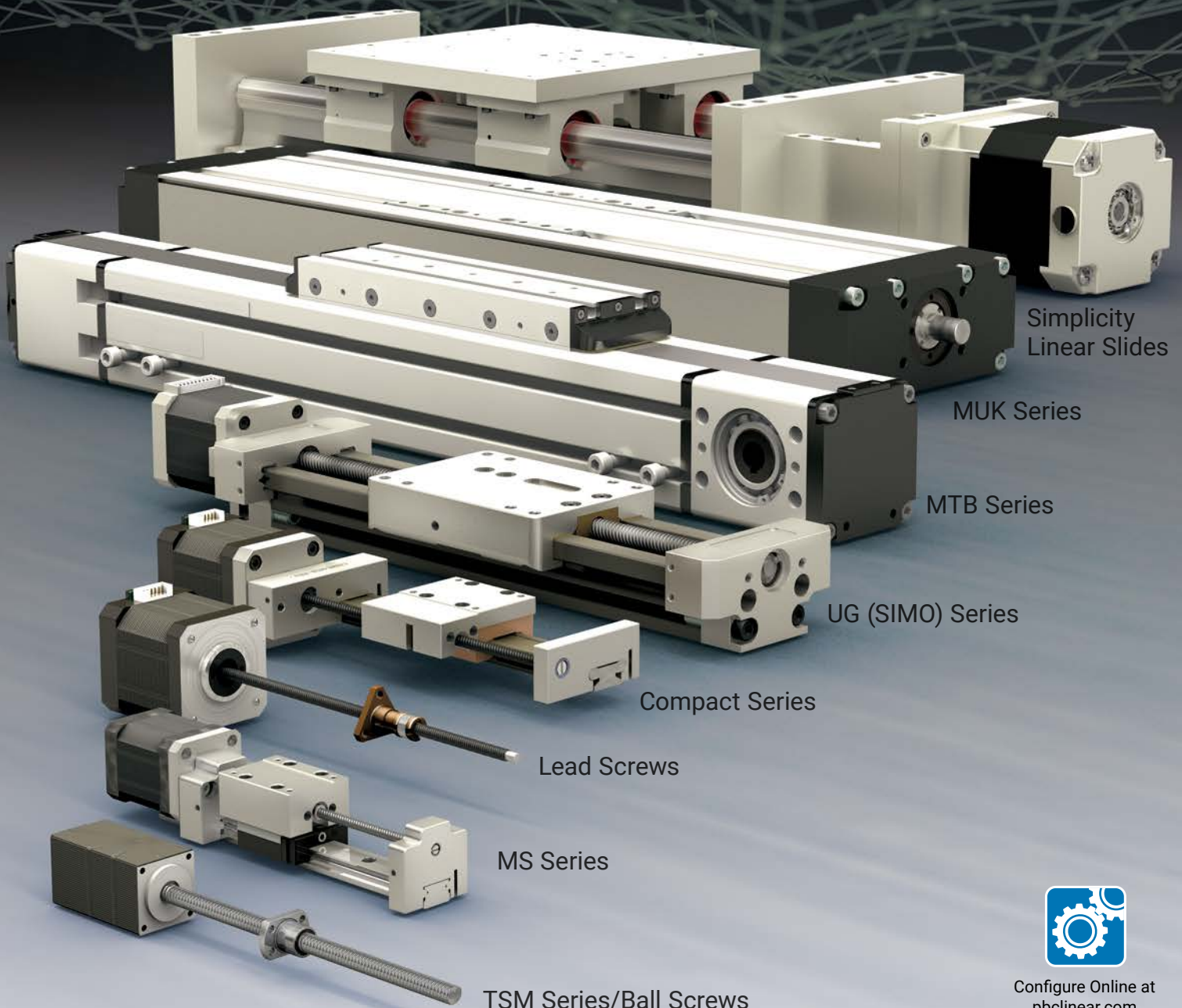




Mechatronics Enabled Actuator Applications

Precision & Industrial Mechatronics for Today's Automation



Simplicity
Linear Slides

MUK Series

MTB Series

UG (SIMO) Series

Compact Series

Lead Screws

MS Series

TSM Series/Ball Screws



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Mechatronics-Enabled Motion

Why Intelligent Integration Delivers Measurably Better Systems

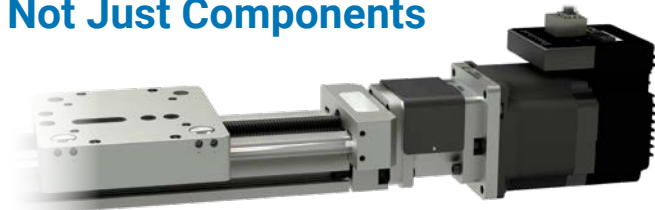
Mechatronics brings together mechanical components, drives, motors, and (when the application calls for it) integrated electronics, all engineered to work together as one system. PBC Linear has built linear motion solutions across this spectrum since 1983, starting with self-lubricating plain bearings and round-shaft technology, extending into precision lead screws and long-rail manufacturing processes, and now adding integrated motors and control electronics.



Most of the value in a linear motion system still comes from the mechanical foundation, including the bearing, the guide, the screw or belt, the rail straightness, the lubrication strategy, and the carriage stiffness.

Get those wrong and no amount of integrated electronics can compensate. Get those right and the system performs whether it's driven by a customer-supplied servo, a NEMA stepper on a motor mount, or an integrated smart motor with onboard control.

Engineered Assemblies, Not Just Components



Building a linear motion subsystem from individual components (shafts, bearings, mounts, screws, fasteners) looks straightforward on paper.

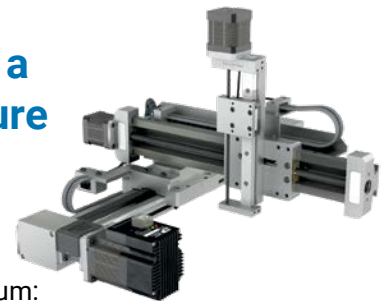
In practice, it rarely is. Specifying and procuring across multiple suppliers, machining custom mounting features, aligning components within tolerance, and validating the resulting assembly all consume engineering hours that scale poorly.



Actuators from PBC Linear arrive pre-engineered. Alignment is built in, the part count is consolidated to a single SKU, and the assembly is tested to its published specifications. For most applications, buying an engineered actuator is faster, cheaper, and more reliable than building the equivalent from components.

A Spectrum, Not a Single Architecture

Different applications need different levels of integration. PBC Linear supplies across the spectrum:



Mechanical actuators for builders who supply their own motor and control. Belt-driven and screw-driven actuators with the motor mount and coupler hardware ready for the customer's chosen drive.



Motor-ready actuators with PBC Linear-supplied NEMA stepper or servo motors, pre-mounted and coupled.



Integrated smart motor actuators, available on select configurations, with onboard drive electronics and network support (EtherNet/IP, EtherCAT, Modbus, CANopen) for distributed control architectures.

We can take you wherever you need to go on the mechanical-to-electronic spectrum and help you decide which tier is the right fit for your application.



Why Choose *PBC Linear*?

Providing Linear Solutions as an Extension of Your Team, from Initial Concept Through to Final Production.

PBC Linear has been engineering linear motion solutions since 1983. From our 200,000-sq-ft headquarters in Roscoe, Illinois, we manufacture mechanical components, drive-trains, and complete assemblies for builders across precision and industrial applications worldwide.

The PBC-Moons joint venture, founded in 2015, brought motor and drive engineering in-house, completing the mechatronics stack. Today, our in-house teams include mechanical, electrical, electronic, and software engineers, giving builders a single supplier for the full assembly.



Global production and support operate from Roscoe, Illinois (Worldwide HQ); Düsseldorf, Germany (Europe HQ); and Shanghai, China (PBC-Moons HQ).



Our 24-hour, in-house manufacturing serves customers building everything from very small pick-and-place assemblies for lab automation to heavy-duty lift systems for industrial manufacturing, with kiosks, scanners, printers, and unattended retail systems in between. If you are designing a machine that needs linear motion, bring us into the conversation early.

5 Ways We Work With You

1 Collaborative Engineering: Our applications engineers work alongside your team from the first whiteboard sketch, engaging at the engineering level, not just the procurement level.



2 Quick-Turn Prototypes: In-house machining, assembly, and motor integration mean prototypes ship in days or weeks, not months.



3 From Pilot to Production: We run pilot production in the same facility as full production, on the same equipment, with the same engineers. So what works in pilot works at scale.



4 Global Production and Supply Chain: Manufacturing in the U.S., Germany, and China, with vertical integration in Roscoe from raw aluminum and steel through finished assemblies.



5 Global Support: Engineering support and application help are available every-where our products ship, from the same engineers who design them.



Precision in the Field

Compact Multi-Axis Solutions for Bench-top Life Science Instruments

Bench-top DNA Sample Preparation Instrument Maker Custom Two-Axis Compact Series

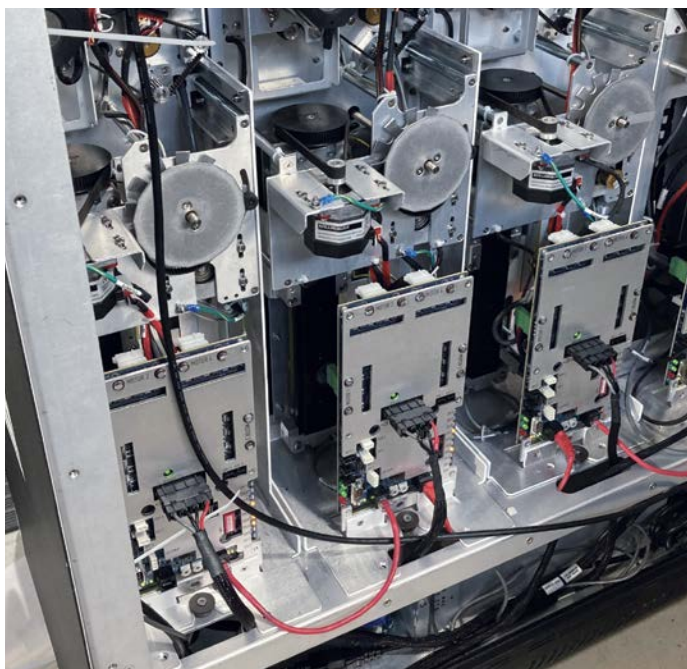
A maker of bench-top DNA sample preparation instruments needed to position an ultrasonic source above a sample for DNA shearing. It was a two-axis problem the customer initially expected to solve with two separate actuators.

PBC Linear delivered a custom two-axis Compact Series assembly as a single part number, removing one integration step from the customer's build. The relationship has grown from a single instrument platform to a second, with a third in early discussions.

PBC Linear often sees this pattern in life sciences, where engineering around customer constraints turns one-axis specifications into multi-program partnerships.



Maintenance-Free Actuation in High-Speed Document Scanning



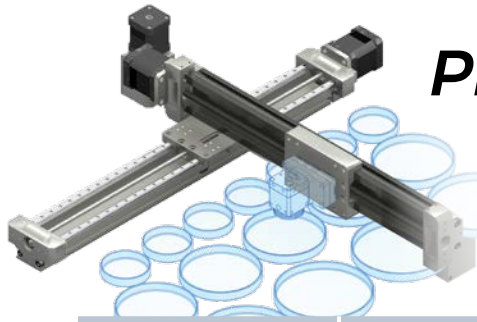
Document Scanning & Sorting OEM

UG Series with FrelonGOLD & Constant Force

A leading document scanning and sorting OEM specified PBC Linear UG Series SIMO actuators with FrelonGOLD self-lubricating bearings and Constant Force lead screws for the vertical axis of its out-sorting stations.

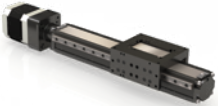
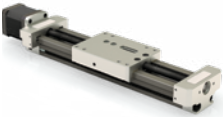
In head-to-head customer testing against a competing dry-running actuator, the PBC Linear unit surpassed 1.6 million cycles and outperformed on running clearance and vibration damping.

This is critical in both the paper-dust environment the customer designs for, and to support the customer's 10-plus-year service life target. The platform has since expanded from traditional bank and insurance document workflows into voting machines and AI training data ingestion.



Precision Mechatronics

Compact actuators for lab automation, medical devices, electronics assembly and test, scanning equipment, and agricultural automation.

Series	Cross-Section, mm	MAX Payload N (lbs)	MAX Stroke mm	Drive Details	QR Code
 Lead Screws/Ball Screws	6–16 dia.	2,180 (Thrust)	1,500	Lead/Ball Screw	
 LS Series	NEMA 08–23	1,100 (Thrust)	1,500	Lead Screw	
 LN Series (non-captive)	NEMA 08–23	1,100 (Thrust)	1,500	Lead Screw	
 LC Series (captive)	NEMA 08–23	1,100 (Thrust)	12–38	Lead Screw	
 BS Series	NEMA 08–23	1,100 (Thrust)	1,500	Ball Screw	
 MS Series	29x38 to 42x50	29–49 (6.6–11)	200	Lead Screw	
 ML Series	32x28 to 58x40	178–890 (40–200)	650	Lead Screw	
 Compact Series	23–39 System Height	1,425 (320)	920	Lead/Ball Screw	
 UG/SIMO	73x24 to 100x40	880–6,000 (200–1,350)	1,900	Lead Screw or Belt	

Scan or click any QR code for more information

Industrial in the Field

Long Travel, Moment Loads, Scanning-Grade Smoothness

Full-Body Security Scanning OEM • MTB Series

A maker of full-body scanning systems for security applications needed an actuator capable of long travel, moment-load capacity, and the motion smoothness scanning systems require for image quality.

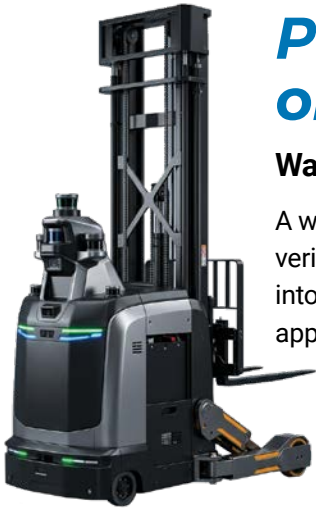
The MTB055 met all three. The customer is now collaborating with PBC Linear engineering on next-generation system designs. This is an example of how our industrial-sized actuators serve precision-grade applications when the requirement is motion quality across a long stroke.



Position Verification on Autonomous Warehouse Vehicles

Warehouse Automation OEM • UG Series

A warehouse automation OEM needed a lightweight, compact actuator to move a camera that verifies whether a storage position is empty before an autonomous vehicle loads a container into it. The customer had previously used the low-profile Redi-Rail from PBC Linear in another application and came back to PBC Linear for this build.



The UG Series delivered the compact footprint, low weight, and positional accuracy the application required. The relationship has since expanded to other applications with the same distributor and additional direct work with the OEM.

Linear Motion that Survives Glass Bottle Inspection Environments

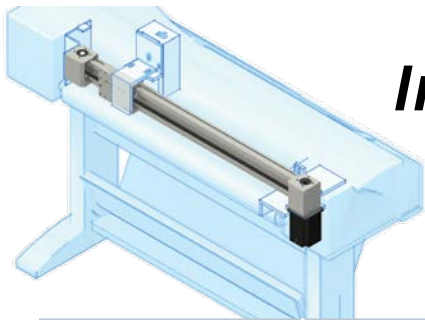
Cold-End Glass-Bottle Handling and Inspection Equipment Maker • Simplicity, Redi-Rail, Uni-Guide

A cold-end glass-bottle handling and inspection equipment manufacturer replaced ball-bearing pillow blocks and fixed-mount conveyor guides on its assembly line with PBC Linear Simplicity plain bearings, Redi-Rail vertical adjusters, and Uni-Guide camera-positioning actuators.

The result was a 40% gain in assembly throughput with the same headcount, plus equipment that tolerates the silica sand, glass fibers, and ambient contamination that destroy conventional recirculating-ball systems.

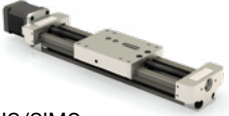
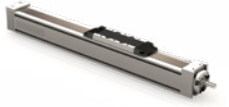
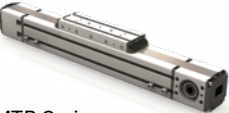
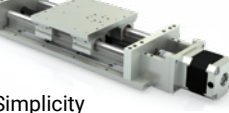
The application is a clear illustration of where plain-bearing technology outperforms ball-bearing precision.





Industrial Mechatronics

Long-stroke, high-load actuators and slides for packaging, converting, material handling, and warehouse automation.

Series	Cross-Section, mm	MAX Payload N (lb)	MAX Stroke mm	Drive Details	QR Code
 UG/SIMO	73 x 24 to 100 x 40	880–6,000 (200–1,350)	1,900	Lead Screw or Belt	
 PLA Series	55 x 55	980 (220)	2,710	Lead/Ball Screw	
 MTB Series	42 x 42 to 105 x 105	1,560–7,500 (351–1,686)	6,000	Belt	
 MTE Series	55 x 55 to 80 x 80	9,180–17,170 (2,064–3,860)	6,700	Belt	
 MTS Series	55 x 55 to 80 x 80	10,800–20,200 (2,428–4,541)	6,700	Belt	
 MUK Series	145 x 65	8,500–11,200 (1,910–2,517)	1,750	Ball Screw	
 Simplicity	153x65 to 457x187	2,028–83,400 (456–18,750)	2,440	Plain or Ball Bearing Slide	

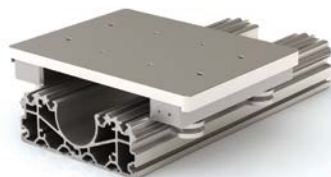
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Heavy-Duty Linear Guide Solutions

Large-Diameter Shafts



Integral-V Rail



Hevi-Rail





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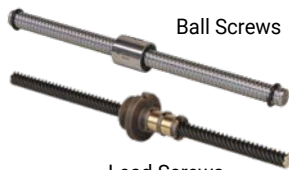
Redi-Rail



Mini-Rail



Hevi-Rail



Ball Screws

Lead Screws

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