

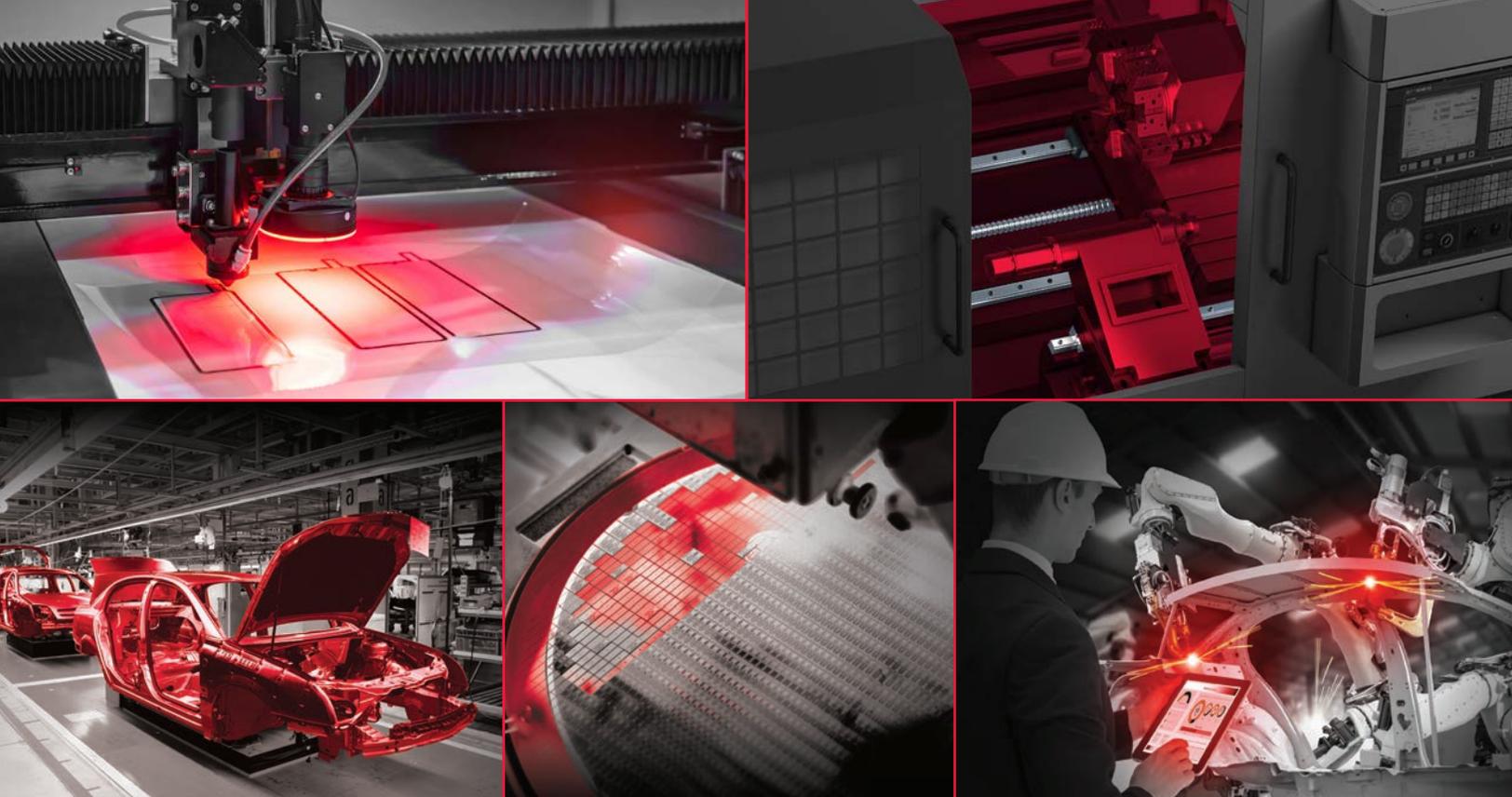


AXIS SERIES LINEAR ACTUATORS

LINEAR MOTOR AND BALL SCREW DRIVE TECHNOLOGIES



ENABLING AUTOMATION IN MOTION & CONTROL



ENABLING AUTOMATION

NSK MECHATRONIC SYSTEM SOLUTIONS

For decades, NSK has specialized in developing electromechanical solutions – integrating our precision machine components with control technology – to deliver advanced, reliable and precise motion and control.

Robotic surgery. Medical imaging. Biomedicine. Semiconductor. 3D printing. Factory automation. Our customers are vast and diverse, united by precision-critical applications and NSK's ability to achieve coherent mechatronic solutions that offer:

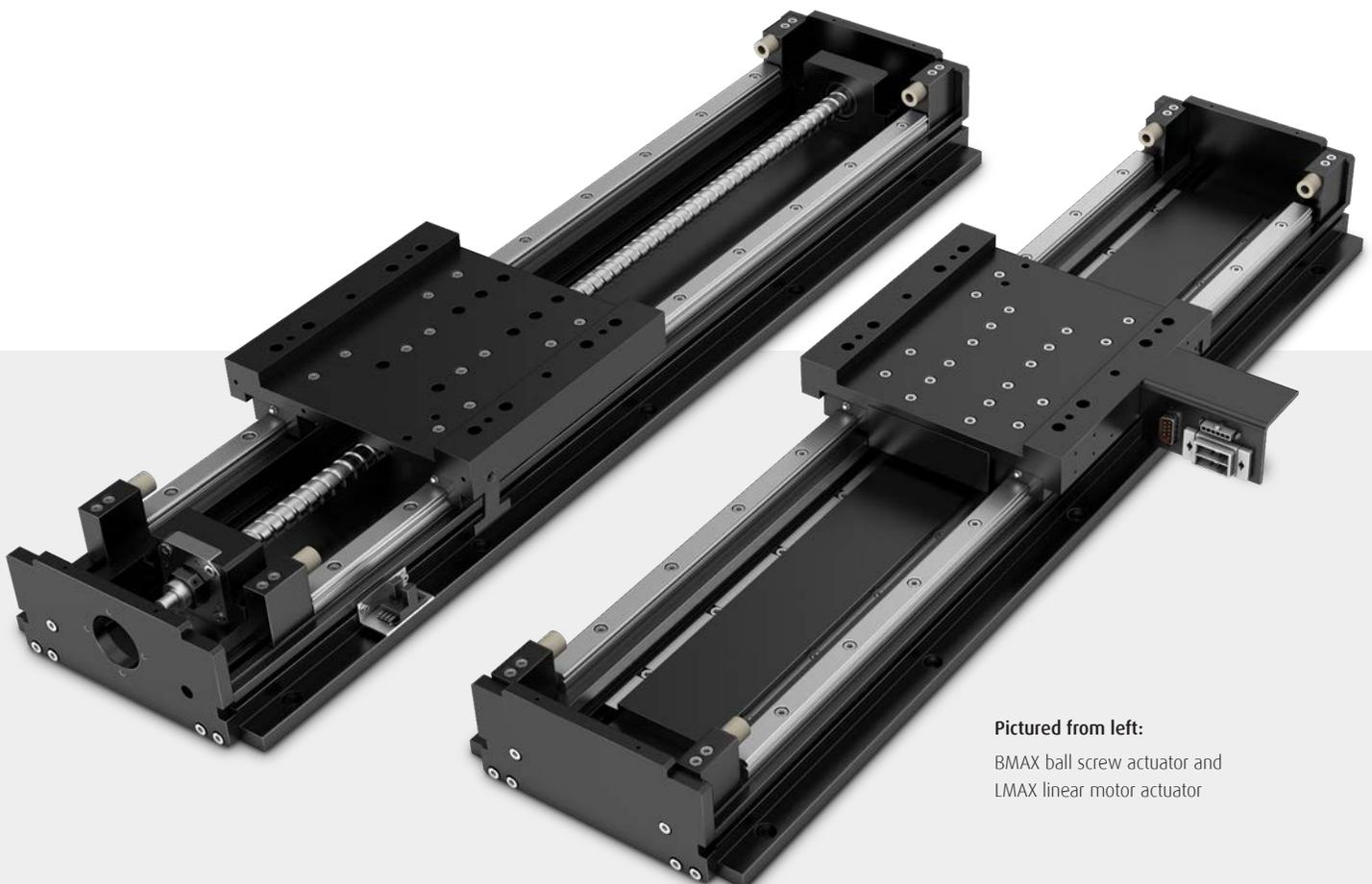
- › Augmented machine function and accuracy
- › Optimized system performance, space and life
- › Reduced costs and complexity

From complex systems to single-axis solutions, NSK delivers innovative and ideal integrated motion solutions to enable automation and accuracy in machine function, for a competitive edge to our customers.

HIGH PERFORMANCE. SIMPLE. FLEXIBLE.

For system designers seeking high capacity, high speed and ultra-precise linear indexing and positioning, NSK applies our accumulated expertise with ball screws, linear guides and support bearings into our new line of single-axis actuators: the AXIS series. Compact and sleek, yet robust, NSK's AXIS actuators are estimable workhorses that deliver seamless integration with considerable benefits including:

- › **Robust drive technology options** – ball screw or linear motor coil
- › **Flexible, open-ended integration** – a wide range of servo/stepper motor compatibility (BMAX); universal position feedback (LMAX)
- › **Net positive performance** – achieved with proven NSK precision ground ball screw and linear guide technologies
- › **Simplified installation** – multiple datum planes and counterbore holes
- › **Modular compatibility** – BMAX and LMAX designs are interchangeable and exchangeable without need for machine modification

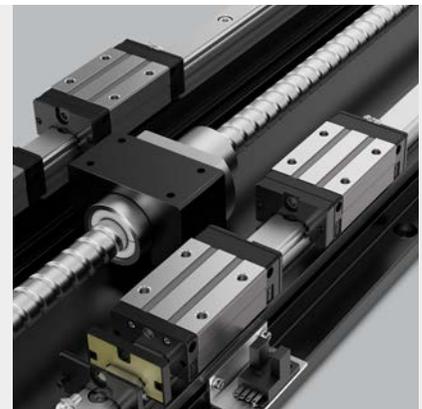


Pictured from left:
BMAX ball screw actuator and
LMAX linear motor actuator

BMAX BALL SCREW ACTUATORS

DESIGN FEATURES

- › Precision ground ball screw drive technology with C5 accuracy
- › Compatible with a wide variety of servo/stepper motors
- › Available in 175 mm and 200 mm frame widths
- › Actuator base includes multiple datum planes to facilitate highly accurate installation
- › Dimensionally interchangeable and exchangeable with LMAX series with no machine modification required
- › Featuring special design, integrated ball screw and NS-AL compact, high-load series linear ball guides; both are equipped with long-life, maintenance-free K1(-L) lubrication units
- › Optional accessories include motor wrap kits, covers, sensor kits, combination and gantry plates



Above: Precision ground ball screw drive technology with integrated NS-AL series linear guides

Actuator Type		Nominal Stroke		Ball Screw Lead	
BMAX	175	-	020	-	05

Actuator Width

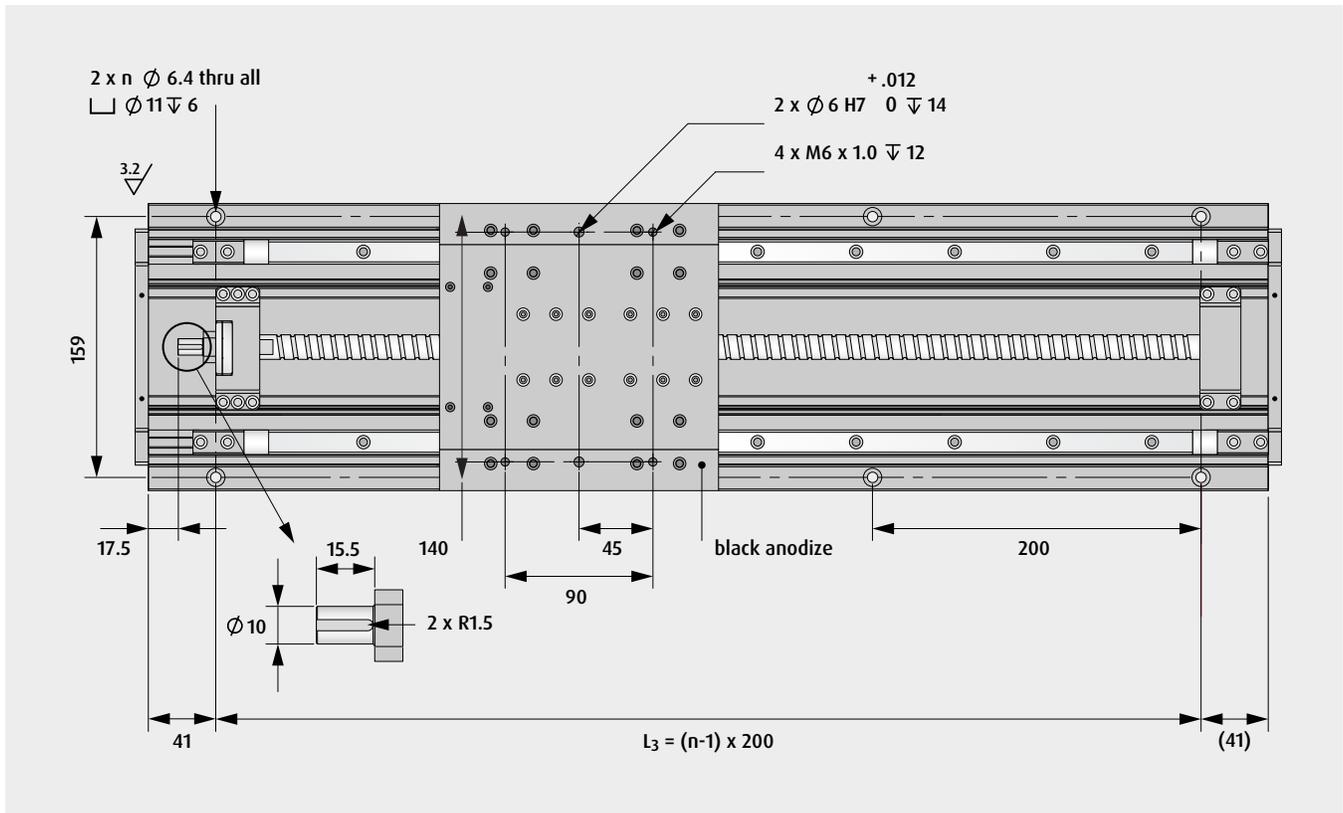
DESIGNATION	ATTRIBUTE	
Actuator type	BMAX	ball screw drive
Actuator width	175	expressed in millimeters
	200	
Nominal stroke		multiply x 10 for stroke in millimeters

DESIGNATION	ATTRIBUTE	
Ball screw lead	05	lead equals 5 millimeters
	10	lead equals 10 millimeters
	20	lead equals 20 millimeters

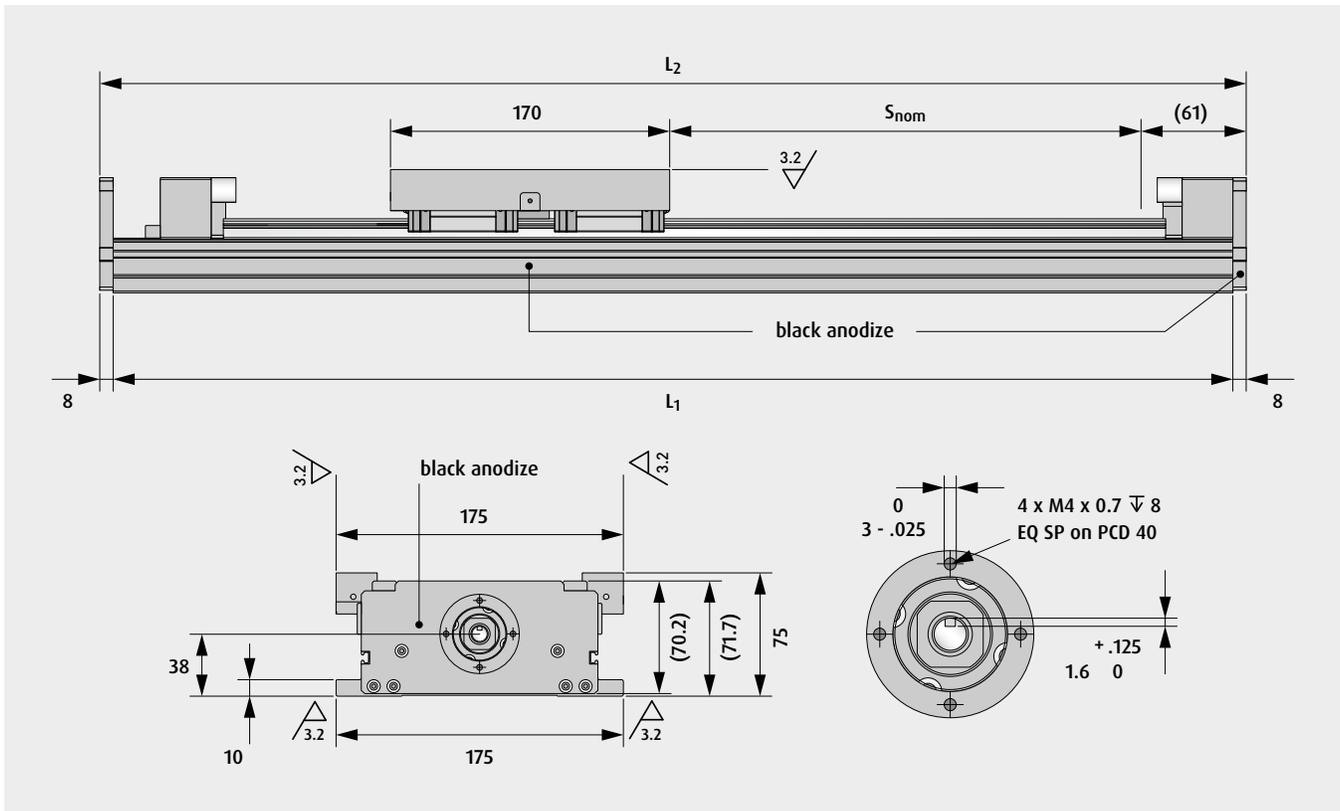
SPECIFICATIONS - BMAX175 ACTUATOR

PARAMETER	UoM	BALL SREW LEAD (MM)			PARAMETER	UoM	BALL SREW LEAD (MM)		
		5	10	20			5	10	20
Ball screw diameter	mm	15			Table mass	kg	2.2		
Maximum stroke	mm	580	980	980	Payload	kg	dependent on load & motion		
Max. speed for max. stroke	rpm	5 000	2 100	2 100	Transportable moment *	Rolling	N-m	350	
Ball screw accuracy grade		C5				Pitching	N-m	280	
Ball screw axial clearance	µm	0 - 5				Yawing	N-m	225	
Ball screw D _n	mm-rpm	75 000			Base mass by length	kg/m	18		
Ball screw support condition		fixed-fixed			Temperature, max. continuous	°C	50		
Ball screw dyn. load rating, C	N	6 410	6 530	5 660	* Transportable Moment - is a value at which the rated fatigue life of linear guide is 10,000 km when any unidirectional moment acts continuously on the linear guide				
Ball screw stat. load rating, C ₀	N	10 100	10 200	8 700					
Lin. guide dyn. load rating, C ₅₀	N	11 200							
Lin. guide stat. load rating, C ₀	N	16 900							
Compliance		RoHS							

BMAX175 DIMENSIONS AND SPECIFICATIONS



BASIC BMAX PART NO.	ACTUATOR DIMENSIONS						
	BALL SCREW LEAD	NOMINAL STROKE	STROKE LIMIT	BODY LENGTH		MOUNTING HOLES	
		S_{nom}	S_{lim}	L_1	L_2	L_3	n
	mm	mm	mm	mm	mm	mm	qty
BMAX175-018-05	5	180	193	482	507	400	3
BMAX175-038-05		380	393	682	707	600	4
BMAX175-058-05		580	593	882	907	800	5
BMAX175-018-10	10	180	193	482	507	400	3
BMAX175-038-10		380	393	682	707	600	4
BMAX175-058-10		580	593	882	907	800	5
BMAX175-078-10		780	793	1 082	1 107	1 000	6
BMAX175-098-10		980	993	1 282	1 307	1 200	7



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BMAX175-098-20		980	993	1 282	1 307	1 200	7

NSK PARTNERING TO ACCELERATE INNOVATION



AXIS series actuators are designed, tested and built by NSK Americas mechatronics experts and integration teams, with decades of accumulated expertise in materials engineering, tribology, and mechatronic integration. They are manufactured domestically at our Franklin, Indiana facility, and our ability to respond quickly and precisely to customer needs is unsurpassed in the industry.

- › **Experience** – NSK partners with companies in virtually every industry. Our depth of experience enables us to bring customers field-proven solutions, supporting their operations with accelerated innovation and automation in robotics, medical, semiconductor, material handling, electronics, automotive assembly and other automation applications.
- › **Fit** – We tailor our solutions to meet your specific performance needs, cost targets, maintenance intervals and service lifetime requirements. We bring robust resources to bear on design, deployment, and speed to market.

With NSK, our customers can expect end-to-end life cycle optimization with:

DESIGN AND DEVELOPMENT

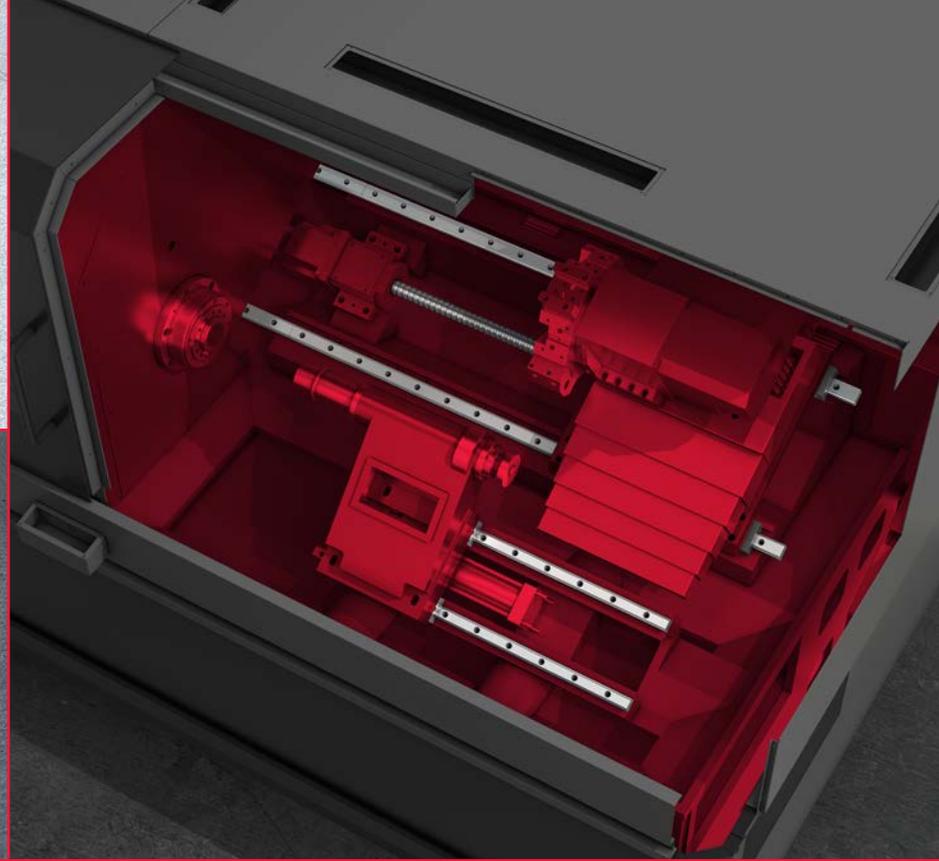
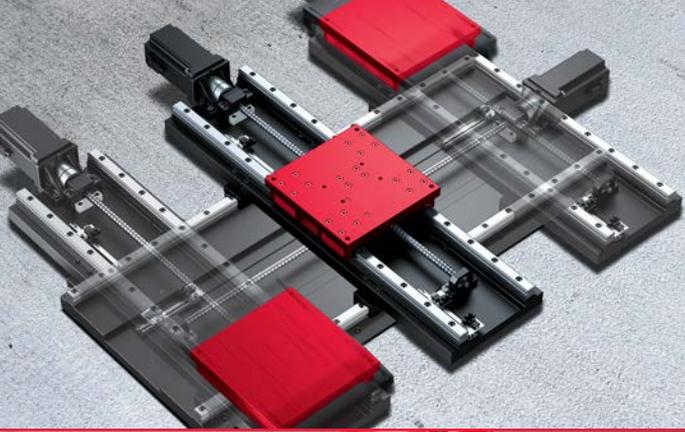
- › System design proposal with CAD model
- › Component failure analysis and benchmarking
- › Optimized material technologies
- › Applications simulation

PROJECT MANAGEMENT

- › Design reviews
- › Prototype with testing and reporting
- › Production schedule

AFTER SALES SERVICE

- › On-site support for system installation
- › Component failure analysis and benchmarking
- › Training



ACCUMULATED EXPERTISE, OPTIMAL SUPPORT

For your precision machine component and integrated system requirements, you can rely on the optimum interaction of NSK design solutions, comprehensive engineering support, domestic manufacturing capabilities and access to our global technology network. Our local automation experts will collaborate closely with you through all aspects of design, provide intensive project management and extend comprehensive technical support. We aim to deliver to our customers the ideal motion and control solution and experience.

Visit nskautomation.com to review products and services, case studies and videos, and to find an NSK distributor near you.

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