



PRECISION MOTION FOR MARITIME DEFENSE

Lead screws, ball screws and electromechanical actuators for controlled linear motion in demanding marine environments.



Maritime platforms demand motion that stays controlled

Space is limited. Loads vary. Access is difficult. Reliability matters.

PRECISION

Repeatable positioning for sensing, alignment and handling functions.

LOAD CONTROL

Efficient conversion of rotary motion into predictable linear force.

ENVIRONMENT

Material, coating, lubrication and sealing choices for marine exposure.

INTEGRATION

Compact architectures that support new designs and retrofit constraints.

The right screw technology begins with the motion profile, load case, duty cycle and operating environment.

One motion toolkit can serve multiple maritime platforms

0 1	SURFACE COMBATANTS	Hatches • sensor positioning • handling • access systems
0 2	AIRCRAFT CARRIERS	Deck-edge systems • maintenance access • equipment positioning
0 3	SUBMARINE PLATFORMS	Compact mechanisms • internal handling • valve and panel actuation
0 4	ELECTRIC & UNCREWED VESSELS	Battery access • payload deployment • steering and trim functions

Aircraft carriers combine high loads with precision

- Aircraft and equipment handling mechanisms
- Sensor, antenna and optical positioning
- Access panels, hatches and maintenance systems
- Material handling and automated service functions
- Opening and closing doors

Engineering lens Evaluate thrust, travel, speed, backlash, shock/vibration and manual-override needs as one system.

Electric and uncrewed boats reward compact, efficient actuation

ENERGY EFFICIENCY

Ball screws reduce friction for high-efficiency positioning and focusing periscopes.

PACKAGING

Integrated actuators simplify compact payload and control architectures.

HOLDING BEHAVIOR

Lead-screw geometry can support self-locking requirements.

AUTONOMY

Repeatable motion supports remote and unattended operating cycles.

Certified Quality for Mission-Critical Applications

Helix Linear Technologies maintains the quality systems, traceability, and regulatory compliance required to support demanding aerospace and defense programs.

- AS9100D Certified with Design
- ISO 9001:2015 Certified with Design
- ITAR Registered
- NIST-Traceable Inspection and Calibration

Our quality systems support consistent manufacturing, controlled documentation, product traceability, and dependable performance from prototype through production.



Choose the screw technology around the mission profile

LEAD SCREWS

- Quiet sliding operation
- Potential self-locking
- Flexible nut materials
- Strong customization range

BALL SCREWS

- High efficiency
- High load capacity
- Low friction
- High accuracy and repeatability

ACTUATORS

- Motor + screw integration
- Captive / non-captive / external
- Compact packaging
- Simplified system integration

Selection is application-specific; Helix engineering can help balance performance, packaging and lifecycle requirements.

Lead screws prioritize simplicity, holding and customization

- Diameter range: 1.6 mm to 65 mm
- Lead range: 0.3 mm to 75 mm
- Stainless steel, alloy, titanium and aluminum options
- Anti-backlash, sleeve and specialty nut designs
- Standard and precision lead-accuracy options



Ball screws prioritize efficiency, load capacity and repeatability

- Diameters offered from 4 mm to 40 mm
- High accuracy and repeatability
- High efficiency with reduced energy consumption
- Low friction and minimal stick-slip behavior
- Dirt-wiper options for contamination management



Roller screws support high-speed and high-acceleration operations

- High static and dynamic load capacity
- Excellent axial stiffness
- High positioning accuracy and repeatability
- Compact design with strong power density
- Smooth, efficient motion under demanding loads

Ideal for aerospace and defense actuation, robotics, precision machinery, heavy-duty automation, and other mission-critical motion systems.

Roller screws use multiple threaded rollers to distribute loads across numerous contact points, making them well suited for high-capacity applications in a compact envelope.



Integrated actuators simplify the mechanical architecture

EXTERNAL

Screw integrated directly into the motor.

CAPTIVE

Screw translates through the motor.

NON-CAPTIVE

Screw passes through the motor to reduce overall length.

PROFILE RAIL / CYLINDER

Guided packages for higher structural integration.



Marine durability starts with the full tribology system

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|-----------|--------------------------|--|
| 01 | SCREW MATERIAL | Stainless steel, alloy, titanium or aluminum selected around load, corrosion and weight. |
| 02 | NUT MATERIAL | Polymer, bronze and engineered material choices aligned to friction, load and temperature. |
| 03 | SURFACE TREATMENT | H10X PTFE and other coating options can reduce friction and extend wear life. |
| 04 | LUBRICATION | General-purpose and military/aerospace formulations matched to materials and environment. |

Bring Helix into the design conversation early

The strongest solution comes from translating mission needs into a complete motion specification.

- What linear load and travel must the mechanism deliver?
- What speed, acceleration, accuracy and backlash are acceptable?
- What shock, vibration, temperature and marine exposure are expected?
- How often will the system cycle, and how will it be serviced?
- What envelope, power, controls and manual-override constraints apply?

ENGINEERING PARTNERSHIP

Application review
Technology selection
Customization
Prototype to production