



CASE STUDY

SIZE, POWER, MODULARITY:

LINEAR ACTUATION SYSTEMS

BENEFIT AUTOMATIC HOSPITAL BED DESIGN



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www.helixlinear.com



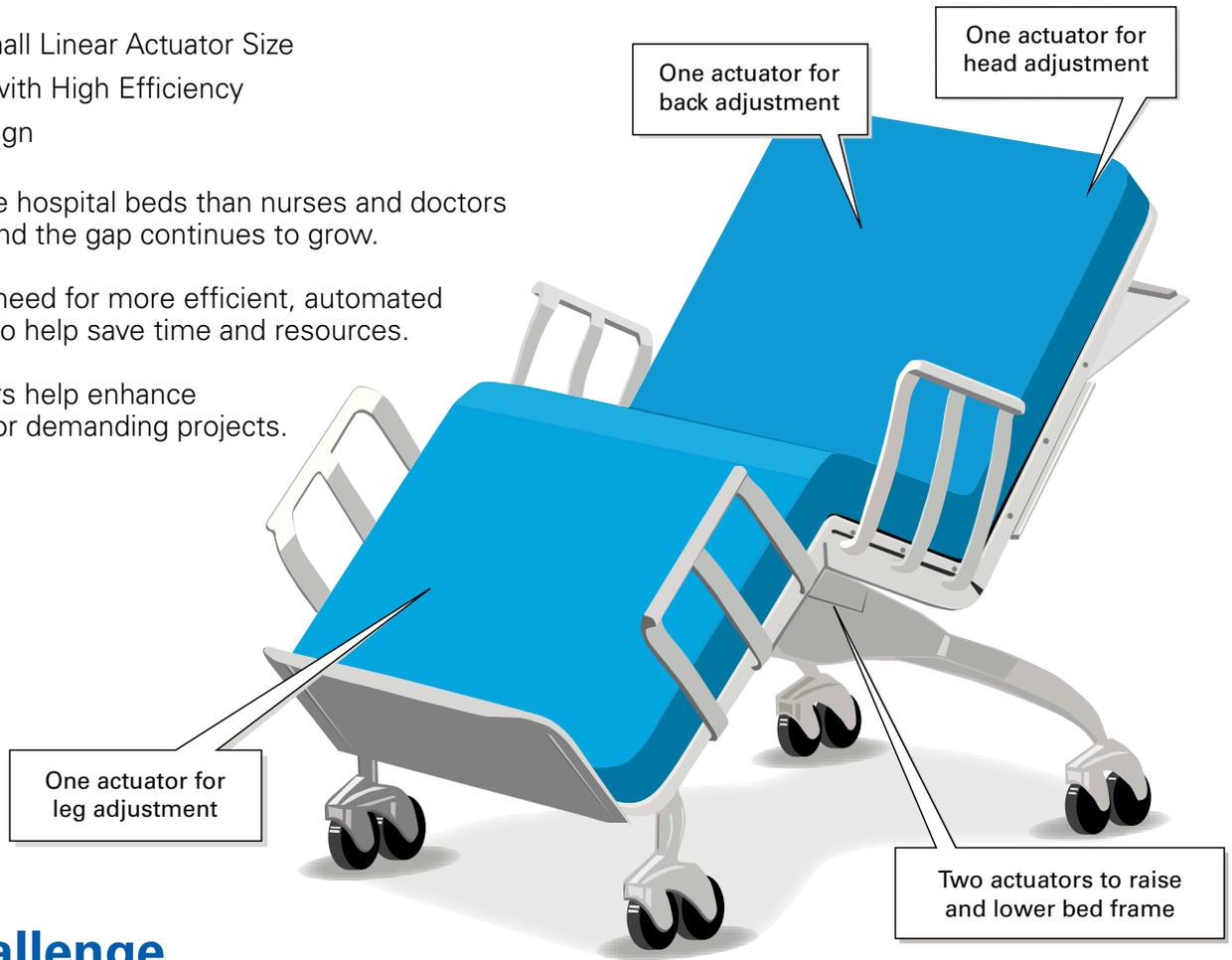
Facing unprecedented challenges, automatic hospital bed design can benefit from linear actuator systems thanks to:

- Relatively Small Linear Actuator Size
- High Power with High Efficiency
- Modular Design

There are more hospital beds than nurses and doctors in a hospital, and the gap continues to grow.

Resulting in a need for more efficient, automated hospital beds to help save time and resources.

Linear actuators help enhance your designs for demanding projects.



The Challenge

Safety: The FDA's Guidance Document, "Hospital Bed System Dimensional and Assessment Guidance to Reduce Entrapment," and IEC requirements standard 60601-2-38 are driving increasingly complex design geometries and safety features, meant to prevent pinch-points and areas of entrapment. Solutions may well include movable sectional rails and more points of articulation in the frame and new areas of bed movement will benefit from the kind of precise motion control and positional feedback that is available with linear actuators.

Power: The more movable components in a bed design, the more likely that areas of high strain or lifting moment will occur.

Geometric Size Constraints: More functionality must be achieved in the smallest possible footprint.

Patient Comfort and Therapy: There is a growing need for increased movement and articulation (with the concomitant need for linear actuators). Lift or sit assist and other solutions, designed to give better care with less demand on caregivers, require new design strategies.

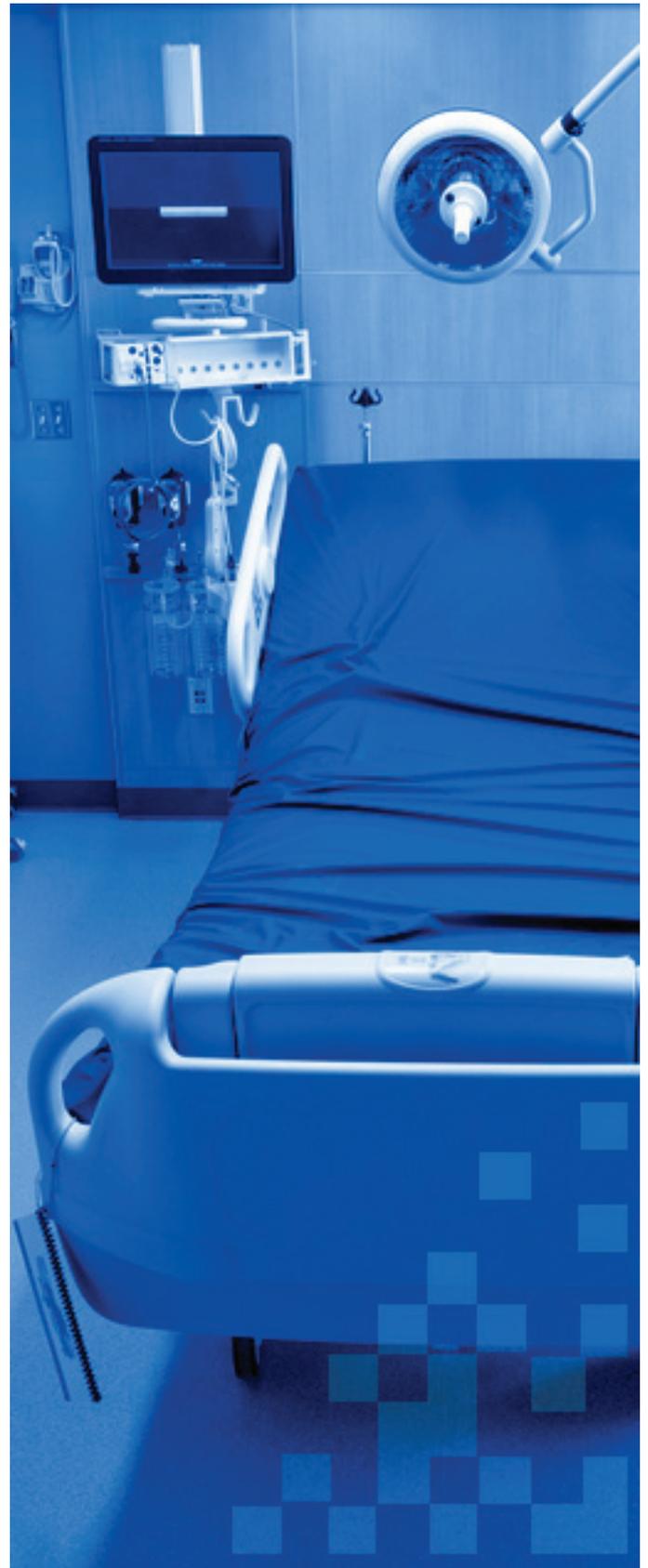
Reliability: Designs must target the highest possible reliability.

Cleanability: Increased emphasis on prevention of hospital-based infection demands good cleanability of all touch surfaces, an ideal use for smooth-surfaced enclosures and guards. Small-footprint linear actuators help simplify enclosure design.

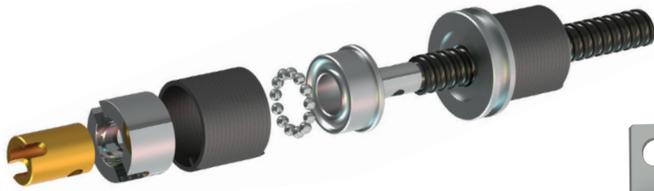
Maintainability: To meet the realities of demanding medical environments, components and mechanisms must be designed for quick return to full, safe usability.

The Solution

- Precision linear actuator systems simplify the design of safe, quiet, and reliable power-driven positioning. Linear actuators integrate easily with increasingly complex moving components and controls.
- Linear actuator systems for automatic hospital beds can range from 2" stroke actuators to 24" stroke actuators with power to handle up to 6000 N loads.
- Our continuous, documented ISO 9001 procedures offer you full accountability and quality records that can be fine-tuned to your GMP and/or QC requirements.
- Whatever the need—lowering, raising, repositioning, mobility, patient transfer—linear actuators make small-footprint design possible by combining high-efficiency motors with precision-formed metals and engineering resins.
- Linear actuators contribute directly to smooth, precise and quiet movement that is designed to enhance patient comfort. With their quiet operation, highly-controllable motion and lock points, electric linear actuators continue to supplant other types of hydraulic or mechanical systems.
- Precision manufacturing and materials engineering help ensure the reliability of linear actuators.
- Low-friction, precision-machined surfaces and dimensionally-accurate plastics molding which can utilize PTFE-infused or self-lubricating resins help reduce maintenance.
- Enclosure design and other design features for cleaning are simplified with linear actuators, thanks to their small footprint and flexible design options.
- If you need custom components, our design team works with you to create linear actuators that meet your motion, NVH, power and footprint specifications.
- Fully modular linear actuator design plus a broad range of mounting options work together in the creation of components that can be field-modified, repaired or swapped out quickly, reducing time constraints on medical bio-engineering and maintenance personnel.
- Linear actuators are well-suited to a broad range of design objectives, including lifts and rotators, sit-to-stand lifts and mechanisms for patient transfer.



Inside Linear Actuator



BRAKE

The load sensitive brake maintains the actuator's position when at rest, without consuming power. (Ball Screw models only)



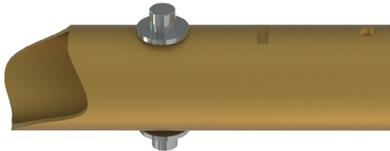
Acme Nut

LIFTING SCREW

Optional acme screw lead and diameters are available.

$\frac{5}{8}$ -5 Acme Screw

* optional



BASE MOUNTS

A variety of mounting brackets and optional trunnion mounts are available.

MOTORS

The CC™ Linear Actuator offers a variety of AC and DC motors including an optional stepper motor.

12 VDC	24 VDC	36 VDC	90 VDC	110 VAC	Stepper
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MOUNTING ENDS

The CC™ Linear Actuator can be fitted with multiple mounting arrangements including a variety of clevis and mounting ends.

$\frac{1}{2}$ " Bolt

$\frac{1}{2}$ " Spherical Rod Eye

$\frac{1}{2}$ " Clevis End

$\frac{1}{2}$ " Threaded Rod End



CLUTCH

The CC Linear Actuator gear head offers a heavy-duty clutch that protects the gears and components in the event of overload or overtravel. Not available with belt drive.



LIMIT SWITCH

The screw type limit switch offers precise positioning for travels up to 36 inches. The design of this switch allows the user to easily set limits at both ends of travel

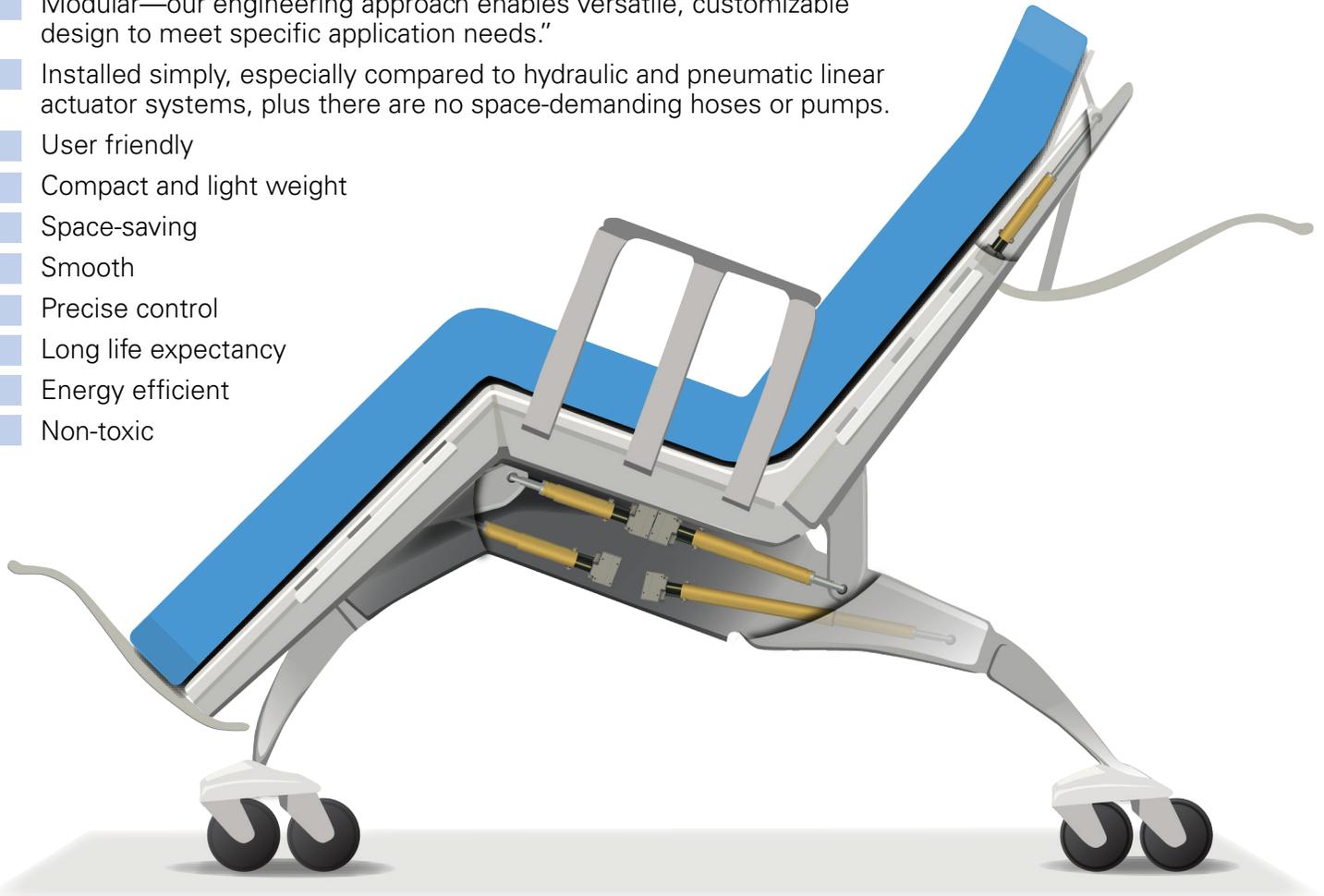
GEAR RATIOS

The CC™ Linear Actuator is fitted with either a belt drive or multiple gear ratios.

18:1 GEAR	19:1 BELT	28:1 GEAR	58:1 GEAR
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Helix Parameters That Benefit You

- Maintenance-friendly—many linear actuator components can be maintenance-free in normal use
- Quiet
- Powerful—linear actuators accommodate loads up to 6000N
- Designed to enhance safety
- Modular—our engineering approach enables versatile, customizable design to meet specific application needs.”
- Installed simply, especially compared to hydraulic and pneumatic linear actuator systems, plus there are no space-demanding hoses or pumps.
- User friendly
- Compact and light weight
- Space-saving
- Smooth
- Precise control
- Long life expectancy
- Energy efficient
- Non-toxic



The HELIX Advantage

HELIX Linear Technologies offers the broadest product line of any lead screw manufacturer, including a full line of rolled, milled, or ground screws and nuts, in standard and customizable sizes. The company provides the flexibility required to service the expanding and evolving customer-driven market for precision linear motion products.

Whether you need Acme, Trapezoidal, or Speedy® (high lead) threads with a precision low-backlash nut, or a state-of-the-art anti-backlash design, HELIX delivers the highest quality products of exceptional value to its customers.

