

Ultraviolet Disinfection



A field-friendly solution for Xenex's disinfecting robot – helping hospitals reduce infection rates by 50-100%

INDUSTRY - APPLICATION

Environmental Hygiene - Ultraviolet Disinfection

APPLICATION DETAILS

The Xenex robot uses ultraviolet light to disinfect and sanitize the surrounding area. A Haydon Kerk Dual Guide Rail mobilizes the UV light as it ascends and descends out of the robot.

CHALLENGE

The application requires supporting a tall 20lb moment load with a safety margin of up to 40lbs. Tall, overhung loads are prone to vibration, noise and deflection. The application requires high thrust while maintaining smooth movement and controlled speed. In addition, the unit needed to be modular for simple field service of the robot.

WHY HAYDON KERK PITTMAN

- Achieved a controlled and smooth rate of motion
- Noise/vibration mitigation with a patented centralizer nut
- Achieved 40 lbs. of overhanging load support
- Wide variety of lead options
- Pre-aligned, turn-key solution facilitates simple and inexpensive installation
- Customizable System

SOLUTION

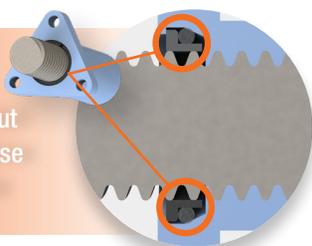
For optimal functionality in the next generation of the Xenex robot, HKP designed a Dual Guide Rail specifically for Xenex's application requirements. This provided a single assembly on one side of the UV light, eliminating the need for two separate assemblies. A single assembly is more robust and does not require alignment. HKP's large catalog of lead options enabled HKP to provide an optimal mix of load support and speed. In this application, too coarse of a thread would have required the system to maintain position using holding current on the motor. Too fine of a thread would not have met Xenex's desired movement profile. HKP was able to select the ideal thread size and lead for this application to meet Xenex's torque, movement and load requirements. Overhung loads are prone to both vibration and noise. To reduce both the noise and vibration, HKP employed its newly patented centralizer. The centralizer applies light, constant pressure to the outer diameter of the lead screw. This pressure creates a damping effect while maintaining a low running torque. The centralizer can be added to both freewheeling nuts and anti-backlash nuts. Finally, HKP added additional features for electrical isolation such as custom Teflon coating and tapped holes to accommodate a grounding wire connection between the Dual Guide Rail and the frame of the Xenex robot.

RESULTS

The assembly is economical, robust, and can handle a significant overhung moment load without the use of expensive ball guides. This is a unique, custom solution resulting from careful consideration of the moment load, stroke length, required resolution, and desired speed. This solution also simplifies both the initial manufacturing of the Xenex robot and service of the robot in the field.



Patented
Centralizer Nut
Mitigates Noise
and Vibration



- RELIABLE
- LONG LIFE
- ECONOMICAL
- STRONG LOAD SUPPORT
- CONTROLLED, SMOOTH MOTION