

# NexBot Robotics CYC123-004 Cycloidal Gearbox 100:1 Ratio

## NexBot Robotics

SKU: NXB-GBX-CYC123-004 | Category: Drive  
Systems > Gearboxes > Cycloidal Gearboxes

### Overview

The NexBot Robotics CYC123-004 is a high-performance cycloidal gearbox engineered to deliver exceptional precision and torque density for demanding robotic applications. This component is the core of motion control in articulated robot joints, providing the necessary torque multiplication and positional accuracy required for complex tasks. At its heart, the cycloidal reduction mechanism offers significant advantages over traditional planetary or harmonic gear systems. Its primary benefit is near-zero backlash, specified at less than 1 arc-minute, which is critical for applications requiring high repeatability, such as automated welding, precision assembly, and intricate material handling. This minimal lost motion ensures that the robot's end-of-arm tooling can be positioned with extreme accuracy, cycle after cycle. The design also provides exceptional torsional stiffness and a high shock load capacity (up to 500% of rated torque), allowing the robot to withstand unexpected impacts or rapid acceleration and deceleration commands without damage or loss of position. With a reduction ratio of 100:1, the CYC123-004 allows system designers to use smaller, higher-speed servo motors while still achieving substantial output torque. It delivers a continuous rated torque of 280 Nm and can handle intermittent peak torque demands up to 450 Nm, making it suitable for joints on medium to heavy payload robots. The gearbox features integrated, high-capacity angular contact bearings that can directly support heavy external loads and moments, simplifying the mechanical design of the robot joint and eliminating the need for additional external support bearings. The CYC123-004 is housed in a compact, rigid steel alloy casing measuring 180 x 180 x 95 mm. It is a fully sealed unit with an IP65 rating, ensuring protection against dust and water ingress in typical industrial environments. The unit is pre-lubricated with a specialized high-performance grease and is designed to be maintenance-free for its operational lifespan, reducing downtime and total cost of ownership. Installation is streamlined with standardized mounting patterns compatible with select NexBot Robotics servo motors and robot arm flanges. This gearbox is an ideal replacement or upgrade component for maintaining the peak performance and reliability of compatible NexBot Robotics systems.

### Technical Specifications

Parameter	Value	Unit
Weight	7.5	kg
Material	Hardened Steel Alloy	
IP Rating	IP65	
Country of Origin	KR	

Parameter	Value	Unit
Dimensions	180 x 180 x 95 mm	
Repeatability	<1 arc-min	
Torque	Rated: 280 Nm / Peak: 450 Nm	

**Safety Notice:** This product must be installed and operated by qualified personnel in accordance with applicable safety standards (ISO 10218, IEC 61508).