

User Manual: NexBot Vision AC811-003 Servo Mounting Bracket

SKU: NXB-SRV-AC811-003 | Version: 1.0 | Brand: NexBot Robotics

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1. Safety Information

READ ALL SAFETY INSTRUCTIONS BEFORE OPERATION. Failure to follow safety procedures may result in serious injury or equipment damage.

DANGER: ELECTRICAL HAZARD: Always de-energize and utilize Lockout/Tagout (LOTO) procedures on the robot controller before attempting to install, inspect, or service this component. Failure to do so can result in fatal electric shock.

WARNING: CRUSH HAZARD: Unexpected robot motion can cause severe injury or death. Ensure the robot is in a safe, de-energized state and motion is disabled before entering the work cell.

WARNING: COMPONENT FAILURE: Failure to use a calibrated torque wrench and apply the specified 3 Nm torque to servo fasteners can lead to component loosening, detachment, and catastrophic system failure.

CAUTION: SHARP EDGES: The machined 6061-T6 aluminum bracket may have sharp edges. Always wear appropriate protective gloves during handling and installation to prevent cuts.

NOTICE: EQUIPMENT DAMAGE: Use only NexBot-specified fasteners for installation. Using incorrect fastener grades or lengths can strip threads and compromise the structural integrity of the entire assembly.

2. Product Overview

The NexBot Vision AC811-003 is a high-strength aluminum mounting bracket designed for the precise and secure installation of servo units on select NexBot industrial and collaborative robots. This component is essential for maintaining positional accuracy and reliability in demanding automation tasks by providing a stable and rigid connection between the robot arm structure and the servo body. Constructed from a solid block of 6061-T6 aluminum, the bracket offers an excellent strength-to-weight ratio, contributing minimal mass to the robot's wrist assembly while ensuring maximum structural integrity. The material's high thermal conductivity also assists in passively dissipating heat generated by the servo during operation, which can contribute to longer component life. Each bracket is CNC machined to exceptionally tight tolerances (± 0.05 mm), guaranteeing perfect alignment with both the robot joint and the servo's mounting points. This precision eliminates mechanical stress that can arise from misaligned components, preventing premature wear and maintaining the robot's specified repeatability. The design features integrated reinforcement ribs that enhance stiffness and reduce micro-vibrations, a critical factor in applications like robotic welding, dispensing, and high-speed assembly where path accuracy is paramount. The bracket is finished with a hard-coat anodization, providing a durable, corrosion-resistant surface suitable for harsh industrial environments. With dimensions of 110 x 75 x 40 mm, this compact mount is engineered for a seamless fit. Installation is straightforward, utilizing the included high-tensile mounting hardware to create a secure, maintenance-free connection for critical servo positioning.

3. Getting Started

1. Product Overview

The NexBot Vision AC811-003 is a precision-machined servo mounting bracket made from high-strength 6061-T6 aluminum. It is designed to provide a rigid, stable, and thermally conductive interface between a servo motor and a NexBot robot arm, ensuring optimal performance and longevity in industrial automation environments.

2. Component Identification

Before installation, verify that the component is correct by locating the laser-etched SKU 'NXB-SRV-AC811-003' on the side of the bracket. Compare this with your bill of materials to prevent incorrect assembly. The bracket's dimensions are 110 x 75 x 40 mm.

3. System Compatibility

This bracket is engineered exclusively for mounting specific NexBot servo series onto designated NexBot robot models. It is fully compatible with servo systems that utilize the PROFINET communication protocol, ensuring that no physical interference occurs with standard connector housings.

4. Operation

Structural Rigidity

The primary function of the AC811-003 bracket is to provide a non-flexible connection point. Its solid billet construction from 6061-T6 aluminum minimizes

deflection and vibration, translating the servo's precise movements directly to the robot arm structure for maximum positional accuracy.

Thermal Management

The aluminum material of the bracket acts as a passive heat sink. It draws thermal energy away from the servo motor body during high-duty cycles, helping to maintain the servo's optimal operating temperature and prevent performance degradation due to overheating.

Tip: Ensure the bracket remains free of heavy dust or grease buildup to maintain its passive cooling efficiency.

Maintaining Alignment

A correctly installed AC811-003 bracket ensures that the servo's output shaft is perfectly aligned with the robot's driveline components. This precise alignment is critical for preventing premature wear on gears, bearings, and other mechanical parts, thereby extending the service life of the robot.

Load Distribution

The bracket is designed to evenly distribute both static and dynamic loads from the servo across a wide footprint on the robot arm. This prevents stress concentrations at the mounting points, safeguarding the structural integrity of both the servo and the robot arm itself.

5. Maintenance Schedule

Interval	Task	Notes
Weekly	Visually inspect the bracket and surrounding area for any signs of physical damage, foreign debris, or fluid leaks from nearby components.	This can be done during routine operator checks.
Quarterly	Perform a fastener torque check. Using a calibrated torque wrench, verify that the servo-to-bracket fasteners are still at 3 Nm.	Perform this check more frequently in high-vibration or high-cycle applications.
Semi-Annually	Clean the exterior surfaces of the bracket using a cloth dampened with a mild, approved cleaning agent to remove any accumulated industrial grime or dust.	Do not spray cleaning fluids directly onto the servo or electrical connections.
Annually	Conduct a detailed inspection for any signs of material fatigue, such as micro-fractures or deformation, particularly around the fastener holes.	This is especially important for robots operating near their maximum payload capacity.
As Required	If fasteners are ever removed for other service, clean the old thread-locking compound from the fastener and threaded hole and re-apply fresh compound before re-torquing.	Never reuse fasteners that show signs of thread damage or stretching.

6. Troubleshooting

Symptom	Possible Cause	Solution
Increased audible noise or high-frequency vibration from the servo.	Loosened mounting fasteners on either the servo or the bracket.	De-energize the robot. Check and re-torque all mounting fasteners to their specified values (3 Nm for servo-to-bracket).
A sudden loss of positional accuracy or 'slop' in the robot axis.	The bracket has shifted due to improperly torqued fasteners or a significant overload event.	A full re-installation of the bracket is required. Disassemble, clean all surfaces, inspect for damage, and re-install following the complete installation guide.
Servo motor is reporting over-temperature faults.	Poor thermal contact between the servo and bracket, or the bracket is covered in insulating debris.	Ensure the servo is seated flush against the bracket. Clean any grime, heavy dust, or oil from the bracket's surface to restore its heat dissipation properties.
Mounting fasteners will not reach their specified torque and keep turning.	The threads in the servo body or robot arm have been stripped due to over-torquing.	The component with the damaged threads (servo or robot arm link) must be replaced. The bracket itself likely has through-holes and is not the damaged part.
Visible corrosion or pitting on the bracket's surface.	Prolonged exposure to a corrosive atmosphere or incompatible cleaning chemicals.	Clean the area with an approved agent. If corrosion is superficial, no action is needed. If it is deep, replace the AC811-003 bracket to prevent potential structural failure.
Intermittent PROFINET communication errors from the installed servo.	Micro-vibrations from a loose bracket are being transferred to the communication connector, causing intermittent contact.	Confirm all bracket and servo fasteners are torqued to spec. If the problem persists, inspect the PROFINET cable connector for damage or looseness.

7. Technical Specifications

Parameter	Value	Unit
Weight	0.45	kg
Material	Aluminum 6061-T6	

Parameter	Value	Unit
Country of Origin	CH	
Protocol	PROFINET	
Dimensions	110 x 75 x 40 mm	
Torque	3 Nm	