

User Manual: NexBot Drives 833-002 Washer And Spacer Set

SKU: NXB-GEN-833-002 | 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: Always disconnect and lock out all power sources to the robot before performing any installation or maintenance. Stored electrical or mechanical energy can cause severe injury or death.

WARNING: Robotic joints are severe pinch points. Keep hands and tools clear of joints during any powered operation or testing. Unexpected motion can occur.

CAUTION: Wear appropriate Personal Protective Equipment (PPE), including safety glasses and gloves, when handling and installing hardware components. The 304 stainless steel components may have sharp edges.

NOTICE: Use only genuine NexBot components, such as the NXB-GEN-833-002 set, for repairs. Using non-specified hardware will void the warranty and may compromise robot performance and safety.

NOTICE: Always refer to the specific robot model's service manual for correct torque values and assembly procedures. The information in this document is supplemental.

2. Product Overview

The NexBot Drives 833-002 Washer and Spacer Set provides essential hardware for maintaining precise alignment and spacing within robotic joint assemblies. This set is engineered to meet the demanding requirements of industrial automation, ensuring long-term reliability and operational consistency for compatible NexBot robot models. Constructed from high-grade 304 stainless steel, each component in the set offers excellent resistance to corrosion, oxidation, and chemical exposure commonly found in manufacturing environments. This material choice guarantees component integrity and prevents contamination, which is critical for sensitive applications. The washers and spacers are machined to exacting tolerances, with a typical thickness variation of just ± 0.05 mm, which is vital for eliminating unwanted play and vibration in robot joints. This precision ensures that joint backlash is minimized and that the robot maintains its programmed path accuracy over millions of cycles. The primary function of this set is to provide correct spacing for bearings and structural components during assembly or maintenance procedures. Proper spacing is crucial for distributing loads evenly and preventing premature wear on more costly internal parts. Applications include securing joint housings, mounting end-of-tooling plates, and general robotic assembly where precise component gaps are required. With a hardness rating of Rockwell B80, these components resist deformation under high compressive loads, contributing to the overall structural rigidity of the robot arm. This set contains a curated assortment of commonly used sizes, providing technicians with the necessary hardware for servicing multiple joints without needing to source individual parts. Regular inspection and replacement of worn hardware with components from this set can significantly extend the operational life of a robot and reduce the likelihood of unplanned downtime.

3. Getting Started

1. Product Overview

The NexBot Drives 833-002 Washer and Spacer Set contains critical hardware for maintaining the mechanical integrity of robotic joints. These components are designed to distribute load, prevent surface marring, and maintain precise spacing between moving parts. The use of high-grade 304 stainless steel ensures excellent durability and corrosion resistance.

2. Component Identification

This set includes a variety of washers and spacers. Before use, identify and sort the components, comparing them against the parts list in your robot's service manual. Ensure you have the correct component for the specific joint you are servicing.

3. Proper Storage

Store the NXB-GEN-833-002 set in its original packaging in a clean, dry environment. Avoid exposure to moisture, corrosive chemicals, or metal

filings that could contaminate or damage the components prior to installation.

4. Operation

Function in Load Distribution

Washers from the 833-002 set are designed to distribute the clamping force of a fastener over a wider surface area. This prevents the bolt head or nut from damaging the softer material of the robot's housing and ensures a consistent, secure connection.

Tip: A properly installed washer helps maintain the correct preload on a bolt, which is critical for preventing vibrational loosening in high-cycle applications.

Role in Precision Spacing

Spacers provide a precise, predetermined gap between two components. In robotic joints, this is essential for maintaining bearing alignment, gear mesh, and clearance for moving parts, directly impacting the robot's accuracy and repeatability.

Preventing Galvanic Corrosion

The 304 stainless steel material of the 833-002 set is chosen for its compatibility with other materials used in NexBot robots. This helps prevent galvanic corrosion that can occur when dissimilar metals are in contact, extending the service life of the entire joint assembly.

Wear Surface Provision

In some applications, a washer can act as a sacrificial wear surface between a rotating component and a stationary housing. This protects more expensive or difficult-to-replace components from direct wear over the robot's operational lifespan.

Tip: During maintenance, always inspect the washer face for signs of scoring or material loss, as this indicates normal wear and proper function.

5. Maintenance Schedule

Interval	Task	Notes
Weekly	Perform a visual and auditory check of the joint area during operation. Listen for any new clicking, grinding, or popping sounds that could indicate a loose or failed component.	This is a non-invasive check performed during a standard operational inspection.
Quarterly	With the robot locked out, check the torque of the key fasteners in the joint assembly. Refer to	Fasteners can loosen over time due to vibration

Interval	Task	Notes
	the service manual for the correct torque value and sequence.	and thermal cycling.
Annually	Perform a partial disassembly of the joint to visually inspect the washers and spacers for signs of deformation, cracking, or severe surface wear (galling or fretting).	This should be scheduled during major preventative maintenance.
Annually	Check for signs of corrosion or discoloration on the 304 stainless steel components. While highly resistant, harsh chemicals or environmental factors can still cause surface issues.	Clean any surface discoloration and assess if the operating environment is too harsh.
As Needed	Replace any washer or spacer from the NXB-GEN-833-002 set that is removed during any service, even if it appears undamaged. Washers can yield after being torqued and may not provide the correct clamping force if reused.	Always use a new component from the set for reassembly.

6. Troubleshooting

Symptom	Possible Cause	Solution
Increased vibration or 'chatter' from a specific joint.	A fastener has loosened, causing excessive clearance. The washer may no longer be providing adequate clamping force.	Power down and LOTO the robot. Re-torque the joint's fasteners to the manufacturer's specification. If the issue persists, disassemble and replace the washer.
A reddish-brown dust is visible around the joint.	This indicates fretting corrosion, caused by micro-movements of a loose washer or spacer against a mating surface.	Disassemble the joint, clean all components, replace the washer/ spacer from the 833-002 set, and ensure proper torque is applied during reassembly.
The robot fails to maintain its position (positional drift).	A critical spacer may have cracked or deformed, causing misalignment within the joint's internal gearing or encoder coupling.	Immediate disassembly and inspection is required. Replace any damaged components from the NXB-GEN-833-002 set.

Symptom	Possible Cause	Solution
Audible clicking or grinding noise during joint movement.	A washer has fractured and pieces are interfering with moving parts within the joint.	Immediately stop robot operation. Disassemble the joint, locate and remove all fragments of the broken washer, and install a new one.
Fastener will not hold torque and continually loosens.	The washer has been completely flattened or 'cupped' due to extreme over-torquing or use of the wrong size, preventing it from maintaining spring tension.	Replace the fastener and the washer. Ensure the correct torque value is used with a calibrated wrench.
Visible gap or misalignment where components should meet flush.	A spacer was omitted during a previous reassembly, or the incorrect size was used.	Consult the service manual's exploded-view diagram. Disassemble the joint and install the correct spacer from the 833-002 set.

7. Technical Specifications

Parameter	Value	Unit
Weight	0.25	kg
Material	Stainless Steel 304	
Country of Origin	CH	