

# Installation Guide: NexBot Robotics 833-013 Washer And Spacer Set (Stainless Steel)

SKU: NXB-GEN-833-013 | Revision: 1.0 | Category: Accessories & Mounting > Fasteners & Hardware > Washers & Spacers

**DANGER:** Disconnect all power sources before beginning installation. Follow lockout/tagout (LOTO) procedures per OSHA 1910.147.

## 1. Required Tools & Materials

- Calibrated Torque Wrench
- Metric/Imperial Socket Set
- Hex Key (Allen Wrench) Set
- Digital Calipers
- Lint-Free Cloths
- Isopropyl Alcohol (99%)
- Safety Glasses
- Nitrile Gloves

## 2. Pre-Installation Checks

1. Verify the SKU on the packaging is NXB-GEN-833-013 to ensure correct part sourcing.
2. Inspect all washers and spacers for burrs, scratches, or any signs of shipping damage.
3. Confirm the component mounting surfaces are clean, dry, and free from oil, grease, or old thread-locking compound.
4. Cross-reference the physical dimensions of the selected washer/spacer with the assembly blueprint for the specific application.
5. Ensure the corresponding fasteners (bolts, screws) are the correct grade, length, and thread pitch as specified in the main robot service manual.
6. Prepare the work area and ensure the robotic system is under a full Lock-Out/Tag-Out (LOTO) procedure before starting work.

### 3. Installation Procedure

#### Step 1: Step 1: Component and Hardware Preparation

Select the required washer or spacer from the NexBot Robotics 833-013 set as specified by the technical diagram. Clean the selected hardware, fastener, and all mating surfaces with isopropyl alcohol and a lint-free cloth to remove any contaminants.

**Warning:** Ensure all cleaning agents have fully evaporated before assembly. Residual fluids can affect torque values and joint integrity.

#### Step 2: Step 2: Component Alignment

Carefully align the component to be mounted (e.g., a bracket, end-effector plate) with the corresponding mounting holes on the robot structure. Ensure there is no binding or misalignment before inserting hardware.

#### Step 3: Step 3: Washer Placement

If a washer is required, place it over the clearance hole on the component. The washer should sit completely flat against the surface to properly distribute the clamping load.

#### Step 4: Step 4: Spacer Insertion

If a specific gap is required, place the designated spacer between the two components, ensuring it is concentric with the mounting hole. The spacer provides a precise, rigid separation critical for mechanical function.

**Warning:** Never stack multiple spacers unless explicitly permitted by the engineering drawing, as this can lead to instability.

#### Step 5: Step 5: Fastener Insertion

Insert the specified bolt or screw through the washer, component, and spacer (if used), and into the threaded receiving hole. Turn the fastener by hand for 2-3 rotations to ensure it is not cross-threaded.

### Step 6: Step 6: Initial Tightening (Snugging)

Using the appropriate tool, tighten the fastener until it is snug. If multiple fasteners are used, snug them all in the recommended pattern (e.g., star or cross pattern) to ensure the component is seated evenly.

**Warning:** Do not apply final torque at this stage. Uneven tightening can cause component misalignment or damage.

### Step 7: Step 7: Final Torque Application

Using a calibrated torque wrench, tighten each fastener to the torque value specified in the parent robot's service manual. Follow the prescribed tightening sequence for multi-fastener installations to ensure even clamping force.

**Warning:** Over-torquing can damage threads, the component, or the washer. Under-torquing can lead to loosening under vibration.

## 4. Post-Installation Verification

1. Verify that all installed fasteners are torqued to the specified value.
2. Visually inspect each washer to ensure it is flat and not deformed, crushed, or extruded.
3. Use calipers or feeler gauges to confirm that any spacing created by spacers is uniform and within the required tolerance.
4. Check for any new gaps or signs of misalignment in the newly installed component.
5. With the system still powered off, manually move any related axes to check for binding, rubbing, or restricted motion.
6. Clean the work area and document the maintenance action in the equipment log.

**Note:** For technical support, contact your authorized service provider or visit <https://robotics.barca.group/support>.