

Glass Shelf Suction Cup Fit: Installation & Quality Verification

1.0 Objective & Quality Standard

The objective of this procedure is to ensure that glass shelves are installed with suction cups that provide a secure, level, and gap-free fit within the cabinet. The quality standard requires that each suction cup is fully seated, the glass shelf is level within 1mm over its length, and no visible gaps exist between the suction cup flange and the glass surface. The assembly must withstand a static load of 5kg applied at the center of the shelf for 60 seconds without any movement or detachment.

2.0 Required Tools & Gauges

- Digital Caliper (0-150mm range, 0.01mm resolution)
- Spirit Level (300mm length, 0.5mm/m accuracy)
- Feeler Gauge Set (0.05mm to 1.00mm)
- Suction Cup Installation Tool (if specified by manufacturer)
- Clean lint-free cloth and isopropyl alcohol (70% or higher)
- 5kg calibrated test weight

3.0 Safety & Material Handling

- Wear cut-resistant gloves when handling glass shelves to prevent injury from sharp edges.
- Use suction cup lifters or two-person lift for shelves over 1200mm in length to avoid strain and dropping.
- Inspect glass edges for chips or cracks before installation; reject any damaged glass.
- Keep work area clean and free of debris to prevent scratching glass surfaces.

4.0 Step-by-Step Procedure

1. Verify that the cabinet opening width and depth match the glass shelf dimensions using a digital caliper; record measurements on the QA checklist.
2. Clean the glass shelf surface and the suction cup contact area with isopropyl alcohol and a lint-free cloth; allow to dry completely for 30 seconds.
3. Inspect each suction cup for cracks, deformation, or contamination; discard any defective cups.
4. Position the suction cup onto the glass shelf at the marked location (typically 25mm from each edge) and press firmly until the cup is fully seated and the release tab is flush with the cup body.
5. Using the feeler gauge, check that no gap exists between the suction cup flange and the glass surface; the maximum allowable gap is 0.1mm.
6. Install the glass shelf into the cabinet by aligning the suction cups with the pre-drilled holes or support brackets; gently lower the shelf until the cups engage.

7. Place the spirit level on the center of the glass shelf and adjust the suction cup height (if adjustable) until the shelf is level within 1mm over its entire length.
8. Apply the 5kg test weight at the center of the shelf and hold for 60 seconds; observe for any movement, sagging, or detachment of the suction cups.
9. Remove the test weight and re-check the level; if the shelf has shifted, re-tighten or re-seat the suction cups and repeat the load test.
10. Visually inspect the glass shelf for any new scratches, chips, or stress marks; if any are found, reject the shelf and report to the QA supervisor.
11. Document the installation on the ShopDocs QA checklist, including measurements, load test result, and any adjustments made.
12. Clean the glass surface with a microfiber cloth to remove fingerprints and dust before final sign-off.

5.0 Verification & Defect Reporting

1. Verify that the glass shelf is level within 1mm using the spirit level; if out of tolerance, adjust the suction cup height or reposition the shelf.
2. If the feeler gauge detects a gap greater than 0.1mm between the suction cup flange and glass, remove the cup, re-clean both surfaces, and re-install; if the gap persists, replace the suction cup.
3. If the load test results in any movement or detachment, red-tag the shelf and suction cup assembly for rework; do not ship the unit.
4. Log all out-of-tolerance defects in the ShopDocs QA module, including photos and measurements, for root cause analysis and corrective action.
5. For recurring defects (more than 2 in a batch), escalate to the production supervisor and initiate a 5S review of the installation station.

Regulatory Disclaimer: This document is a generic quality assurance template. The end-user assumes all liability for validating all dimensional tolerances, testing procedures, and engineering specifications against actual production requirements before deployment.