Drawer Slide Load Test – Quality Verification Procedure

1.0 Objective & Quality Standard

The objective of this procedure is to verify that each drawer slide assembly can support the rated load capacity (as specified by the slide manufacturer or engineering drawing) without binding, excessive deflection, or permanent deformation. The acceptable quality standard is: the drawer must open and close smoothly under full rated load, with no more than 2mm vertical deflection at the front edge when fully extended, and no audible clicking or sticking during travel.

2.0 Required Tools & Gauges

- Calibrated weight set (or equivalent dead weights) matching the rated load capacity of the drawer slide (e.g., 50 kg, 75 kg, 100 kg)
- Digital caliper (0-150mm range, ±0.02mm accuracy)
- Dial indicator with magnetic base (0-25mm range, 0.01mm resolution)
- Feeler gauge set (0.05mm to 1.00mm)
- Torque screwdriver (adjustable, 0.5-5 Nm) for verifying slide mounting screws
- Test fixture or stable workbench with level surface
- Safety gloves and steel-toed boots

3.0 Safety & Material Handling

- Wear steel-toed boots and cut-resistant gloves when handling heavy weights to prevent foot or hand injuries.
- Use two-person lift for weights exceeding 25 kg to avoid back strain.
- Ensure test fixture is stable and level before placing any load on the drawer.
- Keep hands clear of the drawer path during load testing to avoid pinch points.
- Inspect weights for cracks or damage before each use; do not use damaged weights.

4.0 Step-by-Step Procedure

1. Verify that the drawer slide assembly is installed per the manufacturer's specifications and that all mounting screws are torqued to the value specified in the work order (typically 1.5-2.5 Nm for M4 screws).

2. Place the test fixture on a level surface and confirm it is stable. Position the drawer assembly on the fixture so that the slide is fully engaged and the drawer front is flush with the cabinet face.

3. Zero the dial indicator at the front edge of the drawer, centered on the drawer front, with the plunger contacting the drawer bottom. Record the initial reading.

4. Apply the rated load (e.g., 50 kg) evenly across the drawer bottom using the calibrated weights. Distribute the load to simulate typical use (e.g., 60% toward the front, 40% toward the back).

5. Wait 10 seconds for the load to settle, then record the dial indicator reading. Calculate the vertical deflection: final reading minus initial reading. The deflection must not exceed 2.0 mm.

6. With the load still applied, slowly open the drawer to full extension (or to the slide's maximum travel). Observe for any binding, sticking, or unusual noise. The drawer must move smoothly without hesitation.

7. Close the drawer fully and repeat the open/close cycle two more times. Listen for clicking, grinding, or any intermittent resistance. If any abnormal sound or resistance is detected, flag the unit for inspection.

8. Remove the load and inspect the slide for permanent deformation, cracks, or loose fasteners. Use the feeler gauge to check for any gap between the slide rail and the cabinet frame; the gap must not exceed 0.5 mm.

9. Record all measurements and observations on the QA checklist in ShopDocs. Include the serial number of the drawer assembly, the load applied, the deflection reading, and any notes on smoothness.

10. If the drawer passes all criteria, affix a green QA sticker to the underside of the drawer. If it fails, proceed to Section 5.0 for defect reporting.

5.0 Verification & Defect Reporting

1. If the vertical deflection exceeds 2.0 mm, or if the drawer binds, sticks, or makes abnormal noise during the load test, immediately red-tag the assembly with a non-conformance tag.

2. Record the defect details in ShopDocs QA module: assembly serial number, test date, operator name, measured deflection, and description of the failure mode (e.g., binding, noise, excessive deflection).

3. Isolate the failed assembly in the designated rework area. Do not ship or move to finished goods.

4. Notify the production supervisor and QA manager within 30 minutes of identifying the defect. Initiate a root cause analysis (RCA) to determine if the issue is related to slide quality, installation error, or fixture misalignment.

5. For rework: disassemble the drawer, inspect the slide for damage, replace if necessary, re-torque mounting screws, and retest per this SOP. If the slide is damaged, scrap it and replace with a new slide from the same production lot.

6. After rework, retest the assembly. If it passes, remove the red tag and apply a green QA sticker. If it fails again, escalate to engineering for design review.