
Grommet Hole Size Verification For Cables

1.0 Objective & Quality Standard

The objective of this procedure is to verify that grommet holes cut in panels meet the specified diameter tolerance to ensure proper fit of cable grommets, prevent cable chafing, and maintain a clean, professional appearance. The acceptable tolerance for hole diameter is ± 0.5 mm from the specified nominal size (e.g., 25.0 mm nominal, acceptable range 24.5 mm to 25.5 mm). Grommets must snap in securely without gaps or deformation.

2.0 Required Tools & Gauges

- Digital Caliper (0-150mm range, 0.01mm resolution)
- Go/No-Go plug gauge set for nominal hole diameter (e.g., 24.5 mm Go, 25.5 mm No-Go)
- Sample grommet of correct size for fit test
- Non-marring probe or deburring tool (if needed)
- Inspection log sheet or ShopDocs QA module

3.0 Safety & Material Handling

- Wear safety glasses when inspecting cut holes to protect from sharp edges or debris.
- Handle panels with clean, dry hands or gloves to avoid oil or dirt transfer.
- Place panels on a stable, non-marring work surface to prevent scratches.
- Use caution near sharp edges; deburr if necessary before measurement.

4.0 Step-by-Step Procedure

1. Confirm the nominal hole diameter specified on the engineering drawing or work order (e.g., 25.0 mm).
2. Visually inspect the hole for burrs, chips, or irregular edges. If present, deburr gently with a non-marring tool.
3. Select the Go/No-Go plug gauge set corresponding to the nominal diameter tolerance (e.g., Go = 24.5 mm, No-Go = 25.5 mm).
4. Insert the Go gauge into the hole. It must pass through freely without force. If it does not, the hole is undersized.
5. Attempt to insert the No-Go gauge into the hole. It must not pass through. If it does, the hole is oversized.
6. Using the digital caliper, measure the hole diameter at two perpendicular axes (0° and 90°). Record both readings.
7. Calculate the average of the two measurements. Verify it falls within the acceptable range (nominal ± 0.5 mm).
8. Perform a fit test with a sample grommet: press the grommet into the hole by hand. It should snap in evenly with no gaps or distortion.
9. Remove the grommet and inspect the hole for any damage or deformation caused during insertion.
10. Record all measurements and pass/fail results in the inspection log or ShopDocs QA module.

5.0 Verification & Defect Reporting

1. If the hole fails the Go/No-Go gauge test or caliper measurement, red-tag the panel as non-conforming and move it to the rework area.
2. For undersized holes, rework by carefully reaming to the correct diameter. Re-verify after rework.
3. For oversized holes, the panel must be scrapped or patched per engineering approval. Do not force an oversized grommet.
4. If the grommet fit test shows gaps or deformation, inspect the hole for out-of-round condition and re-measure. Report to QA supervisor.
5. Log all defects in the ShopDocs QA module with photos and measurements for root cause analysis and process improvement.

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.