

Flip Up Door Stay Gas Spring Force Check

1.0 Objective & Quality Standard

The objective of this procedure is to verify that the gas spring (stay) installed on a flip-up door provides the correct force to hold the door open at the specified angle without sagging or slamming shut. The acceptable force tolerance is $\pm 10\%$ of the specified nominal force (e.g., 80N ± 8 N) measured at the fully extended position. The door must remain stationary at $75^\circ \pm 5^\circ$ from closed when released.

2.0 Required Tools & Gauges

- Digital force gauge (0-200N range, ± 1 N accuracy) with hook attachment
- Digital protractor or angle finder (0.1° resolution)
- Calibrated test weight set (optional, for verification)
- Assembly fixture or clamped cabinet mock-up
- Torque screwdriver (for bracket adjustment if needed)
- ShopDocs QA checklist (digital or printed)

3.0 Safety & Material Handling

- Wear safety glasses when handling gas springs under tension.
- Use caution when releasing the door; gas springs can cause rapid movement.
- Handle gas springs by the body, not the piston rod, to avoid damage.
- Ensure the door is fully supported during measurement to prevent sudden drop.
- Keep hands clear of pinch points between door and frame.

4.0 Step-by-Step Procedure

1. Mount the flip-up door assembly in the test fixture or clamped cabinet, ensuring the hinge axis is level and the frame is rigid.
2. Install the gas spring(s) per the manufacturer's specifications, verifying correct orientation (piston rod down for damping).
3. Close the door fully and confirm the gas spring is not binding or misaligned.
4. Open the door to the fully open position (typically 90° from closed) and allow the gas spring to extend completely.
5. Attach the digital force gauge hook to the door handle or a dedicated pull point near the gas spring attachment.
6. Slowly pull the force gauge perpendicular to the door face at the gas spring attachment point, recording the peak force required to just begin moving the door from the fully open position.
7. Repeat the measurement three times and calculate the average force. Record the value on the ShopDocs QA checklist.

8. Using the digital protractor, measure the angle at which the door remains stationary when released from the fully open position. The door should hold steady at $75^{\circ} \pm 5^{\circ}$.
9. If the door sags below 70° or slams shut, the gas spring force is insufficient. If the door is difficult to close or does not stay open, the force is too high.
10. Compare the measured force to the nominal specification (e.g., 80N). Acceptable range is nominal $\pm 10\%$.
11. If the force is out of tolerance, adjust the gas spring mounting position (if adjustable) or replace the gas spring with the correct rating.
12. After adjustment or replacement, repeat steps 4 through 10 to confirm compliance.

5.0 Verification & Defect Reporting

1. If the average force is outside the $\pm 10\%$ tolerance or the door does not hold at $75^{\circ} \pm 5^{\circ}$, red-tag the assembly as non-conforming.
2. Log the defect in the ShopDocs QA module, including the measured force, angle, and gas spring part number.
3. For rework, adjust the gas spring mounting bracket position (if slotted) or replace the gas spring with the correct force rating.
4. After rework, re-inspect per this SOP and update the QA record with the final measurements.
5. If the same defect occurs on more than 5% of units in a batch, escalate to engineering for root cause analysis and potential supplier corrective action.

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.