# Facility Overhead Coiling Door Drop Test And Spring Tension Check

## 1.0 Maintenance Objective & Frequency

The objective of this procedure is to verify the mechanical integrity and safe operation of facility overhead coiling doors by performing a controlled drop test and inspecting spring tension. This PM aims to prevent sudden door free-fall, spring failure, and potential injury or property damage. The frequency is quarterly (every 3 months) or immediately after any observed operational irregularity (e.g., jerky movement, unusual noise).

A properly tensioned spring system ensures the door remains balanced, reducing strain on the motor and extending service life. This check is critical for doors used in high-traffic loading bays or exterior openings exposed to wind loads.

## 2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect the door motor at the dedicated disconnect switch or breaker. Apply a personal lock and tag. Verify zero energy with a non-contact voltage tester.
- Mechanical Isolation: Ensure the door is fully closed and the manual release mechanism (if equipped) is disengaged. Chock the door tracks to prevent unintended movement during inspection.
- PPE: Wear safety glasses, steel-toed boots, and heavy-duty work gloves. For spring inspection, wear a full-face shield and cut-resistant sleeves.
- Area Safety: Barricade the area below and around the door with cones and caution tape. Ensure no personnel or equipment are within the door's fall zone.

## 3.0 Required Tools, Parts & Lubricants

- Non-contact voltage tester
- Adjustable wrench (12-inch)
- Socket set with ratchet (3/8-inch drive, metric and imperial)
- Torque wrench (0-100 ft-lb range)
- Spring tension gauge (0-500 lb capacity)
- Dial indicator with magnetic base (for measuring spring deflection)
- Caliper (digital or vernier, 6-inch range)
- Lubricant: Lithium-based grease (NLGI #2) for spring coils and bearings
- Lubricant: Penetrating oil (e.g., WD-40) for rusted fasteners
- Replacement parts: Spring retaining pins, cotter pins, and lock washers (as needed)
- Safety chocks and barricade cones
- Digital camera or smartphone for documentation

## 4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO: Isolate electrical power to the door motor at the disconnect switch. Lock and tag the switch. Verify zero voltage with a non-contact tester. Chock the door tracks to prevent accidental movement.

2. Inspect door for visible damage: Examine the curtain, slats, bottom bar, and weather seals for cracks, dents, or wear. Check all fasteners (bolts, rivets) for looseness. Document any anomalies with photos.

3. Measure spring coil dimensions: Using the caliper, measure the wire diameter and coil outer diameter of the torsion spring(s). Record these values. Compare to OEM specifications. If wire diameter is reduced by more than 5% due to corrosion, schedule spring replacement.

4. Check spring tension with door closed: Attach the spring tension gauge to the end of the spring anchor bracket. Apply a steady pull perpendicular to the spring coil. Record the force required to deflect the spring 1/4 inch. Compare to OEM tension chart. If tension is outside +/-10% of spec, proceed to adjustment step.

5. Adjust spring tension (if needed): Loosen the set screws on the spring anchor bracket using the socket set. Turn the adjustment nut clockwise to increase tension or counterclockwise to decrease. Make 1/4 turn adjustments only. Re-tighten set screws to 25 ft-lb. Re-measure tension and repeat until within spec.

6. Lubricate spring coils and bearings: Apply a thin, even coat of lithium grease to the full length of the spring coils using a brush. Wipe off excess. Apply 2-3 drops of penetrating oil to each bearing and pivot point. Do not over-lubricate.

7. Perform controlled drop test: Remove track chocks. Manually release the door from the motor (if equipped with manual release) or use the push-button control to lower the door 12 inches. Observe the door's descent. It should move smoothly and stop within 2 inches of the fully closed position without bouncing. If the door free-falls or stops abruptly, the spring tension is incorrect. Re-check and adjust.

8. Inspect cables and drums: With the door in the partially open position (12 inches from closed), visually inspect the lift cables for fraying, kinking, or corrosion. Check that cables are properly seated in the drum grooves. Replace any damaged cables immediately.

9. Test safety reverse mechanism: Re-engage the motor. Place a 2x4 block on the floor under the door. Lower the door using the control. The door should reverse direction upon contact with the block. If it does not reverse within 2 seconds, adjust the limit switch or contact limit switch per OEM manual.

10. Document all measurements and observations: Record spring wire diameter, coil OD, tension gauge reading, drop test result, and any adjustments made. Take photos of the spring assembly and door condition. Sign and date the PM work order.

## 5.0 Verification & Return to Service

1. Remove all LOTO devices and chocks. Restore electrical power to the door motor.

2. Perform a full open/close cycle using the wall control. Observe the door for smooth, quiet operation. The door should open fully and close completely without hesitation.

3. Verify the safety reverse mechanism again by placing a 2x4 block under the door and lowering it. The door must reverse within 2 seconds of contact.

4. Check that all guards and covers are reinstalled. Ensure the area is clean and free of tools.

5. Sign off on the PM work order in ServiceGrid, attaching all recorded measurements and photos. Notify the facility manager that the door is safe for use.