

### CYCLE TESTS:

Door strength and durability is determined by either ANSI A250.4 or SDI 131-04 Accelerated Physical Test Procedure for Steel Doors, Frames and Anchors (formerly ANSI A250.5 Accelerated Physical Endurance Test Procedure for Steel Doors, Frames and Frame Anchors). These performance standards include both cycle and twist test requirements. In both tests the door is subjected to stresses that exceed those found in typical applications. During and at the end of the test, the technician is looking for metal fatigue, weld breakage, panel separation, delaminating, reinforcement failure and any other failures that occur.

ANSI/SDI A250.8-2003 "Recommended Specifications for Standard Steel Doors and Frames" specifies the minimum number of cycles for doors:

- 20 gage door . . . . . 250,000 - (Level C)
- 18 gage door. . . . . 500,000 - (Level B)
- 16 and 14 gage door . . . 1,000,000 - (Level A)

### ANSI A250.4

The door is mounted in a frame and is pushed to an open position of 60 degrees. The door is then closed using a conventional door closer.

**Cycle Test** – The cycle is repeated approximately 15 times per minute. The forces placed on the door in this test are determined by adjusting the closer speed.

**Twist Test** – At intervals prescribed by the test procedure, three corners of the door are clamped in place and a prescribed load applied to the fourth corner.

**Steelcraft doors tested in accordance with A250.4 for extended life cycle.**

Door Series	Cycles Tested	Frame Series
L18	5 million	MU16
L16	5 million	F16
L14	3 million	F16
B18	3 million	F16
B16	3 million	F16
CE18	2 million	DW16

This test simulates a door in actual operation. Steelcraft's L-Series door construction was successfully tested in accordance With ANSI/SDI A250.4 for 5,000,000 cycles and 103 twist tests conducted at specified intervals throughout the cycle test.

All tests are UL certified



ANSI A 250.4

### SDI 131-04 (Previously ANSI A250.5)

The door is mounted in a test fixture and is rapidly cycled (opened and closed) by an air cylinder, or by an arm connected to an electric motor through a cam mechanism.

**Cycle Test** – The cycle is repeated a minimum of 60 cycles per minute. The closing forces applied to the door.

**Twist Test** – At test intervals prescribed by the test procedure, three corners of the door are clamped in place and the fourth corner is twist tested.

**Steelcraft doors tested in accordance with SDI 131-04 for extended life cycle.**

Door Series	Cycles Tested
L18	10 million
T18	250,000
A/AN	250,000

This test simulates an actual door in operation. Steelcraft's L18 honeycomb core door was successfully tested in accordance with SDI 131-04 for 10,000,000 cycles and 21 twist tests conducted at different intervals throughout the cycle test.

**Products tested** - Door Model: L-18 3070

**Test Results** - After 10,000,000 cycles and 21 twist tests, the L-18 door demonstrated the following:

**Cycle Test:**

1. Edge Condition - no visible signs of metal fatigue, cracking, or deformation along edges or channels
2. Hardware Preparations - no visible issues
3. Core condition - no notable issues
4. Panel condition - no de-lamination or weld damage

**Twist Test:**

- Initial deflection at 300 lbs = .132"
- Initial residual deflection (0 lbs) = .002"
- After 10 million cycles max. deflection at 300 lbs = .528"
- After 10 million cycles residual deflection (0 lbs) = .0045"

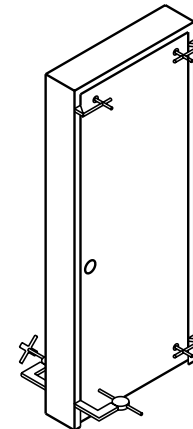
**TWIST TESTS:**

ANSI A250.4 & SDI 131.4

The twist test evaluates the door structure and clearly establishes the strength of the bonding or welding of the core material to the panels and the connection of the panels. The twist test is a required part of both ANSI 250.4 and SDI 131-04.

The door is placed into a structural steel opening and clamped into place at three corners. The unclamped corner is subjected to a force applied in 30 pound increments until a total of 300 pounds of force is applied. The force is removed in the same 30 pound increments until all of the force is off the door.

Measurements are taken at each 30 pound increment and at the 300 pound force. Additional measurements are taken at every 30 pound increment as the force is being removed. Five minutes after the force has been removed, a final reading is taken. This is the residual deflection the door has taken.



Twist Test Fixture

**ANSI 250.4**

Door Series	Cycles Tested	Test Standard	Deflection @ Start of Test	Deflection at Completion @ Completion of test		Total Number of twist test conducted
			300 lbs Load 1.25" max. See note #2	300 lbs Load 1.25" max. See note #2	Residual 0.25" max. See note #2	
L18	10 million	SDI 131-04	.132"	.528"	0.01"	.21
L16	5 million	ANSI 250.4	0.83"	0.68"	0.05"	103
L14	5 million	ANSI 250.4	0.80"	0.43"	0.03"	103
B18	3 million	ANSI 250.4	0.46"	0.44"	0.01"	63
B16	3 million	ANSI 250.4	0.81"	0.68"	0.06"	63
CE18	2 million	ANSI 250.4	1.02"	1.02"	0.13"	43

**Notes:**

1. All tests are UL certified
2. Maximum deflection shown is the pass/fail criteria in accordance with ANSI A250.4 and SDI 131-04.