

Czech Republic Lab Equipment List

This list is continuously checked on annual basis. For more detail please contact fastenaleuropeqc@fastenal.com

200,000 lb. Tensile Tester [2,000 to 200,000 lbs. / 5000 to 1 000 000 N] force- tension and compression Max length of sample / fastener to be tested is 500mm.

Testing of externally threaded fasteners for tensile, wedge tensile, proof load, and yield strengths;

Testing internally threaded fasteners for proof loads. Fixtures available for bolts / nuts sizes from M4 to M30, / from ¼ to 1½ inch

Software: Horizon - Version 10.2.3.2

Rockwell Hardness Tester--- Testing Rockwell hardness in the B and C scales, surface hardness on the 30N and 30T.

Max length of sample / fastener to be tested 260mm, max diameter of sample to be tested 280mm. Max weight of sample to be tested approx.7kg.

Micro-hardness Tester---Hardness testing using the Vickers scales 0.1kg, 0.3kg, 0.5kg, (de)carburization tests, Microhardness test, Case depth of case hardened fasteners

Software: HM-100 – Version Ver. 6.00

Ring and Plug Gages---Go and No-Go thread inspection for inch and metric sizes approx. from M2 to M27, M34, M42, M56, M64 and #8 to 1 1/8in .

Video Measurement System---Dimensional inspection of linear measurements, angles, thread profiles (method “point to point”: metric, imperial, NPT, ACME), diameters and radii.

Geometrical tolerances: circularity, perpendicularity, (of internal threads), straightness, true position, concentricity

Visual check of surfaces (scratches, damages, worn edges, stamping check, etc...)

Max approx. size (w x l) of sample to be inspected 200x300mm. Max height is 150mm. Max weight is 5kg. Zoom 17,5 – 112.5 x

Dimensions range 0 – 12 inches

Software: Smart inspection - Version SI-901 V6.8.5

Length Gage--- Dimension measuring within dimensions 0-12 inches.

Comparator--- Contactless dimension inspection

Recess Checker---Recess depth and penetration depth on cross-recessed (Pozi penetration gages: #1, #2, #3, Phillips penetration gages: #1, #2, #3), hex penetration gages (1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm) , 6-lobe penetration gages (T-08, T-09, T-10, T-15, T-20, T-25)

Protrusion Gage---Measurement of head protrusion on countersunk fasteners. Sizes from #2”, #3”, #4”, #5”, #6”, #8”, #10”, ¼”, 5/16”, 3/8”, 7/16”, ½” 5/8”, ¾”, 1 1/8”, 1 3/8, 1 ½”

Torque wrenches - To perform torsional tests and evaluation of thread discontinuities and damages. Driveability testing of thread forming screws (metric products in accordance with Europe standards so far). Values measurable in metric / imperial units

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501ED	5-50 in/lb	0.4-41.7 ft/lb	0.56-5.6 Nm
6002ED	60-600 in/lb	5- 50 ft/lb	6.8-67.8 Nm
6004CASG	720-7200 in/lb	60-600 ft/lb	81.3-813.5Nm

Inserts for torsion tests

- Metric: M1, M1.2, M1.4 (pitch is not specified at all of these), M2x0.45, M3x0.5, M3.5x0.6, M4x0.7, M5x0.8, M6x1, M8x1.25, M10x1.5;
- Imperial: #4-24, #8-32, #10-24, #10-32, #12-24, ¼-20, 5/16-18, 3/8-16,

Hydrogen embrittlement tests

Externally threaded fasteners

– wedge plate sizes ¼ - 4°, ¼ - 6°, 5/16 - 4°, 5/16 - 6°, 3/8 - 4°, 3/8 - 6°, 7/16- 4°, 7/16-6°, 1/2 - 4°, 1/2 - 6°, 9/16-4°, 9/16-6°, 5/8-4°, 5/8- 6°, ¾ - 4°, ¾ - 6°, 7/8 - 4°

– Imperial Plate sizes: #4-40, #4-48, #5-40, #6-32, #6-40, #8-32, #8-36, #10-24, #10-32, #12-24, #12-28, ¼-20, ¼-28, 5/16-18, 5/16-24, 3/8-16, 3/8-24, 7/16-14, 7/16-20, ½-13, ½-20, 9/16-12, 9/16, 5/8-11, 5/8-18, 5/8,

– Metric Plate sizes: M3-0.5, M4-0.7, M5-0.8, M6-0.75, M6-1, M8-1.25, M8-1, M10-1.25, M10-1.5, M12-1.25, M12-1.75, M14-1.5, M14-2, M16, M18, M20

Driveability test plates: M 2.5, M3, M3.5, M4, M5, M6, M8

Skidmore-Wilhelm – Bolt Tension Calibrators: To determine preload in fastener join, to determine coefficient of friction within mating threads, to determine prevailing torque on special/ deformed nuts

Model RL tension max 110 000 pounds,

Model J tension max 30 000 pounds

Imperial accessory sizes: 9/16, ½, 5/8, ¾, 7/8, 1, 1-1/8, 1-1/4, 3/8, 7/16, 5/16, ¼, #10

Metric accessory sizes: M12, M14, M16, M20

Fastener being tested shall have minimum length of 50 mm/ 2 in

Additional Equipment:

- **Extensometer**
- **Digital Calipers** (0-150 mm, 0-6”), **Micrometer** (0-1”), (1-2”), **Pitch Micrometer** (0-1”), **High accuracy Micrometer** (0-1”) resolution 0.00005”, 0.0001 mm
- **V-Anvil Micrometer**
- **Minor Diameter Cylindrical Gages**
- **Pin Gage Set** 0.006 – 0.625 in (0.001 diameter step)
- **Concentricity gage** max length 400mm, max diameter 50mm
- **Stereomicroscope** (Visual check of surfaces (scratches, damages, worn edges, stamping check, etc..., magnification 4x, 20x, equipment can take pictures at a high resolution)
- **Equipment to perform test of spring washers for presence of hydrogen**

XRF machine

Positive Material Identification (PMI) of alloys, stainless steels and non-ferritic metals. (Carbon is not detectable, magnesium and “heavier” elements may be detected, all metal elements are detectable)

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Measurement of Zn plating thickness, Chemical composition of inorganic plating

Software: XL3T 980 cvf 8.0 - Version HH-XRF_8.4A

TESA Micro-hite 3D – 3D measuring system

Dimensional inspection

Software: Derby - Version V3.051