Tinius Olsen

Laser Type Extensometers

The Tinius Olsen model 500LC non-contacting extensometer is designed to measure the extension of medium to high elongation materials, typically elastomers. Since there is no contact of this extensometer with the sample, the 500LC is ideal for also measuring the elongation of fragile samples where such contact could induce a premature sample break.

The model 500LC uses a low power helium neon laser with precision optical components and a dedicated 16 bit processor. The laser projects a visible red scanning beam that is directed at two reflective targets attached to the specimen. An additional benefit of using laser technology is its ability to scan the test specimen through the glass viewing window of an environmental test chamber. Elongation characteristics can then be evaluated from –70° C to 300° C.

Preparation of the test specimen is quick and easy. A punch is supplied to cut narrow strips of adhesive reflective tape. The gauge length is defined by attaching these two reflective strips to the sample. Any gauge length can be used and this is accurately measured by the laser at the start of the test.

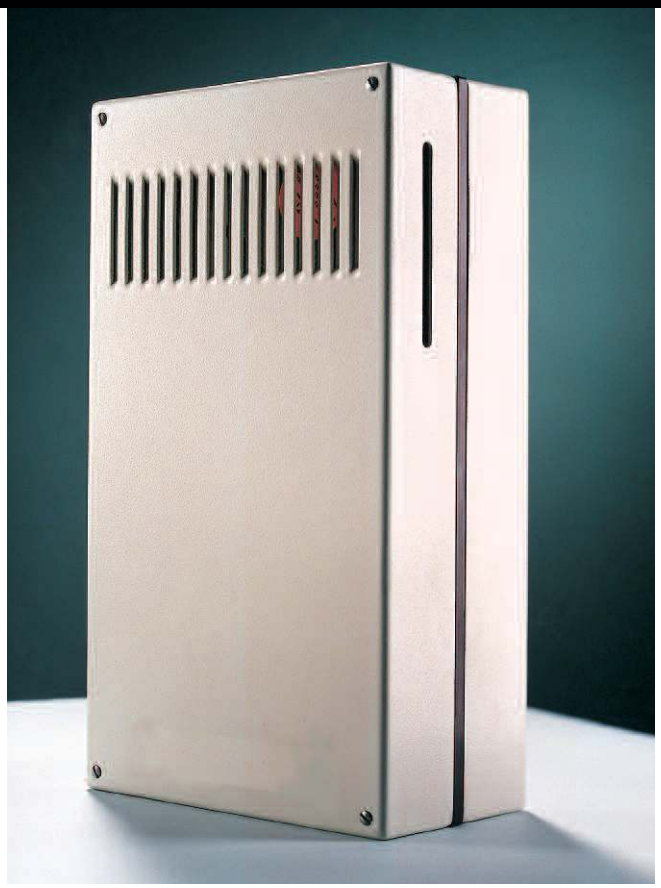

Fig. 1. Model 500LC scanning laser extensometer.

MODEL		500LC
RANGE OF SCAN	in mm	up to 23.6 up to 600
ACCURACY		1% of 25 mm gauge length, BS5214 grade D
RESOLUTION	in mm	4.72 e-4 with filtering 0.012 with filtering
GAUGE LENGTH	in mm	0.39 to full scan 10 to full scan
OPTICAL SCAN RATE	scans per second	320
OPTICAL SCAN ANGLE	degrees	90
DIMENSIONS H x W x D	in mm	32 x 14 x 14 330 x 111 x 180
WEIGHT	lb kg	55 7

6.33 mm 0.5 mW (He-Ne) laser conforms to BSEN60825.1992 Class 2

Model 500LC Extensometer

When force is applied to the sample, the laser scanning beam will measure the separation of the reflective gauge marks at a scan rate of 320 scans per second. Unlike other non-contacting extensometers, if the scanning beam is interrupted for any reason, elongation measurements will automatically be corrected when normal operation is resumed.

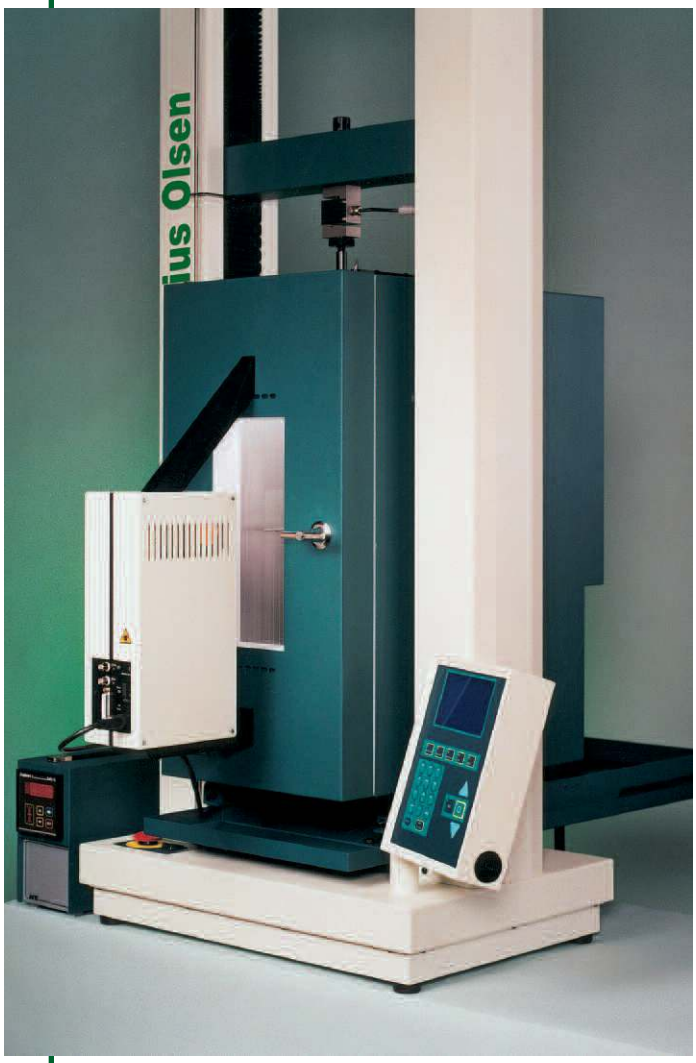

Fig. 2. Model 500LC extensometer mounted on H10kS testing machine with an environmental chamber.

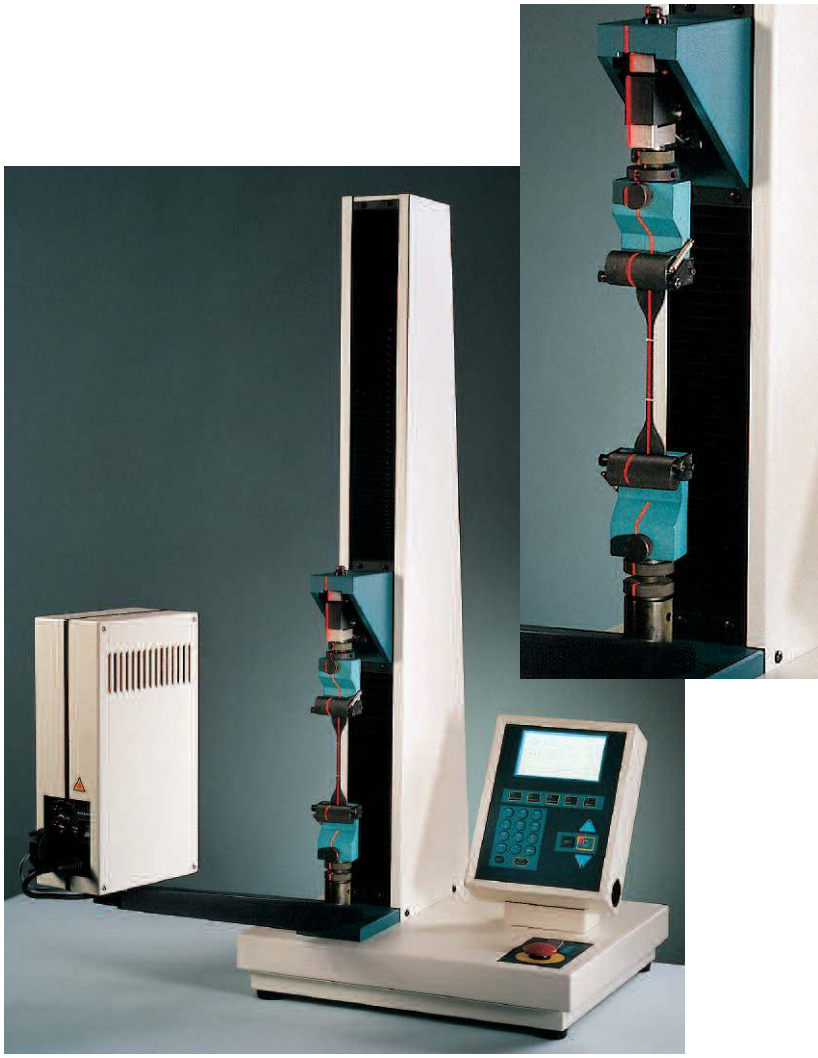

Fig. 3. Model 500LC extensometer mounted on a single column testing machine.

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