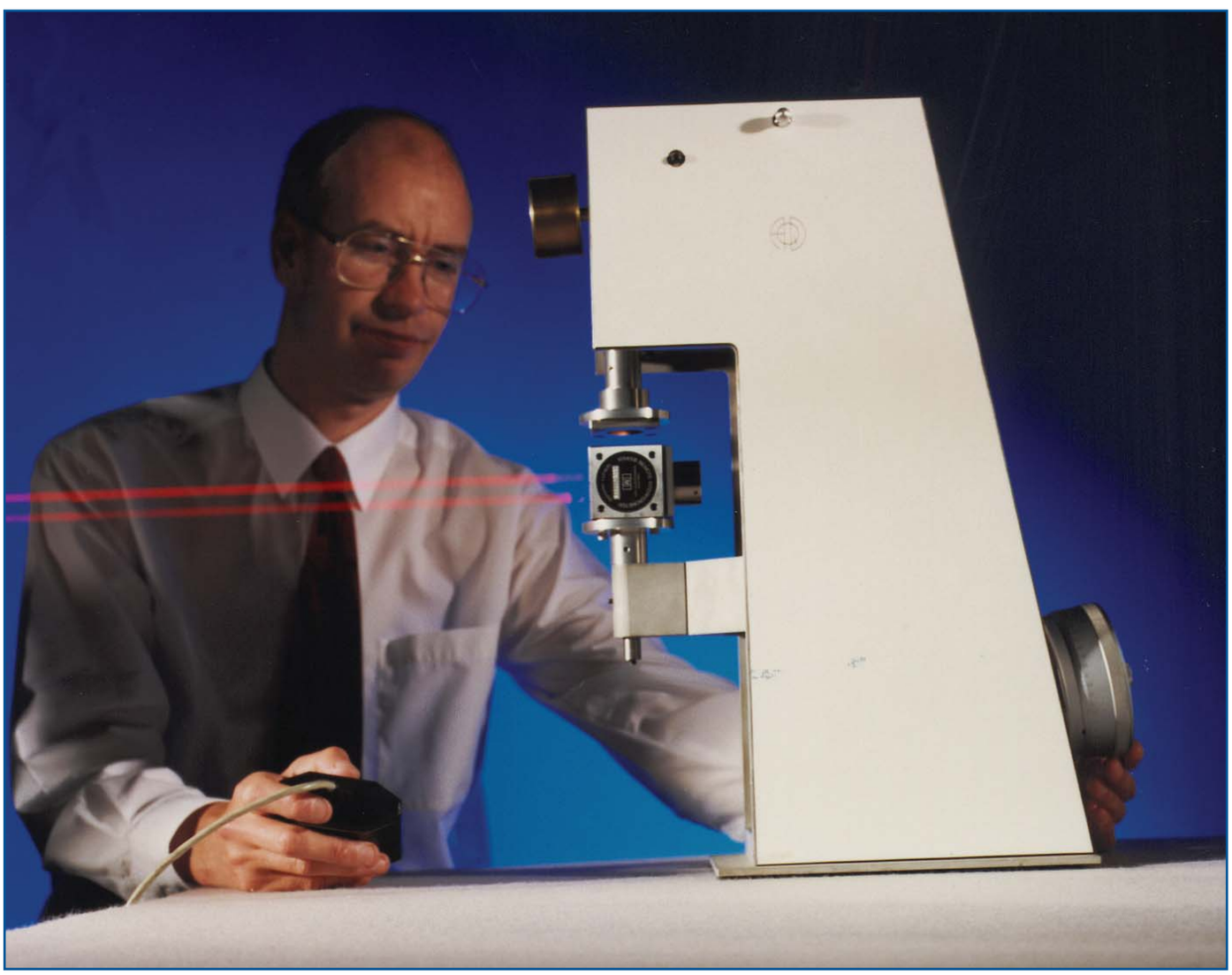
NPL
National Physical Laboratory

Extensometer Calibration Rigs



Calibration of an Extensometer Calibration Rig

NPL offer the following Extensometer Calibration Rig services

- Calibrations to ISO & ASTM standards
- Realignment & Adjustments
- Spares and Repair

dti
FUNDED BY THE DTI

National Physical Laboratory | Hampton Road | Teddington | Middlesex | United Kingdom | TW11 0LW
Switchboard 020 8977 3222 | **NPL Helpline** 020 8943 6880 | **Fax** 020 8943 6458 | **www.npl.co.uk**

Extensometer calibration rigs

Material properties are vital in the design and manufacturing of all component parts. Extensometers are used to measure strain in tensile testing enabling materials properties such as tensile strength, and modulus of elasticity to be determined. To ensure repeatability and confidence in the test data extensometers are calibrated in extensometer calibration rigs which are traceable back to the national standard of length through laser interferometry.

The NPL calibration service

The service is made up of three parts, inspection, adjustment,and calibration.

Inspection

On arrival at NPL, all ECRs undergo a number of checks prior to the start of any calibration, such as.

- All the screws are tight
- The micrometer is securely clamped against its mounting
- The alignment of the test bar bushes
- The strip hinges are horizontal with the micrometer in its mid span
- The travel of the ECR is linear
- The overall magnification of the ECR is correct

Adjustments

During the inspection it may be highlighted that adjustments are required before a calibration can commence. NPL offers an adjustment service where experienced staff are able to realign and adjust ECRs ready for calibration.

There are several different designs of ECR. Some designs have no facility for adjustment but the most common ECR, the AQD design, has several possible adjustments.

Calibration

An interferometer block and retro-reflector are mounted onto the two arms of the ECR. A traceable refractive index-corrected, laser interferometer is then used to measure the distance through which the moving arm travels. This is compared with the readings from the ECR.

A certificate is produced with classification or grading to the following standards:

- ISO 9513
- ASTM E 83

Supply and repair

NPL's fully-equipped engineering workshop is able to supply spares and repair AQD ECR's.

Invalidation of calibration and sensitivity problems

NPL's experience has shown that almost any adjustment to an AQD-design ECR alters its characteristics. In these situations NPL can help by realignment, adjustment, and recalibration. Any of the following adjustments will invalidate the calibration:

- Re-alignment of the test bar bushes
- Repositioning the micrometer head
- Adjusting the eccentric
- Altering the lever length
- Altering the end float of the lever pivot

ECR sensitivity is affected by the following:

- Test bars that are not straight
- Bush holes oversize
- Strip hinges that are not horizontal at mid-travel
- Push rod ends that are not spherical
- Temperatures other than the calibration temperature
- Temperature changes during use

For further information or to discuss your requirements, please contact us.
Direct line: 020 8943 6315
Fax: 020 8943 6184
E-mail: force_enquiry@npl.co.uk
Internet: http://www.npl.co.uk/force/contacts

6456/??k/0706