

TESA UPC – for Comparative Measurement

TESA UPC Gauge Block Comparator for Comparative Measurement

- Measures gauge blocks of same nominal length by comparison.
- Comes with the new template system for positioning the gauge blocks.
- Single or dual template system for optimum ease of gauge handling.
- Features TESA high-precision inductive probes.
- Allows ultra-precise temperature measurement, integrated.
- Transfers on-line all measured length and temperature values.
- Executes computer-aided data processing with all required correction values included.
- Performs calibrations that meet the requirements of both ISO standards and EA guidelines (EAL – European cooperation for Accreditation of Laboratories).
- Includes an execution for greater accuracy along with a calibration certificate (optional).





TESA UPC is specially designed for the calibration – or dimensional inspection – of gauge blocks with nominal lengths ranging from 0,5 to 100 mm. The configuration, which consists of two probes aligned opposite one another, associated with both the concept and quality of the measuring system provides full guarantee for an extra low uncertainty of measurement. Although TESA UPC is mainly intended for manufacturers and end-users of gauge blocks, this comparator is also widely used in nationally accredited laboratories.



If specified, TESA can also provide the temperature device available as an option. This device has 4 PT100 platinum resistances, each capturing the temperature of the two gauge blocks along with that of both the measuring table and the support. Computer-aided data processing lets you carry out any calibration most reliably and rationally – for sure.

 EN ISO 3650

 For gauge blocks ranging from 0,5 mm to 100 mm or 0.02 in to 4 in (0,5 to 500 mm on request)

 Comparative measurement procedure with transference of the length of a reference gauge block to the gauge block being measured.

Measuring configuration

2 probes connected in sum measurement (function +A+B) with mechanical contact with the measuring face.


Measuring points


On the reference gauge block: at the centre of the measuring face (point R). On the gauge block to be measured: at the centre (point 1) as well as the 4 corners of the measuring face, each lying 2 mm away from the adjacent faces (points 2 to 5).

Central length l_c is defined by probing both points R and 1.

Establishing lengths at any point requires measurements to be taken at points R plus 1 to 5.

Variation in length v is the result of measurements taken at points 1 to 5.

 ≈ 23 kg (comparator complete, but without computer). ≈ 4 kg (temperature device)

 All instruments with the option for greater accuracy are delivered with serial numbers

 In-house calibration certificate for the version with greater accuracy or declaration of conformity for the standard version. Temperature device with SCS certificate.



| No | | | | |
|--|---|-----|---|-----|
| TESA UPC GAUGE BLOCK COMPARATOR EQUIPPED WITH SINGLE TEMPLATE SYSTEM | | | | |
| 05930000 | Standard execution without computer application | | | • |
| 05930003 | Execution for greater accuracy, with computer application | | • | |
| TESA UPC GAUGE BLOCK COMPARATOR EQUIPPED WITH SINGLE AND DUAL TEMPLATE SYSTEM | | | | |
| 05930013 | Execution for greater accuracy without computer application | | • | |
| 05930015 | Execution for greater accuracy, with computer application | • | | |
| EACH VERSION CONSISTS OF: | | | | |
| 01610401 | TESA UPC mechanical part equipped with the single template system | | | • • |
| 05960030 | TESA UPC mechanical part equipped with both single and dual template system | • • | | |
| 03260401 | Pneumatic retraction of the measuring bolt, manually operated | | | • |
| 03260432 | Electric vacuum pump with foot switch | | • | |
| 03260433 | Electric vacuum pump with external control | • | | • |
| 01660011 | Pneumatic suction loader | • • | • | |
| 04430012 | TESATRONIC electronic unit TT90 | • • | • | • |
| 05960039 | Set of TESA UPC accessories, including the components 04761049, 04760087 and 04761070 | | | |
| 04761049 | Opto-RS cable, bidirectional | • | | • |
| 04760087 | Opto-RS interface | • | | • |
| 04761070 | Connecting cable TESATRONIC TT90 to vacuum pump | • | | • |
| 04768000 | Hand switch | • | | • |
| 01690021 | Option for greater accuracy with calibration certificate | • • | • | |

Error of Measurement

Provided all the metrological conditions are met, the reliability of the two standard executions No. 05930000 and 05930002 is expressed as follows:

Provided all the metrological conditions are met, the reliability of both executions No. 05930001 and 05930003 along with the option for greater accuracy (No. 01690021) is expressed as follows:

Repeatability limit (with no effect due to external temperature): 0,025 µm

Repeatability limit (with no effect due to external temperature): 0,015 µm

Measurement uncertainty*
 $U = \pm (0,10 + 1,0 \cdot L) \mu\text{m}$ (L in m)

Measurement uncertainty*
 $U = \pm (0,05 + 0,5 \cdot L) \mu\text{m}$ (L in m)

Condition involves the use of reference standards (see page L-14 and L-15) whose uncertainty is as follows:
 $U \leq \pm 0,030 \mu\text{m}$
 when calibrating the comparator
 $U \leq \pm (0,05 + 0,5 \cdot L) \mu\text{m}$ (L in m)
 when calibrating the gauge blocks

Condition involves the use of reference standards (see page L-14 and L-15) whose uncertainty is as follows:
 $U \leq \pm 0,015 \mu\text{m}$
 when calibrating the comparator
 $U \leq \pm (0,02 + 0,2 \cdot L) \mu\text{m}$ (L in m)
 when calibrating the gauge blocks

* Applicable to steel gauge blocks

