

Verification of measuring accuracy with Force Measuring System CMS

All testers are adjusted and calibrated ex factory using traceable inspection equipment. For the verification of the measuring accuracy and if necessary the adjustment of **MI&T** Testers either suitable load parts or the digital high-precision Force Measuring System CMS with load cells SM with nominal loads from 50 N up to 10000 N can be used. For this purpose a suitable support rack set is needed for assembly of the reference load cell on the tester's tool receptions. In case of hand lever operated testers the Load Adaptor KB 1000 is needed for placing the measuring point under a defined static load during calibration or adjustment procedure. The technical data and general information of the CMS Force Measuring System and the Load Cells model SM can be found in the descriptions of the CMS System and SM load cells.

Different load cells with different load ranges can be connected to a CMS force measuring system and operated alternately. This enables the operator to use always the corresponding suitable load cells during calibration of different testers.

For assembling the SM load cell on a tester for a calibration procedure the load cells can be equipped with fork heads or ball screws, depending on the nominal load. On the tester's tool receptions suitable support racks are assembled and the reference load cell is fixed between the two support racks. The calibration is carried out by comparison of the force readings of the tester and the reference CMS force measuring system. In case of hand-operated testers with self-locking drive unit or motorized testers the necessary static test load is applied using the tester's load slide drive. In case of calibrations of hand lever operated testers a Load Adapter KB 1000 is needed for placing the measuring point of the tester under a defined static load.



Force Measuring System CMS



**Load Cells 50 to 1000 N
with fork heads M6**



**Load Cells 2000 to 10000 N
with ball screws M12**

Load Adapter KB 1000

In case of hand lever operated testers the Load Adaptor KB 1000 must be used for placing the measuring point under a defined static load during calibration or adjustment procedure of tester's measuring system.

The Load Adaptor KB 1000 is fixed at tester's load bar. The KB 1000 features a self-locking spindle drive, which enables the exact adjustment of the static verification load. One side of the SM reference load cell is fixed at the load rod of the KB 1000 and the other side of the load cell is fixed at a support rack on measuring point of the tester. The maximum test load which can be applied by a KB 1000 is limited to 1000 N.



Side view of KB 1000 assembled at a tester



Load Adapter KB 1000 with load cell SM

Calibration and adjustment with Force Measuring System CMS

In order to verify the accuracy of the testers the measuring point of testers must be loaded with defined static loads at corresponding gradual force steps. We recommend to carry out verification series over the range of 10% of the nominal load up to the nominal load in increments of 10% of the nominal load.

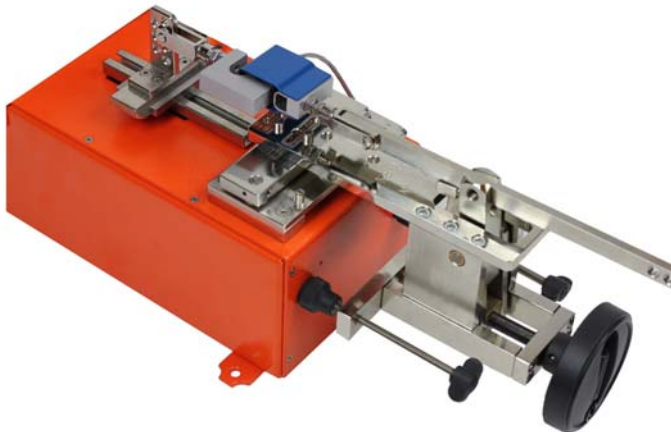
To adjust the testers with an optimum accuracy the testers have to be loaded with their respective nominal load. Therefore it is a prerequisite that the testers can be loaded with a defined static load during the adjustment procedure.

If the Force Measuring System CMS is used for the adjustment and calibration of the testers the corresponding suitable SM load cell of the CMS system is fixed between two hold racks assembled on measuring point and on the load slide of the tester, respectively in case of hand lever operated testers between the measuring point and a suitable load adapter (e. g. KB 1000).

For this support racks are used to assemble the reference load cell on the tester at the necessary fixing height. During calibration the measuring point of the tester is loaded with the required control loads via the reference load cell using the testers drive or by means of a load adapter. The calibration is carried out by comparison of the force readings displayed by the tester in tracking mode with the force reading of the KMS gauge. If deviations are determined during calibration, which are outside the permissible tolerances, the measuring system of the tester must be re-adjusted. Each **MI&T** tester features an adjustment menu in his set-up menu in order to adjust tester's measuring system if the tester is loaded with nominal load. In the manuals of the testers the calibration and adjustment procedures are described in detail.

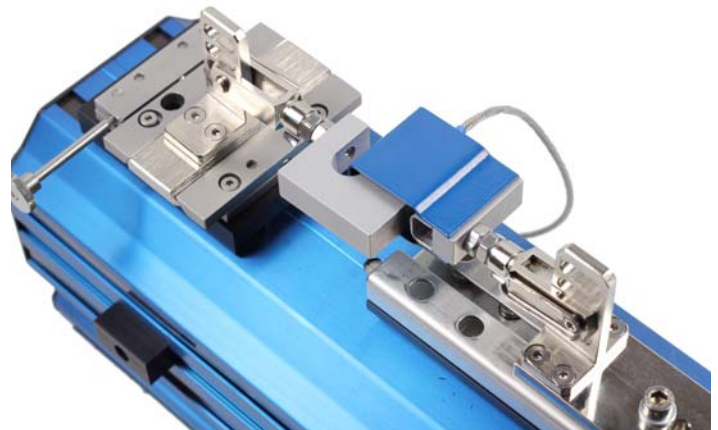
Assembly of SM Load Cells on testers

Tester EPT, PT and FT up to 500 N



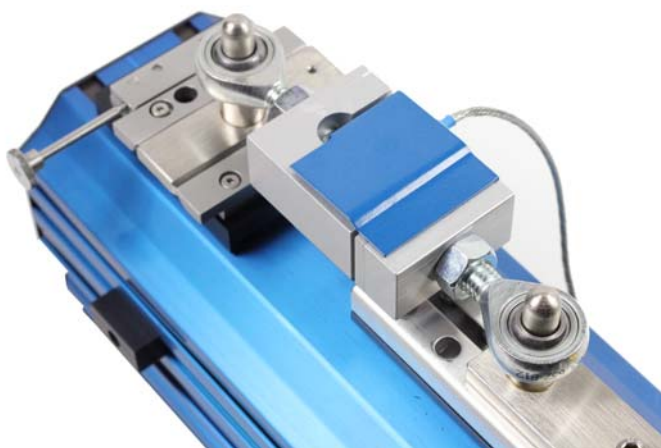
Reference load cell with load adaptor KB 1000

Tester FTS, FTM, ATM and MTM up to 1000 N



Reference load cell SM 50/100/250/500/1000 N
with support racks HB 100

Tester FTM, ATM and MTM with rated load 2000 N



Reference load cell SM 2000 N with support racks HB 200

Tester FTM, ATM and MTM with rated load 5 kN / 10 kN



Reference load cell with support racks HB 1000