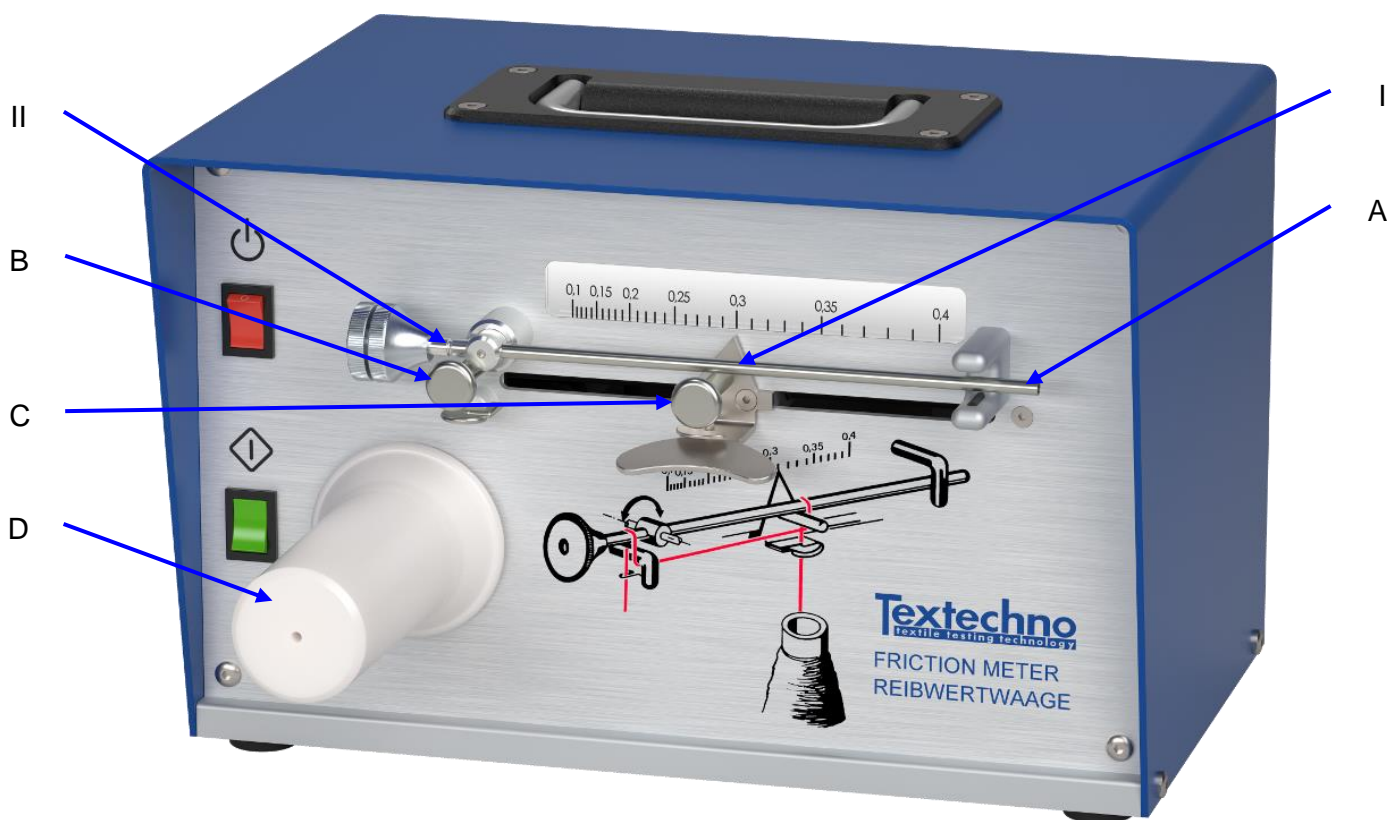


REIBWERTWAAGE Yarn Friction Tester

The running characteristics of a yarn, e.g., during knitting, is directly affected by the quality of paraffin-coating; especially the mechanical strain to the needle during stitch generation in knitting process is affected. The adhesion factor of a yarn without paraffin is approximately 40 % up to 50 % higher compared to paraffin-coated yarns, caused by deposits of microscopic paraffin particles on yarn deflecting points in the latter case. The surface properties of a paraffin-coated yarn – and thereby the quality of paraffin-coating process – up to now only could be determined by using complicated electronic apparatus or, more practically, by counting the number of failures during knitting. The latter method, off course, can only be applied to the completed fabric, e.g., as stripes, broken yarn ends or faulty stitches.

The **REIBWERTWAAGE**, which was developed by the SCHLAFHORST company and commercialized by TEXTECHNO, provides an economically prized measuring testing apparatus to forecast running properties of paraffin-coated yarns in a very simple way utilizing a compensating principle.



The device consists of:

- a precision centre-mounted balance beam 'A',
- a fixed wrapping pin 'B',
- a sliding wrapping pin 'C', and
- a winding device 'D'

The instrument measures the yarn- versus polished steel- friction, which is an indicator for the quality of the paraffin-coating process. The friction is represented by changing the length of a lever arm on a balance beam, which is in balance when the downward pointing force at the running-in position 'I' (created by the in-running yarn tension and wrap at the appropriate length of the lever arm) corresponds with the thread tension of the fixed lever arm at position 'II'. In case the beam gets out of balance (e.g., due to changing paraffin coating), the running-in position must be shifted manually to come back into balance condition. The running-in position (represented by a pointer on the sliding wrapping pin) corresponds to a scale, which indicates the friction and thereby the paraffin-coating of the yarn to be analysed. Here the so-called compensating principle assures, that the in-running tension of the yarn does not affect the test result.

REIBWERTWAAGE Yarn Friction Tester

The thread wraps itself twice around the balancing beam at 180°. The running-in position (I) for the first wrap is movable, and that for the second is determined by the groove in the balancing beam.

The balance arm is tared by means of a nut as compensating weight in such way, that it 'floats' in balance condition without thread, which is the prerequisite for working the friction measuring device in any position. The pointer of the sliding wrapping pin indicates the friction, the frictional value in a dimensionless figure. The basis for the calculation is the rope friction formula

$$S_2 = S_1 \cdot e^{\mu\alpha}$$

with

- S_1 = force at the running-in position 'I',
- S_2 = thread force of the fixed lever arm at position 'II',
- e = base of natural logarithm,
- α = total wrap angle (540°),
- μ = coefficient of friction.

The force pulling at the lever arm (a) is equal the force at arm (b)* when the beams is in balance.

The winding device pulls the thread through the friction measuring unit at about 150 m/min. This corresponds to the average running speed of the thread in knitting machines. The friction measuring device determines the friction value irrespective of the yarn input tension due to its compensating principle. The input tension, however, should be as low as possible, since due to a total wrapping angle of 540° the yarn tension considerably increases within the friction measuring device and may lead to yarn breakages.

Technical data

Mains supply:

100-240 V, 50 (60) Hz, current requirement approx. 1.5 A (power adapter),
24V DC, 2.5 A (RWW).

Lacquer finish:

RAL 5002/aluminium (anodized).

Dimensions, weight:

Height 185 mm, width 280 mm, depth 265 mm,
approx. 2.3 kg (+ power adapter approx. 1.2 kg).

The technical contents are subject to changes by Textechno.