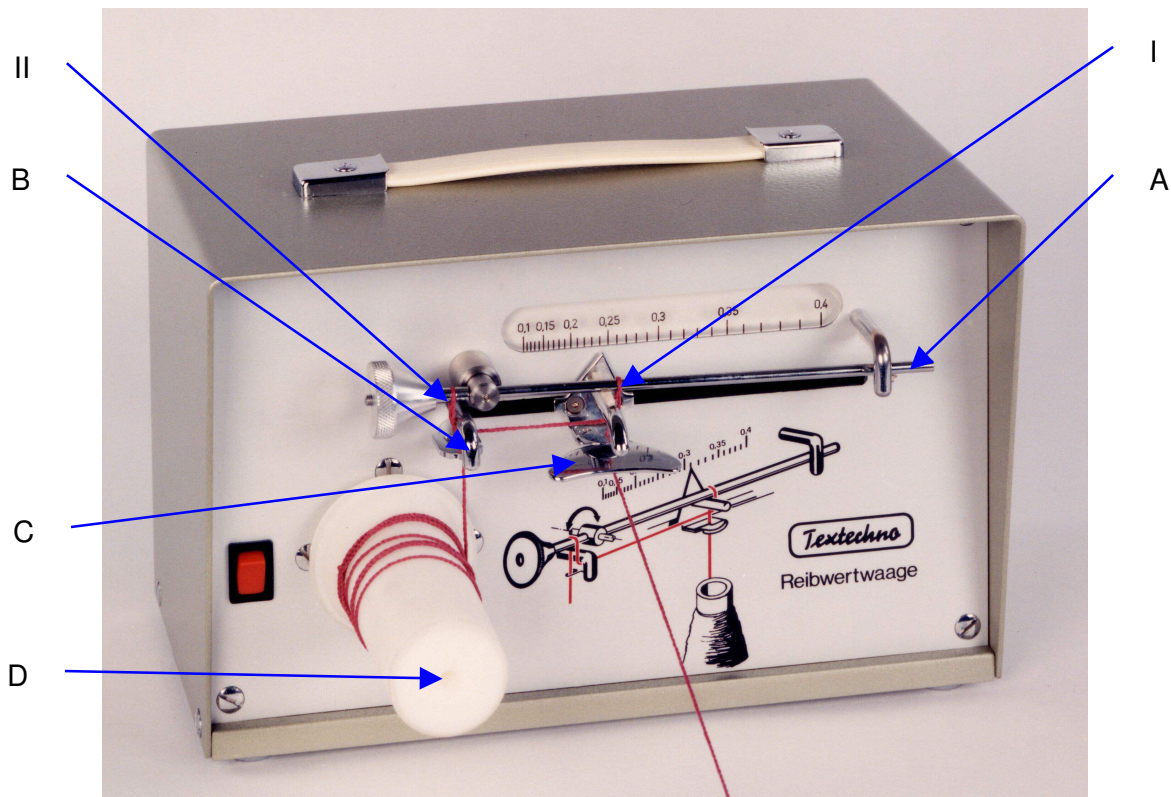


Yarn Friction Tester REIBWERTWAAGE

The running characteristics of a yarn, e.g. during knitting, are directly effected by the quality of paraffin-coating; especially the mechanical strain to the needle during stitch generation in knitting process is effected. The adhesion factor of a yarn without paraffin is approximately 40 up to 50% higher compared to paraffin-coated yarns, which is 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 yarns 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.



Manual version of the REIBWERTWAAGE

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 is shifted by an integrated motor drive in order 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 analyzed. Here the so-called compensating principle assures, that the in-running tension of the yarn does not effect the test result.

The manual version of the device consists of:

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

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.

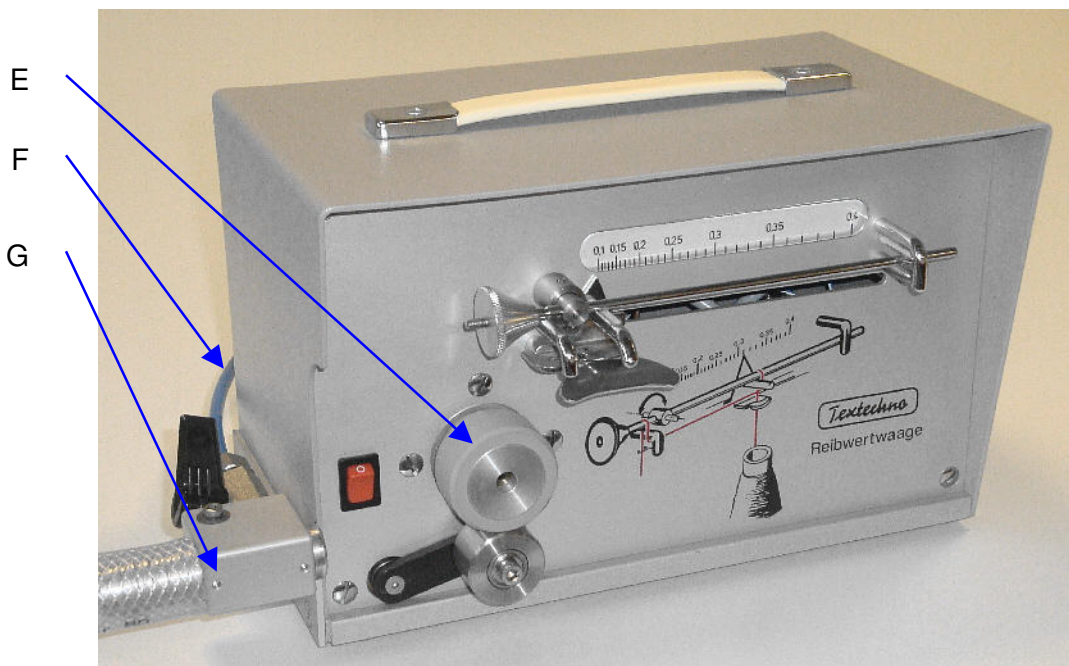
The balance arm is tared by means of a nut as compensating weight in such way, that it 'floats' in balance condition without thread, which is the prerequisite for working the friction measuring device in any position.

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

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

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 increases considerably within the friction measuring device and may lead to yarn breakages.



Automatic version REIBWERTWAAGE SP

With the manual version of the REIBWERTWAAGE the position of the sliding wrapping pin 'C' must be manually adjusted to set the balance beam 'A' in equilibrium, where the automatic version adjusts the balance beam automatically, so that no adjustment is necessary and the friction value can directly be read from the scale on the front side of the instrument. Furthermore the automatic version has a yarn transport by nip rollers ('E') and a suction clearing ('G') by air jet, so that this device requires a supply of compressed air (5 bar, 'F') and a waste bin.

The automatic version of the REIBWERTWAAGE can be connected to a TEXTCONTROL PC, where an appropriate software calculates a complete statistics of the friction value along the yarn and shows the friction value as a graphics. All results can be printed out on a test report. Due to the above facts it is not surprising that the REIBWERTWAAGE nowadays has found it's important position at most yarn producers and machinery manufacturers as a valuable instrument of quality control.

Technical data:

Testing method:	Measurement of friction properties of yarns, especially after paraffining process
Principle:	Direct determination of coefficient of friction according to compensating principle
Yarn take-off:	Manual version: Rotating wind-up body, Automatic version: Suction clearing
Yarn speed:	150m/min
Motor:	Synchronous AC- motor
Design:	Balance beam with high-precision ball bearings, surface hard-chrome plated, housing made of aluminum with heavy-weight ground plate and carrier handle, engraved yarn-path scheme on front plate, rocker switch for motor operation, pluggable yarn wind-up body (holder on rear side during transportation), wrap for mains cable on rear side.
Mains supply:	220V / 50Hz (other supply voltages on request), mains cable with three poles (including protective ground).
Power consumption:	Approx. 0.5 Amp.
Dimensions:	Width 280mm, Depth 170mm, Height 180mm
Weight:	Approx. 5kg
Color:	Housing: metallic green, Front: silver-anodized, other parts: chrome plated
Compressed air supply	Approx. 5 Bar (only "SP" automatic version)