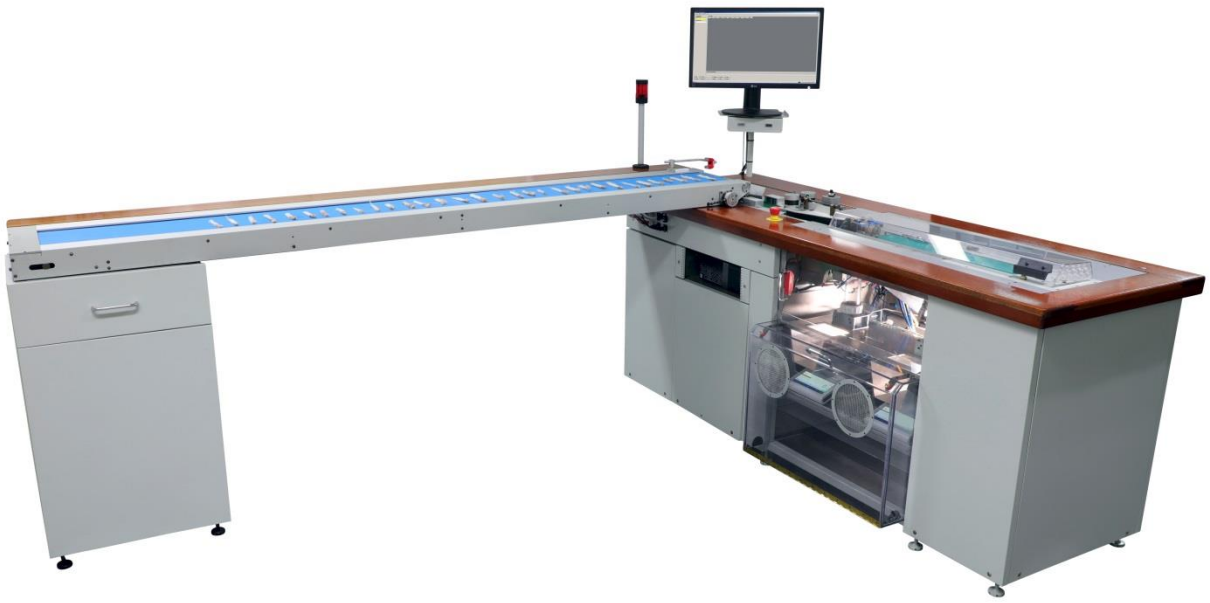
Automatic Tester for Length and Strength ATLAS P3

by AWTA Ltd.



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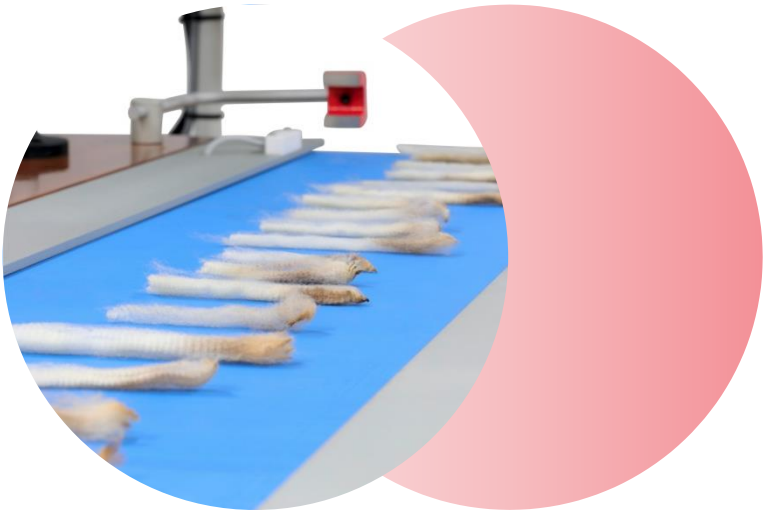
Introducing The Staple Length & Strength Measurement

One of the most important characteristics that determines the value of combing wool is the average fibre length which will be achieved after processing. This length is known as Hauteur. Research has shown that Hauteur is closely correlated to the staple length and staple strength of the greasy wool measured prior to processing.



Prior to the measurement of Staple Length & Strength three levels of sampling need occur:

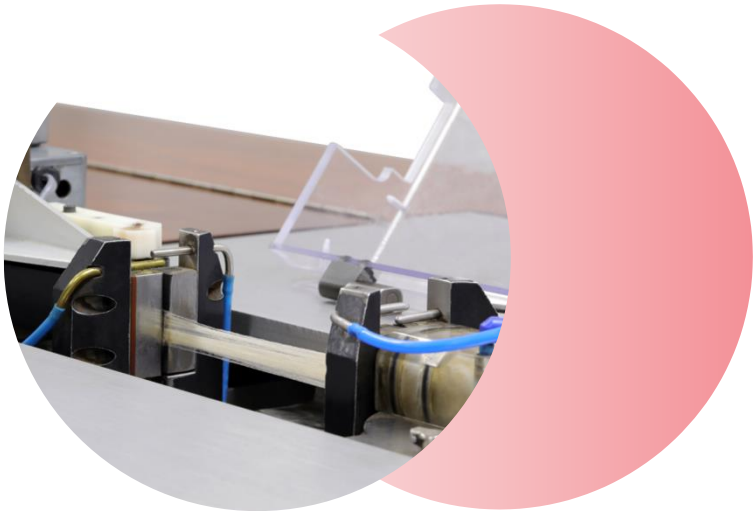
- Grab sampling from the bales of wool in the lot
- Tuft sampling from the grab sample
- Staple preparation of the tufts

Once the above steps are complete, the staple sof greasy wool are measured on an instrument called the Automatic Tester of Length and Strength (ATLAS). This instrument measures:

- The mean Staple Length of the staples (mm)
- Coefficient of Variation of Staple Length (CV%)
- Mean Staple Strength (N/ktex)
- Distribution of Position of Break (POB%)

How does it work?

Length and Strength is measured using an instrument called the Automatic Tester of Length and Strength (ATLAS).



Length is measured by conveying the staple; tip first, through a vertical array of eight light beams and then electronically measuring the distance the conveyor moved while the light beams were interrupted by the staple. All staples are measured for Length regardless of the staple dimensions. Length is measured in millimetres. The IWTO standard requires that a minimum of 55 staples are measured for Length to produce a certified result.

After Length measurement, the staple is picked up by two rubber belts which feed it through to a jaw which grips the tip of the staple. A jaw then moves away until the base of the staple is clear of the rubber belts. The base jaw then grips the base of the staple. The tip jaw moves away and the staple is broken in two. The peak force required to break the staple is measured in Newtons (N) by a force transducer attached to the stationary (base) jaw.

On its own, this information is of little value since the staples that are measured vary in thickness. All things being equal, thick staples require a greater force to break than thin staples. Therefore, the force required to break a staple must be related to staple thickness before it can be used more meaningfully.

Staple thickness is determined from the weight of the staple and the Length of the staple. That is, the more grams of weight per millimetre of Length, the thicker the staple. Staple thickness is measured in kilotex (ktex). The total Newtons of force is divided by the number of kilotex to give a Strength value per unit of thickness (N/ktex). This figure is known as the greasy Staple Strength because it was derived from the greasy staple weight. This is then converted to a measure of clean Staple Strength using the Wool Base and VM Base information.

Only staples longer than 50mm are measured for Strength. This is due to the fact that 25mm of the staple is held in the tip and base jaws and cannot be broken, so only the middle 25mm is measured on a 50mm staple. Strength measurements on staples shorter than 50mm are of very little value. A minimum of 40 staples must be measured for Strength in order to produce a certified result.

The weights of the tip and base portions are measured and are used to determine the weight of the staple and the Position of Break (PoB). For example, if the tip is very light and the base is very heavy, then the PoB is close to the tip.

The PoB is reported as the percentage of staples which break in the tip, middle and base thirds of the staple. From the processors point of view, the worst case is to have the majority of staples breaking in the middle, as this reduces the fibre Length in the processed top (Hauteur). However, this is only of major importance to the processor if the Staple Strength of the sale lot is low.

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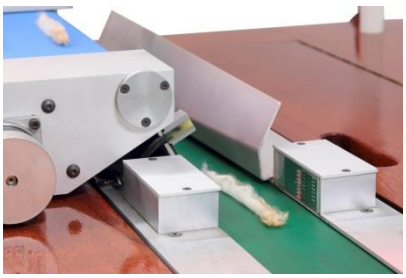

ATLAS

Model: P3

Technical Information

The Atlas P3 measures the Staple Length and Strength of a set of wool staples in accordance with IWTO-30-2007 standards.

Individual wool staples are placed on a belt, which conveys them to the length-measuring section. Length is determined using a light array that senses the start and end of each staple. The staple is then transported to the strength section where jaws grip each end of the staple. The staple is broken, and the force required to break it is recorded. The broken staple pieces are then independently weighed to determine the position of the break in the staple. From this information, the Average Staple Length (mm), Coefficient of Variation of Staple Length (%), Average Staple Strength (N/ktex), and Position of Staple Break (%) are all determined for the set of staples.

Technical Speicifactions

Services				
Electricity	AC 220-240 V 50Hz 10A			
Compressed Air	650-750 kPa			
PC & Software				
Hardware	Intel Core i5 or above	8GB RAM	512GB Storage	1080p Display
Operating System	Windows 8 or above			
Dimensions and Weight				
Dimensions (WxDxH)	2160mm x 3100mm x 1600mm			
Weight	665 kg			
Environmental Parameters				
Operating Temperature	18-22 °C			
Operating Humidity	62-68 %			
Manufacturer Warranty	1 Year			

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