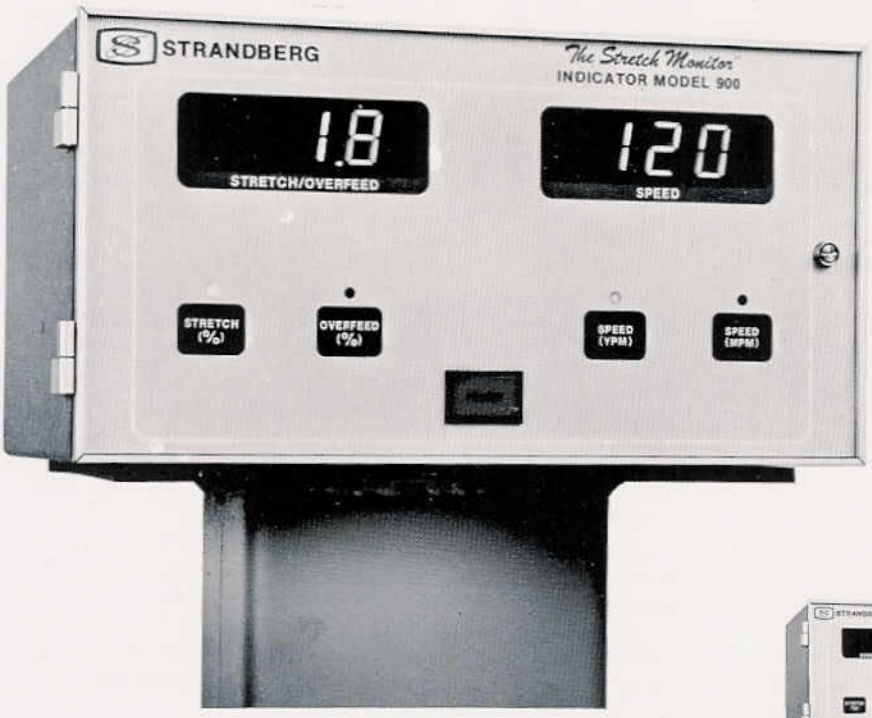
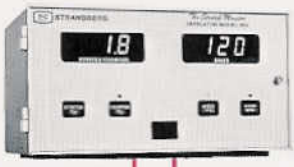
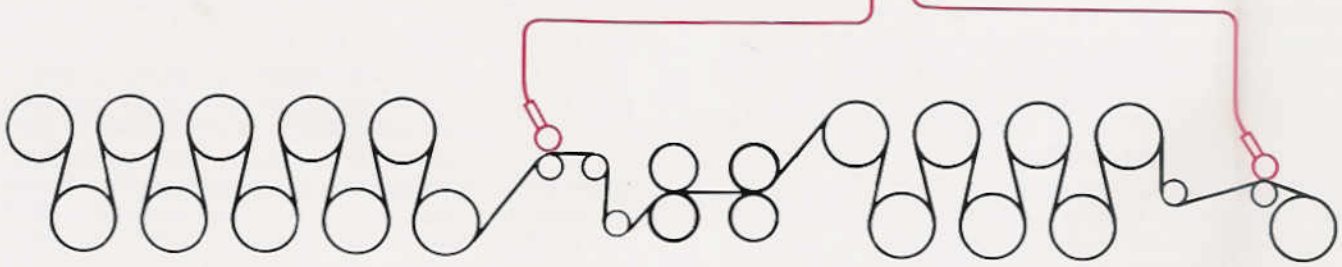
The Stretch Monitor™



INDICATOR MODEL 900





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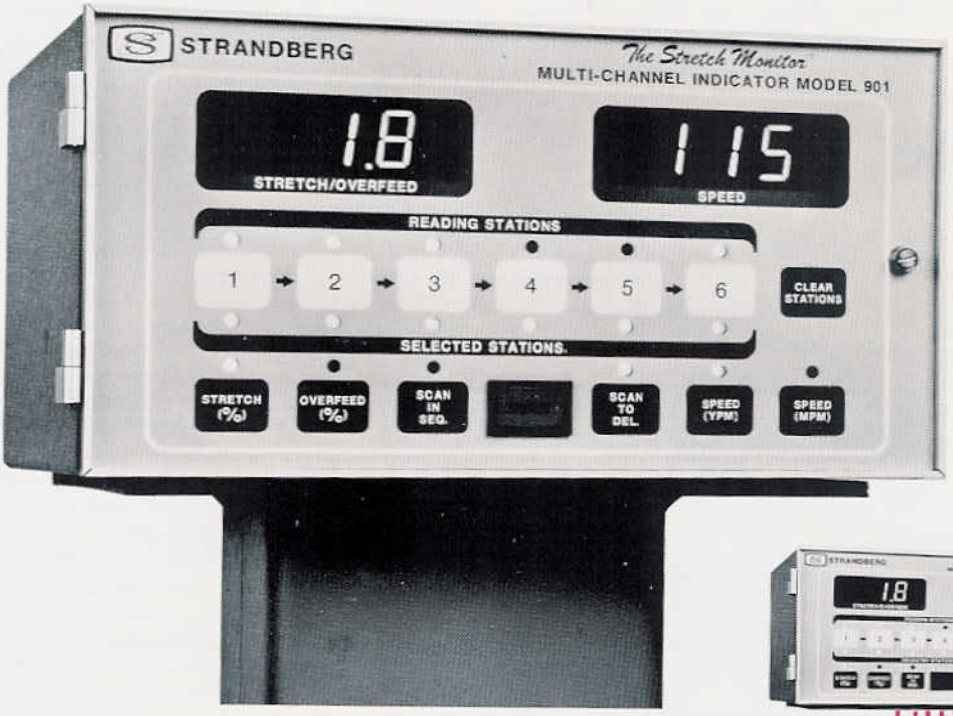
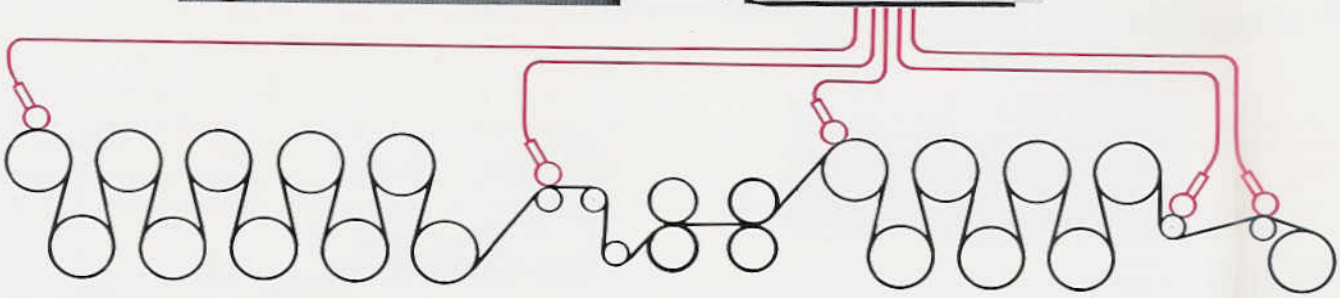
INCREASES EFFICIENCY *The Stretch Monitor*™ SAFEGUARDS QUALITY



MULTI-CHANNEL INDICATOR MODEL 901



Stretch and shrinkage in textile warps and fabrics affect both efficiency and quality to degrees that are almost unbelievable. Perhaps equally surprising is the very large effect that is produced by very small changes in stretch and shrinkage.

Just a half percent too much stretch when sizing cotton and cotton blends is known to significantly step up warp breaks on the looms. Wool, acetate, and rayon warps must be stretched several percentage points when sized to prevent slack ends on the looms. But, if these critical values are exceeded, the nightmare associated with slack ends is over and incessant end breaks occur.

Conventional adjustable-speed transmissions cannot maintain these tenth-percent stabilities that are so necessary in sizing today. As the creels unwind, loads change, one set of rolls slows down in relation to another, and there goes weave-room efficiency, not on just one loom, but on hundreds of them.

But, loom stops and weaving efficiency are only part of the result. Every loom stop invites a defect. The loss of first-quality fabric is an important result.

Just two minutes of excessive slasher stretch assures continuously poor performance at the loom for as much as a whole shift. In many instances, slashers are deliberately run at excessive stretch magnitudes, which substantially affect overall weave-room performance, just to avoid slack ends at slow speed. Conversely, a reasonably tolerable two percent stretch in a cotton warp often surges up to four percent when the machine speed is dropped to slow. Just five minutes of this can require over two hours to weave if the loom never stops. But, with little or no elongation left in the yarn, end breakage becomes excessive, and the loom may very well stand for periods longer than it runs. The probability of producing second-

quality fabric on this loom is enormous. So is the cost of weaving it.

The old adage, "a well prepared warp is half woven", is relentlessly true.

A sizeable fortune is at play around nearly every overfeed control in use today on tenter frames. This is particularly true of knit goods where comparatively high percentages are employed. Once a predictable final width can be assured, a precisely adjustable overfeed rate is essential if there is to be any assurance of consistent fabric density, whatever its value.

On many compressive shrinkage machines, cloth is being stretched going in and shrunk back on its way out. The result: nearly nothing.

As surprising as these consequences are, there are some sound reasons for them. First, webs are stretched when they are pulled through textile processes, when the entering roll speed slips in relation to that of subsequent rolls. Loads on transmissions and drives cause this. Just one-percent slip is enough to bring havoc upon the process. Except for the narrow-range, differential-type PIV, all transmissions slip around one percent or more when loaded. This is also true of multi-motor drives, save only the synchronous and digitally controlled types. Slip, expressed as a percentage of the no-load speed, is stretch.

It is of prime importance to measure stretch and shrinkage, after which one of three choices should be made: (1) alter or repair the machinery; (2) rely upon operator adjustment; or, (3) install automatic controls.

Big, digital, continuous, on-line reading of stretch and shrinkage, bone-accurate to the nearest tenth percent, is an easy job for the STRANDBERG Series 900 STRETCH MONITOR, a complete line of microprocessor-based indicators and controls, designed specifically for textile manufacturing.

The 900 makes it easy for you to step up weaving efficiency whole percentage points, to reduce fabric defects and second-quality goods. It also enables you to more accurately preset and control overfeed on your tenters, to monitor excessive fabric tension on drying cylinders that lose fabric width, cause weft distortion, and rip out seams. It also monitors compressive shrinkage machinery to assure zero stretch at entry and full shrinkage on the Palmer.

The STRETCH MONITOR uses either surface-driven speed transducers or shaft-driven transducers at entry and exit to continuously monitor stretch and shrinkage or, with the press of a button, overfeed and underfeed . . . to the nearest tenth percent. Delivery speed in yards or meters per minute, accurate to the nearest yard or meter, is also continuously monitored.

In selecting transducers, consideration should be given to yarn or fabric slippage on rolls and drying cylinders before deciding upon the shaft-driven type. The light-weight, surface-driven transducers are simply plugged into fixed stations, which also serve as mounting pins. These stations are located at any desired points along the web-flow path. An extension cable is used to locate two transducers side by side for a 00.0% stretch/shrinkage test, an infallible proof-of-accuracy assurance which is easily carried out on all Series 900 installations.

Surface-speed transducers with sensors located a safe distance away from the surface wheels and connected by a chain drive are available for continuous or spot-test operation on hot drying cylinders. This valuable feature permits incremental stretch monitoring on slashers which includes measurements within the drying cylinder section and in the stretch-susceptible wet-warp section immediately after sizing.

The Model 900 STRETCH MONITOR with continuous display of speed is a simple, easy-to-install instrument. It can be used to monitor stretch, shrinkage, overfeed, or underfeed between any two points along the web-flow path. When the STRETCH (%) button is depressed, readings are in percent stretch or shrinkage, the latter reading preceded by a minus sign to indicate shrinkage instead of stretch. The same applies to overfeed and underfeed, the latter also identified by a minus sign preceding the reading. Front-panel lights signify whether the percentage readings are in stretch/shrinkage or overfeed/underfeed. Lights are also used to signify whether the speed readings are in yards or meters per minute.

The 900 requires no routine maintenance, and no calibration is required. Since plug-in circuit cards are employed, servicing is easy. The instrument also has the ability to diagnose the transducers which are connected to it. In this way, it is capable of identifying

which transducer is defective and whether both are defective. It does this by reading 01 in the stretch/overfeed display if the entering transducer is not functioning properly. A reading of 02 indicates that the exit transducer is not functioning properly. Finally, a reading of 03 indicates both transducers to be defective. This self-diagnostic feature makes assembly replacement by process of elimination easy.

The Model 901 STRETCH MONITOR is like the 900, except it can be connected to six speed transducers instead of two. In addition to reading the speed of the highest-numbered transducer, stretch/shrinkage and overfeed/underfeed can be read between any selected stations in continuous, automatic sequence. This selection is made by depressing the SCAN IN SEQ. button. The device can also be made to scan to delivery by depressing the SCAN TO DEL. button. Stretch/shrinkage or overfeed/underfeed between each successively selected station and the highest-numbered station selected is then read in continuous sequence.

Any one of six special scanning sequences can be selected by merely depressing one of the station buttons while the instrument is in the SCAN IN SEQ. mode. Other sets of six are available and can be incorporated into the instrument by plug-in module. No tools are required.

The special scanning sequences cover well-known textile applications, such as single, double, and four size-box slashers. On these machines, sequences include the section of warp in the creel from the back section beam to the size box, the wet section within each size box up to the first drying cylinder or on to the front roll, the amount of stretch on the drying cylinders, themselves, and the amount of stretch in the leasing section. After scanning the segments, a final overall stretch figure can be displayed.

These special scanning sequences also include finishing mill requirements on tenter frames, drying cylinders, and compressive shrinkage machinery. The last of these, for instance, includes a segment between the feed rolls and the entering end of the rubber blanket, from there to the exit end of the Palmer, and on to the plating roller. A final overall shrinkage reading assures proper processing by the machine.

The 901 scanning feature, which reports stretch, shrinkage, overfeed, or underfeed in several increments of the web-flow path in rapid, continuous sequence, is a spectacular advantage over the simple, straightforward, single-increment readout of the 900.

The Model 901 incorporates the same self-diagnostic feature of the 900, except the transducers to be tested for proper operation must be selected in pairs from the front panel.

— SPECIFICATIONS —

MODELS 900 And 901

Finish	Blue, texturized polyurethane
Dimensions, Instrument	6½" (16.5 cm) high 12¼" (31.1 cm) wide 8 7/16" (24.0 cm) deep
Dimensions, Mounting Stand	46" (116.8 cm) high four ⅜" (0.95 cm) holes on 9¼" (23.5 cm) centers
Overall Height	52½" (133.4 cm)
Weight, Instrument	11¼ lb (5.1 kg)
Weight, Stand	54.0 lb (24.5 kg)
Weight, Surface-speed Transducer	3.0 lb (1.4 kg)
Weight, Shaft-driven Speed Transducer	2.1 lb (1.0 kg)
Speed Range	0-200 ± 1 YPM or MPM
Percent Stretch or Overfeed Range	0-± 30.0 ± 0.1% (minus sign is shrinkage or underfeed)
Integration Length	0.2 to 15 meters, selectable
Temperature Range, Instrument	32° - 140°F (0° - 60°C)
Temperature Range, Speed Transducers	32° - 185°F (0° - 85°C)
Output	4-wire data bus for connection to adapters to drive recorders and printers. Provisions are included for selecting data from Model 901.
Relative Humidity Range	0 - 100%
Power Requirements	100/115/200/230 volts, 50/60 Hz, single phase, internal voltage regulation satisfactory for ranges of 95-135 and 190-270 volts.
Accuracy	± 0.1% stretch, shrinkage, overfeed and underfeed; ± 1 yard or meter per minute speed.

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