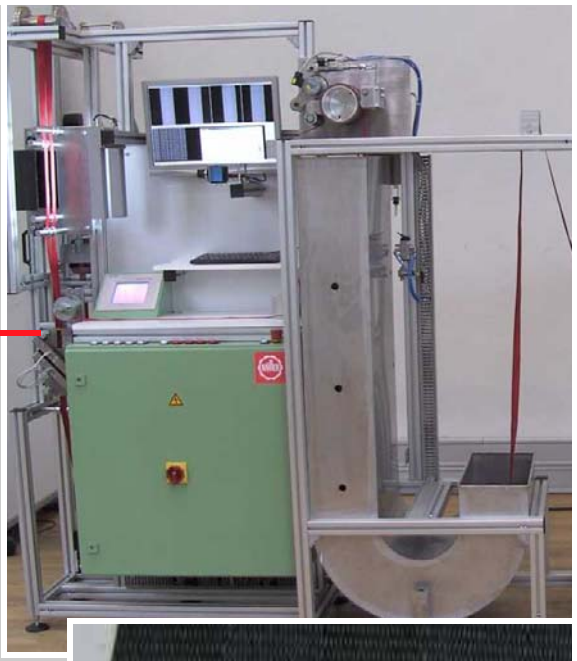
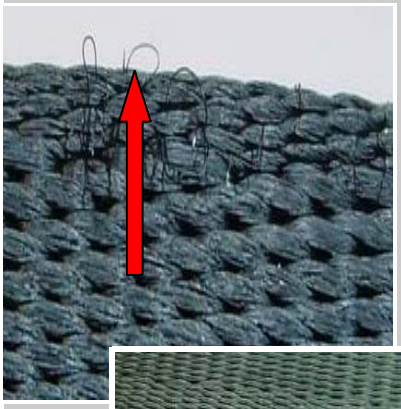
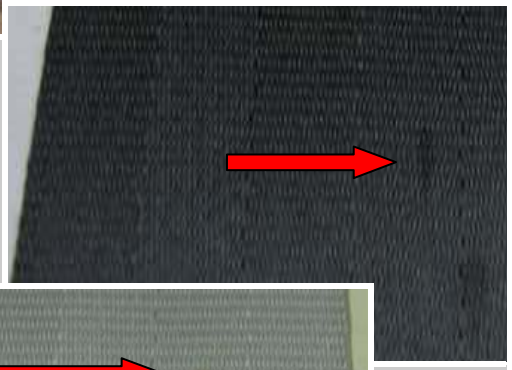
Camera inspection machines

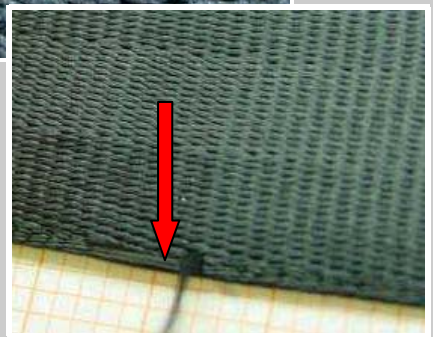
RB715, RB725, RB755

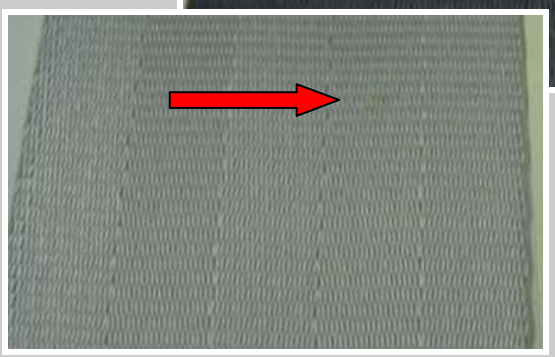
for dirt/dye spot inspection of various types of tapes, belts and ribbons as in line components or stand alone inspection machines











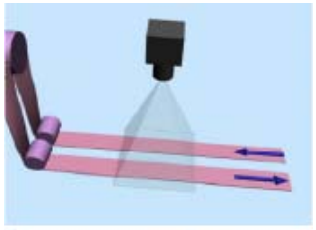
RB715, RB725, RB755

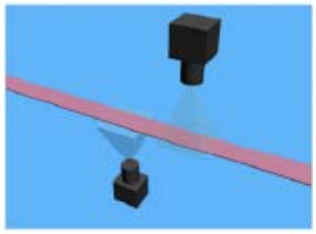
Concept

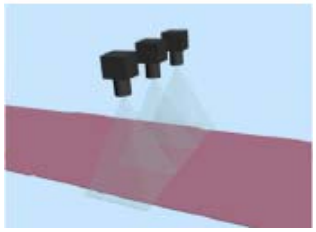
The camera inspection is applied for the inspection of dirt / dye spots and stain in various tapes and belts. The optional adjustment of a filament detector extends the camera inspection to a fully automatic inspection, that can detect almost all quality defects on the belts. All tape faults are stopped and positioned for the operator on an inspection table.

The operator decides

– to cut out the fault,
– repair the fault,
– confirm and mark the fault with a fault label or
– perhaps to accept minor defects.







The camera inspection can be easily integrated in entire production lines, i.e. it can be on a J-Box in front of cutting machines, winders, layering or other belt confection machines. On the other hand there are also stand alone inspection machines possible for offline fault processing.

Depending on the inspected tape width, the required resolution and tape requested speed there are systems with one, 2 or up to 6 cameras possible. The inspection results are documented in fault catalogues, that help to determine the requiredresolution.

The tape surface is illuminated by 2 arrays of white lights LED or in case of seat belt high performance illumination with white MHR light source and glass fibre is used.

Recognition capability

All kinds of fabric faults

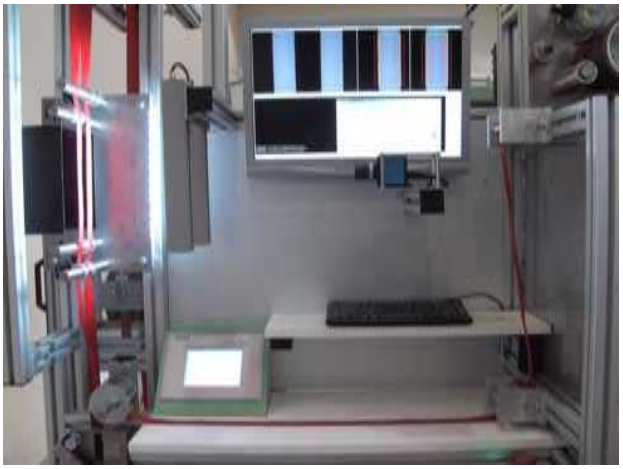
– Dirt and dye spots
– Belt width deviations
– Stains of chemicals, oil, grease, etc.
– Warp defects
– Weft defects
– All kinds of mechanical tape damages
– Damages of the tape selvedge and edge filaments
– Fluff and fluff balls (filament detector)
– Knots

Not possible to inspect:

– Jaquard tapes
– Tapes with patterns in length direction
– Tapes with printings and letter

Important features

– Inspection of dye/ dirt spots and all optical defects on the front side and backside of the belt
– Synchronous inspection of the tape width by the camera system
– Especially suitable for rough structured belts where the weaving structure of the tape makes an inspection with analogous sensors (like MINIFIT) impossible.
– High resolution laser filament sensors for the optional detection of even smallest filaments
– The fault size to be stopped can be individually programmed per belt by the operator
– Inspection parameters can be easily adjusted to different tape structures and colors by adjustment of a few parameters only
– No picture processing experts required and easy to set
– Different parameter settings for front and backside of the tape possible
– All inspection programs can be stored and recalled any time to enable a belt inspection with repetitive results and independent from operator skills and concentration
– The inspection parameters can be set by the operator directly on the inspection machine or can be can be individually programmed offline by quality insurance staff
– Automatic positioning of all faults on an inspection table for easy operator processing
– On option the full fault history including all fault pictures can be transferred and stored in a Fault Management System FMS
– All detected faults are positioned on the inspection table and parallel the fault picture is displayed on the 17” flat panel for comparison of fault picture and real tape
– Devices for the automatic marking of tape faults with barcode labels can be integrated



Fault management system (FMS) extension with camera inspection

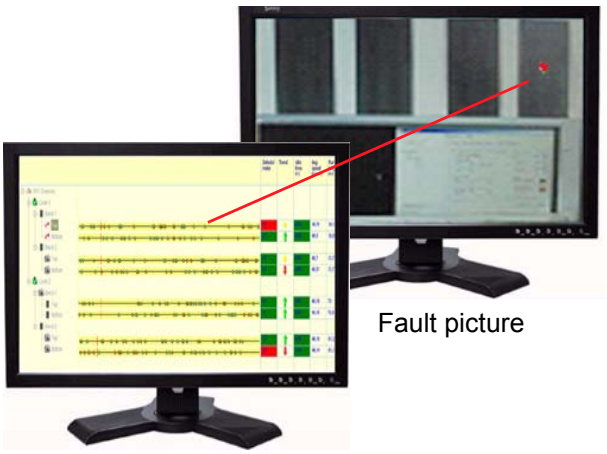
All weaving looms equipped with filament detectors and all camera inspection units can be connected to a central computer system = Fault Management System FMS

All fault data of the filament and camera detection will be reported and documented to the FMS-PC. This system serves as a quality management system, that collects all fault data per machine and documents the full fault and production history. All collected data are immediately available for evaluation regarding quality and productivity control.

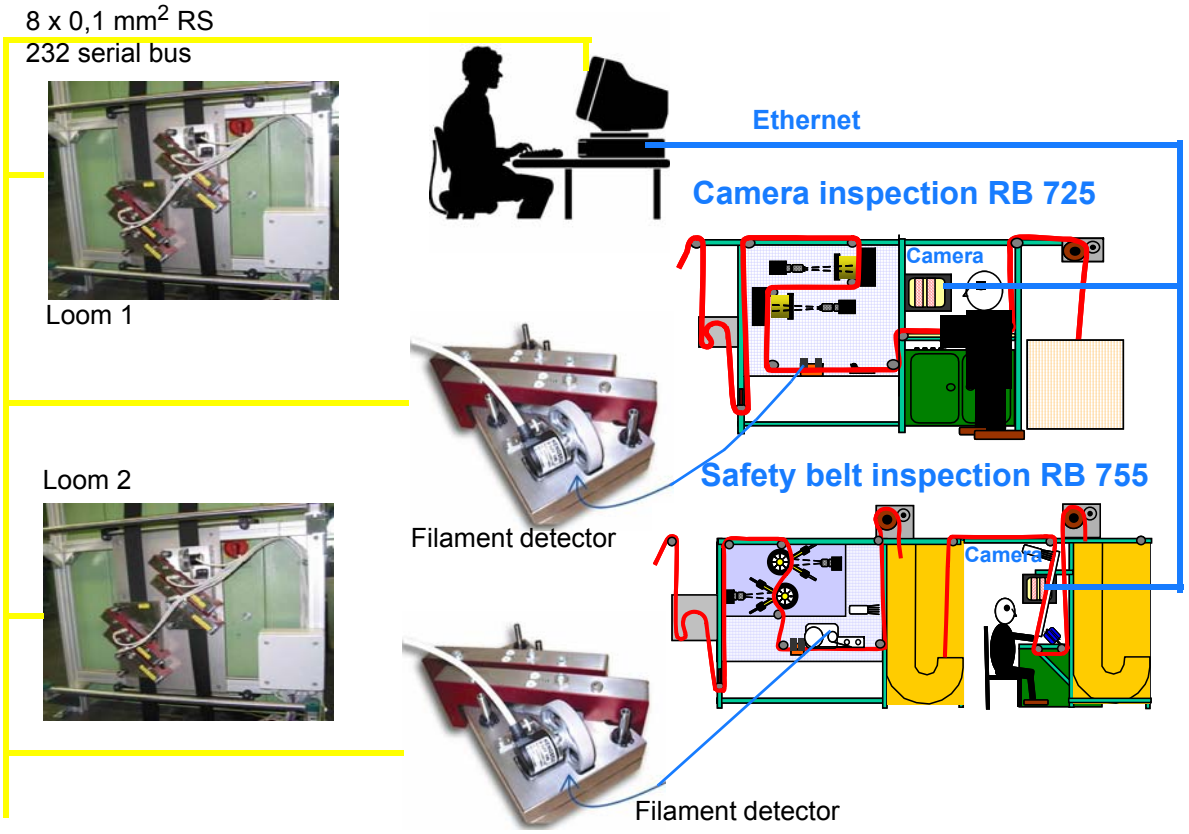
Filament detectors have to be connected using an 8 x 0,2 mm^2 bus cable. For the documentation of camera fault pictures the customer has to provide an additional Ethernet cable from the camera inspection PCs to the FMS-PC. All faults are documented according to their position in the belt.

The data of the camera inspection, documented in the FMS are:

– Current tape length
– Type of fault (width deviation, edge destruction, edge filament or dirt spot)
– Size of fault
– Camera picture of the fault



Fault picture



FMS

Fault management system for filament inspection (FMS)

All weaving looms that are equipped with filament detectors can be connected by 8 x 0,1 mm2 cable to a central computer system = Fault Management System FMS

All fault data of the filament detection will be reported and documented to the FMS-PC. This system serves as a quality management system, that collects all fault data per machine and documents the full fault and production history. All collected data are immediately available for evaluation regarding quality and productivity control.

The data documented in the FMS are

– Current tape length
– Type of fault (high/ low level fault)

As the programming of the filament detectors of the single machines can be done also centrally from the FMS-PC the quality control can take full responsibility on the quality produced.

On the FMS-PC the faults are displayed according to the tape length by color points.

Standard Equipment

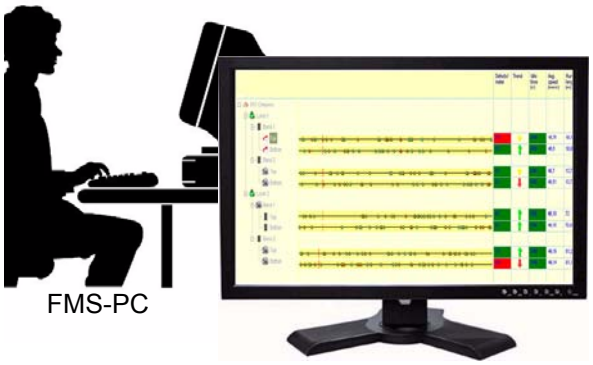
– FMS-PC,
– Keyboard
– Mouse
– 17" flat panel
– FMS- Software

The FMS-PC can be located next to looms or in a central office.

Requirements

Each loom has to be equipped with one single filament detector with encoder. Customer has to install a cable 8 x 0,1 mm^2 (bus wiring). Up to 20 filament detectors per bus possible.

Customer has to connect all camera system PC via Ethernet to the FMS-PC.

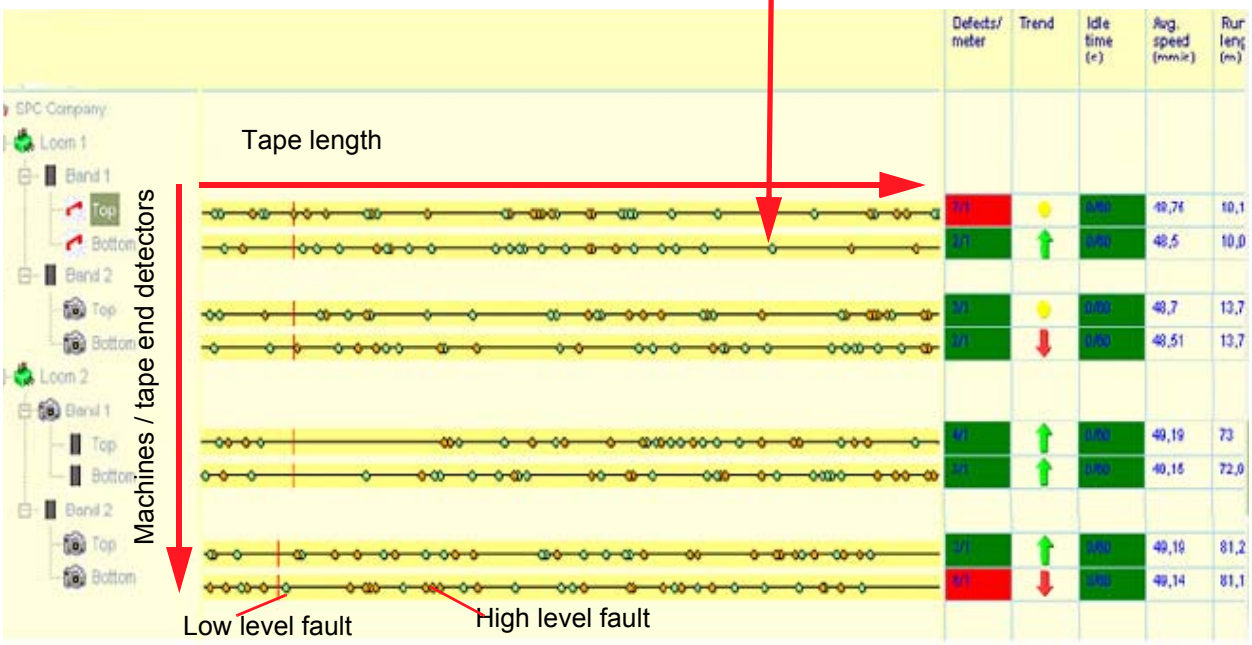


Loom 1

Loom 2

8 x 0,1 mm^2

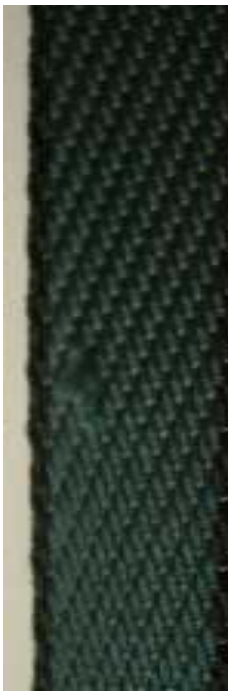
Example stand alone unit

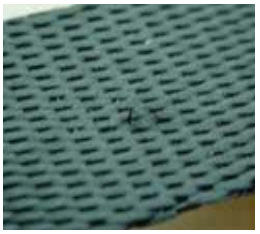


Fault Management System for 2 looms with 2 belts each

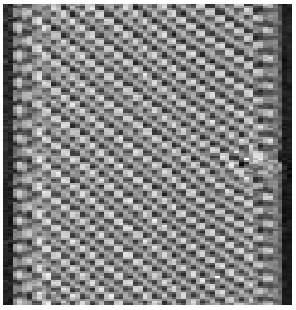
Fault catalogue for belts and tapes

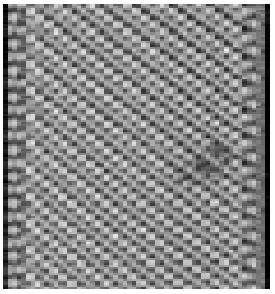
Filamentation on belt edge



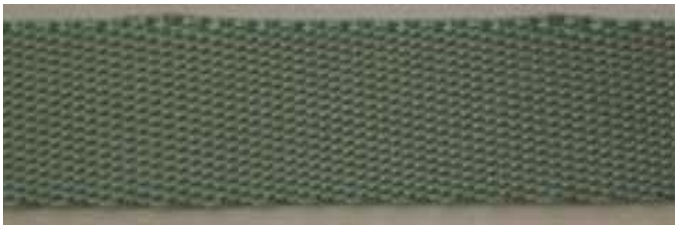


Filamentation on surface



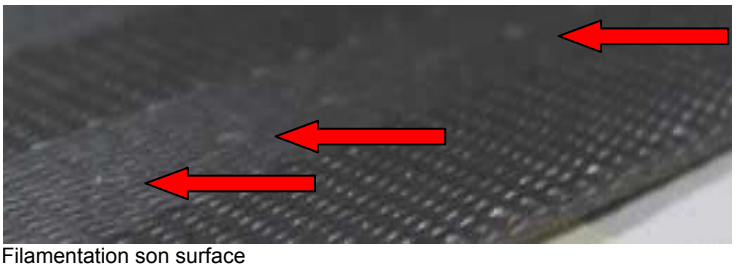


Dirt / Dye spots , stains of grease, oil, chemicals, pattern faults

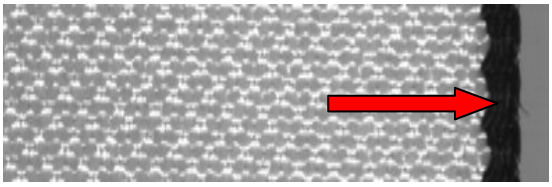


Width deviations

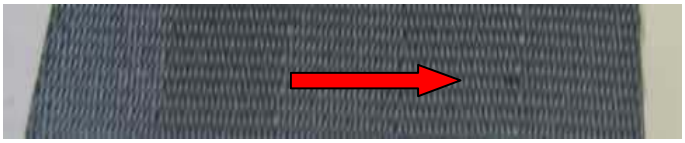
FMS

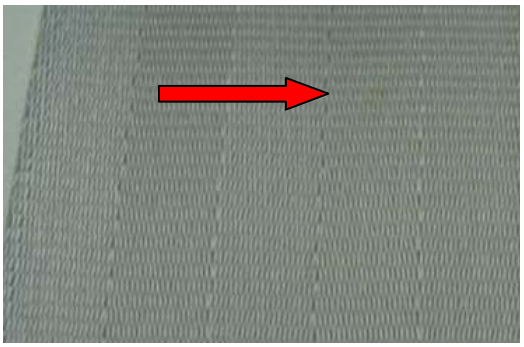


Filamentation son surface

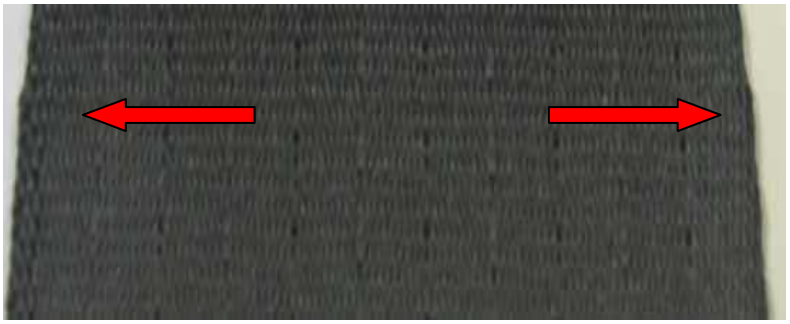


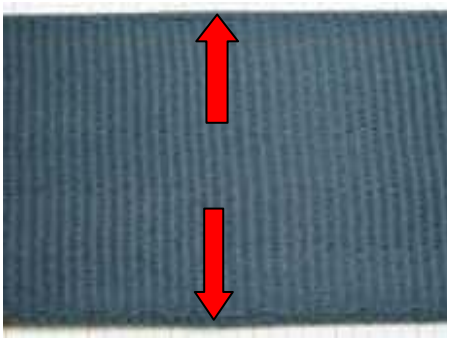
Filamentation belt edge





Dirt / Dye spots, stains of grease, oil, chemicals

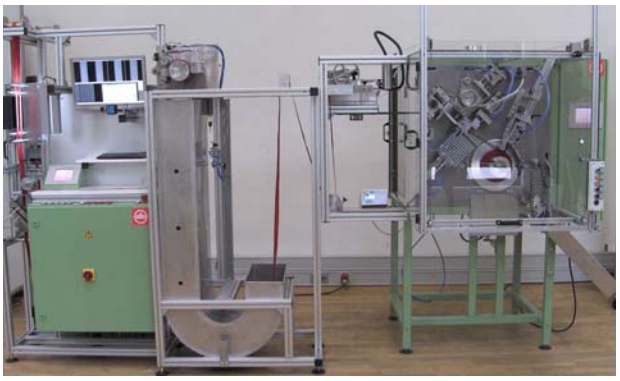




Width deviations

Tape faults marked with barcode labels

RB715 – J-box with camera inspection
Inspection unit as in-line component

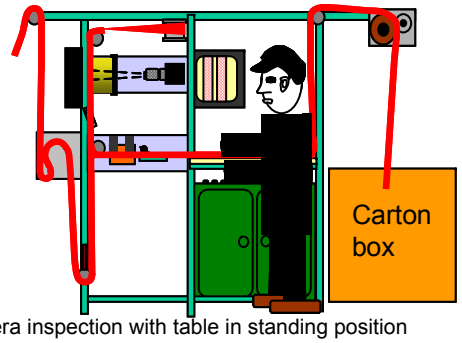


Standard equipment
- Pre-feeder
- Electronic length measuring
- Vision unit with 1 or 2 camera inspection units, flat panel, PC and software
- 2 LED white light arrays- inspection table in standing position
- J-box with drive

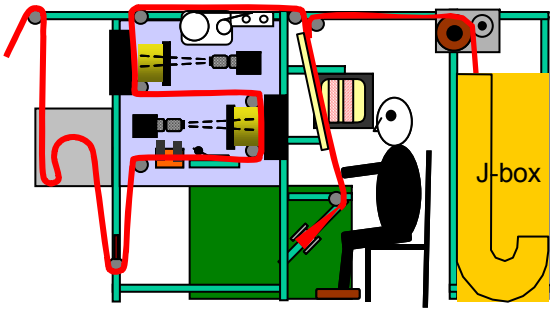
Optional equipment
- High resolution laser filament detector- Fault Management System for the monitoring and central documentation of quality data
- Tape thickness measuring
- Metal detector
- Knot detector

Specification
Tape width: 50 mm or 100 mm
single end inspection
Tape speed: 50 or 100 m/min

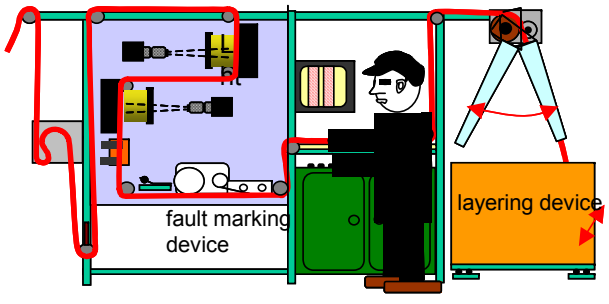
RB725 – stand alone camera inspection machine



1-camera inspection with table in standing position



2-camera inspection with table in sitting position



Standard equipment
- Pre-feeder
- Electronic length measuring
- Vision Unit with 1 or 2 camera inspection units, flat panel, PC and software
- 2 LED white light arrays
- Inspection table in standing position
- Carton box on the outlet

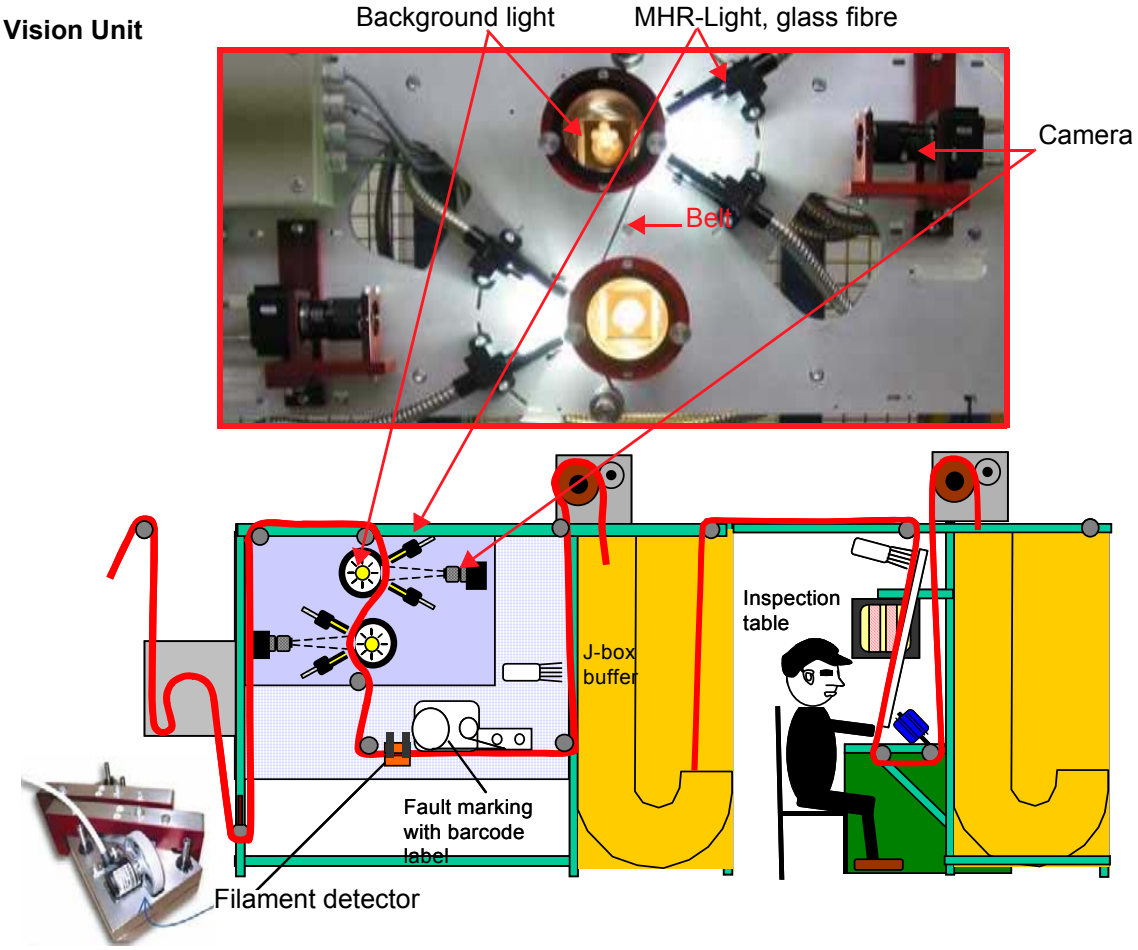
Specification
Tape width: 50 mm or 100 mm
single end inspection
Tape speed: 50 or 100 m/min

Optional equipment
- high resolution laser filament detector
- Inspection table in sitting position
- J-box at the outlet of the machine
- Layering device on the outlet of the machine
- Automatic fault marking device with barcode labels
- Barcode label scanner
- Fault Management System for the monitoring and central documentation of quality data
- Tape thickness measuring
- Metal detector
- Knot detector

RB715, RB725, RB755

RB755 – seat belt inspection machine

Vision Unit



Standard equipment

- Pre-feeder
- Electronic length measuring
- Vision Unit with 1 or 2 camera inspection units, flat panel, PC and software
- High resolution laser filament detector
- MHR light with glass fibre
- Background light
- Inspection table in sitting position
- 2 J-boxes

Optional equipment

- Automatic fault marking device with barcode labels
- Bar code scanner- cold cutting unit on inspection table
- Label application unit on inspection table for reconnection of cut tape ends
- Fault Management System for the monitoring and central documentation of quality data
- Layering device instead of 2nd J-Box
- Tape thickness measuring
- Metal detector
- Knot detector

Specification

Tape width:	max. 55 mm
single end inspection	
Speed for 1-camera system:	60 m/min
Speed for s-camera system:	120 m/min

Vision unit continuously runnig without stop

Fascination of Ribbons and Narrow Fabrics
Innovation in Machinery

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