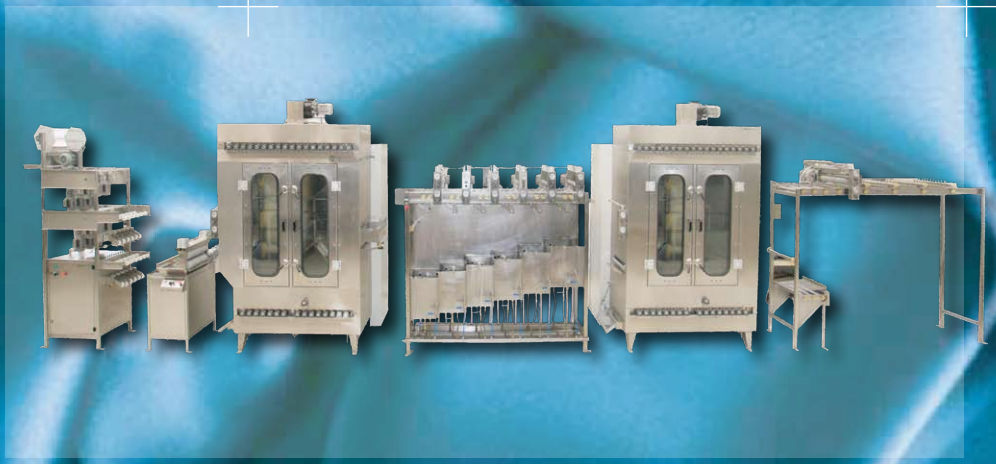
CONTINUOUS RIBBON DYEING AND FINISHING RANGES

TYPE MTF-B

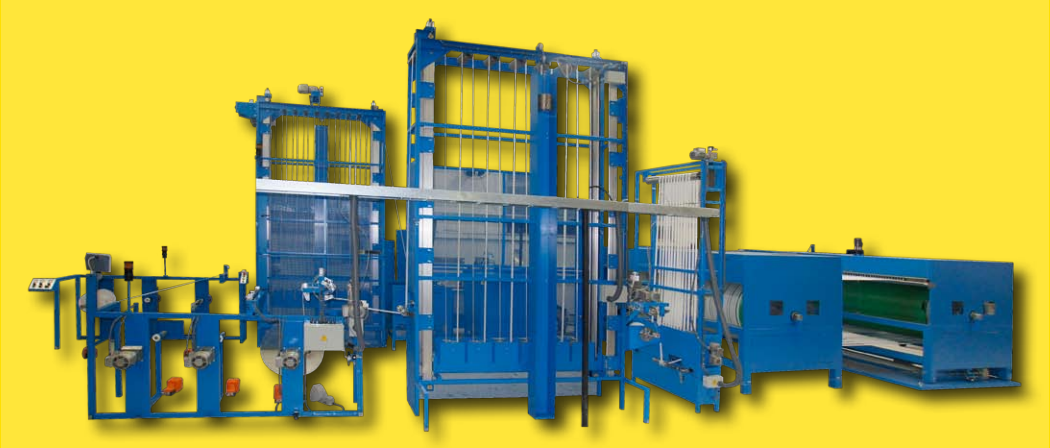
DESCRIPTION

Production ranges for continuous dyeing and finishing of up to 16 elastic or rigid ribbons and tapes.
Produces upt to 20.000 meter per hour of dyes and finished ribbons (polyester, poliamide and cotton), on hot air Thermosol or Pad-Steam process.
Automatic tension control for ribbons.
Transport speed: 2 - 40 m/min.
Ribbon width: 3 mm - 450mm.



Heating of hot air drying and thermofixation cabins by means of electric heaters, thermal oil or gas.
Washing unit heated by steam.
Machines are made of stainless steel modules with: control panel, feeding unit, impregnation padder, feeding tank, steaming and/or thermofixation cabins, washing unit with several wash troughs, finishing padder, hot air drying cabin and/or drying drum, ribbon take-up unit and calender.

The modules can be bought individually to be attached to an existing machine, or as a complete new range.



Modular Construction
Special customized designs

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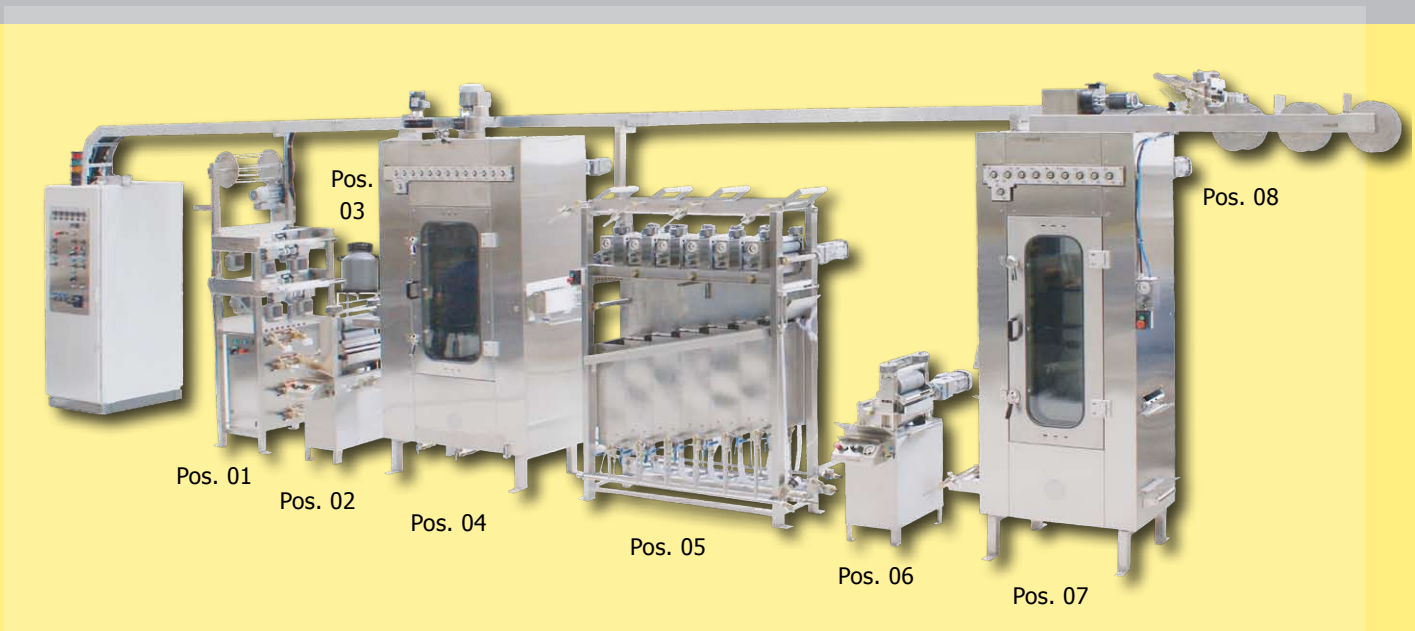
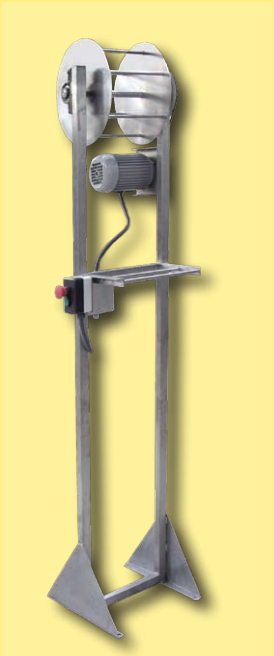
Production ranges available in different sizes and configurations according to required capacity. The machines are set up of several modules, all controlled by one panel and touch screen controller, which is kept separate from the rest of the range to avoid contact with water, steam or chemicals.
The modules are combined due to requested dyeing and/or finishing process, as well as ribbon fibers (polyester, polyamide, cotton, etc.).
Automatic ribbon tension control by means of pneumatic compensator arms and frequency controllers. Big double glass doors for easy access and view into cabins.
Ranges made all of stainless steel. Can be set up in mirrored layout. For heavy ribbons/tapes machines are reinforced.

Example of Standard Module Layout Range:



Pos. 01 - Ribbon feeding options on machine:

Simple feeding unit
with reel to keep ribbons loose.



J-Box
ribbon accumulator with reel and security sensors as well as alarm with safety stop switches for missing ribbon or knots.

Positive ribbon feeding unit
with individual ribbon tension control for each tape and alarm with safety stop switches for missing ribbon or knots, or excessive ribbon tension, beside reel to keep ribbons loose (recommended for elastic ribbons).

Vertical **control panel** stays separate from the rest of the machine to avoid contact with water, steam or chemicals. Panel made of carbon steel with electrostatic paint, containing all electro-electronic commands, controllers as well as frequency controllers for transport speed and ribbon tension control of the machine.

HMI Touch Screen Controller for operation and easy overview of the range.

Optional: Controle panel with manual switches

Pos. 02 e 06- **FImpregnation Padders** for dyeing and finishing:

2 or 3 roll-padder, with 110mm diameter rollers covered by nitrilic rubber with 50-55 shore A. Roller pressure by means of pneumatic pistons controlled by manometer and pressure regulator. Impregnation through with removable immersion rollers for easy cleaning. Gearmotor drives padder roller axis. 3-roll-padder used for more intense impregnation in case of darker colors.
Optional: Volume reducing device for trough, and spacers to keep micrometric distance between padder rollers.

Pos. 03 - Additional (optional) modules:

Feeding Tank
for impregnation trough of padder, with level control on trough and solenoid valve.
Tanks can be made of plastic or stainless steel, with or without stirrer.

Infrared Pre-Heater (IR)
with electric infrared heaters, which are automatically switched off in case machine transport stops, to avoid ribbons from burning. Can be used with half of full power.

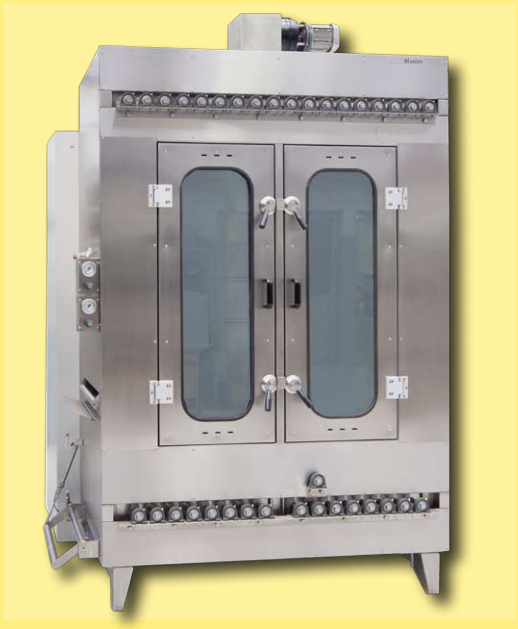
Pos. 04 - New Drying, Thermofixation and Steaming Cabins:

Stainless steel cabins available in several different sizes according to production request. Upper rollers driven by gearmotor while lower rollers are driven by chain that runs over upper rollers (to avoid elastic tapes from loosing too much elasticity). All cylinders made of stainless steel, with external shaft coupling on bearings.
Removable separation devices to keep ribbons aligned, all made of stainless steel for different ribbon widths.
Big double glass door to see inside cabin and for easy access.

New compensator system with pneumatic driver adjusted on touch screen controller for ribbon tension control.

Economic Steamer Cabin

(Type PSE) Used for steaming (Pad-Steam) process with direct steam injection or warm water bath heated by indirect steam coils (optional). Overheating of steam by electric heaters and steam coils. Ceiling, walls and ribbon entrance heated by steam coils to avoid steam condensation drops. Individual steam pressure control for walls and ceiling.
Steam escape chimney.
Water seal with level sensor to control water volume and overflow at cabin exit.

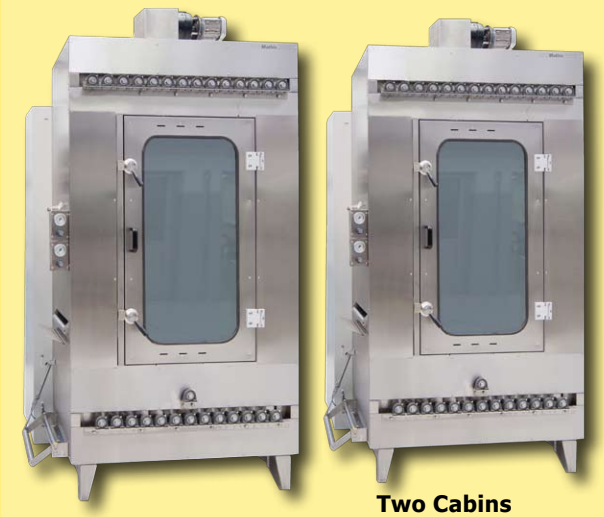


Dryer & Thermofixation Cabin

Hot air cabin (type SEC) with strong air circulation and maximum temperature of 210°C to dry ribbons and thermofix dyes. Heating by electric heaters, or by gas or thermal oil.
Special fan for air distribution, beside exhaust fan on top of cabin to remove humidity and smoke of the oil on ribbons generated at high temperatures.

New Combi Steamer & Hot-Air-Dryer

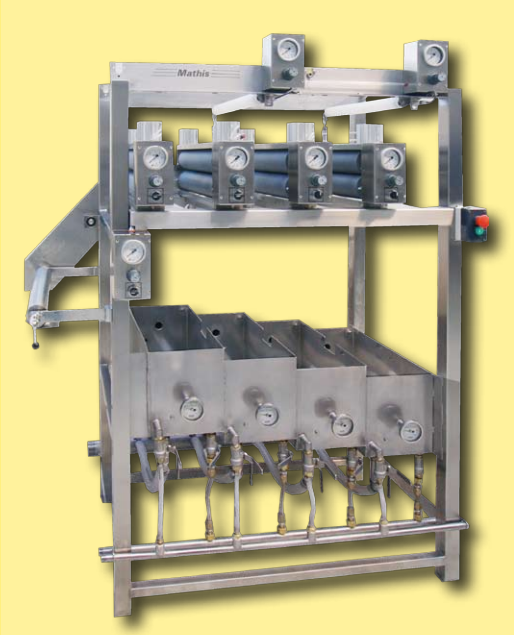
Thermofixation (Dryer) and Steamer cabin (type PSESEC), being a combination of the two cabins described above, but with dynamic steaming, for hot air Thermosol process as well as Pad-Steam. Overheating of steam by electric heaters and steam circulation fan to have steam well distributed in the whole cabin, reducing time inside steamer sensitively. Pre-treatment unit for steam guarantees more humid steam with superior quality for higher color fastness. Controlled heat on first uper roller. Cabin with cowling on backside attending norm NR12 guidelines.

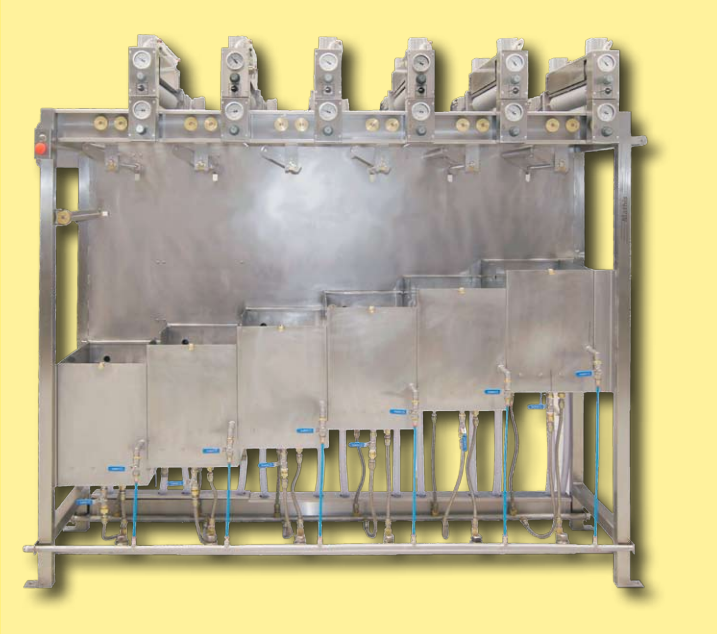


Two Cabins
for bigger production runs

Pos. 05 - Washing unit with up to 8 wash troughs:

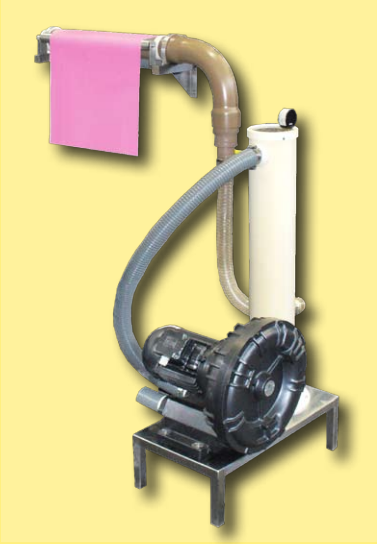
Washing unit (type LAV) made of stainless steel.
Each wash trough has a vertical padder with 2 squeezing rollers, covered with 85 Shore A nitrilic rubber.
One compensator per wash trough controls ribbon tension and speed, turning off transport of the range in case the ribbons are stretched too much.
Squeezing rollers pressure by means of pneumatic pistons controlled by individual manometer and pressure regulator.
Upper rollers are driven by gear motor of the padder, while lower rollers run free.
Heating of wash troughs made by means of steam coils, with manual control, temperature sensor and analogic temperature indication on each wash trough. Additional direct steam injection manually controlled on each trough as well.
Optional: Heating of wash troughs through individual indirect steam coils, automatically controlled by valves, steam trap, temperature sensor and digital temperature controller on main panel.
The wash troughs are installed in counter-flow system, where the cleaner water from the last trough flows back into the first ones, reducing the amount of water, energy and chemical products for the washing process. Each trough has individual manual control for water entrance, drain and overflow
The main water entrance, which may be guided to any of the wash trough, is synchronized with transport of the range, switching on and off the water entrance by means of a pneumatic valve. Volume for water is controlled by manual flow meter.
New compensator system with pneumatic driver adjusted on touch screen controller for ribbon tension control.





Pos. 06 - Additional optional modules:

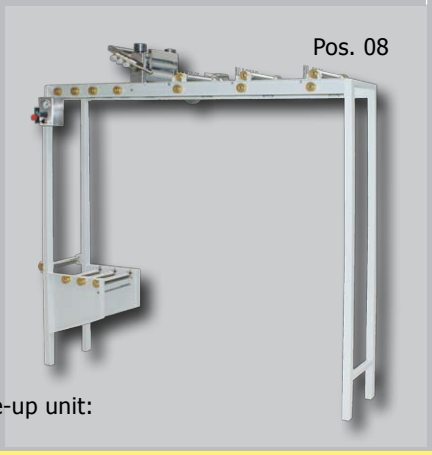
Vacuum slot
with 4 HP pump and condensation colum to remove the water from ribbons after the washing unit.

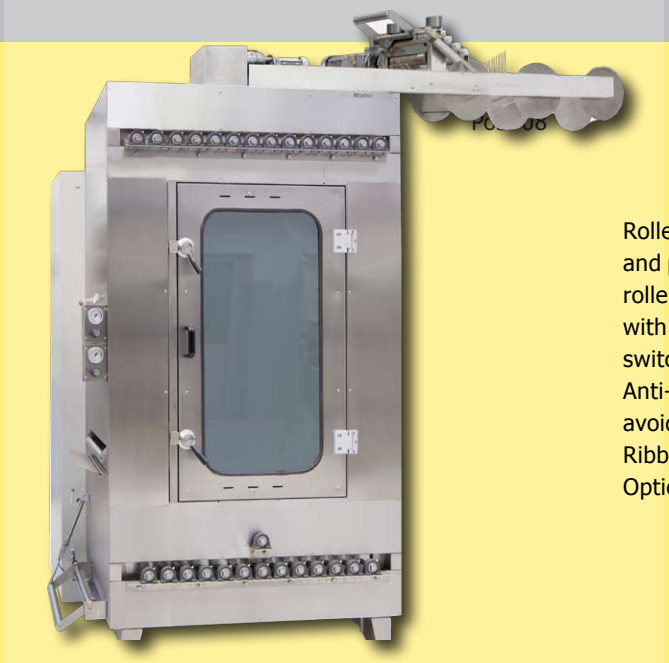


Impregnation Padder
for finishing with 2 (or 3) rollers 110mm diameter, covered with 50-55 shore A nitrilic rubber. Roller pressure by means of pneumatic pistons controlled by manometer and pressure regulator. Impregnation through with removable immersion rollers for easy cleaning.
Gearmotor drives padder roller axis.

Pos. 07 - Dryers:

Hot Air Drying Cabin available in several sizes (type SEC)
Hot air cabin (type SEC) with strong air circulation and maximum temperature of 210°C to dry ribbons and thermofix dyes. Heating by electric heaters, or by gas or thermal oil. Special fan for air distribution, beside exhaust fan on top of cabin to remove humidity and smoke of the oil on ribbons generated at high temperatures.
Upper rollers driven by gearmotor while lower rollers are driven by chain that runs over upper rollers (to avoid elastic tapes from loosing too much elasticity). All cylinders made of stainless steel, with external shaft coupling on bearings.
Removable separation devices to keep ribbons aligned, all made of stainless steel for different ribbon widths. Big double glass door to see inside cabin and for easy access.


Pos. 08



Pos. 08 - Ribbon Take-up unit:

Ribbon take-up unit (type RET) may be attached to the dryer or set up as separate unit. Vertical 2-roll padder, with upper 55 mm diameter cylinder and lower 80 mm diameter cylinder, running on stainless steel bearings. Both cylinders covered by nitrilic rubber with 85 Shore A driven by gearmotor.
Roller pressure by means of pneumatic pistons controlled by manometer and pressure regulator. Beside the padder there are two or three pairs of rollers or reels driven by padder motor through belt. One compensator with security switch controls the speed and tension of the ribbons switching off the transport in case of excessive tension on the ribbons.
Anti-static bar to reduce static electricity on padder as well as system to avoid tapes to wrap around rollers.
Ribbons are distributed into boxes provided by customer.
Optional: additional rollers to cool ribbons down.

Drum Dryers (type SEC-CIL)
Several drum dryer with different number of drums and drum sizes available. Drums made of steel.
Heating by steam or gas.
Optional: infrared temperature controller.
Drum driven by gearmotor. Compensator arm for automatic ribbon tension control.

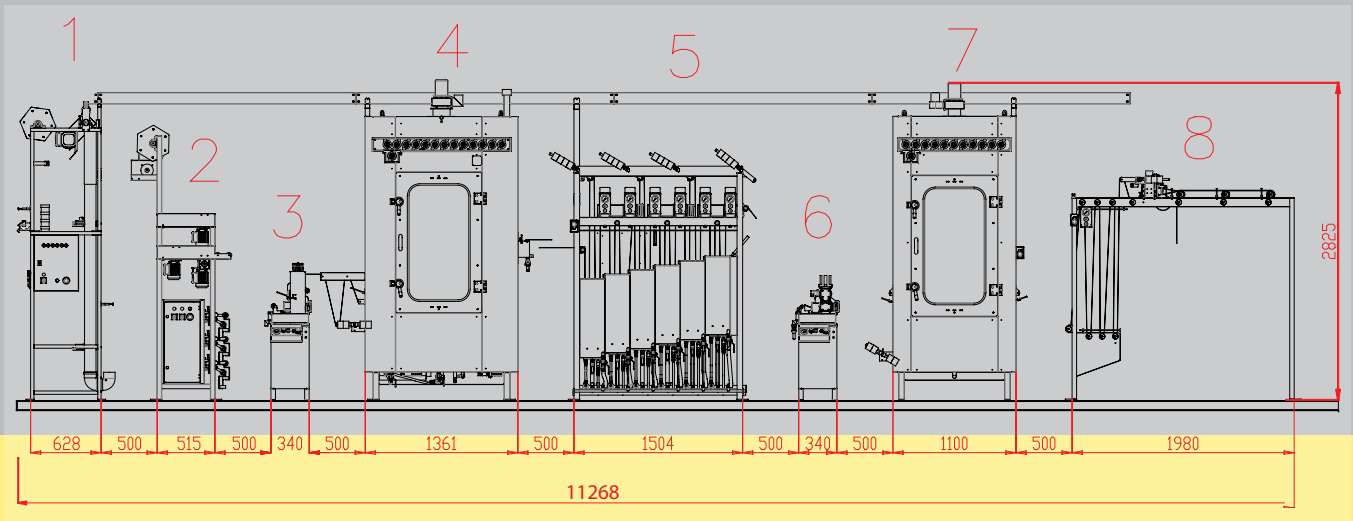
Ribbon take-up unit on dryer exit.

TECHNICAL DATA OF MODULES:

Machine Type (roller width):	MTF-J-B 200mm	MTF-B-350mm	MTF-B-500mm
Modules:			
Positive Feeding Unit and J-Box	for up to 8 ribbons	for up to 12 ribbons	for up to 16 ribbons
Impregnation padder	2 or 3 rollers	2 or 3 rollers	2 or 3 rollers
Infrared Pre-Heater	9 kW	18 kW	24 / 34 lW
Hot Air Thermofixation Cabin (ribbon content)	23 / 29 / 48 / 60 m	35 / 48 / 60 m	35 / 48 / 60 m
Steamer Cabin (ribbon content)	23 / 29 / 48 / 60 m	35 / 48 / 60 m	35 / 48 / 60 m
Combi-Steamer-Dryer (ribbon content)	23 / 29 / 48 / 60 m	35 / 48 / 60 m	35 / 48 / 60 m
Washing Unit	2 / 4 / 6 / 8 troughs	1 - 8 troughs	1 - 8 troughs
Hot Air Dryer Cabin (ribbon content)	23 / 29 / 48 / 60 m	35 / 48 / 60 m	35 / 48 / 60 m
Drum Dryer	2 - 4 drums	2 - 8 drums	2 - 8 drums

Other types and sizes available on request.

Example of universal standard range layout with size indications:



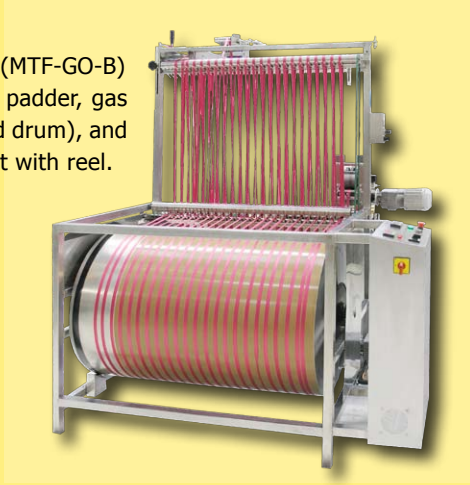
Pos. 1 - J-Box
Pos. 2 - Positive Feeding Unit
Pos. 3 - Impregnation Padder
Pos. 4 - Combi-Steamer & Dryer (Thermosol/Pad-Steam)
Pos. 5 - Washing Unit with 6 Wash Troughs
Pos. 6 - Finishing Padder
Pos. 7 - Hot Air Dryer
Pos. 8 - Ribbon Take-up Unit with Cooler

Ribbon finishing or
Dyeing range for light colors only (PES / PA):
Impregnation and drying with thermofixation only, no washing or final drying.
Machine used for processes where no washing is needed. Further modules can be easily added on machine later on, to set up a complete dyeing range for any kind of color.

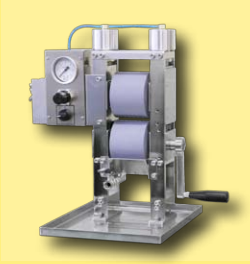
Calender (CAL-B)

Calender for ribbon finishing with pressure, heat and friction of surface. Calender with two carbon steel cylinders covered by regrind hard chrome, and 5kW electric heaters.
Approximate temperature: 240°C. Ribbon take-up unit with vertical 2-roll-padder and reel.

Sizing machine (MTF-GO-B) with impregnation padder, gas (or electric) heated drum), and ribbon take-up unit with reel.



Ribbon color developing equipments:



Mini Padder for ribbon samples Mini-FOU-B

Mini Hot-Air Thermosol Dryer (210ºC) and Steamer (110ºC) for ribbon samples Mini-DH-B

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Modular construction
Special customized ranges on request

TECHNICAL DATA - RIBBON DYEING RANGES TYPE MTF-B

Number of ribbons	1 - 16
Roller width	200 mm / 350 mm / 500 mm
Transport speed	2 - 40 m/min
Thermosol cabin temperature	up to 210ºC
Steamer cabin temperature	up to 110ºC
Washing unit temperature	up to boiling temperature (100ºC)
Electric feeding	3 x 220 V or 3 x 380 V (50 / 60 Hz)
Heating options	electric, gas, thermal oil

Continuous washing unit
High efficiency washing unit **Super-LAV** for ribbons and tapes. Reduces water consumption up to 20% - 40% and increases wash fastness of the ribbons.
Reduced chemical auxiliary concnetration on reductive clean of polyester tapes, increasing dyeing productivity.
This special washing unit can be installed on new or existing ribbon dyeing range with 200mm, 350mm or 500mm roller width.

Automatic pH and Redox control
CPH-B system for pH and conductivity measurement as well control -ling of dye house bath up to 90ºC. (Conductivity indicates amount of salt.)
Dosing pumps for acid and alkali to control pH automatically.

Optional: salt (liquid solution) dosing to control conductivity.

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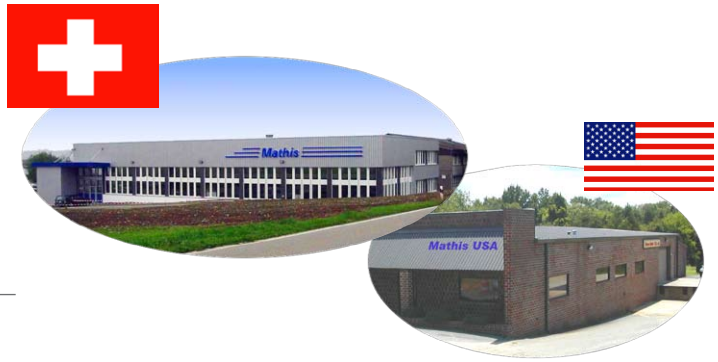
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