



TECHNICAL DETAILS

FABRIC WIDTH:	1.800 mm max.
ROLLER WIDTH:	2.000 mm
DRIVE SIDE:	LEFT in cloth run direction
OPERATION SIDE:	RIGHT in cloth run direction
ELECTRICAL CONNECTION:	approx. 72 kW
ELECTRICITY:	380 V, 3 phases, 50 cycles
PRODUCTION SPEED:	35 m/min. at 25 sec: MERCERIZING TIME
PRODUCTION CAPACITY:	40.000 m / 24 hours
CONSUMPTION OF WATER:	4 - 5 l/kg of fabrics
CONSUMPTION OF STEAM:	0.9 kg/kg of fabrics
CLOTH ARTICLES:	100% CO - WOVENS
CLOTH WEIGHT:	max. 500 g/m AVERAGE: 400 g/m
PROCESS:	MERCERIZING; WET-IN-WET HOT AND COLD MERCERIZING PROCESS
STEAM PRESSURE:	6 - 8 bars, required
WATER PRESSURE:	4 bars, required
AIR PRESSURE:	7 - 8 bars, required
PAINT:	blue RAL 5007
DRAWING:	similar to drawing no. MM 1196-1, however, with 4 washing compartments



pos.	pcs.	scope of supply
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- 1.) 1 **NON-STOP BATCH CHANGING DEVICE:** Installation for feeding the material into the operating range consisting of a pneumatically operated 2-bowl-squeezer, driving roller 200 mm diam. with hard rubber coating, squeezing roller 125 mm diam. with soft rubber coating, approx. 70 degrees Shore, bearings, lateral scaffolds made of profile steel, pressure elements and lever. The squeezer is equipped with a separate controlled driving motor. The cloth guiding is performed after the squeezer by endless rubber strings guided by milled-in grooves in the driven roller and the st.st. guiding roller. At the end a pneumatically controlled st.st. pendulum compensator is installed with pressure elements and controlling devices for pre-selecting the cloth tension and for the synchronisation to the following range at operation without cloth filling in the scray. The scray is equipped with PVC sliding rails avoiding sticking of the material and ensuring a constant sliding of the fabric loops. Due to this construction the scray is usable for dry and wet fabrics out of natural and synthetic fibres, woven and knitted material. A double meter counter at the scray is registering the material during feeding and emptying and stops the whole following range, if the scray is already empty prior to the batch change is performed. Prior to the infeed of the following machine a pneumatically operated torsion stretchener is installed which during emptying of the scray is providing the necessary cloth tension and operating with the pendulum roller switching to the neutral position. Due to this arrangement a function of the following cloth guiders, either selvedge guiders or expanding/centering devices is granted.

Cloth capacity in the scray: 500 - 600 m.
Diameter of st.st. guide rollers: 180 mm.

- 1a.) 1 **HIGH FABRIC ENTRANCE** complete with lateral frames made of sectional steel, torsion stretchener made of st.st. with adjusting device, fixed st.st. pipe, st.st. guide rollers with bearings, edge guiders with support and hand wheel.

Type of the edge guiders: KF2020
St.st. guide roller diameter: 180 mm.

- 1b.) 1 **RINSING TROUGH** made of st.st. with st.st. rollers, water feeding, discharge, overflow, counter-current-connection, placed in front of the mercerising range for wet-in-wet operation.

St.st. roller diameter: 150 mm.

- 1c.) 1 **LEVEL CONTROL** for adding water or chemicals according to the perl-in system, consisting of needle-butterfly-valve, pressure regulator, difference pressure switch, magnetic valve with switching elements.

- 1d.) 1 **HIGH EFFICIENCY SQUEEZING DEVICE, MODEL FXT**, with 3 rollers 320/200/320 mm, squeezing rollers with soft rubber covering, **SYSTEM TEXTRACTOR**, driver roller with ebonite covering, pressure adjustable independently for bottom and top roller from 0 - 10 tons, lateral frames of profile steel with st.st. coverings, in front of the nip one bowed and free-wheeling expander; behind nip one bowed and free-wheeling expander, pneumatic compensator roller made of st.st. with air cylinder, pressure gauge and reduction valve, lever and shafts made of st.st., one st.st. spray pipe as hand protection, one liquor drip sheet of st.st.



pos.	pcs.	scope of supply
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Execution of the expander: BOWED
St.st. guide roller diameter: 180 mm.
Compensator roller diameter: 150 mm.

- 1e.) 1 **CLOTH GUIDANCE** between the high efficiency squeezing device and the mercerising compartment complete with st.st. guide rollers, bearings, lateral frames made of sectional steel, indicator for cloth speed and reaction time as well as meter counter with 2 scales integrated in the operation board, temperature indication for the cooled caustic soda, 3 bowed expander rollers 110 mm Ø / with bearings and lateral frames, arranged in front of the mercerising compartment.

St.st. guide roller diam.: 180 mm.
Number of the cloth layers: 1

- 2.) 1 **CHAINLESS MERCERIZING COMPARTMENT, MODEL "OPTIMA"**, with bottom rollers made of **STEEL PIPES WITH ST.ST. COVERING AND SPIRAL GROOVES** for a better adhesion of the cloth on the rollers and for a lower cloth shrinkage, lateral profiles for the location of the pedestals and ball bearings outside of the machine, sealings for the roller shafts, top rollers made of steel pipes with soft rubber covering and **WITH LATERAL DISKS MADE OF ST.ST.** to avoid that caustic soda will contact the roller faces or enter into the rollers. Lateral st.st. shafts to link the lifting devices for these rollers. At the cloth entrance one pneumatically operated de-airing roller with soft rubber covering including pressure elements. Inbetween the top rollers-distribution pipes with adjustable valves for the feeding of caustic soda into the roller interspaces. **ST.ST. TANKS** under the rollers with liquor overflow to the filter, side walls made of st.st., liquor collecting pipe, mechanical lifting elements in movable execution for the top rollers with joints, st. st. spindles, hand wheels and bars. **LIQUOR PUMP MADE OF ST.ST.** with AC-motor and console. 3-bowl high-capacity-squeezing device at the cloth exit with 2 squeezing rollers with soft rubber covering with 320 mm diameter as well as a driven middle roller 250 mm diameter with ebonite covering, pneumatic pressure 0 - 10 to with 8 bar compressed air, pressure cylinders, control cock, pressure gauge and reduction valve mounted at the machine.
The compartment completely closed with st.st. covers, movable for easy accessibility.

Number of the roller pairs: 8
Cloth content: 14.6 m.
Impregnating time: 25 sec.

CHAINLESS STABILIZING COMPARTMENT, MODEL "OPTIMA", roller arrangement identical to the mercerizing compartment. **BOTTOM ROLLERS MADE OF STEEL PIPES WITH ST.ST. COVERING** to avoid any corrosion with decreasing caustic soda concentration. All rollers with pedestals and ball bearings outside of the machine including shaft sealings, lateral profiles, tanks under the rollers made of st. st. with overflow for weak lye in front of the first stabilizing group. Side walls and coverings made of st. st. The side walls with water seals to take up the movable covers for steamproof execution. **IN THE TANKS DIRECT HEATING** by steam with st. st. pipes and connecting flange, without pipes, valves and condensate traps. All top rollers made of steel pipes with soft rubber coverings incl. side disks and shafts made of st. st., mechanical lifting device for the top rollers, **ST.ST. DISTRIBUTION PIPES** for weak lye located alternately right and left for an equal stabilizing on the total cloth width. In the bottom tanks welded st. st. cascades for counter-current-flow of the weak lye according to the Meander-principle for an equal and fast stabilizing resp. part-neutralization. Each cascade with a separate circulation pump incl. AC-motor and complete piping made of st. st. with discharge valve. Top rollers rubber-covered and same design as in the mercerizing compartment. At the cloth exit a 3-



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bowl-squeezing device with 3 rollers 330/250/330 mm diameter, squeezing rollers with soft rubber coverings, drive roller with ebonite rubber covering, pressure 0 - 10 to with 8 bar compressed air, pressure elements with cylinder, control cock, pressure gauge and reduction valve mounted at the machine.

The compartment completely and steam-tight closed with st.st. covers, movable for easy accessibility.

Number of roller pairs: 12

Number of the stabilizing groups: 1

Cloth content: 21.2 m.

Stabilization time: 36 sec.

- 2a.) 1 **AUTOMATIC CONCENTRATION REGULATOR** for strong caustic soda in the mercerizing compartment when working wet-in-wet, complete with flow box for operation lye, installed pressure measuring converter, adjustment of actual value, set-point indication for the concentration indicated on the operation panel, magnetic valve for feeding of strong caustic soda.

The specific weight of the operation lye is measured by means of the pressure measuring converter in the flow box.

In case of deviation from set value strong caustic soda is fed via a distribution pipe at cloth entrance of the mercerizing compartment. Immediately at the cloth entrance the water coming with the fabric is mixed with strong caustic soda until the concentration of operation lye is reached.

- 2b.) 1 **AUTOMATIC CONCENTRATION REGULATION** for low concentrated caustic soda in the stabilizing compartment, complete with flow box made of st.st. for low concentrated caustic soda, pressure measuring converter installed, adjustment of actual value and set point indication for the concentration integrated in the operation panel, magnetic valve for feeding of warm water and feeding line made of st.st.

The specific weight of low concentrated caustic soda is measured by means of the pressure measuring converter. In case of deviation from set value, water is fed into the stabilizing compartment.

- 2c.) 2 **AUTOMATIC TEMPERATURE REGULATORS** for the compartment consisting of PT 100, pre-setting of the set value, actual value indication, magnetic valves and switching elements.

- 2d.) 1 **AUTOMATIC FILTER** with steelhousing and removable cover including water seal, driven filter drum with lateral discs and st.st. screen, AC-motor 0.4 kW, 1.450 rpm, with reduction gear, completely wired switching elements. St.st. jets for the automatic cleaning of the filter screen, including drainage of the lints, dry-running protection with level feeler whenever a pump is installed. Magnetic valve for the cleaning jets, connecting flanges as well as gear console. Time relay for the operation of the magnetic valve at the cleaning jets with adjustable intervalls for stop and operation. Consisting of 1 filter for the mercerizing compartment.



<i>pos.</i>	<i>pcs.</i>	<i>scope of supply</i>
2e.)	1	<p>MEASURING AND CONTROLLING SYSTEM for the cloth tension in the mercerizing and stabilizing sections complete with tachodynamos, fixed on top of the DC-motor, indicator with scale of plus/minus percentage shrinkage or tension, selector switch for the measurement between two drive points, potentiometers and completely wired switching elements in the control panel.</p> <p>Number of the tachodynamos: 4</p> <p>Seperate indicators for each drive point for a steady indication and control of the cloth tension.</p> <p>Number of the indicators: 4</p>
2f.)	1	<p>CENTRIFUGAL PUMP for caustic soda made of cast iron with AC-drive approx. 3,0 KW power, volume 10 to 15 cbm/hour complete with switching elements and supports.</p>
2g.)	1	<p>ST.ST. PUMP with AC-drive, collector tank made of st.st. with approx. 200 l content, incl. level sensor for the feeding of fresh water, as counter-current-connection between the seperate washing sections, without pipes and valves.</p> <p>Capacity: 20 cbm/h, at 2 bar.</p>
2h.)	1	<p>COMPENSATOR ROLLER located behind the stabilizing section of mercerizing machines for the automatic synchronization with the washing range. Consisting of st.st. rollers, pedestals and bearings, st.st. shafts and levers, chain connections to the electric regulator, compressed air cylinders with pneumatic elements for the pneumatic operation to adjust the cloth tension. 1 set of st.st. guide rollers for the cloth transport between stabilizing section and washing machine.</p> <p>Diam. of the st.st. rollers: 180 mm. Diam. of the compensator roller: 150 mm.</p>
3.)	1	<p>HIGH CAPACITY OPEN WIDTH WASHING MACHINE, MODEL "EFFECTA", made of st.st. in closed construction, st.st. guide rollers with forged roller shafts, upper rollers with ball bearings including special sealings of the roller shafts and bearings, bottom rollers with teflon carbon bearings in st.st. housings, st.st. cascades between the bottom rollers for washing in counter-current-system, counter-current-connections between the compartments with possible drainage to the channel, heating by direct steam pipes with mixing nozzles for operation at a low noise level, oversized windows in the side walls, movable covers constructed as covering with water seal for steam-prooved execution, pneumatic discharge valves, overflows, water and steam connections, without pipes and valves. Behind each compartment, one 2-bowl-nip-stand, driver roller with hard rubber covering, bowed expander in front of the nip, pneumatically operated compensator roller for the synchronisation with st.st. guide rollers, lever and shafts, pressure elements with reduction valve and pressure gauge, bowed expander behind the nip, st.st. liquor return sheet, st.st. spray pipe, steel profiles with st.st. coverings, pressure elements for a pressure of 0 - 2,5 to.</p>



<i>pos.</i>	<i>pcs.</i>	<i>scope of supply</i>
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Consisting of:

4 COMPARTMENTS, MODEL WA/IV with vertical, single cloth guiding.

Cloth content in each compartment: 22 m.

Squeezing roller diameter: 250 mm.

Guide roller diameter: 180 mm.

Compensator roller diameter: 150 mm.

- 3a.) 4 **AUTOMATIC TEMPERATURE REGULATORS** for the compartment consisting of PT 100, pre-setting of the set value, actual value indication, magnetic valves and switching elements.
- 3b.) **EXTERNAL BEARINGS** for bottom guide rollers of the washing compartments, consisting of flange housing and self-aligning ball bearings as well as slide ring seals including pressure springs as well as stiffeners of the side walls for positioning of the flange bearings, seamer washers and flange seals.
- FOR "4" COMPARTMENTS
- 3c.) 1 **PARTITION WALL** made of st.st. for the subdivision of the washing compartment.
- 3d.) 1 **AUTOMATICALLY OPERATED DOSING PUMP** for the feeding of acetic acid in the last washing compartment, complete with measuring electrode, intensifier and switching elements, actual value and set point indication, without tanks, pipes and valves. One st.st. circulation pump, type W 100 with a capacity of 3,6 m³/h at 0,6 bar pressure, 0,12 kW electrical power with pipes and st.st. valve. One st.st. flowbox in the pressure pipe for the installation of the pH measuring sensor for covering the pH value and the regulation of the dosing pump. Feeding of acetic acid in to the circulation line with special injection. The circulation pump guarantees a quick mixing of the liquor with acetic acid. One set of switching elements for the circulation pump.
- 3e.) 1 **HIGH EFFICIENCY SQUEEZING DEVICE, MODEL FXT**, with 3 rollers 320/200/320 mm, squeezing rollers with soft rubber covering, **SYSTEM TEXTRACTOR**, driver roller with ebonite covering, pressure adjustable independently for bottom and top roller from 0 - 10 tons, lateral frames of profile steel with st.st. coverings, in front of the nip one bowed and free-wheeling expander; behind nip one bowed and free-wheeling expander, pneumatic compensator roller made of st.st. with air cylinder, pressure gauge and reduction valve, lever and shafts made of st.st., one st.st. spray pipe as hand protection, one liquor drip sheet of st.st.

Execution of the expander: BOWED

St.st. guide roller diameter: 180 mm.

Compensator roller diameter: 150 mm.

TO BE PLACED BEHIND THE LAST WASHING COMPARTMENT, REPLACING THE STANDARD 2-BOWL INTERMEDIATE SQUEEZING DEVICE.



<i>pos.</i>	<i>pcs.</i>	<i>scope of supply</i>
3f.)		<p>OPERATION WATER FEEDING with automatic water regulation in accordance to the weight of the running fabric. The necessary water quantity referring to the fabric weight is preselected and stored in the control panel. Water counter and motor valves are installed in the pipes. The regulation of the motor valves is performed by SPS by nominal and actual value comparison. Furthermore the st.st. piping between main water supply pipe at the machine and the compartments is included. The shut-off valve for the main supply line is not included in this item and will be offered separately.</p> <p>Number of operation water feedings: 2 pieces.</p>
3g.)	1	<p>AUTOMATIC SHUT-OFF VALVE compl. with switching elements for the main water pipe. This valve is opened to fill the compartments and during the operation of the machine. At machine stop this valve is closed automatically.</p>
3h.)		<p>EXECUTION OF THE 2-BOWL-SQUEEZING DEVICES in closed construction, including st.st. coverings and side walls for steam-proofed execution.</p>
3i.)	1	<p>NON-STOP BATCH CHANGING DEVICE: Installation for feeding the material at operating range consisting of a pneumatically operated 2-bowl-squeezer, driving roller 200 mm diam. with hard rubber coating, squeezing roller 125 mm diam. with soft rubber coating, approx. 70 degrees Shore, bearings, lateral scaffolds made of profile steel, pressure elements and lever. The drive will be effected mechanically by the squeezing device of the preceding range. The cloth guiding is performed after the squeezer by endless rubber strings guided by milled-in grooves in the driven roller and the st.st. guiding roller.</p> <p>At the end a pneumatically controlled st.st. pendulum compensator is installed with pressure elements and controlling devices for pre-selecting the cloth tension and the synchronisation with the following batching device at operation without cloth filling in the scray. The scray is equipped with PVC sliding rails avoiding sticking of the material and ensuring a constant sliding of the fabric loops. Due to this construction the scray is usable for dry and wet fabrics out of natural and synthetic fibres, woven and knitted material. A double meter counter at the scray is registering the material during feeding and emptying and serves for increasing the speed of the batching drive after batch changing has been performed. The penulum compensator operates for synchronisation with the preceding range.</p> <p>Prior to the batcher a pneumatically operated torsion stretchener is installed which during emptying of the scray is providing the necessary cloth tension and operating with the pendulum roller switching to the neutral position.</p> <p>Due to this arrangement a function of the following cloth guiders, either selvedge guiders or expanding/centering devices is granted.</p> <p>Cloth capacity in the scray: 500 - 600 m. Diameter of st.st. guide rollers: 180 mm.</p>
3k.)	1	<p>SET OF EDGE GUIDERS KF 2020</p>



<i>pos.</i>	<i>pcs.</i>	<i>scope of supply</i>
4.)	1	<p>CIRCUMFERENCE BIG BATCH WINDER, SYSTEM SOCHOR, complete with lateral frames made of sectional steel and st.st. covering, air cylinder with controlling elements for the lifting and lowering of the batching roller, bowed and running expander, batching roller 210 mm diam., with soft rubber covering, bearings and shafts, hand protection of st.st., fixing device for the lifted batching roller. Pneumatically operated compensator roller with st.st. guide rollers, air cylinder, reduction valve and pressure gauge, shafts and levers made of st.st.</p> <p>Batching diameter: 1.800 mm. St.st. guide roller diam.: 180 mm. Compensator roller diam.: 150 mm.</p>
4a.)	1	<p>OSCILLATING DEVICE for the batching device consisting of one st.st. guide roller 150 mm diam., with oscillating gear, pendulum ball bearing, lateral frames and bearings.</p>
5.)	1	<p>AC-MULTIPLE-MOTOR-DRIVE with all AC-drives in PROTECTION IP 54, reduction gears coupling and consoles, regulation of the motors with single feeding by 4-quadrant-converters for each AC-motor as tension and frequency regulator, potentiometers at the pendulum rollers, as far as necessary encoders installed at the motors, the switching elements and indicating instruments completely wired in the control panel and controlling boxes at the machine. PLC for the complete machine regulation (drive technology and process technology), the switching elements completely wired in the control panel and the indicating instruments in the controlling boxes at the machine.</p> <p>SWITCHING ELEMENTS: buttons for start, stop, faster, slower, emergency stop, compensator roller bridging, fault reset and as far as needed selection switch for operation modes, switch for opening and closing the squeezing devices.</p> <p>INDICATING INSTRUMENTS: lamps for ON, fault indicator for pendulum rollers, speed indication. Additional operation display with fault record, meter counter, temperature indication of set value and actual value, regulation of discharge valves, pH-value regulation, chemical dosing pumps as well as regulation of further auxiliary drives as for example cleaning intervals, circulation pumps and similar operation modes as well as for maintenance aims as for example change-over of direction of the main drive motors.</p> <p>Switch cabinet and control box powder coated with RAL 7032 - PEBBLE GREY.</p> <p>Number of drive motors: 12 Installed electrical power: 64 kW.</p>
6.)	1	<p>PRESSURE REDUCTION STATION FOR STEAM installed at the machine behind the locally provided main supply line for securing always a constant steam pressure of the direct and indirect heating.</p> <p>Due to this installation an exact pre-selected operation temperature and its constancy will be guaranteed by the temperature regulators.</p> <p>Our supply comprises the main valve with pre-installed dirt filter, the pressure reducing valve for 3.5 - 4.0 bar secondary pressure, equalizing container, pressure gauges 0 - 6 and 0 - 10 bar, condensation drainage as well as safety valve. All elements with complete pipework will be flanged to the main steam line locally.</p>



<i>pos.</i>	<i>pcs.</i>	<i>scope of supply</i>
7.)	1	SET OF PIPE-LINES, VALVES AND FITTINGS at the machine, consisting of pieces of pipes between the compartments and the valves resp. condensate traps, valves and condensate traps with counter-flange or with screwings, steam distributor when working with direct steam heatings as well as water pipes for the spray pipes within the machine. Water pipes made of st.st., valves made of st.st. pipe-lines for steam and condensate made of steel, valves made of brass. Pipe-lines for compressed air made of steel, valves made of steel.
8.)	1	SET OF ELECTRICAL CABLES between switchboard/control panel/operating box and the machine, maximum distance 5 m, however, without main supply lines from the local AC-distributor to the binding screw strip of the control panel, without cable ducts, protection pipes for cable feeding and without fixation material.
9.)	1	SET OF SPARE PARTS for 2 years operation, daily 3 shifts; consisting of ball bearings, operating elements for compressed air, shaft seals, rotating mechanical seals, contactor, signal lamps, switches and fuses. A detailed spare part list will be sent after conclusion of the order out of which you will select the required items.
10.)	1	HEAT RECOVERY WITH FILTER