

Offer no. 65648V7

1 BENNINGER DIMENSA

Type ML2-LK-ZT

Production data for fabrics

Material:	Denim CO/PES; CO/PES/EL	
Weight range:	8 - 14 oz / y2 (270 - 440 g/m2)	
Medium weight:	10 oz / y2 (340 g/m2)	
min. weight 270 g/m2	Useful width 2000 m/min	mmV 28
max. weight 440 g/m2	Useful width 2000 m/min	mmV 18
Ø weight 340 g/m2	Useful width 2000 m/min	mmV 25

Technical data

Useful width	2000 mm
Roller width Useful width	2200 mm
min.	950 mm
Side motors viewed in the direction of travel of the fabric	left/right 5 - 50
Multi-motor drive speed range Average production speed	m/min 25 m/min
Voltage (phase-to-phase) Frequency Command voltage	3 x 440 volts +/-10%. 60 cycles +/-2% 24VDC/230VAC
Total power of drive motors	approx. 63 kW
Total plant power	approx. 87kW
Installed power	approx. 157 kVA
Water pressure (overpressure)	min. 2 bar/max. 3 bar
Saturated steam (overpressure)	4.5 bar
Cooling water for cooling drums	approx. 15 ° C
Hot water	required > 60° C
Compressed air pressure (overpressure) (oil and water free)	min. 7 bar/max. 12 bar
Stainless steel according to EN 10020	1.4404 (AISI 316L) and 1.4301 (AISI 304)
Two-component lacquer paint	dark gray NCS S 5502-B

We reserve the right to make changes due to technical developments.

Offer no. 65648V7

CONSUMPTION

Caustic soda 100% per 1 kg of fabric230 - 250 g/kg
mercerized
160 - 190 g/kg caustified

Neutralization with acetic acid (for final operation)

Water per 1 kg of tissue and a concentration of
of 8° Bé6 - 8 l weak bleach
Steam per 1 kg of fabric0 .8 - 1.0 kg
Acetic acid 80 % per 1 kg of tejidomax . 0.01 l (10 ccm)

Rinsing water2 l

**Attention: Water consumption may be higher due to
"back staining" avoidance with Indigo dyed fabric.**

Offer no. 65648V7

1) 1 fabric feeder with 2 pull rolls and fabric accumulator for roll change without stopping the machine

(During roll change, the maximum production speed has to be adjusted to the fabric pitch property).

consisting of:

- steel scaffolding, 1 reel with mechanical brake, 1 reel with pneumatic brake
- 1 fabric twist protection, with 1 star roll, driven by geared motor, 1 accumulator with tank unit on stainless steel (length 4 m), 1 grid of bars for weaving in stainless steel pipes for regular weaving pile formation
- required number of guide rolls for weaving pitch
- additional rolls for forklift feeding:
 - 1 roll with manually adjustable tensioner, additional guide rolls for fabric insertion through ring-guides
- 2 tractor rolls driven with synthetic coating, 2 geared motors, 1 stainless steel coated support roll, pneumatic system for roll hoisting

- mounting bracket with 1 pneumatic pivoting oscillating roll with pneumatic system and pneumatic pressure control
- pneumatic brake to lock the roll during roll change
- 2 pairs of E+L ring-guides, type KF 2020, cylinder length 400 mm

Conditions for crease-free fabric entry:

- fabric roll and trolley must be parallel and horizontal to the installation.
- the fabric rolls must not be unbalanced
- constant brake resistance of the rolls
- roll must be fixed to the ground

- mounting brackets made of sheet steel, painted, with 2 synthetic coated driven tractor rolls and 2 geared motors, 1 track roller

Offer no. 65648V7

2) 1 closed impregnation compartment in combination for mercerizing, with 4.2 m and 16 m of fabric content

consisting of:

- 1 bathtub in stainless steel sheet with swiveling cover, 5 bathtub guide rolls, coated in stainless steel, 1 driven threaded spreader roll, in stainless steel tube, arranged in front of the lower bathtub roll
- 1 overflow channel with caustic soda return in the preparation tank
- 2 compartments in stainless steel plate with adjustable covers
- first compartment with preparation vat, 1 level transmitter, 1 pneumatic drain valve
- both compartments with necessary connections for caustic soda circulation, each compartment with 1 impregnation tank and overflow pipe with caustic soda return in the preparation tank, 1 level transmitter and 1 pneumatic drain valve
- the bath required for mercerization is approx. 110 liters per meter of useful width per impregnation vat.
- the preparation bath required for mercerization is approx. 500 liters per meter of usable width.
- 1 connecting pipe between the bathtub and the compartments with pneumatic valves
- 1 stainless steel coated tub-guide roll
- each compartment with 4 verticalized tub rolls and outer housing, 5 top rolls, soft rubber coated
- 1 veralized bathtub roll with inner housing between the two compartments
- caustic soda circulation with distribution coil and the necessary pneumatic valves with 9 sprinkler pipes, each with 1 manual valve, circulation pump with flanges for connection to the filter
- 1 indirect steam heating system, consisting of: heat exchanger including water separator, 1 automatic temperature control with 1 electronic temperature regulator, 1 pt100 probe, 1 pneumatic on/off valve
- 1 veralized oscillating roll with corrugated surface, with pneumatic system and pneumatic pressure control

Offer no. 65648V7

1 SPS-controlled regulation for concentrated caustic soda

consisting of:

- control and monitoring of the concentration control for the SPS system (accuracy +/- 1° Bé) with program control for changing the concentration as well as automatic filling and emptying, monitoring of the temperature and level in the preparation tank with alarm signal, central display of the soda concentration in °Bé, soda temperature in °C, and level in the preparation tank in %, central display of the soda concentration in °Bé, soda temperature in °C, and level in the preparation tank in %.
- pneumatic valves necessary for the administration and automatic conduction of the soda and for the feeding of raw soda and diluent product.
- measuring the concentration of concentrated caustic soda with 1 floating measuring instrument with weight counter for recording the specific weight of the caustic soda, 1 pt100 probe, 1 container with connecting tube in the circulation of the caustic soda, 1 measuring instrument for measuring the concentration of concentrated caustic soda with 1 floating measuring instrument with weight counter for recording the specific weight of the caustic soda, 1 pt100 probe, 1 vessel with connecting tube in the circulation of caustic soda, 1 pneumatic on/off steam valve, 1 level transmitter
- 2 additional threaded spreader rolls in stainless steel tube in front of tractor roll, driven by single motor
- 1 dosage of chemical product

3) 1 high performance pneumatic squeezing press for a linear pressure of max. 500 N/cm

consisting of:

- 2 cast iron frames, 1 pneumatic pressure device with automatic lifting of the squeezing roll, 1 liquid return plate, 1 control unit, 1 service box with the necessary control elements
- 1 roll of ebonite coated knob
- 1 top roll with highly efficient synthetic coating
- 1 steam sealing hood made of stainless steel plate including
- 1 threaded spreader roll in front of the press, in stainless steel tube, driven by individual three-phase motor

Offer no. 65648V7

4) 2 closed intensive stabilization compartments with a total of 16 m of fabric contents

consisting of:

- 2 compartments in stainless steel plate with adjustable covers, each compartment with:
- subdividing walls, collecting pipe with 1 pneumatic drain valve, 1 overflow channel with countercurrent bath circulation, 4 rolls with ribbed surface and external housing, 3 supported rolls, covered with soft rubber, manual roll lifting,
- 2 stainless steel coated perforated bathtub rolls with inner housing, 1 veralized bathtub roll, with inner housing
- 2 circulation pumps with distributing coil for the circulation of the diluted soda in each vat subdivision, feeding of the diluted soda over the useful width with 4 perforated pipes with 2 manual valves
- 1 steam heating, consisting of: 2 heat exchangers including water separators, 2 automatic temperature controllers, each with: 1 electronic temperature regulator, 1 pt100 sensor, 1 pneumatic on/off valve
- level transmitter in the compartment for protection against dry running of the pumps
- 1 single drive with geared motor for the submerged coil
- 1 veralized oscillating roll with corrugated surface, with pneumatic system and pneumatic pressure control
- 1 double rotary sieve filters with 2 cleaning chambers and 2 filter sieves

each consisting of: 1 stainless steel tub with 2 self-cleaning sieves, 1 motor to rotate the sieve, 4 level switches, 2 spraying devices, dirt discharge, mud interception device with stainless steel tub, filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve, 1 filter discharge with pneumatic valve.

- individual drive with geared motor for the submerged coil

5) 1 high performance pneumatic squeezing press for a linear pressure of max. 500 N/cm

consisting of:

- 2 cast iron frames, 1 pneumatic pressure device with automatic lifting of the squeezing roll, 1 rewind plate of liquids, 1 control unit, 1 service box with the necessary control components
- 1 roll of ebonite coated knob
- 1 top roll with highly efficient synthetic coating
- hand protection device made of stainless steel sheet metal
- 1 soft rubber coated curved spreader roll, behind the press

Offer no. 65648V7

6) 1 closed washing compartment, type LK-DD6Q, for double run with 28 m of fabric content

consisting of:

- 1 stainless steel bathtub with lift-up cover and revolving windows, with dividing walls, with side passages for countercurrent in coil.
- all bath rolls coated with stainless steel and with long-life grease bearings
- 3 EXTRACTA rolls with pneumatic loading and synthetic coating
- 3 individual top roll drives with geared motors
- 1 oscillating roll with pneumatic system in the fabric binding
- 1 pneumatic drain valve
- stirrup on the compartment facade
- smoothing bars in the compartment for fabric passage without folds

- **all immersion track rollers with sleeve bearings instead of sliding ring bearings**
- bathtub inlet with water shut-off
- 1 bearing with metering pin mounted to the bathing guide roll
- pneumatic oscillating roll pressure control with regulating valve and pressure gauge
- 1 threaded stainless steel tube spreader roll, driven by single motor

- 1 pneumatic squeezing press incorporated for a max. pressure of 20 kN with automatic roll lifting
- 1 synthetic coated press roll, 1 stainless steel coated drive roll, 1 geared motor
- direct steam heating, consisting of: pipes with injector including distribution coil, 1 automatic temperature regulation with 1 electronic temperature regulator, 1 temperature sensor, 1 pneumatic on/off valve, 1 pneumatic on/off valve, 1 temperature sensor, 1 temperature sensor, 1 pneumatic on/off valve.
- 1 water supply for compartment refilling with pneumatic valve, manual operation

- bathtub overflow with alternative conduct to drain or backflow, pneumatic valve control

Offer no. 65648V7

7) 1 closed washing compartment, type LK-DD6, for double run with 27 m of fabric contents

consisting of:

- 1 stainless steel bathtub with lift-up cover and revolving windows, with dividing walls, with side passages for countercurrent in coil.
- all bath rolls coated with stainless steel and with durable grease bearings
- 3 EXTRACTA rolls with pneumatic loading and synthetic coating
- 3 individual top roll drives with geared motors
- 1 oscillating roll with pneumatic system in the fabric binding
- 1 pneumatic drain valve
- stirrup on the compartment facade
- smoothing bars in the compartment for fabric passage without folds

- **all immersion track rollers with sleeve bearings instead of sliding ring bearings**
- bathtub outlet with water shut-off
- 1 curved spreader roll, soft rubber coated, in the bathtub inlet
- 1 bearing with metering pin mounted to the bathing guide roll
- pneumatic oscillating roll pressure control with regulating valve and pressure gauge
- 1 threaded stainless steel tube spreader roll, driven by single motor

- 1 junction box made of stainless steel sheet with lifting cover
- 1 pneumatic squeezing press incorporated for a max. pressure of 20 kN with automatic roll lifting
- 1 synthetic coated press roll, 1 stainless steel coated drive roll, 1 geared motor
- 1 curved spreader roll, soft rubber coated, behind the press
- direct steam heating, consisting of: pipes with injector including distribution coil, 1 automatic temperature control with 1 electronic temperature regulator, 1 temperature probe, 1 pneumatic on/off valve
- bathtub overflow to the countercurrent

Offer no. 65648V7

8) **1 closed washing compartment, type LK-D5C, for double run with 25 m of fabric contents**

consisting of:

- 1 stainless steel bathtub with lifting cover and revolving windows, with dividing walls, with side passages for countercurrent in coil.
- all bath rolls coated with stainless steel and with durable grease bearings
- 1 pneumatic squeezing press for a max. pressure of 5 kN with 1 pneumatic pressure device, 1 synthetic coated press roll, 1 stainless steel coated control roll, 1 pneumatic pressure device, 1 synthetic coated press roll, 1 stainless steel coated control roll
- 3 individual top roll drives with geared motors
- 1 oscillating roll with pneumatic system in the fabric binding
- 1 pneumatic drain valve
- stirrup on the compartment facade
- smoothing bars in the compartment for fabric passage without folds
- **all immersion track rollers with sleeve bearings instead of sliding ring bearings**
- pneumatic oscillating roll pressure control with regulating valve and pressure gauge
- direct steam heating, consisting of: pipes with injector including distribution coil, 1 automatic temperature regulation with 1 electronic temperature regulator, 1 temperature sensor, 1 pneumatic on/off valve
- bathtub overflow with alternative conduct to drain or backflow, pneumatic valve control
- centrifugal pump including piping and bath distributor pipe for connection to the wash compartment

Offer no. 65648V7

9) 1 closed washing compartment, type LK-D3, for double run with 12 m of fabric contents

consisting of:

- 1 stainless steel bathtub with lifting cover and revolving windows, with dividing walls, with side passages for countercurrent in coil.
- all bath rolls coated with stainless steel and with durable grease bearings
- 1 oscillating roll with pneumatic system in the fabric binding
- 1 pneumatic drain valve
- stirrup on the compartment facade
- smoothing bars in the compartment for fabric passage without folds

- **all immersion track rollers with sleeve bearings instead of sliding ring bearings**
- bathtub outlet with water shut-off
- 1 guide roll at the bathtub inlet
- direct steam heating, consisting of: pipes with injector including distribution coil, 1 automatic temperature regulation with 1 electronic temperature regulator, 1 temperature sensor, 1 pneumatic on/off valve, 1 pneumatic on/off valve, 1 temperature sensor, 1 temperature sensor, 1 pneumatic on/off valve.
- bathtub overflow with alternative conduct to drain or backflow, pneumatic valve control

10) 1 high performance pneumatic squeezing press for a linear pressure of max. 500 N/cm

consisting of:

- 2 cast iron frames, 1 pneumatic pressure device with automatic lifting of the squeezing roll, 1 liquid return plate, 1 control unit, 1 service box with the necessary control elements

- 1 roll of ebonite coated knob
- 1 top roll with high-efficiency synthetic coating
- 1 threaded spreader roll in front of the press, in stainless steel tube, driven by individual three-phase motor
- 1 roll-guide for weaving step
- 1 soft rubber coated curved spreader roll, behind the press
- mounting bracket with 1 oscillating roll with pneumatic system, pneumatic pressure control with regulating valve and pressure gauge
- mounting parts for the meter counter, consisting of:
 - 1 proximity switch with the necessary connection parts for recording the signals for the electronic meter counter
- hand protection device made of stainless steel sheet metal

Offer no. 65648V7

11) 1 drum dryer

consisting of:

- 1 frame in steel construction with bolted connections with 12 drums, for drying on both sides, installation for steam and condensate including complete piping to the frame, each drum with gasket and condensate water separator, shut-off valve and condensate check valve, required track rollers, direct AC direct drive per second drum with geared motor
- 1 curved spreader roll coated with soft rubber at dryer inlet

- dryer input humidity 62 - 68 %, residual humidity 8 - 10 %, with a fabric weight of 270 g/m²
- rolls-guide rolls for fabric passage at the dryer inlet
- 10 dryer drums, diameter 800 mm, determined for 6 bar absolute pressure/158°C, Cr-Ni steel jacket DIN 1.4301 (AISI 304)
- the first 4 Teflon-coated dryer drums
- 2 refrigerated drums, installed in the dryer, double jacketed for water cooling, 1 pneumatic on/off valve, 1 radiation protection plate between dryer drums and refrigerant drums
- 1 automatic temperature control with 1 electronic temperature regulator, 1 pt100 sensor, 1 modular pneumatic valve for continuous steam control

- steam suction hood made of stainless steel sheet with connecting pipe and 1 suction fan

Offer no. 65648V7

12) 1 fabric exit with accumulator for roll change without stopping the machine, with peripheral rewinder for rolls of max. 2000 mm diameter and folding device.

(During roll change, the maximum production speed has to be adjusted to the fabric pitch property).

consisting of:

- steel scaffolding, 1 roll with pneumatic brake
- 1 fabric twist guard, with 1 star roll, driven by geared motor, 1 accumulator with tank unit in stainless steel tubes (length 4 m), 1 bar grille for driving of the fabric in stainless steel tubes for regular formation of the fabric pile
- peripheral winder with 2 movable arms with pneumatic system for raising and lowering of the winder, 1 driven winder roll, stainless steel coated, 1 control unit
- folder with 1 driven tractor roll, 1 control unit with geared motor
- 1 folding unit with 2 driven oscillating rolls, 2 oscillating arms, driven by toothed belt from the tractor roll
(max. line speed for folder 80 m/min !)
- required number of guide rolls for weaving pitch
- 1 roll supported by pneumatic system, with automatic roll lifting
- 1 tractor roll with synthetic coated drive, 1 geared motor, 1 stainless steel coated support roll, pneumatic system for roll hoisting

- mounting bracket with 1 pneumatic pivoting oscillating roll with pneumatic system and pneumatic pressure control
- pneumatic brake to lock the roll during roll change
- 1 pair of E+L ring guides, type KF 2020, cylinder length 400 mm
- mounting bracket with 1 oscillating roll with pneumatic system and pneumatic pressure control
- 1 hand protection with electric switch rail for rewinder roll with control device
- 1 curved spreader roll covered with soft rubber in front of the winding roll, with adjustment gearing
- 1 stainless steel coated reciprocating roll, adjustable displacement
- 1 ionization device with control cabinet for the accumulator, for elimination of the static charge in the tissue

Offer no. 65648V7

13) Multi-motor control with digital control and process control

consisting of:

- 1 switch cabinet with built-in cooling system, IP54 protection, gray paintwork

Distribution cabinet, containing:

- SIEMENS-S7 type process control, main switch, fuses, working hours counter, etc.
- frequency converters required for power supply and regulation of the motors
- asynchronous motors required, alternating current, IP 55 protection
- command for the automatic lifting of the squeezing rolls when the machine is stopped

! The ambient temperature must not exceed 45°C !

Process control, type: SIEMENS-S7

- supervision and central process control by color touch-screen, IP65 front protection, for control and process presetting, with the following functions: Input of all necessary program and process parameters, input of preselection of limit values, visualization of control and process, fault message with diagnostics, alarm message.
- necessary control elements, such as: start, stop, emergency stop, faster, slower, function and fault indicator lamps, etc.

Data logging

- with indication of production in meters
- with indication of water consumption

- central recipe storage
with the standard dataset, containing all relevant machine and process data

Command station(s) at the entrance/exit of the facility with management and control elements, such as:

- digital speed indication
- start, stop, emergency stop, faster, slower, slower, start-up, stop, emergency stop, faster, slower
- function and malfunction indicator lamps

Electronic regulators for oscillating roll position adjustment

Offer no. 65648V7

Electronic regulators for load-measuring pins, for measuring web tension and regulating drive motors

Emergency stop stations needed for installation along the machine

Control for changing the fabric roll without stopping the machine, including manual adjustment of the winding speed during roll change.

Soft starter for threaded spreader rolls for slow start at rated speed

Quotient measuring and control device for all control points in the mercerizing area

Language of operation: Spanish

Teleservice system, type TELE-LINK Internet

Complete with hardware equipment and software package for diagnostics and support from our after-sales service directly at the customer's site via the Internet. (The customer must prepare the connection to the switch cabinet and two addresses. public IP for SPS and HMI, which must be accessible by Benninger via Internet or via VPN - Virtual Private Network).

Offer no. 65648V7

14) Water supply for the system

- 5 automatic water feeding, each unit consisting of:
 - 1 connection pipe incl. 1 flowmeter, regulating range 6.8 - 135 lt/min, 1 pneumatic regulating valve

15) Acid dosing for installation

- 1 pH-transformer with LCD display and pH-probe with measuring cable
- 1 electric dosing pump, max. flow rate 17 lt/h with connection tube
- 1 container of 140 lt content for metering pump, made of PE
- 1 float switch for PE container

16) 1 box of assembly tools in solid quality

with hinged lids on both sides, with fixed subdivisions, 1 padlock, containing first-class tools for assembly works and maintenance

17) Electrical cables
(without installation)

along the installation and between the motors and the control cabinet including metal connection covers for main motors (The cable lengths between the control cabinet and the connection points of the installation must be max. 50 m.). It is necessary to take into account the control cabinet installation).

Not included in our delivery: installation material, terminal blocks, registration material and tools.

18) 25 kg grease Klüberplex BE 31-502

for high pressure-loaded housings in a high temperature environment, with high resistance to steam and chemicals

19) 1 set of spare parts
(detailed list after receipt of order)
Rolls depending on the calculation of technologist Benninger

Offer no. 65648V7

Installation, commissioning and training

- 1 BENNINGER technician, for a total of 450 working, travel and standby hours for assembly, mechanical commissioning, training, etc. and assistance during start-up time
- 1 chemist, for 70 hours of work and travel for technical start-up
- 1 electrical engineer, for 100 hours of work and travel for the commissioning of the multi-engine control system.

Included in the assembly costs:

- round-trip travel expenses
- per diem, meals and lodging expenses
- diets

Not included in the assembly costs:

- local travel expenses hotel - place of installation

Comments:

Please request our assembler 4 weeks before the desired date for the beginning of the assembly.

The purchaser undertakes to provide our assembly personnel with the necessary auxiliary personnel to carry out the assembly within the stipulated assembly time. See attached "General Conditions of Assembly".

If the fixed installation time is exceeded through no fault of the seller, the buyer will have to pay for the additional hours according to the rates in force at the time.

In all other respects our "General Conditions of Installation" apply.

Technical documentation

Operating Instructions and Entertainment Instructions (in simple print, by simple on CD)	inEnglish
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Spare parts catalog h (printed duplicate)	inEnglis
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Sub-suppliers' documentation h (for single on CD)	inEnglis
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Offer no. 65648V7

Not included in our delivery:

- oils according to BENNINGER lubrication instructions
 - machine foundation
 - walkway along the machine
 - piping for steam, water, chemicals, compressed air and waste water, along the machine, under the installation, and between the machine
 - caustic soda piping between machine and tanks
 - piping between machine and chemical tanks
 - steam reducing valve
 - pipe insulation
 - cable channels along the machine
 - vacuum cover over the drum dryer
 - steam suction hose for high performance juicer
 - steam suction pipe for drum dryer
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- elevators of sufficient capacity with its equipment
 - workshop tools
 - welding equipment
-
- personnel and auxiliary material
- In order to ensure that assembly and commissioning can be carried out without delay, the purchaser must, at his own expense and responsibility, provide our assembly personnel with auxiliary personnel and equipment.