matachana

WASHER-DISINFECTOR

MAT LD500 & MAT LD500M

CE
2460

TECHNICAL MANUAL

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Table of Contents

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Table of Contents

Introduction

MATACHANA machines are developed and tested in cooperation with hospitals and laboratories to ensure optimal functionability and reliability of operation, as well as to ensure personal safety and environmental protection are given highest priority.

It is important that you follow the factory instructions concerning start-up and daily use of the machine. We therefore ask you to read these instructions carefully before you start operating the machine.

In case of questions about use of the machine, please inform us of the following:

Machine type and machine serial No.
Information is available on the name plate of the machine.

The responsible body should ensure that all personnel who operate or maintain the machine are trained in its operation and use.

Machine description

The MATACHANA MAT LD500 Washer-Disinfector is a washer designed for use in hospitals and clinics. The system provides up to 40 different programs for cleaning and disinfection of surgical instruments and utensils. Each of the programs can include up to 10 program phases and may be adjusted to specific user requirements.

The washer-disinfector comes in an automatic sliding one or two doors model as well as in a manual drop down version, one or two doors.

1. DviejÔdurÔ

The machine can be electrically or steam heated, or both electrically and steam heated.

MAT LD500 has been designed in the form of a basic structure to which features may be added in order to increase flexibility and meet your specific needs. This flexibility applies to features such as:

- Various racks
- Number of dosage pumps
- Number of water connections
- Printer
- Automatic loader/unloader
- RFID monitoring.

The machine and equipment are tested and approved before leaving the factory and we recommend regular preventive maintenance and validation according to applicable standards.

The machine must only be operated by instructed staff.

Intended use

MAT LD500 is intended for use in hospitals or the health care sector for washing and disinfection of:

- Surgical instruments
- Anaesthetic equipment
- Bowls, dishes, receivers, utensils, glassware, etc.

In order to meet the specific requirements for cleaning of the above devices a variety of racks are designed for the machine.

All items to be cleaned in this machine must tolerate heat disinfection.

Only trolleys and racks designed for MAT LD500 must be used.

The machine must only be operated by trained staff. Instructions are provided during start-up of the machine.

MAT LD500 must be used for the intended use only.

If the equipment is used for purposes not listed, the warranty will cease and the equipment may be impaired.

This manual

This manual is intended for qualified personnel who operate disinfection machines and are familiar with hygiene requirements in hospitals or the health sector.
The manual covers the most relevant issues but there may be details that are not described. If you need more information about any such detail, please do not hesitate to contact your supplier.

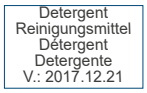
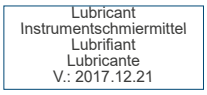
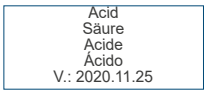
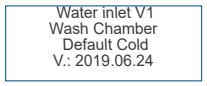
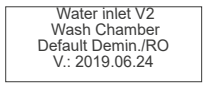
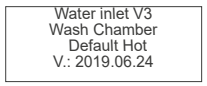
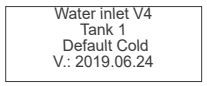
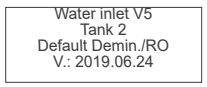
Environment

During development and manufacturing of MAT LD500 the environment is considered to the widest possible extent. This is reflected in choice of materials as well as performance of the machine.

The disinfection is achieved by means of heat instead of chemicals which are harmful to the environment. The low water consumption of the machine also ensures that the consumption of energy and chemicals necessary for the cleaning process is low. Furthermore, the machine is constructed of materials which for the most parts are recyclable.

Overview of labels
Labels present on the machine

This manual must be read in all cases where the above symbol is present in order to establish the nature of the potential hazards and to learn which precautions you need to take.

Label / symbol	Description / title
	Warning: Potentially hazardous situation
	Mandatory action: Read manufacturer's instruction
	This sign is only shown on machines heated by steam
	This sign is only shown on machines with connection for compressed air
	Rinse Aid, Klarspüler, Agent de rinçage, Optimizador secado
	Detergent, Reinigungsmittel, Détergent, Detergente
	Neutralizer, Neutralisationsmittel, Neutralisant, Neutralizador.
	Lubricant, Instrumentschmiermittel, Lubrifiant, Lubricante
	Acid, Säure, Acide, Ácido
	Connection for Cold, Hot or RO/DI water*
	Connection for Cold, Hot or RO/DI water*
	Connection for Cold, Hot or RO/DI water*
	Connection for Cold, Hot or RO/DI water*. Must be cold water when with condenser.
	Connection for Cold, Hot or RO/DI water*
	Connection for cold water for drainage cooling*
	Connection for cold water for both drainage cooling and wash chamber (single water inlet and double valve)*

*See section: "Water connection" , *page 40.* for further explanation.

Labels present on the packaging

Label / symbol	Description / title
	This side up
	Keep dry
	No use of sharp items when unpacking
	Temperature limits
	Humidity limitation
	Fragile. Handle with care
	Top heavy

Labels present in this manual

Label / symbol	Description / title
	Warning: Potentially hazardous situation
	Warning: Possibility of electric shock
	Warning: Corrosive substance
	Warning: Toxic material
	Warning: Hot surfaces
	Warning: Danger of crushing
	Mandatory action: Wear protective gloves
	Mandatory action: Wear eye protection
	Mandatory action: Read manufacturer’s instruction
	Prohibition: Do not spray water
	Protective Earth (ground)
	Waste handling in accordance with local/national provisions on waste disposal
	Call in specially trained staff

General safety

This machine is constructed in accordance with applicable harmonized standards for safety. See ”Declaration of Conformity”.

When subjects mentioned in this manual from which a possibility of personal injury or damage to the equipment can arise, a triangular, yellow risk of danger symbol is shown on the left hand side of the relevant section.

The machine uses electricity, hot water and chemicals for the cleaning process. In accordance with applicable harmonized standards it has through construction been ensured that the daily user is not subjected to danger.

Personal safety

The responsible body must offer regular training of all personnel who is involved in operation and maintenance of the equipment, including emergency procedures in case any toxic or pathogenic substances are released into the environment by accident. Stated below are conditions where hazards might occur if the machine is not handled according to instructions.

Electric shock

Electrical components that might pose hazards are placed behind covers which can only be removed using a tool. These covers may only be removed by specially trained staff.

Chemicals/corrosion

Safety precautions must be taken against splashes and spill when handling chemical canisters. Always wear eye protection and safety gloves, also when cleaning from spillage and leakage. Detergents are alcalic or acidic and can cause severe injury on exposed skin. Avoid any contact with eyes, skin and mouth.

Always follow the chemical supplier's instructions concerning re-filling or replacement. Always read the chemical supplier's Safety Data Sheet (SDS) prior to handling, use and storage of detergents and chemicals.

Inhalation of vapours

Normally, use of approved chemicals for washer-disinfector machines will not cause any health related hazards.

In case the detergent supplier or the health authorities state that the chemicals used might release fumes hazardous to inhale, ventilation should be connected directly to machine. See Safety Data Sheet (SDS).

Hot surfaces

Use caution when pulling out the rack after program completion. The rack and items may be hot and contain hot water. After program completion the filter and washing arms may be hot. Allow to cool or use protective gloves. Avoid contact with the heating element.

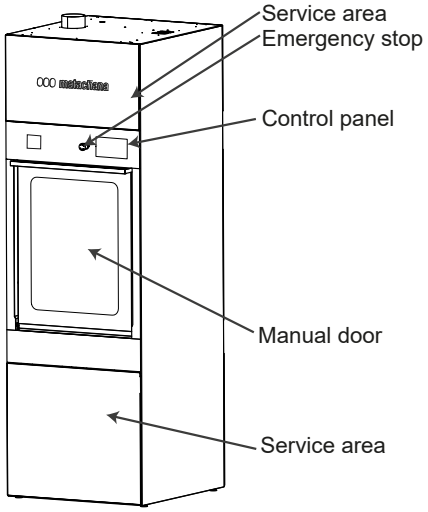
Sharp items

Be careful during cleaning/maintenance of wash chamber. Sharp items might have fallen from racks during washing and disinfection and remain in the wash chamber.

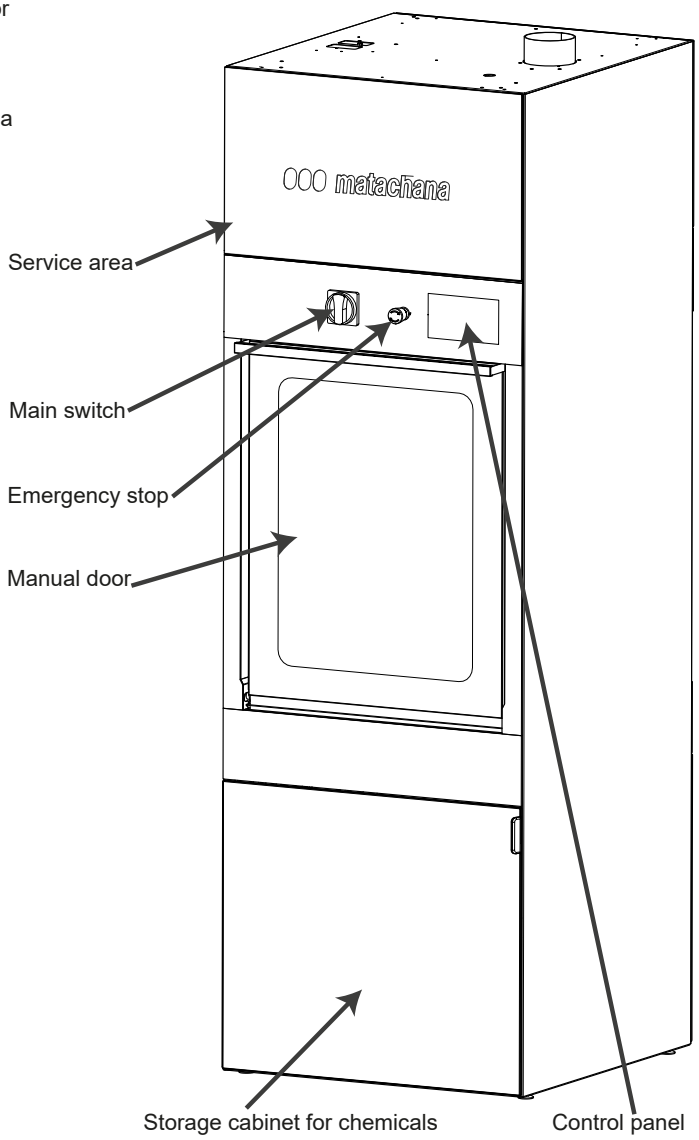
Electricity, water, steam and drain connections may only be carried out by specially trained and certified staff.

MAT LD500M (Manual doors)

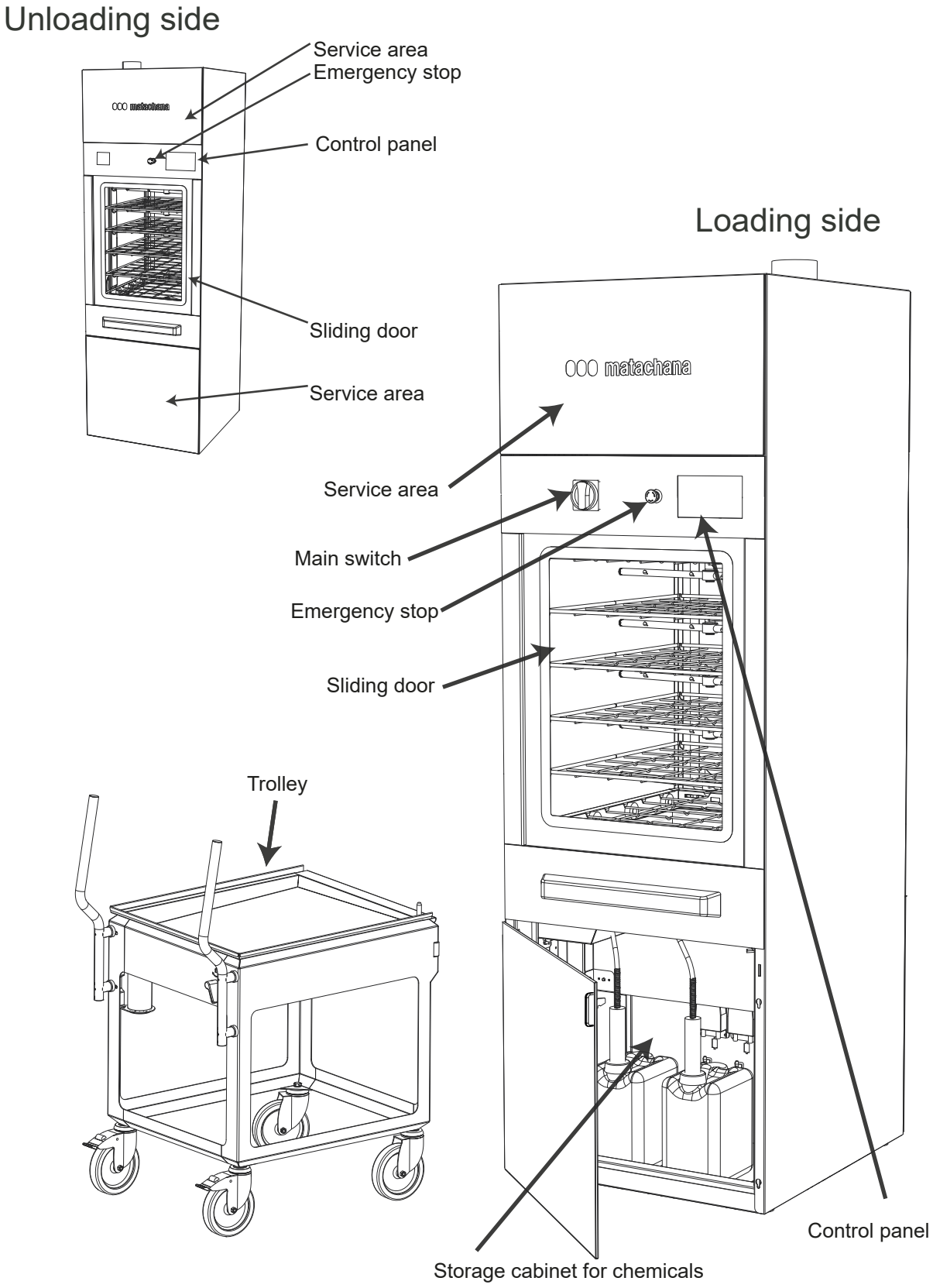
Unloading side



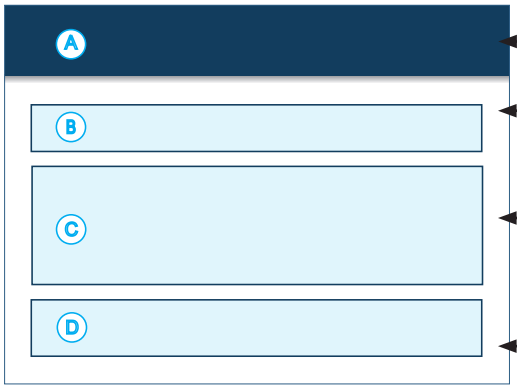
Loading side



MAT LD500 (Sliding doors)



Control panel



Permanent area for generic information and action related to all screen.

Information area.

Area of programs, information and functions.

Functions' area.

Area A: This area indicates continuously the temperature of the chamber and can incorporate 4 different buttons. At least 2 out of the 4 possible buttons are always displayed.

 *Access to "Main menu"*

 *Access to the active messages display*

 *Access to "Information"*

 *Close current display*

Area B: This area includes information on the function and/or program of the current display together with the status of door 1 and 2.

Area C: This area includes information on the machines functions. It also contains program selection buttons, error messages and warnings etc. During the execution of a cycle this area contains relevant information about the cycle running.

Area D: Space for functional buttons.

Touch screen

The start menu shown on control panel, loading side.

Icons

 *Back to program selection menu.*

 *Information screen.*

Program selection.

 *Open/close door.*

 *User identification.*

 *Print menu.*

 *Switch between screens.*

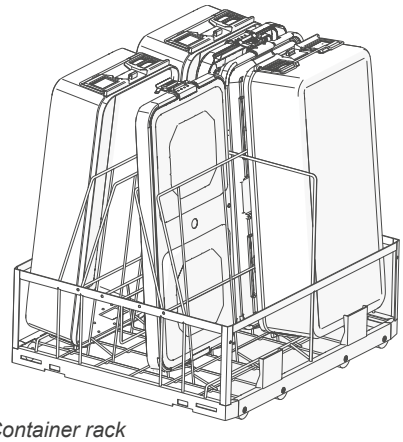
 *Start.*

 *Stop.*

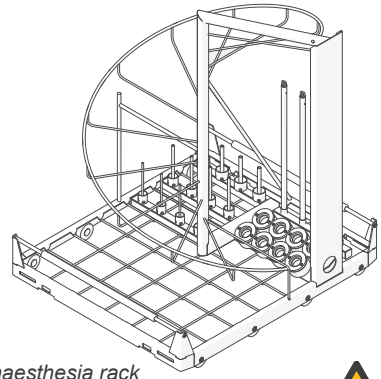
 *Accept/Confirm.*

 *Cancel/Back.*

Loading procedure



Container rack



Anaesthesia rack

1. Place the items to be washed in the appropriate racks.

2. Check that all surfaces can be washed. Items must not lie inside one another or cover each other. Containers, bowls, dishes and receivers must be placed with the opening down so the water can flow out.

3.Ensure the washing arms can rotate freely.

In case of flexible racks check that the washing arms and shelves are placed firmly and in correct location.

For lumen devices it must be verified that:
a. All channels allow the free passage of water before the device is loaded into the machine.
b. All necessary connections have remained in place at the end of the cycle.

As an option the machine can be equipped with means to identify the load and automatically select the correct washing program.

Loading instruments and utensils on the racks must comply with respective manufacturers instructions.

Fig. 1 Lock the wheels on the trolley while placing baskets in the rack.
Fig. 2 Unlock wheels, place the trolley in front of machine to connect. The lock (A) is automatically pulled down, when the trolley is connected correctly to the machine.
Fig. 3 To unlock the trolley from machine turn the handle clockwise.
Fig. 4 The handle is placed on the front of the trolley.

Only turn the handle to release trolley from machine.

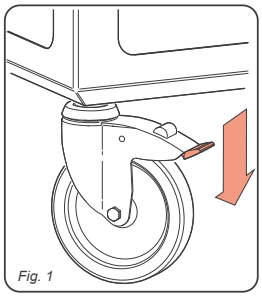


Fig. 1

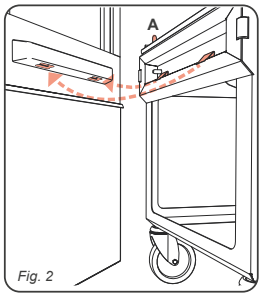


Fig. 2

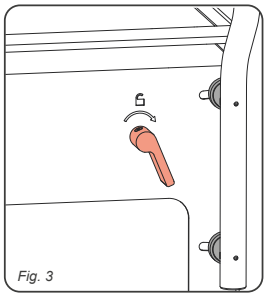


Fig. 3

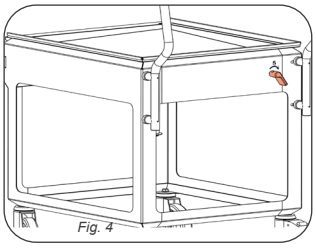


Fig. 4

Trolleys must not be loaded with more than 70 kg.
Do not lift the rack if it is loaded.
Only trolleys and racks designed for MAT LD500 must be used.

5. Atvira programÔstruktÎ ra. Mağinoje gali bÎ ti sukurta iki 40 programÔir kiekviena programa gali bÎ ti sudaryta iğ iki 10-ies faziÛ. Gali bÎ ti renkamasi iğ skirtingÔfaziÔtipÛ

Program settings

The machine comes with 40 programmable programs and each program may consist of up to 10 phases. Each phase has one of the following phase types:

- Prewash
- Wash
- Rinse
- Disinfection (A0)
- Disinfection (Temperature/Time)
- Drying.

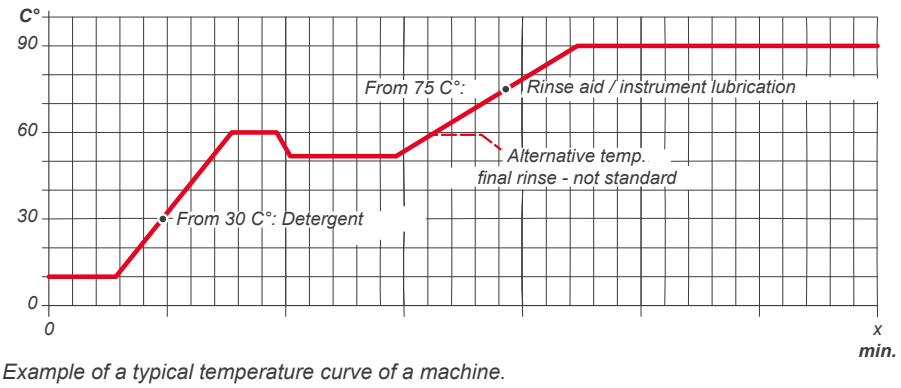
7.Kiekvienoje fazãje yra galimybã pasirinkti ir keisti norimus parametrus

For each phase it is possible to select and adjust parameters. For phases of type prewash, wash or rinse it is possible to select program between different water qualities (if connected), filling method (pressure og level), temperature, duration, 0 to 4 chemistries and conductivities.

For disinfection phase it is possible to select if disinfection should be temperature/ time disinfection or an A0 disinfection.
For drying phase it is possible to select a temperature and a duration.

Program cycles

General temperature curve, normal program

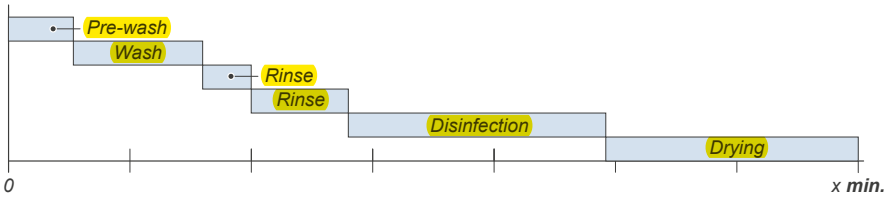


Example of a typical temperature curve of a machine.

11.3. Galimybã plovimo bei neutralizacimo priemoniÔdozavimÑkeisti pagal vartotojo poreikius. Kiekvienoje fazãje gali bÎ ti individualiai pasirenkama pplovimo preimoniÔ(ar neutralizavimo priemoniÔ) tipas ir dozã. Vienoje plovimo fazãje gali bÎ ti naudojama iki 2 skirtingÔ plovimo priemoniÛ pasirenkant jÔkiekDŽas pats gali bÎ ti ateliakama ir skalavimo fazãje, t.y. skalvavimo metu gali bÎ ti naudoajama iki 2-jÔneutraliavimo priemoniÛ

Program phases

In each phase the following can be individually preset: phase name, water quality, water filling method, filling time, type of chemical (max. 2/phase), dosage time, wash temperature and wash period.



Example of a typical washing and disinfection cycle.

Settings may only be changed by specially trained staff.

Program completed

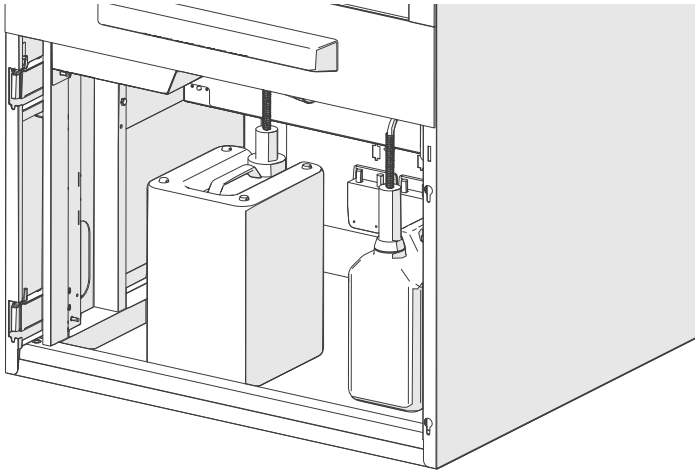
When the washing and disinfection cycle has completed, the door on the loading/ unloading side is unlocked and may be opened by pushing the ”Open/Close” icon. The door on loading side remains locked (applicable for 2 door machines only) until the door on the unloading side is closed after unloading.

Opening the door on unloading side before a washing and disinfection cycle has been completed, can only be done by specially trained staff and by use of a code.

Use caution when pulling out the rack after program completion. The rack and items may be hot and contain hot water. After program completion the filter and washing arms may be hot. Allow to cool or use protective gloves. Avoid contact with the heating element.

Replacement of chemical cans

The chemical canisters are placed in the chemical cabinet, loading side.



Sliding door must be closed to access the canisters.

Safety precautions must be taken against chemical exposure when handling chemical canisters. Always wear eye protection and safety gloves. Detergents are caustic and can cause severe damage on exposed skin. Avoid any contact with eyes, skin and mouth.

Empty chemical canisters must be disposed of chemical waste according to your local/national regulations of waste disposal. Always read the chemical supplier’s Safety Data Sheet (SDS) prior to disposal.

Shut down procedure

When the workday ends, clean the filter, close the door and turn the main switch to OFF position.

If the machine is not to be used for an extended period of time or if maintenance is required, shut off all supply valves to machine and turn the main switch to OFF position.

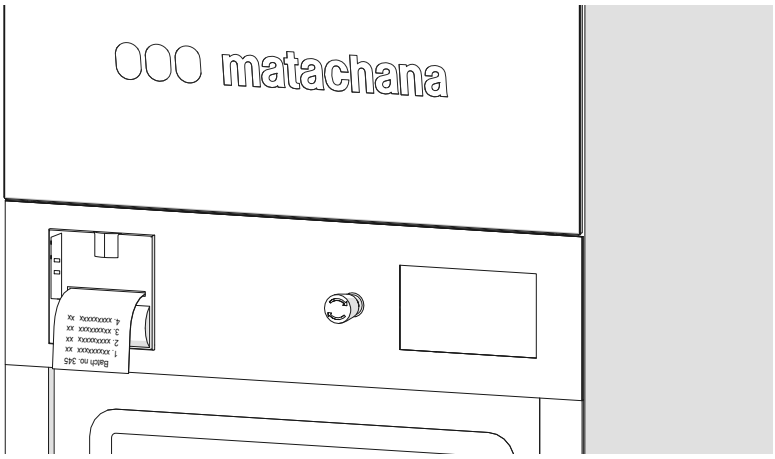
Printer operation

If a printer is installed the following possibilities are available:

10.Integruotas spausdintuvas, plovimo-dezinfekcijos ciklo ataskaitoms spausdinimas

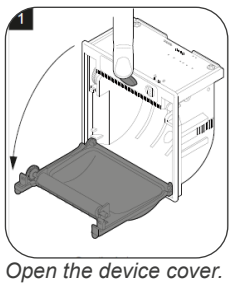
1) Automatic print out of program log.
Data of the recent program is automatically printed 10 seconds after opening of the door.

2) Manual printout of program log.
When a program cycle has completed it is possible to print one or more program logs.

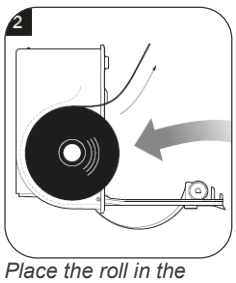


Printer is preset to reverse mode.

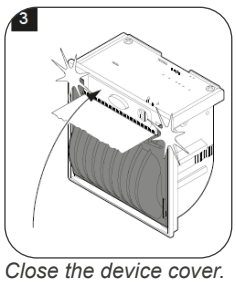
Loading the paper roll



Open the device cover.



Place the roll in the paper compartment and pull out the paper for a few centimeters.



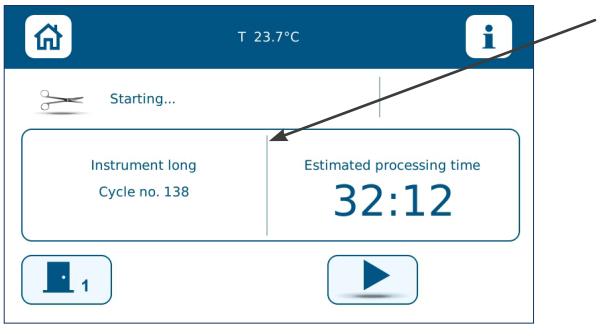
Close the device cover.

Operation

Start menu/select program

The start menu shown on loading side when machine is ready for use.
Switch between screens to find the desired program and push the program name to select it.

Program information

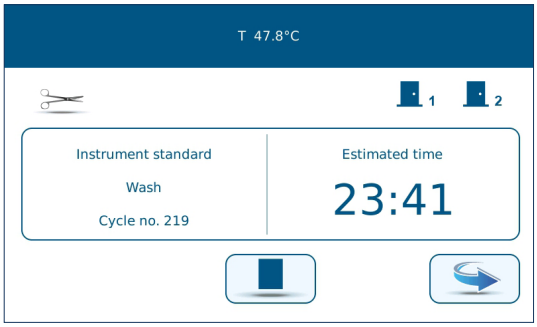


Here you will find specifications of the chosen program.

The information shown will depend on the program setup of your machine.

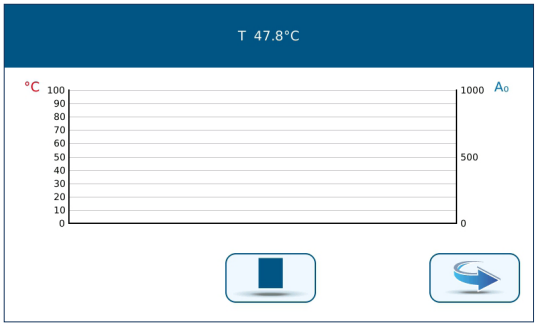
Estimated duration of the chosen program is shown. If the program does not contain a disinfection phase a warning is shown. To verify the choice of program and thereby start the program, push ”Start” icon and maintain it pushed for about 2 seconds.

Process screen



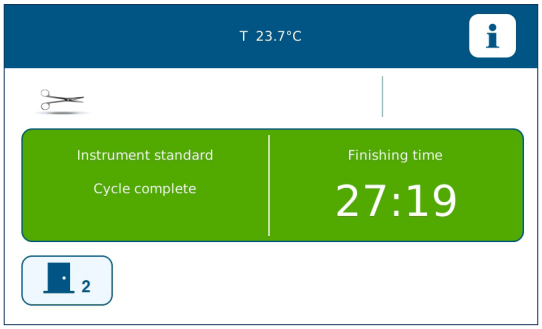
During a program cycle the display will show the estimated time left and active phase of the cycle. By pushing the ”right arrow” icon you will find further information about the current program.

Graph screen



On the graph screen you will see two real time graphs, one states temperature and another one states the A0 value. Furthermore you will get information on the wash chamber's temperature.

Program finished

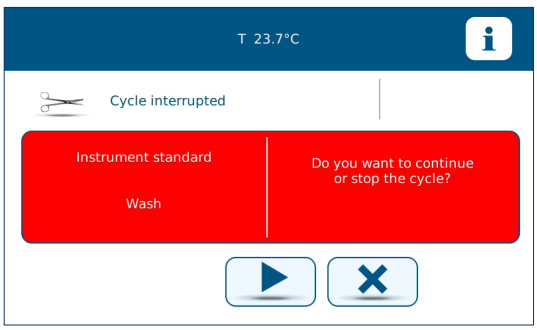


Once a program has ended correctly (fault free), the indication of process end through "Cycle completed" message is displayed in the messages' information window by means of a fully green background and you can now open the door by pushing the "Open/close" icon. After unloading the machine the unloading door must be closed and the displays will return to start screen.

Machine interrupted

If an alarm occurs or the machine is interrupted during a wash cycle, it is possible to restart the wash, starting from the phase in which the machine was interrupted.

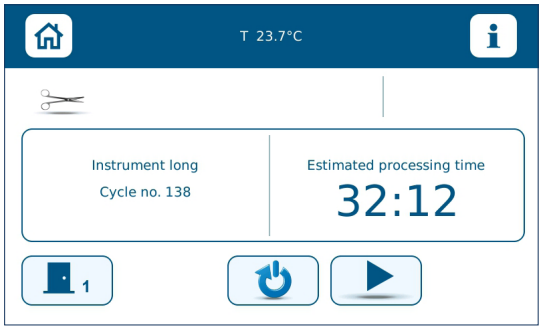
To acknowledge the alarm push the symbol  A list of alarms will appear and by pressing the accept symbol  the below screen will be displayed.

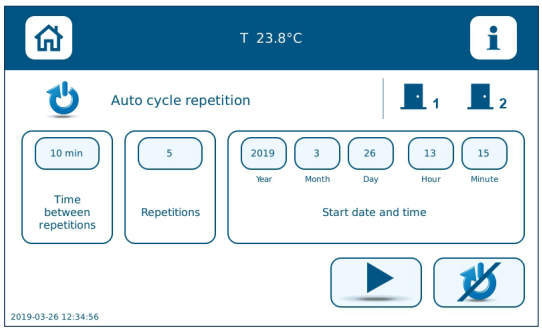


To continue the wash: push the "Start" icon. To cancel: push the "Stop" icon.

Delayed start and automatically repeat
It is possible to make a delayed start and optionally an automatically repeat.

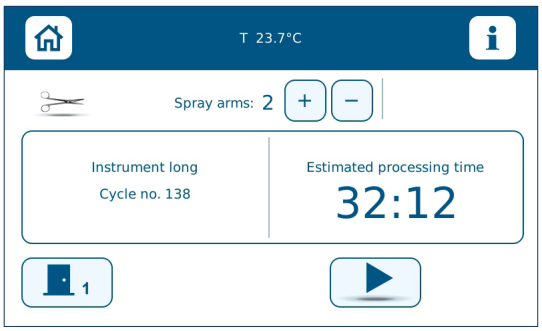
When a program is chosen, it is possible to press on the ”Clock key” to the right in the display to make it possible to choose a time of start, optionally automatically repeat and set the time of the repeat intervals.





Spray arm rotation detection
Optionally the machine can be provided with detection of spray arm rotation.

At the beginning of a program, the number of spray arms in the rack must be indicated.
(If the rack is identified by an RFID tag, the number of wash arms may have already been assigned and the screen will not be displayed)



Press one of the "Number keys" to the left to quote numbers of spray arms in the rack.

Error notifications

The automatic controller is able to identify a number of errors/service messages as regard to the machine installation, the operation and the components. Furthermore it will display errors that have already resulted in, or are about to result in, operational failures.

The controller distinguishes between critical errors service alarms. In case of a service alarm the machine will stay in operational mode but a service technician should inspect the machine within a short period of time. In case of a critical error the process is immediately discontinued and the display indicates the cause of error.

Error notifications cannot be deleted by switching off the machine.

In case several errors are activated during a washing and disinfection cycle the latter error is shown on the display while previous error notifications are queued.

All error notifications are stored in the error log and if your machine is connected to a printer (optional) you are able to print the error log.

Only try to remedy errors that do not require removal of machine covers. In all other cases call service.

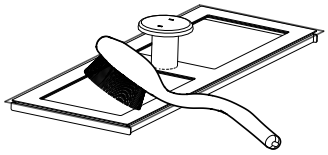
The doors can not be opened before completion of the selected program. In case of an error, the door on loading side can be opened by use of a code.

Do not try to open the door by force.

Daily maintenance

Clean the exterior surfaces of the machine with a moist cloth. Use detergents intended for cleaning stainless steel and glas only.

Wipe the gaskets of the doors with a clean cloth.



Clean filter in bottom of washing tank.
Remove filter and clear away waste from the tank bottom. Clean the filter with a brush, rinse with hot water and put it back in place. The filter might be hot if a wash cycle has just been completed. Avoid contact with the heating element in the wash tank.

Do not use water hose or pressure washer as the machine is not waterproof.

Visual inspection
Upon unloading machine check that the washed and disinfected goods is actually clean.
If no error notifications have appeared and an inspection of the machine does not reveal any irregularities and your items are still soiled the cause may be due to incorrect loading of baskets and racks or to incorrect dosage of detergent.

Preventive maintenance

In order to ensure perfect operation of the machine it is necessary to carry out preventive maintenance at regular intervals in addition to the daily maintenance.

All preventive service and maintenance which require the machine covers to be removed by the use of tools may only be carried out by specially trained and certified staff.

Selection of chemicals

12. Pasirinkdami plovimo procese naudojamus chemikalus, visada rinkitãs priemones, tinkamas medicinos prietaisÔ valymui. Naudokite ģarminDŽermentinDZ arba kombinuotŃ ģemo pH ploviklDžU paprastai rekomenduojamu dozavimu tarp 2-10 ml/l.

Regarding selection of chemical products used in the wash process always select products suitable for cleaning of medical devices. Use an alkalic, enzymatic or combined based low pH detergent with a typically recommended dosing of 2-10 ml/l.

In case a rinse agent during final rinse/disinfection process is used, always select a rinse agent with a content that does not cause any adverse health effect.
We always recommend the machine is tested and validated with selected chemicals.
Contact your detergent supplier for further advice on choice of chemicals.

T1

IMPORTANT: If necessary replace all hoses from suction lances to the entry point in wash chamber. The demands on hoses may vary depending on the chosen type of chemical.

Always follow the chemical suppliers instructions and procedures from the Safety Data Sheet (SDS) prior to the handling chemicals.

Visuomet vadovaukitãs cheminiÔ priemoniÔ tiekãjÔ instrukcijomis ir procedÎ rÔ apraģymais prieģ pradãdami naudotis cheminãmis medģiagomis.

When using strong chemicals, the values indicated in the table below must be observed. If in doubt, please contact MATACHANA.

Chemicals	Concentration in process	Temperature in process	Concentration in canisters	Temperature in canisters
Citric acid	10%	95°C	50%	40°C
Nitric acid	10%	95°C	50%	40°C
Phosphoric acid	10%	95°C	50%	40°C
Sulphuric acid	3%	60°C	7,5%	40°C
Hydrochloric acid	0%	0°C	0%	0°C

The warranty will be repealed in case concentrated aggressive chemicals (e.g. hydrochloric acid) are added into the machine.

EMC compliance statement

This product has been tested to apply with the requirements of EN 60601-1-2 for Electromagnetic compatibility ([EMC]. The following pages list the tests performed and corresponding test levels. Also provided are guidance statements that give recommendations on equipment use. **Guidance statements (those listed in the right-most column of the charts below) are not requirements for use of this product.** The user, operator, installer, or assembler of this product is advised of the following:

1. Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the information provided in this manual.
2. WARNING: Portable and mobile RF communication equipment must not be used closer than 30 cm from the devise because this can affect medical electrical equipment.
3. Use only the power cord provided with this product, or an alternate approved by the manufacturer.
4. WARNING: The use of accessories, transducers and cables other than those specified may result in increased emissions or decreased immunity of this product.
5. WARNING: Equipment should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, this product should be observed to verify normal operation in the configuration in which it will be used.
6. The machine has been tested for electromagnetic compatibility in accordance with EN 60601-1-2 and is suitable for operation in commercial environments, such as hospital, medical practices and laboratories and other similar environments which are connected to mains power supply.
7. Nothing to expect due to EM disturbances. Display flicker can happen, if the device is exposed beyond the test levels.

Guidance and manufacturer's declaration – electromagnetic emissions			
This product is intended for use in the electromagnetic environment specified below. The customer or user of this product should assure that it is used in such an environment.			
Emissions test	**Test level**	**Standard**	**Passed/not passed**
Immunity to electrostatic discharges	+/- 8 kV contact +/- 2,4,8 and 15 kV air	EN(IEC) 61000-4-2:2009	Passed
Immunity to fast transients	+/- 2 kV for power supply lines +/- 1 kV for input/output lines	EN(IEC) 61000-4-4:2012	Passed
Immunity to surge transients	± 0,5 kV, ± 1 kV line-to-line ± 0,5 kV, ± 1 kV, ± 2 kV line-to-ground	EN(IEC) 61000-4-5:2014	Passed
Immunity to AC mains voltage dips and interruptions	0 % *U*T; 0,5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° q) 0 % *U*T; 1 cycle and 70 % *U*T; 25/30 cycles Single phase: at 0° 0 % *U*T; 250/300 cycle	EN(IEC) 61000-4-11:2004	Passed
Immunity to power frequency magnetic field	30 A/m 50 Hz or 60 Hz	EN(IEC) 61000-4-8:2010	Passed
Immunity to conducted radio frequency disturbances	3Vrms 150 kHz to 80 MHz *	EN(IEC) 61000-4-6:2014	Passed
Immunity to RF fields.	10 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	EN(IEC) 61000-4-3:2010	Passed
Immunity to proximity fields from RF wireless communications equipment	See next page	EN(IEC) 61000-4-3:2010	Passed
Measurement of mains harmonic currents	Class A	EN(IEC) 61000-3-2:2014	Passed
Measurement of mains voltage variations and flicker	Complies	EN(IEC) 61000-3-3:2013	Passed
Conducted and radiated RF emissions.	Class B	CISPR 11	Passed
Conducted and radiated RF emissions.	1-6GHz	CISPR 32	Passed

*The ISM (industrial, scientific and medical) bands between 0,15 MHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.

Table 9 – Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

Test frequency (MHz)	Band [a] (MHz)	Service [a]	Modulation [b]	Maximum power (W)	Distance (m)	IMMUNITY TEST LEVEL (V/m)
385	380 –390	TETRA 400	Pulse modulation [b] 18 Hz	1,8	0,3	27
450	430 – 470	GMRS 460, FRS 460	FM [c] ± 5 kHz deviation 1 kHz sine	2	0,3	28
710	704 – 787	LTE Band 13, 17	Pulse modulation [b] 217 Hz	0,2	0,3	9
745						
780						
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation [b] 18 Hz	2	0,3	28
870						
930						
1 720	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation [b] 217 Hz	2	0,3	28
1 845						
1 970						
2 450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation [b] 217 Hz	2	0,3	28
5 240	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation [b] 217 Hz	0,2	0,3	9
5 500						
5 785						

matachana

Technical Description

Technical data	
Outer dimensions	H:1985 x W:662 x D:712 mm
Weight excl. / incl. packaging.	236 / 316 kg
Operative volume / dimensions, wash chamber	231 litres H:690 x W:550 x D:610 mm
Total volume / dimensions, wash chamber	279 litres H:(832) x W:550 x D:610 mm
Dead volume	≤ 0.3 litres
Capacity, baskets	12 DIN-baskets 480 x 250 x 50 mm 5 SPRI-baskets 450 x 340 x 70 mm
Cycle time, standard	35-45 min
Detergent and rinse aid dosage	Standard
Touch display	Standard
Automatic controller	Standard
Two-door model, glass doors	Standard - One-door model as option
Drying module	Standard
Condenser	Optional
Printer	Optional
Network interface	100BASE-TX with support of auto-negotiation
Sealing class	IP20
Sound pressure level according to ISO 11204	
Washing	53.0 dB(A)
Drying	55.0 dB(A)
Emission of heat: Without dryer / with dryer	0.76 kW / 0.92 kW
Power supply options	3 x 200-480V AC + N + PE, 50/60 Hz 7-13 kW
Power supply on this unit	See marking label on the machine.
Steam Heating	200 - 400 kPa
Steam consumption rate	Max. 17,5 kg/h
Compressed air	500 - 700 kPa
Wash pump	0.73 kW 50 Hz / 0.45 kW 60 Hz
Blower, drying unit	1.6 kW 50 Hz / 2.1 kW 60 Hz Not UL / 1.5 kW 60 H
Heating element, wash chamber	6 kW / 9 kW / 12 kW
Heating element, drying unit	2 x 2 kW
Air volume for blower	Max. 210 m³/hour
Filtration	Class H14 according to DS EN 1822 (99,95%)
SEKO chemical pump 24VDC	115 ml/min
Drain	ø50 mm, minimum flow requirements: 115 L/min
Connection to drain from drain pump	Max. height 750 mm
When 2 tanks	Max. height 400 mm
Exhaust connection point	ø100 mm 250 m³/h
Water consumption per phase	Approx. 12-15 ltr (with standard 5-level rack)
Water connections	2 x 3/4" (3rd is optional). Cold water: pressure 200-800 kPa, ≥ 15 l/min, temp. 5-30°C, hardness 0-30° dH. Hot water: pressure 200-800 kPa, ≥ 15 l/min, temp. 30-70°C, hardness 0-3° dH. Demineralized/RO water: pressure 200-800 kPa, ≥ 15 l/min, temp. 5-70°C, conductivity 3-200 µS/cm.
Transport	-20°C-70°C ≤ 80% RH. Handle with care.
Storage	-20°C-70°C ≤ 80% RH. Keep in packaging until installation. After storage at a temperature of -20 ° C, the machine must have 4 and a half hours to acclimatize before the machine is to be used. After storage at a temperature of +70°C, the machine can be used immediately.
Operating environment	Ambient temperature and humidity: 5°C - 40°C, ≤ 80% relative humidity for temperatures up to 31°C decreasing linearly to 50% at 40°C
Fuse F1, F2	500V, 2A, 5x20 mm, time-lag, breaking capacity: 100 A
Fuse F3	250V, 5A, 5x20 mm, time-lag, breaking capacity: 50 A
Fuse F4	250V, 0.63A, 5x20 mm, time-lag, breaking capacity: 35 A

1. 12 DIN talpa

8. Programos trukmã 35-45 min. priklausomai nuo pasirinktÔprogramos faziÔskaiļ iaus, bet bet kuriuo atveju ne ilgesnã kaip 45 min.

15. Elektros prijungimas trifazis:3x200-480V

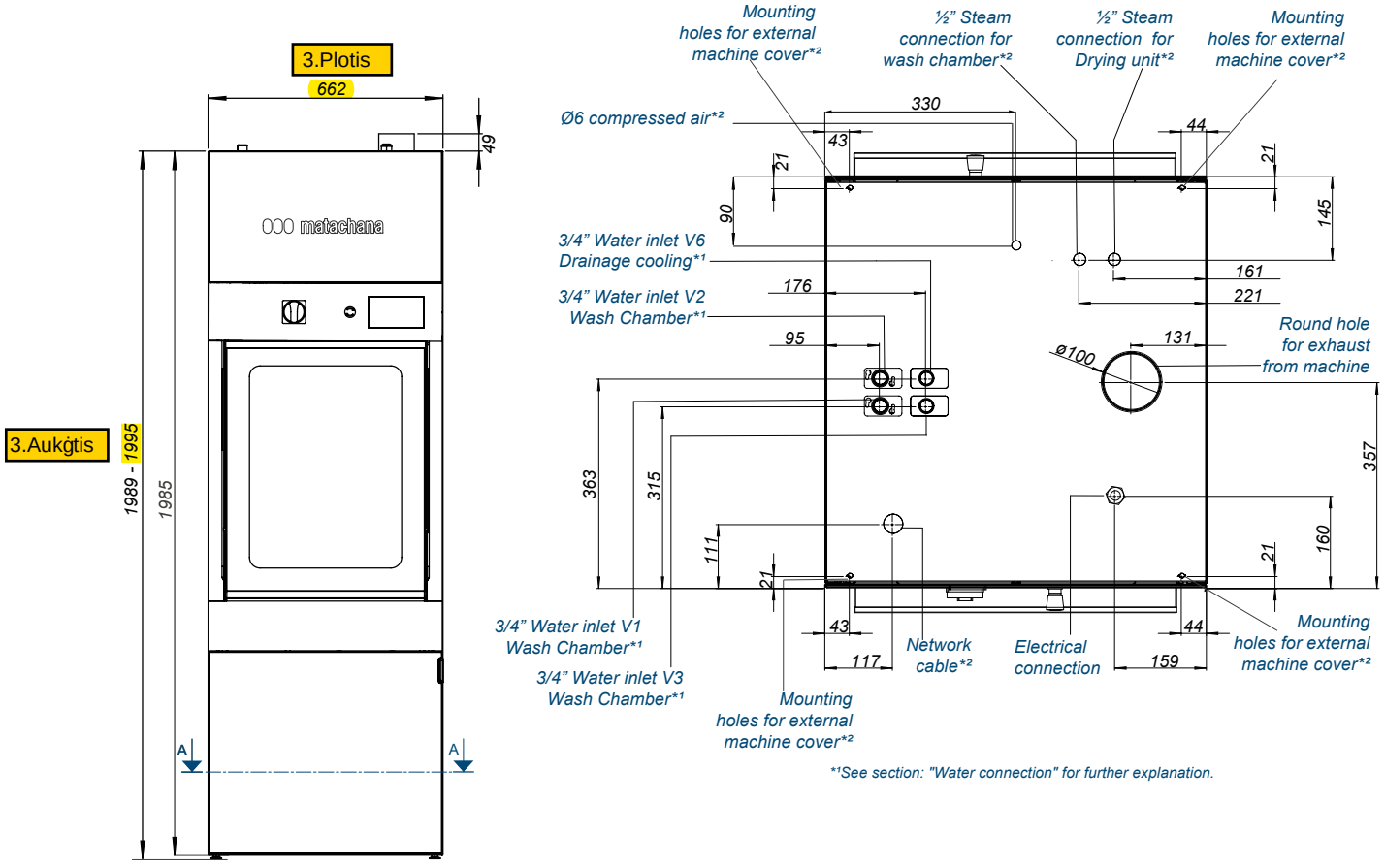
16.Ģemos energijos sŃnaudos. Maksimalus maģinos galingumas 13kW. Maģinai veikinat maksimaliu galingumu 1 val. sŃnaudos siektÔ13 kW. Plovimo-dezinfekcijos pilno ciklo (su dģiovinimo fae) trukmã yra 45 min. Tokiu atveju maksimalios el. sŃnaudos vieno ciklo metu ura 10 kW ir maģiau.

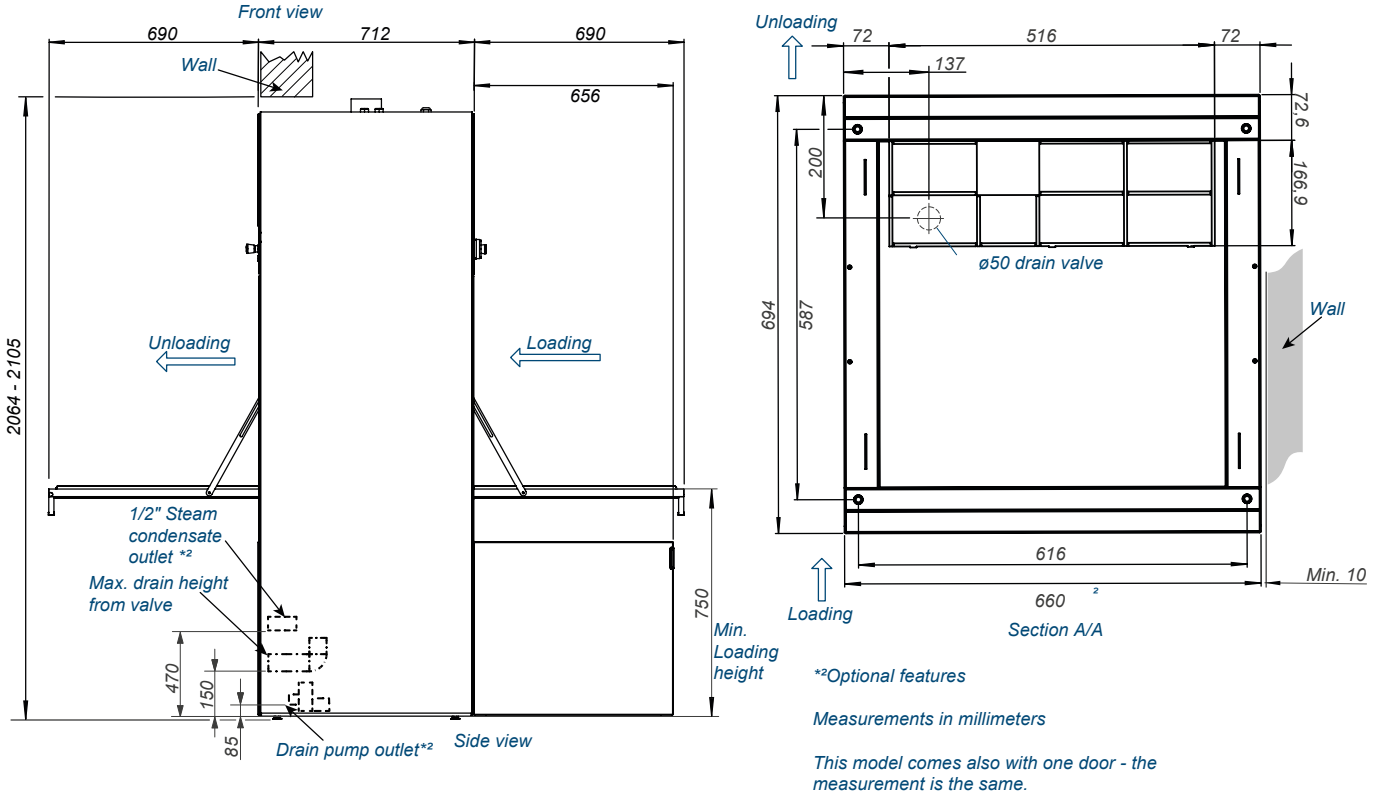
T3

14.Bandes sunaudojimas vineos iklo fazãs metu, naudojant 5 lygiÔrãmŃiki 14l: papildomai ģr. psl. nr. 42

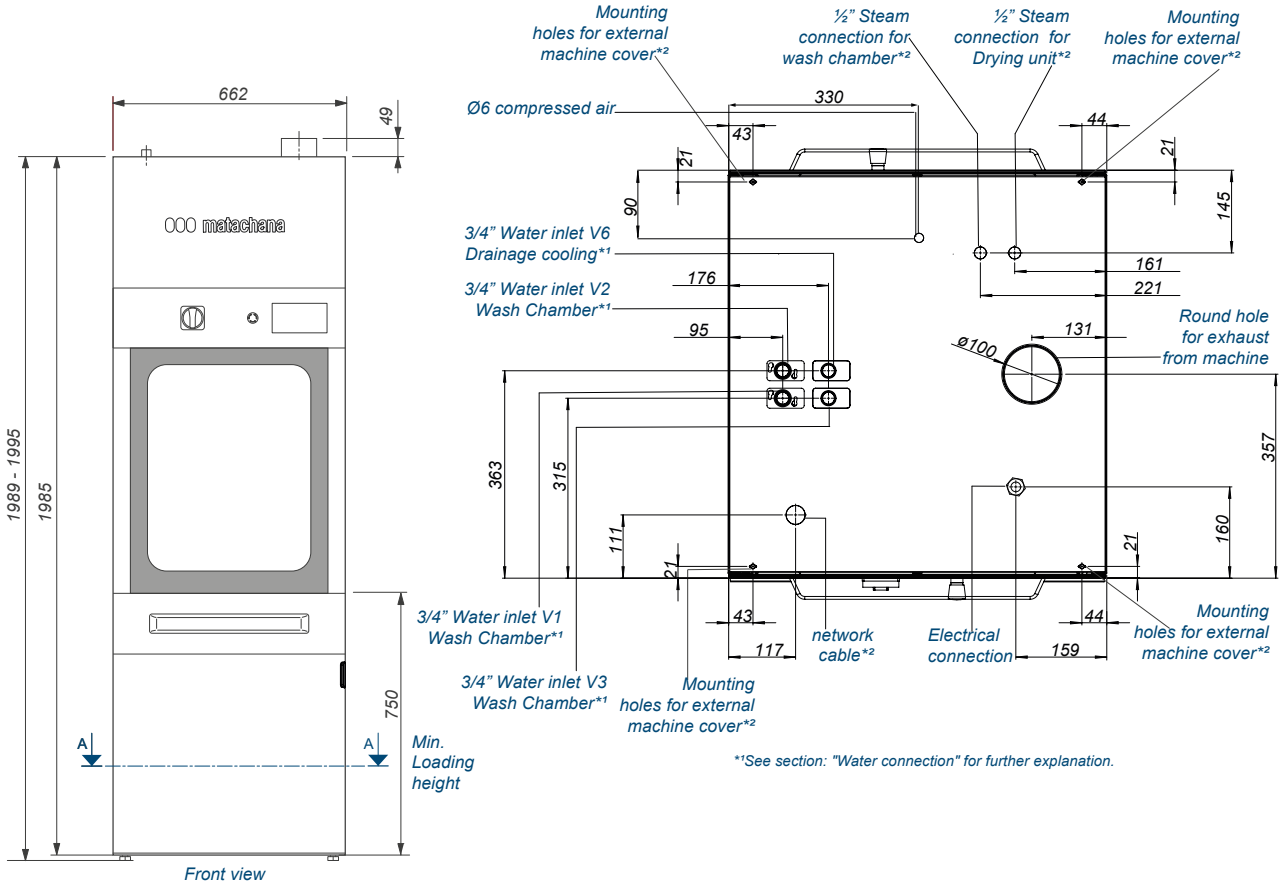
13.Vandens pajungimai
13.2. Ģaltas vanduo
13.3. Karģtas vanduo
13.1. Demineralizuotas/RO vanduo

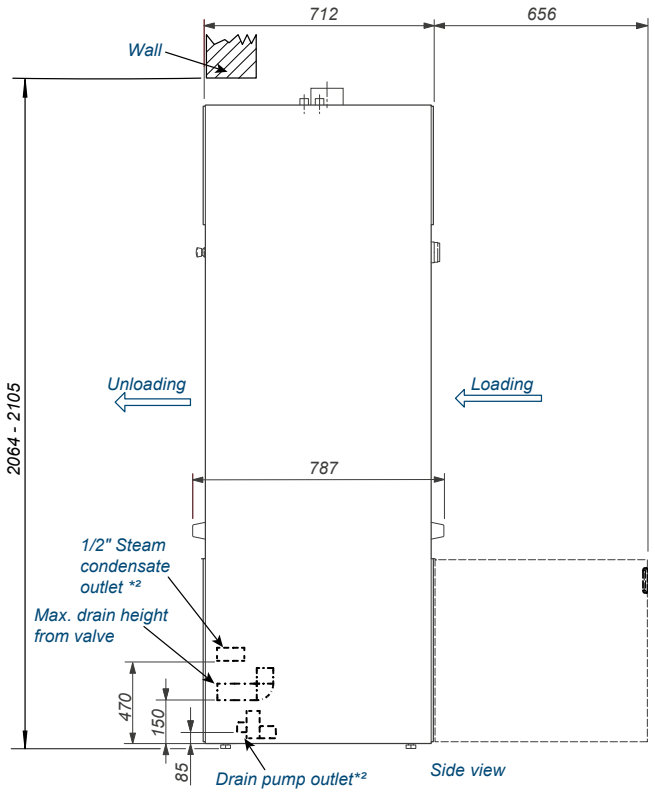
Dimensional sketch MAT LD500M

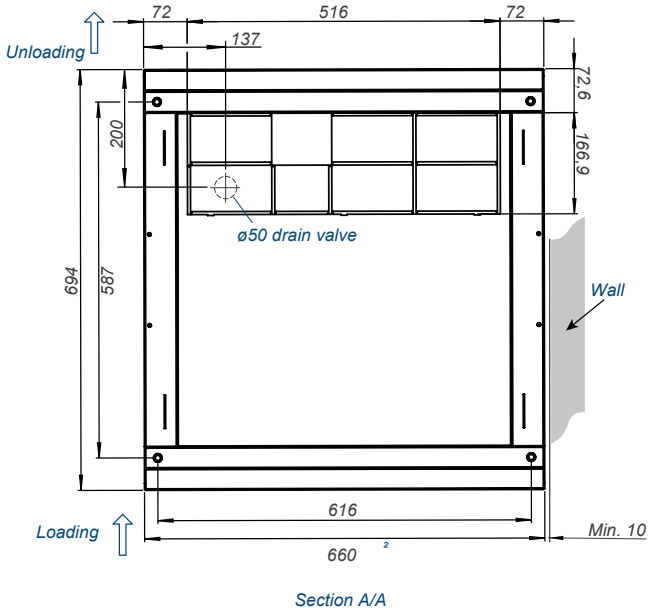




Dimensional sketch MAT LD500





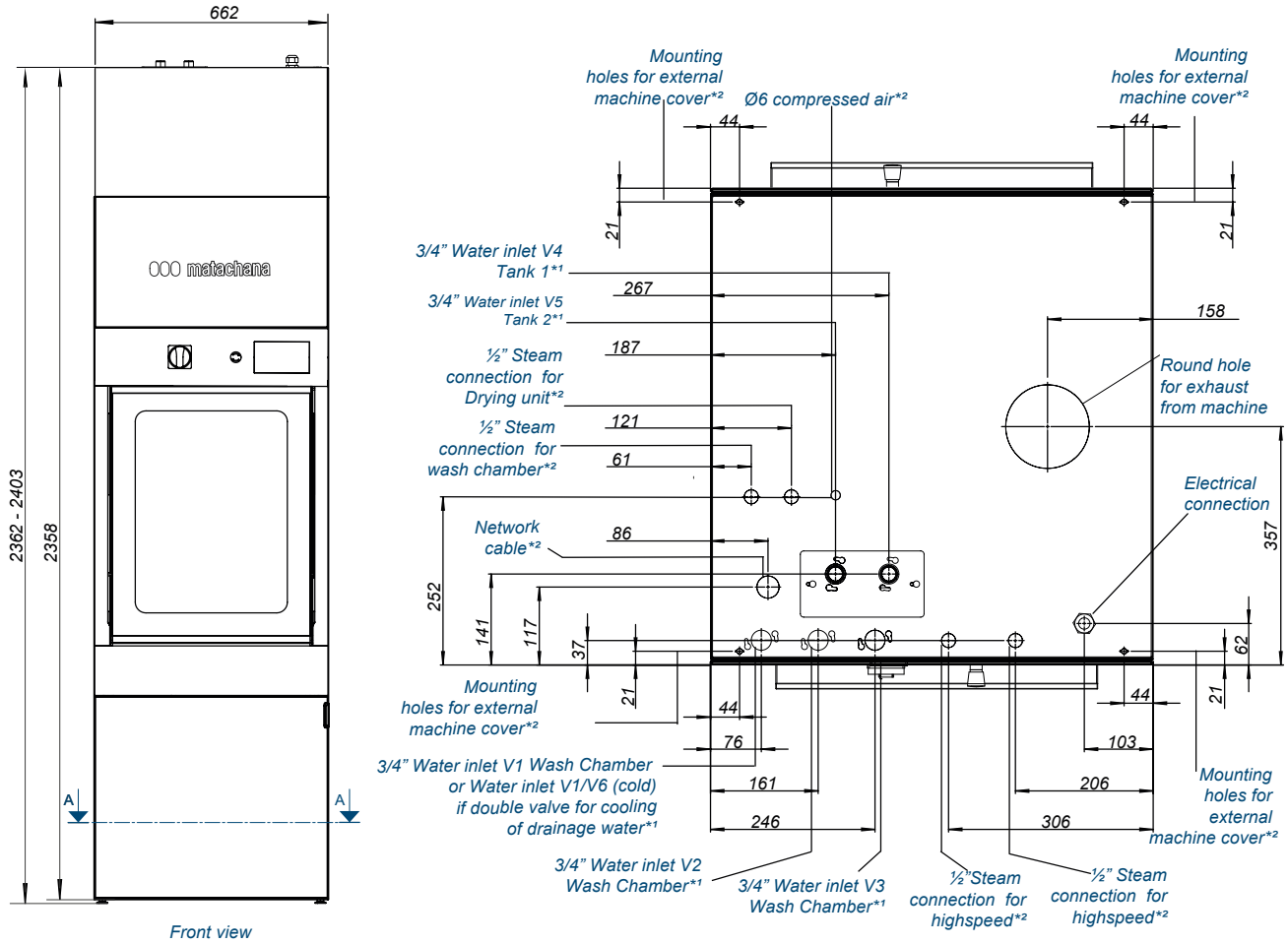


*2Optional features

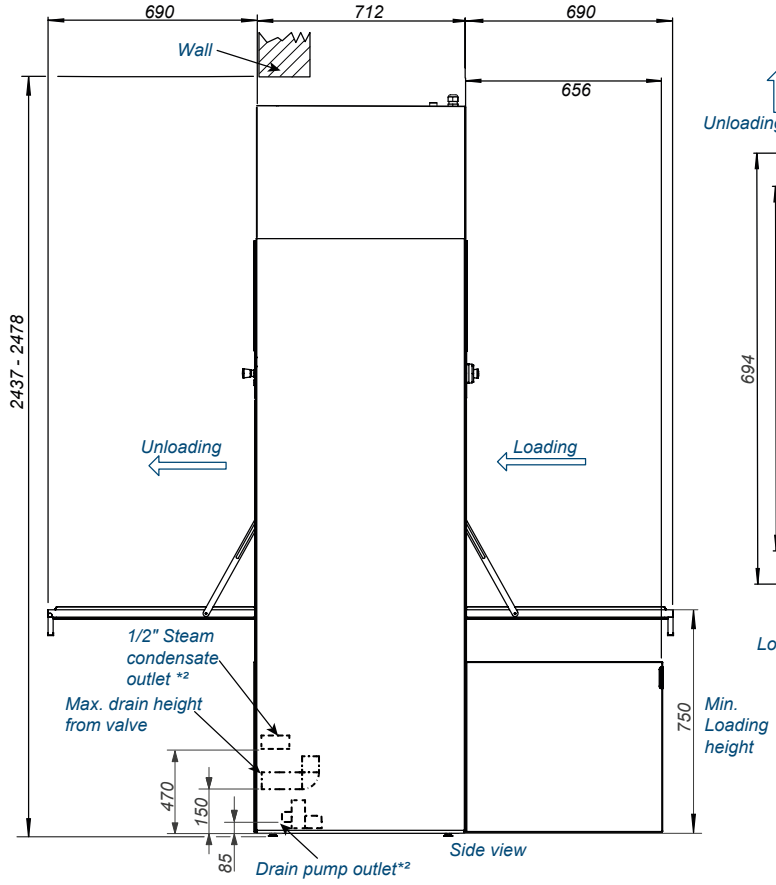
Measurements in millimeters

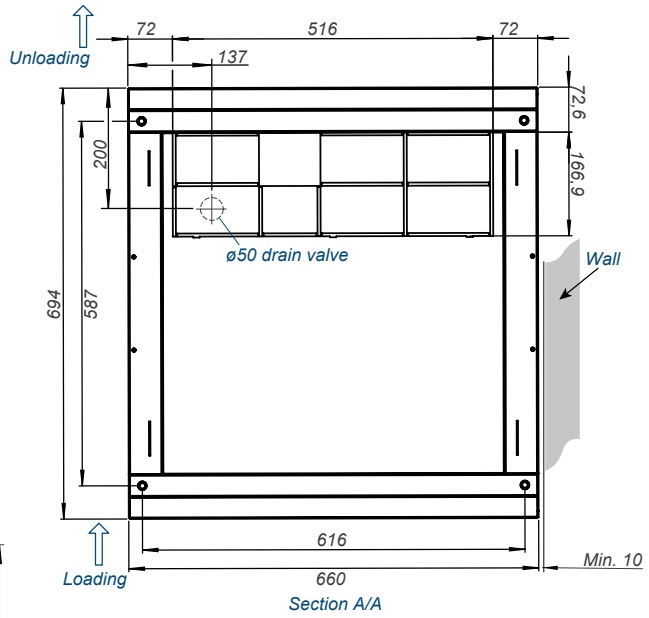
This model comes also with one door - the measurement is the same.

Dimensional sketch - Highspeed MAT LD500M



See section: "Water connection" for further explanation*1.

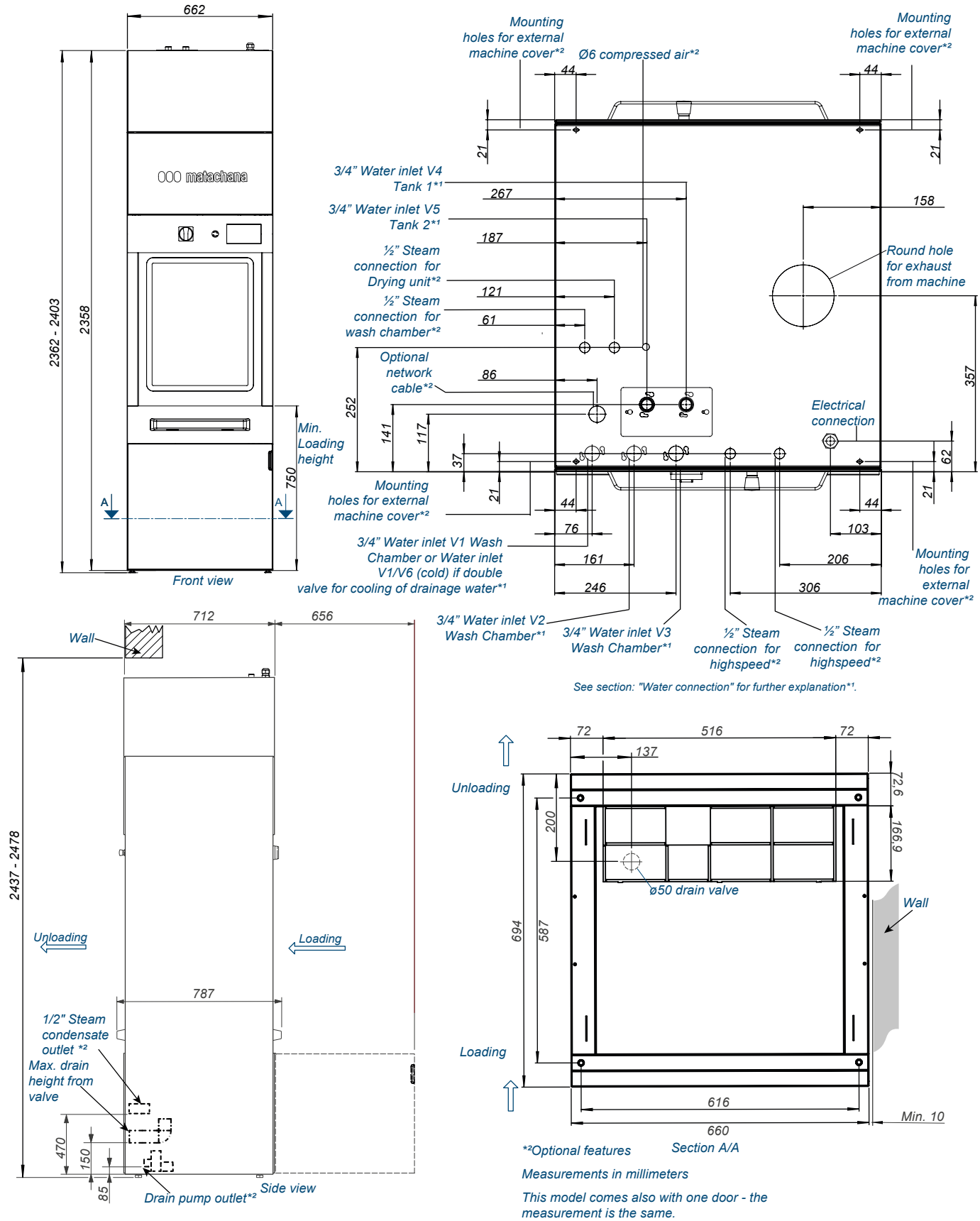




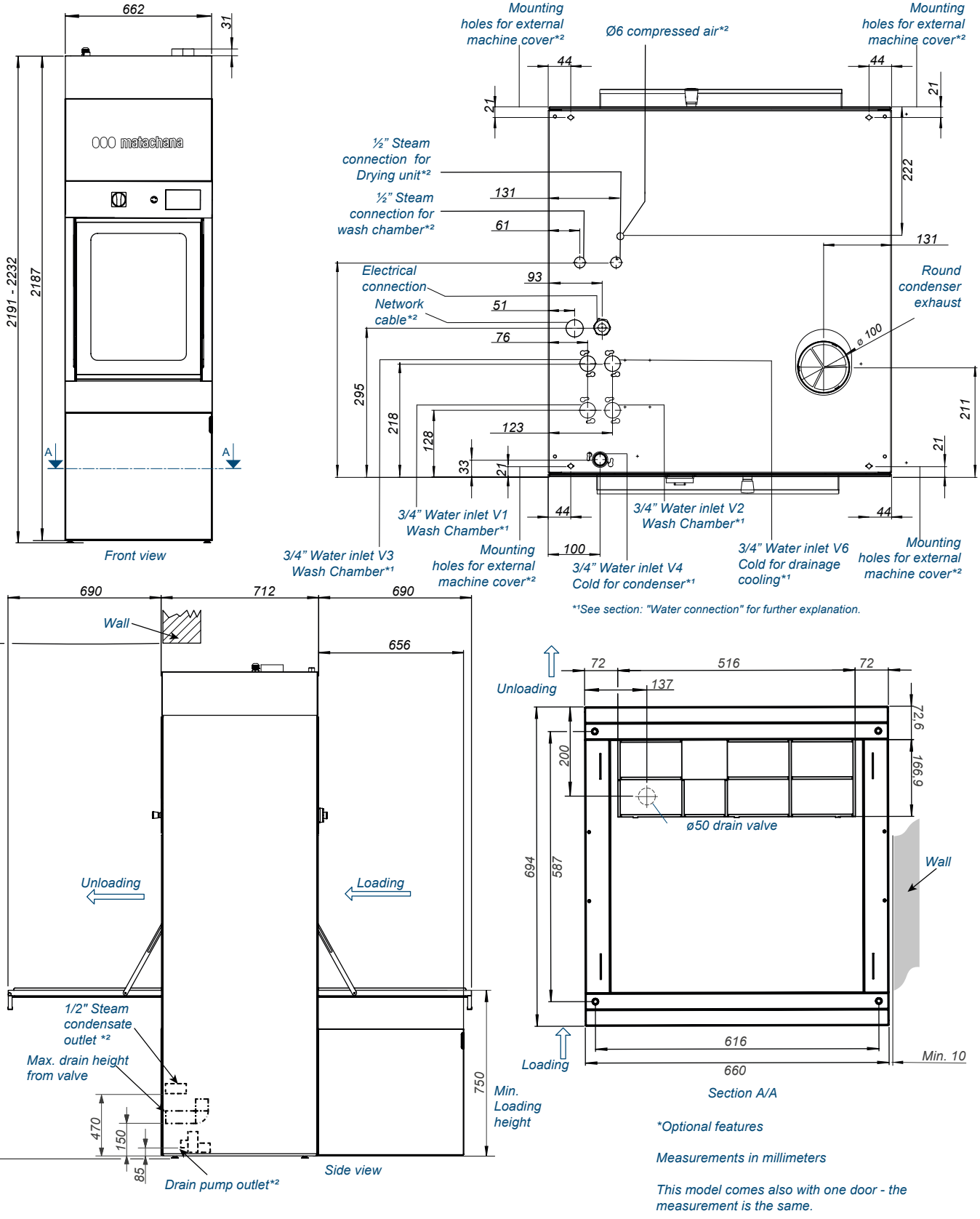
*²Optional feature
Measurements in millimeters

This model comes also with one door - the measurement is the same.

Dimensional sketch - Highspeed MAT LD500



Dimensional sketch - Condenser basic MAT LD500M

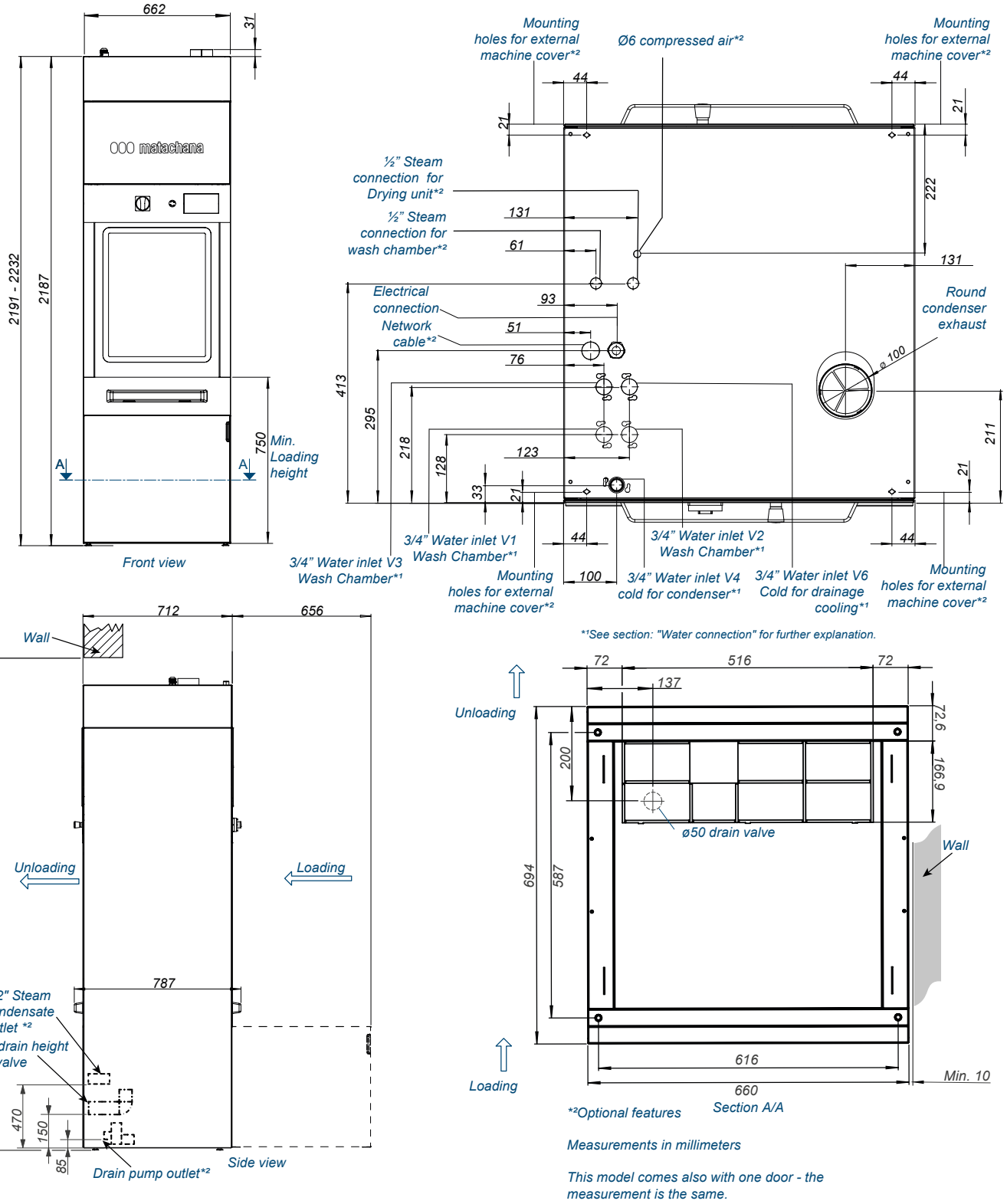


*Optional features

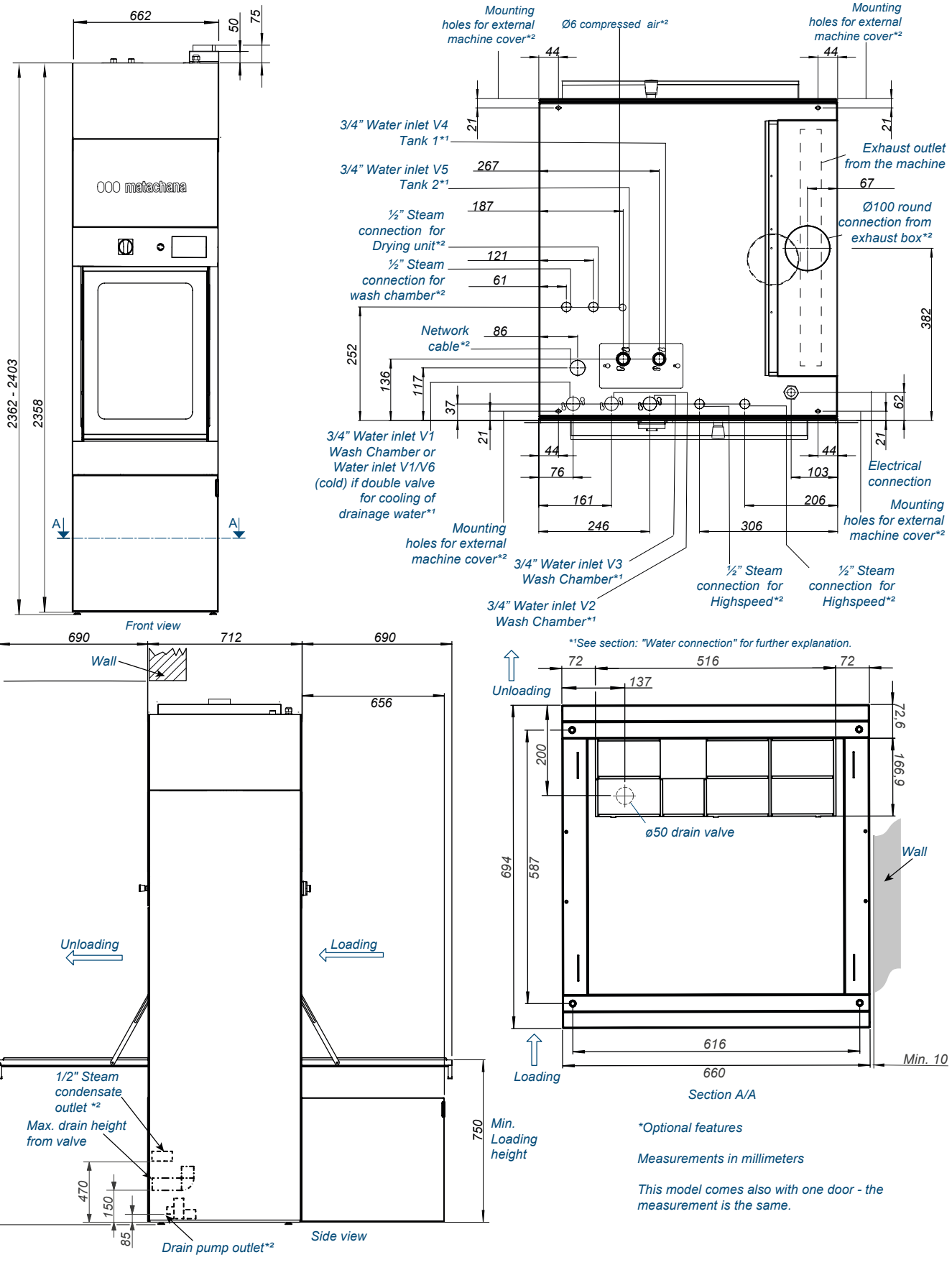
Measurements in millimeters

This model comes also with one door - the measurement is the same.

Dimensional sketch - Condenser basic MAT LD500



Dimensional sketch - Condenser recycle, option round pipe MAT LD500M

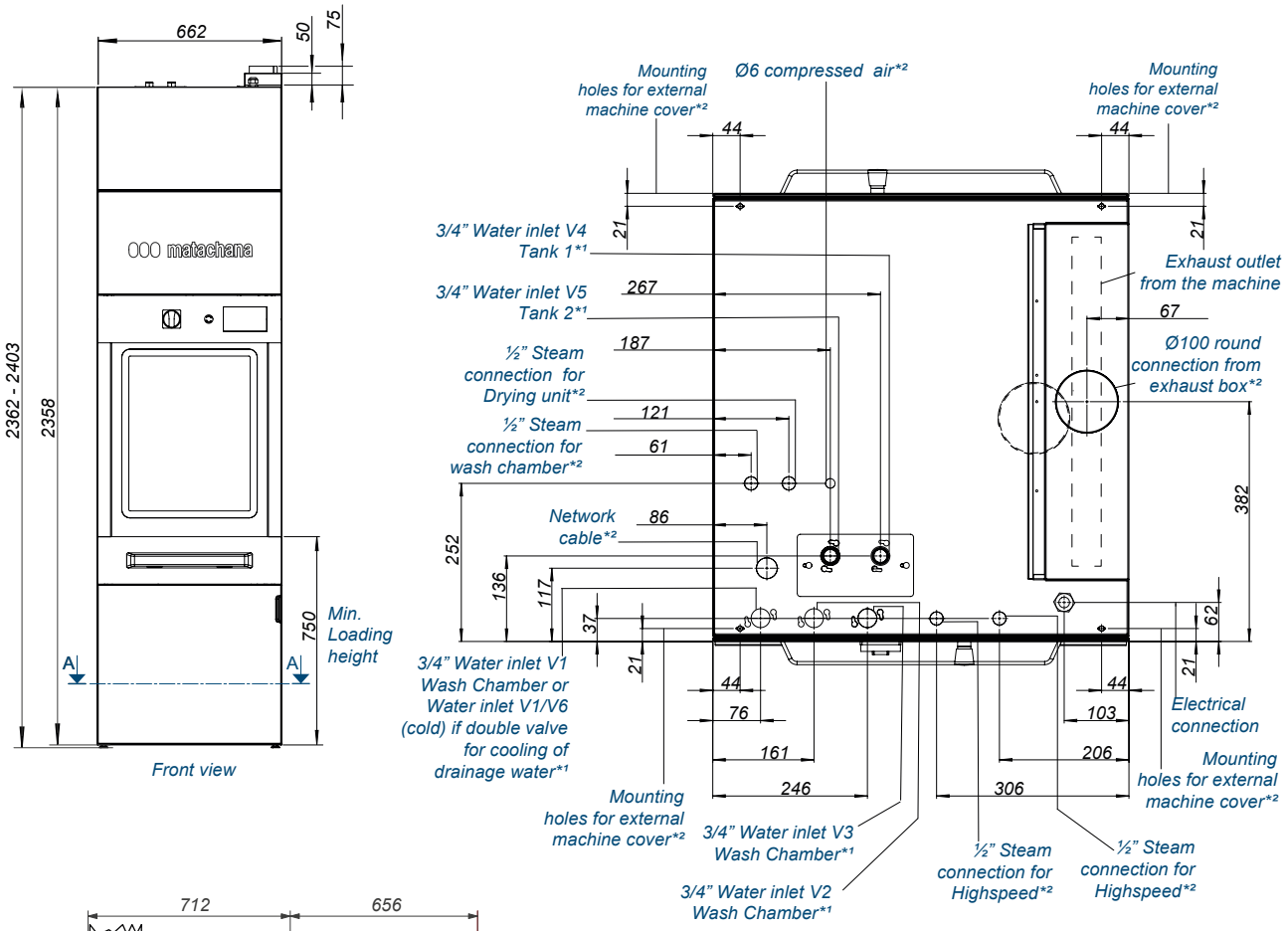


*Optional features

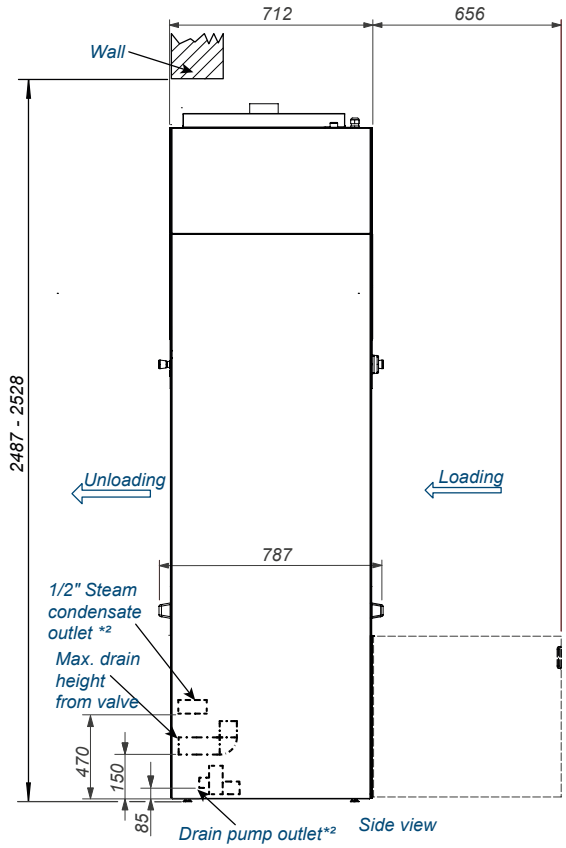
Measurements in millimeters

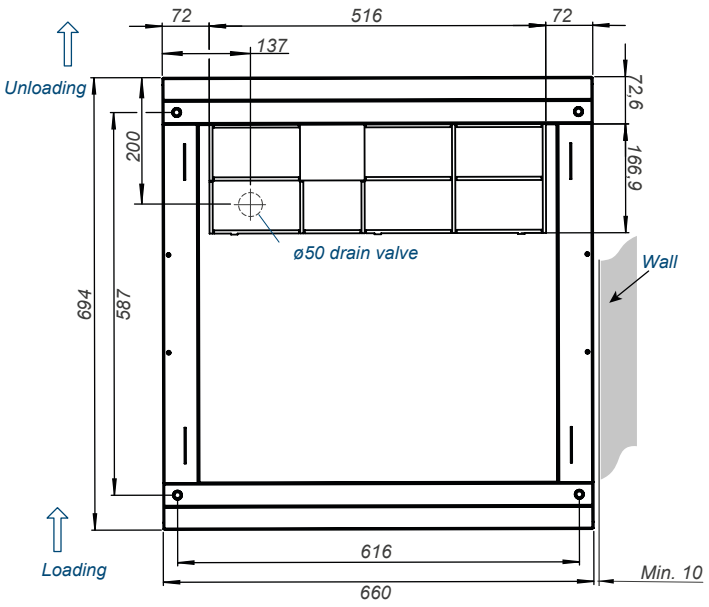
This model comes also with one door - the measurement is the same.

Dimensional sketch - Condenser recycle, option round pipe MAT LD500



*1See section: "Water connection" for further explanation.



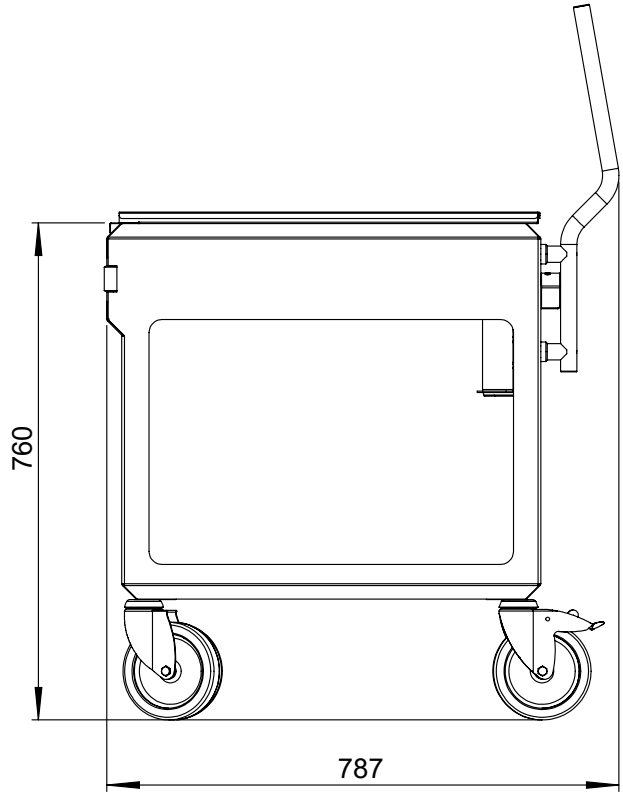


*2Optional features

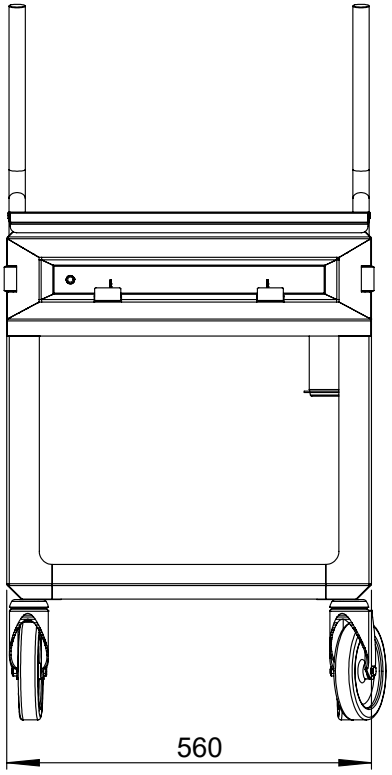
Measurements in millimeters

This model comes also with one door - the measurement is the same.

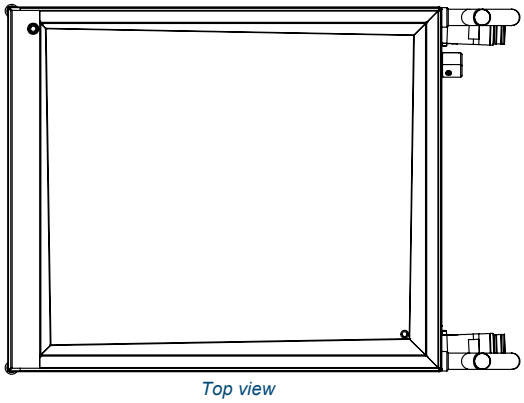
Dimensional sketch - Trolley



Side view



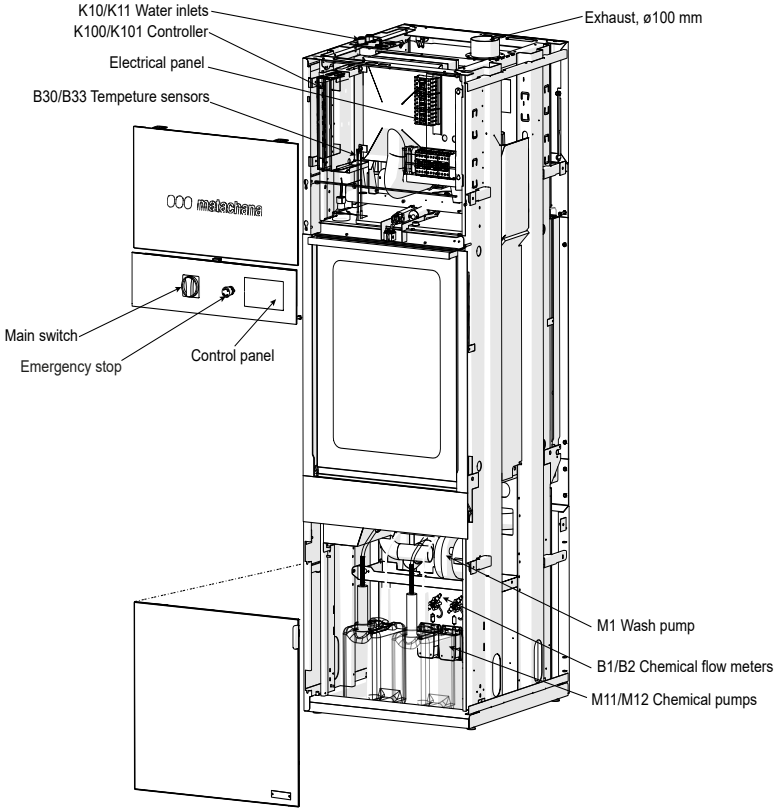
Front view



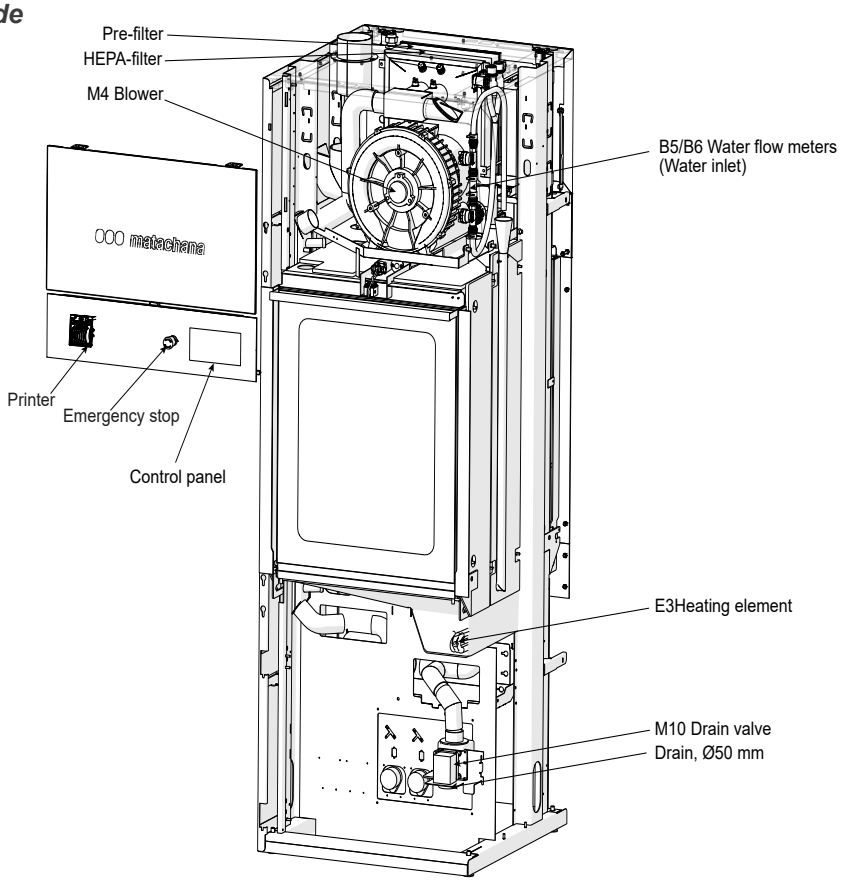
Top view

Machine overview, technical - MAT LD500M

Loading side

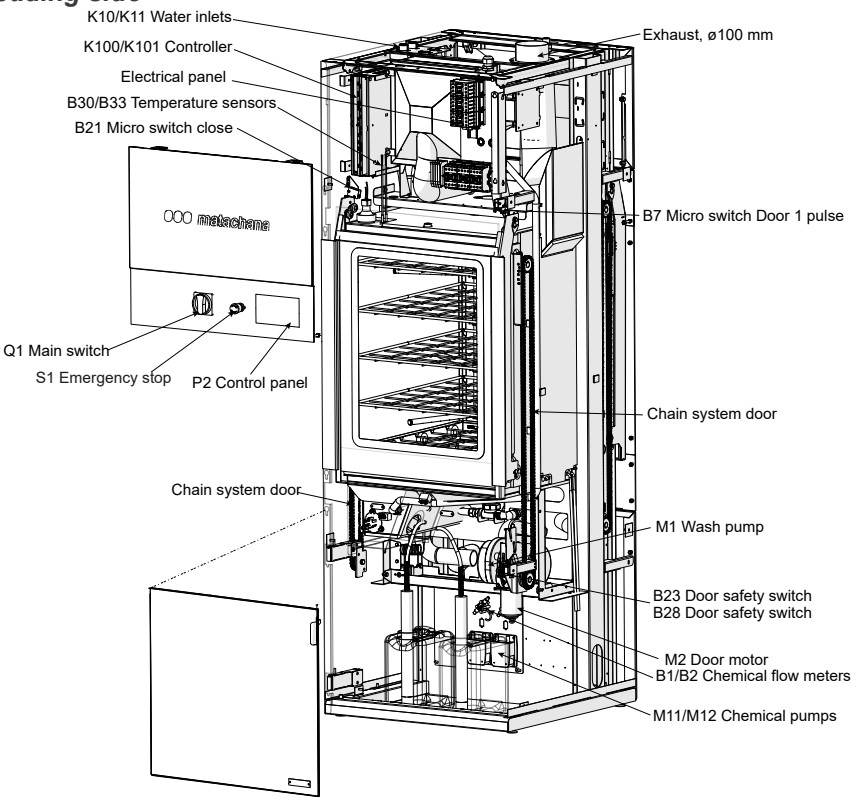


Unloading side

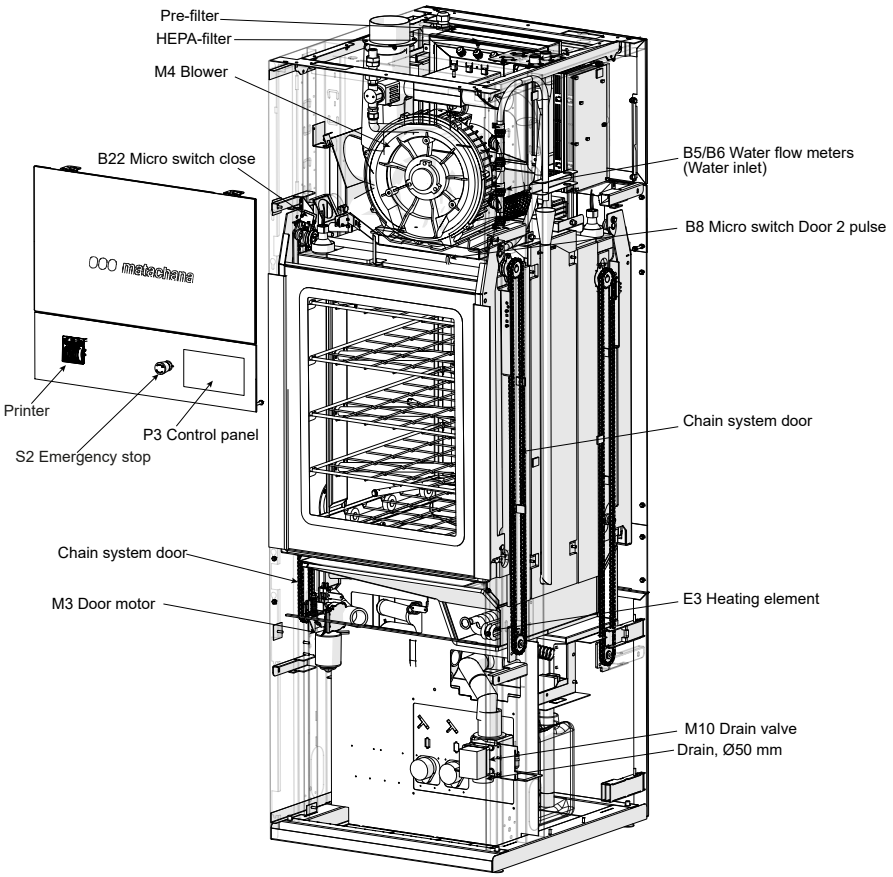


Machine overview, technical - MAT LD500

Loading side



Unloading side



This instruction is intended for personnel trained in installation, maintenance and servicing of disinfecting machines.

Machine installation must be carried out according to proper craftsman practices.

Always switch off power, before accessing live parts.
In case of troubleshooting in areas with live parts, remember to observe safety precautions.

Receipt/transport/unpacking

Immediately check whether the machine has been damaged in transit. If so, complain to the freight carrier immediately.

Be careful when unpacking. Using knife or other sharp objects can damage the machine with scratches.

The machine is transported on a pallet. To move the machine off the pallet a special lifting tool can be used or the pallet can be disassembled.
Transporting the machine after it is taken off the pallet can be done by use of furniture movers or similar.

The machine must be transported in an upright position.

Total machine weight	
Excl. packaging	Incl. packaging
236 kg	316 kg

The machine is top heavy and there is a potential risk it might tip over during transport.

Disposal of packaging

Separate the packaging: Wood, cardboard and plastic and dispose of it according to local/national rules on waste disposal.

Disposal of machine

When the machine is to be disposed, the controller and the chemical cans including connecting hoses must be handled as chemical waste and disposed according to local/national waste regulations.
Always follow the chemical supplier´s Safety Data Sheet (SDS).

The automatic controller runs with a battery. The battery must be removed and handled in accordance with local/national waste regulations.

Note that the machine prior to disposal has been exposed to pathogenic bacterias and thus be contaminated therefore it must be decontaminated prior to disposal.

Dismantling and disposal of the machine may only be carried out by specially trained and certified staff.

Except for the above mentioned the machine can be disposed of through proper resource recovery facilities. The machine does not contain any hazardous or environmentally toxic substances that require special handling and most of the materials are recyclable.

Positioning

Bring the machine into horizontal position by means of a spirit level and the adjustable machine feet.

Maximum slope of floor: 2°.

For dimensions and connections, see *Dimensional sketch*, *page 27*

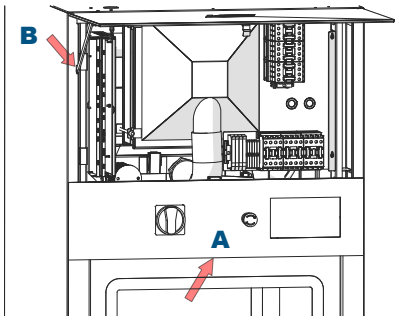
Environmental conditions

The machine is designed to operate safely under the following conditions:

1. Indoor use.
2. Altitude up to 2000 m.
3. Temperatures from 5°C to 40°C.
4. Maximum relative humidity: 80% for temperatures up to 31°C decreasing linearly to 50 %, relative humidity at 40°C.
5. Mains supply voltage fluctuations up to +/-10% of the nominal voltage.
6. Overvoltage category II.
7. Pollution degree 2.

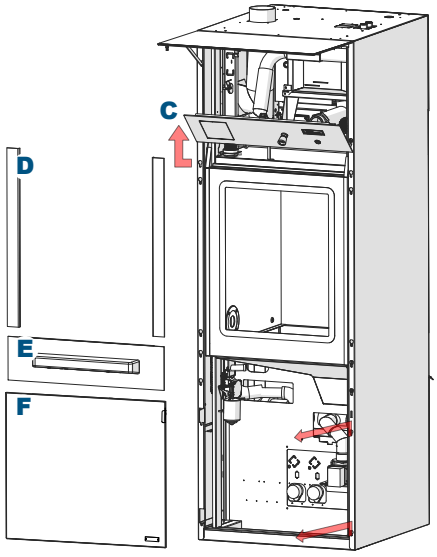
Service areas

Access to the service area in the upper cabinet can be gained by:



1. Use a screwdriver or similar (Ø <6 mm) to unlock the upper glass door. (**A**)
2. Open the door. Use the bracket mounted on the inside to retain the door open. (**B**)

Electricity, water and drain connections may only be carried out by specially trained and certified staff.

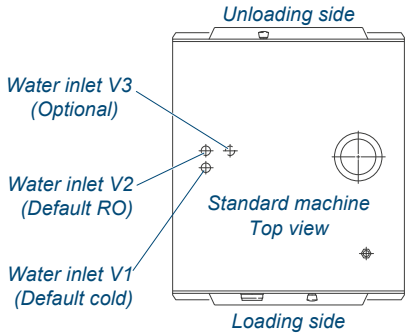


Access to the service area in the lower cabinet on unloading side can be gained by:

1. Open the upper glass door (**A+B**).
2. Remove the control panel and place it in the upper holes (**C**).
3. Remove the side panels (**D**).
4. Remove the lower panel (**E**).
5. Remove lower cover (**F**).

Water connection

Default values during machine set-up is:
Water inlet V1=Cold water for wash chamber
Water inlet V2=Demin/RO water for wash chamber
Water inlet V3=Hot water for wash chamber
Water inlet V4=Cold water for tank 1
Water inlet V5=Demin./RO water for tank 2
Designations for water inlet V1/V2/V3/V4/V5 can be changed during machine set-up.
Water inlet V4 must be cold water when with condenser.
Water inlet V6 must be cold water for cooling of drainage water.
For location of water inlets see section: ”Dimentional sketch”, page 27.
For required water quality see section: ”Technical data” ,page 26



Electricity, water, steam and drain connections may only be carried out by specially trained and certified staff.

Only use approved, reinforced pressure hoses – 3/4″ ISO 228/1 for water connections. The necessary backflow protection against reverse suction is integrated in the machine. A shut-off valve must be installed on each water inlet pipe.

Water connections not in use must be plugged.

Discharge

The machine must be connected to a drain in the floor. A 50 mm water trap must be used. The drain connection is placed in the lower cabinet on unloading side.

Compressed air

Compressed air connection outer diameter Ø6 mm.

Exhaust

The exhaust outlet is located on top of the machine.
The ventilation system must be made of stainless steel, as there will be condensation in the system. To avoid an increase in pressure or a vacuum in the washing chamber, it is important that the connection from the ventilation system to the machine includes an air gap between the machine and the ventilation system. The air gab must by adjusted to ensure that all heat and moisture is extracted from the outlet of the machine. At the same time the adjustment must prevent vacuum inside the washing chamber, as this will affect the performance of the machine. If a motor damper is fitted in the ventilation system, it is important that it is open before the machine starts the drying phase. Also it is important that the damper is not completely closed, to allow minimum ventilation to remove vapour during washing and disinfecting phases.
Signal for ventilation system or damper: See electrical diagram.
A maximum of 5 meters vertical height is acceptable. If more than 2 meters vertical pipe direct from the machine is installed there must be implemented measures to avoid condensate running into ventilation outlet of the machine. Additional ventilation pipes to the free air must have a continuous slope away from the machine to its outlet, unless an automatic drain is fitted at each point where liquid can collect.

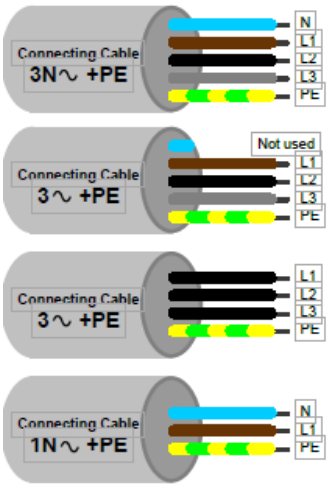
Steam connection

If the machine is heated by means of steam this must be connected with approved pressure hoses – 1/2" ISO 228/1, both steam inlet and condensate.
To comply with our requirements for steam quality, it is recommended to install a water discharge (steam trap) immediately before connecting point to the machine's steam valves. At the steam condensate outlet hose, a non-return valve must be installed.
Steam pressure: See "Technical data".*page 26*

Electricity, water, steam and drain connections may only be carried out by specially trained and certified staff.

Electrical connection

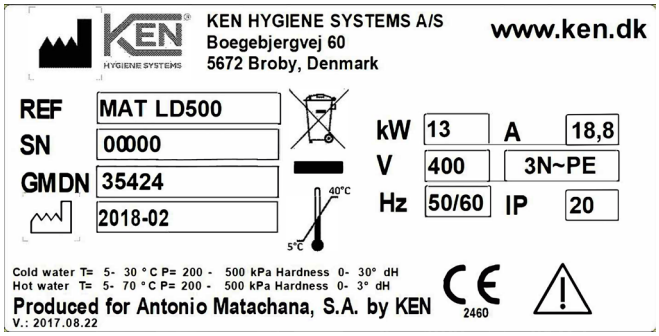
The machine is equipped with an inlet cable and must be connected according to the below shown color markings or designations for the single wires and according to the marking label on the machine.



Possible colour markings and designations for connecting cable.

The marking label is placed behind the lower door on loading side.

Regarding fuse size: See the marking label.



Example of marking label. The machine comes in a 50 or 60 Hz model.

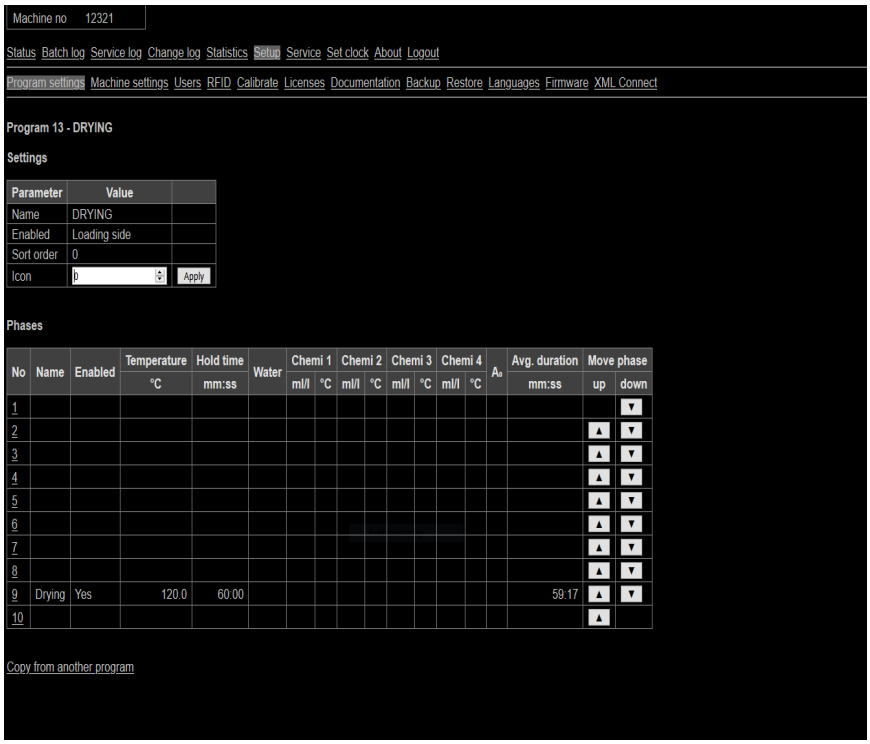
To avoid the risk of electric shock this equipment must only be connected to a supply mains with protective earth.

The motor is connected to 3 phases power, and must rotate according to the arrow.

Selection of chemicals

Regarding selection of chemicals: See section *Selection of chemicals,* *page 23* in the User Manual.

Choice of icons



See the next page for the illustrations item numbers to select in the field ”Icon”

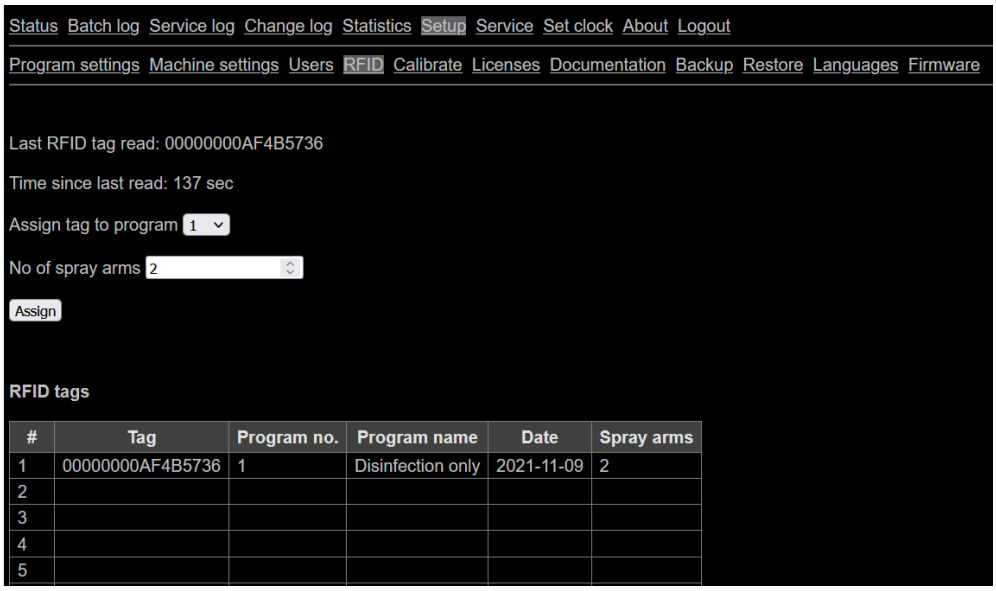
Choice of icons

Spray arm detection

As an option, the LD500 can be equipped with detection of spray arm rotation. The option must be selected in the machine configuration menu to activate it.

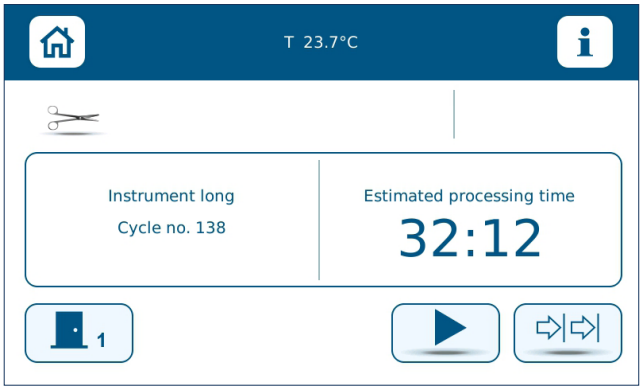
Washing			
Prewash too hot threshold	70.0 °C		
Time between RFID read and wash start	5 sec		
Wash pump pulse start	No		
Wash pump effect	100 W		
Heater effect	12000 W		
Steam Heating	No		
Conductivity reference temperature	25.0 °C		
Spray arm rotation detection	Yes		Apply
Wash pressure type	Analog		

If racks with RFID tags are used, the amount of spray arms must be selected in the RFID setup menu. The user is not asked to select the number of spray arms and the program starts as soon as the rack is loaded in the washing machine.

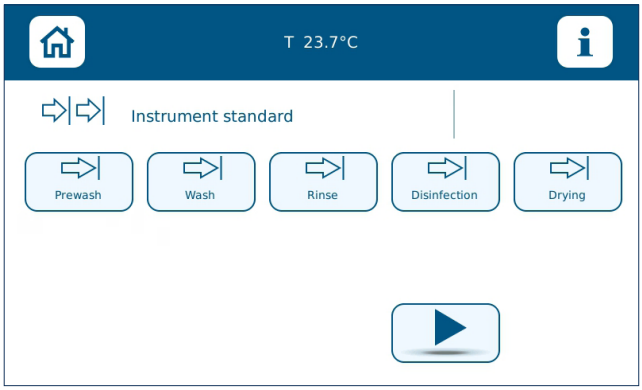


Manual advance

It is possible to choose the setting ”Manual advance” mode in the general options menu.
That enables the function of bypassing phases or stop after a specific phase in a program. This can be useful if there for example is a need for opening the door after a phase.
For entering the general options menu the operator must be changed to staff, administrator or technician.
After enabling, the program screen has a new symbol.



Push the  button and enter the options screen.



Push the buttons and enter the options for each phase.

The options means:

 The phase will proceed and the machine continues to the next phase.

 The phase will proceed and the machine stops when the phase ends.

 The phase will be bypassed and the machine continues to the next phase.

Maintenance by Technician

Recommended preventive maintenance

In addition to the daily maintenance as described in the user part of the manual it is recommended that regular inspection is carried out to ensure optimal machine functions at all times.
The frequency of preventive maintenance depends on the use of the machine, the quality of the water etc. As a minimum, the machine should be inspected once a year or at every 3000 wash cycles.

It is possible to activate an alarm in the service menu for maintenance service for either a period of days or cycles. The alarm will show every 5 min. after the setting is reached.

All preventive service and maintenance which require the machine covers to be removed by the use of tools may only be carried out by specially trained and certified staff.

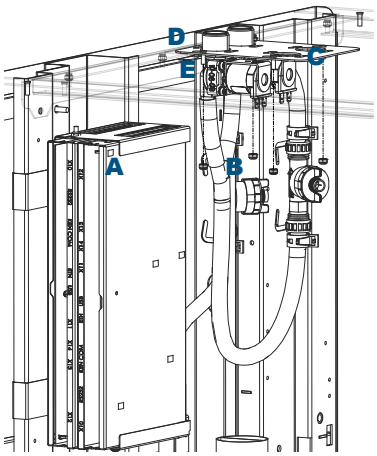
Always switch off power, before accessing live parts.
In case of troubleshooting in areas with live parts, remember to observe safety precautions.

The technician must take precautions if there is to be made preventive maintenance on the machine, in the form of gloves and other safety equipments.

Maintenance procedure	Monthly	Min. per 3000 cycles or once a year
Check functionality of emergency stop buttons	x	
Verify door closure safety mechanism	x	
Check chemical pumps, suction lances and connecting hoses	x	
Check for leakage (pump, hose and pipe connections)	x	
Clean filter in inlet valves		x
Check electrical main connections		x
Check wash pressure		x
Validate and calibrate		x
	Technician	Technician

Preventive maintenance	Cycle/year	3000/1	6000/2	9000/3	12000/4	15000/5	18000/6	21000/7	24000/8	27000/9
4502000 Maintenance-kit 3000 50/60 Hz		X		X				X		X
4502001 Maintenance-kit 6000 50/ Hz			X		X		X		X	
4502006 Maintenance-kit 6000 60/ Hz			X		X		X		X	
4502002 Maintenance-kit 15000 230/400V 50 Hz						X				
4502003 Maintenance-kit 15000 240/415V 50 Hz						X				
4502004 Maintenance-kit 15000 208V 60 Hz						X				
4502005 Maintenance-kit 15000 480V 60 Hz						X				

Inlet valves



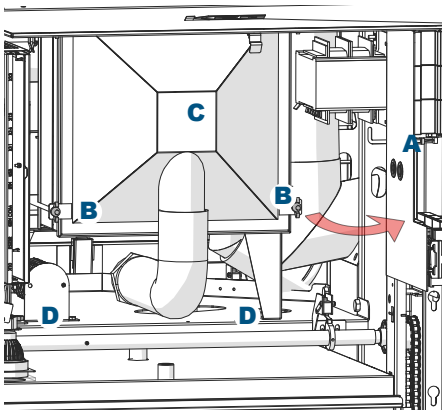
Access to inlet valves can be gained by:

1. Remove water connection.
2. Disconnect and remove computer (**A**).
3. Loosen/remove the four nuts (**B**) which hold the bracket (**C**) with inlet valves. The nuts may stay on the machine as the bracket can be pulled forward + down, sliding it past the nuts.
4. Pull down the bracket (**C**).
5. The filters (**D**) can be removed from the valves.

Each inlet valve is mounted directy on the bracket and in case only one filter/valve has to be cleaned/changed it is also possible to:

1. Remove water connection.
2. Loosen the two nuts (**E**) of the valve in question.
3. Turn and pull down the valve.

HEPA filter and pre-filter



In order to replace the pre-filter or the HEPA filter:

1. Move the electrical panel to the side **(A).**
2. Unscrew the four wing nuts (**B**).
3. Pull out the filter holder (**C**) and remove the filter(s).

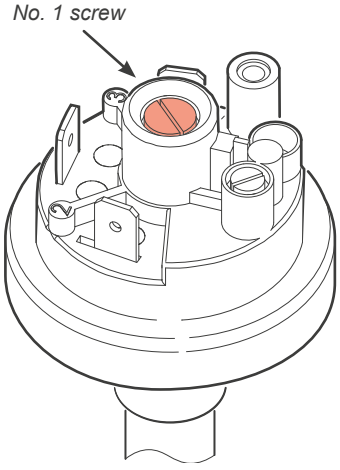
In case the whole filter unit must be removed the bracket holding the filters can be removed by removing four nuts (**D**) on the bottom part of the bracket.

These procedures can only be performed from the loading side of the machine.

Calibration may only be carried out by specially trained and certified staff.

Calibrations

No. 1 screw



Adjusting screw no. 1:
Clockwise: Higher wash pressure.
Counter clockwise: Lower wash pressure.

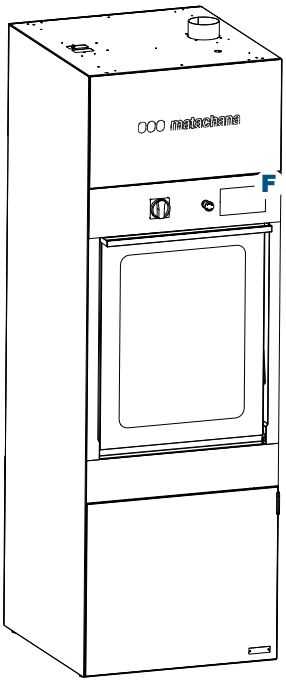
Calibrating the wash pressure switch - Introduction
The wash pressure switch is calibrated by applying 0.3 bar pressure and adjusting the switch to activate at this particular pressure. The machine process controller uses the pressure switch to ensure correct wash pressure and thereby correct wash result. The wash pressure switch (B12) is located in the center of the service room in the upper part of the machine.

Preparation
Get a pressure sensor calibrator that can apply a fixed pressure to the pressure switch. The pressure sensor calibrator must have a manometer with an accuracy of ±0.01 bar and must be a calibrated instrument to ensure correct readings.

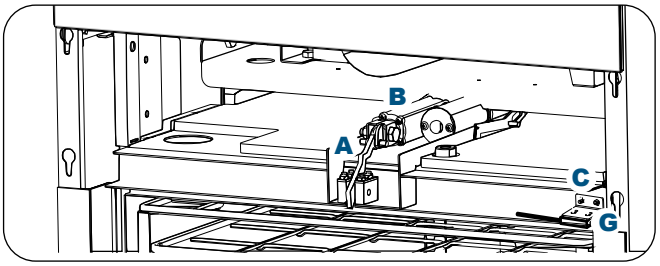
Calibration
Dismount the pressure switch from the machine and mount it on the pressure sensor calibrator. Pump calibrator to 0.30 bar ±0.01 bar. Adjust the pressure switch threshold value to make the switch activate at this pressure by turning the center screw. The pressure switch click when activated and electrical connection is made between connector 1 and 3. Note: Turn clockwise for higher pressure threshold and counter clockwise for lower pressure threshold.
After adjustment mount the pressure switch in the machine again.

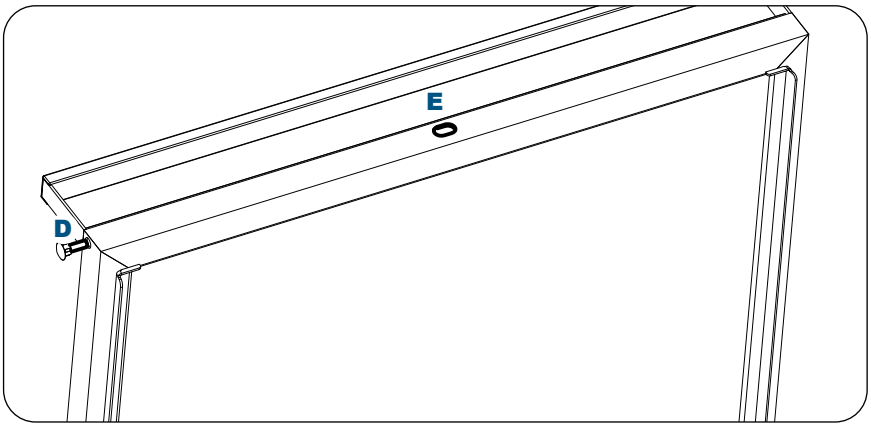
Manual doors

Lock and switches for door



The door is opened and closed manually, and the lock is activated by pushing the icon on the control panel (F) The lock is controlled by a microswitch (B) placed inside the acuator.

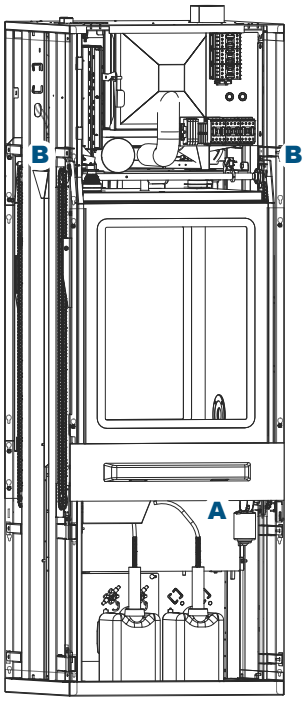




By connecting with the door magnet (D), the reed-contact (C) registers that the door is closed. Then the lock can be activated by pushing the icon on the display and the pin (A) goes down through the lock hole (E).

The closing mechanism is controled by a reed-contact (C) which is ajustable. To ajust the reed-contact, loosen the bolts (G) on the horizontal surface.

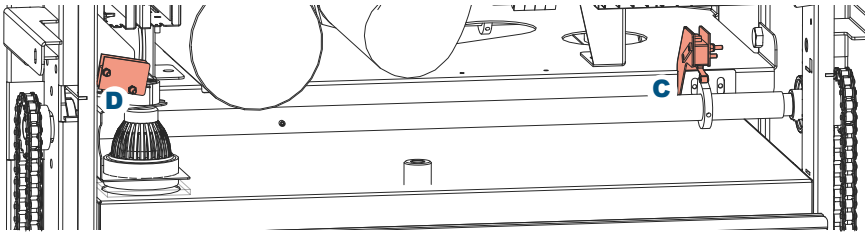
Sliding doors



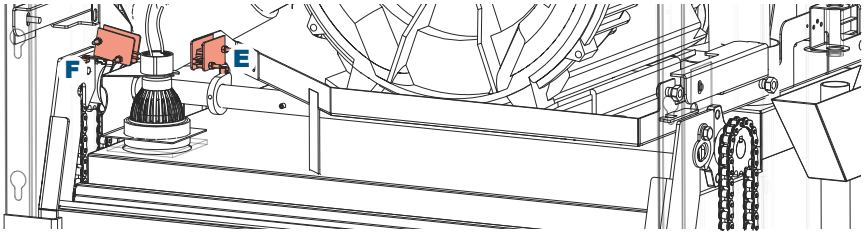
Sliding doors are driven by a motor (**A**) connected to chains (**B**). The chains are located behind the side plates in both side of the machine.

Switch opening/closing position

Switch for opening position and switch for closing position are located behind the upper front panel.



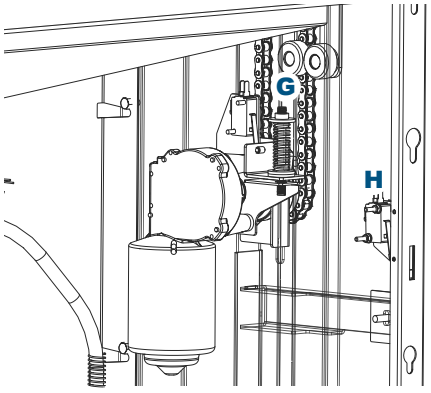
*Loading side: Switch for opening position (**C**) and switch for closing position (**D**).*



*Unloading side: Switch for opening position (**E**) and switch for closing position (**F**).*

The automatic doors are electrically operated. Be careful when opening doors during maintenance and service.

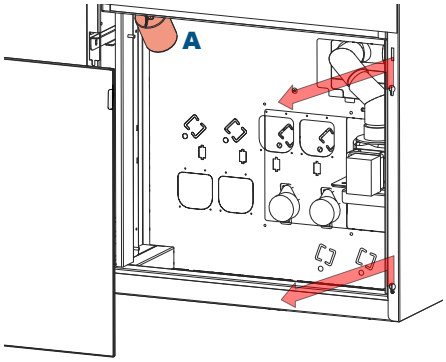
The safety device (**G**) prevents the door from crushing fingers or similar. The maximum force 150N is adjusted with the screw.



Ensure the safety device is working properly. Check the door retracts if it is blocked.

The safety switch (**H**) ensures the sliding door can not be activated when the lower front cover is open.

Sliding door, loss of power supply



Opening the door from unloading side is done as follows:

1. Remove lower front panel as described under ”Service areas”.
2. Disconnect the motor placed to the left (**A**).

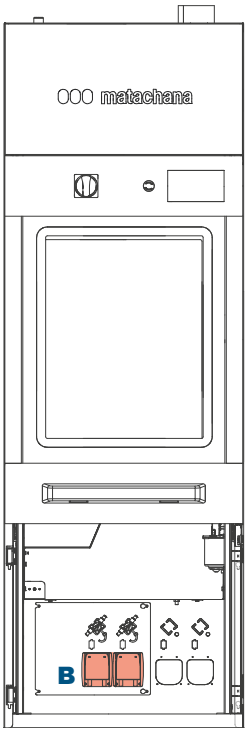
You can now open the sliding door.

Adjustment/inspection of the sliding door mechanism may only be carried out by specially trained staff.

Chemical dosage

Still unclean washed items or water spots on the washed items might be due to an incorrect chemical dosage.

Dosage of chemicals may only be carried out by specially trained and certified staff. Adjustments are made in Service menu.



Dosage pumps are located behind the door of the chemical cabinet (**B**). The dosed quantity can be checked by placing the canisters on a scale and start the pump, e.g. for 60 seconds.

Capacity of dosage pump type SEKO: See *Technical Description, page 26*
The pump can be used for detergent, rinse aid, instrument lubrication or neutralizer. 2 types of hoses are used in the pump:

For detergent: Santoprene.
For rinse aid, instrumental lubrication or neutralizer: Silicone.

Dosage:
Read the instructions from your chemical supplier.
The machine is supplied with automatic control of the dosage quantity for chemicals. The machine stops and an alarm is activated when predicted volume is not dosed. A minimum dosing time of 5 seconds is recommended in consideration of the accuracy of the control system.

Always follow the chemical supplier's instructions and procedures from the Safety Data Sheet (SDS) prior to the handling, use and storage of chemicals.

Use care when working with chemicals. Wear safety glasses and gloves, also when cleaning from spillage and leakage. Detergents are acalic and acidic and can cause severe injury to exposed skin. Avoid contact with skin, eyes and mouth.

Upon maintenance and service it must be verified according to standard IEC 62353 that the equipment is safe to use.

Verification of MAT LD500 according to IEC 62353 involves:

- Visual inspection according to IEC 62353
- Measuring of protective earth resistance according to IEC 62353
- Safety related functions shall be tested (check doors restracts when blocked, check emergency stop).

Display / error	Cause	Remedial action
#20/#21#24 SLOW WATER FILLING 1/2/3 The water intake is slow according to the time setting.	1. Filter in inlet valve 1/2/3 is blocked. 2. Too low water pressure in installation.	1. To be cleaned. 2. Install pressure pump.
#22 FILL VALVES NOT CLOSED	1. Valves malfunctioning.	1. Check valves.
#23 SLOW DRAINING Drainage has taken too long.	1. Wash pressure kept ”prolonged” for draining. 2. Drainage system stopped, water trap. 3. Defective drain valve.	1. Clean filter. 2. Check drainage system. 3. Check valve.
#25/#26/#29 NO WATER FILLING 1/2/3 The water intake has taken too long according to the time setting.	1. Stop valve in installation is closed. 2. See #20, cause 1-2. 3. Defective inlet valve 1/2/3. 4. No power to inlet valve. 5. No power signal from level sensor in wash tank. 6. Defective water supply.	1. Open the stop valve. 2. See #20. 3. To be replaced. 4. Repair electrics to inlet valve. 5. Repair connection to level sensor. Adjust level sensor if necessary. 6. To be repaired.
#27 PUMP PRESSURE Machine is unable to obtain correct pump pressure.	1. Thermal fuse in wash pump has switched off. 2. Pressure of B12 dropped below 0.3 bar. 3. No wash pressure due to foam formation in the machine.	1. Await automatic reconnection. The cause for this switch off should be found. 2. Ensure correct setup of B12. If required, check pre-treatment. 3. Detergent to be checked for foam formation.
#28 NO DRAINING Machine is unable to drain.	1. Drain blocked. 2. Defective drain valve. 3. Defective drain conductivity sensor.	1. Check drainage system and rinse. 2. Check drainage valve and connections. 3. To be replaced.
#30 SLOW HEATING IN WASH TANK The heating element in wash tank has been on for a longer period than normal, without reaching the correct wash temperature.	1. Heating element in wash tank defective. 2. Too much water in wash tank, verify B12 and wash program fill setup.	1. To be replaced. 2. Check/adjust wash pressure level and check/adjust wash program fill setup.
#31 SWITCHED TO ELECTRICAL HEATING Heating water by steam is too slow. The machine has swithed to electrical heating.	1. The stream generator is defective.	1. Check steam generator and replace.
#35 NO HEATING IN WASH TANK The heating element in wash tank has been on without reaching correct wash temperature.	1. Automatic cut-out T1 disconnected (placed below wash chamber). 2. Heating element in wash tank defective. 3. Defective contactor Q5. 4. No connection from output to Q5. 5. Too low water level in wash tank. 6. Foam formation in machine.	1. Reconnect (try only once, the cause of the cut-out must be found). 2. To be replaced. 3. To be replaced. 4. To be repaired. 5. Check for leaks in drain system. 6. Detergent to be checked for foam formation.
#36 NO DRY HEATING The heating element in drying unit has been on for a longer period than normal without reaching the correct drying temperature.	1. Defective heating element in drying unit. 2. Defective contactor Q21. 3. No connection from output to Q21.	1. To be replaced. 2. To be replaced. 3. To be repaired.
#37 HOT LOAD Chamber temperature did not drop below 55 degrees during cooling and therefore there are risks of hot load.	1. Dryer blower is not working. 2. Air is blocked.	1. Check blower. 2. Check air flow.
#45/#46/#47/#48 CHEMICAL LEVEL 1/2/3/4 No signal from chemical level indicator 1/2/3/4.	1. Chemical canister 1/2/3/4 empty. 2. Level indicator 1/2/3/4 dirty/defective. 3. Defective power connections.	1. To be replaced. 2. To be cleaned/repaired. 3. To be checked/repaired.

Display / error	Cause	Remedial action
#61 XML DATA CLIENT IS OFF LINE XML data logger client has been offline for a complete wash and no data is currently being logged.	1. LAN Network cable not connected to machine. 2. Network error result in no connection. 3. Data logging system is not working correctly.	1. Verify/Change LAN cable from machine to local switch. 2. Troubleshoot local network to ensure connection can be etablished. 3. Ensure data logging system client is up and running.
#65/#67 DOOR UNCLEAN/CLEAN SIDE NOT CLOSED Controller receives no signal from closing door switch.	1. Connections between closing door switch loading/unloading side and controller are defective. 2. Defective/incorrectly adjusted switch, chain, door motor, door spring or connecting parts.	1. To be checked/repaired. 2. To be checked/repaired.
#70 IMS: CONDUCTIVITY SENSORS INACCURATE	1. Either controller or IMS conductivity sensor is defect or out of calibration. 2. Controller and IMS conductivity sensors does not measure the same values and machine setting max. sensor difference is setup too low.	1. Verify controller and IMS conductivity sensor measure correctly if not calibrate sensors. 2. Increase machine setting max. sensor difference.
#71 IMS: TOO HIGH CONDUCTIVITY	1. Added chemistry in wash water resulted in too high water conductivity for IMS sensor. 2. Conductivity limit in wash program is incorrect.	1. Verify water conductivity is too high. 2. Verify wash program setup is correct.
#72/#73 IMS: TANK1/2 TEMP. SENSORS INACCURATE	1. Either controller or IMS tank 1/2 temperature sensor is defect or out of calibration.	1. Verify controller and IMS tank 1/2 temperature sensor measure correctly if not calibrate sensors.
#74 PREWASH TEMPERATURE TOO HIGH Water temperature in prewash phase is too high.	1. Prewash phase are configured to use hot water. 2. The machine is hot. Water not cold enough to cool down the machine.	1. Check if the phase are configured to use cold water. 2. Check temperature of cold water.
#75 TEMPERATURE WASH TANK OUT OF RANGE No signal from temperature sensor in wash tank.	1. Wire connection from temperature sensor defective. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#76 TEMPERATURE DRYING OUT OF RANGE No signal from temperature sensor in drying unit.	1. Wire connection from temperature sensor defective. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#77 TEMPERATURE DISINFECTION MONITOR OUT OF RANGE No signal from temperature sensor.	1. Wire connection from temperature sensor defective. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#78 TEMPERATURE TANK 2 OUT OF RANGE No signal from temperature sensor in tank 2.	1. Wire connection from temperature sensor defective. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#79 TEMPERATURE DIFFERENCE TOO HIGH To high difference between measurement of temperature sensor and verification sensor.	1. Wire connection from temperature sensor B30 or B33 defective. 2. Incorrect temperature sensor calibration.	1. To be repaired. 2a. Verify temperature sensor B30 and B33. 2b. Calibrate temperature sensor B30 and B33.

Display / error	Cause	Remedial action
#81 IMS: WASH PRESSURE SENSORS INACCURATE	1. Either controller or IMS pressure sensor is defect or out of calibration. 2. Controller and IMS pressure sensors does not measure the same values and machine setting max. sensor difference is setup too low.	1. Verify controller and IMS pressure sensor measure correctly if not calibrate sensors. 2. Increase machine setting max. sensor difference.
#82 IMS: WASH PRESSURE TOO LOW	1. Wash pump thermal fuse has switched off. 2. Pressure dropped below wash program phase set point. 3. No wash pressure due foam in the machine.	1. Await fuse automatic reconnection and find root cause of fuse switch off. 2. Ensure pressure sensor is working correctly. 3. Verify ok foam formation.
#85 TOO LOW CONDUCTIVITY Conductivity in wash tank is too low.	1. Added chemistry in wash water resulted in too low water conductivity.	1a. Verify water with chemistry conductivity. 1b. Verify wash program setup is correct.
#86 TOO HIGH CONDUCTIVITY Conductivity in wash tank is too high.	1. Added chemistry in wash water resulted in too high water conductivity.	1a. Verify water with chemistry conductivity. 1b. Verify wash program setup is correct.
#87 MAX RINSE RETRIES REACHED Max number of rinses in order to obtain low rinse water conductivity has been reached.	1. Incorrect rinse water quality. 2. Load contaminates rinse water.	1. Verify wash program fill setup is correct and verify no chemistry is added during rinse. 2a. Verify wash program is cable of cleaning load. 2b. Examine load to see if anything on load is causing contaminated rinse water with high conductivity.
#88 CONDUCTIVITY SENSOR DISCONNECTED No signal from conductivity sensor in tank.	1. Wire connection from sensor defective.	1. To be repaired.
#91 SERVICE NEEDED	1. Time since last service expired or cycle counter exceeded.	1. Do service and reset counters.
#95 MISSING DRYING PRESSURE	1. Defect in tube from drying module to C15 PRES module. 2. Tube connected to wrong input on C15 PRES module. 3. C15 PRES module defect.	1. Repair/replace tube. 2. Move tube to correct input. 3. Replace C15 PRES module.
#96 MISSING DRYING AIR FLOW No signal from flow sensor.	1. HEPA filter blocked. 2. Wire connection from sensor defective. 3. Blower not running.	1. Replace HEPA filter. 2. To be repaired. 3. Check blower.
#100 LOADING Error during loading.	1. No signal from loading unit. 2. Movement during loading blocked. 3. Loading unit defective.	1. Check/repair wire connections. 2. Check loading unit/racks for blocking items. 3. To be repaired. See separate manual.
#101 UNLOADING Error during unloading.	1. No signal from unloading unit. 2. Movement during unloading blocked. 3. Loading unit defective.	1. Check/repair wire connections. 2. Check unloading unit/racks for blocking items. 3. To be repaired. See separate manual.
#104 LOADER SAFETY	1. Motor safety switch activated when loading from loader to washer.	1. Ensure nothing is blocking loader.
#105 LOADER ENCODER	1. No encoder signals from motor.	1. Ensure motor encoder wires are not damaged.
#106 LOADER HOME POSITION NOT ACTIVATED	1. Loading table home switch was not activated during homing.	1a. Ensure home switch is adjusted correctly. 1b. Ensure home switch is connected correctly.
#107 LOADER HOMING NOT ALLOWED	1. Loading table has detected a rack while homing.	1a. Remove rack and reset alarm. 1b. Verify rack on loader sensor is adjusted correctly.

Display / error	Cause	Remedial action
#108 UNLOADER SAFETY	1. Motor safety switch activated when unloading from washer.	1. Ensure nothing is blocking unloader.
#109 UNLOADER ENCODER	1. No encoder signals from motor.	1. Ensure motor encoder wires are not damaged.
#111 TANK 1 HEATING No temperature increase when heater is on.	1. Case electrical heating overheat protector activated. 2. Case electrical heating fuse broken. 3. Case electrical heating defect wire. 4. Case steam heating no steam present. 5. Case steam heating steam valve does not work.	1. Verify overheat protector is working properly. 2. Verify heater fuse is ok. 3. Verify no broken wire. 4. Verify steam supply. 5. Verify steam supply valve is working.
#112 TANK 1 WATER LEAKAGE The tank is leaking water.	1. Tank valve does not close. 2. Tank leak.	1a. Verify no broken wire. 1b. Check valve. 2. Check for hole(s) in tank.
#115 TANK 1 FILL TIMEOUT Timeout when filling condenser tank.	1. Filter in inlet valve is blocked. 2. To low water pressure in installlation.	1. Clean filter. 2. Install pressure pump.
#116 TANK 1 DRAINING Timeout draining condenser tank.	1. The valve does not open. 2. The pipe is blocked.	1. Check valve. 2. Check pipe.
#120 ERROR 24V MASTER	1. 24V short circuit or too high current draw.	1. Check wiring for short circuits.
#121 ERROR 24V SLAVE 1	1. 24V short circuit or too high current draw.	1. Check wiring for short circuits.
#125 WATER SENSOR INACCURATE Difference between water flow meters is more than 5%.	1. Too low water pressure. 2. Incorrect water flow calibration.	1. Ensure supply water pressure is within limits required by machine. 2. Check/perform correct water flow calibration.
#127 WASH TANK HIGH WATER LEVEL	1. More than 30L water filled into chamber.	1a.Verify water flow meter B5 and B6 are working correctly. 1b. Verify B12 is working correctly. 1c. Verify wash program fill setup.
#128 UNLOADER HOME POSITION NOT ACTIVATED	1. Unloading table home switch was not activated during homing.	1a. Ensure home switch is adjusted correctly. 1b. Ensure home switch is connected correctly.
#129 UNLOADER HOMING NOT ALLOWED	1. Unloading table has detected a rack while homing.	1a. Remove rack and reset alarm. 1b. Verify rack on loader sensor is adjusted correctly.
#138 NO DISINFECTION WITHIN 24 HOURS	1. Machine has not completed a disinfection for 24 hours.	1. Start program with disinfection.
#139 DISINFECTION TIMEOUT Error during disinfection.	1. Machine unable to obtain correct disinfection.	1a. Defective temperature sensor or wire connections. 1b. Ensure temperature sensor B30 and B33 is measuring correctly. 1c. Calibrate temperature sensor B30 and B33.
#140 TANK 1 TEMP. OUT OF RANGE	1. Wire to temperature sensor is defect. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#145/#146/#147/#148 CHEMISTRY DOSING 1/2/3/4 Chemistry dosing 1/2/3/4 differ more than +/- 5% of wash program setting.	1. Defective chemical pump 1/2/3/4. 2. Air bubbles in chemical hoses. 3. Leakage or kinks on chemical hoses.	1. To be replaced. 2. Check/repair. 3. Check/repair.

Display / error	Cause	Remedial action
#149 TANK 2 HEATING No temperature increase when heater is on.	1. Case electrical heating overheat protector activated. 2. Case electrical heating fuse broken. 3. Case electrical heating defect wire. 4. Case steam heating no steam present. 5. Case steam heating steam valve does not work.	1. Verify overheat proctor is working properly. 2 Verity heater fuse is ok. 3. Verify no broken wire. 4. Verify steam supply. 5. Verify steam supply valve is working.
#150 TANK 2 FILL TIMEOUT Timeout filling tank.	1. a) Water supply valve not open. b) Filter inlet valve blocked. c) To low water pressure in water installation to fill tank within the timeout time.	1. Verify heater fuse is ok.
#155 TANK 2 WATER LEAKAGE The tank is leaking water.	1. Tank valve does not close. 2. Tank leak.	1a. Verify no broken wire. 1b. Check valve. 2. Check for hole(s) in tank.
#156 TANK 2 DRAINING Timeout while draining tank.	1. The tank valve does not open. 2. The drain pipe is blocked.	1. Check valve. 2. Check pipe.
#160/#161 DOOR 1/ DOOR 2 MOTOR NOT CONNECTED No current in door motor.	1. Defective door motor on loading/ unloading side. 2. Defective wire connections.	1. To be replaced. 2. To be repaired.
#162/#163 DOOR 1/ DOOR 2 MOTOR OVER LOAD Loading/unloading door is blocked.	1. Item blocks door in washing chamber. 2. Loading/unloading door blocked in upperpart of machine. 3. Defect in chain drive system. 4. Defective loading/unloading door motor.	1. Remove items from washing chamber. 2. To be checked/repaired. 3. To be checked/repaired. 4. To be replaced.
#164/#165 DOOR 1/ DOOR 2 CAM SWITCH TIME OUT No signal from open/close switch on loading/ unloading side.	1. Item blocks door in washing chamber. 2. Loading/unloading door blocked in lower part of machine. 3. Defect in chain system. 4. Defective loading/unloading door motor.	1. Remove items from washing chamber. 2. To be checked/repaired. 3. To be checked/repaired. 4. To be replaced.
#166/#167 DOOR 1/ DOOR 2 MOVE TIME OUT Movement of door too slow.	1. Defective loading/unloading door motor. 2. Defect in chain system on loading/ unloading side.	1. To be replaced. 2. To be checked/repaired.
#168/#169 DOOR 1/ DOOR 2 SAFETY	1. Loading/unloading door blocked during close movement.	1. Remove item from door opening.
#170/#172 DOOR 1/ DOOR 2 CLOSE SWITCH ERROR No change of signal from close switch on loading/unloading side.	1. Loading/unloading door unable to activate close switch. 2. Defective close switch. 3. Defect in chain system on loading/ unloading side. 4. Defective loading/unloading door motor. 5. Defective wire connections.	1. To be checked/adjusted. 2. To be replaced. 3. To be checked/repaired. 4. To be replaced. 5. To be repaired.
#175 EMERGENCY STOP Emergency stop activated.	1. Emergency stop activated.	1. Reset emergency stop.
#176 TURNED OFF Machine shuts down.	1. No power supply to machine.	1a. Verify power supply. 1b. Verify fuses.
#188 LOADER SAFETY	1. Motor safety switch activated when loading from trolley.	1. Ensure nothing is blocking loader.
#189 LOADER ENCODER	1. No encoder signals from motor.	1. Ensure motor encoder wires are not damaged.
#190 LOADER HOME POSITION NOT ACTIVATED	1. Home sensor is not activated during homing.	1. Verify home sensor is working.

Display / error	Cause	Remedial action
#191 LOADER RACK STILL PRESENT	1. Rack present sensor activated when homing is done after rack loading.	1a. Ensure loader hooks keep hold of rack during loading. 1b. Ensure rack present sensor is adjusted correctly.
#192 LOADER TROLLEY DETACHED	1. Trolley detached while loading from trolley.	1. Ensure trolley attached switch is working and trolley is mechanically attached.
#193 LOADER HOMING NOT ALLOWED	1. Rack present switch activated after error and therefore homing can not be done.	1. Please remove stuck rack from loader.
#194 UNLOADER SAFETY	1. Motor safety switch activated when unloading to trolley.	1. Ensure nothing is blocking unloader.
#195 UNLOADER ENCODER	1. No encoder signals from motor.	1. Ensure motor encoder wires are not damaged.
#196 UNLOADER HOME POSITION NOT ACTIVATED	1. Home sensor is not activated during homing.	1. Verify home sensor is working.
#197 UNLOADER RACK NOT PRESENT	1. Rack present sensor not activated when homing is done after rack unloading.	1a. Ensure unloader hooks keep hold of rack during unloading. 1b. Ensure rack present sensor is adjusted correctly.
#198 UNLOADER TROLLEY DETACHED	1. Trolley detached while unloading to trolley.	1. Ensure trolley attached switch is working and trolley is mechanically attached.
#199 UNLOADER HOMING NOT ALLOWED	1. Rack present switch activated after error and therefore homing can not be done.	1. Please remove stuck rack from loader.
#201 CAN COMMUNICATION ERROR Missing communication between controller units.	1. Main controller lost connection to HMI panels.	1. Verify cabling of internal communication bus.
#202 CAN COMMUNICATION ERROR SLAVE 1 Missing communication between controller units.	1. Main controller lost connection to slaveboard. 2. Wrong dip switch configuration.	1. Verify cabling of internal communication bus. 2. Verify correct dip switch configuration.
#203 CAN COMMUNICATION ERROR HMI 1 Missing communication between controller units.	1. Main controller lost connection to HMI panel 1. 2. Wrong dip switch configuration.	1. Verify cabling of internal communication bus. 2. Verify correct dip switch configuration.
#204 CAN COMMUNICATION ERROR HMI 2 Missing communication between controller units.	1. Main controller lost connection to HMI panel 2. 2. Wrong dip switch configuration.	1. Verify cabling of internal communication bus. 2. Verify correct dip switch configuration.
#205 DISINFECTION COMM ERROR Missing communication in disinfection monitoring.	1. Main controller lost connection to disinfection MCU.	1. Replace main controller board.
#208 CAN COMMUNICATION ERROR WARD	1. Main controller lost connection to slave board.	1. Verify cabling of internal communication bus.
#209 CAN COMMUNICATION ERROR PRESSURE 1	1. Main controller lost connection to C15 PRES module 1. 2. Wrong dip switch configuration.	1. Verify cabling of internal communication bus. 2. Verify correct dip switch configuration.
#212 WASH TARGET PRESSURE NOT REACHED	1. Verify valid wash system pressure setup in wash program. 2. Pump defective	1. Change wash system pressure in wash program to a value that can be set on this kind of load. 2. To be repaired.
#216 WASH PRESSURE OUT OF RANGE	1. Pressure board (K124) defective	1. To be repaired.
#226 RTC ERROR Controller Real Time Clock is not running.	1. Internal controller board fault.	1. Replace main controller board.

Display / error	Cause	Remedial action
#227 UPPER SPRAY ARM ROTATION DETECTION Spray arm does not rotate.	1. The upper spray arm is blocked. 2. The nozzles are blocked.	1. Remove the thing blocking. 2. Clean the nozzles.
#228 RACK SPRAY ARM ROTATION DETECTION Spray arm does not rotate.	1. Wrong numbers of spray arms quoted. 2. The spray arm is blocked. 3. The nozzles are blocked.	1. Restart and quote the right numbers of arms. 2. Remove the thing blocking. 3. Clean the nozzles.
#229 LOWER SPRAY ARM ROTATION DETECTION Spray arm does not rotate.	1. The low spray arm is blocked. 2. The nozzles are blocked.	1. Remove the thing blocking. 2. Clean the nozzles.
#281 IMS: TANK 1 TEMP. SENSOR OUT OF RANGE	1. Wire to IMS temperature sensor is defect. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.
#285 IMS: TANK 2 TEMP. SENSOR OUT OF RANGE	1. Wire to IMS temperature sensor is defect. 2. Wire short-circuited.	1. To be repaired. 2. To be repaired.

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