

Specificatie Tehnica Completata

Modelul: DS 500 SCLD; Producator: Steelco (Miele Group member); Tara: Italia

Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină propusa de către autoritatea ofertanta
<p>Mașină de spălare și dezinfectare a instrumentariului chirurgical, 150L</p> <p>Cod 270260</p> <p>Descriere "Mașină de spălare și dezinfectare a instrumentariului chirurgical și altor ustensile din oțel"</p> <p>Domeniul de utilizare instrumente chirurgicale, ustensile din oțel inoxidabil</p> <p>Sistem deschis de utilizare a detergenților și dezinfectanților da</p> <p>Volumul camerei ≥ 150 L</p> <p>Carcasa exterioară din oțel inoxidabil AISI 304</p> <p>Camera de spălare construită din oțel inoxidabil AISI 316L</p> <p>Nișa interioară specializată pentru dezinfectant și detergent da</p> <p>Pompa de apă, internă da</p> <p>Pompa de aer, internă da</p> <p>Răcitor pentru sistemul de drenaj, cu funcția de reducere a temperaturii apei de scurgere $\leq 90^{\circ}\text{C}$ DA</p> <p>Sistem intern de condensare a aburului, care reduce cantitatea de abur în timpul uscării și împiedică scurgerea aburului da</p> <p>Procesul de spălare și dezinfectare total automat, controlat de microprocesor da</p> <p>Numărul de uși 1 unitate</p> <p>Ușa cu geam din sticlă astfel încât materialele din interiorul camerei să poată fi vizibil da</p> <p>Iluminare internă a camerei da</p> <p>Programe de dezinfecție implicite Min. 10</p> <p>Programe care pot fi programate de către utilizator Min. 30</p> <p>Ecran LCD, color da</p> <p>Afișare ecran: indicarea ciclului, mesaj text și reprezentări grafice a procesului, temperatura apei, timpul rămas, numărul programului da</p> <p>Limbajul interfeței și meniului română și rusă</p>	<p>Mașină de spălare și dezinfectare a instrumentariului chirurgical, 150L DA Modelul 500 SCLD ("D" este inclus sitema de durizare interna)</p> <p>Cod 270260</p> <p>Descriere "Mașină de spălare și dezinfectare a instrumentariului chirurgical și altor ustensile din oțel" DA</p> <p>Domeniul de utilizare instrumente chirurgicale, ustensile din oțel inoxidabil DA</p> <p>Sistem deschis de utilizare a detergenților și dezinfectanților DA</p> <p>Volumul camerei 171 L si 151 pentru cosuri Ref. Brosura pag. 10</p> <p>Carcasa exterioară din oțel inoxidabil AISI 304 Ref. LAB 500 SC- LAB 500 SCL pag.2</p> <p>Camera de spălare construită din oțel inoxidabil AISI 316L Ref. LAB 500 SC- LAB 500 SCL pag.2</p> <p>Nișa interioară specializată pentru dezinfectant și detergent DA Ref Brosura Dental Instrument pag. 13</p> <p>Pompa de apă, internă DA</p> <p>Pompa de aer, internă DA</p> <p>Răcitor pentru sistemul de drenaj, cu funcția de reducere a temperaturii apei de scurgere $\leq 90^{\circ}\text{C}$ DA inclus.</p> <p>Sistem intern de condensare a aburului, care reduce cantitatea de abur în timpul uscării și împiedică scurgerea aburului DA inclus</p> <p>Procesul de spălare și dezinfectare total automat, controlat de microprocesor DA inclus</p> <p>Numărul de uși 1 unitate DA</p> <p>Ușa cu geam din sticlă astfel încât materialele din interiorul camerei să poată fi vizibil DA</p> <p>Iluminare internă a camerei DA</p> <p>Programe de dezinfecție implicite Min. 10 DA</p> <p>Programe care pot fi programate de către utilizator Min. 30 DA</p> <p>Ecran LCD, color DA</p> <p>Afișare ecran: indicarea ciclului, mesaj text și reprezentări grafice a procesului, temperatura apei, timpul rămas, numărul programului DA</p> <p>Limbajul interfeței și meniului română și rusă DA</p> <p>recomanda Englez abriviturile sint mai clare erorele de sitem pot fi usor regasite in manulul de service</p>

<p>Butoane tactile rapide, dedicate programelor de dezinfectie da</p> <p>Buton de anulare a alarmelor și stopare a programului da</p> <p>Imprimantă termică, integrată da</p> <p>Temperatura de uscare ≥ 125 grade</p> <p>Filtrarea aerului HEPA filtru</p> <p>Min. 2 pompe de dozare a detergentului si dezinfectantului da</p> <p>Min. 2 senzori de flux de dozare a detergentului se dezinfectantului da</p> <p>Brațe rotative pentru jetul de apă ≥ 2 unități</p> <p>Monitorizarea temperaturii în cameră prin intermediul a min. 2 senzori de temperatură electronice de precizie înaltă da</p> <p>"Senzori de depistare a nivelului de dezinfectant și detergent în interiorul canistrelor" da</p> <p>Alarmer sonore și vizuale</p> <p>Alarmer cu afișarea codului și descrierei complete a problemei cât și acțiunilor de remediere da</p> <p>Alarma de finalizare a ciclului da</p> <p>Tensiunea de alimentare 380V, 50 Hz</p> <p>Accesorii și consumabile:</p> <p>Sistem de osmoză inversă compatibilă cu mașina de spălat care va fi compusă din: min. 4 nivele de prefiltrare, manometre de control a filtrelor, sistem de dedurizare a apei cu cap electronic, sistemul de osmoză inversă cu membrana și sistem de monitorizare a calității apei. da, sa se indice modelul oferit</p> <p>Suport pentru mașina de spălat 1 buc.</p> <p>Rafturi de încărcare 2 buc.</p> <p>Coșuri pentru instrumente min. 5</p> <p>Hîrtie imprimantă 30 buc.</p> <p>Detergent, volum min. 5L, pentru min. 100 cicluri</p> <p>Dezinfectant, volum min. 5L, pentru min. 100 cicluri</p>	<p>Butoane tactile rapide, dedicate programelor de dezinfectie DA</p> <p>Buton de anulare a alarmelor și stopare a programului DA</p> <p>Imprimantă termică, integrată DA</p> <p>Temperatura de uscare ≥ 125 grade DA</p> <p>Filtrarea aerului HEPA filtru DA</p> <p>Min. 2 pompe de dozare a detergentului si dezinfectantului DA</p> <p>Min. 2 senzori de flux de dozare a detergentului se dezinfectantului DA</p> <p>Brațe rotative pentru jetul de apă - 2 unități DA</p> <p>pentru fiecare raft separa (PN rafuturi C705 si C721) Ref. Brosura Dental instrument</p> <p>Monitorizarea temperaturii în cameră prin intermediul a min. 2 senzori de temperatură electronice de precizie înaltă DA</p> <p>"Senzori de depistare a nivelului de dezinfectant și detergent în interiorul canistrelor" DA</p> <p>Alarmer sonore și vizuale DA</p> <p>Alarmer cu afișarea codului și descrierei complete a problemei cât și acțiunilor de remediere DA</p> <p>Alarma de finalizare a ciclului DA</p> <p>Tensiunea de alimentare 380V, 50 Hz DA</p> <p>Accesorii și consumabile:</p> <p>Sistem de osmoză inversă compatibilă cu mașina de spălat care va fi compusă din: min. 4 nivele de prefiltrare, manometre de control a filtrelor, sistem de dedurizare a apei cu cap electronic, sistemul de osmoză inversă cu membrana și sistem de monitorizare a calității apei. da, sa se indice modelul oferit. Cu popa si rezorvoar pentru asigurarea unui de bit de apa corespunzator. Este atasat separat tratarea apei.</p> <p>Suport pentru mașina de spălat 1 buc. DA</p> <p>Rafturi de încărcare 2 buc. DA C705+C721</p> <p>Coșuri pentru instrumente min. 5DA C03x2, C28x1, C40x1, C62x1.</p> <p>Hîrtie imprimantă 30 buc. DA inclus</p> <p>Detergent, volum min. 5L, pentru min. 100 cicluri DA ProCare Med 10 A – 3 buc</p> <p>Dezinfectant, volum min. 5L, pentru min. 100 cicluri DA ProCare Med 30C – 3 buc.</p>
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**DICHIARAZIONE CE/UE DI CONFORMITÀ
EC/EU DECLARATION OF CONFORMITY
DÉCLARATION CE/UE DE CONFORMITÉ
EG/EU KONFORMITÄTS-ERKLÄRUNG
DECLARACIÓN CE/UE DE CONFORMIDAD**



Il sottoscritto, come legale rappresentante della azienda sotto indicata, dichiara che il prodotto:

The undersigned, officer of the under-written company, hereby declares that the product:

Le représentant juridique soussigné de l'usine sous indiquée, il déclare que le produit:

Der Unterzeichner, Handlungsbevollmächtigter des oben genannten unter hingewiesen, erklärt hiermit, daß das Produkt:

El firmante, como representante legal de la empresa indicada, declara que el producto:

Nome/Modello:

Name/Type:

Nom/Modèle:

Name/Model:

Nombre/Modelo:

LAB 500 SCDL

N° di Serie/Lotto:

Serial/Lot N.:

N° de Série/Lot :

Serial N./ Reihe-Zahl:

N° de Serie/Lote:

20XXXXXXXXXX

è stato progettato e costruito in conformità alle seguenti direttive e successivi emendamenti, secondo quanto indicato dalle norme armonizzate, in applicazione a quanto previsto dalle direttive citate di seguito, è stata dotata di marcatura CE ed è stato predisposto il fascicolo tecnico presso la nostra sede.

La persona giuridica autorizzata a costituire il fascicolo tecnico è la Steelco S.p.A. con sede in via Balegante, 27 – Riese Pio X (TV) - Italia.

is in compliance with the International regulations, according to the following directives and standards and further amendments, and pursuant of the below-mentioned directives, the CE mark have been applied. Furthermore, adequate technical materials have been prepared and are available from our offices.

The juridical person authorized to compile the technical file is Steelco S.p.A., at via Balegante, 27 - Riese Pio X (TV) - Italy.

est conforme aux normes internationales, selon les prescriptions et directives suivantes et les amendements successifs, en application des directives ci-dessus citées, ils portent la marque CE et, les dossiers techniques sont déposés dans notre sièges.

La personne juridique autorisée à constituer le dossier technique est la Steelco S.p.A. avec siège en via Balegante, 27 – Riese Pio X (TV) - Italie.

unter folgenden internationalen Vorschriften und späteren Änderungen, konform entworfen und gebaut wurde, laut Vorschriften der gemeinschaftlichen Richtlinien und in Übereinstimmung mit den angegebenen Richtlinien mit der CE Kennzeichnung versehen wurde und, dass die technischen Daten in unserer Firma erstellt wurden.

Die juristische autorisierte Person, die die technischen Unterlagen zusammenzustellen hat ist Steelco S.p.A. an via Balegante, 27 - Riese Pio X (TV) - Italien.

ha sido diseñado y construido en conformidad con las directivas y siguientes enmiendas indicadas en continuación, según cuanto indicado de las normas armonizadas, en aplicación a cuanto previsto de las directivas abajo emplazadas, ha sido dotada con marca CE y han sido predispuestos las documentación técnicas en nuestra sede. La persona jurídica lícita a constituir el expediente técnico es la Steelco S.p.A. con sede en via Balegante, 27 – Riese Pio X (TV) - Italia.

Direttive applicate: 2006/42/EC (Machinery Directive)

Applied directives: 2014/30/EU (EMC Directive)

Directives appliquées: 2011/65/EU (RoHS 2 Directive)

Angewandte Richtlinien: 2015/863/EU (RoHS 3 Directive)

Directivas aplicadas:

RIESE PIO X, 30 / 03 / 2020

Direttore Generale
Managing Director
Director Général
Geschäftsführer
Gerente

Fabio Zardini
Steelco S.p.A.

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LAB 500 SC – LAB 500 SCL

Laboratory glassware washers



The LAB 500 SC and SCL are under counter washer disinfectors designed to handle a wide range of laboratory glassware granting an automatic washing and thermodisinfection treatment.

These models have 2 separate washing injection connections allowing the use of dedicated upper and lower injection washing carts.

The upper level has telescopic bearing rails enabling the use of specific upper wash carts. The drop-down door provides a loading platform for lower and dual injection wash carts for a convenient loading and unloading job.

LAB 500 SC is available only in the stainless steel door version with electronic programmable microprocessor is capable of storing up to 10 washing programs: 5 standard pre-programmed cycles and 5 additional adjustable and password protected so the customer can configure specialized programs for their independent needs.

LAB 500 SCL is available in the stainless steel door version and can be optionally configured in the full glass door version. LAB 500 SCL electronic programmable microprocessor is capable of storing up to 40 washing programs: 20 standard pre-programmed cycles and 20 additional adjustable and password.

The user can customize any wash cycle parameter.

Specifications

Dimensions:

External WxDxH:
600mm x 630mm x 850mm
23.62" x 24.80" x 33.46"

Chamber WxDxH:
555mm x 500mm x 670mm
21.85" x 19.68" x 26.38"

Door passage WxH:
540mm x 540mm
21.26" x 21.26"

Water consumption:

12l (3.1 gal.) per chamber fill

Heat loss:

1'111 Btu/h (280 kcal/h)

Sound level:

52 dB

Cycles:

LAB 500 SC: 5 pre programmed, 5 user defined

LAB 500 SCL: 20 pre programmed, 20 user defined

Injection cleaning:

2 connections, upper, lower and dual injection wash carts available

Dosing:

Automatic chemical dosing via peristaltic pumps

Drying :

Chamber drying by electrical heating elements

Exhaust steam condenser:

Standard

Standard features LAB 500 SC

Hinged drop down door

- Counterbalanced for ease of operation, stainless steel AISI 316L (DIN 1.4404) washing chamber side, stainless steel AISI 304 external side.
- The door acts as a loading platform for lower and dual injection wash carts for a convenient loading and unloading job.
- Fully insulated to reduce heat loss and noise

Fully extendable load bearing arms

- The upper level has fully extendable telescopic bearing rails enabling the use of specific upper washing carts.

Washing system

- Two rotary spray arms, one on the bottom and one on the top of the chamber
- Up to three more washing arms in the available wash carts
- Spray arms made of AISI 316L stainless steel (DIN 1.4404)
- Easily disassemble washing arms for cleaning and maintenance

Direct injection system

- 2 wash chamber connections for upper, lower and dual injection wash carts

Circulation pump

- 1 unit 450 l/min (118.87 gal.US/min) pump
- Pump power 550W.

Filter System

- A three (3) stage filtration system helps protect recirculation and drain pumps from debris
- Filters are installed on all incoming water lines
- Filters can be easily removed for cleaning

Drying system

- Chamber drying by electrical heating elements located in the sump.

Steam Condenser

- Prevents vapors from entering into the washing area at a set temperature programmable from:
0°C - 93°C (32°F - 200°F)

Chemical dosing

- Two (2) peristaltic pumps provide precise addition of liquid chemical agents
- Vacuum switch for checking chemical presence

Electric Heater

- 5.1 kW electric heating elements providing heating up to 93°C (200°F)
- Electronic Thermostat
- Two (2) independent PT1000 temperature probes

Microprocessor Control System

- Possibility of up to 10 storable programs
5 standard programs, 5 user definable programs

System control panel

- Digit pressure function buttons
- 3 characters monochrome LED display



System Monitoring

- Audible and visual alarms provide quality control for each wash cycle
- Water level sensor for water sump load
- Additional water level sensor to prevent wash chamber overflow
- RS 232 Port for printer connection to monitor and validate washing cycle

Drain Pump

- Independently operated drain pump for efficiently pumping out waste water

*Standard features variations LAB 500 SCL
model, stainless steel door version only*

System control panel



- 32 character monochrome LCD display
- USB port for historical cycle data, machine parameters and washing programs download. Allows easy software upgrades.

*Standard features variations LAB 500 SCL
model, full glass door version only*

Hinged drop down door

- Stainless steel door frame, stainless steel AISI 316L (DIN 1.4404) washing chamber side, high visibility HST tempered full glass door external side.
- The door acts as a loading platform for the lower washing carts for a convenient loading and unloading job.

System control panel



- Graphic colour LCD display

System Monitoring

- Audible and visual alarms provide quality control for each wash cycle
- Water Level Sensory
- Sensors control chamber water level and prevent overflow
- RS 232 Port for printer connection to monitor and validate washing cycle.
- USB port for historical cycle data, machine parameters and washing programs download. Allows easy software upgrades.

Safety features

Locking Door

- Prevents interference with wash cycle once the machine is in operation.

Drop Down Door

- Eliminates the safety hazard associated with guillotine type doors.
- Counterbalanced for safe operation

Optional features

DI Booster Pump

- Provides proper water pressure for demineralized water supply

Printer

- For validating washing phases with detailed information
- External. Printer can be integrated on the front panel of an accessory side cabinet

Water Softener

- Softens incoming hot and cold water
- Programmable regeneration with low salt alarm

Drain Cooling Solenoid Valve

- Waste water is cooled to 60°C (140°F)

Seismic Tie Down

- Anchors washer to floor

Additional Dosing Pump

- One (1) additional peristaltic pump for dosing an additional type of chemical to meet specific wash requirements

Flowmeters

- Flowmeters for additional chemical control

Conductivity Sensor

- Accurate measuring of the conductivity value during the final rinse. Integrated side cabinet is needed

Boiler to pre heat DI water

- 18 l (4.7 gal.) capacity
- Pre-heats DI water to a programmed temperature 0-93°C (32-200°F)
- Requires 600mm (23.62") height stand or fully dedicated side cabinet (machine is built as a single 900mm (35.43") wide unit)

Extra Power 8kW

- Total machine power raised up to 8kW to shorten cycle times through reduced heating time in the wash chamber

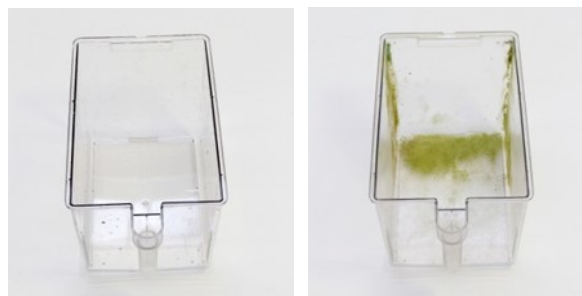
Network connection

- Ethernet connection provided by X-fire device (not for LAB 500 SC model)

Aquatic tank package

This package includes:

- 1 additional dosing pump (to achieve a total of 3 chemical dosing units): needed to feed the unit with the special combination of chemicals for the washing solution and for the neutralization solution before the final rinse phase.
- 3 Flow meters (one for each dosage unit): to monitor the amount of chemicals used for the different phases of the cycle.



Programming and cycle operation

The user is able to create unique programs to meet their specific needs. Listed are various phases that can be programmed and repeated into various combinations.

- **Pre-Wash** – The user is able to define the number of pre-washes, length of pre-washes and select between cold, hot and DI water or mix two sources.
- **Wash** – The user is able to define the length of the wash cycle, detergent dosing and dosing temperature, temperature of the water up to 93°C (200°F) and select between cold, hot and DI water or mix two sources.
- **Chamber Flush During Drain** – The user is able to define flush time execution during the draining of the chamber.
- **Neutralization** – The user is able to select the length of the rinse, the presence and the amount of neutralizer, temperature of the rinse up to 93°C (200°F) and what type of water is to be used, either cold, hot or DI water or two mixed sources.
- **DI Rinse** – The user can define the length of the DI rinse, temperature of the water up to 93°C (200°F) presence and amount of rinse aid.

Construction

Wash Chamber and door internal side

- Constructed using AISI 316L BA Ra<30µin (Ra<0.8µm)
- Designed and constructed with smooth edges and corners removing areas where dirt can accumulate and allow bacterial growth.

Exterior

- AISI 304 Scotch Brite finish Ra<40µin (Ra<1.2µm)

Components

- Constructed using stainless steel and other materials which are resistant against the effects of aggressive detergents

Insulation

- High performance melamine insulation guards against heat loss and reduces noise level

IP protection

- Degree of protection according to EN 60529: IP 21

Accessories

A large variety of basket trays, injector racks, net baskets and specialty racks

Validation support documentation and services

Installation Qualification and Operational Qualification (IQ/OQ) testing can be executed at the customer site.

Cleaning chemicals

A large selection of cleaning chemicals are available.

Required utilities

For connection details please refer to installation drawing of the selected model/version.

Hot water

Cold Water

DI Water

Drain Connection

Electrical requirements

- **Electricity** LAB 500 SC (3.05kW)
- 230V/~ /50Hz
- 208V/3~+N/60Hz
- 220V/~ /60Hz

- **Electricity** LAB 500 SCL (5.60kW - 8.0kW)
- 400V/3~+N/50Hz
- 208V/3~+N/60Hz
- 480V/3~+N/60Hz
- other electrical connections are available to match electrical requirements of installation site.

Dental instrument

Washer Disinfectors





Dental instrument washer disinfectors

Steelco offers a comprehensive range of thermal disinfectors and accessories for the automated cleaning and disinfection in dental practices. Our long experience in automated cleaning of surgical instruments in Central Sterile Supply Departments, in endoscopy centres and in private practices allows safe, efficient and cost effective cleaning and disinfection procedures based on proven modern technologies.

By using Steelco dental washer disinfectors, the dental professional has only to take care of the loading of the material and the selection of the cycle: all the rest – pre-wash, washing, thermal disinfection and drying – is provided by the machines. At the end of the cycle all the instruments are ready for sterilization without any further handling.



Easy installation

Steelco Washer Disinfectors are easy to install in dental practices. The full range includes table top, underbench and standalone models to cover every customer need.

- > DS 50
- > DS 50 DRS hot air drying
- > DS 50 HDRS hot air drying

Documented and validated process

The use of an automatic thermodisinfectant excludes the professional risk due to handling contaminated instruments and also offers the possibility of a complete and documented validated cleaning and disinfection, which is the basis of an effective sterilization process.



Constant improvements and innovations lead **Steelco** products to run economically and reach a high level of environment compatibility.

Machines, baskets, inserts and accessories

"the range offers to customers a large choice of machines, baskets and inserts all specifically designed to meet different end user needs"



> DS 50/2 DRS
hot air drying pass-through

> DS 500 SC
> DS 500 CL
hot air drying

> DS 600 C

Standard compliant

Steelco Washer Disinfectors are designed and constructed to comply with the latest European and UK guidelines on decontamination. EN ISO 15883-1/2, CEN ISO/TS 15883-5 and HTM 01-05.

Steelco Washer Disinfectors are classified CE Medical Device (Community rule 93/42/EEC) code nr. 0051.





Control system

Steelcotronic Control System, with its auto-diagnostic process, constantly monitors and displays current cycle status and alarms. It allows the operator to optimise the washing process and to personalise the programmes on the machine.



T1= 60.4°C	t= 1.00 s	t= 1.00 s
(T1= 60.5°C) (T2= 60.2°C)		
-> 5: Drain		
T1= 61.7°C	T2= 61.6°C	h: 09:37
-> 6: Washing		
T1= 61.6°C	T2= 61.5°C	h: 09:38
Water2	programmed	executed
T= 8°C	t= 30 s	20 l
(T1= 61.9°C) (T2= 61.9°C)		
-> 7: Drain		
T1= 62.9°C	T2= 63.8°C	h: 09:38
-> 8: treatment		
T1= 91.3°C	T2= 91.3°C	h: 09:44
Product3= OK	programmed	executed
T= 90°C	t= 6 s	7 s
(T1= 90.5°C) (T2= 90.5°C)		
AB(1)= 1147	AB(2)= 1195	
-> 9: Drain		
T1= 90.6°C	T2= 90.7°C	h: 09:44
-> 10: drying		
T1= 77.6°C	T2= 80.1°C	h: 09:59
Tmax= 144.8°C		

Easy to use, the touch control system with graphic colour LCD display simplifies the end user job when operating the machine. The glass panel guarantees the operator a better protection against contamination when selecting the cycle type.

Print reports and historical cycle data.

During every washing cycle the machine software generates a report that can be printed, stored on a USB memory key or transferred to a PC connected via Ethernet or RS232 port.

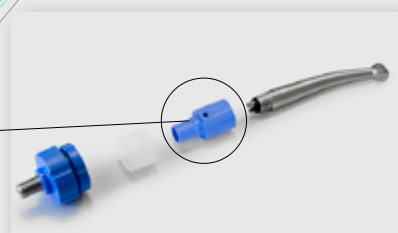
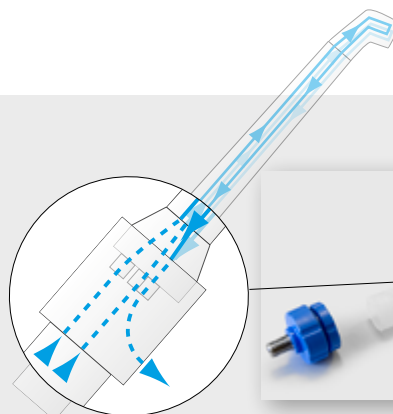
All critical parameters are registered, in particular: status at the end of the washing cycle, reached A0 values, programmed and executed water and chemical quantity consumption, temperatures measured by monitoring probes during each cycle phase.



Smart accessories:

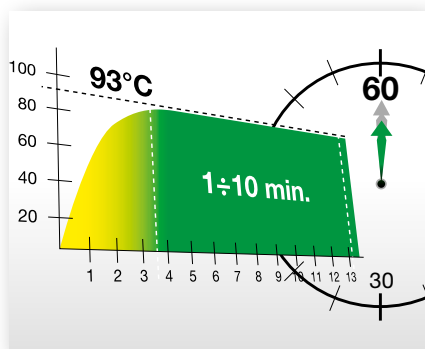
The adaptor allows a thorough cleaning of the internal channels thanks to the water circulation.

Adaptors are available for all hand pieces brands.



Cleaning effectiveness

The **Mechanical** action is one of the main elements for effective cleaning during the washing process. Steelco has customised the washing pumps and circuits of each model ensuring high flow rate combined with effective spray pressure. Efficient Hot Air Drying System (HEPA filter optional) facilitates the total elimination of remaining water both inside and outside the instruments.



It heats up to 93°C and the temperature is held from 1 up to 10 min., achieving high level thermal disinfection under control of two independent probes for the monitoring. High level Disinfection and hot air drying in less than 60 minutes increase the practice efficiency.



Automatic dosing of liquid detergents with level control and monitoring of the detergent and rinse-aid volume. Integrated water softener to prevent scale and to increase detergent efficiency.



Chamber and spray arms made of high quality stainless steel AISI 316L to withstand high temperature and chemical actions. (DIN 1.4404). External cabinet made of AISI 304 stainless steel (DIN 1.4301).

Construction system with total removal of angles, self cleaning tank with rounded edges, water filtering system in three levels. Machines are equipped with door locking system during the whole cycle.



Treatment of dental instruments and accessories:

Thermal disinfection is the most efficient method for the treatment of reusable medical devices recommended by 15883

Steelco machines are designed to reprocess all kind of dental instruments and provide dedicated programs also for turbines, straights and angular hand pieces.





Compact washer disinfectors with forced hot air drying

Steelco DS 50 DRS range is an efficient aid for the cleaning, thermal disinfection and **forced hot air drying** of all types of dental instruments. Manufactured to allow an easy installation onto a bench top, it grants a fast and effective treatment of dental instruments and utensils excluding the professional risk due to handling infected instruments.

The DS 50 HDRS model is dedicated to stand alone installation and can be easily integrated into existing furniture. All the models provide a practical and safe solution for chemical storage.

DS 50 HDRS

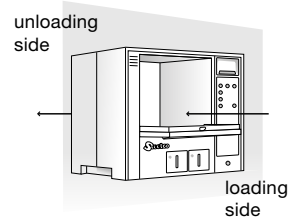


DS 50 DRS



DS 50/2 DRS

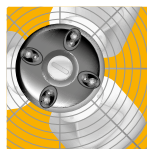
The DS 50/2 DRS double door model is suitable for barrier installations reducing cross contamination by separating dirty and clean areas.



Washing chamber

Chamber volume ~60 lt / 15.85 Gal US
Basket volume ~50 lt / 13.20 Gal US

Forced hot air drying



The filtered forced air drying system with adjustable time and temperature settings, helps to ensure a complete drying of all instruments and tubes both inside and outside.

Standard compliant

Steelco DS 50 DRS range washer disinfectors are designed to comply with the European EN ISO 15883 and UK HTM 01-05 guidelines on decontamination and are classified CE medical device (Community Rule 93/42/EEC).

Chemical storage

On DS 50 DRS and DS 50/2 DRS models, chemical tanks are integrated in the front panel and provided with quantity inspection window.

On DS 50 HDRS model, the large storage on bottom basement allows to allocate up to two 5 lt (1.32 Gal US) chemical containers.



DS 50 DRS range - Key features

- High safety and easy to use soft touch control system on glass panel with LCD colour display to visualize cycle status.
- 20 standard pre-programmed cycles available and 20 additional cycles available for customization.
- USB port for historical cycle data download and software upgrades.
- RS 232 port for printer connection to monitor and validate washing phases.
- High visibility full glass door.
- Filtered forced air drying system with adjustable time and temperature settings, helps to ensure the complete inside and outside drying of all the dental instruments and tubes.
- The built-in water softener, optional, provides optimal cleaning effectiveness
- Washing and Disinfection temperatures are fully adjustable up to 93°C. Temperature is monitored by two independent sensors.
- Standard steam condenser eliminates vapours from entering the washing area.
- Heavy washing pump ensures high flow rate combined with effective spray pressure. Triple water filtering system captures residue preventing re-circulation and extending the pump life.
- Inner cabinet, washing arms and tank filters made of high quality AISI 316L stainless steel.
- A built-in automatic liquid dispenser is standard. A second automatic liquid dispenser normally used for rinse aid chemical is available as option.
- Liquid chemical levels are controlled by a pressure switch.

DS 50 HDRS model

- Ergonomic design of the door level height allows to the user a convenient loading/unloading job.
- Storage on bottom basement to allocate up to two 5 lt (1.32 Gal US) chemical containers.

Optional

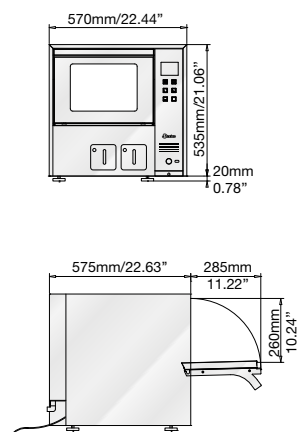
- DI water connection
- 2nd Chemical dosing pump (with integrated liquid container on front panel for DS 50 DRS and DS 50/2 DRS models)
- HEPA H14 air filter
- External printer ST1
- Water softener
- Ethernet connection

Dimensions and connections

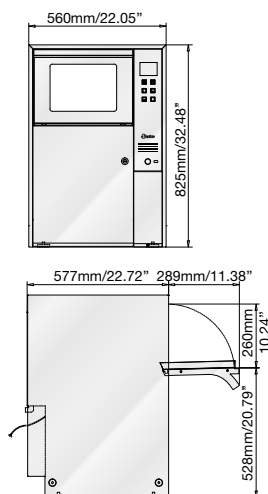
Standard electrical connection (International)	230V/~50Hz
Optional electrical connection (North America)*	220V/~60Hz
Power	2750 W
Pump power	150 W
Noise	52 dB(A)
Permitted room temperature	+5°C/41°F - +40°C/104°F
Dryer blower	up to 100 m³/h - 3531 ft³/h
Dryer heating	750 W

*other electrical connections also available as optional

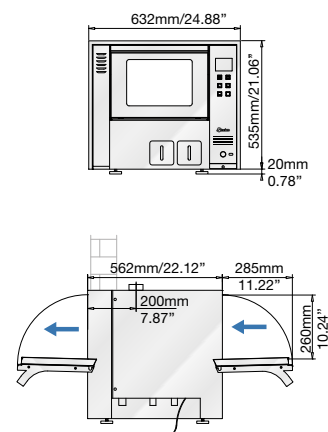
DS 50 DRS



DS 50 HDRS



DS 50/2 DRS



Integrated USB port

A USB port integrated on the front panel is a standard feature on this model allowing the operator easy historical cycle data transfer from the machine to PC.

Ethernet connection is available as option.



A complete range of wash baskets is available for dental instruments and accessories.





DS 50 - Tabletop washer disinfectant

Steelco DS 50 is an efficient aid for the cleaning and thermal disinfection of all types of dental instruments.

Designed for easy installation onto a bench top it allows the operator easy loading of the material and the selection of the cycle.

Everything else - pre-wash, wash, thermal disinfection - is executed automatically by the machine.



A complete accessories range: baskets, inserts, trays



Washing chamber

Chamber volume ~60 lt / 15.85 Gal US

Basket volume ~50 lt / 13.20 Gal US

Steelco DS 50 washer disinfectant is designed to comply with the European EN ISO 15883 and UK HTM 01-05 guidelines on decontamination and are classified CE medical device (Community Rule 93/42/EEC).



Integrated automatic liquid dispenser

The machine is configured with a built-in automatic liquid dispenser for detergent.

A second automatic liquid dispenser, normally used for rinse aid chemical, is available as option. Liquid chemical levels are controlled by a pressure switch.

DS 50 - Key features

- Steelcotronic control system with LED display, 3 pre-setted washing programs for dental instruments.
- RS 232 port for printer connection to monitor and validate washing phases.
- The built-in water softener, optional, provides optimal cleaning effectiveness
- Washing and Disinfection temperatures are fully adjustable up to 93°C. Temperature is monitored by two independent sensors.
- Standard steam condenser eliminates vapours from entering the washing area.
- Heavy washing pump ensures high flow rate combined with effective spray pressure.
- Inner cabinet, washing arms and tank filters made of high quality AISI 316L stainless steel.
- Triple water filtering system captures residue preventing re-circulation and extending the pump life.
- A built-in automatic liquid dispenser is standard. One more built-in dispenser is available as option.

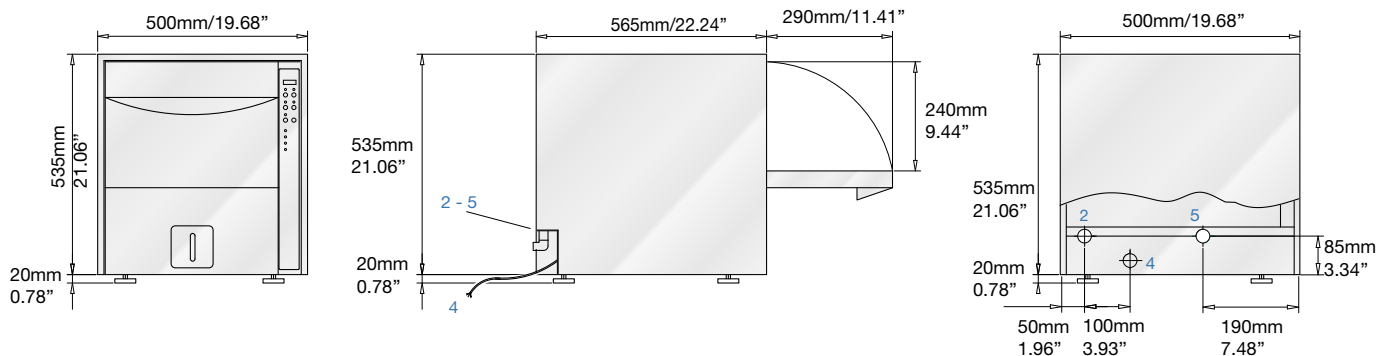
Dimensions and connections

Standard electrical connection (International)	230V/~ /50Hz
Optional electrical connection (North America)*	220V/~ /60Hz
Power	2750 W
Pump power	150 W
Noise	52 dB(A)
Permitted room temperature	+5°C/41°F - +40°C/104°F

*other electrical connections also available as optional

Optional

- DI water connection
- External printer ST1
- Water softener
- 2nd Chemical dosing pump



W 100 - Reverse osmosis water purification system

The W100 is a very compact reverse osmosis device which is perfect to be combined with our small medium range washer disinfectors. The system uses drinking tap water and, with its filtration system, pressure pump and osmosis membrane, it feeds a 35lt. (9.25 Gal US) gal tank with osmotic water. Osmotic water tank is equipped with a level control system and automatically refilled.

Dimensions:

WxDxH 200+200 x 600 x 615mm (7.87"+7.87" x 23.62" x 24.21")

Osmotic water flow: 100 lt/h (26.41 Gal US/h) at 20°C (68°F) with 500 ppm salinity NaCl ca. (lower temperature and higher salinity cause a reduction of the osmotic water production)



DS 500 CL

Underbench / free-standing washer disinfector
with forced hot air drying

Specifically designed for installations with limited space, this model is suitable for the treatment of a large quantity of all types of dental instruments.

The high capacity chamber the **washing and hot air drying on two independent levels**, which are normally seen on larger machines, allow this device to be used following on everyday needs.

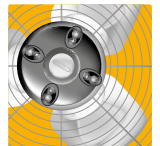
The powerful cleaning and disinfecting system guarantees short programs duration that reach high level performances in terms of cleaning quality, thermosinfection and drying.



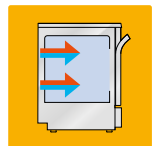
Washing chamber

Chamber volume ~171 lt / 45.17 Gal US
Basket volume ~151 lt / 39.89 Gal US

The filtered forced air drying system with adjustable time and temperature settings, helps to ensure a complete drying of all dental instruments and tubes both inside and outside.



Washing injection system and hot air drying on two levels.



DS 500 can be integrated into existing furniture of treatment rooms, and also with functional side cabinets or ergonomic stands.



Stainless steel door version **DS 500 CL**

Control panel

- LCD display, 40 programs for dental instruments: 20 pre-programmed cycles, 20 customizable cycles.

Connections

- RS 232 port for printer or PC connection.
- USB port on front panel for cycle data storage and the program updating.



Full glass door version **DS 500 CL soft touch**

Control panel

- Full glass, soft touch control panel, LCD display, 40 programs for dental instruments: 20 pre-programmed cycles, 20 customizable cycles.

Connections

- RS 232 port for printer or PC connection.
- USB port on front panel for cycle data storage and the program updating.

DS 500 CL - Key features

- Heavy washing pump to ensure high water flow rate combined with effective spray pressure.
- Filtered forced air drying system with adjustable time and temperature setting, helps to ensure a complete drying, inside and outside, of all the surgical instruments and tubes.
- Washing and DI disinfection temperature are fully adjustable up to 93°C. Temperature is monitored by two independent sensors.
- Standard steam condenser prevents vapours from entering into the washing area.
- Inner cabinet, washing arms and tank filters made of high quality AISI 316 L stainless steel.
- Two automatic liquid dispensers.
- Triple water filtering system captures residue, preventing re-circulation and extending the pump life.

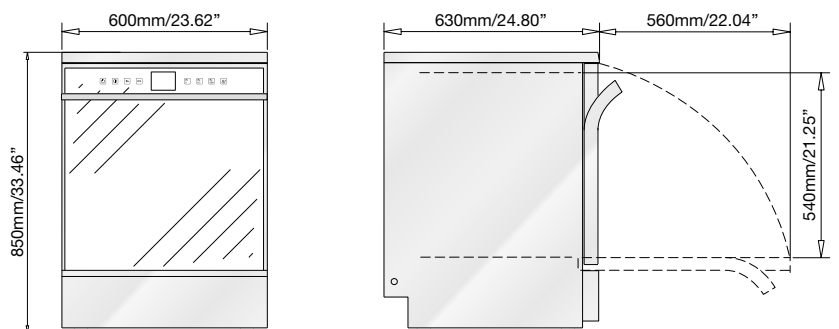
Optional

- **Full glass door version**
- 3rd Chemical dosing pump
- Extra power 8 KW to reduce cycle time
- HEPA H14 air filter
- External printer ST1
- Ethernet connection
- Boiler to pre-heat DI water (stand required)
- Built in water softener
- Light inside chamber

Dimensions and connections

Standard electrical connection (International)	400V/3~+N/50Hz
Optional electrical connection (North America)*	208V/3~+N/60Hz - 220V/~ /60Hz
Power	5600 W
Pump power	550 W
Noise	54 dB(A)
Permitted room temperature	+5°C/41°F - +40°C/104°F
Dryer blower	up to 150 m³/h - 5298 ft³/h
Dryer heating	1400 W

*other electrical connections also available as optional



90
cm
35.43"



Stands and side cabinets

Different models of 300mm/11.81" wide side cabinets allow to hold:

- Boiler for DI water pre-heating (cabinet and washer disinfectors are manufactured as a single 900 mm wide unit).
- Purification system for DI water supply.
- Up to four 5 lt. 1.32 Gal US chemical containers.

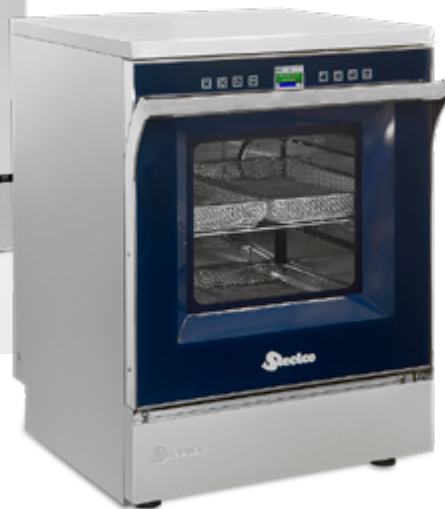
Stands improve ergonomics when machine is not installed under counter. The 600mm/23.62" height stands are equipped with doors for easy storage access to chemicals and accessories.



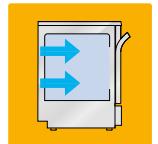
DS 500 SC - Underbench washer disinfector

Specially designed for installations with limited space, this model works with **washing injection system on two levels.**

This new generation of compact washer disinfectors share the same technology of our high capacity CSSD equipment for significative improvements in terms of cleaning quality and thermodisinfection performances.



Washing injection system on two levels.



DS 500 can be integrated into existing furniture of treatment rooms, and also with functional side cabinets or ergonomic stands.



Washing chamber

Chamber volume ~171 lt / 45.17 Gal US
Basket volume ~151 lt / 39.89 Gal US



Stainless steel door version **DS 500 SC**

Control panel

- LED display, 10 programs for dental instruments: 5 pre-programmed cycles, 5 customizable cycles.

Connections

- RS 232 port dedicated for printer or PC connection to monitor and validate the washing cycles and/or the data storage.



Stainless steel door version **DS 500 SCL**

Control panel

- LCD display, 40 programs for dental instruments: 20 pre-programmed cycles, 20 customizable cycles.

Connections

- RS 232 port for printer or PC connection.
- USB port on front panel for cycle data storage and the program updating.



Full glass door version **DS 500 SCL soft touch**

Control panel

- Full glass, soft touch control panel, LCD display, 40 programs for dental instruments: 20 pre-programmed cycles, 20 customizable cycles.

Connections

- RS 232 port for printer or PC connection.
- USB port on front panel for cycle data storage and the program updating.

DS 500 SC - Key features

- Heavy washing pump to ensure high flow rate combined with effective spray pressure.
- Washing and DI disinfection temperature are fully adjustable up to 93°C. Temperature is monitored by two independent sensors.
- Standard steam condenser prevents vapours from entering into the washing area.
- Inner cabinet, washing arms and tank filters made of high quality AISI 316 L stainless steel.
- Two automatic liquid dispensers.
- Triple water filtering system captures residue, preventing re-circulation and extending the pump life.

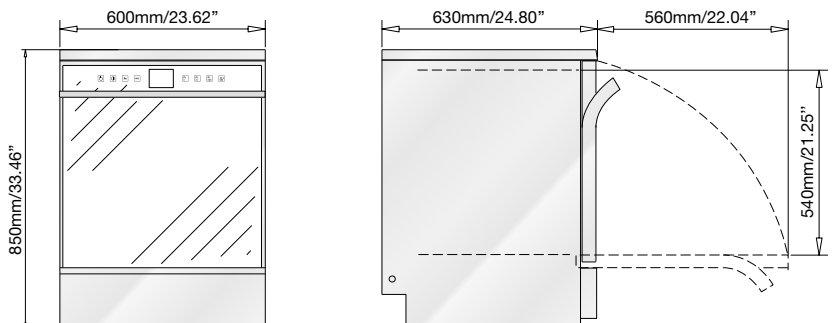
Optional

- **Full glass door version DS 500 SCL soft touch**
- 3rd Chemical dosing pump
- Extra power 8 KW to reduce cycle time
- External printer ST1
- Ethernet connection (full glass door version only)
- Light inside chamber
- Boiler to pre-heat DI water (stand required)
- Built in water softener

Dimensions and connections

	DS 500 SC	DS 500 SCL - DS 500 SCL s.t.
Standard electrical connection (International)	230V/~ /50Hz	400V/3~+N/50Hz
Optional electrical connection (North America)*	208V/3~+N/60Hz - 220V/~ /60Hz	208V/3~+N/60Hz - 220V/~ /60Hz
Power	3050 W	3050 W
Pump power	550 W	550 W
Noise	52 dB(A)	52 dB(A)
Permitted room temperature	+5°C/41°F - +40°C/104°F	+5°C/41°F - +40°C/104°F

* other electrical connections also available as optional



how to combine optionals choosing the right configuration

	stand		cabinet left or right sided		900mm machine right side only cabinet			stand + 900mm machine right side only cabinet	
	comb. 1	comb. 2	comb. 3	comb. 4	comb. 5	comb. 6	comb. 7	comb. 8	comb. 9
• = allowed function									
pre-heating boiler	•	-	-	-	•	-	-	• ^A	• ^B
chemical storage	•	•	•	-	-	•	-	• ^B	• ^B
purification system	-	-	-	•	-	-	•	-	• ^A
4 th dosing pump	-	-	-	-	-	•	-	-	• ^B
integrated printer	-	-	-	-	•	•	•	• ^A	• ^A



DS 600 C - Dental washer disinfectator



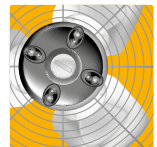
The DS 600 C thermodisinfectator is designed to satisfy the high productivity needs of large dental practices and dental clinics.



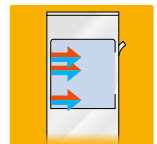
Washing chamber

Chamber volume **200 lt / 58.12 Gal US**
Basket volume **170 lt / 44.90 Gal US**

The filtered forced air drying system with adjustable time and temperature settings, helps to ensure a complete drying of all dental instruments and tubes both inside and outside.



Washing injection system and hot air drying on two levels. The washing cart of the upper level can be placed at two different heights increasing the loading flexibility of the washer.



Sliding drawer

Inside the sliding drawer a protected space can store up to three 5 lt. containers for chemicals.



USB port

Inside the drawer a protected USB port is available as optional to download hystorical cycle data and for software upgrades.



DS 600 C - Key features

- RS 232 port is provided with printer connection for monitoring and validating washing phases.
- Ergonomic design of the door level height allows to the user a convenient loading/unloading job with the support of a manual loading/unloading trolley.
- Door provided with glass window.
- Telescopic bearing rails enable easy and safe loading/unloading of instruments.
- Filtered forced air drying system with adjustable time and temperature setting, helps to ensure the complete inside and outside drying of all the instruments and tubes.
- LCD touch control system with colour panel to visualize cycle status. 20 standard programs and 20 additional custom programs are available.
- The optional built-in water softener provides optimal cleaning effectiveness.
- Washing and DI disinfection temperature are fully adjustable up to 93°C. Temperature is monitored by two independent sensors.
- Standard steam condenser eliminates vapors from entering into the practice.
- Heavy washing pump ensures high flow rate combined with effective spray pressure.
- Washing/drying injection system on three levels.
- Inner cabinet, washing arms and tank filters made of high quality AISI 316 L stainless steel.
- Triple water filtering system captures residue preventing re-circulation and extending the pump life.
- Two standard automatic liquid dispensers provided with level control. Two more dispensers are available.
- Possibility to store up to three 5 lt. containers into the basement.
- Steelco DS 600 C accepts a variety of interchangeable standard and injection baskets.

Optional

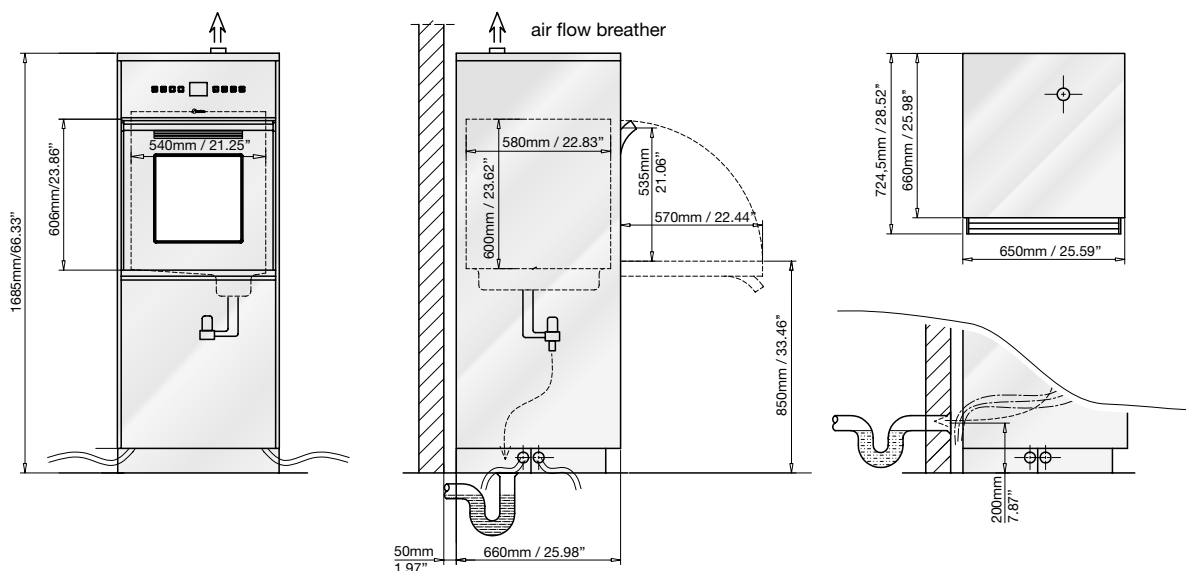
- 3rd and 4th Chemical dosing pump
- HEPA H14 air filter
- Water softner
- Integrated printer ST2
- Light inside chamber
- Sump steam heating
- Additional chemical dosing monitoring
- Ethernet connection
- Analogic sensor on washing circuit for pressure check (registered data)
- Conductivity sensor
- Boiler to pre-heat DI water (4,5 Kw power)

Dimensions and connections

Standard electrical connection (International)	400V/3~+N/50Hz
Optional electrical connection (North America)*	208V/3~+N/60Hz or 480V/3~+N/60Hz
Power**	8250 W
Pump power	750 W
Noise	56 dB(A)
Permitted room temperature	+5°C / +40°C
Dryer blower	up to 150 m³/h - 5298 ft³/h
Dryer heating	4000 W

*other electrical connections also available as optional

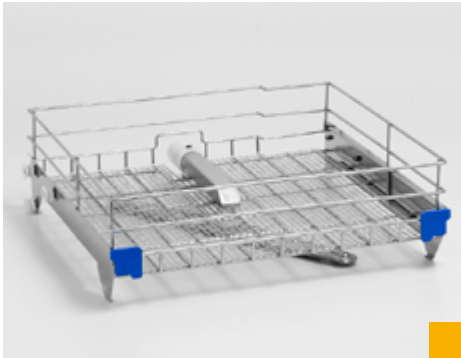
** with electrical heating elements - washing chamber steam heating configuration available as option





Accessories

DS 500 serie and DS 600 C **upper level** washing carts



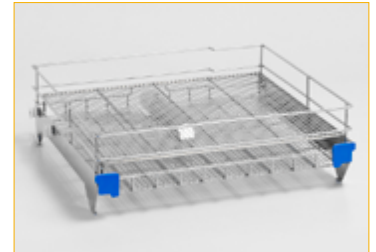
Washing cart provided with washing arm.

C721 for DS 500 SC and DS 500 CL

C728 for DS 600 C



C788 Accessory mesh tray to level out upper level washing carts C721 and C728. Allows the placement of DIN net baskets.



DS 500 serie and DS 600 C **lower level** washing carts



Basic washing cart.

C52L for DS 500 SC and DS 500 CL

C736 for DS 600 C



Washing cart provided with 10 hand pieces holders and 6 injection nozzles for hollow pipes.

C707 for DS 500 SC and DS 500 CL

C755 for DS 600 C





Washing cart provided with washing arm, 10 hand pieces holders and 6 injection nozzles for hollow pipes.

C705 for DS 500 SC and DS 500 CL

C748 for DS 600 C



Washing cart provided with washing arm and 16 hand pieces holders for hollow pipes.

C704 for DS 500 SC and DS 500 CL

C747 for DS 600 C



Washing cart provided with 16 hand pieces holders for hollow pipes.

C706 for DS 500 SC and DS 500 CL

C749 for DS 600 C



😊 Smart accessories:

Turbine/hand pieces and contra-angles holders are provided with stainless steel filters as an additional safety measure against particle recirculation and two sizes of silicon adapters suitable for \varnothing 14-17mm (0,55"-0,67") and for \varnothing 19-21mm (0,75"-0,83") instruments.

Hand pieces holder caps are available as accessories for closing the unused instrument holders enhancing washing performances.





Accessories - DS 50 and DS 50 DRS series washing baskets

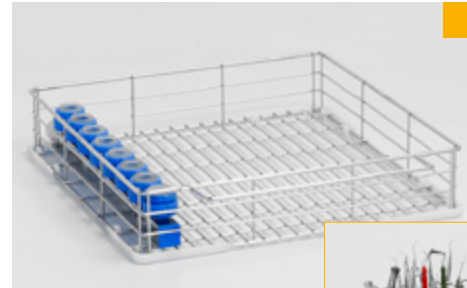


Loading space:
370x395mm
(14.57"x15.55")

Basic washing basket.

C05 for DS 50

C06 for DS 50 DRS and DS 50 HDRS models



Loading space:
320x395mm
(12.60"x15.55")

Washing basket provided with 8 hand pieces holders.

C640 for DS 50

C85 for DS 50 DRS and DS 50 HDRS models



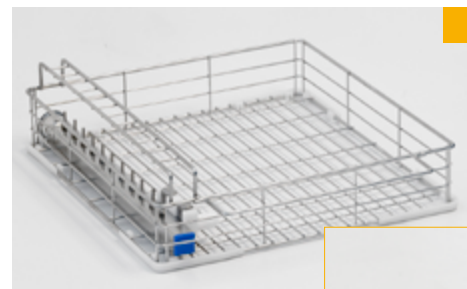
Loading space:
320x395mm
(12.60"x15.55")

Washing basket provided with 6 hand pieces holders and 6 injection nozzles for hollow pipes.

C1012 for DS 50 DRS and HDRS models



Loading space:
320x395mm
(12.60"x15.55")



Washing basket provided with 11 injection nozzles for hollow pipes and 2 connections for suction hoses.

C13 for DS 50

C835 for DS 50 DRS and DS 50 HDRS models



Washing basket provided with 4 hand pieces holders, 5 injection nozzles for hollow pipes and 2 connections for suction hoses.

C80 for DS 50

C84 for DS 50 DRS and HDRS models

C12 Insert for suction hoses.



C681 DS 50/2 DRS washing cart with 8 hand pieces holders.

C691 DS 50/2 DRS standard washing cart (without injection connection).



Loading space:
C681 320x395mm
(12.60"x15.55")

C691 365x395mm
(14.37"x15.55")



Accessories - for all washers



Vertical basket for mirrors and instruments.

C03 mm 395x125x120h
15.55"x4.92"x4.72"h



8 positions tray basket
(step 40 mm./1.57'')

C04 mm 390x180x110h
15.35"x7.08"x4.33"h



Net basket for small items.

C28 mm 100x100x40h
3.93"x3.93"x1.57"h



Net basket for rigid instruments.

C40 mm 485x250x50h
19.09"x9.84"x1.96"h



Net basket DIN 1/1.

C62 mm 485x250x50h
19.09"x9.84"x1.96"h



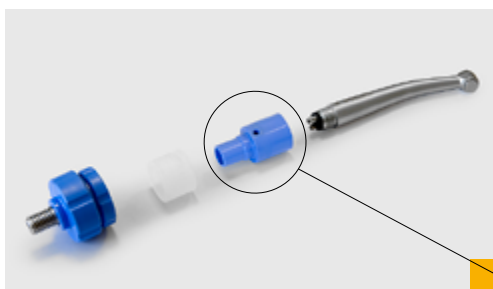
2 positions insert for instruments cassette
(step mm 50/1.96'')

C90 mm 385x250x180h
15.15"x9.84"x7.08"h



4 positions insert for large instruments cassettes (step 50 mm./1.96'').

C862 mm 450x260x210h
17.71"x10.23"x8.26"h



Hand pieces supports

C080010 ring

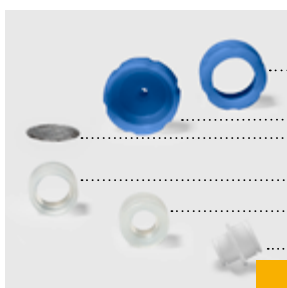
C080009 main body

C080006 stainless steel filter

C080005 silicone seal/adaptor suitable for \varnothing 19-21 mm / 0,75"-0,83" instruments

C080001 silicone seal/adaptor suitable for \varnothing 14-17 mm / 0,55"-0,67" instruments

C080014 injector cap \varnothing mm 15/0.59" and mm 20/0.87"

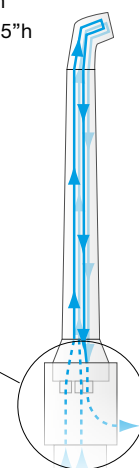


Hand pieces adaptor

C080015

specify brand/model

Adaptors are available for all hand pieces brands. They allow to have the perfect inside channels cleaning through water circulation.





Miele Group Member

ARES - flexible endoscope automated reprocessing system



Dental washer disinfectors

Flusher disinfectors

Steam sterilizing autoclaves



Washer disinfectors for central of sterilization departments

Laboratory glassware washer disinfectors



Washing and sterilizing systems for life science and pharmaceutical applications

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Miele Group
Member

**Instructions manual
Operating manual**

WASHER DISINFECTOR

**LAB 500 CL
LAB 500 CDL
LAB 500 SCL
LAB 500 SCDL**

Serial N°:





Miele Group Member



**Via Balegante, 27
31039 Riese Pio X (TV)
ITALY**

Manufacturer:

STEELCO S.p.A.
Via Balegante, 27
31039 Riese Pio X (TV)
ITALY

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Thank you for purchasing this appliance.

The installation, maintenance and operating instructions given in the following pages have been prepared to ensure the long life and good performance of the appliance.

Following the instructions carefully.

The appliance was designed and constructed using the latest technological innovations available.
Please take good care of it.

Your satisfaction is our best reward.

WARNING	NON OBSERVANCE, EVEN IN PART, OF THE RULES INDICATED IN THIS MANUAL WILL CAUSE THE PRODUCT GUARANTEE TO BECOME INVALID AND RELIEVES THE MANUFACTURER OF ANY RESPONSIBILITY.
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1. GENERAL RULES

1.1 Limits of manufacturer's liability

The manufacturer shall not be held liable for failures or problems which arise due to tampering and/or incorrect applications and/or improper use of the machine.

The purchaser must comply with all instructions set forth in the user's manual, and he must in particular:

- Always work within the allowable limits for the use of the machine;
- Always carry out constant and diligent maintenance;
- Allow use of the machine by persons with proper skills and abilities for their role and purpose who have been properly trained and instructed;
- Use only manufacturer original spare parts.

Any modifications, adaptation or the like which may be made to machines which are subsequently placed on the market do not oblige the manufacturer to intervene on previously supplied machines, nor to consider the machine and the related user's manual lacking and inadequate.

The installation, maintenance and operating instructions given in the following pages have been prepared to ensure the long life and outstanding performance of the appliance.

For some especially demanding programming or maintenance operations, this manual serves as a memorandum of the main operations to be carried out.

Education on these topics can be obtained by attending training course held by the manufacturer

The instructions in this manual do not replace but rather are in addition to employer requirements to adhere to current legislation on standards of prevention and safety.

The machine is guaranteed for 15 months as from the time of shipment.

1.2 Manual validity, contents and conservation

- This manual reflects the state of the art at the moment of manufacture and delivery of the appliance and is valid for its entire life cycle.
- The manufacturer is at clients' disposal for further information or to receive suggestions for making the manual more compliant with the needs for which it was prepared.
- The translation of the contents into the client's language has been carefully prepared.
- In order to prevent possible accidents to persons or property due to incorrect translation of the instructions, the client must:
 - Not perform operations or manoeuvres with the machine if there are any doubts or uncertainties about the operation to be performed;
 - Ask technical service for clarification of the instruction.
- If lost, ask for a new copy from the manufacturer.

It is important to keep this instruction manual with the machine for future reference.

If the machine is sold or transferred, the manual must be handed over to the new owners or user in order for them to become acquainted with its functioning and the relative warnings.

Read the warnings carefully before installing and using the machine.

This is a translation of the Italian text, which prevails in case of doubts.

1.3 Regulations

The purpose of the warnings is to safeguard the user in compliance with following Regulations and “Technical Product Standards”:

EUROPE:

- [2006/42/EC and s.m.i. \(Machinery Directive\)](#);
- 2014/35/EU (Low Voltage Directive);
- 2014/30/EU (Electromagnetic compatibility directive);
- EN 61010-1 (Safety);
- EN 61010-2-040 (Safety);

and recognized international standards:

- IEC 61000 (Electromagnetic compatibility);
- ISO 12100 (Risk analysis);
- IEC 61326-1 (Electromagnetic compatibility);
- ISO 15883-1 (Cleaning efficacy);
- ISO 15883-2 (Cleaning efficacy);
- ISO/TS 15883-5 (Cleaning efficacy);
- IEC 60529 (IP Grade).

2. SAFETY INFORMATION



Compliance with safety standards allow the operator to work productively and calmly, without the danger of harming himself or others.

Before starting work, the worker must be completely familiar with the functions and proper operation of the machine. He must know the precise function of all command and control devices of the machine.

2.1 Intended use, improper use


INTENDED USE:

Use is permitted of this machine only and exclusively for the washing and thermal disinfection of laboratory instruments and objects normally used in laboratories, like:

- Glass works
- Laboratory instruments

IMPROPER USE:

The improper use of this device is any use other than that for which the machine is intended.

	WARNING
	Any use other than the one intended is forbidden.
	Improper use of this unit may be hazardous to the operator and may seriously damage the machine itself.
	If the appliance is used in a manner not specified by the manufacturer, protection of the appliance may be compromised.

2.2 Important warnings and suggestions

For proper use of the machine, and in order to safeguard employed staff, carefully comply with the following general and specific standards.

THE OPERATOR MUST:

- **Carefully adhere to the provisions and instructions** provided by the employer, managers and supervisors for individual and group safety.
- **Use safety devices appropriately and with care**, as well as group and individual safety gear provided by the employer.
- **Immediately inform the employer**, the manager and the supervisor of deficiencies in the aforementioned devices and means, as well as any hazardous conditions which he may become aware of, taking action directly in urgent cases within their scope of responsibilities and abilities to eliminate or reduce the deficiencies or hazards.

THE OPERATOR MUST NEVER:

- **Remove or modify, without authorization, the safety devices**, nor those for signalling and measuring, nor the individual and group safety gear.
- **Undertake on his own initiative operations or manoeuvres which are not his responsibility** which may compromise safety.
- **Insert foreign objects into the electrical parts.**
Do not insert foreign bodies into the covers of the electrical motors or into the moving parts of the machine.
- **Provide power to the machine by tampering with the main switch and the safety devices.**

2.3 Safety recommendations

- If the new machine appears to be damaged, contact the retailer before starting it.
- Any modification of electrical and hydraulic systems necessary to install the machine must be carried out by qualified, authorised persons only.
- This machine must be operated by trained persons only;
- The machine must be used for treatment and thermo disinfection of instruments for laboratory use and for laboratory glasses.
- Any use other than that for which the machine was intended is forbidden.
- The user is forbidden to carry out any work or repairs on the machine
- Technical Assistance for this washer disinfecter should be carried out by qualified and authorised operators only.
- The equipment should be installed by authorised persons only.
- Do not install the equipment in rooms where there is the risk of explosion. (ATEX)
- Do not expose the equipment to intense cold.
- The electrical safety of this washer disinfecter is only guaranteed if it is connected to an efficient earth system.
- Pay maximum attention when handling detergent products and additives. Avoid direct contact by wearing gloves and protections for your eyes. For information concerning chemical products and their correct use and storage, please refer to the technical file of the product, provided by the manufacturer.
- Do not inhale the fumes produced by chemical products.
- Take great care when handling detergents and additives: avoid contact, wear gloves and act in compliance with the safety recommendations indicated by the manufacturer of the chemical products.
- In order to prevent solvent from being accidentally ingested, eating and drinking is not allowed in the work area.
- This machine is not suitable for use with chemical products which give off harmful vapours or gas at room temperature.
- Information relating to the conformity reports of specific products used with the equipment can be requested to the manufacturer.

WARNING:

The chemical products are an irritant for the eyes, in case of contact rinse thoroughly with plenty of water and consult a doctor.

If these products come into contact with the skin, rinse with plenty of water.

- The water in the tank is not drinking water.
- Do not lean on the door and do not use it as a step.
- The machine reaches a temperature of 93°C during the work cycle: take great care to avoid burns.
- Do not wash the machine using high-pressure jets of water.
- Disconnect the machine from the electrical supply before carrying out maintenance work.
- The acoustic pressure of the machine is below 70 dB(A).
- The operator always has to verify before starting of the cycle the presence of the filters water in the sump and their correct positioning.



2.4 Recommendations to ensure high quality performance

- The user must oversee the machine during the cycle.
- The injection tube for washing water must always be connected with the appropriated basket.
- When the machine is running do not interrupt the cycle since this jeopardises disinfection.
- Check periodically using chemical indicators to ensure correct disinfection.
- Use recommended detergents and chemical additives only.
- The use of other products may damage the machine.
- During the manipulation of treated objects, it is required the use of appropriated PPE to prevent contact with infected material and the risk of contamination.
- Recommending chemical additives does not make the manufacturer responsible for any damage to the materials and objects treated.
- Check that type of chemical product is suitable for the specific washing program used.
- Follow the manufacturer's indications when using chemical products and use them for the foreseen use only.
- The machine was designed for use with water and chemical additives.
- Do not use organic or other types of solvent as this may result in the risk of explosion or the rapid deterioration of certain machine parts.
- Residues of solvents or acids, particularly "hydrochloric acid", can damage steel.
- Contact should be avoided.
- Use original accessories only.
- Do never use soap powder.
- Do never use foaming detergent.
- The machine is to be used only with the baskets and or accessories included by the manufacturer.
- Accessories which are not approved by the manufacturer may compromise the results achieved as well as user safety.
- Do never use chemical products based on chlorides (bleaches, sodium hypochlorite, hydrochloric acid and so on).
- These kinds of chemical detergents irreparably damage the machine and jeopardise the integrity of materials and objects treated.

The taps of the water feeding must be always turned off, as the safety and diagnosis system will be deactivated, in the following situations:

- if the machine is left unused;
- if the machine is disconnected from the electrical connection.

The manufacturer declines all responsibility for personal injury or material damage resulting from the non-observance of the above rules.

The non-observance of these rules produces the total and prompt cancellation of the guarantee.

2.4.1 Inlet water quality

The quality of the water used in all stages of cleaning is important for good results.

The water used in each stage must be compatible with:

- The material of which the washer disinfectant is made.
- The chemicals used in the process.
- Process requirements for the various stages of the process.

The main factors for good inlet water quality in relation to the washing efficacy are:

HARDNESS	The high hardness of the water generates a detergent inactivation, reducing its efficacy. It also causes limescale deposits in the machine, jeopardizing the clean of the instruments and the machine, especially on hot parts (ex. heating elements).
IONIC CONTAMINANTS	A high concentration of ionic contaminants may cause corrosion of steel, manganese or copper instruments.
MICROBIAL CONTAMINANTS	Microbial contaminants can increase the microbial contamination of the instruments at the end of the wash.

The manufacturer therefore recommends that:

- water used in the pre-rinsing and washing phases should be of drinkable quality in accordance with the "Guidelines for drinking water quality 3rd edition" published by WHO.
- demi water is used for the rinsing phase.

A typical specification for demi water is:

Ion concentration H+	4.5...7 pH
Conductivity	< 30 $\mu\text{s} \cdot \text{cm}^{-1}$
TDS	< 40 mg/l
Maximum hardness (CaCO₃)	< 10 mg/l
Chlorine	< 10 mg/l
Heavy metals	< 10 mg/l
Phosphates	< 0.2 mg/l come P ₂ O ₅
Silicates	< 0.2 mg/l come SiO ₂
Endotoxins	< 0.25 EU/ml
Colony-forming unit (CFU)	< 100 per 100 ml (*)

(*) for rinsing after disinfection phase, the maximum limit changes to 0.

Further advice should also be obtained from the manufacturers of chemical and medical equipment.

Where local standards are stricter than provided recommendations, they should be followed.

Note: that it is the user's responsibility to supply the machine with suitable water.

2.5 Residual risks


The appliance includes a series of fixed guards to prevent access to hazardous internal parts or zones.

It is however considered that the **WASHER DISINFECTOR** includes some residual risks.

Hereunder for each phase or significant work intervention are useful measures to be taken:

PHASE	TROLLEY LOADING
RISK	Contusions and cuts to the upper limbs , due to accidental contact with due to falling or striking against tools, objects and instruments, mainly while loading and handling the basket.
MEASURE	Assign staff that is instructed and equipped with work equipment (e.g. trolley with protections, transport carts) and appropriate clothing and individual protection gear (e.g. shirts and protective gloves).

PHASE	OBTAINING DETERGENTS/CHEMICAL ADDITIVES
RISK	Contact with body parts with chemical washing products.
MEASURE	Assign staff that is instructed and equipped with appropriate clothing and individual protection gear. Wear clothing, gloves and goggles and act in compliance with the safety recommendations indicated by the manufacturer of the chemical products.
FIRST AID MEASURE	<ul style="list-style-type: none"> Immediately take off/remove clothing which has been contaminated or soaked by the product. If the substances come into contact with the skin, wash off affected skin areas immediately and rinse with water.
RISK	Inhalation of vapours of chemical wash products.
MEASURE	Assign staff that is instructed and equipped with appropriate clothing and individual protection gear. Comply with the safety instructions provided by the manufacturer of the chemical products and if there are none, wear a mask for the protection of the respiratory airways.

RISK	Accidental release of chemical wash product.
MEASURE	Do not flush concentrate into drains, surface or ground waters. Collect spillage with adsorbent material (e.g. sand, earth, vermiculite, diatomaceous earth). Flush away minor amounts with plenty of water.
	IN CASE OF CONTACT WITH BODY OR RELEASE OF CHEMICAL PRODUCT LOOK ALWAYS AT THE SAFETY MEASURES INDICATED IN THE CHEMICAL TECHNICAL DATASHEET.

PHASE	MAINTENANCE OF INTERNAL EQUIPMENT
RISK	Burns of body parts by hot parts of the appliance.
MEASURE	Allow maintenance to be performed only by trained personnel, equipped with appropriate clothing and individual protection gear. Wear suitable clothing and protective gloves.

PHASE	EMISSION OF HAZARDOUS GAS
RISK	Inhalation of vapours of hazardous gas.
MEASURE	With a correct installation, concurring with the manufacturer prescription, using the authorized chemical product and concurring with the rules in force in your country, the machine don't generate hazardous gas. However the machine is supplied with vapours discharge, that have to be connected concurring with the instruction in chapter 3.

2.6 Safety signal used

To inform personnel operating on the machines of obligations of behaviour and residual risks, adequate safety signals (as set forth by 92/58 EEC) are applied to the machine and near the work place.

GENERIC SAFETY SIGNALS:

In particular, labels with signals of obligation, prohibition and danger contained in this manual and pertinent to this machine and most commonly used are:



Electrical risk



Warning!
See annex documentation



CAUTION
HOT SURFACE
Caution hot surface

INDIVIDUAL SAFETY WEAR:

The evaluation of risks for the health and safety of workers carried out in the workplace and on any equipment used, as well as the evaluation of residual risks as indicated, allow the employer to evaluate the need to adopt the individual protection gear which is most suitable and appropriate to be provided to workers.

Considering the type of machine, it is felt that the individual protection gear should be provided to staff.

2.7 Training

Instructions for use of the machine will be provided by the STEELCO INSTALLATION TECHNICIAN during the start-up phase to MACHINE OPERATORS and MAINTENANCE TECHNICIANS for their areas of responsibility, who will be thus instructed and trained.

It will be the duty of the EMPLOYER to check that the degree of staff training is suitable for assigned duties.

2.7.1 Staff qualification

Depending on the difficulty of certain installation operations, and of the operation and maintenance of the system, professional profiles are identified as follows:

IS *INSTALLATION and REPAIR TECHNICIAN:*

Specialized installation and maintenance staff capable of carrying out all machine positioning and installation operations, connection of various systems and machine start-up at the client's place of business, as well as all routine and special maintenance operations.

This operator is responsible for training staff for machine operation and for testing the machine.

AS *RESPONSIBLE AUTHORITY FOR THE MACHINE IN THE WORKPLACE:*

Specialized staff assigned to the verification of safety devices and procedures for proper use of the machine in complete absence or hazards.

The *responsible authority* is personally responsible for training courses for staff assigned to machine operation and maintenance.

He must ensure that staff assigned to operation have acquired all information required for use and routine maintenance of the machine, registering attendance and documenting comprehension tests.

The *responsible authority* must have a perfect understanding of all command, control and safety devices of the machine.

He must inform all personnel assigned to machine operation and maintenance of the instructions concerning *safety standards*, the *actions to be avoided* and the *first aid interventions* connected with use of the machine and the chemical wash agents it contains.

The *responsible authority* must be aware of all correct procedures for carrying out in absolute absence of danger all operation and maintenance of the machine, as well as all procedures for disposal of any residual pollutants and manufacturing wastes.

He must always be present during extraordinary or routine maintenance and give his *approval to proceed* to staff assigned to operation or to personnel assigned to routine or special maintenance.

The *responsible authority* will be responsible for operation of all command, control and safety devices in the machines of the system.

He shall carry out scheduled verification of those devices in order to ensure their continued operation over time.

AC *MACHINE OPERATOR:*

Skilled personnel assigned to machine operation.

The *machine operator* must be perfectly aware of all of the machine's command and control devices.

Only after approval by the *safety supervisor*, the *machine operator* must be capable of using the assigned commands to do the following:

- Commissioning and start-up of the machine;
- Loading and unloading of material to be washed in the baskets;
- Operation of the machine in the various possible working modes, such as the start of various programmed wash cycles.
- Programming and setting data from the operator panel, adjustment of single control devices during working phases, starting or resetting of work functions.
- In addition, the *machine operator* must, by making use of all required individual protection gear and following adequate safety measures, be capable of performing some routine maintenance such as cleaning inside the machine, cleaning clogged filters, and disposing of pollutant waste materials produced during working.

2.8 Indication of sound level

The value shown refers to the measurement obtained on a machine of the same type as that covered herein and measured with an instrument at a height of 1.5 m at a distance of 1 m from the machine.

AVERAGE SOUND PRESSURE LEVEL: < 70 dB (A)

2.9 Transport and storage

Environment conditions:

- Temperature range -5 ... +50 °C;
- Relative Humidity range 20...90% without condensation;
- Ventilation: Air exchange not required (required only if chemical tanks are installed).

3. INSTALLATION (FOR THE INSTALLER ONLY)

3.1 Activity prior to installation

PREPARATION OF INSTALLATION SITE:

Arrangements for connections to the electrical and plumbing systems must be provided by the client prior to machine installation.

Connections must be compliant with current directives in the country of installation and they must comply with the instructions contained in the documentation (provided on request) prior to machine installation.

Environment conditions:

- Temperature range +5...+40°C;
- Relative Humidity range 20...90% without condensation.
- Maximum altitude: 2.000 m ASL (for higher altitudes are available special versions of the device).

3.2 Positioning

EQUIPMENT REQUIRED FOR INSTALLATION

- A transpallet;
- Safety goggles;
- A hard hat;
- Safety shoes;
- Gloves;
- A complete case of instruments;
- A spirit level;

3.2.1 Movement, unpacking and placing

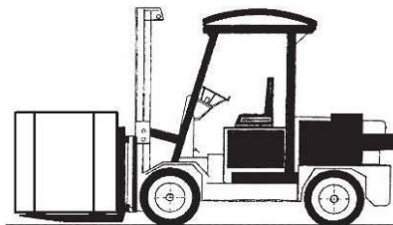
The machine is delivered to the client fully packed, resting on a wood base and completely protected by cardboard covering.

LIFTING AND MOVEMENT:

The handling and movement of the machine and its separate accessories must be carried out by trained personnel using appropriate lifting and transport equipment and this must comply with the following indications:

- Unload all the machine crates from the lorry and put all the parts together;
- Unload the small boxes (if present);
- Put all the machine parts together in a clean, safe and covered area in order to avoid damage.
- The lifting capability of the forklift must be greater than the total weight of the machine to be moved.
- The machine must be kept as close as possible to the ground during movement;
- Stack up: not allowed;
- Rotation: do not turn upside down.

The forklift operator must perform movement only when there are no persons or objects in the movement area.



UNPACKING AND PLACING:

Near the place of installation, unpack the machine.

Carefully follow these steps:

All the packaging materials can be recycled.


- Carefully remove the pallet from underneath the machine;
- Open the packaging carefully.
- Do not overturn the machine as this may cause irreparable damage.
- Cut the strap or open the box and remove the expanded polystyrene corner guards.

- Remove the cardboard box first and then the nylon bag taking care so as not to damage the components.

Caution: the bag represents a serious hazard for children and should be disposed of immediately.

- Place the machine on the work surface and level it by adjusting the feet.
- The machine must be placed horizontally with a maximum inclination of $1 \div 2^\circ$.
- Do not position the machine on surface which could cause a fire or fume hazard.

The installation of the machine must be carried out by authorised technicians by complying with the site plan provided by the client.

	ATTENTION
	In order to protect the health and safety of personnel, the operator must wear the PPE (Personal Protective Equipment) described in the directives currently in force in the country in which the machine is installed.
	Some operations must be carried out with the protection panels removed from the machine; pay attention so as to avoid accidents and to not allow unauthorised personnel to enter the installation area.
	Make sure that the floor of the washing area can bear the weight of the machine.

3.2.2 Maximum floor load

For the installation of the machine, the floor must be able to sustain a minimum load of:

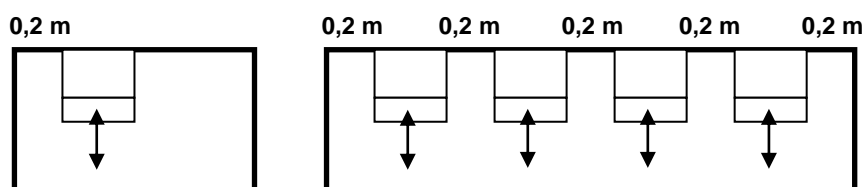
- 150 daN/m²

3.2.3 Positioning of the machine

In normal conditions, the minimum dimensions are suggested for the use of the machine in a single installation or with the coil nearby.

For different installation ask for the distributors.


Minimum room ceiling height: MACHINE HEIGHT (in m) + 0,3 m



3.3 Water connection (for the installer only)

To perform proper installation, account of following regulations:

- The machine has been connected to the water distribution network following the in force rules;
- Use only the tubes supplied with the machine;
- Don't cut short the rubber tubes supplied with the machine;
- Make sure that mains water pressure is between 100 kPa (1 bar g) and 800 kPa (8 bar g);
If it is below 100 kPa (1 bar g) dynamic pressure, you will need to install a pressure increase pump.
If the pressure is higher than 800 kPa (8 bar g) a pressure reducer must be installed.
- For machines equipped with steam condenser or water softener, the minimum pressure of water must be increased to 200 kPa (2 bar g) to ensure the correct functioning in terms of performance.
- If the average hardness of the water is higher than 7 °f, decalcified water must be used;
- For connection use cocks with an attachment of 3/4", located in an easily accessible location as near as possible to the machine;
- Make sure that the general feeding tube is sufficient for the flow rate required from the machine and equipped with a general closing valve.


	ATTENTION
	For the specifications for water connections, refer to the plant installation.

During the machine installation, the installer must take the following step:

1. Identify the tubes supplied with the machine and make sure they are free from damages;
2. Identify the correspondence of the connection of flexible tubes to the water supply taps arranged in site, according to the references of the following chart.


CONNECTION	COLOUR
HOT WATER	RED
COLD WATER	BLUE
DEMI WATER	WHITE

3. Screw and tighten up the pipe sleeve to the connection arranged in site.
4. Remove any debris in the pipes or in the taps. To perform this operation, open the tap and let the water flow in a pail.
5. Check the water temperature according to the specifications of the installation diagram.
6. Identify the correspondence of the connection of flexible tubes to the solenoid valve water supply of the machine.
7. Screw and tighten up the pipe sleeve to the connection arranged in site.
8. Open gradually the water supply taps and check the connections seal.
9. Terminated the connection, in case of water leaks repeat the procedure.

	ATTENTION
	The threaded connections can be easily damaged, therefore before to apply the maximum clamping, screw manually the locking sleeve for some threads.

Information:

- The back syphonage prevention system is already installed inside the machine concurring with IEC61770;
- If it isn't available the double connection to hot and cold water, the two supply pipes must be connected together;
- **The manufacturer declines all responsibility for damage or injury caused by noncompliance of the rules relating the supply installations.**
- **If you don't comply with the conditions above, the deriving damages will not warranty.**
- **In case of lack of demineralised and warm water set the parameter 3.37 and 3.38 to 1.**

	ATTENTION
	When the machine is not in operation, always close the supply cocks.

3.4 Electrical connection

Connection of the machine to the electrical mains must be made by qualified, skilled personnel.

Power supply cable: It is compulsory for the retailer - installer to adapt the insulation class of the power supply cable to suit the working environment in compliance with Current Technical Regulations.

- The electrical connection must be carried out in compliance with current technical regulations.
- The machines are normally equipped with a three-phase 220/230/240 vac - 60hz power supply and three-phase with neutral 380/400/415 vac - 60hz power supply.
For the specific voltage, please refer to the label on the machine.
- Make sure that the mains voltage reading corresponds to the voltage indicated on the machine plate.
- Check that the power supply voltage does not differ by more than 10% from its nominal value.
- The frequency of the power supply voltage must not differ by more than 1% of its value.
- Connection of the machine to the mains must be provided with an earth connection and an equipotential circuit as set forth by current standards.
- Make sure that the electrical systems are efficiently earthed.

- The earth conductor is to be connected to the earth terminal identified by the standard symbol.



- The machine is equipped with a terminal identified by the relative symbol for equipotential connections between appliances (see rules for electrical plants).

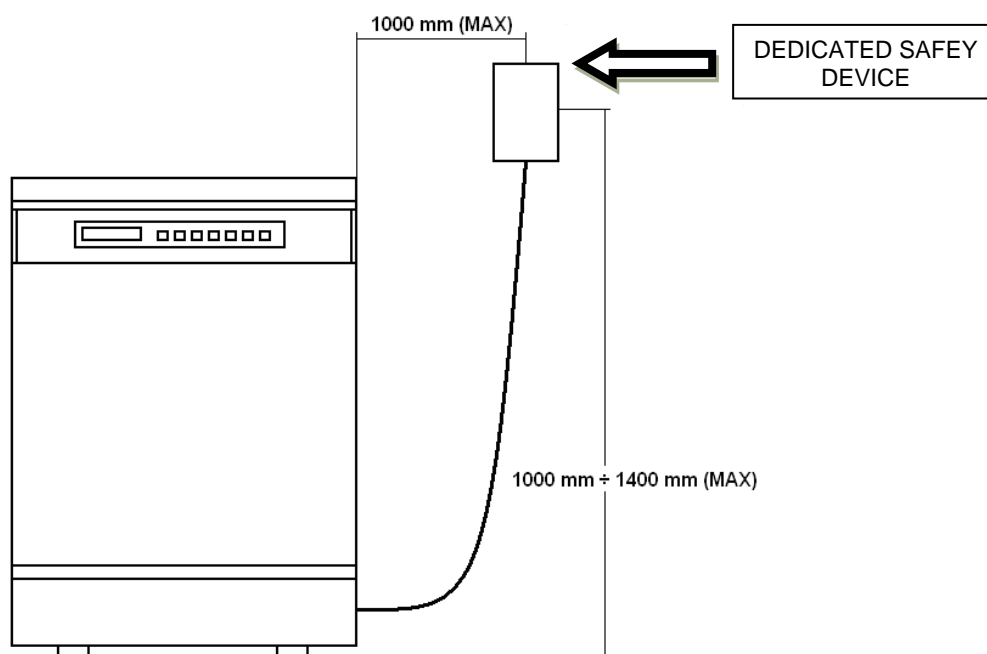



- Connect the machine and the relative dedicated safety device (not supplied) by using a power cable compatible with the electrical characteristics of the machine.
- In case of prolonged unused of the machine is recommended that you execute the disconnection procedure of the electrical connection by placing the dedicated safety device in "OFF" state.
- The upstream electrical power line must be dimensioned and protected in accordance with current local regulations.

The dedicated safety device must be positioned in an accessible place, free and not covered from other machines or anything that could obstruct the switch control.

- The dedicated safety device must be provided with quality markings and must be indicated as an electrical shut-off device for the machine.
- Near the dedicated safety device, a sign must be placed which reads:

EXAMPLE OF DEDICATED SAFETY DEVICE POSITIONING




	ATTENTION
	Protection of the upstream power line must be carried out in accordance with current local regulations.
	As regards the technical specifications of the safety device, please refer to the wiring diagram.
	For specifications concerning the disconnection device, the temperature of the cables and the safety devices, please refer to the electric schematics.
	The maximum value of short-circuit current to the instrument is specified in the reference wiring diagram.
	For input and output's specification see the wiring diagram.

3.5 Fuse

The fuses are used to protect the electrical circuits of machine from possible failure as overload or short circuits. If fuse takes action the downstream connections and their function are no longer available.

The fuses must respect the characteristics (size, dimensions and tripping characteristic) indicated in the wiring diagram.


3.5.1 Replacement of fuse

	ATTENTION
	The replacement of fuse must be done from authorized operators only. Before making the replacement procedure of fuse, establish and remove the cause of the fault. If necessary, contact our technical assistance service.

Replacement procedure of fuse:

- Log off the machine in safety condition by dedicated safety device.
- Access at the electrical panel.
- Identify the fuse subjects to replacement, based on the wiring diagram.
- Remove the related fuse from electrical panel.
- Replace failure fuse with another fuse with same characteristics. The correct value of fuses are in the wiring diagram.

If at the reactivation of electrical devices the new fuse intervenes, repeat the diagnosis and replacement procedure as described previously.

	ATTENTION
	Use only fuses with the amperage and characteristics indicated in the wiring diagram. The use of fuses other than those specified in the wiring diagram, void the warranty and can cause the risk of damage the machine.

3.6 Chemical products connections


The dosing system of chemical products is composed of:


- Dosing pump for chemical products.
- Presence sensor chemical product.
- The system can be equipped with meter quantity of dispensed product.

Further dosing pumps and accessories can be ordered as optional.

Each pump is combined with a corresponding type of chemical, according with the references on the table below.

PRODUCT	NOTE
DOS 1 ALCALINE / NEUTRAL / ENZIMATIC	
DOS 2 NEUTRALIZER / RINSE AID / LUBRICANT	
DOS 3 RINSE AID / LUBRICANT	

	ATTENTION
	In order to guarantee the right treatment of the objects, we suggest the use of specific products. In the case of necessity, ask for advises to the seller or the producer.
	The machine is not designed to support the use of liquids/chemical products which release hazardous substances or room-temperature gases.

	ATTENTION
	For information about conformity reports of the specific products in combination with the equipment, ask to manufacturer.
	For information concerning the storage and correct use of hazardous substances, please refer to the technical file of the product.
	For information concerning the disposal of the substances, please refer to local legal dispositions.

3.6.1 Presence sensor of chemical product

Each dosing pump is combined with a sensor that confirm the presence of chemical product inside the container. If the product is scarce, the electronic control system of the machine sends a message on video of lack of product.


3.6.2 Meter quantity of chemical product

Each dosing pump can be combined with a volumetric sensor for the quantity measurement of dispensed product. The electronic control system manages the value of required minimum quantity and, if necessary, stops the cycle.

3.6.3 Replacement of chemical product container


To replace the chemical product container, perform the following procedure:

- Take the new product container.
- Switch off the machine.
- Open the compartment and remove the chemical product container.
- Replace the chemical product container removing the level sensor from the empty tank and put into the new one.
- Close the topper of the chemical product container and place it in the area for the storage of chemical substances.
- Close the technical compartment and switch on the machine.

	ATTENTION
	The used chemical product can be dangerous if touched or inhaled. Before the use, read carefully the safety information supplied by the manufacturer of the chemical product and the label on the package.
	During the operations of replacement of chemical product container, use the appropriate tools for individual protection (chemical protective gloves, face masks for breathing, etc.).
	The access to the technical compartment, where are located the chemical product containers, is permitted only with keys and to the authorized personal.
	As regards the safe disposal of the chemical products or the relative containers, please refer to the regulations governing this subject in force within the country in which the equipment is installed.

3.6.4 Warning

- For the maximum amount of product which can be used for washing cycle, follow the instructions for the product you are using.
- The quantity of supplied can be adjusted by following the directions given in chapter 12 – Chemical calibration.
- To ensure the efficiency of the chemical dosing system it is recommended to perform the calibration procedure every 6 months.
- To ensure the efficiency of the dispenser pumps for chemical products it is important to service them regularly as described in chapter 18.
- Use liquid chemical products only machine cannot function with powder detergent.
- For the dispose of the chemical detergent and his tank follow the instruction indicated on the technical and safety data sheet provided by the manufacturer.
- Check that type of chemical product is suitable for the specific washing program used.
- Don't place the chemical tank on the machine.

	ATTENTION
	<p>Before undertaking any sort of special maintenance or movement of machine, empty tanks and chemical dosing circuit from the chemical. It is advised to execute a treatment cycle without chemical.</p> <p>This procedure must be carried out in order to prevent contact of the chemical product with body parts and machine components that can be damage.</p>

3.6.5 Information

- The machine has been validated in accordance with the provisions of Standard UNI EN ISO 15883.
- The type test was carried out using the most widely known chemical products on the market, concerning the type of chemical products, the concentrations and the cycle parameters used you can ask the Manufacturer for details.

3.7 Connecting the discharge pipe

- The discharge pipe connection should be checked carefully.
- Use a discharge pipe suitable for organic and chemical materials and hot liquids.
- The machine is equipped with a drain pipe with a diameter indicated on the installation plant.
- The choice of materials relating to the ventilation circuit for drainage operations must take into account the same requirements as for piping that comes into direct contact with drain fluids; it must be taken into consideration that these may give off harmful (corrosive, toxic, etc.) vapours that may involve the output/input point of the duct.

Caution:

If the discharge pipe is clogged take great care when processing the water and avoid contact with hands, eyes, etc. In the case of contact, rinse the parts concerned with plenty of water.

CONNECTING DRAIN PIPE:

The drain pipe is connected to the sewer network in the following manner:


- Identify the drain pipe and relative fittings and assemble them.
Make sure the seal gasket is installed correctly.
- Identify the drain manifold and connect the hose via the union and ring nut. Tighten the ring nut firmly.
- Insert the drain hose and clamp it in place.
- Insert the other end of the hose into the drain unit, fitting it properly and locking it in position.

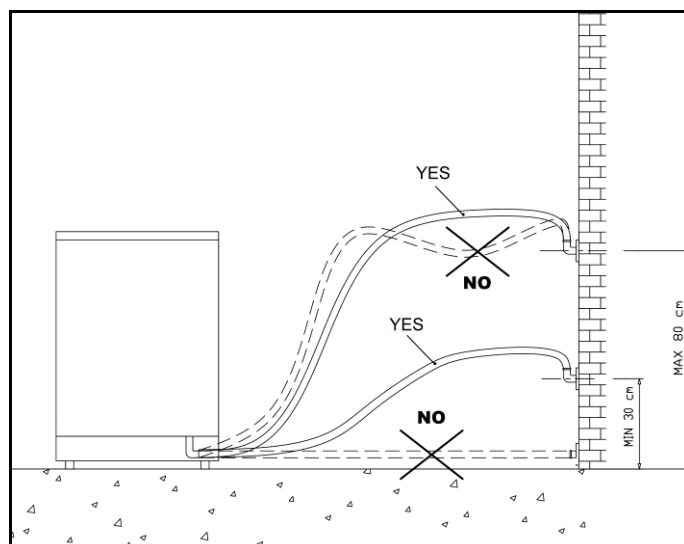
IT IS NECESSARY TO FOLLOW THESE INSTRUCTIONS FOR DRAIN CONNECTION

- Drain pipe must be connected by using a clamp.
- Drain pipe must not present angles or irregular curving in its course.
- Drain point must be placed at the same height of the machine drain point or on the floor.

FOLLOW CAREFULLY THESE INSTRUCTIONS AS A WRONG DRAIN CONNECTION CAN CAUSE THE BLOCK OF MACHINE.

- The diameter of main drain must be as indicated on the installation plant.
- Avoid drain pipe extension.

	ATTENZIONE
	Drain must be done following International rules. The manufacturer cannot be held responsible if an inaccurate use of machine causes pollution.
	If the discharge pipe is clogged take great care when processing the water and avoid contact with hands, eyes, etc. In the case of contact, rinse the parts concerned with plenty of water.
	When the machine is connected to an exhaust ventilation system, the drain pipe should be positioned externally of the building, protected from any animal access, and make sure that it not causes any hazard.



3.8 Water softener built-in (LAB 500 CDL – LAB 500 SCDL)

The water softener built-in function is to reduce the anti-limescale quantity contained into the inlet water. If the machine is connected to hard water, the result is a rapid degeneration with lost in functions and performances. Regeneration must be done in order to maintain active ionic resins.

For machines equipped with water softener, when installed, water hardness value (French degrees -°F) must be introduced by entering the programmation (PRG switch 5 seconds), at parameter **P7.26** and introduce one of the following values:

WATER HARDNESS (°f)	PARAMETER SETTING	CYCLES
0-10	Value 10	NO REGENERATION
11-15	Value 15	Regeneration every 30 cycles
16-20	Value 20	Regeneration every 25 cycles
21-25	Value 25	Regeneration every 21 cycles
26-30	Value 30	Regeneration every 18 cycles
31-35	Value 35	Regeneration every 15 cycles
36-40	Value 40	Regeneration every 12 cycles
41-45	Value 45	Regeneration every 9 cycles
46-50	Value 50	Regeneration every 6 cycles
51-55	Value 55	Regeneration every 3 cycles
56-60	Value 60	REG. present at each cycle (it is recommended for authorized people only).

The machine advise that it need a regeneration with a sign on display “salt loading”

Actions:

- Open the door.
- Unscrew the plastic cap of salt box.
- Spill 0,5 kg of common salt inside the box by using the appropriate funnel.

WARNING: During this operation, pay attention do not let fall salt outside box

- Closed the plastic cap.

After having introduce the basket, start with a normal washing cycle.
Machine regenerates automatically.

WARNING:

Washing cycle made after “salt inlet” will be longer and it seems that machine doesn’t work. During this phase, on display will appear “REGENERATION”.

3.9 Drying air filtration (Optional)

The machines are standard equipped with an air filter of class 5 following rules EN 779.

The filter's replacement is suggested after 100 working hours.

The machine can be equipped also with a further absolute filter "HEPA H14" following rules EN 1822.

The filter's replacement is suggested after 300 working hours.

3.10 Ambient ventilation requirements

During the normal operation, the machine warms up itself dispersing heat and hot air increasing the humidity value; in the drying phase, these events increase. Therefore, in order to guarantee a comfortable environment with good temperature and humidity for the operator, it is necessary to prepare an air conditioning or air circulation system capable to balance the emissions reported in the installation plan.

The machines with drying system are equipped with an exhaust which can be connected to an external extraction system.

The air that is expelled from the work area must not be re-circulated, so as to protect the operator from any undesired emissions produced by the machine or by the chemical products present within the work area.

The extraction ventilation system must be able to send a signal to the machine in case of any system malfunctioning or shutdown. The installation technician must always interface the ventilation system with this interlocking device.



A detail of the machine connections is shown on the installation plant and electrical wiring.

4. CHECKS PRIOR TO START-UP

4.1 Introduction

The preliminary adjustments and controls are performed by a skilled technician, who has been specifically trained for this purpose.

4.2 Checks of safety systems

Indicative list of adjustments and checks of safety systems and devices to be carried out:

- Check the mains supply voltage;
- Check the efficiency of the emergency and machine shutdown devices (circuit breaker);
- Check the efficiency of the door opening safety micro switch;
- Check the operation of machine controls, especially the **START** and **STOP** commands.

4.3 General controls

Indicative list of general adjustments and checks to be made:

- Check proper execution of general supplies of the machine (electrical and plumbing);
- Ensure that the MACHINE OPERATOR is trained for its use;
- Check that the motors installed on the machine rotate in the correct direction (only for machines equipped with tri-phase power supply motors).

5. USING THE MACHINE (FOR THE USER)

5.1 Checks

Check the quantity of chemical additives present and top-up if necessary, as described below:

- Obtain appropriate individual protection gear (gloves for protection from chemical substances, breathing protection masks, goggles etc.) and the new detergent container.
- Turn off the machine.
- Follow the instruction on sections 3.6.

ATTENTION:

The chemical product which is used may be hazardous if touched or inhaled.

Prior to use, carefully read the safety information provided by the detergent supplier and the label applied to the package.

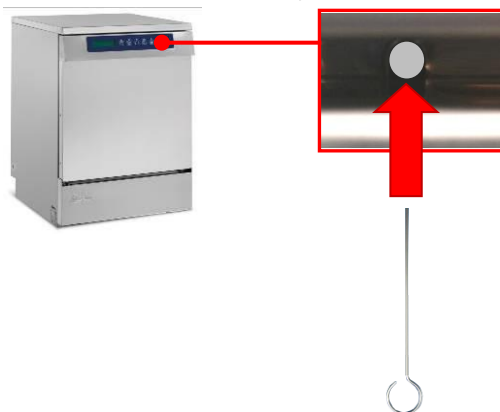
5.2 Opening and closing the door

- The machine is fitted with an electric door lock to prevent it being opened when the machine is running.
- To open the door during a wash cycle, interrupt the cycle and remember that:
 1. The items inside the machine may be very hot.
 2. The entire wash cycle must be repeated.

5.2.1 Door unlocking

In case of power fail or malfunctioning of door lock, it is possible to unlock and open the door by follow the procedure:

1. Identify the hole between the door and the cover panel (see the picture).
2. Insert the dedicated instrument.
3. Keep pushing the dedicated instrument. In this moment the door is unlocked and it is possible to open it.
4. To close the door, keep pushing the dedicate instrument as described on point 3.



ATTENTION

After performing the procedure described previously, remember that:

- The items inside the machine could be very hot and contaminated.
- The entire treatment cycle must be repeat.

5.3 Switching on

Turn on the machine following the procedure:

- Activate the dedicated safety device.
- The control panel starts automatically.
- Check that there is no alarm message. In negative case remove it.

5.4 Preparation

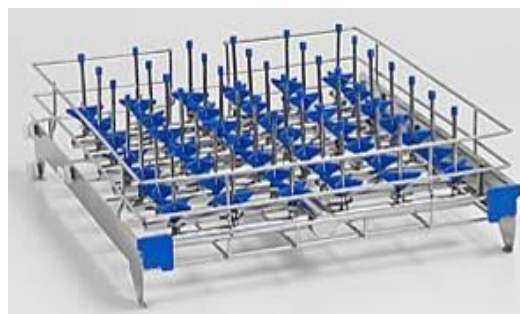
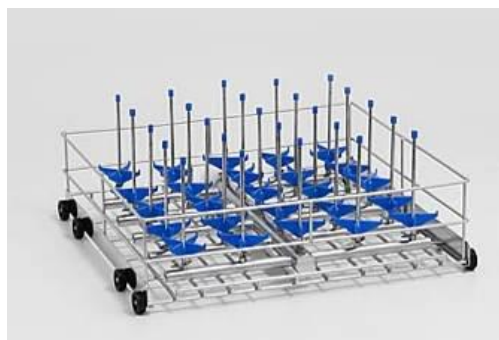
- Place the items to be washed inside the machine and position them carefully on the holder and in the rack.
- Items should not overlap.
- Receptacles should be positioned so that liquids can flow out easily.
- Tall or heavy items should be placed towards the middle of the basket if possible to facilitate washing.
- Make sure that nothing is blocking the arms and that they turn freely.
- Place the load uniformly in the basket.
- Check the patency of hollow instruments prior to their treatment in the machine.



CAUTION

- The maximum load for each cycle is 20 Kg (basket included).
- **NEVER USE THE MACHINE WITHOUT BASKET!!!!**

Below there are some examples of the basket:



WARNING



- Do never emptying any solid waste into the machine (excrement, toilet paper etc.).
- This will block the outlet system with pump and destroy the machine.
- The treatment cycle has to be activated only if the basket is present into the machine or if it is used a basket equipped with an injection system.
- Non observance, even in part, of the rule here indicated, can cause dangerous leakage of water from the door.

6. CONTROL PANEL AND SYMBOLS USED



The control panel with liquid crystal display is illustrated in the diagram.

This panel makes the machine easy to use as it indicates the stage of the cycle in progress, the maximum temperature reached during disinfection and fault messages.

6.1 Control panel

Selection of wash cycle and machine start-up are performed by the operator via the machine's control panel. The control panel includes the following components:

DISPLAY LCD:

- Displays the various programmes, stages, temperatures and any machine faults.
- During Wait, the type of programme selected is displayed.
- When one of the cycle keys (**P1, P2 or P3**) is pressed, the first line of the display indicates the type of programme selected, the second line reads: "press start" or "door open" or indicates the presence of a fault.
- After pressing Start, the first line indicates the temperature of the washing water for the entire cycle and the second line indicates the various stages of the cycle.
- In the event of a Shutdown, the first line indicates the shutdown status and the second line indicates the type of fault.
- In the event of a Fault that does not cause the machine to shutdown (lack of detergent or limescale remover), the fault is indicated in the second line during programme selection. If the detergent runs out when a 'with detergent' cycle is in progress, the detergent finished message is given in second line of the display for the entire cycle.

LED:









- There are 8 Led:
- a yellow Start led (**1**), a red Stop led (**2**), a flashing red led to indicate that disinfection did not take place (**3**), a green led to indicate a complete cycle (**4**), three yellow led for indication of the various programme (**5**) and one yellow led for drying switch (**6**).

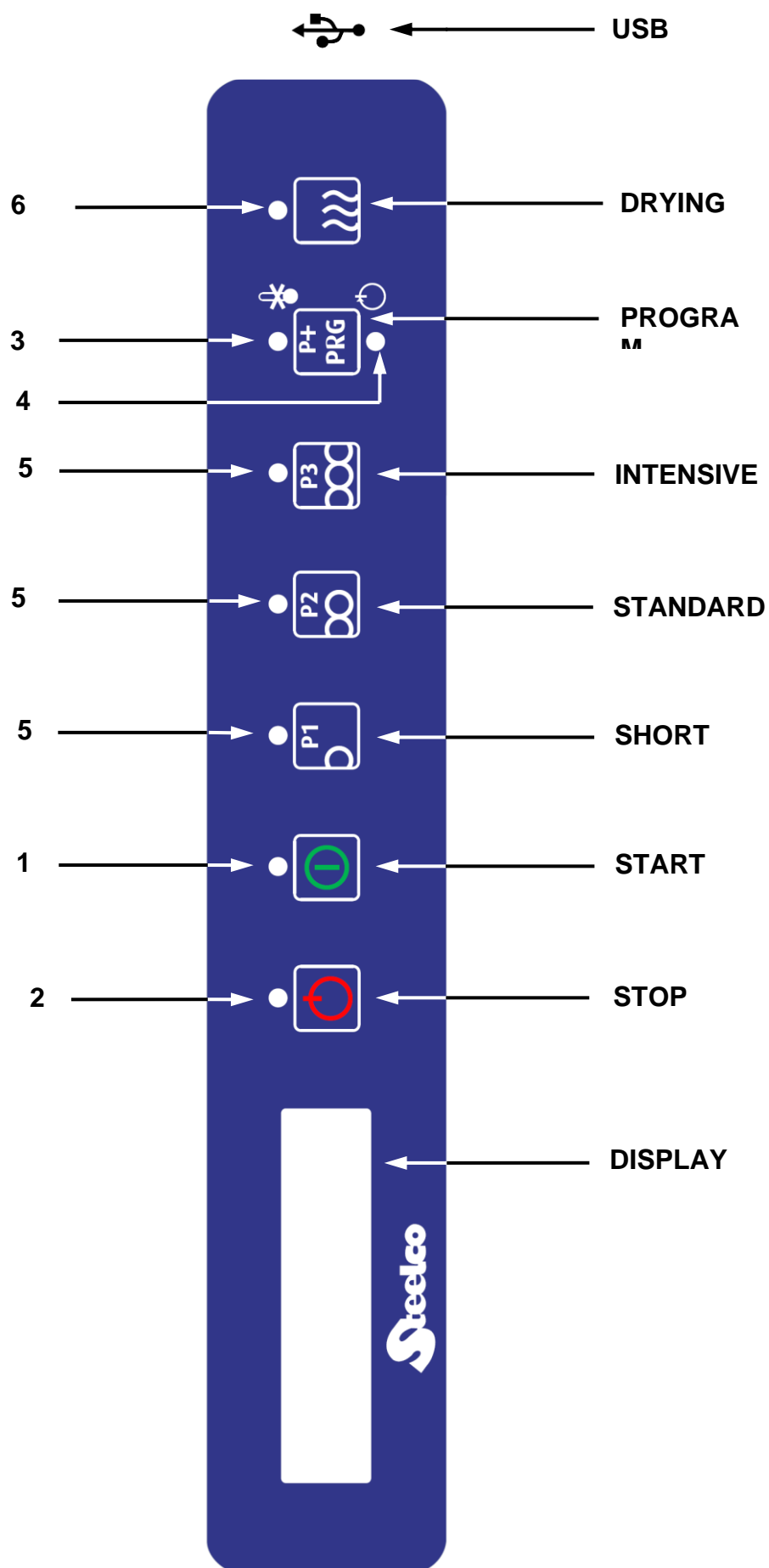
BUZZER:

- The buzzer sounds each time a key is pressed and intermittently in the case of a machine Shutdown (if is set by parameter **P1.12**).

6.2 Switches

Programmes available to the user are the following:

SWITCH		DESCRIPTION
P1		Select " SHORT " cycle.
P2		Select " STANDARD " cycle.
P3		Select " INTENSIVE " cycle.
P+		Pushing button P+/PRG you select other programmes; each pressure corresponds to a new programme.
PRG		Keep pressed for five seconds during Wait or Shutdown to display the Menu. The programming menu access is reserved to specialized technician in possession of the password.
START		Select the programme required and press the relative switch to start the cycle.
STOP		This switch interrupts the cycle in progress, the card interrupts the process, displays a message indicating that disinfection did not take place, keeps the door locked and if necessary, indicates a high temperature inside the chamber. To return the machine to normal conditions the reset procedure must be carried out.
DRYING		It functions in machine equipped with drying. This switch allows the exclusion of drying forced phase from selected cycle.
USB		On the control panel board there is an USB port that allows the machine programming and data saving.
THE ACCESS TO THE PROGRAMMING MODE IS RESTRICTED ONLY TO AUTHORIZED AND SKILLED TECHNICIANS WHICH ARE SUPPLIED WITH THE PASSWORD.		



7. WASHING PROGRAMMES

7.1 Pre-programmed cycles

The machine has three main washing programs in according to the necessity:

SHORT PROGRAMME	P1	Suitable for lightly soiled items.
STANDARD PROGRAMME	P2	Suitable for moderately soiled items.
INTENSIVE PROGRAMME	P3	Suitable for heavily soiled items.

The machine has several washing programmes; it is possible to select remaining programmes by pushing **P+/PRG**.
The programs available to the user are as follows:

Phase												
Program	Prewashing		Washing		Washing		Neutralization		Rinsing	Rinsing	Rinsing	Drying
	Water Time	Chemical	Water Temp.-Time	Chemical	Water Temp.-Time	Chemical	Water Temp.-Time	Chemical	Water Temp.-Time	Water Temp.-Time	Water Temp.-Time	Temp.-Time
SHORT			WARM 122°F - 180 s	DOS.1 8%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
	COLD 120 s		WARM 140°F - 360 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
GLASSWARE	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
INTENSIVE	COLD 120 s		WARM 140°F - 120 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	212°F 1500 s
PLASTIC	COLD 300 s	DOS.1 8%	DEMI 167°F - 180 s		WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
NO CHEM.			DEMI 194°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 167°F - 60 s	248°F 900 s
MICROBIOL.			DEMI 200°F - 300 s	DOS.3 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 167°F - 60 s	248°F 900 s
E.COLI	COLD 120 s		WARM 149°F - 360 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%	WARM 60 s		DEMI 140°F - 600 s	248°F 900 s
BLOOD	COLD 120 s		WARM 167°F - 120 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%	WARM 60 s		DEMI 140°F - 600 s	248°F 900 s
MINERAL OIL			WARM 167°F - 120 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%	WARM 60 s		DEMI 167°F - 60 s	248°F 900 s
GREASE			WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%	WARM 60 s		DEMI 140°F - 60 s	248°F 900 s
PIPETTE	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 93°C - 60 s	248°F 900 s
CELL.CULT.	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
ANALYTIC	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
GLASSWARE	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 140°F - 60 s	248°F 900 s
THERMODIS.	COLD 120 s		WARM 122°F - 180 s	DOS.1 5%	WARM 120 s	DOS.2 1.5%	WARM 120 s	DOS.2 1.5%			DEMI 200°F - 60 s	248°F 900 s
CHEM.DISIN	COLD 300 s	DOS.3 3%	COLD 104°F - 600 s	DOS.3 3%	WARM 122°F - 60 s	DOS.2 15%	WARM 122°F - 60 s	DOS.2 15%			DEMI 104°C - 300 s	248°F 900 s
CHEM.CLEAN			WARM 122°F - 60 s	DOS.1 15%	WARM 122°F - 60 s	DOS.2 15%	WARM 122°F - 60 s	DOS.2 15%			DEMI 60 s	248°F 900 s
SELF CLEAN			WARM 122°F - 60 s	DOS.1 15%	WARM 122°F - 60 s	DOS.2 15%	WARM 122°F - 60 s	DOS.2 15%			DEMI 122°F - 60 s	120°C 900 s
DRYING												120°C 1500 s

PRODUCT
DOS 1 ALCALINE / NEUTRAL / ENZYMATIC
DOS 2 NEUTRALISER / RINSE AID / LUBRICANT
DOS 3 RINSE AID / LUBRICANT

7.2 Phase parameters

7.2.1 Drain phase

- Cold water time for rinsing (sec)
- Functioning time of tank pump (sec.)
- Drain cooling choice (yes/no)

7.2.2 Prewashing phase

- Water type 1
- Water type 2
- Water total litres
- Conductivity
- Chemical type 1
- Dosing quantity of product 1
- Chemical type 2
- Dosing quantity of product 2
- Phase time (sec.)

7.2.3 Treatment phase

- Water type 1
- Water type 2
- Water total litres
- Conductivity
- Chemical type 1
- Dosing quantity of product 1
- Min. temperature for filling up of 1st chemical
- Chemical type 2
- Dosing quantity of product 2
- Min. temperature for filling up of 2nd chemical
- Phase time (sec)
- Phase temperature set point

7.2.4 Drying phase

- Fan starting type at low speed (sec)
- Fan starting time at high speed (sec.)
- Phase temperature set point

7.3 Start washing program

To start the washing program follow the procedure:

- Open the door, insert the basket and close the door.
- Select the washing program (with automatic recognition active it is read automatically) and press START button to confirm.
- Insert the operator code by using the keyboard (if P1.02=1).
- Press START button to start the washing cycle.

8. MACHINE STATUS

8.1 Wait

The machine is ready to start a cycle.

The diagnostics are active. If necessary, the display indicates that the door is open or gives warning messages: no detergent, no limescale remover, memory full (historic data) or high temperature inside chamber.

8.2 Cycle

Cycle mode is entered by pressing the Start key, this command is only accepted if the machine is in wait mode and the door is closed.

The cycle carries out the foreseen stages.

The diagnostics and regulators are active.

The user interface gives information concerning the stage in progress.

8.3 Shutdown

The diagnostics have detected a fault that causes the machine to shutdown, the cycle is suspended and the door remains locked.

The fault is indicated on the display and the user interface is ready for the door release sequence and the Reset procedure to restore the machine to Wait (see reset procedure).

9. SPECIAL FEATURES

9.1 Power failure





When tension is restored after a power failure during Preparing, Wait or Shutdown, the card returns to the previous programme.

When tension is restored following a power failure with a cycle in progress, the card shuts down the machine (power failure), indicates that the cycle has been interrupted and waits for the reset procedure to be carried out (in according with parameter P3.04).

9.2 Reset procedure

In the event of a Shutdown or when the stop key is pressed with a cycle in progress, the door remains locked.

To open the door the door release sequence must be carried out from the keyboard as follows:

1. Press the **STOP**  and **START**  switch together and keep pressed for 5".
2. LCD display indicating switch procedure.
3. Press the programme **P2**  switch followed by the program **P1**  switch.
4. The machine is reset and returns to standby.

N.B.:

If the machine shutdown persists due to a fault in one of its components (e.g.: faulty probe, unsuitable levels, etc.), the door is released and the machine remains inactive.

Seek technical assistance.

10. WORK PROCEDURES

10.1 Introduction

The machine was constructed only for washing and thermal disinfection of laboratory instruments and objects normally used in laboratories and so forth.

It is therefore subject to constant contact with aggressive detergents and with contaminated instruments.

For this reason, it is necessary to provide some useful instructions for the operators who will be using it.

10.2 Instructions to personnel

The machine operator, in normal operating conditions, is not subject to risks if he works safely using suitable means of protection.

In order to work safely the operator must:

- Carefully comply with the instructions set forth in this manual.
- Use safety devices appropriately and with care, as well as group and individual safety gear provided in the workplace.
- Personally, take action, or inform appropriate persons in the event of deficiencies in the aforementioned devices and means, as well as any hazardous conditions which he may become aware of, taking action directly in urgent cases within their scope of responsibilities and abilities to eliminate or reduce the deficiencies or hazards.

The maintenance technicians, in normal operating conditions, are not subject to risks if they work safely using suitable means of protection.

In order to work safely the maintenance technician must:

- Carefully comply with the instructions set forth in this manual.
- Use safety devices appropriately and with care, as well as group and individual safety gear provided in the workplace.
- Use special care in making repairs or replacing mechanical parts (e.g. drain pump, etc.) on malfunctioning machines which have not completed the thermal disinfection cycle.

10.3 Decontamination procedures

When making repairs or replacing mechanical parts (e.g. drain pump, heating element, etc.) on malfunctioning machines that have not completed the thermal disinfection cycle, before undertaking any sort of maintenance on the internal parts of the machine, the disinfection procedure must be carried out in order to eliminate any pathogenic residues and protect operators who come into contact with the machine from the risk of infection.

The decontamination procedure must be performed by the system operator, who must be equipped with all provided individual protection gear.

MACHINE STATUS:

The machine must not be electrically powered and the dedicated safety device switch must be in the OFF position.

The person performing the task this operation.

SAFETY SYSTEMS TO BE ADOPTED:

The operation must be carried out in compliance with standards governing the use of disinfectant substances used (see technical information for the product being used, provided by the manufacturer), in compliance with standards concerning contact with parts of the machine which may be contaminated by pathogenic materials and with use of individual protection gear.

MODE OF INTERVENTION:

If possible, dry run a cycle for thermal disinfection of the wash chamber.

Open the wash chamber door and spray evenly with a suitable disinfectant.

Cover all internal parts as well as any basket and the instruments it may contain.

Wait for the amount of time required for disinfection (see technical information for the disinfectant product).

When performing maintenance on parts of the machine which have not been reached by the disinfectant, take appropriate precautions and use suitable safety gear.

10.4 Disinfection of the machine

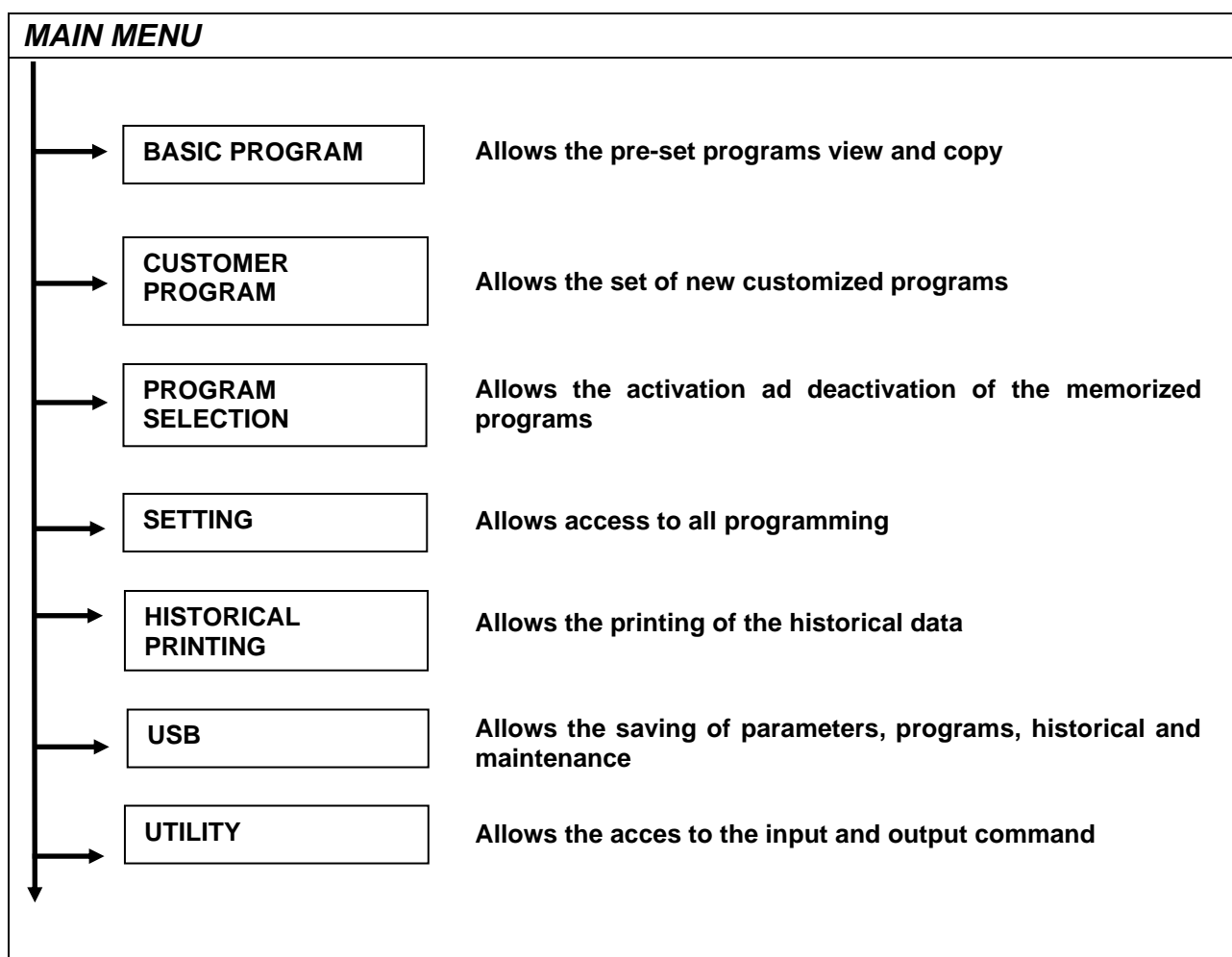
It is advisable to carry out a discharge and disinfection cycle when using the machine for the first time and should the machine have not been used for a period of time exceeding 24 hours.
A disinfection cycle without basket or objects is enough.

11. MENU

11.1 Menu plan

To enter the menu, keep the **PRG**  key pressed for five seconds.

- Press **P1**  and **P2**  buttons to scroll through the menu.
- Press **START**  to confirm selection, press **STOP**  to exit the menu and return to Wait or Shutdown mode.

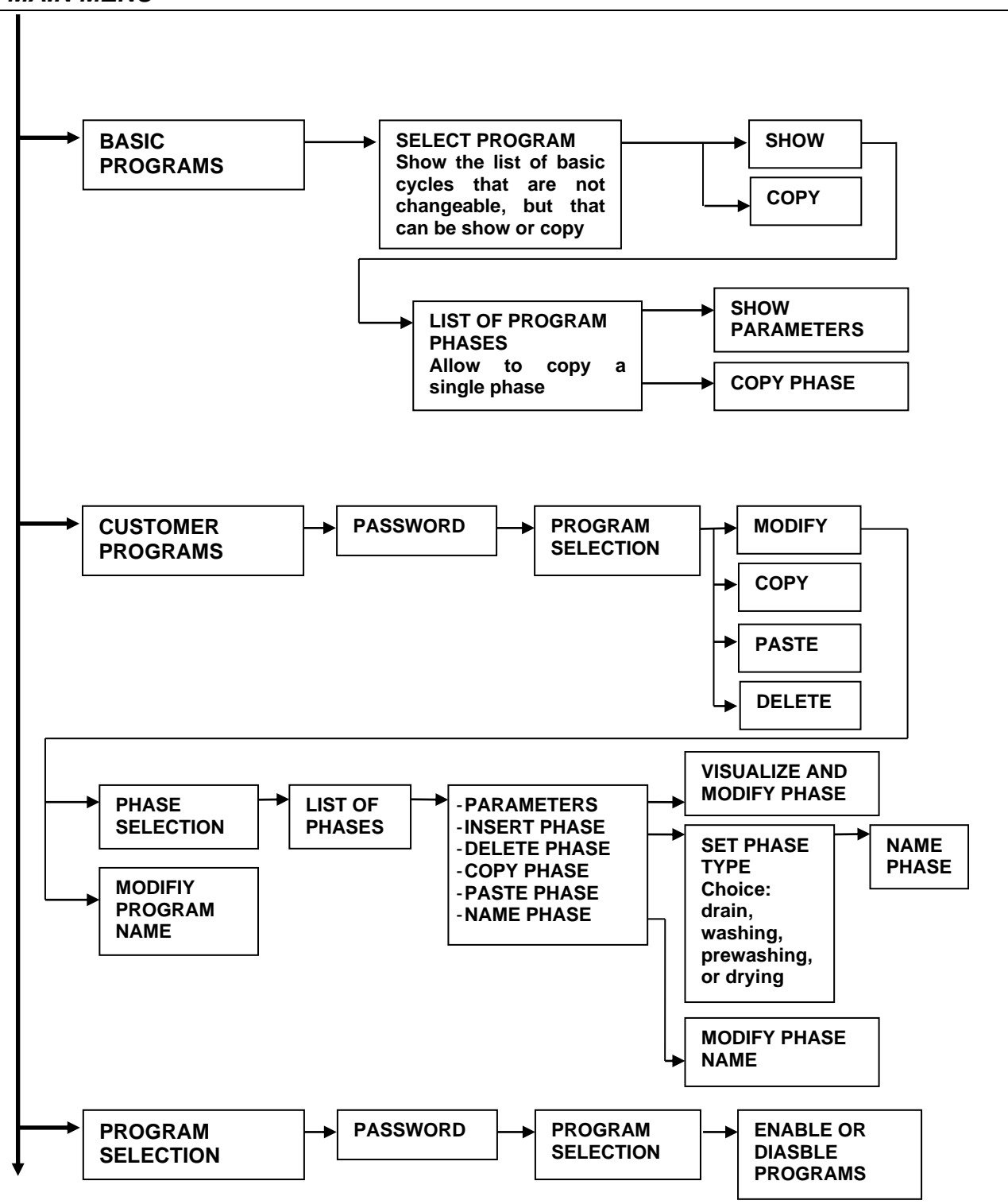


THE PROGRAMMATION ACCESS AND THE MENU ARE PROTECTED BY THREE PASSWORD LEVELS

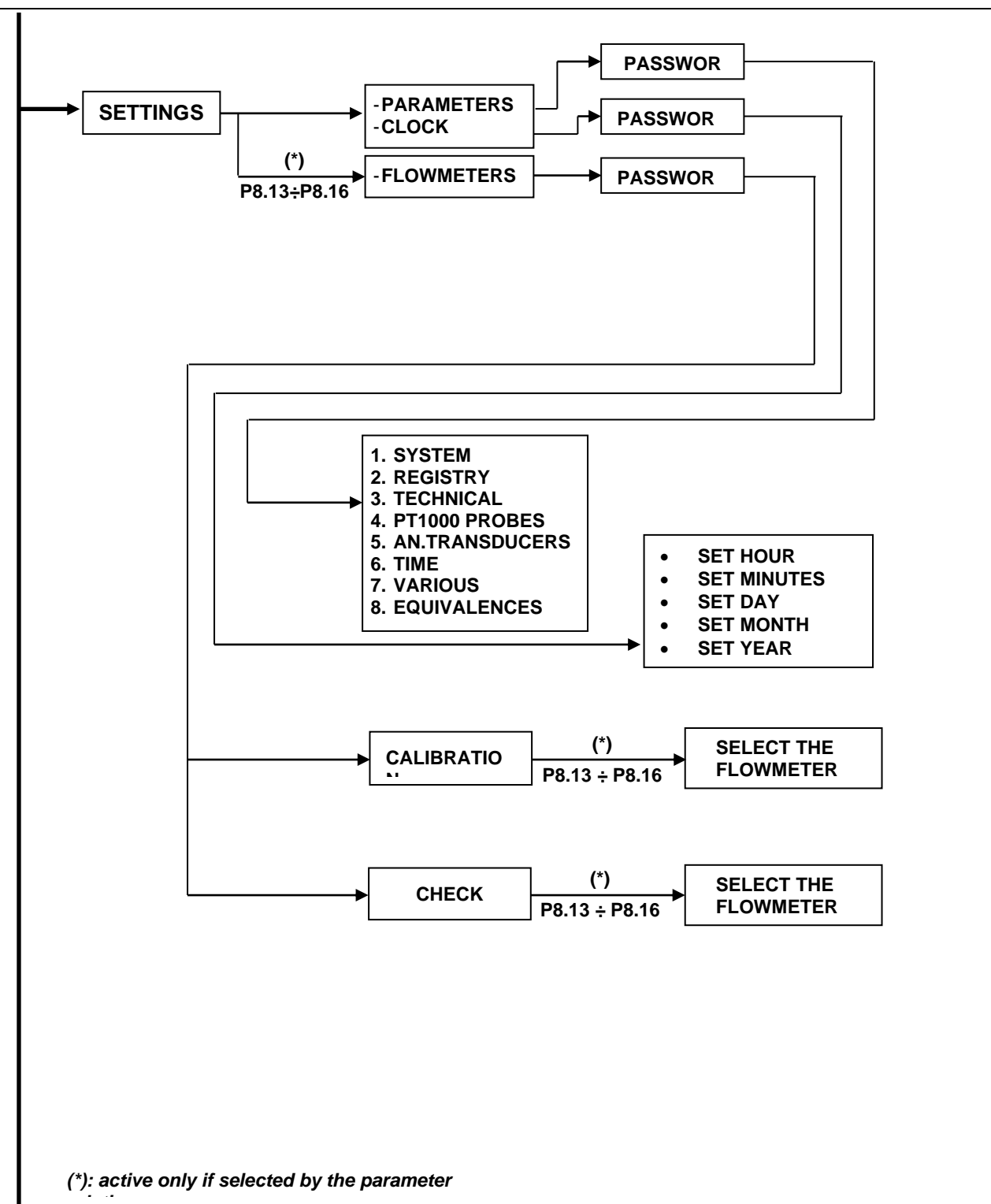


- **1st level:** *operator password* – allow the access to the programs selection, historical and USB menu access (view and printing, not historical deletion).
- **2nd level:** *technician password* – allow the access to all menu but with limited modification possibility.
- **3rd level:** *manufacturer password* – allow the complete access to all menu and settings of the machine.

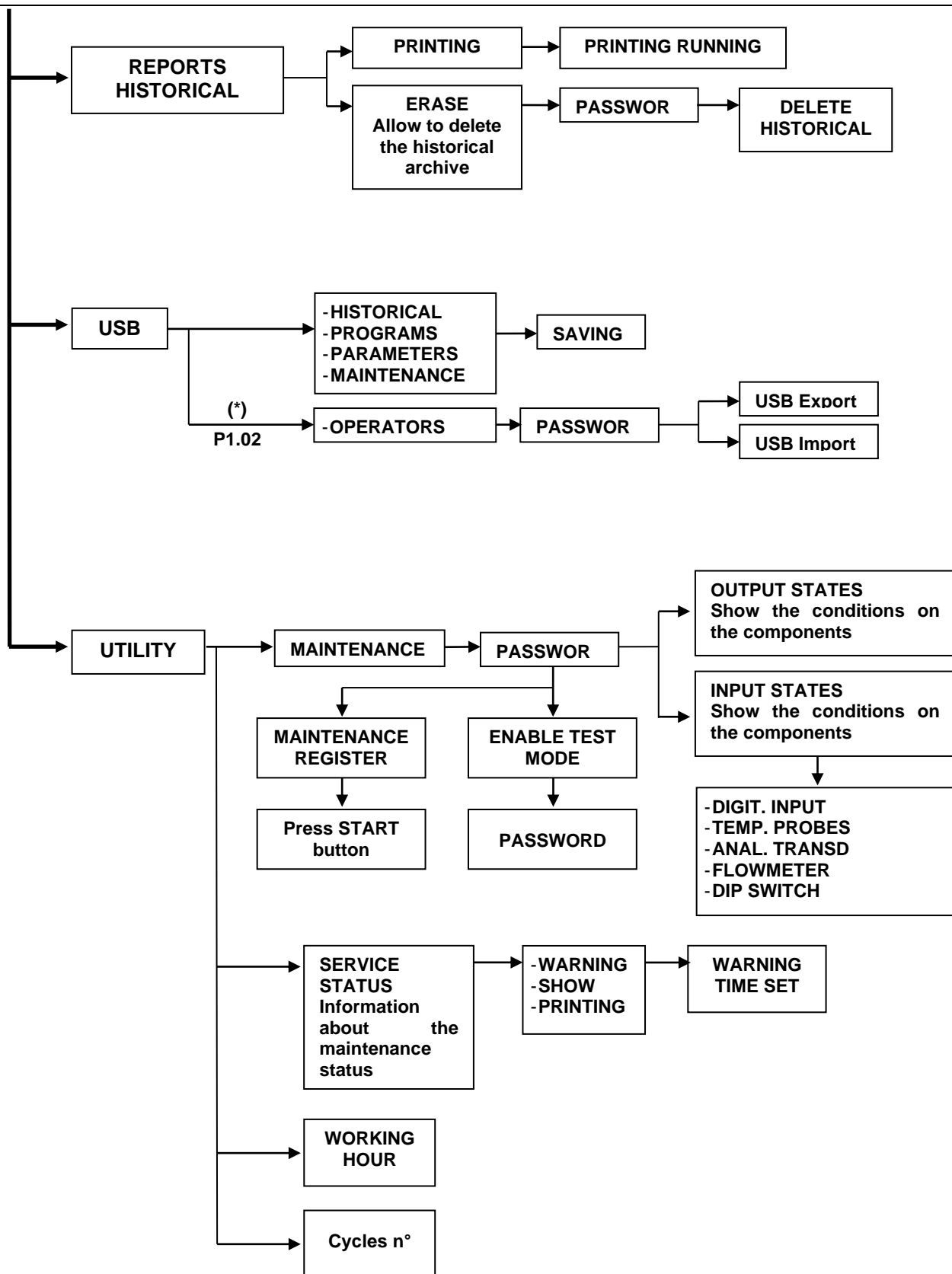
MAIN MENU



MAIN MENU





MAIN MENU








(*): active only if selected by the parameter relative.


11.2 Parameters settings

To select parameters please follows this special procedure.

To set parameters, a password will be requested, which is inserted using **P1**  and **P2**  buttons.
If an incorrect password is entered the menu is closed immediately.

By pressing **P1**  and **P2**  buttons it is possible to scroll through parameters.

Press **START**  button to access at modify of parameter and use keys **P1**  and **P2**  to increase or decrease the various parameter values.

If no parameters are varied, you can exit parameter setting with **STOP**  key.

WARNING:

IT IS ALLOWED TO ENTER INTO PLANNING MENU TO AUTHORISED TECHNICIAN, WITH PASSWORD ONLY.

THE PASSWORD MUST BE REQUESTED FROM THE MANUFACTURER.

11.3 Parameter list

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number					
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL	
							CL CDL	SCL SCDL
SYSTEM								
MACHINE	1	1	User name (16 characters)	char	,	~	•	•
CYCLE	1	2	Operator identification (0=disabled, 1=addition of the keyboard password) 2=reading of the barcode)	sel	0	1	•	•
PRINT OUT	1	4	Graphic print out at the end of the cycle (0=no print out, 1=print graph, 2=table print out, 3=print only on USB)	num	0	3	•	•
PRINT OUT	1	5	Print out results of the cycle being carried out (events, consumption,...)	sel	YES - NO		•	•
PRINT OUT	1	6	Automatic print out on USB of the cycle results at the end of it if the graphic print out is set P1.04 >0	sel	0	1	•	•
KEYBOARD	1	7	Buzzer volume key tone loading side (0=buzzer switched off)	num	0	50	•	•
KEYBOARD	1	8	Buzzer volume end of cycle warning loading side (0=buzzer switched off)	num	0	50	•	•
KEYBOARD	1	9	Buzzer alarm volume loading side (0=buzzer switched off)	num	0	50	•	•
KEYBOARD	1	13	Show the A0 value on the display	sel	YES - NO		•	•
CYCLE	1	16	Hystorical cycles memory full (0=no warning, 1=warning, 2=warning and it is not possible to start a cycle). The warning is reset if the hystorical is saved on a USB key or printed.	num	0	2	•	•
KEYBOARD	1	18	Maximum mistakes number on password input into the protected menu (0: function disabled)	num	0	100	•	•

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number					
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL	
							CL CDL	SCL SCDL
REGISTRY								
SUPERVISOR	1	19	Connection to the supervsion sistem (steelco Data)	sel	0	1	•	•
SUPERVISOR	1	20	Machine IP address: field 1-4	num	0	255	•	•
SUPERVISOR	1	21	Gateway IP address: field 1-4	num	0	255	•	•
SUPERVISOR	1	22	IP Netmask: field 1-4	num	0	255	•	•
SUPERVISOR	1	23	Supervisor ID address: field 1-4	num	0	255	•	•
KEYBOARD	1	24	Miele menu setting (dosing setting of chemical products in %)	sel	0	255	•	•
MACHINE	2	1	Machine model (8 characters)	char	,	~	•	•
MACHINE	2	2	Machine matriculation number (5 characters)	char	0	9	•	•
MACHINE	2	3	Test day	num	1	31	•	•
MACHINE	2	3	Test month	num	1	12	•	•
MACHINE	2	3	Test year	num	10	99	•	•
KEYBOARD	2	4	Select language (Note: the available languages dipend on the specific machine settings)	sel	ENGLISH ITALIANO DEUTSCH FRANCAIS ESPAGNOL		•	•
MACHINE	2	5	Station number	num	0	99	•	•
MACHINE	2	6	Client/distributor (16 characters)	char	,	~	•	•
KEYBOARD	2	7	Select font group (0=European, 1=European + Japanese, 2=European + Cyrillic)	num	0	2	•	•
KEYBOARD	2	8	Unit of measurement (0=International, 1=American)	Sel.	0	1	•	•
TECHNICAL								
PT1000	3	2	Activate regulation probe (tub probe 2):(0=no, 1=on a separate regulation form, 2=on standard form)	sel	0	2	•	•
PRINT OUT	3	3	Printer on board (0=no, 1=on main board, 2=on both main and slave boards)	sel	0	1	•	•
CYCLE	3	4	Activate after cycle has been interrupted due to energy failure (when phase restarts, from the beginning of the cycle or from when cycle failed)	sel	INIT. STEP START. PROG. END CYCLE		•	•
CYCLE	3	5	Activate after cycle has been interrupted due to alarm (when phase restarts, from the beginning of the cycle or from when cycle failed)	sel	INIT. STEP START. PROG. END CYCLE		•	•
CHEMICALS	3	6	Set in case of lack of chemical additives (warning, alarm with machine block)	sel	WARNING ALARM		•	•
BOILER	3	8	Boiler on board (demineralised water heater)	sel	YES - NO		•	•
PUMPS	3	13	Washing arm pump pressure switch	sel	YES - NO		•	•
DRAINING	3	18	Cold water electrovalve for drainage cooling (0=absent, 1=on dedicated output)	sel	0	1	•	•

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number					
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL	
							CL	CDL
DRIER	3	20	Activate dryer (0=no, 1=normally selected, 2=normally not selected, 3=always activated)	num	0	3	•	•
PUMPS	3	23	Transducer (4-20 mA) to control impeller pump pressure.	sel	YES - NO		•	•
WATER	3	25	Analogue probe (4-20 mA) for conductivity	sel	YES - NO		•	•
DOORS	3	29	Solenoid door lock	sel	YES - NO		•	•
BOILER	3	30	Configuration of cold water on boiler (for 500)	sel	YES - NO		•	•
DOORS	3	31	Door safety switch for UL conformity	sel	YES - NO		•	•
SYSTEM	3	35	Enable of power reduction	sel	YES - NO		•	•
WATER	3	37	Absence of demineralised water (1=load cold water in its place)	sel	0	1	•	•
WATER	3	38	Absence of hot water (1= load cold water in its place)	sel	0	1	•	•
CYCLE	3	51	Num. automatic repetitions of the cycle for cleaning test (0=no repetition)	num	0	100	•	•
DRYING PROCESS	3	56	% value modulating control low speed drying process (0=no modulating control fan 0/10V)	%	0	100	•	•
DRYING PROCESS	3	57	% value modulating control high speed drying process (0=no modulating control fan 0/10V)	%	0	100	•	•
STEAM COND.	3	58	Steam condenser presence for steam extraction (DS 500)	sel	0	1	•	•
PT1000 PROBE								
PT 1000	4	1	Offset calibration chamber probe 1 at a 0°C	°C	-9,9	9,9	•	•
PT 1000	4	2	Offset calibration chamber probe 1 at a 100°C	°C	-9,9	9,9	•	•
PT 1000	4	3	Offset calibration chamber probe 2 at a 0°C	°C	-9,9	9,9	•	•
PT 1000	4	4	Offset calibration chamber probe 2 at a 100°C	°C	-9,9	9,9	•	•
PT 1000	4	7	Offset calibration boiler or tank 1 probe at 0°C	°C	-9,9	9,9	•	•
PT 1000	4	8	Offset calibration boiler or tank 1 probe at 100°C	°C	-9,9	9,9	•	•
AN. TRANSDUCERS								
PUMPS	5	1	Pressure scale lower limit	bar	-1	P5.02	•	•
PUMPS	5	2	Pressure scale upper limit	bar	P5.01	3	•	•
WATER	5	3	Conductibility scale lower limit	uS/cm	0	P5.04	•	•
WATER	5	4	Conductibility scale upper limit	uS/cm	P5.03	20000	•	•
TIME								
CHAMBER	6	1	Max time per 1°C increase in the chamber	s	0	999	•	•
BOILER	6	2	Max time per 1°C increase in the boiler or tank	s	0	999	•	•
DRAINING	6	3	Maximum drainage time	s	0	999	•	•

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number					
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL	
							CL	CDL
DRAINING	6	4	Maximum drainage time with rinsing water loaded	s	0	999	•	•
WATER	6	5	Maximum waiting time for cold water filling to level in the chamber	s	0	999	•	•
WATER	6	6	Maximum waiting time for hot water filling to level in the chamber	s	0	999	•	•
WATER	6	7	Max waiting time for demineralised water filling to level in the chamber	s	0	999	•	•
WATER	6	8	Max waiting time for cold+warm water filling	s	0	999	•	•
WATER	6	9	Max waiting time for cold+demi water filling	s	0	999	•	•
WATER	6	10	Max waiting time for warm+demi water filling	s	0	999	•	•
CHEMICALS	6	12	Maximum waiting time for chemical products flowmeter impulse	s	0	99,9	•	•
DOORS	6	13	Max time door lock opening	s	0	99,9	•	•
DOORS	6	14	Max time door lock closing	s	0	99,9	•	•
DOORS	6	15	Max time opening closing/door (automatic door)	s	0	99,9	•	•
DOORS	6	17	Delay in reading pump pressure switch	s	0	99,9	•	•
MACHINE	6	18	Delay on overtemperature cut-out reading on on heating element feedback (0=control disabled)	s	0	99,9		•
CHEMICALS	6	20	Chemical 1 loading time after a chemical lack alarm	s	0	999,9	•	•
CHEMICALS	6	21	Chemical 2 loading time after a chemical lack alarm	s	0	999,9	•	•
CHEMICALS	6	22	Chemical 3 loading time after a chemical lack alarm	s	0	999,9	•	•
CHEMICALS	6	23	Chemical 4 loading time after a chemical lack alarm	s	0	999,9	•	•
BOILER	6	24	Time taken after cycle inactivity for switching off boiler or tank	h	0	24	•	•
DRAINING	6	25	Time taken for activating cooling drainage electrovalve	s	0	99,9	•	•
STEAM CONDENSOR	6	26	Steam condenser solenoid valve OFF time.	s	0	99,9	•	•
STEAM CONDENSOR	6	27	Steam condenser solenoid valve ON time.	s	0	99,9	•	•
PUMPS	6	28	Fractional pump OFF time	s	0	99,9	•	•
PUMPS	6	29	Fractional pump ON time	s	0	99,9	•	•
DRAINING	6	30	Draining cycle OFF time	s	0	99,9	•	•
DRAINING	6	31	Draining cycle ON time	s	0	99,9	•	•
BOILER	6	39	Boiler or tank loading delay after full level activation	s	0	99	•	•
DOORS	6	40	Delay on door lock 1 opening after the limit switch activation	s	0	9,9	•	•
DOORS	6	41	Delay on door lock 1 closing after the limit switch activation	s	0	9,9	•	•
REGENERAT.	6	44	Pause time during regeneration	s	0	999	•	•

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number					
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL	
							CL	CDL
REGENERAT.	6	45	Water loading time for regeneration	s	0	999	•	•
REGENERAT.	6	46	Cold water loading time for regeneration rinsing	s	0	999	•	•
PRINT OUT	6	47	Sampling time for chamber temperature and pressure trends	s	5	99	•	•
CYCLE	6	48	Time in months to warn about forthcoming maintenance service since the last one carried out	num	1	99	•	•
CYCLE	6	49	Increase in machine hours to warn about the next maintenance service since the last one carried out	h	1	9999	•	•
DRAINING	6	51	Time ON surface heating element during the first stage of the resistive drying	s	1	15		•
DRAINING	6	52	Time ON surface heating element during the next stages of the resistive drying	s	1	15		•
DRAINING	6	53	Pause time for surface heating element during the resistive drying	s	0	999		•
VARIOUS								
DRAINING	7	1	Number of fractioned draining cycles	num	1	99	•	•
BOILER	7	2	Boiler or tank 1 stand-by temperature	°C	0	80	•	•
BOILER	7	3	Boiler or tank 1 cycle temperature	°C	0	80	•	•
CHAMBER	7	7	Min. quantity of water in the chamber	L	0	P7.08	•	•
CHAMBER	7	8	Max. quantity of water in the chamber	L	P7.07	99	•	•
CHAMBER	7	11	Max. chamber probe temperature difference	°C	0	99	•	•
CHAMBER	7	12	Min. temperature for max. chamber temperature probes difference control	°C	0	95	•	•
PREWASH	7	14	Max. permitted temperature in pre-wash phase	°C	0	95	•	•
DRAINING	7	15	Min. temperature for drain cooling activation	°C	0	100	•	•
STEAM CONDENSOR	7	16	Min. temperature for steam condenser solenoid valve ON-OFF activation (in treatment phase)	°C	0	95	•	•
WATER	7	19	Max. conductivity of water in chamber	uS/cm	0	20000	•	•
CHEMICALS	7	21	Max. chemical flowmeter impulse excess after switching off dosing pump	num	0	99	•	•
CHAMBER	7	22	A0 temperature interval	°C	0	99	•	•
CHAMBER	7	23	A0 temperature reference	°C	0	99	•	•
CHAMBER	7	24	A0 lower temperature limit	°C	0	99	•	•
PRINT OUT	7	25	Horizontal Resolution graphics (pixel/hour)	num	240	1000	•	•
REGENERAT.	7	26	Regeneration [memor. val./displayed val./no. cycles completed after being carried out] 1/10/never, 2/15/30, 3/20/25, 4/25/21, 5/30/18, 6/35/15, 7/40/12, 8/45/9, 9/50/6, 10/55/3, 11/60/1	sel	1	11	•	•
REGENERAT.	7	27	Number of regenerations for salt load warning	num	1	18	•	•

SW version 8.01			Legend: sel=selection, s=seconds, char=character, num=number						
CATEG.	SEC.	PAR.	DESCRIPTION	UDM	MIN	MAX	MODEL		
							CL CDL	SCL SCDL	
KEYBOARD	7	28	Programme selected in position 1 (P1 switch)	num	1	40	•	•	
KEYBOARD	7	29	Programme selected in position 2 (P2 switch)	num	1	40	•	•	
KEYBOARD	7	30	Programme selected in position 3 (P3 switch)	num	1	40	•	•	
CHAMBER	7	31	Temperature over the setpoint to switch OFF the heating element, only for set point lower than 90°C	°C	0	1	•	•	
CHAMBER	7	32	Temperature over the set point to switch ON the heating element, only for set point lower than 90°C	°C	0,1	P 7.31	•	•	
CHAMBER	7	33	Temperature over the setpoint to switch OFF the heating element, only for set point equal or higher than 90°C	°C	P 7.34	3	•	•	
CHAMBER	7	34	Temperature over the set point to switch ON the heating element, only for set point equal or higher than 90°C	°C	0,1	P 7.33	•	•	
EQUIVALENCES									
CHEMICALS	8	5	Chemical product for dosing pump 1 (flowmeter)	IMP/mL	0	9,999	•	•	
CHEMICALS	8	6	Chemical product for dosing pump 2 (flowmeter)	IMP/mL	0	9,999	•	•	
CHEMICALS	8	7	Chemical product for dosing pump 2 (flowmeter)	IMP/mL	0	9,999	•	•	
CHEMICALS	8	8	Chemical product for dosing pump 4 (flowmeter)	IMP/mL	0	9,999	•	•	
CHEMICALS	8	9	Chemical product for dosing pump 1 (timed control)	SEC/mL	0	9,999	•	•	
CHEMICALS	8	10	Chemical product for dosing pump 2 (timed control)	SEC/mL	0	9,999	•	•	
CHEMICALS	8	11	Chemical product for dosing pump 3 (timed control)	SEC/mL	0	9,999	•	•	
CHEMICALS	8	12	Chemical product for dosing pump 4 (timed control)	SEC/mL	0	9,999	•	•	
CHEMICALS	8	13	Way of dosing for chemical product 1 (by impulse, timed)	sel	IMPULSES - TIME		•	•	
CHEMICALS	8	14	Way of dosing for chemical product 2 (by impulse, timed)	sel	IMPULSES - TIME		•	•	
CHEMICALS	8	15	Way of dosing for chemical product 3 (by impulse, timed)	sel	IMPULSES - TIME		•	•	
CHEMICALS	8	16	Way of dosing for chemical product 4 (by impulse, timed)	sel	IMPULSES - TIME		•	•	
CHEMICALS	8	17	Reference for automatic calibration of chemical flowmeter. If P2.08=YES, the value is once/10.	mL	1	999	•	•	

THE TEMPERATURE FOR THE CHEMICAL LOADING HAS BEEN SET AS PHASE PARAMETER.

The parameters of the list below are referred to the chemical type called chemical product 1,2,3 as described on the following list.

Product 1: → Alkaline detergent

Product 2: → Acid/neutralizer detergent

Product 3: → Lubricant/rinse aid detergent

Product 4: → Caustic soda/disinfectant dosing pump

For a better understanding of this new version, follow the "**PARAMETERS LIST**" and the "**PROGRAMMES SHEET**" enclosed.

This new software contains a new generation of washing programmes that are designed to meet the needs of customers all over the world.

In particular, now there is the possibility of varying the position of the programmes.

A switch with 20 preset programmes can be installed near switch **P1** - **P2** - **P3**.

Parameters **P7.28**, **P7.29**, **P7.30** are used for this selection; for example, if the value "9" is entered for parameter **P7.30**, key **P3** will be selected for program 9 "**INTENSIVE**".

11.4 Details of the electronic card

The electronic card was designed for the control of the type of machine described below.
Any use other than that specified above.

The electronic card was designed following the indications given in the standards below:

EN 60335	low voltage
EN 61000-6-3	emissions
EN 61000-6-1	immunity

11.5 Features of master card

SERIAL INTERFACE

Com1:

Low voltage bus bar for two-way communication with the keyboard card.

Com2:

Asynchronous serial interface type RS 232 foreseen for connection to PC or printer.

11.6 Starting up and display of devices

It is possible to display the state of the devices.

Enter the menu: **UTILITY** → **MAINTENANCE** → **Insert 3rd level password** → **INPUT STATE**.

Push **P1** and **P2** buttons to scroll the the list of input and push **START** button to enter.

Push **P1** and **P2** to select the input to show.

Whether the entry is not active, the writing **OFF** appears, otherwise when active appears **ON**.

It is also possible to activate every device but the electrical resistance manually.

Enter the menu: **UTILITY** → **MAINTENANCE** → **Insert 3rd level password** → **OUTPUT STATE**.

Push **P1** and **P2** buttons to scroll the list of output and push **START** to select the contactor you want to activate.

Then push **P1** to activate it or **P2** to deactivate.

Nearby the display appears the contactor state.

Whether the contactor is not active, the writing **OFF** appears, otherwise when active appears **ON**.

If a contractor is not possible to activate you will see in the display "**FORBIDDEN**".

	WARNING
	For input and output's specification see the wiring diagram.

12. CHEMICALS CALIBRATION

Chemical products have different viscosities, so it is recommended to calibrate the dosing system every time you change the type of chemical.

Depending on machine configuration and set parameter (**P8.13 ÷ P8.17**), the chemical dosing can be done by time or impulses (in this case **ONLY** if it presents the flowmeter, ordered as **OPTIONAL**).

	ATTENTION There is a risk of contact with the chemical product, therefore obtain appropriate individual protection gear (gloves for protection from chemical substances, breathing protection masks, goggles etc.) during the execution of operations. The chemical products are an irritant for the eyes, in case of contact rinse thoroughly with water and consult a doctor. If these products come into contact to the skin, rinse with plenty of water.
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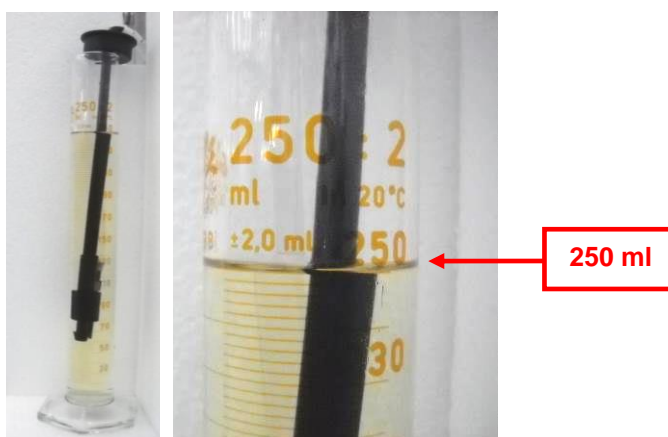
12.1 Timed dosing

In order to do the chemicals calibration, it is necessary to control that the chemical products dosing system is completely filled.

For this calibration's procedure it is necessary to have the stopwatch.

12.1.1 Calibration

Insert the suction lance of the chemical to be calibrated into a ml-graduated cylinder and fill it with the chemical up to 250 ml.



Chemical product

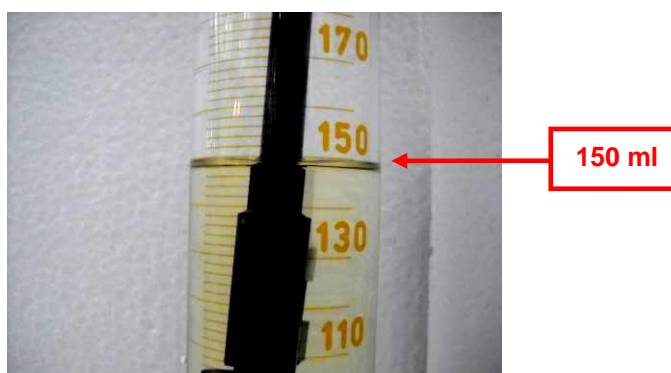
To start the calibration of dosing system it is necessary to activate manually the dosing device.

Enter the menu: **UTILITY → MAINTENANCE → Insert 3rd level password → OUTPUT STATE**

Push **P1** and **P2** buttons to scroll the list of devices and push **START** button to select the desired device.

After selecting the device to calibrate (see the input/output section 11.6) push **P1** button to activate the device and at same time activate the stopwatch to start measuring the time of dosing.

Push **P2** button to deactivate the device when the level of chemical product in ml-graduated cylinder have reached 100 ml and stop the stopwatch.



Chemical product

Calculate the value of calibration as the ratio between the time measured by the stopwatch and the amount of chemical product dosed in the cylinder (Ex. 45 sec / 100 ml = 0.45).

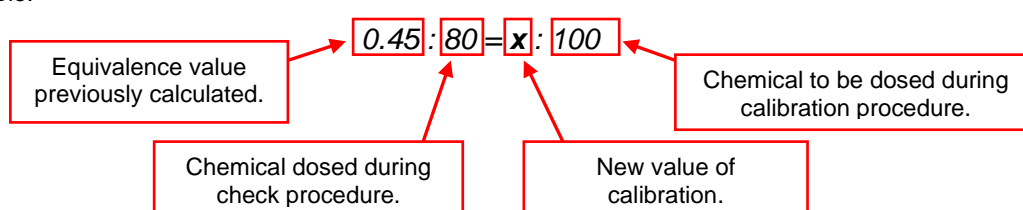
Insert the previously calculated value in the relative parameter relative of the doser on the section "EQUIVALENCE".

12.1.2 Check

After the calibration it is necessary to control the calibration efficacy by the check procedure:

- Activate manually the dosing device and the stopwatch to start measuring the time.
- When the stopwatch reaches the dosing time measured in the previous calibration procedure, deactivate the dosing device.
- Check that the level of product in the ml-graduated cylinder is 100 ml or the same dosed in the previous calibration procedure.
- If the level of dosed product is correct the check procedure is finished and continue the chemical calibration for others dosing devices.
- If not calculate the new value of the equivalence taking into account the dosage values previously calculated and the amount of chemical dosed.

Example:



- Insert the new value in the related parameter of the doser on the section "EQUIVALENCE".
- Control the calibration consistency with a new check procedure.

AFTER THE CHEMICAL CALIBRATION IT IS NECESSARY TO RUN A RINSING CYCLE WITHOUT INSTRUMENTS INSIDE THE CHAMBER.

12.2 Impulsed dosing

In order to set the flowmeters, it is necessary to control that the chemical products dosing system is completely filled.

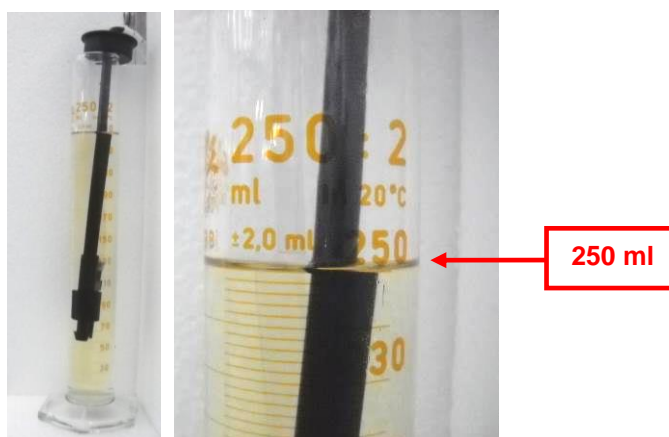
12.2.1 Calibration

Enter the menu: **SETTINGS** → **FLOWMETERS** → Insert 2nd level password → **CALIBRATION**

Select the flowmeter that you want to calibrate by using **P1** and **P2** buttons.

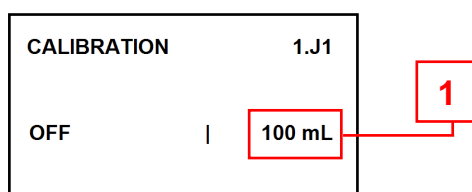
ATTENTION: If it is not present the flowmeter the system displays the message "**FORBIDDEN**".

Insert the suction lance of the chemical to be calibrated into a ml-graduated cylinder and fill it with the chemical up to 250 ml.

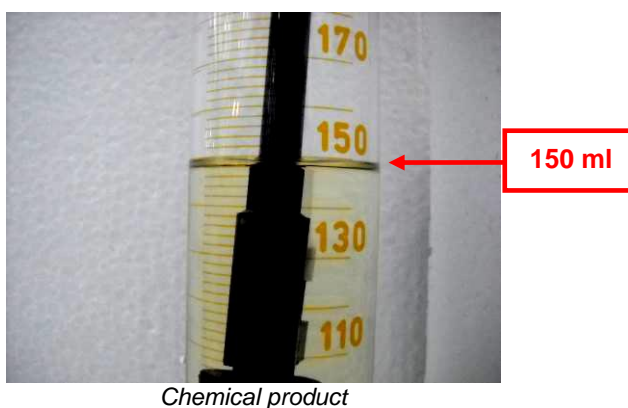


Chemical product

After selecting the flowmeter to calibrate (see the input output section 11.6) push **START** to start the procedure and **CONFIRM** it.



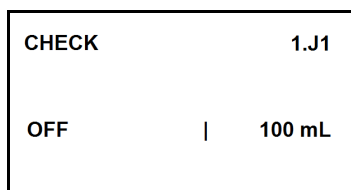
Press **START** when the level on the ml-graduated cylinder have reached the displayed quantity (1). If you want to shut off the procedure press **STOP**.



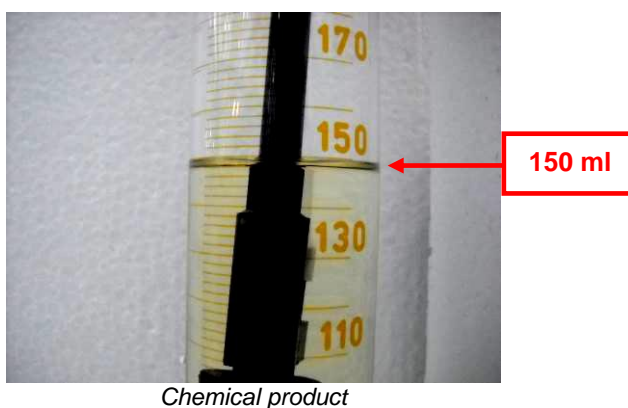
12.2.2 Check

After the calibration it is necessary to control the calibration efficacy by the CHECK procedure.

Enter the menu: **SETTINGS** → **FLOWMETERS** → **Insert 2nd level password** → **CHECK**



Select the chemical flowmeter to check and press **START** to begin the calibration verification. Once finished the dosing, the level of product in the ml-graduated cylinder should be the same of that one shown in the display.



Whether the levels do not correspond, a new calibration must be executed.

The quantity of product to execute the calibration can be changed using 8.17 parameter.

AFTER THE CHEMICAL CALIBRATION IT IS NECESSARY TO RUN A RINSING CYCLE WITHOUT INSTRUMENTS INSIDE THE CHAMBER.

13. CLOCK

- The card has a real-time clock.
- Time readings are also used when recording historical data.

14. HISTORICAL DATA

During the working cycle, the machine memorizes on a card all the working data of the wash cycles that have been performed.

- The card is able to record the fields described below for up to a max. of 400 cycles in the permanent memory. The fields given in the example below are recorded for each cycle:

DATE	START TIME	PROGRAMME	MAX °C	HOLD>85°C	FAULTS
12/12/2012	12.00	Short	93°C	60 seconds	01
12/12/2012	13.05	Standard	94°C	180 seconds	01

- When 95% of the memory is full the dump memory message appears on the display. To clear the message, insert the USB key on the dedicated port and enter the menu. Select the USB menu and download from the machine the historical data.
- The various causes for machine shutdowns are indicated in the FAULTS section, the faults are identified by alarm code.

15. PC INTERFACE

The card has a communication channel RS 232 with Modbus protocol.

The channel can be used to access the historical data records file by setting the printer as follows:

- **baud rate: 9600 baud, X ON X OFF**
- **data bits: 8bits,**
- **parity: none.**

16. ALARMS and EVENTS LIST

16.1 Logical description of alarm interventions

During machine operation, the operator is aided by **ALARMS** or **WARNING** which make use of visual signals on the operator display panel to advise him of possible anomalies in progress and machine alarms which have intervened.

Intervention of an **ALARM** during operation of the system is signalled to the operator by a message on the operator panel.

The alarm which appears on the panel remains active until the cause of intervention is removed.








The intervention of an alarm stops the wash cycle currently in progress.













16.2 List of alarm messages










Possible alarms which may intervene during a work cycle are shown on the control panel display.



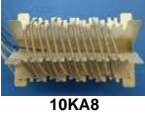






The message includes the number of the alarm that has intervened and its name.










A complete list of possible alarm messages follows.











ALARM TEXT	ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
1 power fail	Indicate a power failure at the restoration	6VI1	1- General power supply interrupted 2- The voltage supply is lower than the voltage needed	1- Power supply restoration 2- Control the voltage and current value
2 open load. door	The loading door is open or/and unlocked during a cycle	13SQ23  13SQ16 	1- Door sensor 13SQ23 stuck or defective 2- Sensor connection NOT OK	1- Check and eventually replace the defective sensor 2- Check input I23 and relative wire 13.23
4 load.door fail.	The loading door is open and locked (incongruity)	13SQ23  13SQ16  11M15 	1- Locking door micro switch 13SQ23 stuck or defective 2- Door sensor 13SQ23 stuck or defective 3- Micro switch connection NOT OK 4- Sensor connection NOT OK 5- Gear motor 11M15 stuck or defective 6- Gear motor connection NOT OK	1- Check and eventually replace the defective micro switch 2- Check and eventually replace the defective sensor 3- Check input I23 and relative wire 13.23 4- Check input I22 and relative wire 13.16 5- Check and eventually replace the defective gear motor 6- Check output O13 of board 6VI1 and relative wire 11.09
7 unblock.door 1	The loading door is not locked after the start of the cycle	13SQ23  11M15 	1- Time set by P6.14 too low 2- The door was open during the locking door process 3- Unlocking door micro switch 12B3 stuck or defective 4- Gear motor 11M15 stuck or defective 5- Micro switch connection NOT OK 6- Gear motor connection NOT OK	1- Increase the diagnostics time P6.14 2- Close door 3- Check and eventually replace the defective micro switch 4- Check and eventually replace the defective gear motor 5- Check input I22 and relative wire 13.16 6- Check output O13 of board 6VI1 and relative wire 11.09



ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
9	unlocking 1fail.	The door locking opening of the loading side is not complete after the time set by P6.14	 	1- Time set by P6.14 too low 2- Locking door micro switch 13SQ23 stuck or defective 3- Gear motor 11M15 stuck or defective 4- Micro switch connection NOT OK 5- Gear motor connection NOT OK	1- Increase the diagnostics time P6.14 2- Check and eventually replace the defective micro switch 3- Check and eventually replace the defective gear motor 4- Check input I22 and relative wire 13.16 5- Check output O13 of board 6V11 and relative wire 11.09
11	no cold water	The cold water filling is not complete after the time set by P6.05	 	1- Water supply interrupted 2- Water filling solenoid valve 9YV5 defective or not connected 3- Time set by P6.05 too low 4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.05 4- Check and eventually replace the defective pressure switch 5- Check output O5 of board 6V11 and relative wire 9.5 6- Check input I18 and relative wire 12.17
12	no hot water	The hot water filling is not complete after the time set by P6.06	 	1- Water supply interrupted 2- Water filling solenoid valve 10YV27 defective or not connected 3- Time set by P6.06 too low 4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.06 4- Check and eventually replace the defective pressure switch 5- Check output O9 of board 6V11 and relative wire 10.25 6- Check input I18 and relative wire 12.17
13	no demin. water	The demineralised water filling is not complete after the time set by P6.07	 	1- Water supply interrupted 2- Water filling solenoid valve 9YV6 defective or not connected 3- Time set by P6.07 too low 4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.07 4- Check and eventually replace the defective pressure switch 5- Check output O6 of board 6V11 and relative wire 9.6 6- Check input I18 and relative wire 12.17
14	no c.+hot water	The level of the cold+hot water filling has not been reached after the time set by P6.08 (level control)	  	1- Water supply interrupted 2- Water filling solenoid valve 9YV5 or 10YV27 defective or not connected 3- Time set by P6.08 too low 4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.08 4- Check and eventually replace the defective pressure switch 5- Check output O5 or O9 of board 6V11 and relative wire 9.5 or 10.25 6- Check input I18 and relative wire 12.17
15	no c.+demi water	The level of the cold+demi water filling has not been reached after the time set by P6.09 (level control)		1- Water supply interrupted 2- Water filling solenoid valve 10YV27 or 9YV6 defective or not connected 3- Time set by P6.09 too low	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.09

ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
			9YV6  12SP17 	4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	4- Check and eventually replace the defective pressure switch 5- Check output O6 or O5 of board 6V11 and relative wire 9.6 or 9.5 6- Check input I18 and relative wire 12.17
16	no h.+demi water	The level of the hot+demi water filling has not been reached after the time set by P6.10 (level control)	10YV27  9YV6  12SP17 	1- Water supply interrupted 2- Water filling solenoid valve 10YV27 or 9YV6 defective or not connected 3- Time set by P6.10 too low 4- Pressure switch 12SP17 defective 5- Solenoid valve connection NOT OK 6- Pressure switch connection NOT OK	1- Verify if the water tap is open and if there is no interruption on the loading pipe 2- Check and eventually replace the defective solenoid valve 3- Increase the diagnostics time P6.10 4- Check and eventually replace the defective pressure switch 5- Check output O6 or O9 of board 6V11 and relative wire 9.6 or 10.25 6- Check input I18 and relative wire 12.17
17	no chemical 1	The chemical product associated to dosing pump 1 is used-up (if it is set as an alarm by P3.06) Diagnostics with dosing pump enabled: Pressure switch state with pressure switch presence;	10M9 	1- Chemical product used-up 2- Dosing pump 10M9 defective 3- Pressure switch connection NOT OK	1- Replace the chemical tank 2- Check and eventually replace the defective dosing pump 3- Check output O11 and relative wire 10.9
18	no chemical 2	The chemical product associated to dosing pump 2 is used-up (if it is set as an alarm by P3.06) Diagnostics with dosing pump enabled: Pressure switch state with pressure switch presence;	11M8 	1- Chemical product used-up 2- Dosing pump 11M8 defective 3- Pressure switch connection NOT OK	1- Replace the chemical tank 2- Check and eventually replace the defective dosing pump 3- Check output O12 and relative wire 11.8
20	no chemical 3	The chemical product associated to dosing pump 3 is used-up (if it is set as an alarm by P3.06) Diagnostics with dosing pump enabled: Pressure switch state with pressure switch presence;	11M26 	1- Chemical product used-up 2- Dosing pump 11M26 defective 3- Pressure switch connection NOT OK	1- Replace the chemical tank 2- Check and eventually replace the defective dosing pump 3- Check output O14 and relative wire 11.26
23	drain problem	After a set time from the drain pneumatic valve activation, the water level on the tank is still active (tank not empty). The timeout is referred to: a) P6.03 simple drain b) P6.04 drain with rinse water intake	10M1 12SP17 	1- Drain obstructed 2- Tank level pressure switch 12SP17 defective 3- Drain pump 10M1 defective 4- Drain pump connection NOT OK 5- Pressure switch connection NOT OK 6- Time set by P6.03 or P6.04 too low	1- Remove the obstruction 2- Check and eventually replace the defective pressure switch 3- Check and eventually replace the defective pump 4- Controllare l'uscita O10 e relativo filo 10.11 5- Check input I18 and relative wire 12.17 6- Increase P6.03 or P6.04



ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
24	fan problem	Pressure switch open with fan switched on at the maximum speed; Pressure switch closed with fan switched off	3M31 15SP40 	With drying enable: 1- Drying pressure switch 15SP40 defective 2- Fan 3M31 defective 3- Air filter obstructed 4- Fan connection NOT OK 5- Pressure switch connection NOT OK With drying disabled: 6- Drying pressure switch 15SP40 defective 7- Fan connection NOT OK	1- Check and eventually replace the defective pressure switch 2- Check and eventually replace the defective fan 3- Check and eventually replace the defective filter 4- Check output O4 of board 6V11 and relative wire 9.27 5- Check input I40 of board 6V11 and relative wire 15.40 6- Check and eventually replace the defective pressure switch 7- Check output O4 of board 6V11 and relative wire 9.27
25	drying min°C	The air temperature has never reached the minimum temperature set by P7.13 during the drying phase	18BT1  2HE4  10KA8 	1- Probe 18BT1 defective 2- Probe connection NOT OK 3- Heating element 2EH4 defective 4- Air heating element contactor 10KA8 defective 5- Heating element connection NOT OK 6- Time set by P7.13 too high	1- Check and eventually replace the defective probe 2- Check input I35-I36 3- Check and eventually replace the defective heating element 4- Check and eventually replace the defective contactor 5- Check output O8 of board 6V11 and relative wire 10.8 6- Decrease P7.13
26	prewash max°C	The tank temperature is over the maximum allowed temperature during a prewashing phase	16BT1 – 17BT1 	1- Prewashing limit temperature (P7.14) incorrect 2- Program phases error (prewashing phase execute immediately after an high temperature phase) 3- Probe 16BT1 – 17BT1 defective 4- Probe off set 16BT1 – 17BT1 incorrect	1- Set P7.14 2- Correct working program 3- Check and eventually replace the defective probe 4- Set the probe offset
27	tank probe lim°C	The tank temperature is over 102°C (= max limit 95°C + emergency 7°C)	16BT1 – 17BT1 	1- Probe 16BT1 – 17BT1 defective 2- Probe off set 16BT1 – 17BT1 incorrect 3- Probe connection NOT OK 4- Tank heating element contactor stuck	1- Check and eventually replace the defective probe 2- Set the probe offset 3- Check input I29-I30 and I32-I33 4- Check and eventually replace the defective contactor
28	Dryingprobelim°C	The air temperature is over 162°C (= max limit 150°C + emergency 12°C)	18BT1 	1- Probe 18BT1 defective 2- Heating element connection NOT OK 3- Air heating element contactor stuck 4- Contactor connection NOT OK 5- Probe off set 18BT1 incorrect	1- Check and eventually replace the defective probe 2- Check input I35-I36 3- Check and eventually replace the defective contactor 4- Check output O8 of board 6V11 and relative wire 10.8 5- Set the probe by P4.05
29	Boilerprobelim°C	The boiler temperature is over 100°C (= max limit 80°C + emergency 20°C)	21BT1 	1- Probe 21BT1 defective 2- Heating element connection NOT OK 3- Boiler heating element contactor 19KM11 stuck 4- Contactor connection NOT OK 5- Probe off set incorrect	1- Check and eventually replace the defective probe 2- Check input I19-I20 of board 6V13 3- Check and eventually replace the defective contactor 19KM11 4- Check output O11 of board 6V13 and relative wire 19.11 5- Set the probe by P4.07
30	tank probe	Tank temperature probe failure (working probe)	16BT1 	1- Probe 16BT1 defective 2- Probe connection NOT OK	1- Replace the defective probe 2- Check input I29-I30 of board 6V11



ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
31	tank probe 2	Tank temperature probe failure (registration probe)	17BT1 	1- Probe 17BT1 defective 2- Probe connection NOT OK	1- Replace the defective probe 2- Check input I32-I33 of board 6V11
32	drying probe	Air temperature probe failure	18BT1 	1- Probe 18BT1 defective 2- Probe connection NOT OK	1- Replace the defective probe 2- Check input I35-I36 of board 6V11
33	boiler probe	Boiler temperature probe failure	21BT1 	1- Probe 21BT1 defective 2- Probe connection NOT OK	1- Replace the defective probe 2- Check input I19-I20
34	check temp.	Only for the treatment phase if: a) The tank temperature is over P7.12 b) The registration probe is different from the working probe of a value over P7.11, c) Tank heating element off d) All the condition a,b,c) still exist form 30 s	16BT1  17BT1 	1- Incongruity parameter P.7.11 incorrect 2- Probes off set incorrect 3- Probe 16BT1 defective 4- Probe 17BT1 defective 5- Probes connection NOT OK	1- Set P7.11 2- Set the probe by P4.01 e P4.03 3- Replace the defective probe 4- Replace the defective probe 5- Check input I29-I30 and I32-I33 for board 6V11
35	Serial connect.1	The communication between the main board and the control panel is interrupt (loading side)	6V11	1- Loading side plug cable defective 2- Control panel- main board connection NOTOK 3- Main board 6V11 defective 4- Loading side control panel defective	1- Replace the plug cable 2- Check the connection 3- Replace the defective board 4- Replace the defective control panel
38	no basket	No basket presents. Diagnostics detected only at start cycle.			
39	no tank heating	During the tank electrical heating the temperature is increased less than 1°C after the time set by P6.01	16BT1  10KM3 	1- Time set by P6.01 too low 2- Heating element contactor 10KM3 stuck 3- Contactor connection NOT OK 4- Probe 16BT1 defective 5- Probes connection NOT OK 6- Water filling solenoid valve defective	1- Increase P6.01 2- Check and eventually replace the defective contactor 3- Check output O7 and relative wire 10.10 4- Replace the defective probe 5- Check I29-I30 6- Replace the defective solenoid valve
41	no boilerheating	During the boiler electrical heating the temperature is increased less than 1°C after the time set by P6.02	21BT1  19KM11 	1- Time set by P6.02 too low 2- Heating element contactor 10KM1 stuck 3- Contactor connection NOT OK 4- Probe 31BT1 defective 5- Probes connection NOT OK 6- Water filling solenoid valve defective	1- Increase P6.02 2- Check and eventually replace the defective contactor 3- Check output O11 of board 6V13 and relative wire 19.11 4- Replace the defective probe 5- Check I19-I20 6- Replace the defective solenoid valve
45	Condenser pump	The maximum level of the steam condenser is activated (even the minimum one): possible drain pump/steam condensate failure			

ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
46	pump	Pump pressure switch closed with pump on, or open with pump off	 	Pump 2M1 on: 1- Water quantity not sufficient 2- High Chemical quantity 3- Pump 2M1 defective 4- Pressure switch 15SP41 defective 5- Pressure switch connection NOT OK 6- Pump connection NOT OK Pump 2M1 off: 7- Pump connector stuck 8- Contactor connection NOT OK 9- Pressure switch 15SP41 defective 10- Pressure switch connection NOT OK	1- Verify the cycle parameters and/or verify the drain valve leak 2- Verify the cycle parameters (chemical quantity + P8.17) 3- Check and eventually replace the defective pump 4- Check and eventually replace the defective pressure switch 5- Check input I41 and relative wire 15.41 6- Check output O15 and relative wire 11.12 7- Check and eventually replace the defective contactor 8- Check output O15 and relative wire 11.12 9- Check and eventually replace the defective pressure switch 10- Check input I41 and relative wire 15.41
47	flowmeter fail.1	The chemical 1 flowmeter signal an impulse number superior to value set by P7.21 with the dosing pump off	 	1- Dosing pump 1 10M9 defective 2- P7.21 incorrect 3- Flowmeter J1 defective 4- Flowmeter connection NOT OK	1- Replace the dosing pump 1 2- Check and control P7.21 3- Replace the defective flowmeter 4- Check input J1
48	flowmeter fail.2	The chemical 2 flowmeter signal an impulse number superior to value set by P7.21 with the dosing pump off	 	1- Dosing pump 2 11M8 defective 2- P7.21 incorrect 3- Flowmeter J2 defective 4- Flowmeter connection NOT OK	1- Replace the dosing pump 2 2- Check and control P7.21 3- Replace the defective flowmeter 4- Check input J2
50	flowmeter fail 3	The chemical 3 flowmeter signal an impulse number superior to value set by P7.21 with the dosing pump off	 	1- Dosing pump 3 11M26 defective 2- P7.21 incorrect 3- Flowmeter J3 defective 4- Flowmeter connection NOT OK	1- Replace the dosing pump 3 2- Check and control P7.21 3- Replace the defective flowmeter 4- Check input J3
55	conduc. probe	Conductivity probe failure	 	1- Conductivity limit parameter not correct 2- Max. number of attempts parameter not correct 3- Conductivity transmitter 9A7 not calibrated 4- Conductivity transmitter 9A7 defective 5- Conductivity sensor defective or exhausted 9FU1	1- Fix parameter within treatment phase parameter 2- Fix parameter 3- Calibrate conductivity transmitter 9A7 4- Replace conductivity transmitter 9A7 5- Replace conductivity sensor 9FU1

ALARM TEXT		ALARM DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
56	conductivity	Conductivity value superior to the value set by P7.19	Device 9FU1 	1- Conductivity limit parameter not correct 2- Max. number of attempts parameter not correct	1- Fix parameter within treatment phase parameter 2- Fix parameter
			Device 9A7 	3- Conductivity transmitter 9A7 not calibrated 4- Conductivity transmitter 9A7 defective 5- Conductivity sensor defective or exhausted 9FU1	3- Calibrate conductivity transmitter 9A7 4- Replace conductivity transmitter 9A7 5- Replace conductivity sensor 9FU1
60	TIME	During the treatment phase the thermal-regulating timeout expired (30min) (start to count the first time that the tank temperature reaches the setpoint temperature +0.5 °C)	/	1- Excessive chimney suction 2- Wrong loading chemical temperature	1- Decrease the chimney suction 2- Check and set the chemical loading temperature
67	ALARM	Machine configuration. wrong	/	1- The pin 19 is not closed.	1- Check pin 19.
100	CAN serial	Diagnostics activated if P1.19 is not set at 0. Interruption of Can bus communication between master board and Can/Ethernet gateway of supervisor interface (diagnostics detected in case of machine in standby status)			

WARNINGS LIST

WARNING TEXT	WARNING DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
press start	It is possible to start a cycle during a stand-by state. With a double door machine is necessary to open and close the door one time after the end of a cycle	/	/	/
no chemical 1	The chemical product associated to dosing pump 1 (detergent) is used-up (if it is set as a warning by P3.06) Diagnostics with dosing pump enabled: - Pressure switch state with pressure switch presence; Lack of a new impulse after the time set by P6.12 if a flowmeter is used	13SP15 	1- Chemical 1 used up 2- Level sensor 13SP15 chemical 1 dirty or blocked 3- Level sensor 13SP15 chemical 1 defective 4- Level sensor connection NOT OK	1- Replace the chemical tank 1 2- Clean the level sensor chemical 1 3- Replace the level sensor chemical 1 4- Check input I21 and relative wire 13.15
no chemical 2	The chemical product associated to dosing pump 2 (neutralising) is used-up (if it is set as a warning by P3.06) Diagnostics with dosing pump enabled: - Pressure switch state with pressure switch presence; Lack of a new impulse after the time set by P6.12 if a flowmeter is used	12SP14 	1- Chemical 2 used up 2- Level sensor 12SP14 chemical 2 dirty or blocked 3- Level sensor 12SP14 chemical 2 defective 4- Level sensor connection NOT OK	1- Replace the chemical tank 2 2- Clean the level sensor chemical 2 3- Replace the level sensor chemical 2 4- Check input I17 and relative wire 12.14

WARNING TEXT	WARNING DESCRIPTION	DEVICE	POSSIBLE CAUSES	SOLUTION
no chemical 3	The chemical product associated to dosing pump 3 (soda) is used-up (if it is set as a warning by P3.06) Diagnostics with dosing pump enabled: - Pressure switch state with pressure switch presence; Lack of a new impulse after the time set by P6.12 if a flowmeter is used		1- Chemical 3 used up 2- Level sensor 12SP13 chemical 3 dirty or blocked 3- Level sensor 12SP13 chemical 3 defective 4- Level sensor connection NOT OK	1- Replace the chemical tank 3 2- Clean the level sensor chemical 3 3- Replace the level sensor chemical 3 4- Check input I20 and relative wire 12.19
no chemical 4	The chemical product associated to dosing pump 4 (lubricating) is used-up (if it is set as a warning by P3.06) Diagnostics with dosing pump enabled: - Pressure switch state with pressure switch presence; Lack of a new impulse after the time set by P6.12 if a flowmeter is used		5- Chemical 4 used up 6- Level sensor 12SP13 chemical 4 dirty or blocked 7- Level sensor 12SP13 chemical 4 defective 8- Level sensor connection NOT OK	5- Replace the chemical tank 4 6- Clean the level sensor chemical 4 7- Replace the level sensor chemical 4 8- Check input I20 and relative wire 12.19
salt loading	Make a salt refill after the cycle number set by P7.27 (with P7.26 different form 10)	/	/	/
pressure probe	Failure of washing pump pressure measuring.	/	/	/
- open door -	Inform that one door is open	/	/	/
wait	Generic warn that inform to wait before to do a new action	/	/	/
close door!	Inform that one door is close			
ON PRINT	Cycle successful completed	/	/	/
NO DISINFECTION	The cycle has been interrupted		The cycle was interrupt before the thermal disinfection process end	Restart a cycle form the beginning
wait Supervisor	The unloading of the data cycle carried out by the and it is necessary ato wait in order to start a new cycle			

HISTORICAL EVENTS

EVENT	DISPLAY MESSAGE	DESCRIPTION
FROM 1 TO 100	SAME LIST OF ALARMS	(SEE ALARMS LIST)
90	OK	CYCLE ENDS WITH SUCCESS
91	NO DISINFECTION	CYCLE HAS BEEN INTERRUPTED

17. USB PORT

On the control panel board there is an USB port that allows the machine programming and data saving.



17.1.1 Programming

It is sufficient to insert the USB key on the port and switch OFF and switch ON the control panel board using the ON/OFF button.

The display will ask about the new files installation allowing the selection between APPEND (add only the new parts) and OVERWRITE (delete the existing files and install the new one).

It is possible to program:

- Parameters
- Cycles
- Control panel FW
- Language file

17.1.2 Data saving

Insert the USB key on the dedicated port and enter the menu and select the USB menu; it is possible to download from the machine the following information and files:

- cycles
- parameters
- historical
- maintenance historical

Selected the information you want to download, press the **START** button.

The cycle and parameter files can be used to program another machine or as back-up of the machine.

17.1.3 Data saving during the cycle

To save the data at the end of every washing program, insert the USB key on the dedicated port and follow the procedure:

Set the parameters P1.04 at 3 and P1.05 to YES.

Start the washing program.

At the end of the cycle the machine creates the file with the samples of temperature and pressure probes with the information of every washing program phases.

To every washing program are associated two files which contain the data structured as below.



00036G.TXT

The file *****G.TXT contains:

N.B.: the ***G.TXT will be saved automatically at the end of the washing program.**

```
*****
*****
End user      : *****
Model        :
Machine       : 13146
Work station  : 0
Software      : 7.00
Operator      :
-----
```

Information related to machine and operator.

```
B20 PREWASH   Record: 00015
.....
START:        05/06/13 h: 16:10
```

Information related to washing program.

n°	mm:ss	°C(1)	°C(2)	Bar
0001	0:00	35.2	35.1	----
0002	0:05	35.2	35.1	----
0003	0:10	35.2	35.1	----
0004	0:15	35.2	35.1	----
0005	0:20	35.2	35.1	----
0006	0:25	35.1	35.0	----

Number of samples.

Data value to sampled data.

Sampling time.

WRITE OK



00036C.TXT

The file *****C.TXT contains:

N.B.: To save the ***C.TXT, insert the key in the dedicated port, enter the menu, select the USB menu and download from the machine the information of historical.**

```
*****
*****
End user      : *****
Model        :
Machine       : 13146
Work station  : 0
Software      : 7.00
Operator      :
-----
```

Information related to machine and operator.

Information related to washing program.

```
B20 PREWASH   Record: 00015
.....
START:        05/06/13 h: 16:10
```

```
-> chemical load h: 16:10
    T1= 35.2°C T2= 35.1°C
-> 1: drain h: 16:11
    T1= 35.1°C T2= 35.0°C
-> 2: prewashing h: 16:16
    T1= 24.5°C T2= 24.5°C
-> 3: drain h: 16:17
    T1= 24.6°C T2= 24.6°C
STOP: 05/06/13 h: 16:17
END CYCLE: OK
```

Information related to every washing program phase.

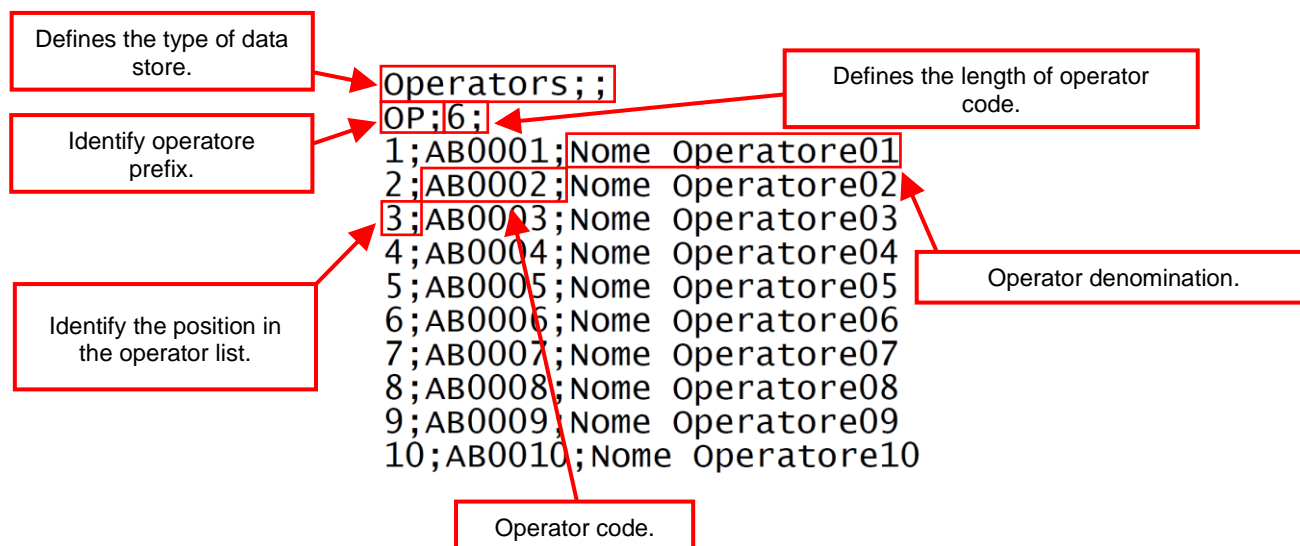
17.1.4 Operator archive management

It is possible to save the archive operators present inside of machine memory into a file following the procedure:

Insert the USB key into dedicated port.

Enter menu: **USB → OPERATOR → Insert 3rd level password → USB EXPORT → Press START button.**

The name of file is "**OPERATxxxxx.CSV**", where "**xxxxx**" stands for an optional generic denomination and it contains the data structured as below:



FIELD	FIXED CHARACTERISTICS
Type of data store	Nothing
Operator prefix	Length = 2 Allowable characters: 0...9 number digits, "A...Z" uppercase alphabet, "a..z" lowercase alphabet, " " space, "-" minus sign, "." full stop.
Lenght of operator code	From 1 to 8
Position in the operator list	Progressive order (Maximum number of operators = 60)
Operator code	Allowable characters: 0...9 number digits, "A...Z" uppercase alphabet, "a..z" lowercase alphabet, " " space, "-" minus sign, "." full stop.
Operator denomination	Length ≤ 16 (can be empty) Allowable characters: 0...9 number digits, "A...Z" uppercase alphabet, "a..z" lowercase alphabet, " " space, "-" minus sign, "." full stop.

It is possible to upload the archive operators by insert the USB key into dedicated port and enter the menu: **USB → OPERATOR → Insert 3rd level password → USB IMPORT → Press START button.**

	ATTENTION
	<ul style="list-style-type: none"> To modify the operator archive file, it is recommended use a text editor (ex. Notepad). If the file contains an operator with the field "OPERATOR CODE" null (no character), the file is considered valid up to the previous operator. All subsequent elements are ignored. If the file contains values that do not comply with the constraints described above, the file is considered incorrect. During the upload it is displayed the first line where the error is present.

18. MAINTENANCE

18.1 General recommendations on maintenance

The machine was constructed only for washing and thermal disinfection of laboratory instruments and objects normally used in laboratories and so forth.

It is therefore subject to constant contact with aggressive detergents and with contaminated instruments.

For this reason, it is necessary to provide some useful instructions for the operators who will be performing maintenance on it.

The maintenance technicians, in normal operating conditions, are not subject to risks if they work safely using suitable means of protection.

In order to work safely the maintenance technician must:

- Carefully comply with the instructions set forth in this manual.
- Use safety devices appropriately and with care, as well as group and individual safety gear provided in the workplace.
- Use special care in making repairs or replacing mechanical parts (e.g. drain pump, etc.) on malfunctioning machines which have not completed the thermal disinfection cycle.

Maintenance operations for the machine described in this manual can be divided into "**Routine Maintenance**" and "**Special Maintenance**".

GENERAL GUIDELINES

MACHINE STATUS:

The machine must not be electrically powered and the dedicated safety device must be in the OFF position. Person performing the task must ensure that there is no-one around the machine during this operation.

SAFETY SYSTEMS TO BE ADOPTED:

The operation must be carried out in compliance with standards governing the use of disinfectant substances used (see technical information for the product being used), in compliance with standards concerning contact with parts of the machine which may be contaminated by pathogenic materials and with use of individual protection gear.

18.1.1 Maintenance request

The machine displays the "**MAINTENANCE**" warning after a specified time or after a specified numbers of working hours according to parameter **P6.48**. This warning doesn't affect the normal use of machine.

The service technician must do the maintenance operations in the shortest possible time.

To clear the "**MAINTENANCE**" warning, follow the procedure:

1. Do the general maintenance of machine;
2. Enter at the MENU':

UTILITY → MAINTENANCE → Insert 3rd level passord → MAINTENANCE REGISTER → Press START button.

18.2 Procedure for routine maintenance work

Routine maintenance includes all operations aimed at keeping various parts of the machine clean and functional.

They must be performed on a regular basis (see table in paragraph 18.3) or when considered necessary due to incorrect performance of washing cycle.

Since these are simple cleaning operations, they are normally performed by the machine operator on his own liability.

18.3 Table of routine maintenance tasks

The following table shows the various routine maintenance tasks, their frequency, who is to perform them and the reference to the specific intervention form.

Each single task is more fully explained in the single reference forms.

Even if the water supply is relatively soft, the high temperature can cause the formation of residues which may create problems with the heating element, compromising the correct wash cycle and the reaching of the disinfection temperature.

For these reasons it is advisable to carry out regular cleaning as described below.

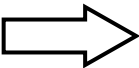
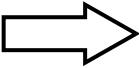
TABLE OF ROUTINE MAINTENANCE TASKS

Steelco		LAB 500 SCL - LAB 500 SCDL - LAB 500 CL - LAB 500 CDL																		WORKER	TIME	REFERENCE
		Programmed maintenance scheme																				
		Components	Step make every	months												Activity						
				3	6	9	12	15	18	24												
Chamber filters		make every day														Take off filters and cleaning.	Ac	10'	M1			
Water solenoid filter		make every		x											x	Check, clean and if necessary replace.	Is	10'	M4			
Dryer pre-filter (if present)		make every 100 hours														Replace.	Is	2'	M5			
Dryer HEPA filter (if present)		make every 300 hours														Replace.	Is	2'	M5			
Temperature probes		make every		x											x	During periodic validation, check the sensor status.	Is	60'	M2			
Safety thermostat		make every		x											x	Verify the sensor.	Is	5'	M2			
Chemical flowmeters (if present)		make every		x											x	Open the flowmeter and clean the inner side. If it stays inactive for more than 15 days, make and inner cleaning before using.	Is	10'				
Chemical dosing pump		make every	x	x											x	Check the membrane pipe and the presence of lack.	Is	5'	M6			
Inner pipe and connection pipe of dosing pump		make every	x	x											x	Replace.	Is	12'	M6			
Chemical tank level sensor		make every		x											x	Check and clean the suction filter.	Is	4'				
Connection pipe of dosing pump		make every		x											x	Check of crashing, any lacks or hardening.	Is	10'				
Washing arms		every week														Check for free rotation. Open the cleaning caps and wash inside: check and in case cleaning the nozzle.	Ac	30'	M3			
Door gasket		make every		x											x	Verify the gasket . Replace after 1000 cycles.	Ac	5'				
Washing pumps		make every ...													x	Check for water leaks from the arm seal.	Is	20'				
Water heating element		make every ...													x	Check for water leaks fro the gasket.	Is	5'				
Water solenoid valves		make every ...													x	Check for any leaks, if necessary remove and clean the membrane seat.	Is	1'				
Drain pump		make every ...													x	Check for any leaks, if necessary remove and clean the membrane seat.	Is	3'				
Pressure switches		make every ...													x	Operation is checked by the control system. In case of defect of control system of water levels, go on by emptying the tank, blowing inside the black pipe connected to the pressure switch, in order to free from obstructions.	Is	3'				
Pipe of unloading water		make every ...													x	Check the situation of pipe and the seal.	Is	10'				
Pipes of loading water		make every ...													x	Check the situation of pipe and the seal.	Is	3'				

Is = Installation and repair technician - As = Responsible authority for the machine in the workplace - Ac = Machine operator

N.B.:

Routine maintenance tasks must be performed at the intervals set forth in the table.
It is however advisable to carry out single cleaning tasks anytime you feel they may be necessary.

In case the machine requires the replacement of one or more components, please refer to the manufacturer's spare part list.	
	It is advisable to carry out a general check-up and to clean the appliance regularly, particularly if the supply water is very hard.
	Particular attention should be paid to heating element and the probe of thermostats.

WARNING

- Do not clean the machine outside with high pressure water.
- Please contact the retailer that supplies your cleaning products for details of recommended methods and products for sanitizing the machine regularly.
- The machine has a safety thermostat that shuts down the power supply to the heating elements in the event of overheating.
Before turning the machine back on, you will need to eliminate the problem and wait for the temperature to drop back below operating levels.

To re-start the appliance the fault that caused overheating must be corrected

Every 12 months

- Clean the diaphragms of solenoid valves and replace if necessary;
- Clean the thermostat probe.
- Change the membrane pipe inside dosing pump.

Even if the supply water is soft, the high working temperatures may cause limescale to build-up.

Apart from damaging the resistors, limescale can also clog the nozzles in which case the correct tank temperature for thermodisinfection may not be reached.

WARNING

IT IS NECESSARY TO MAKE A MAINTENANCE AT REGULAR INTERVALS, THIS MEANS EVERY 3 MONTHS, IN ORDER TO GUARANTEE THE PERFECT FUNCTIONING OF PUMPS DOSING CHEMICAL PRODUCTS.

CLEANING OF WASH CHAMBER DRAIN FILTERS

M1

Worker: **Ac**

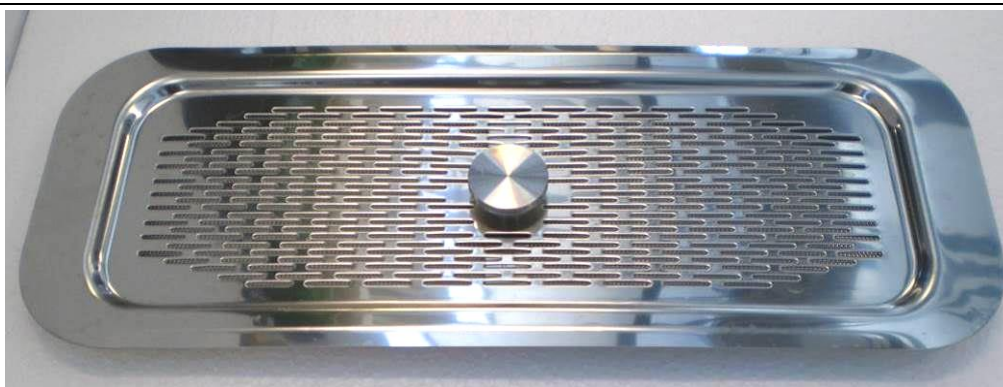
Frequency of Intervention: **every day**

METHOD OF INTERVENTION: clean the wash chamber drain filters in the following manner:

- Open the wash chamber door and extract the basket.
- Extract the drain water filtering assembly from the chamber.



- Unscrew the threaded pin and remove the cover of the drain water filter basket.



- Clean the drain water filter basket. Remove residues deposited during various wash cycles.
- Remove and clean any deposits and incrustations from the wash chamber drain.



- Replace the clean filter on the wash chamber drain.
- Put the cover for the drain water filter back in place. Lock it in position with the threaded pin.
- Put the drain water filter group back in the wash chamber.

CLEANING OF WASH CHAMBER THERMOSTAT PROBE

M2

Worker: **Is**

Frequency of Intervention: **6 months**

METHOD OF INTERVENTION: clean the wash chamber thermostat probe in the following manner:

- Open the wash chamber door and extract the basket.
- Check the wash chamber thermostat probe and clean it of any deposits or lime incrustations using a damp cloth and an appropriate detergent.

Take care not to damage or move the probe.

CLEANING OF WASH ROTORS

M3

Worker: **Ac**

Frequency of Intervention: **every week**

METHOD OF INTERVENTION: clean the wash rotors as follows:


- Open the wash chamber door and extract the basket.
- Unscrew the fastening pin of the two rotors and extract them from the chamber.




- Unscrew the closure plug of the rear part of the nozzle and remove it.



- Carefully cleaned and remove any incrustations from the wash rotor nozzles using appropriate detergents.
- Put the plugs back in place at the ends of the wash arms.
Make sure the gasket is properly positioned and in good condition.
Replace it if necessary.
- Put the rotors back on the machine.
- Lock them in place with the previously removed fastening pin.

CLEANING AND CHECKING WASH CHAMBER INSTRUMENTATION		
	Worker: Ac	Frequency of Intervention: Once a week or when it is necessary
METHOD OF INTERVENTION:		
<p>Carry out an empty washing cycle with a basket present so as to carry out the disinfection process inside the washing chamber. This will guarantee a complete disinfection of the washing chamber, the basket and the hydraulic circuits.</p> <p>In case it is not possible to carry out an empty washing cycle, it is advisable to proceed with the disinfection of the machine as described below:</p> <ul style="list-style-type: none"> • Open the access door to the chamber and check that no equipment, trays, or instruments have been left on the washing basket. • Inside the washing chamber, evenly spray a disinfectant that is both compatible to be used on stainless steel surfaces and which contains the following active ingredients: <ul style="list-style-type: none"> • quaternary ammonium salts or • chlorhexidine digluconate – ammonium chloride – isopropyl or ethyl alcohol • All internal parts must be treated by this operation. <p>The approved STEELCO product for cleaning and disinfection of the chamber is called "STEELCO Surface Cleaner Disinfectant".</p>		
	ATTENTION	
	As regards the contact time and the methods of use of the disinfectant used, please comply with the instructions given on the technical data sheet of the product itself.	
	Always check the compatibility of the chemical product with the materials it will be used on; this information can be found on the technical data sheet of the chemical product used.	
	The application of the disinfectant inside the chamber must be carried out when the surfaces are cold in order to avoid harmful fumes coming from the product being inhaled.	
	It is advisable to contact your cleaning products dealer to obtain detailed instructions relating to the periodic disinfection of the machine.	

CLEANING THE EXTERNAL BODY OF THE MACHINE		
	Worker: Ac	Frequency of Intervention: every day
METHOD OF CLEANING OUTER BODY		
<p>Use a damp cloth to clean the outer body of the machine.</p> <p>Use only neutral detergents.</p> <p>Do not use abrasive detergents or solvents and/or thinners of any kind.</p>		
METHOD OF CLEANING MARKING LABEL		
<p>Use a damp cloth to clean the marking label surface. Use only water or isopropyl alcohol.</p> <p>Do not use abrasive detergents or solvents and/or thinners of any kind.</p>		
METHOD OF CLEANING CONTROL PANEL		
Clean the control panel using only a soft cloth dampened with a product for the cleaning of plastic materials.		

LIMESCALE REMOVAL TREATMENT		
	Worker: Ac	Frequency of Intervention: whenever necessary
METHOD OF INTERVENTION:		
<p>Use a descaling agent (we recommend vinegar) during an empty washing cycle with cold water (this is usually carried out every week unless the quality of the water requires a daily treatment in order to prevent the build-up of limescale and the blockage of the water jets).</p> <p>As regards the quantity of the product to use, please comply with the instructions given on the technical data sheet of the product itself. In case vinegar is used, use 0.5 litres.</p> <p>The descaling product must be poured into a container of the same size, positioned on an empty loading basket.</p> <p>Use a washing programme with water at room temperature, without activating the drying cycle.</p>		
	ATTENTION	
	<p>Even if the feed water only contains a small amount of limescale, high temperatures can generate the formation of limescale residues. This, as well as problems that could be caused to the heating element, may cause the blockage of the nozzles, jeopardising the correct washing process and preventing the ideal disinfection temperature in the tank to be reached.</p>	

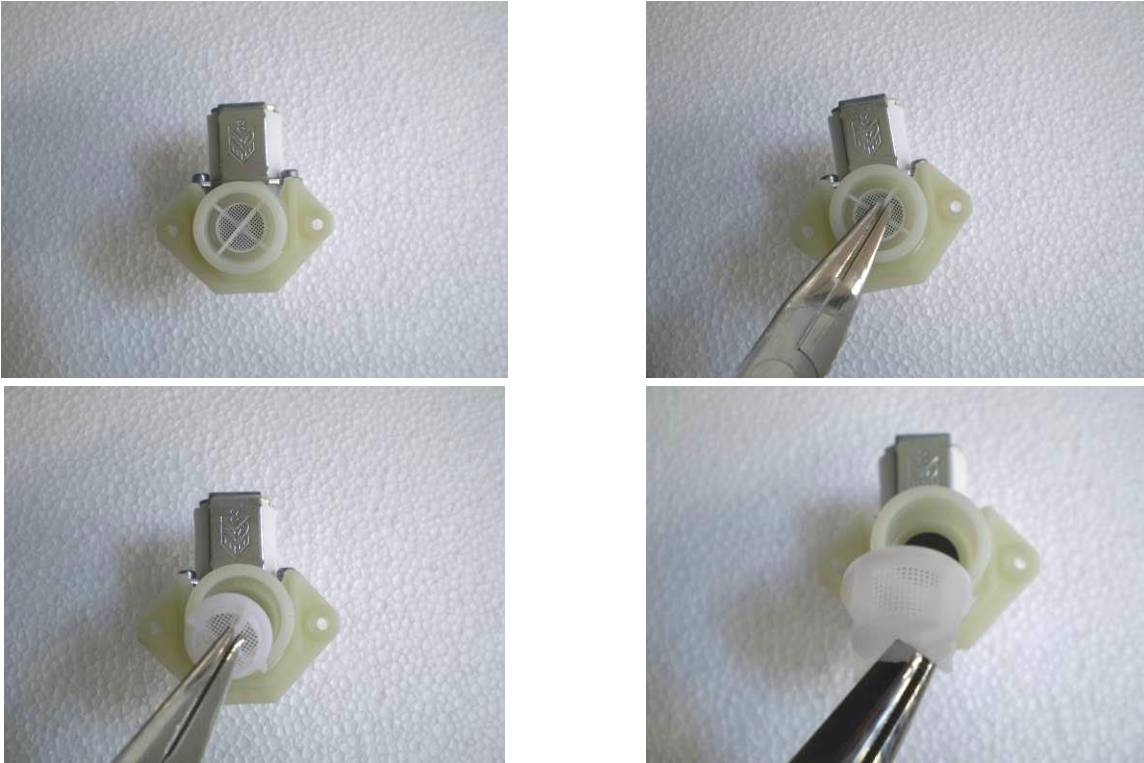
18.4 Procedure for special maintenance work

All special maintenance work is to be performed only by qualified, skilled personnel.

A table is shown below which includes possible special maintenance work that may be required.
If your machine should require special maintenance, please contact your retailer/distributor.

18.5 Table of special maintenance tasks

See scheduled maintenance form table.

CLEANING OF COLD EATER INLET FILTERS		
M4	Worker: Is	Frequency of Intervention: 6 months or when necessary
METHOD OF INTERVENTION: clean (or replace) the water solenoid valve filter as described below:		
<ul style="list-style-type: none"> • Close the water supply tap. • Loosen and completely unscrew the water supply pipe. • Remove the filter located inside the water supply pipe fitting and clean it, removing any incrustation or deposits by immersing it in a container of water, or in appropriate lime removal products if required. 		
		

CLEANING OF DRYING SYSTEM PRE-FILTER (IF PRESENT)

M5

Worker: **Is**

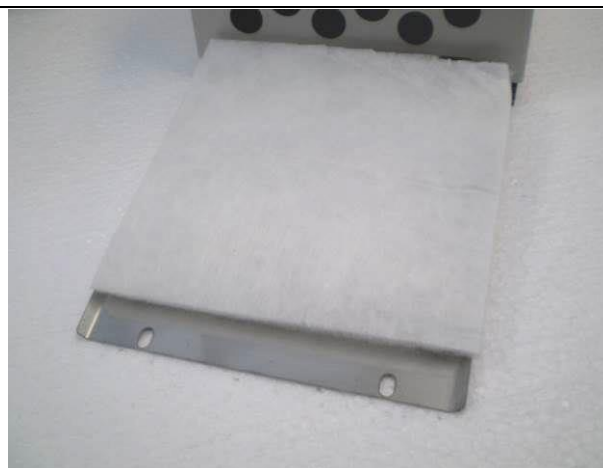
Frequency of Intervention: **100 hours**

METHOD OF INTERVENTION: clean (or replace) the drying system filter as described below:

- Remove the two screws from the drying system filter protective front panel and remove it from the machine.



- Extract the filter and clean it of any dust. If the filter is no longer usable, replace it with another filter of the same type.



- Carefully put the clean (or new) filter back in place. Use the screws to fasten the previously removed protective front panel.

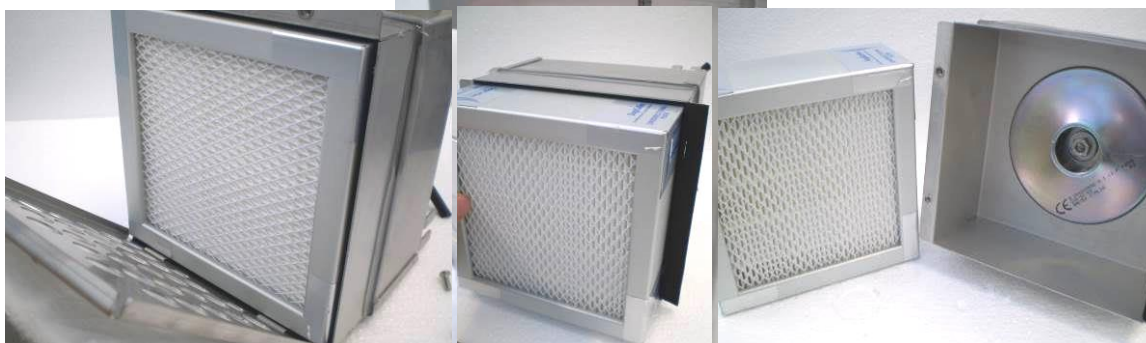


CLEANING OF DRYING HEPA FILTER (IF PRESENT)**M5** Worker: **Is** Frequency of Intervention: **300 hours****METHOD OF INTERVENTION:** clean (or replace) the drying system filter as described below:

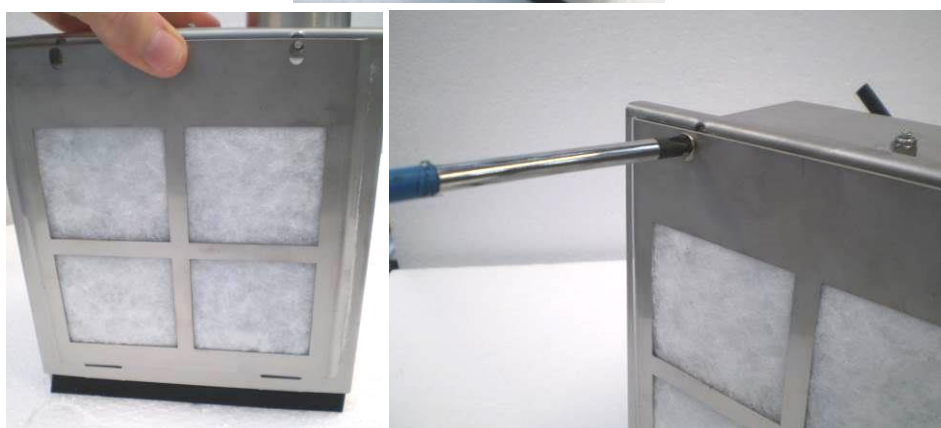
- Remove the two screws from the drying system filter protective front panel and remove it from the machine.



- Extract the pre-filter and then the HEPA filter; replace it with another filter of the same type.



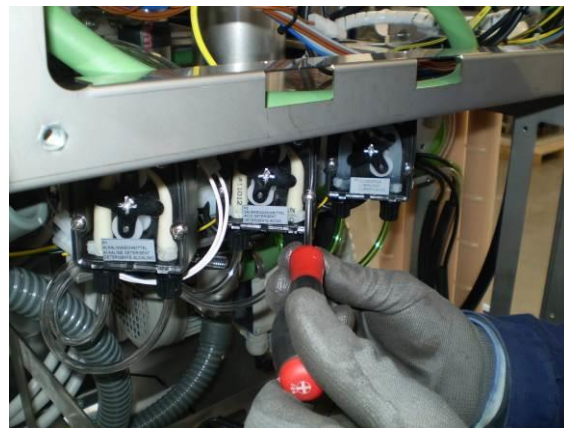
- Carefully put the pre-filter back in place. Use the screws to fasten the previously removed protective front panel.



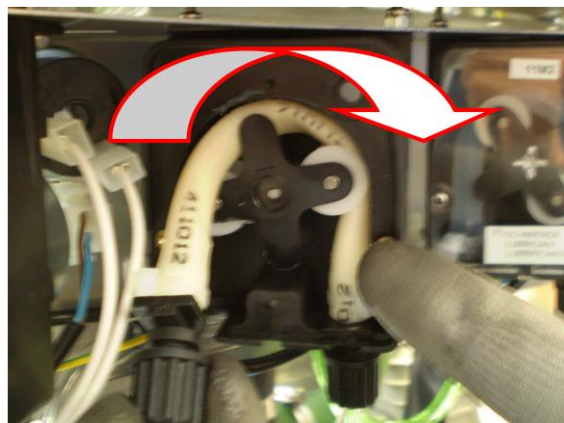
REPLACEMENT THE MEMBRANE PIPE OF DISPENSING PUMP**M6**Worker: **Is**Frequency of Intervention: **from 3 to 6 months**

METHOD OF INTERVENTION: replace the membrane pipe of dispensing pump for chemical products as described below:

1. Remove the closure panel of the machine by removing the screws.
2. Access the chemical product pump. Use a tool to remove the protective mask of the rotor.



3. Extract the membrane pipe from the dispensing pump.
4. Turn the rotor manually, clockwise, until the membrane pipe is fully extracted from the dispensing pump.



ATTENTION: the rotor of dispensing pump turns ONLY clockwise !!!

5. Place the membrane pipe in vertical position to help the flow of chemical product from membrane tube to chemical circuit. Do this operation to prevent leakage of chemical product during replacement.
6. Loosen the tube clamps and disconnect the product supply tubes from the membrane pipe attachments.



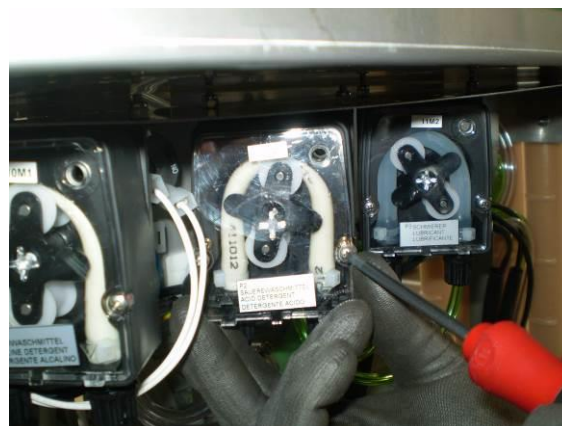
7. Replace the membrane pipe with an other one of the same type. (see the spare part list).

8. Replace the membrane pipe into dispensing pump, manually operating the rotor.



ATTENTION: the rotor of dispensing pump turns ONLY clockwise !!!

9. Replace the protective mask of the rotor.



CLEANING OF DISPENSING PUMP FOR CHEMICAL PRODUCTS

M6 Worker: **Is** Frequency of Intervention: **from 3 to 6 months**

METHOD OF INTERVENTION: clean the pump for the dispensing of chemical products as described below:

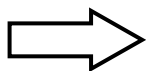
- Remove the closure panel of the machine by removing the screws.
- Access the chemical product pump. Use a tool to remove the protective mask of the rotor
- Loosen the tube clamps and disconnect the product supply tubes from the membrane tube attachments
- Turn the rotor manually, clockwise, until the membrane tube is fully extracted from the dispensing pump.
- Apply an even layer of silicon grease to the membrane tube you have just removed before re-installing it on the dispensing pump, following the previously described operations in reverse order.

CLEANING OF SAFETY SIGNALS SURFACES

Worker: **Is** Frequency of Intervention: **1 year**

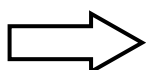
METHOD OF INTERVENTION:

Clean the safety signals surfaces with water or isopropyl alcohol, using a cloth.



WARNING

In order to remove the scale, suitable products can be used, yet pay attention that they are not highly corrosive.



ASSISTANCE

Should your machine not work properly even after ordinary maintenance has been carried out, contact the Technical Support Centre of reference, describing the fault and giving the machine model and serial numbers.

19. PROBLEMS – CAUSES – SOLUTIONS

19.1 Introduction

This chapter includes possible problems which may occur during machine operation, along with their cause and solution. All components, if not identified by specific figures, are referred to by the attached assembly drawings.

Should the inconveniences continue or take place frequently even after having carried out all the instructions stated in this chapter, please contact the Technical Support Centre of reference.

19.2 Problems - Causes - Solutions

P. MACHINE WILL NOT START:

- C. Circuit breaker de-activated.
- S. Place it in the "ON" working position.
- C. Machine start switch de-activated.
- S. Press the start button.

P. UPON GIVING START-UP COMMAND, WASH CYCLE DOES NOT START:

- C. The door is not correctly closed or locked.
- S. Check door closure. Check that the door micro-switch is properly activated.
- C. Micro-switch failure.
- S. Check operation and replace as necessary.
- C. No detergent in tank.
- S. Turn the machine off and fill the tank.

P. MACHINE DOES NOT REACH SET TEMPERATURE FOR THE SELECTED WASHING CYCLE:

- C. The thermostat probe of the wash chamber is dirty or covered with lime.
- S. Clean the thermostat probe of the wash chamber, performing the routine maintenance described in chapter 18 (Form M2) of this manual.

P. MACHINE DOES NOT PROPERLY RUN WASH CYCLE:

- C. The nozzles of the wash rotors are clogged by deposits or lime.
- S. Clean the rotors by carrying out the routine maintenance set forth in chapter 18 (Form M3) of this manual.
- C. Water required for proper washing does not arrive.
- S. Ensure that the water is supplied at the correct pressure and that there are no obstructions.
- C. The correct amount of water required for correct washing cycle does not arrive.
- S. Completely close the tap for connection to the plumbing system located upstream from the machine and clean the filter as described in chapter 17 (form M1) of this manual.

P. DETERGENT FILLING PHASE DOES NOT OCCUR CORRECTLY:

- C. Chemical dispensing pump not very efficient.
- S. Perform the routine maintenance set forth in chapter 18 (Form M5) of this manual.
- C. Chemical dispensing pump failed.
- S. Contact the Technical Support Centre of reference and ask for the assistance of an **authorized workshop technician** for the repair or replacement of the pump.

P. MACHINE DOES NOT PERFORM DRYING PHASE:

- C.** Air filter of drying system is dirty or clogged.
- S.** Clean the filter by carrying out the routine maintenance set forth in chapter 18 (Form M6) of this manual.
- C.** The fan of the drying system does not work.
- S.** Check the electrical connections of the drying system.
- S.** Contact the Technical Support Centre of reference and ask for the assistance of an **authorized workshop technician** for the repair or replacement of the motor.

20. DECOMMISSIONING

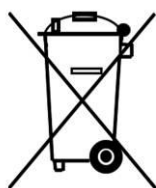
20.1 Instructions for disassembly of the machine

For demolition and subsequent disposal of your machine, proceed as follows:

- Disconnect the machine from the electrical power and water supply, and from the drain. With the machine disconnected, check that the water circuit is not pressurized.
- Contact the organization responsible for reporting and certifying machine demolition, in accordance with the laws in the country where the machine is installed.
- Carry out draining, storage and subsequent disposal of substances such as oils and grease which may be in the lubrication tanks in accordance with the law.
- When disassembling the machine, make sure to divide the materials it is made of according to their chemical makeup (iron, aluminium, bronze, plastic, etc.).
- Ensure that the floor where the machine or any parts of it are placed is made of washable materials, non-absorbent, and provided with adequate drainage to protect against accidental oil leaks or rust. These drains must carry any leakage to watertight collection containers.
- Cover the machine or parts of it with insulating covers to prevent rain or humidity from damaging the structure through oxidation or rust.

Following the legal requirements where the machine is installed and used, dispose of all materials and substances resulting from its disassembly.

20.2 Machine disposal



- For the dispose of the equipment get through to the manufacturer or distributor.
- Do not dispose of this equipment as miscellaneous solid municipal waste but arrange to have it collected separately.
- The re-use or correct recycling of the electronic and electrical equipment (EEE) is important in order to protect the environment and the well-being of humans. In accordance with European Directive WEEE 2012/19/EC, special collection points are available to which to deliver waste electrical and electronic equipment and the equipment can also be handed over to a distributor at the moment of purchasing a new equivalent type.
- The public administration and producers of electrical and electronic equipment are involved in facilitating the processes of the re-use and recovery of waste electrical and electronic equipment through the organisation of collection activities and the use of appropriate planning arrangements.
- Unauthorized disposal of waste electrical and electronic equipments is punishable by law with the appropriate penalties.