Installation manual Washer-extractors WPB4700H – WPB4900H – WPB41100H Clean Room



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Environmental information

Concerned by providing the end user with useful and necessary environmental information, we wish to precise :

[©] Data about energetic consumptions, wastes (atmospheric and liquid) and sound level are indicated in the paragraph **"Technical characteristics"**.

The running of this machine requires the use of detergents which draining in the nature can have a significant environmental impact. So, we do recommend to only use, with agreement of the manufacturers, the quantities of detergents strictly necessary.

^{ce} Forseeing its recycling, this machine is fully dismantle.

This machine is free from any asbestos.

Our machine packing complies with the provisions of rule 98-639 dated July 20th 1998 regarding environmental demands.

For additional information, do not hesitate to consult our environmental department.



Scrapping of machine

When the machine is no longer to be used, it must be submitted to a recycling facility for destruction. The majority of the components in the machine can be reused, but it also contains other material that must be taken care of in the correct way. Therefore, never mix the machine or its parts with domestic waste as this may lead to health hazards or damage to the environment.

Preliminary instructions

Before any use, it is compulsory to read the instruction handbook.

Users must have learnt how the machine operates.

The identification plate is placed on the loading side of the machine.

In order to prevent any risk of fire or explosion, flammable products should never be used to clean the machine.

Any repair or maintenance intervention should be carried out by qualified personnel only.

Detergents used in laundry are particularly agressive. No stainless steel is able to resist their corrosive actions. Detergent dispenser must consequently be considered as wearing parts likely to be replaced.



CAUTION



This machine should be installed in conformance to the health and safety regulations, and only used in a sufficiently aerated area. Check the instructions before installing or using the machine.



SAFETY

The mechanical and electrical installation of the machine should only be done by qualified personnel.



CAUTION Do not use the machine unless it is plugged into a correctly earthed power socket complying with standards in force.



CAUTION

For your personal safety, never use the machine without the protective housings.



CAUTION

Disconnect the machine electrical power supply before doing any repair or servicing work.

Disconnect all the sources of energy before any intervention on the machine.

Never try to open the drum door before the complete stop of the cage.

The safety devices of the cage door(s) should in no case be made inoperative.

The machines comply with the European Directive EMC (Electromagnetic Compatibility). They have been tested in laboratory and approved as such. It is so prohibited to add wires or non shielded electric cables in the cabinets, strands or cables' troughs.

Considering that the volume of the cage is superior to 150 liters, the standard kept for the electric part is the IN 60204.





The use and handling of chemical products such as detergent, chlorine, acids, antiliming agents etc... may create hazards for health and environment ; the following precautions should be taken.

- Do not breathe the dusts or steam.
- Avoid contact with skin or eyes (may cause burns).
- In case of important spillage, wear a protecting mask, gloves,
- and eye protectors.
- Handle with care.
- Consult the use and first aid advice on the packings.
- Do not dispose pure products in the environment.



The machine can work without the protective casing when the electric supply is not cut off.

Interlock the main isolating switch with a padlock. Close the steam inlet valves.

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Distributor Letter

CHEMICAL SYSTEM RESPONSABILITY

DISCLAIMER

The following policy should be considered and understood as a warranty/disclaimer to customers operating textile care installations where liquid supply (chemical) systems use or may use peristaltic pumps to inject supplies into equipment.

To Whom it May Concern :

We, the undersigned, accept no responsibility for loss or damage when, during periods of non-use, concentrated chemicals leak, spray or "dribble" onto any part of our machines or their contents.

It is well known that many pumped liquid chemical systems tend to permit concentrated chemicals to dribble out of the injection tubes when the system has not been used for relatively long periods of time – as after working hours and during weekends. This puts highly concentrated corrosive chemicals in direct contact with dry stainless steel surfaces and often directly on any textiles left in the machine. Chemical deterioration (rusting) of the stainless steel and damage to the textiles is the inevitable result.

It is absolutely useless to flush the affected sites after each injection because the *harmful dribble always occurs later* – after the machine is no longer in use. One seemingly foolproof solution for "dribbling chemicals" (which we highly recommend but obviously cannot guarantee) is to locate the chemical tanks and pumps well below the injection point on the machine (so the contents of the injection tube(s) cannot siphon into the machine) and to completely purge the just-used chemical injection tube(s), or manifold, with *fresh water after every injection* so that only fresh water (which cannot cause a problem) can dribble out. Naturally, this – or any other solution – is the sole responsibility of the pump and/or chemical supplier (not the machine manufacturer).

Additionally, external chemical leakage is dangerous to personal health and safety, and will also cause severe damage to machines and/or their surroundings. The installer and/or user of the chemical injection system must make sure there are no external chemical leaks and that excessive pressure can never build up in any chemical delivery tube, *because excessive pressure can burst the tube, or disconnect it from the machine, and spray dangerous concentrated chemicals about the premises.*

The machinery manufacturer is not, and cannot be, responsible for compliance with the above.

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Locking and tagging procedure

A red insert at the beginning of this instruction handbook schematically shows the locking and tagging procedure described below. If you wish, you can detach this insert and display it close to the machine to remind maintenance personnel of the safety instructions.



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Handling

Before any handling, check that the four transport locks fitted (B) are still in place and well-tightened, and so the four casing locks (A).

To do so, remove the side casings and check presence of four locks (B) and the down casings for the four locks (A).

Check also that the load cells are free of the tub assembly (weighing option).

N.B. : To handle the machine, you must imperatively reassemble the transport bridles and disengage the load cells (proceed in reverse order of "Remove of the transport locks fitted").



SAFETY

It is obligatory that all these operations are undertaken by handling specialists.

1/ Lifting with handling straps

Lifting in that case can only be done with handling straps (minimum capacity 3000 daN) which bear weight of the machine.



4. Handling



2/ Lifting with a fork-lift truck

This can be carried out from the front or back, and at the centre of the machine using forks with minimum length of 1,50 m (59").



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CAUTION In order to avoid any bending of casings, you should never climb and stand on top of the machine.



Packing

Packing dimensions in mm/inch	Size A	Size B	Size C
Washer extractor Type 700 barrier	1690/67"	1720/68"	2330/92"
Washer extractor Type 900 barrier	1670/66"	1970/78"	2330/92"
Washer extractor Type 1100 barrier	1680/66"	2180/86"	2330/92"

Weight

Weight in kg/lb (machine + crate)	Electric	Steam/T.F.
Washer extractor Type 700 barrier	2900/6395	2900/6395
Washer extractor Type 900 barrier	3100/6836	3100/6836
Washer extractor Type 1100 barrier	3280/7233	3280/7233



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Washer extractor type 700 barrier - Clean Room



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Washer extractor type 700 barrier - Clean Room

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Hea	ting	Units	Electric	Steam	Therm. fluid
	Characteristics Ø drum Drum length Opening drum door (LxH) Openning cage door (LxH) Drum volume Specific load 1/10 (dry linen, ISO 9398-4)	mm mm mm dm ³ kg	1050 794 670 x 490 728 x 698 685 685	1050 794 670 x 490 728 x 698 685 685 68.5	1050 794 670 x 490 728 x 698 685 685
	Floor area Contact surface with floor Net weight Weight loading (high level)	m² m² daN daN	2.04 0.25 2530 3290	2.04 0.25 2530 3290	2.04 0.25 2530 3290
	Water consumption, washing, low level Water consumption, washing, hught level Max. dynamic load Max. transmitted floor load Max. pressure transmitted to fllor Spin efficiency Max. unbalance	I daN daN kPa G kg	185 370 F = 310 3600 144 300 15	185 370 F = 310 3600 144 300 15	185 370 F = 310 3600 144 300 15
L M N	Main switch to connect main cable Electric cable (section) Stuffing box for main cable Supply voltage Installed electric power Installed heating power Electric consumption for a normal cycle* Heat loss : 3 % of installed heating power	mm² kW kW kWh/h	4 x 35 380 / 4 65.7 54 17.8	4 x 10 415 V 3+E ~ 50/ 11.7 - 1.8	4 x 10 60 Hz 11.7 - 1.8
G G' D	Steam inlet Steam return Maximum supply pressure Steam instantaneous flow rate at 600 kPa Steam consumption for a normal cycle* Bath inlet (waters + detergents)	DN mm DN mm kPa kg/h kg/h DN mm	- - 32 (1"¼ BSP)	20 (3/4" BSP) 20 (3/4" BSP) 600 240 24 32 (1"¼ BSP)	- - 32 (1"¼ BSP)
H1 H2 I	1st drain connection 2bd drain connection (option) Max. drain flow rate Waste water collector (3 cm/m (3%) minimum slope)	Ø mm Ø mm I/min DN mm	110 110 380 200	110 110 380 200	110 110 380 200
J	Air vent hole	Ømm	80	80	80
G G'	Thermic fluid inlet Thermic fluid return Max. supply pressure Inner volume thermic fluid exchanger	DN mm DN mm kPa I	- - - -	- - - -	20 (1" BSP) 20 (1" BSP) 400 8
O P R	Barrier partition (provided by customer) Fram (provided by customer) Aseptis seal	mm	60 x 100	60 x 100	60 x 100
К	Compressed air inlet Min./max. compressed air pressure Consumption	Ø mm bar I/h	6/8 5.5/7 50	6/8 5.5/7 50	6/8 5.5/7 50
т	Liquid detergents connection	Ømm	25	25	25

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Washer extractor type 900 barrier - Clean Room



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Washer extractor type 900 barrier - Clean Room

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Hea	ting	Units	Electric	Steam	Therm. fluid
	Characteristics Ø drum Drum length Opening drum door (LxH) Openning cage door (LxH) Drum volume Specific load 1/10 (dry linen, ISO 9398-4)	mm mm mm dm³ kg	1050 1026 900 x 490 958 x 698 885 885 88.5	1050 1026 900 x 490 958 x 698 885 885 88.5	1050 1026 900 x 490 958 x 698 885 885 88.5
	Floor area Contact surface with floor Net weight Weight loading (high level)	m² m² daN daN	2.35 0.25 2725 3735	2.35 0.25 2725 3735	2.35 0.25 2725 3735
	Water consumption, washing, low level Water consumption, washing, hught level Max. dynamic load Max. transmitted floor load Max. pressure transmitted to fllor Spin efficiency Max. unbalance	I daN daN kPa G kg	220 440 F = 365 4100 164 300 15	220 440 F = 365 4100 164 300 15	220 440 F = 365 4100 164 300 15
L M N	Main switch to connect main cable Electric cable (section) Stuffing box for main cable Supply voltage Installed electric power Installed heating power Electric consumption for a normal cycle* Heat loss : 3 % of installed heating power	mm² kW kW kWh/h	4 x 35 380 / 4 87.7 72 24.3	4 x 10 415 V 3+E ~ 50/ 15.7 2.3	4 x 10 60 Hz 15.7 2.3
G G' D	Steam inlet Steam return Maximum supply pressure Steam instantaneous flow rate at 600 kPa Steam consumption for a normal cycle* Bath inlet (waters + detergents)	DN mm DN mm kPa kg/h kg/h DN mm	- - 32 (1"¼ BSP)	20 (3/4" BSP) 20 (3/4" BSP) 600 240 32 32 (1"¼ BSP)	- - 32 (1"¼ BSP)
H1 H2 I	1st drain connection 2bd drain connection (option) Max. drain flow rate Waste water collector (3 cm/m (3%) minimum slope)	Ø mm Ø mm I/min DN mm	110 110 380 200	110 110 380 200	110 110 380 200
J	Air vent hole	Ømm	80	80	80
G G'	Thermic fluid inlet Thermic fluid return Max. supply pressure Inner volume thermic fluid exchanger	DN mm DN mm kPa I	- - -	- - -	20 (1" BSP) 20 (1" BSP) 400 9
O P R	Barrier partition (provided by customer) Fram (provided by customer) Aseptis seal	mm	60 x 100	60 x 100	60 x 100
К	Compressed air inlet Min./max. compressed air pressure Consumption	Ø mm bar I/h	6/8 5.5/7 50	6/8 5.5/7 50	6/8 5.5/7 50
т	Liquid detergents connection	Ømm	25	25	25

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Washer extractor type 1100 barrier - Clean Room



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Washer extractor type 1100 barrier - Clean Room

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Hea	ting	Units	Electric	Steam	Therm. fluid
	Characteristics Ø drum Drum length Opening drum door (LxH) Openning cage door (LxH) Drum volume Specific load 1/10 (dry linen, ISO 9398-4)	mm mm mm dm³ kg	1050 1256 900 x 490 958 x 698 1083 108.3	1050 1256 900 x 490 958 x 698 1083 108.3	1050 1256 900 x 490 958 x 698 1083 108.3
	Floor area Contact surface with floor Net weight Weight loading (high level)	m² m² daN daN	2.67 0.25 2850 4050	2.67 0.25 2850 4050	2.67 0.25 2850 4050
	Water consumption, washing, low level Water consumption, washing, hught level Max. dynamic load Max. transmitted floor load Max. pressure transmitted to fllor Spin efficiency Max. unbalance	l daN daN kPa G kg	300 600 F = 400 4450 178 300 15	300 600 F = 400 4450 178 300 15	300 600 F = 400 4450 178 300 15
L M N	Main switch to connect main cable Electric cable (section) Stuffing box for main cable Supply voltage Installed electric power Installed heating power Electric consumption for a normal cycle* Heat loss : 3 % of installed heating power	mm² kW kW kWh/h	4 x 50 380 / 4 91 72 25.3	4 x 10 415 V 3+E ~ 50/ 19 - 2.4	4 x 10 60 Hz 19 2.4
G G' D	Steam inlet Steam return Maximum supply pressure Steam instantaneous flow rate at 600 kPa Steam consumption for a normal cycle* Bath inlet (waters + detergents)	DN mm DN mm kPa kg/h kg/h DN mm	- - 32 (1"¼ BSP)	20 (3/4" BSP) 20 (3/4" BSP) 600 240 36 32 (1"¼ BSP)	- - 32 (1"¼ BSP)
H1 H2 I	1st drain connection 2bd drain connection (option) Max. drain flow rate Waste water collector (3 cm/m (3%) minimum slope)	Ø mm Ø mm I/min DN mm	110 110 380 200	110 110 380 200	110 110 380 200
J	Air vent hole	Ømm	80	80	80
G G'	Thermic fluid inlet Thermic fluid return Max. supply pressure Inner volume thermic fluid exchanger	DN mm DN mm kPa I	- - -	- - -	20 (1" BSP) 20 (1" BSP) 400 10
O P R	Barrier partition (provided by customer) Fram (provided by customer) Aseptis seal	mm	60 x 100	60 x 100	60 x 100
К	Compressed air inlet Min./max. compressed air pressure Consumption	Ø mm bar I/h	6/8 5.5/7 50	6/8 5.5/7 50	6/8 5.5/7 50
т	Liquid detergents connection	Ømm	25	25	25

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Sound level

Airborne noise emitted by the machine (values established from measurements made on machine at points A, B, C, and D).



Weighted sound pressure level (A) in dB (A)

	Washer (without	700Washer 900Washerinsulation)(without insulation)(without in		Washer 900 (without insulation)		ner 1100 t insulation)
	washing	high spin extraction	washing	high spin extraction	washing	high spin extraction
Α	63,5	82,2	63,5	82	66	81,5
В	64	81,3	64,2	81	66	81,5
С	63	83,9	63,8	83	67	83
D	64	82,7	64,2	83	67	83

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You should have found an instruction handbook and keys to open the machine casings, in the machine.

Depending on its destination, the washer extractor is delivered bare or may be placed on a transport pallet and/or packed with plastic film.

In some cases, it may be delivered in a crate, or in maritime packing (wood box).

Please refer to the handling chapter in this instruction handbook for a description of handling operations.

Unpacking

Take off the plastic film or remove the four wood socles with an spanner.



Check that no damage has been caused during transport.

Installation

The installation must be done by competent technicians in accordance with local codes and regulations. When there are not local codes and regulations, the installation **must be comply** with European standards applicable.

The machine must be installed on a perfectly even surface, strong and horizontal, capable resisting to the efforts shown in the technical characteristics.

Adjustment of the machine by addition of level plate should be avoided.

[@] Control the horizontal level using a water level placed on the machine's sole.

Place the washer extractor so that it is easy for the user and the service technician to do their work.

^(according to the recommendation in standard EN 60204) between the machine, a wall or any other machine at the sides.



Working place lighting

The lighting should be designed so as to avoid eye strain for the operator ; it should be uniform without any glare, and should be sufficient to detect any hazards.

The average lighting value on the working place recommended by the clothing industry for inspecting linen is **500 lux**.

Whenever possible, the working place should be illuminated by daylight.

Supplies

Take the box placed underneath the drum.

You must connect the compressed air to unlock the loading door. Then push on the orange button of the D9/D10 distribution unit in the electric cabinet. So you can access the drum.



List of accessories provided with each machine :

- 1 instruction handbook + Clarus Control memory card + converter handbook,
- 3 keys for frames,
- 4 dowells,
- 1 or 2 connection bellows Ø 110 mm and 2 or 4 collars for drain,
- 1 or 2 plate(s) for drain,
- 4 bolsters + 4 wedges (see explanation for the setting).

Extra accessories for steam heating machine :

- 1 pipe union + filter,
- 1 steam flexible.

Extra accessories for barrier machine :

- 1 rubber seal + the aluminium extruded section,
- 2 filling angles + 4 screws + 4 nuts Ø 6.

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Instructions for securing the machine on the ground

Place the machine on a perfectly even surface and horizontal.

Control this using a water level (see drawing).

Each point must be level.

If the defect is lower than 10 mm, you can stall the machine. You must do again the ground in the opposite case.

Mark out the drill holes for the securing bolts and drill them so as to insert the 4 bolts, they will secure the machine to the floor.







Bolsters : G

Water level : N

Mechanical installation

Setting of the bolsters

Preparation of the ground and machine :

- Clean carefully the ground and the soles of the machine.

Setting the bolsters :

- Place each bolster (G) at its respective location (see drawing) and heave successively each bearing of the machine.

- Verify the levels and place if necessary the wedges (C) between the bolster and the soles to stabilize the machine.

- When this "trial" stalling is realized, apply obligatory the glue (type SILICOMET) on every bolster face and under the soles of the machine (see drawing).

- The indicated faces on the drawing must be aligned. Apply equally glue to each face of the used wedges.

- Put the machine in position and secure it with the bolts (F) **without tighten**.

Electrical safety device :

- As rubber is a very good electric insulating material, the earthing of the machine is compulsory.

To displace the machines sealed with bolsters :

- You must introduce a flat chisel between the ground and the bolsters by heaving the machine; you have to remove them and avoid to pull off the ground.





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Instructions for installation of the washer with barrier partition

The barrier partition (O) (provided by customer) should be assembled before the installation of the machine.

Centre and align the washer-extractor with the frame (P) 60 x 100 mm (2x4") maximum (provided by customer).

Place the rubber seal (R) inside the aluminium extruded section (S).

Srew the aluminium extruded section (S) on the frame or on the optional plates (P).

Machine type	700	900	1100
Size A (mm/inch)	1570/61.81	1800/70.86	2030/79.92
Size B (mm/inch)	2080/81.89	2080/81.89	2080/81.89
Size C (mm/inch)	2040/80.31	2040/80.31	2040/80.31
Size D (mm/inch)	1490/58.66	1720/67.71	1950/76.77



Waters connections

The hereunder example sketch shows the connection of the machine to the different inlets.

- U Manual stop valve DN 32 (1"¹/₄ BSP) (provided by customer)
- **B** Electrovalve (provided by customer)
- Y Flexible pipe DN 32 (provided by customer)
- **D** Water inlet DN 32 (1"¼ BSP)
- A Washer-extractor

Water supply pressure, 300 kPa (43.5 psi) maxi.





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Steam and condensate connections

Steam connection

The inlet pipe to the machine has to be fit with a manual stopping valve to ease installation and maintenance and a flexible steam supply pipe to allow reliable running of automatic weighting system.

Hereunder values apply to the steam pressure.

Recommended pressure : 300 at 600 kPa (3 at 6 kg/cm²) (43.5 at 87 psi)

Limiting of values :

- mini. 100 kPa (1 kg/cm²) (14.5 psi)
- maxi. 600 kPa (6 kg/cm²) (87psi)

Connection size : DN 20 (¾" BSP).

Condensate connection

The customer must install a purge valve with float closed with an incondensibles drainage device and a steam trap, a by-pass, a nonreturn valve and a manual closing valve lockable in off position (do not use a 1/4 turn valve).

Connection size : DN 20 (¾" BSP).

Connect the steam installation on the top of the machine (see example sketch).

- A Washer-extractor
- **B** Line trap (provided by customer)
- **C** Return of condensates
- D Manual stop wheel valve (provided by customer)
- E Steam filter (provided by customer)
- **F** Steam trap (provided)
- H Non-return valve (provided by customer)
- **M** Pressure gauge (provided by customer)
- **N** Thermal insulation for the pipework (provided by customer)
- P Steam electrovalve (provided)
- **S** Safety valve (provided by customer)
- V Steam inlet





Drain connection

The machine's exhaust sleeve is outside diameter 110 mm (4.33"). It is located underneath the machine.

The waste water collector diameter 200 mm (7.87") (manufactured by customer) should have a 3 cm/m (3 %) slope and resist to a temperature of 90°C (194°F). It should be connected to the waste water general network in accordance with local codes and regulations.

Adapt and connect the machine's exhaust sleeve to the waste waters' collector (rubber bend and connection nozzle are supplied in the machine with collars).

Drawing of drain connection to waste waters' collector

Connect the durit to the connect nozzle.

Seal and fix the nozzle using 2 screws.

Them connect the durit to the drain's evacuation sleeve.



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Air vent connection

The air vent of the drum opens on the top of the machine. Connect the bent hose to this opening.

Connect the air vent, to the outside of the laundry in accordance with tte legislation.

The air vent should resist to 100°C (212°F) temperature and allow the condenses to return to the machine.



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Liquid detergents' connection

The machine is equiped with a connection for the use of external liquid detergents.

Connection size: Ø 25 mm male.





CAUTION

Liquid detergents are particularly aggressive. To avoid the machine's rubbers from being attacked, dilute imperatively all of your detergents before letting them flow into the machine.

ADVISE IF USING LIQUID DETERGENTS



After use, there is always chemical remaining in the liquid detergents' dosing pipes.

When the machine is not running, this detergent may slowly drip and so, quickly corrode the parts in contact with.

In order to avoid (ex. corrosion of the drum or by bleach), we advise you to forecast a device <u>to drain every night</u> the distribution pipes of the liquid detergents.

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CAUTION

The running of detergents must be independent from the running of the machine.

The control information of detergents must imperatively be relayed. It is imperative to use armoured wires for every connection in the electrical box.

Connection scheme of liquid detergents

We advise you to use one of the two systems shown hereby to connect your liquid detergents.

Single inlet dose collector with a compulsory rinsing device.



Multi inlet dose collector with a compulsory rinsing device.



Connection on the A8 output relay card

The output relay card allows to connect from 1 to 16 electrovalves of liquid detergents.

The card is situated on the up right side of the electric box.

Carry the connection cables by the partition crossing and the cable through of the machine.

To connect the wires on the J802 terminal block, introduce a screwdriver in the upper aperture to open the cable clamp.

- c : common of electrovalves
- 1 : electrovalve 1
- 2 : electrovalve 2
- 3 : electrovalve 3
- 4 : electrovalve 4
- 5 : electrovalve 5
- 6 : electrovalve 6
- 7 : electrovalve 7
- 8 : electrovalve 8
- 9 : electrovalve 9
- 10 : electrovalve 10
- 11 : electrovalve 11
- 12 : electrovalve 12
- 13 : electrovalve 13
- 14 : electrovalve 14
- 15 : electrovalve 15
- 16 : electrovalve 16

Supply voltage : 250 V~ maximum Intensity max. : 6 A.



Electrical installation must be carried out by an authorized





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Washer-extractor electricity power supply



The use of power electronics (variator or filter for example) may lead to unexperted release of breakers with 30 mA differential current device.

To avoid these untimely activations, you ought to use differential protecting systems with residual current only, having a high level of immunity as regards leakage transient current.

This type of breaker should thus be avoided, or a value of <u>**300 mA**</u> maximum should be observed according to standard NFC 15100 paragraph 532.2.6.

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Pass the power supply cable of the machine trough the stuffing box on the top of the machine.

Caution : the main switch must be removed in order to have easy access to the connection terminals.

Remove the outer sections (A) and the inner section (C) by unscrewing the screws (B). When the cables are attached, reassemble the switch in reverse order.

For each machine, install a fixed multipole circuit breaker (or fuses protector) in the

laundry main cabinet.





Connect the power supply cable on the machine main switch.

Connect the 3 phases on the main switch (see marks L1, L2, L3) and connect the earth wire on the earth terminal (PE) of this main switch.

(check operation, see chapter no. 8).



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Connection diagrams for the control circuit power supply (T1)

The tension of the control circuit delivered by the power supply must be 24 volts dc. The supply tension for your machine is normally of 400 volts between phases, this tension can however be different. The potentiometer allows to adjust the tension.



The feeder cable sections mentioned in our literature are given only as a guide.

To obtain a value perfectly suited to your own application and which takes account of the different correction factors in respect of your plant, refer to the tables below.

 Table 1 (in accordance with EN Standard 60204-1)

Values given for :

- Cable with copper conductors.
- Cable with PVC insulation (for other insulants see Table 3).
- Ambient temperature 40 °C max. (for others see Table 2).
- Three-phase cable under load without including starting currents.
- BT / C/ E cable layout.

Maximum Admissible Current

Cable section	Seated in Cable Duct or Cable Trough	Wall Fixing	Cable Tray
	B2	С	Е
3 x 1.5 mm²	12.2 A	15.2 A	16.1 A
3 x 2.5 mm²	16.5 A	21 A	22 A
3 x 4 mm²	23 A	28 A	30 A
3 x 6 mm²		36 A	37 A
3 x 10 mm²	40 A	50 A	52 A
3 x 16 mm²	53 A	66 A	70 A
3 x 25 m²	67 A	84 A	88 A
3 x 35 mm²	83 A	104 A	114 A
3 x 50 mm²		123 A	123 A
3 x 70 mm²		155 A	155 A

Table 2 (correction factors for different ambient	Ambient Temperature	Correction Factor
temperatures)	30 °C (86 °F)	1.15
	35 °C (95 °F)	1.08
	40 °C (104 °F)	1.00
	45 °C (113 °F)	0.91
	50 °C (122 °F)	0.82
	55 °C (131 °F)	0.71

60 °C (140 °F).....0.58

Table 3

(correction factors for different cable insulating materials)

Insulating material	Max. Working Temperature range	Correction factor
PVC	70 °C (158 °F)	1.00
Natural or Synthetic Rubber	60 °C (140 °F)	0.92
Silicone Rubber	120 °C (248 °F)	1.60

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Table 4

(B2, C and E correction factors for cable grouping)

Number of cables	B2 Seated in Cable Duct	C Wall Fixing or Cable Trough	E Cable Tray
1	1.00	1.00	1.00
2	0.80	0.85	0.87
4	0.65	0.75	0.78
6	0.57	0.72	0.75
9	0.50	0.70	0.73

The total current included for using Table 1 should be the maximum rated current for the machine divided by the product of the different correction factors. Other correction factors may also be applied ; consult the cable manufacturers.

Calculation : Example

- The machine has a rated current of 60 A.

- The ambient temperature is 45 °C ; Table 2 gives a correction factor of 0.91.

- Rubber cable insulant : Table 3 gives a correction factor of 0.92.

- The cable is fixed directly to the wall (Column C), with 2 cables side by side. Table 4 gives a correction factor of 0.85.

60 A Total current : ----- = 84 A 0.91 x 0.92 x 0.85

Taking Column C in Table 1 (wall fixing), we obtain a minimum cable section of : 3 x 25 mm².

Machine type	Heating	Supply Voltage	Installed Power	Rated Intensity	Main Switch	Connection Cable Section	Fuse
700	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	11,7 kW	27 A	3 x 40 A	4 x 10 mm²	3x32 A
700	Electric	380/415 V 3+T ~ 50/60 Hz	65,7 kW	100,5 A	3 x 125 A	4 x 35 mm²	3x125A
900	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	15,7 kW	33 A	3 x 40 A	4 x 10 mm²	3x40A
900	Electric	380/415 V 3+T ~ 50/60 Hz	87,7 kW	135 A	3 x 160 A	4 x 35 mm²	3x160A
1100	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	19 kW	42 A	3 x 50 A	4 x 10 mm²	3x50A
1100	Electric	380/415 V 3+T ~ 50/60 Hz	91 kW	140 A	3 x 160 A	4 x 50 mm²	3x160A

Compressed air connection

The customer should arrange the installation of filter/lubricator device, as well as a pressure regulator (manometer) on the machine's compressed air supply.

The manual stopping valve lockable in closed position (provided by customer) should be installed on the machine's compressed air supply.

The supply pipe should accept a pressure of at least 1 Mpa (10 bar) (145 psi).

• Connection diameter : rapid action hose coupling DN 6 (0.24") for hose Ø 6/8 mm.

Nota : to avoid too big head losses, the compressed air supply pipe should be bigger in diameter than the coupling diameter (DN 8 for example); in this case, put a 6/8-8/10 adapter.

• Advised pressure : 550-700 kPa (5,5-7 bar) (80-102 psi).

• Minimum pressure: 550 kPa (5,5 bar) (80 psi).

• Maximum pressure : 700 kPa (7 bar) (102 psi).

• Consumption 50 l/h.



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Remove of the transport locks fitted



CAUTION Before putting the machine into service, it is compulsory to remove the 4 transport locks fitted.

To do so, remove the side casings, then the fixing screws of the transportation bridles (B), as well as the transportation bridle screws of the down casings (A).

Keep the transport locks fitted with their screws and bolts to be able to assemble them again in case you would need to lift the machine.

Nota : Never handling the machine without the transportation bridles.



Weighing option :

Unscrews the fixing screws of the transportation bridles (B).

You must connect the compressed air to go up the tub assembly and release the bridles; the machine must not be under voltage. For this, push on the orange button of the D1/D2 distribution unit in the electric cabinet. Remove the bridles and the screws.

Then come down slowly the tub by pushing on the green button of the D1/D2 distribution unit. So the assembly must rest on the load cells.

Reset the weighing equipment when you start the machine.



Operating inspection

Before putting the machine into service, carry out the working tests.

The operating inspection must be done by an approved technician.

Manual operation

The procedure for operating the various machine functions manually is described in the chapter "Machine operation" under the heading "Manual operation".

• Switch on the machine's main switch and check the voltage on the three phases (3 x 400 volts).

• Check the direction of rotation of the <u>cage</u> <u>during spinning</u>. The cage should rotate as shown by the arrow on the hereby drawing. Check this point especially if you have changed the machine's motor or frequency converter.



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• Check the direction of rotation of the <u>motion motor</u> fan (see arrow stuck on the fan). Switch off the current and shift two phases on the main switch of the machine if the fan rotates in the wrong direction.

- Check that the cage is empty.
- Open the manual valves controlling the water and steam supplies.

• Operate the machine manually to fill with cold water, then hot water. Check that these water supplies are connected as they should be.

• Start the machine on wash action, and check that the motor is revolving alternately in the both ways, as normal for wash action.

• Start heating by programming a final temperature. Check that the steam valve opens or the heating element relay reacts, as appropriate.

- Check that the detergents container is working as they should.
- Check the water and steam connections and the drain valve for signs of any leakages.
- Empty the water from the machine and open its door.

Automatic operation

• Check that the external switch or switches are switched on and that the manual valves for water and steam are open.

• Run one of the machine's built-in (standard) with heating.

• Check that the program proceeds normally, and the water filling, detergent filling, heating and motor action are all working in accordance with the program display on the display screen.

Final checking

If all function checks have been satisfactory, reassemble all protection casings.

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Conversion of measurement units				S The following is a list of correspondences of the main frequently used units, to avoid the need to use measurement unit conversion tables.					
bar :	1 bar = 1 bar = 1 bar = 1 bar = 1 bar =	= 100 00 = 1.019 7 = 750.06 = 10 197 = 14.504	0 Pa 7 kg/cm² mm Hg mm H ₂ O psi	pound :	1 kg/cm² 1 kg/cm² 1 lb = 45	0 mm H 57 6 mr 7 g	₂O n Hg		
british thern	nal uni	i t: 1 1	Btu = 1 055.06 J Btu = 0.2521kcal	meter .	1 m = 3.2 1 m = 39	280 83 f .37 in	t		
calorie :	1 cal = 1 cal = 1 kcal 1 cal/h 1 kcal/	4.185 5 10 ⁻⁶ th = 3.967 = 0.001 h = 1.16	5 J Btu 163 W 3 W	cubic mete	er :1 m ³ = 1 1 m ³ = 3 1 dm ³ = 6 1 dm ³ = 6	000 dm 5.314 7 61.024 c 0.035 3	l ³ cu ft cu in cu ft		
continental	horse	2: cower 1	l ch = 0.735 5 kW ch = 0.987 0 HP	pascal :	1 Pa = 1 1 Pa = 0. 1 Pa = 0. 1 Pa = 0.	N/m² .007 500 .101 97 .010 197) 6 mm l mm H ₂ C 7 g/cm²	Hg)	
cubic foot :	1 cu ft 1 cu ft	= 28.31 = 1 728	6 8 dm³ cu in		1 Pa = 0. 1 MPa =	.000 145 10 bar	5 psi		
cubic inch :	1 cu in	= 16.38	37 1 dm³	psi :	1 psi = 0	.068 947	7 6 bar		
foot :	1 ft = 3 1 ft = 1	804.8 mr 2 in	n	thermie :	1 th = 1 (1 th = 10 1 th = 4.1	000 kcal ⁶ cal 185 5 x ⁻	10 ⁶ J		
gallon (U.K.)	:	1 gal = 4 1 gal = 2	4.545 96 dm³ or l 277.41 cu in		1 th = 1.1 1 th = 3 9	162 6 kV 967 Btu	Vh		
gallon (U.S./	4.) :	1 gal = : 1 gal = :	3.785 33 dm³ or l 231 cu in	watt :	1 W = 1 . 1 W = 0 8	J/s 860 11 k	cal/h		
horse power	· :	1 HP = 1 HP =	0.745 7 kW 1.013 9 ch	watt-hour :	1 Wh = 3 1 kWh =	8600 J 860 kca	l		
inch :	1 in = :	25.4 mm	1	yard :	1 yd = 0. 1 yd = 3	914 4 m ft	I		
joule :	1 J = 0 1 J = 0).000 27).238 92	7 8 Wh cal		1 yd = 36	3 in			
kilogramme	:1 kg =	2.205 6	62 lb	temperatur	re degrees 0 °K = -2 0 °C = 27	: 73.16 °(73.16 °K	C		
kg/cm² :	1 kg/cı 1 ka/cı	$m^2 = 98$ $m^2 = 0.9$	066.5 Pa 80 665 bar		t °C = 5/9 t °F = 1.8	9 (t °F-3) 3 t °C + 3	2) 32		



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