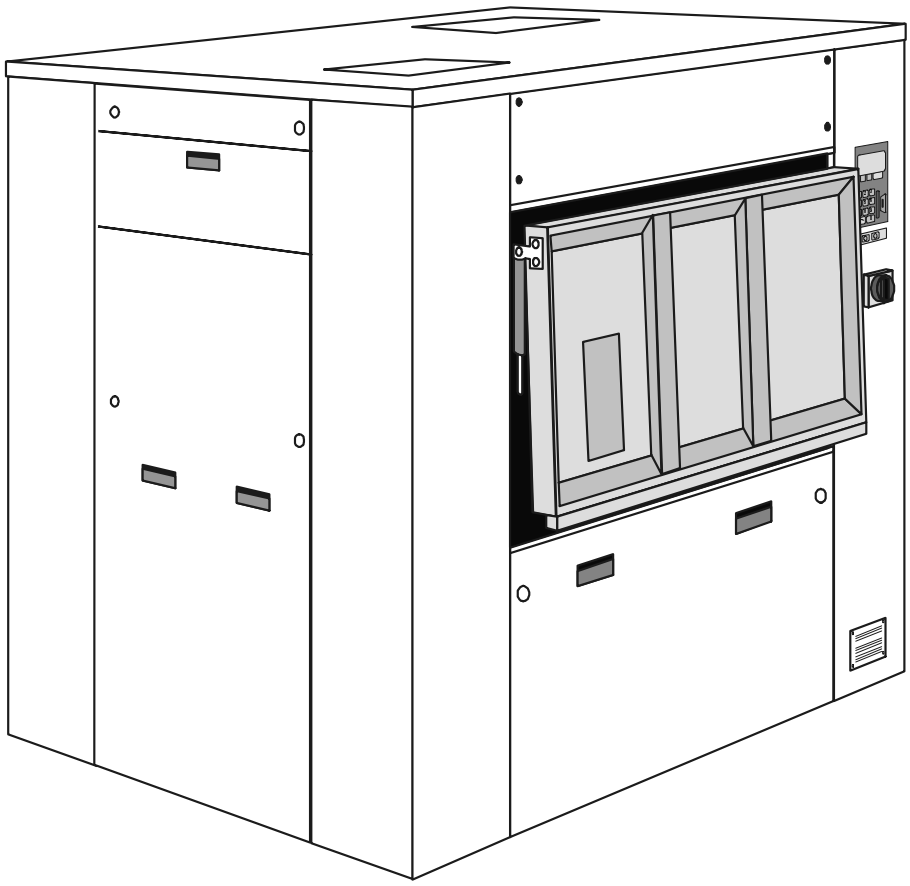
INSTRUCTION HANDBOOK

WASHER-EXTRACTORS

WP3 690-890-1080 H

WPB3 690-890-1080 H



Wascomat

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General instructions

The machines described in this handbook have a washing capacity of 687, 887 or 1087 litres according to their type.

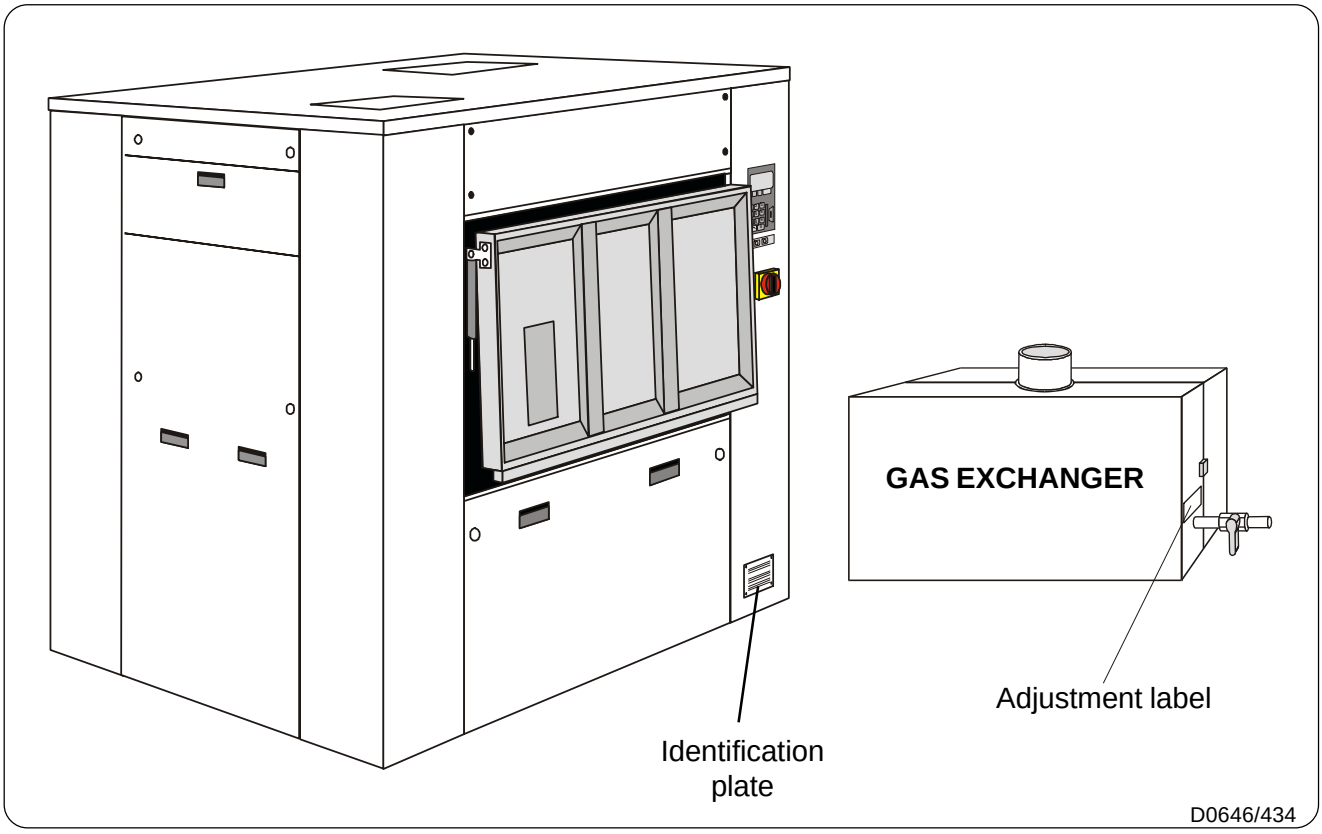
They are washer-extractors designed to meet the most severe requirements.

They are designed to be installed in hotels, laundries, hospitals or collectivities.

The suspension device mounted with springs and shock absorbers limits to the maximum ground vibrations.

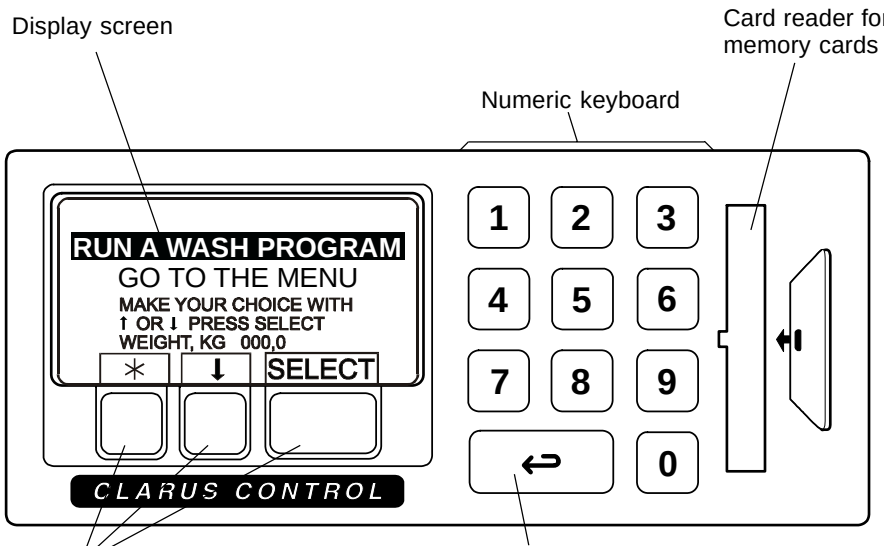
A important G factor guarantees the highest extraction quality for your linen.

These machines also exist in barrier version allowing the respect of linen's hygiene rules.



This washer extractor is controlled by a microprocessor-based program control unit placed on the loading side. There are many advantages to this equipment, including :

- Timing, levels and temperatures are controlled with great precision and flexibility.
- The large display screen means that detailed information on wash programs, machine status and operations, wash times and temperatures can be accessed in plain language
- It is possible for the user to create new wash programs, and to adapt programs with great precision, on the basis of experience and to suit various types of textile, degrees of soiling etc.
- a very high level of machine safety through continuous monitoring and built-in safety interlocks.
- The program control unit has a reader for "smart cards". These are cards the size of a credit card which contain a memory chip. Smart cards allow the user to :
  - transfer wash programs between a PC and the washer extractor, or from one washer extractor to another
  - run programs straight from a card
- Great flexibility during program operation :
  - rapid advance both forwards and backwards in the program
  - the user can change temperatures, program module lengths and extraction speeds directly, during program operation
  - change to running a different wash program, at any time during program operation of the washer extractor.



Function keys.
The functions of these keys change, depending on which menu or part of a menu you are using. Their current functions at any time are shown on the display immediately above each key.

During a wash : "Pause" key.
Before and after a wash, and during programming : "Move back key".
By pressing this key repeatedly you can move backwards through the menus you have navigated through. This will always bring you back to the menu shown on the display in this illustration.

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A very high working safety level of the machine is achieved thanks to a continuous monitoring and built-in safety devices.

Even the compound textile fabrics can be washed at a high temperature with no crumpling risk thanks to a special cooling process before the rinsing cycle.

In order to avoid an excessive mechanical fatigue during the hydro-extraction process, the machine is equipped with an unbalance detector. If the latter detects the least unbalance of the load, the hydro-extraction cycle is interrupted and the machine fills with water to make a new distribution of the linen possible.

The machine then resumes the distribution speed and another hydro-extraction cycle begins.

The machine can also be controlled sequence by sequence and is equipped with a keyboard for the manual control of certain functions.

Precautions for use

- ☞ The machine should not be used by children.
- ☞ The machine is designed for "water washing" of textile only.
- ☞ This machine is for professional use and must be used exclusively by qualified personnel.
- ☞ It is forbidden to wash textiles soaked with solvents.
- ☞ In case of a gas heated machine, do not assemble the machine on premises containing a dry cleaning machines or other similar machines.

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.
- 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.

Preliminary instructions

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

Users must have learnt how the machine operates.

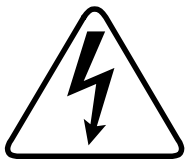
The identification plate is placed on the loading side of the machine.

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.

Explanation of graphic symbols



A flash of lightning with an arrow at its end displayed inside an equilateral triangle, warns the user about the presence of uninsulated "dangerous current" sufficient in intensity to cause electrocution.

An exclamation mark inside an equilateral triangle offers the user important advice about usage, servicing and hazardous conditions.

This symbol warns the user that there are mechanisms inside the machine which can be dangerous. The protective housing must be in place during use.

This symbol warns the user of the presence of high temperatures which could cause severe burns. Some surfaces can reach close to 200 °C (392 °F).

SAFETY

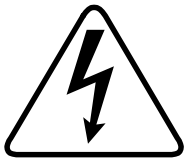
This machine should be installed in conformance to the health and safety regulations, and only used in a sufficiently aerated area.

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

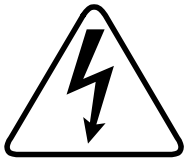


Do not use the machine unless it is plugged into a correctly earthed power socket complying with standards in force.

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.

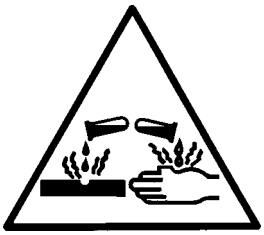
The machines comply with the European Directive EMC (Electromagnetic Compatibility). They have been tested in laboratory and approved as such. It is so prohibited to add wires or non shielded electric cables in the cabinets, strands or cables' troughs.

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

Ensure that the machine is not loaded beyond its nominal capacity (see "Specific load" in the instruction booklet's technical characteristics).
An excessive load has consequences for the lifetime of the machine's organs, as follows:

- **Rapid destruction of the suspension elements (springs, shock absorbers);**
- **Excessive fatigue of motorisation elements (engine, belt);**
- **Rapid reduction of lifetime of drum bearings (rolling bearings);**
- **Opening and destruction of drum doors and tank doors during oil dehydration.**

This is particularly important for your safety and that of others.
The consequence is an immediate cancellation of the warranty.



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.

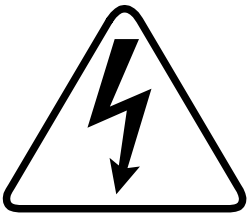
- Avoid contact with skin or eyes (may cause burns).

- 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 or gas inlet valves.

Distributor Letter

Chemical System Responsibility

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.

Locking and tagging procedure

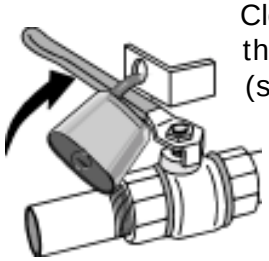
A red insert at the beginning of this instruction handbook schematically shows the locking and tagging procedure described below. If you wish, you can detach this insert and display it close to the machine to remind maintenance personnel of the safety instructions.

1

Always respect items 2, 3 and 4 carefully before doing any repair or maintenance work on the machine.

2

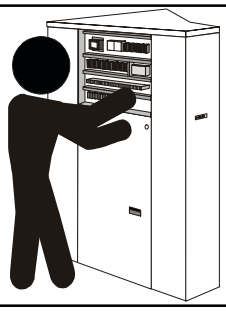
Put the main switch to Off and lock the handle with a padlock in one of the three holes provided for this purpose.



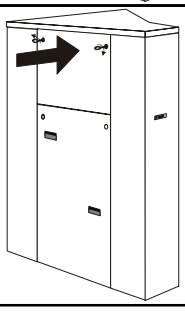
Close the stop valves for the other supplies (steam, gas, thermal fluid, compressed air) to stop and lock their handle with a padlock.

3

Open the fixed protectors (casings, doors) with the key provided or a special tool.

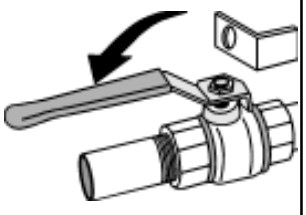


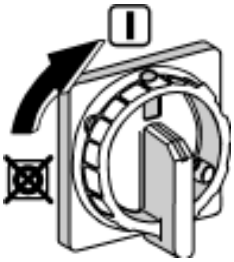
Do the maintenance.



Close and carefully lock the fixed protectors.

4



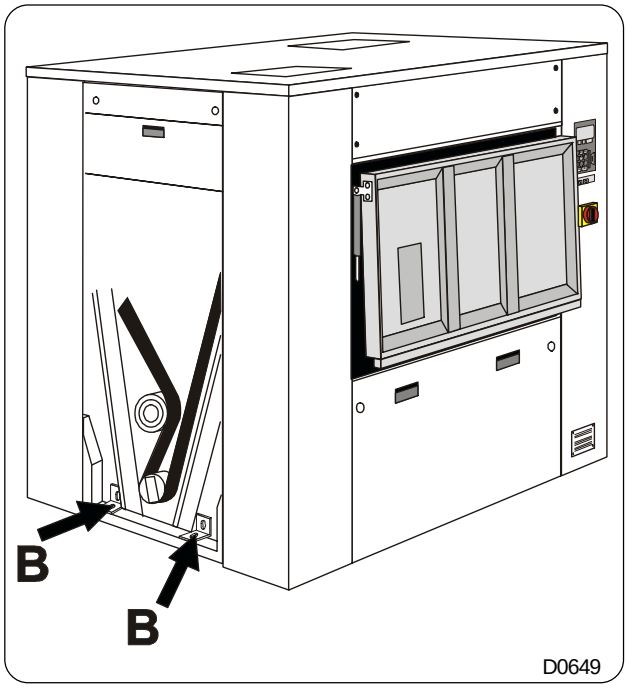


Unlock the stop valves and the main switch.

Handling

Before any handling, check that the four transport locks fitted are still in place and well-tightened.

To do so, remove the front and rear casings and check presence of four locks (B).

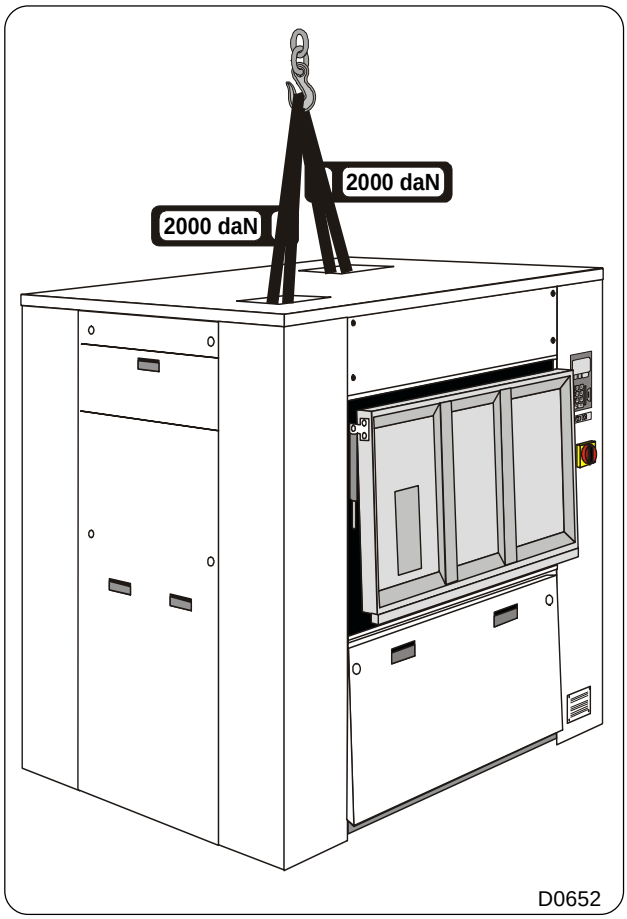


SAFETY

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 2000 daN) which bear weight of the machine.



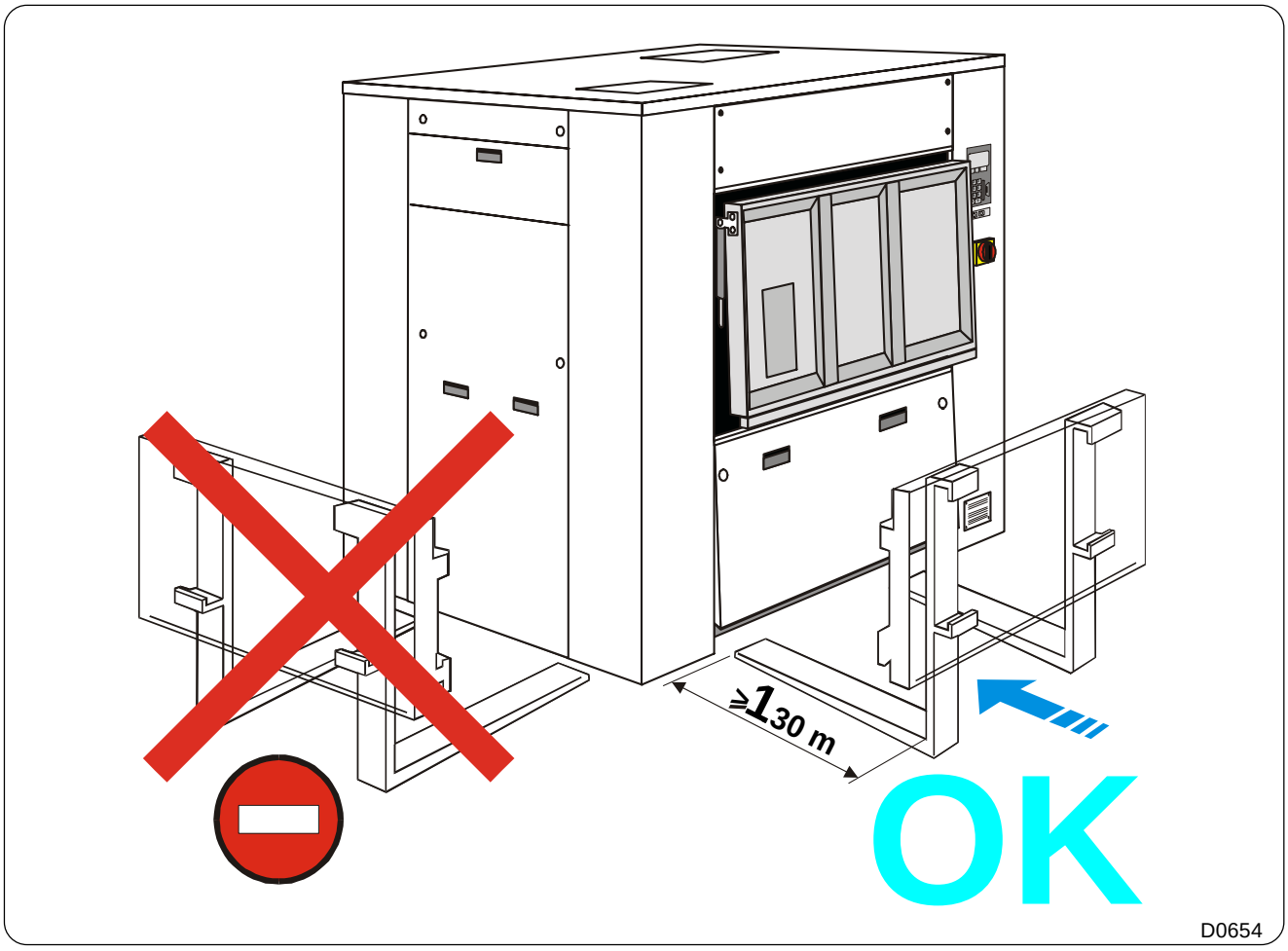
CAUTION

You should never handle the machine in its longitudinal side (any other than shown on the drawing below) with a fork-lift truck.

Important risk of parts deterioration for those fixed under the machine.

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 1.30 m (51").



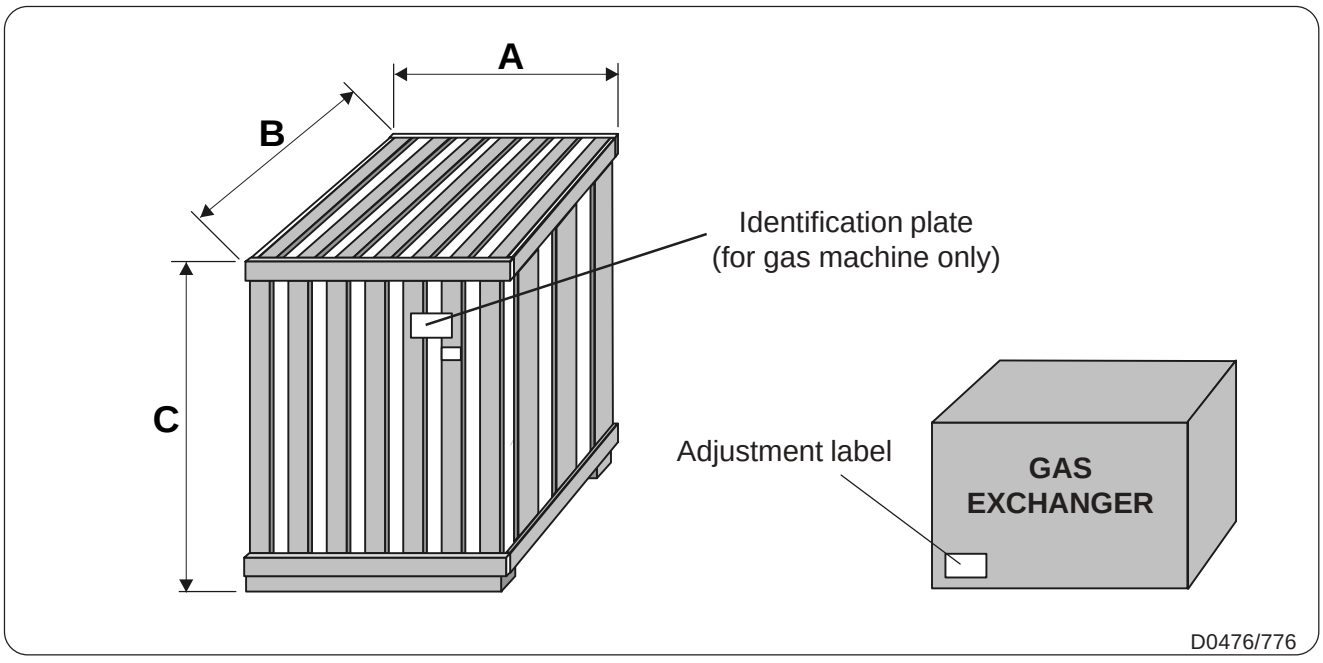
CAUTION
In order to avoid any bending of casings, you should never climb and stand on top of the machine.

Packing

Packing dimensions in mm/inch	Size A	Size B	Size C
Washer extractor Type 690 standard	1580/62"	1600/63"	2250/89"
Washer extractor Type 690 barrier	1580/62"	1600/63"	2250/89"
Washer extractor Type 890 standard	1580/62"	1820/72	2250/89"
Washer extractor Type 890 barrier	1580/62"	1820/72	2250/89"
Washer extractor Type 1080 standard	1580/62"	2080/81"	2250/89"
Washer extractor Type 1080 barrier	1580/62"	2080/81"	2250/89"

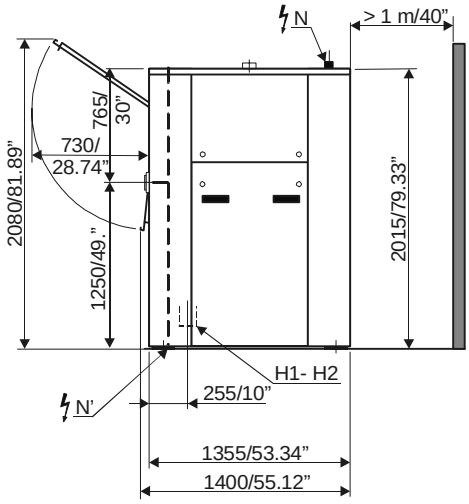
Weight

Weight in kg/lb (machine + crate)	Gas	Electric	Steam/T.F
Washer extractor Type 690 standard	1750/3860	1750/3860	1750/3860
Washer extractor Type 690 barrier	1750/3860	1750/3860	1750/3860
Washer extractor Type 890 standard	-	1955/4312	1955/4312
Washer extractor Type 890 barrier	-	1955/4312	1955/4312
Washer extractor Type 1080 standard	-	2245/4950	2245/4950
Washer extractor Type 1080 barrier	-	2245/4950	2245/4950

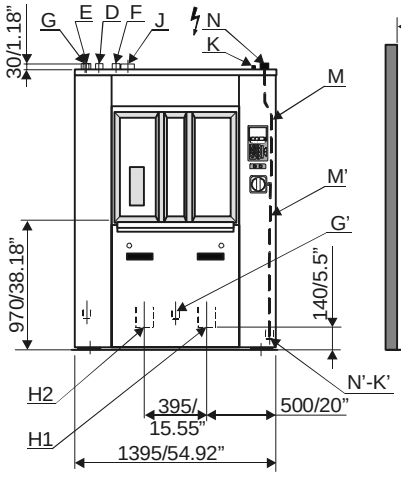


Washer extractor type 690 standard

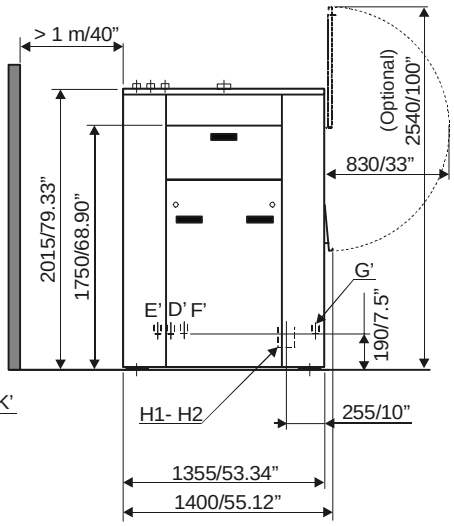
Right view



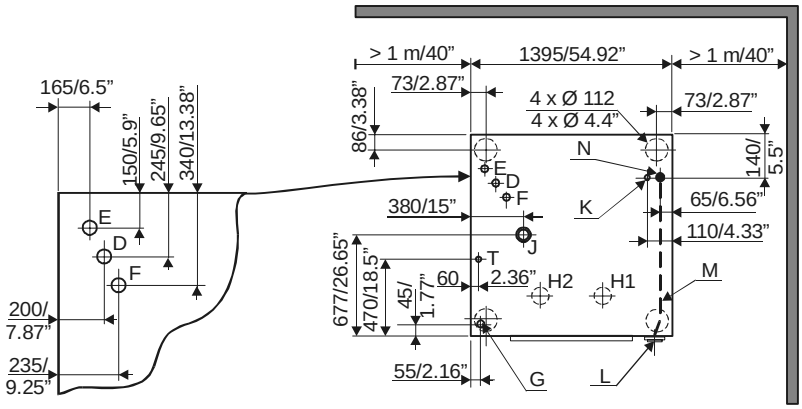
Front view



Left view

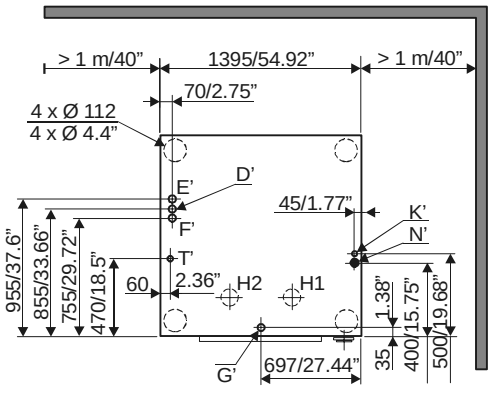


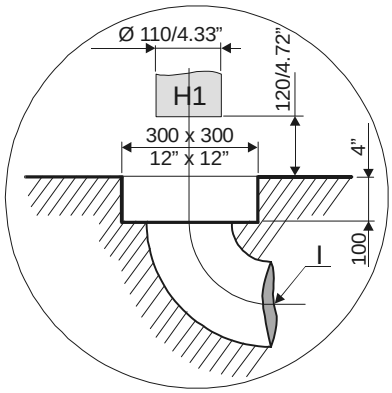
Top inlets



Top views

Bottom inlets





Example of drain connection

Washer extractor type 690 standard

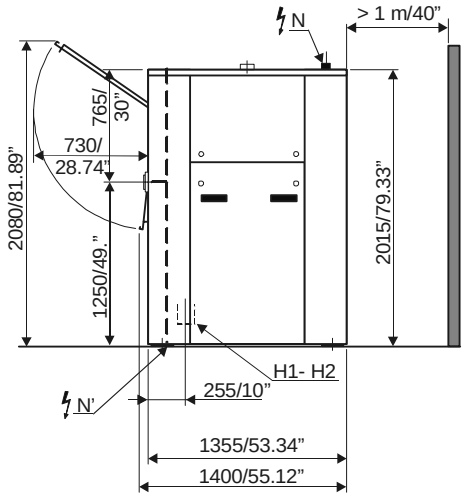
Diagram No. 07100101

Heating		**Gas**	**Electric**	**Steam**	**Thermic fluid**
Characteristics	Ø drum	1050 mm (41.33")			
	Drum length	790 mm (31.10")			
	Opening drum door (LxH)	670x490 mm (26.38x19.3")			
	Opening cage door (LxH)	728x698 mm (28.66x27.5")			
	Drum volume	687 dm³ (687 l)			
	Specific load 1/11 (dry linen, ISO 9398-4)	62 kg (138 lb)			
Floor area		1.89 m² (20.34 sq. ft)			
Contact surface with floor		0.083 m² (129 sq. in)			
Net weight		1595 daN (3518 lb)			
Weight loaded (high level)		2033 daN (4484 lb)			
Water consumption, washing, low level		185 l	185 l	185 l	185 l
Water consumption, washing, high level		370 l	370 l	370 l	370 l
Max dynamic load		F = 394 daN (869 lb)			
Max transmitted floor load		2427 daN (5353 lb)			
Max pressure transmitted to floor		639 kPa (92 psi)			
Frequency of the dynamic force		0.65 Hz			
Spin efficiency		300 G			
Max. unbalance		8 kg (17 lb)			
(L) Main switch to connect main cable					
(M or M') Electric cable (section)		4 x 6 mm²	4 x 25 mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable					
Supply voltage		380 / 415 V 3+T ~ 50/60 Hz			
Installed electric power		11.7 kW	65.7 kW	11.7 kW	11.7 kW
Installed heating power		40 kW	54 kW	-	-
Electric consumption for a normal cycle*		1.7 kWh/h	17.8 kWh/h	1.7 kWh/h	1.7 kWh/h
Heat loss		3 % of installed heating power			
(G or G') Steam inlet				DN 25 (1" BSP)	
	- Maximum supply pressure			600 kPa (87 psi)	
	- Steam instaneous flow rate at 600 kPa			240 kg/h	
	- Steam consumption for a normal cycle*			33 kg/h	
(D or D') Hot water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
(E or E') Cold hard water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
(F or F') Cold soft water connection / flow (option)		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
Water supply minimum pressure		50 kPa (7.25 psi)			
Water supply maximum pressure		300 kPa (43.5 psi)			
Water consumption for a normal cycle*		960 l	960 l	960 l	960 l
(H1) 1st drain connection		Ø 110 mm (4.33")			
(H2) 2nd drain connection (option)		Ø 110 mm (4.33")			
Maximum drain flow rate		380 l/min	380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3%) minimum slope)		DN 200 mm (8" BSP)			
(J) Air vent hole		Ø 80 mm (3.15")			
(-) Thermic fluid inlet					DN 20 (3/4" BSP)
(-) Thermic fluid return					DN 20 (3/4" BSP)
	- Maximum supply pressure				xxx kPa
	- Installed calorific power				xxx kcal
	- Average calorific consumption				xxx kcal/h
	- Inner volume thermic fluid exchanger				xx l
(K or K') Compressed air inlet		Ø 6/8 mm (1/4")			
	- Min./max. compress air pressure	5.5/7 bar (80/100 psi)			
	- Consumption	50 l/h			
(T or T') Liquid detergents connection		Ø 20 mm (0.79")			
Gas inlet		DN 20 (3/4" BSP)			
Combustion products evacuation		Ø 125 mm (5")			

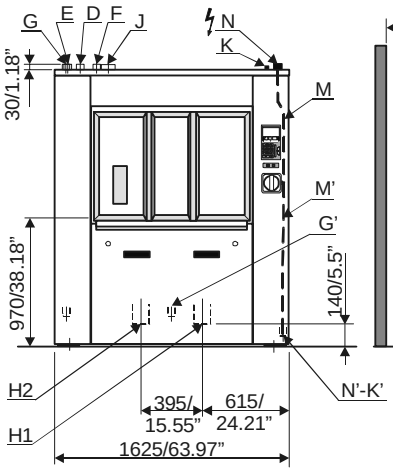
* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

Washer extractor type 890 standard

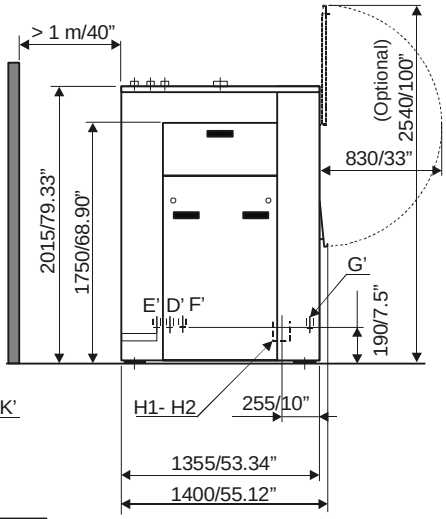
Right view



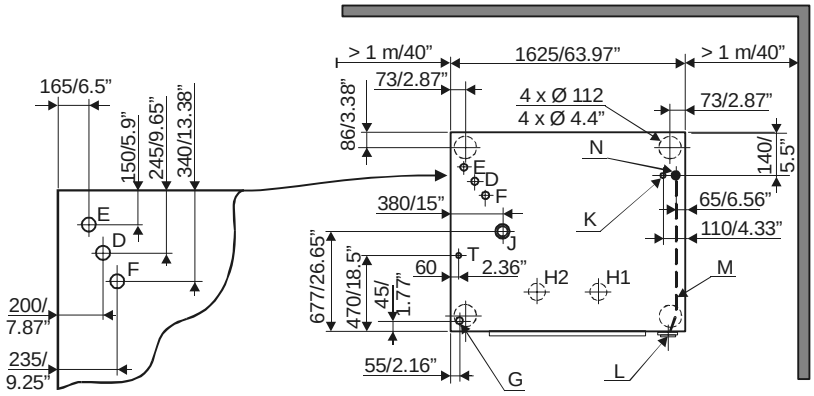
Front view



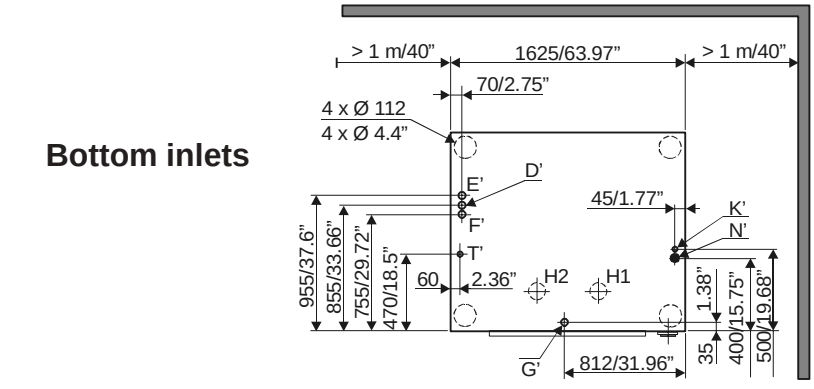
Left view



Top inlets

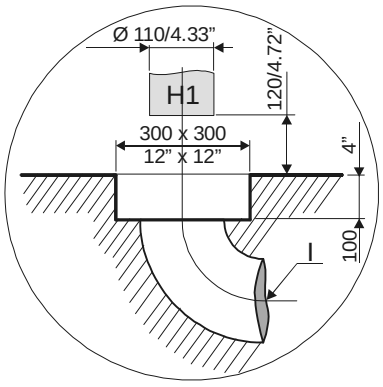


Top views



Bottom inlets

Example of drain connection



Washer extractor type 890 standard

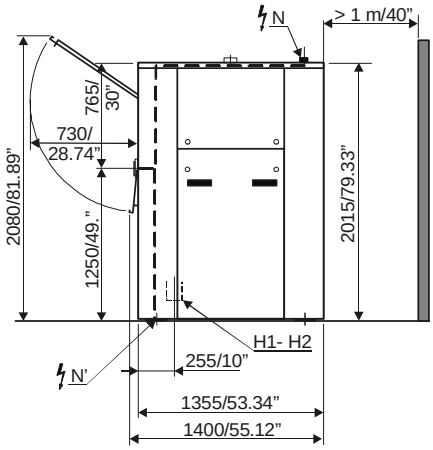
Diagram No. 07100102

		Electric	Steam	Thermic fluid
Characteristics	Ø drum	1050 mm (41.33")		
	Drum length	1020 mm (40.16")		
	Opening drum door (LxH)	900x490 mm (35.43x19.3")		
	Opening cage door (LxH)	958x698 mm (37.71x27.5")		
	Drum volume	887 dm³ (887 l)		
	Specific load 1/11 (dry linen, ISO 9398-4)	81 kg (178 lb)		
Floor area		2.20 m² (23.68 sq. ft)		
Contact surface with floor		0.083 m² (129 sq. in)		
Net weight		1750 daN (3860 lb)		
Weight loaded (high level)		2280 daN (5029 lb)		
Water consumption, washing, low level		220 l	220 l	220 l
Water consumption, washing, high level		440 l	440 l	440 l
Max dynamic load		F = 500 daN (1103 lb)		
Max transmitted floor load		2780 daN (6131 lb)		
Max pressure transmitted to floor		732 kPa (106 psi)		
Frequency of the dynamic force		0.65 Hz		
Spin efficiency		300 G		
Max. unbalance		10 kg (22 lb)		
(L) Main switch to connect main cable				
(M or M') Electric cable (section)		4 x 25 mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable				
Supply voltage		380 / 415 V 3+T ~ 50/60 Hz		
Installed electric power		87.7 kW	15.7 kW	15.7 kW
Installed heating power		72 kW	-	-
Electric consumption for a normal cycle*		26.5 kWh/h	2 kWh/h	2 kWh/h
Heat loss		3 % of installed heating power		
(G or G') Steam inlet			DN 25 (1" BSP)	
	- Maximum supply pressure		600 kPa (87 psi)	
	- Steam instaneous flow rate at 600 kPa		240 kg/h	
	- Steam consumption for a normal cycle*		47 kg/h	
(D or D') Hot water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(E or E') Cold hard water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(F or F') Cold soft water connection / flow (option)		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
Water supply minimum pressure		50 kPa (7.25 psi)		
Water supply maximum pressure		300 kPa (43.5 psi)		
Water consumption for a normal cycle*		1260 l		
(H1) 1st drain connection		Ø 110 mm (4.33")		
(H2) 2nd drain connection (option)		Ø 110 mm (4.33")		
Maximum drain flow rate		380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3 %) minimum slope)		Ø 200 mm (8" BSP)		
(J) Air vent hole		Ø 80 mm (3.15")		
(-) Thermic fluid inlet				DN 20 (3/4" BSP)
(-) Thermic fluid return				DN 20 (3/4" BSP)
	- Maximum supply pressure			xxx kPa
	- Installed calorific power			xxx kcal
	- Average calorific consumption			xxx kcal/h
	- Inner volume thermic fluid exchanger			xx l
(K or K') Compressed air inlet		Ø 6/8 mm (1/4")		
	- Min./max. compress air pressure	5.5/7 bar (80/100 psi))		
	- Consumption	50 l/h		
(T or T') Liquid detergents connection		Ø 20 mm (0.79")		

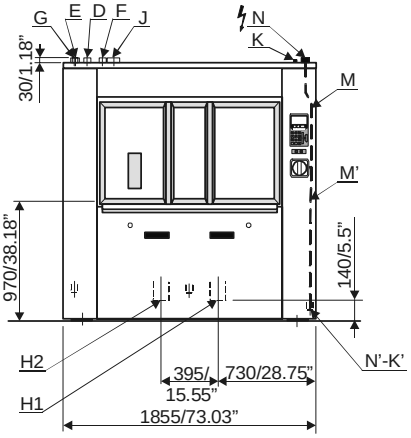
* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

Washer extractor type 1080 standard

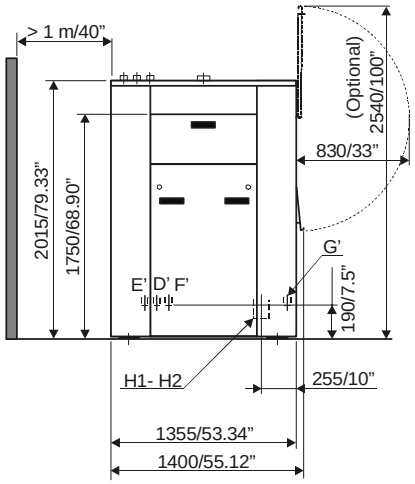
Right view



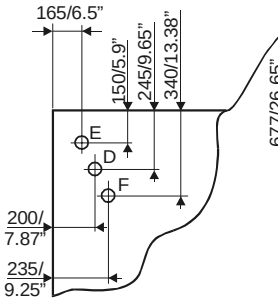
Front view



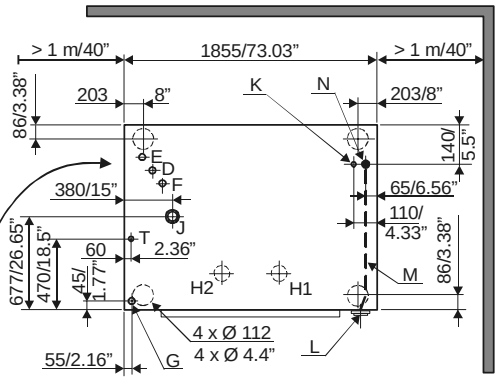
Left view



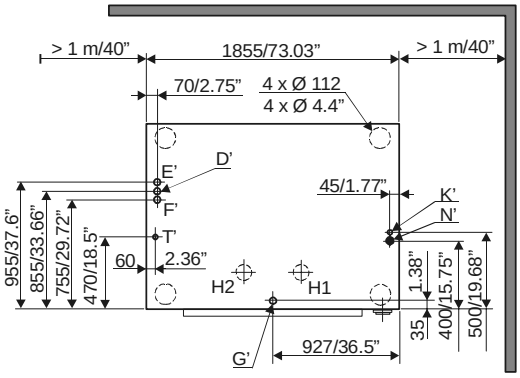
Top inlets

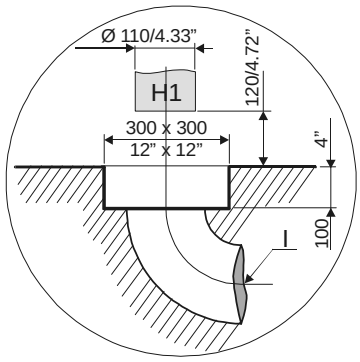


Top views



Bottom inlets





Example of drain connection

07100096

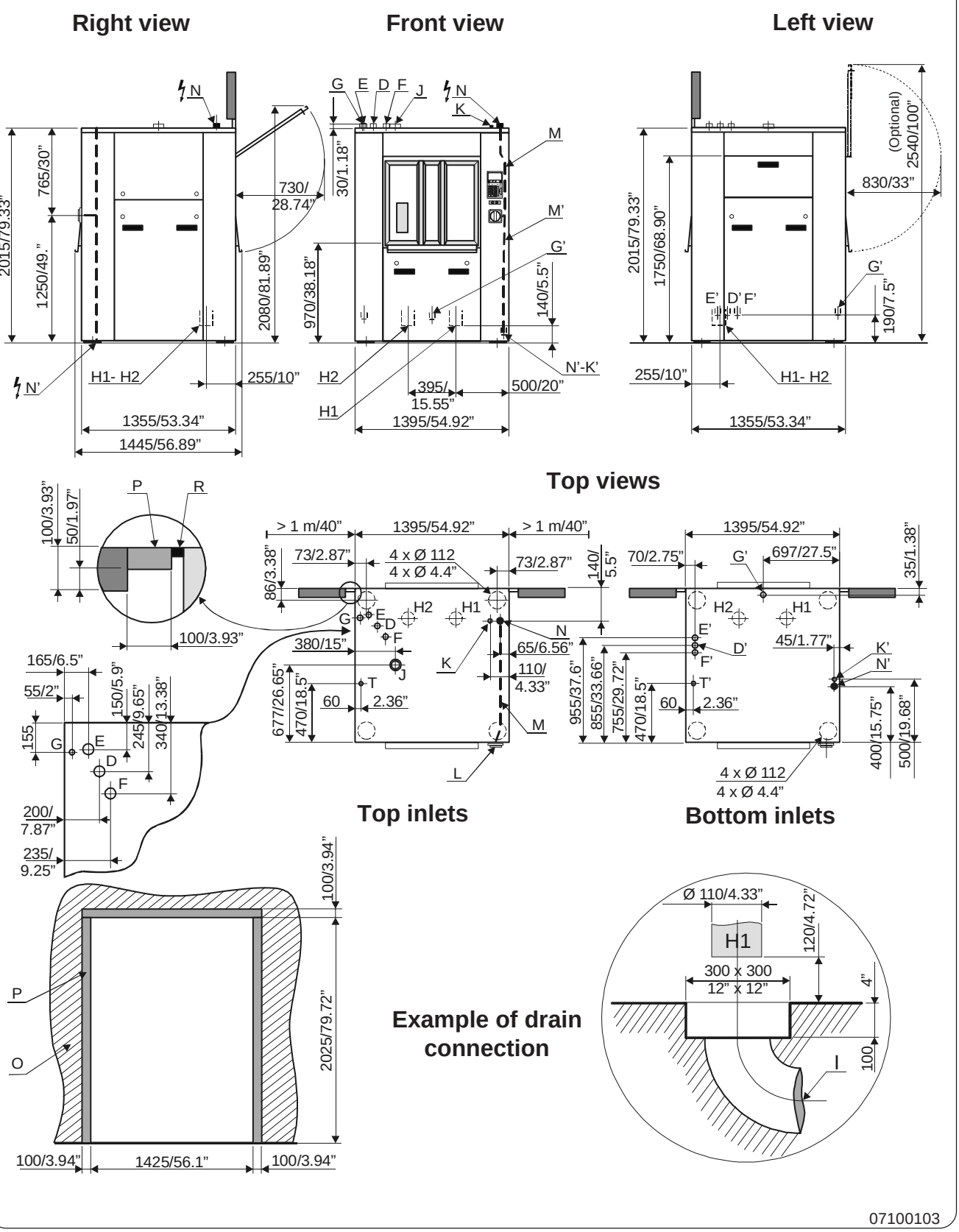
Washer extractor type 1080 standard

Diagram No. 07100096

Heating		**Electric**	**Steam**	**Thermic fluid**
Characteristics	Ø drum	1050 mm (41.33")		
	Drum length	1250 mm (49.21")		
	Opening drum door (LxH)	900x490 mm (35.43x19.3")		
	Opening cage door (LxH)	958x698 mm (37.71x27.5")		
	Drum volume	1087 dm³ (1087 l)		
	Specific load 1/11 (dry linen, ISO 9398-4)	99 kg (218 lb)		
Floor area		2.50 m² (26.9 sq. ft)		
Contact surface with floor		0.083 m² (129 sq. in)		
Net weight		1950 daN (4300 lb)		
Weight loaded (high level)		2670 daN (5889 lb)		
Water consumption, washing, low level		300 l	300 l	300 l
Water consumption, washing, high level		600 l	600 l	600 l
Max dynamic load		F = 590 daN (1301 lb)		
Max transmitted floor load		3260 daN (7190 lb)		
Max pressure transmitted to floor		858 kPa (124 psi)		
Frequency of the dynamic force		0.65 Hz		
Spin efficiency		300 G		
Max. unbalance		15 kg (33 lb)		
(L) Main switch to connect main cable				
(M or M') Electric cable (section)		4 x - mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable				
Supply voltage		380 / 415 V 3+T ~ 50/60 Hz		
Installed electric power		xx kW	19 kW	19 kW
Installed heating power		xx kW	-	-
Electric consumption for a normal cycle*		xx kWh/h	2.2 kWh/h	2.2 kWh/h
Heat loss		3 % of installed heating power		
(G or G') Steam inlet			DN 25 (1" BSP)	
	- Maximum supply pressure		600 kPa (87 psi)	
	- Steam instaneous flow rate at 600 kPa		240 kg/h	
	- Steam consumption for a normal cycle*		50 kg/h	
(D or D') Hot water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(E or E') Cold hard water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(F or F') Cold soft water connection / flow (option)		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
Water supply minimum pressure		50 kPa (7.25 psi)		
Water supply maximum pressure		300 kPa (43.5 psi)		
Water consumption for a normal cycle*		1517 l		
(H1) 1st drain connection		Ø 110 mm (4.33")		
(H2) 2nd drain connection (option)		Ø 110 mm (4.33")		
Maximum drain flow rate		380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3 %) minimum slope)		Ø 200 mm (8" BSP)		
(J) Air vent hole		Ø 80 mm (3.15")		
(-) Thermic fluid inlet				DN 20 (3/4" BSP)
(-) Thermic fluid return				DN 20 (3/4" BSP)
	- Maximum supply pressure			xxx kPa
	- Installed calorific power			xxx kcal
	- Average calorific consumption			xxx kcal/h
	- Inner volume thermic fluid exchanger			xx l
(K or K') Compressed air inlet			Ø 6/8 mm (1/4")	
	- Min./max. compress air pressure		5.5/7 bar (80/100 psi))	
	- Consumption		50 l/h	
(T or T') Liquid detergents connection			Ø 20 mm (0.79")	

* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

Washer extractor type 690 barrier



07100103

Washer extractor type 690 barrier

Diagram No. 07100103

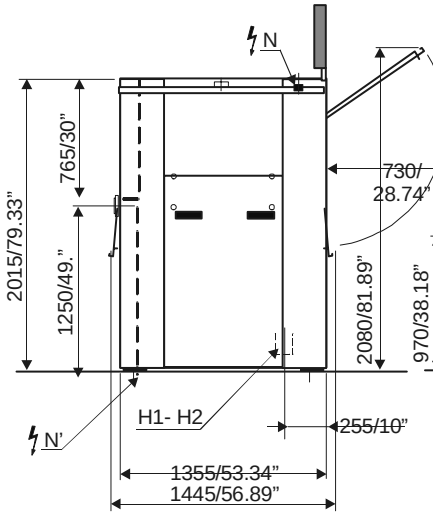
Heating	Gas	Electric	Steam	Thermic fluid
Characteristics Ø drum	1050 mm (41.33")			
Drum length	790 mm (31.10")			
Opening drum door (LxH)	670x490 mm (26.38x19.3")			
Opening cage door (LxH)	728x698 mm (28.66x27.5")			
Drum volume	687 dm³ (687 l)			
Specific load 1/11 (dry linen, ISO 9398-4)	62 kg (138 lb)			
Floor area	1.89 m² (20.34 sq. ft)			
Contact surface with floor	0.083 m² (129 sq. in)			
Net weight	1595 daN (3518 lb)			
Weight loaded (high level)	2033 daN (4484 lb)			
Water consumption, washing, low level	185 l	185 l	185 l	185 l
Water consumption, washing, high level	370 l	370 l	370 l	370 l
Max dynamic load	F = 394 daN (869 lb)			
Max transmitted floor load	2427 daN (5353 lb)			
Max pressure transmitted to floor	639 kPa (92 psi)			
Frequency of the dynamic force	0.65 Hz			
Spin efficiency	300 G			
Max. unbalance	8 kg (17 lb)			
(L) Main switch to connect main cable				
(M or M') Electric cable (section)	4 x 6 mm²	4 x 25 mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable				
Supply voltage	380 / 415 V 3+T ~ 50/60 Hz			
Installed electric power	11.7 kW	65.7 kW	11.7 kW	11.7 kW
Installed heating power	40 kW	54 kW	-	-
Electric consumption for a normal cycle*	1.7 kWh/h	17.8 kWh/h	1.7 kWh/h	1.7 kWh/h
Heat loss	3 % of installed heating power			
(G or G') Steam inlet			DN 25 (1" BSP)	
- Maximum supply pressure			600 kPa (87 psi)	
- Steam instaneous flow rate at 600 kPa			240 kg/h	
- Steam consumption for a normal cycle*			33 kg/h	
(D or D') Hot water connection / flow	DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
(E or E') Cold hard water connection / flow	DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
(F or F') Cold soft water connection / flow (option)	DN 32 (1"¼BSP) - 200 l/min at 250 kPa (36 psi)			
Water supply minimum pressure	50 kPa (7.25 psi)			
Water supply maximum pressure	300 kPa (43.5 psi)			
Water consumption for a normal cycle*	960 l	960 l	960 l	960 l
(H1) 1st drain connection	Ø 110 mm (4.33")			
(H2) 2nd drain connection (option)	Ø 110 mm (4.33")			
Maximum drain flow rate	380 l/min	380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3%) minimum slope)	DN 200 mm (8" BSP)			
(J) Air vent hole	Ø 80 mm (3.15")			
(-) Thermic fluid inlet				DN 20 (3/4" BSP)
(-) Thermic fluid return				DN 20 (3/4" BSP)
- Maximum supply pressure				xxx kPa
- Installed calorific power				xxx kcal
- Average calorific consumption				xxx kcal/h
- Inner volume thermic fluid exchanger				xx l
(K or K') Compressed air inlet	Ø 6/8 mm (1/4")			
- Min./max. compress air pressure	5.5/7 bar (80/100 psi)			
- Consumption	50 l/h			
(T or T') Liquid detergents connection	Ø 20 mm (0.79")			
Gas inlet	DN 20 (3/4" BSP)			
Combustion products evacuation	Ø 125 mm (5")			

(O) Barrier partition (provided by customer)
(P) Frame 50x100 mm (2x4") (provided by customer)
(R) Foam joint

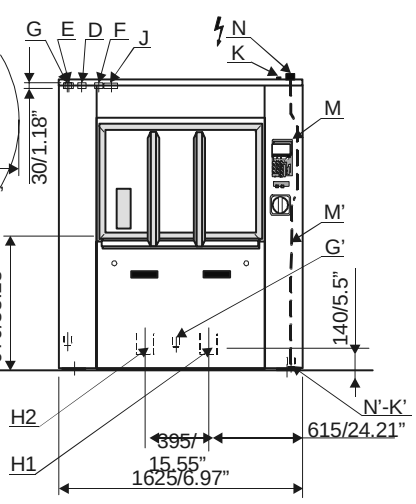
* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

Washer extractor type 890 barrier

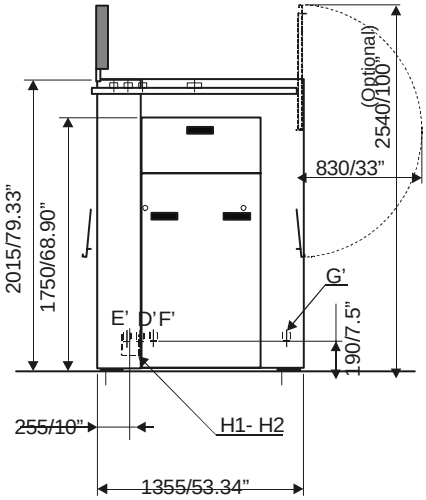
Right view



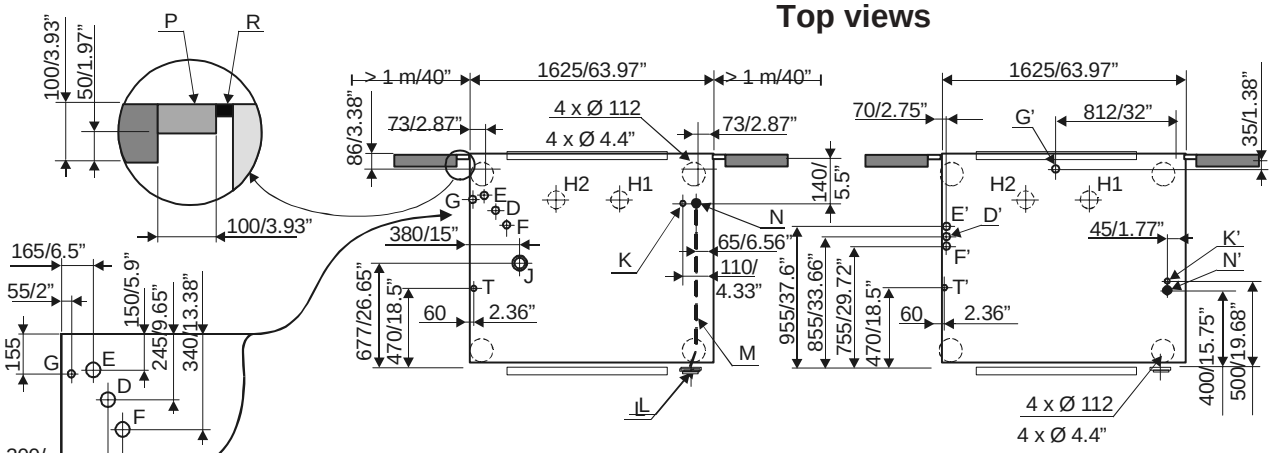
Front view



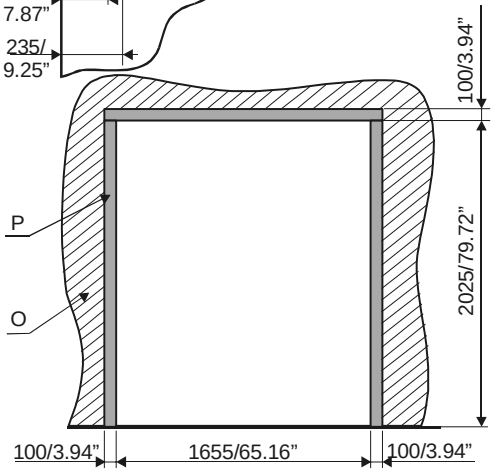
Left view



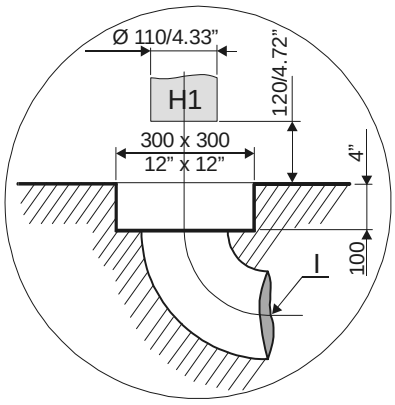
Top views



Top inlets



Bottom inlets



Example of drain connection

07100104

Washer extractor type 890 barrier

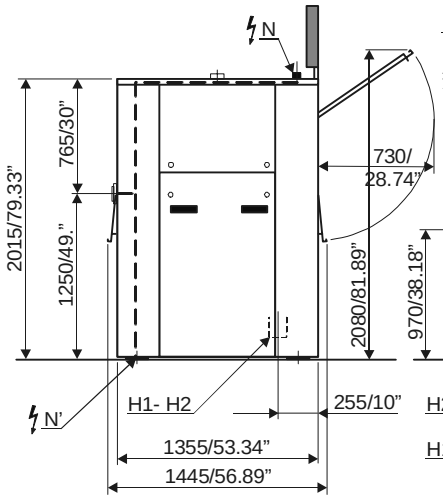
Diagram No. 07100104

Heating		**Electric**	**Steam**	**Thermic fluid**
Characteristics	Ø drum	----------1050 mm (41.33")----------		
	Drum length	----------1020 mm (40.16") ----------		
	Opening drum door (LxH)	----------900x490 mm (35.43x19.3")----------		
	Opening cage door (LxH)	----------958x698 mm (37.71x27.5")----------		
	Drum volume	---------- 887 dm³ (887 l)----------		
	Specific load 1/11 (dry linen, ISO 9398-4)	---------- 81 kg (178 lb) ----------		
Floor area		--------- 2.20 m² (23.68 sq. ft)---------		
Contact surface with floor		--------- 0.083 m² (129 sq. in)---------		
Net weight		--------- 1750 daN (3860 lb)---------		
Weight loaded (high level)		--------- 2280 daN (5029 lb)---------		
Water consumption, washing, low level		220 l	220 l	220 l
Water consumption, washing, high level		440 l	440 l	440 l
Max dynamic load		------ F = 500 daN (1103 lb)--------		
Max transmitted floor load		-------- 2780 daN (6131 lb)--------		
Max pressure transmitted to floor		--------- 732 kPa (106 psi)--------		
Frequency of the dynamic force		---------- 0.65 Hz ----------		
Spin efficiency		---------- 300 G ----------		
Max. unbalance		---------- 10 kg (22 lb) ---------		
(L) Main switch to connect main cable				
(M or M') Electric cable (section)		4 x 25 mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable				
Supply voltage		-----380 / 415 V 3+T ~ 50/60 Hz--------		
Installed electric power		87.7 kW	15.7 kW	15.7 kW
Installed heating power		72 kW	-	-
Electric consumption for a normal cycle*		26.5 kWh/h	2 kWh/h	2 kWh/h
Heat loss		-----3 % of installed heating power------		
(G or G') Steam inlet				DN 25 (1" BSP)
	- Maximum supply pressure		600 kPa (87 psi)	
	- Steam instaneous flow rate at 600 kPa		240 kg/h	
	- Steam consumption for a normal cycle*		47 kg/h	
(D or D') Hot water connection / flow		DN 32 (1"⅛BSP) - 200 l/min at 250 kPa (37 psi)		
(E or E') Cold hard water connection / flow		DN 32 (1"⅛BSP) - 200 l/min at 250 kPa (37 psi)		
(F or F') Cold soft water connection / flow (option)		DN 32 (1"⅛BSP) - 200 l/min at 250 kPa (37 psi)		
Water supply minimum pressure		---------- 50 kPa (7.25 psi) ---------		
Water supply maximum pressure		---------- 300 kPa (43.5 psi) ---------		
Water consumption for a normal cycle*		---------- 1260 l ----------		
(H1) 1st drain connection		------ Ø 110 mm (4.33") ---------		
(H2) 2nd drain connection (option)		------ Ø 110 mm (4.33") ---------		
Maximum drain flow rate		380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3 %) minimum slope)		------- Ø 200 mm (8" BSP) ---------		
(J) Air vent hole		Ø 80 mm	Ø 80 mm	Ø 80 mm
(J) Air vent hole		------ Ø 80 mm (3.15") ---------		
(-) Thermic fluid inlet				DN 20 (3/4" BSP)
(-) Thermic fluid return				DN 20 (3/4" BSP)
	- Maximum supply pressure			xxx kPa
	- Installed calorific power			xxx kcal
	- Average calorific consumption			xxx kcal/h
	- Inner volume thermic fluid exchanger			xx l
(O) Barrier partition (provided by customer)				
(P) Frame 50x100 mm (2x4") (provided by customer)				
(R) Foam joint				
(K or K') Compressed air inlet		--------- Ø 6/8 mm (1/4") ---------		
	- Min./max. compress air pressure	--------- 5.5/7 bar (80/100 psi)) ---------		
	- Consumption	--------- 50 l/h ----------		
(T or T') Liquid detergents connection		--------- Ø 20 mm (0.79") ---------		

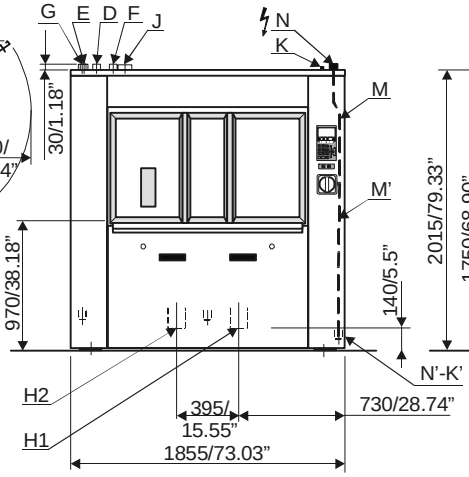
* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

Washer extractor type 1080 barrier

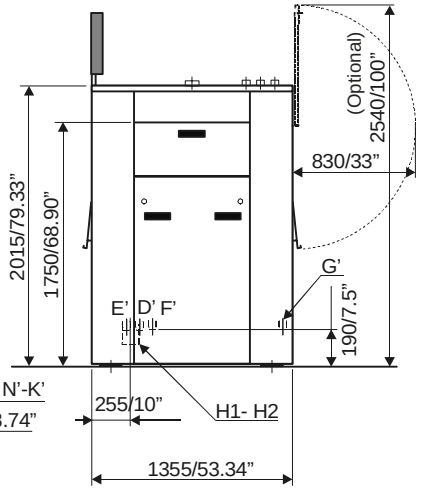
Right view



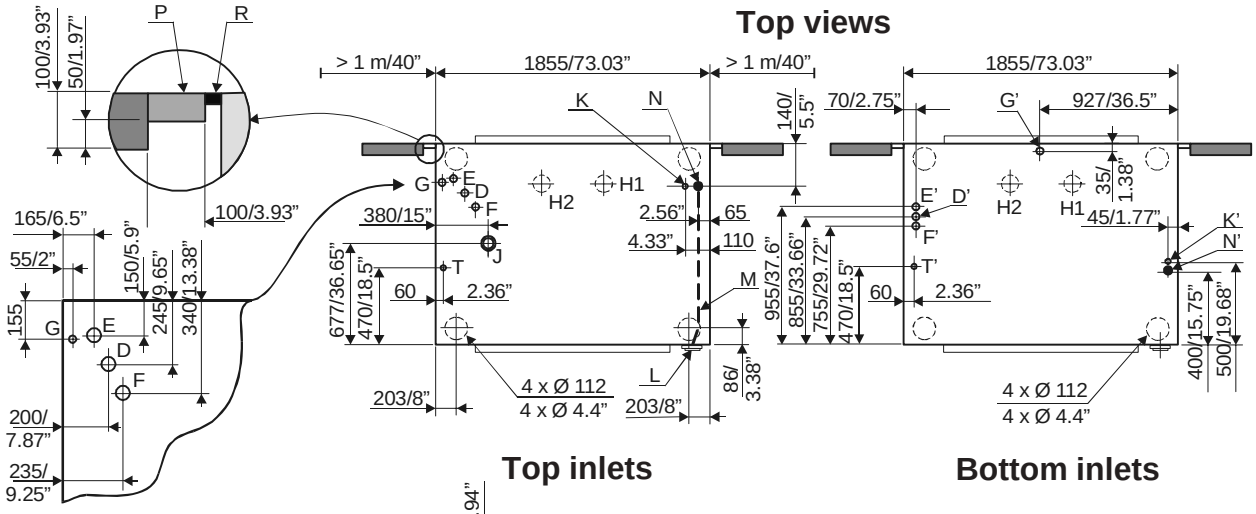
Front view



Left view

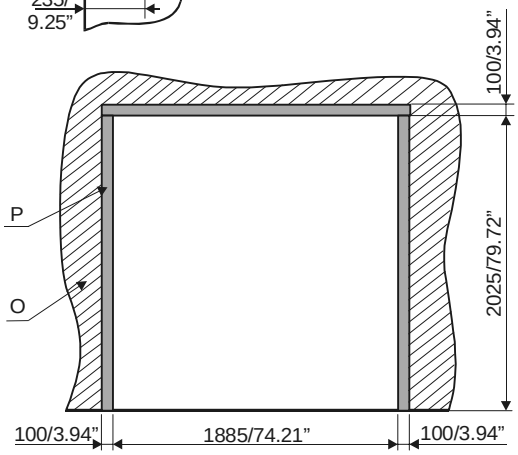


Top views

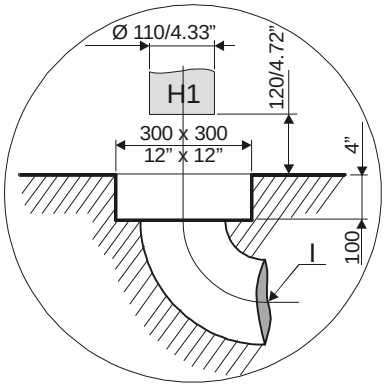


Top inlets

Bottom inlets



Example of drain connection



07100097

Washer extractor type 1080 barrier

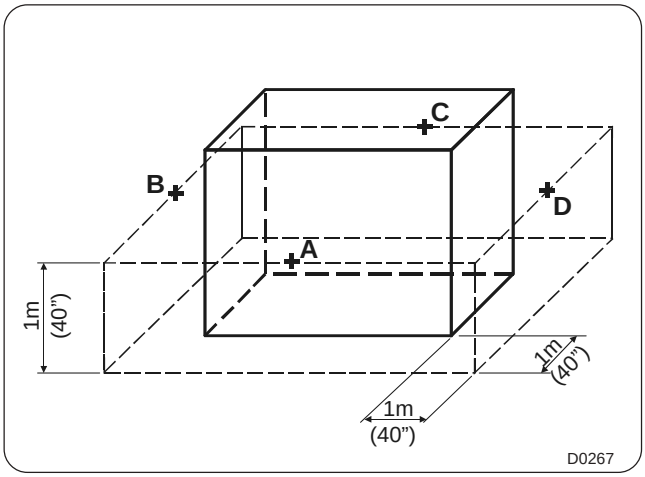
Diagram No. 07100097

Heating		Electric	Steam	Thermic fluid
Characteristics	Ø drum	----------1050 mm (41.33")----------		
	Drum length	----------1250 mm (49.21") ----------		
	Opening drum door (LxH)	----------900x490 mm (35.43x19.3")----------		
	Opening cage door (LxH)	----------958x698 mm (37.71x27.5")----------		
	Drum volume	---------- 1087 dm³ (1087 l)----------		
	Specific load 1/11 (dry linen, ISO 9398-4)	---------- 99 kg (218 lb) ----------		
Floor area		--------- 2.50 m² (26.9 sq. ft)---------		
Contact surface with floor		--------- 0.083 m² (129 sq. in)---------		
Net weight		--------- 1950 daN (4300 lb)---------		
Weight loaded (high level)		--------- 2670 daN (5889 lb)---------		
Water consumption, washing, low level		300 l	300 l	300 l
Water consumption, washing, high level		600 l	600 l	600 l
Max dynamic load		------ F = 590 daN (1301 lb)--------		
Max transmitted floor load		-------- 3260 daN (7190 lb)--------		
Max pressure transmitted to floor		--------- 858 kPa (124 psi)--------		
Frequency of the dynamic force		---------- 0.65 Hz ----------		
Spin efficiency		---------- 300 G ----------		
Max. unbalance		---------- 15 kg (33 lb) ---------		
(L) Main switch to connect main cable				
(M or M') Electric cable (section)		4 x - mm²	4 x 6 mm²	4 x 6 mm²
(N or N') Stuffing box for main cable				
Supply voltage		-----380 / 415 V 3+T ~ 50/60 Hz--------		
Installed electric power		xx kW	19 kW	19 kW
Installed heating power		xx kW	-	-
Electric consumption for a normal cycle*		xx kWh/h	2.2 kWh/h	2.2 kWh/h
Heat loss		-----3 % of installed heating power------		
(G or G') Steam inlet		DN 25 (1" BSP)		
	- Maximum supply pressure	600 kPa (87 psi)		
	- Steam instaneous flow rate at 600 kPa	240 kg/h		
	- Steam consumption for a normal cycle*	50 kg/h		
(D or D') Hot water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(E or E') Cold hard water connection / flow		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
(F or F') Cold soft water connection / flow (option)		DN 32 (1"¼BSP) - 200 l/min at 250 kPa (37 psi)		
Water supply minimum pressure		---------- 50 kPa (7.25 psi) ---------		
Water supply maximum pressure		---------- 300 kPa (43.5 psi) ---------		
Water consumption for a normal cycle*		---------- 1517 l ----------		
(H1) 1st drain connection		------ Ø 110 mm (4.33") ---------		
(H2) 2nd drain connection (option)		------ Ø 110 mm (4.33") ---------		
Maximum drain flow rate		380 l/min	380 l/min	380 l/min
(I) Waste water collector (3 cm/m (3 %) minimum slope)		------- Ø 200 mm (8" BSP) ---------		
(J) Air vent hole		------ Ø 80 mm (3.15") ---------		
(-) Thermic fluid inlet				DN 20 (3/4" BSP)
(-) Thermic fluid return				DN 20 (3/4" BSP)
	- Maximum supply pressure			xxx kPa
	- Installed calorific power			xxx kcal
	- Average calorific consumption			xxx kcal/h
	- Inner volume thermic fluid exchanger			xx l
(O) Barrier partition (provided by customer)				
(P) Frame 50x100 mm (2x4") (provided by customer)				
(R) Foam joint				
(K or K') Compressed air inlet		--------- Ø 6/8 mm (1/4") ---------		
	- Min./max. compress air pressure	--------- 5.5/7 bar (80/100 psi)) ---------		
	- Consumption	--------- 50 l/h ----------		
(T or T') Liquid detergents connection		--------- Ø 20 mm (0.79") ---------		

* normal cycle : prewash 3 min at 35 °C, drain 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 2 min, rinse 2 min, extract 10 min (cold water supply at 15 °C).

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 690 (without insulation)		Washer 890 (without insulation)		Washer 1080 (without insulation)	
	washing	**high spin extraction**	**washing**	**high spin extraction**	**washing**	**high spin extraction**
A	63.5	82.2	63.5	82	66	81.5
B	64	81.3	64.2	81	66	81.5
C	63	83.9	63.8	83	67	83
D	64	82.7	64.2	83	67	83
	(with insulation)		**(with insulation)**		**(with insulation)**	
A	63.5	72.2	63.5	79	66	79
B	64	77	64.2	79	66	79
C	63	79.5	63.8	79	67	78
D	64	75.8	64.2	78	67	77

Label of energetic performance (gas heating only)

The global output ***hg*** of the gas heated washer-extractor is determinated according to a standardised method and shall not be lower than 50 %.

This output minimal level is indicated on the machine's marking by the symbol ★.

Beyond the output minimal level hereabove specified, a label of energetic performance is given to the machine according to its global output ***hg*** and according to the hereunder chart.

Symbolisation of the label	Value of the output ***hg***
★ ★	50 % **<=** ***hg*** < 65 %
★ ★ ★	65 % **<=** ***hg*** < 80 %
★ ★ ★ ★	***hg*** >= 80 %

The indication of the energetic performance of this washer-extractor is of ★★★★ .

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

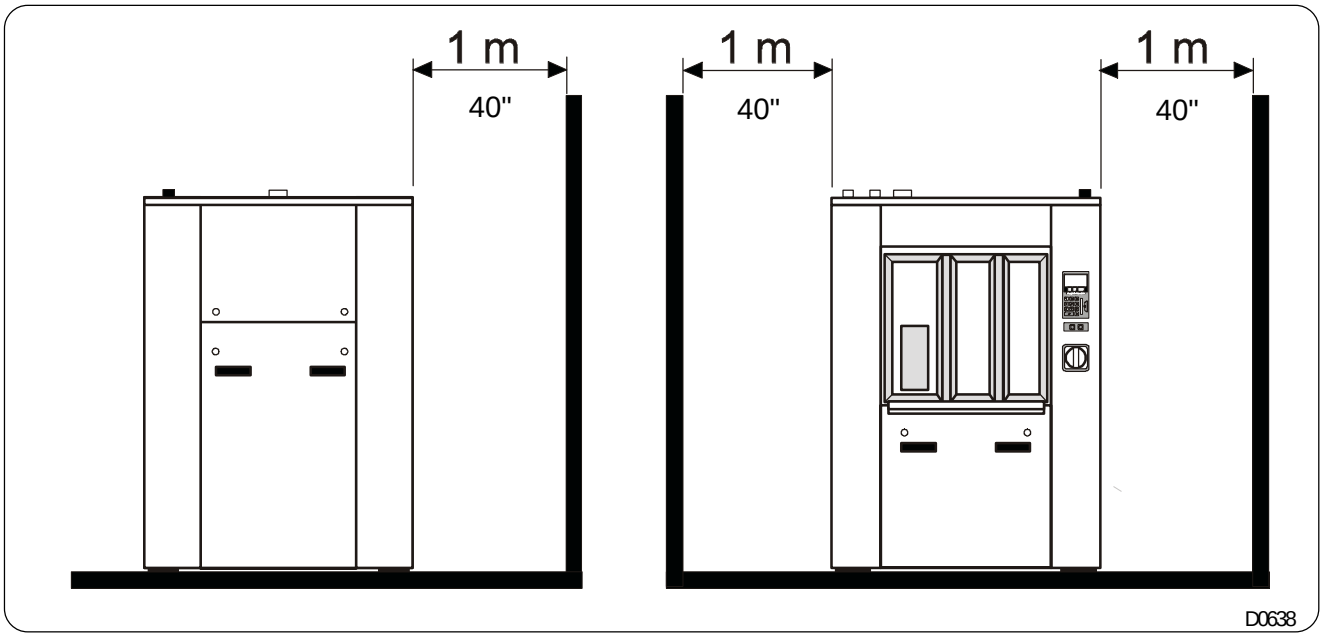
The installation must be done by competent technicians in accordance with local codes and regulations. When there are not local codes and regulations, the installation **must be comply** with European standards applicable.

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.

☞ Leave at leasy 1 m (40") **(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

Open the casings and take the box placed underneath the cage.

List of accessories provided with each machine :

- 1 instruction handbook
- 1 elbowed durit Ø 60 mm (2.4") and one collar air event
- 1 elbowed durit Ø 110 mm (4.33") and two collars for drain
- 1 connection nozzle

Extra accessories for steam heating machine :

- 1 pipe union

Extra accessories for gas heating machine :

- 2 pipes Ø 125 mm (5"), length 500 mm(20") to connect at the chemney
- 1 T-square pipe Ø 125 mm (5") and a anti-bursting chemney regulator to connect over the gas exchanger
- 1 draught accelerator to extract the exhaust of burn gas, to connect at the chimney

Extra accessories for barrier machine :

- 1 tube of glue and foam joint

Mechanical installation

Preparation of the ground :

- Carefully degrease the ground at place of rubber bolsters of the machine.

Electrical safety device :

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

To move the machines :

- It is compulsory to lift the machine from the ground not to damage rubber bolsters and weighting device.

Instructions for installation of the washer with barrier partition

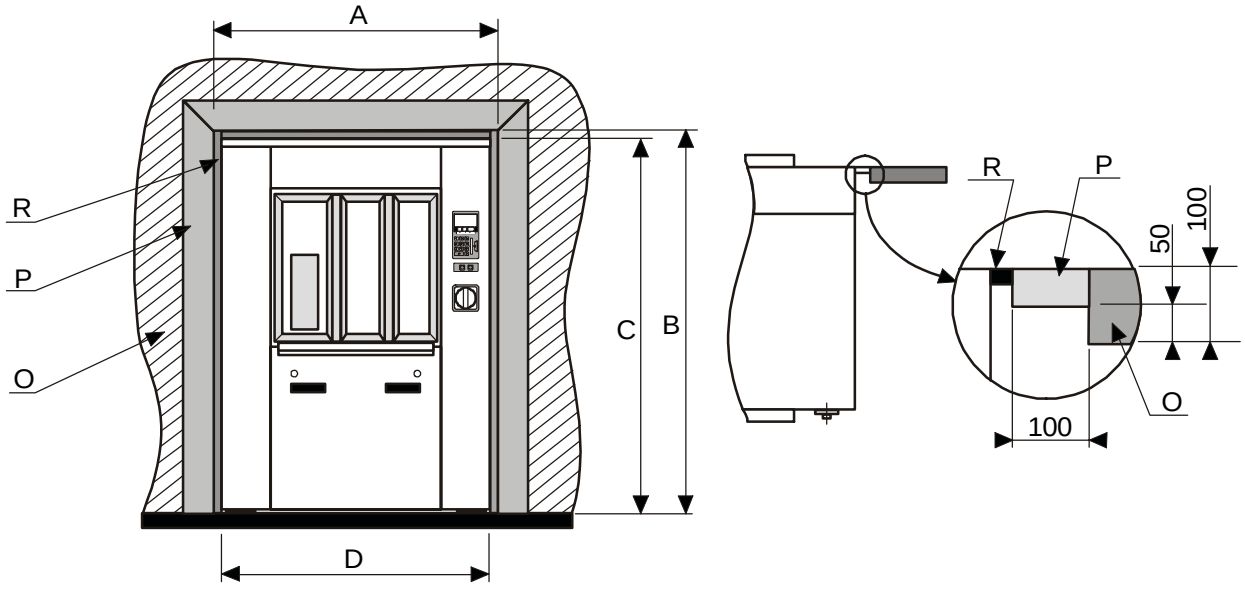
The barrier partition (O) (provided by customer) should be assembled before the installation of the machine.

Centre and align the washer-extractor with the frame (P) 50 x 100 mm (2x4") (provided by customer).

Stick the foam joint (R) with glue on the barrier frame (P).

Let dry before starting the machine.

Machine type	690	890	1080
Size A (mm/inch)	1425/56.1	1655/65.16	1885/74.21
Size B (mm/inch)	2025/79.72	2025/79.72	2025/79.72
Size C (mm/inch)	2015/79.33	2015/79.33	2015/79.33
Size D (mm/inch)	1395/54.92	1625/63.97	1855/73.03



Waters connections

Washer extractors are assembled in standard execution with two waters inlet.
One hot water and one hard water. On option, a third water inlet (soft) is possible.

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

U Manual stop valve DN 40 (1"½ BSP) (provided by customer)

X Nipple 1"½-1"¼ (provided by customer)

Z Joining piece (male) (1"½ BSP) + collars (provided)

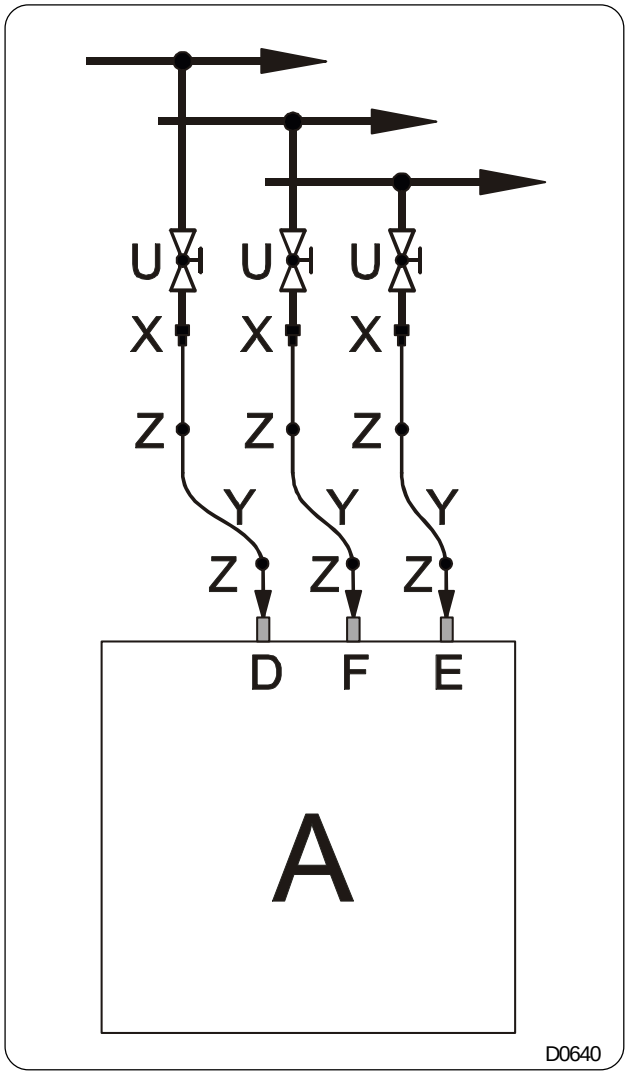
Y Flexible pipe DN 32 length : 50 cm (20") (provided)

D Hot water inlet DN 32 (1"½ BSP female)

E Hard water inlet DN 32 (1"½ BSP female)

F Cold soft water inlet (option) DN 32 (1"½ BSP female)

A Washer-extractor



Water supply pressure, **50 kPa (7.25 psi) mini.**

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

Steam connection

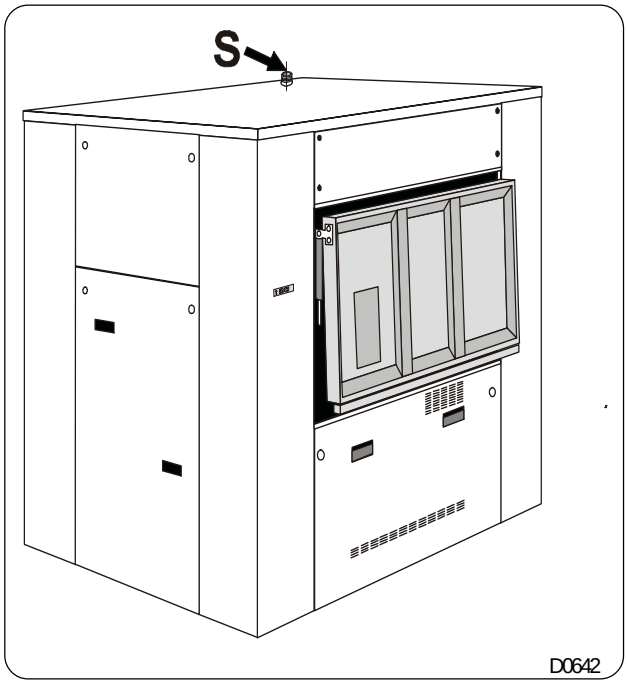
The inlet pipe to the machine has to be fit with a manual stopping valve to ease installation and maintenance and a flexible steam supply pipe to allow reliable running of automatic weighting system.

Hereunder values apply to the steam pressure :

Recommended pressure : 300-600 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) (87 psi)

Connection size : DN 25 (1" BSP male).



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

A Washer-extractor

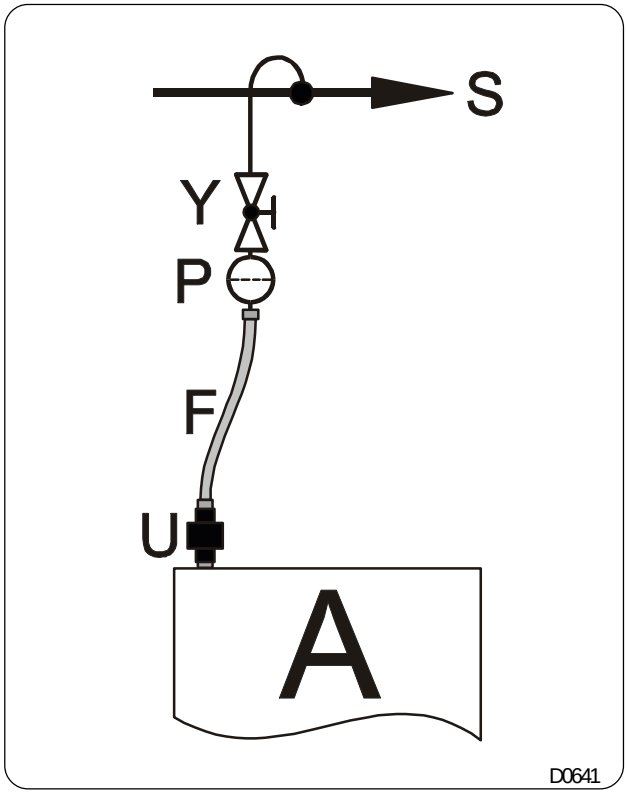
S Steam inlet

Y Manual stop wheel valve
DN 25 (1" BSP)
(provided by customer)

P Steam filter
DN 25 (1" BSP) (provided)

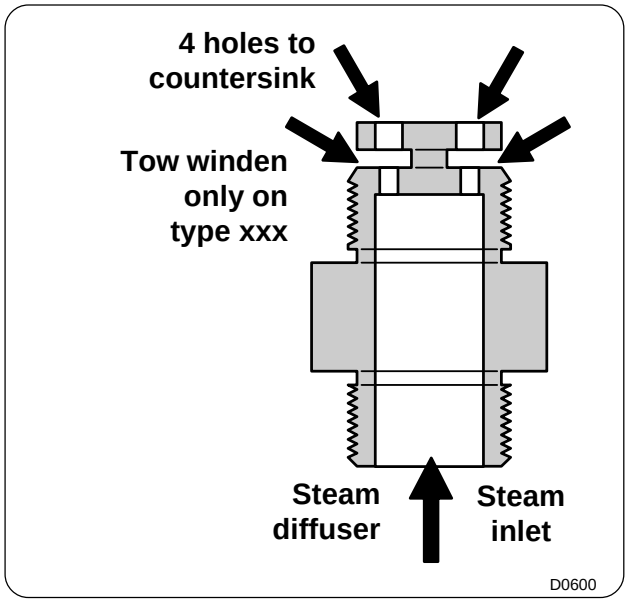
F Steam flexible pipe
DN 25 (1" BSP) (provided)

U Pipe union (male/female)
DN 25 (1" BSP) (provided)



You can drill the machine's steam diffuser to adjust the steam flow according to the supply pressure.

Hereunder chart sums up different possibilities.



Adjusting the diameter for drilling the steam diffuser according to the pressure

Machine	1 bar	2 bar	3 bar	4 bar	5 bar	6 bar **(standard pressure)**
690	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm
890	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm
1080	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm	Ø x mm

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).

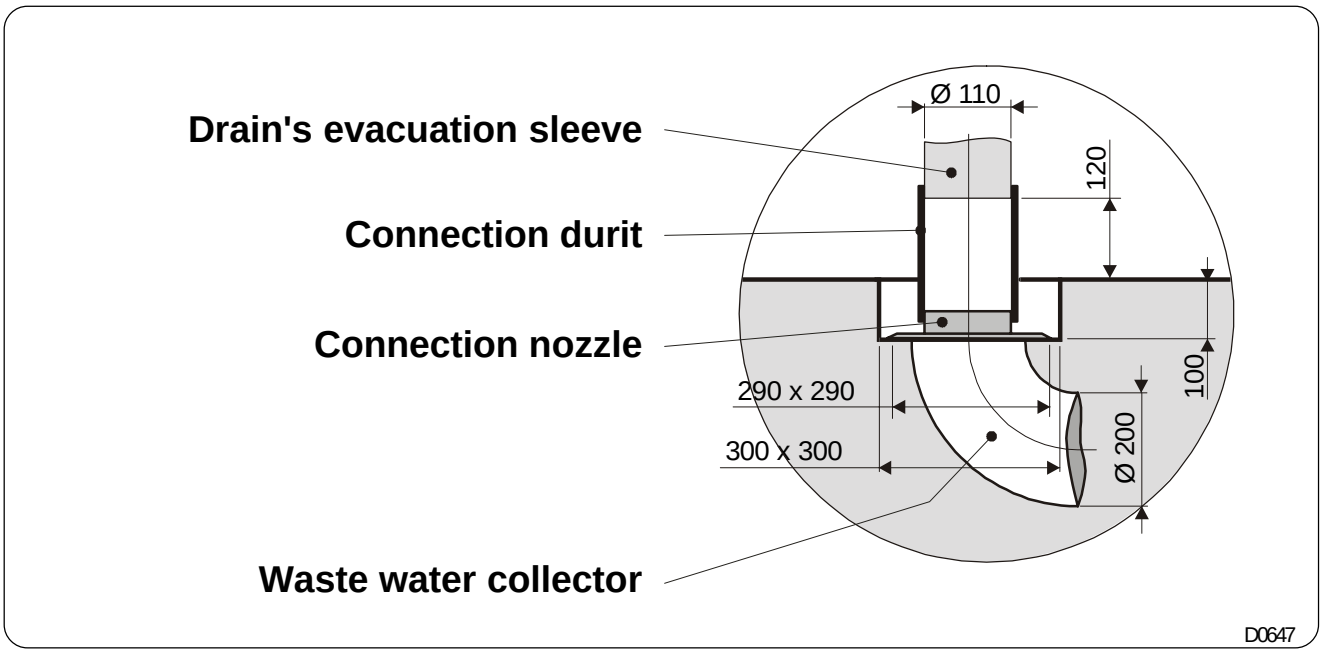
Drawing of drain connection to waste waters' collector

Connect the durit to the connect nozzle.

Put them both in the 300 x 300 mm (12x12") hole.

Seal and fix the nozzle in the hole using 2 screws.

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

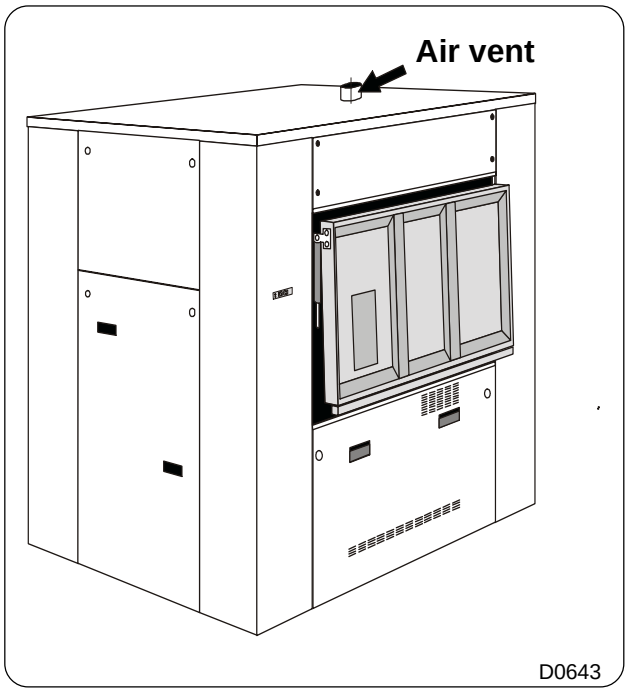


Air vent connection

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.



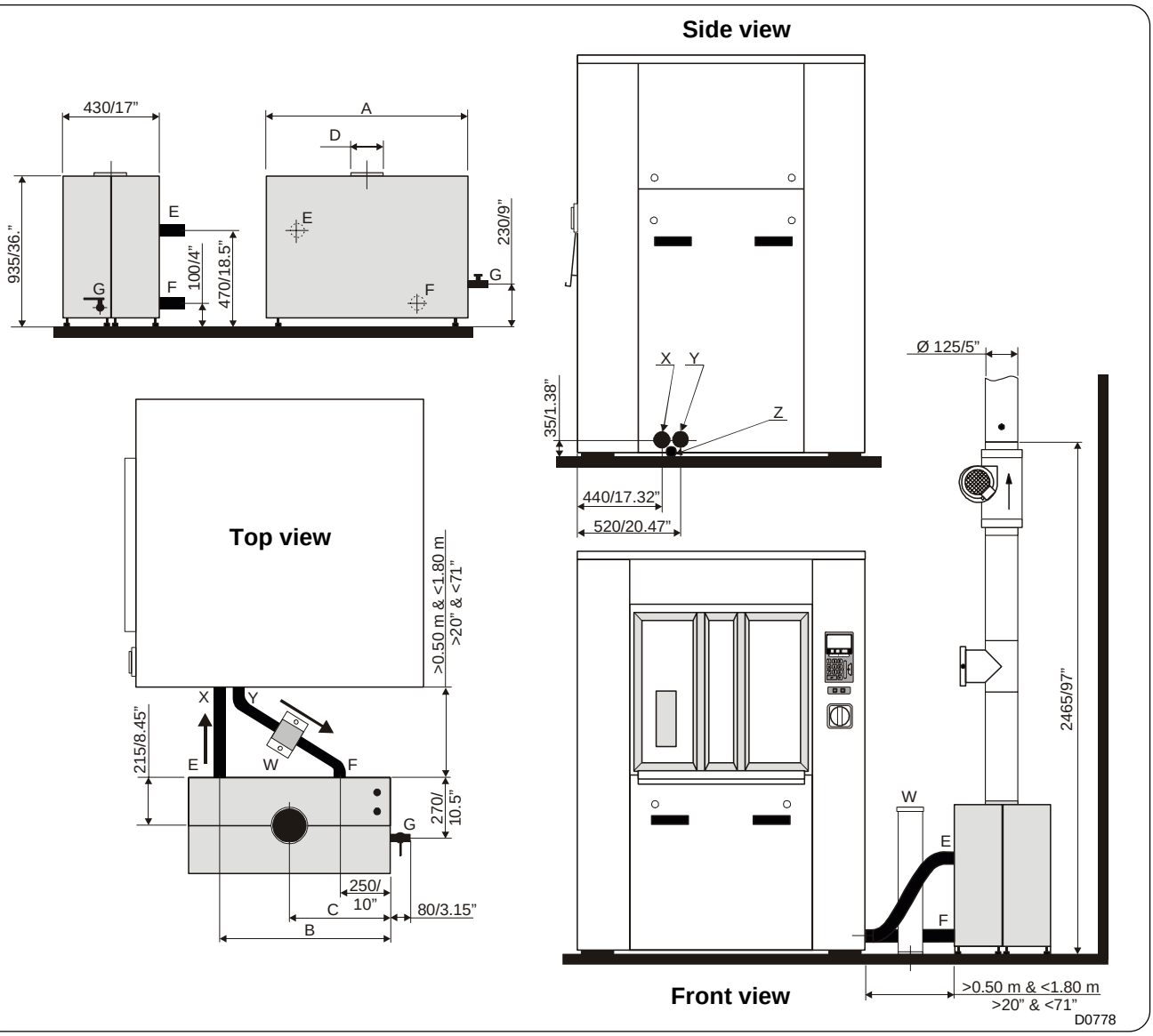
Installation of the gas exchanger (690 machine only)

The gas exchanger can be installed indifferently on the left or on the right of the machine according to the available place. Holes are provided on the sole of the machine on the two sides.

CAUTION

The machine should be installed in conformity with the regulations and standards enforced and situated in a correctly ventilated room.

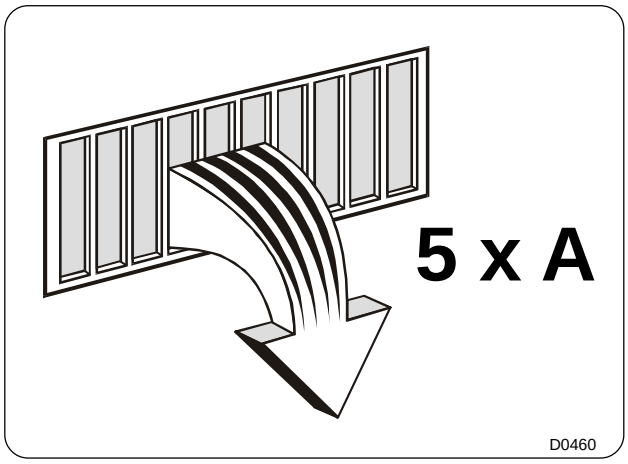
Machine type		Units	690
A	Length of exchanger	mm/inch	1110/43.7"
B	Dimension of output exchanger	mm/inch	1040/41"
C	Dimension of evacuation pipe	mm/inch	645/25.39"
D	Evacuation of burn gas	mm/inch	Ø 125/5"
E	Exchanger bottom output	mm/inch	Ø 36/40 (1"1/2)
F	Exchanger bottom input	mm/inch	Ø 36/40 (1 1/2")
G	Gas connection	mm/inch	DN 20 (3/4" BSP female)
W	Filter		
X	Input machine/exchanger		
Y	Output machine/exchanger		
Z	Hole for electric cable to gas exchanger		



Connection of the evacuation pipe of the gas exchanger.

Fresh air inlet

To allow the gas exchanger to work at ist best, it is important that the laundry air inlet passes throught an opening from the outside.



The fresh air arrival must be equivalent to the volume of evacuated air.

In order to prevent drafts in the room, the best solution is to place the air inlet behind the machine.

It is essential that the rooms should be ventilated.

The free section of the air inlet must be five times greater than the section of the evacuation pipe.

Do not forget to allow for the fact that grills often occupy half the total area of the free air opening.

Evacuation duct

It is recommended that a separate smoothwalled evacuation duct should be connected to each machine, providing the least possible resistance to air.

Check that the shaft flow is at least twice the capacity of the gas exchanger draught accelerator.

- Draught accelerator maximum flow rate with no pressure : 260 m³/h (152 cfm).
- Maximum pressure available with no flow : 27 mm H_2O (1"H_2O).
- Maximum admissible head loss on evacuation : 15 mm H_2O (0.6"H_2O) at point (**P**).
- Average temperature of exhaust coming out of the gas exchanger : 140°C (284°F).

Provided an upper **ventilation of 7 dm² (1.1 sq. ft) and** a **lower one of 14 dm² (1.5 sq. ft)** in your laundry.

These conditions are absolutely essential for the correct working of the machine.

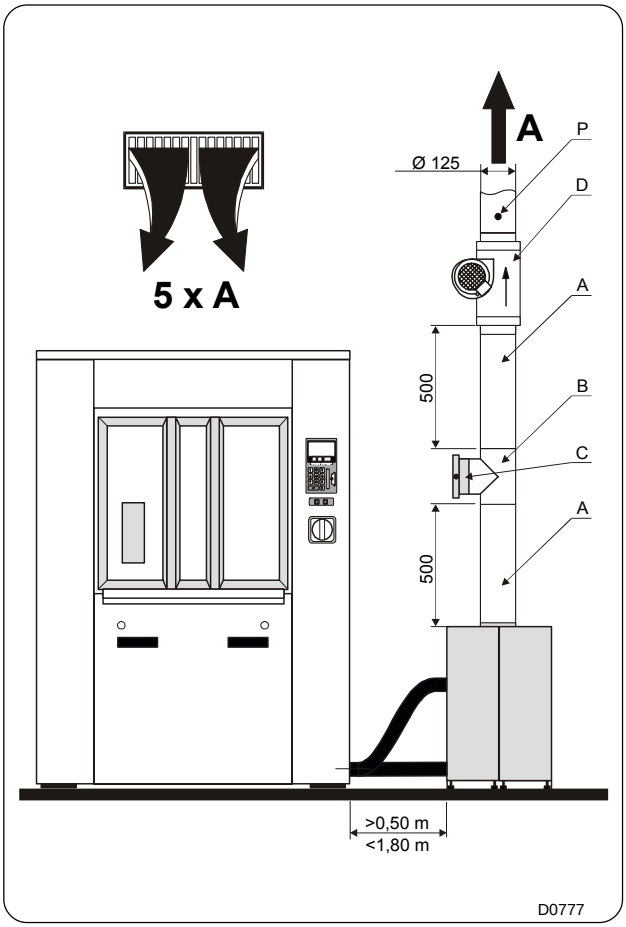
For gas heating, the required combustion fresh air supply should be not less than 2 m³/h per kW, either 80 m³/h (47 cfm) minimum .

NOTE : if the flow is insufficient due to an excessive pressure loss, a safety pressure switch will automatically switch the heating off.

Installation of the exhaust of burn gas

- Connect the whole set of pipes on your cheminey pipe, that is to say :
- 1 aluminium pipe (A) lenght 500 mm (20") on the exchanger.
-1 T-square (B) pipe + 1 regulator (C).
-1 aluminium pipe (A) length 500 mm (20").
-1 draught accelerator (D).

It is necessary to install the gas exchanger at the ground level.

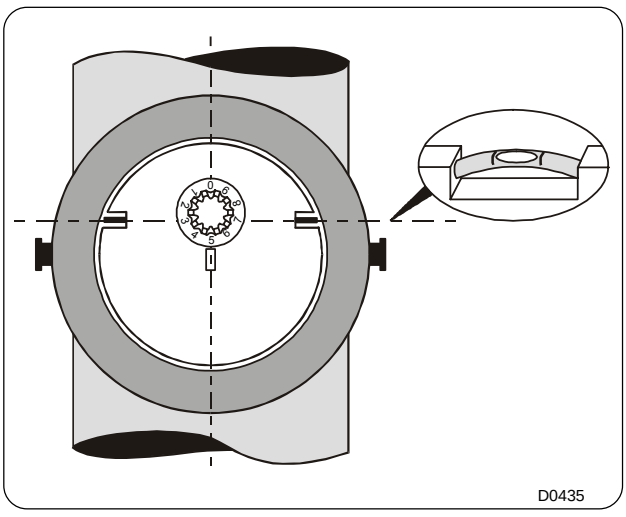


Evacuation of burn gas from a machine with gas heating must never be connected to the evacuation used for a dry cleaning machine or other machine of the same type.

Installation of the chemney regulator

For a correct running of the installation, this chimney regulator must always have its axle of rotation of his flap perfectly horizontal.

The adjustment toothed wheel has to be positioned on the mark no 7.



Gas connection

CAUTION

The installation, connection and gas arrival adjustments for the machine must be done by qualified personnel only.

The customer must install a filter and a manual stop valve on the supply side of the machine if NATURAL GAS is used.
For BUTANE 28-30 mbar or PROPANE 37 or 50 mbar, the customer must install a filter, a manual closing valve and a pressure reducer.

Check that the diameter of injectors is adequate for the king of gas of your installation (see table). The machine is delivered with extra injectors in a plastic envelope. There is also a sheet metal plate with a cork joint or an adjusting head to feed the machine with another gas.

Connect the installation at the exchanger : DN 20 (3/4" BSP).

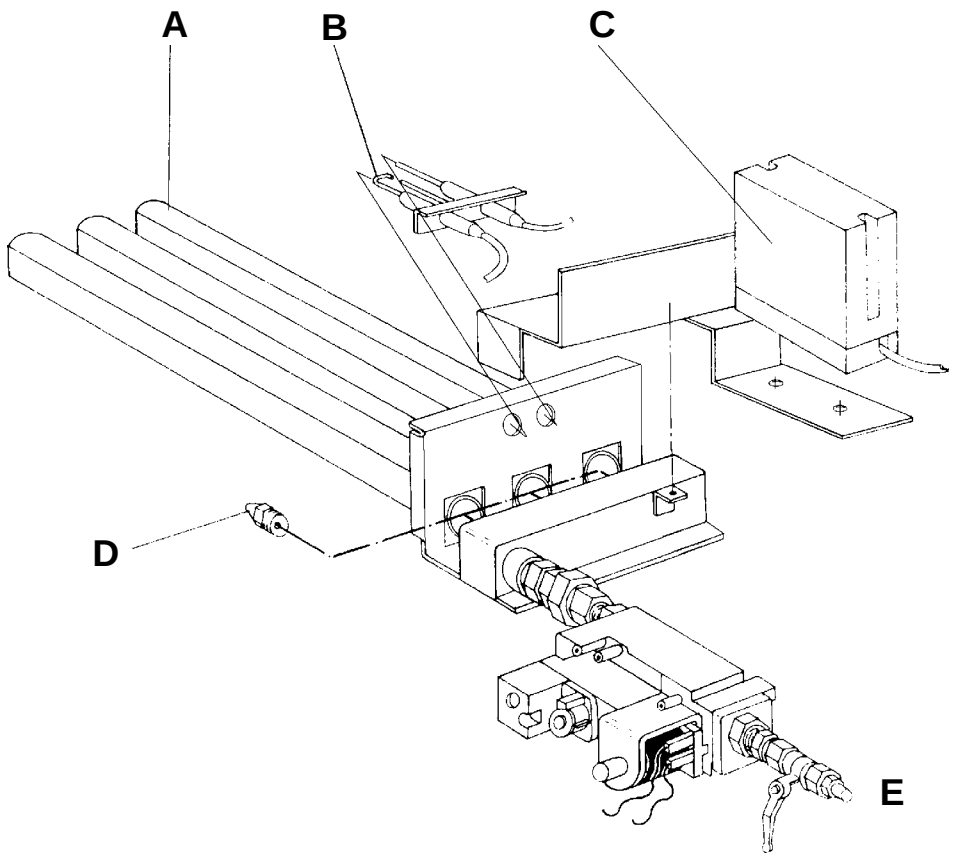
A : gas burner

B : ignition and control electrodes

C : ignitor

D : injectors

E : gas admission



The gas exchanger is adjusted at the plant to be suitable for the kind of gas specified on the order. If you have to supply your machine with gas in a family different from the gas for which your machine was adjusted, proceed as follows.

Testing pressures

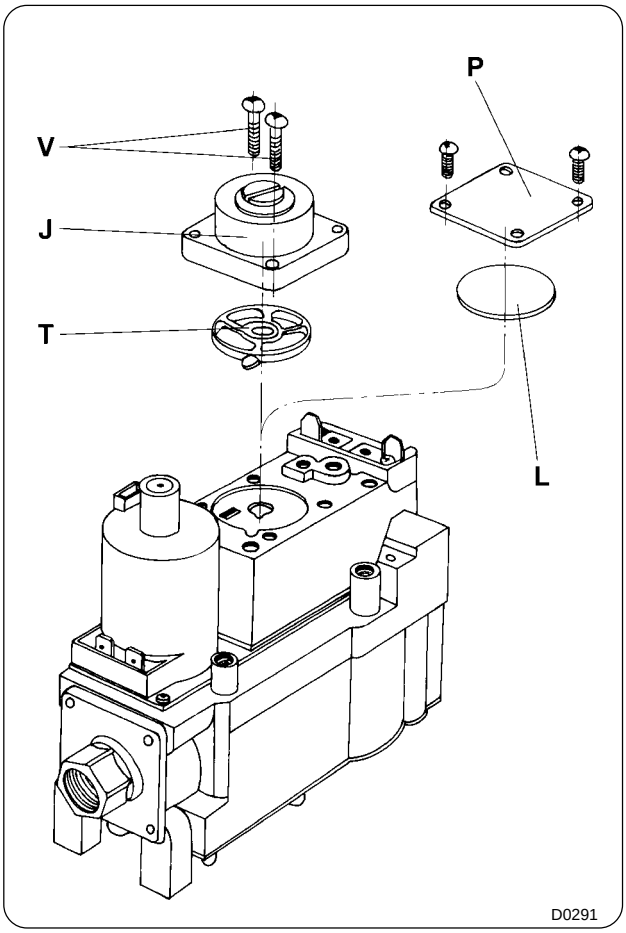
According to the EN 437 standard, the values of the testing pressures mentioned in our various documents are values for static pressure taken at the gas inlet connection of the machine ; the heating of the machine being on.

Changing to a gas in the same family (type H or L)

- Change the 3 injectors with joints and if necessary, adjust the air flow (see tables of correspondences).

Changing to a gas in a different family (from type H or L to butane or propane)

- Change the 3 injectors with joints (see tables of correspondences)
- Unscrews the fixing screws (V) and remove the adjusting head (J) as well as its cork (T), keep these parts in case a change would by necessary.
- Replace it by the cork (L) and the plate (P).
- Screw the two screws and block.
- Adjust the air flow (see tables of correspondences).



Changing a gas from one family to another (from butane or propane to type H or L)

- Change the 3 injectors with joints (see tables of correspondences)
- Unscrews the fixing screws (V) and remove the plate (P) as well as the cork (L), keep these parts in case a change would by necessary.
- Set the cork (T) and the adjustment head (J).
- Screw the two screws and block.
- Adjust the air flow (see tables of correspondences).

IMPORTANT

Adjustments should be made by qualified personnel only.

Adjustement and chesking of the outlet pressure

The gas outlet pressure of the electrovalve is adjusted at the factory. If you have to make another adjustment, proced as follows.

A Inlet

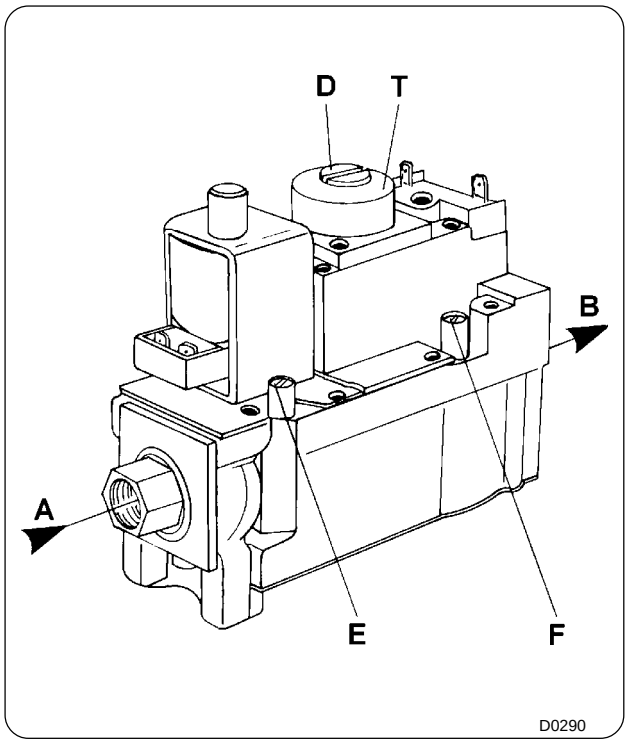
B Outlet

D Outlet pressure regulator adjustment screw plug.

E Inlet pressure tapping

F Outlet pressure tapping

T Head regulation



1- Close the gas inlet and remove the binding screw from the pressure tapping (F) and connect the manometer tube.

2- The electricity supply must be energized otherwise gas will not be supplied to the burner.

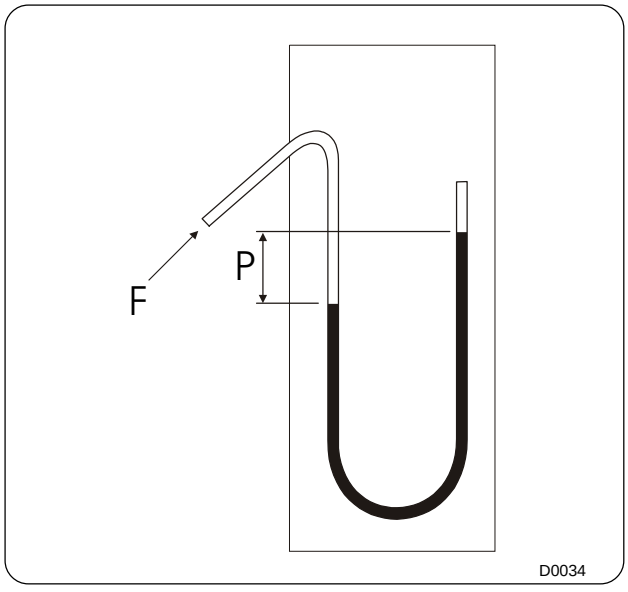
3- Open and check the gas inlet main burner using the manometer on the pressure tapping (F).

4- Remove the pressure regulator cap (D).

5- Using a screwdriver, slowly turn the adjustment screw until the required pressure (P) is indicated on manometer (see tables on the following pages).

Turn the adjustment screw clockwise to increase and counter-clockwise to decrease gas pressure.

6- Reset the pressure regulator cap, close off the gas inlet, remove the manometer tube and put the binding screw back in (F).

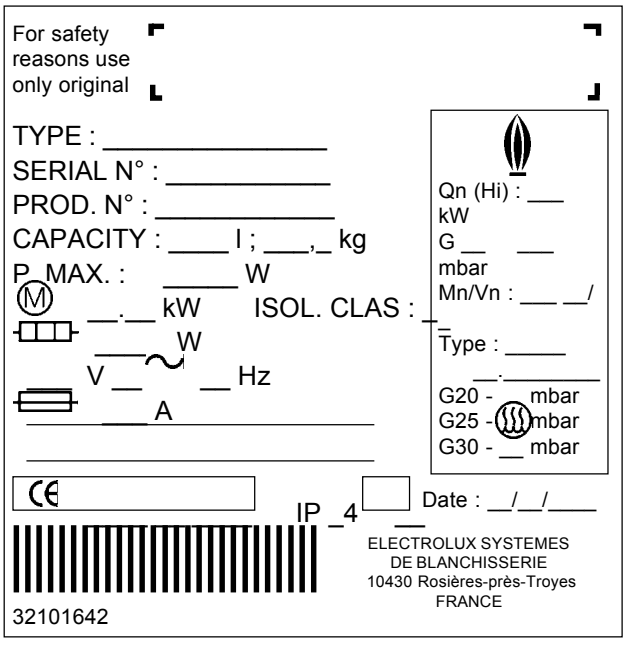


Legend of symbols used

I: machine working with only one gas family
II: machine working with two gas families
1: 1st family : caol gas or town gas (for information : not used here)
2: 2nd family : natural gas
3 : 3th family : liquefied petroleum gas (LPG)
H : natural gas with high calorific value (type G20)
L : natural gas with low calorific value (type G25)
E : natural gas with high and low calorific value (type G20)
LL : natural gas with low calorific value (type G25)
Esi : natural gas with high and low calorific value with adjustment (type G20)
B : butane gas (type G30)
P : propane gas (type G31)
B/P : butane and propane gas (type G30 and G31)
3+ : butane/propane gas with couple of pressure 30/37 (type G30 and G31)

Qn (Hi) : nominal heat emission express in relation to the net calorific value
Mn : nominal mass (for butane/propane gas)
Vn : nominal volume (for naturel gas)

AT : Austria
BE : Belgium
CH : Switzerland
DK : Denmark
DE : Germany
ES : Spain
FI : Finland
FR : France
GB : Great Britain
GR : Greece
IE : Irland
IT : Italy
LU : Luxemburg
NL : Netherlands
NO : Norway
PT : Portugal
SE : Sweden



Country	Category	Gas	Pressure (mbar)
AT	I2H	G20	20
DE	I2E I3P	G20 G31	20 50
BE	I2E(S)B I3P	G20/G25 G31	20/25 37
DA-FI-SE-IT	I2H	G20	20
FR	II2ESI3P	G20/G25 G31	20/25 37/50
ES-GR-IE PT-CH-GB	II2H3P	G20 G31	20 37
ES-CH	II2H3P	G20 G31	20 50
NL	II2L3P	G25 G31	25 50
LU	I2E	G20	20

TABLE OF CORRESPONDENCES - Washer-Extractor 690

Category index	Type of gas	Working supply pressure in mbar	Hi	Ø of injectors in mm	Pressure at injectors in mm H_2O	Heat emission Qn in kW (Hi)	Consumption Mn in kg/h **	Consumption Vn in m³/h**
*2E, 2H, 2ESI	G 20	20	34.02 MJ/m³	2.90	153	40	-	2.81
2L, 2ESI	G25	25	29.25 MJ/m³	3.20	154	40	-	3.36
3 P	G31	37	46.34 MJ/kg	1.85	regulator out of operation	40	2.12	-
3 P	G31	50	46.34 MJ/kg	1.70	regulator out of operation	40	2.12	-
* For Belgium, no work is allowed between G20 and G25.								

** normal cycle : prewash 3 min at 35 °C, drain. 2 min, main wash 4 min at 65 °C, drain 2 min, rinse 2 min, extract. 2 min, rinse 2 min, extract 2 min, rinse 2 min, extrac. 10 min (cold water supply at 15 °C).

Note : G20 (H) = natural gas, Lacq type (20 mbar)
G25 (L) = natural gas, Groningue type (20 or 25 mbar)
G31 = propane gas (28/30, 37, 50 mbar)

20 mbar = 0.29 psi
25 mbar = 0.36 psi
28 mbar = 0.41 psi
30 mbar = 0.43 psi
50 mbar = 0.72 psi

IMPORTANT

Tightness test after installation
The gas leak test is performed as follows :

1/ Paint pipe joints, pilot gas tubing connections and inspect outlets with rich soap and water solution ; do not use an aggressive soap.
2/ Put the machine into service. Bubbles indicate a gas leak.
3/ Eliminate this leak.

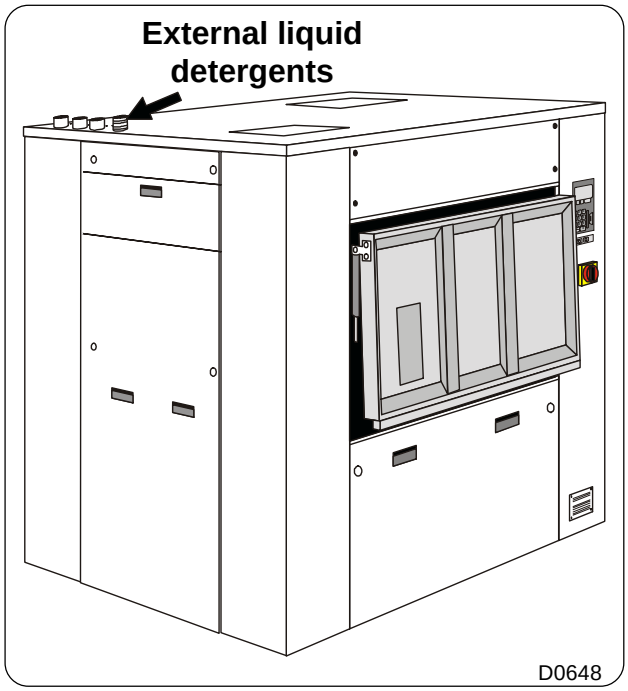
NOTE : After all intervention, re-seal (red varnish) the following adjustment organs :
- regulator of pressure.
In case of changing of gas, the stick for the adjustment has to be modified.

Check-out

Before leaving, put the appliance into operation and allow to run a complete cycle. Watch to ensure that all burner system components function correctly.

Liquid detergents' connection

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



CAUTION

Liquid detergents are particularly aggressive. We advise you to use only products with pH lower than 9 in order 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

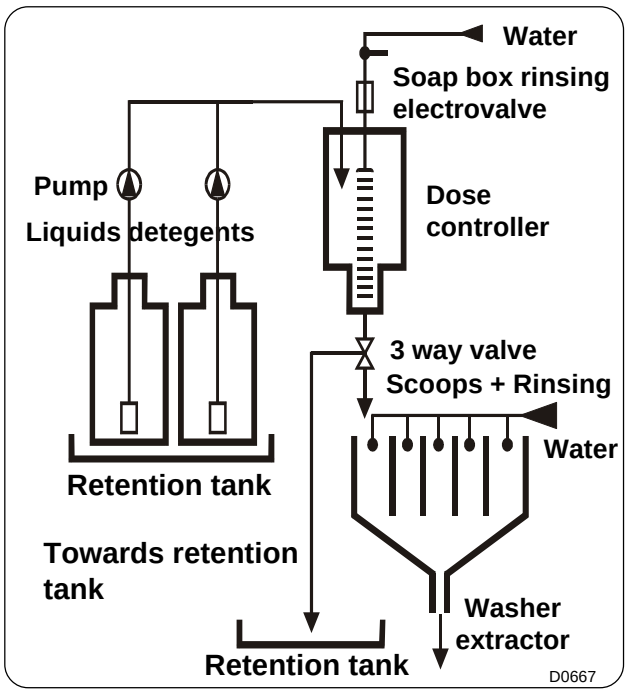
After use, there is always chemical remaining in the liquid detergents' dosing pipes.
When the machine is not running, this detergent may slowly drip and so, quickly corrode the parts in contact with.
In order to avoid (ex. corrosion of the drum or by bleach), we advise you to forecast a device to drain every night the distribution pipes of the liquid detergents.

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.

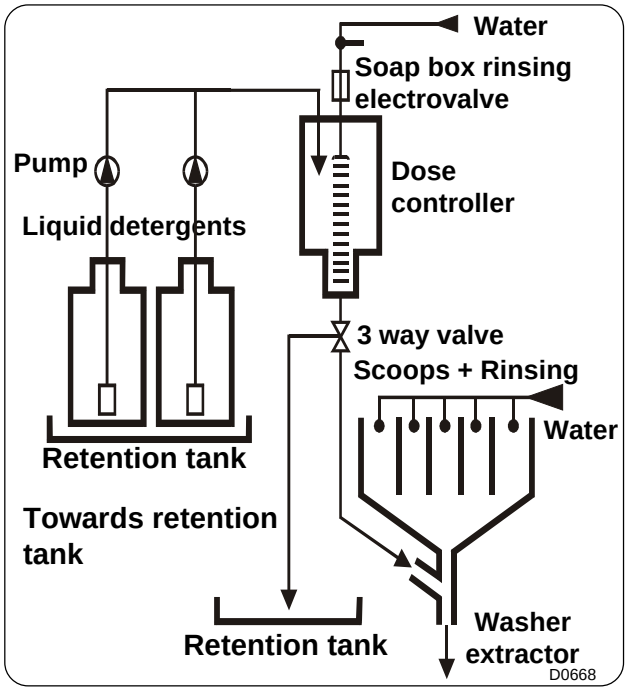
Connection scheme of liquid detergents

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

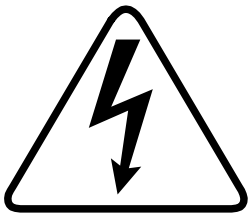
Single inlet dose controller with a compulsory rinsing device.



Multi inlet dose controller with a compulsory rinsing device.



Washer-extractor electricity power supply



CAUTION

Prior to use, the washer-extractor should be plugged into a correctly earthed power socket complying with the standards in force.

SAFETY

The electrical installation of the machine must be undertaken by qualified personnel.

CAUTION

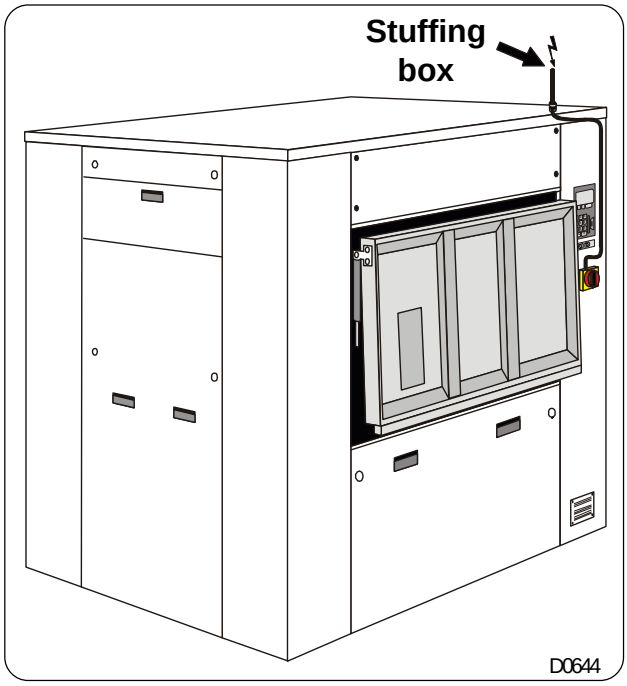
Ensure that the electrical voltage is correct and that the power of your supply is sufficient, before connecting the machine.

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

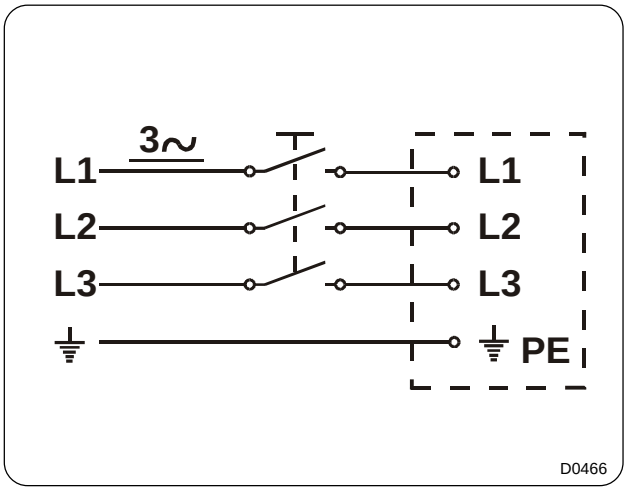
To avoid these untimely activations, you ought to use differential protecting systems with residual current only, having a high level of immunity as regards leakage transient current.

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

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



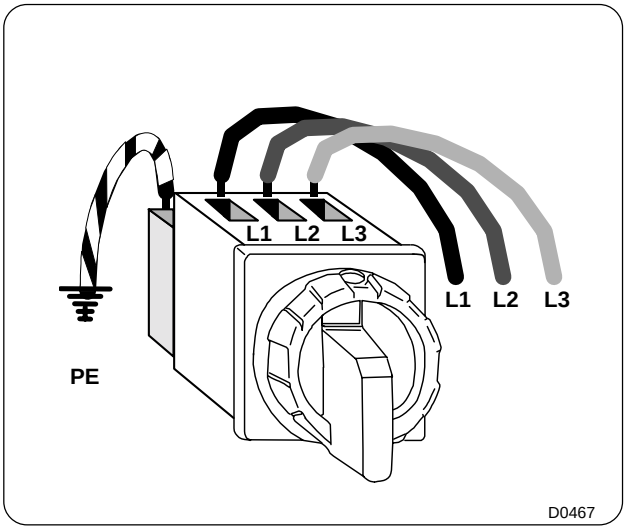
For each machine, install a fixed multipole circuit breaker (or fuses protector) in the laundry main cabinet.



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. 10).

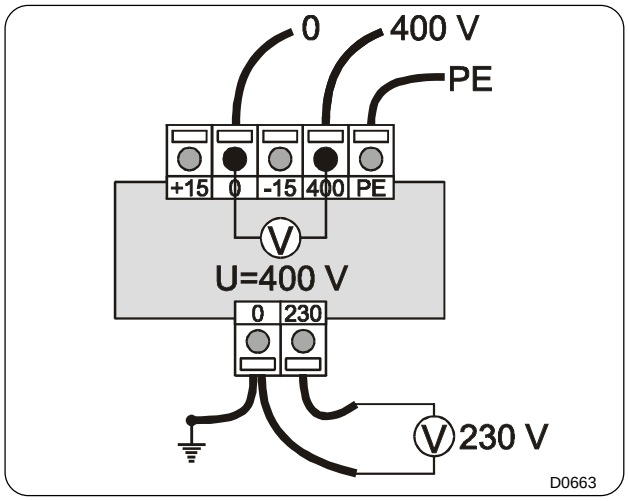


Connection diagrams for the control circuit power supply transformer (T1) as a function of the various customer power supply voltages.

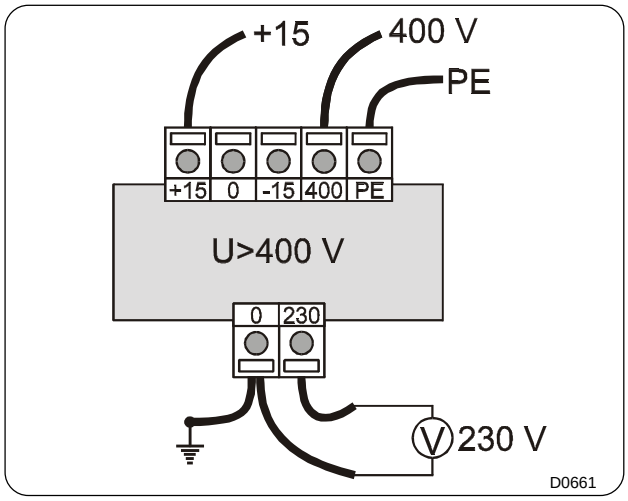
The tension of the control circuit delivered by the transformer must be 230 volts, single-phase. The supply tension for your machine is normally of 400 volts between 2 phases, this tension can however be different. The following schemes show how to adjust the tension at the secondary of the transformer.

Measure the power supply voltage at the transformer primary with a voltmeter between the transformer 0 and 400 volts terminals.

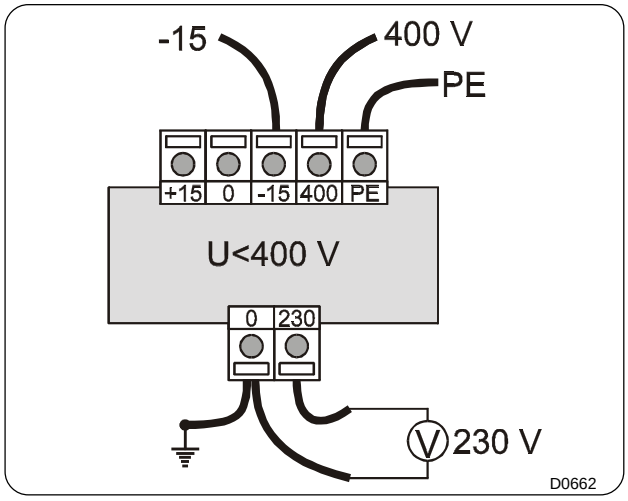
- If the voltage is equal to 400 volts, do not touch the transformer connection which must be as shown in the adjacent figure.



- If the voltage is > 400 volts (for example : 420 or 430 volts), connect the wires to the transformer as shown in the adjacent figure.



- If the voltage is significantly < 400 volts (for example : 370 or 380 volts), connect the wires to the transformer as shown in the adjacent figure.



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	C	E
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	29 A	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 temperatures)

Ambient Temperature	Correction Factor
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

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.

$$\text{Total current : } \frac{\textbf{60 A}}{\textbf{0.91 x 0.92 x 0.85}} = \textbf{84 A}$$

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
690	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	11.7 kW	27 A	3 x 40 A	4 x 6 mm²	3 x 32 A
690	Electric	380/415 V 3+T ~ 50/60 Hz	65.7 kW	100.5 A	3 x 125 A	4 x 25 mm²	3 x 125 A
890	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	15.7 kW	33 A	3 x 40 A	4 x 6 mm²	3 x 40 A
890	Electric	380/415 V 3+T ~ 50/60 Hz	87.7 kW	135 A	3 x 160 A	4 x 25 mm²	3 x 160 A
1080	Steam/T.F	380/415 V 3+T ~ 50/60 Hz	19 kW	42 A	3 x 50 A	4 x 6 mm²	3 x 50 A
1080	Electric	380/415 V 3+T ~ 50/60 Hz	- kW	- A	3 x - A	4 x - mm²	3 x - A

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 (supplied) 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 (1.24") 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) (80-120 psi)
- Minimum pressure: 550 kPa (5.5 bar) (80 psi)
- Maximum pressure : 700 kPa (7 bar) (102 psi)
- Consumption 50 l/h

Remove of the transport locks fitted

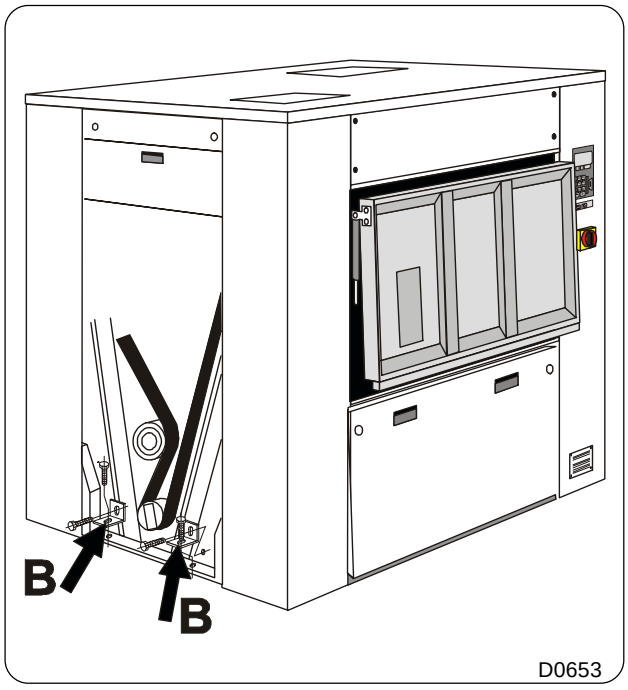
CAUTION

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

To do so, remove the front and rear casings, then the fixing screws of the transportation bridles (B).

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.



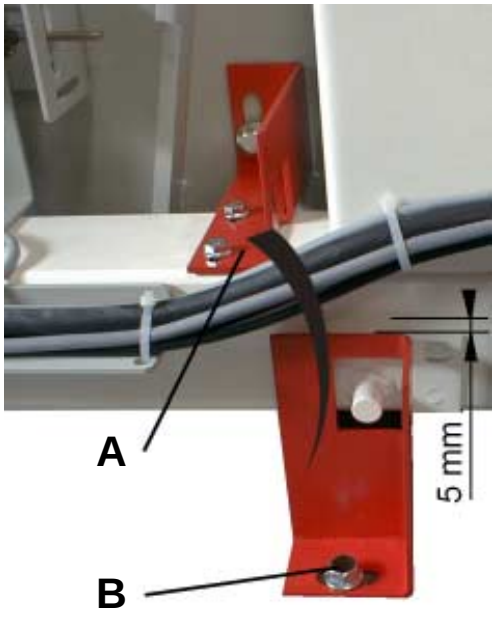
Instructions to fit the safety flanges

Take the transport flanges (A), these can be used to clamp the machine to the ground.

Position the two flanges on each side, leave a gap of about 5 mm between the flange and the base of the machine, centre the finger of the flange opening.

Mark the place of the drilling hole for the fixing pin (B) and drill the holes for fixing of flanges (holes diam. 12 mm depth 60 mm).

Put the pins in the flanges, position the flanges and screw.



P106

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Operating inspection

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

The operating inspection must be done by an approved technician.

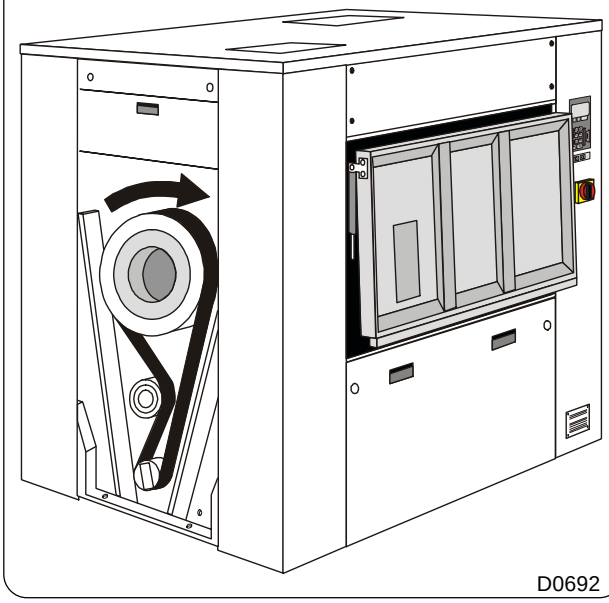
Manual operation

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).

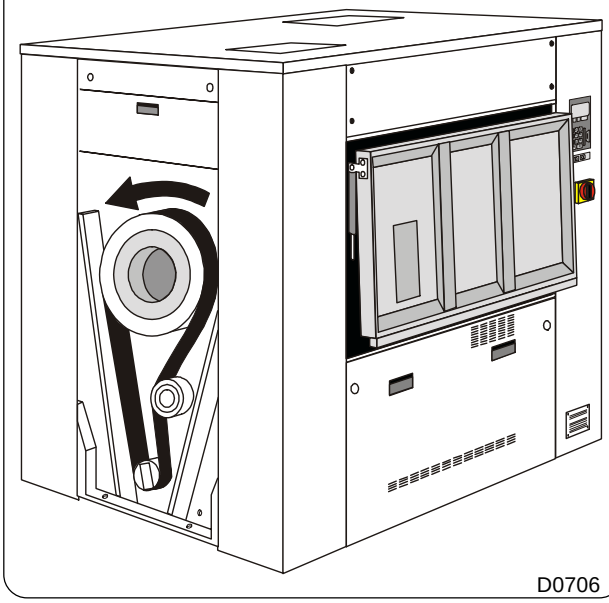
- Check the direction of rotation of the **cage during spinning**. The cage should rotate as shown by the arrow on the hereby drawing. Check this point especially if you have changed the machine's motor or frequency converter.

Washer-extractor barrier types



D0692

Washer-extractor standard types



D0706

- Check the direction of rotation of the motion motor 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 the direction of rotation of the circulating pump and of the draught accelerator gas heating.

Note : The exchangers of the gas heated machines have a water circulating pump.

Before the first start of the machine, you must check if this pump is priming well.

Therefore, it is necessary to fill the machine with water and to run only the circulating pump, without heating, by pushing, with an isolated screwdriver, on the manual control of the exchanger's KM3 contactor.

To be sure that the pump is well primed (10 to 15 secondes), you must pay attention to a change in the running noise when the water goes through the circuit.

- Check that the cage is empty.
- Open the manual valves controlling the water, gas or 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 or gas 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.

Auxiliary controls

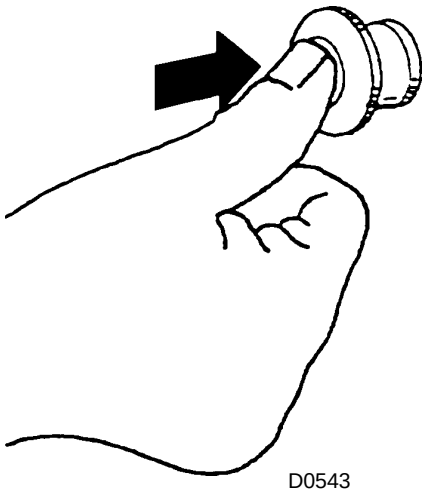
Emergency stop

The emergency stop must be unblocked, if not the machine will not work (to unblock, turn the red button to the right).

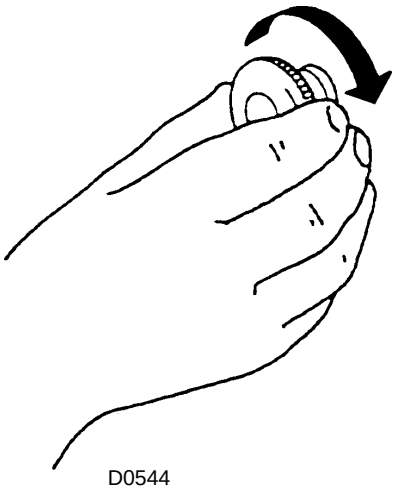
If the machine for some reason has to be stopped, abnormal or dangerous running, press emergency stop button.

Nota : it is necessary to wait for 30 seconds before resetting after any action on the emergency stop.

Release the emergency stop, by turning it clockwise only after checking what motivated this stop.



D0543



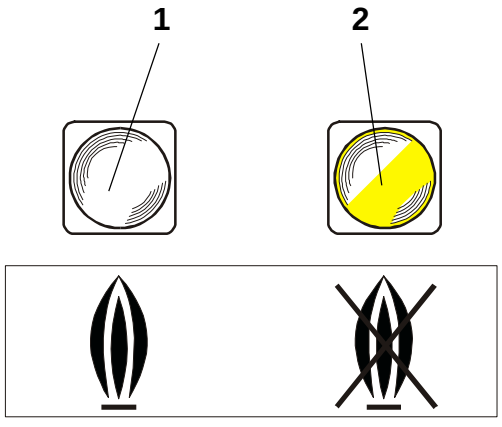
D0544

Gas exchanger

Two indicators are situated on the top of the gas exchanger.

- White indicator (1) light = **"gas heating On"**.
- Yellow indicator (2) light = **"ignition gas burner fault indicator"**.

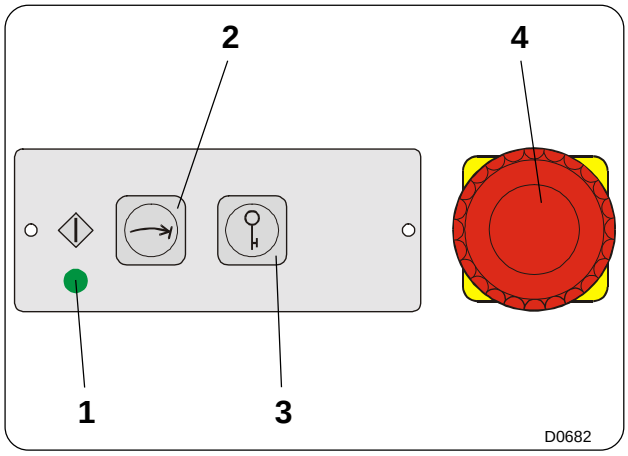
The yellow indicator remains on if a fault occurs when the gas burner ignites, the gas heating does off and the machine stops functioning. Verify the working of the gas exchanger. If la fault remains, consult your after-sales service.



D0697

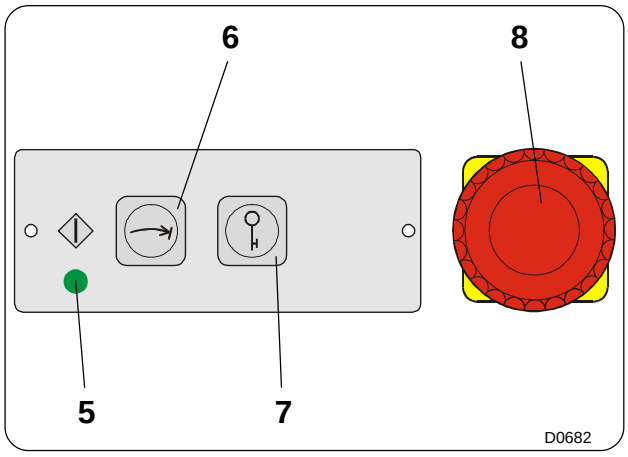
The control board on the loading side includes the following :

- Indicator (1) "**fix light**" = loading or unloading cycle running.
  Indicator (1) "**flashing light**" = door opening possible.
- Push-button (2) :
  a) change of compartment ;
  b) cage rotation in loading position.
- Drum door opening push-button (3).
- Emergency stop (4).



The control board on the unloading side includes the following :

- Indicator (5) "**fix light**" = loading or unloading cycle running.
  Indicator (5) "**flashing light**" = door opening possible.
- Push-button (6) :
  a) change of compartment ;
  b) give back control to loading side.
- Drum door opening push-button (7).
- Emergency stop (8).



Automatic operation

Preparation

Sort the linen according to the instructions mentioned on the care labels.
Empty the pockets and clasp the slide fasteners.

Loading side

Display of the Clarus Control main menu

↳ At first starting of the day, the green light of the auxiliary board is off  .

↳ Press on the push-button  **DOOR OPENING.**

- The cage rotates to bring the first premier compartment in loading position.
- During this rotation, this light stays off  .
- The green light flashes when the cage is positioned  (this state is effective after a complete washing cycle).

↳ Press on the push-button  **DOOR OPENING.**

- The door unlocks.

↳ Open the loading side door using the handle.

- Press on the safety lock and on upper and lower doors at the same time with both hands.

↳ Open the cage doors until complete opening.

Be careful, to hold the doors until complete opening.

↳ Load the linen into the drum making sure of its correct distribution.

If you use nets to wash the linen, it is better to use several nets, three or four in the same compartment rather than one or two to load the machine. Finish the load with loose linen if necessary.

Make sure note to over load the machine.

↳ Close the cage doors (check the good running of the mechanical safety lock by push on the cage doors).

↳ Close the drum door for locking.

- The light becomes fix again  .

↳ Press on the push-button  **CAGE ROTATION** to bring the second compartment in loading position.

- During the cage positioning, the green light stays off  .
- The green light flashes again when the cage is positioned  .

↳ Press on the key  **DOOR OPENING**.

- The door unlocks

↳ Open the loading side door using the handle.

↳ Press on the safety lock and on upper and lower doors at the same time with both hands.

↳ Open the cage doors until complete opening.

Be careful, to hold the doors until complete opening.

↳ Load the linen into the cage making sure of its correct distribution.

If you use nets to wash the linen, it is better to use several nets, three or four in the same compartment rather than one or two to load the machine. Finish the load with loose linen if necessary.

Make sure note to over load the machine.

↳ Close the cage doors (check the good running of the mechanical safety lock by push on the cage doors).

↳ Close the drum door for locking.

- The green light stays off  .

↳ The machine is now ready to start the washing cycle.

Nota : you should absolutely load both drum's compartments before launching washing cycle. The machine does not start, the green light stays on, if the condition is not fullfilled.

Add detergent and other laundry products.

If you are using the machine's built-in detergent dispensers, add the required detergent and other laundry products in the compartments.

WARNING !

Take care when adding laundry products. Powder or liquids left in the compartments (scoops) may be corrosive.

ATTENTION

Do not open the cover when the water valves are flushing water through the detergent dispenser. Take care when adding laundry products.

Detergent dispenser

The detergent dispenser has five compartments. Each compartment is connected to a water valve. The water supply to individual compartment is as follows :

Compartment	Valve	Water
P1	Y9	warm
P2	Y13	warm
L1	Y11	cold
L2	Y10	cold
L3	Y12	cold

Dosage of the detergents

Pour the detergents in the containers according to the program.

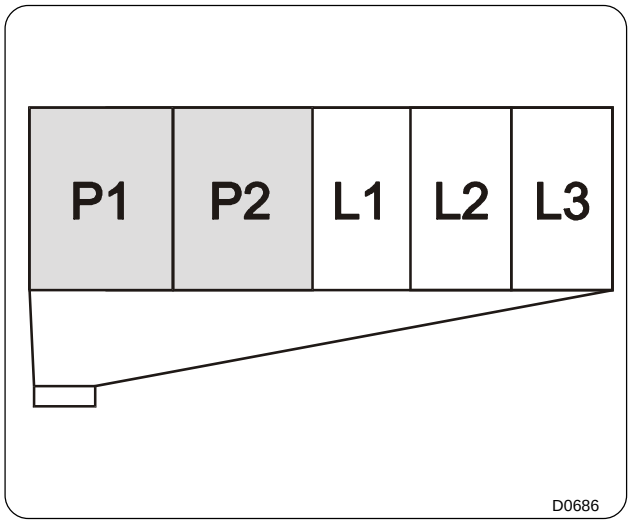
P1 : powder product (prewash)

P2 : powder product (wash)

L1 : liquid product (ex : chlorine)

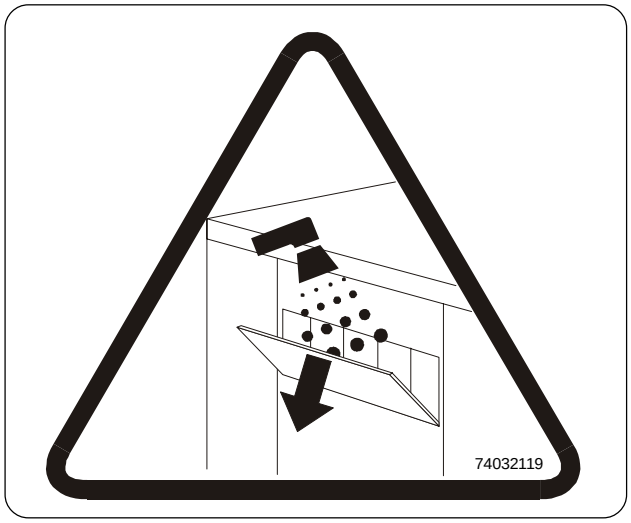
L2 : liquid product (ex : neutralizer)

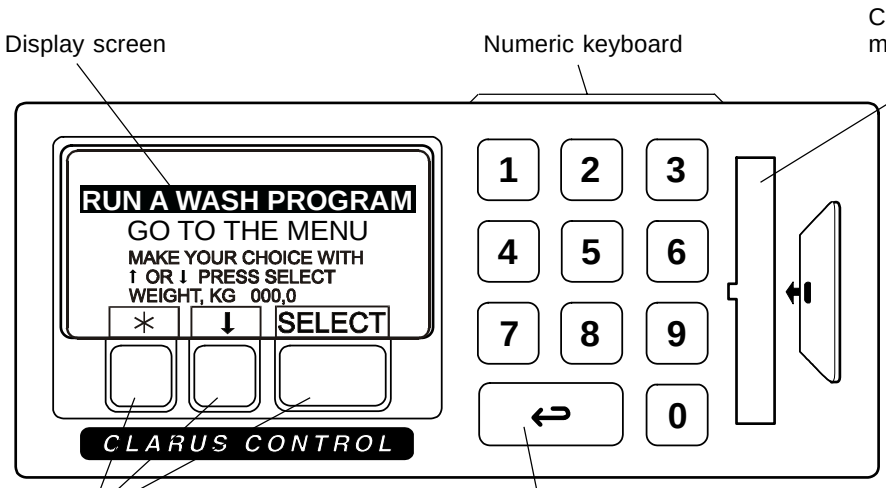
L3 : liquid product (ex: softener)



Rinsing of the soap box

Rinse the inside, every days with water, the detergents container.





Function keys.
The functions of these keys change, depending on which menu or part of a menu you are using. Their current functions at any time are shown on the display immediately above each key.

During a wash : "Pause" key.
Before and after a wash, and during programming : "Move back key".
By pressing this key repeatedly you can move backwards through the menus you have navigated through. This will always bring you back to the menu shown on the display in this illustration.

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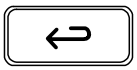
To run a wash program

The « Move back » key



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If you find you are in the wrong place, or if you want to undo earlier key presses :

Press the « Move back » key one or more times

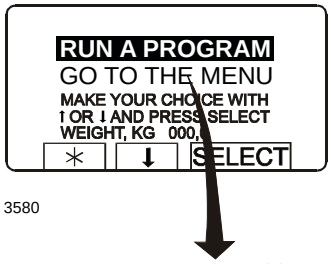
The « Move back » function

Each press of the « Move back » key moves you back one menu, in reverse order.

By pressing this key repeatedly you can return to this menu at any time :

3651

To start the wash program



3580

If the menu is not currently displayed :

Press ⏎ repeatedly.

If « GO TO THE MENU » is highlighted :

Press ⇧.

When « RUN A WASH PROGRAM » is highlighted :

Press SELECT.

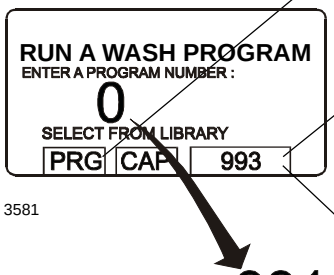
Two way of starting a program

By entering the actual program number

Enter the actual program number if you know it, then press **SELECT.**

By starting from the program library (see section «To start a wash program from the program library»)

If you are unsure about the programs available, you can select a program from the program library, where the programs are listed with their descriptions.



3581

Here you can select programs from the program libraries. See the section entitled "To start a wash program from the program library".

Displayed here will be the number of the most frequently used program. S993 would indicate the number of a program on a memory card.

Press this key if you want to select program.

991

Use the numeric key to enter the program number.

SELECT

Press SELECT.

If you have entered a wrong number…

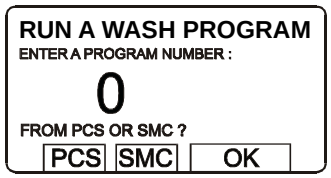
Enter the correct number to overstrike the earlier one.

Note: you must always enter three digits, even when the number is really only a one or two-digits number.

Examples :

The program number required is **9**. Enter **009** to overstrike all digits in the wrong number.

The program number required is **19.** Enter **019** to overstrike all digits in the wrong number.



4031

If you have a memory card in the program control unit, and the program you selected is both on the memory card and in the PCU, you will be asked "FROM PCS OR SMC ?".

PCS

Press PCS if you want to take the program from the PCU.

SMC

Press SMC if you want to take the program from the memory card.

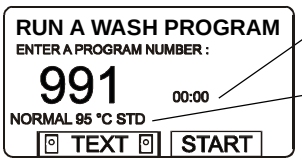
In some of the text shown on the display, Clarus Control is referred to as PCS and the memory card is referred to as SMC.

Memory cards

A memory card is a plastic card, the size of a credit card, with an electronic memory chip inside it. This card is capable of storing 10 to 15 wash programs of normal size. If the programs are mostly small ones, more of them can be stored, whereas larger programs will reduce the number which can be held by the card. Memory cards of this type can be used to :

- transfer wash programs from one washer extractor to another
- run wash programs straight from the card
- transfer wash programs from a PC to a memory card and from a memory card to a PC (these procedures, and how to write a wash program on a PC, are described elsewhere).

Memory cards are described in detail in the section entitled "The Memory card".



3582

Delayed start time (hrs:mins)

Nom du programme

If you want to see the description of the program :

TEXT

Press TEXT.

Pressing « Text » displays more information

The text displayed is a description of the wash program selected. This text description is inserted when a new wash program is created. This procedure is described fully in the programming manual.

Choose 1 or 2 :

① START

1 To start the program now :

Press START.

②

1 2 3
4 5 6
7 8 9
0

2 Delayed start

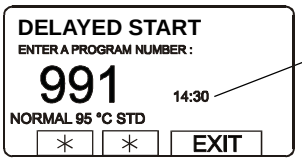
Use the numeric keys to enter a time (max. 24 hrs). This parameter appears on the right of the display.

START

Press START.

Delayed start

Delayed start means that the machine will not start the wash program until the time entered has elapsed. This function allows you, for example, to load the machine in the evening, but delay the start of the wash until early the next morning, to end in time for the next shift.



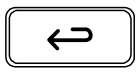
Time left before the machine is to start :

If you want to cancel the delayed start :

EXIT

Press EXIT.

During a wash program :

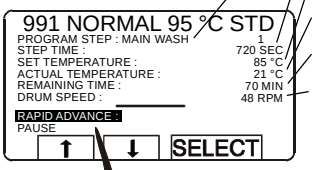


3627

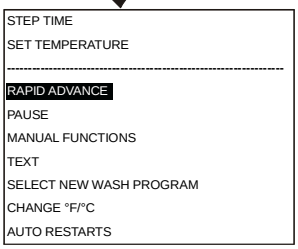
Press ⏎ to make the machine pause during the wash program.

The following information is displayed during the wash program :

- Current program step
- Time left for this program step
- Set temperature
- Actual temperature
- Remaining program time
- Drum speed



3583



↓ If required :

Select a function using the cursor keys.

↑

SELECT **Press SELECT.**

Two ways of pausing during a wash program

There are two ways of pausing during a wash program :

1 By pressing ⏎ .

2 As an additional function. This is described in **section « Pause ».**

To change parameters in the current program step :

Certain program step parameters can be altered during the course of the program. In the example (left), the length of the program step and the heating temperature can be altered.

Additional functions during the program

Rapid advance (see section « Rapid advance »)
Rapid advance through the program to the program step required. Rapid advance can be used to move both forwards and backwards through the program.

Pause (see section « Pause »)
The machine stops. The drain valve remains closed. Alternative method for pausing during program :
Press ⏎.

Manual functions (see section « Manual operation during program operation »)
The following functions can be controlled manually during the course of the program :
- all water valves, drain and pumps (where applicable).
- limit highest extraction speed.
- motor on/off after end of wash program.
- flush detergent.

Text (see section « Text »)
Display description of wash program (if available).

Select a different wash program (see section "To change the wash program after program operation has commenced")
You can switch to using a different wash program at any stage during the wash. Once this function has been selected, the current step (for example, rinse) of the earlier program will be allowed to finish and then the new program will start (from the beginning).

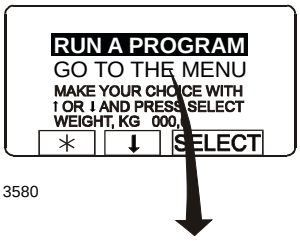
Change temperatures scale °C or °F (see section « To change temperatures scale °C/°F »)

Auto restart (see section « Auto restart »)
Here you enter the number of times you wish the wash program to restart automatically.

To terminate a program before it has finished

- Select RAPID ADVANCE and press SELECT. Advance to « END OF PROGRAM » and press SELECT.
- Wait until « THE DOOR IS OPEN » appears on the display.
- Now the door can be opened.

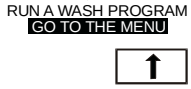
To start a wash program from the program library



3580

If this menu is not currently display :

Press ↩ reapetedly.



If « GO TO THE MENU » is highlighted :

Press ⇧.

When « RUN A WASH PROGRAM » is highlighted :

Press SELECT.

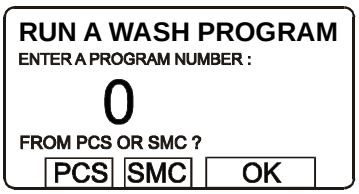
Waht is the program library ?

The program library lists all wash programs, both user and standard programs, showing their program numbers and a description, for example :

1	MY OWN 40°C (104°F)
2	MY OWN 60°C (140°F)
3	MY OWN 90°C (194°F)
991	NORMAL 95°C (203°F) STD
992	NORMAL 60°C (140°F) STD
993	NORMAL 40°C (104°F) STD
994	INTENSIVE 95°C (203°F)
995	INTENSIVE 60°C (104°F)
996	PERM. PRESS 60°C (140°F)
997	PERM. PRESS 40°C (104°F)
998	LOW EXTRACT 1 MIN
999	HIGH EXTRACT 5 MIN

Each time a new program is stored in the machine program memory, its number and description will be inserted automatically into the program library.

The program library may be used for starting a wash program, but is also used in programming, when a wash program needs to be modified or if a new program is to be created on the basis of an existing one.



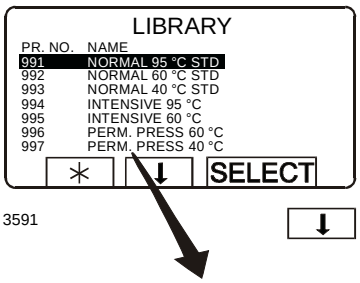
4031

To select a program from the PCU program labrary :

PCS **Press PCS.**

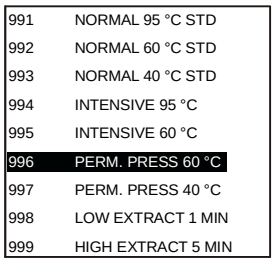
If there is a memory card in the PCU and you wish to select a program on that :

SMC **Press SMC.**



3591

↓ **Press ⇩ the required number of times...**

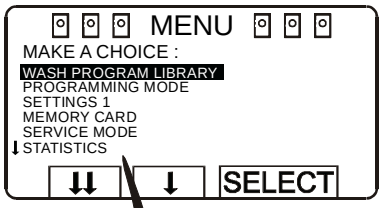


... to highlight the wash program required.

SELECT **Press SELECT.**

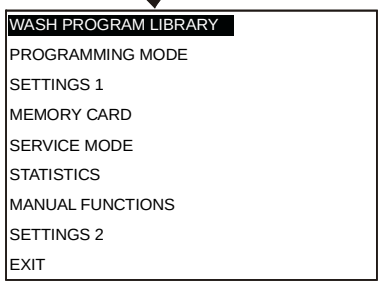
Select library via menu

You can also select the program library via the option "GO TO THE MENU". Then select "WASH PROGRAM LIBRARY".



3590

↓



SELECT

Delayed start time (hrs:mins)

Program name

If you want to see the description of the program :

3582

TEXT

Press TEXT.

Pressing "Text" displays more information

The text displayed is a description of the wash program selected. This text description is inserted when a new wash program is created. This procedure is described fully in the programming manual.

Choice 1 or 2 :

1 to start the program now :

① START

Press START.

2 Delayed start

② 1 2 3 / 4 5 6 / 7 8 9 / 0

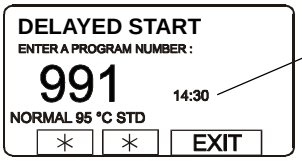
Use the numeric keys to enter a time (max. 24 hrs). This parameter appears on the right of the display.

Delayed start

Delayed start means that the machine will not start the wash program until the time entered has elapsed.

This function allows you, for example, to load the machine in the evening, but delay the start of the wash until early the next morning, to end in time for the next shift.

START **Press START.**



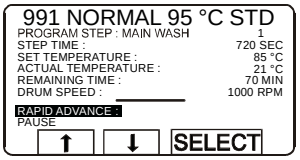
Time (in hours and minutes) left before the machine is to start.

If you want to cancel the delayed start :

EXIT **Press EXIT.**

The functions wich are available during program operation are described in section « To change parameters in the current program step » and « Auto restart ».

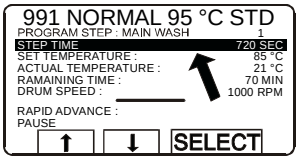
To change parameters in the current program step



3584

During program operation the display will look like this (see section « To start the wash program »).

⇧ **Press ⇧ one or more times …**



… to highlight the time required.

SELECT **Press SELECT.**

1 2 3 4 5 6 7 8 9 0 **Use the numeric keys to enter the ew parameter.**

SELECT **Press SELECT.**

You can alter the following parameters :

Prewash, Main wash, Rinse, Drain, Soak, Rinse repeat
Length of program step (max. 9998 seconds), heating temperature (max. 97°C) (205°F).

Extract
Length of program step (max. 3600 seconds), extraction speed.

ATTENTION
Never program a temperature above to 90°C (195°F).

If you have entered the wrong parameter

Continue pressing numeric keys to overstrike the incorrect parameter.

Note : always use the same number of digits as used on the display to overstrike the incorrect parameter.

Example :

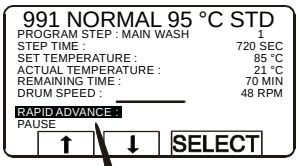
To change the time for the program step to **30** seconds, enter **030** to overstrike the earlier parameter.

WARNING

If you happen to make your own program, you must not input cold water in the cage while this later has a washing bath at 85°C (185°F), with the cage stopped. It is compulsory that the cage turns while letting in cold water.

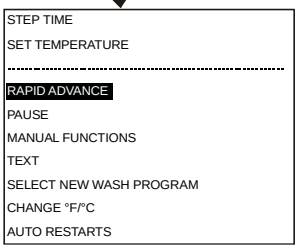
A bad programming can, in this particular case, be the cause of the breakage of the doors' windows.

Rapid advance



3583

During program operation the display will look this (see section « To start the wash program »).

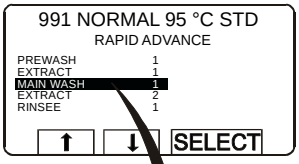


Check that « RAPID ADVANCE » is highlighted.

If it is not highlighted :

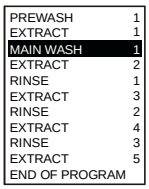
Press ⇧ or ⇩ one or more times to highlight « RAPID ADVANCE ».

Press SELECT.



3586

Press ⇧ or ⇩ one or more times to highlight the program step you wish to advance to.



Press SELECT.

To terminate a program before it has finished

- Select RAPID ADVANCE and press SELECT. Advance to "END OF PROGRAM" and press SELECT.
- Wait until "THE DOOR IS OPEN" appears on the display.
- Now the door can be opened.

Rapid advance works in both directions

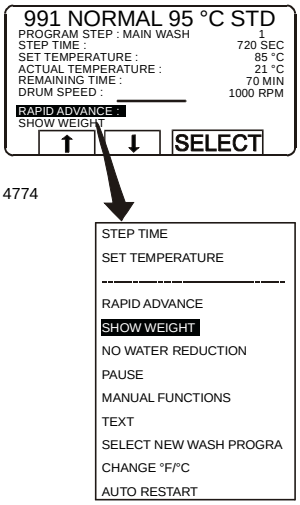
Rapid advance works in both directions, using (⇩) and (⇧).

Using rapid advance to move forwards allows you to skip one or more program steps. Using rapid advance backwards allows you to repeat one or more program steps.

Automatic return to normal display

Once you have selected any of the functions below, you must make any changes required within 20 seconds. If no further keys are pressed within 20 seconds, the display will revert automatically to its normal appearance during a wash program.

Show weight (for machines with weighing equipment installed only)



4774

During program operation, the display will look like this (see section "To start the wash program").

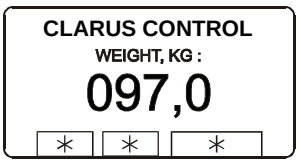
Show weight

The actual weight is shown in large digits on the display (weight display mode).

If the weighing equipment is not connected, the error message "FUNCTION NOT ALLOWED" will appear. See the section "Fault-finding, weighing equipment" in the machine manual.

Press ⇩ or ⇧ one or more times to highlight « SHOW WEIGHT ».

Press SELECT.



4775

Weight display mode :

The actual net weight is shown in large digits on the display.

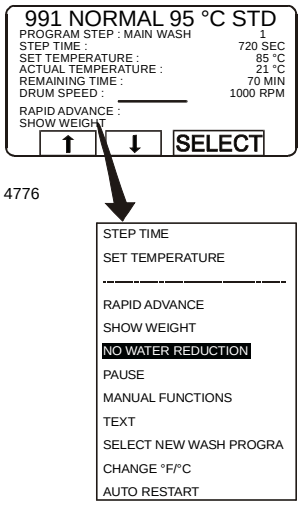
Return to normal display

The display will return to normal at the end of the "time for weight display" set as a parameter in Settings 1. The manufacturer's default parameter is 20 seconds.

To end weight display sooner

Press ↩ or use the numeric keys to enter a new program number.

No water reduction (for machines with weighing equipment installed only)



During program operation, the display will look like this (see section "To start the wash program").

Press ⇧ or ⇩ one or more times to highlight « NO WATER REDUCTION ».

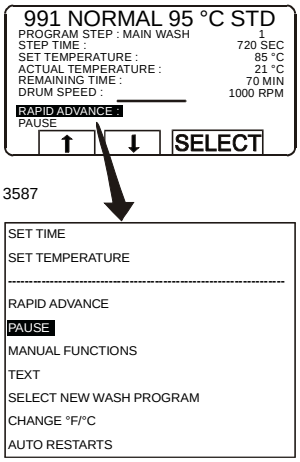
Press SELECT.

No water reduction

The wash load is weighed during the program and the water level is adjusted automatically according to its weight. If the load is not a full one, the water level will be reduced according to a water level reduction table. You can switch off water level reduction at any stage of a program.

Note that if you select "NO WATER REDUCTION", this applies only to the program currently running. The next time a program is started, water level reduction will occur automatically again.

Pause



3587

During program operation the display will look this (see section « To start the wash program »).

Press ⇩ or ⇧ one or more times to highlight « PAUSE ».

Press SELECT.

Two ways of pausing during a wash program

Note that you must be in normal wash mode to be able to pause in this way. If, for example, you are using "Manual Functions", you will have to exit that first before you can use Pause.

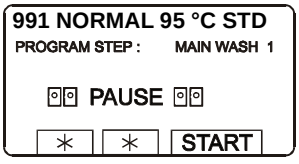
There are two ways of pausing during a wash program :

1 As an additional function. This is described in this section.

2 By pressing ↩.

When the machine pauses :

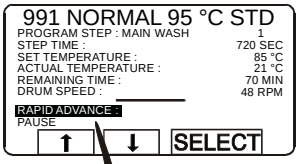
- Program operation is halted.
- Filling is halted (where applicable).
- Heating is halted (where applicable).
- The motor stops.
- The drain valve remains closed.
- The door cannot be opened.



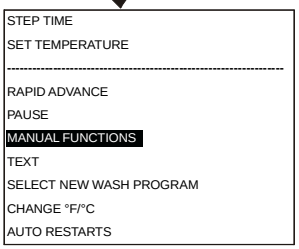
3588

Press START o restart the wash program.

Manual operation during a program



3585



During program operation the display will look this (see section « To start the wash program »).

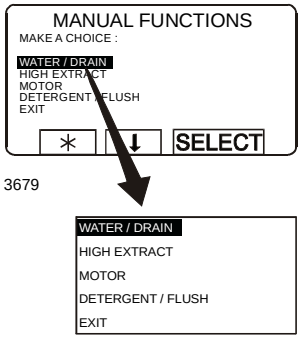
Two types of manual operation

There are two types of manual operation, which should not be confused :

- M**anual operation during a program**
  These functions are described in this section.
- **Manual operation when no program is running**
  These functions are described in **section "Manual operation"**.

↓ ↑ **Press ⇧ or ⇩ one or more times to highlight « MANUAL FUNCTIONS ».**

SELECT **Press SELECT.**



3679

↓ ↑ **Use the cursor key to select the function.**

SELECT **Press SELECT.**

Automatic return to normal display

Once you have selected any of the functions below, you must make any changes required within 20 seconds. If no further keys are pressed within 20 seconds, the display will revert automatically to its normal appearance during a wash program.

Manual functions during a wash program

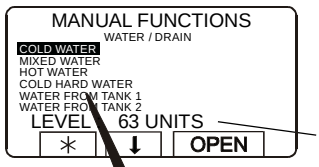
Water/drain (see section "Water/drain")
Allows manual operation of all water valves and the drain valve.

Highest extraction speed (see section "Maximum extraction speed")
Here you can limit the maximum extraction speed for the current program.

Motor (see section Motor on after wash")
Motor on/off after program has ended.

Detergent valves (see section "Detergent signals and water flushing")
Allows you to control all valves in the detergent compartment or in external detergent supply system.

Water / drain

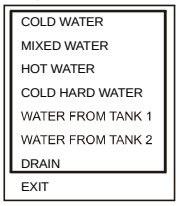


To access this function, see instructions in section « Manual operation ».

Water level in drum.

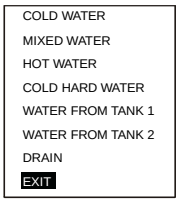
3680

Use ⇩ and ⇧ to select the water/drain option you require.



Press OPEN.

The function will be activated for as long as you press and hold this key. The function ceases as soon as you release the key.

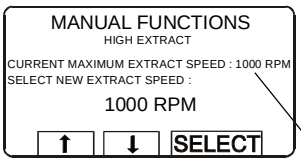


When you have finished :

Press ⇩ repeatedly to highlight « EXIT ».

Press SELECT.

Maximum extraction speed



3681

To access this function, see instructions in section « Manual operation ».

Maximum extraction speed in current program.

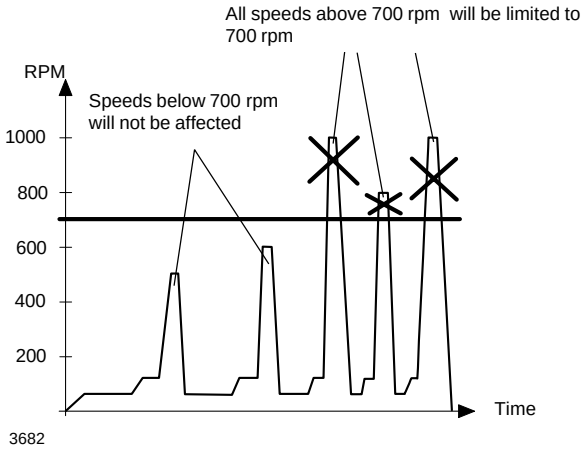
1 2 3
4 5 6
7 8 9
0

Enter the maximum extraction sped you require for this program.

SELECT **Press SELECT.**

To limit the program's highest extraction speed

This function allows you to modify the highest extraction speed allowed during the program.
Example :
Assume that the highest speed in the program is 1000 rpm and that you have set 700 rpm as the highest speed allowed.

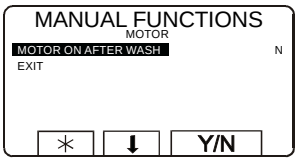


3682

This change will affect the current program only. No change will be implemented if extraction is taking place at the time of the (attempted) change.The next time that this program is used, the original maximum speed will apply.

This function does not allow you to set a **higher** speed than the usual maximum speed for the program.

Motor on after wash



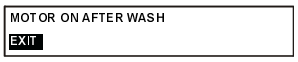
To access this function, see instructions in section « Manual operation ».

3683

A toggle function :
Use Y/N to toggle the function from Y (Yes) to N (No).

When you have finished :

Press ⇩ to highlight « EXIT ».



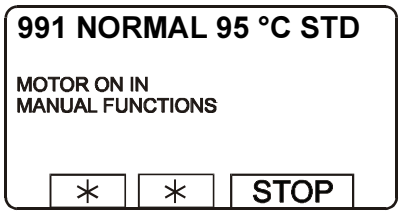
Press SELECT.

Motor to rotate after program has ended

If you answer **Yes (Y)** :

The motor will continue to rotate in alternative directions after the program has ended. This prevents creasing of the load.

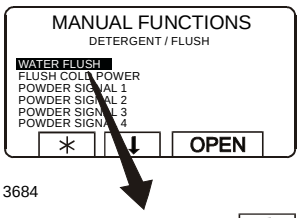
When the program has ended, the display will look like this :



4111

Press STOP to stop the motor.

Detergent signals and water flushing

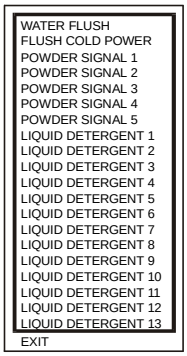


3684

To access this function, see instructions in section « Manual operation ».

⇩ ⇧

Use ⇩ and ⇧ to select the function you require.

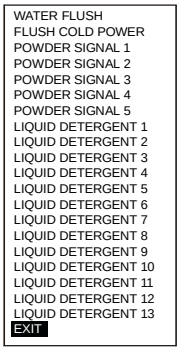


Press OPEN.

OPEN

⇩

The function will be actived for as long as you press and hold this key. The function ceases as soon as you release the key.



When you have finished :

Press ⇩ repeatdly to highlight « EXIT ».

SELECT

Press EXIT.

Detergent signals and water flushing

FLUSH WATER :

This function uses water to clear detergent from the supply tubes of the detergent dispensing system.

POWDER SIGNAL :

This function will either :

a) use water to dispense detergent from machine compartments, or :

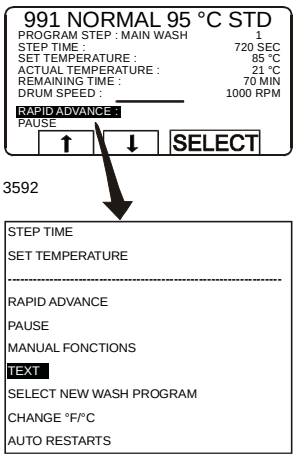
b) dispense detergent from an external system.

The number of valves present will vary according to the machine type.

Text

Pressing "Text" displays more information

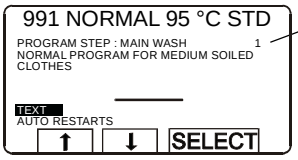
The text displayed is a description of the wash program selected. This text description is inserted when a new wash program is created. This procedure is described fully in the programming manual.



During program operation the display will look this (see section « To start the wash program »).

Press ⇩ or ⇧ one or more times to highlight « TEXT ».

Press SELECT.



Description of wash program.

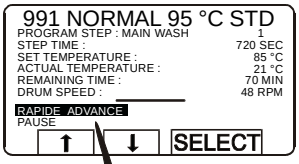
To return to the normal display :

Press SELECT again.

Automatic return to normal display

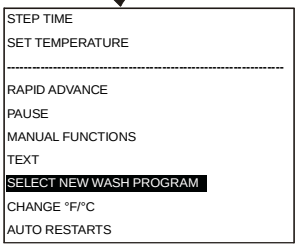
If you do not press SELECT within 20 seconds, the display will revert automatically.

To change the wash program after program operation has commenced



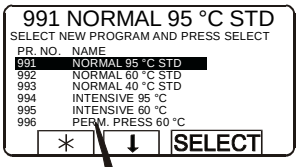
3694

During program operation the display will look this (see section « To start the wash program »).



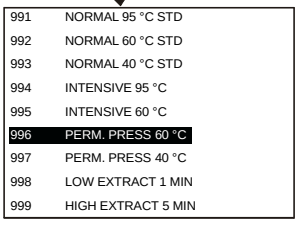
↓ ↑ **Press ⇧ or ⇩ one or more times to highlight « SELECT NEW WASH PROGRAM ».**

SELECT **Press SELECT.**



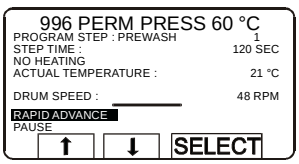
3695

↓ **Press ⇩ one or more times as required...**



... to highlight the new wash program.

SELECT **Press SELECT.**



The existing wash program will not be interrupted and the new one will begin.

To change the wash program after program operation has commenced

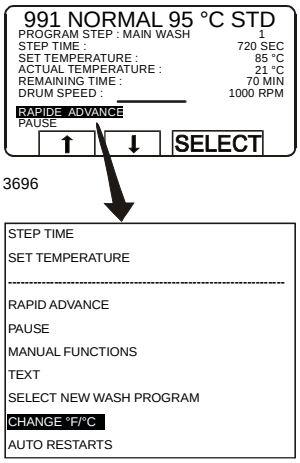
You can change to a different wash program at any time during program operation. When you do, the current function (for example, rinse) will be interrupted. The new program will start immediately after that (from the beginning).

This function is useful, for example, if you discover that you have started the wrong program.

Automatic return to normal display

If no key is pressed within 20 seconds, the display will revert automatically.

To change temperature scale °C/°F



During program operation the display will look this (see section « To start the wash program »).

Press ⇩ or ⇧ one or more times to highlight « CHANGE °C/°F ».

Press SELECT.

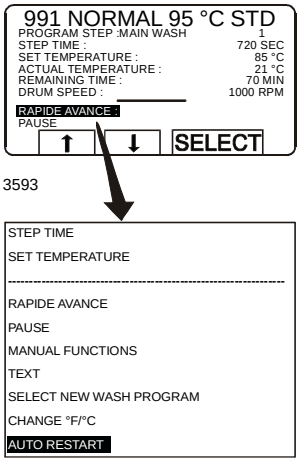
To change temperature scale °C/°F

This function changes the temperature scale used for all temperatures displayed during the wash program.

Please note that this scale change applies only to the current program. The default temperature scale will apply next time you run a program.

To change the default temperature scale for all programs, use the function "SETTINGS", which is described in the Service Manual.

Auto restart



3593

During program operation the display will look this (see section « To start the wash program »).

What is Auto restart ?

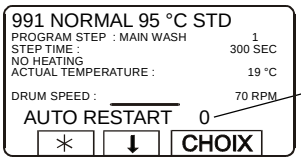
Auto restart means that the same program will be repeated one or more times, according to the number set. The program will restart immediately, and the door will remain locked. If you have set auto restart, the display will show the number of restarts left.

This function is used primarily for testing.

↓ **Press ⇩ one or more times to highlight « AUTO RESTART ».**

↑

SELECT **Press SELECT.**



3594

Shows the number of time the program will restart.

1 2 3
4 5 6
7 8 9
0

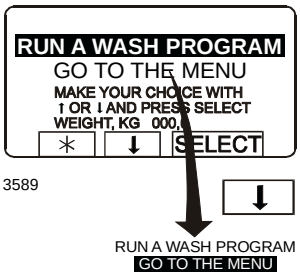
If required :

Use the numeric keys to change the required number of restarts.

SELECT **Press SELECT.**

Manual operation

To select manual operation



If this menu is not currently displayed :

Press ↩ repeatedly.

Press ⇩ to highlight « GO TO THE MENU ».

SELECT **Press SELECT.**

Two types of manual operation

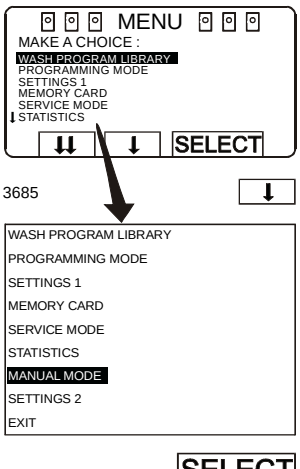
There are two types of manual operation, which should not be confused :

- Manual operation when no program is running
  These functions are described in this section.
- Manual operation during a program
  These functions are described in **section "Manual operation"**.

Always lock the door first !

You must always close and lock the door first before you can operate the machine manually.

To lock the door, use the submenu MOTOR/DOOR, **see section "Motor/door"**.



Press ⇩ six times...

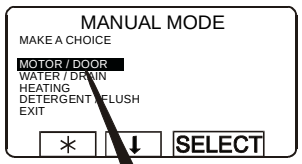
... to highlight "MANUAL MODE".

SELECT **Press SELECT.**

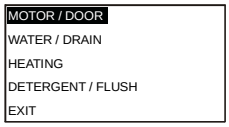
All manual settings are cancelled when you exit manual operation

All manual settings (such as door, motor, temperature, and drain) will be cancelled when you exit manual operation.

The door is unlocked, the motor stops, the drain opens, heating is halted, and the temperature is reset to zero.



3686



Manual operation when no program is running

Motor/door (see section "Motor/door")
Lock/unlock door. Switch motor on/off (normal drum action).

Water and drain valves (see section "Water/ drain")
Operation of drain valve and all water valves.

Heating (see section "Heating")
Heat water to any temperature required.

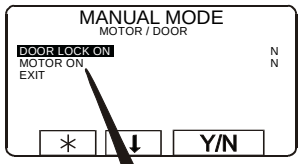
Detergent valves (see section "Detergent signals and water flushing")
Allows manual operation of all valves in detergent compartment or external detergent supply system.

Exit
Returns you to the MENU diplay.

↓ ↑ **Select the function required using the cursor keys**

SELECT **Press SELECT.**

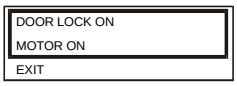
Motor/door



3687

To access this function, see instructions in section « To select manual operation ».

Press ⇩ as required to select a function.



A toggle function :
Use Y/N to toggle the function from Y (Yes) or N (No).

Y/N

When you have finnished :
Press ⇩ to highlight "EXIT".

SELECT **Press SELECT.**

Lock the door and start the motor

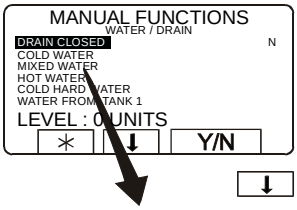
DOOR LOCK ON

If you answer **Yes (Y) :**
The door will be locked. Note that you must always lock the door before you can operate the machine manually.

MOTOR ON

If you answer **Yes (Y)** :
The motor will start and operate, using normal action.

Water/drain



To access this function, see instructions in section « To select manual operation ».

↓ ↑

Use ⇧ or ⇩ to select Drain or one of the six Water filling alternative.

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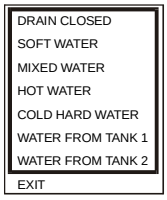


Drain (a toggle function) :
Press Y/N to toggle the function from Yes (Y) and No (N).

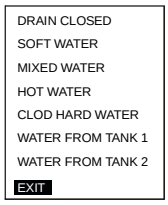
Y/N

Water filling :
Press OPEN.

OPEN

The function will be activated for as long as you press and hold this key. The function ceases as soon as you release the key.

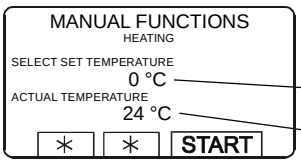
When you have finnished :
↓ **Press ⇩ to highlight « EXIT ».**



SELECT **Press SELECT.**

Heating

To access this function, see instructions in section « To select manual operation ».



Temperature selected

Actual temperature

3689

1 2 3
4 5 6
7 8 9
0

Use the numeric key to enter the temperature the water is to be heated do.

ATTENTION
Never program a temperature above to 90°C (194°F).

START

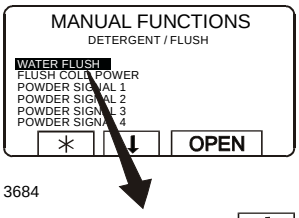
Press START.
Heating will now begin.

If you wish, you can cancel heating before the set temperature is reached :

STOP

Access this function again and press STOP.

Detegent signals and water flushing

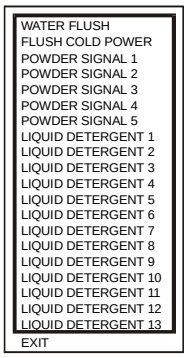


3684

To access this function, see instructions in section « To select manual operation ».

⇩ ⇧

Use ⇩ and ⇧ to select the function you require.

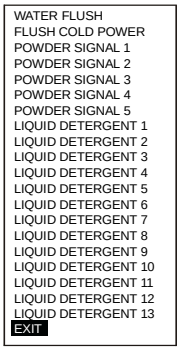


OPEN

Press OPEN.
The function will be activated for as long as you press and hold this key. The function ceases as soon as you release the key.

⇩

When you have finnished :
Press ⇩ repeatedly to highlight « EXIT ».



SELECT

Press SELECT.

Detergent signals and water flushing

FLUSH WATER :

This function uses water to clear detergent from the supply tubes of the detergent dispensing system.

POWDER SIGNAL :

This function will either :

a) use water to dispense detergent from machine compartments, or :

b) dispense detergent from an external system.
The number of valves present will vary according to the machine type.

At the end of the wash

For your safety, the door can only be open after 40 seconds.

Standard machines (unloading side)

- At the end of the washing cycle, one of the two compartments of the drum is automatically positioned to be unloading.

- The green light of the auxiliary board is off 

- Press on the key  **DOOR OPENING**.
  - Automatic unlock of the cage doors and drum door.
- Open the unloading side door using the handle.
- Open the cage doors until complete opening.
- Unload the linen from the drum.
- Close the cage doors (check the good running of the mechanical safety lock by push on the cage doors).
- Close the drum door.
  - Automatic lock of the drum door.
  - The green light becomes on fix  .
- Press on the push-button  **CAGE ROTATION** to bring the second compartment in unloading position.
  - During the drum positioning, the green light stays off  .
  - The green light flashes again when the drum is positioned  .
- Press on the key  **DOOR OPENING**.
  - Automatic unlock of the cage doors and drum door.
  - The green light stays off  .
- Open the unloading side door using the handle.
- Open the cage doors until complete opening.
- Unload the linen from the cage.
- Close the cage doors (check the good running of the mechanical safety lock by push on the cage doors).

↳ Close the drum door.

- Automatic lock of the drum door.
- The green light becomes on fix  .

↳ Press on the push-button  **CAGE ROTATION**, the drum slightly rotates to bring a compartment in loading position.

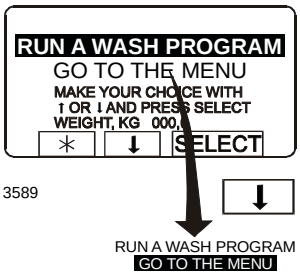
- The green light stays off  .

Loading side

- The green light  flashes to advise that the machine is now ready for the launching of a new washing cycle.

Statistics

To select "Statistics"



If this menu is not currently diplayed :

Press ↩ repeatedly.

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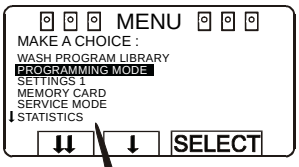
Press ⇩ to highlight « GO TO THE MENU ».

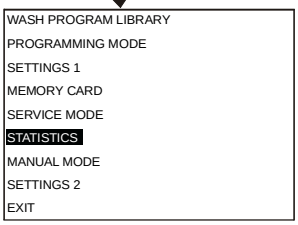
Press SELECT.

— — — — — — — — — — — — — — — — — — —



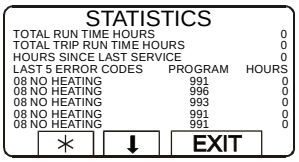
3691

Press ⇩ five times…



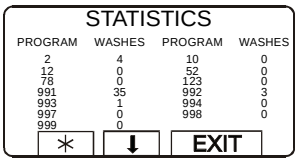
… to highlight « STATISTICS ».

Press SELECT.



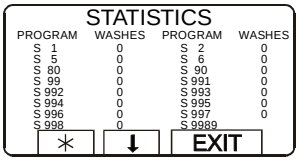
3690

To display the next page of "statistics" :
Press ⇩.



3958

To display the next page of "statistics" :
Press ⇩.



If a memory card is in place in the PCU, the memory card program statistics will be displayed. An « S » before the program number shows that it is a memory card program.

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When you want to cancel to the display of statistics :
Press EXIT.

The Statistics function

The Statistics function gives you access to the following information :

TOTAL RUN TIME HOURS :
Shows the total operating time for the machine since it was installed.

TOTAL TRIP RUN TIME HOURS :
This register records the total number of operating hours since it was last reset. It can, for example, be used to keep track of operating time since the last machine service. The procedure for resetting it is described in **section "To reset "Total trip run time hours" to zero"**.

HOURS SINCE LAST SERVICE
This register shows the time elapsed since the last service. The register can also be used to generate a signal on the display to show when service is needed (see the section ”Settings 1” in the service manual).

LAST 5 ERROR CODES :
This displays the most recent error codes, and tells which program was operating at the time and during which hour (according to the "total run time" record) the error code was flagged.

NO. OF TIMES EACH PROGRAM USED :
Displays statistics for PCU programs and for programs on any memory card currently in place in the PCU.

Resetting statistics registers

If the menu is not currently displayed :

Press ↩ repeatedly.

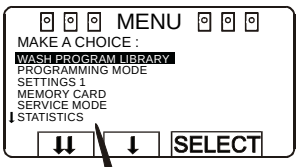
Press ⇩ to highlight « GO TO THE MENU ».

Press SELECT.

Statistics registers which can be reset to zero

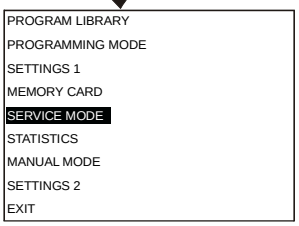
The following registers in the statistics function can be cleared (reset to zero) :

- Total trip run time hours.
- Hours since last service.
- No. of times each program used (PCU programs).
- No. of times each program used (programs on any memory card currently in the PCU).



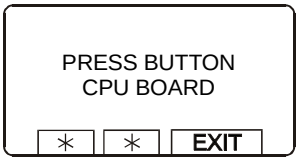
3693

Press ⇩ four times...



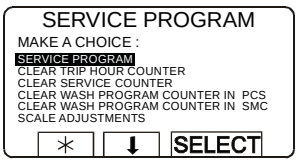
... to highlight « SERVICE MODE ».

SELECT **Press SELECT.**



4209

Press the button on the PCU circuit board.



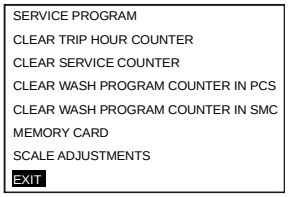
Now you can choose either to clear/reset a register or to adjust the weighing equipment.

4042

Press ⇩ to highlight the option you want, then press SELECT.

SELECT

If you wish to exit :



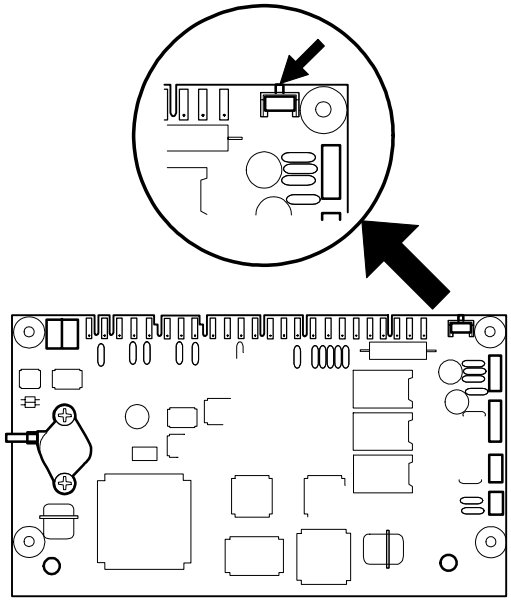
Press ⇩ repeatedly until EXIT is highlighted.

SELECT **Press SELECT.**

The service mode may only be used by authorised personnel, because all safety interlocks are disabled when it is in use.

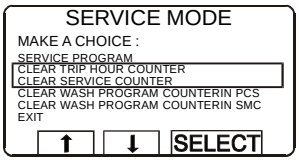
To prevent unauthorised or accidental use

To access this function, you must first press the button on the CPU circuit board. This is to prevent unauthorised or accidental use of the service program.



3972

Time counter « service time » and « last service »



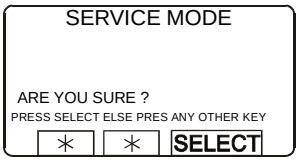
4041

Both counters can be reset in the same way.

Press ⇩ so that « CLEAR TRIP HOUR COUNTER » or « CLEAR SERVICE COUNTER ».

SELECT

Press SELECT.



4043

First you have a chance to change your mind.

If you **do not want to reset** the register :

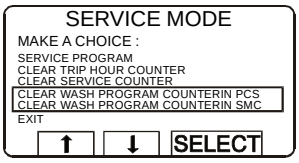
Press any key *other than* SELECT.

If you want to reset the register :

SELECT

Press SELECT.

Number of washes for program in timer or memory card

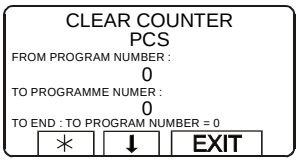


4044

You can reset program in both timer and the memory card (if inserted) :

Press ⇩ so that "CLEAR WASH PROGRAM COUNTER IN PCS" or "CLEAR WASH PROGRAM COUNTER IN SMC".

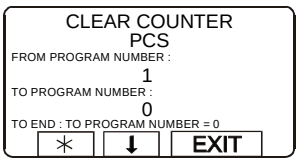
Press SELECT.



4045

Write from which program number you want to clear wash programs.

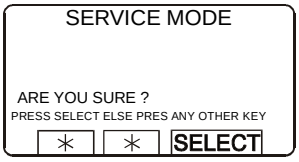
Press ⇩.



Write up to which program number you want to clear wash programs.

4046

Press ERASE.



Do you want to change your mind ?

If you do not want to reset the register :

Press on any button except SELECT.

4043

If you want to reset the register :

Press SELECT.

Now the numbers of washes toy haves marked are erased.

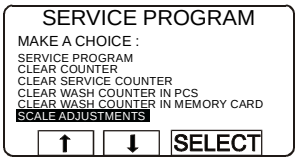
If you want to change any number you have written:

Press ⇧ if you want to change the first written number. Write the new number.

If you regret something :

Press ↩.

Scale adjustments (for machines with weighing equipment installed only)

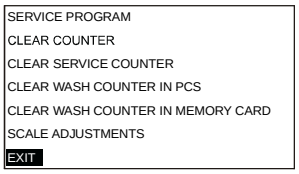


Press ⇩ repeatedly until SCALE ADJUSTMENTS is highlighted.

4777 ↓

SELECT **Press SELECT.**

↓ When you have finished : **Press ⇩ repeatedly until EXIT is highlighted.**



SELECT **Press SELECT.**

Scale adjustments

The following functions are accessed via the SCALE ADJUSTMENTS menu :

Reset scale to zero (see section "Reset scale to zero")
Used to make the weighing equipment display 0 when the machine has no load in it.

Reset tare to zero (see section "Reset tare to zero")
Used to clear a stored tare parameter.

Tare scale (see section "Tare scale")
Used to reset the weighing equipment so that a weight such as a container will not be included when calculating net weight.

Set tare to a certain value (see section "Set tare to a certain value")
Used to enter a value for the tare parameter, a weight in hectograms.

Read tare value (see section "Read tare value")
Used to check the value currently stored as the tare parameter.

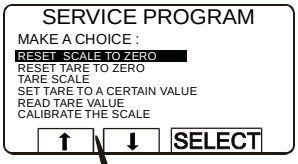
Calibrate the scale (see section "Calibrate the scale")
This function is used only on installation of a new scale unit.

Zero calibration (see section "Zero calibration")
Used to increase the accuracy of the weighing equipment.

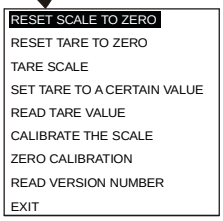
Read version number (see section "Read version number")
This is where you find the version number of the weighing equipment.

If the weighing equipment is not connected, the error message "WEIGHING EQUIPMENT NOT CONNECTED" will be displayed. Connect the weighing equipment and try again. If necessary, see the section "Fault-finding, weighing equipment" in the machine manual.

Reset scale to zero (for machines with weighing equipment installed only)



4778

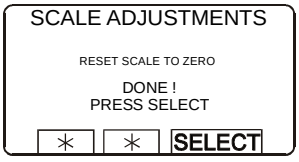


Check that "RESET SCALE TO ZERO" is highlighted.

If it isn't...

Press ⇧ or ⇩ as required to highlight "RESET SCALE TO ZERO".

Press SELECT.



4779

This screen shows that the weighing equipment has been reset to zero.

Press SELECT.

Reset scale to zero

Reset weighing equipment" is used to make the weighing equipment display 0 when the machine has no load in it.

If your attempt to reset the weighing equipment fails at this point, you will see an error message equivalent to : "FAILED. PRESS SELECT" on the display. For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.

Please note :

The machine must be unladen when you use this function, i.e. no water or wash load in the drum.

Please note :

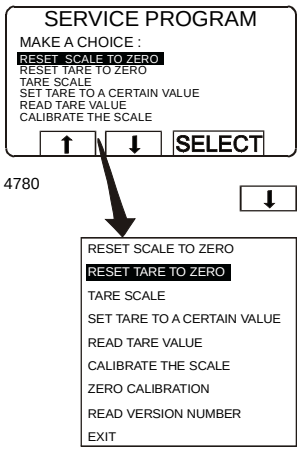
After a power-cut, the weighing equipment will always display 0, no matter what the actual load in the drum.

In this event you will have to use the "Reset scale to zero" function.

Reste tare to zero (for machines with weighing equipment installed only)

Reset tare to zero

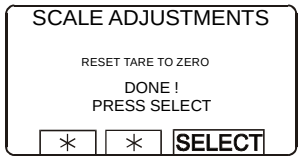
If your attempt to clear the tare parameter fails at this point, you will see an error message equivalent to : "FAILED. PRESS SELECT" on the display. For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.



4780

⬇ **Press ⇩ once to highlight "RESET TARE TO ZERO".**

SELECT **Press SELECT.**

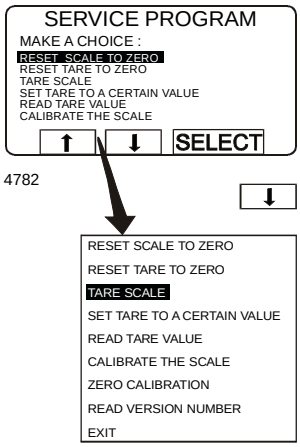


This screen shows that the stored tare parameter has been cleared.

4781

SELECT **Press SELECT.**

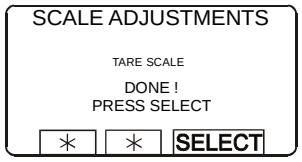
Tare scale (for machines with weighing equipment installed only)



4782

Press ⇩ twice to highlight "TARE SCALE".

SELECT **Press SELECT.**



This screen shows that the stored tare parameter has been cleared.

4783

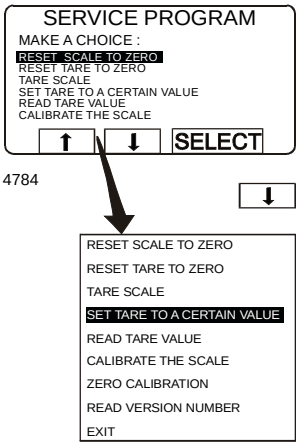
SELECT **Press SELECT.**

Tare scale

This function involves first loading the drum with, for example, a container, then taring (resetting) the weighing equipment so that the weight of the container will not be included when calculating net weight.

If your attempt to tare the weighing equipment fails at this point, you will see an error message equivalent to : "FAILED. PRESS SELECT" on the display. For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.

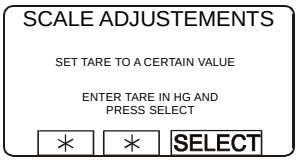
Set tare to a certain value (for machines with weighing equipment installed only)



4784

Press ⇩ three times to highlight "SET TARE TO A CERTAIN VALUE".

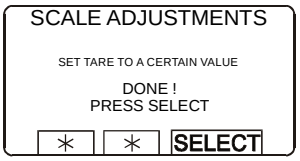
Press SELECT.



4785

Use the numeric key to enter the tare you require, unit : hectograms ; (1 hectogram = 100 grams).

Press SELECT.



This screen shows that the parameter has been entered successfully.

4786

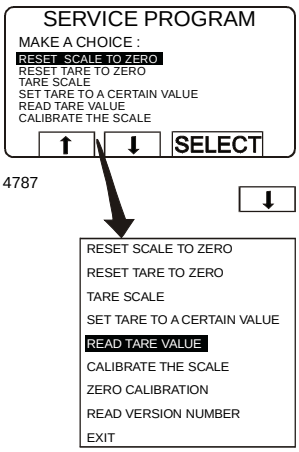
Press SELECT.

Set tare to a certain value

This function lets you enter a value for the tare parameter, i.e. a weight value which the weighing equipment will disregard when showing a net weight on the display. The function will automatically clear any earlier tare value when you enter a new one.

If your value is not entered successfully at this point, you will see an error message equivalent to : "FAILED. PRESS SELECT" on the display. For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.

Read tare value (for machines with weighing equipment installed only)



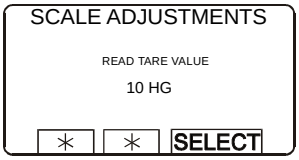
4787

Press ⇩ four times to highlight "READ TARE VALUE".

Press SELECT.

Read tare value

This function lets you check the value currently stored as the tare parameter.

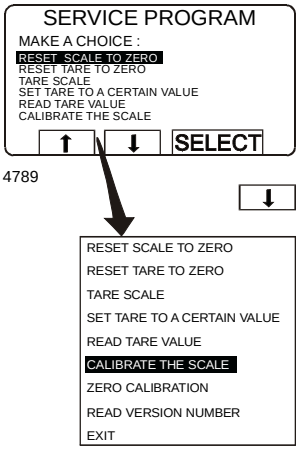


This screen shows the stored tare parameter ; unit : hectograms (1 hectogram = 100 grams)

4788

Press SELECT.

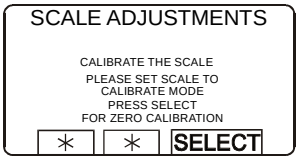
Calibrate the scale (for machines with weighing equipment installed only)



4789

Press ⇩ three times to highlight "SET TARE TO A CERTAIN VALUE".

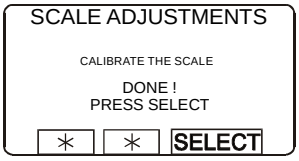
SELECT **Press SELECT.**



4790

Set the calibration switch to calibartion mode.

SELECT **Press SELECT.**



4791

SELECT **Press SELECT.**

Please note :

This function is used only on installation of a new scale unit.

Calibrate the scale

If this calibration has not succeeded you will see an error message equivalent to: "FAILED. PRESS SELECT" on the display. For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.

Please note :

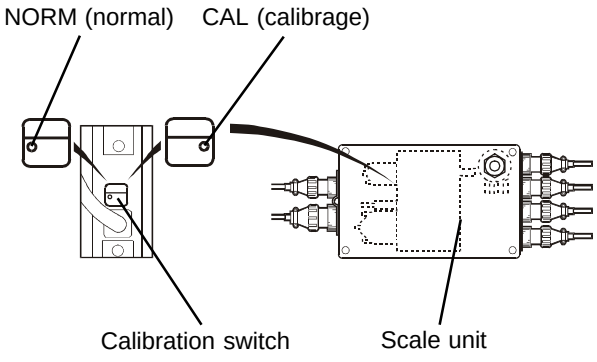
The machine must be unladen at the start of calibartion ; i.e. no water or wash load in the drum.

Calibration mode/normal mode

To gain access to the calibration switch in the scale unit, the side panel has to be taken off.

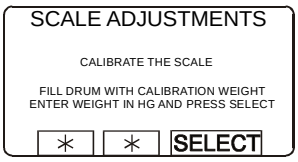
Remove the four screws on the scale unit cover.

Then the calibration switch can be switched between normal mode "NORM" and calibration mode "CAL".



4758

(for machines with weighing equipment installed only)



4792

Put the calibration weight in the drum.

Calibration weight

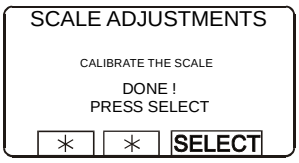
A weight of between 40 kg and 400 kg should be used as a calibration weight.

The higher the weight (within these limits), the better the weighing accuracy of the machine.

1 2 3
4 5 6
7 8 9
0

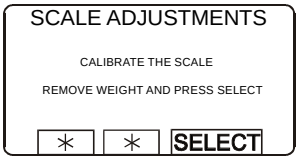
Use the numeric key to enter the calibration weight in hg, (1 hg = 100 grams).

SELECT **Press SELECT.**



4791

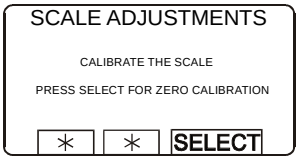
SELECT **Appuyez sur CHOIX.**



Remove the calibration weight.

4793

SELECT **Press SELECT.**

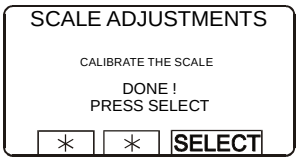


If you want to use the "Calibration zero" function now :

4794

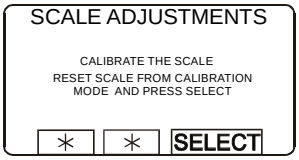
SELECT **Press SELECT.**

(for machines with weighing equipment installed only)



4791

SELECT **Press SELECT.**



Restore the calibration switch to normal mode.

4795

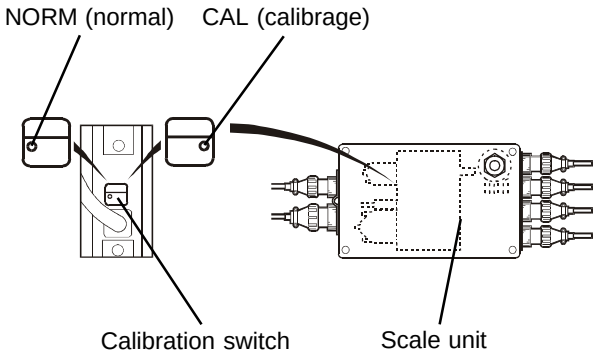
SELECT **Press SELECT.**

Calibration mode/normal mode

To gain access to the calibration switch in the scale unit, the side panel has to be taken off.

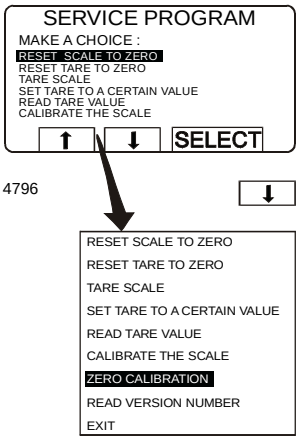
Remove the four screws on the scale unit cover.

Then the calibration switch can be switched between normal mode "NORM" and calibration mode "CAL".



4758

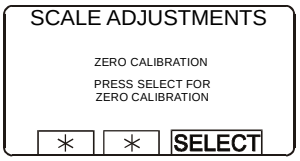
Zero calibration (for machines with weighing equipment installed only)



4796

Press ⇩ six times to highlight "ZERO CALIBRATIONN".

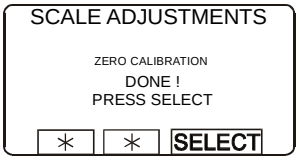
SELECT **Press SELECT.**



If you wish to calibrate zero for the weighing equipment :

4797

SELECT **Press SELECT.**



This screen shows you have calibrated zero.

4798

SELECT **Press SELECT.**

Zero calibration

The "Zero calibration" function is used to increase the accuracy of the weighing equipment. This should be done once a month.

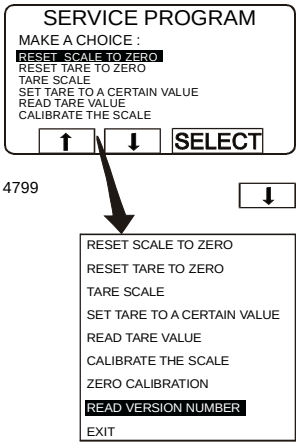
If this calibration has not succeeded you will see an error message equivalent to: "FAILED. PRESS SELECT" on the display.

For troubleshooting, see the section "Fault-finding, weighing equipment" in the machine manual.

Please note :

The machine must be unladen during this calibration, i.e. no water or wash load in the drum.

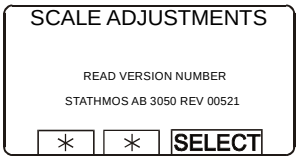
Read version number (for machines with weighing equipment installed only)



4799

Press ⇩ seven times to highlight "READ VERSION NUMBER".

SELECT **Press SELECT.**



The screen shows the version number.

4800

SELECT **Press SELECT.**

Read version number

In the event of a fault in the weighing equipment (which cannot be put right with the aid of the section "Fault-finding, weighing equipment" in the machine manual), make a note of the version number accessed via this function before you contact the supplier's service department.

Functions "ON/OFF" and "Servo-control pause" by exterior signals

Description

During a programme, an on/off function and a servo-control pause can be used to vary the heating or the starting of a machine in comparison to another by using an exterior signal (electric signal).

Functioning

The on/off function is made by feeding X15-1 and X15-2 with 230 V (just one impulse is enough) having previously chosen the washing programme and pushed the button “SELECT” in order to be in START position.

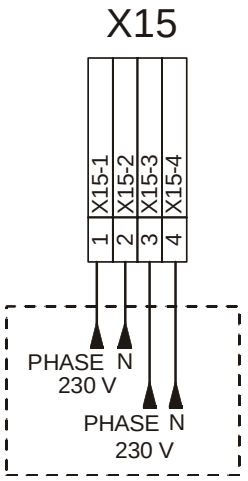
The function “servo-control pause” is made by feeding X15-3 and X15-4 with 230 V. The heating is cut off, the signal “servo-control pause” blocks the time deduction and the other units (rinse, emptying, spin, etc…) of the machine is still working.

When the electric signal disappears, the heating is back on.

Connector X15 on I/O CARTE no 1 of CLARUS

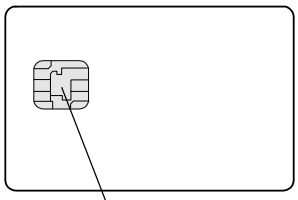
Exterior signal in 230 V :

- X15-1 and X15-2 putting into service by servo-control
- X15-3 and X15-4 heating is halted



Memory card

General introduction



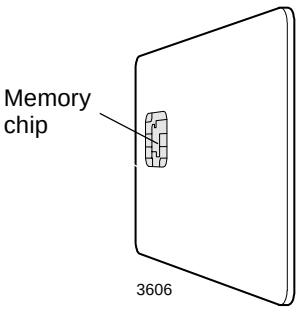
A memory card is a plastic card, the size of a credit card, with an electronic memory chip inside it. This memory card is capable of storing 10 to 15 wash programs of normal size. If the programs are mostly small ones, more of them can be stored, whereas larger programs will reduce the number which can be held by the memory card. Memory cards of this type can be used to :

- transfer wash programs from one machine to another
- run wash programs straight from the memory card
- transfer wash programs from a PC to a memory card and from a memory card to a PC (these procedures, and how to write a
- wash program on a PC, are described elsewhere)

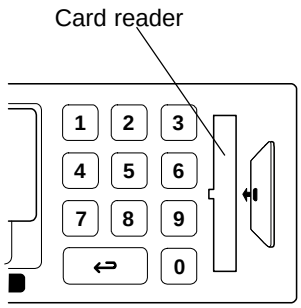
A program stored on a memory card may be given restricted-use status. This means that :

- The program cannot be deleted or copied to the program control unit of a washer extractor.
- You cannot alter the program or inspect the way it is written.
- To run the program you have to have the memory card and to insert it into the program control unit when the program is to be started.

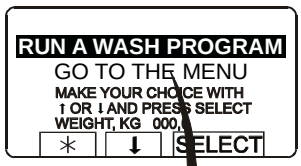
To select the « Memory card » function



Turn the memory card so its memory chip is at the far end, and on the left of the card...



...then insert the memory card into the program control unit.

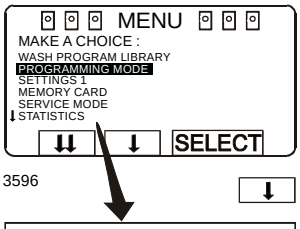


If this menu is not currently displayed :

Press ↩ repeatedly.

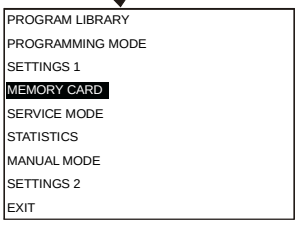
Press ⇩ to highlight « GO TO THE MENU ».

Press SELECT.



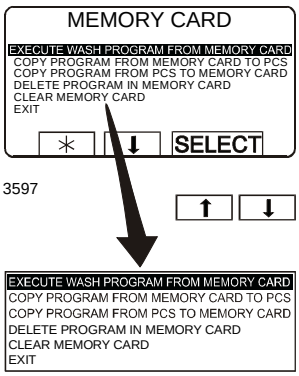
3596

Press ⇩ three times…



… to highlight « MEMORY CARD ».

Press SELECT.



Select the function required using the cursor keys.

SELECT **Press SELECT.**

"The "Memory card" functions

Run wash program straight from memory card (see section "To run a wash program straight from a memory card")

A wash program can be run from the memory card, without first being copied to the washer extractor. The memory card may be removed from the card reader after the program has started.

Programs on memory cards may have "restricted-use" status, which means that they can only be run straight from the memory card, not copied or modified.

Copy program from memory card to PCS (see section "To copy a program from a memory card to the machine´s program control unit")

One or more wash programs can be copied from the memory card to the memory chip in the machine's program control unit. Note that programs on the memory card with "restricted-use" status cannot be copied to the machine memory chip.

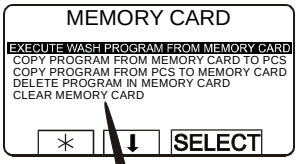
Copy program from PCS to memory card (see section "To copy a program from the program control unit to a memory card")

One or more wash programs can be copied from the memory chip in the machine's program control unit to the memory card. The memory card can hold 10 to 15 wash programs of normal size.

Delete program on memory card (see section "To delete a program on a memory card")

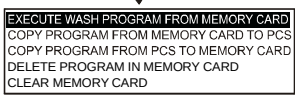
Clear memory card (see section "To delete all programs on a memory card")

To run a wash program straight from a memory card



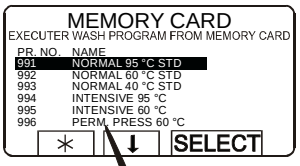
To access this menu, follow the instructions in section « To select the "Memory card" function ».

3598



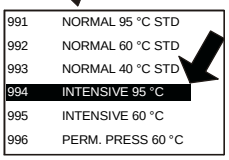
Highlight « EXECUTE WASH PROGRAM FROM MEMORY CARD » (press ⇧ if necessary).

Press SELECT.



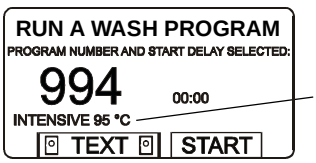
3607

If necessary, use ⇩ to…



… highligh the wash program required.

Press SELECT.



3608

Program name

If you want to see the description of the program (where available) :

Press TEXT.

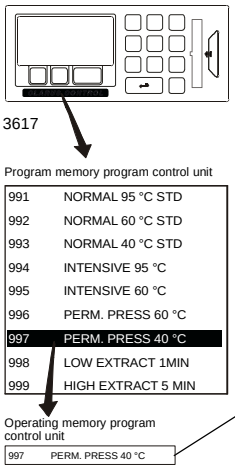
To start program.
Press START (see also section « To start the wash program »).

Once the program has started, the memory card may be removed from the card reader.

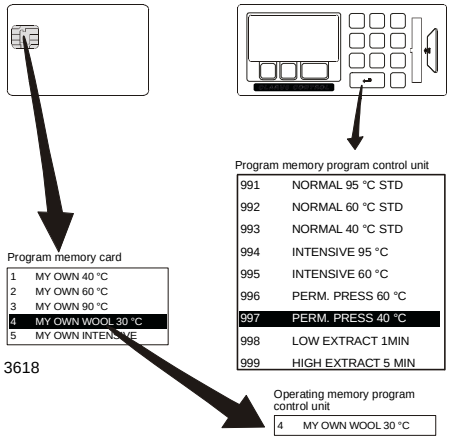
To run a program from the memory card

In broad terms, the program control unit has two different memories. One is a "**program memory**" where all its wash programs are stored, the other is an "**operating memory**, which is used to hold the program currently in use. The program control unit takes the instructions it needs to run the program from the operating memory.

When a wash program is started, the correct program is retrieved from the program memory and copied into the operating memory.

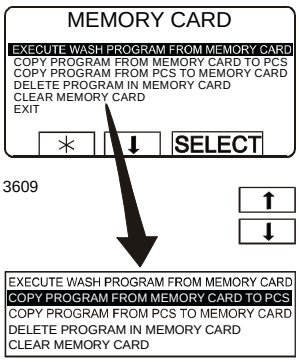


A parallel process takes place when a program is started from a memory card. In other words, the program is copied from the memory card into the operating memory, and the machine runs the program entirely from the set of instructions in the operating memory.



That is why you may remove the memory card from the card reader once the program has started. Once the program has ended it is erased from the operating memory.

To copy a program from memory card to the machine's program control unit



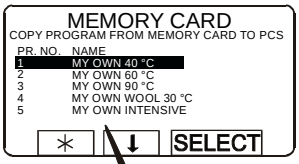
3609

To access this menu, follow the instructions in section « To select the "Memory card" function ».

Note that restricted-use programs on a memory card cannot be copied.

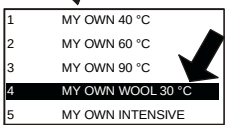
Highlight « COPY PROGRAM FROM MEMORY CARD TO PCS » (press ⇧ or ⇩ if necessary).

SELECT **Press SELECT.**



3610

If necessary, use ⇩ to…



...highlight the wash program required.

SELECT **Press SELECT.**

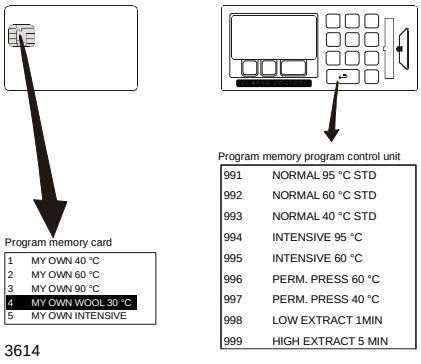
What is a restricted-use program ?

A wash program which has been created on a PC can be made a "restricted-use" program. This means that :

- The program cannot be deleted or copied to the program memory of a washer extractor.
- You cannot modify the program or examine its structure.
- To run the program you must have access to the memory card, and insert it into the card reader when the program is to be started.

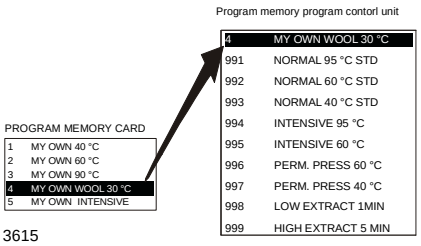
What happens when a program is copied ?

Both the memory card and the program control unit have memory chips capable of storing wash programs. The chip on the card can hold about 10 to 15 programs of normal size, while the chip in the program control unit has a capacity of several hundred programs.



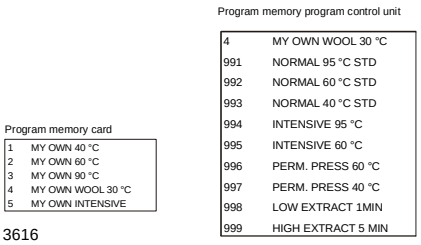
3614

When a program is copied from a memory card to the machine's program control unit, it is copied, not moved (not deleted from the card). A copy is transferred from the chip on the memory card to the storage chip of the machine program control unit.



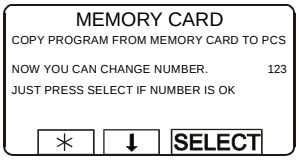
3615

The program remains on the memory card, but another copy of it has now been stored in the program control unit.



3616

Change program number when you copied a program from memory card to program control unit



3611

Choose 1 or 2 :

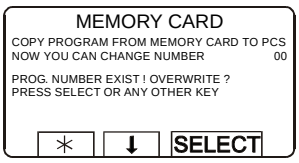
1 If you want to give the program a different program number (from the one it had on the memory card :

Use the numeric keys to enter the new program number, the press SELECT.

1 2 3
4 5 6
7 8 9
0

2 If the existing number is suitable :

SELECT **Press SELECT.**



4114

If the number yoy have choosen is already used :

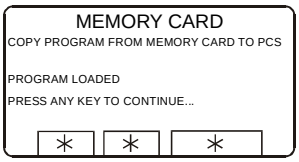
1 Select another number.

Enter the new number and press SELECT.

1 2 3
4 5 6
7 8 9
0

2 Erase the old program number.

SELECT **Press SELECT.**

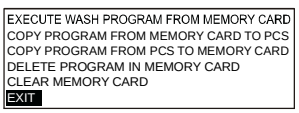


3612

After the program has been copied (it takes only a few seconds) the menu will look like this :

If you want to copy more programs :

Press any key to continue.



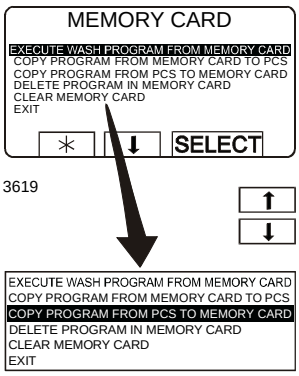
4115

When you have finished :

Press ⇩ repeatedly to highlight « EXIT ».

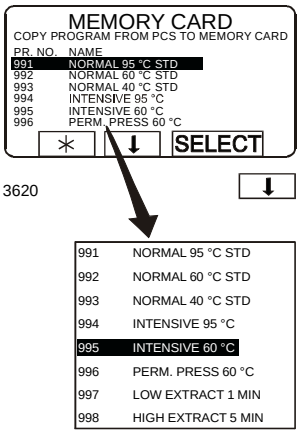
SELECT **Press SELECT .**

To copy a program from the program control unit to a memory card



Highlight « COPY PROGRAM FROM PCS TO MEMORY CARD » (press ⇧ or ⇩ if necessary).

SELECT **Press SELECT.**



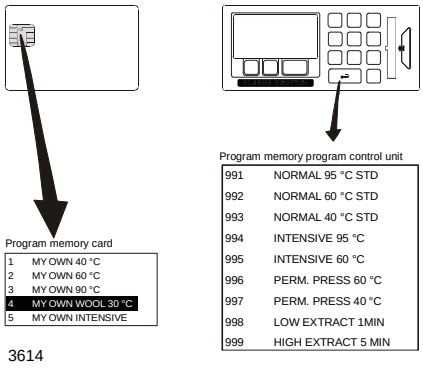
If necessary, use ⇩ to…

… highlight the wash program required.

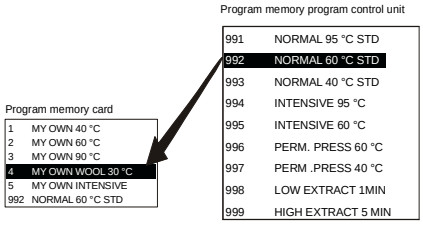
SELECT **Press SELECT.**

What happens when a program is copied ?

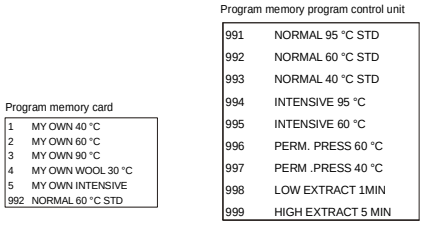
Both the memory card and the program control unit have memory chips capable of storing wash programs. The chip on the memory card can hold about 10 to 15 programs of normal size, while the chip in the program control unit has a capacity of several hundred programs.



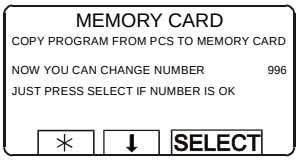
When a program is copied from the machine's program control unit to a memory card, it is copied, not moved (not deleted from the machine). A copy is transferred from the storage chip of the machine program control unit to the chip on the card.



The program remains in the program control unit, but another copy of it has now been stored on the card.



Change program number when you copied a program from program control unit to memory card



3623

Choose 1 or 2 :

1 If you want to give the program a different program number (from the one it had on the machine) :

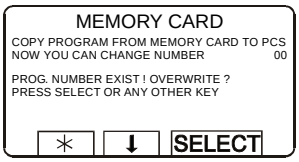
Use the numeric keys to enter the new program number, then press SELECT.

1 2 3
4 5 6
7 8 9
0

2 If the existing number is suitable :

SELECT

Press SELECT.



4114

If the number you have choosen is already used :

1 Select another number.

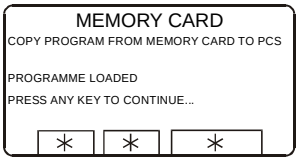
Enter the new number and press SELECT.

1 2 3
4 5 6
7 8 9
0

2 Erase the old program number.

SELECT

Press SELECT.

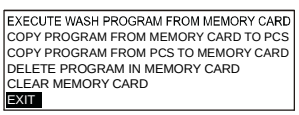


3624

After the program has been copied (it takes only a few seconds) the menu will look like this :

If you want to copy more programs :

Press any key to continue.



4115

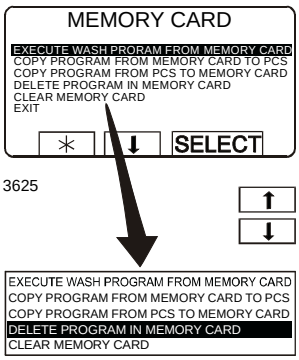
When you have finished :

Press ⇩ repeatedly to highlight « EXIT ».

SELECT

Press SELECT.

To delete a program on a memory card

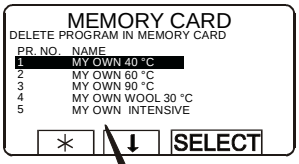


To access this menu, follow the instructions in section « To select the "Memory card" function ».

3625

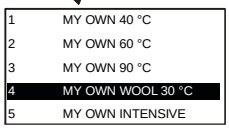
Highlight « DELETE PROGRAM FROM IN MEMORY CARD » (press ⇧ or ⇩ if necessary).

SELECT **Press SELECT.**



3626

If necessary, use ⇩ to…



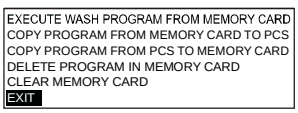
… highlight the wash program required.

SELECT **Press SELECT.**

The program will now be deleted from the memory card. This takes between 5 and 51 seconds.

If you want to delete more programs:

Continue in the same way as described above.



When you have finished :

Press ⇩ repeatedly to highlight « EXIT ».

4115

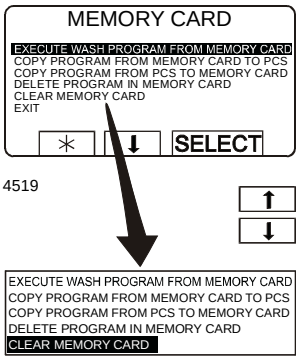
SELECT **Press SELECT.**

What is a restricted-use program ?

A wash program which has been created on a PC can be made a "restricted-use" program. This means that :

- The program cannot be deleted or copied to the program memory of a washer extractor.
- You cannot modify the program or examine its structure.
- To run the program you must have access to the memory card, and insert it into the card reader when the program is to be started.

To delete all programs on a memory card



4519

Note that restricted-use programs on a memory card cannot be copied.

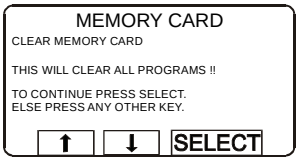
Highlight « CLEAR MEMORY CARD » (press ⇧ or ⇩ if necessary).

SELECT **Press SELECT.**

What is a restricted-use program ?

A wash program which has been created on a PC can be made a "restricted-use" program. This means that :

- The program cannot be deleted or copied to the program memory of a washer extractor.
- You cannot modify the program or examine its structure.
- To run the program you must have access to the memory card, and insert it into the card reader when the program is to be started.



3629

If you change yor mind and do not want to delete the entire memory card :
Press any key <u>other than</u> SELECT.

If you want to delete all programs on the memory card (with the exception of any restricted-use programs) :

SELECT **Press SELECT.**

Weighing equipment (optional equipment)

Description

Fig. 1

The weighing equipment comprises the following units :

- A scale unit located
- Four load cells, one in each corner of the frame
- Wiring

The weight of the wash load is registered by the four load cells, which send analogue signals to the scale unit. In the scale unit the signals are processed and converted to a weight value in an analogue-digital converter. The weight value is transmitted via a serial interface to the CPU board. The weight is then shown on the display.

Weighing the load allows the water level to be adjusted automatically according to the actual weight of the load, i.e. the water level is reduced during washing if the machine does not have a full load. The consumption of water and energy can thus be reduced.

Safety rules

The weighing equipment is a precision measuring device and must be treated as such.

- Never spray water directly onto the load cells and scale unit.
- The load cells are vulnerable to impact.
- The load cells are potentially vulnerable if welding is carried out. If welding has to be done on the washer extractor, attach the earth cable clamp as close as possible to the welding site.

After a power-cut

When the supply is restored after a power-cut, the weight display will show "0" if the load inside the drum is less than 6.25 kg (13.78 lb). If the load weighs more than 6.25 kg (13.78 lb), the true weight of the load will be shown.

Water level reduction

To achieve optimum load volumes, the weight of the load can be seen on the display while the machine is being loaded. If the machine does not have a full load, the water level will be reduced according to a water-level reduction table. The water level can never be any lower than the safety level plus the hysteresis.

Actual weight display

Fig. (2) The Clarus control unit automatically detects if weighing equipment is connected, and the actual (current) weight is shown on the display, on one line of the menu (normal display mode).

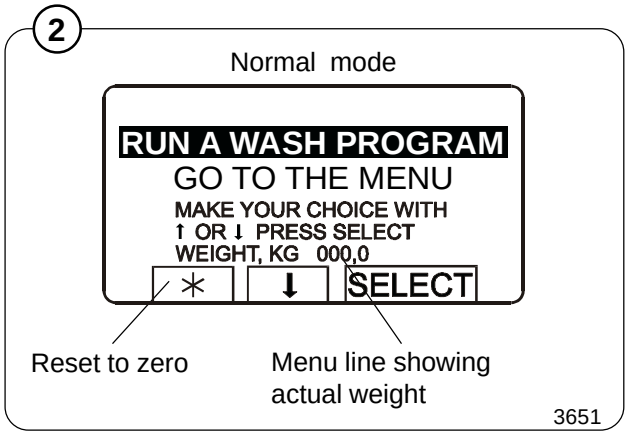
Fig. (3) When the machine starts to be loaded, the display switches to showing the actual weight in large numerals (weight display mode).

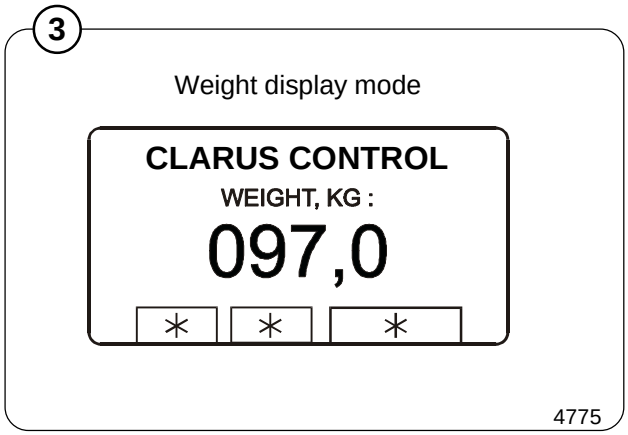
Normal display mode is resumed :

- If a new program number is entered using the numeric keys.
- If ↩ is pressed.
- Automatically after the time set via "Settings 1" under "Time for weight display".

While a wash program is running, you can switch to weight display mode by selecting "Show weight", see the section "Show weight" under "Machine operation".

The weight shown on the display will always be the net weight (achieved because the weighing equipment has been "tared"). A slight delay is built in to prevent the display from flickering.





Resetting the weighing equipment

If the display does not show the weight (in an empty machine) as zero after a program, the weighing equipment can be reset to zero using the TAR key.

For a description of the functions used to set and check the tare value, see the section headed "Scale adjustments" under "Machine operation".

Calibration the weighing equipment

The "Zero calibration" function is used to increase the accuracy of the weighing equipment. This should be done once a month. See the section headed "Zero calibration" under "Machine operation".

If a new scale unit is installed, it must be calibrated as described in the section "Calibrate the scale" under "Machine operation".

Checking accuracy of weighing equipment display

Twice a year you need to check that the weighing equipment is displaying the accurate weight, with the aid of an object of known weight. If the weighing equipment does not show the real weight of this object, you will need to follow the "Zero calibration" procedure, a function in the Clarus software. Follow the instructions under "Zero calibration" in the "Machine operation" section of the manual. If this is unsuccessful, the weighing equipment will have to be recalibrated using the "Calibrate the scale" function, as described under "Machine operation".

If the weighing equipment has a fault

Follow the troubleshooting procedure under the heading "Fault-finding, weighing equipment".

If you cannot rectify the problem with the help of that section, make a note of the weighing equipment version number before you contact the service department.

To find the weighing equipment version number, access the service program, select "Scale adjustments", then "Read version number".

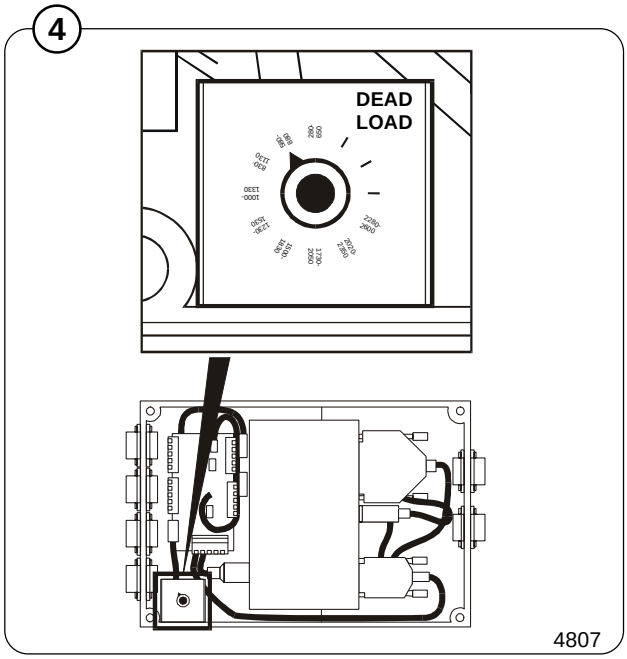
The dead load selector

Fig. 4

The dead load selector, located in the scale unit, is used for setting the machine's "dead load".

The dead load is the load (weight) to which the load cells are subjected before any load is placed in the wash drum. The dead load selector is set before the machine leaves the factory, and its setting should not normally be changed. The selector should be set to **1500-1380 kg** position (machine 690) or **1730-2050 kg** position (machine 890) or **xxxx-xxxx kg** position (machine 1080).

If calibration of the weighing equipment should fail, one possible cause can be that this selector is incorrectly set.

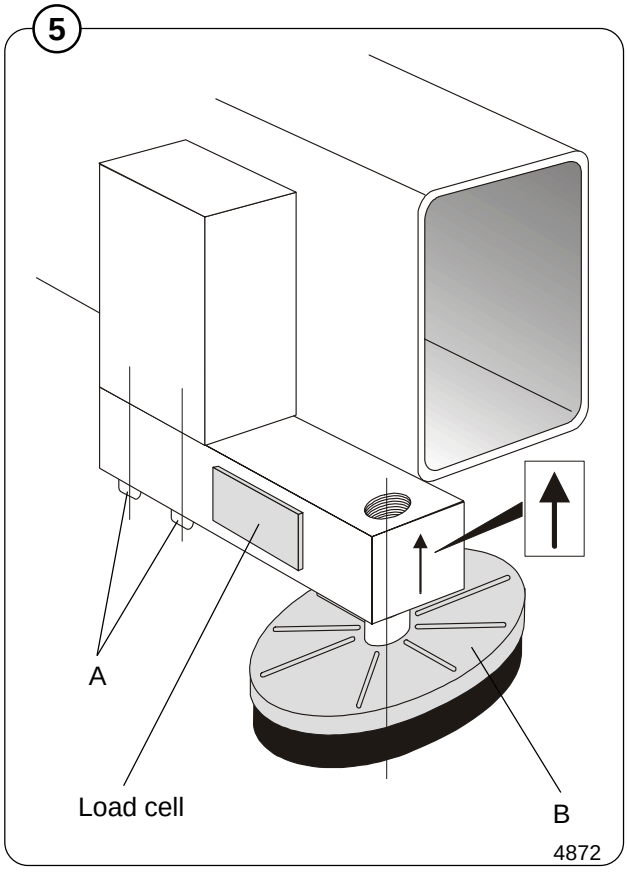


To replace a load cell

Fig. 5

- Use a suitable jack to lift under the frame at the corner where the load cell is to be replaced.
- Insert a suitable object as a chock beneath the frame, to remove risk of injury and machine damage.
- Disconnect the load cell cable at the scale unit.
- Remove the screws (A).
- Remove (B).
- Remove the faulty load cell and fit the new, assembly is reverse of disassembly.

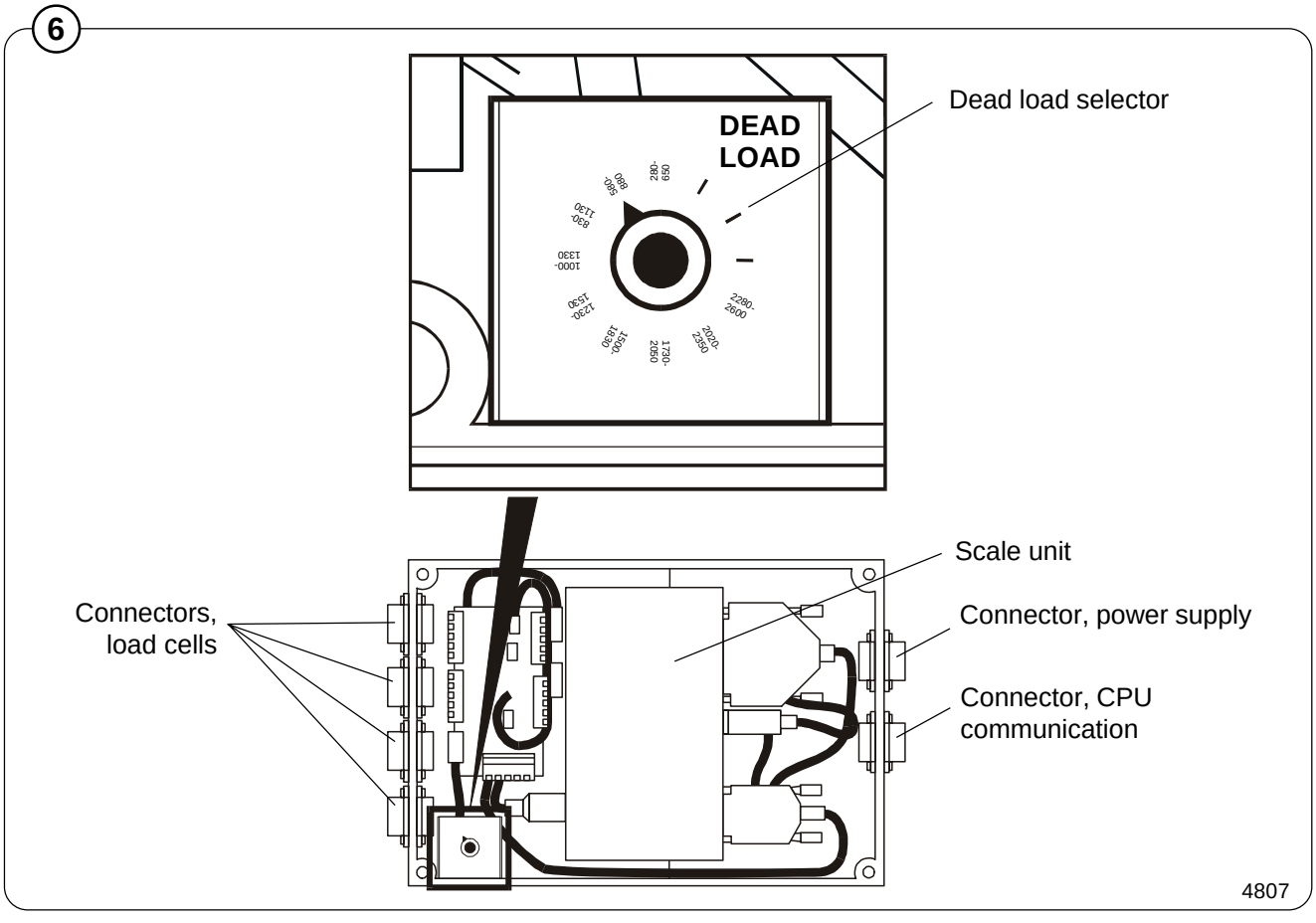
Install the new load cell as indicated by arrow on side of load cell !



To replace the scale unit

Fig. 6

- Remove the machine's side panel.
- Disconnect the six connectors to the scale unit.
- Remove the scale unit.
- Install the new scale unit, assembly in reverse order of disassembly.
- Check that the dead load selector is set to **1500-1380 kg** position (machine 690) or **1730-2050 kg** position (machine 890) or **xxxx-xxxx kg** position (machine 1080).
- Calibrate the weighing equipment, see "Calibrate the scale" under "Machine operation".



Component locations

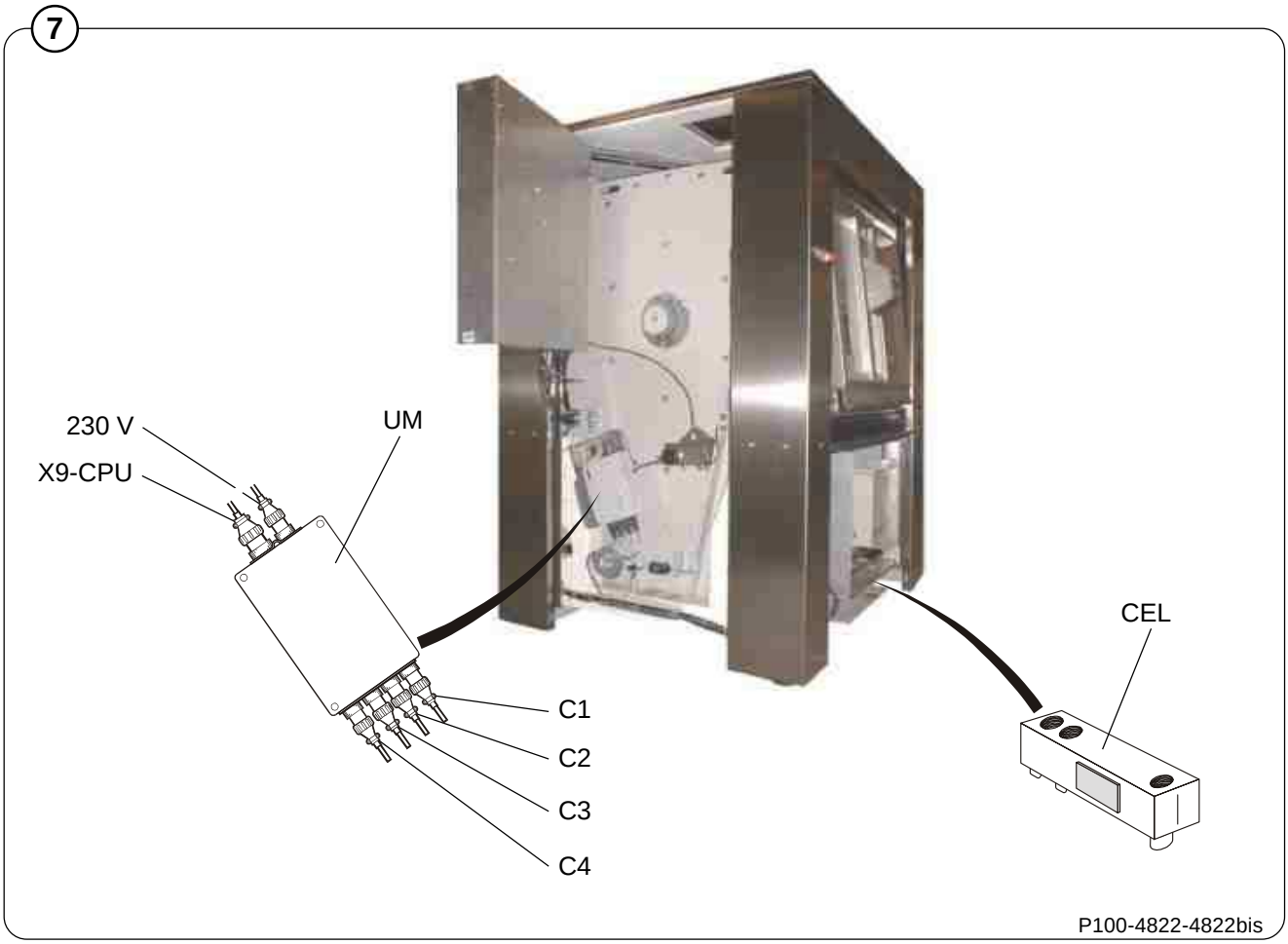


Fig. 7		
	UM	Scale unit
	CEL	Load cells
	Connectors	
	230 V	Voltage feed
	X9-CPU	Communication with CPU board
	C1-C4	Load cells

Fault-finding, weighing equipment

Error message on display :

Weight, in kg : 999,0 or -999,9

Probable cause :

The weighing equipment is overloaded/ "underloaded", i.e. the load cells are sending a signal which is too high/low to the scale unit. Probable cause is one or more load cells faulty. The dead load selector may be on the wrong setting. The machine may be incorrectly installed.

Fault-finding procedure :

- Check that all connections to the machine are flexible.

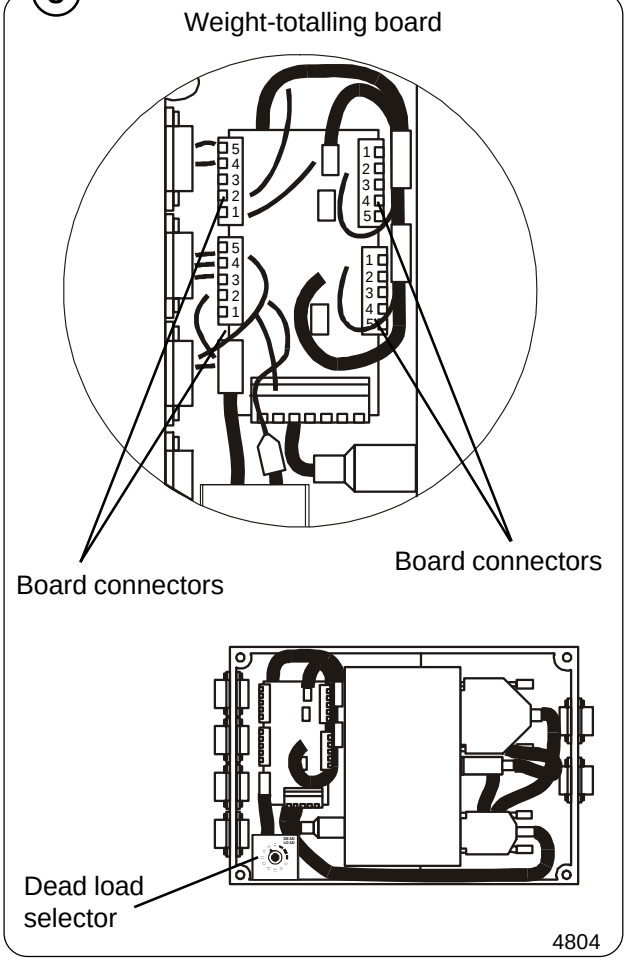
Fig. 8

- Remove the side panel. Check that the dead load selector is set to **1500-1380 kg** position (machine 690) or **1730-2050 kg** position (machine 890) or xxxx-xxxx kg position (machine 1080). If it is not, set it correctly and calibrate the weighing equipment according to "Calibrate the scale" under "Machine operation".
- If the weight displayed is -999.9, try following the "Zero calibration" procedure (described under "Zero calibration" in the "Machine operation" chapter).
- Remove the side panels and check that the load cells are unobstructed. Remove any mechanical obstructions.

Fig. 8

- Taking the load cell cables one at a time, disconnect the cable connecting each load cell to the scale unit. Continue one by one until a stable weight parameter is displayed (but not 999.9). When this stable parameter is displayed you will know which of the load cells must be faulty.

8



- If more than one load cell is faulty, the faulty cells can be identified using a multimeter on the scale unit weight-totalling board to check each cell in turn, as follows :
- Remove the four screws on the scale unit cover.
- Check that the four load cell cables are connected to the scale unit.
- Measure the voltage at the connectors on the weight-totalling board, between terminal 2 and 3 for each load cell. The normal value for an unladen machine is approx. 3-5 mV (DC). A value different from this indicates that the load cell is faulty.
- Replace the faulty load cell(s) as described under "To replace a load cell".

Menu line which should show actual weight not displayed.

Possible causes :

The option “DISPLAY WEIGHT ALLOWED” may be switched off (have the answer “No” alongside) in “Settings 1”. Possible fault in communication with CPU board or display. The fault can also be in the scale unit.

Fault-finding procedure :

- Check in "Settings 1" that the option "DISPLAY WEIGHT ALLOWED" has "Yes" alongside.
- Check that the cables/wiring for CPU communication and power supply are connected to the scale unit and in good condition.
- If the washer extractor appears to be working normally apart from the absence of weight parameter display, try replacing the scale unit as described under "To replace the scale unit".

If you suspect that the weighing equipment is not displaying accurate weight value.

Probable cause :

Probably a faulty load cell.

Fault-finding procedure :

- Place an object of known weight at one corner on top of the washer extractor. Check the weight shown on the display. Move the weight to each of the other corners of the machine in turn, checking the display each time. If one corner is different from the others, this will reveal which load cell is faulty.
- Check that the load cell in question is mechanically unobstructed, free of anything which could affect its normal functioning.
- Replace the load cell as described under "To replace a load cell".

Error message on display :

Failed. Press SELECT.

Possible causes :

Dead load selector or calibration switch incorrectly set. An incorrect calibration weight has been used for calibration.

Fault-finding procedure :

Fig. 9

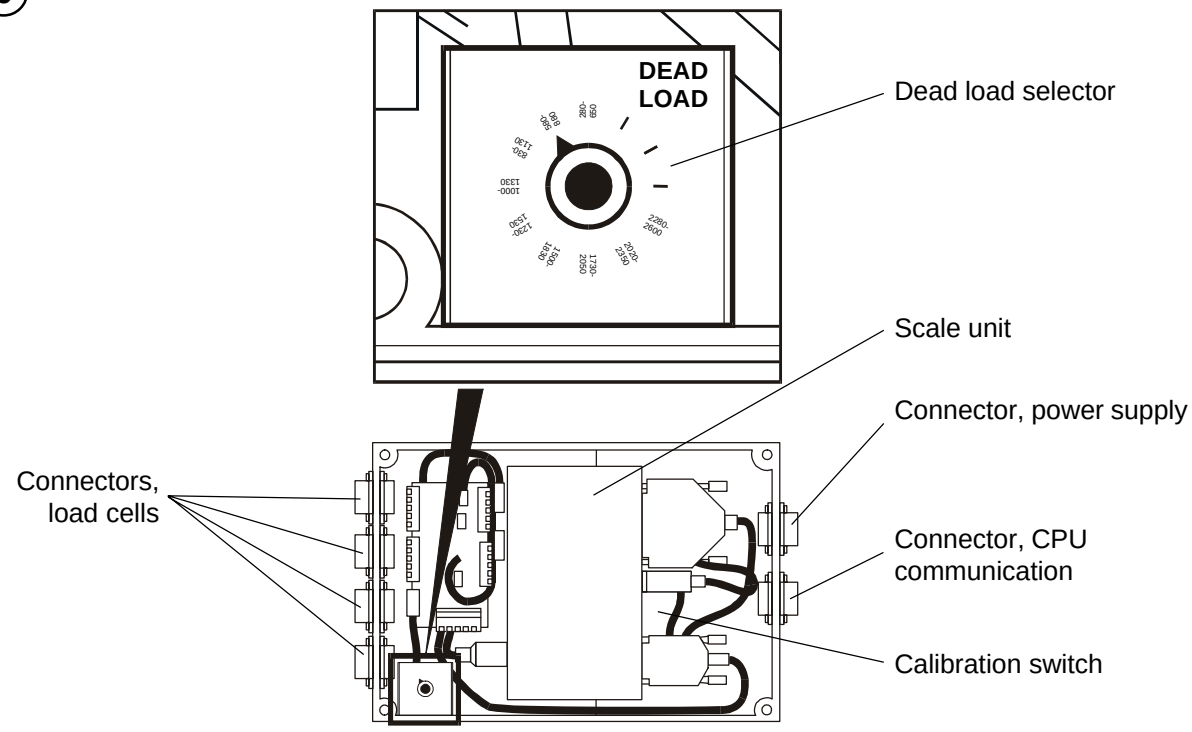
- Check that the dead load selector is set correctly. It should be set to **1500-1380 kg** position (machine 690) or **1730-2050 kg** position (machine 890) or **xxxx-xxxx kg** position (machine 1080).
- If you are or have recently been calibrating the weighing equipment, the calibration switch may be incorrectly set, or an incorrect calibration weight may have been used for calibration.

  Check that the calibration switch is set correctly. It should normally be set to NORM (normal). During calibration the switch should be set to CAL (calibrage).

  The calibration weight should be between 40 and 400 kg.

  If relevant/necessary, calibrate the weighing equipment, or follow the "Calibrate the scale" procedure under "Machine operation".
- Check that all cables/wiring to the scale unit are sound and correctly connected.

9



Information in display :

Function no allowed.

Probable cause :

A function has been selected in the program which cannot be carried out.

Fault-finding procedure :

- Check that the function in question is switched on under "Settings".
- Check that the cables for CPU communication, power supply and load cells are connected.
- Check that these cables are all in good condition.
- If any cable is faulty, replace it.

Information in display service program :

Weighing equipment not connected.

Probable cause :

CPU board not communicating with scale unit.

Fault-finding procedure :

- Check that the connectors for CPU communication, power supply and load cells are connected on the scale unit.
- Check that their cables are all in good condition.
- If any cable is faulty, replace it.

HACCP option (Hazards Analysis Critical Control Points)

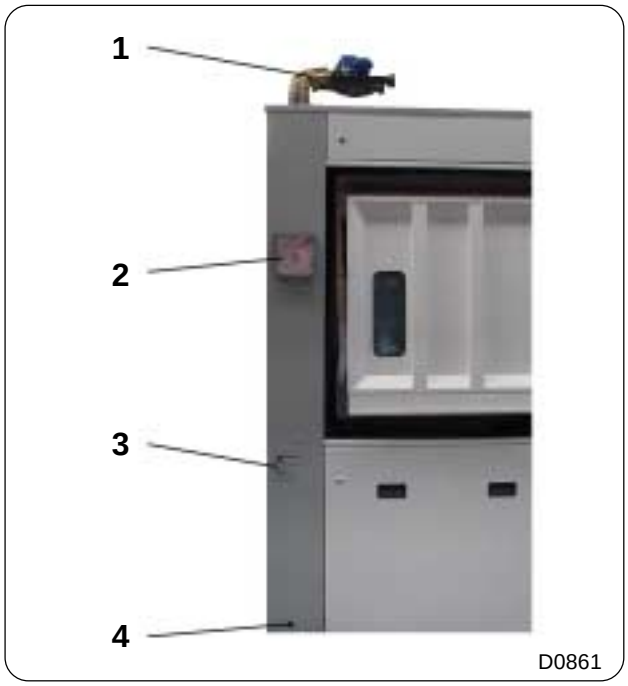
Traceability for quality control :

As a quality control option, all washer-extractors can be equipped for traceability to comply with HACCP method.

HACCP (Hazards Analysis Critical Control Points) is a very well known quality control method used in catering industry. It allows the recording of vital statistics to ensure the exactness of an achieved process in regards to its program.

The machine is equipped with :

1 - Watermeters on water inlets
2 - Temperature recorder
3 - 1/4 turn valve for bath analyses
4 - Automatic weighing system



Watermeters :

Water meter allowing to record the water consumption for each cycle. Recording water consumption must be manually made.

Temperature recorder :

Disk type temperature recorder allowing to draw the temperature curve of the wash cycle. (A pack of about 100 disks is provided with the recorder).

1/4 turn valve for bath analyses :

1/4 turn valve on machine’s outer drum allowing to manually withhold a sample of bath for analyses.

Automatic weighing system :

Internal load cells located in the feet of the machine weigh the content of the drum as it is being loaded.

The actual weight of the wash load is displayed on the Clarus Control panel. It eliminates time and efforts of weighing each load on scale.

Replacement of the disk

The recorder disk must be changed after three or four using days (following the use).

To achieve its replacement, please follow the instructions.

A- Open the transparent cover with the key

B- Delicately raise the needle (1)

C- Unscrew the central nut (2)

D- Remove the old disk (3)

E- Put the new disk and center it carefully on the shouldered axis

F- Slide the edge of the disk under the three peripheral pin (4)

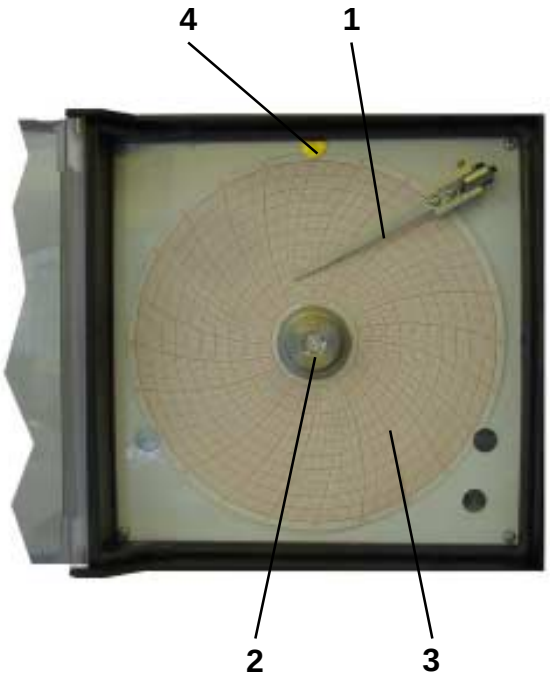
G- Lower the needle

H- Screw the central nut but not completely

I- Turn manually the disk to place the number for “0” (zero) under the superior pin

J- Block the central nut

K- Close and lock the cover



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Safety

Restarting the machine

After any stoppage of the machine, either due to power failure, emergency stop, motor safety, the machine can only be restarted after having pressed key "ON".

Drum doors

All of the different parts of the machine stop working automatically as soon as one of the drum doors is opened. The doors can only be opened if the cage is at a complete standstill and the programmer on end of cycle.

The drum door is kept opened by gas jacks.

On barrier machines, the loading and unloading doors cannot be opened at the same time.

For barrier machines, the unloading door opening is possible only if the wash program has been completely achieved. This guarantee the barrier process for a decontamination wash program in particular (time, temperature, water levels and detergents' inputs have been respected).

Motor protection

The motors driving our machines are of asynchronous rotor type with short circuit. They are protected by a frequency converter. A circuit breaker protect the frequency converter.

Level

Our machines are equipped with a pressure switch which controls the level of water in the machine according to the different programmes, prevents heating from taking place in the absence of water (minimum water level authorized : 10 units), and prevents from opening the door if the water level is higher than low level.

Washing-extraction

A safety device ensured by a electronic temporized relay adjusted at 40 seconds prevents the cage doors from being opened after its complete stop. This safety device is doubled by a rotation detector checking the total stop of the drum.

Unbalance safety device

A safety device stops the machine if the load is unbalanced (uneven distribution of linen at start of extraction).

Cage doors

If the cage doors are opened, the revolving drum is blocked mechanically.

Drum doors

Drum doors are equipped with "securit" type small windows, make of 2 tempered glasses separated by a plastic film, avoiding glass projection in case of thermic or physical shock.

Emergency stop

An emergency stop button is provided on the loading and unloading sides of the barrier machines.

Accessibility

All of the casings can be dismantled by means of a specially designed tool.

Safety

Gas heating

The gas burners are ignited and the flamme controlled by an electronic conrol box which ensures perfect security in the case of bad draught, disruption of gas flow, power cuts, etc...

Operating incidents

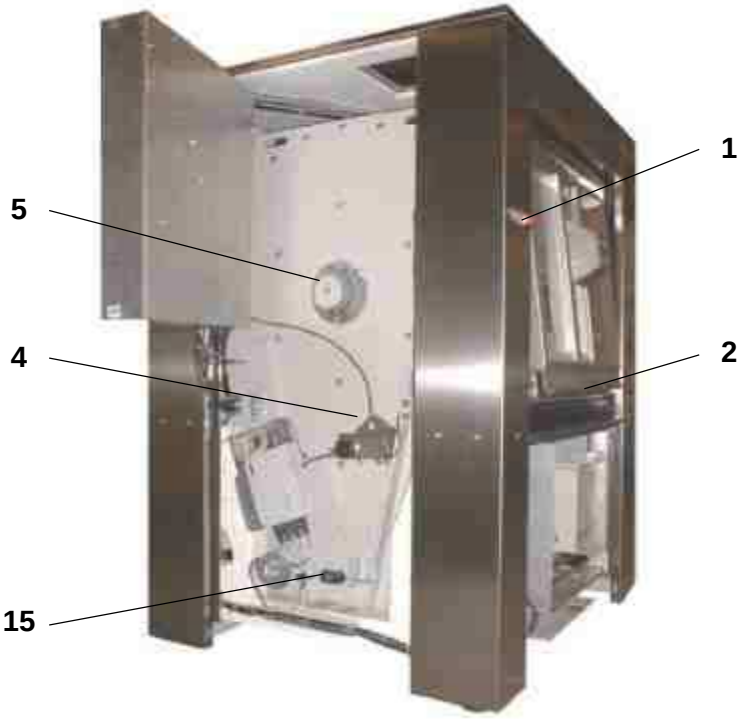
In order to limit the risk of failure in the electronic controls of the programming unit of the machine, the machine should be earthed. Should interferences happen, the first thing to be checked is the earthing of the machine.

The programming unit permanently checks the machine, regarding both safety and working aspects. To make the fault finding easier, the display window indicates in clear text the origin of the failure, or the reason why the particular function cannot be used. The table below gives for each problem detected the message of the machine and the solutions to be brought.

Error/Function	Cause	Action
NO WATER Water level has not reacher set level within set time.	- Electrovalve's filters are blocked.	- Clean electrovalve's filters.
	- No water in main supply.	- Check water in main supply.
	- Manual water valves (taps) are close. - Electrovalves are faulty.	- Open taps. - Check function of electrovalves.
	- Drain valve is open.	- Check function of drain valve and compressed air inlet.
	- Level tube is faulty or not come loose from mother board. - Level detection function on CPU PCB faulty.	- Check that level tube is sound and his raccordement. - Replace PCB.
DOOR OPEN **DOOR UNLOCKED** Signal from microswitch which detects when the door is locked absent at program start.	- Door not locked.	- Test whether door really locked.
	- Fault in door lock switch, in wiring faulty or in compressed air.	- Open the door and switch off power to machine. Wait a minute or so, switch on power supply, close door again and try restarting. - Check compressed air inlet. - Check wiring or replace door lock as appropriate.
	- The PCB is faulty.	- Replace PCB.
NTC LOW TEMP. Temperature sensor indicating a temperature below lowest allowable value.	- This suggests open circuit (continuity fault) in sensor or wiring.	- Check the wiring temperature sensor and replace as appropriate.
	- Temperature sensor faulty.	- Replace temperature sensor.
	- Fault in temperature sensing device on CPU PCB.	- Replace PCB.

Error/Function	Cause	Action
NTC HIGH TEMP.		
Temperature sensor indicating a temperature above highest allowable value.	- This suggests short-circuit in sensor or wiring.	- Check the wiring temperature sensor and replace as appropriate.
	- Temperature sensor faulty.	- Replace temperature sensor.
	- Temperature detection function on CPU PCB faulty.	- Replace PCB.
WATER IN DRUM		
The water level is higher than the EMPTY level at start of program.	- Waste water collector might be blocked.	Clean waste water collector.
	- Drain valve, wiring faulty or compressed air inlet.	- Check drain valve functioning.
	- Level tube probably blocked.	- Clean or replace level tube. Clean connection of the water level control device.
	- Level detection function on CPU PCB faulty.	- Replace PCB.
	- Air vent blocked.	- Clean air vent.
MACHINE OVER-FILLED		
The water level is above the set safety level during program operation or manual operation.	- Transient fault or water has been added manually.	- Drain machine then restart a program or change the level in the manual program.
	- Electrovalves are faulty.	- Check function of electrovalves.
	- Level detection function on CPU PCB faulty.	- Replace PCB.
NO HEATING		
Rate of temperature incease in water slower than minimum value allowed.	- Bad water seal of the drain valve.	- Check water seal of the drain valve.
	- Elements faulty.	- Switch off power supply at wall switch. Measure resistance of elements to see if any element is faulty (open circuit).
		- Replace faulty element.
	- Leak at water supply.	- Check seals of water electrovalves.
	- Fault in wiring between contactor and element(s) or heating contactor faulty.	- Check wiring and replace the heating contactor.
	- Temperature detection function on CPU PCB faulty.	- Replace PCB.
NO MOTOR COMM.		
Communication between PCU and frequency converter interrupted or disturbed.	- Transient fault. No action required.	- Turn the machine's wall switch off and on again. Start a program.
	- Frequency converter faulty.	- Check the frequency converter.

Error/Function	Cause	Action
NOT DRAINED		
The water level is higher than the EMPTY level after drain sequence.	- Programmed drain time too short.	- Increase drain time.
	- Level tube probably blocked.	- Clean or replace level tube. Clean connection of the water level control device.
	- Drain valve or compressed air inlet.	- Check drain valve functioning and compressed air inlet.
	- Level detection function on CPU PCB faulty.	- Replace PCB
IMBALANCE SENSOR		
The unbalance safety device has been activated before spinning.	- The unbalance safety contact has been activated for at least 5 seconds during washing before a distribution.	- Turn the machine's wall switch off and check unbalance safety contact.
	- The unbalance safety contact fautly or a suspension spring is broken.	- Check suspension.
	- Bad loading of machine.	- Correctly load the drum or put linen in several nets.
DOOR LOCK		
signal absent from door status switch, although door is locked.	- Transient fault. No action required.	- Check if the door is locked. - Open the door and switch off power to machine. Wait a minute or so, switch on power supply, close door again and try restarting.
	- Fault in door lock switch, in wiring faulty or compressed air inlet.	- Check wiring or replace door lock as appropriate. Check the compressed air inlet
	- The PCB is faulty.	- Replace PCB.
I/O COMMUNICATION		
Communication between the CPU board and one of the I/O boards disturbed or lost.	- Transient fault. No action required.	- Turn the machine's wall switch off and on again. Start a program.
	- The PCB is faulty.	- Replace PCB.
MOTOR TOO HOT		
The frequency converter has detected a high temperature of the motor.	- The motor's fan does not cool down anymore.	- Check the direction of rotation of the fan. - Clean the grid of the fan. - Replasse the fan.
	- Internal fault in motor causing high temperature.	- Replace the motor.
EMERGENCY STOP		
The emergency stop button has been pressed.	- Abnormal or dangerous running of the machine.	- After the problem which caused the emergency stop has been put right, reset the emergency stop button by turning it until it pops back out. - Check wiring.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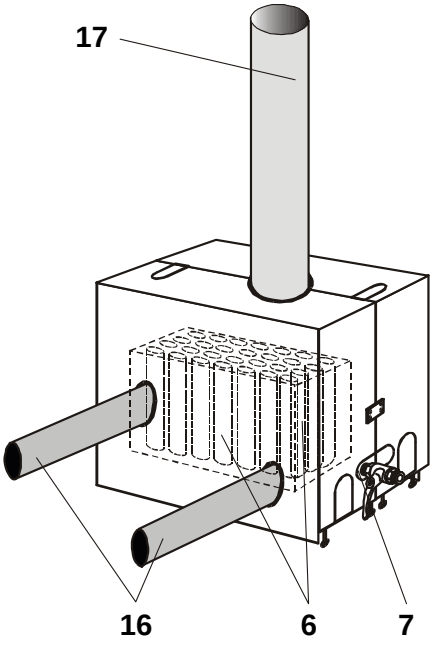
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12

Maintenance

CAUTION

Complete the washing cycle, unload the machine and shut off the power supplies (water, gas, electricity, steam) before any maintenance or repair intervention is carried out.

DAILY

1 Check that the "emergency stop button(s)" work correctly.

2 Check that the opening safety devices of the drum door work correctly.

3 Clean the detergent container (rinse the inside of the container with water).

MONTHLY

4 Clean the connection and the water level pipe on the drum (do not blow i the tube towards the CPU).

5 Grease the drum bearings (2 greasing point on each bearing). Use the right pump and grease by slow and not brutal injections. Use lithium soap grease, drop point 190°C (374°F) and penetration 250 / 300 (see lubrication table in the following pages).

6 Check the pipes of the heating rack. Clean if necessary. The frequency of your visits should depend on the degree of deposits.

Nota : the gas exchanger never completely drains from its water ; because the position of the machine's connections are higher than the exchanger's.

Every month, it is then necessary to run a special scaling programme (antiliming) with a rinse making sure that the circulation pumps runs, i.e. : with a programmed temperature.

Maintenance of the gas exchanger

a) Carry out a scaling cycle : the dosage will depend on product used.
Example : Horolith C

- dose : 5 % per litre of water
- cycle length : 5-10 min at washing speed at 60°C (140°F)

b) Carry out 2 cold rinses for 5 minutes at high level.

7 Clean the gas burners

EVERY SIX MONTH

8 Check the tension and condition of the cage driving belts.

9 Check the connections of the electric elements (for electric heating).

10 Check the condition and fixing of the flexible steam pipe and clean the filter (for steam heating).

11 Check the bellow's condition and the collar's squeezing.

12 Check the squeezing of the electrical connections on the main switch and the electric heating contactor.

13 Check and clean if necessary the valve's filters.

14 Scale the heating elements using the appropriate antiliming agent, and adapt the frequency of these scales operations regarding to your real need.

15 Check the good running of the unbalance switch during an extraction : the machine should stop when the switch is manually actioned.

16 Check the pipes' condition between the gas exchanger and the washer-extractor.

EVERY YEAR

17 Sweep the smoke tubes of the heating box and the exhaust pipes of burnt gas (for gas heating).

CAUTION

To ensure that your machine gives the very best service, please take care that maintenance is carried strict accordance with the instructions above mentioned.

Frictional electricity
Some textiles may generate frictional electricity causing damages when calendering. In most cases, this can be avoided by using at the last rinse a softener with an antistatic agent.
Example :
HENKEL : Yrodoux, Pirol, Prilan
ECOLAB : Orix doux soft, soft VI
COLGATE : Soupline
LEVER INDUSTRY : Cajoline, Ago douceur, Claradoux, Clarasouple, etc.

Chlorine
Chlorine introduced in a rinsing bath at a temperature of more than 40°C (104°F) affects stainless steel.
The chlorometric degree should be between 47° and 50°.
(1° chlorometric degree corresponds to 3.17 g (0.11 oz) of active chlorine).
The chlorine concentration should not exceed the ratio indicated, or the stainless steel may be affected. Check the concentration ratio of your products.
The javellization should be of 10 to 15 cm^3 / kg (0.28 to 0.42 cu in/lb) of linen.

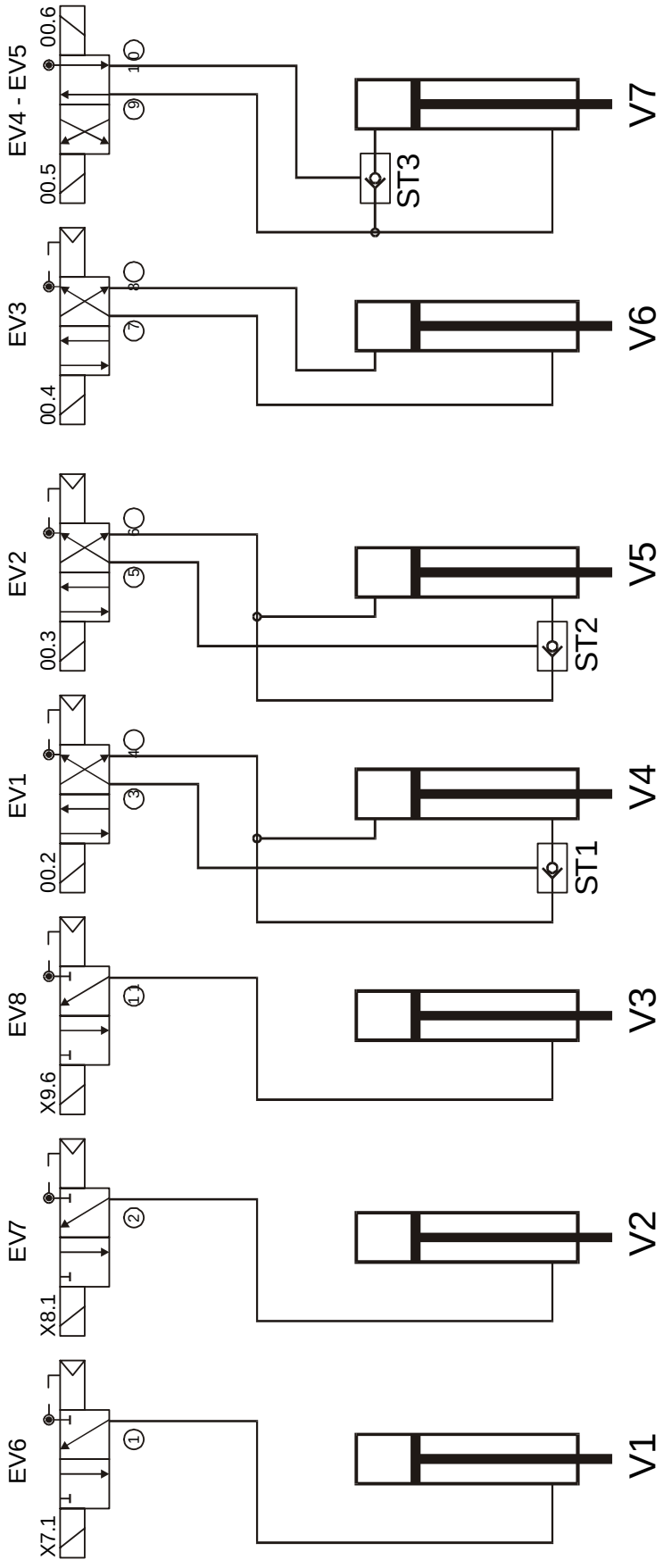
Colorants

Do not input colorant in the machine with very hot water. Very hot water react with the colorant, which creates a very corrosive solution. The colorants must be input with cold water or warm water which temperature doesn't exceed 50°C (122°F).

t0130gb

LUBRICATION TABLE

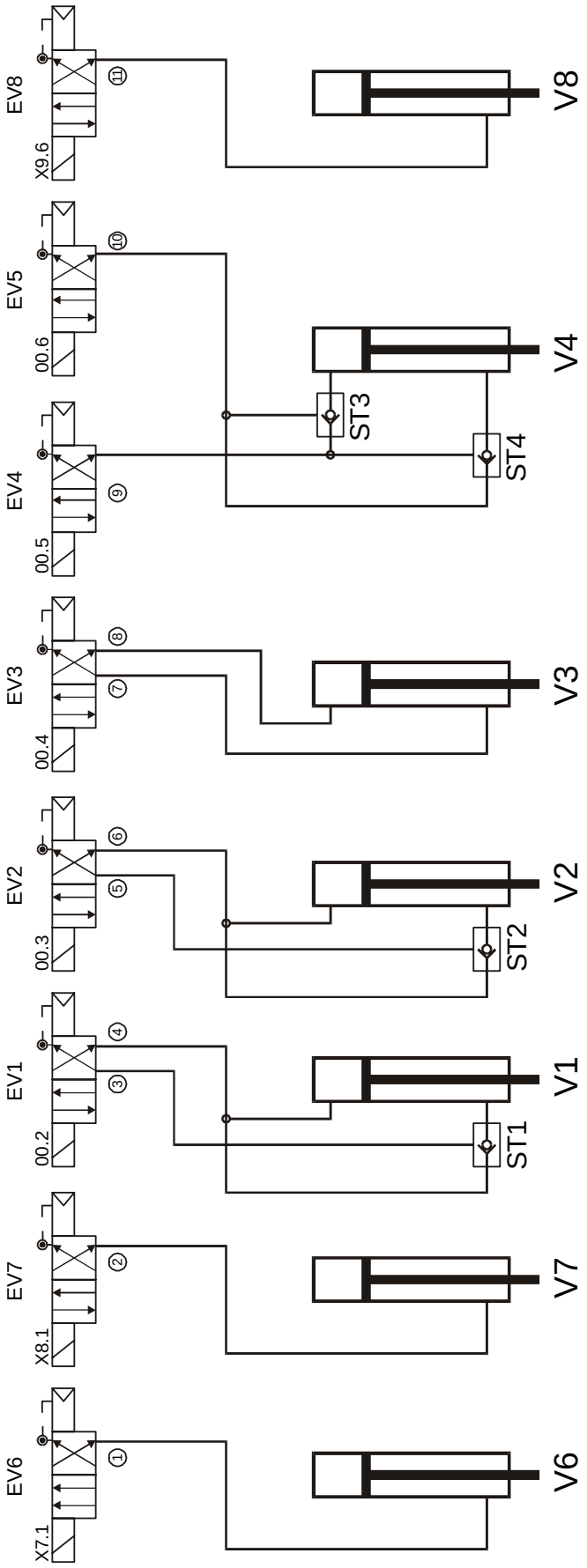
USES	Rolling bearings Bearings	Rolling bearings Bearings high temperature	Assembly paste (fretting corrosion)	Bare gears Chains shafts Thread Slides	Flange joints Union pipes Steam circuits	Reducers with wheels and screws	Reducers with gears	Circuits and pneumatic devices
TYPES OF LUBRICANTS AND STANDARDIZATION	Lithium soap grease	Lithium soap grease + silicone oil	Lithium soap paste + mineral oil + mineral solid greases	Lithium soap grease with MO SE additive	Graphite grease mini 60% graphite special leakproof	Extreme high pressure oil	Extreme high pressure oil	Inhibited oil SAE5
	Grade ISO NLGI 2	Grade ISO NLGI 3	Grade ISO NLGI 1	Grade ISO NLGI 2	Grade ISO NLGI 2	Grade ISO VG 150	Grade ISO VG 220	Grade ISO VG 22
TEMPERATURE LIMIT RANGE	- 20°C + 140°C	- 40°C + 200°C	- 20°C + 150°C	- 20°C + 135°C	- 30°C + 700°C	0°C + 100°C	0°C + 120°C	- 10°C + 65°C
RECOMMENDED	ALVANIA R2	NTN SH 44 M	ALTEMP Q.NB.50	MI-SETRAL 43N		REDUCTELF SP150	REDUCTELF SP220	LUBRA K ATL SAE5W
CODE PRODUCT	96011008	-	96011014	96011000	96011004	96010001	96010004	96010030
CORRESPONDENCE ANTAR	ROLEXA 2			EPOXA MO 2		EPONA Z 150	EPONA Z 220	MISOLA AH
BP	LS EP2					ENERGOL CRXP 150	ENERGOL CRXP 220	SHF 22
CASTROL	SPEEROL EP 2					ALPHA SP 150	ALPHA SP 220	
ELF	EP2			STATERMA MO 10		REDUCTELF SP 150	REDUCTELF SP 220	SPINEF 22
ESSO	BEACON EP2			MULTI PURPOSE GREASE MOLY		SPARTAN EP 150	SPARTAN EP 220	SPINESSO 22
FINA	MARSON EP2					GIRAN SR 150	GIRAN SP 220	
GBSA					BELLEVILLE N			
GRAFOIL					GRACO AF 309			
KLUBER	CENTOPLEX 2	UNISILKON L50Z	ALTEMP Q.NB.50	UNIMOLY GL 82	WOLFRACOAT C	LAMORA 150	LAMORA 220	CRUCOLAN 22
MOBIL	MOBILUX					MOBILGEAR 629	MOBILGEAR 630	DTE 24
KERNITE	LUBRA K LC			LUBRA K MP		TOP BLENB ISO 80W90	TOP BLEND ISO 220	LUBRA K ATL SAE 5W
SETRAL				MI-SETRAL 43N				
SHELL	ALVANIA R2			RETINA AM		OMALA 150	OMALA 220	TELLUS 22
TOTAL	MULTISS EP2					CARTER EP 150	CARTER EP 220	EQUIVIS 22
MOLYKOTE		MOLYCOTE 44	PATE DX					
OPAL	GEVAIR SP			SUPER MOS 2		GEAROPAL GM 65 ISO 150	GEAROPAL GM75 ISO 220	HYDROPAL HO 110 HM ++22
ITECMA	GRL-ULTRA	VULCAIN		GMO	LHT-C	DURAGEAR 80 W 140		AEROSYN


EV4 - EV5
00.6
00.5
10
9
ST3
V7
EV3
00.4
8
7
V6
EV2
00.3
6
5
ST2
V5
EV1
00.2
4
3
ST1
V4
EV8
X9.6
11
V3
EV7
X8.1
2
V2
EV6
X7.1
1
V1

31100276

PNEUMATIC DIAGRAM
Diagram no. 31100276
with "Parker" pilot valves

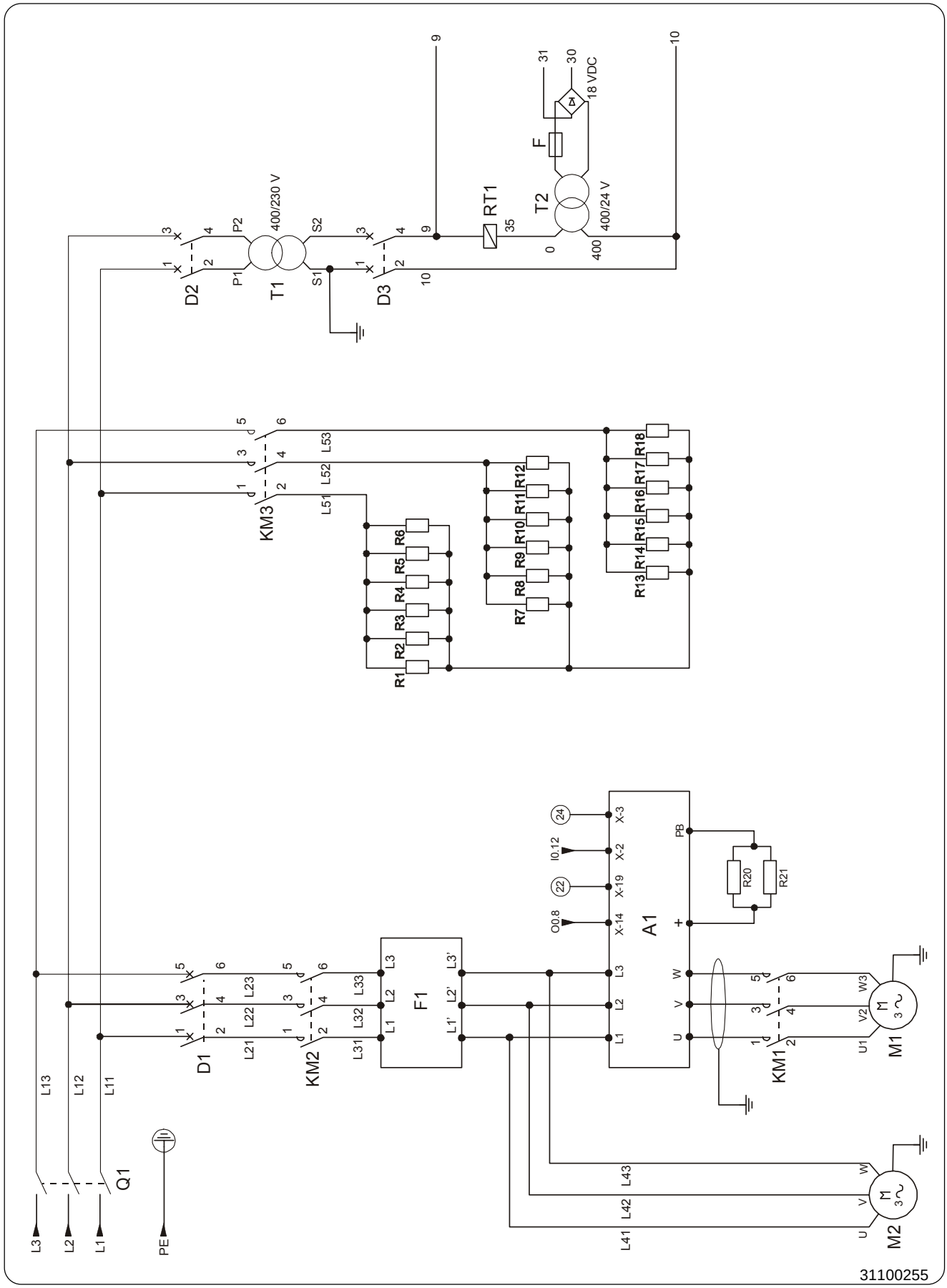
EV1	Drum door unlocking 4/2 monostable pilot valve, loading side
EV2	Drum door unlocking 4/2 monostable pilot valve, unloading side
EV3	Cage doors unlocking 4/2 monostable pilot valve, unloading side
EV4-EV5	Cage locking/unlocking 4/2 bistable pilot valve
EV6	3/2 monostable pilot valve for drain valve no. 1
EV7	3/2 monostable pilot valve for heating valve
EV8	3/2 monostable pilot valve for drain no. 2 (optional)
ST1	Pilot stop-jack for loading door unlocking
ST2	Pilot stop-jack for unloading door unlocking
ST3	Pilot stop-jack for cage door unlocking
V1	Drain jack no. 1
V2	Steam valve jack or thermic fluid
V3	Drain jack no. 2 (optional)
V4	Loading door unlocking jack
V5	Unloading door unlocking jack
V6	Cage doors unlocking jack (optional)
V7	Cage locking jack


EV8
X9.6
11
V8
EV5
00.6
10
EV4
00.5
9
ST3
ST4
V4
EV3
00.4
8
7
V3
EV2
00.3
6
5
ST2
V2
EV1
00.2
4
3
ST1
V1
EV7
X8.1
2
V7
EV6
X7.1
1
V6

31100276A

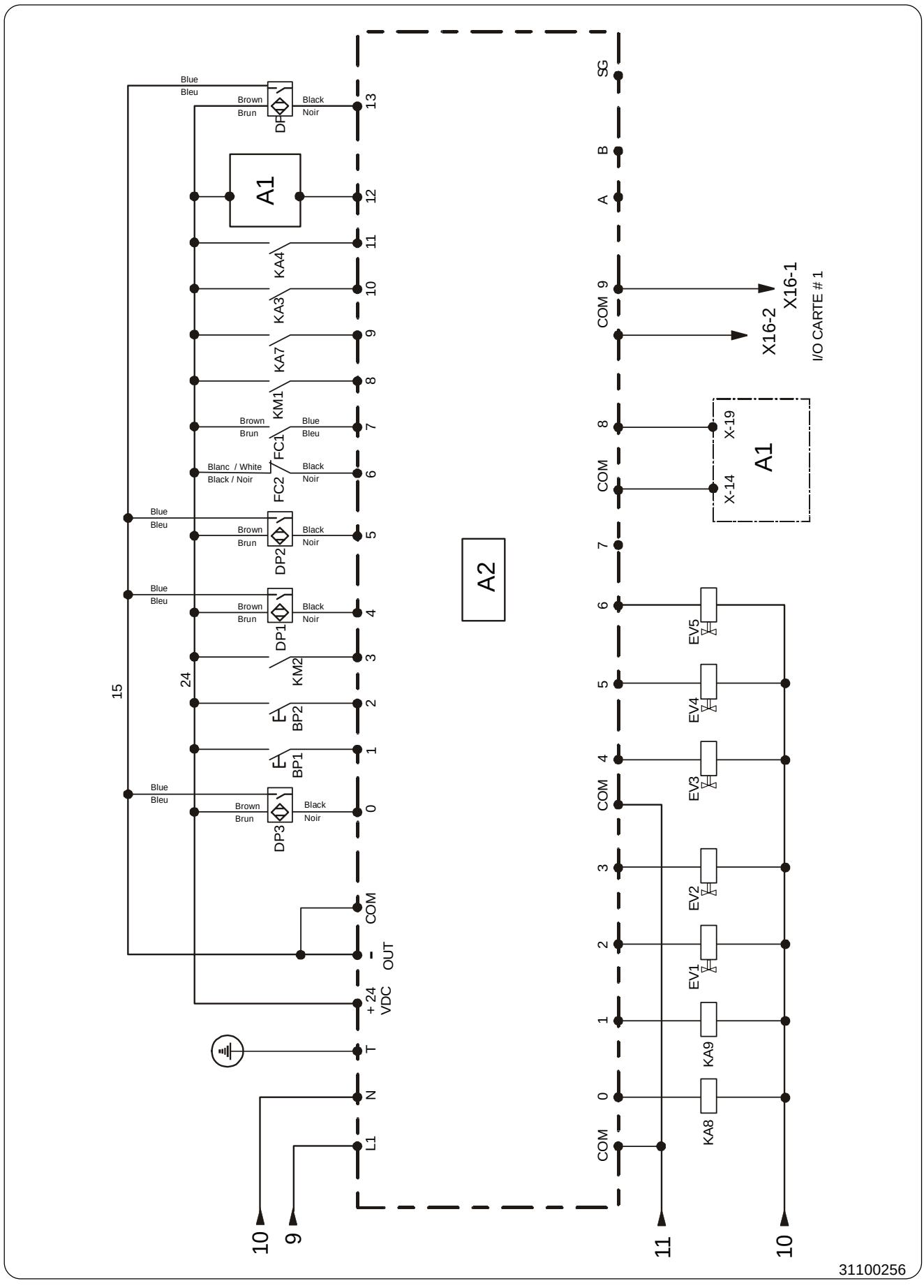
PNEUMATIC DIAGRAM
Diagram no. 31100276A
with "Burkert" pilot valves

EV1	Drum door unlocking 4/2 monostable pilot valve, loading side
EV2	Drum door unlocking 4/2 monostable pilot valve, unloading side
EV3	Cage doors unlocking 4/2 monostable pilot valve, unloading side
EV4-EV5	Cage locking/unlocking 4/2 bistable pilot valve
EV6	3/2 monostable pilot valve for drain valve no. 1
EV7	3/2 monostable pilot valve for heating valve
EV8	3/2 monostable pilot valve for drain no. 2 (optional)
ST1	Pilot stop-jack for loading door unlocking
ST2	Pilot stop-jack for unloading door unlocking
ST3-ST4	Pilot stop-jack for cage door unlocking
V1	Loading door unlocking jack
V2	Unloading door unlocking jack
V3	Cage doors unlocking jack (optional)
V4	Cage locking jack
V6	Drain jack no. 1
V7	Steam valve jack or thermic fluid
V8	Drain jack no. 2 (optional)


L3
L2
L1
PE
Q1
L13
L12
L11
D1
KM2
F1
KM3
T1
D2
D3
RT1
T2
F
400/230 V
400/24 V
18 VDC
A1
KM1
M1
M2
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R20
R21
31100255

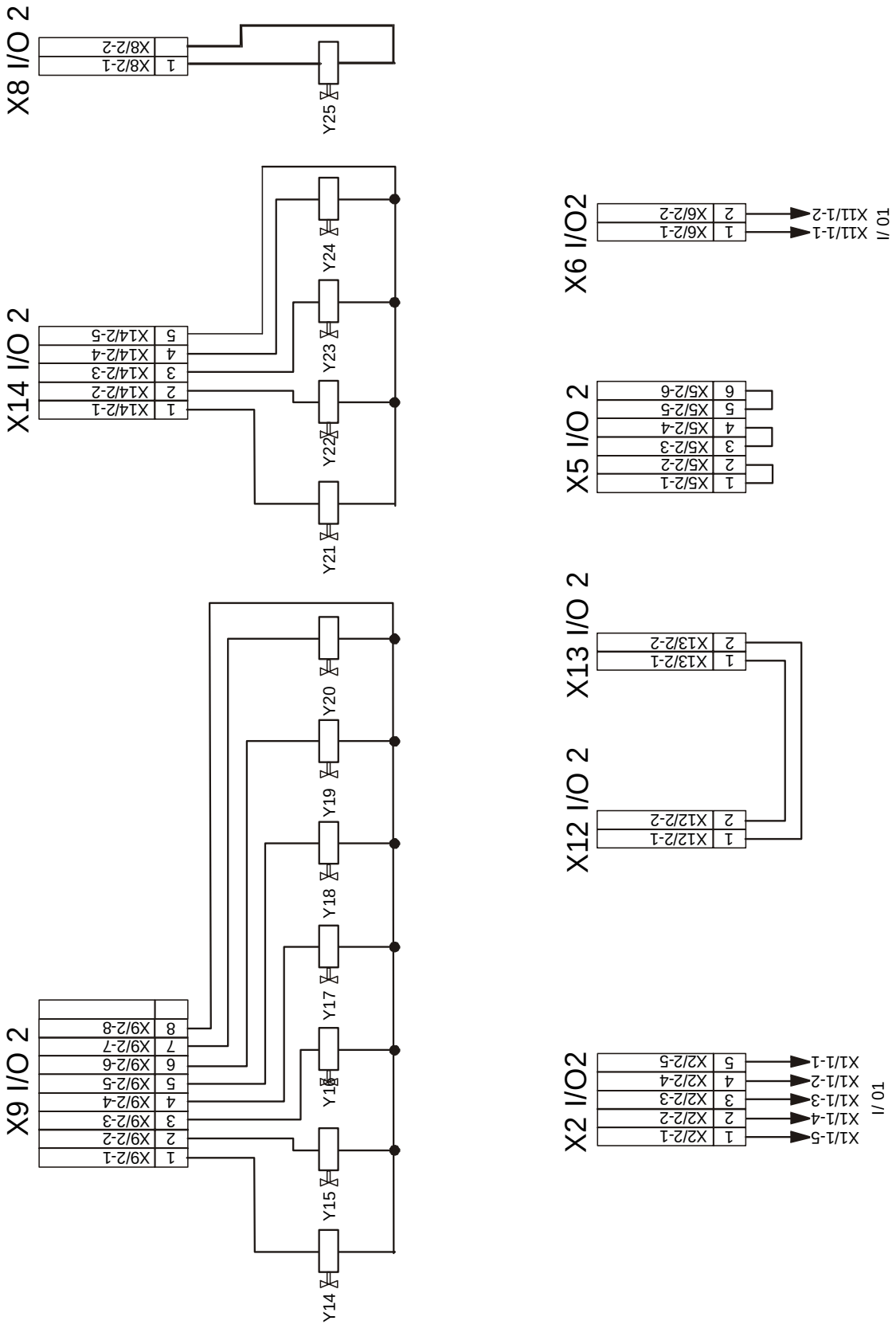
POWER CIRCUIT
Diagram no. 31100255

A1	Frequency converter
Q1	Main switch
D1	Motion breaker
D2	Primary breaker
D3	Secondary breaker
F	Fuse
F1	Frequency converter interference filter
KM1	Motion contactor
KM2	Safety relay
KM3	Electric heating contactor
R1 to R16	Heating element (690)
R5-R6-R11-R12-R17-R18	Heating element (890 only)
R20-R21	Braking resistor
RT1	Electronic time-limit relay
M1	Motion motor
M2	Fan motor
T1	Control circuit transformer
T2	Transformer 400/24 VDC


A1
A2
DP
DP1
DP2
DP3
KA4
KA3
KA7
KM1
FC1
FC2
KM2
BP1
BP2
KA9
KA8
EV1
EV2
EV3
EV4
EV5
X16-1
X16-2
I/O CARTE # 1
X-19
X-14
Blue
Bleu
Brown
Brun
Black
Noir
Blanc / White
Black / Noir
COM
OUT
+ 24 VDC
L1
N
T
SG
A
B
31100256

CONTROL CIRCUIT
AUTOMATE CONNECTION
Diagram no 31100256

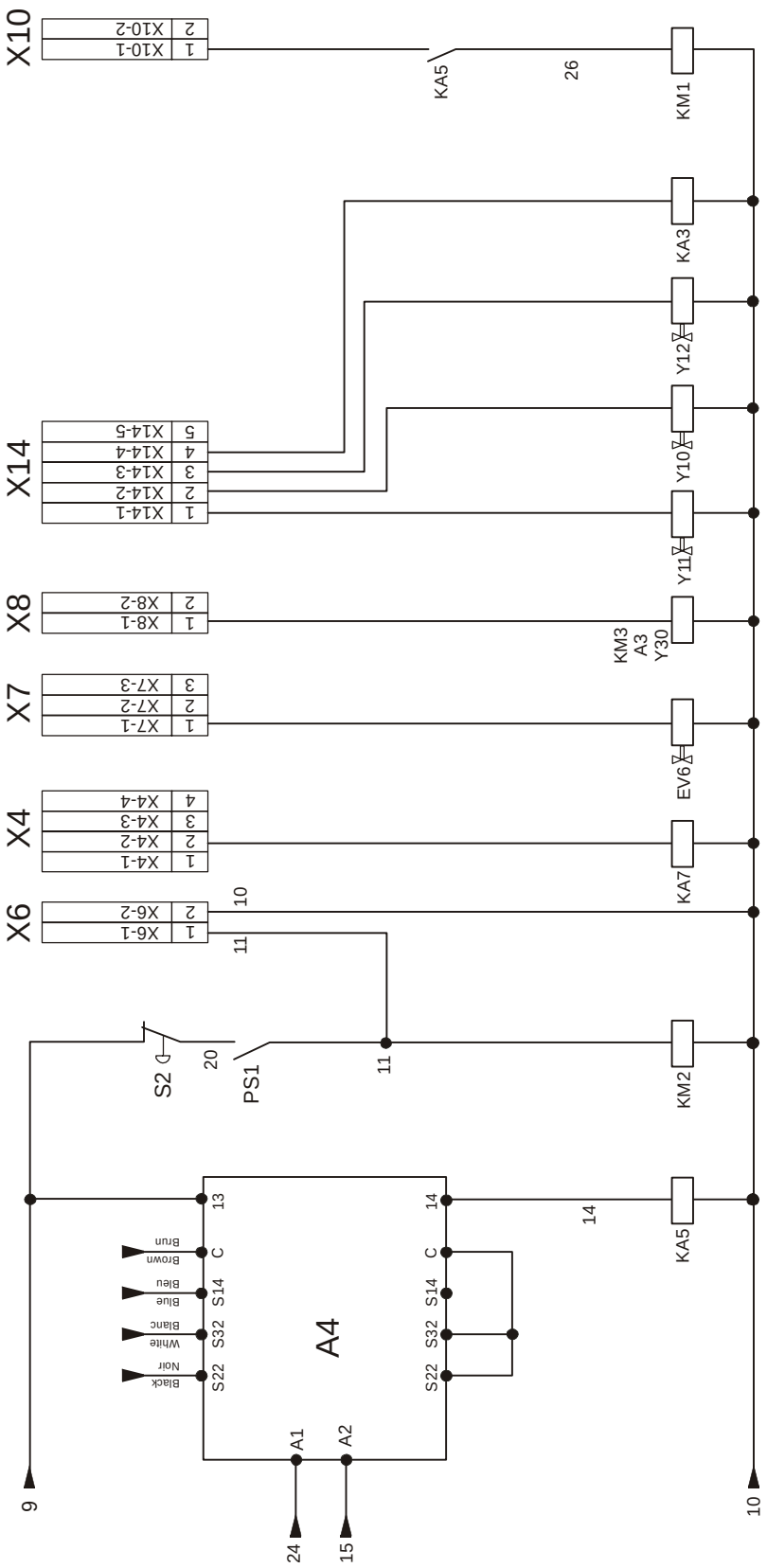
A1	Converter
A2	Programmable automate
BP1	Push-button, loading side cage positioning
BP2	Push-button, unloading side cage positioning (with barrier machine only)
DP1	Proximity detector, presence of loading side door
DP2	Proximity detector, presence of unloading side door (with barrier machine only)
DP3	Proximity detector, indexing of cage
DP4	Proximity detector, door jack in rear position (optional)
EV1	Drum door unlocking pilot valve, loading side
EV2	Drum door unlocking pilot valve, unloading side (optional with barrier machine only)
EV3	Cage door unlocking pilot valve, unloading side (with barrier machine only)
EV4	Cage unlocking pilot valve
EV5	Cage locking pilot valve
FC1	Unlocking cage
FC2	Locking cage
KA3	Authorization of loading side door opening
KA4	Authorization of unloading side door opening (with barrier machine only)
KA7	End of washing cycle
KA8	Diode control, loading possible
KA9	Diode control, unloading possible (with barrier machine only)
KM1	Motor contacteur
KM2	Safety contact relay


X8 I/O 2
X8/2-2
X8/2-1
Y25
X14 I/O 2
X14/2-5
X14/2-4
X14/2-3
X14/2-2
X14/2-1
Y24
Y23
Y22
Y21
X9 I/O 2
X9/2-8
X9/2-7
X9/2-6
X9/2-5
X9/2-4
X9/2-3
X9/2-2
X9/2-1
Y20
Y19
Y18
Y17
Y16
Y15
Y14
X6 I/O2
X6/2-2
X6/2-1
X11/1-2
X11/1-1
TO I/
X5 I/O 2
X5/2-6
X5/2-5
X5/2-4
X5/2-3
X5/2-2
X5/2-1
X13 I/O 2
X13/2-2
X13/2-1
X12 I/O 2
X12/2-2
X12/2-1
X2 I/O2
X2/2-5
X2/2-4
X2/2-3
X2/2-2
X2/2-1
X1/1-1
X1/1-2
X1/1-3
X1/1-4
X1/1-5
TO I/

31100861

INPUTS / OUTPUTS CARD no. 2 (optional)
Diagram no. 31100861

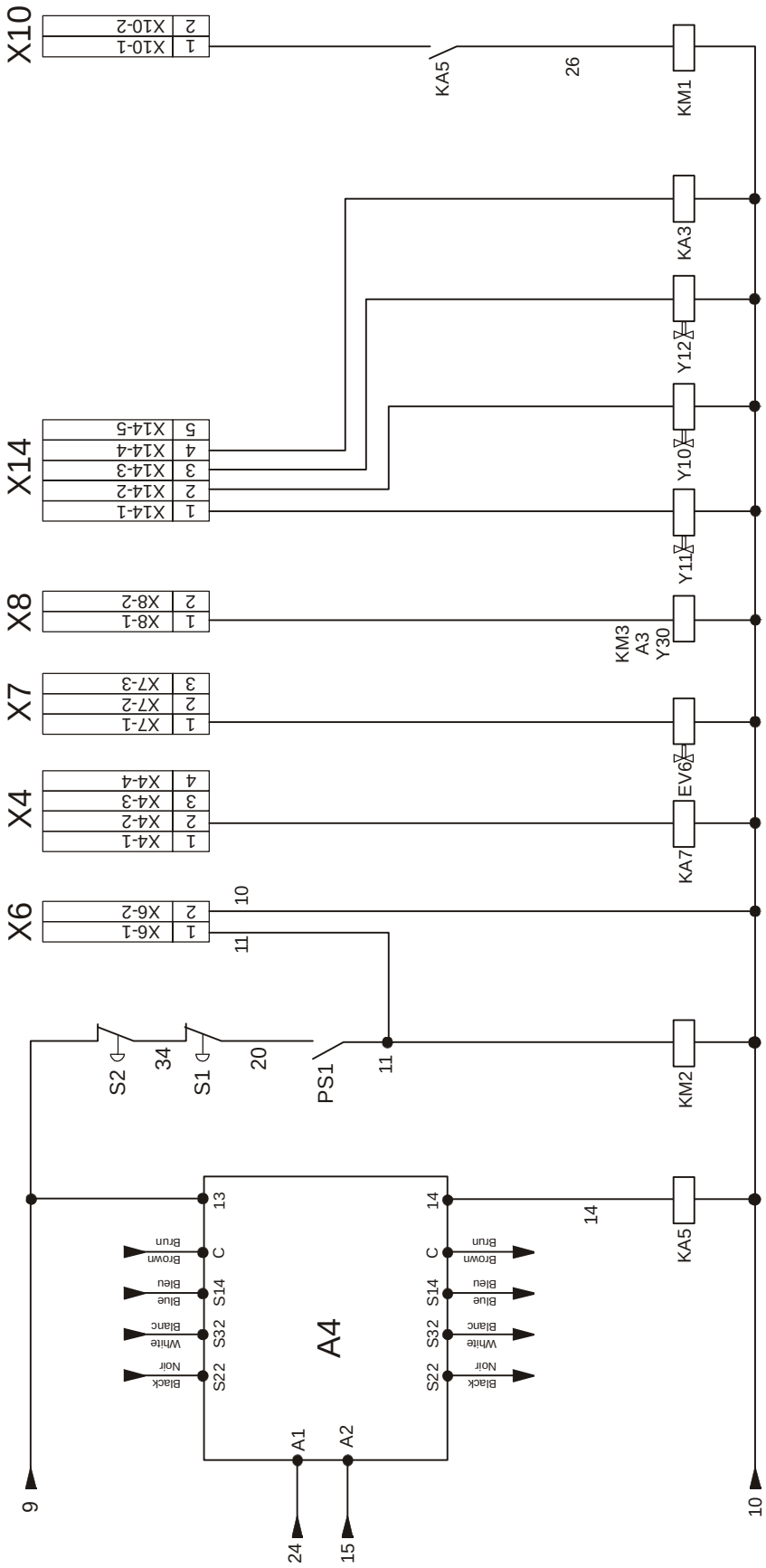
X2	Connector to card I/O no. 1
X5	Connector shunt
X6	Connector to card no. 1 supply
X8	Connector to Y25 or liquid products rinsing
X9	Connector to different options
X12	Connector shunt
X13	Connector shunt
X14	Connector to liquid products
Y14	Electrovalve, recycled water no. 1
Y15	Electrovalve, recycled water no. 2
Y16	Electrovalve, liquid product no. 4
Y17	Electrovalve, liquid product no. 5
Y18	Electrovalve, liquid product no. 6
Y19	Electrovalve, liquid product no. 7
Y20	Electrovalve, liquid product no. 8
Y21	Electrovalve, liquid product no. 9
Y22	Electrovalve, liquid product no. 10
Y23	Electrovalve, liquid product no. 11
Y24	Electrovalve, liquid product no. 12
Y25	Electrovalve, liquid product no. 13


X10
X10-2
X10-1
KA5
26
KM1
KA3
Y12
Y10
Y11
X14
X14-5
X14-4
X14-3
X14-2
X14-1
X8
X8-2
X8-1
KM3
A3
Y30
X7
X7-3
X7-2
X7-1
EV6
X4
X4-4
X4-3
X4-2
X4-1
KA7
X6
X6-2
X6-1
10
11
S2
20
PS1
11
KM2
A4
13
14
C
S14
S32
S22
Brun
Brown
Bleu
Blue
Blanc
White
Noir
Black
A1
A2
14
KA5
9
24
15
10

31101369

CONTROL CIRCUIT
Washer-extractor standard types
Diagram no. 31101369

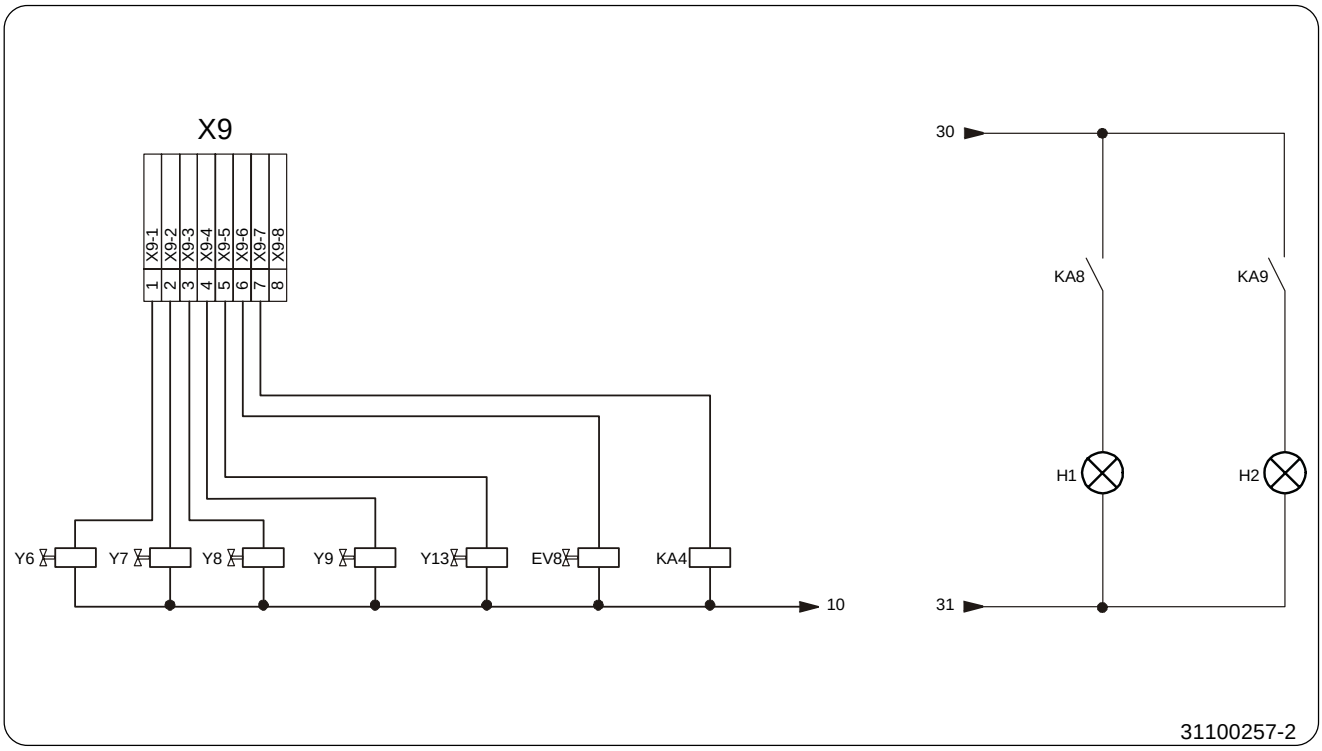
A4	Door magnetic safety box
A3	Ignitor of gas exchanger
KA3	Authorization of loading side door opening
KA5	Coil relay, loading door locking
KA7	End of cycle contact relay
KM1	Motor contactor
KM2	Safety contact relay
KM3	Electric heating contactor
PS1	Air pressure switch for compressed air detection
S2	Emergency stop (Loading side)
X4	Connector to end of cycle
X6	Connector to outputs card supply
X7	Connector to drain no. 1
X8	Connector to heating
X10	Connector to motor contactor
X14	Connector to different outputs
EV6	Pilot valve for drain valve no. 1
Y10	Liquid product no. 2 electrovalve, detergents container
Y11	Liquid product no. 1 electrovalve, detergents container
Y12	Liquid product no. 3 electrovalve, detergents container
Y30	Steam electrovalve


X10
X10-2
X10-1
KA5
26
KM1
KA3
Y12
Y10
Y11
X14
X14-5
X14-4
X14-3
X14-2
X14-1
X8
X8-2
X8-1
KM3
A3
Y30
X7
X7-3
X7-2
X7-1
EV6
X4
X4-4
X4-3
X4-2
X4-1
KA7
X6
X6-2
X6-1
10
11
S2
34
S1
20
PS1
11
KM2
A4
13
14
C
S14
S32
S22
Brown
Brun
Blue
Bleu
White
Blanc
Black
Noir
A1
A2
14
KA5
9
10
24
15

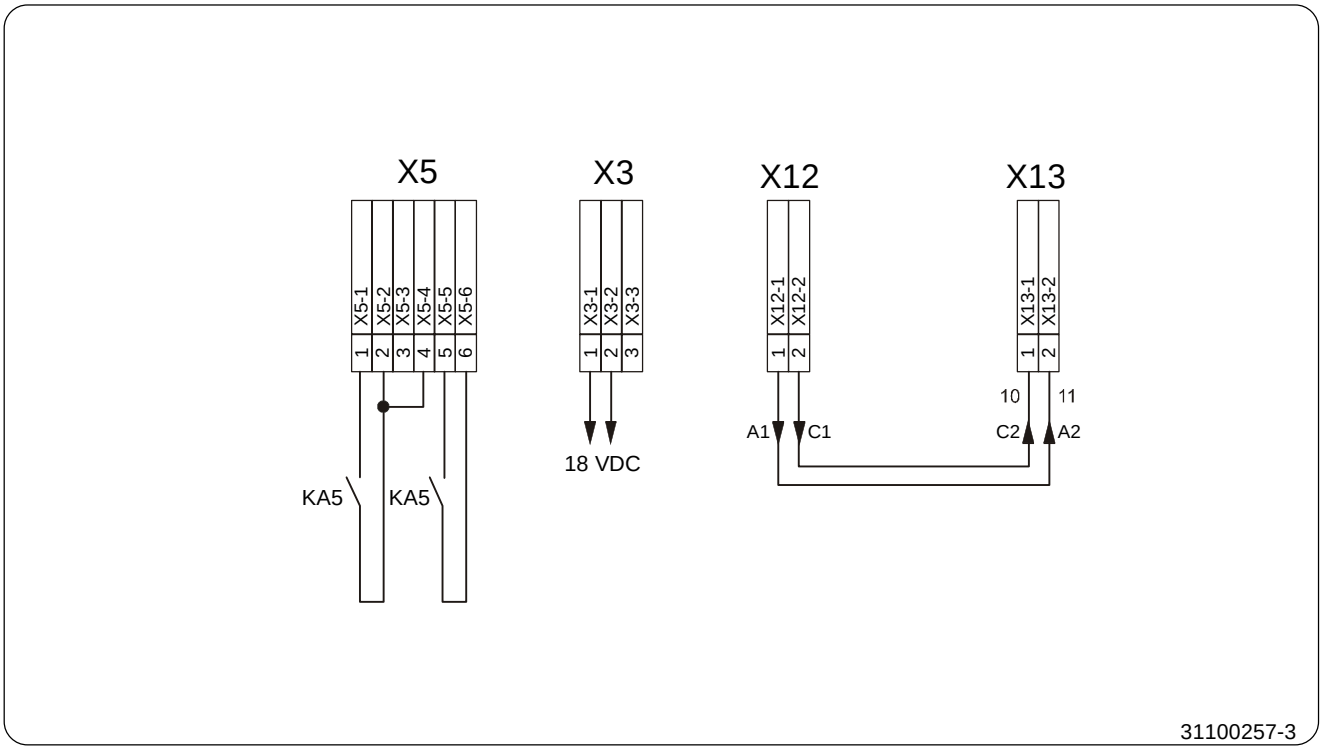
31100257-1

CONTROL CIRCUIT
Washer-extractor barrier types
Diagram no. 31100257-1

A4	Door magnetic safety box
A3	Ignitor of gas exchanger
KA3	Authorization of loading side door opening
KA5	Coil relay, loading door locking
KA7	End of cycle contact relay
KM1	Motor contactor
KM2	Safety contact relay
KM3	Electric heating contactor
PS1	Air pressure switch for compressed air detection
S1	Stop emergency (Unloading side)
S2	Stop emergency (loading side)
X4	Connector to end of cycle
X6	Connector to outputs card supply
X7	Connector to drain no. 1
X8	Connector to heating
X10	Connector to motor contactor
X14	Connector to different outputs
EV6	Pilot valve for drain valve no. 1
Y10	Liquid product no. 2 electrovalve, detergents container
Y11	Liquid product no. 1 electrovalve, detergents container
Y12	Liquid product no. 3 electrovalve, detergents container
Y30	Steam electrovalve



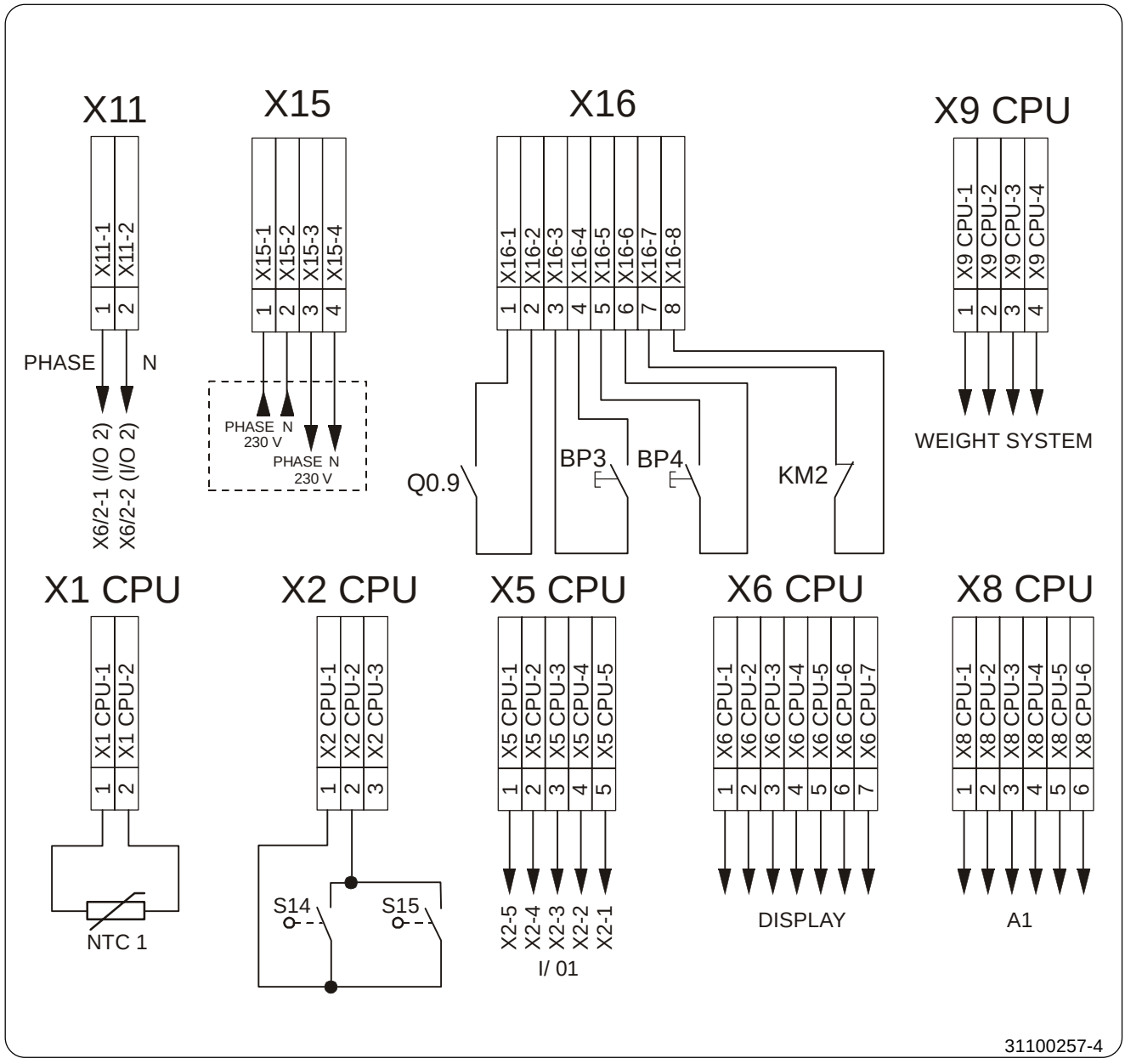
31100257-2



31100257-3

CONTROL CIRCUIT
Washer-extractor all types
Diagrams no. 31100257-2 & 3100257-3

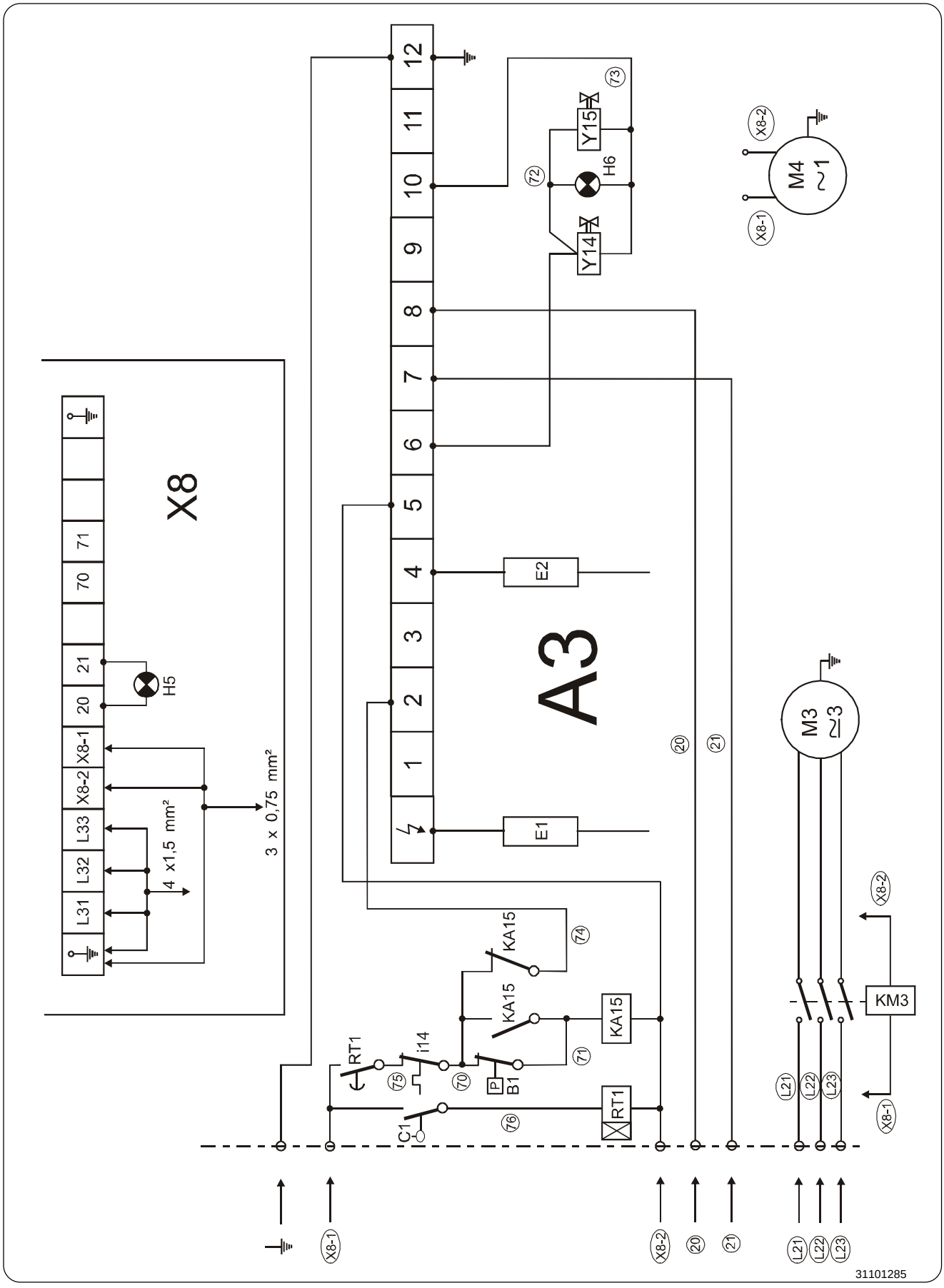
KA4	Authorization of unloading side door opening (with barrier machine only)
KA5	Coil relay, loading door locking
X3	Connector to Clarus Control supply
X5	Connector to mocking door control
X9	Connector to different outputs
X12	Connector shunt
X13	Connector shunt
Y6	Soft cold water electrovalve (optional)
Y7	Hot water electrovalve
Y8	Cold water electrovalve
Y9	Powder product no. 1 electrovalve, detergents container
Y13	Powder product no. 2 electrovalve, detergents container
EV8	Pilot valve for drain valve no. 2


X11
X11-1
X11-2
1
2
PHASE
N
X6/2-1 (I/O 2)
X6/2-2 (I/O 2)
X15
X15-1
X15-2
X15-3
X15-4
1
2
3
4
PHASE N
230 V
PHASE N
230 V
X16
X16-1
X16-2
X16-3
X16-4
X16-5
X16-6
X16-7
X16-8
1
2
3
4
5
6
7
8
Q0.9
BP3
BP4
KM2
X9 CPU
X9 CPU-1
X9 CPU-2
X9 CPU-3
X9 CPU-4
1
2
3
4
WEIGHT SYSTEM
X1 CPU
X1 CPU-1
X1 CPU-2
1
2
NTC 1
X2 CPU
X2 CPU-1
X2 CPU-2
X2 CPU-3
1
2
3
S14
S15
X5 CPU
X5 CPU-1
X5 CPU-2
X5 CPU-3
X5 CPU-4
X5 CPU-5
1
2
3
4
5
X2-5
X2-4
X2-3
X2-2
X2-1
I/ 01
X6 CPU
X6 CPU-1
X6 CPU-2
X6 CPU-3
X6 CPU-4
X6 CPU-5
X6 CPU-6
X6 CPU-7
1
2
3
4
5
6
7
DISPLAY
X8 CPU
X8 CPU-1
X8 CPU-2
X8 CPU-3
X8 CPU-4
X8 CPU-5
X8 CPU-6
1
2
3
4
5
6
A1
31100257-4

CONTROL CIRCUIT
INPUTS CARD no. 1 + CPU
Washer-extractor all types
Diagram no. 31100257-4

BP3	Loading door opening push-button
BP4	Unloading door opening push-button (with barrier machine only)
KM2	Safety relay
Q0.9	Push-button, cage positioning
NTC1	Temperature probe
S14	Left side unbalance switch
S15	Right side unbalance switch
X1 CPU	Connector to temperature probe
X2 CPU	Connector to unbalance switch
X5 CPU	Connector to I/O1
X6 CPU	Connector to display
X8 CPU	Connector to converter
X9 CPU	Connector to weight system (optional)
X11	Connector to card no. 2
X15	Connector to putting into service and pause by exterior signals (optional) X15-1 and X15-2 putting into service by servo-control X15-3 and X15-4 heating is halted
X16	Connector to cage positioning, opening doors push-button and emegency stop

16. Electric diagrams



GAS HEATING - CONNECTING DIAGRAM
Washer-extrators 690 all types
Diagram no. 31101285

A3	Ignitor and checking box
B1	Products of combustion pressure switch (do not change the adjustments)
C1	Water level detector
E1	Ignitor electrode
E2	Checking electrode
H5	Safety heating gas burner indicator
H6	Heating indicator On
i14	Circulating pump ipso
KA15	Depression safety relay
KM3	Circulating pump contactor
M3	Circulating pump motor
M4	Draught accelerator motor
RT1	Time-limit relay 5 sec.
X8	Gas exchanger terminal
Y14	Gas electrovalve
Y15	Electrovanne gaz

Configuration of variator

Inverter type KEB type F4

Customer parameter confuguration

CP00 [0] Bus password imp. ..... = application password
CP01 [0] Actual frequency display ..... = x Hz
CP02 [0] Inverter state display..... = F Const. A-Rev
CP03 [0] Set freq. display ..... = x Hz
CP04 [0] Actual inv. util. ..... = x %
CP05 [0] Peak inv. util. ..... = x %
CP06 [0] Apparent current ..... = x A
CP07 [0] Actual parameter. ..... = x: jeu x
CP08 [0] OL counter display ..... = x %
CP09 [0] Last error ..... = ERROR xx
CP10 [0] Error counter OC ..... = x
CP11 [0] Error counter OL ..... = x
CP12 [0] Error counter OP..... = x
CP13 [0] Error counter OH ..... = x
CP14 [0] No used
CP15 [A] Select. signal source ..... = x
CP16 [A] Slip compens. / Gain ..... = x
CP17 [A] Torque compens. ..... = x
CP18 [A] Freq. ref. set. ..... = x Hz
CP19 [A] Rated motor speed ..... = x rpm/mn
CP20 [A] Motor term. resis. ..... = x Ohms
CP21 [A] Boost ..... = x %
CP22 [A] Maximum ref. rev. ..... = x Hz
CP23 [A] Stall level ..... = x %

NOTA :

- CP.00 is the password parameter
  100 : CP parameter for read only
  200 : Parameter for read and write

- CP.01 to CP.14 are parameters for reading of the state of the variator and the physical sizes measured by the variator.

- CP.15 allows to select the parameters CP.16 to CP.24 in the various sets (control terminal diconnected).

0 : Selection of the set 0 for programming (diconnected terminal).
16 : Selection of the set 1 for programming (diconnected terminal).
32 : Selection of the set 2 for programming (diconnected terminal).
48 : Selection of the set 3 for programming (diconnected terminal).
64 : Selection of the set 4 for programming (diconnected terminal).
80 : Selection of the set 5 for programming (diconnected terminal).
96 : Selection of the set 6 for programming (diconnected terminal).
112 : Selection of the set 7 for programming (diconnected terminal).

Nota : reset CP.15 to 0 after CP.16 to CP.24 parameters programming, it's imperative to make this value at CP.15, for correct working of the machine.

- CP.16 to CP.24 are parameters for read and write allowing variator setting.
Parameters writing may be forbidden by the code no. 100 in the parameter CP.00.

Conversion of measurement units

To 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 = 100 000 Pa
1 bar = 1.019 7 kg/cm²
1 bar = 750.06 mm Hg
1 bar = 10 197 mm H_2O
1 bar = 14.504 psi

Bitish Thermal Unit : 1 Btu = 1 055.06 J
1 Btu = 0.252 1 kcal

calorie : 1 cal = 4.185 5 J
1 cal = 10^{-6} th
1 kcal = 3.967 Btu
1 cal/h = 0.001 163 W
1 kcal/h = 1.163 W

continental horse-power : 1 ch = 0.735 5 kW
1 ch = 0.987 0 HP

cubic foot : 1 cu ft = 28.316 8 dm³
1 cu ft = 1 728 cu in

cubic inch : 1 cu in = 16.387 1 dm³

foot : 1 ft = 304.8 mm
1 ft = 12 in

gallon (U.K.) : 1 gal = 4.545 96 dm³ or l
1 gal = 277.41 cu in

gallon (U.S.A.) : 1 gal = 3.785 33 dm³ or l
1 gal = 231 cu in

Horsepower : 1 HP = 0.745 7 kW
1 HP = 1.013 9 ch

inch : 1 in = 25.4 mm

joule : 1 J = 0.000 277 8 Wh
1 J = 0.238 92 cal

kilogramme : 1 kg = 2.205 62 lb

kilogram per square centimeter :
1 kg/cm² = 98 066.5 Pa
1 kg/cm² = 0.980 665 bars
1 kg/cm² = 10 000 mm H_2O
1 kg/cm² = 735.557 6 mm Hg

livre : 1 lb = 453.592 37 g

meter : 1 m = 1.093 61 yd
1 m = 3.280 83 ft
1 m = 39.37 in

cubic meter : 1 m³ = 1 000 dm³
1 m³ = 35.314 7 cu ft
1 dm³ = 61.024 cu in
1 dm³ = 0.035 3 cu ft

pascal : 1 Pa = 1 N/m²
1 Pa = 0.007 500 6 mm Hg
1 Pa = 0.101 97 mm H_2O
1 Pa = 0.010 197 g/cm²
1 Pa = 0.000 145 psi
1 MPa = 10 bar

psi : 1 psi = 0.068 947 6 bar

thermie : 1 th = 1 000 kcal
1 th = 10^6 cal
1 th = 4.185 5 x 10^6 J
1 th = 1.162 6 kWh
1 th = 3 967 Btu

watt : 1 W = 1 J/s
1 W = 0.860 11 kcal/h

watt-hour : 1 Wh = 3600 J
1 kWh = 860 kcal

yard : 1 yd = 0.914 4 m
1 yd = 3 ft
1 yd = 36 in

temperature degrees :
0° K = -273.16 °C
0° C = 273.16 °K
t° C = 5/9 (t° F-32)
t° F = 1.8 t° C + 32

Washing symbols

To overcome language barriers, the following are symbols used internationally to give you guidance and recommendations when washing different textiles.

Washing Symbol	Max. washing temperature in °C/°F	Cycle	Load	Spin
	95/203	normal	1/1	normal
	95/203	normal	1/2	short
	60/140	normal	1/1	normal
	60/140	normal	1/2	short
	40/104	normal	1/1	normal
	40/104	normal	1/2	short
	30/86	mild	1/2	short
	Do not wash in machine.	Wash by hand.		Do not spin
	Do not wash in water.			

Ironing The number of dots indicates the maximum recommended temperature.

	Max. 200 °C (392°F).
	Max. 150 °C (302F).
	Max. 110 °C (230°F).
	Do not iron.

Dry cleaning The circle symbolizes dry cleaning.

Ⓐ	Articles to be dry cleaned with any solvent.
Ⓟ	Articles to be dry cleaned.
Ⓕ	Articles to be dry cleaned.
	Do not dry clean.

Bleaching The triangle symbolizes bleaching.

	Bleacheable (chlorine or oxygen).
	Do not bleach.

Drying The square symbolizes drying.

	Can be put in a tumble dryer.
	Do not put in a tumble dryer.

Wool If clothing is marked IWS or Superwash, it can be washed in the machine.
Use only the mild cycle at temperature not exceeding 40°C (104°F).