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## 2. WARNINGS



**FAILURE TO COMPLY WITH THE INSTRUCTIONS IN THIS MANUAL MAY LEAD TO INCORRECT USE OF THE WASHER EXTRACTOR, AND MAY RESULT IN BODILY INJURIES OR DEATH AND/OR DAMAGE TO THE LAUNDRY AND/OR THE WASHER EXTRACTOR.**

- ◆ This English version is the original version.
- ◆ This instruction is not complete without „User“, „Installation and Maintenance“, „Programming“, „Spare parts manual“.
- ◆ Before installing, operating or maintaining the machine, read and follow these instructions carefully and keep them in a handy place for later use. Safety instructions included in manuals for personnel operating the washing machine must be printed and posted on a visible place near the machine in the laundry room.
- ◆ Follow all basic and valid safety instructions and laws. Do not bypass the instructions stated in the instruction manual and warnings on the labels. The labels must stay on the machine and they must be legible.
- ◆ Installation and service can be done only by a service organization with proper authorization.
- Do not let children use, play in, on, or around the machine.
- ◆ Any changes concerning the installation which are not described in this Installation Manual must be approved by the supplier or manufacturer. Otherwise, the supplier and manufacturer are not responsible for potential injuries to operators or for any damages. Interventions in the machine execution or functions are not allowed, and the manufacturer refuses any responsibility in such cases.
- ◆ During transportation and storage never use excessive forces on the carton box because components can be damaged protruding the contour line of the machine.
- ◆ The washer extractor must be installed on level. If not, the machine may become unbalanced during extraction and, although fitted with an unbalance safety, the machine may become seriously damaged what may result in bodily injuries.
- ◆ Never transport the machine without the transporting braces mounted.
- ◆ Never put the machine in operation when the transporting braces are not removed.
- ◆ To prevent the possibility of electrical shock, make sure the washer has been properly grounded in accordance with the installation instructions and ALL local codes.
- Use copper conductors only. This appliance must be connected to a supply circuit to which no lighting units or general-purpose receptacles are connected.
- ◆ The machine must be connected to the power, ground, water, ventilation and steam supply according to the Installation manual, in compliance with the local standards done by qualified technicians with proper authorization. The valid standards for connecting to the local power network (TT / TN / IT, ...) must be followed. In the standard execution, the washer may not be suitable for connecting to an IT supply system.
- ◆ All machines types are produced according the EMC-directive (Electro-Magnetic-Compatibility). They can be used in restricted surroundings only (comply minimally with class A requirements). For safety reasons there must be kept the necessary precaution distances with sensitive electrical or electronic device(s).
- ◆ If you have a machine with frequency inverter do not change the parameters of the inverter. Doing so can cause serious injury, fire, machine damage, etc.
- ◆ Before removing top or back panel of the machine, switch power off and wait for at least 10 minutes. Before starting inspection of frequency inverter, check for residual voltage across main circuit terminals + and -. This voltage must be below 30 VDC before you can access the inverter for inspection.
- ◆ The washer extractor is intended to be permanently connected to fixed wiring.
- ◆ The washer must not be operated when the finger protection rubbers are removed or damaged.
- ◆ Do not expose the washing extractor to excessive humidity or extreme temperatures.
- ◆ Keep the top of the machine clean, without the presence of flammable materials. Do not wash or spray the machine with running water.
- ◆ Do not operate the washer extractor when parts are broken or missing or when covers are open. The machine may not operate until the fixed guards are put correctly in place.
- ◆ Do not tamper with the washer extractor controls and do not bypass the safety instructions and the warnings.
- ◆ Do not store flammable materials around the machine.
- ◆ Define the dangerous areas in the laundry room and obstruct an admission to them during machine's operating.
- ◆ Carefully read and follow the instructions on the packaging of detergents. Observe all warnings, cautions and labels to avoid personal injury. Store detergents, laundry aids and disinfectants out of reach of children, preferably in a locked cabinet.
- Do not put articles soiled with explosive solvents and/or dangerous chemical products in the machine for any reason.
- Do not open door until cylinder remains stopped and water has been drained from cylinder.
- ◆ Always disconnect the power supply and close all water and steam valves while servicing the washer extractor.
- ◆ Although the washer may be in the „off“ position, there is still electrical power to the switch supply terminals.
- Do not repair or adjust belt drive when the machine is in operation. Do not repair or replace any part of the washer, or attempt any servicing unless specifically recommended in the maintenance instructions.
- Original or identical parts must be used for replacement in this washer extractor. After servicing replace and secure all panels in the original way. Take these measures for continued protection against electrical shock, injury, fire and/or property damage.
- ◆ If steam is leaking, turn off the main steam supply and contact the maintenance worker.
- ◆ Turn off the main supply like water, steam, electricity at the end of each operating day.
- ◆ Check the functioning of the door lock mechanism on regular base.
- ◆ Regularly once a three months check the proper function of ground and emergency button.
- ◆ The emergency stop device is omitted on machines design for coin, token, external payment system or similar operation for use in self-service situation. The owner-installer-user must provide a remote-located emergency stop device that is connected to each machine.
- ◆ Under certain conditions, hydrogen gas may be created in the hot water system that has not been used for two or more weeks. Hydrogen gas is explosive. If the hot water system has not been used for such period open all hot water taps and let the water run out for few minutes. This will release any accumulated gas. As this gas is flammable, do not smoke or use open flames during this time.
- ◆ The instructions and warnings described in this manual do not include all conditions and situations which may occur during the installation, maintain or operate of your machine. They must be generally understood. Caution and care are factors which are not included in the design of this machine and all persons who install, operate or maintain the machine must be qualified and familiar with the operating instructions.
- ◆ If any problems or failures occur which you do not understand, immediately contact your dealer, serviceman or manufacturer.

= Warnings and labels present on the machine

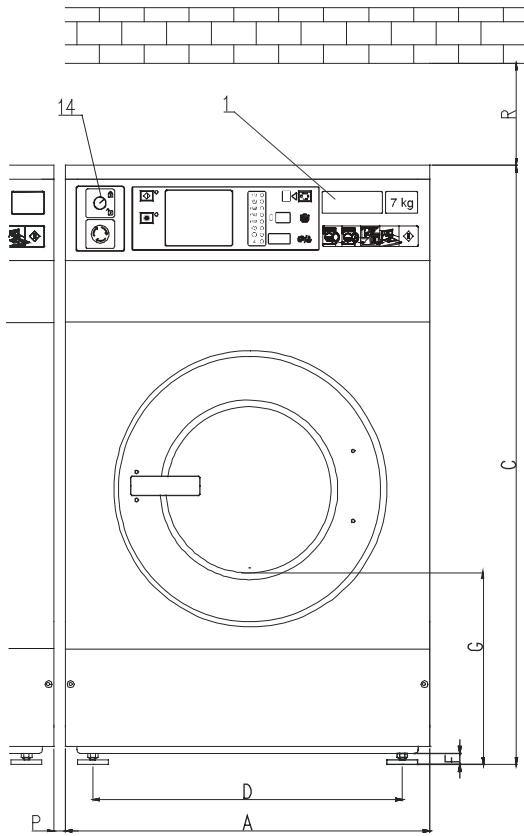
### 3. TECHNICAL INFORMATION

LOAD CAPACITY OF DRY LINEN (1/10)	6 kg / 13 lb	7 kg / 16 lb	10 kg / 22 lb	16 kg / 36 lb
<b>DIMENSIONS</b>				
<b>MACHINE DIMENSIONS *</b>				
Width	660 mm/25.98"	660 mm/25.98"	660 mm/25.98"	835 mm/32.87"
Depth	770 mm/30.31"	770 mm/30.31"	865 mm/34.05"	1040 mm/40.94"
Height	1070mm/42.12"	1070mm/42.12"	1130mm/44.48"	1295 mm/50.98"
<b>PACKING DIMENSIONS</b>				
Width	750 mm/29.53"	750 mm/29.53"	750 mm/29.53"	930 mm/36.61"
Depth	850 mm/33.46"	850 mm/33.46"	950 mm/37.40"	1140 mm/44.88"
Height	1250mm/49.21"	1250mm/49.21"	1300mm/51.18"	1510 mm/59.44"
Transportation volume	0.79m <sup>3</sup> /27.89ft <sup>3</sup>	0.79m <sup>3</sup> /27.89ft <sup>3</sup>	0.92m <sup>3</sup> /32.48 ft <sup>3</sup>	1.6 m <sup>3</sup> /56.5 ft <sup>3</sup>
<b>DIMENSIONS OF INNER DRUM</b>				
Diameter	530 mm/20.86"	530 mm/20.86"	530 mm/20.86"	650 mm/25.6"
Depth	270 mm/10,63"	330 mm/12,99"	420 mm/16.53"	500 mm/19.68"
Drum Volume	60dm <sup>3</sup> /15.85gal	73dm <sup>3</sup> /19.28gal	95dm <sup>3</sup> /25.1gal	166dm <sup>3</sup> /43.8gal
Door opening	285 mm / 11,22"	285 mm / 11,22"	285 mm / 11,22"	410 mm / 16,14"
<b>WEIGHT</b>				
Net	230 kg / 508 lb	235 kg / 519 lb	275 kg / 607 lb	465 kg / 1026 lb
Gross	240 kg / 530 lb	250 kg / 552 lb	300 kg / 662 lb	485 kg / 1070 lb
<b>ELECTRICAL DATA</b>	<p>3x380-415V+N 50Hz - applicable for 16 kg / 36 lb            3x380-415V 50Hz - applicable for 16 kg / 36 lb            3x380V 60Hz - applicable for two motor drive            3x440-480V 60Hz            3x220-240V 50Hz            3x200V 50/60Hz            3x208-240V 60Hz            3x380-415V+N 50/60Hz - applicable for electrical heating            1x220-240V 50/60Hz - not applicable for electrical heating            3x220-240V 50/60Hz - applicable for electrical heating            1x200-208V 50/60Hz - applicable for 10 kg / 22 lb, 16 kg / 36 lb, not applicable for electrical heating            3x200-208V 50/60Hz - applicable for 10 kg / 22 lb, 16 kg / 36 lb, applicable for electrical heating            3x380-480V 50/60Hz</p>			
Permitted deviation of voltage	-6% to +10% V	-6% to +10% V	-6% to +10% V	-6% to +10% V
Permitted deviation of frequency	±1% Hz	±1% Hz	±1% Hz	±1% Hz
<b>TOTAL INPUT OF THE MACHINE WITH</b>				
Electric heating 6kW	6.75 kW	6.75 kW	7.5 kW	-
Electric heating 9 kW	9.75 kW	9.75 kW	10.5 kW	11.3kW
Electric heating 12 kW	-	12.75 kW	13.5 kW	14.3kW
Electric heating 18 kW	-	-	-	20.3kW
Without heating or steam	0.75 kW	0.75 kW	1.5 kW	2.3kW
Nominal output of motor	0.75 kW	0.75 kW	1.5 kW	2.2kW
<b>NOMINAL OUTPUT OF THE MOTOR AT RPM</b>	0.75 kW	0.75 kW	1.5 kW	2.2kW
<b>INPUT PROTECTION</b>				
Electric heating 6kW (220-240V)				25A
Electric heating 6kW (400/440V 3AC)				16A
Electric heating 9kW (220-240V)				32A

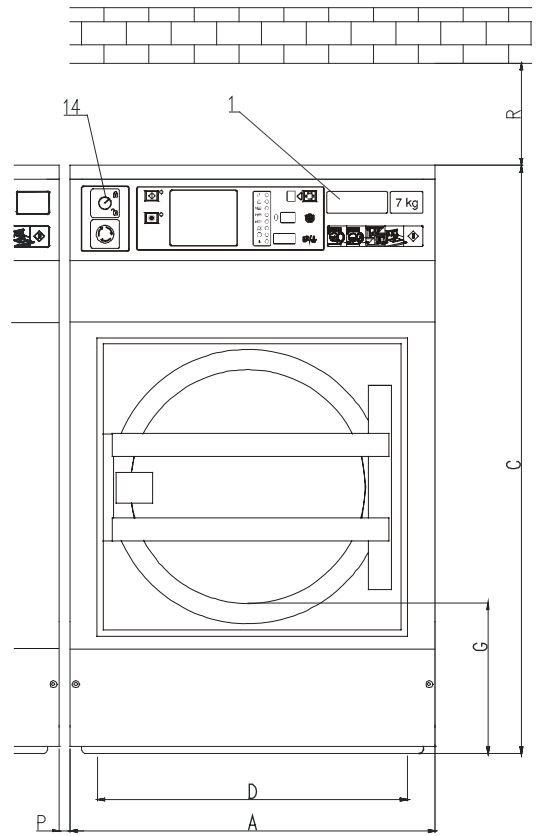
Electric heating 9kW (400/440V 3AC)	20A			
Electric heating 12kW (220-240V)	40A			
Electric heating 12kW (400/440V 3AC)	25A			
Electric heating 18kW (220-240V)	60A			
Electric heating 18kW (400V 3AC)	40A			
Electric heating 18kW (440V 3AC)	32A			
Without el. heating (220-240C 1/3AC)	16A			
<b>WASHING FUNCTIONS</b>				
Washing	48 RPM	48 RPM	48 RPM	45 RPM
High extracting	1000 RPM	1000 RPM	1000 RPM	980 RPM
G-factor	300	300	300	350
<b>CONNECTION</b>				
<b>WATER CONNECTION</b>				
Water pressure	0.1-0.8 MPa / 1-8 bar / 14.5-116 PSI	0.1-0.8 MPa / 1-8 bar / 14.5-116 PSI	0.1-0.8 MPa / 1-8 bar / 14.5-116 PSI	0.1-0.8 MPa / 1-8 bar / 14.5-116 PSI
Recommended water pressure	0.3-0.5 MPa / 3-5 bar / 36.3 PSI	0.3-0.5 MPa / 3-5 bar / 36.3 PSI	0.3-0.5 MPa / 3-5 bar / 36.3 PSI	0.3-0.5 MPa / 3-5 bar / 36.3 PSI
Water inlet	G3/4"	G3/4"	G3/4"	G3/4"
Maximal water temperature	90°C / 194°F	90°C / 194°F	90°C / 194°F	90°C / 194°F
<b>CONNECTION OF WATER DRAINAGE</b>				
Via drain valve diameter	76 mm/3"	76 mm/3"	76 mm/3"	76 mm/3"
Flow amount with drain valve	3.5 l/s	3.5 l/s	3.5 l/s	3.5 l/s
<b>CONNECTION OF STEAM</b>				
Steam connection	G1/2"			
Steam pressure low	1-3 bar / 14,5 - 44 PSI			
Steam pressure high	3-8 bar / 44-116 PSI			
<b>ELECTRICAL CONSUMPTION</b>				
Light soiled fabrics, wash 60°C(1)				
Without electrical heating	0.2 kWh	0.2 kWh	0.3 kWh	0.5kWh
With electrical heating	1.2 kWh	1.3 kW	1.7 kW	3.5kWh
<b>WORKING CONDITIONS</b>				
Ambient temperature	+5°C (41°F) to +35°C (95°F)	+5°C (41°F) to +35°C (95°F)	+5°C (41°F) to +35°C (95°F)	+5°C (41°F) to +35°C (95°F)
Relative humidity	30% to 90% without condensation	30% to 90% without condensation	30% to 90% without condensation	30% to 90% without condensation
Height above sea level	up to 1000 m / 3280 ft	up to 1000 m / 3280 ft	up to 1000 m / 3280 ft	up to 1000 m / 3280 ft
Storage temperature	0°C (32°F) to +55°C (131°F)	0°C (32°F) to +55°C (131°F)	0°C (32°F) to +55°C (131°F)	0°C (32°F) to +55°C (131°F)
<b>BOTTOM LOAD</b>				
Max.static load on floor	2413 N	2492 N	3002 N	5450N
Max.dynamic load on floor	650 N	730 N	1100 N	1220 N
Frequency of dynamic load	16 Hz	16 Hz	16 Hz	16Hz
<b>NOISE</b>				
Equivalent sound power level Leq (dB(A))	< 70 dB(A)	< 70 dB(A)	< 70 dB(A)	< 70 dB(A)

\* maximum dimensions including protruding parts

(1) Depends of temperature of cold and hot water supply



6kg / 13lb, 7kg / 16lb, 10kg / 22lb



16kg / 36lb machine with frequency control drive

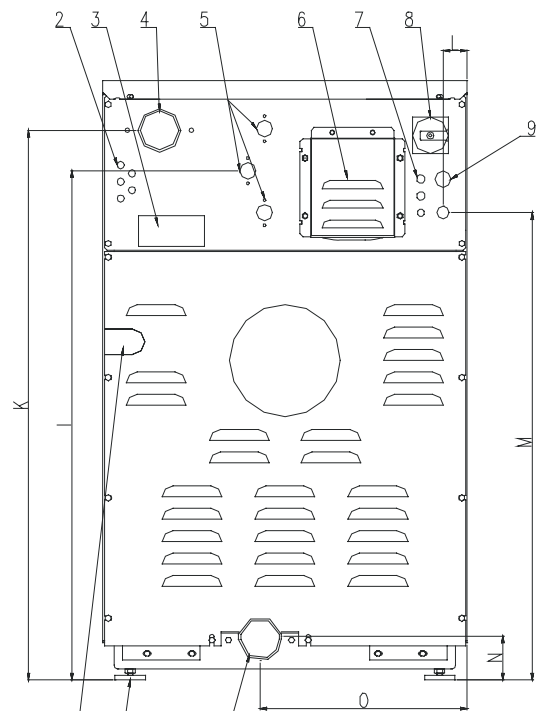
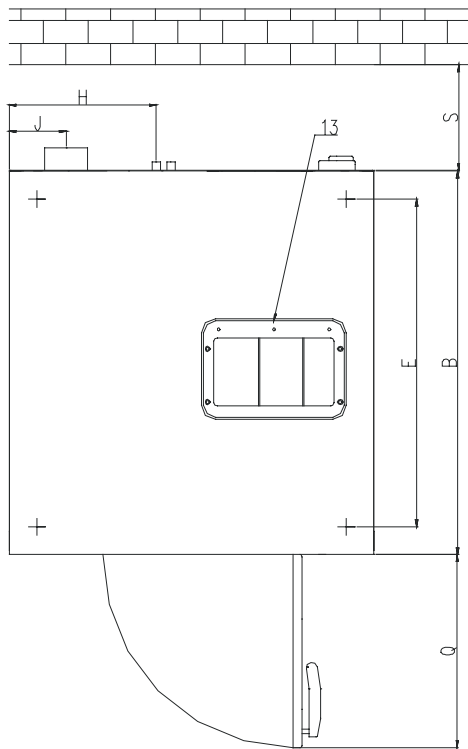


Fig. 3.1.

100391A

1. Control panel
2. Connection liquid soap
3. Serial plate
4. Soap hopper venting
5. Water supply
6. Frequency inverter
7. Fuses

8. Main switch
9. Electrical supply connection
10. Drain
11. Adjustable leg
12. Steam connection
13. Soap hopper
14. Emergency/Coin system

	<b>6kg / 13lb</b>	<b>7kg / 16lb</b>	<b>10kg / 22lb</b>	<b>16kg / 36lb</b>
<b>A</b>	660 mm / 25.98"	660 mm / 25.98"	660 mm / 25.98"	835 mm / 32.87"
<b>B</b>	685 mm / 26.97"	685 mm / 26.97"	785 mm / 30.91"	960 mm / 37.8"
<b>C</b>	1070 mm / 42.13"	1070 mm / 42.13"	1130 mm / 44.49"	1295 mm / 50.98"
<b>D</b>	560 mm / 22.05"	560 mm / 22.05"	560 mm / 22.05"	715 mm / 28.15"
<b>E</b>	585 mm / 23.03"	585 mm / 23.03"	685 mm / 26.97"	815 mm / 32.09"
<b>F</b>	20 mm / 0.79"	20 mm / 0.79"	20 mm / 0.79"	-
<b>G</b>	420 mm / 15.54"	420 mm / 15.54"	480 mm / 18.90"	430 mm / 16.92"
<b>H</b>	263 mm / 10.35"	263 mm / 10.35"	263 mm / 10.35"	300 mm / 11.81"
<b>I</b>	910 mm / 35.83"	910 mm / 35.83"	970 mm / 38.19"	1135 mm / 44.68"
<b>J</b>	103 mm / 4.06"	103 mm / 4.06"	103 mm / 4.06"	120 mm / 4.72"
<b>K</b>	980 mm / 38.58"	980 mm / 38.58"	1040 mm / 40.94"	1195 mm / 47"
<b>L</b>	44 mm / 1.73"	44 mm / 1.73"	44 mm / 1.73"	44 mm / 1.73"
<b>M</b>	835 mm / 32.87"	835 mm / 32.87"	895 mm / 35.24"	1015 mm / 39.96"
<b>N</b>	78 mm / 3.07"	78 mm / 3.07"	78 mm / 3.07"	55 mm / 2.16"
<b>O</b>	375 mm / 14.76"	375 mm / 14.76"	375 mm / 14.76"	415 mm / 16.33"
<b>P</b>	10 mm / 0.39"	10 mm / 0.39"	10 mm / 0.39"	15 mm / 0.6"
<b>Q</b>	445 mm / 17.52"	445 mm / 17.52"	445 mm / 17.52"	530 mm / 20.86"
<b>R</b>	700 mm / 27.56"	700 mm / 27.56"	700 mm / 27.56"	700 mm / 27.55"
<b>S</b>	600 mm / 23.6"	600 mm / 23.6"	600 mm / 23.6"	600 mm / 23.62"



### 4.3.1. FREELY ON THE FLOOR

The machine is to be located on a not elevated leveled concrete floor that comply with static and dynamic stress of the machine.

The friction coefficient must be higher then 0,5 between the rubber feet and the floor material. Do not place the machine on a smooth surface but on a rough floor material like concrete. If the friction coefficient is less, then the machine can move while spinning. If this should happens fasten the machine, see „Fasten with anchoring bolts“.

#### MACHINES 6kg / 13lb, 7kg / 16lb, 10kg / 22lb

Position the machine only on his 4 adjustable rubber feet.

#### MACHINES 16kg / 36lb

Place between the four corners of the frame and the floor a thin rubber sheet of 10x10cm / 3.93"x3.93" with thickness between 1-2 / 0.04"-0.08" maximum. We advice to fasten this machines always, see „Fasten with anchoring bolts“.

### 4.3.2. FREELY ON AN ELEVATION

#### MACHINES 6kg / 13lb, 7kg / 16lb, 10kg / 22lb

If you choose to place the machine on a metal base or pad, use a U-profile to secure the machine position. Fix the U-profile to the iron frame by welding or fix it to the floor by anchoring bolts. This is necessary to prevent that the machine moves from the base. Make a base according, fig. 4.3.2.

Place the machines front rubber feet in the U-profile.

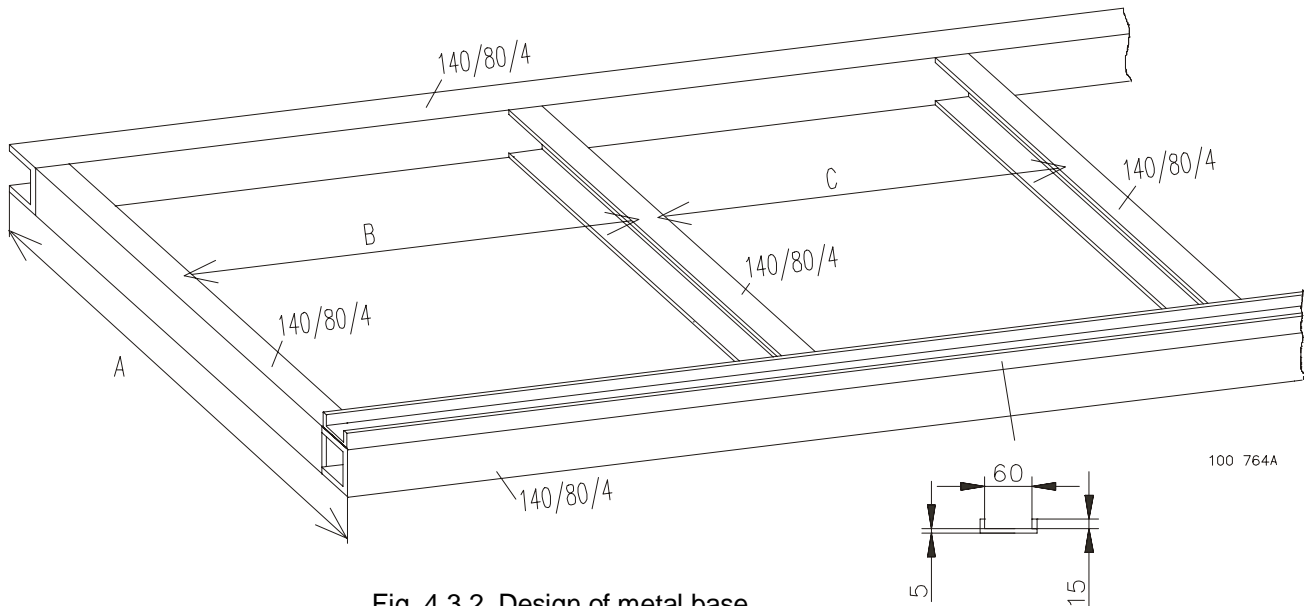


Fig. 4.3.2. Design of metal base

	6kg / 13lb	7kg / 16lb	10kg / 22lb
<b>Distance A</b>	660	660	760
<b>Distance B</b>	480	480	480
<b>Distance C</b>	590	590	590

Tab 4.3.2. Frame dimensions



**WARNING !**

**NEVER DO THIS FOR A 16 kg / 36 lb MACHINE.**

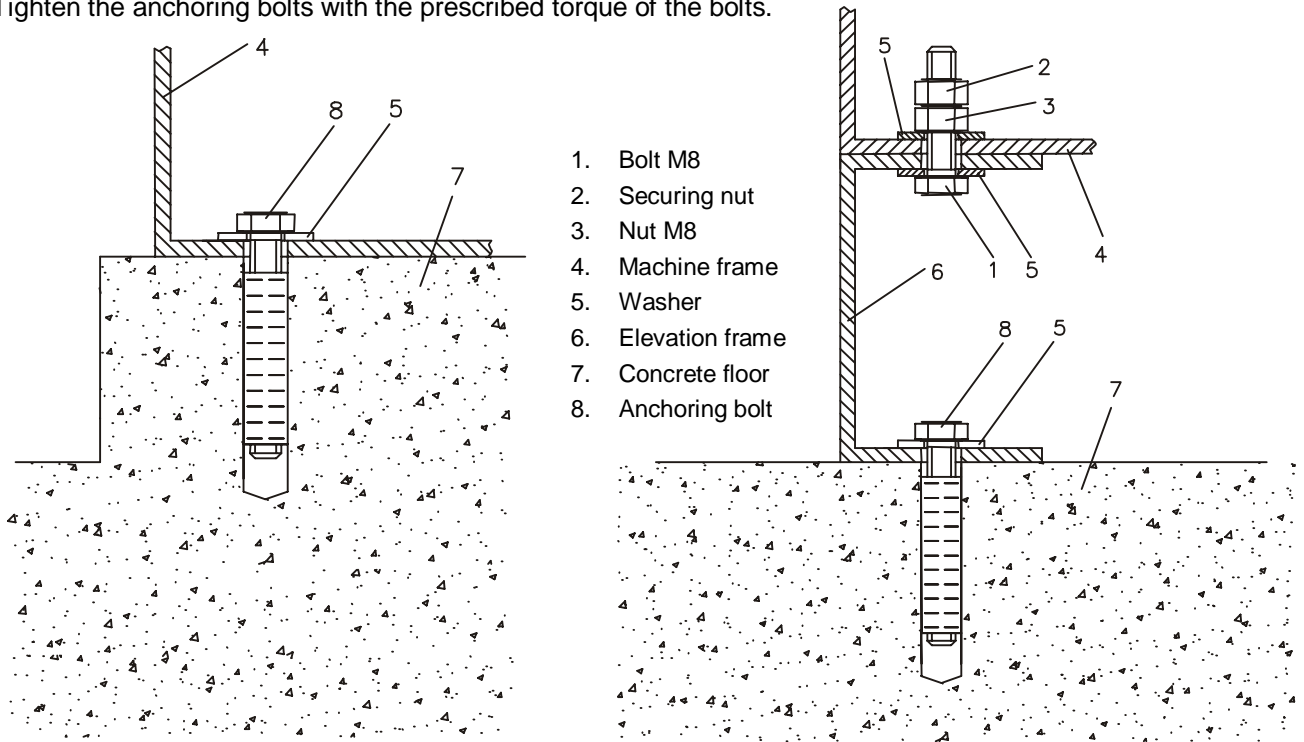
### 4.3.3. FIXED ON AN ELEVATION

The machine can also be secured to a mounting base or foundation by means of bolts and anchoring bolts to assure the safety. When a concrete pad or a frame is used then is the maximum height 305 mm (12"). The pad or frame must be designed so that it can carry the static and dynamic forces. The thickness of iron profiles is minimum 4 mm (0.158").

For 6kg / 13lb, 7kg / 16lb, 10kg / 22lb machines, remove the four rubber feeds from the machine frame.

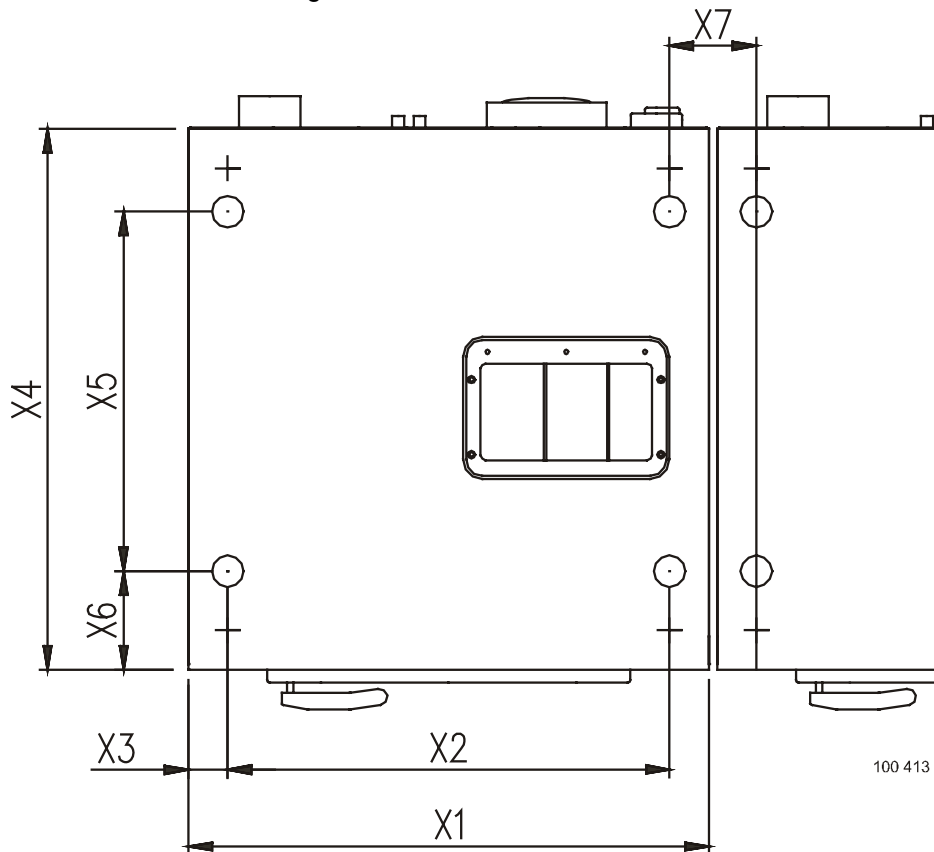
Do not tighten anchoring bolts before the concrete base around the bolts is completely secured.

Tighten the anchoring bolts with the prescribed torque of the bolts.



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Fig. 4.3.3.A On an elevation



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Fig. 4.3.3.B Frame fixation dimensions

	6kg / 13lb	7kg / 16lb	10kg / 22lb	16kg / 36lb
X1	660 mm / 25.98"	660 mm / 25.98"	660 mm / 25.98"	830 mm / 32.7"
X2	560 mm / 22.05"	560 mm / 22.05"	560 mm / 22.05"	715 mm / 28.1"
X3	50 mm / 1.97"	50 mm / 1.97"	50 mm / 1.97"	57.5 mm / 2.26"
X4	685 mm / 26.97"	685 mm / 26.97"	785 mm / 30.91"	960 mm / 37.8"
X5	455 mm / 17.91"	455 mm / 17.91"	565 mm / 22.24"	815 mm / 32.09"
X6	130 mm / 5.12"	130 mm / 5.12"	130 mm / 5.12"	80 mm / 3.15"
X7	110 mm / 4.33"	110 mm / 4.33"	110 mm / 4.33"	130 mm / 5.12"

Tab 4.3.3. Distances anchoring bolts

#### 4.3.4. LEVELING THE MACHINE

**⚠ WARNING !**

**THE MACHINE MUST RELIABLY REST IN ALL FOUR CORNERS OF THE MACHINE!  
THE MACHINE MAY NOT ROCK.  
THE MACHINE MUST BE IN WATER LEVELLED POSITION.**

#### **MACHINES 6kg / 13lb, 7kg / 16lb, 10kg / 22lb**

The rubber feet are screwed on the bottom of the machine frame and are adjustable with a wrench size 13mm / 0.5" and 17mm / 0.7". Check the position of the top of the machine by a water level and adjust machine legs, fig.3.1, pos.11. Adjust the four rubber feet until the machine is leveled and tighten the nuts M10 back to the bottom of the frame.

#### **MACHINES 16kg / 36lb**

The 16kg / 36lb machines don't have rubber feet for adjustment to water level. When it is necessary use thin hard plates of 10x10cm / 3.93"x3.93"with thickness of 1mm / 0.04" and place them under the frame corner of the lowest position. Use more of them until the machines stands water level. It is always advisable to bolt down this machine after leveling. Take care that the machine is in the lowest possible position. If the machine with his cabinet rocks can it damage the machine cabinet. The manufacturer is not responsible for consequences caused by a wrong installation.

#### 4.4. SHIPPING BARS

**⚠ WARNING !**

**DO NOT TRY TO OPERATE THE MACHINE WITHOUT REMOVING THE SHIPPING BARS  
DO NOT TRANSPORT THE MACHINE WITHOUT SHIPPING BARS MOUNTED.  
OTHERWISE THIS CAN LEAD TO INJURY TO PEOPLE AND CAN DAMAGE THE MACHINE.**

The machine is blocked for transport. This eliminates all possible movement of the tub during transportation. There are 3 striking shipping bars which must be removed before putting the machine into operation.

1. Remove fixation plate front, fig. 4.4. pos. 1.
2. Remove fixation plate rear right, fig. 4.4. pos. 2.
3. Remove fixation plate rear left, fig. 4.4. pos. 2.

**IMPORTANT : UNSCREW ONLY THE NUTS WHERE INDICATED !**

After removing the shipping bars put the service panel, fig. 4.4. pos.3 and the rear panel, fig.4.4. pos.4 back on the machine. Keep the shipping bars pos.1, 2 for possible future transportation.

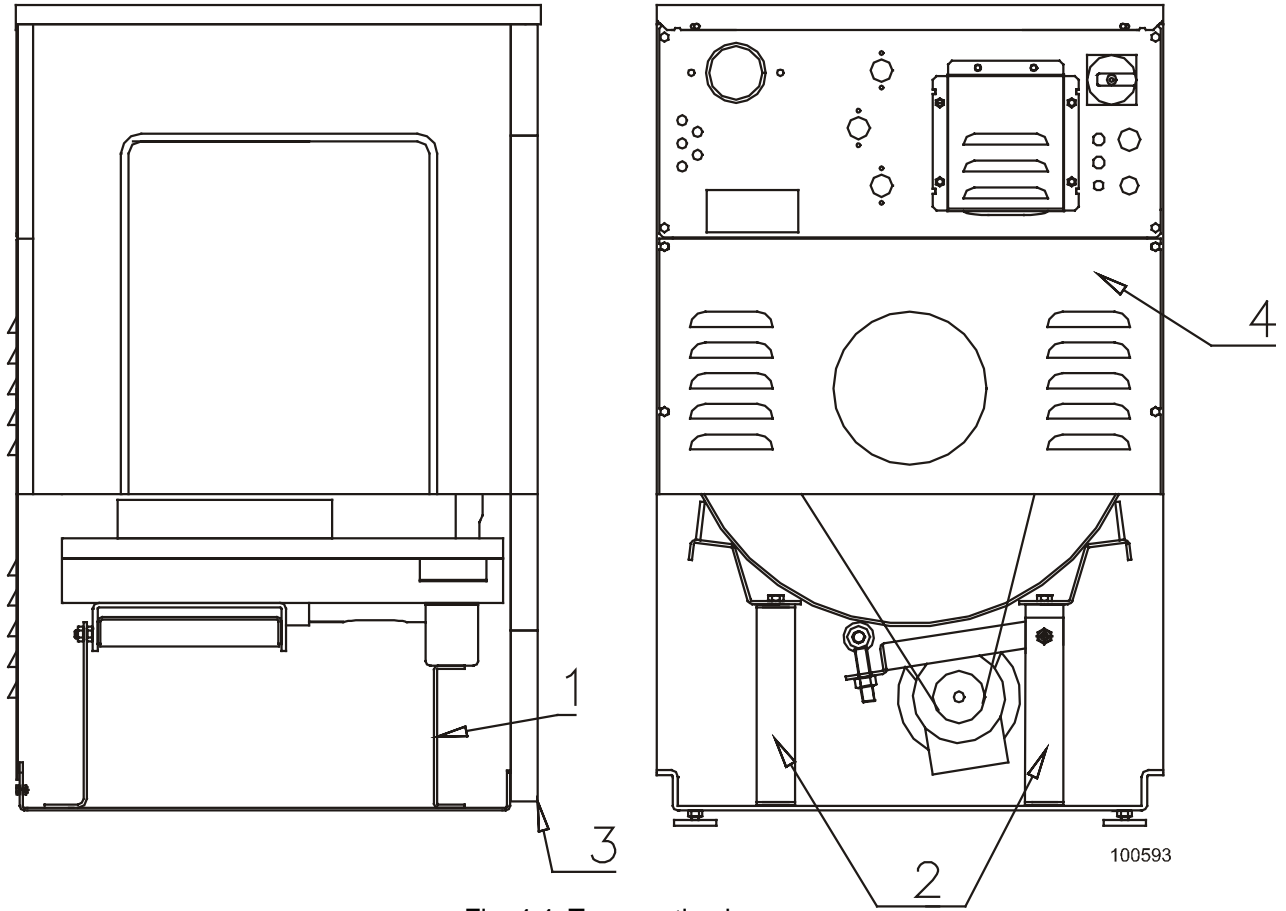


Fig. 4.4. Transporting braces

## 4.5. ELECTRICAL CONNECTION

### 4.5.1. GENERAL

#### **⚠ WARNING !**

**THE MACHINE MUST BE CONNECTED TO THE POWER, GROUND, WATER, VENTILATION AND STEAM SUPPLY ACCORDING TO THE INSTALLATION MANUAL, IN COMPLIANCE WITH THE VALID LOCAL STANDARDS DONE BY QUALIFIED TECHNICIANS WITH PROPER AUTHORIZATION.**

**THE VALID STANDARDS FOR CONNECTING TO THE LOCAL POWER NETWORK (TT / TN / IT, ...) MUST BE FOLLOWED. IN THE STANDARD EXECUTION, THE WASHER MAY NOT BE SUITABLE FOR CONNECTING TO AN IT SUPPLY SYSTEM.**

**THE WASHER EXTRACTOR IS INTENDED TO BE PERMANENTLY CONNECTED TO THE ELECTRICAL SUPPLY.**

The machines have been designed for connecting to the electrical network according to the specifications of your order. Before connection check if the electrical values stated on the serial plate of the machine correspond to your electrical network. If not do not connect the machine, please contact your dealer.

If the machine is not equipped with a supply disconnecting device, like a main switch then a supply disconnecting device need to be provided in the installation for all electrical supplies connected to the machine, in accordance with EN 60204-1 standard, point 5.3. This device shall disconnect the electrical equipment of the machine from the supply when required e.g. maintenance.

### 4.5.2. EMERGENCY STOP DEVICE

The machines are equipped with an emergency stop device in accordance with ISO13850 - category 0 stop function. Nevertheless, the emergency stop device is omitted on machines design for coin, token, external payment system or similar operation for use in self-service situation. The owner-installer-user must provide remote-located emergency stop device(s). This emergency stop device(s) needs to stop each machine in accordance with ISO13850 - category 0. There are made provisions in the wiring harness, were immediate removal of power to the actuators can be accomplished. See the electrical schematic of the machine for correct connection of the device.

### 4.5.3. SUPPLY CABLE AND SAFETY DEVICES

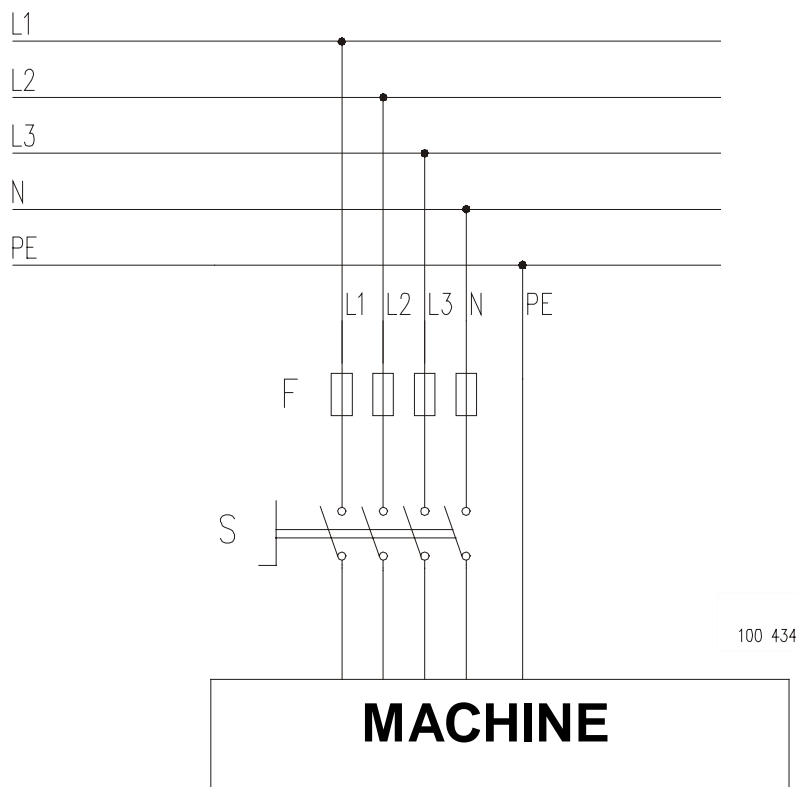


Fig. 4.5.A. Example of electrical connection

Supply cable of the machine must have copper wires. The cross section of the supply wires depends on the supply voltage and on the total electrical power input of the machine (see table 4.3). The supply cable safety device against a short-circuit fault and overloading must be performed by automatic breakers or fuses in the laundry switchboard. The recommended minimal cross-section of the supply wires as well as the values of fuses (F) for the supply are stated in table 4.5.

In all cases where the local standards requirements are higher, these have to be followed above the recommendation in table 4.5. If the local standards require installation of the earth leakage trip, we suggest to install one of 100 mA for the machines equipped with frequency inverter. The main contacts of the earth leakage trip must comply with the specified power input of the machine.

Power supply protection (A)	Recommended phase conductor section (mm <sup>2</sup> )	Protection conductor section (mm <sup>2</sup> )
16	2,5	2,5
25 - 32	4	4
40	6	6
50	10	10
60 - 80	16	16

Tab 4.5.A. Recommended minimal conductor section

#### 4.5.4. INSTALL SUPPLY CABLE TO THE MACHINE

**⚠ WARNING !**

**THE PROTECTIVE CONDUCTOR MUST BE LONGER SO THAT WHEN THE CABLE IS PULLED OUT ACCIDENTALLY, THIS CONDUCTOR IS DISCONNECTED AS THE LAST ONE!**

Push the cable through the turnbuckle and connect the wires with the main switch. The diameter of the supply cable must be between 11-17mm / 0.43-0.67" for M25 turnbuckle and between 12-21mm / 0.47-0.83" for M32 turnbuckle. Conductors of the supply cords shall not be consolidated by lead-tin soldering where they are subject to contact pressure, unless the clamping means is constructed so that there is no risk of a bad contact due to cold flow of the solder. The phase terminals are marked by L1, L2 and L3. A separate insulated terminal, labeled N, is provided for the neutral wire. Connect the protection earth wire directly to the protection earth terminal (marked PE) located on the rear bridge. Tighten the cap nut of the turnbuckle. By this way the rubber ring in the turnbuckle is pressed, thus securing the cable mechanically and against water. If there's no main switch the terminals are marked in the same way so also the connection is the same. Depending on your supply voltage it is possible that L2 and L3 (1 AC) or N (3 AC without Neutral) must not be connected.

If the cable is attached from above, it is recommended to make a sagging on the cable in front of its entry into the cable turnbuckle. In this way an ingress of the running condensed water into the bush and/or machine can be avoided. The manufacturer recommends to attach the cable from beneath.

1. L1, L2, L3 and N terminal
2. Turnbuckle
3. Turnbuckle nut
4. PE terminal

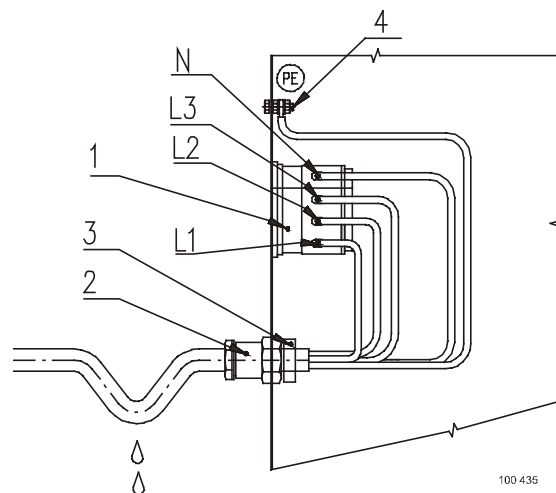


Fig. 4.5.B. Example of supply cable connection

### 4.5.5. CHECKING ROTATION DIRECTION

CHECK IF THE DRUM ROTATES FROM THE FRONT VIEW IN CLOCKWISE DIRECTION DURING EXTRACTION. IF IT ROTATES IN OPPOSITE DIRECTION, DISCONNECT TWO PHASES OF THE CONNECTION FROM THE FREQUENCY INVERTER TO THE MOTOR , SWITCH THEM OVER AND CHECK AGAIN THE ROTATION DIRECTION.

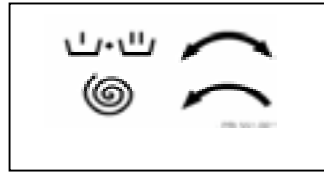


Fig. 4.5.C. Spin direction

### 4.5.6. MULTIPLE MACHINES IN LINE SIMPLE PHASE

When multiple single phase machines are connected to the same electrical network, it is necessary to connect the machines according to fig. 4.5.D. The phase of the frequency control and motor which is connected to the terminal inside the machine, has to be connected alternatively for the first machine with the first phase L1 of the network, the second machine with the second phase L2, ... The fourth machine must again be connected to the first phase L1. This assures a better load of the electrical network.

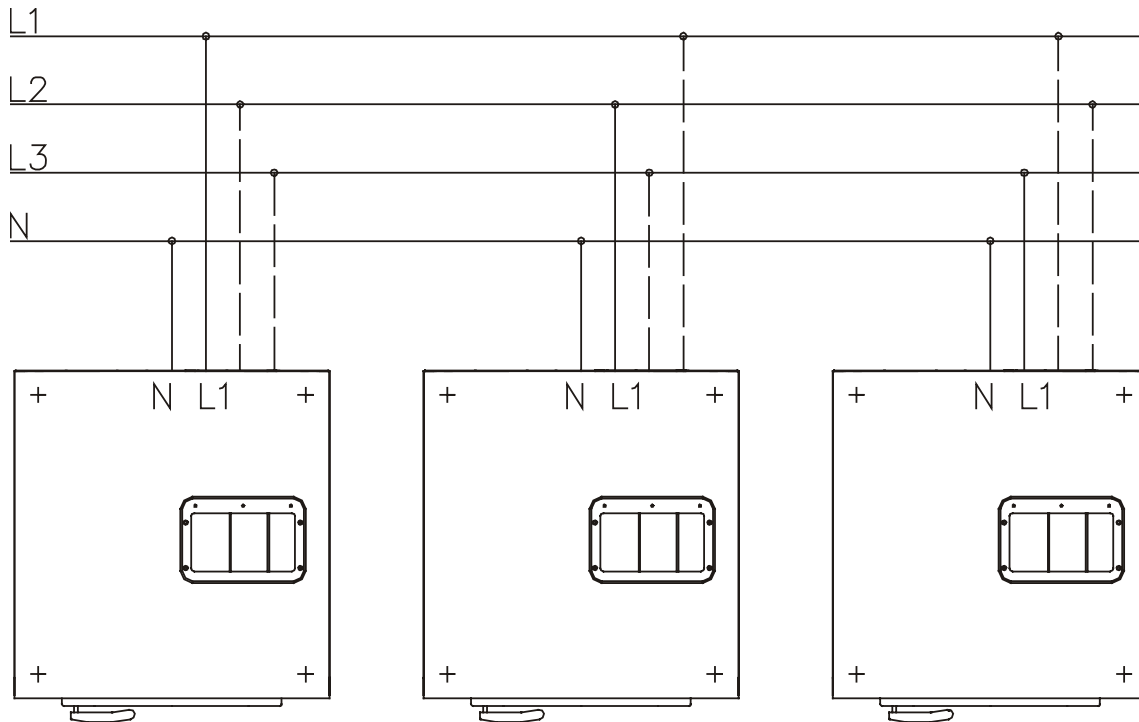


Fig. 4.5.D. Multiple machines in line

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## 4.6. CONNECTION OF WATER SUPPLIES

### WATER CONNECTION

#### WATER HARDNESS

It is advisable to contact the water supplier for information concerning the properties of the water in your area. Good wash results are dependent also on the water hardness. For medium to very hard water, consideration should be made to make the water softer.

Only in some cases is the use of hard water desirable, such as adding softener in the linen.

The soap supplier can help you with making the right decisions concerning hard water, soft water, washing programs, type of soap and other related items to have the best wash results.

Characteristics	mmol / dm <sup>3</sup>	dH - Germany	fH - France	England	gr/gal USA
soft	0 - 1,25	0 - 7°	0 - 12°	0 - 8,75°	0 - 3
medium	1,25 - 2,5	7 - 14°	12 - 25°	8,75 - 17,5°	3 - 7
hard	2,5 - 3,75	14 - 21°	25 - 37°	17,5 - 26,3°	7 - 15
very hard	above 3,75	above 21°	above 37°	above 26,3°	above 15

Tab.4.6.A.

## HOT WATER

When the machine is provided with a hot water inlet, we advise connecting this inlet to a hot water supply that is set to 70°C / 158°F. The hot water supply needs to be large enough to provide the required hot water for the washers.

## WATER CONNECTION

Most machines are made with 2 or 3 water inlets. One is always marked with „soft water“. If more inlets are present, they are marked with „Hot water“ or „Hard water“. For connection dimensions see fig. 3.1. Always use the flexible hose delivered with the machine, if not present, contact your dealer. In each case **do not** use a fixed connection to the water supply.

For the proper function of the machine, it is necessary to keep the water pressure within the limits stated in the technical data. It is also necessary to connect all available water inlets to a water supply. If a hard water supply is not present, connect it with soft water. If no hot water supply is present, contact your dealer for the proper required action.

The machine is equipped with 3/4" inlet valves. First let the water flow from the tap into the drain before connecting the machine to the water system. This is for cleaning the pipes from dirt. Otherwise the filters could be stopped up.

Open the taps and check the connection points at the taps and at the inlets of the machine for tightness. If water is leaking, correct the position of the seal and tighten the screw coupling.

## WATER CONSUMPTION

The water consumption depends on the programmed values in the timer. These values are shown in the program manual. For a prewash and wash the low water level (LL) is used. The high water level (HL) is used for rinsing. The programmed units correspond to an average amount of water. You can calculate the total water consumption in one washing program by counting up the amount of water by each washing step.

An example is shown for a system with cold and warm water supply for a machine with capacity of 10kg / 22lb. A system without warm water supply you can count with the total amounts.

Program (60°C / 140F) Light soiled linen			
Consumption	Cold water (liter / gal)	Warm water (liter / gal)	Total (liter / gal)
1. Wash 60°C	15 / 3.96	16 / 4.22	31 / 8.18
2. Rinse (3x)	46 / 12.15	-	138 / 36.45
TOTAL	61 / 16.11	16 / 4.22	169 / 44.64

Tab 4.6.B. Water consumption

The values received from this calculation is only an estimation of the real water consumption. The deviation depends on many circumstances. In the wash cycle for example there will be taken a mix of warm water and cold water. The mix of the water depends on the temperature of both. The total amount of water consumed depends also on the loading of the drum with linen and the turning of the drum.

## STEAM CONNECTION

**⚠ WARNING !**  
**BEFORE EVERY STEAM VALVE IT IS NECESSARY TO INSERT THE FILTER WITH PERMEABILITY UP TO 300 MICROMETERS. POSSIBLE DIRT BIGGER THAN 300 MICROMETERS MIGHT DAMAGE THE STEAM VALVE AND CAUSE ITS LEAKAGE.**

Machines with steam heating have a device for a steam connecting, see fig. 3.1, pos.12) with diameter 1/2" in rear left part. Use inlet steam pressure hoses, adapted to the valves with seal. The condition for proper function of inlet valves is the pressure between (0,1 - 0,3 MPa / 14,5 - 44 PSI - applicable for steam pressure low), (0,3-0,8 MPa / 44-116 PSI - applicable for steam pressure high).

## WATER DRAIN CONNECTION

The machine is equipped with a drain valve of 76 mm (3") diameter. The drain is situated on the rear of the machine. The drain has to be connected to the waste channel. You can use the elbow, which is a part of the delivery. Secure the elbow with a clamp.

**THE WASTE CHANNEL MUST BE LOCATED LOWER THAN THE DRAIN PIPES BECAUSE THE WATER DISCHARGES FROM THE MACHINES BY GRAVITY. DO NOT REDUCE THE DIAMETER OF THE MACHINE DRAIN PIPES.**

1. Waste channel cover
2. Drain elbow  $\text{Ø}76\text{mm} / 3''$
3. Clamp
4. Waste channel

Without rubber feet :

$X1 = 55\text{mm} / 2.16''$

With rubber feet :

$X1 = 73\text{mm} / 2.87''$

$X2 > 100\text{mm} / 3.93''$

$X3 > 20\text{mm} / 0.78''$

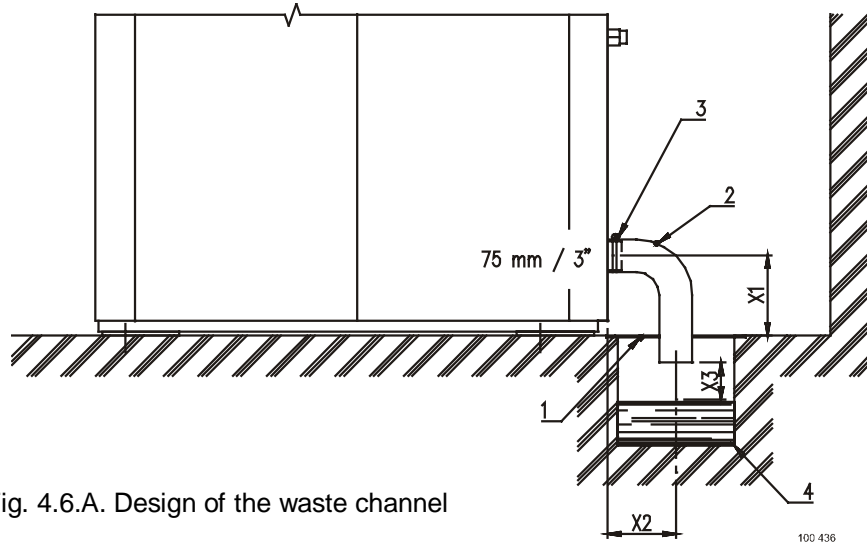


Fig. 4.6.A. Design of the waste channel

The main drain pipe must have the capacity to be able to handle the total output of all connected machines. There must also be a hole every twenty meter in the drainpipe, fig. 4.6.B, pos. 1 to assure the good working of the drain. This allows air in the main drain and facilitates drainage of the water flow. Every time a machine is coupled on the drainpipe, the diameter of the tube or the width of the waste channel must be more. See, fig. 4.6.B, D1, D2, D3.

The recommended drain pipes diameter are:

D1 = 75 mm / 3'' for one machine

D2 = 100 mm / 4'' for two machines

D3 = 125 mm / 5'' for three machines

If the main drain cannot be sufficiently deodorized, install a deodorizer per machine.

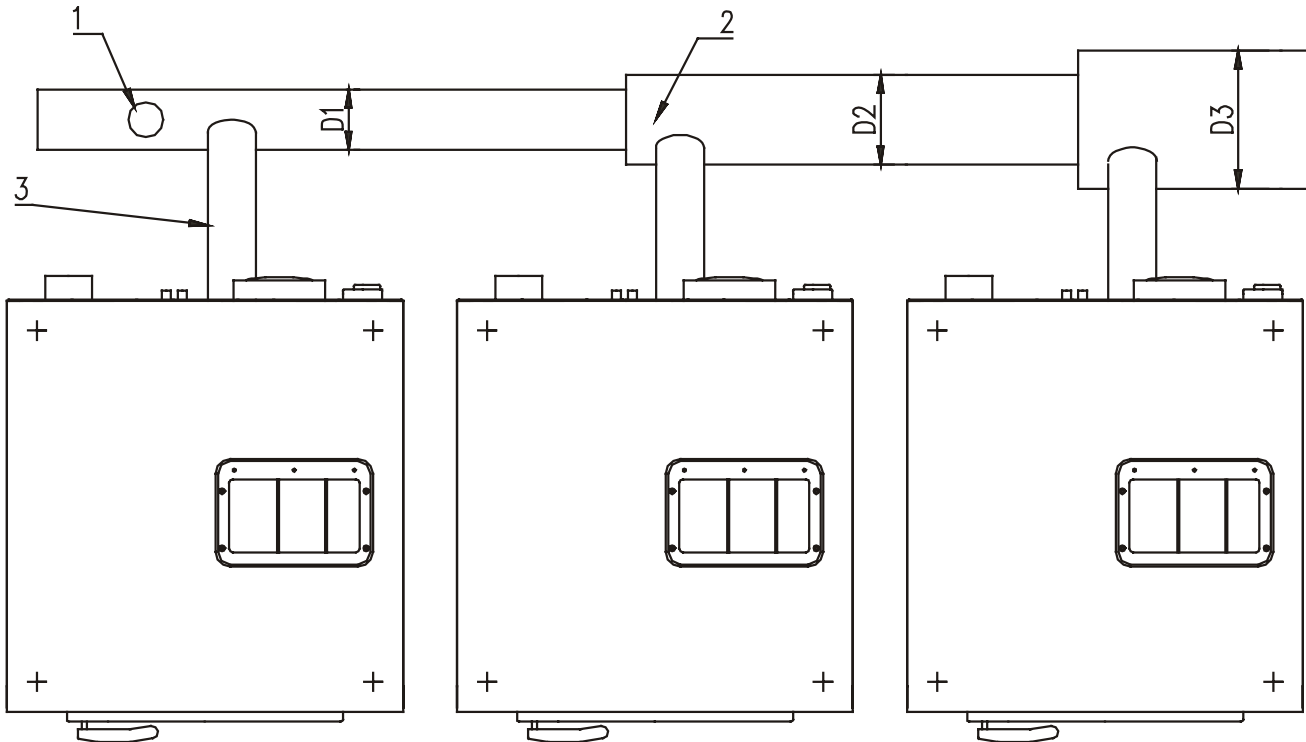


Fig. 4.6.B. Recommended drain pipe diameters

## AIR VENT CONNECTION

### **⚠ WARNING!**

**WATCH OUT, VAPOURS ESCAPE FROM THE MACHINE THROUGH THE AIR VENT OPENING!**

**DO NOT COVER OR CONNECT TO ANYTHING!**

On the backside, the washers are provided with an air vent opening of O.D. 75 mm / 3".

Do not cover the washer air vent opening. It is part of the back flow prevention water system. It also takes care that the tub can not be pressurized by water intake and vapor of the hot water, this allows for proper measuring of the water level.

For the safety of everyone make sure that unauthorized persons cannot reach the backside of the machine.

## 4.7. CONNECTION OF LIQUID WASHING SOAPS DOSING

It is possible to connect an external dosing of liquid soaps to the machine.

### **⚠ WARNING !**

**DISCONNECT THE MACHINE SUPPLY POWER INLET BEFORE INSTALLATION.**

**THE INLET TERMINALS ARE UNDER CURRENT EVEN WHEN THE MAIN SWITCH IS OFF**

**ELECTRICAL CONNECTION AND CONNECTING THE MACHINE INLETS MUST BE CARRIED OUT BY AUTHORIZED WORKERS ACCORDING TO INSTALLATION MANUAL INSTRUCTIONS AND IN ACCORDANCE WITH VALID LOCAL STANDARDS.**

**AFTER THE HOSES ARE CONNECTED PUT ALL MACHINE COVERS BACK TO THEIR PLACES.**

For connecting the liquid soap inlets and wiring for machines 6kg / 13lb, 7kg / 16lb, 10kg / 22lb you must take of the top panel. Unscrew the two bolts and take the top panel of the machine. For 16kg / 36lb machine it is sufficient to open the top panel by means of the two key switches at the front.

At the right side panel there is a support for the top panel.

The hoses of external dosing of liquid soaps are pushed through the holes in the rear panel after removing the plugs. The hoses should be protected by rubber bushings where penetrating the rear panel. After this make as many holes in the soap hopper, fig. 4.7.A, pos.1) as you have liquid soap hoses. Connect the hoses to the soap hopper by means of clamps.

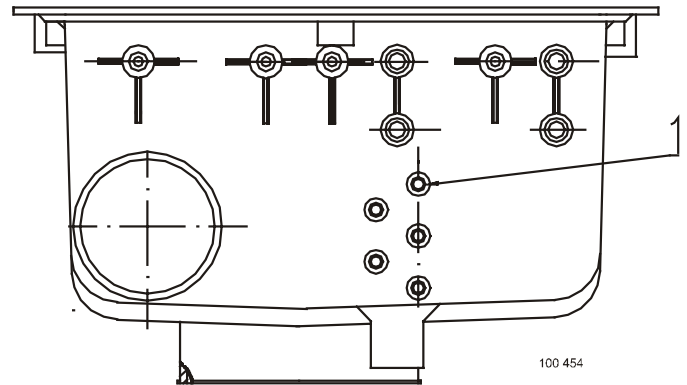


Fig 4.7.A. Connection soap hopper

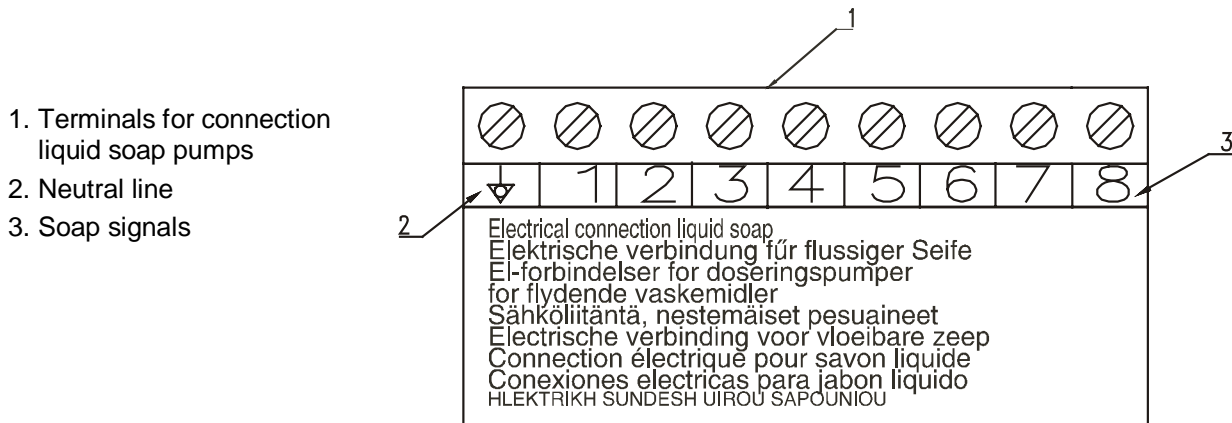
### **⚠ WARNING !**

**CHECK IF THE HOSES ARE TIGHTEN BY THE CLAMPS !**

**ANY LEAKAGE OF CHEMICALS MAY CAUSE CORROSION ON THE PARTS IN THE MACHINE.**

The liquid soap pump system supply needs to be connected to an external electrical source. Only authorized workers with a valid qualification must execute the electrical connection of the machine according to the valid local standards. Do not connect the pump system in the machine. The liquid soap signals are available in the machine on a connector, see fig. 4.7.B. The first terminal is the common line of the signals. The following terminals are the signals that will be active depending of the programmed wash program. These signals have a potential of max. 250V. Use a cable that is sufficient for their function and pass it in the appropriate opening in the machine. Connect these signal terminals like the manufacturer of the liquid soap system requires.

The liquid soap system may draw maximum 0,1A out the control circuit of the washer-extractor.



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Fig. 4.7.B. Electrical connection soap pumps

## 4.8. PREPARING THE MACHINE FOR OPERATION

### CHECKING BEFORE PUTTING INTO SERVICE

1. Make sure the transporting braces are removed.
2. Put out all things from wash drum.
3. Check the machine horizontal position.
4. Check connection and clearance of your drain, channel or central drainage.
5. Check protective connection (earthing) and electrical supply connection.
6. Open water valves to machine and check hose and connections for leaks.
7. Read carefully the „User´s manual“ and „Programming manual“, which are a part of delivery.
8. Initialize the programmer after machine installation. The calibration of the zero level must not happen anymore. This calibration is executed in the factory and is not changeable.
9. Check the drum rotation direction during extracting according to the extracting label.
10. Check the vibration switch function during extracting (see also chapter 5.2 adjustments and parts exchange, adjustment of the vibration switch).
11. Check the emergency function.

## 5. MAINTENANCE AND ADJUSTMENTS

### **WARNING !**

**ALWAYS FOLLOW SAFETY INSTRUCTIONS! DO NOT BYPASS ANY SAFETY DEVICES OR THEIR PARTS, ANY INTERFERENCE TO THE MACHINE FUNCTIONS AND CONSTRUCTION ARE PROHIBITED. BEFORE MAINTENANCE WORK DISCONNECT THE MACHINE POWER SUPPLY.**

**USE THE PROPER CHEMICAL AGENTS WHICH AVOID CALCIUM SEDIMENTS ON HEATING ELEMENTS AND OTHER MACHINE PARTS. DISCUSS THIS ISSUE WITH YOUR SUPPLIER OF WASHING PRODUCTS. THE MANUFACTURER OF THE MACHINE IS NOT RESPONSIBLE FOR THE DAMAGE OF HEATING ELEMENTS AND OTHER MACHINE PARTS DUE TO CALCIUM SEDIMENTS.**

In case of serious failures call the technical service of your supplier. When replacing any parts of the machine, exchange them with original parts obtained from your dealer or ordered through the spare parts catalogue.

### 5.1. MAINTENANCE

#### CHECKING AND MAINTENANCE DAILY

1. Remove the linen or other parts (paperclips, needles, ...) who are left lying in the drum to avoid injuries and damage to the rubber door seal, seals, glass etc.
2. Clean the door seal from any remaining detergent and other foreign matter.
3. Clean the top and body when water or detergent traces are on the machine. Use a dampened cloth, do not use abrasive cleaners. Dry with a soft cloth.
4. Hoppers must be cleaned at the end of each working day. Remove sediments inside the reservoir by means of a plastic spatula and splash by water.
5. Check water and possible steam inlets for leakage.
6. At the end of the working day, open the machine door to allow airing out the machine and to prolong the door gasket life service. We recommend to shut off all electrical power inlets and main water inlets.

#### CHECKING AND MAINTENANCE EVERY THREE MONTHS

### **WARNING !** **HOT MACHINE PARTS SHOULD BE ALLOWED TO COOL FIRST !**

1. Check if the drain valve is not leaking during the wash process. It is also important that the valve opens properly afterwards (drain valve opens when electrical power falls out). Wash out the drain if the water doesn't drain fluent.
2. Check for the belt tightness or possible damage; therefore remove the machine rear cover.
3. Check the tightness of the bolts according to chapter 5.2.
4. Check visually all hoses and connection inside the machine for leaking.
5. Make sure that the control components are protected against moisture and dust during the clean up. Wipe and clean up the machine inside.
6. Tighten the contacts of heating elements terminals on machines with electrical heating.

#### CHECKING AND MAINTENANCE EVERY SIX MONTHS

1. The filters in the water connection at the valves need to be cleaned. Turn off the tap. Unscrew the hoses at the back of the appliance. Take out the filter at the center with pointed pliers, clean and re-insert. When re-attaching the hoses, make sure that the seals are seated correctly. Check water inlets for leaks. Tighten the connections or replace the seals of the inlet hose if necessary.

### **BEFORE REMOVING TOP OR BACK PANEL OF THE MACHINE, SWITCH POWER OFF AND WAIT FOR AT LEAST 10 MINUTES. BEFORE STARTING INSPECTION OF FREQUENCY INVERTER, CHECK FOR RESIDUAL VOLTAGE ACROSS MAIN CIRCUIT TERMINALS + AND -. THIS VOLTAGE MUST BE BELOW 30VDC BEFORE YOU CAN ACCESS THE INVERTER FOR INSPECTION.**

2. Clean and remove dirt and dust from:
  - the cooling fin of the inverter
  - the motor cooling fins
  - the internal ventilator of the inverter (if present)
  - the external ventilator (if present)
  - the external air relieves of the machine
  - check if ventilator in coolfins of inverter (if present) is functional
  - check if external ventilator (if present) is functional

## 5.2. ADJUSTMENTS AND PART'S EXCHANGES

### ADJUSTMENT OF DOOR SEAL THRUST

#### MACHINES 6kg / 13lb, 7kg / 16lb, 10kg / 22lb

If there is a water leakage around the door it is necessary to find out if the problem has been caused due to the door shift out of its position or if the door seal thrust should be adjusted. In some cases the door seal has to be replaced. (fig. 5.2.A).

1. For increasing (decreasing) the pressure of the door seal, take off spacers (pos.1) (add spacers) between the door frame and the hinge blocks. Therefore remove the screws (pos.4) on the door frame. Tighten the screws again after positioning the spacers.
2. The adjustments of the door seal pressure must be executed as follows. The door rubber (pos.2) must still touch the tub rubber at the hinge side when the door opens at 5°.
3. Adjust the position of the door by loosening the screws (pos.4) on the door frame. The door hook must be right in the center of the door lock opening. Tighten the screws (pos.4) again after correct positioning of the door.

1. Adjusting spacers of the door hinge
2. Door seal
3. Door glass
4. Bolts of the door hinge
5. Door frame

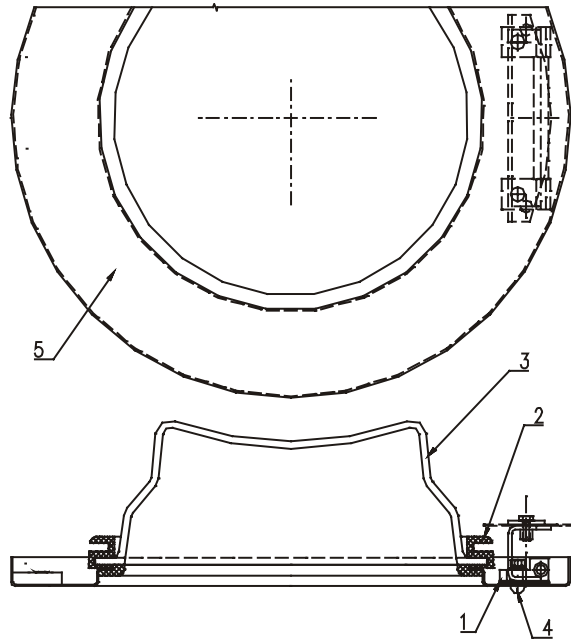


Fig. 5.2.A. Door fastening

#### MACHINES 16kg / 36lb

1. Loosen two bolts (6) fastening the top door hinge (7), fig. 5.2.B.

**BE CAREFUL TO AVOID POSSIBLE FALLING OF THE DOOR WITH LOOSENED HINGE TO THE FLOOR. RISK OF INJURIES!**

2. Take off the elimination washer (8).
  3. Tighten the two bolts (6) fastening the top door hinge.
  4. Do the same with the bottom hinge.
  5. Check if the door hinge has not moved, closing and opening of the door must be smooth.
- If the thrust adjusting has not been sufficient, exchange the door seal.

6. Hinge bolt
7. Hinge
8. Elimination washer
9. Door

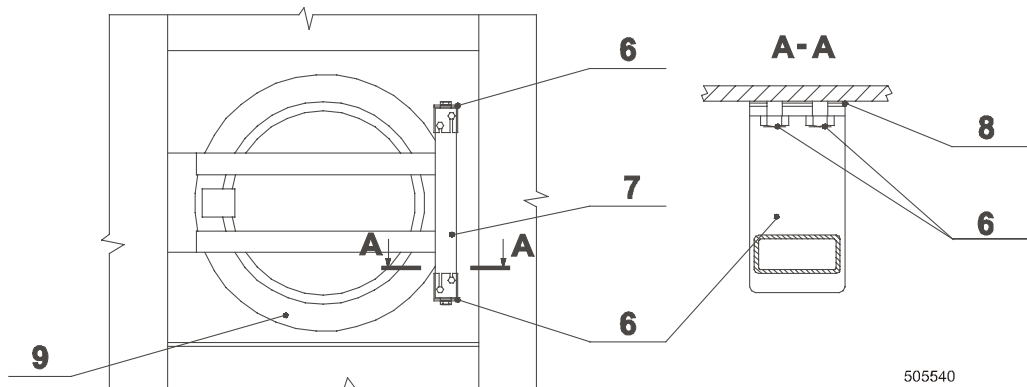


Fig. 5.2.B. Door fastening

## REPLACEMENT OF DOOR RUBBER

### MACHINES 6kg / 13lb, 7kg / 16lb, 10kg / 22lb

1. Open the door. Remove the door glass (Fig. 5.2.A, pos.3) with rubber (pos.2) from the stainless steel door (pos.5) by pushing it towards the drum. Do it carefully, do not damage the glass.
2. Remove the seal (pos.4) from the glass.
3. Place a new rubber seal with wider groove on the glass with the edge up.
4. Moisten the seal groove (pos.2) for door with soap water. Place a smooth cord in the groove all around. Tighten up the margin by cord and fit the unit to the door opening (pos.5) (with the clip up). Hold one end of the cord firmly on the door. Pull the other cord end towards the center of the glass for the rubber edge properly fit in.

## ADJUSTING OF VIBRATION SWITCH

**⚠ WARNING!**  
**MAKE SURE THE MACHINE IS DISCONNECTED FROM POWER SUPPLY BY PULLING OUT THE PLUG!**

The vibration switch is an important safety element which must - if correctly adjusted - stop the machine if excessive vibrations and shaking occur due to an unbalance caused by improper distribution of linen in the washing drum. It is recommended that at the first installation and then once in a year a qualified worker verifies the vibration switch, fig. 5.2.C.

5. Dismantle (6kg / 13lb, 7kg / 16lb, 10kg / 22lb) the top cover by two bolts on machine rear for machines. For the 16kg / 36lb the top cover can be folded open and supported by the support at the right side panel.
6. Check the distance between microswitch (pos 1) and the limiter (pos 2).
7. The distance between the microswitch and the spring holder must be 0,2mm / 0.008".
8. Check the position and condition of the sensor (pos.3) in the limiter (pos 2). It must be exactly in the center of the hole! Unscrew the tiltswitch plate and move the plate up, down, left and right to adjust the center of the sensor to the center of the hole on the limiter.
9. At the first installation and then once in a year the vibration switch has to be tested on his functionality. After starting the extraction mode and after reaching the maximum RPM, carefully switch over the vibration switch by moving the flexible sensor manually. The machine will stop extracting and will return to 0 RPM.

**⚠ WARNING!**  
**DO NOT OPERATE THE MACHINE IF THIS FUNCTION DOESN'T WORK ANYMORE!**  
**DO THIS CAREFULLY TO AVOID INJURIES BY VIBRATING AND FIRM PARTS OF THE MACHINE!**  
**AFTER YOU HAVE CHECKED THE FUNCTION, MOUNT THE MACHINE COVER BACK!**

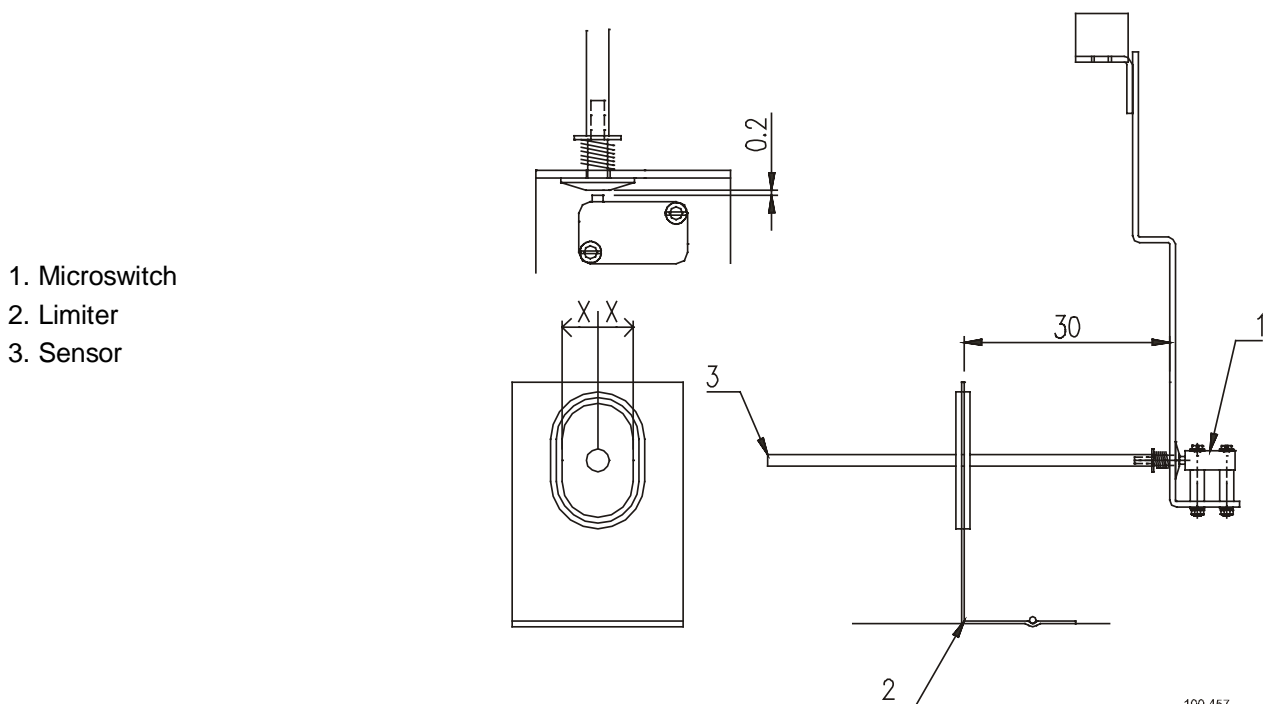


Fig. 5.2.C. Vibration switch

## REPLACEMENT / REGULATION OF THE BELT

**⚠ WARNING!**  
**MAKE SURE THE MACHINE IS DISCONNECTED FROM POWER SUPPLY BY PULLING OUT THE PLUG FROM THE SOCKET.**

On a new machine and after a belt replacement, make an inspection of the belt tightness :

10. After first 24 hrs of operation
11. After first 80 hrs of operation
12. Every 6 months or every 1000 operation hours - which ever come first.

The belts are accessible from the rear of the machine.

If the belts are too tight the bearing seating are under stress and their life service will be shortened. If the belts are too loose they can be slipping on the pulley and can cause a noisy operation. In the case when it's needed, tighten the belts.

### **MACHINES 16kg / 36lb**

The testing force of belt tensioning is 200 N which can be measured by tension meter. Procedure for approximate belt tensioning with belt deflection 20mm / 0.78" : apply a load of 5,5kg / 12lb to the middle of the belt. Change the belts if they are worn out or damaged.

**⚠ TO CHANGE THE BELTS:**  
**NEVER USE A CROWBAR TO TAKE OFF THE BELTS OVER THE PULLEY GROOVES!**

1. Dismantle the rear panel, fig. 5.2.D, (pos.1).
2. Take off the belts, (pos.2.) by pulling the belt and turning the drum pulley (pos.5).
3. Put a new belt (2) of identical type on pulleys (pos.5 and 8). The re-assembly of the belts is done in the reverse order as the disassembly.
4. The belt must be placed in the correct motor pulley trenches in such way the belt is running in the center of the drum pulley.

To tighten or loosen the belt tension :

1. Loosen the bolts (pos.4) for securing the motor position.
2. First unscrew the lower nut (pos.6) and then unscrew the upper nut (pos.7) for increasing the belt tension.
3. For decreasing the belt tension screw the lower and upper nut (pos.6 and 7) and lift the motor suspension. After this tighten all the bolts.
4. After the belt replacement, check the pulley alignment, the tightness of belts, bolts and nuts. Keep the belts and pulleys clean and free of oil, lubricants, water etc.

1. Rear panel
2. 2 x Belt
3. 2 x Screw M12 : Alignment
4. 2 x Screw M10
5. Motor pulley
6. Securing nut of bolt M16 (lower)
7. Securing nut of bolt M16 (upper)
8. Drum pulley

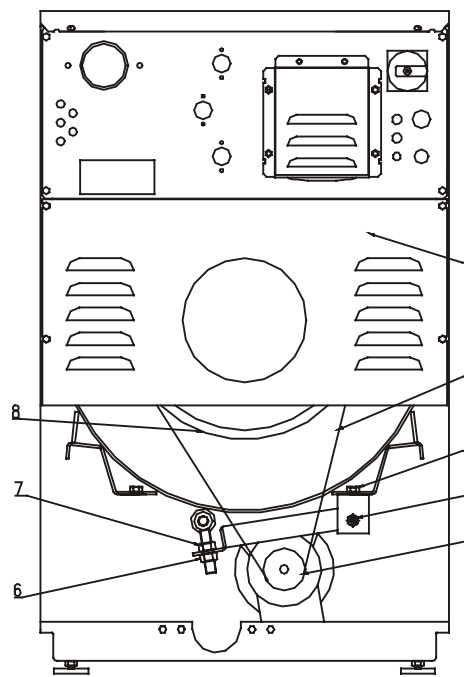


Fig. 5.2.D. Regulation of belt

## WATER FILTERS

Machines are equipped with filters on water inlets. It is necessary to clean up the filters occasionally to avoid a prolongation of filling the machine with water. Intervals of cleaning depend on the quality of the water, for example foreign particles in the water line.



### **WARNING !**

**BEFORE YOU START THE FILTER CLEANING CHECK IF THE INLET OF HOT WATER TO THE MACHINE IS CLOSED AND COLD.**

## TIGHTENING MOMENTS



### **WARNING !**

**REGULARLY, ONCE IN THREE MONTHS OR EVERY 500 WORKING HOURS INSPECT THE TIGHTNESS OF THE BOLTS !**

**REPLACE A DAMAGED BOLT WITH A BOLT OF THE SAME STRENGTH VALUE MARKED ON HIS HEAD ! IGNORING OF THE BOLT QUALITY AND MECHANICAL STRENGTH CAN CAUSE SERIOUS BODILY INJURIES !**

The recommended torque values for standardized steel bolts :

M6 8.8 : C = 10 Nm

M8 8.8 : C = 25 Nm

M10 8.8 : C = 45 Nm

M12 8.8 : C = 80 Nm

M16 8.8 : C = 200 Nm

The bolts that have to be inspected are :

Bolts which are used for the reinforcement triangles for the cabinet. This reinforcements are found in the front (2 pieces) and in the back (2 pieces) of the machine = 16 bolts M6 and M8.

Bolts for fixation of bearing house in tub M10 or M12.

## FUSES

The internal fuses FU1, FU2 for controlling circuits have value 1A (230V or 400V) and dimension L=32mm / 1.26" and  $\varnothing = 6,3\text{mm} / 0.24"$ . The fuses are accessible from the machine rear, fig. 3.1., pos.7.

## 6. TROUBLESHOOTING AIDS

### 6.1. ERROR HANDLING

The timer allows the full control of the washing machine. When an error occurs then automatically the machine will go over to a safe state. With the diagnostic program you can determine the problem (See „Programming manual“). This program will test all the functions of the washing machine.

If a failure occurs then the computer will display a diagnostic message. The message is a number that correspond with a typical problem.

If a failure occurs and the timer gives no message you can consult chapter 6.2.

### 6.2. PROBLEM CHECK LIST

Problem	Cause	Solving the problem
<p>When the power is switched on : the display is not lighting up</p> <p>Remark : The display must always light up when the power connector is connected to the power board (EPROM with software must be implemented)</p>	<ul style="list-style-type: none"> <li>• no external power</li> <li>• the emergency button is activated</li> <li>• the power connector is not connected on the board</li> <li>• the power connector is inverse connected</li> <li>• the fuse on the PWR board has jumped</li> <li>• the input connector is disconnected</li> <li>• the EPROM that contains the software is not implemented</li> </ul>	<ul style="list-style-type: none"> <li>• verify the external tension of the machine</li> <li>• deactivate the emergency button</li> <li>• connect the power connector</li> <li>• check the wiring and connect the connector as it must be</li> <li>• if the transformer is deformed replace the PWR board</li> <li>Check the wiring and the tension at the power Connector</li> <li>If the transformer is still OK change the Fuse</li> <li>• if the display is lighting up: verify that the input signals or the + 16 V signal are not touching the cabinet</li> <li>• put the right EPROM with software into the socket on the board.</li> </ul>
<p>The machine is not starting up when the start button is pressed.</p>	<ul style="list-style-type: none"> <li>• the key switch stands in Program mode</li> <li>• the correct amount of coins is not inserted</li> <li>• the door is not closed properly</li> </ul>	<ul style="list-style-type: none"> <li>• set the Key switch to Run mode</li> <li>• the start button must be pressed when 00 is flashing on the lower display</li> <li>• close the door</li> </ul>
<p>Coins are inserted but the displayed program price is not counting down</p>	<ul style="list-style-type: none"> <li>• the micro contact mounted on the coin drop is not functional</li> <li>• the optocoupler mounted on the coindrop is not functional</li> <li>• check the wiring to the coindrop</li> <li>• verify if you have entered a coin value in the u-submenu for the corresponding coindrop</li> </ul>	<ul style="list-style-type: none"> <li>• verify the well functioning of the micro contact of the coindrop : positive pulses should be generated</li> <li>• verify the well functioning of the optocoupler positive pulses should be generated</li> <li>• if the wiring is broken: repair the wiring</li> <li>• insert the correct coin value in the u-submenu</li> </ul>
<p>Coindrop is accepting coins but does not start the washer</p>	<ul style="list-style-type: none"> <li>• the start button is not pushed after the amount is flashing on '00'</li> <li>• the right amount is not reached</li> <li>• the door is not closed properly</li> </ul>	<ul style="list-style-type: none"> <li>• push the start button</li> <li>• Put the right amount in the coindrop</li> <li>• close the door</li> </ul>
<p>The machine is not responding on pressing the keyboard buttons</p>	<ul style="list-style-type: none"> <li>• the key switch is not functional (no dot is displayed when switching in Program mode)</li> <li>• the START button is not functional (the key switch stands in Program mode)</li> <li>• the SET button is not functional (the key switch stands in Run mode)</li> <li>• no button is functional and the key switch is in the right position</li> </ul>	<ul style="list-style-type: none"> <li>• check if the input connector A is well connected and check the wiring between the input connector and the keyswitch</li> <li>• set the Key switch to Run mode</li> <li>• set the Key switch to Program mode</li> <li>• check if the connector K of the keyboard is well connected</li> </ul>
<p>The dot to indicate that the software is in program mode can not be enabled or disabled</p>	<ul style="list-style-type: none"> <li>• the key switch is not functional</li> <li>• the infrared key is not functional</li> </ul>	<ul style="list-style-type: none"> <li>• check if the input connector A is well connected and check the wiring between the input connector and the keyswitch</li> <li>• set the menu-item, Ir = On</li> </ul>

Problem	Cause	Solving the problem
		use the key switch at a distance less than 0,5 meter and in front of check the battery (the LED of the infrared key is eliminated when the button is pressed)
The machine is not behaving as expected	<ul style="list-style-type: none"> <li>• if the wrong machine type is selected the wrong outputs will be activated</li> <li>• the suspension is not working, the shock absorbers are cold</li> </ul>	<ul style="list-style-type: none"> <li>• check if the right machine type is selected in the S-submenu</li> <li>• change shock absorbers or springs</li> </ul>
A program is started, but the outputs are not activated	<ul style="list-style-type: none"> <li>• check if connector R and Q are connected</li> <li>• check if connector R and Q are not inverted</li> </ul>	<ul style="list-style-type: none"> <li>• connect the connector at the correct position</li> <li>• Pin Q10 must be supplied with 220Vac when the door is closed</li> </ul>
Dashes are displayed and on the lower display a counter is counting down	<ul style="list-style-type: none"> <li>• this is a wait state caused by a power interruption or a safety sequence at the end of the process</li> </ul>	<ul style="list-style-type: none"> <li>• wait until the counter has reached 0</li> <li>• do not switch of/on the power again as you will restart the counter</li> </ul>
Wrong water level (the water level sensor must not be calibrated)	<ul style="list-style-type: none"> <li>• check if the programmed water levels in the P-submenu are the correct ones</li> <li>• check if the right machine type is selected in the S-submenu</li> <li>• you have changed the machine type but the standard water levels are not changed</li> </ul>	<ul style="list-style-type: none"> <li>• set the right water levels</li> <li>• select the right machine type in the S-submenu</li> <li>• the standard water levels can only be reinitialised by changing the program Set in the S-submenu : standard wash</li> </ul>
The process is stopped and there is still water in the drum	<ul style="list-style-type: none"> <li>• you can start a new program and advance the program to the tumble sequence</li> <li>• the drain is stopped up</li> <li>• the drain valve is blocked</li> </ul>	<ul style="list-style-type: none"> <li>• advancing a program : turn the key switch in program-mode and press the start button</li> <li>When the water is drained you can open the door</li> <li>• clean the drain</li> <li>• clean the drain valve</li> </ul>
The water does not stay in the machine	<ul style="list-style-type: none"> <li>• the drain valve is not closing</li> <li>• leakage of rubber between tub and drain valve</li> </ul>	<ul style="list-style-type: none"> <li>• check wiring from drain valve</li> <li>• change drain valve when broken</li> <li>• Replace rubber piece</li> </ul>
Machine is not filling or filling time is too long	<ul style="list-style-type: none"> <li>• inlet taps are closed</li> <li>• water pressure too low</li> <li>• water is blocked somewhere</li> <li>• inlet valve filter is blocked</li> <li>• inlet valve is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• open inlet taps</li> <li>• look at your supply installation</li> <li>• check for kinks in the inlet hose</li> <li>• close water inlet and clean filter</li> <li>• replace inlet valve</li> </ul>
Machine is filling with water in the 'OFF' position	<ul style="list-style-type: none"> <li>• inlet valve is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• replace inlet valve</li> </ul>
Machine is leaking	<ul style="list-style-type: none"> <li>• clamps of hoses are not tightened</li> <li>• some hose is damaged</li> <li>• sealing is damaged</li> <li>• supply and drain hoses are not connected properly</li> </ul>	<ul style="list-style-type: none"> <li>• tighten the clamps</li> <li>• replace the hose</li> <li>• change the sealing</li> <li>• connect the hoses properly</li> </ul>
There is a door seal leakage	<ul style="list-style-type: none"> <li>• the door rubber seal is damaged</li> <li>• insufficient door pressure</li> </ul>	<ul style="list-style-type: none"> <li>• change the door rubber seal</li> <li>• remove spacers from behind the hinges</li> </ul>
There is no warm water in the wash sequence	<ul style="list-style-type: none"> <li>• program is not correct</li> <li>• the hoses are not correct connected</li> <li>• incoming supply is not warm</li> </ul>	<ul style="list-style-type: none"> <li>• change program to correct temperature</li> <li>• connect the supply hoses correctly, the incoming supply to the warm water inlet valve.</li> <li>• use warm water supply, check your warm water installation</li> </ul>
The heating time is too long	<ul style="list-style-type: none"> <li>• heating elements are defective</li> <li>• wiring is damaged or wrong</li> <li>• calcium sediments cover the heating elements</li> </ul>	<ul style="list-style-type: none"> <li>• change heating elements</li> <li>• check, replace or repair wiring</li> <li>• clean or replace the heating elements</li> </ul>
There is too much vibration during extracting	<ul style="list-style-type: none"> <li>• bolts of cabinet and reinforcements are not fixed properly</li> <li>• vibration switch is not correct installed</li> <li>• the suspension is damaged, the</li> </ul>	<ul style="list-style-type: none"> <li>• tighten the bolts</li> <li>• reinstall vibration switch</li> </ul>

Problem	Cause	Solving the problem
	shock absorbers are cold	<ul style="list-style-type: none"> <li>• change the shock absorbers</li> </ul>
Door fails to open	<ul style="list-style-type: none"> <li>• a fault is occurred</li> <li>• power is off, safety is working</li> <li>• power is off, after a couple of minutes waiting the door is jammed</li> </ul>	<ul style="list-style-type: none"> <li>• wait until the counter has reached '0'</li> <li>• wait until safety device is inactive</li> <li>• you can always open the door by the mechanical override, be sure the machine is stopped spinning and there is no hot water anymore in the tub.</li> </ul>
Machine will not spin	<ul style="list-style-type: none"> <li>• a fault in the program is made</li> <li>• wiring is damaged</li> <li>• V-belts are broken</li> <li>• Motor is broken</li> <li>• Frequency converter is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• check the program</li> <li>• check and replace wiring</li> <li>• replace the V-belts</li> <li>• repair or change motor</li> <li>• repair or replace the frequency converter</li> </ul>
There is a lack of steam	<ul style="list-style-type: none"> <li>• leak in steam system</li> <li>• too many condense in the steam system</li> <li>• too much machines on 1 supply</li> </ul>	<ul style="list-style-type: none"> <li>• repair the leakage</li> <li>• Remove the condens</li> <li>• Disconnect other machines or increase steam capacity</li> </ul>

### 6.3. DOOR FAILS TO OPEN

In case of a power failure or an emergency situation, proceed as follows:

1. Before the door is open, check the washing bath and machine parts temperature.

**⚠ WARNING !**  
**IF TOO HOT DO NOT OPEN! RISK OF BURN OR SCALD INJURIES !**  
**KEEP CHILDREN OFF WHEN THE MACHINE IS IN OPERATION !**

2. When the washing bath is cooled down, find the lever of emergency door opening on the left bottom side pull the lever by a screwdriver (∅ 4 mm / 0.15") to open the door.

**⚠ WARNING !**  
**IF THE WASHING WATER WAS NOT DRAINED OFF, IT WILL RUN OUT THROUGH THE DOOR OPENING !**

## 7. LIST OF RECOMMENDED SPARE PARTS

Find more detailed information in the spare part manual for individual machines.

PRI 340 055 051	Drain valve 3" 230V
PRI 340 020 035	2-way water inlet valve
PRI 340 030 038	3-way water inlet valve
273 112 994 945	Rubber for door glass, applicable for 16kg / 36lb
PRI 505 000 045	Rubber for door glass, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 610 011 077	Microswitch 83.161.3
PRI 530 030 012	Rubber tub housing, applicable for 16kg / 36lb
PRI 530 020 012	Rubber tub housing, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 530 030 013	Ring, applicable for 16kg / 36lb
PRI 530 020 013	Ring, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
514 038	Contacteur of frequency inverter LC1-D09
514 038	Heating contactor, LC1-D09, 6kW / from 200 to 440V, 9kW / 400V, 12kW / 400V
514 039	Heating contactor, LC1-D12, 9kW / 230V
514 042	Heating contactor, LC1-D18, 18kW / 400V
PRI 345 002 019	Heating contactor, LC1-D32, (12kW, 18kW) / 230V
345 805 163 032	Fuse 1A 32x6.3
PRI 401 022 021	Fuse 0,5A, 200-208V / 440V
PRI 342 000 011	Heating element 2000W 230V, electrical heating 6kW, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 342 000 028	Heating element 3000W 230V, electrical heating 9kW, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 551 002 217	Heating element 2x2000W 230V, electrical heating 12kW, applicable for 16kg / 36lb
PRI 342 000 032	Heating element 2x3000W 230V, electrical heating 9kW, 18kW, applicable for 16kg / 36lb
PRI 342 000 040	Heating element 2x1500W 230V, electrical heating 9kW, 440V, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 342 000 031	Heating element 2x2000W 230V, electrical heating 12kW, applicable for 6kg / 13lb, 7kg / 16lb, 10kg / 22lb
PRI 607 000 093	Belt XPZ 1562, applicable for 7kg / 16lb
101 175	Belt XPZ 1587, applicable for 6kg / 13lb, 10kg / 22lb
PRI 607 000 110	Belt XPZ 1512
PRI 320 000 012	Motor 0.75 kW, applicable for 6kg / 13lb, 7kg / 16lb
PRI 320 000 013	Motor 1.5 kW, applicable for 10kg / 22lb
PRI 320 000 009	Motor 2.2 kW, applicable for 16kg / 36lb
101 872	Frequency inverter 0.75kW, 200-240V, 400V 3AC + N, applicable for 6kg / 13lb, 7kg / 16lb
101 871	Frequency inverter 0.75kW, 400/440V, without N, applicable for 6kg / 13lb, 7kg / 16lb
101 822	Frequency inverter 1.5kW, 200-240V, 400V 3AC + N, applicable for 10kg / 22lb
101 824	Frequency inverter 1.5kW, 400/440V, without N, applicable for 16kg / 36lb
101 823	Frequency inverter 2.2kW, 200-240V, 400V 3AC + N, applicable for 16kg / 36lb
101 825	Frequency inverter 2.2kW, 400/440V without N, applicable for 16kg / 36lb
PRI 348 000 123	Keyboard MCB LC, black
100 052	Keyboard MCB LC, grey
100 521	Keyboard MCB FC, grey
100 629	Keyboard MCB FC, black
516 745	Keyboard MCG FC
516 694	Programmer board MCB LC
516 696	Programmer board MCB FC
516 697	Programmer board MCG EC
516 698	Programmer board MCG FC



# IMPORTANT !

**MACHINE TYPE:**

**PROGRAMMER:**

- ELECTRONIC TIMER MCB EC
- ELECTRONIC TIMER MCB FC

**INSTALLATION DATE:**

**INSTALLATION  
CARRIED OUT BY:**

**SERIAL NUMBER:**

**ELECTRICAL DETAILS:**

**.....VOLT.....PHASE.....HZ**

**NOTE:**

ANY CONTACTS WITH YOUR DEALER REGARDING MACHINE SAFETY, OR SPARE PARTS, MUST INCLUDE THE ABOVE IDENTIFICATION.

MAKE CERTAIN TO KEEP THIS MANUAL IN A SECURE PLACE FOR FUTURE REFERENCE.

**DEALER:**

