

HIGH SPIN INDUSTRIAL WASHER EXTRACTORS

**6kg
7kg
10kg
13kg
16kg
22kg**

INSTALLATION AND MAINTENANCE MANUAL

**SP100646 K
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2. IMPORTANT SAFETY INSTRUCTIONS



WARNING - SAVE THESE INSTRUCTIONS FOR LATER USE.

Failure to comply with the instructions may lead to incorrect use of the appliance, and may result in risk of fire, bodily injuries or death and/or damage to the laundry and/or the appliance.



WARNING - Read the IMPORTANT SAFETY INSTRUCTIONS in this manual carefully before operating the appliance. Improper use of the appliance may cause risk of fire, electrical shock or serious body injuries or death as well as serious damage to the appliance.

- ◆ This English version is the original version of this manual. The instructions for the appliance are only complete with the programming, user and spare parts information.
- ◆ Safety instructions included in manuals for personnel operating the appliance must be printed and posted on a visible place near the machine in the laundry room.
- ◆ The washer extractor is designed for fabrics washing only, other objects can damage the washer and can cause damage or injuries.
- ◆ The manufacturer is not responsible for the damage to the fabrics that are washed by an inappropriate washing method.
- ◆ Always follow the instructions and/or warnings that are stated on the fabrics, washing products or cleaning products mentioned by the manufacturer.
- ◆ The washer must be set up in accordance with the instructions. All drain, inlet, electrical connections, ventilation, groundings and other connections must be done in accordance with 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 appliance may not be suitable for connecting to an IT supply system. Contact your commercial distributor for assistance.
- ◆ All appliances are produced according to 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).
- ◆ Do not change the parameters of the frequency inverter. This can cause serious injury, fire, washer damage, etc.
- ◆ During transportation and storage never use excessive forces on the packing because components can be damaged protruding the contour line of the appliance.
- ◆ Use copper conductors only. This appliance must be connected to a supply circuit to which no lighting units or general-purpose receptacles are connected.
- ◆ 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 appliance execution or functions are not allowed, and the manufacturer refuses any responsibility in such cases.
- ◆ The washer extractor must be installed on level. If not, the washer may become unbalanced during extraction and, although fitted with an unbalance safety, the washer may become seriously damaged what may result in bodily injuries.
- ◆ Never put the washer in operation when the transporting braces are not removed. The washer should always be tested before use.
- ◆ It is possible that there are residues of products used during the production process in the new washer. These residues could cause stains on your laundry. Therefore, you must first run at least 1 hot wash with old rags before using for your normal laundry.
- ◆ Keep the appliance top and surface and the area around clean and clear of combustible or flammable products.
- ◆ Do not store flammable materials around the appliances. Define the dangerous areas in the laundry room and obstruct an admission to them during appliances operating.
- ◆ Do not wash articles that have been previously cleaned in, wash in soaked in, or spotted with gasoline, dry-cleaning solvents, or other flammable or explosive substances as they give off vapors that could ignite or explode.
- ◆ Do not add gasoline, dry-cleaning solvents, or other flammable or explosive substances to the wash water. These substances give off vapors that could ignite or explode.
- ◆ 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.
- ◆ **TEMPERATURE IN WASHING MACHINE TUB:** The electronic controller uses the temperature sensor in the tub to control the temperature of the washing bath. There are a lot of things that have influence on the temperature measurement. Therefore the temperature control of the washing bath is not very precise.
- ◆ Always strictly comply with the instructions that are written on the laundry chemicals-, laundry aids-, dry-cleaning solvents- and disinfectants packaging to avoid personal injury. Keep these agents out of the reach of children, preferably in a locked cabinet.

- ◆ Do not tamper the washer-extractor controls and do not bypass the safety instructions and the warnings.
- ◆ Do not use some means on the soap dispenser lid to hold it open by filling or when the machine operates. The discharge or splashing of hazardous liquid can cause serious scalding and burning.
- ◆ Do not operate the appliance when parts are broken or missing or when covers are open. The appliance must not be operated until the fixed guards are put correctly in place.
- ◆ The appliance must not be stored, installed or exposed to the weather, extreme low or high temperature and humidity levels. Do not hose down the washer. NEVER allow the appliance to get wet.
- ◆ Check the functioning of the door lock mechanism on regular base. NEVER bypass the doorlock mechanism.
- ◆ Disconnect the power and close all water and steam supply before cleaning, servicing and at the end of each operating day.
- ◆ Out of the venting at the back of the washer can escape warm vapor or and hot air. Do not cover the vent but protect it sufficiently. It serves air gap and as a vapor outlet to prevent pressure building in the washer.
- ◆ Do not repair or replace any part of the appliance or attempt any servicing unless specifically recommended in the service manual or published user-repair instructions that you understand and have the skills to carry out. Only qualified service personnel may open the appliance to carry out servicing.
- ◆ Information contained in this manual is intended for use by a qualified service technician familiar with proper and safe procedures to be followed when repairing an electrical appliance. All tests and repairs should be performed by a qualified service technician equipped with proper tools and measuring devices. All component replacements should be made by a qualified service technician using only factory approved replacement parts.
- ◆ Improper assembly or adjustment may occur if service or repair is attempted by persons other then qualified service technicians or if parts other then approved replacement parts are used. Improper assembly or adjustment can create hazardous conditions.
- ◆ There can be a risk of injury or electrical shock while performing services or repairs. Injury or electrical shock can be serious or even fatal. Consequently, extreme caution should be taken while performing voltage checks on individual components or a product. PLEASE NOTE: Except as necessary to perform a particular in servicing a product, the electrical power supply should ALWAYS be disconnected when servicing a product.
- ◆ All industrial (OPL - On Premise Laundry) washers are designed for use in Laundry with professionally trained attendants.
- ◆ Before the appliance is removed from service or discarded, remove the door.
- ◆ Any Water or Steam Leaks Must Be Repaired Immediately. Closed supply immediately.
- ◆ If any problems or failures should arise, immediately contact your dealer, serviceman or manufacturer.
- ◆ The manufacturer reserves the right to change the manuals without previous notice.

⚠ WARNING -- CAUTION

This appliance must be connected to a grounded metal, permanent wiring system, and additionally an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment-grounding terminal or lead on the appliance.

⚠ WARNING -- CAUTION

**In order to minimize the risk of fire, electrical shock and injury, THIS WASHER MUST BE PROPERLY GROUNDED. Never plug in or direct-wire an appliance unless it is properly grounded in accordance with all local and national codes.
If more appliances in the same location, mutual grounding must be applied where possible.**

⚠ WARNING -- CAUTION

**The washer extractor is intended to be permanently connected, it MUST be secured mounted to a NON-COMBUSTIBLE, adequate floor structure. A concrete foundation is required. Metal reinforced wood floors are NOT allowed due to the risk of fire and excessive vibrations.
NEVER install the washer on an upper floor or over a basement without a load support designed by a structural engineer.**

⚠ WARNING -- CAUTION

Looking at the machine from the front view the drum rotation during extraction must be clockwise.

⚠ WARNING - Although the appliance may be in the „off“ position, there is still electrical power to the switch supply terminals.

⚠ WARNING - When power supply has been switched off wait for at least 10 minutes before starting inspection or servicing the washer. 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.

⚠ WARNING - Do not allow children to play on, in or around the appliance at any time. Close supervision of children is necessary when the appliance is used near children. Never permit children to operate the appliance.

⚠ WARNING - Do not open door until cylinder remains stopped and water has been drained completely. If the door safety lock does not work, do not use washer until the door lock mechanism is repaired.

⚠ CAUTION! - Follow all valid basic safety rules and laws. The instructions in this manual cannot account for every possible dangerous situation. They must be generally understood. Caution and care are factors which can not included in the design of the appliance and all persons who install, operate or maintain the appliance must be qualified and familiar with the operating instructions. It is up to the user to take proper care when operating the appliance.

⚠ CAUTION! - Do not remove warning signs placed on the appliance. Observe signs and labels to avoid personal injuries. Safety labels appear at crucial locations on the appliance. Failure to maintain legible safety labels could result in injury to the operator or service technician.

⚠ CAUTION! - If the installed appliance operate with coin, token or similar operation for use in self-service situations, then the owner-installer must provide a remote-located emergency stop device. This device must be placed in such a way that it is easy and safely accessible for the users. The emergency stop device takes care that at least the control circuit of the appliance is interrupted.

2.1. SYMBOLS ON THE MACHINE

See User's manual

2.2. IMPORTANT INFORMATION BEFORE INSTALLATION

FOR TRANSPORTATION AND STORAGE

IN CASE OF TRANSPORTATION AND STORAGE, WATCH COMPONENTS PROTRUDING FROM THE CONTOUR LINE OF MACHINE (DOOR LOCKS ETC.), TO AVOID INJURIES.

- Never push, pull or exert pressure on components protruding from the machine contour line (controls, door locks etc.).
- Make sure that these components are secured so as to avoid damages during machine manipulation and installation.
- In case of the machine transportation by the customer, follow the manufacturer's instructions for transportation, handling and storage of the product. In case of transportation of machine by the customer the manufacturer is not responsible for possible damage of machine in the course of transportation. In case of storage the machine in a free area it must be protected against mechanical damage and weather condition factors.

FOR INSTALLATION

ALL CONNECTION, AND IN SPECIAL PROTECTING EARTH, MUST BE PERFORMED BY QUALIFIED PERSONNEL WITH A PROPER AUTHORIZATION ACCORDING THE INSTALLATION MANUAL IN COMPLIANCE WITH LOCAL STANDARDS.

- The washer must not be installed or stored in an area where it will be exposed to water and/or weather. Avoid damp conditions where water or moisture could run down the walls and covers of the washer or cover the floor around the washer. Do not install the washer above an open gutter. Close any nearby gutters so that waste water steam cannot collect near/inside the washer.
- Any changes in the machine installations must be approved by dealer or manufacturer. Otherwise the dealer / manufacturer is not responsible for possible injuries or damages. Interference and changes in the machine construction are not allowed and the manufacturer refuses any responsibilities in such cases.
- Define dangerous areas in the laundry room and do not allow people to enter if the machine is in operation.

MACHINE INFORMATION

- This manual comprises information for the soft-mount machine series with a load of dry linen 6, 7, 10, 13, 16, 22 kg (15, 18, 25, 30, 35, 50 lb). Verify the machine model according to your order and the data plate located on back of washing machine, fig.3.3., pos.3 and find corresponding information in the manual.
- The machines are controlled by electronic programmer. Find the programming instructions in the programming manual.
- Additional heating can be provided by electrical heating elements or by steam from an external steam supply.
- Water inlets can use warm, cold soft and possibly also cold hard water.
- Electrical setup of the machine is indicated on data plate, (see data plate, fig.3.3.,pos.3).

3. TECHNICAL SPECIFICATION

3.1. MACHINES 6 kg / 15 lb, 7 kg / 18 lb, 10 kg / 25 lb, 13 kg / 30 lb CAPACITY

DRY LOAD CAPACITY (1/10)	6 kg / 15 lb	7 kg / 18 lb	10 kg / 25 lb	13 kg / 30 lb
MACHINE DIMENSIONS *				
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"	930 mm / 36,61"
Height	1080 mm / 42,52"	1080 mm / 42,52"	1140 mm / 44,88"	1295 mm / 50,98"
PACKING DIMENSIONS				
Width	750 mm / 29,53"	750 mm / 29,53"	750 mm / 29,53"	855 mm / 33,66"
Depth	850 mm / 33,46"	850 mm / 33,46"	950 mm / 37,40"	950 mm / 37,40"
Height	1250 mm / 49,21"	1250 mm / 49,21"	1300 mm / 51,18"	1425 mm / 56,10"
Transportation volume	0,79 m ³ / 27,89 ft ³	0,79 m ³ / 27,89 ft ³	0,92 m ³ / 32,48 ft ³	1,16 m ³ / 40,96 ft ³
INNER DRUM DIMENSIONS				
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"	395 mm / 15,55"
Volume	60 dm ³ / 15,85 gal	73 dm ³ / 19,28 gal	95 dm ³ / 25,1 gal	131 dm ³ / 34,6 gal
Door opening	285 mm / 11,22"	285 mm / 11,22"	285 mm / 11,22"	410 mm / 16,14"
WEIGHT				
Net	230 kg / 508 lb	235 kg / 519 lb	275 kg / 607 lb	360 kg / 794 lb
Gross	240 kg / 530 lb	250 kg / 552 lb	300 kg / 662 lb	380 kg / 838 lb
ELECTRICAL DATA				
	3x380-415V+N 50/60Hz 3x380-415V 50/60Hz 3x440-480V 50/60Hz 3x220-240V 50Hz 1x220-240V 50/60Hz - not applicable for electrical heating 1x200-208V 50/60Hz - not applicable for electrical heating 3x200-208V 50/60Hz 3x208-240V 60Hz			
POWER SUPPLY - deviations	-6% to +10% of the voltage supply ±1 Hz			
INPUT POWER MACHINE				
Electrical heating 6kW	6,75 kW	6,75 kW	7,5 kW	9,3 kW
Electrical heating 9 kW	9,75 kW	9,75 kW	10,5 kW	11,3 kW
Electrical heating 12 kW	-	12,75 kW	13,5 kW	14,3 kW
Electrical heating 18 kW	-	-	-	-
Without heating or steam	0,75 kW	0,75 kW	1,5 kW	-
NOMINAL MOTOR OUTPUT	0,75 kW	0,75 kW	1,5 kW	2,2 kW
Residual current device (RCD)	100mA, class B			
SUPPLY PROTECTION DEVICE	Use „slow“ type Protection Devices (circuit breakers: curve D)			
Steam heating or without electrical heating 200-240V 1/3AC 380-400V + N 3AC	16A (15A)	16A (15A)	16A (15A)	20A
380-480V 3AC	10A	10A	10A	16A (15A)
El. heating 6kW (200-240V 3AC)	25A			
El. heating 6kW (380-480V 3AC)	16A			
El. heating 9kW (200-240V 3AC)	32A			
El. heating 9kW (380-480V 3AC)	20A			
El. heating 12kW (200-240V 3AC)	40A			
El. heating 12kW (380-480V 3AC)	25A			
El. heating 18kW (200-240V 3AC)	63A			
El. heating 18kW (380-480V 3AC)	32A			

Tab.3.1.

DRY LOAD CAPACITY (1/10)	6 kg / 15 lb	7 kg / 18 lb	10 kg / 25lb	13 kg / 30 lb
WASHING FUNCTIONS				
Washing	48 RPM			45 RPM
High extracting	1000 RPM			1000 RPM
G-factor	300			360
WATER CONNECTION				
Water pressure range	0,1-0,8 MPa / 1-8 bar / 14,5-116 PSI			
Recommended pressure	0,3-0,5 MPa / 3-5 bar / 43-73 PSI			
Water inlet	BSP 3/4"			
Maximal water temperature	90°C / 194°F			
DRAIN CONNECTION				
Drain valve diameter	Ø 76 mm / 3"			
Flow amount with drain valve	3,5 l / s			
MACHINE VENTING				
Venting connection of outer drum	Ø 75 mm / 3"			
STEAM CONNECTION				
Steam connection	G1/2"			
Steam pressure low	1-3 bar / 14,5 - 44 PSI			
Steam pressure high	3-8 bar / 44-116 PSI			
CONSUMPTIONS				
Light soiled fabrics, wash 60°C ⁽¹⁾				
Without electrical heating	0,2 kWh	0,2 kWh	0,3 kWh	0,5 kWh
With electrical heating	1,2 kWh	1,3 kW	1,7 kW	3,6 kWh
Steam consumption	-	-	-	8 kg.cycle ⁻¹ / 17,6 lbs.cycle ⁻¹
				0,02 kg.sec ⁻¹ / 0,044 lbs.sec ⁻¹
WORKING CONDITIONS				
Ambient temperature	+5°C (41°F) to +35°C (95°F)			
Relative humidity	30% to 90% without condensation			
Height above sea level	up to 1000 m / 3280 ft			
Storage temperature	0°C (32°F) to +55°C (131°F)			
FLOOR DATA				
Max.static load on floor	2413 N	2492 N	3002 N	4823 N
Max.dynamic load on floor	650 N	730 N	1100 N	3916,5 N ± 1375 N
Frequency of dynamic load	16 Hz	16 Hz	16 Hz	16,6 Hz
NOISE				
Equivalent sound power level Leq (dB(A))	< 70 dB(A)	< 70 dB(A)	< 70 dB(A)	< 70 dB(A)

Tab.3.1. continuation

* maximum dimensions including protruding parts

⁽¹⁾ - depends of cold and hot water supply temperature and wash program setup

3.2. MACHINES 16 kg / 35 lb, 22 kg / 50 lb CAPACITY

DRY LOAD CAPACITY (1/10)	16 kg / 35 lb	22 kg / 50 lb
MACHINE DIMENSIONS *		
Width	835 mm / 32,87"	900 mm / 35,43"
Depth	1040 mm / 40,94"	1115 mm / 43,89"
Height	1295 mm / 50,98"	1435 mm / 56,49"
PACKING DIMENSIONS		
Width	930 mm / 36,61"	975 mm / 38,38"
Depth	1140 mm / 44,88"	1200 mm / 47,24"
Height	1510 mm / 59,44"	1620 mm / 63,77"
Transportation volume	1,6 m ³ / 56,5 ft ³	1,9 m ³ / 67,09 ft ³
INNER DRUM DIMENSIONS		
Diameter	650 mm / 25,6"	750 mm / 29,52"
Depth	500 mm / 19,68"	498 mm / 19,60"
Volume	166 dm ³ / 43,8 gal	220 dm ³ / 58,11 gal
Door opening	410 mm / 16,14"	410 mm / 16,14"
WEIGHT		
Net	465 kg /1026 lb	650 kg /1433 lb
Gross	495 kg /1092 lb	690 kg /1522 lb
ELECTRICAL DATA		
	3x380-415V+N 50/60Hz 3x380-415V 50/60Hz 3x440-480V 50/60Hz 3x220-240V 50Hz 1x220-240V 50/60Hz - not applicable for electrical heating 1x200-208V 50/60Hz - not applicable for electrical heating 3x200-208V 50/60Hz 3x208-240V 60Hz	
POWER SUPPLY - deviations	-6% to +10% of the voltage supply ±1 Hz	
INPUT POWER MACHINE		
Electrical heating 6kW	-	-
Electrical heating 9 kW	11,3kW	-
Electrical heating 12 kW	14,3kW	-
Electrical heating 18 kW	20,3kW	21,6kW
Without heating or steam	2,3kW	3,6 kW
NOMINAL MOTOR OUTPUT	2,2kW	3kW
Residual current device (RCD)	100mA, class B	
SUPPLY PROTECTION DEVICE	Use „slow“ type Protection Devices (circuit breakers: curve D)	
Steam heating or without electrical heating 200-240V 1/3AC 380-400V + N 3AC	20A	20A ⁽²⁾
380-480V 3AC	16A (15A)	16A(15A)
El. heating 6kW (200-240V 3AC)	20A	-
El. heating 6kW (380-480V 3AC)	16A	-
El. heating 9kW (200-240V 3AC)	32A	-
El. heating 9kW (380-480V 3AC)	25A	-
El. heating 12kW (200-240V 3AC)	40A	-
El. heating 12kW (380-480V 3AC)	25A	-
El. heating 18kW (200-240V 3AC)	63A	-
El. heating 18kW (380-480V 3AC)	32A	-

Tab.3.2.

DRY LOAD CAPACITY (1/10)	16 kg / 35 lb	22 kg / 50 lb
WASHING FUNCTIONS		
Washing	45 RPM	42 RPM
High extracting	980 RPM	915 RPM
G-factor	350	350
WATER CONNECTION		
Water pressure range	0,1-0,8 MPa / 1-8 bar / 14,5-116 PSI	
Recommended pressure	0,3-0,5 MPa / 3-5 bar / 43-73 PSI	
Water inlet	BSP 3/4"	
Maximal water temperature	90°C / 194°F	
DRAIN CONNECTION		
Drain valve diameter	Ø 76 mm / 3"	
Flow amount with drain valve	3,5 l / s	
MACHINE VENTING		
Venting connection of outer drum	Ø 75 mm / 3"	
STEAM CONNECTION		
Steam connection	G1/2"	
Steam pressure low	1-3 bar / 14,5 - 44 PSI	
Steam pressure high	3-8 bar / 44-116 PSI	
CONSUMPTIONS		
Light soiled fabrics, wash 60°C ⁽¹⁾		
Without electrical heating	0,5 kWh	0,7 kWh
With electrical heating	3,5 kWh	3,8 kWh
Steam consumption	-	15 kg.cycle ⁻¹ / 33 lbs.cycle ⁻¹
		0,028 kg.sec ⁻¹ / 0,062 lbs.sec ⁻¹
WORKING CONDITIONS		
Ambient temperature	+5°C (41°F) to +35°C (95°F)	
Relative humidity	30% to 90% without condensation	
Height above sea level	up to 1000 m / 3280 ft	
Storage temperature	0°C (32°F) to +55°C (131°F)	
FLOOR DATA		
Max.static load on floor	5450N	7860N
Max.dynamic load on floor	1220 N	1626N
Frequency of dynamic load	16Hz	15Hz
NOISE		
Equivalent sound power level Leq (dB(A))	< 70 dB(A)	< 70 dB(A)

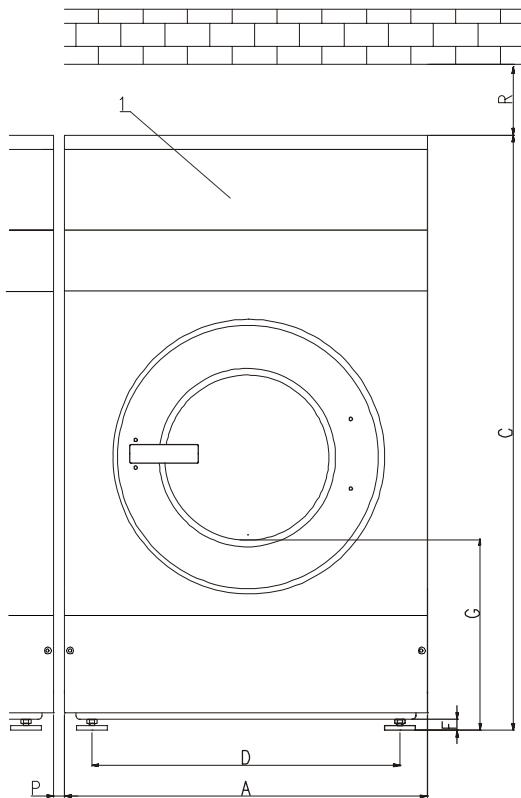
Tab.3.2. continuation

* maximum dimensions including protruding parts

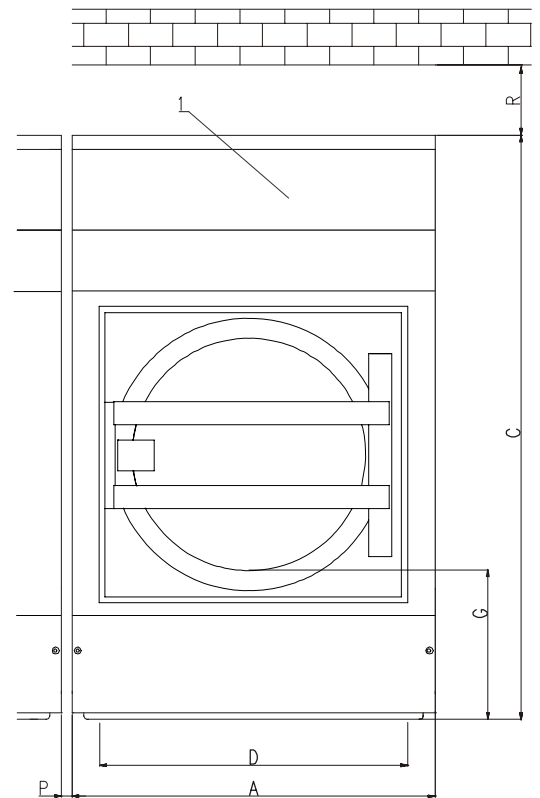
⁽¹⁾ - depends of cold and hot water supply temperature and wash program setup

⁽²⁾ - if the voltage indication is 200-208V 3AC or 208-240V 3AC, the value is max. 16A (15A)

3.3. DIMENSIONS AND PLACEMENT OF COMPONENTS ON THE MACHINE



6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb



13 kg / 30 lb, 16 kg / 35 lb, 22 kg / 50 lb

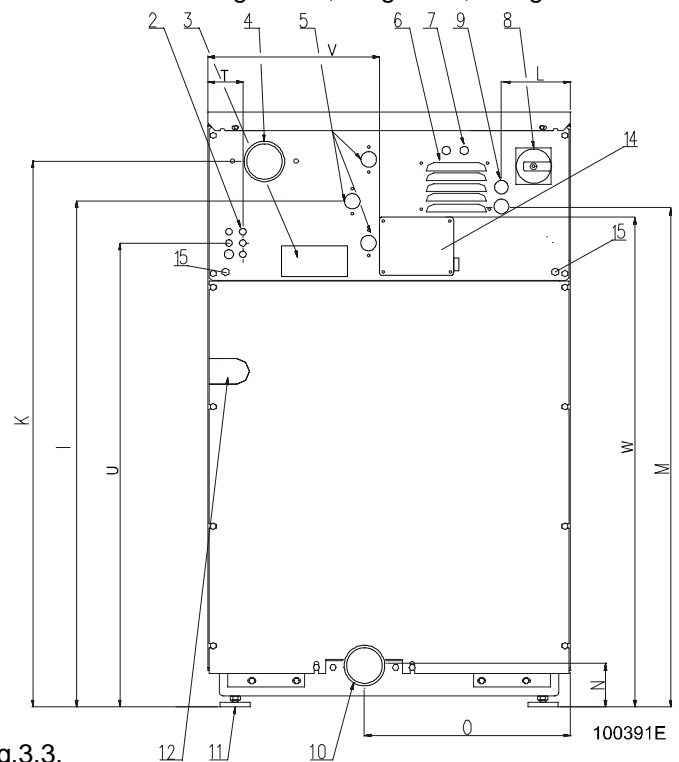
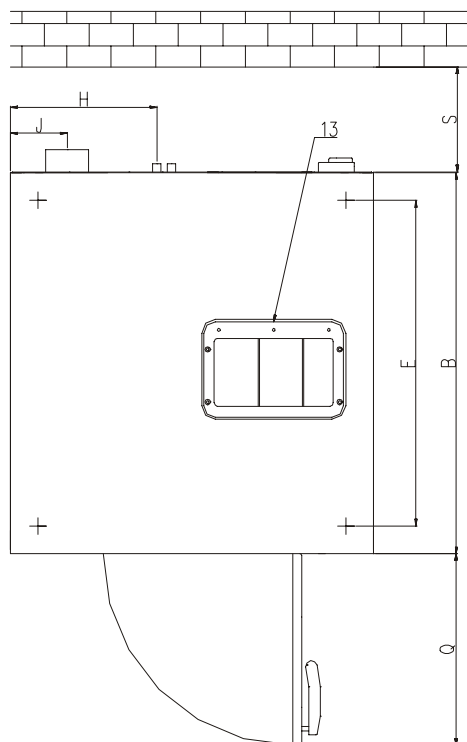


Fig.3.3.

1. Control panel
2. Connection liquid soap
3. Serial plate
4. Air relieve
5. Water supply
6. Air vent holes, Frequency inverter
7. Fuses
8. Main switch

9. Electrical supply connection
10. Drain
11. Adjustable feet
12. Steam connection
13. Soap dispenser
14. Plastic box for electrical connection to liquid soap pumps
15. Earth connection

	6 kg / 13 lb	7 kg / 18 lb	10 kg / 25 lb	13 kg / 30 lb	16 kg / 35 lb	22 kg / 50 lb
A	660 mm / 25,98"	660 mm / 25,98"	660 mm / 25,98"	835 mm / 32,87"	835 mm / 32,87"	900 mm / 35,43"
B	685 mm / 26,97"	685 mm / 26,97"	785 mm / 30,91"	845 mm / 33,26"	960 mm / 37,8"	1085 mm / 42,71"
C	1080 mm / 42,52"	1080 mm / 42,52"	1140 mm / 44,88"	1295 mm / 50,98"	1295 mm / 50,98"	1430 mm / 56,29"
D	560 mm / 22,05"	560 mm / 22,05"	560 mm / 22,05"	715 mm / 28,15"	715 mm / 28,15"	799 mm / 31,45"
E	585 mm / 23,03"	585 mm / 23,03"	685 mm / 26,97"	500 mm / 19,68"	815 mm / 32,09"	846 mm / 33,30"
F	20 mm / 0,79"	20 mm / 0,79"	20 mm / 0,79"	-	-	-
G	420 mm / 15,54"	420 mm / 15,54"	480 mm / 18,90"	430 mm / 16,92"	430 mm / 16,92"	585 mm / 23,03"
H	263 mm / 10,35"	263 mm / 10,35"	263 mm / 10,35"	300 mm / 11,81"	300 mm / 11,81"	263 mm / 10,35"
I	910 mm / 35,83"	910 mm / 35,83"	970 mm / 38,19"	1135 mm / 44,68"	1135 mm / 44,68"	1225 mm / 48,22"
J	103 mm / 4,06"	103 mm / 4,06"	103 mm / 4,06"	120 mm / 4,72"	120 mm / 4,72"	103 mm / 4,06"
K	980 mm / 38,58"	980 mm / 38,58"	1040 mm / 40,94"	1195 mm / 47"	1195 mm / 47"	1315 mm / 51,77"
L	44 mm / 1,73"	44 mm / 1,73"	44 mm / 1,73"	135 mm / 5,31"	44 mm / 1,73"	450 mm / 17,71"
M	835 mm / 32,87"	835 mm / 32,87"	895 mm / 35,24"	1015 mm / 39,96"	1015 mm / 39,96"	1285 mm / 50,59"
N	78 mm / 3,07"	78 mm / 3,07"	78 mm / 3,07"	60 mm / 2,36"	55 mm / 2,16"	140 mm / 5,51"
O	375 mm / 14,76"	375 mm / 14,76"	375 mm / 14,76"	415 mm / 16,33"	415 mm / 16,33"	720 mm / 28,34"
P	15 mm / 0,6"	15 mm / 0,6"	15 mm / 0,6"	20 mm / 0,79"	20 mm / 0,79"	20 mm / 0,79"
Q	445 mm / 17,52"	445 mm / 17,52"	445 mm / 17,52"	530 mm / 20,86"	530 mm / 20,86"	530 mm / 20,86"
R	700 mm / 27,56"	700 mm / 27,56"	700 mm / 27,56"	700 mm / 27,56"	700 mm / 27,56"	700 mm / 27,56"
S	600 mm / 23,62"	600 mm / 23,62"	600 mm / 23,62"	600 mm / 23,62"	600 mm / 23,62"	600 mm / 23,62"
T	68 mm / 2,67"	68 mm / 2,67"	68 mm / 2,67"	200 mm / 7,87"	200 mm / 7,87"	168 mm / 6,61"
U	850 mm / 33,46"	850 mm / 33,46"	850 mm / 33,46"	1060 mm / 41,73"	1060 mm / 41,73"	1092 mm / 42,92"
V	-	-	339 mm / 13,34"	470 mm / 18,5"	470 mm / 18,5"	445 mm / 17,52"
W	-	-	874 mm / 34,40"	1052 mm / 41,41"	1052 mm / 41,41"	1140 mm / 44,88"

Tab.3.3.

4. MACHINE INSTALLATION

4.1. MACHINE INSPECTION

When the machine is delivered, it is necessary to do a visual inspection for any damage that may have occurred during transit. If the package or pallet are damaged or signs of possible damage are evident, let the carrier note the condition on the shipping papers before the shipping receipt is signed.

Remove the package as soon as possible and check if the information on the serial plate correspond with your order. The serial plate is located on the rear of the machine, fig.4.1. This determines the type of model you have bought, the voltage and the serial number.

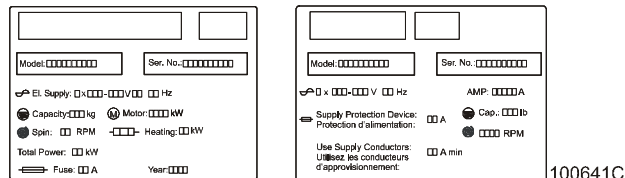


Fig.4.1. Serial plate

Check if the machine is not damaged and if all the accessories are included according to your order. The accessories and manuals are located inside the machine.

4.2. WASHER STORAGE

When the machine will be stored after delivery, be sure this is followed:

- Use the delivered package to protect the machine against moisture and dirt.
- The washer must not be installed or stored in an area where it will be exposed to water and/or weather. Avoid damp conditions where water or moisture could run down the walls and covers of the washer or cover the floor around the washer. Do not install the washer above an open gutter. Close any nearby gutters so that waste water steam cannot collect near/inside the washer.
- If possible, leave the machine in the transporting package or at least let it set on the transporting wooden until the time of final installation on the foundation according the chapter 4.3. of this manual.

4.3. WASHER POSITIONING

⚠ WARNING!
IF THE MACHINE IS LOCATED ON AN ELEVATED BASE FOR EASIER OPERATION.
THE MACHINE MUST BE SECURED FOR SAFETY REASONS.

- All passages and spaces the machine has to be transported through at installation should be reasonably dimensioned to meet the height and width of the machine including the package.
- Remove the packaging, loosen the rear panel (see fig.4.10., pos.4) and the service panel (pos.3). Remove the four bolts, which holds the machine on the wooden pallet. Lift up the machine carefully, take care not to damage the machine components.
- Never push, pull or press the components protruding from the contour line of machine (control panel, door, control elements, water inlet and outlet pipes, etc.).
- Make sure that the loading door is closed during handling.
- Take care that the floor at final position is underneath supported. The washer should not be installed on an upper floor or over a basement without approval of structural engineer about the requirements of permissible loading, vibrations and noise level in the building.
- Take care that the floor where the machines will be placed is not combustible.
- At final position, leave clearance around the machine like indicated in fig.3.3., for running conditions and maintenance access.

INSTALLING, LEVELING FREELY ON THE FLOOR

⚠ 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.

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 or sheet 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 „INSTALLING, LEVELING AND SECURE ON AN ELEVATION“.

MACHINES 6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb

Position the machine only on his 4 adjustable rubber feet. The rubber feet are screwed on the bottom of the machine frame and are adjustable with a wrench size 13 mm / 0.5" and 17 mm / 0.7". Check the position of the top of the machine by a water level and adjust machine feet, fig.3.3., pos.11. Adjust the four rubber feet until the machine is leveled in such a way that they push equally on the floor. Once adjusted, tighten the nut M10 back to the bottom of the frame as counter nut.

MACHINES 16 kg / 35 lb, 13 kg / 30 lb, 22 kg / 50 lb

The machine doesn't have rubber feet for adjustment to water level. When it is necessary use thin hard plates of 10 x 10 cm / 3.93" x 3.93" with thickness of 1 mm / 0.04" and place them under the frame corner of the lowest position. Use more of them until the machines stands water level and doesn't rock, taking care that the machine is in the lowest possible position. Secure these hard plates so they can not move anymore.

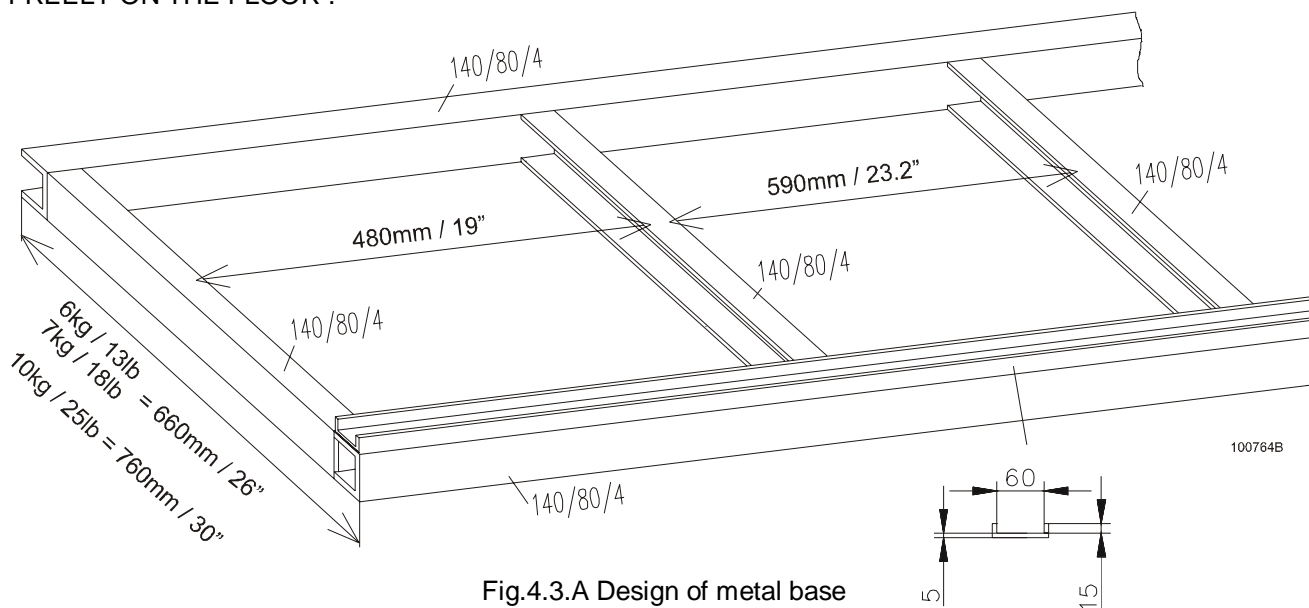
Place between the four corners of the frame and the supporting floor points a thin rubber sheet of 10 x 10 cm / 3.93" x 3.93" with thickness between 1-2 mm / 0.04" - 0.08" maximum.

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. Therefore we advice to secure the machine always, see chapter „INSTALLING, LEVELING AND SECURE ON AN ELEVATION“.

INSTALLING, LEVELING FREELY ON AN ELEVATION BASE

ONLY FOR MACHINES 6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb

If you choose to place the machine freely 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 can not move from the base. A metal base can be accordingly fig.4.3.A. Place the machine front rubber feet in the U-profile. Install and level the machine like indicated in paragraph „INSTALLING, LEVELING FREELY ON THE FLOOR“.



⚠ WARNING!
NEVER APPLY THIS FOR A 13 kg / 30 lb, 16 kg / 35 lb, 22 kg / 50 lb MACHINES.

INSTALLING, LEVELING AND SECURE 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/18lb, 10kg/25lb machine, remove the four rubber feet 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.

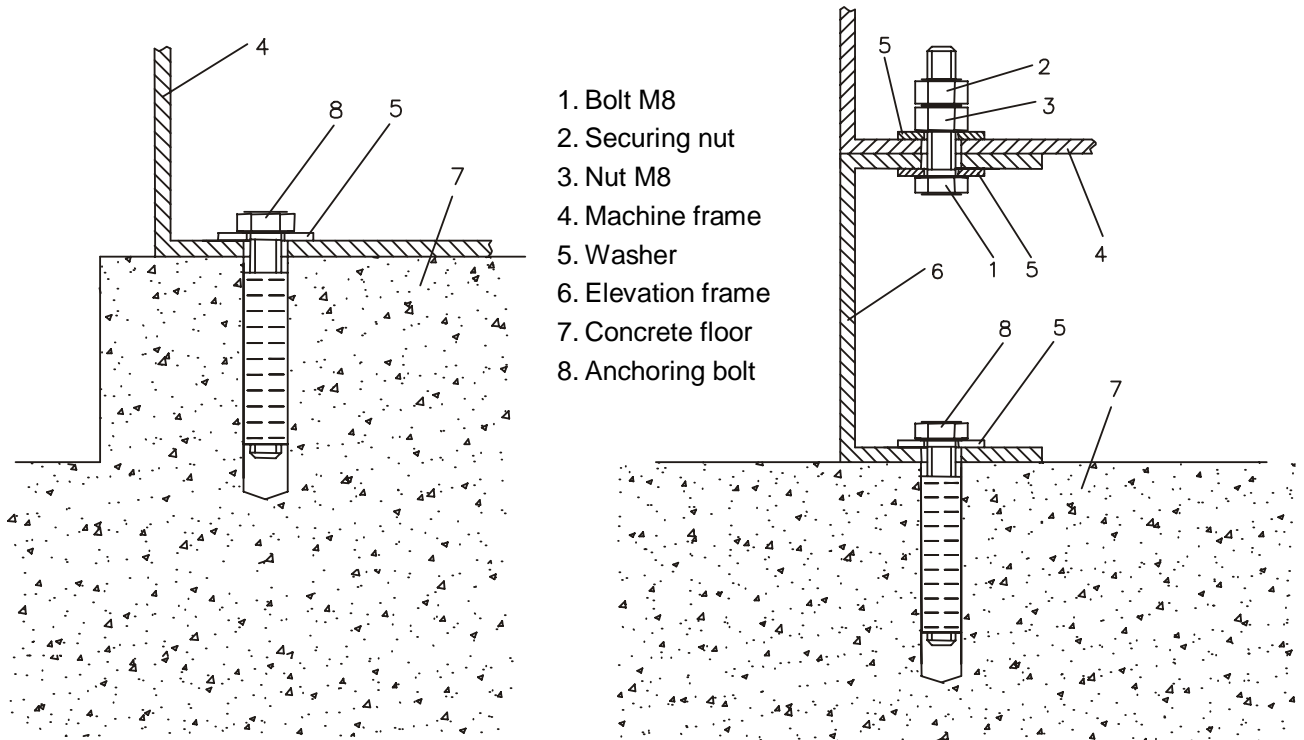
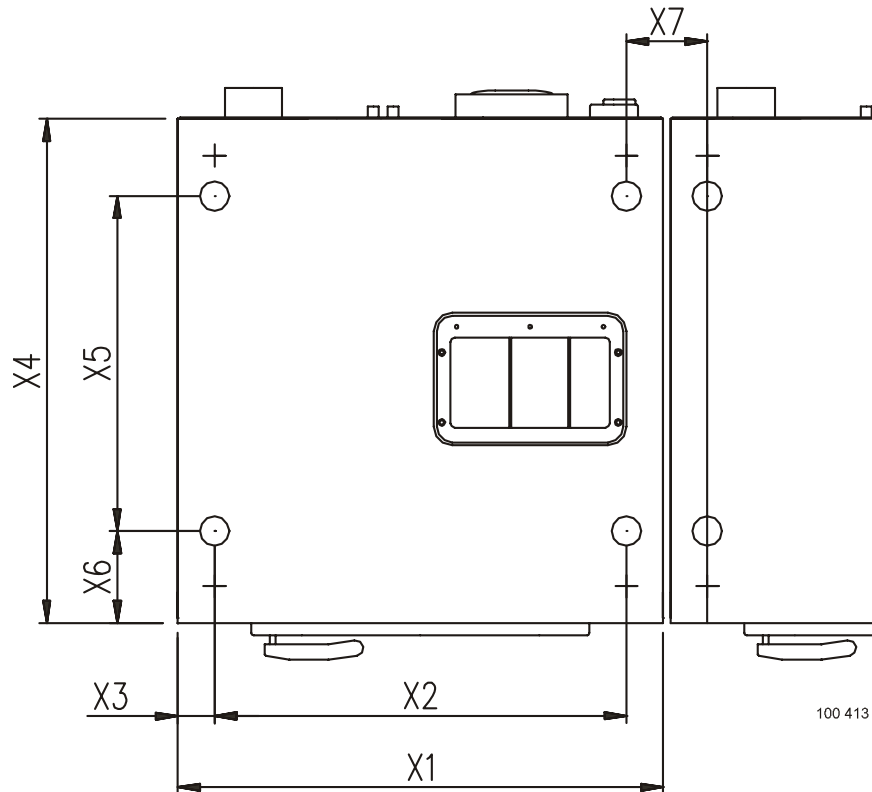


Fig.4.3.B. On an elevation

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Fig.4.3.C. Frame fixation dimensions

	6 kg / 13 lb	7 kg / 18 lb	10 kg / 25 lb	13 kg / 30 lb	16 kg / 35 lb	22 kg / 50 lb
X1	660 mm / 25,98"	660 mm / 25,98"	660 mm / 25,98"	830 mm / 32,7"	830 mm / 32,7"	900 mm / 35,43"
X2	560 mm / 22,05"	560 mm / 22,05"	560 mm / 22,05"	715 mm / 28,1"	715 mm / 28,1"	799 mm / 31,45"
X3	50 mm / 1,97"	50 mm / 1,97"	50 mm / 1,97"	57,5 mm / 2,26"	57,5 mm / 2,26"	50,5 mm / 1,98"
X4	685 mm / 26,97"	685 mm / 26,97"	785 mm / 30,91"	845 mm / 33,26"	960 mm / 37,8"	1085 mm / 42,71"
X5	455 mm / 17,91"	455 mm / 17,91"	565 mm / 22,24"	500 mm / 19,68"	815 mm / 32,09"	846 mm / 33,30"
X6	130 mm / 5,12"	130 mm / 5,12"	130 mm / 5,12"	178,5 mm / 7,02"	80 mm / 3,15"	39,5 mm / 1,55"
X7	115 mm / 4,53"	115 mm / 4,53"	115 mm / 4,53"	135 mm / 5,32"	135 mm / 5,32"	121 mm / 4,76"

Tab.4.3. Distances anchoring bolts

4.4. ELECTRICAL CONNECTION

GENERAL

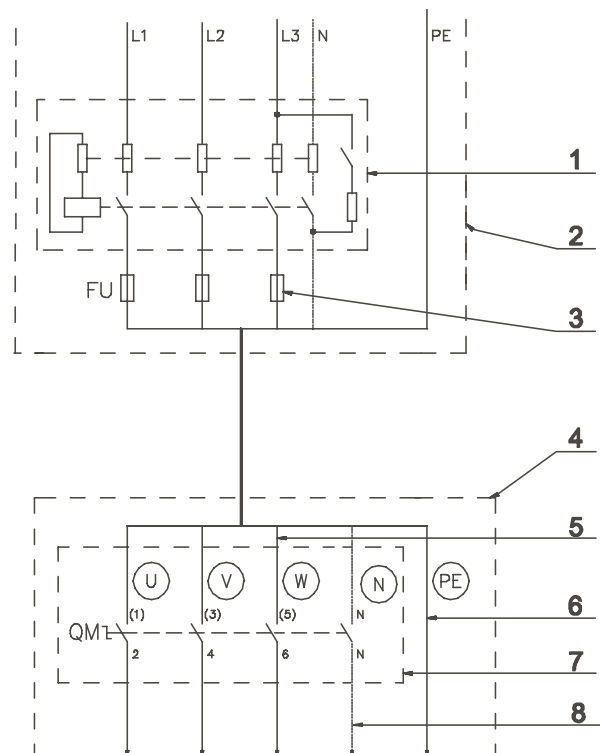
The machine has been designed for connecting to the electrical network according the specification of your order. Before connection check the electrical data stated on the data plate (fig.3.3., pos.3), if they correspond to your electrical network. An individual branch circuit needs to be used for each machine. The way of the connection is described in fig.4.4.A. For electrical protection, there must be installed a residual current device (RCD) and a circuit breaker in the electrical installation of the building (laundry switchboard). For correct selection see below.

IMPORTANT:

- If the machine is not equipped with a main switch then supply disconnecting devices 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.
- Make sure the supply voltage is always within the limits specified in the chapter „3. TECHNICAL SPECIFICATIONS“ in all circumstances. When you have long distances in the electrical installation, it may be necessary to use bigger cables to reduce the voltage drop.
- When the machine is connected near a large capacity power supply transformer (500kVA or more, wiring length shorter than 10 m) or there is a power capacitor switch-over, a power supply improving reactor must be installed. If you do not install this, the inverter may get damaged. Contact your sales office for more info.

⚠ WARNING!
GROUNDING: IN EVENT OF MALFUNCTION OR BREAKDOWN OR LEAKAGE CURRENT, THE GROUNDING WILL REDUCE THE RISK OF ELECTRICAL SHOCK AND SERVE AS A PROTECTING DEVICE, BY PROVIDING A PATH OF LEAST RESISTANCE OF ELECTRICAL CURRENT. THEREFORE IT IS VERY IMPORTANT AND THE RESPONSIBILITY OF THE INSTALLER TO ASSURE THE WASHER IS ADEQUATELY GROUNDED AT THE POINT OF INSTALLATION TAKING INTO CONSIDERATIONS THE NATIONAL AND LOCAL CONDITIONS AND REQUIREMENTS.

1. Residual current device (RCD)
2. Laundry electrical switchboard
3. Supply protection device
4. Washing machine
5. Phase conductors
6. Protective conductor
7. Main switch inlet terminal switchboard
8. Neutral conductor



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Fig.4.4.A Machine connection to electrical network (with a residual current device)

RESIDUAL CURRENT DEVICE (RCD)

In some countries an RCD is known as an „earth leakage trip“ or „Ground Fault Circuit Interrupter“ (GFCI) or an „Appliance Leakage Current Interrupter“ (ALCI) or „earth (ground) leakage current breaker“.

Specifications:

- Tripping current: 100mA (if locally not available/allowed use a 30mA trip current, preferably selective type with small time delay set)
- Install max. 2 machines on each RCD (for 30mA, only 1 machine)
- Type B. There are components inside the machine which make use of DC voltages and therefore a „type B“ RCD is necessary. For information only: Type B is better performance than type A, and type A is better than type AC.

When locally allowed, there must always be installed an RCD. In some power network earthing systems (IT, TN-C,...), an RCD might not be allowed (see also IEC 60364).

Some washer control circuits are supplied with a separating transformer. Therefore the RCD may not detect faults in the control circuits (but the fuse(s) of the separating transformer will).

SUPPLY PROTECTION DEVICE

A supply protection device basically protects the machine and wiring against overloads and short circuits.

As supply protection device, you can use either (glow-wire) fuses or (automatic) circuit breakers.

See the table „Technical specifications“ for the rating of the nominal current and other specifications of the supply protection device. In this table there is specified that the protection must be the „slow“ type, for circuit breakers this means curve D. Although not recommended, if for some reason you can not use a slow type, select the protection device with 1 step higher nominal current rating to avoid disconnecting during start-up.

SUPPLY CABLE

The supply cable is not delivered with the machine.

Specifications:

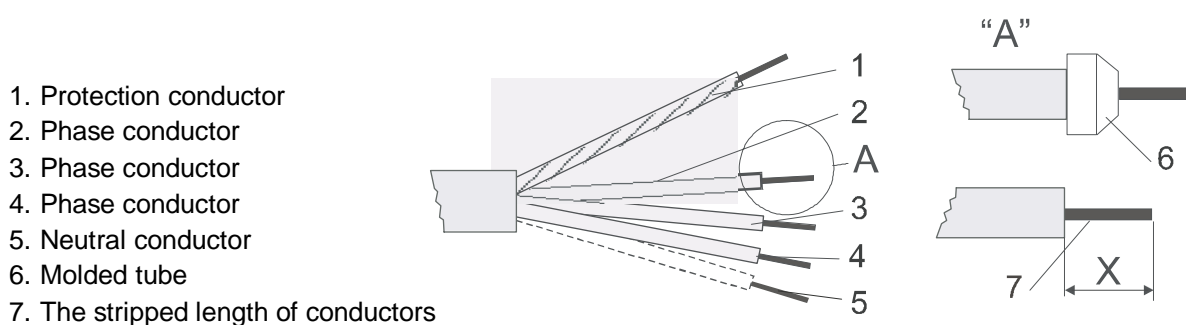
- conductors with copper cores
- stranded conductors are strongly recommended (flexible wiring) to avoid conductor breaking because of vibration
- **THE CROSS SECTION DEPENDS ON THE USED SUPPLY PROTECTION DEVICE. SEE TABLE 4.4., FOR THE MINIMAL CROSS SECTION**
- As short as possible, directly from the supply protection device to the washer without branching off.
- No plug or extension cords: The machine is intended to be permanently connected to the electrical network

Connection:

- Insert the cable through the hole in the on the rear panel, insure a strain relief (turnbuckle) is used so that the supply cable can not move.
- Strip the conductor ends according fig.4.4.B.
- The protective conductor must be longer so that when the cable is pulled out accidentally, this conductor is disconnected the last one!
- With stranded conductors, use „wire end tubes“ with an insulated sleeve (6) for L1/U, (L2/V), (L3/W), (N) conductors. Make sure there can not be make accidental contact, since the supply cable stays under voltage even when the main switch is off.
- Crimp a ring terminal (eyelet) to the protection conductor for good fixation to the PE terminal.
- Connect the supply cable conductors to the incoming terminals (main switch (1)) marked with L1/U, (L2/V), (L3/W), (N), and the terminal (copper screw) marked with PE, see fig.4.4.C.
- Provide a sag in the cable, in front of the cable strain relief. This will avoid ingress of condensed water into the machine, see fig.4.4.C.

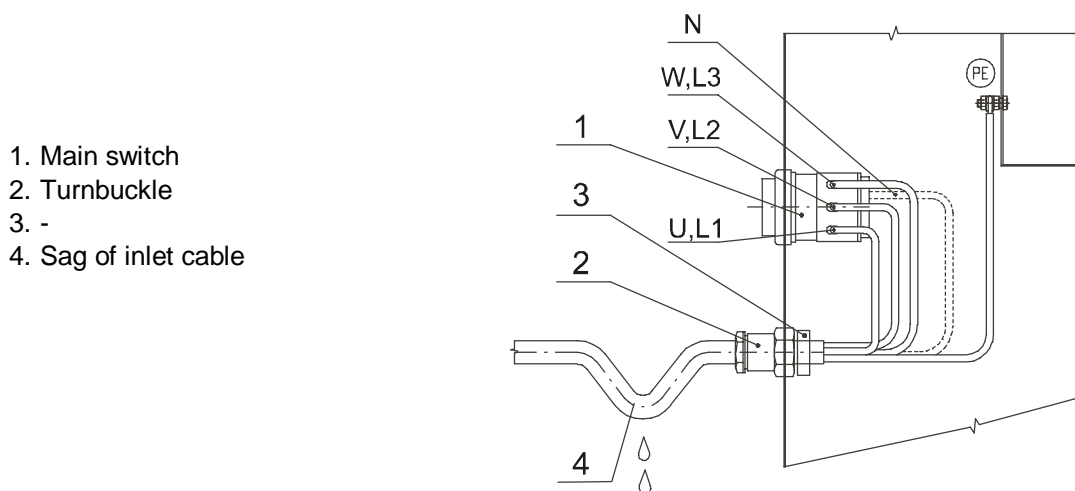
Power supply protection device nominal current (US)		Min. phase conductor section in mm ² (AWG)	Min. Protection conductor section in mm ² (AWG)
Automatic circuit breakers	Fuses		
16A (15A)	10A (10A)	1,5 mm ² (AWG 15)	1,5 mm ² (AWG 15)
20A (20A)	16A (15A)	2,5 mm ² (AWG 13)	2,5 mm ² (AWG 13)
25A (-)	20A (20A)	4 mm ² (AWG 11)	4 mm ² (AWG 11)
40A (40A)	32A (30A)	6 mm ² (AWG 9)	6 mm ² (AWG 9)
63A(-)	50A (50A)	10 mm ² (AWG 7)	10 mm ² (AWG 7)
80A	63A	16 mm ²	16 mm ²
100A	80A	25 mm ²	16 mm ²
125A	100A	35 mm ²	25 mm ²

Tab.4.4. Manufacturer's recommended minimal conductor section



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Fig.4.4.B Adaptation of conductor ends of supply cable



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Fig.4.4.C Connection of main power inlet

MACHINE PROTECTIVE EARTH CONNECTION AND EQUIPOTENTIAL BONDING

Independent of the supply cable, the washer must be connected to the laundry protective earth system with a separate conductor. The protection conductor, enabling this connection, is not included with the washer. If there are other washers/appliances with exposed conductive parts, which can be touched simultaneously, make sure to make equipotential bonding between all these appliances. The external protective terminal for this purpose is located on the rear panel of the machine frame, (fig.4.4.D., pos.3). The minimum protection conductor's cross section depends on the supply cable cross section and can be found in table 4.4. However, for the protection purposes with the supply cable section of min. 4 mm² we recommend to select a larger conductor section, i.e. 6 mm².

- 1. Washing machine (rear view)
- 2. Laundry protective earth connection
- 3. Washing machine external protective terminal
- 4. Protective conductor - washing machine connection
- 5. Earth mark

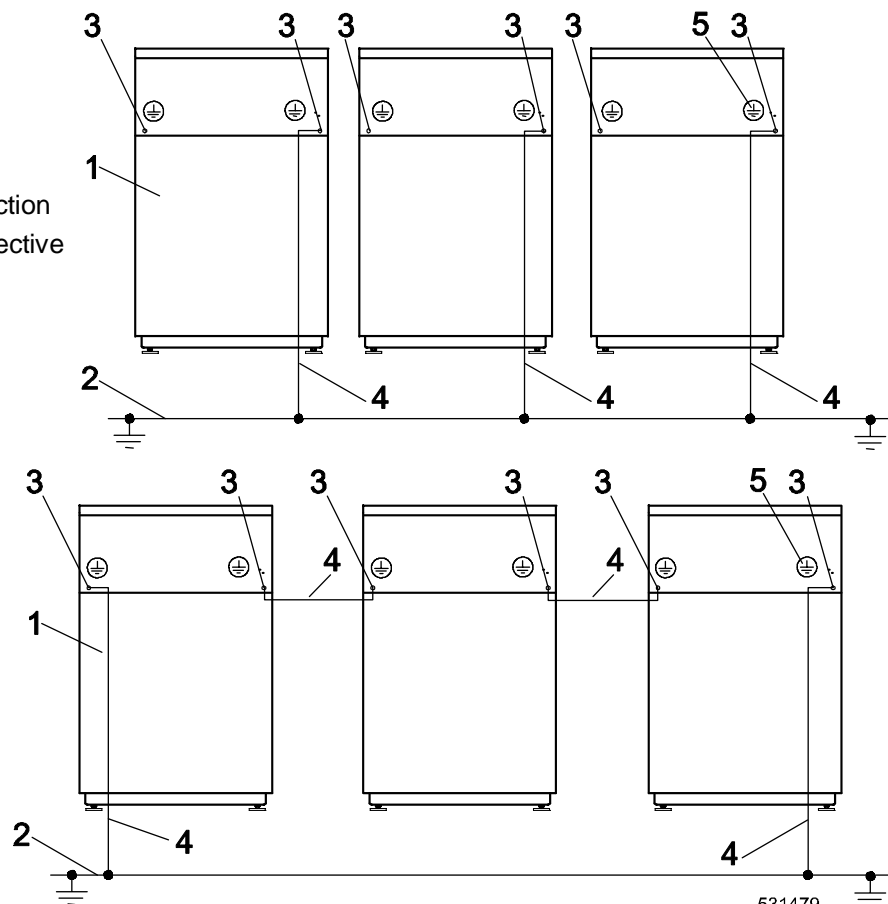


Fig.4.4.D.

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MULTIPLE MACHINES IN LINE SINGLE PHASE

When multiple single phase machines are connected to the same electrical network, it is necessary to connect the machines according to fig.4.4.E. 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.

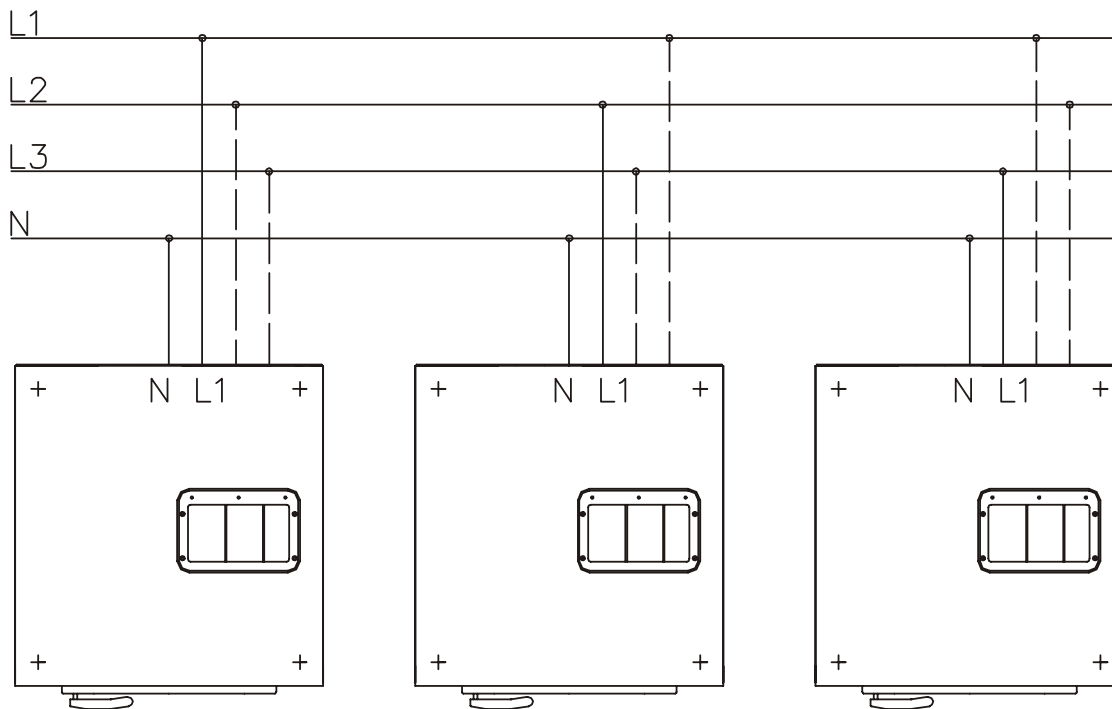


Fig.4.4.E Multiple machines in line

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4.5. WATER CONNECTION

The washer is equipped with 3/4" BSP (British Standard Pipe Thread) hot and cold water inlet valves, indicated by a sticker next to the inlet. Use the water inlet hoses that accompany the washer as they are properly adapted to the water valves and appliance. NEVER use a rigid connection to the water supply.

There are 2 kinds of water inlet hoses, water inlet hoses with at both sides BSP threaded nuts or at one side a BSP nut and a NPT nut on the other end. The NPT Nut is marked with groove.

For best operation of the washer, water pressure must be between 43 - 73 PSI (pound per square inch) or 0.3 - 0.5 MPa. Water pressure that is below minimum requirements can lengthen the wash cycle or/and not allow proper function of the washer.

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 cold water. If no hot water supply is present, contact your dealer for the proper required action.

TO INSTALL

Flush the water system in order to remove any particles that may be in the water system. Insert a „screen seal hose washer“ into the faucet connection end of the inlet hose and the standard hose seal washer at the opposite end of the inlet hose. When connecting inlet hoses, be sure hose connections are not cross-threaded on the water valves. Tighten securely by hand plus 1/4 turn with pliers. DO NOT over tighten as this will strip threads on the water valve(s). The water hardness can have an influence on the wash results. 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 give the best wash results.

HOT WATER

IMPORTANT -- TEMPERATURE IN WASHING TUB

The electronic controller uses the temperature sensor in the tub to control the temperature of the washing bath. There are a lot of things that have influence on the temperature measurement. Therefore the temperature control of the washing bath is not very precise.

In principle, the manufacturer strives that the real temperature inside the washer is never higher than the programmed temperature so that textile linen will not be damaged because of too high temperature.

If for certain applications a very precise washing bath temperature is necessary, appropriate measures must be taken. If any part needs to be replaced (wash controller, temperature sensor,...) and your application needs very precise temperatures, appropriate measures must be taken. The manufacturer will refuse any responsibility for all consequences because of inaccurate temperatures inside the washing machine tub. The hot water supply needs to be large enough to provide the required hot water for the installed washers. For good wash results we advise a hot water supply that is set between 140 - 160°F / 70 - 80°C. To determine the boiler capacity you can use the data in below table. Please be aware that this is an average and depends highly of the boiler, boiler temperature, linen, program set up and washing program used.

CAPACITY	Hot water	
	dm ³	gal
6-7 kg / 13-18 lb	15	4
10 kg / 25 lb	16	4.5
16 kg / 35 lb	31	8
22 kg / 50 lb	40	10,6

Tab.4.5.A

WATER CONSUMPTION

The water consumption depends on the programmed values in the controller. These default values can be found in the program manual. For a pre-wash 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. Be aware of the fact that these are only indicative values. 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, type of linen and the drum rotation.

4.6. STEAM CONNECTION

⚠ WARNING!
INSTALL A STEAM SUPPLY DISCONNECTING DEVICE IN THE VICINITY OF EACH WASHER.
DISCONNECT THE STEAM SUPPLY ALWAYS BEFORE ANY SERVICE OR INTERVENTION, GIVING SUFFICIENT TIME TO COOL DOWN THE PARTS TO AVOID INJURES.

⚠ WARNING!
IT IS NECESSARY TO INSERT A FILTER WITH PERMEABILITY UP TO 300 MICROMETERS IN FRONT OF THE STEAM VALVE. POSSIBLE DIRT BIGGER THAN 300 MICROMETERS MIGHT DAMAGE THE STEAM VALVE AND CAN CAUSE ITS LEAKAGE.

For dimensions of steam connection information, see fig.3.3., and technical specification table.

Use an inlet steam pressure hoses only, adapted to the steam valve with appropriate seal that is suitable for the applied working pressure.

Take care that by the installation and connection of the steam supply the necessary measure are taken that accidental contact is prevented, this for all persons. Due to the high temperature, direct injury will appear.

4.7. WATER DRAIN CONNECTION

The machine is equipped with a drain valve of OD 76 mm (3"). The drain outlet is situated on the rear of the machine. The drain has to be connected to the waste channel-pipe. You can use the elbow, which is a part of the delivery when ordered. Secure the elbow with clamps.

A WASTE CHANNEL CAN NOT BE LOCATED UNDER THE MACHINE AND MUST BE LOWER THAN THE DRAIN PIPE BECAUSE THE WATER DISCHARGES FROM THE MACHINE BY GRAVITY. DO NOT REDUCE THE DIAMETER OF THE MACHINE DRAIN PIPE.

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

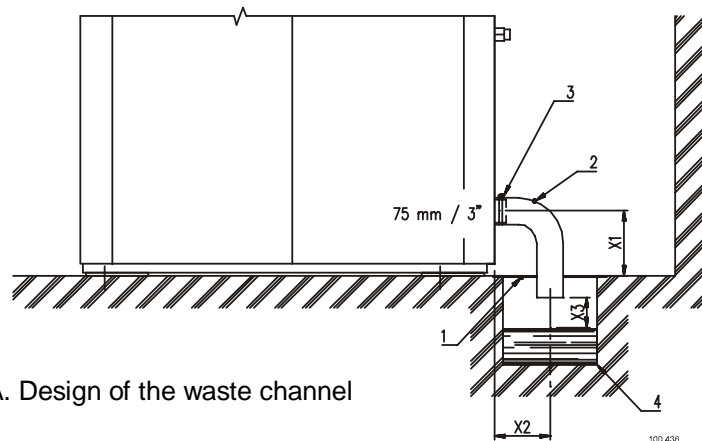


Fig.4.7.A. Design of the waste channel

	6 kg / 13 lb	7 kg / 18 lb	10 kg / 25 lb	13 kg / 30 lb	16 kg / 35 lb	22 kg / 50 lb
X1	73 mm / 2,87"			60 mm / 2,36"	55 mm / 2,16"	140 mm / 5,51"
X2	> 100 mm / 3.93"					
X3	> 20 mm / 0.78"					

The main drain channel-pipe must have the capacity to be able to handle the total output of all connected machines. In a drainpipe, a deodorizer must be provided every twenty meter, fig.4.7.B., pos.1 to assure the good working of the drain pipe. If the main drain pipe cannot be sufficiently deodorized, install a deodorizer per machine. 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.4.7.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

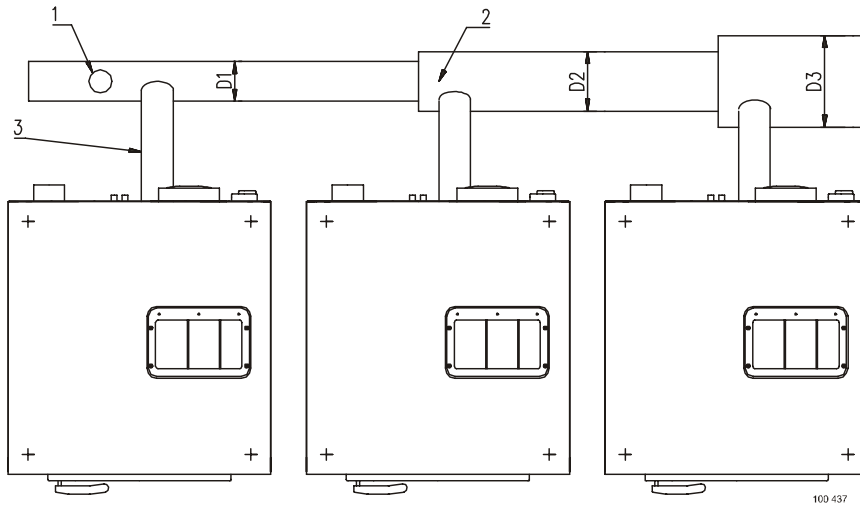


Fig.4.7.B. Recommended drain pipe diameters

4.8. VENTING

⚠ WARNING!
VAPOURS ESCAPE FROM THE MACHINE THROUGH THE AIR VENT OPENING!
(FIGURE 3.3., POSITION 4), DO NOT COVER.

The vent air opening 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. It allows also proper measuring of the water level. For the safety of everyone make sure that unauthorized persons cannot reach the backside of the machine. Notwithstanding the fact that it is not advised and if measures were taken, you can connect the machine venting pipe to the laundry central duct for exhausting the vapor out of the building. For placing of connection points see fig.3.3. The piping material must withstand a temperature of 80°C / 176°F and generated machine vibrations. The central duct for multiple venting must be dimensioned for the total cross section of venting pipes of all machines. Take care that this installation can not create any injury at anyway.

4.9. LIQUID SOAP CONNECTION

General : Always use liquid soap pumps with a flow rate that can bring the requested quantity in less than 30sec.

Important : Start pumping immediately after the water valves are open. The incoming water dilutes the liquid soap and brings it into the tub assembly.

Caution : **The machines are produces in two versions:**

Without liquid soap (standard version)

With liquid soap (according to the request)

Secure the location of the wiring and hoses in such a way that they can not be pinched, damaged or rubbed. Before you start to use liquid soap, check with your liquid soap supplier whether the liquid soap is harmless and inert to HD-PE and PVC material in order to avoid a problem that manufacturer is not responsible for.

To rebuild the machine from the version „Without liquid soap“ to the version „With liquid soap“ follow the service instruction no. 529621.

The washer has provisions for connecting external dosing of liquid soaps. On the back side, a plastic hose connection part is present, fig.4.9.A to connect the liquid soap hoses. Depending of the number of liquid soap pumps that will be used, drill holes (max. 5) of Ø 8 mm / 0.315“ in the plastic hose connection part for each pump. On the plastic hose connection part is also a nipple of Ø 12 mm / ½“. Use this nipple **ONLY** for entering diluted soap. Drill with Ø 11.5 mm / 0.45“. By default, these nipples are closed. Drill only the ones that will be used. **Take care that the drill particles are carefully removed so that they can not clog up the hoses and openings.**

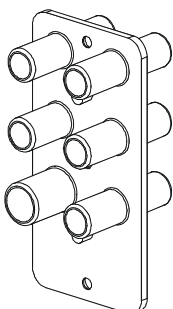


Fig.4.9.A Plastic hose connection part

⚠ WARNING!

CHECK THAT THE HOSE CONNECTIONS ARE TIGHT (CHECK THE CLAMPS)! ANY LEAKAGE OF CHEMICALS MAY CAUSE SERIOUS BODY INJURIES AS WELL AS SERIOUS DAMAGE TO THE WASHER. IF ONE OF THE NIPPLES ARE OPEN, CLOSE AND SECURE THE OPENING WITH AN APPROPRIATE COVER.

ELECTRICAL CONNECTION

The power supply of the liquid soap supply system has to be connected to an external electrical source. Only authorized workers with a valid qualification must execute the electrical connection on the machine according to the valid local standards. The correct connection way can be found on the wiring diagram that is located inside the cabinet in a plastic bag. Do not connect the liquid soap pump system in the washer.

ELECTRONIC CONTROLLER WITH BLUE PCB AND GRAPHICAL DISPLAY

For electric connection of supply control signals a plastic box is available on the back side of the machine (see fig.4.9.B., pos.57) with the terminal box with LED signalization of activation of the respective pump, (pos.50). Under the terminal box there is a label for electric connection, fig.4.9.B. Detail connection of signals could be also found on the electric scheme of the machine. Signals for supply pumps control are 24V AC. Maximum current for control circuits of pumps must be limited to 10mA. Lead the cable for connection of pumps control signals through the plastic cable bushing, pos.19. After connection of conductors to the respective positions of the connector „P“ (screw clamps), fix up the cable by tightening the cable bushing against disconnection and close the box with the cover. For details about liquid soap supply system programming, see Programming manual.

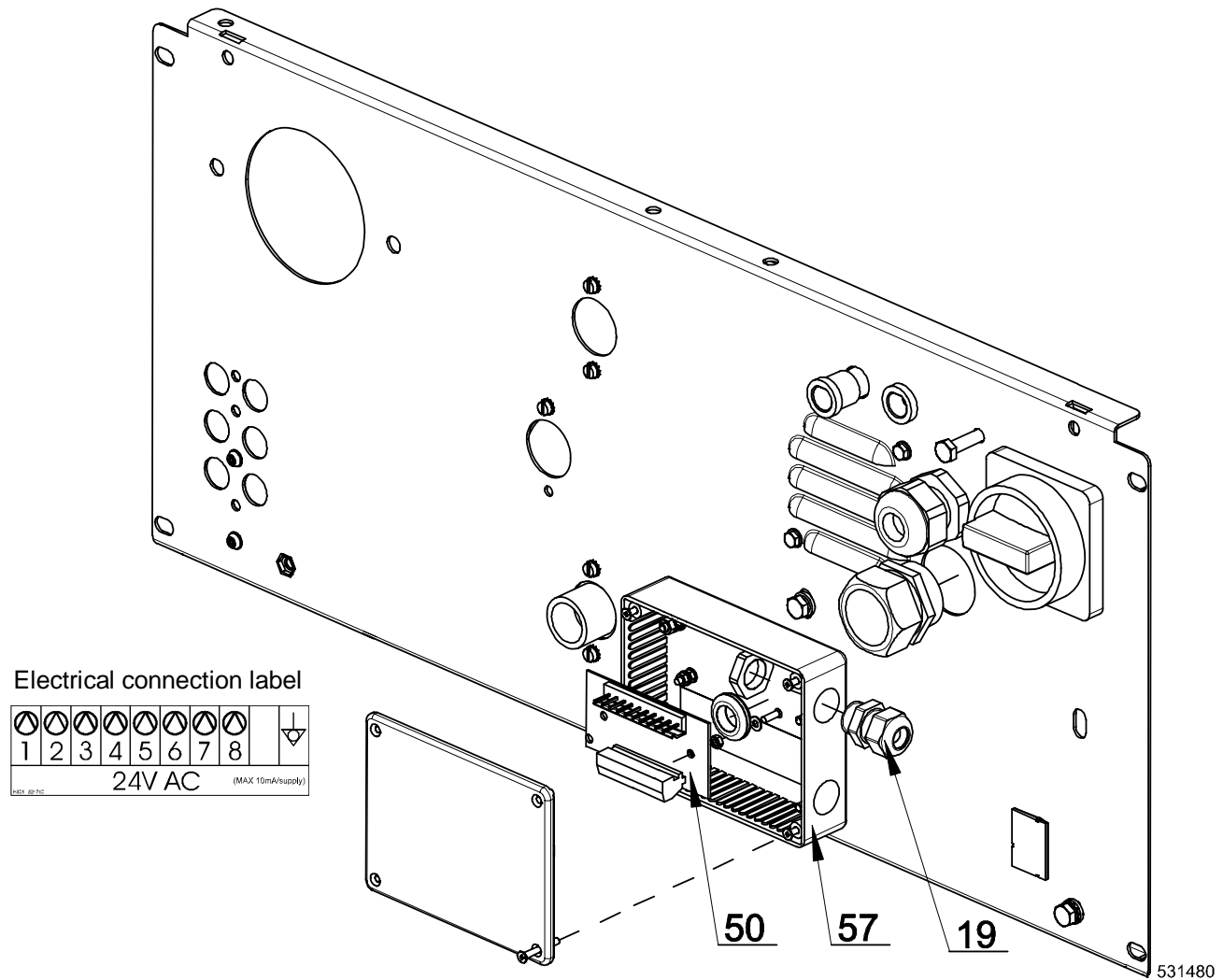


Fig.4.9.B Rear panel

4.10. PUTTING THE MACHINE INTO SERVICE

⚠ WARNING!
DO NOT OPERATE THE MACHINE WITHOUT REMOVING THE TRANSPORT BRACES.
OTHERWISE THIS CAN LEAD TO INJURY TO PEOPLE AND DAMAGE THE MACHINE.
DO NOT TRANSPORT THE MACHINE WITHOUT TRANSPORT BRACES MOUNTED.

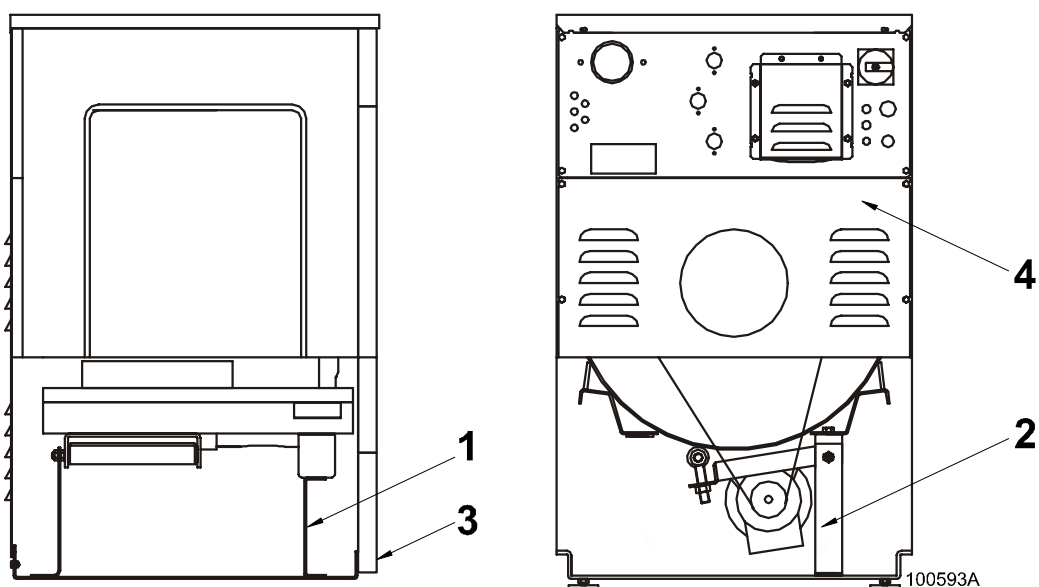
The machine is blocked for transport. This eliminates all possible movement of the tub assembly during transportation. The transport braces must be removed prior putting your machine into service.

1. machines 6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb, 13 kg / 30 lb, 16 kg / 35 lb - two transport braces
2. machine 22 kg / 50 lb - three transport braces

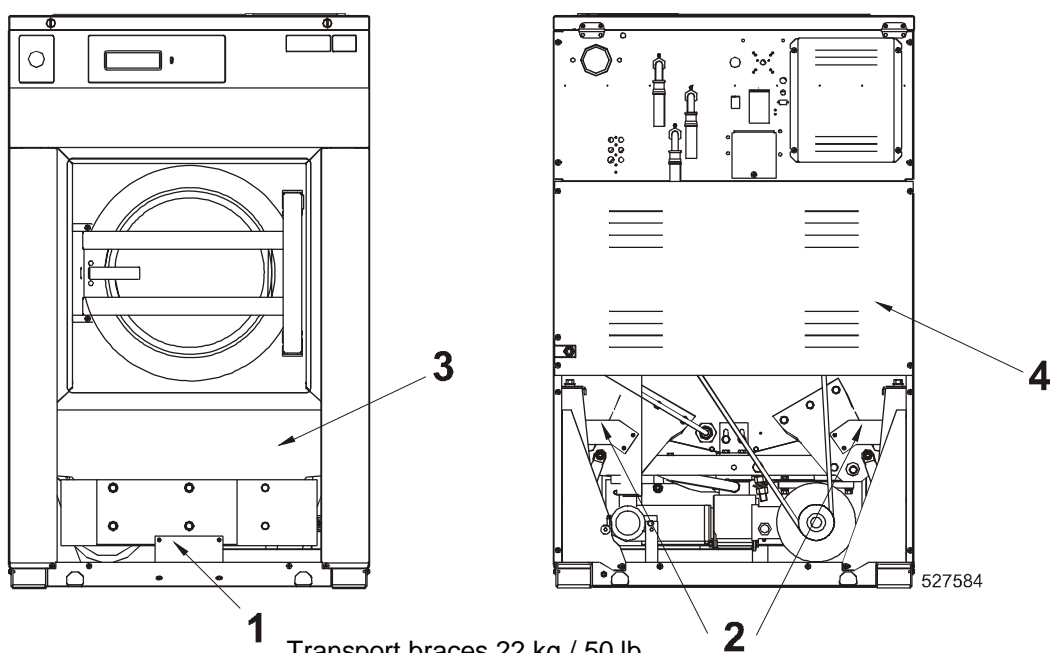
IMPORTANT NOTE: UNSCREW ONLY THE BOLTS AND NUTS WHERE INDICATED!

1. Remove transport brace front, fig.4.10., pos.1.
2. Remove transport brace rear right, fig.4.10., pos.2.
3. Remove transport brace rear left, fig.4.10., pos.2., applicable for 22 kg / 50 lb.

After removing the transport braces put the service panel, fig.4.10., pos.3 and the rear panel, pos.4 back on the machine. Keep the shipping brackets pos.1, 2 for possible future transportation.



Transport braces, 6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb, 13 kg / 30 lb, 16 kg / 35 lb



Transport braces 22 kg / 50 lb
Fig.4.10.

CHECKING BEFORE PUTTING INTO SERVICE

1. Make sure the transport braces are removed.
2. Put out all items 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 (earth) and electrical supply connection.
6. Open water valves to machine and check hose and connections for leaks.
7. Read carefully the „User's manual“.
8. Start a wash program as test.
9. Check the vibration switch function during extracting, see chapter „5.2.3 ADJUSTING OF OUT OF BALANCE SWITCH“.
10. 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! 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.

DO NOT OPERATE THE MACHINE WITH BROKEN / MISSING PARTS OR OPENED COVERS!

BEFORE MAINTENANCE WORK DISCONNECT THE MACHINE POWER SUPPLY!

WHEN THE MAIN SWITCH IS TURNED OFF THE INLET TERMINALS OF THE MACHINE MAIN SWITCH ARE STILL UNDER CURRENT! THAT IS THE WAY TO AVOID INJURIES.

When replacing any parts of the machine, exchange them with original parts obtained from your dealer or ordered through the spare parts manual.

5.1. MAINTENANCE

CHECKING AND MAINTENANCE DAILY

1. Remove the linen or other parts (paperclips, needles, ...) that 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.
Do not use solvents, acids or grease to clean the rubber door gasket!
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

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 „5.2.6. Tightening moments“.
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. On machines with electric heating check the tightening of the contacts of heating elements terminals and other power terminals (main switch, fuse disconnectors, contactors).
7. 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.

⚠ WARNING!

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. Remove dirt and dust, clean, and verify functionality 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

5.2. ADJUSTMENTS AND PART'S EXCHANGES

5.2.1. ADJUSTMENT OF DOOR SEAL PRESSURE

MACHINES 6 kg / 13 lb, 7 kg / 18 lb, 10 kg / 25 lb, 13 kg / 30 lb, fig.5.2.1.A

If there is a water leakage around the door area, it is necessary to find out what caused the problem. A reason can be due to the door seal pressure should be adjusted or if the door shift out of position. In some cases the door seal has to be replaced.

1. For increasing (decreasing) the pressure of the door gasket, 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. Add a screw lock to secure the torque.
2. After adjustment, the door seal pressure must be verified as follows, the door handle, in closed position, should be pushed away from the doorlock with about 5 mm due to the tub rubber against door rubber gasket at the hinge side.
3. Adjust the center position of the door by loosening the screws (pos.4) on the door hinge. The door pin must be right in the center of the doorlock opening with the tolerance to above. Tighten the screws (pos.4) again after correct centering of the door. Add a screw lock to secure the torque.

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

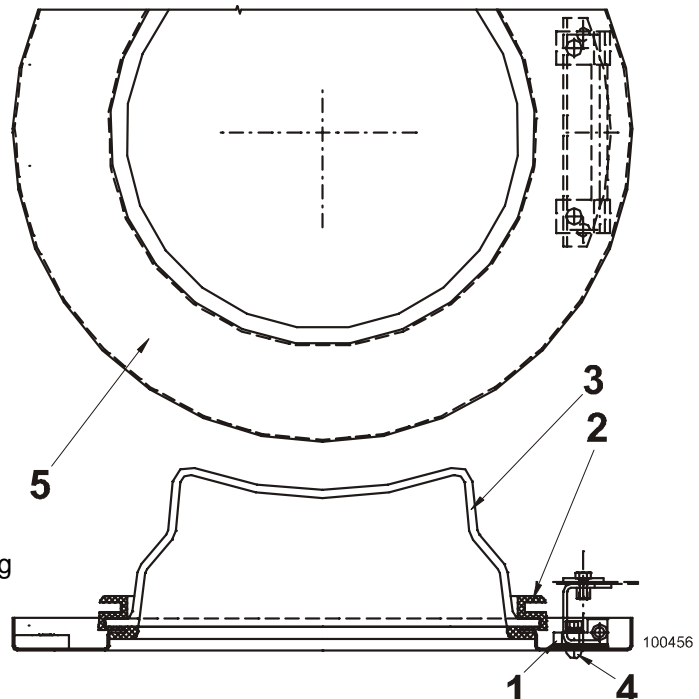


Fig.5.2.1.A Door fastening

ADJUSTMENT OF PRESSURE ON THE HINGE SIDE FOR MACHINES 16 kg / 35 lb, 22 kg / 50lb, fig.5.2.1.B

⚠ WARNING!
BE CAREFUL TO AVOID POSSIBLE FALLING OF THE DOOR TO THE FLOOR. RISK OF INJURIES!

1. Open the door, loosen the bolt (1) clamping the door frame to the hinge and take out the square washers. Tighten the bolt.
2. Loosen the bolt (4).
3. According to need insert one, two or three washers (6) between longitudinal beam (8) and cross beam (5).
4. Tighten the bolt (4).
5. Proceed the same for the bottom bolt (4).

ADJUSTMENT OF PRESSURE ON THE DOOR LOCK SIDE FOR MACHINES 13 kg / 30 lb, 16 kg / 35 lb, 22 kg / 50lb, fig.5.2.1.B

6. Remove the lock cover (11) by screwing off the bolts (12).
7. Remove the bolts which fasten the lock (9)
8. According to need take out one, two, three or four washers under the lock - thickness 1mm (10).
9. Screw back the lock and the lock cover.

⚠ WARNING!
WHILE CLOSING THE DOOR CHECK, WHETHER SHIFTING OF HINGE, RUBBING OF GLASS OR LOCK OCCURED. IF ADJUSTMENT OF PRESSURE IS INSUFFICIENT, REPLACE THE DOOR SEALING. ALWAYS PAY ATTENTION IF THE SEALING PRESSURE IS EQUAL AROUND THE WHOLE CIRCUIT.

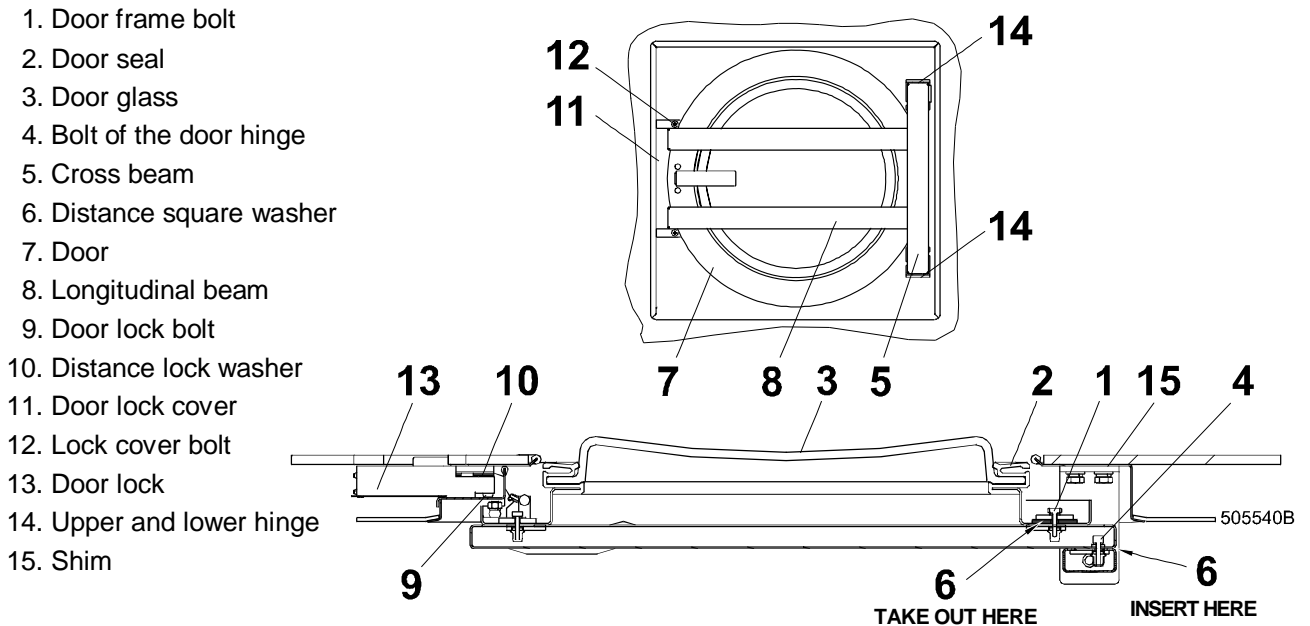


Fig.5.2.1.B Door fastening

5.2.2. REPLACEMENT OF DOOR RUBBER

1. Open the door. Remove the door glass, fig.5.2.1.A, B., pos.3 with rubber (pos.2) from the stainless steel door frame by pushing it towards the drum. Do it carefully, do not damage the glass.
2. Remove the gasket (pos.2) from the glass.
3. Place a new rubber gasket 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.

MACHINES 16 kg / 35 lb, 22 kg / 50 lb

A detailed procedure of the door seal replacement can be found in the service procedures for round and square doors. For more information, please contact our service department.

Important note: After the door seal replacement it can happen that the door seal pressure is too high on the door lock side as well as on the hinge side. If this happens, follow the service instructions mentioned above.

5.2.3. ADJUSTING OF OUT OF BALANCE SWITCH

The out of balance switch is an important component which must - if correctly adjusted - stop the machine when excessive movement and shaking occur due to an unbalance caused by improper distribution of linen in the washing drum. The adjustment of the vibration switch has ALWAYS to be executed at the installation of the washer. It is recommended that once a year a qualified worker verifies the vibration switch setting, fig.5.2.3.

1. After the installation and when the out of balance switch will be verified, first the machines has to be done the extraction mode with max. RPM. This takes care that the tub assembly stands in his equilibrium point.
2. The out of balance switch is located at the front side just under the top cover.
Move the top cover of the machine in such a way that the out of balance is easily accessible.
3. Verify the distance between the microswitch and the spring holder which must be 0,2 mm / 0.008".
4. Check the distance between microswitch holder (pos.x) and the operation plate (pos.2) with the distance indicated.
5. Check the position and condition of the sensor (pos.3) in the operation plate (pos.2). It must be in the center of the hole! If necessary, release the out of balance switch 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 operation plate.

1. Microswitch
2. Operation plate
3. Sensor

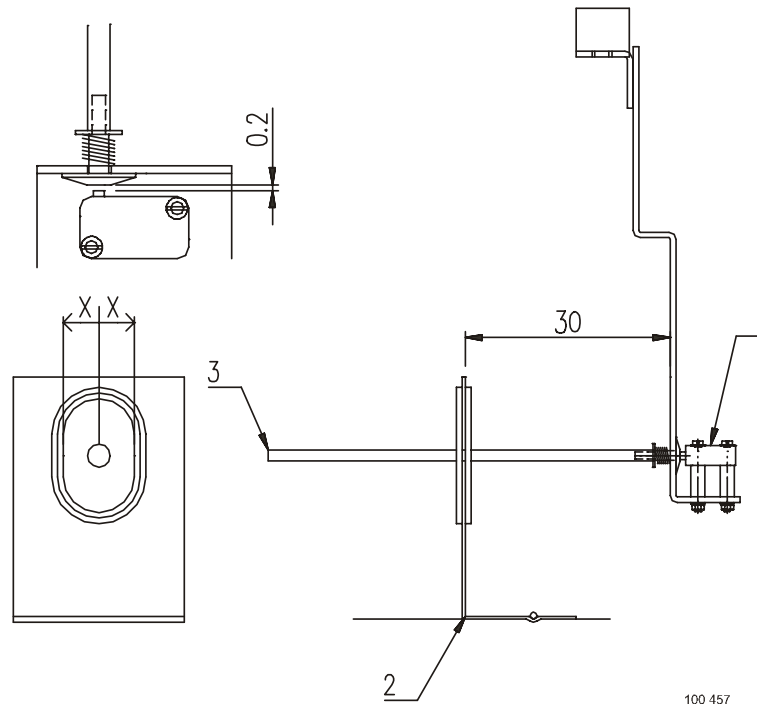


Fig.5.2.3. Vibration switch

FUNCTIONALITY TEST OF THE OUT OF BALANCE

⚠ ATTENTION!
DO NOT USE THE MACHINE IF THIS FUNCTION DOESN'T WORK PROPERLY!
THIS FUNCTIONAL TEST CAN ONLY BE EXECUTED BY A QUALIFIED TECHNICIAN WITH PROPER AUTHORIZATION.

1. After installation and once a year the vibration switch has to be verified on his functionality. During the extraction mode carefully activate the out of balance switch by moving the flexible sensor manually.
 The machine will stop extracting and will return to 0 RPM.
2. Secure all plates and covers in his original state.

5.2.4. BELT REPLACEMENT AND ADJUSTING TENSION

⚠ WARNING!
MAKE SURE THE MACHINE IS DISCONNECTED FROM POWER SUPPLY BY USE AND SECURE THE DISCONNECTING DEVICE.

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

1. After first 24 hrs of operation
2. After first 80 hrs of operation
3. Every 6 months or every 1000 operation hours - which ever comes first.

The belts are accessible from the rear of the machine. If the belts are too tight or too loose, the durability will be shortened. If too loose they can be slipping on the pulley and can cause a noisy operation and generate excessive wear with fast breaking as consequence. In such cases correcting the belts tension is necessary. The belt tension can be verified with an approximate method. Apply a load of 60N / 13lb to the middle of the belt. The belt tension is good when the belt deflection is between 15 and 20 mm / 0.78". If the deflection is less, reduce the belt tension, if more add more tension.
 Change the belts in case they are worn or damaged. See procedure hereafter.

⚠ ATTENTION!
TO CHANGE THE BELTS: NEVER USE A CROWBAR, SCREW DRIVER OR ALIKE TO TAKE OFF THE BELTS OVER THE PULLEY!

1. Dismantle the rear panel, fig.5.2.4., pos.1.
2. Remove the belts, item 2, from the pulley's, by releasing the securing nuts, item 6-7 and item 4.
3. Put a new identical type belts on pulleys item 5 - 8.

4. The belts must be in line on the two pulley's item 5 - 8. If necessary move the motor, forwards, backwards, so that the belts gets aligned.
5. Turn on the bolt, item 7 down for applying tension to the belts, taking care that the nut item 6 give enough freedom.
6. Verify the belt tension like above described.
7. If the belt tension is within the limits, screw the lower nut, item 6 against the motor plate as counter nut. Tighten strongly to secure the whole setup.
8. 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

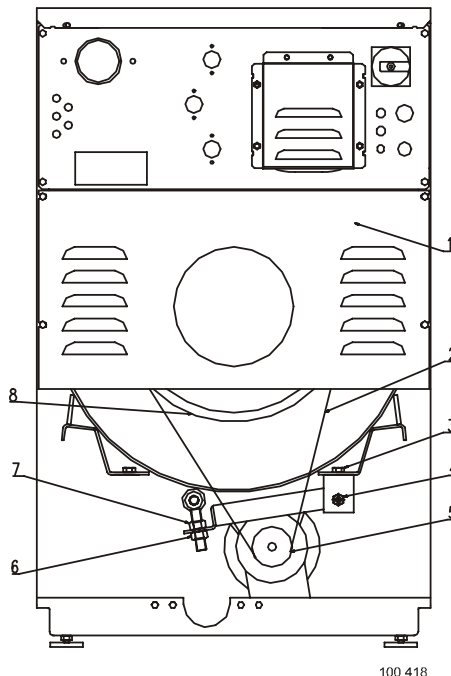


Fig.5.2.4. Regulation of belt

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5.2.5. 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 CLEANING THE WATER FILTERS, CHECK IF ALL WATER INLET TO THE MACHINE IS CLOSED.

5.2.6. TIGHTENING MOMENTS

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. These 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.

5.2.7. REPLACEMENT WASHER FUSES

FUSE VALUES

The correct values of fuses can be found in the vicinity of the fuse holders and on the electrical scheme and delivered with the machine. When a fuse is blown, you can replace it with the same value but in **NO** case a higher value. If the fuse blows again, do not change it, but find the cause of the failure.

Contact your commercial distributor for help if necessary.

6. TROUBLE SHOOTING AIDS

6.1. UNBLOCKING OF THE DOOR LOCK IN CASE OF EMERGENCY

If the power blackout takes too long, you can make an emergency unblocking of the door lock. The emergency door opening has been described as follows:

⚠ WARNING!
BEFORE THE EMERGENCY DOOR OPENING TURN OFF THE MACHINE MAIN SWITCH!
NEVER OPEN THE DOOR WHILE DRUM IS STILL RUNNING!
NEVER OPEN THE DOOR IF „TOO HOT“ IS INDICATED! RISK OF BURN OR SCALD INJURIES!
NEVER OPEN THE DOOR IF THE MACHINE PARTS FEELS TOO WARM!
NEVER OPEN THE DOOR, UNTIL THERE IS NO WATER IN THE DRUM! IN THE OPPOSITE CASE, IT WILL FLOW OUT AFTER OPENING THE DOOR.

1. Verify if all condition are present to safely open the door.
2. Remove service panel.
3. Find the cord of emergency door opening on the left side. Pull on it gently but firm.
4. If a light click is heard, the lock went to open position.
5. Open the door if all safety conditions are fulfilled.
6. Put the service panel back on his place and secure it again.

6.2. ERROR INDICATION SHOWN ON DISPLAY

See the chapter „Troubleshooting“ in the programming manual.

7. LIST OF RECOMMENDED SPARE PARTS

- drain valve
- 2-way inlet valve
- 3-way inlet valve
- steam valve
- door lock microswitch
- door lock coil
- fuses
- thermostat sensor
- motor contactor
- heating contactor
- heating element
- V-belts
- door seal

Find more detailed information and order codes in the spare parts catalogue for individual machines at your dealer.

8. PUTTING THE MACHINE OUT OF SERVICE

8.1. DISCONNECTING THE MACHINE

1. Switch off the external electric power inlet to the machine.
2. Turn off the main switch on the machine.
3. Shut the external water or steam inlet to the machine.
4. Make sure that the external electric power and steam inlets are shut off. Disconnect all electric, water or steam inlets.
5. Insulate the external electric power inlet conductors.
6. Equip the machine with a sign „OUT OF SERVICE“.
7. Unscrew nuts (bolts) fixing the machine to the floor.
8. During transportation follow the instructions stated in chapters:
„2.2. IMPORTANT INFORMATION BEFORE INSTALLATION“, paragraph „For transportation and storage“,
„4. MACHINE INSTALLATION

In case the machine will never be used again, secure it so that injury of persons, damage to health, property, and nature is avoided. Make sure enclosing of persons or animals inside the machine cannot occur, injury of persons by moving or sharp parts of the machine, possibly operating fills, (e.g. remove the door, secure the drum against turning, ... and similar.)



BE CAREFUL, FALLING DOOR AND GLASS CAN CAUSE INJURIES!

8.2. MACHINE DISPOSAL

⚠ WARNING!
TAKE ALL NECESSARY ACTION AND PRECAUTIONS WHEN DOING DISASSEMBLY OF THE WASHER TO AVOID INJURIES BY GLASS OR SHARP METAL EDGES.

8.2.1. POSSIBILITY OF THE MACHINE DISPOSAL BY THE SPECIALIZED COMPANY

Information concerning the WEEE-directive (Waste Electrical and Electronic Equipment, for European Union member states only):

- For the production of the machine that you have purchased, natural resources are being reclaimed and used. The machine can contain substances which are dangerous for health and environment.
- When you dispose of your machine, to avoid spreading of these substances in our environment and to reduce the pressure on our natural resources, we encourage you to use the collection, reuse and recycle system of your region or country. These systems reuse or recycle most of the components.
- The symbol „crossed out bin on wheels ()“ invites you to make use of these systems.
- If you wish more information concerning the systems for collection, reuse or recycling of disposed machines, you can take contact with the competent administration of your region or country (waste management).
- You can also take contact with us for more information concerning the environmental performances of our products.
- Please, consider that the WEEE directive is generally only valid for household machines. In some countries professional machines are added, in others not. Therefore the symbol () may not be present.
- Info for dealers: Due to the diversity of the national legislations, manufacturer can not take all the measures to be in accordance with all national legislations of each member state. We expect that each dealer who imports our appliances into a member state (and puts it on the market) takes the necessary steps to be in rule with the national legislation (as the directive requires).

8.2.2. POSSIBILITY OF THE MACHINE LIQUIDATION BY OWN POTENTIAL

It is necessary to sort out the parts for metal, non-metal, glass, plastics etc, and bring them to recycle places. The sorted out materials has to be classified in waste groups. These groups can be found on www.euwas.org

Offer the sorted waste to the company which is competent for further treatment.

IMPORTANT !

MACHINE TYPE:

PROGRAMMER:

ELECTRONIC TIMER

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:

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