



COMMERCIAL WASHER

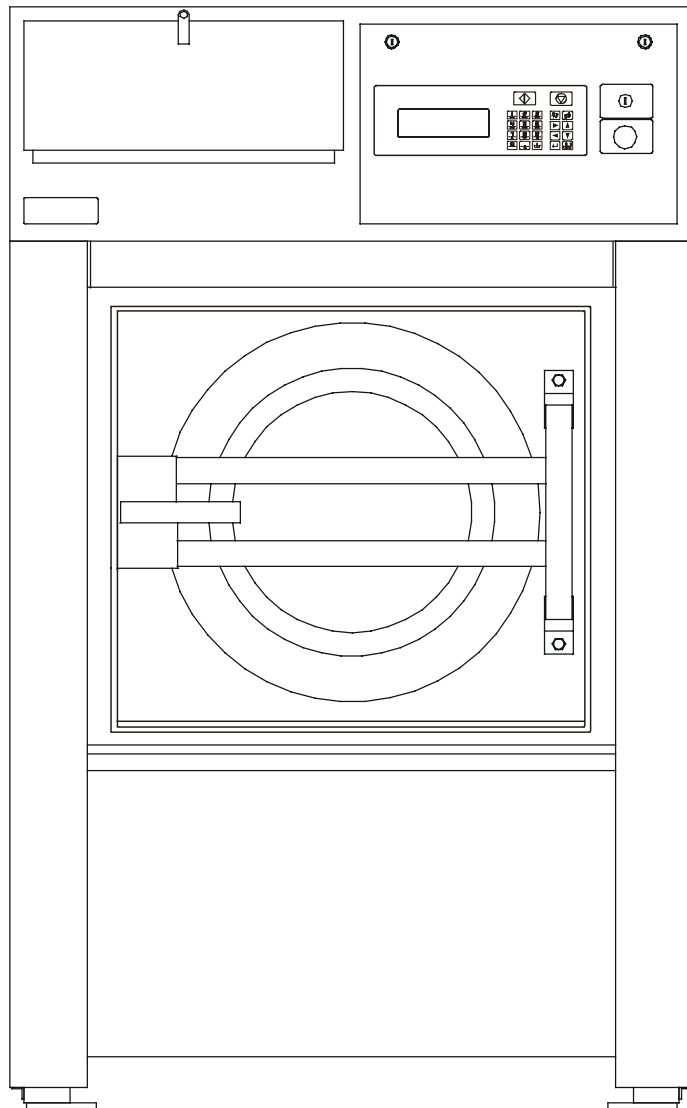
# MFS 50-125

INSTALLATION AND MAINTENANCE INSTRUCTIONS

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INDUSTRIAL WASHER-  
EXTRACTORS



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## 2. WARNINGS AND SYMBOLS



**TO MINIMIZE THE RISK OF FIRE, INJURY BY ELECTRIC SHOCK OR SERIOUS INJURIES OF PERSONS OR PROPERTY DAMAGE, PLEASE READ AND FOLLOW THE FOLLOWING INSTRUCTIONS:**

### 2.1. PERSONAL SAFETY RULES GENERALLY

- This manual version is the translation of the original English version. Without the original version, these instructions are incomplete. Before installation, operation and maintenance of the machine read carefully the complete instructions supplied with the machine, i.e. this „Installation and maintenance instructions“, „User’s manual“ and „Programming manual“ and keep the manuals in a handy place.
- Do not bypass the safety instructions stated in manuals and warnings on the labels. Basic safety instructions stated in chapters „2. WARNINGS AND SYMBOLS“ of the supplied manuals should be printed and located near the machine for the operator’s use. The labels must be readable and permanently located on the machine!
- Follow all valid local safety instructions and laws !
- Do not use the machine with its parts damaged, missing parts or opened covers !
- Do not store any flammable materials near the machine. Storing of chemicals near the machine or operating dry cleaning machines in bad technical conditions can cause a health damage or the machine parts corrosion.
- Do not tamper with the machine controls.
- The washer must not be operated when the finger protection rubbers are removed or damaged.
- The washer extractor is intended to be permanently connected to fixed wiring.
- 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.
- If your electrical supply has a neutral wire and this wire is not used by the machine and thus not connected to the machine, make sure the neutral wire is properly isolated by a qualified technician.
- 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.
- Instructions and warnings included in this manual do not cover all possible conditions and situations that can occur at installation, maintenance or operations of the machine. They must be understood in common sense. Caution and carefulness are factors that can not be achieved by the design of machine. These factors are conditioned by qualification and competence of personnel who install, operate and maintain the machine.
- In case of a problem or situations that you can not solve by yourselves, contact your qualified serviceman, manufacturer or the dealer. Always state the model and serial number of your machine from the completed last page of the manual.

### FOR MAINTENANCE

- When the main switch is off, the inlet terminals of the switch are still under current!
- Do not bypass any safety devices or their parts. Any interference to the machine function and design are prohibited and the manufacturer does not bear any responsibilities in such cases!
- Before maintenance activities always disconnect the machine power supply!
- Do not repair or replace any machine parts and do not perform machine service work if it is not recommended in the maintenance instructions. All other service activities should be provided by qualified service workers.
- Do not repair or adjust the machine belt drives while in operation. Turn off the main switch!
- Original or identical parts must be used for replacement in this machine. 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.
- Once in 3 months, check the earthing and the emergency function.
- Keep the machine top clean and free of flammable materials. Do not wash or spray the machine by water.
- For the steam heated version:  
In case of steam leakage, shut-off the main valve of steam supply and call the maintenance worker.

### INSTALLATION AND SERVICE CAN BE DONE BY A SERVICE COMPANY WITH PROPER AUTHORIZATION FROM THE MANUFACTURER.

The machine warranty can be cancelled if the instructions of this manual are not followed.

### 2.2. SYMBOLS ON THE MACHINE



Danger, read and follow written instructions



Caution, high power voltage, electrical devices



Press push button in case of emergency

505511

## 2.3. 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.
- The ambient temperature of transportation and storage must be between -25°C / -13°F to +55°C / 131°F. Relative humidity must be between 30% to 90% without condensation. In case of storage the machine in a free area it must be protected against mechanical damage and weather condition factors.

### FOR INSTALLATION

**ELECTRICAL CONNECTION, EARTHING AND VENTING OF THE MACHINE, WATER INLETS AND DRAINAGE MUST BE PERFORMED BY QUALIFIED PERSONNEL WITH A PROPER AUTHORIZATION ACCORDING THE INSTALLATION MANUAL IN COMPLIANCE WITH LOCAL STANDARDS (APPLICABLE ALSO FOR STEAM CONNECTION ON STEAM HEATED MACHINES).**

- Do not install the machine at places exposed to climatic effects or excessive humidity. The machine is not designed to accept environment with sprayed water.
- 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 22, 33, 40, 55 kg (50, 80, 100 and 125 lbs). Verify the type of your machine according to your order and the name plate located on the machine rear and find corresponding information in the manual.
- The machines are controlled by electronic or card programmers. Find the programming instructions by a type of programmer in the programming manual. The version with an electronic programmer is either 2 - motor or 1 - motor with a frequency controlled drive.
- Machine 22 kg / 50 lbs capacity has 5 soap hoppers filled from front or 3 soap hoppers filled from top of machine (frequency drive and electronic programmer only).
- Heating is provided by electrical heating elements or by steam from your steam system.
- Water inlets can use warm, cold soft and possibly also cold hard water. A machine can be equipped with recycled discharging, dosing pumps for liquid soaps and machines of 22 kg/ 50 lbs capacity with a modification for wet cleaning by your order.
- Electric construction of the machine is 1 - phase 220 V, 3 - phase 220 V or 3 - phase 380 - 415 V (see name plate - fig. 3.5, pos. 12).
- The machine workmanship which fulfils The European Agreement requirements is stated in the name plate by the symbol „CE“.
- 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).
- The product fulfils the technical requirements for a product to be assessed by the law no. 22 / 1997 Sb. of Czech Republic.
- Models with electronic programmers and 5 soap hoppers, 2 - motor and feeding voltage 3 x 208 - 240 V (models with frequency drive 3 x 208 - 230 V), 3 x 440 V and 3 x 480 V with „CSA“ mark in the name plate are approved by the „Canadian Standards Association“ testing - certificate no. LR 107387-4.

## 3. TECHNICAL SPECIFICATION

### 3.1. MACHINES WITH 22kg / 50lbs CAPACITY

	1-Motor version	2-Motor version	
<b>CAPACITY:</b>	<b>22kg / 50lbs</b>		
<b>DIMENSIONS</b>			
<b>PACKING DIMENSIONS:</b>			
width	1100 mm / 43,3"		
depth	1260 mm / 49,6"		
height	1920 mm / 75,6"		
transportation capacity	2,66 m <sup>3</sup> / 99,90 ft <sup>3</sup>		
<b>MACHINE DIMENSIONS: *</b>			
width	1000 mm / 39,36"		
depth	1160 mm / 45,66"		
height	3 soap hoppers: 1503 mm / 59,2" 5 soap hoppers: 1640 mm / 64,57"		
<b>DIMENSIONS OF INNER DRUM:</b>			
diameter	750 mm / 29,5"		
depth	498 mm / 19,7"		
drum capacity	220 dm <sup>3</sup> / 58 gal		
door opening	410 mm / 16,10"		
<b>WEIGHT</b>			
<b>WEIGHT:</b>			
Net weight	740 kg / 1631 lbs	677 kg / 1493 lbs	
Gross weight	830 kg / 1829 lbs	717 kg / 1581 lbs	
<b>ELETRICAL DATA</b>			
Permitted deviations of feeding voltage for machines (with and without load):	±10%, with a maximal standard deviation of the frequency 1%		
Electrical system of the machine:	3x380-415V+N 50/60Hz - applicable for el. heating 1x220-240V 50/60Hz - not applicable for el. heating 3x220-240V 50/60Hz - applicable for el. heating 3x380-480V 50/60Hz	3x380-415V 50Hz 3x380V 60Hz 3x440-480V 60Hz 3x220-240V 50Hz 3x208-240V 60Hz	
<b>TOTAL INPUT OF THE MACHINE WITH:</b>		<b>380-440V 3AC:</b>	<b>208-240 V / 480V:</b>
electric heating 18 kW	21,6 kW	18,9 kW	19,1 kW
no heating	3,6 kW	3,6 kW	3,6 kW
steam heating	3,6 kW	3,6 kW	3,6 kW
<b>NOMINAL OUTPUT OF THE MOTOR AT RPM:</b>	400 V		
washing / distribution	3 kW	400 V: 0,55 / 0,65 kW 230/480V: 0,73/0,9 kW	
spinning low / high	3 kW	400 V: 1,8 / 2,2 kW 230/480V: 2,2 / 2,6 kW	
<b>INPUT PROTECTION FOR ONE MACHINE:</b>			
with electric heating 18 kW (230V 3AC)	63 A	63 A	
with electric heating 18 kW (400V 3AC)	32 A	32 A	
without electric heating (230V)	20 A	20 A	
without electric heating (400V)	20 A	20 A	
Overload protection of the motor:	eletronic protection on the frequency invertor	overcurrent relay	

tab. 3.1

	1-Motor version	2-Motor version
<b>CAPACITY:</b>	<b>22kg / 50lbs</b>	
<b>WASHING FUNCTION</b>		
<b>RPM OF THE DRUM:</b>		
washing	7 - 50 rpm	42 rpm
distribution	90 rpm	90 rpm
low spinning		435 rpm
high spinning	301 - 860 rpm	860 rpm
G - factor of spinning	max. 310	310
<b>HEATING</b>		
<b>TYPES OF HEATING:</b>	steam 100 % electric 18 kW 100 % hot water max 90°C / 194°F	
<b>ATTACHMENT</b>		
<b>OF WATER INLETS:</b>		
water pressure	0,3 - 0,6 MPa / 44 - 87 PSI	
water inlet	3/4"	
<b>OF WATER DRAINAGE:</b>		
dimension	Ø 76 mm / Ø 3"	
capacity	150 dm <sup>3</sup> /min / 40 US gal/min	
<b>OF STEAM HEATING:</b>		
steam attachment	3/4"	
steam pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
Connections to external liquid soap supply system	1 connection for manifold (1 - 5, 6 - 10, ... connections) to liquid soap supply system	
Soap hoppers:	3 / 5	5
<b>CONSUMPTION</b>		
Mean water consumption:	depends on selected programme cca 550 dm <sup>3</sup> / 145 US gal	
<b>STEAM CONSUMPTION:</b>		
depends on selected programme	22 kg. cycle <sup>-1</sup> / 48,51 lbs. cycle <sup>-1</sup>	
Maximum steam consumption	0,024 kg.s <sup>-1</sup> (88 kg.h <sup>-1</sup> ) / 0,054 lbs.s <sup>-1</sup> (194 lbs.h <sup>-1</sup> )	
<b>WORKING CONDITIONS</b>		
ambient temperature	from +5°C / 41°F to +40°C / 104°F	
mean ambient temperature in 24 hrs	to +35°C / 95°F	
relative humidity	30% ÷ 95% without condensation	
height above sea level	to 1000 m	
<b>ANCHORING</b>		
Bolt:	4 pcs M10	
max. static loading (with linen and water)	831kg / 1833lbs	
max. dynamic loading (alternative stress when extracting)	± 140 kg / ± 309lbs	
frequency of dynamic loading	14,5 Hz	
<b>NOISE</b>		
Mean noise level at max. loading:	70,6 dB (A)	

\* maximum dimensions including protruding parts

tab. 3.1 continuation

### 3.2. MACHINES 33kg / 80lbs CAPACITY

	1-Motor version	2-Motor version	
<b>CAPACITY:</b>	<b>33kg / 75lbs</b>		
<b>DIMENSIONS</b>			
<b>PACKING DIMENSIONS:</b>			
width	1430 mm / 56,3"		
depth	1475 mm / 58,1"		
height	2105 mm / 82,87"		
transportation capacity	4,4 m <sup>3</sup> / 156 ft <sup>3</sup>		
<b>MACHINE DIMENSIONS: *</b>			
width	1195 mm / 47,04"		
depth	1330 mm / 52,4"		
height	1905 mm / 75"		
<b>DIMENSIONS OF INNER DRUM:</b>			
diameter	914 mm / 36"		
depth	510 mm / 20"		
drum capacity	335 dm <sup>3</sup> / 88 gal		
door opening	540 mm / 21,3"		
<b>WEIGHT</b>			
<b>WEIGHT:</b>			
netto	1230 kg / 2712 lbs	1366 kg / 3012 lbs	
brutto	1370 kg / 3020 lbs	1466 kg / 3233 lbs	
<b>ELETRICAL DATA</b>			
Permitted deviations of feeding voltage for machines:	±10%, with a maximal standard deviation of the frequency 1%		
Electrical system of the machine:	3x380-480V 50/60Hz 3x200-240V 50/60Hz	3x380-415V 50Hz 3x380V 60Hz 3x440-480V 60Hz 3x220-240V 50Hz 3x208-240V 60Hz	
<b>TOTAL INPUT OF THE MACHINE WITH:</b>		<b>380-440V 3AC:</b>	<b>208-240 V / 480V:</b>
electric heating 24 kW	28,8 kW	24,9 kW	25,1 kW
no heating	4,8 kW	3,6 kW	3,6 kW
steam heating	4,8 kW	3,6 kW	3,6 kW
<b>NOMINAL OUTPUT OF THE MOTOR AT RPM:</b>			
washing / distribution	4 kW	400 V: 0,55 / 0,65 kW 230/480V: 0,65/0,75kW	
spinning low / high	4 kW	400 V: 1,8 / 2,2 kW 230/480V: 2,2 / 2,6 kW	
<b>INPUT PROTECTION FOR ONE MACHINE:</b>			
with electric heating 24 kW (230 V)	80 A	80 A	
with electric heating 24 kW (400 V)	50 A	50 A	
without electric heating (400V / 50 Hz, 480V / 60 Hz)	20 A	20 A	
without electric heating (230 V)	30 A	20 A	
Overload protection of the motor:	eletronic protection on the frequency invertor	overcurrent relay	

tab. 3.2

	1-Motor version	2-Motor version
<b>CAPACITY:</b>	<b>33kg / 75lbs</b>	
<b>WASHING FUNCTION</b>		
<b>RPM OF THE DRUM:</b>		
washing	7 - 50 rpm	36 rpm
distribution	90 rpm	59 rpm
low spinning		435 rpm
high spinning	301 - 830 rpm	845 rpm
G - factor of spinning	max. 365	365
<b>HEATING</b>		
Types of heating:	steam 100 % electric 24 kW 100 % hot water max 90°C / 194°F	
<b>ATTACHMENT</b>		
<b>OF WATER INLETS:</b>		
water pressure	0,3 - 0,6 MPa / 44 - 87 PSI	
water inlet	1"	
<b>OF WATER DRAINAGE:</b>		
dimension	2 x Ø76 mm / 2 x Ø 3"	
capacity	300 dm <sup>3</sup> /min / 80 US gal/min	
<b>OF STEAM HEATING:</b>		
steam attachment	3/4"	
steam pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
<b>COMPRESSED AIR: * *</b>		
air connection	G 1/4"	
air pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
Connections to external liquid soap supply system	1 connection for manifold (1 - 5, 6 - 10, ... connections) to liquid soap supply system	
Soap hoppers:	5	
<b>CONSUMPTION</b>		
Mean water consumption:	depends on selected programme cca 900 dm <sup>3</sup> / 240 US gal	
<b>STEAM CONSUMPTION:</b>		
depends on selected programme	33 kg. cycle <sup>-1</sup> / 72,77 lbs. cycle <sup>-1</sup>	
Maximum steam consumption	0,046 kg.s <sup>-1</sup> (165 kg.h <sup>-1</sup> ) / 0,101 lbs.s <sup>-1</sup> (364 lbs.h <sup>-1</sup> )	
<b>WORKING CONDITIONS</b>		
ambient temperature	from +5°C / 41°F to +40°C / 104°F	
mean ambient temperature in 24 hrs	to +35°C / 95°F	
relative humidity	30% ÷ 95% without condensation	
height above sea level	to 1000 m	
<b>ANCHORING</b>		
Bolt:	4 pcs M16	
max. static loading (with linen and water)	1597kg / 3521lbs	
max. dynamic loading (alternative stress when extracting)	± 280kg / ± 618lbs	
frequency of dynamic loading	14 Hz	
<b>NOISE</b>		
Equivalent noise level at spinning cycle L <sub>Aeq</sub> :	80,8 dBA	
Level of acoustic output L <sub>P,A</sub> :	84,7 dB (P,A)	

\* maximum dimensions including protruding parts

\*\* it is valid for machines, which have water valves with air operated control

tab. 3.2 continuation

### 3.3. MACHINES 40kg / 100lbs CAPACITY

	1-Motor version	2-Motor version	
<b>CAPACITY:</b>	<b>40kg / 95lbs</b>		
<b>DIMENSIONS</b>			
<b>PACKING DIMENSIONS:</b>			
width	1430 mm / 56,3"		
depth	1570 mm / 61,8"		
height	2105 mm / 82,87"		
transportation capacity	4,7 m <sup>3</sup> / 166 ft <sup>3</sup>		
<b>MACHINE DIMENSIONS: *</b>			
width	1195 mm / 47,04"		
depth	1430 mm / 56,3"		
height	1905 mm / 75"		
<b>DIMENSIONS OF INNER DRUM:</b>			
diameter	914 mm / 36"		
depth	610 mm / 24"		
drum capacity	400 dm <sup>3</sup> / 106 gal		
door opening	540 mm / 21,3"		
<b>WEIGHT</b>			
<b>WEIGHT:</b>			
netto	1560 kg / 3439 lbs	1560 kg / 3440 lbs	
brutto	1700 kg / 3748 lbs	1666 kg / 3674 lbs	
<b>ELETRICAL DATA</b>			
Permitted deviations of feeding voltage for machines:	±10%, with a maximal standard deviation of the frequency 1%		
Electrical system of the machine:	3x380-480V 50/60Hz 3x200-240V 50/60Hz	3x380-415V 50Hz 3x380V 60Hz 3x440-480V 60Hz 3x220-240V 50Hz 3x208-240V 60Hz	
<b>TOTAL INPUT OF THE MACHINE WITH:</b>		<b>380-440V 3AC:</b>	<b>208-240 V / 480V:</b>
electric heating 36 kW	44,7 kW	37,4 kW	37,5 kW
no heating	8,7 kW	7,3 kW	7,3 kW
steam heating	8,7 kW	7,3 kW	7,3 kW
<b>NOMINAL OUTPUT OF THE MOTOR AT RPM:</b>			
washing / distribution	7,5 kW	400 V: 0,9 / 1 kW 230/480V: 1 / 1,1 kW	
spinning low / high	7,5 kW	400 V: 4 / 5,2 kW 230/480V: 4,5 / 5,8 kW	
<b>INPUT PROTECTION FOR ONE MACHINE:</b>			
with electric heating 36 kW (3x230 V)	120 A	120 A	
with electric heating 36 kW (3x400 V)	80 A	63 A	
without electric heating (3x400V/50Hz, 3x480V/60Hz)	30 A	25 A	
without electric heating (3x230 V)	40 A	30 A	
Overload protection of the motor:	eletronic protection on the frequency invertor	overcurrent relay	

tab. 3.3

	1-Motor version	2-Motor version
<b>CAPACITY:</b>	<b>40kg / 95lbs</b>	
<b>WASHING FUNCTION</b>		
<b>RPM OF THE DRUM:</b>		
washing	7 - 50 rpm	40 rpm
distribution	90 rpm	64 rpm
low spinning		430 rpm
high spinning	301 - 830 rpm	830 rpm
G - factor of spinning	max. 351	351,00
<b>HEATING</b>		
Types of heating:	steam 100 % electric 36 kW 100 % hot water 90°C / 194°F	
<b>ATTACHMENT</b>		
<b>OF WATER INLETS:</b>		
water pressure	0,3 - 0,6 MPa / 44 - 87 PSI	
water inlet	1"	
<b>OF WATER DRAINAGE:</b>		
dimension	2 x Ø76 mm / 2 x Ø 3"	
capacity	300 dm <sup>3</sup> /min / 80 US gal/min	
<b>OF STEAM HEATING:</b>		
steam attachment	3/4"	
steam pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
<b>COMPRESSED AIR: * *</b>		
air connection	G 1/4"	
air pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
Connections to external liquid soap supply system	1 connection for manifold (1 - 5, 6 - 10, ... connections) to liquid soap supply system	
Soap hoppers:	5	
<b>CONSUMPTION</b>		
Mean water consumption:	depends on selected programme cca 1195 dm <sup>3</sup> / 315 US gal	
<b>STEAM CONSUMPTION:</b>		
depends on selected programme	40 kg. cycle <sup>-1</sup> / 88,2 lbs. cycle <sup>-1</sup>	
Maximum steam consumption	0,055 kg.s <sup>-1</sup> (200 kg.h <sup>-1</sup> ) / 0,123 lbs.s <sup>-1</sup> (441 lbs.h <sup>-1</sup> )	
<b>WORKING CONDITIONS</b>		
ambient temperature	from +5°C / 41°F to +40°C / 104°F	
mean ambient temperature in 24 hrs	to +35°C / 95°F	
relative humidity	30% ÷ 95% without condensation	
height above sea level	to 1000 m	
<b>ANCHORING</b>		
Bolt:	4 pcs M16	
max. static loading (with linen and water)	1746kg / 3850lbs	
max. dynamic loading (alternative stress when extracting)	± 300kg / 662lbs	
frequency of dynamic loading	14 Hz	
<b>Noise</b>		
Equivalent noise level at spinning cycle L <sub>Aeq</sub> :	77,0 dBA	
Level of acoustic output L <sub>P,A</sub> :	86,8 dB (P,A)	

\* maximum dimensions including protruding parts

\* \* it is valid for machines, which have water valves with air operated control  
tab. 3.3 continuation

### 3.4. MACHINES 55kg / 125lbs CAPACITY

	1-Motor version	2-Motor version	
<b>CAPACITY:</b>	<b>55kg / 125lbs</b>		
<b>DIMENSIONS</b>			
<b>PACKING DIMENSIONS:</b>			
width	1430 mm / 56,3"		
depth	1750 mm / 68,9"		
height	2105 mm / 82,87"		
transportation capacity	5,3 m <sup>3</sup> / 187 ft <sup>3</sup>		
<b>MACHINE DIMENSIONS: *</b>			
width	1195 mm / 47,04"		
depth	1610 mm / 63,4"		
height	1905 mm / 75"		
<b>DIMENSIONS OF INNER DRUM:</b>			
diameter	914 mm / 36"		
depth	790 mm / 31,1"		
drum capacity	518 dm <sup>3</sup> / 137 gal		
door opening	540 mm / 21,3"		
<b>WEIGHT</b>			
<b>WEIGHT:</b>			
netto	1630 kg / 3594 lbs	1626 kg / 3585 lbs	
brutto	1770 kg / 3902 lbs	1766 kg / 3894 lbs	
<b>ELETRICAL DATA</b>			
Permitted deviations of feeding voltage for machines:	±10%, with a maximal standard deviation of the frequency 1%		
Electrical system of the machine:	3x380-480V 50/60Hz 3x200-240V 50/60Hz	3x380-415V 50Hz 3x380V 60Hz 3x440-480V 60Hz 3x220-240V 50Hz 3x208-240V 60Hz	
<b>TOTAL INPUT OF THE MACHINE WITH:</b>		<b>380-440V 3AC:</b>	<b>208-240 V / 480V:</b>
electric heating 54 kW	62,7 kW	55,8 kW	56 kW
no heating	8,7 kW	8,2 kW	8,2 kW
steam heating	8,7 kW	8,2 kW	8,2 kW
<b>NOMINAL OUTPUT OF THE MOTOR AT RPM:</b>			
washing / distribution	7,5 kW	400 V: 1,2 / 1,1 kW 230/480V: 1,4 / 1,2kW	
spinning low / high	7,5 kW	400 V: 5,8 / 4,5 kW 230V: 6,5 / 5 kW 480V: 6,5 / 5,5 kW	
<b>INPUT PROTECTION FOR ONE MACHINE:</b>			
with electric heating 54 kW (3x230V/60Hz)	160 A	160 A	
with electric heating 54 kW (3x400V/50Hz)	100 A	100 A	
without electric heating (3x400V/ 50 Hz, 3x480 V/ 60 Hz)	32 A	25 A	
with steam heating (3x230 V/60 Hz)	40 A	30 A	
without electric heating (3x230 V / 60 Hz)	40 A	30 A	
with steam heating (3x400 V/50 Hz)	32 A	25 A	
Overload protection of the motor:	electronic protection on the frequency inverter	overcurrent relay	

tab. 3.4

	1-Motor version	2-Motor version
<b>CAPACITY:</b>	<b>55kg / 125lbs</b>	
<b>WASHING FUNCTION</b>		
<b>RPM OF THE DRUM:</b>		
washing	7 - 50 rpm	40 rpm
distribution	90 rpm	64 rpm
low spinning		430 rpm
high spinning	301 - 830 rpm	830 rpm
G - factor of spinning	max. 351	351
<b>HEATING</b>		
Types of heating:	steam 100 % electric 54 kW 100 % hot water 90°C / 194°F	
<b>ATTACHMENT</b>		
<b>OF WATER INLETS:</b>		
water pressure	0,3 - 0,6 MPa / 44 - 87 PSI	
water inlet	1"	
<b>OF WATER DRAINAGE:</b>		
dimension	2 x Ø76 mm / 2 x Ø 3"	
capacity	300 dm <sup>3</sup> /min / 80 US gal/min	
<b>OF STEAM HEATING:</b>		
steam attachment	3/4"	
steam pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
<b>COMPRESSED AIR: * *</b>		
air connection	G 1/4"	
air pressure	0,3 - 0,8 MPa / 44 - 116 PSI	
Connections to external liquid soap supply system	1 connection for manifold (1 - 5, 6 - 10, ... connections) to liquid soap supply system	
Soap hoppers:	5	
<b>CONSUMPTION</b>		
Mean water consumption:	depends on selected programme cca 1500 dm <sup>3</sup> / 400 US gal	
<b>STEAM CONSUMPTION:</b>		
depends on selected programme	55 kg. cycle <sup>-1</sup> / 121,3 lbs. cycle <sup>-1</sup>	
Maximum steam consumption	0,076 kg.s <sup>-1</sup> (275 kg.h <sup>-1</sup> ) / 0,168 lbs.s <sup>-1</sup> (606 lbs.h <sup>-1</sup> )	
Working conditions		
ambient temperature	from +5°C / 41°F to +40°C / 104°F	
mean ambient temperature in 24 hrs	to +35°C / 95°F	
relative humidity	30% ÷ 95% without condensation	
height above sea level	to 1000 m	
<b>ANCHORING</b>		
Bolt:	4 pcs M16	
max. static loading (with linen and water)	1951kg / 4302lbs	
max. dynamic loading (alternative stress when extracting)	± 320kg / 706lbs	
frequency of dynamic loading	14 Hz	
<b>NOISE</b>		
Equivalent noise level at spinning cycle L <sub>Aeq</sub> :	77,0 dBA	
Level of acoustic output L <sub>P,A</sub> :	86,8 dB (P,A)	

\* maximum dimensions including protruding parts

\* \* it is valid for machines, which have water valves with air operated control

tab. 3.4 continuation

### 3.5. DIMENSIONS AND CONNECTIONS OF THE MACHINE

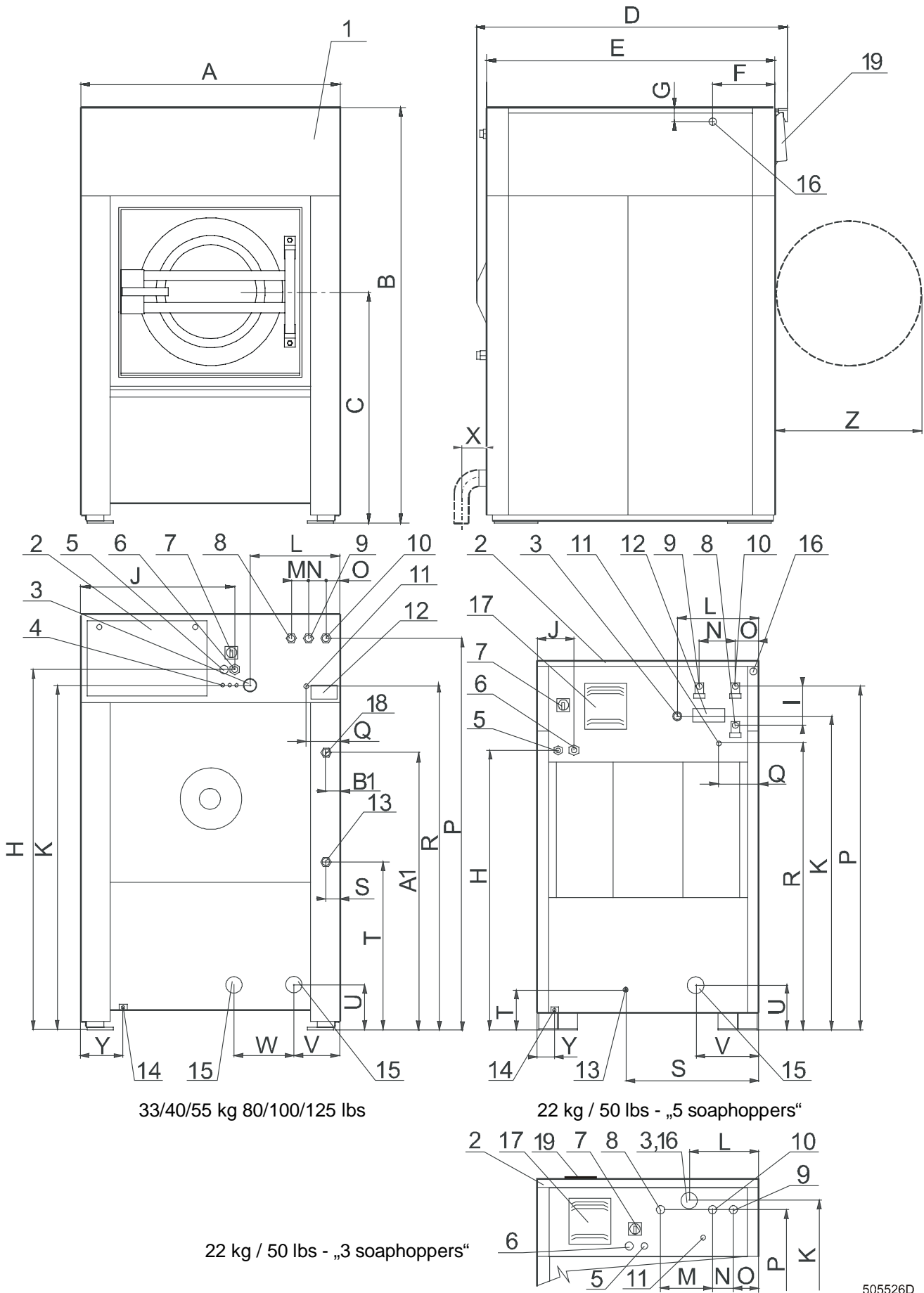


Fig. 3.5.

505526D

- |   |   |
|---|---|
| 1. Front panel with operating elements                  | 11. Plug of hole for external dosing hose |
| 2. Electric switchboard cover                           | 12. Name plate                            |
| 3. Tub ventilation                                      | 13. Steam inlet                           |
| 4. Lubrication  | 14. External protective clamp             |
| 5. Bushing of external dosing pumps electric connection | 15. Draining outlet                       |
| 6. Main power supply bushing                            | 16. Soap hopper ventilation               |
| 7. Main switch  | 17. Frequency inverter cover              |
| 8. Hard cold water inlet                                | 18. Compressed air supply                 |
| 9. Hot water inlet                                      | 19. Soap hoppers                          |
| 10. Soft cold water inlet                               |   |

Machine capacity:	22 kg/ 50 lbs 3 soap hoppers	22 kg/ 50 lbs 5 soap hoppers	33 kg 80 lbs	40 kg 100 lbs	55 kg 125 lbs
<b>A</b>	985 mm 38,78"	1000 mm 39,36"	1195 mm 47,04"	1195 mm 47,04"	1195 mm 47,04"
<b>* A1</b>	-	-	1361 mm 53,58"	1361 mm 53,58"	1361 mm 53,58"
<b>B</b>	1503 mm 59,2"	1640 mm 64,57"	1905 mm 75"	1905 mm 75"	1905 mm 75"
<b>* B1</b>	-	-	116 mm 4,56"	116 mm 4,56"	116 mm 4,56"
<b>C</b>	867 mm 34,13"	867 mm 34,13"	1055 mm 41,54"	1055 mm 41,54"	1055 mm 41,54"
<b>D</b>	1025 mm 40,35"	1160 mm 45,66"	1330 mm 52,4"	1430 mm 56,3"	1610 mm 63,39"
<b>E</b>	917 mm 36,1"	917 mm 36,1"	1222 mm 48,11"	1322 mm 52,05"	1502 mm 59,13"
<b>F</b>	-	25 mm 1"	300 mm 11,8"	300 mm 11,8"	300 mm 11,8"
<b>G</b>	-	45 mm 1,77"	50 mm 1,97"	50 mm 1,97"	50 mm 1,97"
<b>H</b>	1233 mm 48,54"	two motors: 1437 mm / 56,57" one motor: 1233 mm / 48,54"	1617 mm 63,66"	1617 mm 63,66"	1617 mm 63,66"
<b>I</b>	-	173 mm 6,79"	-	-	-
<b>J</b>	401 mm 15,8"	two motors: 87 mm / 3,43" one motor: 168 mm / 6,61"	730 mm 28,74"	730 mm 28,74"	730 mm 28,74"
<b>K</b>	1417 mm 55,8"	1388 mm 54,63"	1567 mm 61,69"	1567 mm 61,69"	1567 mm 61,69"
<b>L</b>	317 mm 12,5"	362 mm 14,25"	422 mm 16,61"	422 mm 16,61"	422 mm 16,61"
<b>M</b>	235 mm 9,25"	-	80 mm 3,15"	80 mm 3,15"	80 mm 3,15"
<b>N</b>	80 mm 3,15"	160 mm 6,3"	80 mm 3,15"	80 mm 3,15"	80 mm 3,15"
<b>O</b>	124 mm 4,9"	104 mm 4,09"	70 mm 2,75"	70 mm 2,75"	70 mm 2,75"
<b>P</b>	1382 mm 54,41"	1522 mm 59,9"	1782 mm 70,16"	1782 mm 70,16"	1782 mm 70,16"
<b>* P</b>	-	-	1672 mm 65,82"	1672 mm 65,82"	1672 mm 65,82"
<b>Q</b>	130 mm 5,1"	130 mm 5,1"	160 mm 6,3"	160 mm 6,3"	160 mm 6,3"
<b>R</b>	1272 mm 50,1"	1264 mm 49,76"	1565 mm 61,6"	1565 mm 61,6"	1565 mm 61,6"
<b>S</b>	591 mm 23,27"	591 mm 23,3"	65 mm 2,56"	65 mm 2,56"	65 mm 2,56"
<b>T</b>	176 mm 6,93"	176 mm 6,93"	768 mm 30,24"	768 mm 30,24"	768 mm 30,24"
<b>U</b>	200 mm 7,87"	200 mm 7,87"	205 mm 8,07"	205 mm 8,07"	205 mm 8,07"
<b>V</b>	282 mm 11,08"	282 mm 11,08"	213 mm 8,39"	213 mm 8,39"	213 mm 8,39"
<b>W</b>	-	-	420 mm 16,54"	275 mm 10,83"	275 mm 10,83"
<b>X</b>	130 mm 5,14"	130 mm 5,14"	175 mm 6,89"	175 mm 6,89"	175 mm 6,89"
<b>Y</b>	77 mm 3,03"	77 mm 3,03"	195 mm 7,68"	195 mm 7,68"	195 mm 7,68"
<b>Z</b>	530 mm 20,87"	530 mm 20,87"	700 mm 27,56"	700 mm 27,56"	700 mm 27,56"

\*- it is valid for machines, which have water valves with air operated control

# 4. INSTALLATION

## 4.1. HANDLING, TRANSPORT AND STORAGE

### TRANSPORT AND STORAGE

**⚠ WARNING !**  
**FORKS OF HIGH LIFTING TRUCK MUST HAVE SUFFICIENT LENGTH (SEE FIG. 4.1.A).**

- Use a lift truck or a manual skid cart for handling with the machine in transporting package.
- The ambient temperature of transportation and storage must be between -25°C / -13°F and +55°C / 131°F. The machine may not be installed within the reach of spraying water. Avoid severe climatic conditions and excessive humidity. When steamed up due to the temperature to the temperature changes, water must not run over the walls and covers of the machine nor to cover the floor under and around it.
  - If possible, leave the machine in the transporting package or at least let it set on the transporting wooden skid until the time of final installation on the foundation according the chapter 4.3. of this manual.

<b>22 kg</b>	<b>33/40/55 kg</b>
1100 mm	1500 mm
<b>50 lbs</b>	<b>80/100/125 lbs</b>
44"	59"

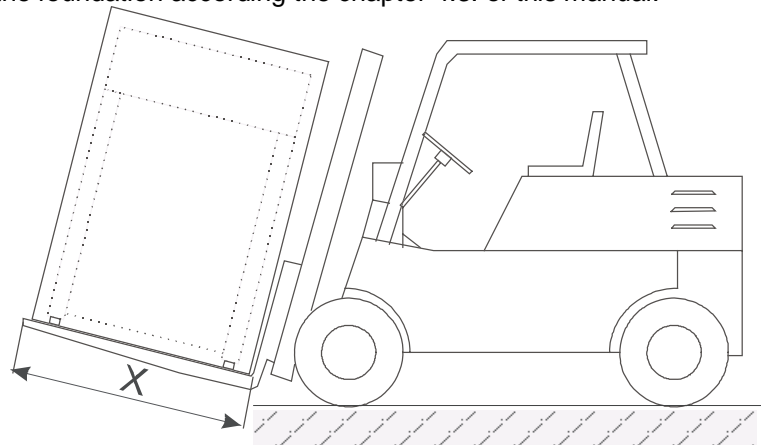


Fig. 4.1 A Minimum length „X“ of lift truck forks for individual machine types including package <sup>505527</sup>

### HANDLING DURING INSTALLATION

All activities can be done only by a worker, which knows all information about the machine. Machine is delivered to the customer in a wooden packing and protected with polyethylene film. The machine is attached to the skid by means of four bolts M16 (for machine 22 kg / 50 lbs capacity: M12).

To remove the machine to its final location follow these precautions:

- 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.
- **Never push, pull or press the components protruding from the contour line of machine (front part, filling door, control elements, belt cover, water inlet and outlet pipes etc.).**

**MAKE SURE THAT THESE COMPONENTS ARE SECURED SO AS TO AVOID THEIR DAMAGE DURING HANDLING AND INSTALLATION OF THE MACHINE.**

- **Make sure that the filling door are secured to avoid its opening during the handling.**
- Lift the machine up by lift truck using a transport skid to which the machine has been attached.

### UNPACKING

After unpacking, check if the machine has not been damaged and if all the accessories are included according to your order. Verify the type of your machine by a name plate located on the machine rear and find corresponding information in the manual. The accessories and the manual is located inside of the drum, which can be opened according to chapter 6.1.

Before the machine locating to its place, remove the packaging, loosen four nuts and lift the machine carefully up - take care not to damage the machine components located in its lower part. The lift truck forks must be at least 10 cm longer than the length of the washing machine frame (tab. 4.1.).

<b>22 kg</b>	<b>33 kg</b>	<b>40 kg</b>	<b>55 kg</b>
1100 mm	1222 mm	1322 mm	1502 mm
<b>50 lbs</b>	<b>80 lbs</b>	<b>100 lbs</b>	<b>125 lbs</b>
44"	48"	52"	59"

Tab. 4.1. Minimum length „X“ of a lift truck forks for individual machine types without packing

## 4.2. SPACE REQUIREMENTS

### REQUIRED MACHINE WORKING CONDITIONS:

See chapter „3. TECHNICAL SPECIFICATION“.

The machine may not be installed within the reach of directly spraying water. Do not install the machine where it will be exposed to weather condition and excessive humidity. When steamed up due to temperature changing, water must not run over the machine walls and covers, nor to cover the floor under and around it.

### SIZE OF A LAUNDRY ROOM

#### IGNORING THE REQUIREMENT FOR SPACES BETWEEN MACHINES AND WALLS CAN MAKE SERVICE AND MAINTENANCE WORK DIFFICULT.

Total space requirements for the system installation are usually determinate by a detailed plan of the building. The machine dimensions are stated in the chapter „3. TECHNICAL SPECIFICATION“.

Leave at least 1 m / 3,3 ft of a space between the machine rear and the wall for the maintenance access.

Between the lateral sides of each machine leave a minimum space of 0,7 m / 2,3 ft (see fig. 4.3. A, dimension „I“). Above the machine must be minimum 0,7 m / 2,3 ft of free space for the maintenance access.

The waste piping or outlet channel must be dimensioned to the discharged water quantity and a number of washing machines.

## 4.3. MACHINE POSITIONING

### CARRYING CAPACITY OF THE FLOOR

**⚠ WARNING !**  
**IT IS RECOMMENDED TO CONSULT STATIC REQUIREMENTS WITH A STATIC A ENGINEER TO MEET THE REQUIREMENTS OF PERMISSIBLE LOADING, VIBRATIONS AND A NOISE LEVEL IN THE BUILDING.**  
**THE MANUFACTURER DOES NOT RECOMMEND TO INSTALL THE WASHING MACHINE IN A ROOM WITH A CELLAR OR ON A FLOOR HAVING ROOMS BENEATH.**

**⚠ WARNING !**  
**IN CASE OF INSTALLATION IN A ROOM WITH A CELLAR OR ON A FLOOR HAVING ROOMS BENEATH:**  
**THE INSTALLATION MUST BE APPROVED BY A STATIC ENGINEER TO MEET THE REQUIREMENTS OF PERMISSIBLE LOADING, VIBRATIONS AND A NOISE LEVEL IN THE BUILDING. THE MANUFACTURER IS NOT RESPONSIBLE FOR SUCH EFFECTS.**

	MODEL	22 kg 50 lbs	33 kg 80 lbs	40 kg 100 lbs	55 kg 125 lbs
Maximum static load of the floor (with linen and water)	kg lbs	831 1832	1597 3521	1746 3850	1951 4302
Maximum dinamic load of the floor (alternative stress when extracting)	kg lbs	±140 ±309	±280 ±617	±300 ±662	±320 ±706
Dynamic load frequency of the floor	Hz	14,50	14,00	14,00	14,00

Tab. 4.3. A

### FASTENING THE MACHINE

#### THE MACHINE WILL BE FIRMLY FIXED TO THE FLOOR AND MUST RELIABLY REST IN ALL FOUR FOOTINGS OF THE MACHINE !

The machine is to be located on a levelled concrete floor to comply with static and dynamic stress of the machine. Check the position of the machine base frame by a water level. The manufacturer is not responsible for consequences caused by a wrong installation. It is expected to use anchoring bolts for fixing the machine to the floor. There is also possible to use a suitable outlet channel for the waste water (fig.4.3.A), unless the machine is connected to a drain pipeline.

**⚠ WARNING !**  
**THE NUTS OF THE ANCHORING BOLTS HAVE TO BE TIGHTENED BY MEANS OF A TORQUE - LIMITING RANGE (SEE TAB. 4.3.B). DO NOT TIGHTEN NUTS OF ANCHORING BOLTS BEFORE THE CONCRETE BASE AROUND THE BOLTS IS COMPLETELY CURED. FOR CSA-NRTL/C APPROVED MACHINES FOLLOWING IS APPLICABLE: TO REDUCE THE RISK OF FIRE, THIS APPLIANCE MUST BE BOLTED TO AN UNCOVERED CONCRETE FLOOR.**

	22 kg / 50 lbs	33 kg / 80 lbs	40 kg / 100 lbs	55 kg / 125 lbs
<b>BOLT</b>	M10 x 160 mm	M16 x 160 mm		
<b>TIGHTENING MOMENT</b>	49 Nm / 36 lbf.ft	210 Nm / 155 lbf.ft		

Tab.4.3.B

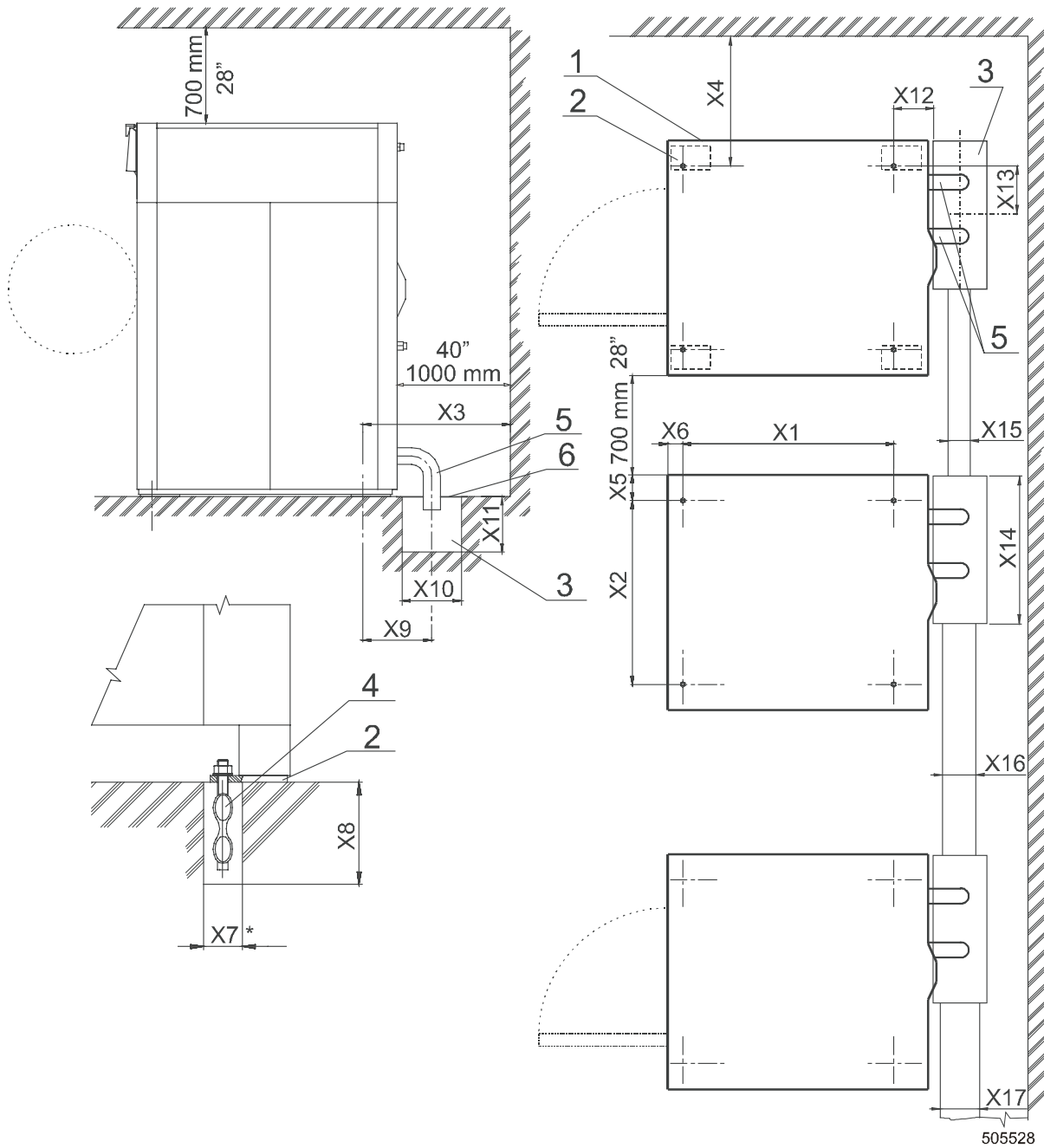


Fig.4.3.A Distances between washing machines, walls and between other machines and optional design of the waste channel

1. Machine line of contour
2. Machine footing
3. Waste sump
4. Anchoring bolt
5. Draining elbow
6. Cover of waste sump

	22 kg 50 lbs	33 kg 80 lbs	40 kg 100 lbs	55 kg 125 lbs		22 kg 50 lbs	33 kg 80 lbs	40 kg 100 lbs	55 kg 125 lbs
<b>X1</b>	774 mm 30,47"	970 mm 38,19"	1070mm 42,13"	1250 mm 49,21"	<b>X10</b>	200 mm 8"	300 mm 12"	300 mm 12"	300 mm 12"
<b>X2</b>	886 mm 34,88"	930 mm 36,61"	930 mm 36,61"	930 mm 36,61"	<b>X11</b>	250 mm 9"	250 mm 9"	250 mm 9"	250 mm 9"
<b>X3</b>	1066 mm 42"	1175 mm 46¼"	1175mm 46¼"	1175 mm 46¼"	<b>X12</b>	100 mm 4"	200 mm 8"	200 mm 8"	200 mm 8"
<b>X4</b>	750 mm 29,5"	830 mm 32,7"	830 mm 32,7"	830 mm 32,7"	<b>X13</b>	232 mm 9,15"	250 mm 9"	250 mm 9"	250 mm 9"
<b>X5</b>	50 mm 1,95"	130 mm 5,12"	130 mm 5,12"	130 mm 5,12"	<b>X14</b>	300 mm 12"	750 mm 29½"	750 mm 29½"	750 mm 29½"
<b>X6</b>	75 mm 2,97"	77mm 3,03"	77mm 3,03"	77mm 3,03"	<b>X15</b>	100 mm 4"	150 mm 6"	150 mm 6"	150 mm 6"
<b>X7</b>	40 mm 1,6"	60 mm 2,36"	60 mm 2,36"	60 mm 2,36"	<b>X16</b>	150 mm 6"	180 mm 7"	180 mm 7"	180 mm 7"
<b>X8</b>	150 mm 6"	160 mm 6,3"	160 mm 6,3"	160 mm 6,3"	<b>X17</b>	180 mm 7"	200 mm 8"	200 mm 8"	200 mm 8"
<b>X9</b>	196 mm 8"	350 mm 14"	350 mm 14"	350 mm 14"					

\*) hole optimized for new floor, drilled hole can be smallish dimension

Tab.4.3.C

## 4.4. CONNECTIONS

### CONNECTION OF WATER SUPPLIES

#### 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.4.4.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. 3.5. 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.

Inlet valves 1" (machine 22 kg / 50 lbs capacity: 3/4") for cold and hot water are delivered with the machine. For these valves use inlet pressure hoses with gaskets. Mount shut - off valves 1" (machine 22 kg / 50 lbs capacity: 3/4") to the water supply pipes, it will make the maintenance and cleaning of filters delivered with a machine easy.

For connection of the machine to water inlet shut-off valves we recommend to use enclosed flexible hoses (960mm / 38" long) with couplings 1" (machine 22 kg / 50 lbs capacity.: 3/4").

If you connect the water inlet without using flexible hoses, install connections to the connecting points; this will make possible to dismantle valves / filters in case of failure.

## WATER DRAIN CONNECTION

The washer is equipped with 2 drain pipes (machine 22 kg / 50 lbs : only 1) of 75 mm (3") diameter, located in the machine rear wall. These must be connected to the waste sump.

The waste sump 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.

To connect the machine drainage to a waste sump, you can use the elbow 75 mm /3" which is a part of the delivery. Secure the elbow with a clamp. Cover the waste sump with a proper cover.

	22 kg / 50 lbs	33 kg / 80 lbs	40 kg / 100 lbs	55 kg / 125 lbs
dm <sup>3</sup> / min	150,00	300,00	300,00	300,00
US gallons / min	40,00	80,00	80,00	80,00

Tab. 4.4.B Capacity of discharged water

## STEAM CONNECTION

The washing machine with a steam heating is equipped with an outer thread G 3/4" in the machine rear part for connecting to the laundry steam line. For dimensions of connection points see fig.3.5. The value of inlet steam pressure must correspond to the range stated in chapter „2. Technical specification“. Any other pressure values can cause an improper or insufficient function of the machine.

**⚠ WARNING !**  
**STOP THE MAIN STEAM INLET AND LET THE PARTS COOL DOWN AFTER THE CONNECTION TO AVOID POSSIBLE INJURIES.**

**⚠ 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.**

Attach the steam filter which is a part of the delivery to the machine connecting point. The supply piping must be clean without dirt particles and rust residues. Impurities in supply line may cause failures of steam valves.

**WHEN CONNECTING THE PIPES DO NOT TWIST THE FILTER GASKET. THE ASSEMBLY SHUT BE MADE BY CLAMPING THE FILTER AT THE SIDE OF CONNECTING PIPE.**

To enable a possible dismantling of the steam valve, equipped the attaching point with a connector.

## VENTING

**⚠ WARNING !**  
**WATCH FOR A STEAM ESCAPE FROM THE MACHINE VENTING (FIG. 3.5, POS. 3 AND 16), DANGER !**

**DO NOT COVER THE MACHINE VENTING; IT SERVES AS A STEAM OUTLET, MACHINE VENTING AND ALLOWS A PROPER MEASURING OF THE LEVEL!**

You can connect the machine venting pipe to the laundry central duct for exhausting the steam out of the building. For placing of connection points see fig.3.5. The piping material must withstand a temperature of 80°C / 176°F. You can attach a rubber elbow delivered with machine by using of a clamp (tape). The central duct for multiple venting must be dimensioned for the total cross section of venting pipes of all machines. A calibration of the machine's „zero“ level must be made after the duct attachment.

## ELECTRICAL CONNECTION

The machine has been designed for connecting to the electrical network according the specification of your order. Before connection check the voltage values and the frequency stated in the machine label (fig.3.5, pos.12), if they correspond to your power network. The way of the connection is described in fig. 4.4.A. 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.

**⚠ WARNING !**  
**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.**

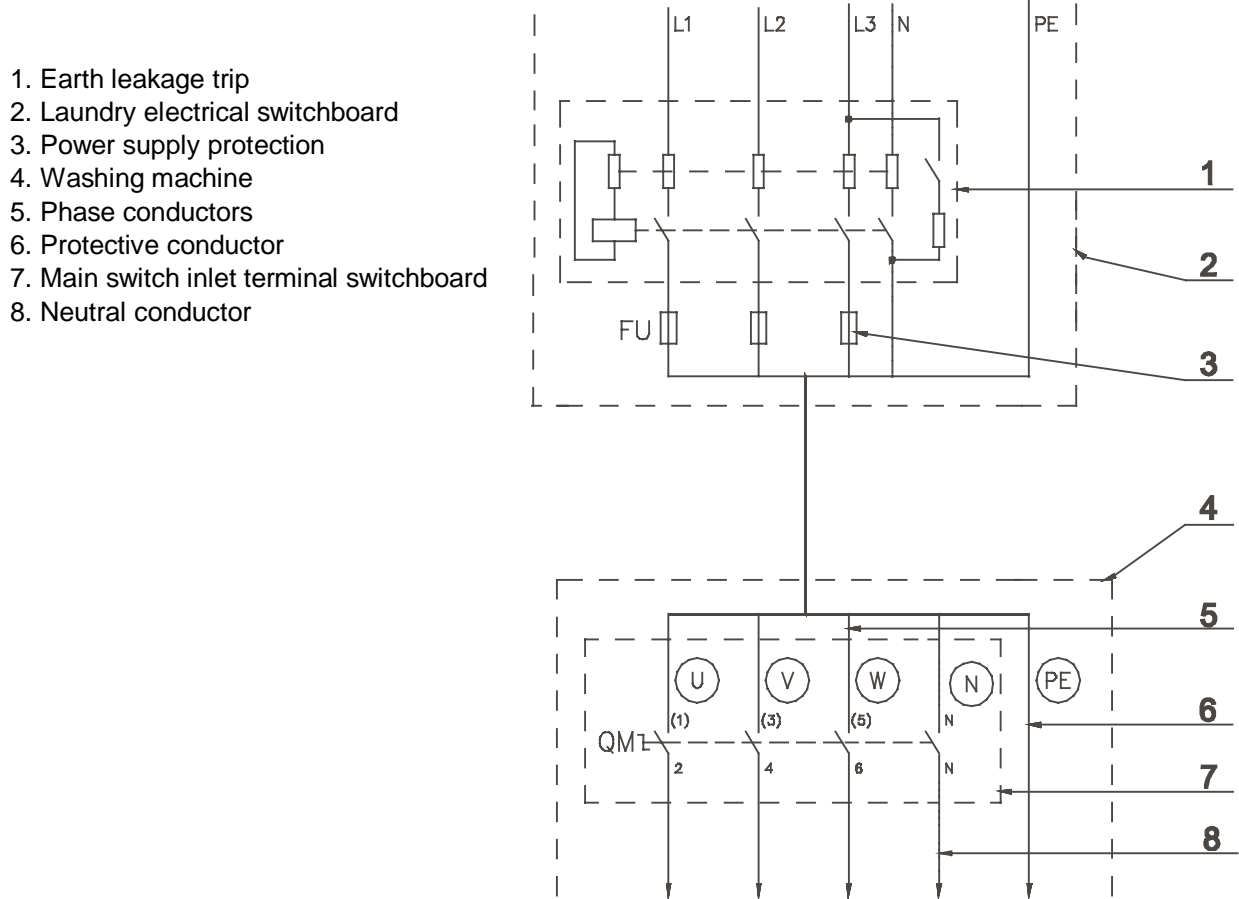


Fig.4.4.A Machine connection to electrical network (with an earth leakage trip)

505529

### INLET CONDUCTORS AND POWER SUPPLY PROTECTION

Inlet conductors of the machine connection to the electrical network must have copper cores. The inlet conductors cross section depends on the voltage and the machine heating type, i.e. total electrical input. The inlet cable protection against a short-circuit fault and overloading must be performed by circuit breakers or fuses in the laundry switchboard. Minimal cross section of the supply conductors recommended by the manufacturer as well as the values of fuses are stated in tables 4.4.C. For the corresponding current see table in chapter „3.Technical specifications“.

Power supply protection (A)	Recommended phase conductor section (mm <sup>2</sup> )	Protection conductor section (mm <sup>2</sup> )
20 - 25	2,5	2,5
30 - 32	4	4
50	10	10
60 - 80	16	16
100 -120	25	16
160	35	25

Tab.4.4.C Manufacturer's recommended minimal conductor section

## PROTECTION WITH EARTH LEAKAGE TRIPS

To increase the safety of the operating personnel and / or servicemen during the maintenance work and operation with electric devices it is recommended to mount in front of the supply cable in the laundry switchboard an earth leakage trip according to fig. 4.4.A, preferably with an actuating current 30 mA. The main contacts of the earth leakage trip must comply with the specified power input of the machine. Specification of the earth leakage trip for individual machine types is illustrated in tab. 4.4.D.

Machine	Voltage	Heating type	Max. current (A)
22 kg / 50 lbs	3AC 400V	electric 18 kW	33,50
		steam	20,00
	3AC 230V	electric 18 kW	63,00
		steam	20,00
33 kg / 80 lbs	3AC 400V	electric 24 kW	45,00
		steam	20,00
	3AC 230V	electric 24 kW	75,00
		steam	30,00
40 kg/ 100 lbs	3AC 400V	electric 36 kW	80,00
		steam	30,00
	3AC 230V	steam	40,00
55 kg / 125 lbs	3AC 400V	electric 54 kW	92,00
		steam	30,00
	3AC 230V	steam	40,00

Tab.4.4.D

The machine control circuits are supplied by a dividing transformer; the earth leakage trip is determined for strong electric circuits i.e. motors, heating elements, motor contactors, circuit breaker, main switch etc., see the inner connecting diagram list „A“ supplied with the machine.

## SUPPLY CABLE CONNECTION TO THE MACHINE

### CABLE PREPARATION

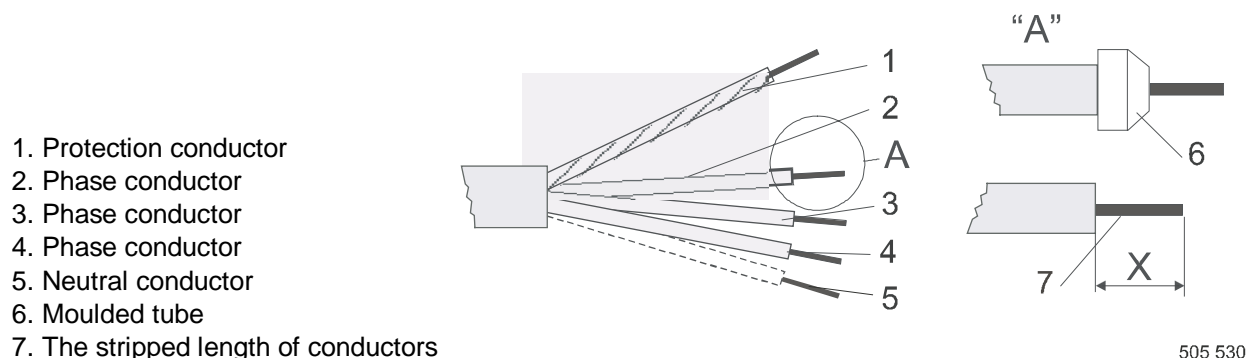
Use a cable or cord with copper conductors for the connection. Adapt the conductor ends according the fig. 4.4.B.

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

**⚠ WARNING !**  
**THE WASHER EXTRACTOR IS INTENDED TO BE PERMANENTLY CONNECTED TO FIXED WIRING.**

When using the cable (hard copper conductors), strip individual cores in such way to avoid the protrusion of a stripped part from the terminal when the conductor is connected into the device (6) - dimension X. When using a cord (stranded copper conductors), the individual cores can be stripped in the same way as in the case of a cable, or you can use moulded tubes (6).

To avoid a contact to a part under tension after the conductor connection even when the main switch is off, use tubes with an insulated neck on the conductor ends.



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

## CONNECTING POINT

The cable can be attached to the machine from a cable channel (from below). If the cable is attached from above, it is recommended to make a sag on the cable in front of the entry into the cable bushing (fig.4.4.C, pos.4). In this way an ingress of condensed water into the bushing or the machine can be avoided. When the cable is pushed through the bushing (2), tighten the sealing nut of the bushing. By this way the rubber ring in the bush is pressed, thus securing the cable mechanically and against water. If the mechanical securing is insufficient, use the securing clamp (3) which is not a part of the delivery.

The supply cable is connected to the main switch of the machine (1). The phase terminals are marked by U, V, W (L1,L2,L3). Connect the protection conductor directly to the protection terminal located on the switchboard bottom. The terminal has been marked as PE.

### TWO MOTOR VERSION:

**CHECK IF THE DRUM ROTATES (FROM THE FRONT VIEW) IN COUNTERCLOCKWISE DIRECTION DURING EXTRACTION. IF IT ROTATES IN OPPOSITE DIRECTION, DISCONNECT TWO PHASES, SWITCH THEM OVER AND CHECK AGAIN THE ROTATION DIRECTION.**

1. Main switch
2. Bushing
3. Clamp
4. Sag of inlet cable

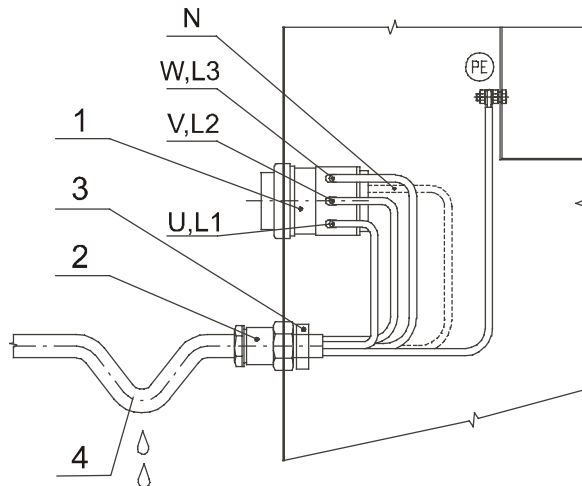


Fig.4.4.C Connection of main power inlet

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## MACHINE PROTECTIVE CONNECTION

From the safety reasons it is necessary to connect the washing machine to the laundry protection system. The external protective terminal (M8), located on the left rear part of the machine frame (fig.3.5, pos.14) and identified by an earthing mark (5) serves for this purpose. The protection conductor enabling this connection is not a part of the delivery.

**THE PROTECTION CONDUCTOR'S CROSS SECTION MUST AT LEAST CORRESPOND TO FIGURES GIVEN IN TABLES 4.4. C - D.**

However, we recommend for the supply cable with 2,5 mm<sup>2</sup> cross section to select a larger conductor section i.e. 4 mm<sup>2</sup>.

**IF THE MACHINE PROTECTIVE CONNECTION IS NOT ALLOWED BY YOUR NATIONAL (LOCAL) STANDARDS, YOU MUST EARTH THE MACHINES ACCORDING TO YOUR VALID STANDARDS.**

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

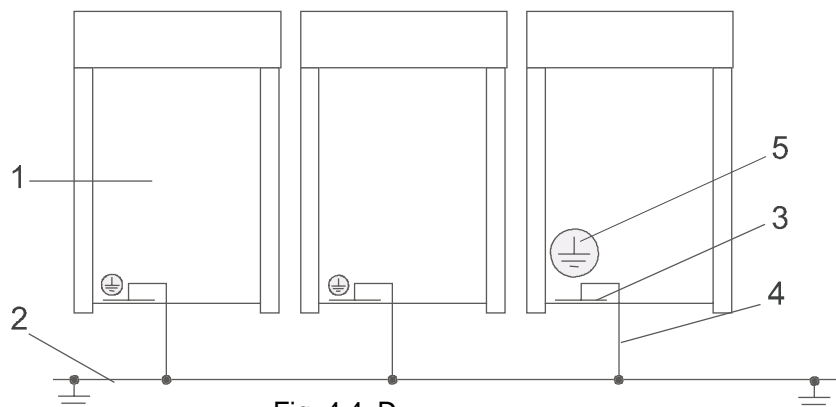
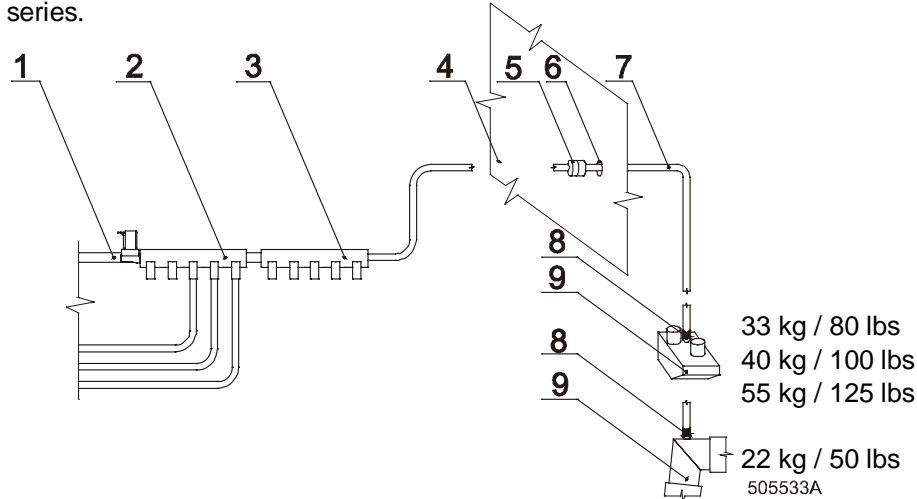


Fig. 4.4. D

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## CONNECTION TO LIQUID SOAP SUPPLY SYSTEM

It is possible to connect external liquid soap supply system to the machine. Connect the hoses of liquid soap supplies on inlets of dosing pumps. Connect outlets on vertical inlets of external liquid soap mixer (fig.4.4.E, pos.2). After removing the black plug, put the hose of external liquid soap dosing (7), coming from the mixer, through the hole in the machine rear side (6). Provide the opening, where the hose is coming through, with rubber bushing (5). Connect the hose of liquid soap external dosing to the tube of mixer of water system (9) inside the washing machine, and secure with the clamp (8). Mixer of the machine water system is accessible after removing the rear or side cover. Connect the water supply (1) to inlet of electrical water valve, which is connected to inlet of liquid soap external mixer. External mixer of liquid soap can be used for 1 - 5 supply inlets of liquid soap. When you need to connect more supply inlets of liquid soap, use another mixer (3). Connect the mixers in series.



- |  |   |
|--|---|
| 1. Water supply  | 5. Bushing  |
| 2. External mixer of liquid soap                       | 6. Hole for hose of external dosing (put through) |
| 3. Second external mixer of liquid soap<br>(extension) | 7. Hose of external dosing                        |
| 4. Rear panel  | 8. Clamp  |
|  | 9. Mixer of the machine water system              |

Fig.4.4.E

**CHECK IF THE HOSE IS TIGHTEN BY CLAMP!  
ANY LEAKAGE OF CHEMICALS MAY CAUSE THE PARTS CORROSION INSIDE OF THE MACHINE.**

**⚠ WARNING !  
PLACE EXTERNAL MIXER (MIXERS) NEAR THE MACHINE, NEVER INSIDE THE MACHINE.**

**⚠ WARNING !  
ALWAYS INSTALL EXTERNAL MIXER (MIXERS) IN SUCH A WAY, SO THAT POSSIBLE ESCAPE  
OF CHEMICALS COULD NOT CAUSE INJURY OF PERSONS OR DAMAGE OF PROPERTY.**

**⚠ WARNING !  
DISCONNECT THE MACHINE POWER INLET BEFORE INSTALLATION.  
THE INLET TERMINALS ARE UNDER CURRENT EVEN WHEN THE MAIN SWITCH IS OFF.**

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

**⚠ WARNING !  
AFTER THE HOSE IS CONNECTED, PUT ALL MACHINE COVERS BACK TO THEIR PLACES  
OTHERWISE YOU JEOPARDIZE INJURIES.**

The liquid soap pump system supply needs to be connected to an external electrical source. Only authorised 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 for connecting liquid soap pump. The last terminal is the common line of the signals. The following terminals are the signals that will be active depending of the programmed wash programme. These signals have a potential of max. 250V AC 50/60 Hz. 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.

## WATER RECYCLED DRAINAGE CONNECTION

Valid only for machines equipped with recycled drainage by the manufacturer or for machines after modification. Attach connecting hoses to the discharging valve of 76 mm / 3" diameter, located on the right side (from rear view). The hoses go to your recycling tank located below the drainage valve. The tank must be dimensioned for a total weight of given water volume and made up of materials which resist the temperature of 80°C / 176°F and washing soaps effects. The quantity of water for one machine and a washing cycle differs according to applicated programmes and creates an average about 550 - 1500 dm<sup>3</sup> / 145 - 400 US gallons.

**THE QUANTITY OF WATER DEPENDS ON THE PROGRAMME YOU HAVE CHOSEN AND ON WATER LEVELS BEING SET UP IN INDIVIDUAL WASHING STEPS.**

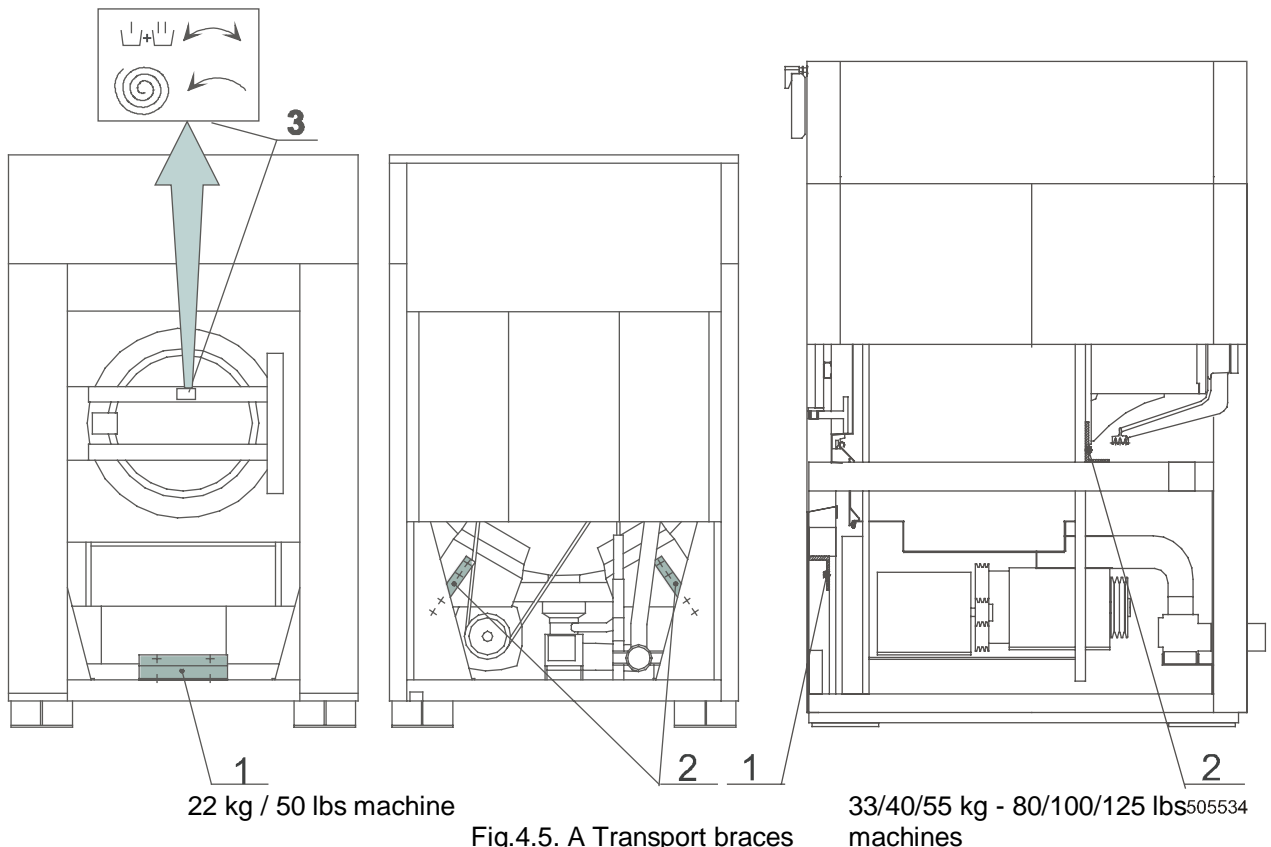
## 4.5. PUTTING THE MACHINE INTO SERVICE

Before you put the machine into service, remove the three striking colour transport braces securing the vibrating machine components during the transport. One brace (fig. 3.11. A, B, pos. 1) is located in the front part of the machine, accessible after the front lower cover removal. The two braces (2) are placed in the rear machine part, accessible after the rear cover removal. After you have removed the braces, mount the covers back to their places.

**⚠ WARNING !**  
**THE TRANSPORT BRACES MUST BE REMOVED PRIOR PUTTING YOUR MACHINE INTO SERVICE. OTHERWISE YOUR WASHING MACHINE CAN BE SERIOUSLY DAMAGED!**

### YOU MUST DO:

1. A check of the transport braces removal.
2. Removal of the cabinet protective foil.
3. A check if the waste sump is ready for water drainage.
4. A check of the protective connection (earthing) - „PE“ or „PEN“.
5. A careful reading of the operation manual before the machine start and following the instructions stated.
6. A check of the drum rotation direction during extracting according to the extracting label (fig.4.5, pos.3) on 2-motor versions.
7. A check of the vibration switch function during extracting and the emergency function.
8. Initialization for calibration of „zero“ level (on the microprocessor version), according to instructions of the „Programming manual - electronic programmer“ delivered with the machine.



## 5. MAINTENANCE

### **⚠ 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. INTRODUCTION

Due to the quality construction and reliable parts and materials of the machine the preventive maintenance has been limited to the minimum.

When the machine is still under warranty, call your dealer's service to perform the interference stated in chapter 5.3 - 5.5 to avoid the warranty cancellation.

The technical service of your dealer is ready to eliminate serious failures of your machine.

### 5.2. DAILY

Check daily:

1. Water and possible steam inlets for leakage.
2. Drain valve for leakage during a washing process and for its proper opening (the valve is in open position without electric current).
3. Clean the machine cabinet to remove any traces of washing soaps.
4. Soap hoppers must be cleaned at the end of each working day.
5. Clean up the door gaskets to remove sediments and dirt.

**Do not use solvents or acids to clean the rubber door gasket !**

**Do not use oil or grease on rubber !**

After the machine has been cleaned up leave the door opened to provide the machine venting and to prolong the door gasket life service. We recommend to shut off all main inlets of electric power and steam (the laundry main valves and switches).

### 5.3. MONTHLY OR AFTER 200 WORKING HOURS

1. Lubrication according to chapter 5.8.
2. Check of leakproof of external liquid soap supply system.  
**Check if all hose joints, screw joints and all connections of the whole system of external liquid soap are leakproof.**

### 5.4. EVERY 3 MONTHS OR AFTER 500 WORKING HOURS

1. Make sure the machine is disconnected from main power supply by the laundry switch or circuit breaker and that the other workers are well informed about the machine maintenance activity.
2. Check the tightness of the bolts according to chapter 5.6.
3. Check visually the pipes and hoses connections inside of the machine for leakage.
4. Make sure that the control components are protected against moisture and dust during the clean up. Wipe and clean up the machine inside.
5. Lubrication according to chapter 5.8.
6. Tightening the contacts of heating elements terminals on machines with electric heating.
7. Put the covers back and switch on the power supply by the main laundry switch or circuit breaker.
8. If there is the earth leakage trip installed in the inlet circuit of the laundry electric switch board, test it according to chapter 5.15.

### 5.5. EVERY 6 MONTHS OR AFTER 1000 WORKING HOURS

1. Clean the filters with water and steam inlets by chapter 5.10.
2. Remove the rear machine cover and check the condition and tightness of the V-belts (chapter 5.9.).

**⚠ 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.**

3. 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

## **5.6. SAFETY VIBRATION SWITCH**

### **FUNCTION DESCRIPTION**

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. Because this component is very important, it is recommended that at the first installation and then once in a year the vibration switch was verified by a qualified worker.

The unit contain the vibration switch (fig.5.6, pos.5) with a flexible controlling element which is attached to a holder (7) by nuts (6) and this entire assembly is bolted to the bottom of the switchboard (4). The switch controlling element is inserted into the rubber bushing (3) located into the limiter (2) which is bolted to the drum front face (1). The switch attached to the switchboard is a part of the machine skeleton which is attached to the frame and the limiter with the bushing is a part of the assembly that vibrates. The vibration switch sensibility is given by a mutual adjusting of these two components which controls the unbalance level of linen in the drum.

Reaction of the machine and the control system after the vibration switch is operated, has been described in manuals „Programming manual - Electronic programmer“ or „Programming manual - Card programmer“.

### **VERIFYING OF THE FUNCTION**

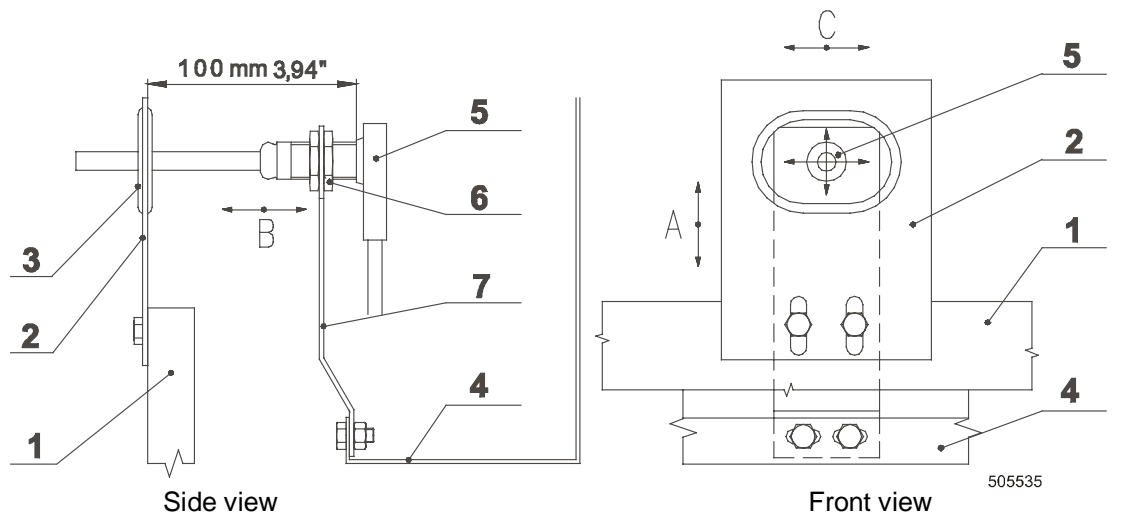
Perform the verifying as follows:

1. Open the control panel cover.
2. Start extraction mode.
3. After reaching of the maximum RPM, carefully switch over the vibration switch by moving the flexible control element manually.

**⚠ WARNING !**  
**DO THIS CAREFULLY TO AVOID INJURIES BY VIBRATING AND FIRM PARTS OF THE MACHINE!**  
**AFTER YOU HAVE CHECKED THE FUNCTION, MOUNT ALL PANEL COVERS BACK TO ORIGINAL PLACE !**

### **SENSIBILITY ADJUSTMENT**

1. By moving the limiter (2) up or down, you will adjust the centre of rubber bushing to the control element axis of vibration switch.
2. By moving the vibration switch on the holder (7) to the left, you will increase the sensibility and to the right you decrease it. To reach the maximal permitted unbalance value it is necessary to keep the distance of 100mm / 3,93" between the limiter (2) and the vibration switch (5) - see the side view.
3. Moving the holder (7) with the switch left or right you will centre the switch control element in the rubber bushing of the limiter.



- 1. Front face of the drum
- 2. Limiter
- 3. Rubber bushing
- 4. Switchboard bottom
- 5. Vibration switch
- 6. Adjusting nut
- 7. Vibration switch holder

Fig.5.6.

## 5.7. TIGHTENING MOMENTS

**⚠ WARNING !**  
**REGULARLY, ONCE IN THREE MONTHS OR EVERY 500 WORKING HOURS (WHICH EVER COMES FIRST) INSPECT THE TIGHTNESS OF THE BOLTS !**

If anyone of the bolts has been damaged, exchange it with the bolt of the same strength value marked on its head. The best way is to order the original part according the „Spare parts manual“.

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

Tighten the loosened bolts using the torque value stated in the following table:

Tightening Moments values of bolts and nuts for 22 kg / 50 lbs machine (fig. 5.7. A)				
Bolt (nut)	Dimension	Number of pcs.	Tightening Moments (Nm)	Tightening Moments (lbf.ft)
<b>A</b>	M12 x 40	16	78,00	58,00
<b>B</b>	M 8 x 40	24	11,00	8,10
<b>C</b>	M12 x 35	3	36,00	27,00
<b>D</b>	M 8 x 30	12	11,00	8,10
<b>E</b>	M10 x 30	10	20,00	15,00
<b>F</b>	M12 x 35	2	36,00	27,00
<b>G</b>	nut KM13	1	420,00	310,00

Tab.5.7.A

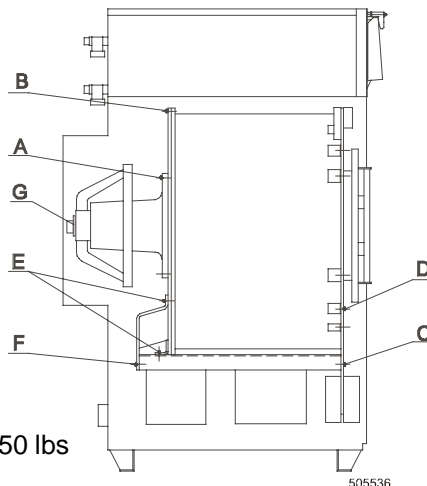


Fig. 5.7. A Machines 22 kg / 50 lbs

## MARKING OF THE BOLTS

- A Bolts of hub flange
- B Bolts fixing the rear wall of external drum to the inner drum covering over a tyre
- C Bolts fixing the plate of motors to the outer face
- D Bolts fixing the external drum to the front face
- E Bolts fixing the support and damper holders to the rear wall of outer drum
- F Bolts fixing the plate of motors to the damper holders
- G Housing fixing the drum pulley to the shaft

Tightening Moments values of bolts and nuts for 33/40/55 kg 80/100/125 lbs machines (fig. 5.7. B)				
Bolt (nut)	Dimension	Number of pcs.	Tightening Moments (Nm)	Tightening Moments (lbf.ft)
A	M20 x 65	24 (12)	600,00	443,00
B	M12 x 30	8	70,00	52,00
	33 kg TYPE: nut KM13	1	450,00	332,00
C	M12 x 35	6	70,00	52,00
D	M30 x 80	1	800,00	590,00
E	M12 x 38	4	25,00	18,50

Tab.5.7.B

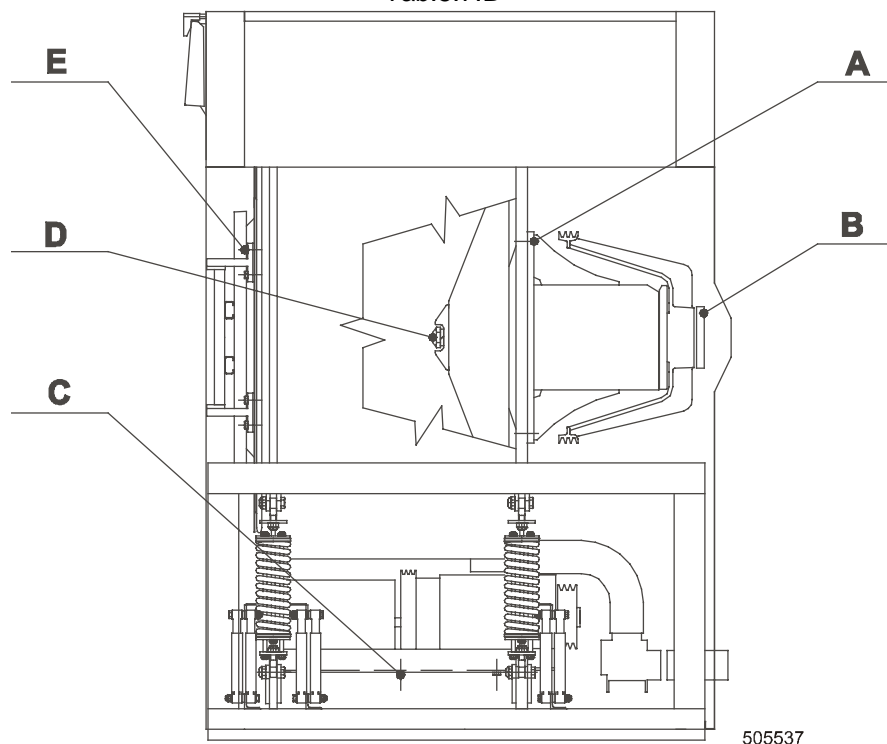


Fig. 5.7. B Machines 33/40/55 kg 80/100/125 lbs

## MARKING OF THE BOLTS

- A Bolts of hub flange
- B Bolts fixing the pulley to the nut of fixing housing
- C Bolts fixing the motors plate to the external drum
- D Bolts fixing the inner drum to the shaft
- E Bolts fixing the door brackets

A spanner for the jam nut KM 13 is not a part of the delivery or accessories.

## 5.8. LUBRICATION

**⚠ WARNING !**  
**DO THE LUBRICATION WORK ONLY WHEN THE MAIN SWITCH IS OFF AND ALL COMPONENTS HAVE BEEN STOPPED!**  
**(IF NOT STATED OTHERWISE IN FOLLOWING INSTRUCTION).**

Every time you use a grease gun especially for greasing bearings and seals, do it slowly - not faster than 5 strokes in 1 minute. The grease gun can create a high pressure which would cause the seal deformation and consequent leakage. Never operate the grease gun faster even if the grease contain air gaps.

Overlubrication can cause the same damage as an insufficient lubrication.

Always make sure that your grease gun is in perfect condition.

If you substitute the lubricant by another type make sure that these two kinds are compatible, otherwise there is a risk of a bearing failure. For example lithium lubricants are compatible with calcareous lubricants but not with sodium ones.

**NEVER MIX PETROLEUM LUBRICANTS WITH SILICONE LUBRICANTS!**

## LUBRICATION POINTS, QUANTITY AND LUBRICATION PERIODS

**ONLY FOR MACHINES 33/40/55 kg 80/100/125 lbs:**

### ☐ LUBRICANT:

Use a multipurpose lithium lubricant containing high-pressure additives of consistency NLGI 2.

SKF - LGEP 2

ESSO - BEACON EP 2

### ☐ LUBRICATORS:

For main bearings and seals (fig.5.8) there are located on the rear machine cabinet. Press the lubricant in slowly and let the drum rotate with the same speed as during washing.

### ☐ QUANTITY OF LUBRICANT:

2 cm<sup>3</sup> (2 strokes) -once in a month or every 200 working hours, which ever comes first.

1. Rubber seal lubricator
2. Front bearing lubricator
3. Rear bearing lubricator

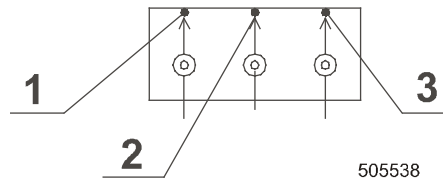


Fig.5.8. Lubrication places of 33/40/55 kg - 80/100/125 lbs machine for bearing house (placed on rear of machine)

## FOR ALL MACHINES 22-55 kg / 50-125 lbs

Once in 6 months or when needed, grease spring suspension eyes (fig.5.12, pos. 6), guiding rods (3), the door handle casing (fig.5.11.A, pos.2) and the casings in the door brackets (2).

The motor bearings are maintenance-free (do not lubricate).

The hub and pulley seating of machines 22 kg / 50 lbs are maintenance-free.

## 5.9. DRIVING MECHANISM

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 come first.

## INSPECTION OF THE BELT TIGHTNESS

**⚠ WARNING !**  
**BEFORE YOU START, TURN OFF THE MAIN SWITCH TO AVOID POSSIBLE INJURIES!**

The belts are accessible after the rear or side cover dismantling. If the belts are too tight the bearing seatings are under stress and their life service has been shortened.

If the belts are too loose they can be slipping on the pulley and cause a noisy operation.

In the case of need, tighten the belts. Change the belts if worn out or damaged.

In table 5.9 is indicated testing force of belt tensioning which can be measured by tension meter. Procedure for approximate belt tensioning with belt deflection 20mm / 0,8" : For machine 22/33kg 50/80lbs, apply a load of 5,5kg / 12,1lbs to the middle of the belt. For machine 40/55kg 100/125lbs apply a load of 7kg / 15,4lbs to the middle of the belt.

	22 kg / 50 lbs, 33 kg / 80 lbs	40 kg / 100 lbs, 55 kg/125 lbs
Force F measured by device	200 N	300 N

Tab. 5.9.

## BELT REPLACEMENT

### NEVER USE A CROWBAR TO TAKE OFF THE BELTS OVER THE PULLEY GROOVES.

Loosen the bolts of tightening pulley on the drum rear wall and the adjusting screw for taking the belts off.

#### TWO - MOTOR VERSION:

Belts between motor for washing and motor for extracting are to be removed after loosening the bolts that fasten the motor for extracting and after loosening the tightening bolts.

Always change a complete set of the belts for one transmission. Always the same type of the changed belts in the set is required. If the pulleys are damaged, replace them.

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.

## PULLEY ALIGNMENT

A precondition for the reliable operation and long service life of the belts is a proper pulley alignment.

Do the inspection of the alignment by means of a ruler (fig. 5.9., pos. 4) with placing it on the pulley faces.

If all points (A, B, C, D) are touching the ruler the pulleys are aligned.

1. Main housing with the pulley
2. Drum
3. Drive motor
4. Ruler

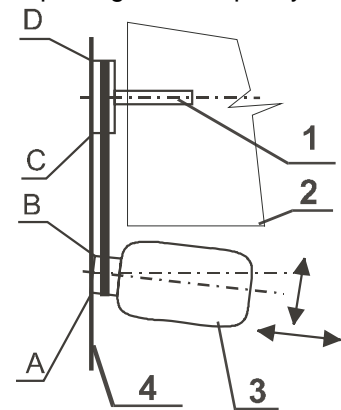


Fig.5.9.

## 5.10. WATER AND STEAM FILTERS

Machines are equipped with filters on water and steam inlets (if the machine has steam heating). It is necessary to clean up the filters occasionally to avoid a prolongation of filling the machine with water. Intervals of cleaning depends on the quantity of foreign particles in the water line.

### CLEANING THE FILTER

1. Stop the water (steam) inlet to the machine.

**⚠ WARNING !**  
**BEFORE YOU START THE FILTER CLEANING CHECK IF THE INLET OF HOT WATER (STEAM) TO THE MACHINE IS CLOSED AND COLD !**

2. Unscrew the filter plug (fig.5.10., pos.4) and remove the filter sieve (2).
3. Clean the sieve with running water or with compressed air.
4. Put the sieve (2) and gasket (3) back to the filter body (1) and tighten the plug (4).

1. Filter body
2. Filter sieve
3. Gasket
4. Plug

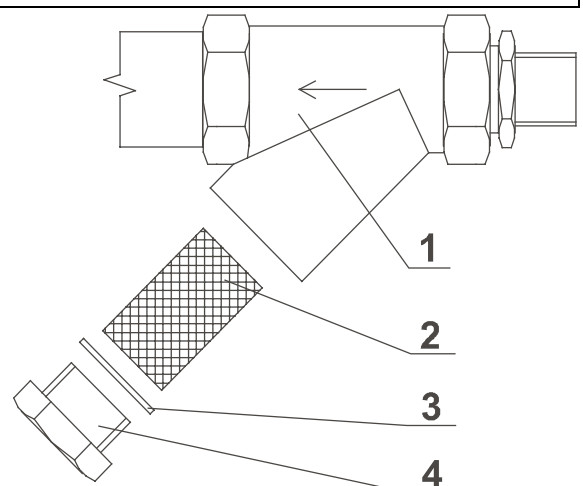


Fig. 5.10.

## 5.11. THRUST OF DOOR SEAL

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.

## ADJUSTING ON THE SIDE OF THE DOOR HANDLE

### ONLY FOR MACHINE 33/40/55 kg 80/100/125 lbs

1. Unscrew the bolt (fig. 5.11.B, detail „B“, pos. 1) securing the casing of the door handle (2).
2. Unscrew the casing (2) from the door bearer (3) always by a whole turn that the groove in the casing thread (2) appears below the securing bolt (1).
3. To make the casing turning (2) easier, use the semicircle notches (4) between the casing (2) and the handle pin (5), in which you insert cylindrical object (a bolt etc.). By turning the handle, the casing (2) will also move.
4. After the door thrust has been adjusted, tighten up the securing bolt (1) to the groove in the casing (2) thread.

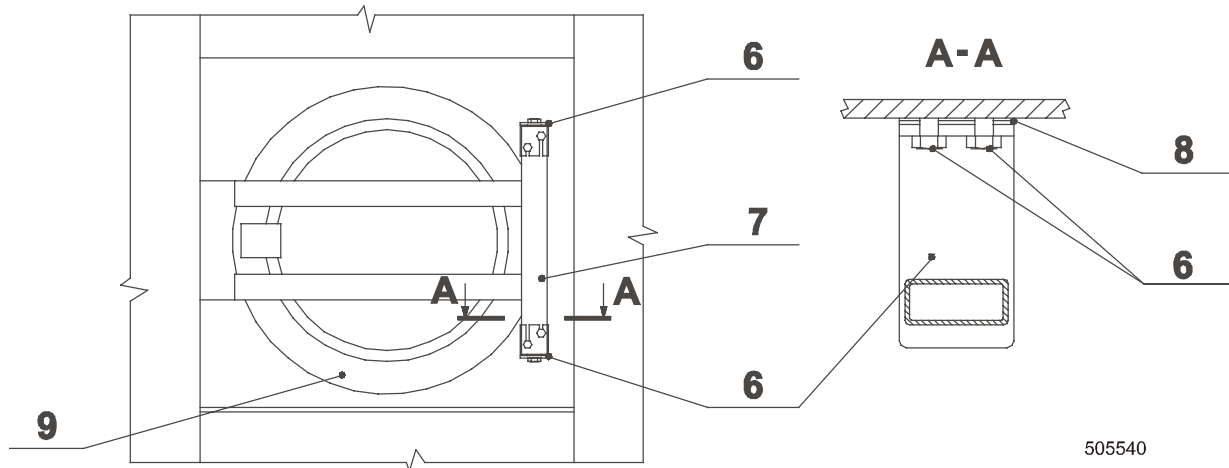


Fig.5.11.A Machines 22 kg / 50 lbs

- |                      |                    |                       |
|----------------------|--------------------|-----------------------|
| 1. Handle bolt       | 4. Semicircle cuts | 7. Hinge              |
| 2. Handle sleeve     | 5. Handle pin      | 8. Elimination washer |
| 3. Door carrier beam | 6. Hinge bolt      | 9. Door               |

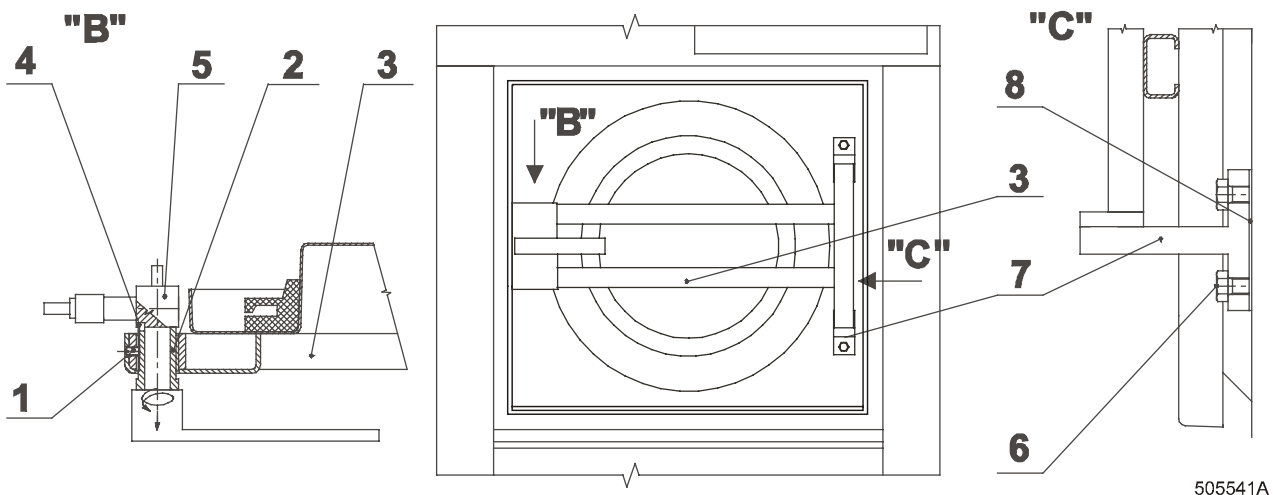


Fig.5.11.B Machines 33/40/55 kg 80/100/125 lbs

## ADJUSTING ON THE SIDE OF THE DOOR HINGE

For machines 22kg / 50lbs (fig.5.11. A), and if the adjusting described above is not sufficient, for machines 33/40/55 kg 80/100/125 lbs (fig.5.11.B):

1. Loosen two bolts (6) fastening the top door hinge (7).
- 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.

## 5.12. SPRING UNIT

Spring units (fig.5.12., pos.1) are to be adjusted in the case that you found out the suspended machine part is not in a horizontal position (without linen and water) or after the spring unit has been replaced.

**⚠ WARNING !**  
**MAIN SWITCH MUST BE OFF!**

The spring unit adjusting is achieved by turning the nuts (2) with the same number of turns always simultaneously on the opposite guiding rods (3) of spring unit. The adjustment is correct when a same gap in all four corners of the suspended machine part has been achieved (for machines 33/40/55 kg 80/100/125 lbs the  $X = 55 \text{ mm} / 2,16''$ ) between the plate edge (4) of the vibrating part and the frame top surface (5).

1. Spring unit
2. Adjusting nuts
3. Guiding rods
4. Suspended part
5. Machine frame
6. Spring suspension eyes

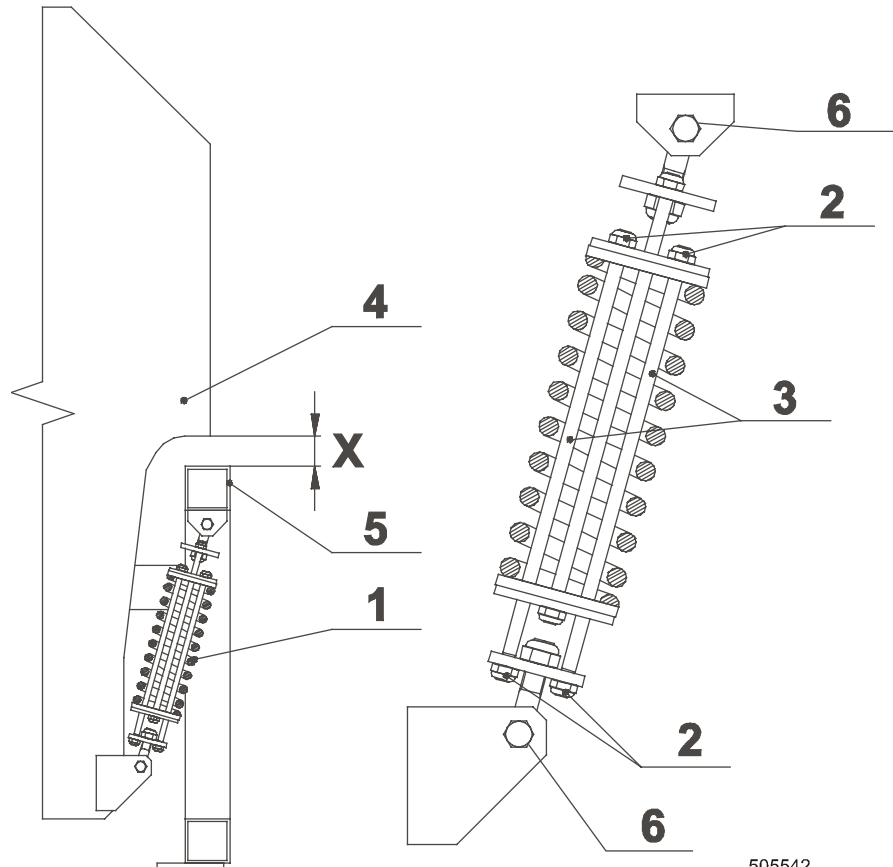


Fig.5.12.

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## 5.13. OVERLOAD MOTOR CURRENT PROTECTION

Two motor machine has overload motor current protection by overcurrent relay.

All current protections have been set to the value (according to a machine type) stated on the power electrical scheme delivered with machine. It is not recommended to change the setting of the current protector. Check only the setting correctness of the current protectors.

If a current protector was exchanged, set it up as follows:

- 1. Turn off the electrical supply of the machine by main switch !**
2. Unlock the machine cover (fig.3.5, pos.2) 22kg / 50 lbs (on machines 33/40/55 kg 80/100/125 lbs remove the switchboard cover - fig.3.5, pos.2), and open it.
3. Check the marking from the current protector label and check the machine voltage. Find the correct Amper value of the current protector for FA1, FA 2 in the power electrical scheme of machine.
4. Open the relay transparent cover (fig.5.13, pos.2).
5. Set up the regulator (1) correct value (with a screwdriver) that it will be facing to the arrow (the value is stated in the electric chart of power circuits and is delivered with the machine).
6. Set up the changing switch (4) to the „H“ position (see the picture).
7. Shut the transparent cover.
8. Shut the switchboard cover (lock it up).

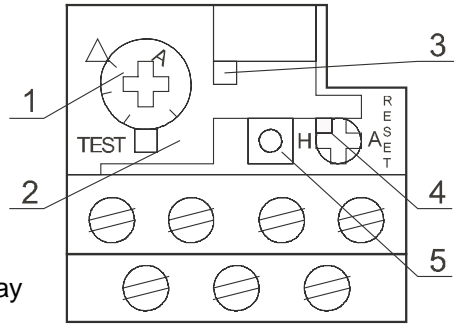


Fig.5.13. Overcurrent relay

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## 5.14. VALUES OF FUSES

Values of fuses you can find on electrical scheme delivered with machine.

Marking	Destined for:
FU1, FU2	transformer - primary winding
FU3	control circuits
FU5	clutch of 2-motor version
	pumps
	external dosing

Tab.5.14.

## 5.15. EARTH LEAKAGE TRIPS

If the laundry is equipped with the earth leakage trip in the inlet circuit of the electric switchboard it is necessary to test it regularly. The earth leakage trip is a very sensitive device and it provides a safety for operators avoiding a risk of an electric shock while the machine is in operation.

**⚠ WARNING !**  
**A QUALIFIED WORKER MUST PERFORM A TEST OF THE EARTH LEAKAGE TRIP FUNCTION AT LEAST ONCE IN 3 MONTHS.**

### THE TEST PROCEDURE:

Press the test push button of the earth leakage trip while it is under tension. **The earth leakage trip must go off !**

# 6. TROUBLE SHOOTING AIDS

## 6.1. DOOR BLOCKING

### DESCRIPTION OF DOOR LOCK FUNCTION

The door lock has been designed as a compact unit. Its function is to secure the door against opening during the washing cycle. Unlocking after a cycle completion will be made by:

- a signal from the programmer (microprocessor version)
- a manual pressing of the lock push button (card version)

The lock has been blocked also during the failure situations e.g. electric network black out, before and after the machine installation and you can unlock it in case of emergency according to the procedure hereafter described.

### LOCK WITHOUT TENSION BEFORE THE PROGRAMME START

It is possible to open and shut the washing machine door any time. The lock will not be blocked, coils with the latch are not active.

### MAIN SWITCH AND EMERGENCY STOP BUTTON ARE SWITCHED ON

#### DOOR SHUTTING

- microprocessor version:

The lock is secured by a blocking latch after the door is shut and the programme has been started. In this moment the door is not openable.

- card version:

The lock is blocked after the door has been shut, a card inserted to the programmer and the Start button on the programmer keyboard has been pressed.

#### DOOR OPENING

The door can be opened after the lock is unblocked and when the blocking latch moves to the non active position.

This situation occurs when:

- microprocessor version

at the end of a programme or when pressing the Stop button and the following function described in the „Programming manual - Electronic programmer“.

- card version

When the door illuminated push button is pressed at the end of a programme or when the card is pulled out of the programmer after a safety delay.

### CURRENT FAILURE DURING OPERATION

When the power supply has been interrupted during a washing cycle the door lock stays in a blocked position and the door is not openable.

### 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 !**

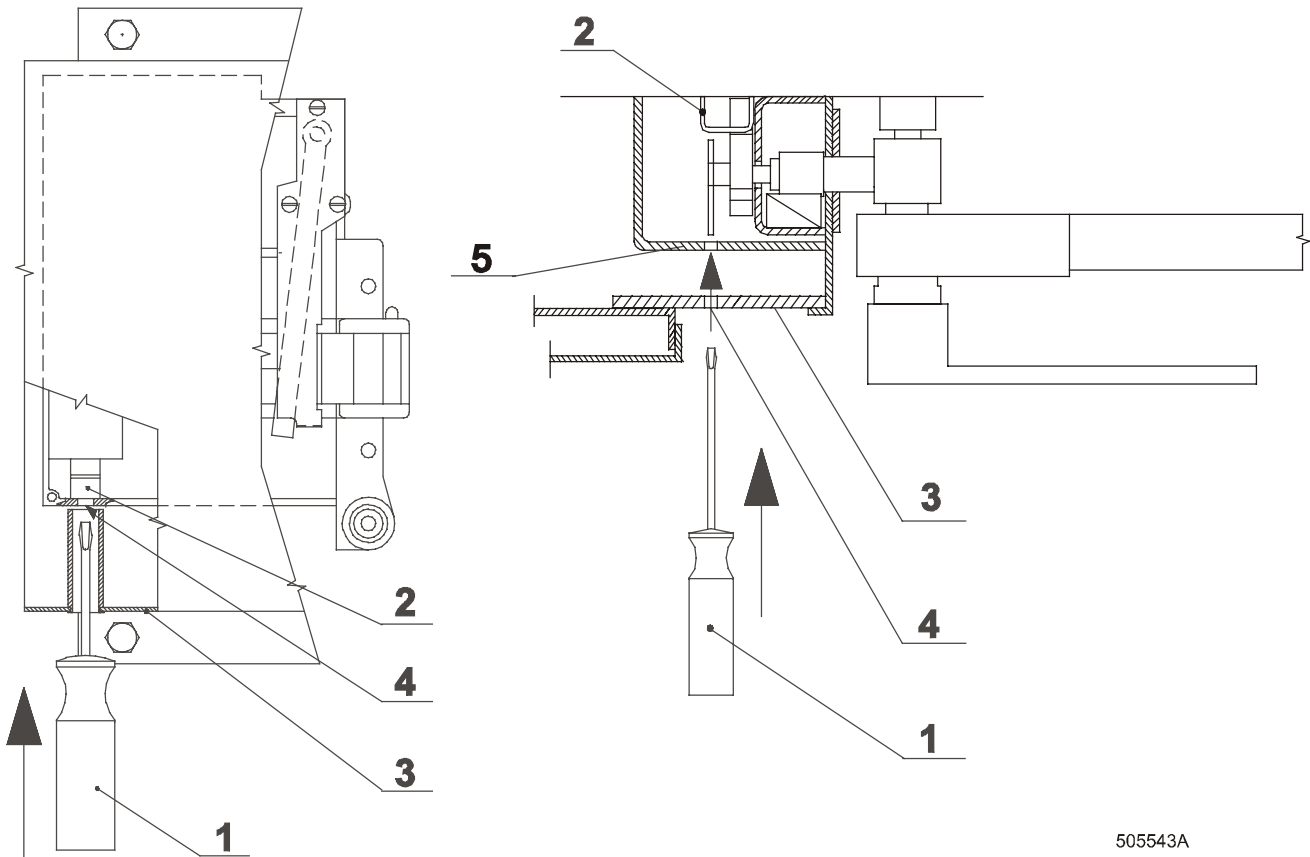
**BEFORE THE EMERGENCY DOOR OPENING TURN OFF THE MACHINE MAIN SWITCH!**

**DO NOT OPEN THE DOOR IF WATER IN THE DRUM!**

**IF THE WASHING BATH IS TOO HOT DO NOT OPEN THE DOOR. RISK OF BURN AND SCALD INJURIES!**

**DO NOT OPEN THE DOOR IF THE DRUM HAS NOT BEEN COMPLETELY STOPPED!**

Use a tool e.g. screwdriver (1), a piece of wire etc. which is not a part of delivery with maximum diameter  $\varnothing$  5,5 mm / 0,21". For machine 22kg / 50lbs insert the tool into the hole in the lock cover (4) and push moderately. For machine 33/40/55kg / 80/100/125lbs insert the tool through the finger protection hole into the lock cover, fig.6.1., pos. 5 and push moderately. By this the latch mechanism (2) is lifted up and the lock is unblocked. The lock stays unblocked even after the tool removal and you can open the door if the drum is not rotating or if the machine does not contain a (hot) washing bath.



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Front view: machine 22 kg / 50 lbs

Top view: machines 33/40/55 kg - 80/100/125 lbs  
Fig.6.1

## 6.2. TOO LONG FILLING TIME

- Low water pressure:
  - more machines have been filling up in the same time.
- The inlet valve clogged:

**⚠ WARNING !**  
**STOP THE HOT WATER INLET TO THE MACHINE AND WAIT FOR COMPONENTS TO COOL DOWN!**

shut the main water inlet, take off the inlet valve filters, clean and put them back.

- A damaged hose:
  - replace the hose or its gasket.
- Defective inlet valve:
  - change the valve.
- Water escaping:
  - check the inlet pipeline, hoses, valves, filters, tapes, clamps, their connections and eliminate possible leakage.

## 6.3. TOO LONG HEATING TIME

- Electrical heating elements clogged or defective:
  - exchange heating elements for new ones.
- Insufficient steam supply:
  - to many steam-heated machines connected.
  - leakage of the steam system.
  - too high level of condensation in the steam system.
- Clogged steam filter or hot (cold) water filter:

**⚠ WARNING !**  
**STOP THE HOT WATER INLET TO THE MACHINE AND WAIT FOR COMPONENTS TO COOL DOWN!**

-dismantle the sieve (fig.5.9, pos.2) from the filter body (1), clean the sieve and put it back with the gasket (3).

- Defective steam or hot water valve:
  - exchange the valve

## **6.4. TOO LONG DRAINAGE TIME**

- Clogged drainage:
  - clean the outlet.
- Defected drainage valve:
  - clean the drainage valve or exchange it.
- Too small waste sump dimensions:
  - check the waste sump diameters and enlarge it accordingly.

## **6.5. PROGRAMMER PROBLEMS**

See the chapter „Troubleshooting“ in the programming manual according to your machine type:  
„Programming manual - Electronic programmer“  
„Programming manual - Card programmer“

## 7. LIST OF RECOMMENDED SPARE PARTS

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

PRI 340 055 051	Drain valve 3"
101 344	2-way inlet valve 3/4"
101 345	3-way inlet valve 3/4"

### FOR MACHINES 22 kg / 50 lbs CAPACITY

PRI 340 200 056	1-way valve 3/4" 0,3-10bar	
PRI 610 034 077	Microswitch U83161.1	
PRI 610 011 077	Microswitch 83161.3	
PRI 401 020 021	Fuse 1,6 A	
345 805 363 032	Fuse 2,5 A	
345 805 163 032	Fuse 1A	
PRI 610 012 077	Coil H24-F-HS221311 205 VDC 100% ED	
223 107 001 214	Door seal	
PRI 607 000 085	V-belt XPZ 1320	2-motor version
PRI 607 000 070	V-belt SPZ 2187-LW	2-motor version-50Hz
272 111 002 137	V-belt SPZ 2187-LW	2-motor version-60Hz
100 035	V-belt XPZ 2160	1-motor version
PRI 345 000 046	Contactora LC1D 0901	1-motor version
PRI 345 000 047	Contactora LC1D 1201 M7	2-motor version

### FOR MACHINE 33 kg / 80 lbs CAPACITY

PRI 340 030 056	1-way inlet valve 220V 50Hz / 230V 60Hz	
F02 117 002 114	Microswitch 83.161.3 modification 1	
F02 117 002 224	Microswitch 83.161.3 modification 2	
PRI 401 020 021	Fuse 1,6 A	
345 805 363 032	Fuse 2,5 A	
345 805 163 032	Fuse 1A	
F02 117 001 814	Coil-modification	
F02 107 003 214	Door seal	
PRI 607 000 660	V-belt XPZ 987 Lp	2-motor version
PRI 607 000 065	V-belt XPZ 2280 Lp	
PRI 345 006 011	Contactora LC1D1801 M7	1-motor version-200V
PRI 345 000 047	Contactora LC1D1201 M7	2-motor version + 1 motor version-400V
347 000 001 810	Contactora LC1D1810 M7	2-motor version

### FOR MACHINE 40 / 55 kg – 100 / 125 lbs CAPACITY

F02 117 002 114	Microswitch 83.161.3 modification 1	
F02 117 002 224	Microswitch 83.161.3 modification 2	
F02 117 001 814	Coil - modification	
F02 107 003 214	Door seal	
272 111 001 000	V-belt XPZ 1000 Lp	2-motor version
PRI 607 000 095	V-belt XPA 2650 Lp	2-motor version
PRI 607 000 096	V-belt XPZ 1000 Lp	2-motor version
503 526	V-belt SPA 2582	1-motor version
PRI 345 002 019	Contactora LC1-D3201 M7	1-motor version – 230V
PRI 345 000 047	Contactora LC1-D1201 M7	2-motor version
PRI 345 006 011	Contactora LC1-D1810 M7	2-motor version + 1 motor version – 400V
347 000 001 810	Contactora LC1-D1810 M7	2-motor version
PRI 401 020 021	Fuse 1,6 A	
345 805 363 032	Fuse 2,5 A	
345 805 163 032	Fuse 1A	

**FOR MACHINES WITH ELECTRIC HEATING**

PRI 342 000 032	Heating element 6000W 220V
PRI 342 000 031	Heating element 4000W 220V
PRI 345 001 019	Contactora LC1 D4011 M7
PRI 345 006 011	Contactora LC1 D1801 M7
PRI 345 002 019	Contactora LC1 D3201 M7

**FOR MACHINES WITH ELECTRONIC PROGRAMMER, MCB EC, MCB FC**

PRI 401 020 021	Fuse 1,6 A
345 805 363 032	Fuse 2,5 A
345 805 163 032	Fuse 1A
100 521	Grey keyboard MCB FC
100 629	Black keyboard MCB FC
PRI 340 015 019	Thermostat sensor 22 kg / 50 lbs
100 052	Black keyboard MCB EC
PRI 348 000 123	Grey keyboard MCB EC
503 839	Thermostat sensor 33 / 55 kg / 80 / 125 lbs

**FOR MACHINES WITH CARD PROGRAMMER**

PRI 401 020 021	Fuse 1,6 A
345 805 363 032	Fuse 2,5 A
345 805 163 032	Fuse 1A
PRI 340 019 019	Thermostat sensor 22 kg / 50 lbs
503 839	Thermostat sensor 33 / 40 / 55 kg / 80 / 100 / 125 lbs
PRI 340 000 074	Level switch

**MACHINES WITH STEAM HEATING**

514 162	Steam valve 3/4" with coil
514 166	Steam valve 3/4", without coil, valid for export USA
514 167	Coil, valid for export USA



# IMPORTANT !

**MACHINE TYPE:**

**PROGRAMMER:**

- ELECTRONIC TIMER MCB EC
- ELECTRONIC TIMER MCB FC
- ELECTRONIC TIMER MCG FC
- CARD PROGRAMMER K24

**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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