

HIGH SPIN INDUSTRIAL WASHER EXTRACTORS

22kg PRO

33kg

40kg

55kg

80kg

100kg

120kg

ORIGINAL INSTALLATION, MAINTENANCE AND USER'S MANUAL

523503 E

Publication date: 23 Mar 2011

USER'S MANUAL

1. TABLE OF CONTENTS

| | |
|--|----------|
| 1. TABLE OF CONTENTS | 1 |
| 2. WARNINGS AND LABELS..... | 2 |
| 2.1. INSTRUCTIONS FOR MAINTENANCE, ADJUSTMENT AND SAFETY OF PEOPLE | 3 |
| 3. SYMBOLS ON THE MACHINE (DEPENDING ON THE MACHINE MODEL) | 4 |
| 4. OPERATION INSTRUCTION | 6 |
| 4.1. BEFORE WASHING | 6 |
| 4.2. OPENING THE DOOR | 6 |
| 4.3. LOADING THE MACHINE WITH LINEN | 6 |
| 4.4. CLOSING THE DOOR..... | 6 |
| 4.5. PROGRAM SELECTION..... | 6 |
| 4.6. WASH PROGRAMS OVERVIEW..... | 7 |
| 4.7. ADD DETERGENTS..... | 7 |
| 4.8. START THE WASHER | 7 |
| 4.9. END OF WASH CYCLE..... | 8 |
| 4.10. HOW TO OPEN DOOR WHEN FAILURE OCCURS..... | 8 |
| 5. FIRST SERVICE AT TECHNICAL PROBLEM..... | 9 |

2. WARNINGS AND LABELS



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

- This English version is original language version. Without this original version, these instructions are incomplete.
- Before installation, operation and maintenance of the machine read carefully the complete instructions, i.e. this „Installation, maintenance and user's manual“, „Programming manual“ and „Spare parts manual“. The Programming manual and Spare parts manual are not delivered with a machine by default. You shall ask the supplier / manufacturer to obtain Programming manual and Spare parts manual.
- Follow the instruction written in manuals and keep the manuals in a proper place by the machine for later use.
- The washer extractor is designed for fabrics washing only, other objects can damage the machine 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 instructions and/or warnings that are stated on the fabrics, washing products or cleaning products mentioned by the manufacturer.
- If the machine is used for special applications follow the instructions and warning to avoid person injury.
- Keep the washer extractor surface and surrounding clean and free of flammable materials.
- Do not put fabrics treated with flammable products in the washer extractor. Such fabrics must first be washed by hand and air dried.
- Store laundry aids, dry-cleaning solvents and disinfectants out of the reach of children, preferably in a locked cabinet.
- Do not tamper the washer-extractor controls and follow the safety instructions and the warnings.
- Do not remove warning signs placed on the machine. Follow instructions on signs and labels to avoid personal injuries.
- 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.
- The use of hypochlorite will cause corrosion which may cause component failure under certain circumstances.
- The warranty of the machine cannot be accepted in case corrosion was caused by chlorine and chlorine compounds impact.
- Do not operate the washer extractor when parts are broken or missing or when covers are open. The machine must not be operated until the fixed guards are put correctly in place.
- The washer extractor is not designed for work which may create an explosive atmosphere inside the machine and will not be used for this purpose.
- In case of steam escaping anywhere in the machine, shut off the main steam supply valve and call for maintenance.
- 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.
- In case of danger turn off the main switch or other emergency disconnection devices.
- Turn off the main water supply at the end of each operating day.
- Only qualified service personnel can execute service on the washer extractor.
- Follow all valid and basic safety rules and laws.
- It is obvious that it is impossible to mention each possible risk in this manual. It is up to the user to proceed as careful as possible.
- The manufacturer reserves the right to change the manuals without previous notice.
- If a problem should arise, contact your dealer for assistance.
- Norm IEC335 is applied for machines with a net usable drum capacity between 60 and 150 l. Norm EN60204-1 is used for a net usable drum capacity above 150 l.

WARNING!

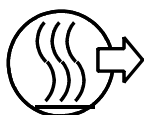
IF THE INSTALLED APPLIANCE OPERATE WITH COIN, TOKEN OR SIMILAR OPERATION FOR USE IN SELF-SERVICE SITUATIONS, THEN THE OWNER-INSTALLER MUST PROVIDE A REMOTE-LOCATED EMERGENCY STOP DEVICE. THIS DEVICE MUST BE PLACED IN SUCH A WAY THAT IT IS EASY AND SAFELY ACCESSIBLE FOR THE USERS. THE EMERGENCY STOP DEVICE TAKES CARE THAT AT LEAST THE CONTROL CIRCUIT OF THE APPLIANCE IS INTERRUPTED.

⚠ WARNING!
DO NOT TOUCH THE DOORGLASS UNTIL CYCLE HAS BEEN COMPLETED. DO NOT OPEN DOOR UNTIL CYLINDER REMAINS STOPPED AND WATER HAS BEEN DRAINED FROM CYLINDER. DO NOT PUT ARTICLES SOILED WITH EXPLOSIF SOLVENTS AND/OR DANGEROUS CHEMICAL PRODUCTS IN THE MACHINE. THIS MACHINE SHOULD NOT BE USED BY CHILDREN. DO NOT LET CHILDREN PLAY IN, ON, OR AROUND THE MACHINE. BEFORE TURNING THE MACHINE „ON“, MAKE SURE THAT THERE ARE NO PEOPLE OR ANIMALS PRESENT IN OR AROUND THE MACHINE.



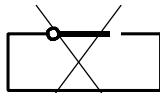
WARNING!

Always disconnect the washer from the electrical supply before attempting any service. The washer extractor is out of tension if the main plug is taken out or when the main supply is disconnected. When the main switch is turned off the inlet terminals of the machine main switch are still under current!



CAUTION!

Extreme hot conditions can arise in the surroundings of this air. Watch out for vapour that escapes from the washer extractor venting!



CAUTION!

Do not cover the washer extractor venting. It serves as a vapour outlet to prevent pressure building in the washer extractor.

PRI 551 000 047 A

⚠ WARNING!
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.

⚠ WARNING!
SAFETY LABELS APPEAR AT CRUCIAL LOCATIONS ON THE MACHINE. FAILURE TO MAINTAIN LEGIBLE SAFETY LABELS COULD RESULT IN INJURY TO THE OPERATOR OR SERVICE TECHNICIAN.

2.1. INSTRUCTIONS FOR MAINTENANCE, ADJUSTMENT AND SAFETY OF PEOPLE

Some important information for the usage of the machine are not (or only partly) mentioned in this „User's manual“. Missing information is possible to find in „Installation and maintenance manual“ according to the following references.

1. Manipulation, transportation, storage
2. Putting the machine into service
3. Technical specification
4. Putting the machine out of service
5. Description of the safe work system when maintenance is performed, adjustment, and when eliminating defects
6. Procedures on searching for defects, cleaning, maintenance
7. Heat risks
8. Description of qualities for ventilation
9. Loss of stability
10. Electric risks
11. Minimal water level
12. Sight holes
13. Water supply

3. SYMBOLS ON THE MACHINE (DEPENDENT ON THE MACHINE MODEL)

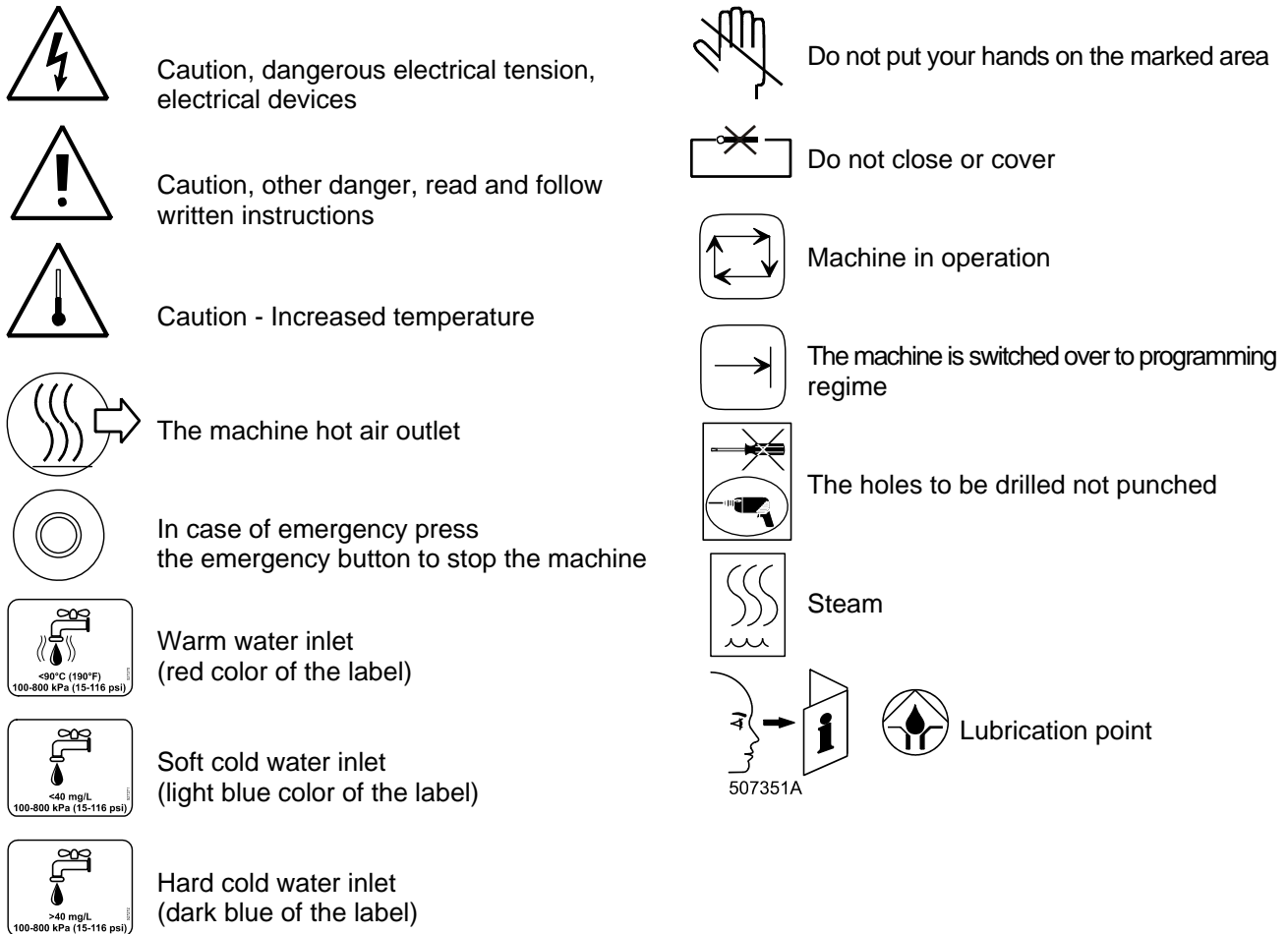


Fig.3.A. Symbols on the machine

HANGING CONTROL

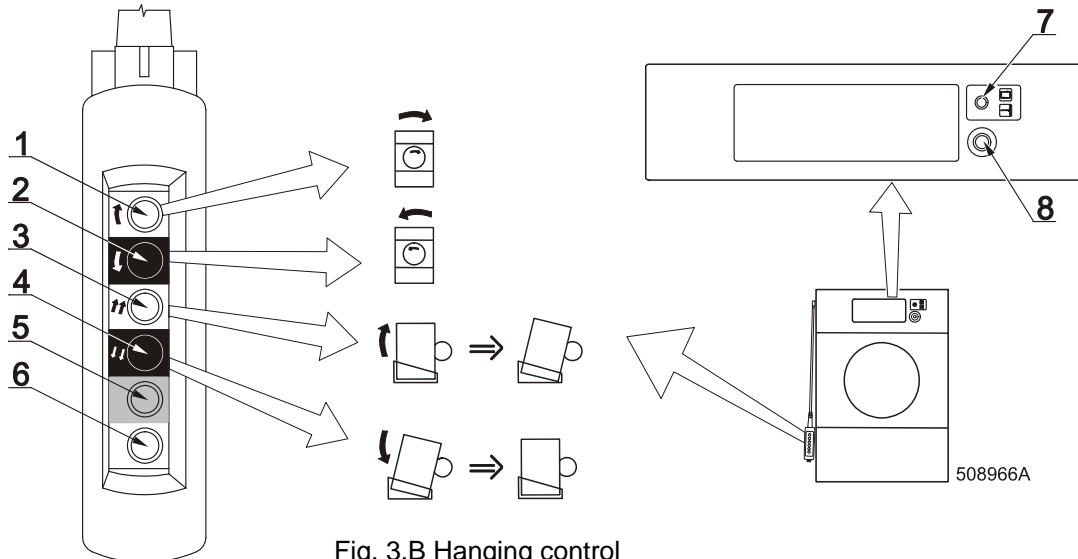
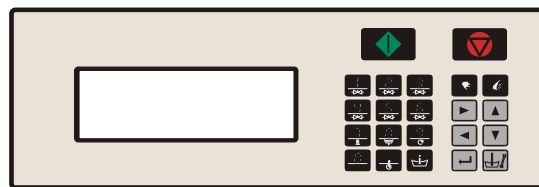


Fig. 3.B Hanging control

1. Button for drum rotating, direction of rotating is clockwise from the frontal view.
2. Button for drum rotating, direction of rotating is counter clockwise from the frontal view.
3. Button for tilting, direction of tilting is forward to unload.
4. Button for tilting, direction of tilting is backward to basic position.
5. Extra button for customer's own function.
6. Button for permission to drum rotating - two-hand control.
7. Key switch.
8. Button CENTRALSTOP.

GRAPHITRONIC MICROPROCESSOR



516530



START (advancing program)



STOP (interrupting program)



YES SELECTION



NO SELECTION



INCREASING SEQUENCE TIME



DECREASING SEQUENCE TIME



INFO (overview available wash programs and wash sequence functions)



SERVIS (shows actual water temperature and level, number of fulfilled cycles and actual states)



ACTIVATES THE TIME DELAY FUNCTION (delay time will be started by pressing start)



OPENING THE INLET VALVES



ACTIVATE HEATING



OPEN DRAIN VALVE



SPEED ADJUST



ENTER - SELECTION OR CONFIRMATION

507352C

4. OPERATION INSTRUCTION

4.1. BEFORE WASHING

Sort the linen according to temperature and instructions determined by fabric manufacturer. Check if there aren't any strange objects between the linen like nails, screws, needles, etc. to prevent the washer-extractor or linen damage. Turn sleeves of shirts, blouses, etc. inside out. To get a better washing result mix the bigger and smaller pieces of linen and put them into the washer separately.

4.2. OPENING THE DOOR

MACHINE 22 kg / 50 lb

Pull the handle towards you.

MACHINE 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

Turn the handle down.

⚠ WARNING!
WHEN HANDLING THE MACHINE TILTING BY THE TILTING CONTROL, ALWAYS STAND ON THE SIDE OF THE MACHINE. DO NOT STAND IN FRONT OR BEHIND THE MOVING MACHINE!

⚠ WARNING!
AVOID ACCESS OF ANY PERSON IN THE FRONT OR BEHIND THE MACHINE DURING ITS TILTING!

4.3. LOADING THE MACHINE WITH LINEN

Put the linen in the drum depending on the maximum capacity of the washer. Do not overload the washer extractor. Overloading the machine can lead to a bad wash result. Half washing loads can obstruct a proper function.

4.4. CLOSING THE DOOR

⚠ WARNING!
NEVER PUT FINGERS BETWEEN DOOR SEALING AND DRUM, AVOID POSSIBLE INJURY!

MACHINE 22 kg / 50 lb

Pull the handle towards the machine.

MACHINE 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

Turn the handle up.

Before start up, make sure the door is properly latched.

4.5. PROGRAM SELECTION

Choose one of the available wash programs, best corresponding to the quality of linen and allowed wash temperature in the wash load. Selection of the program determines temperature and time for washing and rinsing.

Note: To change factory settings and/ or washing programs and for other settings options - see Programming manual.

4.6. WASH PROGRAMS OVERVIEW

| | | | |
|------------------|----------------------|------|---------------------|
| Wash program 1: | Hot wash | 90°C | |
| Wash program 2: | Warm wash | 60°C | |
| Wash program 3: | Coloured wash | 40°C | |
| Wash program 4: | Bright coloured wash | 30°C | |
| Wash program 5: | Woollens | 15°C | |
| Wash program 6: | Hot wash | 90°C | ECONOMY level |
| Wash program 7: | Warm wash | 60°C | ECONOMY level |
| Wash program 8: | Coloured wash | 40°C | ECONOMY level |
| Wash program 9: | Bright coloured wash | 30°C | ECONOMY level |
| Wash program 10: | Hot wash | 90°C | SUPER ECONOMY level |
| Wash program 11: | Warm wash | 60°C | SUPER ECONOMY level |
| Wash program 12: | Coloured wash | 40°C | SUPER ECONOMY level |
| Wash program 13: | Bright coloured wash | 30°C | SUPER ECONOMY level |
| Wash program 14: | Extraction | | low speed |
| Wash program 15: | Extraction | | high speed |

4.7. ADD DETERGENTS

Fill the soap dispenser at the front or side of the washer extractor depending of the chosen program.



- ◆ Dispenser A: 1 st Wash
- ◆ Dispenser B: 2 nd Wash
- ◆ Dispenser D: Last Rinse

Add the detergents before the start of the wash cycle.

❑ For washing machines connected to liquid soap supply system.

Check if the liquid soap supply system is in operation and if there is sufficient quantity of liquid soap.

❑ Standard wash programs versus custom made wash programs.

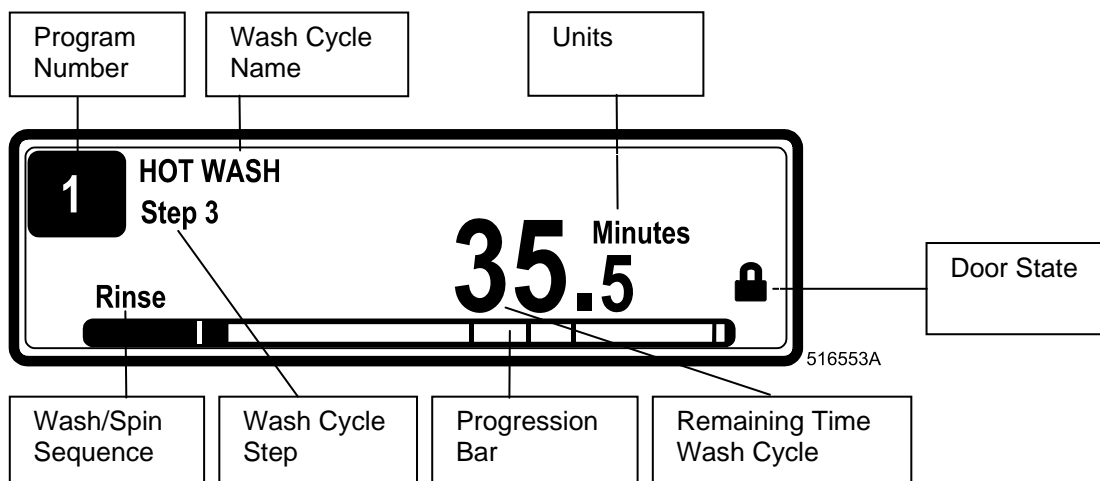
This explanation is only valid for standard wash programs. For custom made programs, it is possible that other dispensers have been selected. (See „Programming manual“).

❑ **Remark:** It is advisable to use only detergents with „reduced foaming“ which can easily be found in retail shops. The dosage of soap to use is generally mentioned on the packing. An overdose of detergent can lead to poor wash results and „suds“ overflow which can damage the machine. Take care that the lid of the soap dispenser is closed when the machine starts.

4.8. START THE WASHER

GRAPHITRONIC MICROPROCESSOR

After selecting the desired wash program number, by pressing the **START** button the wash cycle will be started. If there is no washing program available for the selected program number, **INVALID** will be displayed.



⚠ WARNING!

**IF "CLOSE DOOR" IS DISPLAYED, IT IS NOT POSSIBLE TO START WASHING CYCLE.
CHECK WHETHER:**

- THE MACHINE IS IN BASIC POSITION
- THE DRUM DOOR IS CLOSED

4.9. END OF WASH CYCLE

⚠ WHEN THE POWER SUPPLY HAS BEEN CUT, THE DOOR WILL BE AUTOMATICALLY BLOCKED AGAINST OPENING. AFTER COOLING DOWN THE WASHING BATH, THE DOOR CAN BE OPENED ACCORDING TO THE MACHINE MAINTENANCE INSTRUCTIONS.

At the end of the wash cycle, when the remaining program time reaches „0“, **PROGRAM END** is displayed. When **UNLOAD** appears on the display, open the door by the door handle and take out the garments of the washer/extractor.

TILTING THE MACHINE FORWARDS TO A POSITION SUITABLE FOR UNLOADING THE LINEN

You can tilt the machine forward to any position, extreme position for tilting forwards is 15° from the basic position. If it is sufficient for you, it is not necessary to tilt the machine up to extreme position. On the controller press and hold the button for tilting the machine (fig.3.B., pos.3). After cca 10s the machine starts tilting. Tilting driven by the electric motor can respond without a time delay. Tilting can be interrupted if you release the pressed button (fig.3.B., pos.3). When the extreme position is reached, tilting is stopped.

Tilting is possible only with open drum door.

UNLOADING THE LINEN

⚠ WARNING!

DURING UNLOADING WHILE THE DRUM IS ROTATING, NOBODY MUST STAND IN FRONT OF THE MACHINE. THE LINEN COMES OUT OF THE MACHINE BY ITSELF. DO NOT PULL THE LINEN OUT WHILE THE DRUM IS ROTATING.

To make the linen unloading easier use drum rotation function. To make drum rotation in tilted position press and hold the button of drum rotating in required direction (fig.3.B., pos.1, or 2 and the green button (6) on the controller at the same time. It will make unloading of the linen easier.

It is possible to unload the linen into a few steps, it means tilt the machine to certain position and unload some linen using the function of the drum rotating. Then tilt the machine more and repeat the process again.

TILTING THE MACHINE TO THE BASIC POSITION

After unloading the linen, tilt the machine back to basic position. Press and hold the button of tilting (fig.3.B., pos.4). If you release the pressed button (fig.3.B., pos.4) you will interrupt the machine tilting.

When the power supply is interrupted during tilting, the machine remains secured in its actual position as well as after the power supply restart.

4.10. HOW TO OPEN DOOR WHEN FAILURE OCCURS

See Installation and maintenance manual.

5. FIRST SERVICE AT TECHNICAL PROBLEM

| N° | Failure message | Failure | Action | Fault occurrence |
|-----|--------------------|---|---|-----------------------------------|
| E1 | No Drain Co | Drain failure Cooldown | Full Stop + tumble | Draining sequence Cooldown |
| E2 | No Drain | Drain failure | Full Stop + tumble | Draining sequence |
| E3 | Tilt Fault | Out of balance : Before spin | Full stop + tumble | Start spin |
| E4 | Imbalance | Out of balance : Normal spin | Skip + continue | After 10 x tilt |
| E5 | Tilt High Sp | Out of balance : high spin | Full stop + safety time | >500 or 750 RPM |
| E6 | Door Coil | Door switch failure | Full stop + safety time | Whole cycle |
| E7 | Door Switch | Door solenoid switch failure | Full stop + safety time | Whole cycle |
| E8 | Door Start | Door lock check at start failure | Don't start | At start up |
| E9 | Door Unload | Door lock switch closed failure | Don't start | End cycle |
| E10 | Bimetal/Spring | Bimetal/Spring | Continue | 2 min 30 sec after start cycle |
| E11 | No Fill | Fill failure | Full stop + request for Continue | While filling |
| E12 | Overfill | Overfill failure | Full stop + tumble | While filling |
| E13 | No Heating | Heating failure | Full stop + tumble | While heating |
| E14 | Heat Time | Heating time failure | Full stop + request for Continue | While heating |
| E15 | Too Hot | Too Hot | Full stop + tumble | While heating |
| E21 | Overflow | Overflow failure | Full stop + tumble | Wash step |
| E22 | Flush fault | Flush failure | Full stop + tumble | Flush step |
| E24 | Level Sens | Defective level sensor | Continue + Don't start | Before start up |
| E25 | Temp Sensor | Defective temperature sensor | Continue + Don't start | Before start up |
| E26 | Mitsub code | Undefined frequency inverter error code | Full stop + tumble | Whole cycle |
| E27 | Comm fault | Communication fault inverter | Full stop + safety time | Whole cycle |
| E28 | THT time / E.OL | THT Time out / E.OL | Full stop + safety time | At spin sequence |
| E29 | OV3 time / E.OP | OV3 Time out / E.OP | Full stop + safety time | At spin sequence |
| E31 | Load Parr | Initialization fault inverter | Don't start | At initialization |
| E32 | Verify Parr | Verification fault inverter | Don't start | At loading parameters |
| E33 | Stall prev | Stall prevention function active | Continue | At spin sequence |
| E35 | Wrong Softw | Wrong software version | Don't start | New software version |
| E37 | No Drain Sp | Drain failure at the Spray Sequence | Full stop + tumble | Spray Sequence |
| E38 | No Recycle | The Tank with recycle water is empty | Warning at the End. Front soap dispenser Mach. only | Wash step |
| E39 | Out of Soap | The Soap Supplies are running Out of Soap | For Info only | Wash step |
| E40 | No Fill Rec | Fill failure due to an empty water recycle Tank | Full stop + Request for Continue Top soap dispenser Mach. only | Wash step |
| E41 | Service Due | Service Due Warning | For Info only Open door = reset | End cycle |
| E42 | Connection | No Network Connection | For Info only | Data Transfer Networking |

| | | | | |
|----------------|-----------------------------|---|-----------------------------------|--|
| E43 | Voltage Par | Wrong Voltage Range Selection | Make correct selection | Configuration menu |
| E44 | Model type | Wrong Inverter Model Type | Make correct selection | Configuration menu |
| E45 | No Speed Sensor Signal | No Speed pulses when drum turns. | Continue + Warning | At spin sequence (MB70-90-110-140-180 only) |
| E46 | Brake Closed | Brake Stays Closed | Full stop + safety time | At spin sequence (MB70-90-110-140-180 only) |
| E47 | Brake Wear Out | Friction blocks brake are wear-out | Full stop + safety time | Any time (MB70-90-110-140-180 only) |
| E48 | Brake Open | Brake Stays Open | Continue + Warning | At spin sequence (MB70-90-110-140-180 only) |
| E49 | UnBalance Switch At Wash | Air suspension without compressed air | Full stop + safety time | Wash action (MB70-90-110-140-180 only) |
| E50 | No Second Acceleration Ramp | Missing wire bridge inverter / wrong inverter parameters | Continue | At spin sequence (MB70-90-110-140-180 only) |
| E51 | No Third Acceleration Ramp | Missing wire bridge inverter / wrong inverter parameters | Continue | At spin sequence (MB70-90-110-140-180 only) |
| E52 | Board Memory | PCB-EEPROM CRC failure | Don't start | At Power Up |
| E53 | Board Data | PCB-EEPROM Data out of range failure | Don't Start | At Power Up |
| E57 | Lock System | Door Lock Switch stays closed when the outer door is open. | Don't Start | At locking sequence (MB70-90-110-140-180 only) |
| E58 | No Free Run | Deceleration end of spin while brake is closed. | Full stop + safety time | At spin sequence (MB70-90-110-140-180 only) |
| E59 | Run Free Run | Run Status inverter =1 while brake is closed. | Full stop + safety time | At spin sequence (MB70-90-110-140-180 only) |
| E60 | No reset Drive | No detection motor speed signal at wash | Full stop + safety time | Wash Sequence |
| E61 | Continue spin | Motor doesn't stop spinning anymore | Full stop + safety time | Whole cycle |
| E62 | Extended speed | Motor spins too fast | Full stop + safety time | Whole cycle |
| E63-E67 | Motor Drive | Reset Motor Drive for E60, E61 & E62 | Reset Motor Drive | Wash Sequence |
| E68 | No Sign Spin | No detection motor speed signal at spin | Full stop + tumble | Spin Sequence |
| E69 | RS Unbalance | Unbalance input should not be high on R machines | Don't Start Full stop + tumble | Start Spin sequence Whole cycle |
| E70 | RS7 Select | RS7 selected in case of RS10 | Don't Start | Start Cycle |
| E71 | RS10 Select | RS10 selected in case of RS7 | Don't Start | Start Cycle |
| E72 | KEB ST LOW | No wire bridge terminals 16-20 | Don't Start | Start cycle |
| E73 | KEB ST HIGH | No KEB parameters loaded in inverter | Full stop + safety time | Start cycle |
| E74 | CFIStuck | Inverter not switched off at end of cycle. | For Info only | End of cycle |
| E75 | KEB code | Undefined frequency inverter error code | Full stop + tumble | Whole cycle |
| E78 | Lock Active | At standby door lock is locked nevertheless door is open. | Don't Start | At Standby |
| E79 | Lock Start | After pressing Start door lock is locked nevertheless door is open. | Don't Start | At Start Cycle |

| | | | | |
|--------------------|------------------|--|--|---|
| E80 | Time Out Input16 | On Hold Signal Failure Soap Dispensing System | Full stop + tumble. | Whole cycle |
| E81 | No Reheat | Heating Failure | Full stop + tumble. | Wash Step (MB only) |
| E82 | No Refill | Refill failure | Full stop + request for Continue | Wash Step (MB only) |
| E83 | Cycle Fail | No successful wash cycle termination | Info that the wash cycle has to be repeated. | Abnormal Cycle Termination (MB only) |
| E84 | No Store PC | Communication failure with PC | For Info only. | End cycle (MB only) |
| E85 | RTC Low Batt | Real Time Clock, No Battery or battery low power | For Info only. | End cycle (MB only) |
| E86 | No RTC Comm | Real Time Clock is not available | For Info only. | End cycle (MB only) |
| E100 | Weigh No Comm | Communication fault weighing system | Full Stop Tumble | Before Start (MB16-MB180) Whole Cycle (MB16-MB66) (MB & FS23-55 only) |
| E101 | Weigh Low | Weight machine is too low | Don't Start | Before Start (MB & FS23-55 only) |
| E102 | Weigh High | Weight machine is too high | Don't Start | Before Start (MB & FS23-55 only) |
| E103 | Weigh Balance | Weight is not balanced over 4 load cell's. | Don't Start | Before Start (MB & FS23-55 only) |
| E104 | Weigh Overload | Weight on individual load cell exceeds max. | Full Stop Tumble | Whole Cycle (MB16-66 & FS23-55 only) |
| E105 | Weigh Airbags | No functional air pressure system | Don't Start | Before Start (MB70-180 only) |
| E300 - E353 | Mits Err | Specific Mitsubishi Inverter Alarm | Full stop + safety time | Whole cycle |
| E400 - E441 | KEB Err | Specific KEB Inverter Alarm | Full stop + safety time | Whole cycle |
| E500 - E520 | Memory Err | Memory Error | Full stop + safety time | Any time |
| E550 | DAQ Version Err | Wrong DAQ Memory version | For Info only | Installation new softw |
| E551 | DAQ Write Err | Problem writing DAQ Memory | For Info only | Traceability function, whole cycle |
| E552 | DAQ Full Err | DAQ Traceability Memory is Full | For Info only | Traceability function, whole cycle |
| E553 | Store DAQ>PC | DAQ Traceability Memory is almost Full | For Info only | Traceability function, whole cycle |
| E600 - E628 | Softw Err | Software Error | Full stop + safety time | Any time |

INSTALLATION AND MAINTENANCE MANUAL

1. CONTENTS

| | |
|---|-----------|
| 1. CONTENTS..... | 1 |
| 2. IMPORTANT SAFETY INSTRUCTIONS | 2 |
| 2.1. SYMBOLS ON THE MACHINE | 4 |
| 2.2. IMPORTANT INFORMATION BEFORE INSTALLATION | 4 |
| 3. TECHNICAL SPECIFICATIONS..... | 5 |
| 3.1. WASHERS 22-33-40-55 kg / 50-80-100-125 lb..... | 5 |
| 3.2. WASHERS 80-100-120 kg / 180-220-265 lb..... | 7 |
| 3.3. DIMENSIONS AND COMPONENTS OF THE WASHERS 22-33-40-55 kg / 50-80-100-125 lb | 9 |
| 3.4. DIMENSIONS AND COMPONENTS OF THE WASHERS 80 kg / 180 lb | 11 |
| 3.5. DIMENSIONS AND COMPONENTS OF THE WASHERS 100-120 kg / 220-265lb..... | 12 |
| 4. INSTALLATION | 14 |
| 4.1. HANDLING, TRANSPORT AND STORAGE..... | 14 |
| 4.2. SPACE REQUIREMENTS..... | 15 |
| 4.3. MACHINE POSITIONING..... | 15 |
| 4.4. CONNECTIONS | 18 |
| 4.5. PUTTING THE MACHINE INTO SERVICE..... | 25 |
| 5. MAINTENANCE | 27 |
| 5.1. INTRODUCTION | 27 |
| 5.2. DAILY..... | 27 |
| 5.3. MONTHLY OR AFTER 200 WORKING HOURS | 27 |
| 5.4. EVERY 3 MONTHS OR AFTER 500 WORKING HOURS | 27 |
| 5.5. EVERY 6 MONTHS OR AFTER 1000 WORKING HOURS | 28 |
| 5.6. SAFETY VIBRATION SWITCH | 28 |
| 5.7. TIGHTENING MOMENTS | 31 |
| 5.8. LUBRICATION..... | 33 |
| 5.9. DRIVING MECHANISM..... | 34 |
| 5.10. WATER AND STEAM FILTERS..... | 35 |
| 5.11. THRUST OF DOOR SEAL | 35 |
| 5.12. SPRING UNIT..... | 37 |
| 5.13. REPLACEMENT WASHER FUSES..... | 39 |
| 5.14. EARTH LEAKAGE TRIPS | 39 |
| 6. TROUBLE SHOOTING AIDS..... | 40 |
| 6.1. DOOR BLOCKING..... | 40 |
| 6.2. ERROR INDICATION SHOWN ON DISPLAY..... | 41 |
| 7. LIST OF RECOMMENDED SPARE PARTS..... | 42 |
| 8. PUTTING THE MACHINE OUT OF SERVICE..... | 43 |
| 8.1. DISCONNECTING THE MACHINE..... | 43 |
| 8.2. MACHINE DISPOSAL | 43 |

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. Without this version, the instructions are incomplete.
- ◆ Before installation, operation and maintenance of the machine read carefully the complete instructions, i.e. this „Installation, maintenance and user's manual“, „Programming manual“ and „Spare parts manual“. The Programming manual and Spare parts manual are not delivered with a machine by default. You shall ask the supplier / manufacturer to obtain Programming manual and Spare parts manual.
- ◆ Follow the instruction written in manuals and keep the manuals in a proper place by the machine for later use.
- ◆ 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 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 appliance may not be suitable for connecting to an IT supply system. Contact your commercial distributor for assistance.
- ◆ All appliances 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).
- ◆ 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 than qualified service technicians or if parts other than 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 - 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 dry load of 22, 33, 40, 55, 80, 100, 120 kg (50, 80, 100, 125, 180, 220 and 265 lbs). Verify the machine model according to your order and the data plate located on the machine rear and find corresponding information in the manual.
- The machines are controlled by electronic controller. 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. 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 at order.
- Electrical setup of the machine is indicated on data plate, (see serial plate, fig.3.3., pos.11, fig.3.4., 3.5., pos.15).

3. TECHNICAL SPECIFICATIONS

3.1. WASHERS 22-33-40-55 kg / 50-80-100-125 lb

| DRY LOAD CAPACITY (1/10) kg / lb | | 22 / 50 | 33 / 80 | 40 / 100 | 55 / 125 |
|-------------------------------------|-----------|---|--------------|--------------|--------------|
| MACHINE DIMENSIONS ⁽¹⁾ | | | | | |
| Width | mm / inch | 900 / 35.43 | 1195 / 47.04 | 1195 / 47.04 | 1195 / 47.04 |
| Depth | mm / inch | 1150 / 45.27 | 1330 / 52.4 | 1430 / 56.3 | 1610 / 63.4 |
| Height | mm / inch | 1625 / 63.97 | 1905 / 75 | 1905 / 75 | 1905 / 75 |
| PACKING DIMENSIONS | | | | | |
| Width | mm / inch | 1030 / 40.55 | 1430 / 56.3 | 1430 / 56.3 | 1430 / 56.3 |
| Depth | mm / inch | 1280 / 50.39 | 1475 / 58.1 | 1570 / 61.8 | 1750 / 68.9 |
| Height | mm / inch | 1920 / 75.6 | 2105 / 82.9 | 2105 / 82.9 | 2105 / 82.9 |
| Transportation volume | m³ / ft³ | 2.5 / 89 | 4.4 / 156 | 4.7 / 166 | 5.3 / 187 |
| DRUM DIMENSIONS | | | | | |
| Diameter | mm / inch | 750 / 29.5 | 914 / 36 | 914 / 36 | 914 / 36 |
| Depth | mm / inch | 498 / 19.7 | 510 / 20 | 610 / 24 | 790 / 31.1 |
| Drum volume | dm³ / gal | 220 / 58 | 335 / 88 | 400 / 106 | 518 / 137 |
| Door opening | mm / inch | 410 / 16.10 | 540 / 21.3 | 540 / 21.3 | 540 / 21.3 |
| WEIGHT | | | | | |
| Net | kg / lb | 670 / 1477 | 1230 / 2712 | 1560 / 3439 | 1630 / 3594 |
| Gross | kg / lb | 750 / 1654 | 1370 / 3020 | 1700 / 3748 | 1770 / 3902 |
| ELECTRICAL DATA | | | | | |
| | | 3x380-415V 50/60Hz 3x440-480V 50/60Hz 3x200-240V 50/60Hz 1x220-240V 50/60Hz - only 22kg / 50lb and no electrical heating | | | |
| Power supply - deviations | | -6% to +10% of the voltage supply ± 1 Hz | | | |
| Motor output | kW | 3 | 4 | 7.5 | 7.5 |
| INPUT POWER | | | | | |
| Electric heating 18kW | kW | 21.1 | - | - | - |
| Electric heating 24 kW | kW | - | 28.1 | - | - |
| Electric heating 36 kW | kW | - | - | 43.6 | - |
| El. heating 54 kW (380- 480V) | kW | - | - | - | 61.6 |
| Steam or without heating | kW | 3.1 | 4.1 | 7.6 | 7.6 |
| SUPPLY PROTECTION DEVICE | | Use „slow“ type Protection devices (circuit breakers: curve D) | | | |
| Residual current device (RCD) | mA | 100, class B | | | |
| Steam or without electrical heating | | | | | |
| 220 - 240V 1/3AC | A | 20 | - | - | - |
| 380 - 400V + N 3AC | A | 20 | - | - | - |
| 200 - 240V 3AC | A | 20 | 30 | 40 | 40 |
| 380 - 480V 3AC | A | 16 (15) | 16 (15) | 20 | 20 |
| El. heating 18kW (200- 240V) | A | 63 | - | - | - |
| El. heating 18kW (380- 415V) | A | 32 | - | - | - |
| El. heating 18kW (440- 480V) | A | 25 | - | - | - |
| El. heating 24kW (200- 240V) | A | - | 80 | - | - |
| El. heating 24kW (380- 415V) | A | - | 50 | - | - |
| El. heating 24kW (440- 480V) | A | - | 32 | - | - |
| El. heating 36kW (200- 240V) | A | - | - | 120 | - |
| El. heating 36kW (380- 480V) | A | - | - | 80 | - |
| El. heating 54kW (220-240V) | A | - | - | - | 160 |
| El. heating 54kW (380- 480V) | A | - | - | - | 100 |
| WASHING FUNCTIONS | | | | | |
| Washing | RPM | 42 | 38 | | |
| High extracting | RPM | 915 | 830 | | |
| G-factor | | 350 | | | |

Tab.3.1.

| DRY LOAD CAPACITY (1/10) kg / lb | | 22 / 50 | 33 / 80 | 40 / 100 | 55 / 125 |
|---|--|---------------------------------|-----------------------------|---------------|---------------|
| CONNECTION DATA | | | | | |
| Water inlet connection inch | | BSP 3/4" | BSP 1" | | |
| Water pressure range MPa / bar / PSI | | 0.1- 0.8 / 1 - 8 / 14.5 - 116 | | | |
| Recommended water pressure MPa / bar / PSI | | 0.3 - 0.5 / 3 - 5 / 43 - 73 | | | |
| Maximal water temperature °C / °F | | 90 / 194 | | | |
| Drain diameter mm / inch | | 1 x Ø76 / 3 | 2 x Ø76 / 3 | | |
| Drain flow rate dm³.min ⁻¹ | | 150 | 300 | | |
| gal.min ⁻¹ | | 40 | 80 | | |
| Steam connection inch | | G 1/2" | G 3/4" | | |
| Steam pressure MPa / bar / PSI | | 0.3 - 0.8 / 3 - 8 / 44 - 116 | | | |
| Press air connection (2) inch | | - | G1/4" | | |
| Air pressure MPa / bar / PSI | | - | 0.3 - 0.5 / 3 - 5 / 43 - 73 | | |
| Powder dispenser cups | | 4 | 5 | 5 | 5 |
| Liquid soap signals | | 8 | 8 | 8 | 8 |
| External liquid soap connections | | 6 | 6 | 6 | 6 |
| CONSUMPTION (3) | | Light soiled 60°C wash | | | |
| Without electrical heating kWh | | 0.7 | 1.1 | 1.7 | 2.1 |
| With electrical heating kWh | | 3.8 | 5.3 | 8 | 12 |
| Steam | | | | | |
| Average kg.hour ⁻¹ / lb.hour ⁻¹ | | 15 / 33 | 33 / 72 | 40 / 88 | 50 / 110 |
| Maximum kg.s ⁻¹ / lb.s ⁻¹ | | 0.028 / 0.062 | 0.046 / 0.101 | 0.055 / 0.123 | 0.076 / 0.168 |
| GENERAL DATA | | | | | |
| Ambient temperature °C / °F | | 5 to 35 / 41 to 95 | | | |
| Relative humidity | | 30% to 90% without condensation | | | |
| Height above sea level m / ft | | up to 1000 / 3280 | | | |
| Storage temperature °C / °F | | 1 to 55 / 34 to 131 | | | |
| Max. static load on floor kN | | 8.86 | 14.41 | 18.16 | 19.57 |
| Max. dynamic load on floor kN | | 7.57 ± 1.62 | 12.7 ± 2.74 | 16.08 ± 2.94 | 17.06 ± 3.13 |
| Frequency of dynamic load Hz | | 15 | 14 | | |
| SOUND LEVELS (4) | | | | | |
| L _{Aeq} extraction seq. db | | 70 | 75 | 77 | |

Tab.3.1. continuation

- (1) maximum dimensions including protruding parts
(2) washers with air operated water valves
(3) depend on related wash parameters
(4) ISO 3744

3.2. WASHERS 80-100-120 kg / 180-220-265 lb

| DRY LOAD CAPACITY (1/10) kg / lb | | 80 / 180 | 100 / 220 | 120 / 265 |
|-------------------------------------|---|---|--------------|--------------|
| MACHINE DIMENSIONS ⁽¹⁾ | | | | |
| Width | mm / inch | 1530 / 60.23 | 1800 / 70.86 | 1855 / 73.03 |
| Depth | mm / inch | 1800 / 70.86 | 2010 / 79.13 | 2025 / 79.72 |
| Height | mm / inch | 2000 / 78.73 | 1950 / 76.77 | 2080 / 81.88 |
| PACKING DIMENSIONS | | | | |
| Width | mm / inch | 1690 / 66.53 | 1865 / 73.42 | 2000 / 78.73 |
| Depth | mm / inch | 1950 / 76.77 | 2125 / 83.66 | 2170 / 85.43 |
| Height | mm / inch | 2200 / 86.61 | 2345 / 92.33 | 2340 / 92.12 |
| Transportation volume | m ³ / ft ³ | 7.25 / 256 | 9.29 / 328 | 10.16 / 359 |
| DRUM DIMENSIONS | | | | |
| Diameter | mm / inch | 1110 / 43.70 | 1200 / 47.24 | 1300 / 39.48 |
| Depth | mm / inch | 838 / 33 | 860 / 33.85 | 870 / 34.25 |
| Drum volume | dm ³ / gal | 807 / 213 | 1003 / 265 | 1180 / 312 |
| Door opening | mm / inch | 530 / 20.86 | | |
| WEIGHT | | | | |
| Net | kg / lb | 2640 / 5820 | 3200 / 7055 | 3280 / 7232 |
| Gross | kg / lb | 2830 / 6239 | 3400 / 7496 | 3490 / 7695 |
| ELECTRICAL DATA | | | | |
| Power supply - deviations | | 3x208-240V 50/60Hz 3x380-480V 50/60Hz -6% to +10% of the voltage supply ±1 Hz | | |
| Motor output | kW | 11 | 15 | 18.5 |
| INPUT POWER | | | | |
| Electric heating 67.5kW | kW | 75 | - | - |
| Steam or without heating | kW | 11.25 | 15,25 | 18,75 |
| SUPPLY PROTECTION DEVICE | | Use „slow“ type Protection devices (circuit breakers: curve D) | | |
| Residual current device (RCD) | mA | 100, class B | | |
| Steam or without electrical heating | | | | |
| 3x208-240V 50/60Hz | A | 63 | 75 | 100 |
| 3x380-480V 50/60Hz | A | 32 | 50 | 63 |
| El. heating 67.5kW (3x208-240V) | A | 250 | - | - |
| El. heating 67.5kW (3x380-480V) | A | 125 | - | - |
| WASHING FUNCTIONS | | | | |
| Washing | RPM | 36 | 35 | 34 |
| High extracting | RPM | 750 | 725 | 700 |
| G-factor | | 350 | | |
| CONNECTION DATA | | | | |
| Water inlet connection | inch | 3 x BSP 1 ½" | | |
| Water pressure range | MPa / bar / PSI | 0.1- 0.8 / 1 - 8 / 14.5 - 116 | | |
| Recommended water pressure | MPa / bar / PSI | 0.3 - 0.5 / 3 - 5 / 43 - 73 | | |
| Maximal water temperature | °C / °F | 90 / 194 | | |
| Drain diameter | mm / inch | 2 x Ø103 / 4 | | |
| Drain flow rate | dm ³ .min ⁻¹ gal.min ⁻¹ | 540 142 | | |
| Steam connection | inch | G 1" | | |
| Steam pressure | MPa / bar / PSI | 0.3 - 0.8 / 3 - 8 / 44 - 116 | | |
| Press air connection (2) | mm / inch | Ø 8 / 0.3 | | |
| Not lubricated air pressure | MPa / bar / PSI | 0,6 / 6 / 87 | | |
| Powder dispenser cups | | 5 | | |
| Liquid soap signals | | 8 pumps | | |
| External liquid soap connections | | 6 tubes | 1 x ½" | |

Tab.3.2.

| DRY LOAD CAPACITY (1/10) kg / lb | | 80 / 180 | 100 / 220 | 120 / 265 |
|---|---|---------------------------------|-----------|-----------|
| CONSUMPTION (3) | | Light soiled 60°C wash | | |
| Without electrical heating | kWh | 1.8 | 2 | 2,1 |
| With electrical heating | kWh | 17.5 | - | - |
| Steam | | | | |
| Average | kg.hour ⁻¹ / lb.hour ⁻¹ | 72 / 159 | | |
| Maximum | kg.s ⁻¹ / lb.s ⁻¹ | 0.11 / 0.24 | - | - |
| GENERAL DATA | | | | |
| Ambient temperature | °C / °F | 5 to 35 / 41 to 95 | | |
| Relative humidity | | 30% to 90% without condensation | | |
| Height above sea level | m / ft | up to 1000 / 3280 | | |
| Storage temperature | °C / °F | 1 to 55 / 34 to 131 | | |
| Max. static load on floor | kN | 31,78 | - | - |
| Max. dynamic load on floor | kN | 27,47 ± 6,72 | - | - |
| Frequency of dynamic load | Hz | 12.5 | - | - |
| SOUND LEVELS (4) | | | | |
| L _{Aeq} wash / extraction seq. | db | 55 / 74 | - | - |

Tab.3.2. continuation

(1) maximum dimensions including protruding parts

(2) washers with air operated water valves

(3) depend on related wash parameters

(4) ISO 3744

3.3. DIMENSIONS AND COMPONENTS OF THE WASHERS 22-33-40-55 kg / 50-80-100-125 lb

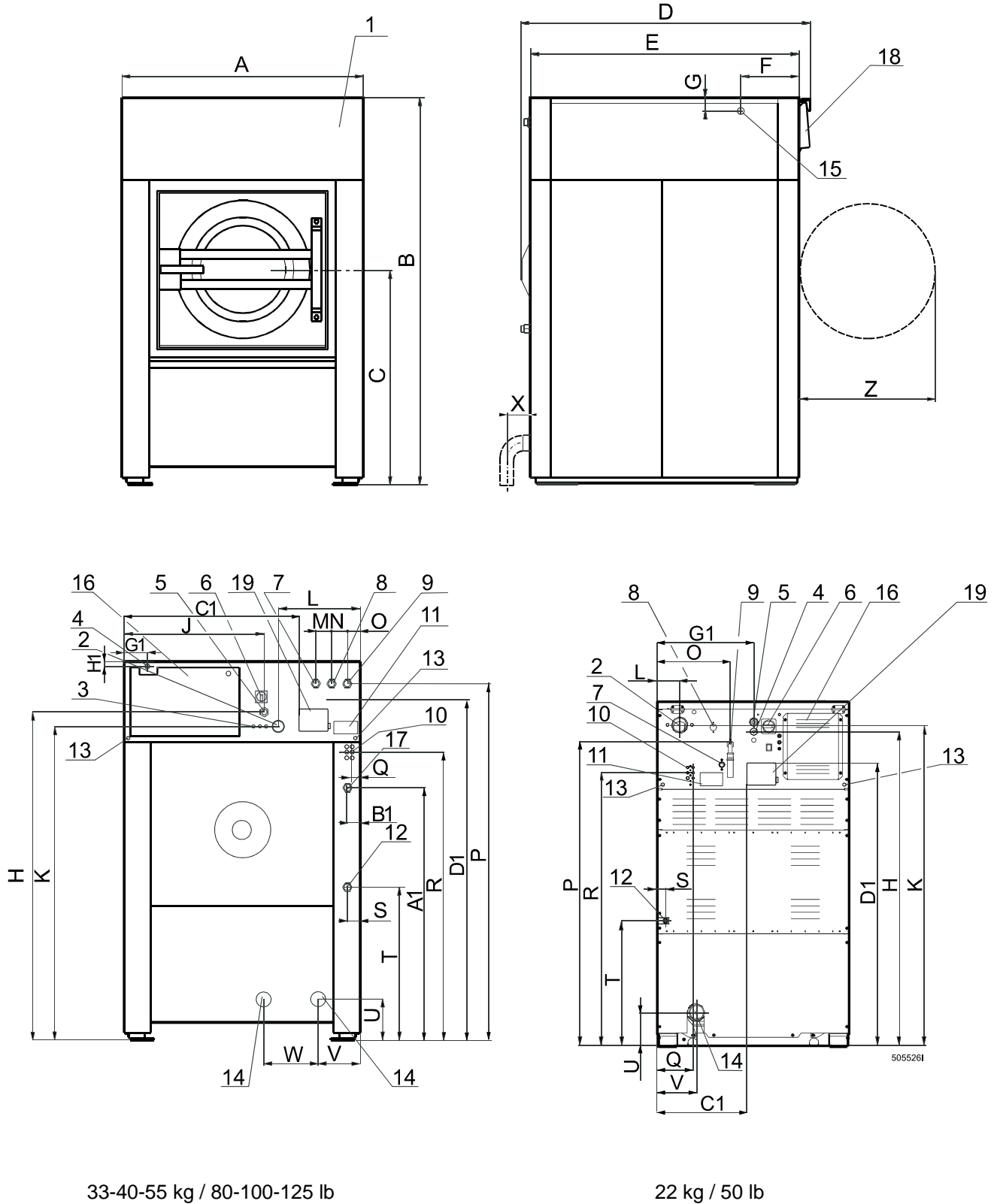


Fig.3.3.

1. Operator panel
2. Tub ventilation:
Ø 60mm / 2,4" for (33-40-55 kg / 80-100-125 lb),
Ø 76mm / 2,99" for (22kg / 50lb)
3. Lubrication points
4. Entry soap supply cable
5. Entry main power cable
6. Main switch
7. Hard cold water inlet
8. Hot water inlet
9. Soft cold water inlet
10. Hose connection soap supply
11. Data plate
12. Steam inlet
13. Equipotential bounding terminal
14. Drain outlet
15. Soap dispenser air relieve
16. Frequency inverter cover
17. Compressed air inlet
18. Soap dispenser
19. Electrical signals liquid soap

| Machine capacity | kg / lb | 22 / 50 | 33 / 80 | 40 / 100 | 55 / 125 |
|------------------|-----------|--------------|--------------|--------------|--------------|
| A | mm / inch | 900 / 35.43 | 1195 / 47.04 | 1195 / 47.04 | 1195 / 47.04 |
| A1 (1) | mm / inch | - | 1361 / 53.58 | 1361 / 53.58 | 1361 / 53.58 |
| B | mm / inch | 1620 / 63.77 | 1905 / 75 | 1905 / 75 | 1905 / 75 |
| B1 (1) | mm / inch | - | 116 / 4.56 | 116 / 4.56 | 116 / 4.56 |
| C | mm / inch | 786 / 30.94 | 1055 / 41.54 | 1055 / 41.54 | 1055 / 41.54 |
| C1 | mm / inch | 445 / 17.51 | 980 / 38.58 | 980 / 38.58 | 980 / 38.58 |
| D | mm / inch | 1150 / 45.27 | 1330 / 52.4 | 1430 / 56.3 | 1610 / 63.39 |
| D1 | mm / inch | 1330 / 52.36 | 1600 / 62.99 | 1600 / 62.99 | 1600 / 62.99 |
| E | mm / inch | 920 / 36.22 | 1222 / 48.11 | 1322 / 52.05 | 1502 / 59.13 |
| F | mm / inch | - | 300 / 11.8 | 300 / 11.8 | 300 / 11.8 |
| G | mm / inch | - | 50 / 1.97 | 50 / 1.97 | 50 / 1.97 |
| G1 | mm / inch | 450 / 17.71 | 110 / 4.33 | 110 / 4.33 | 110 / 4.33 |
| H | mm / inch | 1475 / 58.07 | 1617 / 63.66 | 1617 / 63.66 | 1617 / 63.66 |
| H1 | mm / inch | - | 25 / 0.98 | 25 / 0.98 | 25 / 0.98 |
| J | mm / inch | - | 730 / 28.74 | 730 / 28.74 | 730 / 28.74 |
| K | mm / inch | 1505 / 59.25 | 1567 / 61.69 | 1567 / 61.69 | 1567 / 61.69 |
| L | mm / inch | 105 / 4.13 | 422 / 16.61 | 422 / 16.61 | 422 / 16.61 |
| M | mm / inch | - | 80 / 3.15 | 80 / 3.15 | 80 / 3.15 |
| N | mm / inch | - | 80 / 3.15 | 80 / 3.15 | 80 / 3.15 |
| O | mm / inch | 260 / 10.23 | 70 / 2.75 | 70 / 2.75 | 70 / 2.75 |
| P | mm / inch | 1400 / 55.11 | 1782 / 70.16 | 1782 / 70.16 | 1782 / 70.16 |
| P (1) | mm / inch | - | 1672 / 65.82 | 1672 / 65.82 | 1672 / 65.82 |
| Q | mm / inch | 168 / 6.61 | 60 / 2.36 | 60 / 2.36 | 60 / 2.36 |
| R | mm / inch | 1092 / 42.99 | 1285 / 50.59 | 1285 / 50.59 | 1285 / 50.59 |
| S | mm / inch | 45 / 1.77 | 65 / 2.56 | 65 / 2.56 | 65 / 2.56 |
| T | mm / inch | 590 / 23.22 | 768 / 30.24 | 768 / 30.24 | 768 / 30.24 |
| U | mm / inch | 140 / 5.51 | 205 / 8.07 | 205 / 8.07 | 205 / 8.07 |
| V | mm / inch | 720 / 28.34 | 213 / 8.39 | 213 / 8.39 | 213 / 8.39 |
| W | mm / inch | - | 420 / 16.54 | 275 / 10.83 | 275 / 10.83 |
| X | mm / inch | - | 175 / 6.89 | 175 / 6.89 | 175 / 6.89 |
| Z | mm / inch | 520 / 20,47 | 700 / 27.56 | 700 / 27.56 | 700 / 27.56 |

Tab.3.3.

(1) washers with air operated water valves

3.4. DIMENSIONS AND COMPONENTS OF THE WASHERS 80 kg / 180 lb

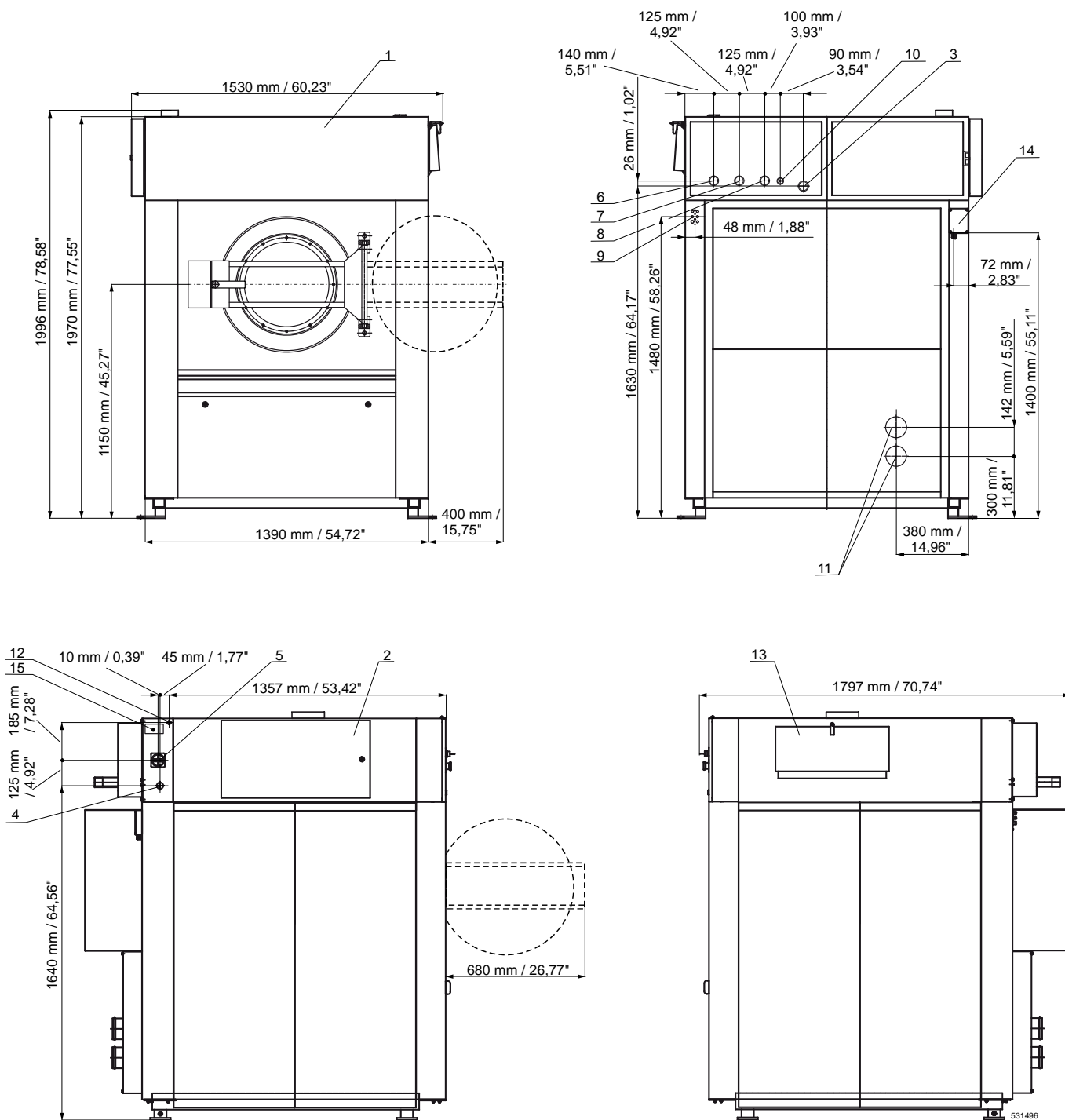


Fig.3.4.

3.5. DIMENSIONS AND COMPONENTS OF THE WASHERS 100-120 kg / 220-265lb

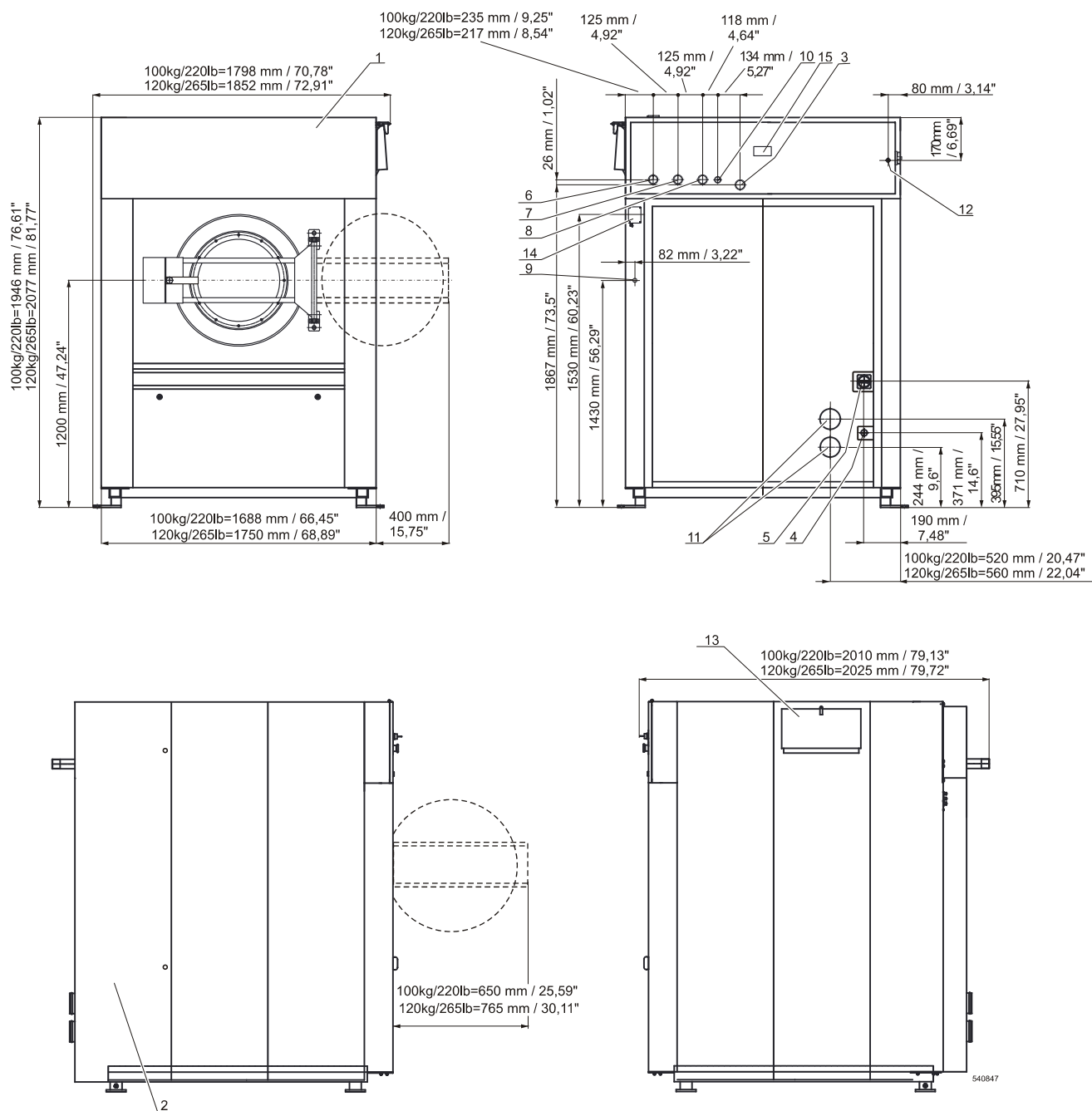


Fig.3.5.

LEGEND

1. Operator panel
2. Electric switchboard cover
3. Tub ventilation
4. Entry main power cable
5. Main switch
6. Hard cold water inlet
7. Soft cold water inlet
8. Hot water inlet
9. Hose (hoses) connection soap supply
10. Steam inlet
11. Drain outlet
12. Compressed air supply
13. Soap dispenser
14. Electrical signals liquid soap
15. Data plate

4. INSTALLATION

4.1. HANDLING, TRANSPORT AND STORAGE

TRANSPORT AND STORAGE

⚠ WARNING!
FORKS OF LIFT TRUCK MUST HAVE SUFFICIENT LENGTH (SEE FIG.4.1.).

Use a lift truck or a manual skid cart for handling with the machine in transporting package.

- 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.

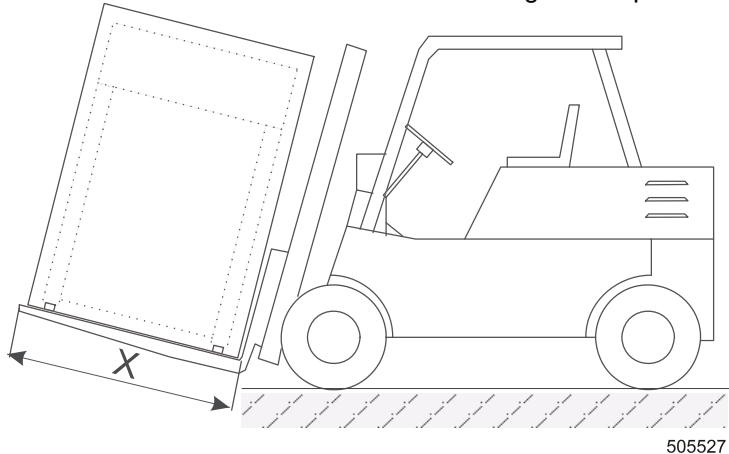


Fig.4.1. Minimum length „X“ of lift truck forks for machine model

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 machines of 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 data 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).

| 22 kg / 50 lb | 33-40-55 kg / 80-100-125 lb | 80 kg / 180 lb | 100-120 kg / 220-265 lb |
|---------------|--------------------------------|----------------|----------------------------|
| 1100 mm / 44" | 1500 mm / 59" | 1800 mm / 71" | 2000 mm / 78,73" |

Tab.4.1. Minimum length „X“ of a lift truck forks for individual machine model

4.2. SPACE REQUIREMENTS

REQUIRED MACHINE WORKING CONDITIONS:

See chapter „3. TECHNICAL SPECIFICATION“.

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.

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 SPECIFICATIONS“.

Leave at least **1 m / 39,36“** 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 / 27,55“**, for machines of 80-100-120 kg / 180-220-265 lb **0,8 m / 31,49“**. Above the machine must be minimum **0,7 m / 27,55“** of free space for the maintenance access.

The waste piping or outlet channel must be dimensioned to the discharged water quantity and the 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.

FASTENING THE WASHER

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

The machine is to be located on a leveled 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.

WARNING!

THE NUTS OF THE ANCHORING BOLTS HAVE TO BE TIGHTENED BY MEANS OF A TORQUE - LIMITING WRENCH (SEE TAB. 4.3.A). DO NOT TIGHTEN NUTS OF ANCHORING BOLTS BEFORE THE CONCRETE BASE AROUND THE BOLTS IS COMPLETELY CURED.

| | 22 kg / 50 lb 80-100-120 kg / 180-220-265 lb | 33-40-55 kg / 80-100-125 lb |
|----------------------|--|--------------------------------|
| BOLT | M10 x 160 mm | M16 x 160 mm |
| TIGHTENING MOMENT | 49 Nm / 36 lbf.ft | 210 Nm / 155 lbf.ft |

Tab.4.3.A

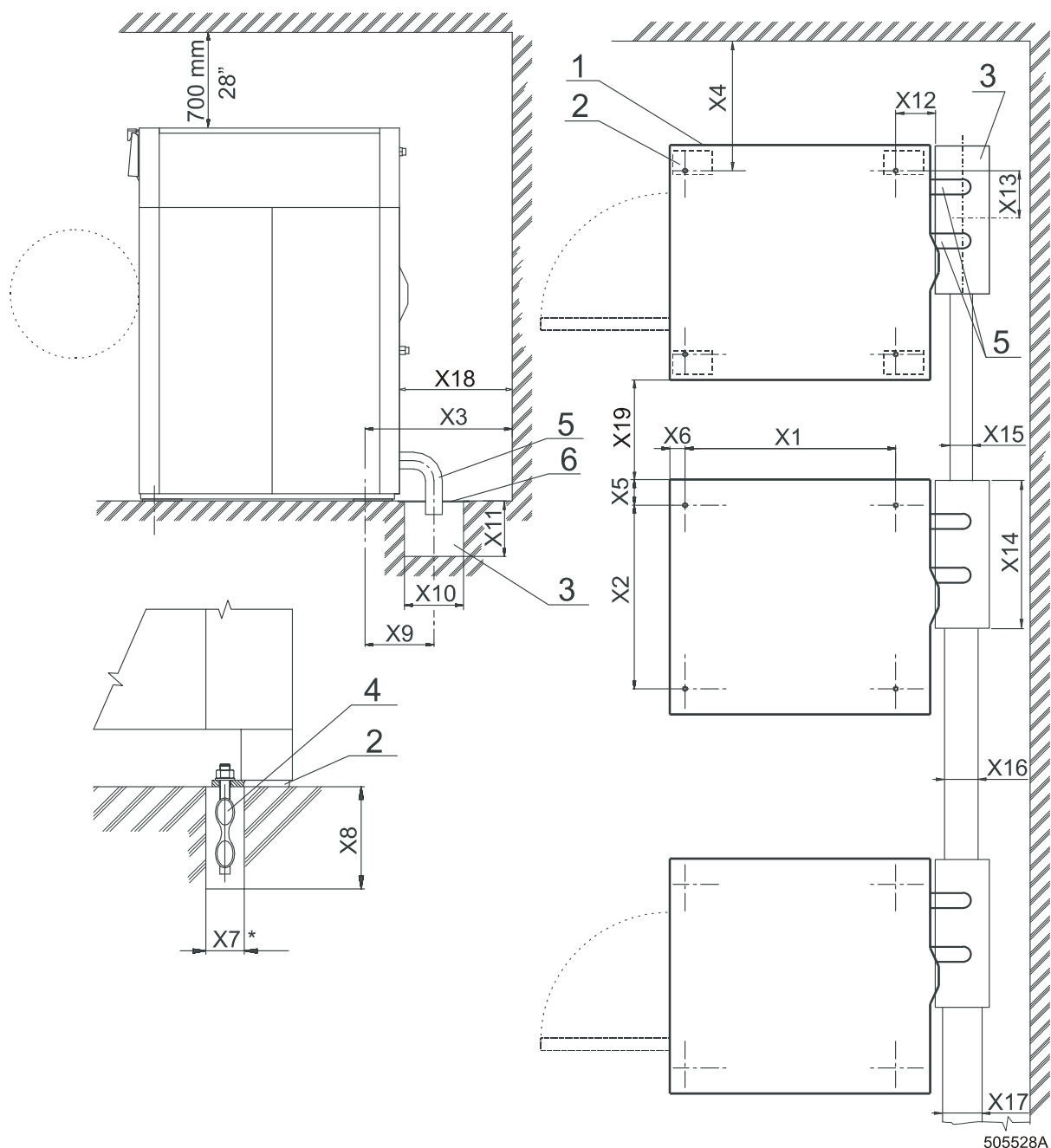


Fig.4.3.A Washers 22-33-40-55 kg / 50-80-100-125 lb

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

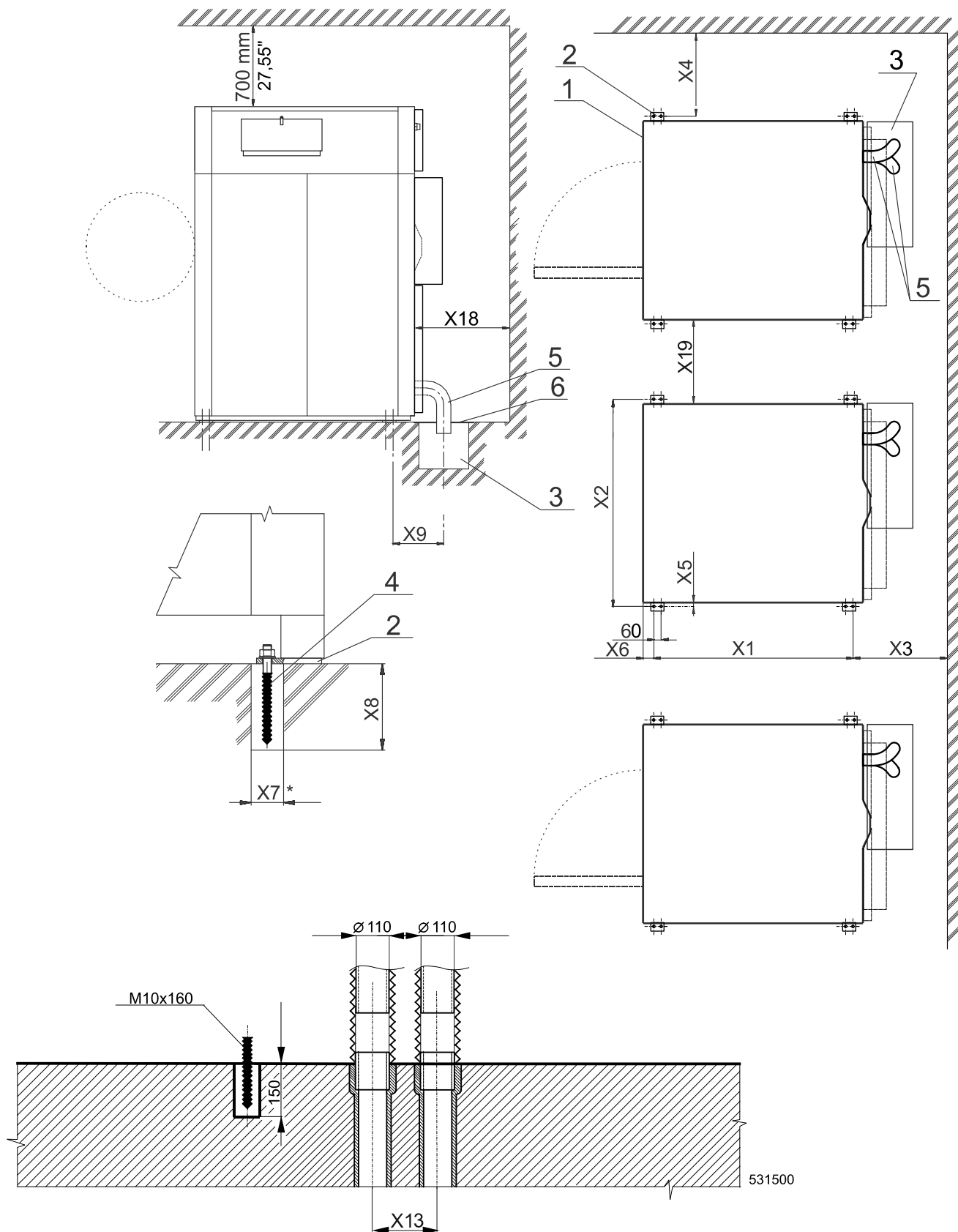


Fig.4.3.B Washers 80-100-120 kg / 180-220-265 lb

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

| Machine capacity kg/lb | 22 / 50 | 33 / 80 | 40 / 100 | 55 / 125 | 80 / 180 | 100 / 220 | 120 / 265 |
|------------------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| X1 mm / inch | 846 / 33,3 | 970 / 38,18 | 1070 / 42,13 | 1250 / 49,21 | 1270 / 49,99 | 1388 / 54,64 | 1400 / 55,11 |
| X2 mm / inch | 799 / 31,45 | 930 / 36,61 | | | 1430 / 56,29 | 1715 / 67,51 | 1780 / 70,07 |
| X3 mm / inch | 639,5 / 25,17 | 1175 / 46,25 | | | 1065 / 41,92 | 1332 / 52,44 | |
| X4 mm / inch | 20 / 0,78 | 830 / 32,67 | | | 780 / 30,70 | 780 / 30,70 | |
| X5 mm / inch | 50,5 / 1,98 | 130 / 5,12 | | | 20 / 0,78 | 13,5 / 0,53 | 15 / 0,59 |
| X6 mm / inch | 39,5 / 1,55 | 77 / 3,03 | | | 150 / 5,9 | 130 / 5,11 | 132 / 5,19 |
| X7 mm / inch | 40 / 1,57 | 60 / 2,36 | | | 40 / 1,57 | 40 / 1,57 | |
| X8 mm / inch | 150 / 5,9 | 160 / 6,29 | | | 150 / 5,9 | 150 / 5,9 | |
| X9 mm / inch | >140 / > 5,51 | 350 / 13,77 | | | 415 / 16,33 | 415 / 16,33 | |
| X10 mm / inch | 200 / 7,87 | 300 / 11,81 | | | - | | |
| X11 mm / inch | 250 / 9,84 | | | | - | | |
| X12 mm / inch | 100 / 3,93 | 200 / 7,87 | | | - | | |
| X13 mm / inch | 232 / 9,13 | 250 / 9,84 | | | | 250 / 9,84 | |
| X14 mm / inch | 300 / 11,81 | 750 / 29,52 | | | | - | |
| X15 mm / inch | 100 / 3,93 | 150 / 5,9 | | | | - | |
| X16 mm / inch | 150 / 5,9 | 180 / 7,08 | | | | - | |
| X17 mm / inch | 180 / 7,08 | 200 / 7,87 | | | | - | |
| X18 mm / inch | 600 / 23,62 | 1000 / 39,36 | | | | | |
| X19 mm / inch | 20 / 0,78 | 700 / 27,55 | | | | 800 / 31,49 | |

Tab.4.3.B

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

4.4. CONNECTIONS

WATER CONNECTION

The washers are equipped with ¾", 1" or 1½" BSP (British Standard Pipe Thread) hot and cold water inlet valves, indicated by a sticker next to the inlet. For connection dimensions see fig.3.3., 3.4.

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.

If ¾" inlet hoses, 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. If a NPT Nut is present it is marked with a groove.

The 1" or 1½" inlet hoses have on both side BSP thread. To connect them to a NPT installation, an adapter is available. For best operation of the washer, it is necessary to keep the water pressure within the limits stated in the chapter „3. TECHNICAL SPECIFICATIONS“. 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.

Install on the washer the filter device, normally delivered with the washer. Connect to this the inlet water hose with appropriated seal washer where necessary.

When connecting inlet hoses, be sure hose connections are not cross-threaded on the connection devices.

Tighten the hoses securely. DO NOT over tighten as this will damage threads on the device(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, see Programming manual.

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.

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.

WATER DRAIN CONNECTION

By default washers are equipped with two drain outlets with outer diameter of 75 mm (3"). There are two exceptions: Machines of 22 kg / 50 lb have only one drain outlet and machines of 80-100-120 kg / 180-220-265 lb have a diameter of 103 mm (4"). The drain outlets are situated on the rear of the machine. The drain has to be connected to the waste channel or pipeline. You can use the elbow or the hose, which is a part of the delivery when ordered. Seal the connecting point of the drain throat and flexible hose with silicon cement. Secure the elbow or the hose with a clamp. Cover the waste sump with a proper cover.

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

The main waste channel or pipeline must have such a capacity that it can take away the drained water from all connected machines at the same time. Ask a corresponding expert (construction technician) to design a sufficiently dimensioned waste pipeline for your washing machines. The correctly designed pipeline is fitted with the main ventilating pipeline (air supply), possibly an auxiliary ventilating pipeline. This will prevent deceleration of the flow and creation of a high vacuum or overpressure inside the pipeline, causing a breach of the water level in odour closures.

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 INJURIES.

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., 3.4 and technical information 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.

VENTING

⚠ WARNING!
VAPOURS ESCAPE FROM THE MACHINE THROUGH THE AIR VENT OPENING!
(fig.3.3., pos.2 and 15, fig.3.4., 3.5., pos.3) 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. The external diameter of the ventilating opening for washers 33-40-55 kg / 80-100-125 lb it is 60mm / 2.4", for washers 22kg / 50lb it is 76mm / 2.99", for washers 80-100-120 kg / 180-220-265 lb it is 51 mm / 2".

For placing of connection points see fig. 3.3., 3.4. 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.

ELECTRICAL CONNECTION

The machine has been designed for connecting to the power network according the specification of your order. Before connection check the voltage values and the frequency stated in the machine label (fig.3.3., pos.11, fig.3.4., pos.15) if they correspond to your power 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.

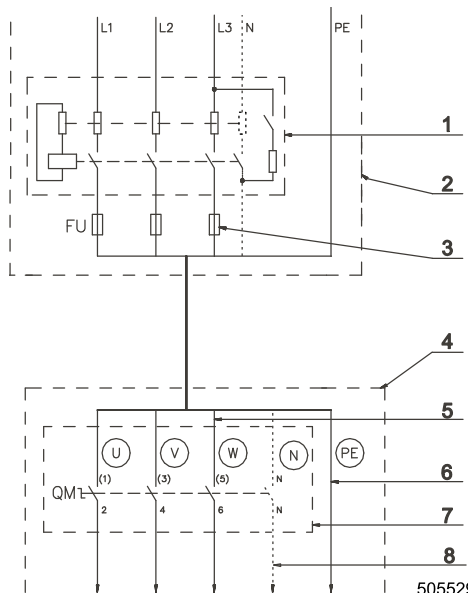
IMPORTANT:

- 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 „3. Technical specification“ table 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 10m) 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

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).

The machine control circuits are mostly supplied by 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 machine 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 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 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 A | Fuses A | | |
| 16 (15) | 10 (10) | 1.5 (AWG 15) | 1.5 (AWG 15) |
| 20 (20) | 16 (15) | 2.5 (AWG 13) | 2.5 (AWG 13) |
| 25 (-) | 20 (20) | 4 (AWG 11) | 4 (AWG 11) |
| 40 (40) | 32 (30) | 6 (AWG 9) | 6 (AWG 9) |
| 63(-) | 50 (50) | 10 (AWG 7) | 10 (AWG 7) |
| 80 | 63 | 16 | 16 |
| 100 | 80 | 25 | 16 |
| 125 | 100 | 35 | 25 |
| 160 | 125 | 50 | 35 |
| 200 | 160 | 70 | 50 |
| 250 | 200 | 95 | 70 |
| 300 | 250 | 120 | 95 |

Tab.4.4 Manufacturer's recommended minimal conductor section

1. Protection conductor
2. Phase conductor
3. Phase conductor
4. Phase conductor
5. Neutral conductor
6. Molded tube
7. The stripped length of conductors

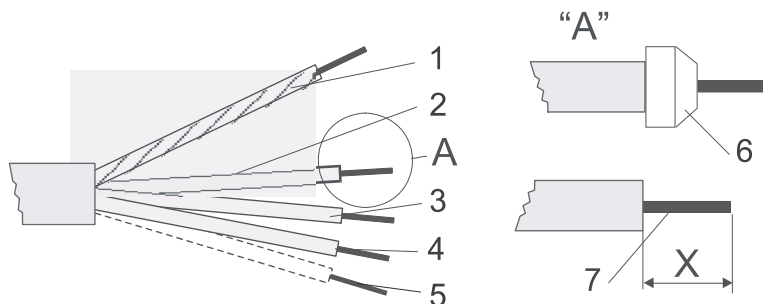


Fig.4.4.B Adaptation of conductor ends of supply cable

505 530

1. Main switch
2. Turnbuckle
3. -
4. Sag of inlet cable

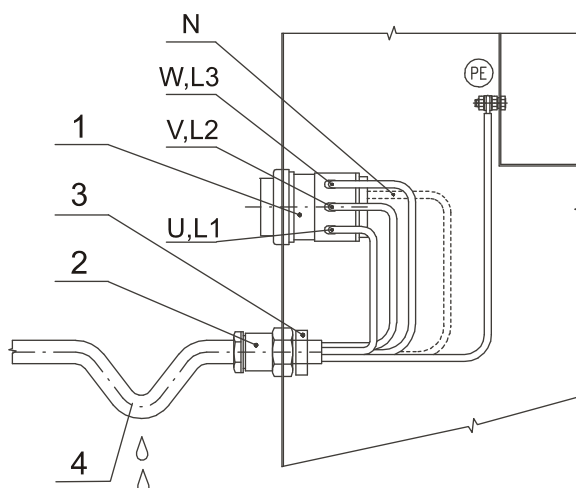


Fig.4.4.C Connection of main power inlet

505 531

WASHER 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

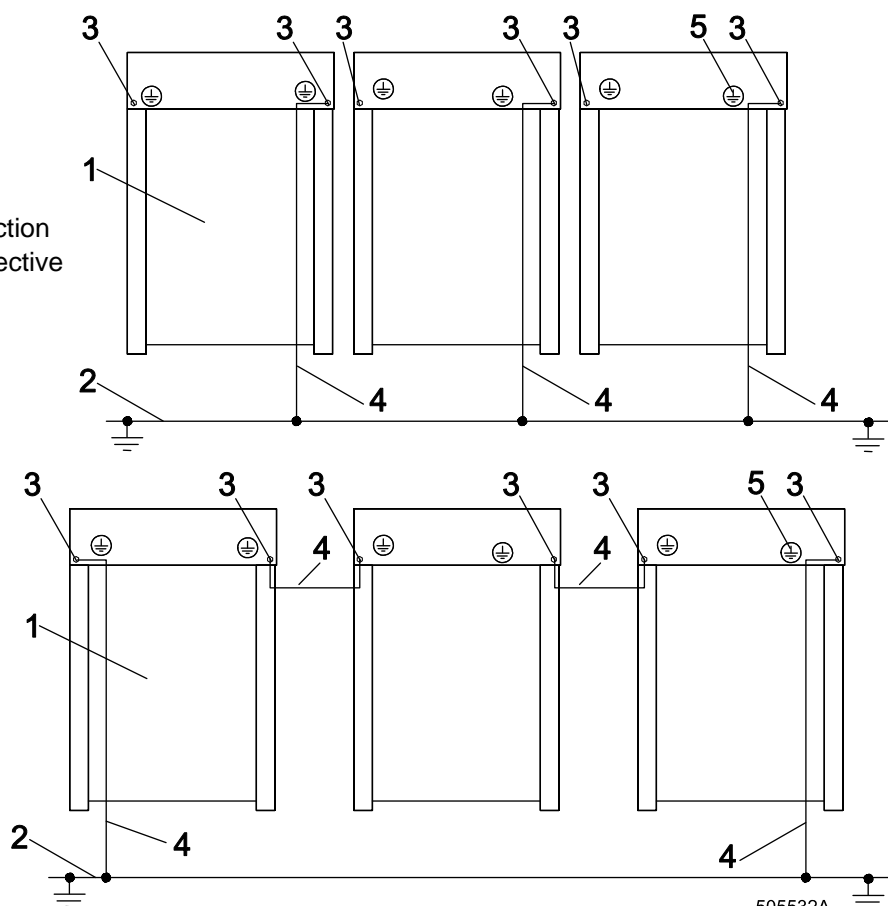


Fig.4.4.D

505532A

LIQUID SOAP CONNECTION

WASHERS 22 kg / 50 lb

The machines are produced in two versions: **Without liquid soap (standard version)**
With liquid soap (according to the request)

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

WASHERS 100-120 kg / 220-265 lb

Connection point for soap supply, see fig.3.5., pos.9.

WASHERS 33-40-55-80 kg / 80-100-125-180 lb

By default the machines are produced in version: **With liquid soap**

General : Always use liquid soap pumps that have a flow rate high enough to bring the requested quantity into the washer in less than 30 sec.

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 : Secure the location of the wiring and hoses in such a way that they can not be pinched, damaged or rubbed. Only authorized workers, with a valid qualification, should do the installation. 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.

The washer has provisions for connecting external dosing of liquid soaps. On the back side, a plastic hose connection part is present, fig.4.4.E to connect the liquid soap hoses. Depending of the number of liquid soap pumps that will be used, drill holes (max. 5) of \varnothing 8 mm / 0.315" in the plastic hose connection part for each pump. On the plastic hose connection part is also a nipple of \varnothing 12 mm / 1/2". Use this nipple **ONLY** for entering diluted soap. Drill with \varnothing 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.**

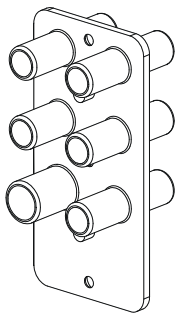


Fig.4.4.E Plastic hose connection part

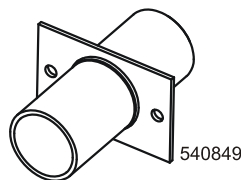


Fig.4.4.F Hose connection, 100-120 kg /
220-265 120kg / 265 lb



WARNING!

CHECK THAT THE HOSE CONNECTIONS ARE TIGHT (CHECK THE CLAMPS)! ANY LEAKAGE OF CHEMICALS MAY CAUSE SERIOUS BODILY 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 pump 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.4.4.G., pos.51) with the terminal box with LED signalization of activation of the respective pump, (pos.52). Under the terminal box there is a label for electric connection, fig.4.4.G. 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, position 53. 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.

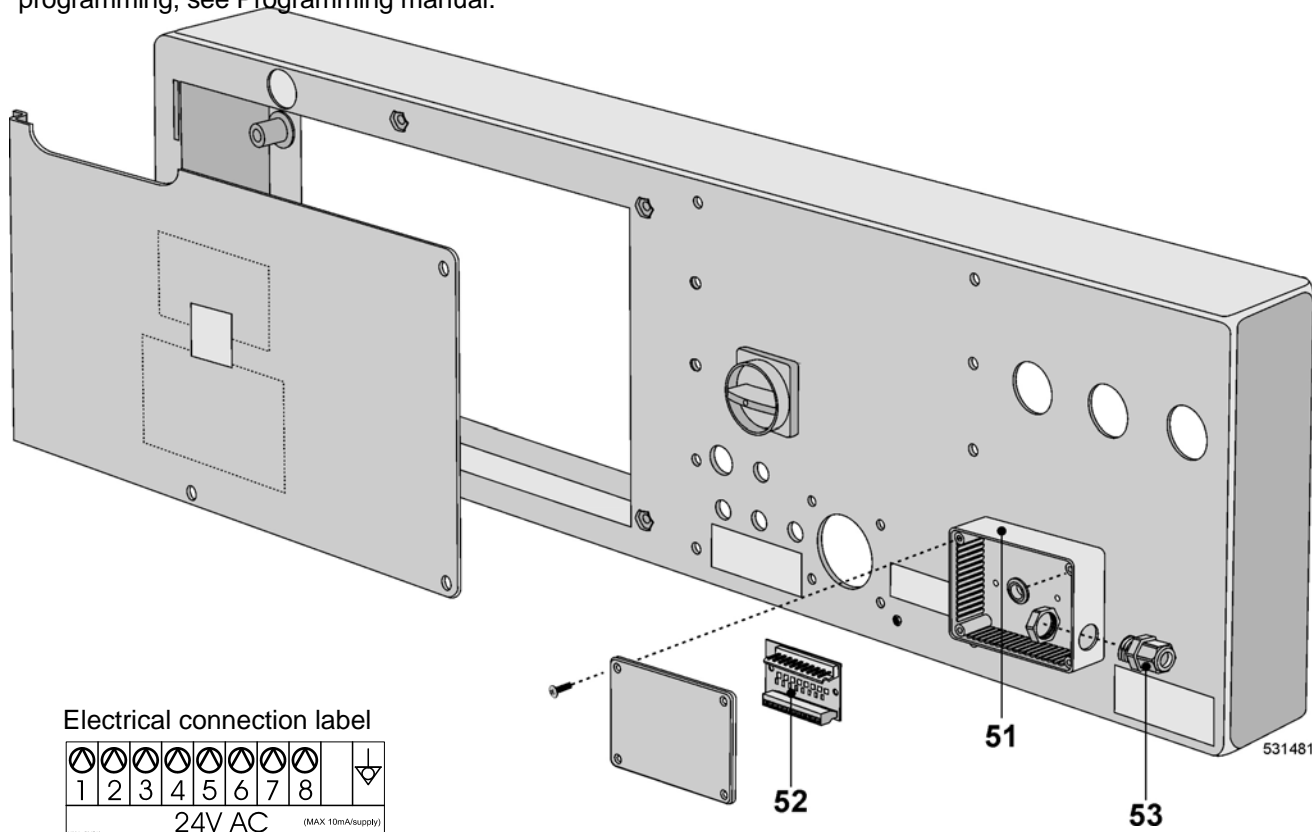


Fig.4.4.G Rear panel 22-33-40-55 kg / 50-80-100-125 lb

4.5. PUTTING THE MACHINE INTO SERVICE

WASHERS 22-33-40-55 kg / 50-80-100-125 lb, fig.4.5.A

Before you put the machine into operation, remove the three striking color transport braces securing the vibrating machine components during the transport. One brace (fig. 4.5.A., pos.1) is located in the front part of the machine, accessible after removal of the front lower cover. The two braces (2) are placed in the rear machine part, accessible after removal of the rear cover. After removal of the braces, mount the covers back to their places.

WASHERS 80-100-120 kg / 180-220-265 lb, fig.4.5.B

Before you put the machine into operation, remove the seven striking color transport braces securing the vibrating machine components during the transport. One brace (fig. 4.5.B., pos.1) is located in the rear part of the machine, accessible after removal of the rear lower cover. The three braces (2) are placed on the left side of the machine and three braces (2) are placed on the right side of the machine, accessible after removal of the side covers. After removal of 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!

CHECKING BEFORE PUTTING INTO SERVICE

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 (earth connection) - „PE“ or „PEN“.
5. A careful reading of the operation manual before the machine start and following the instructions stated.

6. Check of the drum rotation direction during extracting:
WASHERS 22-33-40-55 kg / 50-80-100-125 lb, fig.4.5.A

LOOKING AT THE MACHINE FROM THE FRONT VIEW THE DRUM ROTATION DURING EXTRACTION MUST BE COUNTER-CLOCKWISE!

WASHERS 80-100-120 kg / 180-220-265 lb, fig.4.5.B

LOOKING AT THE MACHINE FROM THE FRONT VIEW THE DRUM ROTATION DURING EXTRACTION MUST BE CLOCKWISE!

7. A check of the vibration switch function during extracting and the emergency function.

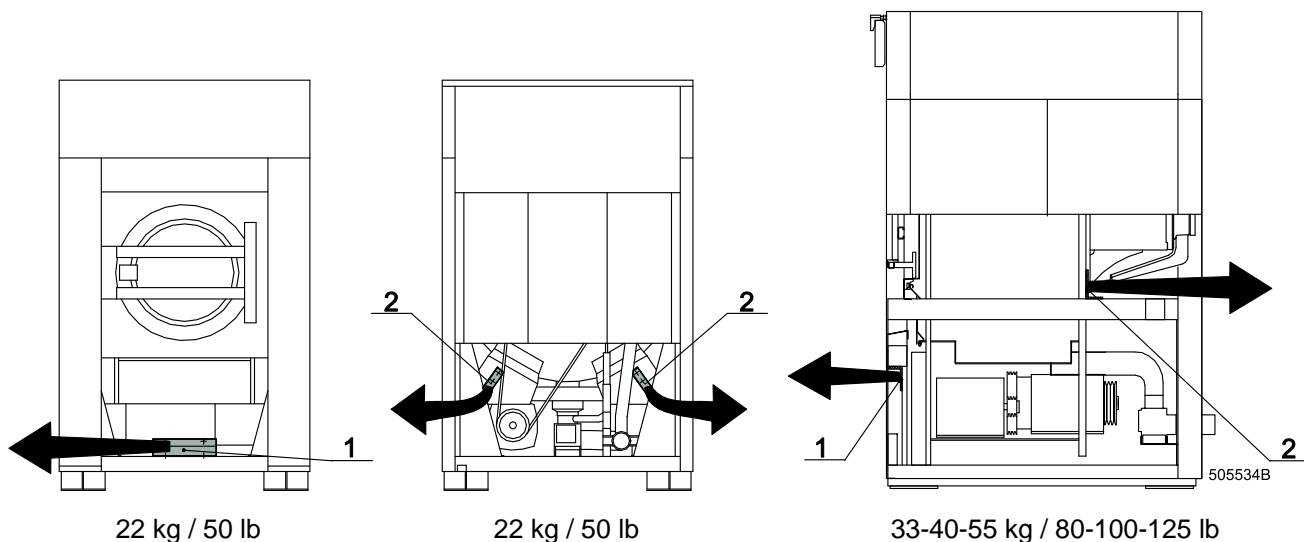


Fig.4.5.A Transport braces, washers 22-33-40-55 kg / 50-80-100-125 lb

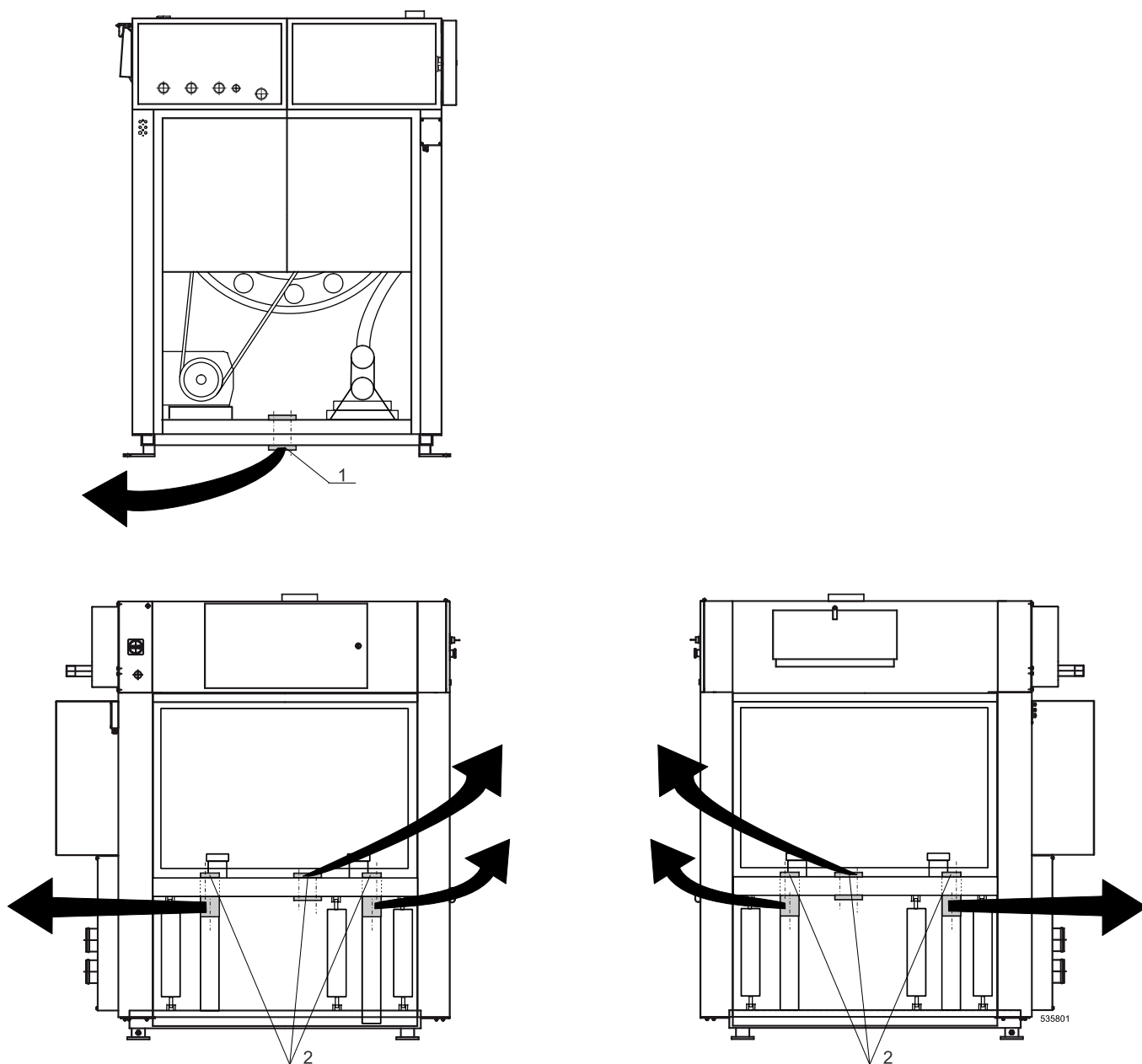


Fig.4.5.B Transport braces, washers 80-100-120 kg / 180-220-265 lb

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 5.7.
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. 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. 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 5.14.

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.).

⚠ 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.

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

WASHERS 22 kg / 50 lb

FUNCTION DESCRIPTION

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. 5.6.A.

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.

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.

Verify the distance between the microswitch and the spring holder which must be 0,2 mm / 0.008".

Check the distance between microswitch holder (pos.x) and the operation plate (pos.2) with the distance indicated.

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.

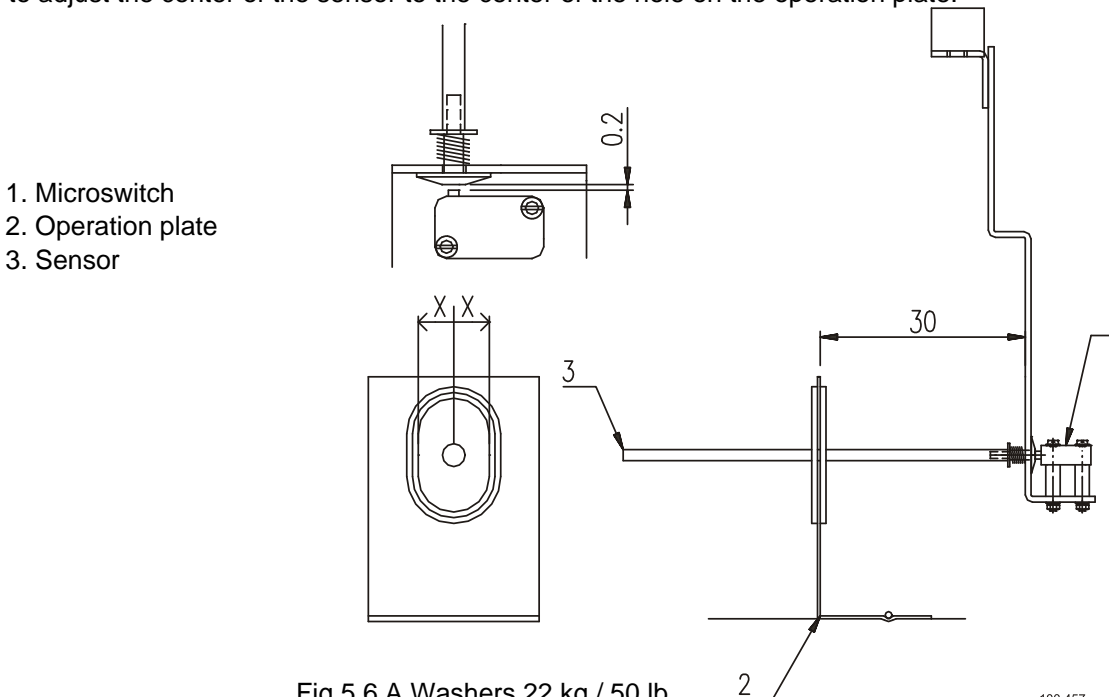


Fig.5.6.A Washers 22 kg / 50 lb

100 457

VERIFYING OF THE FUNCTION

⚠ WARNING!
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.

WASHERS 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

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.

WASHERS 33-40-55 kg / 80-100-125 lb, fig.5.6.B

The unit contains the vibration switch (fig.5.6.B., 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.

WASHERS 80-100-120 kg / 180-220-265 lb, fig.5.6.C

The unit contains the vibration switch (fig.5.6.C., pos.4) with a flexible controlling element, which is attached to a holder (6) by nuts (5) and this entire assembly is bolted to the machine frame (3). The switch controlling element is inserted into the limiters (2) which is bolted to the drum front face (1). The limiters are 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.

SENSIBILITY ADJUSTMENT, WASHERS 33-40-55 kg / 80-100-125 lb

1. By moving the limiter (2) up or down (direction A), 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 (direction B). To reach the maximal permitted unbalance value it is necessary to keep the distance of 100 mm / 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 (direction C) you will centre the switch control element in the rubber bushing of the limiter.

SENSIBILITY ADJUSTMENT, WASHERS 80-100-120 kg / 180-220-265 lb

1. Set a distance 12 mm / 0.47" between the limiters (2).
2. By moving the vibration switch (4) on the holder (6) to the left, you will decrease the sensibility and to the right you increase it (direction A). To reach the maximal permitted unbalance value it is necessary to keep the distance of 60 mm / 2,36" between the limiters (2) and the vibration switch (4), see the side view.
3. Moving the holder (6) with the switch left or right (direction B) you will centre the switch control element to the distance axis between the limiters (2).

VERIFYING OF THE FUNCTION, WASHERS 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

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!

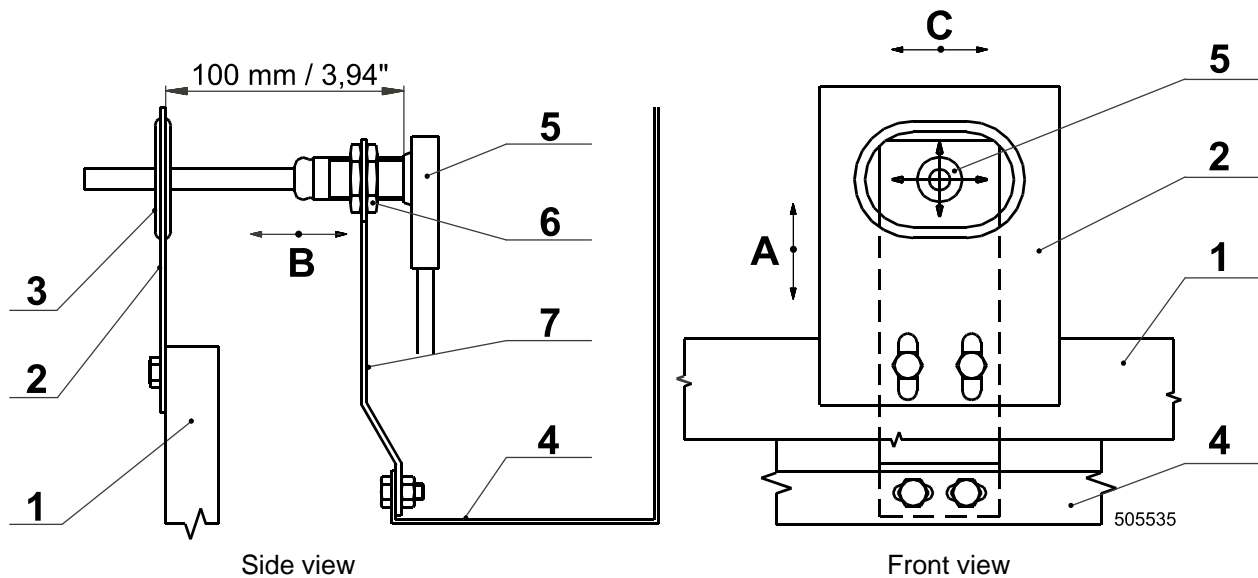


Fig.5.6.B Washers 33-40-55 kg / 80-100-125 lb

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

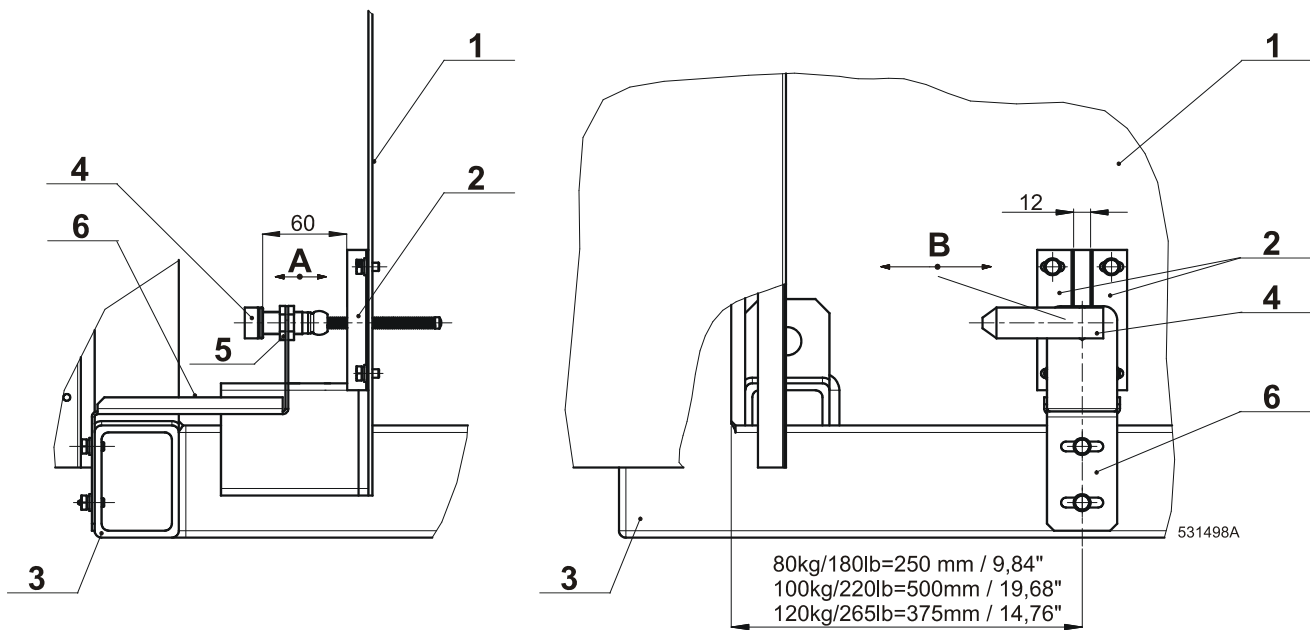


Fig.5.6.C Washers 80-100-120 kg / 180-220-265 lb

- | | |
|---------------------------|----------------------------|
| 1. Front face of the drum | 4. Vibration switch |
| 2. Limiters | 5. Adjusting nut |
| 3. Machine frame | 6. Vibration switch holder |

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:

WASHERS 22 kg / 50 lb

| TIGHTENING MOMENTS VALUES OF BOLTS AND NUTS FOR 22 kg / 50 lb WASHERS, (fig.5.7.A) | | | | |
|--|-----------|----------------|-------------------------|-----------------------------|
| BOLT (NUT) | DIMENSION | NUMBER OF PCS. | TIGHTENING MOMENTS (Nm) | TIGHTENING MOMENTS (lbf.ft) |
| A | M12 x 40 | 16 | 78 | 58 |
| B | M 8 x 40 | 24 | 11 | 8,1 |
| C | M12 x 35 | 3 | 36 | 27 |
| D | M 8 x 30 | 12 | 11 | 8,1 |
| E | M10 x 30 | 10 | 20 | 15 |
| F | M12 x 35 | 2 | 36 | 27 |
| G | nut KM13 | 1 | 420 | 310 |

Tab.5.7.A

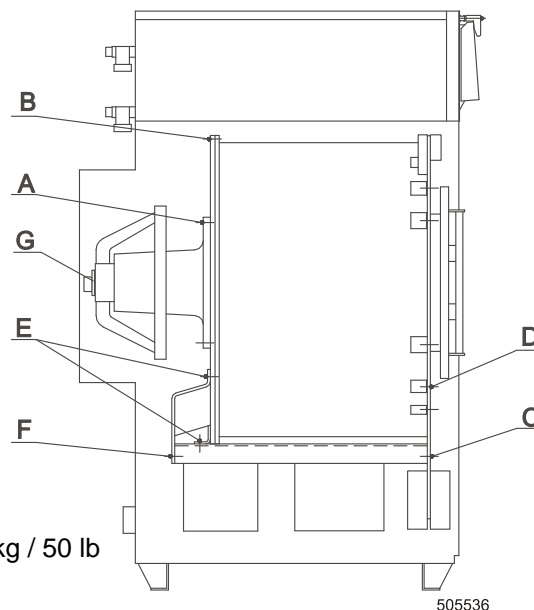


Fig.5.7.A Machines of 22 kg / 50 lb

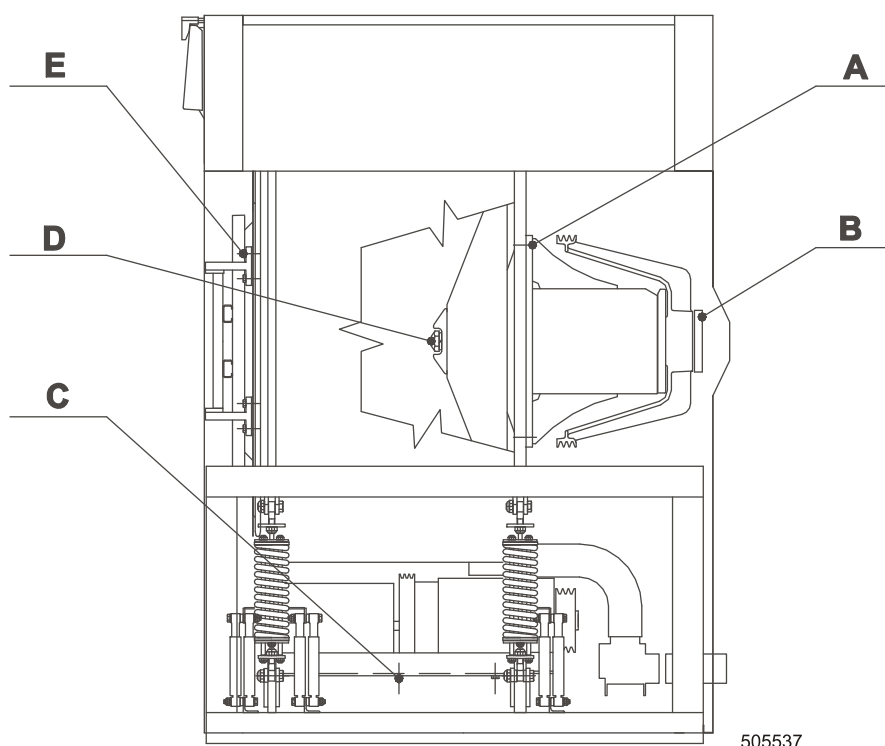
MARKING OF THE BOLTS

- 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 motor to the damper holders.
- G - housing fixing the drum pulley to the shaft.

MACHINES OF 33-40-55 kg / 80-100-125 lb

| TIGHTENING MOMENTS VALUES OF BOLTS AND NUTS FOR WASHERS 33-40-55 kg / 80-100-125 lb, (fig.5.7.B) | | | | |
|---|-----------------------------------|----------------|-------------------------|-----------------------------|
| BOLT (NUT) | DIMENSION | NUMBER OF PCS. | TIGHTENING MOMENTS (Nm) | TIGHTENING MOMENTS (lbf.ft) |
| A | M20 x 65 | 24 (12) | 600 | 443 |
| B | M12 x 30 | 8 | 70 | 52 |
| B | 33 kg / 80 lb: nut KM13 | 1 | 450 | 332 |
| C | M12 x 35 | 6 | 70 | 52 |
| D | M30 x 80 | 1 | 800 | 590 |
| E | M12 x 38 | 4 | 25 | 18,5 |

Tab.5.7.B



505537

Fig.5.7.B Washers 33-40-55 kg / 80-100-125 lb

MARKING OF THE BOLTS

- A - bolts of hub flange
- B - bolts fixing the pulley to the nut of fixing housing
- C - bolts fixing the motor 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 WASHERS 33-40-55 kg / 80-100-125 lb

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.A) lubricators are located on the rear machine cabinet and marked by the symbol „Lubrication point“, (see User's manual, chapter „3. SYMBOLS ON THE MACHINE“). Lubricators can also be marked by text „Lubrication“. Press the lubricant in slowly and let the drum rotate with the same speed as during washing.

QUANTITY OF LUBRICANT

2 cm³ (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

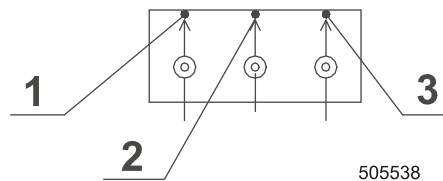


Fig.5.8.A Lubrication places of 33-40-55 kg / 80-100-125 lb, washers for bearing house (placed on rear of machine)

WASHERS 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

Once in 6 months or when needed, grease spring suspension eyes (fig.5.12.A., fig.5.12.B., pos. 6), guiding rods (fig.5.12.A., fig.5.12.B., pos. 3), the door handle casing (fig.5.11.B, pos.2) and the casings in the door hinge (fig.5.11.B., pos. 7). The motor bearings are maintenance-free (do not lubricate). The hub and pulley seating of machines of 22 kg / 50 lbs are maintenance-free.

PNEUMATIC LUBRICATOR, WASHERS 80-100-120 kg / 180-220-265 lb

Fill the lubricator pot with approximately 23 cm³ of oil.

Recommended type of oil: non-detergent and without aggressive additives, viscosity VG32 (ISO 3448).
e.g.: oil for pneumatic devices or hydraulic oil.

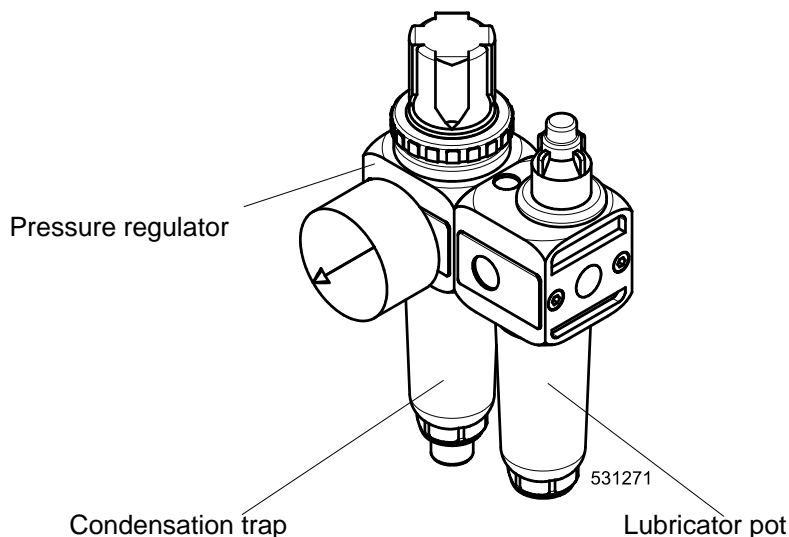


Fig.5.8.B Pneumatic lubricator, washers 80-100-120 kg / 180-220-265 lb

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.

Testing force of belt tensioning which can be measured by tension meter is indicated in table 5.9.

Procedure for approximate belt tensioning according to force measured by tension meter:

Apply a load at the middle of the belt:

| | |
|---------------------------------|--|
| Washers 22-33 kg / 50-80 lb | :belt deflection is 20 mm / 0,78" - force in belt deflection is 53 - 54 N . |
| Washers 40-55 kg / 100-125 lb | :belt deflection is 20 mm / 0,78" - force in belt deflection is 68 - 69 N . |
| Washers 80 kg / 180 lb | :belt deflection is 12,3 mm / 0,48" - force in belt deflection is 11 - 12 N . |
| Washers 100-120 kg / 220-265 lb | :belt deflection is 9 mm / 0,35" - force in belt deflection is 20 - 22 N . |

The data are valid only for belts delivered by the manufacturer.

| | | 22-33 kg / 50-80 lb | 40-55 kg / 100-125 lb | 80 kg / 180 lb | 100-120 kg / 220-265 lb |
|---------------------------------|----|------------------------|--------------------------|----------------|----------------------------|
| Force F measured by device | N | 200 | 300 | - | - |
| Frequency measured by device | Hz | - | - | 36-37 | 35-37 |

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.

Always change a complete set of the belts. Always the same type of the changed belts in the set is required.

If the pulleys are damaged, replace them.

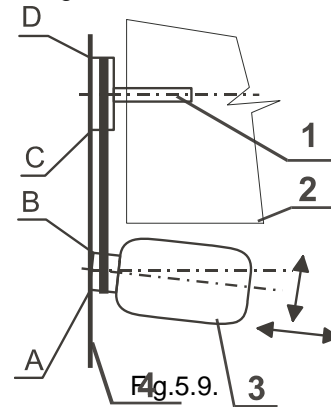
After the belt replacement, check the pulley alignment, the tightness of belts, bolts and nuts.

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



505 539

5.10. WATER AND STEAM FILTERS

Machines are equipped with filters on water and steam inlets (if the machine has steam heating). The washers 80-100-120 kg / 180-220-265 lb is equipped with a filter for steam only. 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

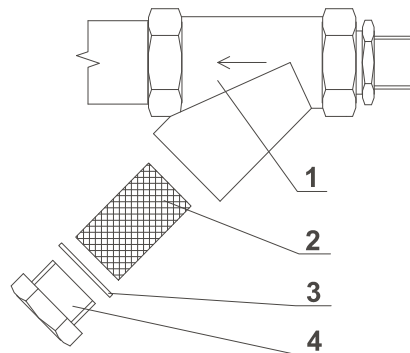


Fig.5.10.

505518

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.

ADJUSTMENT OF PRESSURE ON THE HINGE SIDE, WASHERS 22 kg / 50 lb, fig.5.11.A

⚠ 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, WASHERS 22 kg / 50 lb, fig.5.11.A

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

⚠ WARNING!

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

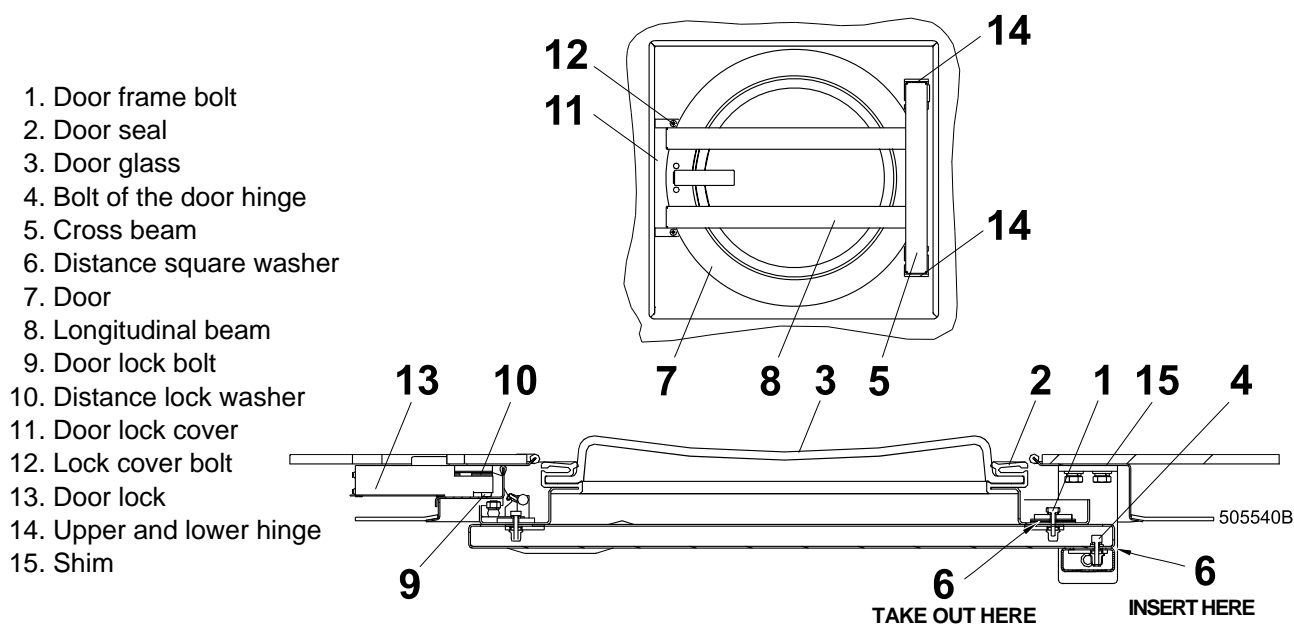


Fig.5.11.A Door fastening, 22 kg / 50 lb

REPLACEMENT OF DOOR RUBBER, WASHERS 22 kg / 50 lb, fig.5.11.A

1. Open the door. Remove the door glass, fig.5.11.A., 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.

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.

ADJUSTING ON THE SIDE OF THE DOOR HANDLE, WASHERS 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb (fig.5.11.B)

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.

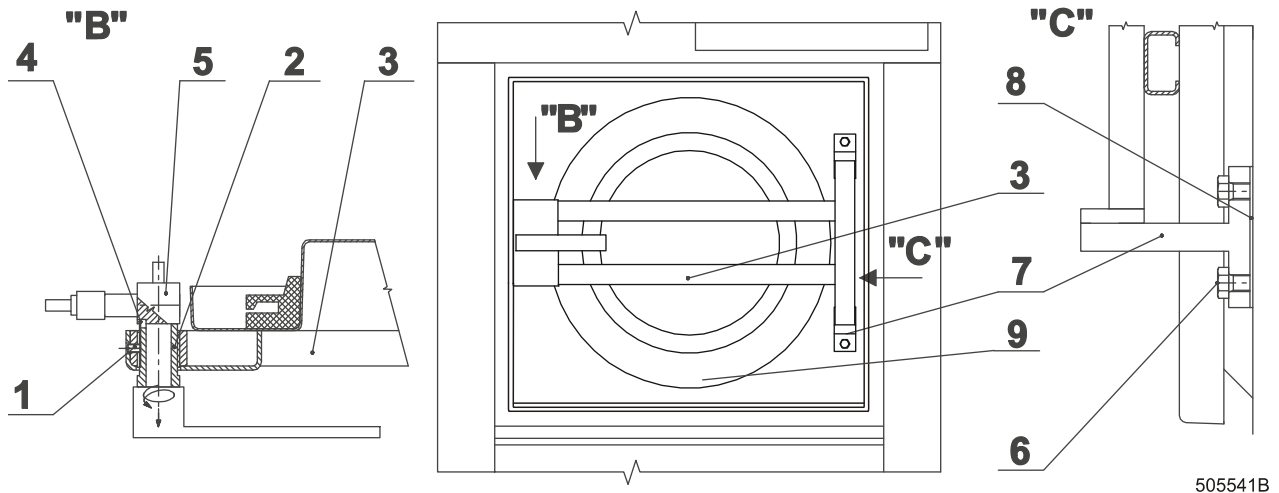


Fig.5.11.B Washers 33-40-55 kg / 80-100-125 lb

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

ADJUSTING ON THE SIDE OF THE DOOR HINGE, WASHERS 33-40-55 kg / 80-100-125 lb, fig.5.11.B

IF THE ADJUSTMENT AT THE DOOR HANDLE SIDE IS INSUFFICIENT, IT IS NECESSARY TO PERFORM ADJUSTMENT AT THE DOOR HINGE SIDE.

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

WASHERS 22-80-100-120 kg / 50-180-220-265 lb

Adjusted by manufacturer.

WASHERS 33-40-55 kg / 80-100-125 lb

Spring units (fig.5.12.A., 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 washers 33-40-55 kg / 80-100-125 lb the $X = 55 \text{ mm} / 2,16''$) between the plate edge (4) of the vibrating part and the frame top surface (5).

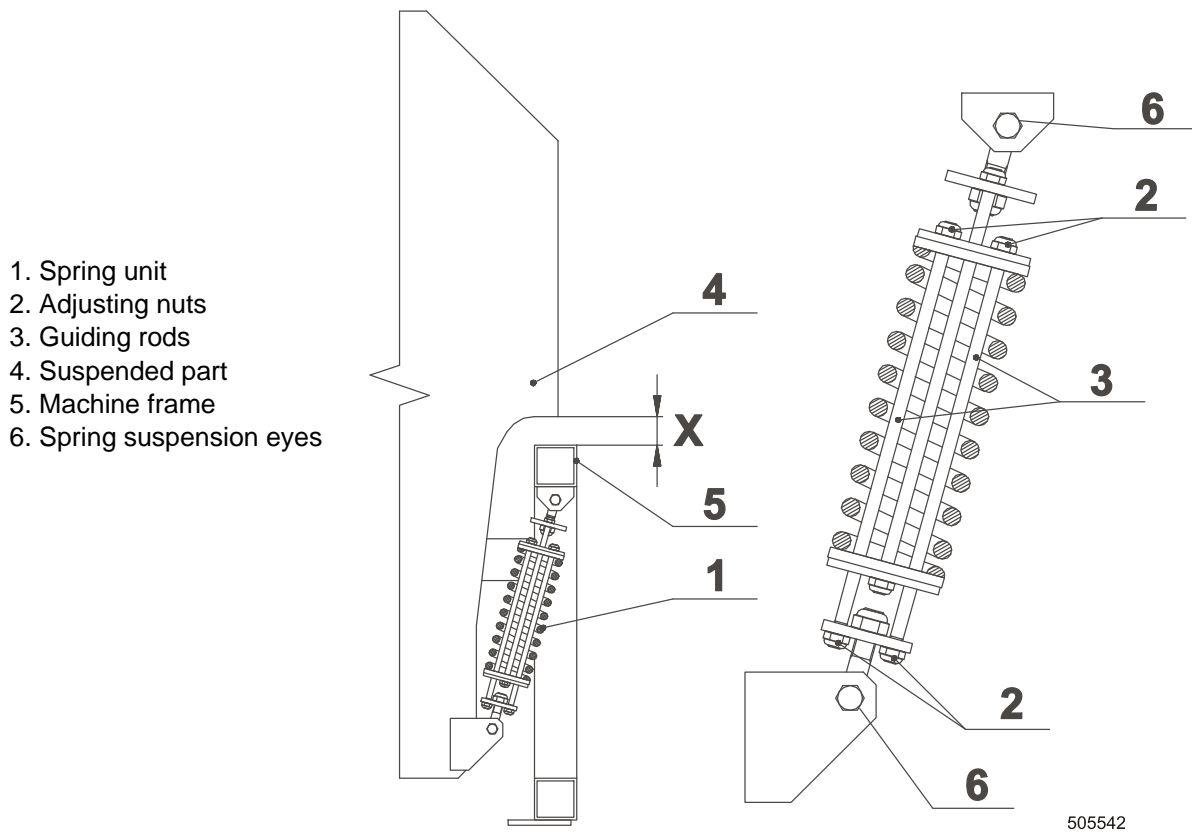


Fig.5.12.A Washers 33-40-55 kg / 80-100-125 lb

WASHERS 80-100-120 kg / 180-220-265 lb

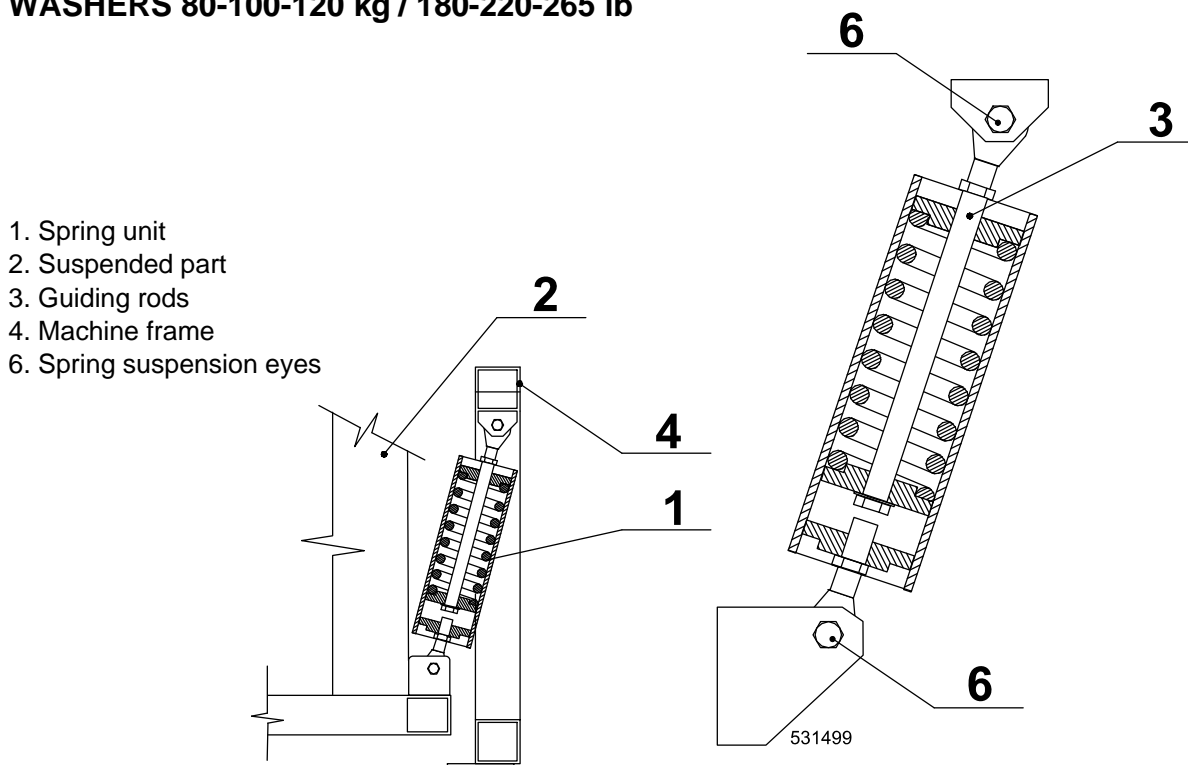


Fig.5.12.B Washers 80-100-120 kg / 180-220-265 lb

5.13. 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.

5.14. 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. When the cycle is finished unlocking is done automatically by a programmer. 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 PROGRAM 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

The lock is secured by a blocking latch after the door is shut and the program has been started. In this moment it is not possible to open the door.

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 at the end of a program or when pressing the Stop button.

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 cannot be opened.

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.

WASHERS 22 kg / 50 lb

1. Verify if all conditions are present to safely open the door.
2. Remove the service panel in the lower part of the machine.
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.

WASHERS 33-40-55-80-100-120 kg / 80-100-125-180-220-265 lb

1. Verify if all conditions are present to safely open the door.
2. **WASHERS 33-40-55 kg / 80-100-125 lb:**
Use a tool e.g. screwdriver, fig.6.1.A.,pos.1, a piece of wire etc. which is not a part of delivery with maximum diameter \varnothing 5,5 mm / 0,21". Insert the tool through the finger protection hole into the lock cover, pos.5 and push softly.

WASHERS 80-100-120 kg / 180-220-265 lb:

- Unscrew the bolt in the lock cover, fig.6.1.B. Insert a screwdriver to the hole into the lock cover and push softly.
3. By this the latch mechanism is lifted up and the lock is unblocked. The lock stays unblocked even after the tool removal.
4. Open the door if all safety conditions are fulfilled.

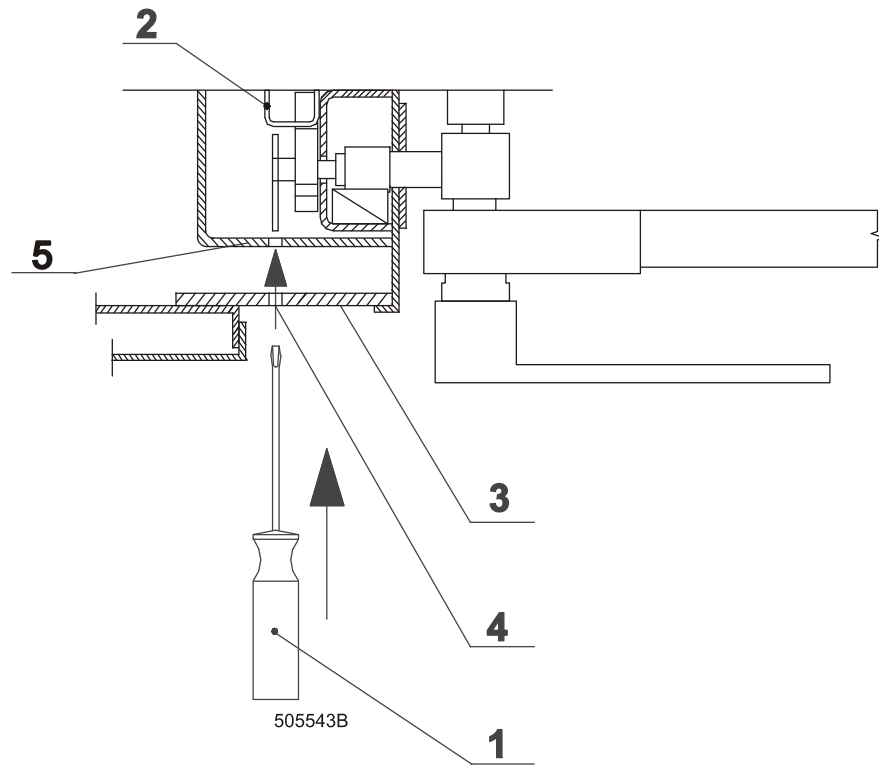


Fig.6.1.A Top view, washers 33-40-55 kg / 80-100-125 lb

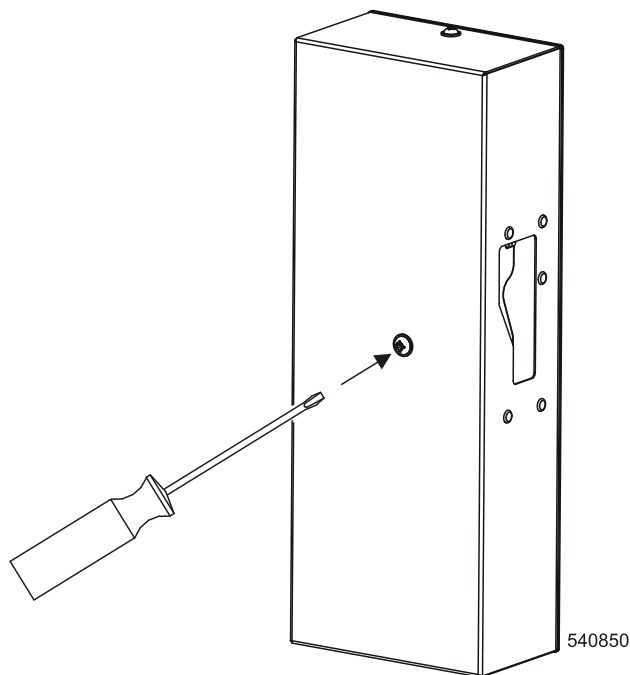


Fig.6.1.B Lock cover, 80-100-120 kg / 180-220-265 lb

6.2. ERROR INDICATION SHOWN ON DISPLAY

See User's manual, chapter 5.

See Programming manual, chapter „Troubleshooting“.

7. LIST OF RECOMMENDED SPARE PARTS

List of recommended spare parts:

- drain valve
- 1-way inlet 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

If the machine is out of service, possibly replaced, follow the instructions.

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 rear.
3. Shut the external water or steam inlet to the machine.
4. Make sure that the external electric power 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“, „4.1. Handling, transportation and storage“.

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.

[illegible]

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:

| |
|--|
| |
|--|