Operating and installation manual

Tumble dryer WASCOMAT TT600

Electric- and steam heating

487 17 53 61 / 01
GB 98.10

(RMC)

Tumble dryer, drum volume 600 litres

List of contents:

Safety instructions

This machine is only intended for drying water-washed garments.

The machine must not be used for drying foam rubber or foam-like materials.

The machine must not be used for drying floor mops*.

The machine must not be used by minors.

The machine must not be hosed down with water.

Mechanical, electrical and gas installations must only be carried out by authorized personnel.

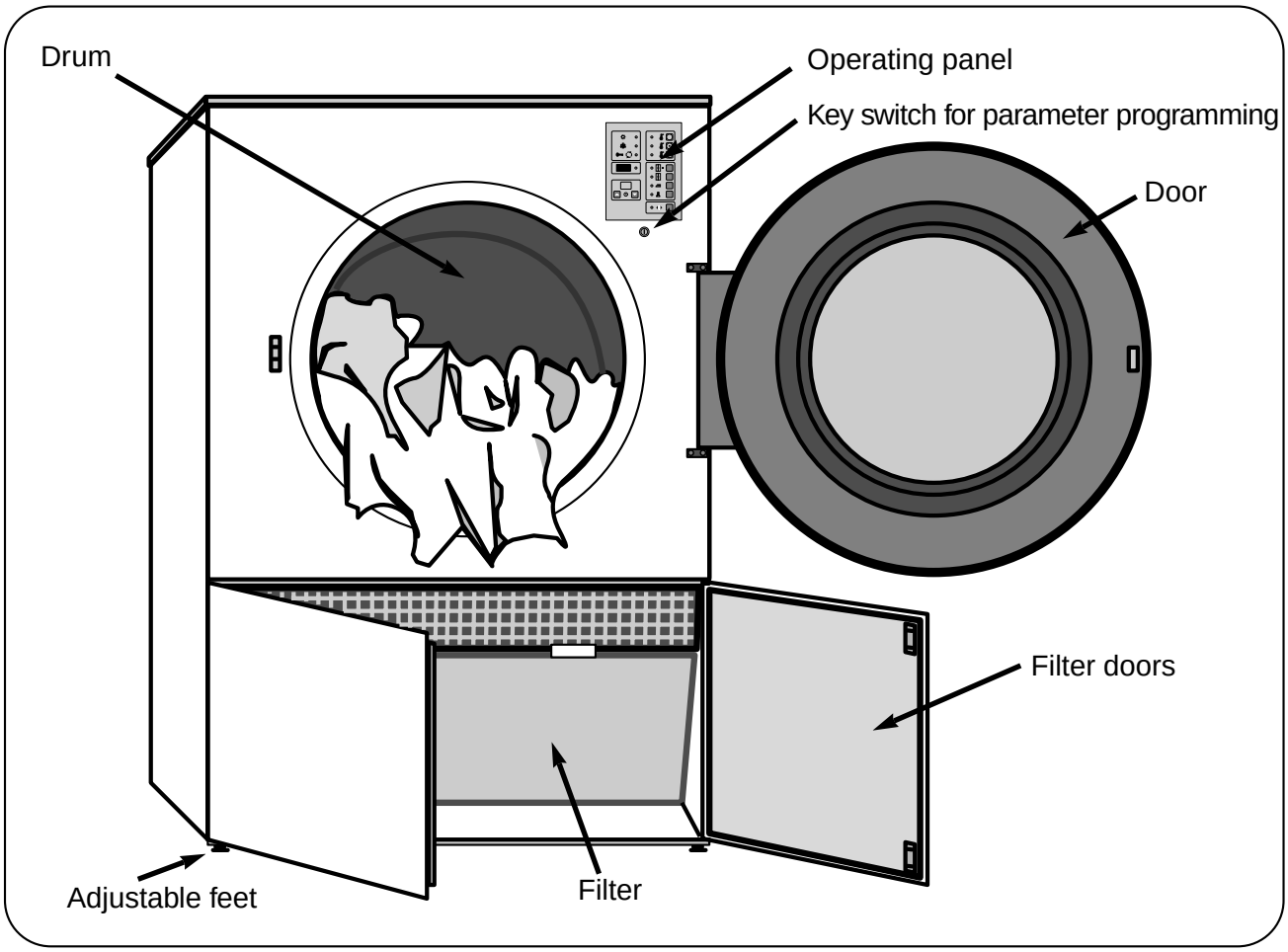
If the machine has a fault, this must be reported as soon as possible to the person in charge. This is important for your own safety and for the safety of others.

*Applies only to floor mops containing polypropylene.

Remember that such textiles as silk and wool must not be dried in the tumbler.

The manufacturer reserves the right to modify design and material specifications without notice.

General



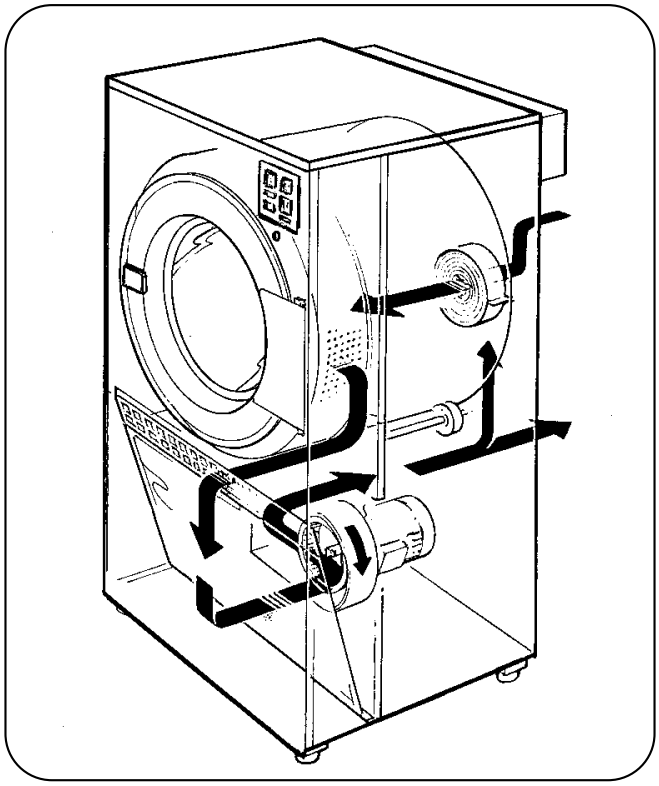
Air-flow principle

The fan generates a negative pressure in the drum, which means that air is sucked into the machine via the heater.

The heated air passes through the clothes and the holes in the drum.

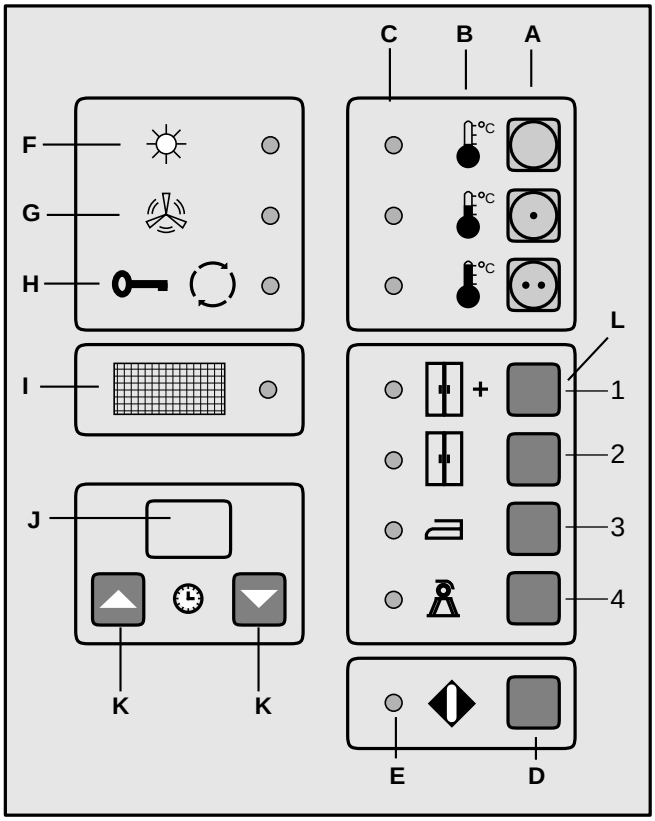
The air is then guided through a lint filter placed immediately before the fan.

On gas and electricity heated machines, approx. 50-60% of the air is recirculated. The remaining air is evacuated via the fan and the evacuation system.



Manual operation with residual moisture control

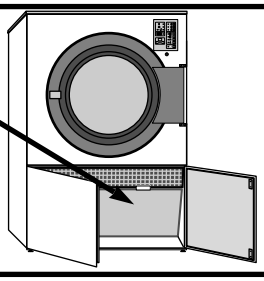
A. Program selection buttons
B. Temperature symbols
C. Lamp lit for selected program
D. Start button
E. Lamp flashes / ready to start
F. Drying / lamp is lit
G. Cooling / lamp is lit
H. Drying time completed / lamp is lit
I. Filter/lamp is lit: Clean filter
J. The display shows drying time / residual time, in time control mode
K. Timer buttons for desired drying time; one push = one minute
L. Select residual moisture control program by pressing one of the buttons:
    1. Extra dry
    2. Ready-to-put-away
    3. Iron dry, for the iron
    4. Iron dry, for ironing machine



Operation

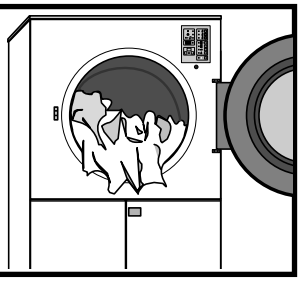
1

Open filter door.
Clean filter.
Close filter door.



Open filling door.

Load garments into drum.
Close door.

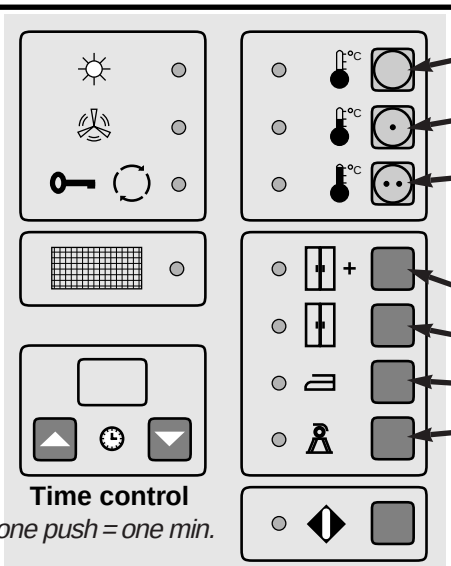


2

Select drying program.
Press a program button.
The lamp of the selected program is lit.

3

Then select
either
Time control
or
Residual Moisture Control



Airing
without heat
Fine wash / mild
Low heat
Normal wash / P
Normal heat

Residual moisture
Extra dry
Ready to put away
Iron dry, iron
Iron dry,ironing machine

4

Drying program:

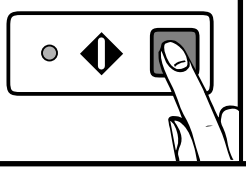
Airing without heat
Fine wash / mild wash
Normal wash / PP

Time control:
set timer
approx. 10 min.
approx. 25 min.
approx. 25 min.

Residual moisture:
Automatic program for selection of:
Extra dry
Ready to put away
Iron dry (iron)
Iron dry (ironing machine)

5

Start:
Press start button



Stop:
The tumbler can always be stopped by opening the door.
Restart:
Close door and press start button.

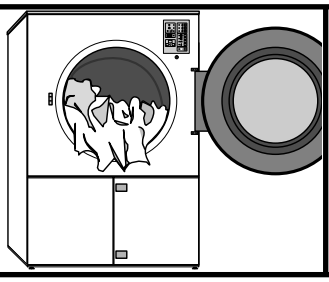
Tumbler stops automatically:

In time control:
• When drying time has ended

Residual moisture:
• When the selected residual moisture has been reached..

6

To **prevent creasing** of garments: Empty tumbler immediately.



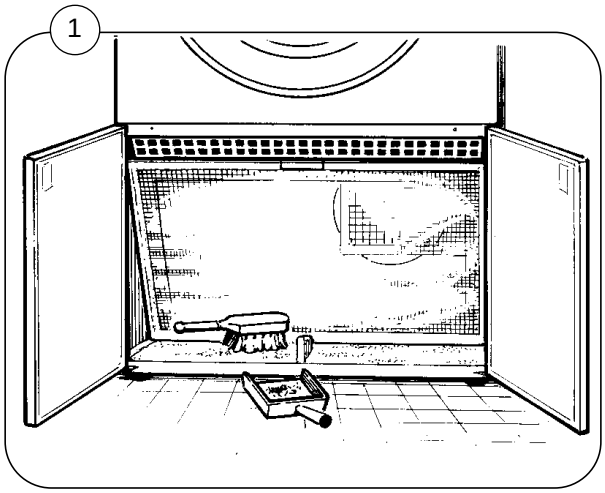
Anti-crease program:

After the drying time is up, the drum rotates at short intervals until the door is opened.

Max. 1 hour.

Maintenance

The following should be carried out at regular intervals, depending on the operating frequency.



Daily

- Check that the drum stops when the door is opened.
- Check that the machine does not start until the start button has been activated.
- Check whether the door packing has been cleaned (use a moist cloth).

1

- Clean the lint filter by means of a hand-held broom or a vacuum-cleaner.
- The lint filter must not be taken out for cleaning.
- Check that the lint filter is unbroken.

Quarterly/Semi-annually

- Check that the fresh-air intake at the back of the tumbler is not clogged by lint or otherwise blocked.

- Check that the evacuation ducts/pipes are tight and not clogged by lint/dust or otherwise blocked.

Annually

- Check that the fresh-air intake to the room and evacuation ducts/pipes in and from the room are not clogged by lint/dust or otherwise blocked.
  Carry out cleaning/cleansing at a frequency that depends on the operating load - once a year as a minimum.
- At least once a year a skilled expert should check the inside wearing parts of the machine and clean them of lint.

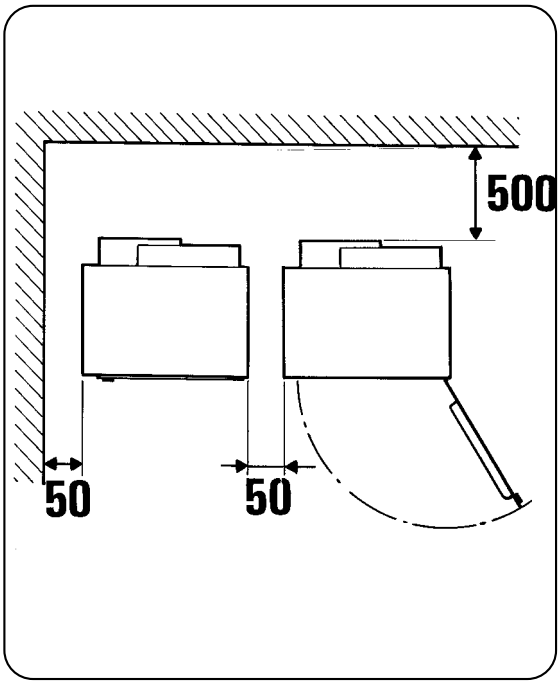
Installation

Unpacking

When unpacking the machine, handle it with care.

There are no transport clamps.

Release the machine from the pallet by removing the four corner bolts. Lift the machine off the pallet. Remember only to lift at the reinforced sections (**A**). Before placing the machine in the right position, fit the four feet where the bolts were.



Positioning

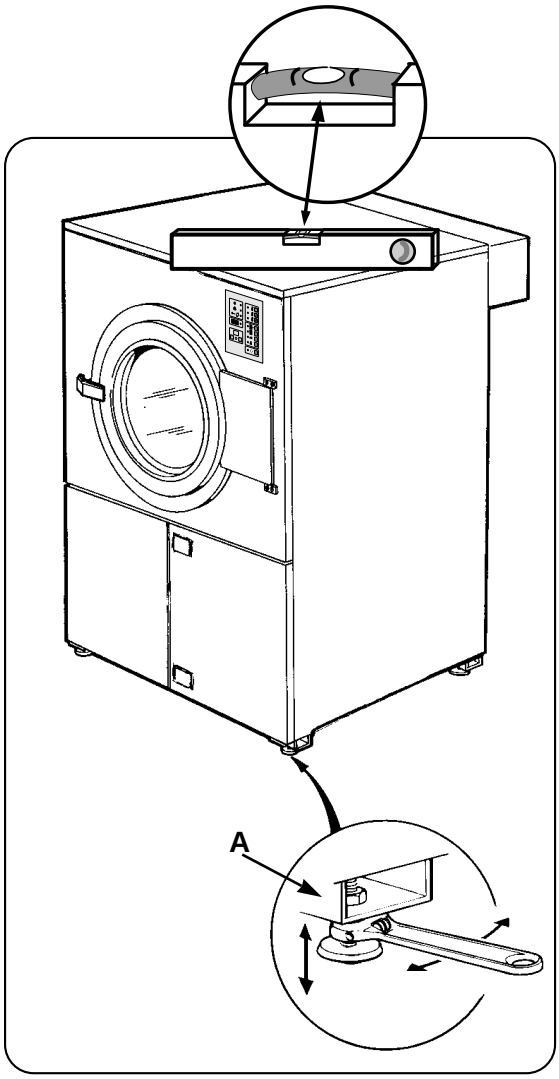
Place the tumble dryer to give good access for user and service technician alike.

The distance to a wall or other equipment behind the machine should be at least 500 mm, and the distance to the sides at least 50 mm. To allow servicing, there should - however - be access to the rear of the machine.

Mechanical installation

Adjust the machine to make it stand horizontally and stably on all four feet.

The max. height adjustment of the feet is 15 mm.



Instructions for installation, steam

Steam installation:

(2) From the main steam pipe (flow) the steam is tapped through a service line at the top (**A**) (the tap-off point is at the top to prevent condensate in the steam).

Bring the service line down to the same height (or slightly above) the top steam connection (**B**) of the steam calorifier.

Install a stop cock (slide valve)(**C**) and a dirt collector (**D**) on the pipe before it reaches the steam calorifier.

Connect both the inlet pipe/hose (**B**) and the outlet pipe/hose (**E**) to the steam calorifier with a union (1 $^{1}/_{4}$”).

Just after the steam calorifier outlet branch (**E**), install a mechanical water discharger (**F**). (A thermal water separator is not suited for a calorifier of this magnitude).

After the water separator install a dirt collector (**G**) and a manual stop cock (**H**). A return line then takes the condensate back to the main condensate pipe.

(3) If a steam hose (pressurized hose) is used on the last piece before the steam calorifier connection branch, it is important to ensure a continuous slope, see fig. 3.

(4) The hose should not be allowed to sag, since this would create local accumulations of condensate, leading to a risk of water shock inside the steam calorifier.

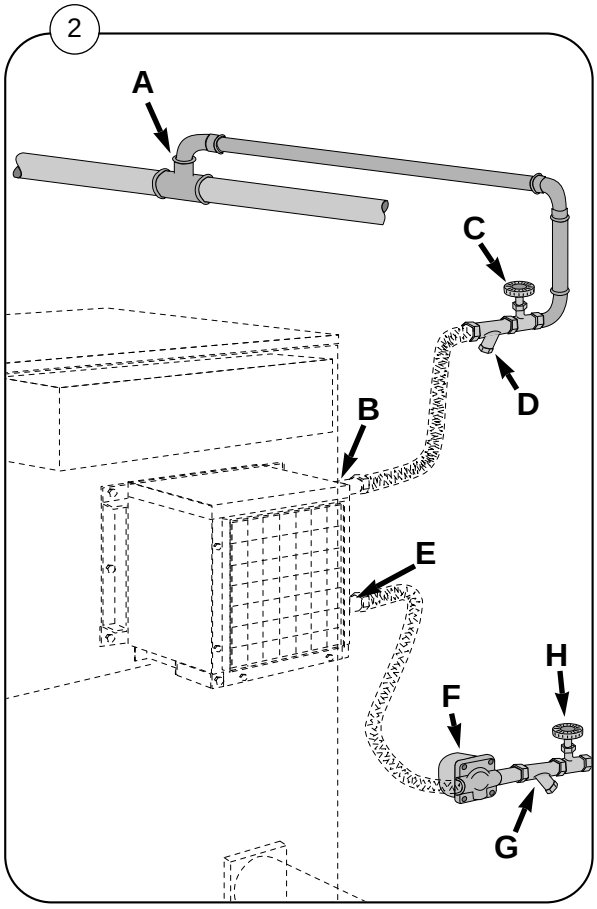
If the hose is placed after the calorifier, it also needs to slope all the way to the water separator.

All pipes have been insulated to reduce the risk of burns, while also reducing the heat loss to the surroundings.

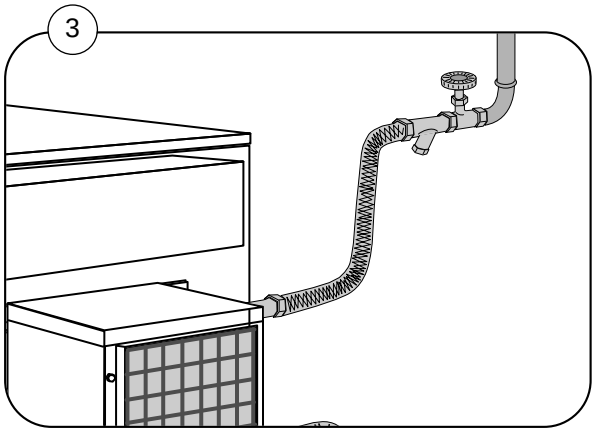
Steam:

Hot water 1-10 bar absolute pressure (100-180°C).
Water steam 1-10 bar absolute pressure (100-180°C).

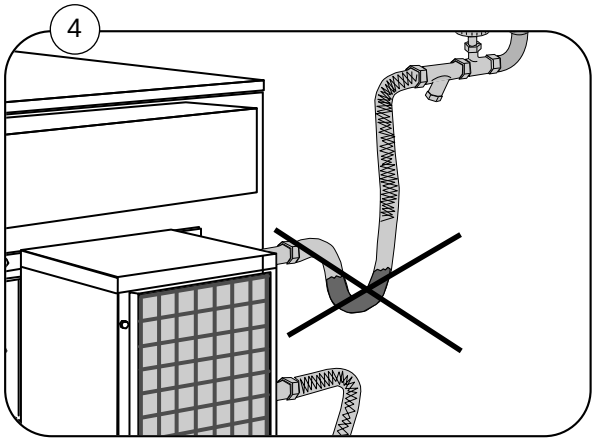
2



3



4



Installation of steam calorifier

When the tumbler is delivered, the steam calorifier has not been installed, but comes with the tumbler as a full kit consisting of a steam calorifier with insulation and an adjustable “T-foot” for supporting the steam calorifier.

Installation of steam calorifier and T-foot:

• Remove the packing from the steam calorifier. It must be treated carefully to avoid damaging the thin insulating sheets.

• Install the packing thread/tape on the in- and outlet branches of the steam calorifier.

• Install one union part (1 $^{1}/_{4}$”) on the in- and outlet branches of the steam calorifier. (Remember to use the pipe branch as backstop).

• Remove the two bearing sections (fig. 5) from the bottom of the steam calorifier and install them loosely on the T-foot with the attachment screws already found inside the bearing sections.

5

• Remove the 8 M6 screws from the steam calorifier flange.

• Place the steam calorifier flange on the inlet flange of the tumble dryer and tighten the 8 M6 screws to ensure that the steam calorifier has been securely attached and has a close seal to the tumble dryer inlet flange.

6

• Place the T-foot underneath the steam calorifier, so that the two bearing sections fit into their original holes; then screw home the four screws.

7

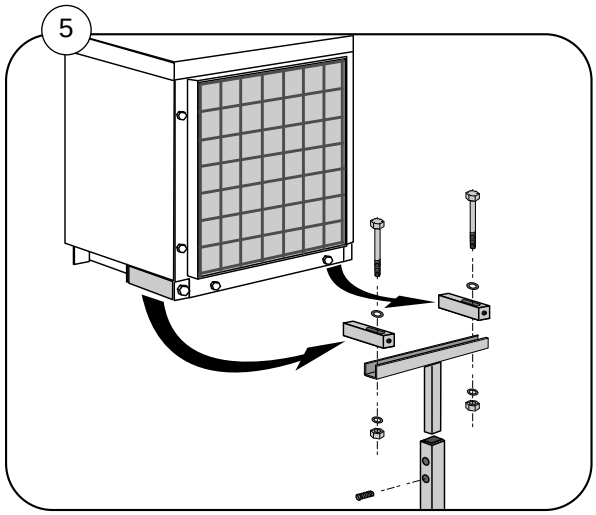
• Adjust the T-foot for height to make it support the steam calorifier; then tighten all screws.

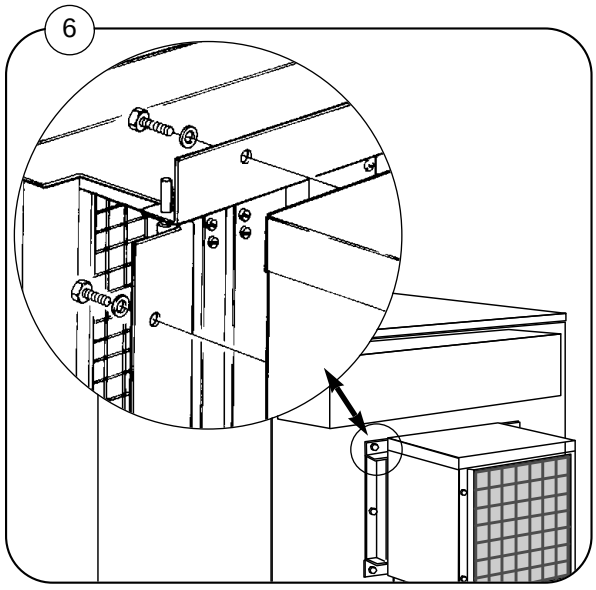
• Install the second union part on the steam and condensate lines.

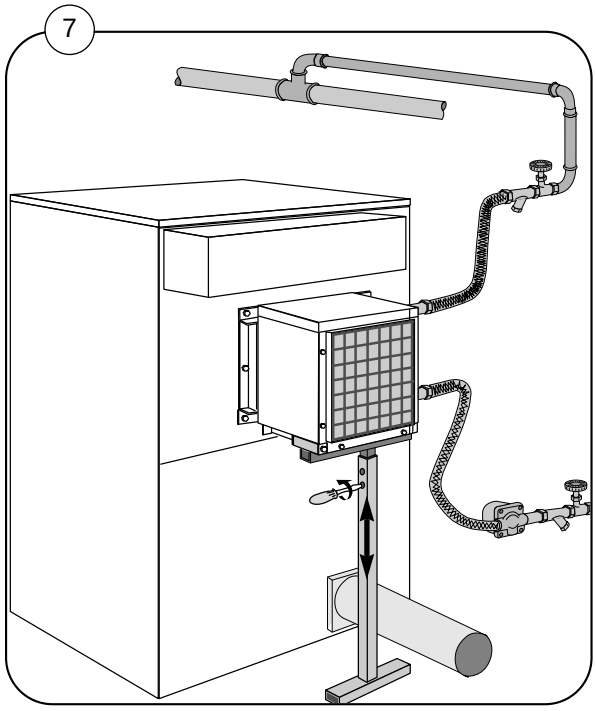
• Slowly open the steam feed and the steam outlet from the calorifier.

• Check that there are no leaks in the system.

• Start the tumbler using full heat and let it run without garments for 10 minutes. If there are no problems, the tumbler is ready for use

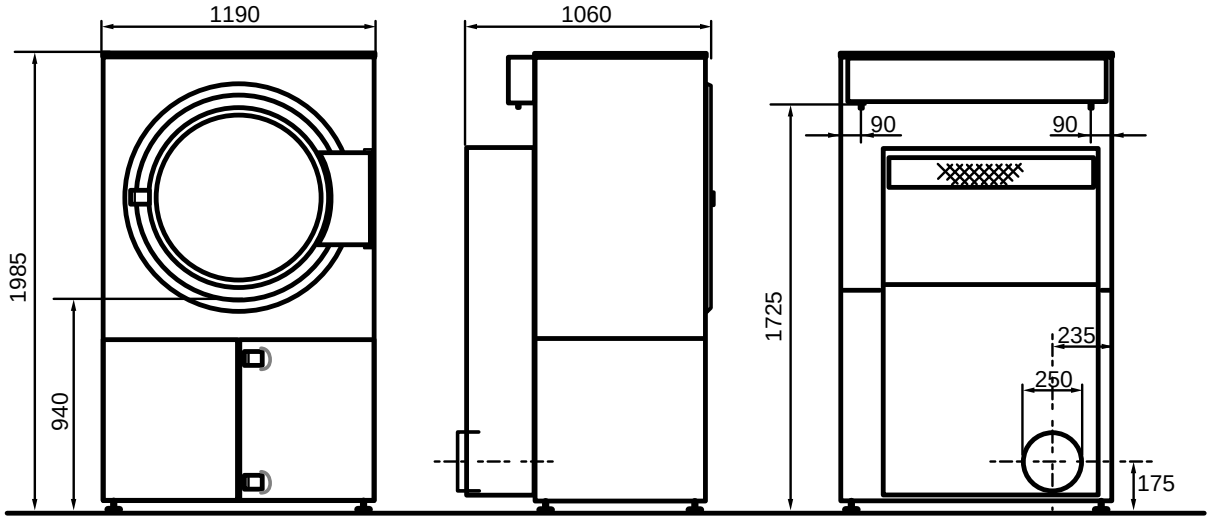


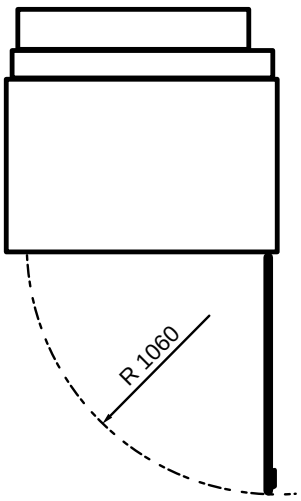




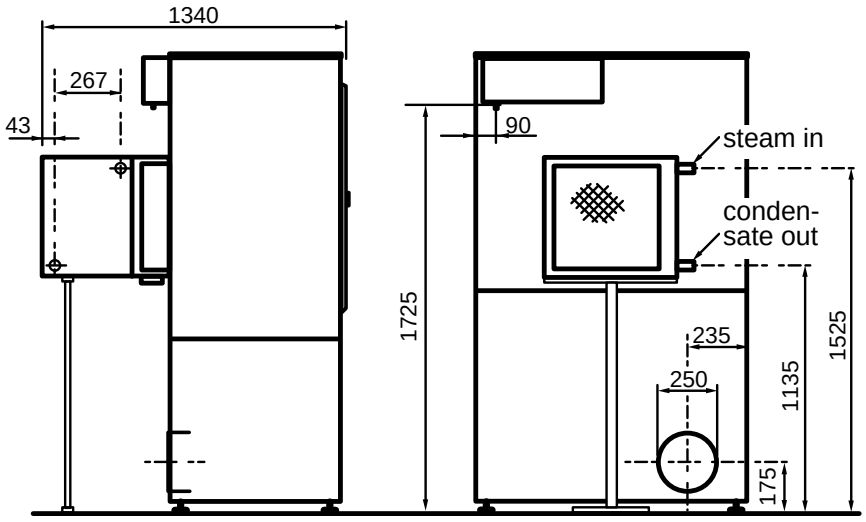
Installation

Dimension sketch





Steam



Wiring installation. Inside the EU and EEA

This must be carried out by a skilled expert. The tumble dryer must have a fuse-group of its own.

For countries inside EU and EEA, a multi-pole lockable switch is fitted for each tumble-dryer in the permanent installation.

A lockable switch accompanies the machine for countries inside EU and EEA. (Machine directive requirements concerning disconnection of the electricity supply during service work).

The switch must be easily accessible, but it must **not** be possible to mistake it for the master switch of the tumble-dryer.

For calculation of the connection cable dimension, please refer to local guidelines.

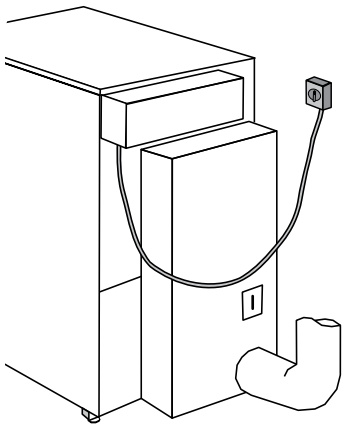
Functional inspection, see page 14

(Right direction of rotation is important).

The tumble dryer must be provided with extra protection in accordance with applicable regulations.

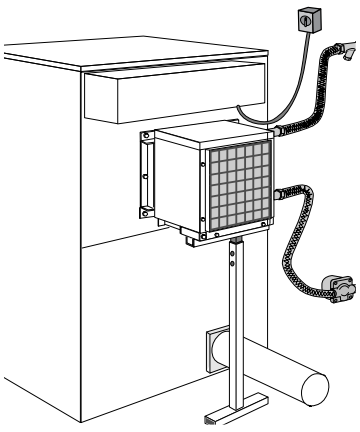
Electric heating, inside the EU and EEA

Cable	Voltage	Heat and motor effect	Fuse
1 cable for heat and motor	400-440V *3N / 3 AC 50/ 60 Hz	32,7 kW	50 A
1 cable for heat and motor	400-440V *3N / 3 AC 50/ 60 Hz	26,7 kW	50 A
1 cable for heat and motor	208-240V 3 AC 50/ 60 Hz	32,7 kW	100 A
1 cable for heat and motor	208-240V 3 AC 50/ 60 Hz	26,7 kW	80 A



Electric heating, inside the EU and EEA

Cable	Voltage	Total output	Fuse
Cable for motor	400-440V *3N / 3 AC 50/ 60 Hz	2,7 kW	10 A
	208-240V 3 AC 50/ 60 Hz	2,7 kW	10 A



*If the machine is equipped with a zero voltage connection, **this must always be connected.**

Wiring installation. Outside the EU and EEA

This must be carried out by a skilled expert. The tumble dryer must have a fuse-group of its own.

For countries outside EU and EEA, a multi-pole switch is fitted for each tumble-dryer in the permanent installation.

The switch must be easily accessible, but it must **not** be possible to mistake it for the master switch of the tumble-dryer.

For calculation of the connection cable dimension, please refer to local guidelines.

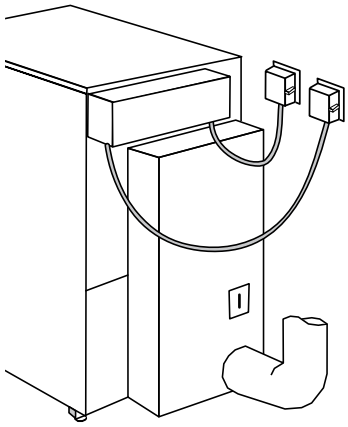
Functional inspection, see page 14

(Right direction of rotation is important).

The tumble dryer must be provided with extra protection in accordance with applicable regulations.

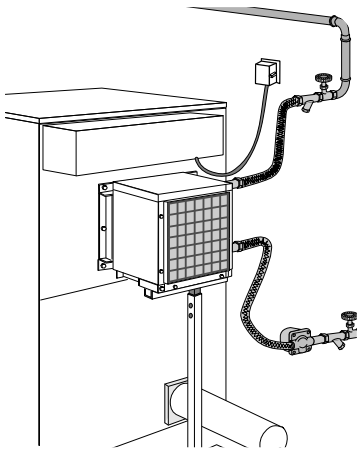
Electric heating, outside the EU and EEA

Cable	Voltage	Heat and motor effect	Fuse
1 cable for heat 1 cable for motor	400-440V *3N / 3 AC 50/ 60 Hz	30,0 kW 2,7 kW	50 A 10 A
1 cable for heat 1 cable for motor	400-440V *3N / 3 AC 50/ 60 Hz	24,0 kW 2,7 kW	50 A 10 A
1 cable for heat 1 cable for motor	208-240V 3 AC 50/ 60 Hz	30,0 kW 2,7 kW	100A 10 A
1 cable for heat 1 cable for motor	208-240V 3 AC 50/ 60 Hz	24,0 kW 2,7 kW	80 A 10 A



Steam heating, inside the EU and EEA

Cable	Voltage	Total output	Fuse
Cable for motor	400-440V *3N / 3 AC 50/ 60 Hz	2,7 kW	10 A
Cable for motor	208-240V 3 AC 50/ 60 Hz	2,7 kW	10 A



*If the machine is equipped with a zero voltage connection, **this must always be connected.**

Technical data

Heating			Electricity	Steam
	Drum volume:		**600 litres**	**600 litres**
	Dimensions:	Width	1190 mm	1190 mm
		Depth	1060 mm	1345 mm
		Height	1985 mm	1985 mm
	Weight:	Net	339 kg	329 kg
	Drum:	Diameter	1100 mm	1100 mm
		Depth	630 mm	630 mm
		RPM	33 rpm	33 rpm
		G-factor	0.67	0.67
	Capacity:	1 : 25	24 kg	24 kg
		1 : 33	18 kg	18 kg
	Motor:	Power	2 x 1.35 kW	2 x 1.35 kW
		RPM 50 Hz	1400 rpm	1400 rpm
		RPM 60 Hz	1700 rpm	1700 rpm
	Heat effect:		24 / 30 kW	~ depending on steam pressure
	Air consumption:	24 kW	800 m^3/h	
		30 kW	1000 m^3/h	
		Steam		1600 m^3/h
	Piping:	Air-evacuation	Ø 250 mm	Ø 250 mm
		Steam: Pipe thread		ISO 7/1 - R 1 1/4 .
		Condensate: Pipe thread		ISO 7/1 - R 1 1/4 .
	Steam:	Recommended pressure (absolute)		100 - 1000 kP
		Max. permissible pressure		1000 kP
	Pressure drop:	Air-evacuation 50 Hz	max. 80 Pa	max. 70 Pa
	Sound pressure level :		< 70 dB (A)	< 70 dB (A)

Evacuation system for tumble dryer

Fresh-air

For the machine to work optimally with the shortest possible drying time, it is **important** for the air input to the room to come from an aperture from outside, through which the same amount of air is taken into the room as is blown out. To avoid a draught in the room, the air inlet should preferably be placed behind the machine. The area of the air inlet aperture must be five times the area of the air outlet pipe. The resistance in the grating/slats should not exceed

1

10 Pa (0.1 mbar). The air consumption is approx. 800-1600 m3/h.

Outlet pipe/duct

It is recommended that each machine be connected separately to a smooth air outlet pipe with the lowest possible friction.

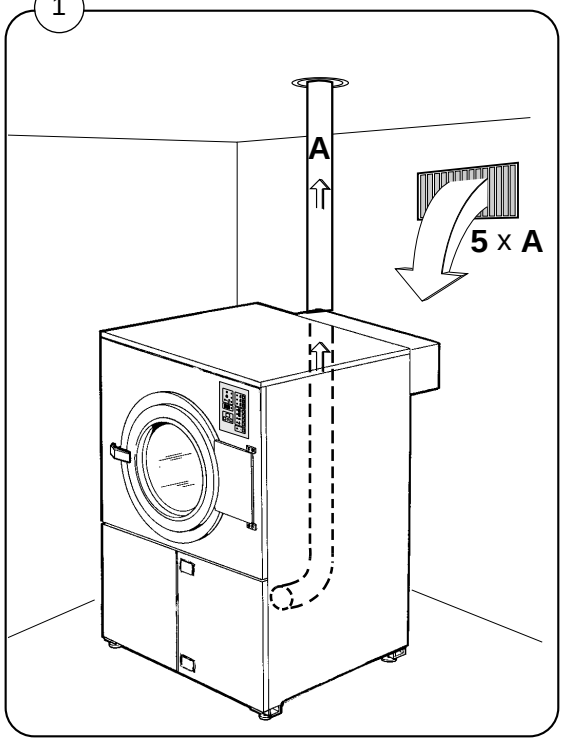
Measure the straight lengths of pipe in metres. Add two metres for each 90° bend and one metre for each 45° bend. Set the machine grate to this value,
see fig. 2.

2

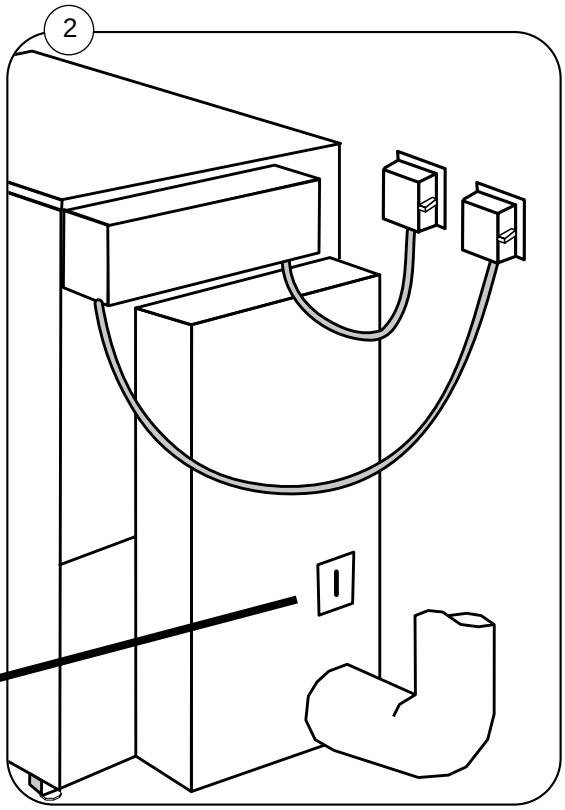
The pipe must end outside the building and its aperture must be protected against rain and impurities.

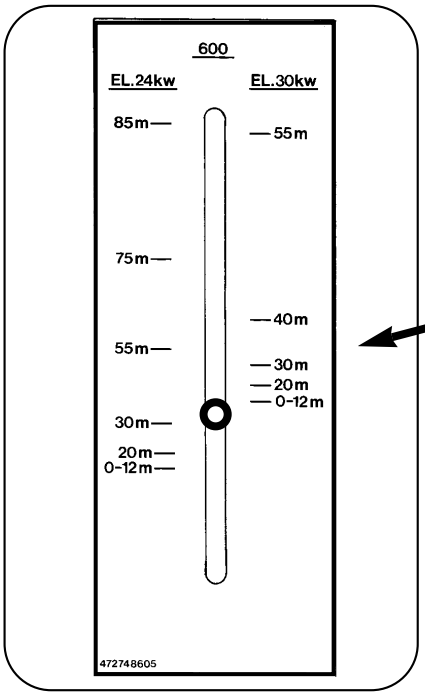
If there is any doubt concerning the design of an evacuation system, please do not hesitate to contact our service organization or dealer.

1



2



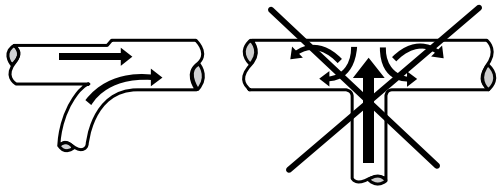


Evacuation system if more than one machine uses a given air outlet pipe

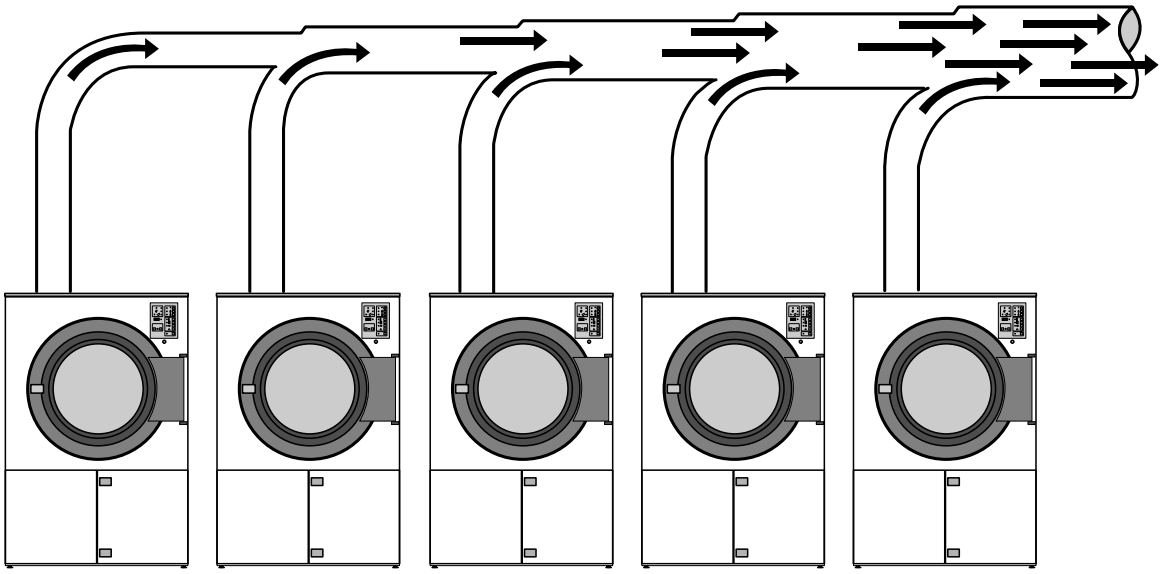
1 If more than one machine uses a given air outlet pipe, the area of the pipe should be increased for each machine to ensure that each machine has the same air resistance. Fig. 1 and the table give a simplified version of the dimensions required from the air outlet pipe.

2 **Note!** Bends (not T-sections) must be used to give the air a co-current, see fig. 2.

2



1



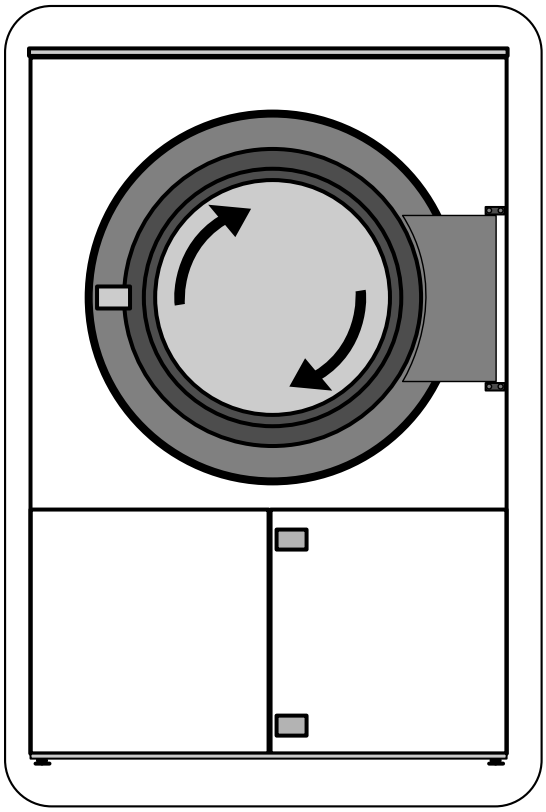
No. of tumblers	1	2	3	4	5
Air outlet pipe diameter, inches and mm	10" 250	14" 355	18" 450	20" 500	22" 560
Required area of fresh-air inlet pipe, m^2	0.3	0.5	0.8	1.0	1.3

Each machine requires a fresh-air aperture of 540 x 540 mm

Function check:

This must be carried out by skilled personnel. Check whether the drum is empty and the door closed.

Start the machine. Check whether the safety lock works. The drum must stop when the front door is opened.



The drum should rotate “clockwise” (see illustration). If this is not the case, switch two phases.

Let the machine work five minutes with a program that requires heat; then open the front door and feel whether the heating works.

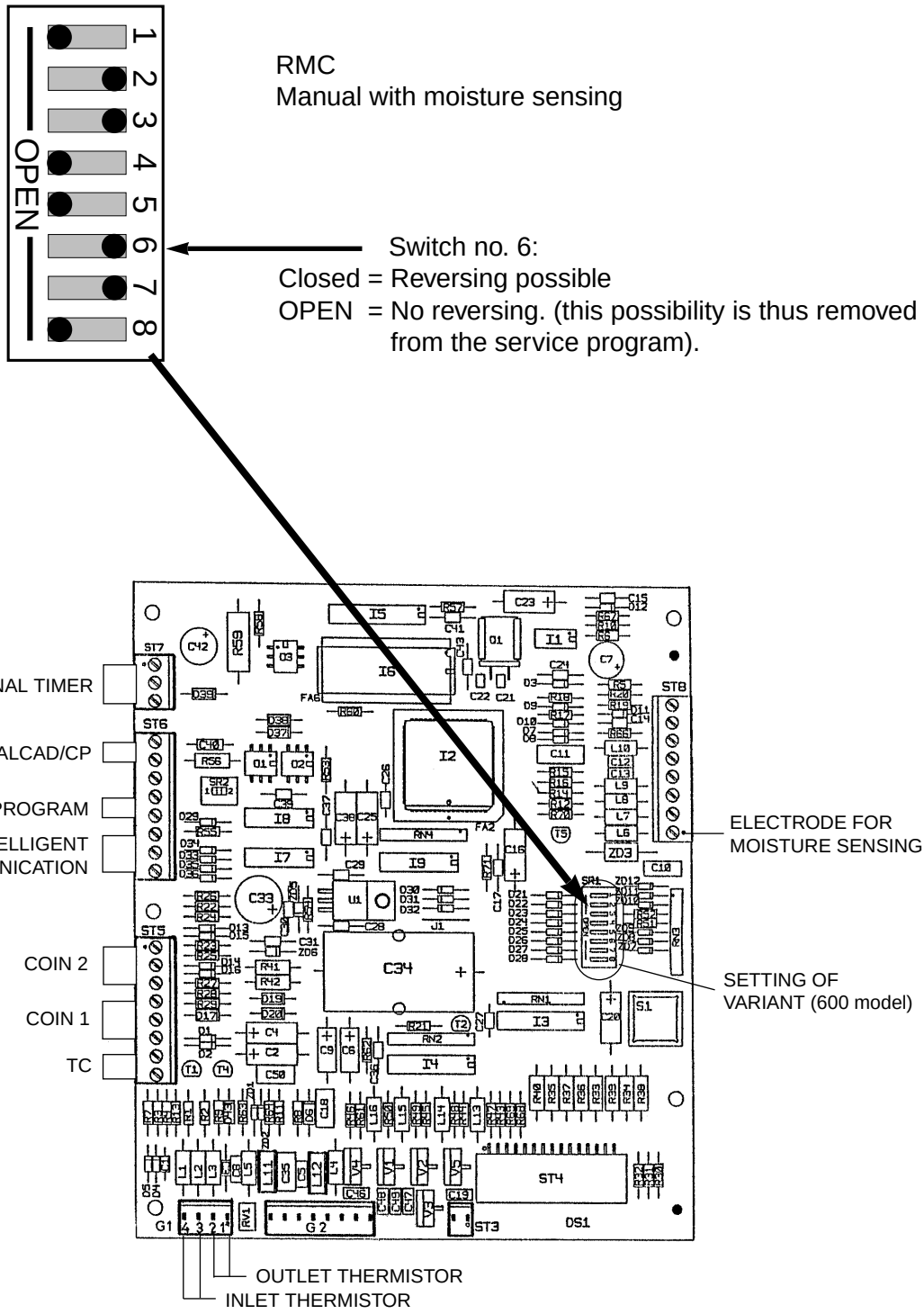
If the tests outlined above are successful, the tumbler is ready for use.

If any faults or deficiencies are found, please contact the nearest service organization / dealer.

PCB (printed circuit board), setting of 600-litre machine

The switch setting (variant setting) for the 600-litre model. The PCB has been preset at the works to match this model.

Only if the PCB is replaced is it necessary to reset.



Quick-view parameter listing

The following values have been pre-programmed:

Parameter No.	Value / setting	Parameter
01	3.0	Cooling time
02	50	Program with low temperature: 50°C
03	70	Program with high temperature: 70°C
04	90	Maximum running time
05	1	With reversing
06	2.3	Reversing time
07	3	Reversing, pausing time
16	n6	Program: Extra dry
17	0	Program: Dry
18	13	Program: Iron dry (iron)
19	21	Program: Iron dry (ironing machine)

A more detailed explanation of the parameter programming can be found on the following pages.

Explanation of the parameter programming

At the works specific values have been pre-set for the tumbler, such as: Maximum time on timer, temperature, cooling, reversing and residual moisture percentage.

These different parameters can be adjusted in the service program of the machine.
The parameter programming can be activated by turning the key switch (**A**) at the front of the machine.
(The parameter programming can only be engaged when the machine has stopped and the machine door is open).

When engaging the program, always start with parameter no.01. By pressing the start button (**B**) repeatedly (**Enter**), it is possible to go to the parameter number to be adjusted.

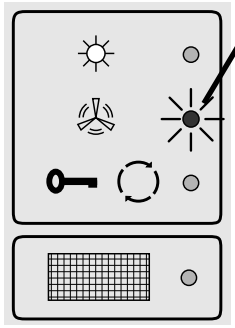
Once the parameter programming has been engaged, the LEDs (light-emitting diodes) are used as an indicator for the parameter in question:

LED **Drying** =

LED **Cooling** =

LED **Key** =

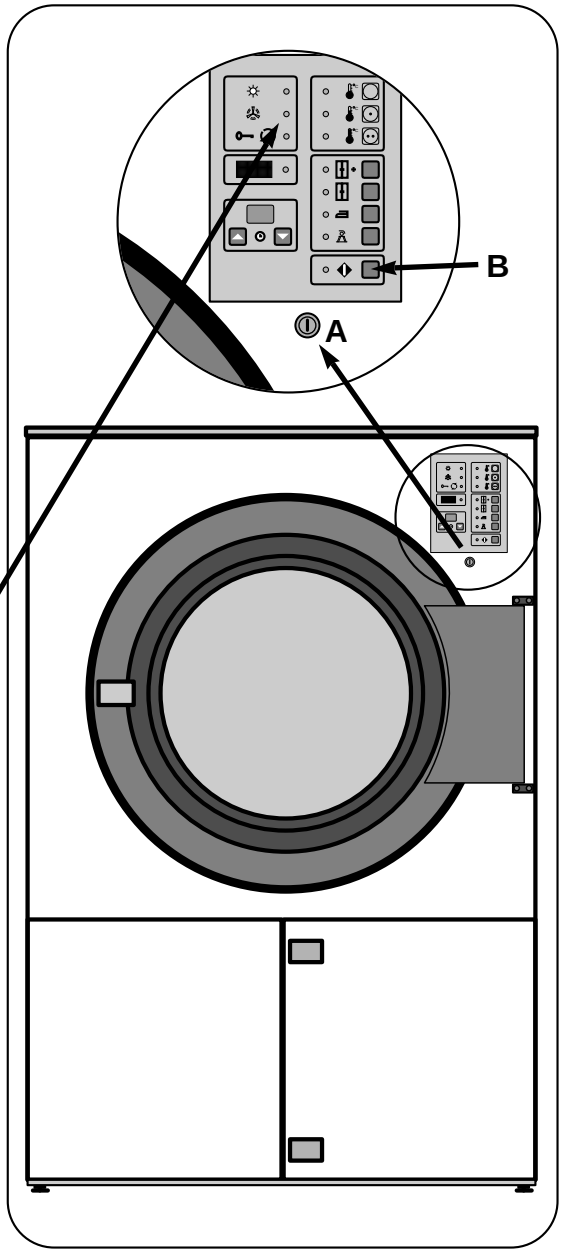
LED **Filter** =



An example: (Parameter no. 04). If the maximum time on the timer is not satisfactory (factory setting = 40 min.):
First press start button (**B** - **Enter**), until the LED for **Cooling** is lit - corresponding to parameter no. 04. The display now reads 40. Now count upwards by means of the **"Count Up"** button if a longer time, or **"Count Down"** if a shorter time, is required. Once the desired value has been reached, press the start button **"Enter"**. The new value has now been stored in the program.
Back to factory setting 40: Press **"Reset"**.

Examples are described with illustrations on the following page.

It is always possible to leave the parameter programming by turning back the key switch to its original position.



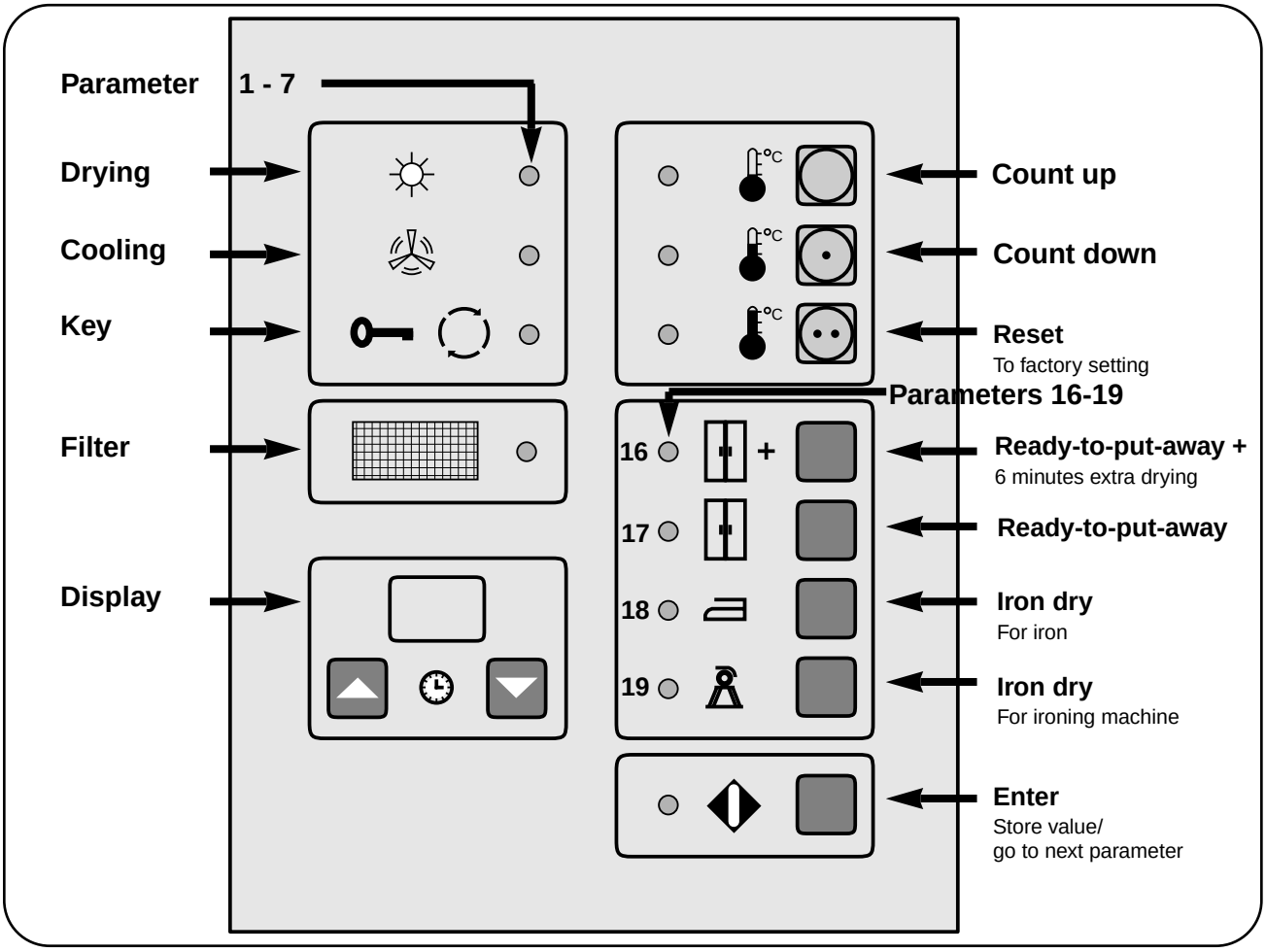
Parameter no. 04

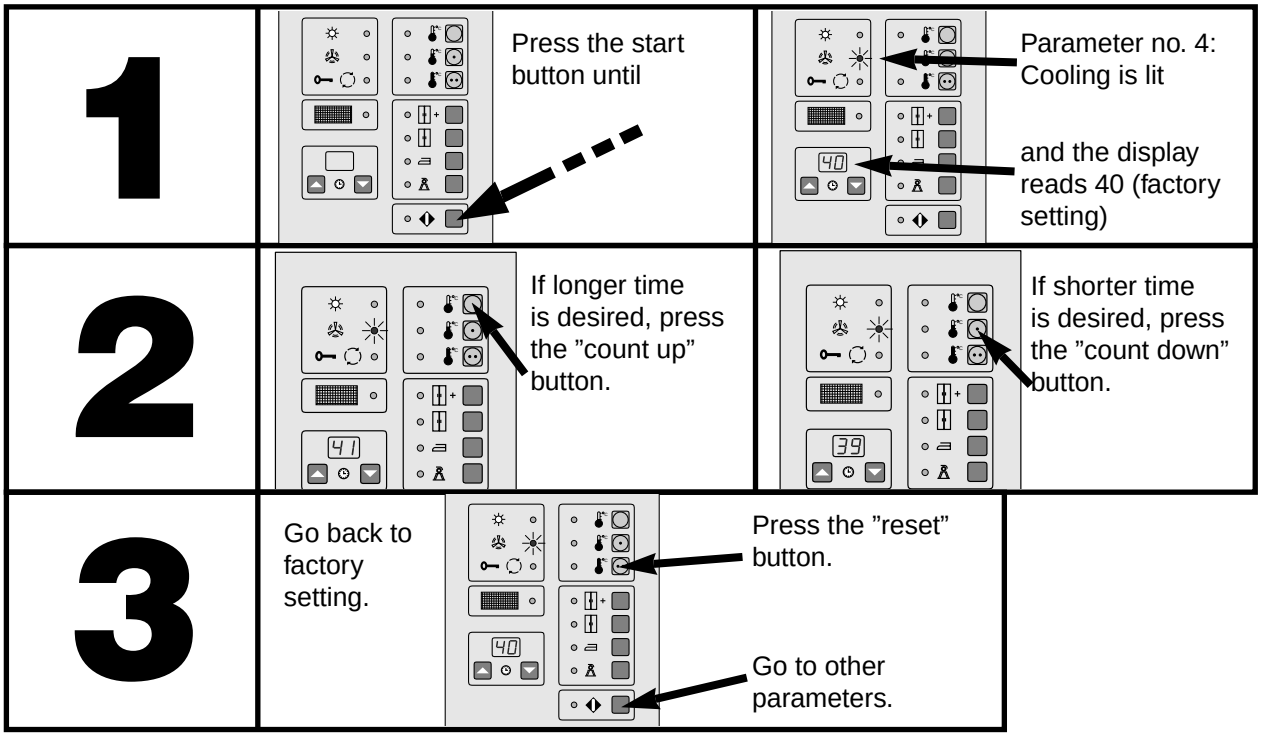
Factory setting: 40,
but reset to 90.

Note! On this machine parameter 4 has to be set (using the counter) to 90.

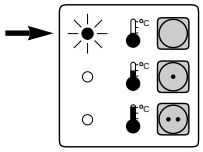
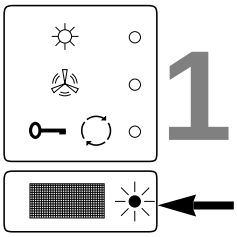
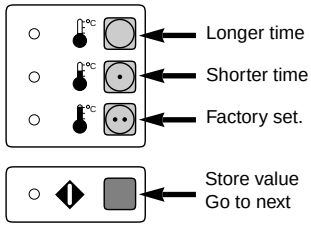
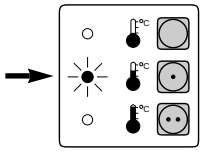
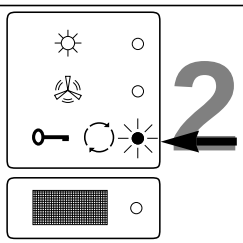
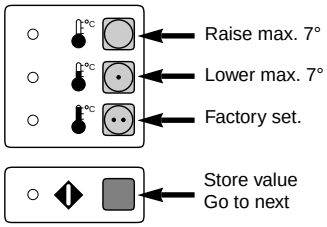
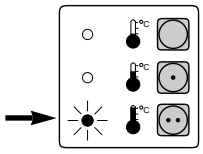
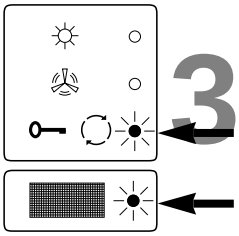
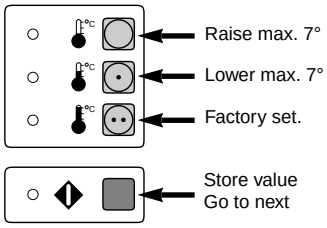
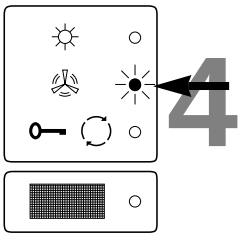
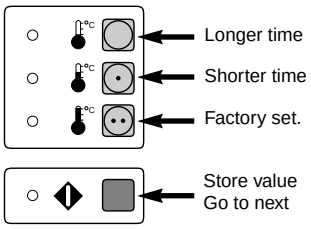
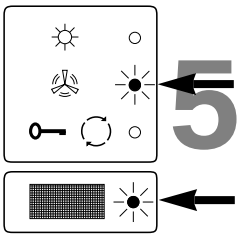
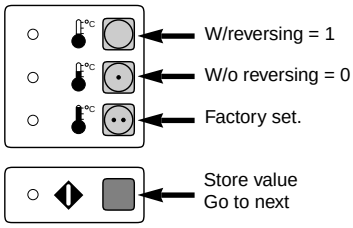
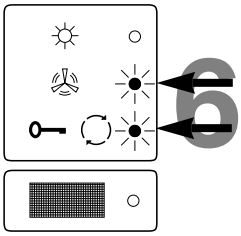
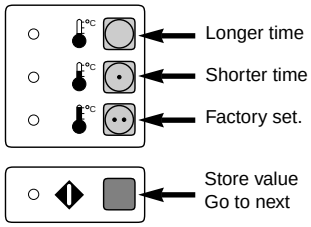
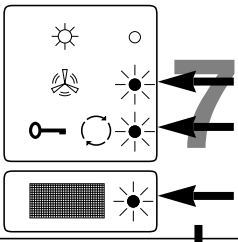
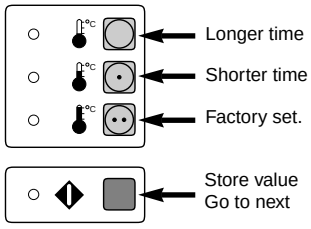
Parameter programming

Control panel





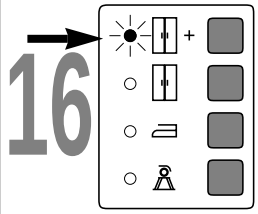
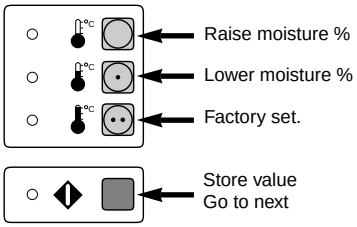
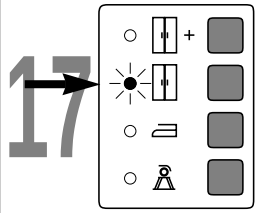
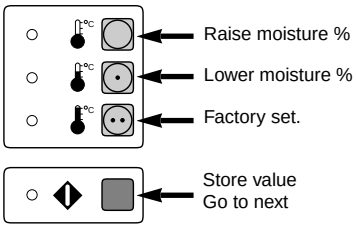
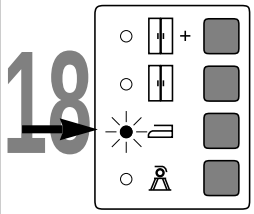
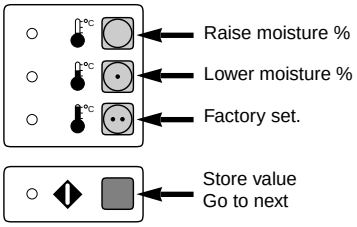
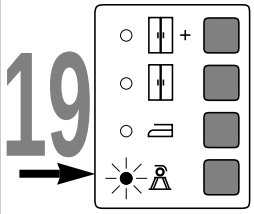
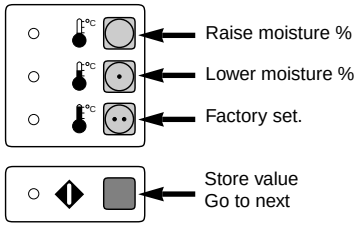
Parameter programming

Parameters 1 - 7	LED: On = ☼ Off = ○	Value, factory setting	Adjustment wanted: Do this: *Press for:*
Cooling time 		Value= Min. sec. **0.0 - 9.6** Factory setting: 3.0	
Temperature 50° 		Value = Degrees C. ± 7°C Factory setting: 50°C	
Temperature 70° 		Value = Degrees C. ± 7°C Factory setting: 70°C	
Max running time for automatic residual moisture control		Value = Minutes **20 - 90** Factory setting: 40, but reset to 90. **Note! On this machine parameter 4 has to be set (using the counter) to 90.**	
Reversing		Value = **1 / 0** W/ or w/o reversing Factory setting; 1 with	
Reversing time		Value = Min sec. **0.2 - 9.6** Factory setting: 2.3	
Reversing, pausing time		Value = Sec. **3 - 20** Factory setting: 3	

Parameters no. 8-15 are not used on this variant (w/o payment)

Parameter programming

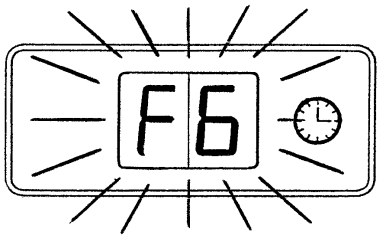
Only on machines with residual moisture control

Parameters 16 - 19	**LED:** On = ☼ Off = ○	**Value, factory setting**	**Adjustment wanted:** Do this: *Press for:*
Automatic residual moisture control Extra dry		Value = Residual moisture: **n9 - 30 %** Factory setting: **n6** *n6 = 0% + 6 minutes extra drying* *(n1 - n9 = 1 - 9 minutes)*	
Automatic residual moisture control Dry		Value = Residual moisture **0 - 30 %** Factory setting: **0 %**	
Automatic residual moisture control Iron dry for iron		Value = Residual moisture **0 - 30 %** Factory setting: **13 %**	
Automatic residual moisture control Iron dry for ironing machine		Value = Residual moisture **0 - 30 %** Factory setting: **21 %**	

NB! Parameters 8-15 are not used for this control variant (with automatic residual moisture control).

Error codes

The machine feature automatic fault reporting, indicated by flashing error codes.



Error code	Error	What is wrong? What to do?
F1	Brown-out	20% lowering of voltage from power plant: Can be started when the voltage is back to normal.
F3	Heating fault	Fault on inlet sensor or heating element: Disconnect mains for a moment. If the fault occurs again: call in service.
F4	Outlet sensor	Fault on outlet sensor: Disconnect mains for a moment. If the fault occurs again: call in service.
F5	Wrong variant	Wrong combination of switches on PCB All lamps go out: call in service.
F6	Electronic fault	Micro-processor fault: call in service.
F7	Service program	Service program wrongfully engaged: is only to be engaged with the machine door open.
F9	Vacuum switch fault	Vacuum switch fault: call in service.